Appendix D

Traffic Study and Roundabout Memo

Traffic Study

Region of Peel

Schedule C Class Environmental Assessment Study for Mayfield Road from Chinguacousy Road to Heart Lake Road, Project 10-4350

Project No. 101-17262

FINAL

September 2013

Traffic Report

GENIVAR Inc. 600 Cochrane Drive, 5th Floor, Markham, Ontario L3R 5K3
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GENIVAR

101-17262

September 25, 2013

Mr. Neal Smith, C.E.T.
Project Manager
Peel Region
9445 Airport Road
3rd Floor
Brampton, ON L6S 4J3

Re: Class Environmental Assessment for Mayfield Road from Chinguacousy Road to Heart Lake Road (Project #10-4350)
Traffic Report

Dear Mr. Smith:

Attached please find the Traffic Report for the Class Environmental Assessment for Mayfield Road from Chinguacousy Road to Heart Lake Road as per the requirements of Project #10-4350.

The Traffic Report documents the data reviewed, traffic operations analysis, safety review, transit review, existing and future deficiencies, and recommended geometric improvements.

Should you have any questions, please feel free to contact either of the undersigned.

Yours truly,

GENIVAR Inc.

Sharon Sterling, MCIP, RPP
Director, Traffic Management

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Executive Summary

GENIVAR was retained to prepare the Class Environmental Assessment (EA) for Mayfield Road from Chinguacousy Road to Heart Lake Road (Project #10-4350). This Traffic Report is one component of the EA study.

Mayfield Road is located on the boundary of Brampton and Caledon within the Region of Peel. The length of Mayfield Road within the project limits is approximately 5.8km. The existing corridor has 12 intersections, of which eight are signalized and four are unsignalized.

Currently, the approximate range of two-way traffic volumes along Mayfield Road within the study limits is from 800 to 1,800 vehicles per hour in the AM and PM peak hours. The midday peak hour volumes are significantly lower than the AM and PM peak hour volumes along the corridor and, therefore, are not included in the analysis sections of the report.

There is an Orangeville rail crossing over Mayfield Road approximately 200m west of Cresthaven Road. The rail traffic over the Mayfield Road crossing is four trains per week. A grade separation is not warranted at the Orangeville rail crossing over Mayfield Road under existing conditions.

Mayfield Road from Chinguacousy Road to Heart Lake Road is performing relatively well from a safety perspective with a low, or low to moderate potential for collision reduction. The capacity analysis shows that, under existing conditions, all signalized and unsignalized intersections have good operational characteristics with low delays, reserve capacity and no critical movements.

The corridor is located in a general area where a number of roadway improvements from different agencies (Peel, Brampton, Caledon) are included in Capital Programs and are anticipated to be completed by the 2021 and 2031 horizon years. The exception is the GTA-West Corridor for which the study is still under the formal EA process and it is not anticipated at this time that the corridor will be constructed by 2031. For Mayfield Road, the Peel Capital Projects identify that by 2021 the corridor would be widened from two to four lanes from Chinguacousy Road to Hurontario Street and from four to six lanes from Hurontario Street to Heart Lake Road and that by 2031, Mayfield Road would be further widened from four to six lanes from Chinguacousy Road to Hurontario Street.

Brampton's Transportation and Transit Master Plan (TTMP) Sustainable Update 2009 identifies that there will be a number of transit improvements in the Study Area, including Bus Rapid Transit (BRT) on Hurontario Street. By 2021, there will be five transit corridors anticipated within the Study Area.

GENIVAR has developed turning movement volumes for the 2021 and 2031 corridor networks and the projected turning movement volumes were approved by the Region of Peel on June 30, 2011. Subsequent to developing the turning movement projections in 2011, new information was provided to GENIVAR by the Region and, as a result, the traffic projections for Mayfield Road have been revised for the corridor between Chinguacousy Road and McLaughlin Road and these were agreed upon by the Region on June 6, 2013.

A roundabout feasibility analysis was undertaken for the intersections along Mayfield Road and it was found that roundabouts from Chinguacousy Road to Cresthaven Road / Robertson Davies Drive may form a cohesive group and were, therefore, analyzed in the evaluation of corridor network alternatives.

The following network alternatives were developed for this study:

- 2021 Do Nothing Roadway Network Alternative
- 2021 Capital Projects Network Alternative
- 2031 Capital Projects Network Alternative
- 2031 Capital Projects Network Alternative with Roundabouts

A grade separation is not warranted at the Orangeville rail crossing over Mayfield Road under 2031 traffic conditions.

As detailed capacity analysis showed, as presently configured, Mayfield Road will not have sufficient capacity to accommodate the anticipated traffic demand by 2021 and 2031.

Traffic analysis of the 2021 Capital Projects Network Alternative shows that widening Mayfield Road to six lanes east of Hurontario Street and four lanes west of Hurontario Street in 2021 provides improvements to the corridor compared to 2021 Do Nothing Roadway Network Alternative.

Traffic analysis shows that in 2031, widening the corridor to six lanes west of Hurontario Street and additional turn lanes at certain intersections provide sufficient improvements to accommodate projected traffic growth.

The evaluation of corridors shows that implementing roundabouts along the corridor from Chinguacousy Road to Cresthaven Road / Robertson Davies Drive would reduce the corridor speeds compared to the 2031 Capital Projects Alternative. Furthermore, roundabouts result in longer overall delays when minor street traffic volumes are low compared to major street traffic volumes, require initial public education, usually cost more to construct, construction staging for retrofits is costly and complicated, and are not suitable for accommodating the high truck volumes that are anticipated on Mayfield Road.

The following corridors are recommended for the 2021 and 2031 horizon years:

- 2021 Capital Projects Network Alternative
- 2031 Four and Six Lane Mayfield Road Network Alternative without GTA-West corridor

The following corridors are recommended for the 2021 and 2031 horizon years:

- 2021 Capital Projects Network Alternative
- 2031 Capital Projects Network Alternative

The following roadway improvements are recommended:

	Horizon Year	
	2021	2031
Roadway Improvements		
Mayfield Road		
Chinguacousy Road to Hurontario Street	Widen to four lanes	Widen to six lanes
Hurontario Street to Heart Lake Road	Widen to six lanes	Widen to six lanes
Chinguacousy Road		
Wanless Drive to Mayfield Road	Widen to four lanes	Widen to four lanes
New Collector Road 1		
Wanless Drive to Old School Road	New two lane road	New two lane road
New Collector Road 1 at Mayfield Road		Signalize
New Collector Road 2		
Wanless Drive to Mayfield Road	New two lane road	New two lane road
New Collector Road 2 at Mayfield Road		Signalize
McLaughlin Road		
Wanless Drive to Mayfield Road	Widen to four lanes	Widen to four lanes
Van Kirk Drive		
Van Kirk Drive at Mayfield Road	Signalize	Signalize
Kennedy Road		
Mayfield Road to south of Old School Road	Widen to four lanes	Widen to four lanes
Heart Lake Road		
Mayfield Road to south of Old School Road	Widen to four lanes	Widen to four lanes

The storage lane requirements at the study intersections for each horizon year are:

		Horizon Year		
		Existing	2021	2031
Intersection Storage Lane Requirements				
Chinguacousy Road	NB Left	N/A	30m	30m
	NB Right	N/A	Continued from through lane	Continued from through lane
	SB Left	N/A	30m	30m
	WB Left	N/A	80m	Dual 80m
	EB Left	N/A	30m	30m
New Collector Road 1	NB Left	N/A	30m	30m
	SB Left	N/A	30m	30m
	WB Left	N/A	30m	30m
	EB Left	N/A	30m	30m
New Collector Road 2	NB Left	N/A	30m	30m
	NB Right	N/A	Continued from through lane	Continued from through lane
	WB Left	N/A	30m	30m
McLaughlin Road	NB Left	N/A	30m	50m
	NB Right	25m	Continued from through lane	Continued from through lane
	SB Left	N/A	30m	30m
	WB Left	30m	60m	120m (protect property for 2 WBL)
	EB Left	30m	30m	30m
	EB Right	N/A	N/A	60m
Van Kirk Drive	NB Left	40m	40m	40m
	NB Right	N/A	Continued from through lane	Continued from through lane
	WB Left	35m	50m	50m
	EB Right	30m	30m	30m
Cresthaven/Robertson Davies	NB Left	35m	35m	35m
	SB Left	30m	30m	70m
	WB Left	30m	30m	30m
	WB Right	30m	30m	70m
	EB Left	30m	30m	60m
	EB Right	25m	25m	25m

		Horizon Year		
		Existing	2021	2031
Intersection Storage Lane Requirements				
Hurontario Street	NB Left	45m	85m	130m
	NB Right	60m	105m	150m
	SB Left	Dual 75m	Dual 75m	Dual 75m
	SB Right	75m	135m	165m
	WB Left	Dual 50m	Dual 60m	Dual 75m
	WB Right	55m	85m	120m
	EB Left	110m	120m	Dual 120m
	EB Right	100m	120m	165m
Colonel Bertram Road	NB Left	20m	20m	20m
	WB Left	50m	50m	50m
	WB Right	20m	20m	20m
	EB Left	30m	20m	20m
	EB Right	Continued from through lane	30m	30m
Summer Valley Drive	SB Left	30m	30m	30m
	SB Right	Continued from through lane	Continued from through lane	Continued from through lane
	EB Left	65m	65m	65m
Valley View Drive	NB Left/Through/Right	Continued from through lane	Continued from through lane	Continued from through lane
	WB Through/Right	Continued from through lane	Continued from through lane	Continued from through lane
	EB Through/Right	Continued from through lane	Continued from through lane	Continued from through lane
Inder Heights Drive/Snellview Boulevard	NB Left	15m	15m	15m
	WB Left	30m	30m	30m
	WB Right	N/A	30m	30m
	EB Left	N/A	30m	30m
Kennedy Road	NB Left	45m	70m	90m
	NB Right	Continued from through lane	N/A	115m
	SB Left	45m	45m	60m
	SB Right	N/A	N/A	140m

		Horizon Year		
		Existing	2021	2031
Intersection Storage Lane Requirements				
	WB Left	20m	75m	115m
	WB Right	N/A	N/A	55m
	EB Left	25m	90m	130m
	EB Right	Continued from through lane	N/A	75m
Stonegate Drive	WB Left	100m	100m	100m
Heart Lake Road	NB Left	105m	105m	105m
	NB Right	40m	40m	N/A
	SB Left	20m	Dual 130m	Dual 150m
	SB Right	20m	N/A	N/A
	WB Left	155m	155m	155m
	WB Right	155m	195m	260m
	EB Left	115m	115m	115m
	EB Right	175m	175m	175m

At the intersection of Cresthaven Road at Mayfield Road and the Orangeville rail track, the following alternative measures are recommended for 2021 and 2031:

- queue detector loops to allow queues to clear before they reach the track
- use upstream traffic signals to meter traffic so that it does not queue over the crossing
- improve signage at the rail crossing

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1. Introduction

GENIVAR has been retained to complete the Class Environmental Assessment (EA) for Mayfield Road from Chinguacousy Road to Heart Lake Road. This report is the Traffic Study associated with the subject EA.

Mayfield Road is located on the boundary between Brampton and Caledon within the Region of Peel. The length of Mayfield Road within the project limits is approximately 5.8km.

This Traffic Study includes a traffic operations analysis, safety review, transit review, existing and future deficiencies, and recommended geometric improvements. The horizon years are existing, 2021 and 2031 and the time periods contained in the analysis include typical roadway AM and PM peak hours.

Information used in the Traffic Study includes:

- City of Brampton Transportation and Transit Master Plan, Final Report, November 2009, Revised February 2010
- Town of Caledon Official Plan – December 31, 2008 Consolidation
- Caledon Transportation Needs Study Update, Paradigm and Philips Engineering, March 2009
- Mount Pleasant Secondary Plan Area Transportation Master Plan (TMP), ENTRA Consultants, June 2009
- Schedule M to Official Plan Amendment OP2006 Schedule 51 (a) Mount Pleasant Secondary Plan No. 51
- Mayfield West Community Plan Traffic Impact Analysis Report, ENTRA Consultants, June 2006
- Mayfield West Community Plan Traffic Management Plan, ENTRA Consultants, February 2008
- Mayfield West Phase Two Secondary Plan Transportation Impact Study – Part A: Existing Conditions, Paradigm Transportation Solutions Ltd., January 26, 2009
- Presentation file for the Mayfield West Secondary Plan Phase 2 Council Information Workshop, June 15, 2010
- Mayfield Road from Hurontario Street to Heart Lake Road Class Environmental Assessment, Stantec, November 2002
- Fernbrook Homes Anthem Subdivision Traffic Impact Study, June 2010
- Region of Peel Road Program 2010 – 2031, Transportation – Public Works
- 2010 Current and Capital Budget and Forecast, City of Brampton
- Accident Analysis by Location Report along Mayfield Road from 2005 to 2009

- Regional Guidelines for Using Synchro Version 7.73, Revision 8, Region of Peel, December 2010
- Trip Generation, 8th Edition, Institute of Transportation Engineers (ITE)
- 2010 AM, Midday and PM peak hour turning movement counts along Mayfield Road corridor provided by Region of Peel
- Signal Timing Plans for the Mayfield Road Corridor provided by Region of Peel
- Region of Peel approved growth rates for Mayfield Road corridor, e-mail dated June 30, 2011
- Region of Peel EMME model plots for 2011, 2021 and 2031 dated December 2010
- Population and Employment by Transportation Analysis Zone, March 2009, provided by the Region of Peel
- Region of Peel TAZ map, December 2010
- Existing, 2021 and 2031 Synchro network for the Mayfield Road corridor, provided by Region of Peel
- Brampton By-Law 93-93 – Schedule X – Rate of Speed
- Highway Safety Manual, 1st Edition (HSM)
- Region of Peel Long Range Transportation Plan, Final Report, September 2005
- Region of Peel Long Range Transportation Plan, Draft Report, June 2011
- Traffic projections for Mayfield Road at Chinguacousy Road and at McLaughlin Road developed by Paradigm Transportation Solutions Ltd.
- Mount Pleasant Block 51-2 Collector Road Environmental Assessment Study and Transportation Study, September 2011, prepared by BA Group Transportation Consultants

2. Existing Conditions

2.1 Roadway Network

The Study Area includes Mayfield Road (Regional Road 14) from Chinguacousy Road to Heart Lake Road, a stretch of road approximately 5.8km in length. The roadways in the Study Area are:

Mayfield Road is an east-west arterial road under the jurisdiction of the Region of Peel and forms the boundary line between the Town of Caledon and the City of Brampton. From Chinguacousy Road to Hurontario Street (2.8km), Mayfield Road has two lanes. Along this section of Mayfield Road, there is an Orangeville rail crossing west of Cresthaven Road / Robertson Davies Drive. From Hurontario Street (2.8km) to Heart Lake Road, Mayfield Road has four lanes. The speed limit is 80km/h from Chinguacousy Road to 100m west of McLaughlin Road, 70km/h from 100m west of McLaughlin Road to 305m west of Hurontario Street, 60km/h from 305m west of Hurontario Street to 100m west of Heart Lake Road and 80km/h from 100m west of Heart Lake Road to Heart Lake Road.

Chinguacousy Road south of Mayfield Road is classified as a minor collector road, is under the jurisdiction of the City of Brampton, has two lanes and a speed limit of 70km/h. North of Mayfield Road, Chinguacousy Road is classified as a collector road, is under the jurisdiction of the Town of Caledon, has two lanes and a speed limit of 80km/h.

McLaughlin Road south of Mayfield Road is classified as a minor collector road, is under the jurisdiction of the City of Brampton, has two lanes and a speed limit of 70km/h. North of Mayfield Road, McLaughlin Road is classified as collector road, is under the jurisdiction of the Town of Caledon, has two lanes and a speed limit of 80km/h.

Hurontario Street from south of Collingwood Avenue to south of Mayfield Road is classified as a major arterial road, is under the jurisdiction of the City of Brampton, has four lanes and a speed limit of 70km/h.

Kennedy Road south of Mayfield Road is classified as a minor collector road, is under the jurisdiction of the City of Brampton, has four lanes and a speed limit of 60km/h. North of Mayfield Road, Kennedy Road is classified as a collector road, is under the jurisdiction of the Town of Caledon, has two lanes and a speed limit of 60km/h.

Heart Lake Road south of Mayfield Road is classified as a minor collector road, is under the jurisdiction of the City of Brampton, has two lanes and a speed limit of 70km/h. North of Mayfield Road, Heart Lake Road is classified as a collector road, is under the jurisdiction of the Town of Caledon, has two lanes and a speed limit of 80km/h.

Van Kirk Drive is a City of Brampton local road that forms an unsignalized T-intersection with Mayfield Road. It has two lanes, is stop controlled at Mayfield Road and has a 50km/h speed limit.

Cresthaven Road / **Robertson Davies Drive**: Cresthaven Road is a City of Brampton local road with two lanes and a 50km/h speed limit. Robertson Davies Drive is a Town of Caledon local road with two lanes and a 50km/h speed limit. Cresthaven Road / Robertson Davies Drive form a signalized intersection with Mayfield Road.

Colonel Bertram Road is a City of Brampton local road that has two lanes, a 50km/h speed limit and is signalized at Mayfield Road. The north leg of the Colonel Bertram Road at Mayfield Road intersection is a shopping plaza driveway.

Summer Valley Drive is a Town of Caledon local road that has two lanes, a 40km/h speed limit and is signalized at Mayfield Road. Summer Valley Drive forms a T-intersection with Mayfield Road.

Valley View Road is a City of Brampton local road that has two lanes, a 50km/h speed limit and is unsignalized at Mayfield Road. Valley View Road forms a T-intersection with Mayfield Road.

Inder Heights Drive is a City of Brampton local road that has two lanes, a 50km/h speed limit and is unsignalized at Mayfield Road. Inder Heights Drive forms a T-intersection with Mayfield Road.

Stonegate Drive is a City of Brampton local road that has two lanes, a 50km/h speed limit and is unsignalized at Mayfield Road. Stonegate Drive forms a T-intersection with Mayfield Road.

The existing lane configurations are provided in Exhibit 1 and Exhibit 2.

2.2 Existing Traffic Volumes

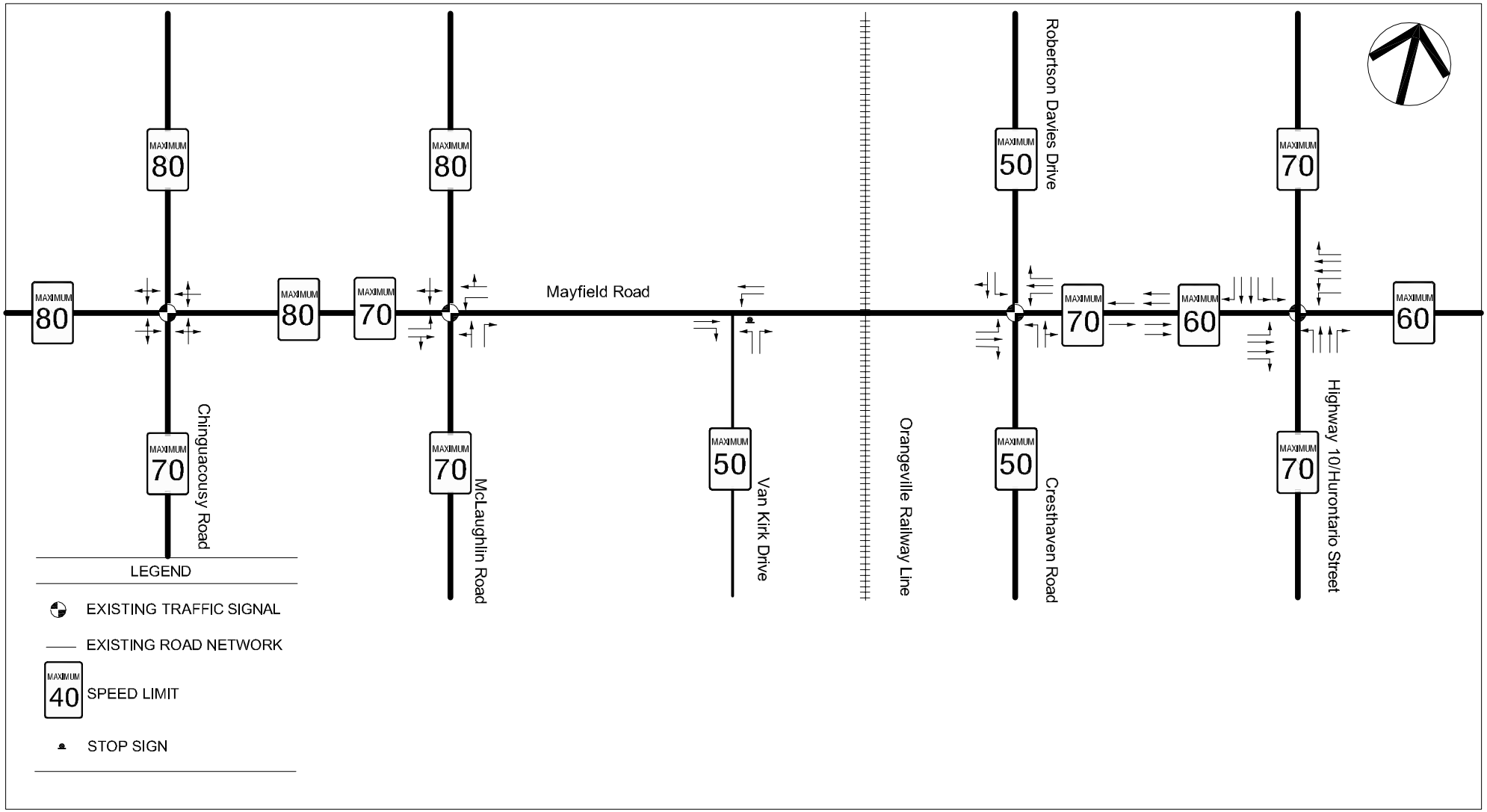
The existing 2010 traffic AM, midday and PM peak hour turning movement counts for the Mayfield Road corridor were provided to GENIVAR by the Region of Peel. The turning movement count sheets are provided in Appendix A.

The approximate range of two-way traffic volumes along Mayfield Road within the study limits are:

- 900 vehicles per hour west of Chinguacousy Road to 1,800 vehicles per hour east of Heart Lake Road in the AM peak hour
- 200 vehicles per hour east of Chinguacousy Road to 650 vehicles per hour west of Summer Valley Drive in the midday peak hour
- 800 vehicles per hour east of Chinguacousy Road to 1,800 vehicles per hour east of Heart Lake Road in the PM peak hour

The midday peak hour volumes are significantly lower than the AM and PM peak hour volumes along the corridor and, therefore, are not included in the intersection capacity analysis in subsequent sections of this report.

The AM and PM peak hour traffic volumes for several movements at the intersection of Heart Lake Road at Mayfield Road from the turning movement count sheets were significantly lower when compared to the information in the existing Synchro network that was provided to GENIVAR by the Region of Peel. Consequently, the AM and PM peak hour turning movements for the southbound through, southbound left-turn and westbound right-turn movements from the Synchro model were adopted for this study. Traffic volumes were balanced between intersections where appropriate.



SCHEMATIC

Exhibit 1
Existing Lane Configurations (West of Hurontario Street)
Class EA for Mayfield Road from Chinguacousy Road to Heart Lake Road - Traffic Report

GENIVAR

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Revision:

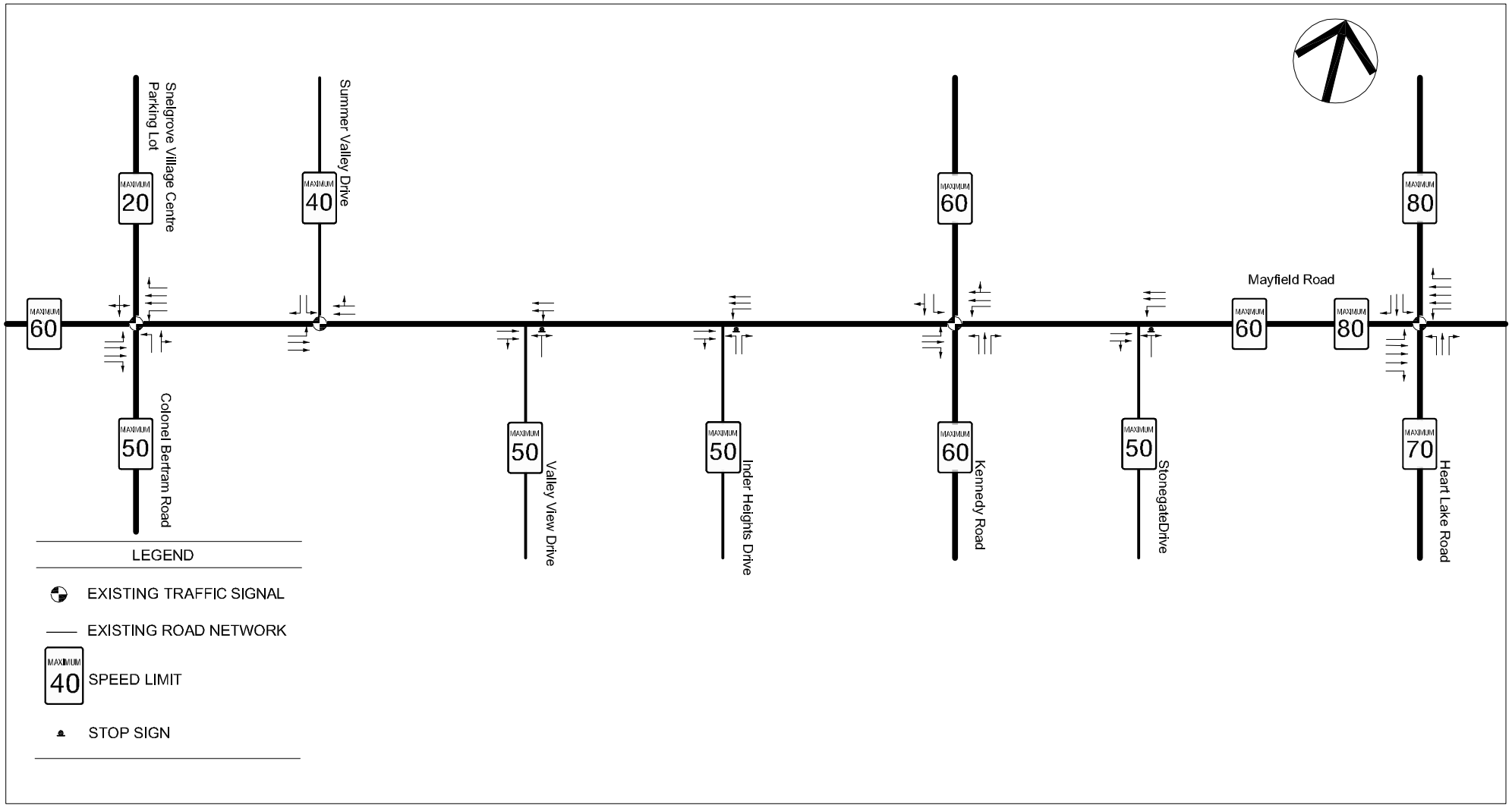

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Exhibit 2
Existing Lane Configurations (East of Hurontario Street)
Class EA for Mayfield Road from Chinguacousy Road to Heart Lake Road - Traffic Report

GENIVAR

101-17262fig11-07-13Existing.dwg

Revision:

The existing AM peak hour traffic volumes are shown in Exhibit 3 and Exhibit 4. The existing PM peak hour traffic volumes are shown in Exhibit 5 and Exhibit 6.

2.3 Existing Transit

There are currently two transit routes operating along Mayfield Road: Route 7 Kennedy and Route 24 Van Kirk Industrial. A map of the existing bus routes in the Study Area can be found in Exhibit 7.

Route 7 Kennedy runs north-south from Mayfield Road in Brampton to Courtney Park Drive East in Mississauga. The route generally follows Kennedy Road except for the two termini. The northern terminus is a clockwise on-street loop beginning at Heart Lake Terminal at the intersection of Kennedy Road and Sandalwood Parkway and looping along Sandalwood Parkway East, Hurontario Street, Mayfield Road, and Kennedy Road. The southern terminus is a clockwise on-street loop beginning at the intersection of Kennedy Road and Derry Road East, looping along Kennedy Road, Courtney Park Drive East, Hurontario Street, and Derry Road East.

Route 24 Van Kirk Industrial runs north-south from north of Mayfield Road to the Downtown Brampton Terminal. The route generally runs between Hurontario Street / Main Street and McLaughlin Road, via English Street, Vodden Street West, Royal Orchard Drive, and Van Kirk Drive. The northern terminus is a clockwise on-street loop beginning at the intersection of Van Kirk Drive and Wanless Drive and looping along Van Kirk Drive, Mayfield Road, Robertson Davies Drive, Collingwood Avenue, Hurontario Street, Brinkley Drive, Cresthaven Road, Tournament Drive, and Wanless Drive. The southern portion of the route runs along Main Street North from English Street to the Downtown Brampton Terminal.

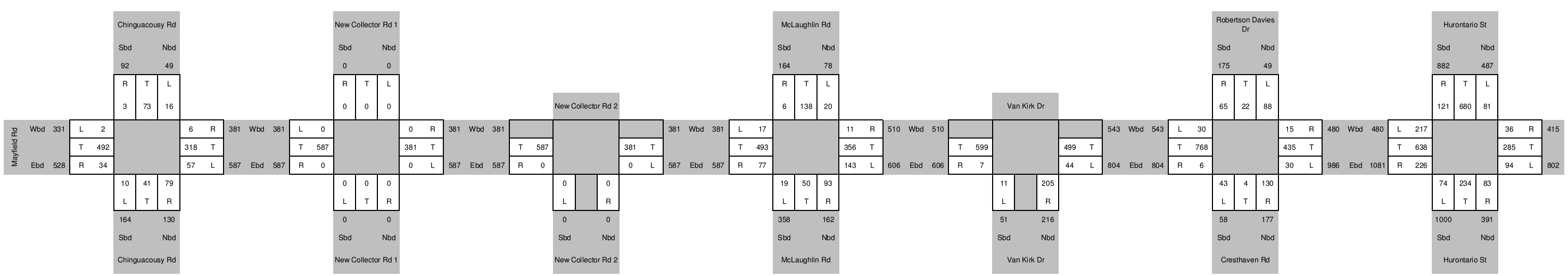

Exhibit 3
Existing AM Peak Hour Traffic Volumes West of Hurontario Street
Class EA for Mayfield Road from Chinguacousy Road to Heart Lake Road - Traffic Report

GENIVAR

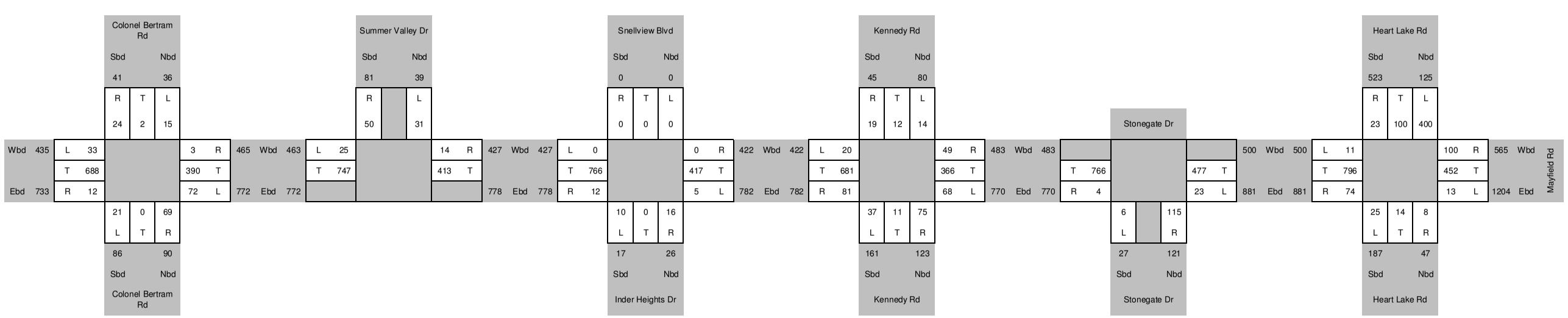

Exhibit 4
Existing AM Peak Hour Traffic Volumes East of Hurontario Street
Class EA for Mayfield Road from Chinguacousy Road to Heart Lake Road - Traffic Report

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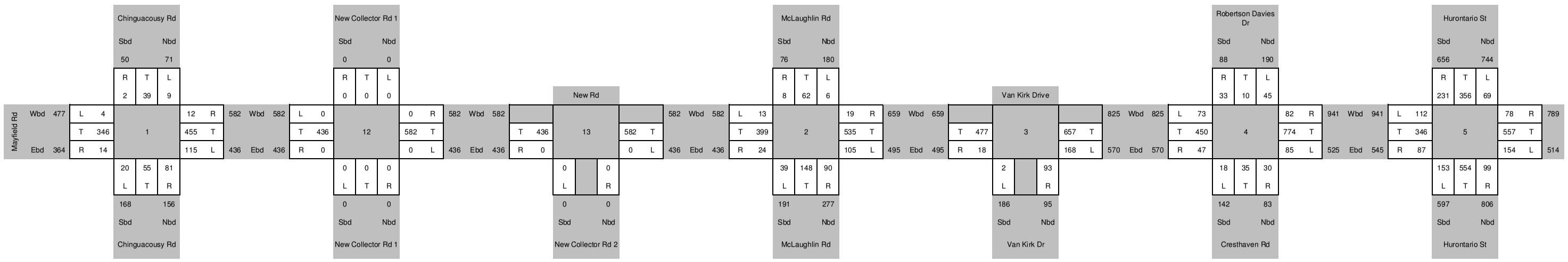

Exhibit 5
Existing PM Peak Hour Traffic Volumes West of Hurontario Street
Class EA for Mayfield Road from Chinguacousy Road to Heart Lake Road - Traffic Report

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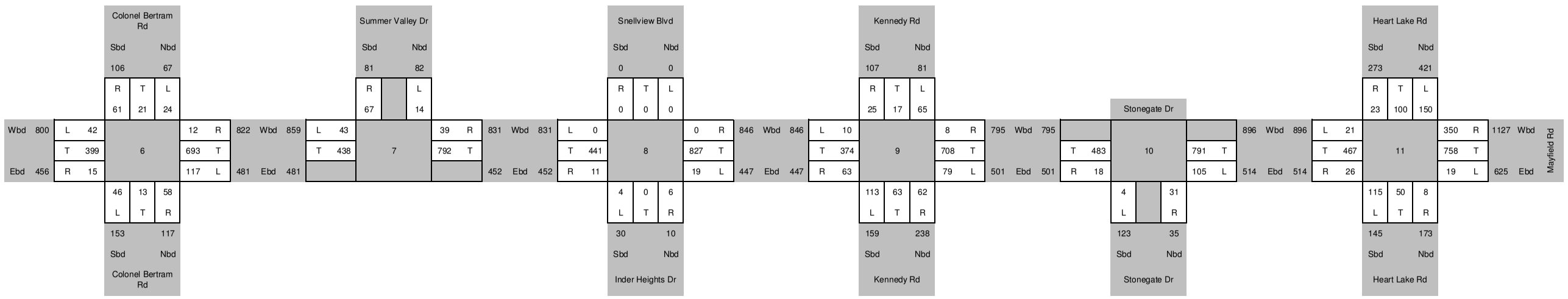

Exhibit 6
Existing PM Peak Hour Traffic Volumes East of Hurontario Street
Class EA for Mayfield Road from Chinguacousy Road to Heart Lake Road - Traffic Report

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Exhibit 7 – Map of Existing Bus Routes in Study Area

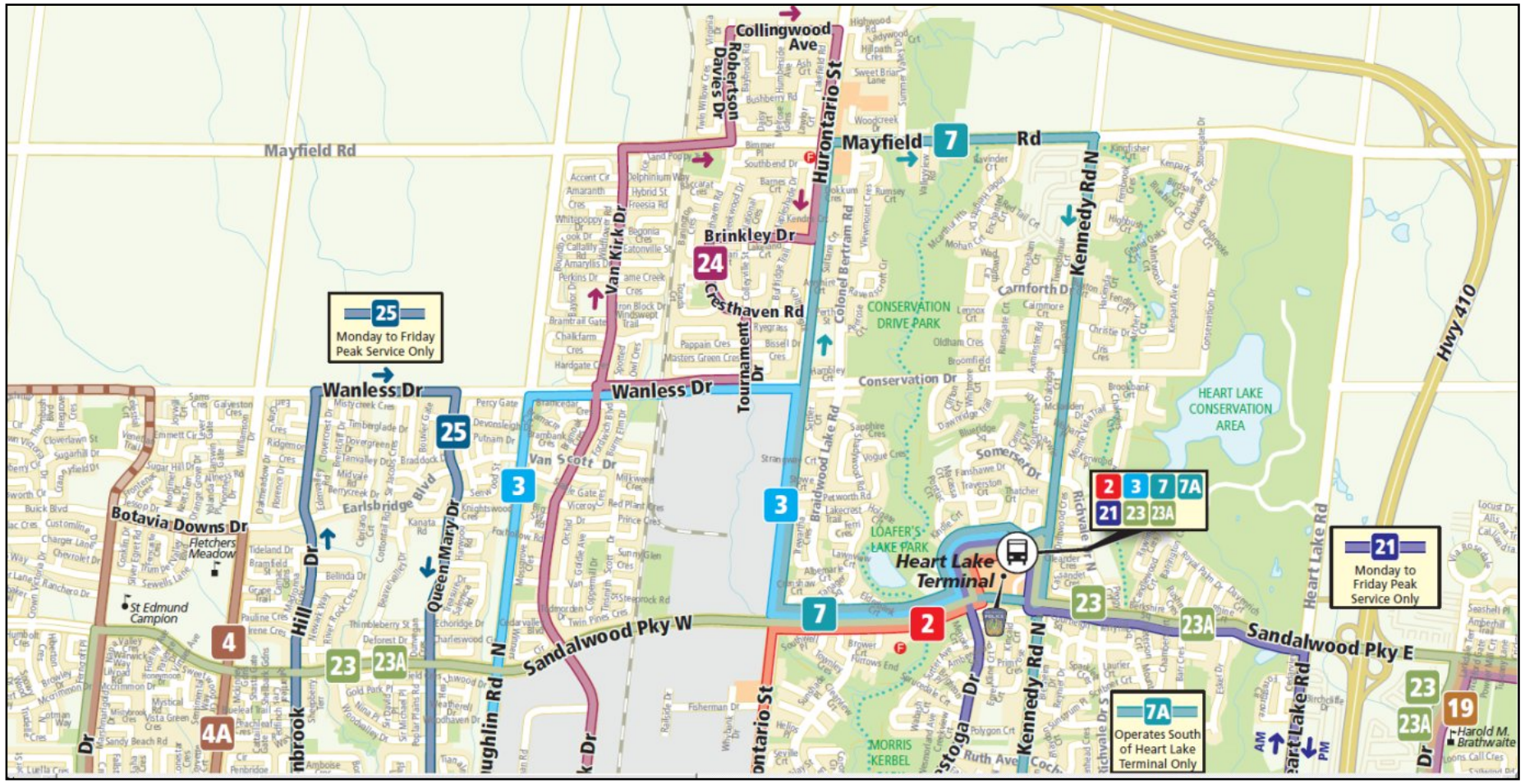


Table 1 shows the existing headways for the two bus routes within the Study Area.

Table 1 – Existing Headways for Transit Services Within the Study Area

Route	AM Peak	Midday	PM Peak	Evening	Saturday	Sunday
7 Kennedy	20 min	20 min	20 min	30 min	30 min	30 min
24 Van Kirk Industrial	30 min	30 min	30 min	60 min	60 min	60 min

The existing bus routes are served by several stops within the Study Area. These bus stops are listed in Table 2

Table 2 – Existing Bus Stops Within the Study Area

On Street	At Street	Direction	Route(s) Served
Cresthaven Road	South of Mayfield Road	Northbound, Southbound	213
Robertson Davies Drive	South of Sundridge Street	Northbound	24
Mayfield Road	East of Hurontario Street	Eastbound	7, 202
Hurontario Street	South of Mayfield Road	Northbound, Southbound	NB: 7, 202 SB: 24, 204
Hurontario Street	North of Mayfield Road	Southbound	24
Mayfield Road	Opposite of Summer Valley Drive	Eastbound	7, 202
Mayfield Road	Inder Heights Drive	Eastbound	7, 202
Kennedy Road	South of Mayfield Road	Southbound	7, 202, 203

2.3.1 GO Transit

GO Transit operates one bus route within the Study Area. The 37 – Orangeville GO Bus runs along Hurontario Street, from Orangeville south through Caledon and Brampton to the Downtown Brampton Terminal. The bus stops on Hurontario Street at Mayfield Road. Six trips operate each way Monday through Friday; most southbound trips operate in the morning and most northbound trips operate in the afternoon. No service is provided on weekends.

2.3.2 School Routes

Brampton Transit currently provides special routes before and after school to various secondary schools. Four of these routes, Routes 202, 203, 204, and 213, serve various areas within the Study Area. Routes 202, 203, and 204 connect the neighbourhoods south of Mayfield Road

near Hurontario Street and Kennedy Road to the Mayfield Secondary School at Mayfield Road and Bramalea Road. Route 213 connects the neighbourhoods to the southwest of the Mayfield Road / Hurontario Street intersection with St. Edmund Campion Secondary School on Sandalwood Parkway West.

2.4 Orangeville Rail Crossing

There is an Orangeville Rail crossing over Mayfield Road approximately 220m west of Cresthaven Road. The rail traffic over the Mayfield Road crossing is four trains per week (two on Tuesday and two on Thursday). Excursion trains generally operate on Saturday and Sunday and add one train in each direction on these days. Orangeville Brampton Railway (OBR) does not expect any significant increase in rail traffic in the short-term (five years) and are not able to predict for a longer term.

The railway siding (Snelgrove) located just north of the crossing is used to allow the locomotive to "run around" the cars to facilitate switching at industries in the area and results in the crossing being blocked for longer periods, and also activation of the warning system when the train will not enter the crossing.

2.4.1 Analysis of Existing Orangeville Rail Crossing

A cross product (number of trains daily multiplied by the average annual daily traffic (AADT)) of 200,000 is often used as an indicator that a grade separation may be warranted, and that a detailed engineering study should be undertaken. It should be noted that many crossings with considerably higher cross products are operating safely in Canada.

The approximate cross product for existing conditions is 25,000 and does not meet the cross product criteria for warranting a grade separation.

Currently, the rail traffic over the Mayfield Road crossing is relatively low with four trains per week, two on Tuesday and two on Thursday. The OBR hope that there will be a traffic increase, but do not expect any significant increase in the short-term (five years). In the long term, the traffic is difficult to be forecasted by the OBR.

The train speed at the crossing is 40.2km/h (25mph) and requires crossing circuits approximately 1,100ft (335m) from the roadway for a warning system with gates. Based on a 20-car train proceeding at a constant 40.2km/h (25mph), the time from when the lights start to flash until the gates are fully raised would be 90 seconds.

The excursion trains generally operate on Saturday and Sunday and would add one train in each direction on these days. From OBR's description of operations, it is expected that the signals at the crossing could be operating for five minutes at a time but that this would not normally be in the AM or PM peak hours.

When switching occurs north of Mayfield Road, the signals operate for several minutes without a train occupying the crossing. Switching usually occurs between 9:00a.m. and 11:00a.m. depending on customer needs. The Credit Valley Explorer excursion train has Spring, Summer and Fall schedules requiring the locomotive runaround at Mayfield Road somewhere between 1:00p.m. and 3:00p.m. During Winter, specialty trains require locomotives runaround later in the day between 6:00p.m. and 8:00p.m. Switching that occurs north of Mayfield Road initiates the signals for several minutes without a train occupying the crossing.

2.4.2 Queues at Rail Crossing

Queues backing up towards the rail crossing from adjacent intersections were estimated using the intersection storage calculation spreadsheet that is typically used for queuing analysis for Region of Peel intersections (more details are provided in Section 2.6 of this report: Existing Traffic Analysis). The queues were estimated along Mayfield Road at the eastbound approach of Cresthaven Road and westbound approach of McLaughlin Road.

The summary results are shown in Table 3.

Table 3 – Queuing Analysis at Orangeville Rail Crossing for Existing Traffic

Location	Storage Length (m)	Queue Length	
		AM Peak Hour	PM Peak Hour
Eastbound at Cresthaven Road	200	122	63
Westbound at McLaughlin Road	660	80	115

The analysis results for existing conditions indicate that the estimated queues do not reach the rail crossing from the adjacent intersections during the AM and PM peak hours. It should be noted that the estimated queues are based on the existing cycle lengths and traffic volumes and the cycle length at the Cresthaven Road intersection with Mayfield Road is currently short at 60 seconds. As the traffic volumes increase on Mayfield Road before the widening occurs, the queues would increase and the chance of queuing over the rail crossing from the Cresthaven Road and Mayfield Road intersection would increase.

While it is possible to interconnect the railway warning signals and traffic signals and provide preemption to clear potential queued vehicles from the crossing, the distance is toward the upper end of the range where this is normally used. Therefore, the following alternative measures are recommended:

- queue detector loops to allow queues to clear before they reach the track
- use upstream traffic signals to meter traffic so that it does not queue over the crossing
- improve signage at the rail crossing

2.5 Safety Analysis

The results of the safety analysis on Mayfield Road between Chinguacousy Road and Heart Lake Road are included in this section. The analysis is based on collision data covering a five-year period between January 1, 2005, and December 31, 2009. The collision data used in this analysis was obtained from the Region of Peel's concise Accident Analysis by Location Report in which each collision is reported with the date and time, weather condition, road condition, light, impact type, and classification. The individual accident reports on which the list above is based, are also used to validate and complement the list of collisions.

The safety analysis is divided into three parts: collision summary, overall analysis, and detailed analysis. The collision summary geographically identifies individual collisions including impact type and severity. The overall analysis presents the collisions for the whole Study Area with regard to the different recorded parameters such as year, season, lighting, road condition and weather condition. The last part presents a detailed analysis of each intersection and road segment using performance indexes such as collision rate, observed and predicted collision frequency, and level of service of safety (LOSS).

The predicted collision frequency and LOSS are provided by the American Association of State Highway and Transportation Officials (AASHTO) Highway Safety Manual, 1st Edition (HSM). The HSM permits road safety evaluations (primarily based on a performance index called Safety Performance Functions or SPF) for various road configurations and environments. However, as described in the HSM, limitations exist and caution must be exerted. Notably, it is assumed in this study that the conditions of the Study Area correspond to the default conditions assumed in the HSM without regional calibration. The results are assumed to be reliable enough for comparison purposes, however, further analyses are highly recommended where critical values are reached or exceeded.

The study period in this document corresponds to the collision data and extends from January 1, 2005 to December 31, 2009. It must be noted that road modifications occurred during that period. Road construction may have affected the road safety and collision history.

2.5.1 Collision Summary

Exhibit 8 shows each individual collision with regard to its location, type of impact and severity. The corresponding list of collisions is provided in Appendix B. The original Region of Peel Accident Analysis by Location Report is provided in Appendix C.

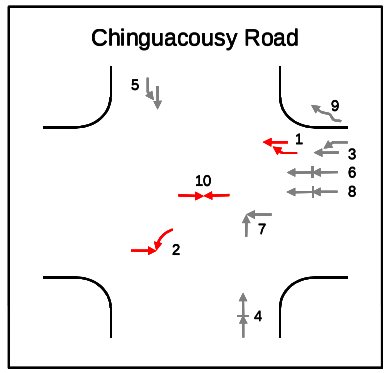
The data indicates that most collisions occurred at the Hurontario Street, Kennedy Road and Heart Lake Road intersections. At Kennedy Road and Heart Lake Road in particular, a high number of rear-end collisions are found. In many cases, especially during 2008 and 2009, collision reports indicate stop-and-go traffic and/or construction activities. However, the exact number of collisions in which construction was likely a contributing factor is unknown. It must be noted that, as the present safety analysis is being completed, important modifications to the roadway between Inder Heights Drive and Heart Lake Road (and beyond) have been performed. That and the opening of the new interchange at Highway 410 will likely have a profound impact on the collision risks and patterns in this area and are not represented in this study.

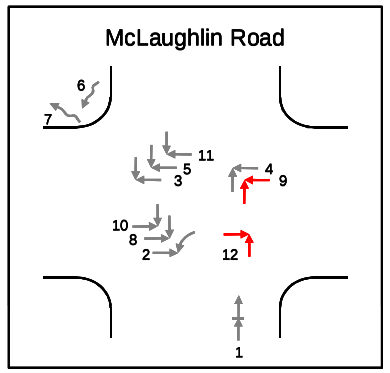
The Mayfield Road at Hurontario Street intersection is the largest in the Study Area as Hurontario Street contains four through lanes. Mayfield Road also contains four through lanes with divisional islands since 2007 and a second left-turn lane has been added on the southbound and westbound approaches. This intersection is also bordered with gas stations on its north and south quadrants (upper-right and lower-left corners on the map) and a donut shop and grocery store on its east quadrant (lower-right). The presence of the corresponding commercial driveways potentially increases the risk of collisions due to the additional conflicting movements. It is noted that collisions 2, 3, 14 and 27 involved a vehicle exiting one of the gas stations.

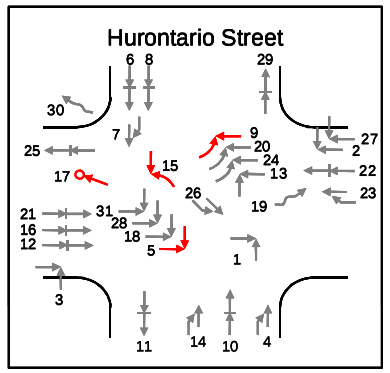
As for mid-block collisions, the segment between Stonegate Drive and Heart Lake Road contains the highest number of collisions. In this case too, some collision reports indicate stop-and-go traffic and/or construction activities.

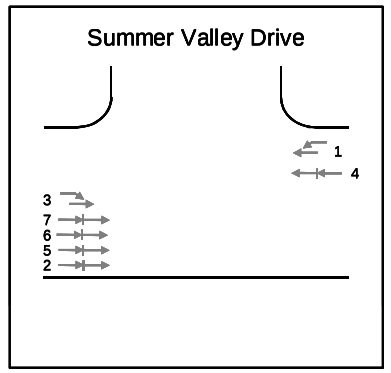
2.5.2 Fatal Collision

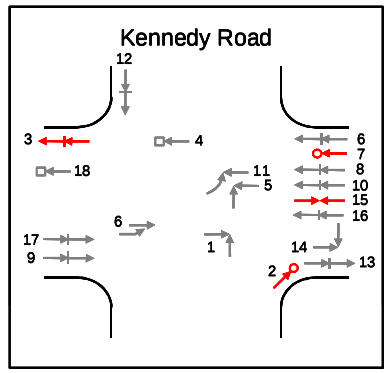
The only fatal collision found in the Study Area during the five-year period was located on Mayfield Road, 1.0km west of McLaughlin Road (collision 2). This fatal collision occurred on November 2008 in early morning. The road surface was dry and conditions were clear. According to the collision report, the vehicle was travelling at high speed and contacted the gravel shoulder on the right side, lost control, over-corrected and struck a hydro pole on the left side.

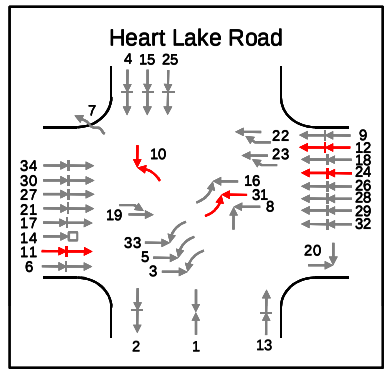


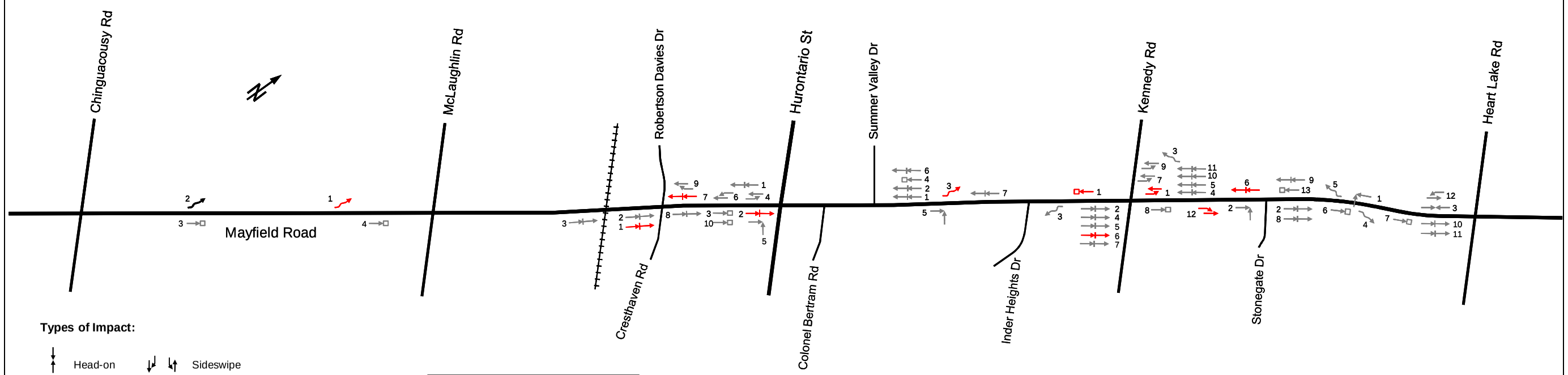












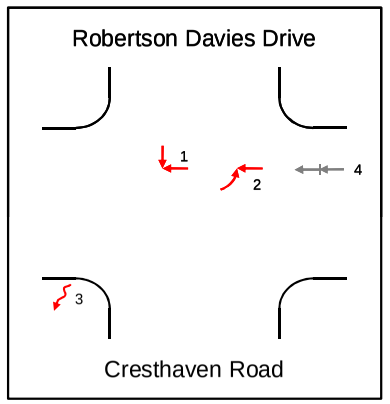
Types of Impact:

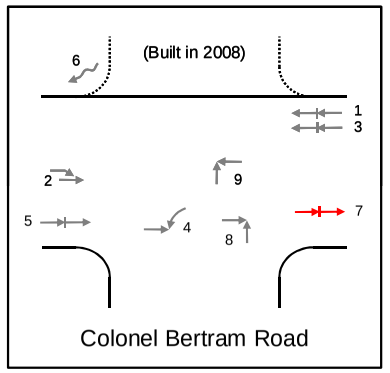
- Head-on
- Sideswipe
- Rear-end
- Angle (T-bone)
- Turning Movement
- Skid / Road Departure
- Pedestrian
- Animal/Object

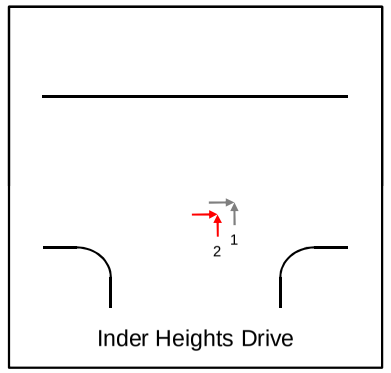
Severity:

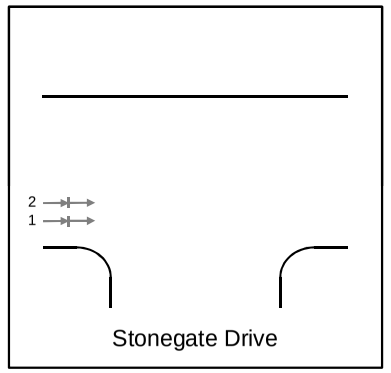
- Property Damage Only
- Non-fatal Injury
- Fatal Injury

Note: Locations are approximate.









January 28, 2010

Exhibit 8
Collision Summary 2005-2009
101-17262 Mayfield Road EA from Chinguacousy Road to Heart Lake Road

GENIVAR

2.5.3 Overall Analysis

Within the five-year analysis period (January 2005 and December 2009), a total of 185 collisions occurred, which account for 37 collisions per year in average. Exhibit 9 and Table 4 show the number of accidents per year.

Exhibit 9 – Collisions per Year (2005 to 2009)

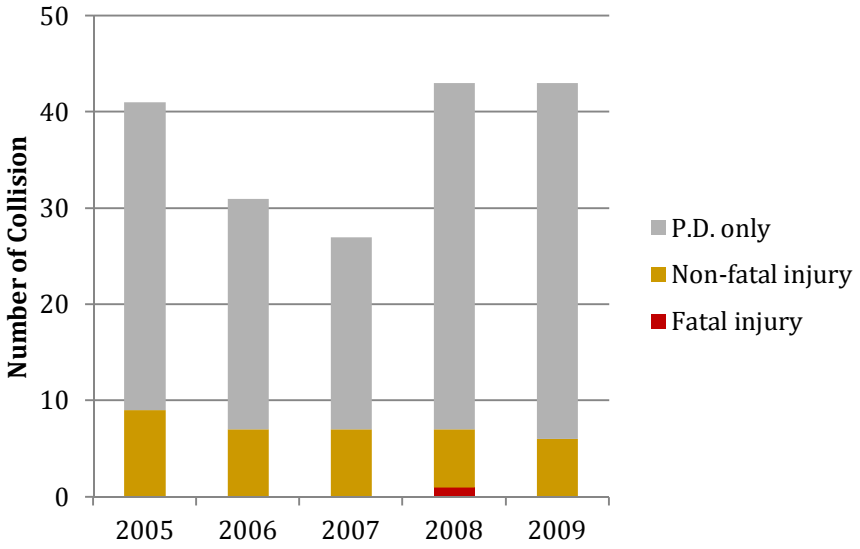


Table 4 – Collisions per Year (2005 to 2009)

	2005	2006	2007	2008	2009	**Total**	Proportion
Fatal				1		**1**	1%
Non-fatal injury	9	7	7	6	6	**35**	19%
P.D. only	32	24	20	36	37	**149**	80%
Total	**41**	**31**	**27**	**43**	**43**	**185**	100%

The variation in collision numbers does not seem to follow any particular trend, although the presence of construction may explain the sudden increase in the last two years. The years 2008 and 2009 contain the highest total number of collisions while the year 2005 contains the highest number of collisions with injury, and the only fatal collision in the five-year period has been recorded in 2008 (see section 2.5.2).

2.5.4 Impact Type

Table 5 presents the number of collisions by type of impact. The rear-end impact is the most frequent with 79 collisions (43 percent). There have been 156 collisions (84 percent) involving two or more vehicles. Among the single motor vehicle (SMV) collisions, 15 (8 percent) were with a pedestrian or an obstacle on the road and the remaining 14 (8 percent) were following a road departure due to skidding.

Aside from collisions with pedestrians, head-on collisions, turning movement collisions and skids to the left have a high rate of injury per collision (0.4, 0.4 and 0.6 respectively) while rear-end and angle collisions have an average rate of 0.2. Sideswipes and single motor vehicle collisions have lower injury rates.

Table 5 – Collisions per Impact Type

	Multiple Motor Vehicles						Single Motor Vehicle					
	Head-on	Rear-end	Angle (T-bone)	Turning Movement	Sideswipe	With Animal	With Pedestrian	With Animal	With Object	Skid to the left	Skid to the right	Total
Fatal										1		**1**
Non-fatal injury	2	12	5	6	3		3	1		2	1	**35**
P.D. only	3	67	28	9	20	1	–	8	3	2	8	**149**
Total	**5**	**79**	**33**	**15**	**23**	**1**	**3**	**9**	**3**	**5**	**9**	**185**
Proportion	3%	43%	18%	8%	12%	1%	2%	5%	2%	3%	5%	100%
Injury/Total	0.4	0.2	0.2	0.4	0.1	0.0	1	0.1	0.0	0.6	0.1	0.20

2.5.5 Seasonal Collision Analysis

For the present analysis, each “season” corresponds exactly to three months as shown in Table 6. For example, “Summer” corresponds to the period between June 1 and August 31. Table 6 indicates that there are generally more collisions during Fall and Winter (with 29 percent and 30 percent of the total number of collisions, respectively) than during Spring and Summer (20 percent and 21 percent, respectively).

Table 6 – Collisions by Season

	Winter	Spring	Summer	Fall	
	December January February	March April May	June July August	September October November	Total
Fatal				1	1
Non-fatal injury	10	7	9	9	35
P.D. only	44	30	30	45	149
Total	**54**	**37**	**39**	**55**	**185**
%	29%	20%	21%	30%	100%

2.5.6 Environment

Table 7, Table 8, and Table 9 present the number of collisions with regard to lighting, road condition and weather condition respectively. The collisions occur predominantly during daylight (70 percent) on dry roads (74 percent) under a clear sky (81 percent).

Table 7 – Collisions by Light Conditions

	Dark	Dawn	Daylight	Dusk	Total
Fatal injury	1				**1**
Non-fatal injury	6	1	27	1	**35**
P.D. only	36	4	103	6	**149**
Total	**43**	**5**	**130**	**7**	**185**
%	23%	3%	70%	4%	100%

Table 8 – Collisions by Road Surface Condition

	Dry	Wet	Mud	Sand or Gravel	Slush	Loose Snow	Packed Snow	Ice	Total
Fatal injury	1								**1**
Non-fatal injury	29	4				1	1		**35**
P.D. only	107	24	1	1	3	6	1	6	**149**
Total	**137**	**28**	**1**	**1**	**3**	**7**	**2**	**6**	**185**
Projection	74%	15%	1%	1%	2%	4%	1%	3%	100%

Table 9 – Collisions by Environmental Condition

	Clear	Rain	Snow	Drifting Snow	Fog, Mist, Smoke, Dust	Strong wind	Total
Fatal injury	1						**1**
Non-fatal injury	30	3	1		1		**35**
P.D. only	120	17	7	1	3	1	**149**
Total	**151**	**20**	**8**	**1**	**4**	**1**	**185**
Proportion	82%	11%	4%	1%	2%	1%	100%

2.5.7 Detailed Analysis

A detailed safety analysis has been performed by intersection and by road segment. The following terms are used in this section:

- Average AADT: the average AADT (Annual Average Daily Traffic) over the five year period between 2005 and 2009. $AADT_{maj}$ represents the busiest intersection approach on Mayfield Road while $AADT_{min}$ represents the busiest approach of the intersecting (minor) road.
- Frequency: average number of collision per year.
- Collision Rate: collision frequency divided by an index of exposure which depends on the intensity of traffic (AADT) and the length of the road segments (= 1 for intersections).

- Critical Collision Rate: value calculated from the overall collision rate average (for intersections and road segments in this study) and the index of exposure. Any individual collision rate above this value normally requires further attention (confidence level of 95 percent).
- Equivalent Property Damage Only (PDO) Frequency: average number of PDO-equivalent collisions per year. Each collision is assigned a severity factor: 542 for a fatal injury, 11 for a non-fatal injury, and 1 for a PDO collision. These are the default values as prescribed by the HSM (local authorities may prescribe different values).

Additionally, calculations are performed in accordance with the HSM in order to determine for each intersection and road segment a predicted collision frequency to which the observed collision frequency may be compared. A level of service of safety (LOSS) is also determined, based on the comparison between the observed and predicted collision frequencies in combination with the predicted frequency's standard deviation (also calculated in accordance with the HSM).

The LOSS interpretation is explained in Table 10.

Table 10 – Interpretation of the LOSS

LOSS	Description
I	Indicates a low potential for collision reduction
II	Indicates low to moderate potential for collision reduction
III	Indicates moderate to high potential for collision reduction
IV	Indicated a high potential for collision reduction

Source: Highway Safety Manual, 1st Edition

As stated in the introduction, these calculations are based on the default Safety Performance Functions from the HSM and no region-specific calibration factor has been applied.

2.5.8 Intersections

There are 10 intersections being analysed in the Study Area (because Valleyview Road is a short dead-end roadway, its intersection is treated as a driveway between Summer Valley Drive and Inder Height Drive). Table 11 presents the number of collisions for each intersection with regard to severity and year. The Hurontario Street and Heart Lake Road intersections contain the highest number of collisions (31 and 34 respectively).

Table 12 presents the collision rate and equivalent PDO frequency. It is observed that the Heart Lake intersection is the only one that exceeds the critical collision rate, and is anticipated to contain an unusually high number of collisions. In terms of severity, the intersections of Hurontario Street, Kennedy Road and Heart Lake Road have the highest equivalent PDO frequencies.

Table 11 – Collisions per Intersection

Intersecting Road(s)	Fatal injury	Non-fatal injury	P.D. only	2005	2006	2007	2008	2009	Total
Chinguacousy Road	0	3	7	2	2	2	0	4	**10**
McLaughlin Road	0	2	10	5	1	2	2	2	**12**
Robertson Davies Drive / Cresthaven Road	0	3	1	1	0	0	2	1	**4**
Hurontario Street	0	4	27	4	10	4	8	5	**31**
Colonel Bertram Road	0	1	8	2	3	0	2	2	**9**
Summer Valley Drive	0	0	7	2	1	1	2	1	**7**
Inder Heights Road	0	1	1	1	0	0	1	0	**2**
Kennedy Road	0	5	13	3	1	4	3	7	**18**
Stonegate Drive	0	0	2	0	0	0	2	0	**2**
Heart Lake Road	0	5	29	8	4	4	10	8	**34**
Total	**0**	**24**	**105**	**28**	**22**	**17**	**32**	**30**	**129**

Table 12 – Collision Frequency and Rate per Intersection

Intersecting Road(s)	Average $AADT_{maj}$	Average $AADT_{min}$	Number of Collisions	Frequency (/year)	Collision Rate	Critical Collision Rate	Equivalent PDO Frequency (/Year)
Chinguacousy Road	9234	2925	10	2.0	0.45	0.69	8.0
McLaughlin Road	10846	4570	12	2.4	0.43	0.65	6.4
Robertson Davies Drive / Cresthaven Road	13629	2322	4	0.8	0.14	0.65	6.8
Hurontario Street	13629	18517	31	6.2	0.43	0.57	14.2
Colonel Bertram Road	20551	3571	9	1.8	0.20	0.21	3.8
Summer Valley Drive	20551	2343	7	1.4	0.16	0.21	1.4
Inder Heights Road	21032	707	2	0.4	0.05	0.21	2.4
Kennedy Road	21389	5885	18	3.6	0.35	0.59	13.6
Stonegate Drive	22159	2598	2	0.4	0.04	0.20	0.4
Heart Lake Road	24206	3167	34	6.8	0.68	0.60	16.8
Total			**129**	**25.8**			**73.8**

Table 13 presents the predicted collision frequency and level of service of safety for each intersection. The Heart Lake Road intersection is the only intersection with an observed collision frequency higher than the predicted value and a moderate to high potential for collision reduction (LOSS III). However, the configuration of this intersection has recently changed. In this regard, the present analysis, which is based on the previous configuration, is no longer applicable. All of the other intersections, including Hurontario Street, perform adequately from a safety perspective.

Table 13 – Predicted Collision Frequency and Level of Safety Service of Intersections

Intersecting Road(s)	Setting	Type	Frequency (/year)	Predicted Frequency (/year)	Standard Deviation	Level of Service of Safety (LOSS)
Chinguacousy Road	Rural	Signalized 4-Leg	2.0	7.0	2.3	I
McLaughlin Road	Rural	Signalized 4-Leg	2.4	8.4	2.8	I
Robertson Davies Drive / Cresthaven Road	Urban	Signalized 4-Leg	0.8	2.9	1.8	II
Hurontario Street	Urban	Signalized 4-Leg	6.2	7.3	4.5	II
Colonel Bertram Road	Urban	Unsignalized 3-Leg	1.8	3.1	2.8	II
Summer Valley Drive	Urban	Unsignalized 3-Leg	1.4	2.8	2.5	II
Inder Heights Road	Urban	Unsignalized 3-Leg	0.4	2.0	1.8	II
Kennedy Road	Urban	Signalized 4-Leg	3.6	6.0	3.7	II
Stonegate Drive	Urban	Unsignalized 3-Leg	0.4	3.3	3.0	II
Heart Lake Road	Urban	Signalized 4-Leg	6.8	5.7	3.6	III
Total			**25.8**	**48.5**		

2.5.9 Road Segments

There are 7 intersections being analysed in the Study Area (because Hurontario Street, Colonel Bertram Road and Summer Valley Drive are close to each other, collisions occurring between them are considered “intersection” collisions).

Table 14 illustrates the number of collisions for each roadway segment in the Study Area with regard to severity and year. A relatively high number of collisions is found between Kennedy Road and Stonegate Drive (12 collisions) and between Stonegate Drive and Heart Lake Road (13 collisions).

Table 14 – Collisions per Road Segment

Road Segment	Fatal injury	Non-fatal injury	P.D. only	2005	2006	2007	2008	2009	Total
Chinguacousy Road – McLaughlin Road	1	1	2	1			1	2	**4**
McLaughlin Road – R.D. Drive / Cresthaven Road		1	2	1			1	1	**3**
R.D. Drive / Cresthaven Road – Hurontario Street		2	8	1	4	2	2	1	**10**
Summer Valley Drive – Inder Heights Drive		1	6	2	2	2		1	**7**
Inder Heights Drive – Kennedy Road		2	5	3			2	2	**7**
Kennedy Road – Stonegate Drive		3	9	1	2	3	3	3	**12**
Stonegate Drive – Heart Lake Road		1	12	4	1	3	2	3	**13**
Total	**1**	**11**	**44**	**13**	**9**	**10**	**11**	**13**	**56**

Table 15 presents the collision rate and equivalent PDO frequency. The road segment between Chinguacousy Road and McLaughlin Road displays a high equivalent PDO frequency because of the fatal injury that occurred at that location and the heavy weight associated with such collisions. The second highest equivalent PDO frequency is found between Kennedy Road and Stonegate Drive.

Table 15 – Collision Frequency and Rate per Road Segment

Road Segment	Average AADT	Distance (km)	Number of Collisions	Frequency (/year)	Collision Rate	Critical Collision Rate	Equivalent PDO Frequency (/Year)
Chinguacousy Road – McLaughlin Road	9234	1.4	4	0.8	0.17	0.62	111.0
McLaughlin Road – R.D. Drive / Cresthaven Road	11305	0.9	3	0.6	0.16	0.65	2.6
R.D. Drive / Cresthaven Road – Hurontario Street	13629	0.4	10	2.0	1.01	0.76	6.0
Summer Valley Drive – Inder Heights Drive	21032	0.6	7	1.4	0.30	0.62	3.4
Inder Heights Drive – Kennedy Road	21366	0.4	7	1.4	0.45	0.68	5.4
Kennedy Road – Stonegate Drive	22107	0.5	12	2.4	0.59	0.64	8.4
Stonegate Drive – Heart Lake Road	24206	0.8	13	2.6	0.37	0.57	4.6
Total			**56**	**11.2**			**141.4**

Table 16 presents the predicted collision frequency and level of service of safety for each road segment.

Table 16 – Predicted Frequency and Level of Service per Road Segment

Road Segment	Setting	Type	Frequency (/year)	Predicted Frequency (/year)	Standard Deviation σ	Level of Service of Safety (LOSS)
Chinguacousy Road – McLaughlin Road	Rural	Two-Lane Undivided	0.8	2.1	1.1	II
McLaughlin Rd – R.D. Drive / Cresthaven Road	Rural	Two-Lane Undivided	0.6	1.6	1.1	II
R.D. Drive / Cresthaven Road – Hurontario Street	Urban	Two-Lane Undivided	2.0	0.9	0.8	III
Summer Valley Drive – Inder Heights Drive	Urban	Two-Lane Undivided	1.4	2.1	1.9	II
Inder Heights Drive – Kennedy Road	Urban	Two-Lane Undivided	1.4	1.5	1.3	II
Kennedy Road – Stonegate Drive	Urban	Two-Lane Undivided	2.4	1.9	1.7	III
Stonegate Drive – Heart Lake Road	Urban	Two-Lane Undivided	2.6	3.5	3.2	II
Total			**11.2**	**14.2**		

The road segment between Robertson Davies Drive / Cresthaven Road and Hurontario Street has a collision rate that exceeds the critical frequency and, therefore, has moderate to high potential for collision reduction. In this particular case, the low predicted collision frequency is the result of:

- → the short length of the roadway segment
- → the low traffic volumes in this segment

There does not seem to be a common factor to each of the 10 collisions that occurred on this road segment except perhaps the proximity to the neighbouring intersections. Three collisions involved lane weaving to/from a turning lane, four involved rear-ending, and two involved an encounter with a deer. It is projected that the widening of this road segment coupled with the increase in traffic volumes will bring the collision frequency below the predicted frequency.

Table 16 indicates that the section between Kennedy Road and Stonegate Drive also has a moderate to high potential for collision reduction (LOSS III). However, roadway modifications have been undertaken on that segment and the historical analysis is no longer applicable.

2.5.10 Safety Analysis Conclusions

The present analysis, which covers a five-year period between January 2005 and December 2009, indicates that Mayfield Road from Chinguacousy Road to Heart Lake is performing relatively well from a safety perspective (i.e. low to moderate potential for collision reduction). However, road construction occurred during the study period which may have had an impact on the collision history.

In terms of intersections, the analysis indicates that the Heart Lake Road intersection is the only one with an observed collision frequency higher than the predicted value (it has a moderate to high potential for collision reduction). However, the configuration of this intersection has recently changed and the analysis, which is based on the previous configuration, is no longer applicable.

In terms of roadway segments, the two segments with a collision frequency higher than the predicted value is between Robertson Davies Drive / Cresthaven Road and Hurontario Street and between Kennedy Road and Stonegate Drive. In the latter case, modifications have been undertaken and the analysis is no longer applicable. In the former case, there does not seem to be a common factor to the 10 collisions that occurred on this road segment except perhaps the proximity to the neighbouring intersections. It is projected that the widening of this road segment coupled with the increase in traffic volumes will bring the collision frequency below the predicted frequency.

2.6 Existing Traffic Analysis

Intersection capacity analyses for the study intersections for existing traffic conditions for the AM and PM peak hours was analyzed using Highway Capacity Manual (HCM) methodology and Synchro 7.0 software. The new Regional Guidelines for Using Synchro Version 7.73, Revision 8, December 2010 were adopted in the capacity analysis. The queuing analysis for signalized intersections is based on the intersection storage calculation spreadsheet that is typically used for queuing analysis for Region of Peel intersections. The queuing analysis for unsignalized intersections is based on HCM methodology.

Traffic signal timing and phasing were obtained from the Region of Peel and are provided in Appendix D. The analysis assumes the existing lane configuration and speeds at the intersections. Assumed lane configurations and speed limits were confirmed during a site visit by GENIVAR staff on July 13, 2011.

The report documents for all scenarios the overall level of service (LOS), overall volume-to-capacity (V/C) ratios plus critical movements for all signalized intersections. For unsignalized intersections the LOS and V/C ratios are provided for all lane groups that experience delay. The 95th percentile queues are also documented in the report for both signalized and unsignalized intersections. For this study, critical movements are those where the V/C ratios exceed 1.0 for exclusive movements and 0.85 for shared movements as required in the Region of Peel guidelines for Traffic Impact Studies.

A summary of the capacity analysis showing the overall LOS and overall V/C ratios for signalized intersections and the LOS and V/C ratio for the critical lane group for unsignalized intersections is provided in Table 17. A more detailed summary of the intersection capacity analysis and queuing analysis results are presented in Appendix E. Detailed Synchro capacity analysis sheets are provided in Appendix F. Queuing calculation sheets for signalized intersections are provided in Appendix G.

Table 17 – Intersection Level of Service, Existing Traffic Volumes

Intersection	AM Peak Hour			PM Peak Hour		
Movement	V/C	Delay (sec.)	LOS	V/C	Delay (sec.)	LOS
Mayfield Road and Chinguacousy Road	0.47	10	B	0.58	11	B
Mayfield Road and McLaughlin Road	0.52	12	B	0.53	14	B
Mayfield Road and Van Kirk Drive						
Westbound Left	0.05	9	A	0.16	9	A
Northbound Left	0.06	26	D	0.02	40	E
Northbound Right	0.39	16	C	0.15	12	B
Mayfield Road and Cresthaven Road/Robertson Davies Drive	0.62	12	B	0.56	8	A
Mayfield Road and Highway 10	0.62	26	C	0.55	26	C
Mayfield Road and Colonel Bertram Road	0.24	8	A	0.27	10	B
Mayfield Road and Summer Valley Drive	0.27	6	A	0.27	6	A
Mayfield Road and Valley View Drive						
Westbound Left	0.00	0	A	0.00	0	A
Northbound Left	0.01	11	B	0.00	10	B
Mayfield Road and Inder Heights Drive						
Westbound Left	0.01	10	A	0.02	8	A
Northbound Left	0.04	22	C	0.01	18	C
Northbound Right	0.03	11	B	0.01	10	A
Mayfield Road and Kennedy Road	0.44	10	A	0.32	14	B
Mayfield Road and Stonegate Drive						
Westbound Left	0.03	10	A	0.10	9	A
Northbound Left	0.30	18	C	0.07	13	B
Mayfield Road and Heart Lake Road	0.56	17	B	0.39	13	B

The analysis of existing conditions identifies that the signalized intersections have an overall V/C ratio ranging from 0.24 to 0.62 in the AM peak hour and from 0.27 to 0.58 in the PM peak hour with no critical lane group movements, which indicates that the intersections are operating with reserve capacity during both AM and PM peak hours. The overall LOS for signalized intersections ranges from LOS A to LOS C in the AM and PM peak hours. These are good operational characteristics for the signalized intersections.

At unsignalized intersections, all individual lane group V/C ratios are significantly below 0.85 in both the AM and PM peak hours, which indicates that the intersections are operating with reserve capacity. Northbound vehicles exiting the side streets experience the longest delays in both the AM and PM peak hours. These delays range from 11 seconds (LOS B) to 26 seconds (LOS D) in the AM peak hour and from 10 seconds (LOS B) to 40 seconds (LOS E) in the PM peak hour. These are good operational characteristics for the unsignalized intersections.

The capacity analysis shows that under existing conditions, all signalized and unsignalized intersections have good operational characteristics with low delays, reserve capacity and no critical movements.

Results of the vehicle queuing analyses show that the estimated queue lengths for the southbound left-turn movement at the intersection of Mayfield Road at Heart Lake Road of 126m exceeds the available storage (20m) at the intersection of Mayfield Road at Heart Lake Road.

The recommended roadway improvement for existing conditions is to extend the southbound left-turn lane at Mayfield Road and Heart Lake Road to a length of 130m.

3. Future Transportation Conditions

3.1 Roadway Network Improvements

There are a number of roadway improvements anticipated in the Study Area or close to the Study Area that will have an impact on future Mayfield Road traffic. These roadway improvements are outlined below.

3.1.1 Region of Peel

The Region of Peel Road Capital Program (2010 to 2031) identifies the following improvements:

- Mayfield Road from Chinguacousy Road to Hurontario Street, widening from two to four lanes (2015)
- Mayfield Road from Chinguacousy Road to Hurontario Street, widening from four to six lanes (2024)
- Mayfield Road from Hurontario Street to Heart Lake Road, widening from four to six lanes (2016)
- a new three-way signalized intersection on Mayfield Road between McLaughlin Road and Chinguacousy Road in conjunction with new development (2012)

3.1.2 City of Brampton

The City of Brampton Capital Road Projects (2010 to 2031) identifies the following improvements:

- Chinguacousy Road from Wanless Drive to Mayfield Road, widening from two to four lanes (2016)
- McLaughlin Road from Wanless Drive to Mayfield Road, widening from two to four lanes (2021)
- Highway 410 interchange at Highway 10 (2021)

3.1.3 Town of Caledon

The current planned roadway program identified in the Caledon Transportation Needs Study Update, Paradigm and Philips Engineering, March 2009 are:

- Kennedy Road from Mayfield Road to south of Old School Road, widening from two to four lanes (2011)
- Heart Lake Road from Mayfield Road to south of Old School Road, widening from two to four lanes (2021)

3.1.4 GTA West Corridor

The Ontario Ministry of Transportation (MTO) has commenced the formal EA process to examine long-term transportation problems and opportunities to the year 2031 and consider alternative solutions to provide better linkages between Urban Growth Centres in the GTA West Corridor Preliminary Study Area, including Downtown Guelph, Downtown Milton, Brampton City Centre and Vaughan Corporate Centre, as identified in the Growth Plan. The GTA West Study

is at the stage where a Draft Transportation Development Strategy Report was released. This report includes a Preliminary Route Planning Study Area, which is a geographic area within which a reasonable range of route alternatives can be generated and will be applied in the Stage 2 of the EA process.

The Preliminary Route Planning Study Area identifies that this corridor will traverse through the southern part of Caledon, north of Mayfield Road. There are no commitments to have this corridor in place by 2031 and the Region of Peel informed GENIVAR that a quantitative analysis of a scenario with the GTA-West corridor is not required for this Traffic Report.

3.1.5 Halton Peel Freeway

The Halton-Peel Boundary Area Transportation Study Report was adopted by the Councils of participating municipalities including Region of Peel, City of Brampton, Town of Caledon, Halton Region and Town of Halton Hills in April and May 2010. The proposed Halton-Peel Freeway (HPF) will connect Mayfield Road in the area near Heritage Road with Highways 401 and 407 in Halton Region by 2031. There will potentially be a new connection between the HPF and GTA-West corridor north of Mayfield Road. The HPF was assumed to be in place for the 2031 horizon in the EMME model from the Region of Peel.

3.1.6 Mayfield West Secondary Plan Phase 2

The Mayfield West Phase Two Secondary Plan Transportation Impact Study recommends that a collector road network should be provided to the existing arterial roadway network including to Mayfield Road and the collector road should be aligned with similarly planned streets on the south side of Mayfield Road.

3.1.7 Mount Pleasant Secondary Plan

Schedule M to the Official Plan Amendment for the Mount Pleasant Secondary Plan Area 51 identifies two new collector roads intersecting with Mayfield Road between Chinguacousy Road and McLaughlin Road.

3.1.8 Fernbrook Homes

At Project Meeting No. 2m the Region noted that Fernbrook Homes will introduce a new entrance on the north side of Mayfield Road near Kennedy Road. This entrance would be aligned with Inder Heights Drive to the south.

3.2 Transit Improvements

3.2.1 Transit in 2011

The Transportation and Transit Master Plan Sustainable Update 2009 outlines future improvements to local transit in Brampton at the horizon years of 2011, 2016, and 2021. The proposed 2011 transit network is shown in Exhibit 10 and includes three transit corridors within the Study Area:

- Mayfield Road
- Hurontario Street
- Kennedy Road

Transit service on Mayfield Road would run from Hurontario Street to Kennedy Road.

The Kennedy, Mayfield, and Hurontario (south of Mayfield Road) corridors are presently served by Route 7, and Hurontario Street north of Mayfield Road is served by Route 24. The existing routes roughly match the plan. The 2011 plan has all three routes designated as secondary corridors, which would have a peak period headway of 10 to 15 minutes.

3.2.2 Transit in 2016

The Transportation and Transit Master Plan Sustainable Update 2009 outlines further improvements to transit service in the Study Area by the year 2016, as shown in Exhibit 11. Five transit corridors would be within the Study Area:

- Mayfield Road
- Chinguacousy Road
- McLaughlin Road
- Hurontario Street
- Kennedy Road

Transit service would be available on Mayfield Road between Chinguacousy Road and Airport Road. All of these corridors, except for Hurontario, are designated as secondary corridors, with peak period headways of 10 to 15 minutes. Hurontario is designated as a primary corridor, with peak period headways of five to 10 minutes.

3.2.3 Transit in 2021

The 2021 Transit Network plan presented in the Transportation and Transit Master Plan Sustainable Update 2009, shown in Exhibit 12, differs slightly from the 2016 plan. The only change from 2016 to 2021 would be the extension of BRT on Hurontario Street from the 2016 northern terminus north of Sandalwood Parkway northerly into Caledon, crossing Mayfield Road. Transit service on Mayfield Road, Chinguacousy Road, McLaughlin Road, and Kennedy Road would remain secondary corridors, with peak period headways of 10 to 15 minutes.

Exhibit 10 – 2011 Transit Network

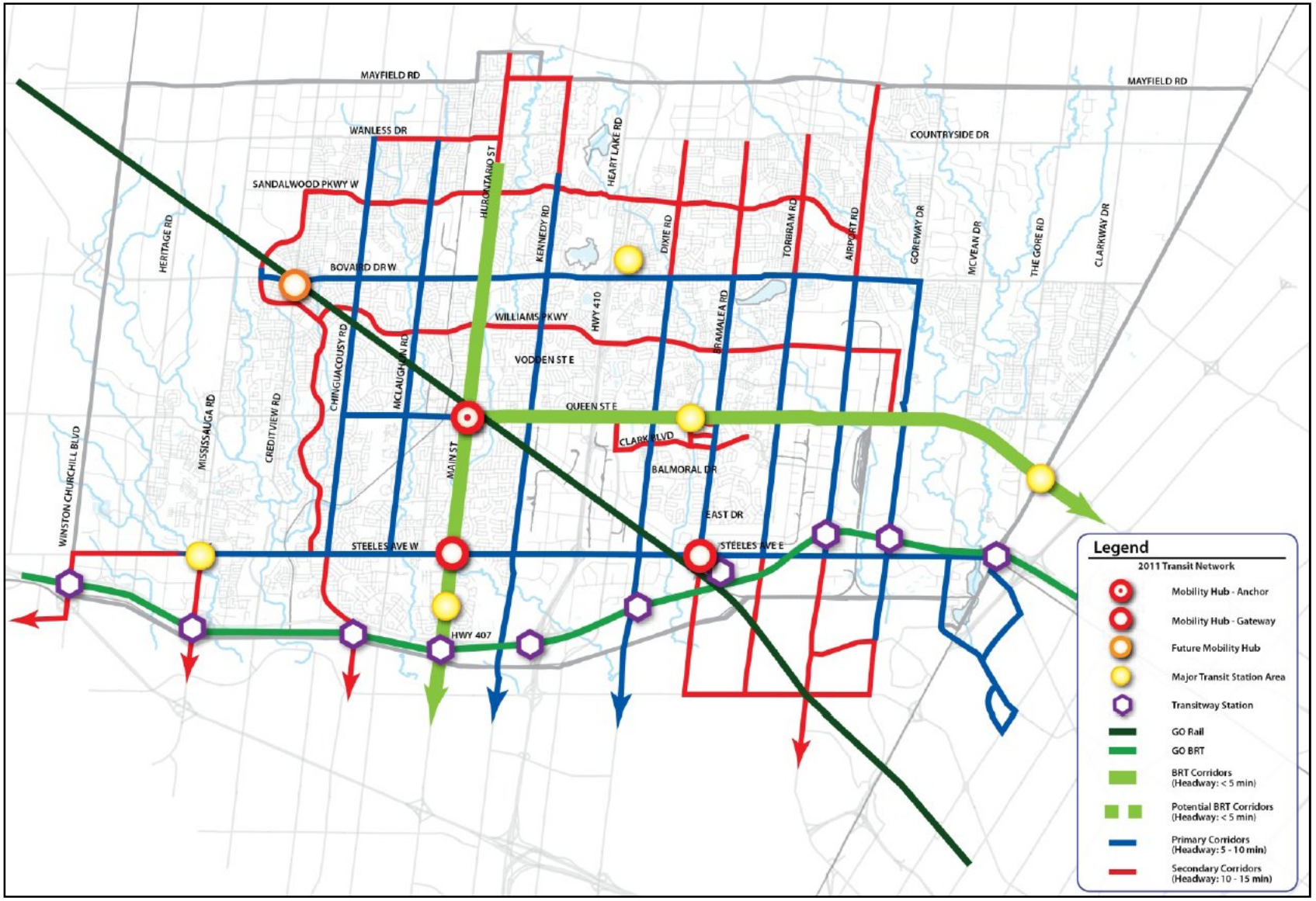


Exhibit 11 – 2016 Transit Network

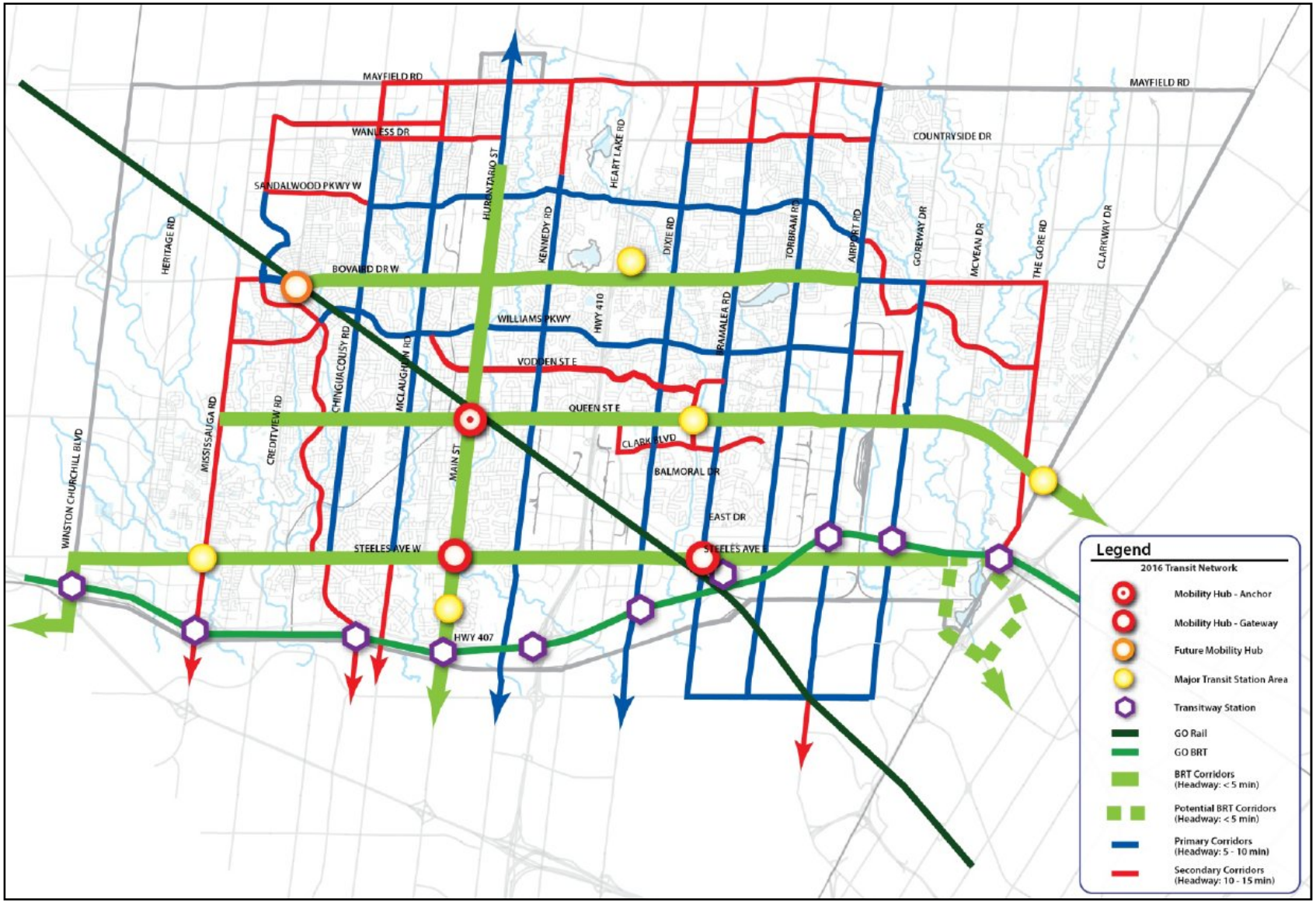
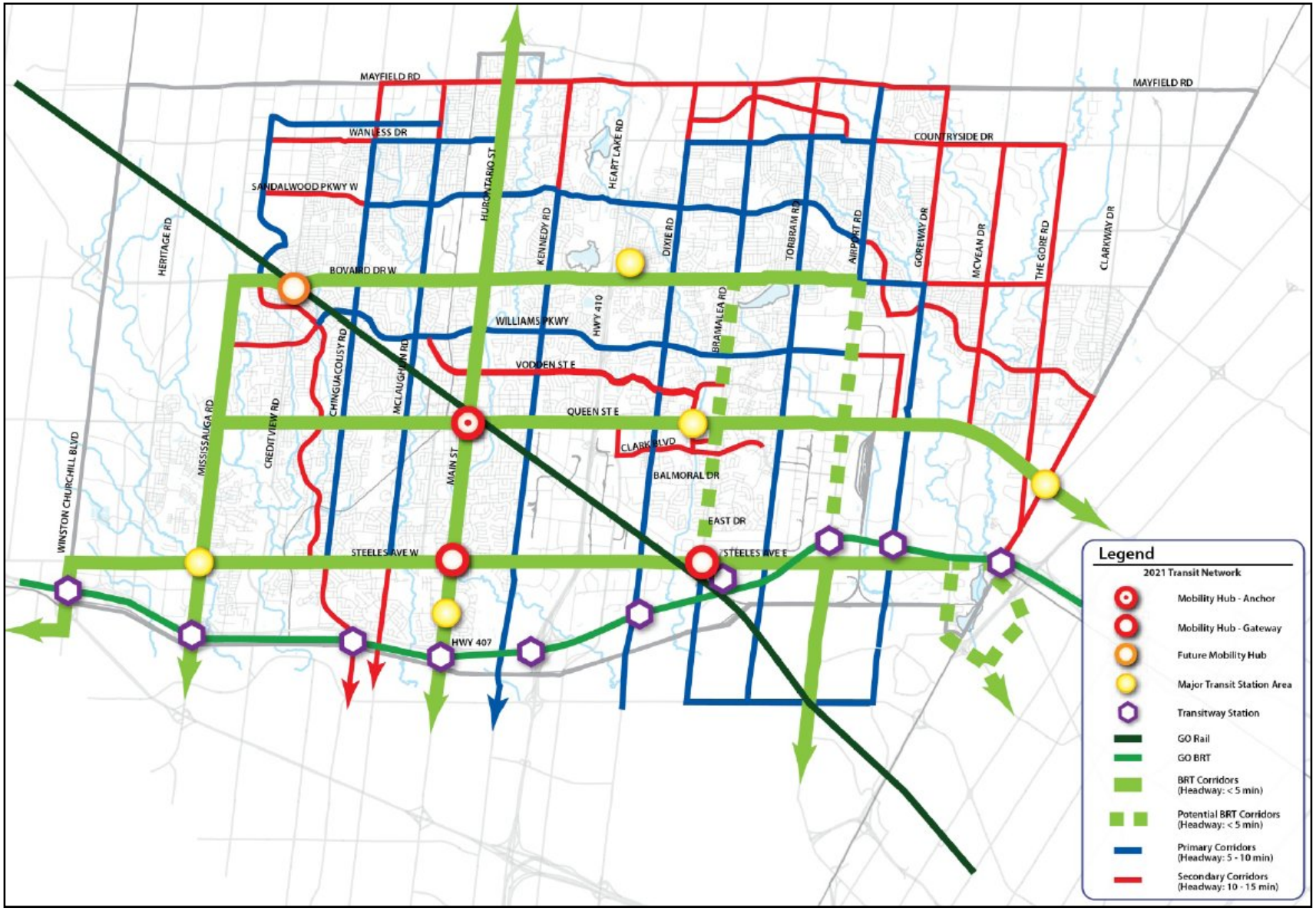


Exhibit 12 – 2021 Transit Network



3.3 Future Traffic Volumes

GENIVAR has developed turning movement volumes for the 2021 and 2031 corridor networks and the projected turning movement volumes were initially approved by the Region of Peel on June 30, 2011.

Subsequent to developing the turning movement projections in 2011, new information was provided to GENIVAR by the Region:

- Traffic projections for Mayfield Road at Chinguacousy Road and at McLaughlin Road developed by Paradigm Transportation Solutions Limited. These traffic projections were developed as part of the Class Environmental Assessments for improvements to Chinguacousy Road from Wanless Drive to Mayfield Road and for McLaughlin Road from Wanless Drive to Mayfield Road (see Appendix H).
- Mount Pleasant Block 51-2 Collector Road Environmental Assessment Study and Transportation Study, September 2011, prepared by BA Group Transportation Consultants (see Appendix I).

As a result of this new information, a revised set of traffic projections were developed for a section of a corridor and these were agreed upon by the Region on June 6, 2013.

The following is the methodology for developing turning movement volumes for the future corridor network alternatives:

- The following growth rates were applied to Mayfield Road between Chinguacousy Road and Heart Lake Road: 2011-2021, 4 percent annual growth; 2021-2031, 6 percent annual growth except for turning movements at intersections east of Hurontario Street where a 2.5 percent annual growth was applied.
- No growth was applied to local roads that accommodate traffic in areas that are fully built-out under existing conditions. These include:
  - Van Kirk Drive south of Mayfield Road
  - Cresthaven Road / Robertson Davies Drive north and south of Mayfield Road
  - Colonel Bertram Road north and south of Mayfield Road
  - Inder Heights Drive south of Mayfield Road
  - Stonegate Drive south of Mayfield Road
- Traffic volumes from the Fernbrook Homes Anthem Subdivision Traffic Impact Study, June 2010 were applied to Snellview Boulevard, which is the new link north of Mayfield Road aligned with Inder Heights Drive to the south.
- The comprehensive Mayfield West Community Plan Traffic Impact Analysis Report from June 2006 prepared by ENTRA Consultants was reviewed in detail to assist in determining 2021 traffic volumes on Heart Lake Road, Kennedy Road and to some extent on Hurontario Street. For example, the north leg directional link volumes on Heart Lake Road were adjusted to match the volumes from the 2006 report plus, based on professional judgement,

more turning movements from Heart Lake Road were assigned to and from Mayfield Road in comparison to the 2006 report due to the proximity of the Highway 410 interchange.

- Screenline volumes from the EMME model north and south of the Mayfield Road corridor were compared for the 2011, 2021 and 2031 horizon years. This information is provided in Appendix J. The resulting growth rates for the screenline north of Mayfield Road are: 2 percent for both the 2011 to 2021 and for 2021 to 2031 horizons. The resulting growth rates for the screenline south of Mayfield Road are: 1 percent for 2011 to 2021 and for 2021 to 2031 horizons. These growth rates were applied to the through volumes on north-south arterial roads crossing Mayfield Road that were not adjusted in the previous steps within the study limits.
- Traffic volumes for the additional links associated with the Mayfield West Boundary Area Expansion and Mount Pleasant Secondary Plan Area were not projected in the two transportation studies for these areas[12]. Traffic volumes for these additional links were therefore estimated based on the principles and detailed calculations provided in Appendix H. The turning movements at the New Collector Road 1 and New Collector Road 2 were then adjusted based on the Mount Pleasant Block 51-2 Traffic Study.
- The 2031 turning movement projections for Mayfield Road at Chinguacousy Road and at McLaughlin Road were adjusted to match the ones developed by Paradigm Transportation Solutions Limited. The through volumes on Mayfield Road were adjusted to balance with the remaining corridor east of McLaughlin Road.
- The 2021 turning movement projections for Mayfield Road at Chinguacousy Road and at McLaughlin Road were adjusted by using the 2016 traffic projections from the Mount Pleasant Block 51-2 Traffic Study. The 2016 turning movements were adjusted to 2021 by linear interpolation between 2016 and 2031. The resulting AM and PM peak hour traffic volumes are shown in Exhibit 13 through Exhibit 20.

[1] Mount Pleasant Secondary Plan Area Transportation Master Plan (TMP), ENTRA Consultants, June 2009

[2] Mayfield West Phase Two Secondary Plan Transportation Impact Study – Part A: Existing Conditions, Paradigm Transportation Solutions Ltd., January 26, 2009

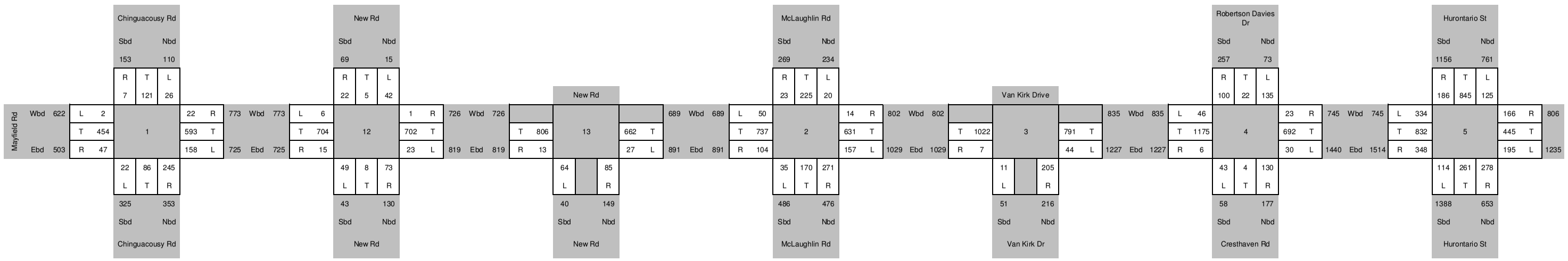


Exhibit 13
2021 AM Peak Hour Traffic Volumes West of Hurontario Street
Class EA for Mayfield Road from Chinguacousy Road to Heart Lake Road - Traffic Report

GENIVAR

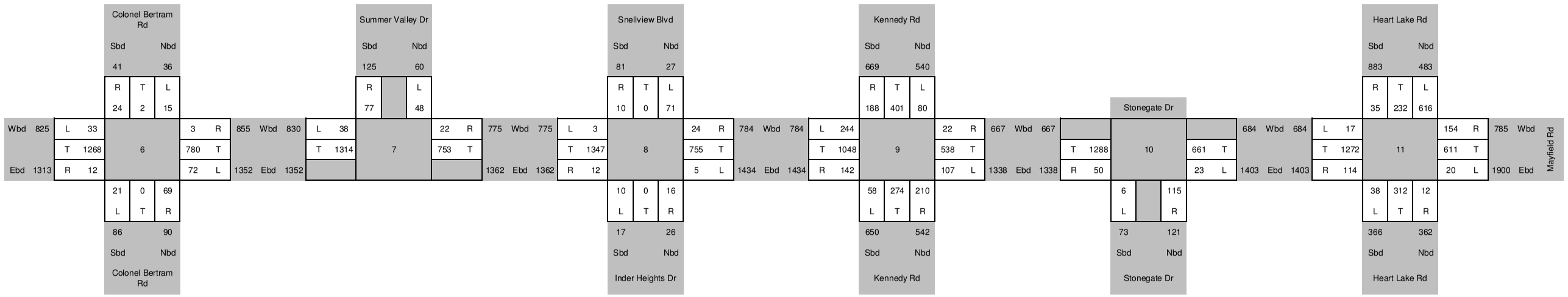


Exhibit 14
2021 AM Peak Hour Traffic Volumes East of Hurontario Street
Class EA for Mayfield Road from Chinguacousy Road to Heart Lake Road - Traffic Report

GENIVAR

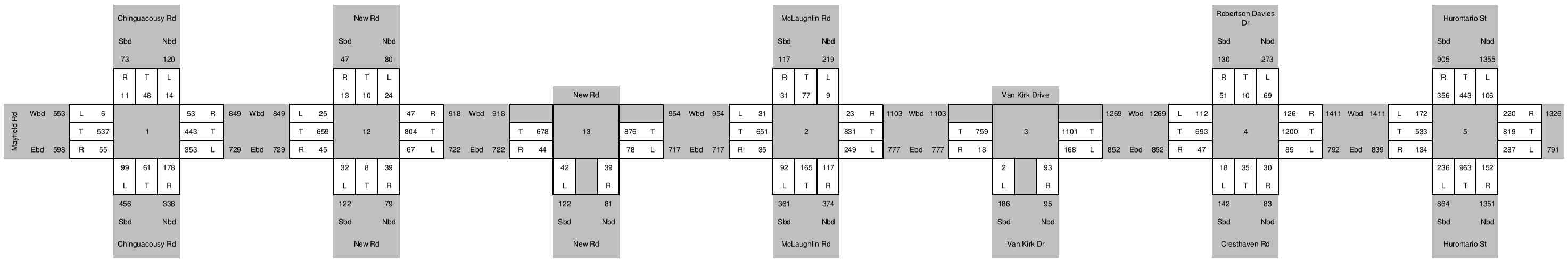


Exhibit 15
2021 PM Peak Hour Traffic Volumes West of Hurontario Street
Class EA for Mayfield Road from Chinguacousy Road to Heart Lake Road - Traffic Report

GENIVAR

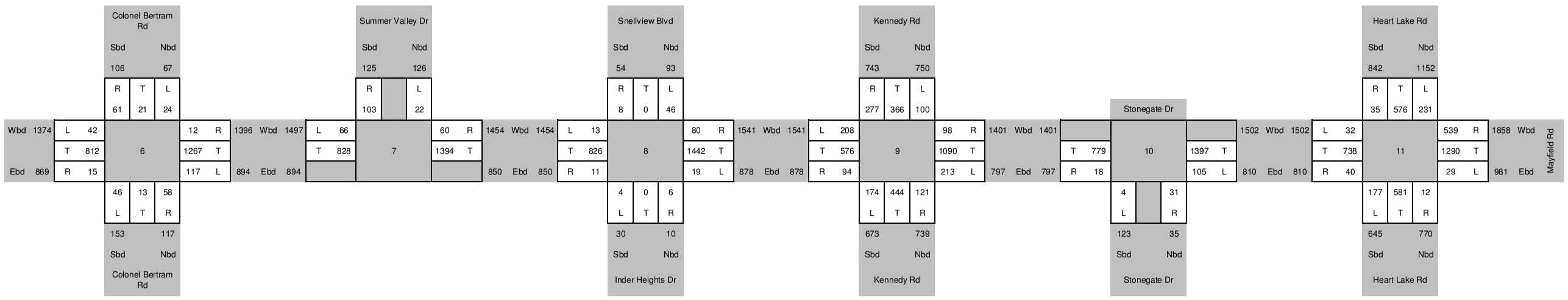


Exhibit 16
2021 PM Peak Hour Traffic Volumes East of Hurontario Street
Class EA for Mayfield Road from Chinguacousy Road to Heart Lake Road - Traffic Report

GENIVAR

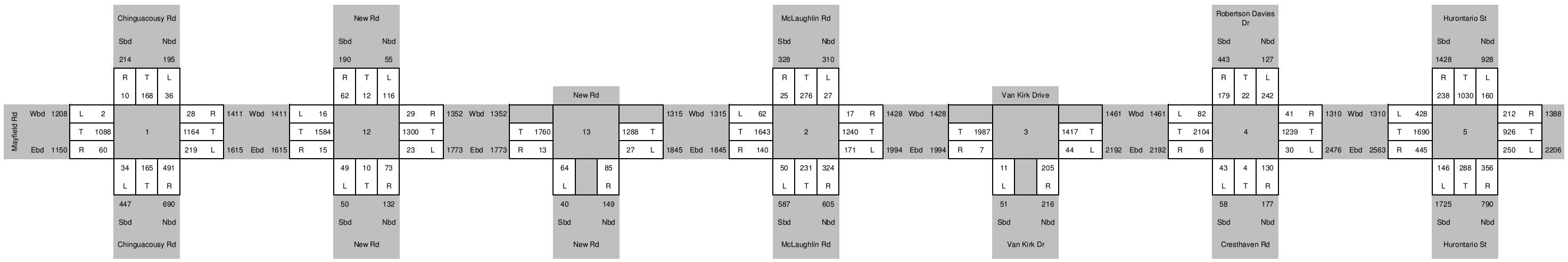


Exhibit 17
2031 AM Peak Hour Traffic Volumes West of Hurontario Street
Class EA for Mayfield Road from Chinguacousy Road to Heart Lake Road - Traffic Report

GENIVAR

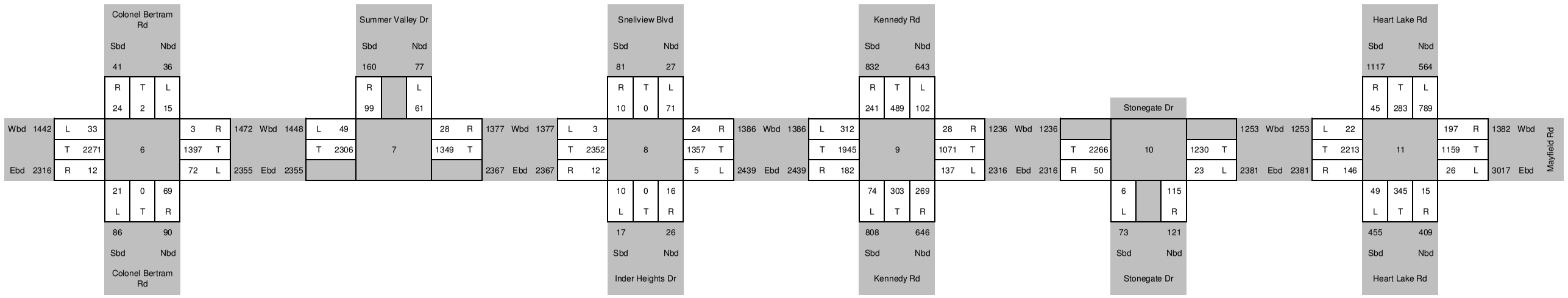


Exhibit 18
2031 AM Peak Hour Traffic Volumes East of Hurontario Street
Class EA for Mayfield Road from Chinguacousy Road to Heart Lake Road - Traffic Report

GENIVAR

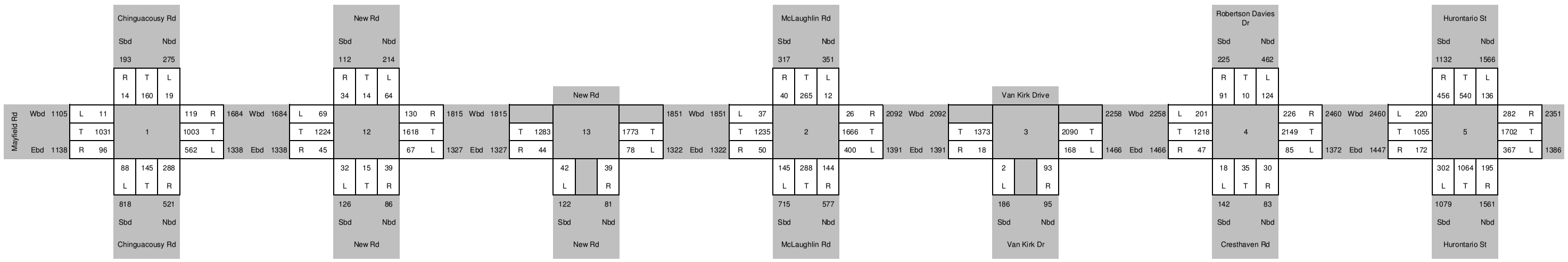


Exhibit 19
2031 PM Peak Hour Traffic Volumes West of Hurontario Street
Class EA for Mayfield Road from Chinguacousy Road to Heart Lake Road - Traffic Report

GENIVAR

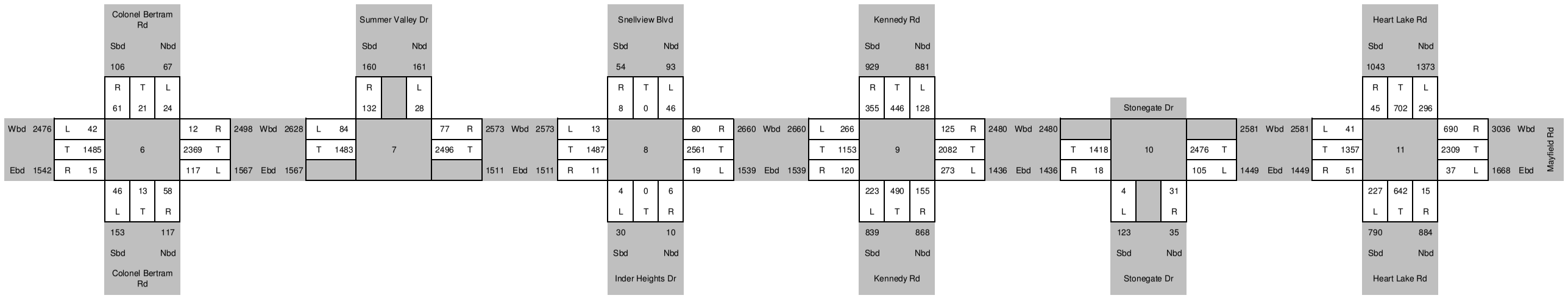


Exhibit 20
2031 PM Peak Hour Traffic Volumes East of Hurontario Street
Class EA for Mayfield Road from Chinguacousy Road to Heart Lake Road - Traffic Report

GENIVAR

3.4 Feasibility Analysis of Roundabouts

A roundabout feasibility analysis was undertaken for the intersections along Mayfield Road. The analysis is grouped into four sections:

- general characteristics (safety, visibility, transition zone, etc.)
- site-specific characteristics (topography, speed, access management, design vehicle, etc.)
- capacity (roundabout capacity analysis, hierarchy, left-turn movements, etc.)
- control (comparison of roundabout with TWSC and AWSC)

All analyses associated with the roundabouts are based on GENIVAR's team design experience with roundabouts in rural and urban areas, as well as recommendations from the Federal Highway Administration's (FHWA) roundabout guide.

It should be noted that the feasibility analysis of roundabouts was undertaken using the traffic projections approved by the Region in 2011. The new speed limit on Mayfield Road, changing the posted speed limit from 80 km/h to 70 km/h, was taken into consideration for analyses covering general and site-specific characteristics. Speed limits are not used for capacity analyses for roundabouts; those were therefore not updated. However, further additional capacity analyses might be undertaken at a later time, based on new projections. For some intersection, the difference in projected traffic flows is significant.

Roundabout capacity analysis was undertaken using to the following procedures:

- Verification of number of lanes necessary for the worst-case scenario, based on FHWA guidelines.
- Verification of residual capacity, for all scenarios, based on European and FHWA capacity guidelines.
- If an intersection has ample residual capacity following this first test, no further analysis is conducted.
- If an intersection shows less residual capacity than desired, an additional analysis is conducted for this scenario.
- Additional analysis is conducted using Arcady, based on a generic two-lane roundabout geometry (two lanes, 9m at the entry, angle of attack 20°). The results are provided for the worst-case scenario, worst time period only and include the following measures: LOS (seconds), queue length (Passenger Car Units (PCU)), capacity (Ratio of Flow to Capacity (RFC)).

For intersections without existing traffic signal control, a signal-warrant analysis was undertaken using the Transportation Association of Canada (TAC) guidelines. If a signal is not warranted at the intersection, a stop-control may be more suitable. The intersection of Mayfield Road at Valley View Road was not assessed for roundabouts as this intersection is a short, dead end roadway serving approximately 10 residential units.

At this stage, most of the right-of-way (ROW) analysis is not based on actual plans that might be used in the design phase. However, the level of detail is sufficient for a feasibility analysis. The

geometry used in the analyses may be different than actual geometry that would be used in subsequent phases but provides sufficient detail for this stage of analysis.

A summary of the roundabout feasibility analysis for each intersection is provided in Table 18. Details of the feasibility analysis are provided in Appendix K.

Implementation of roundabouts should always be looked at in a larger scope. Alternating between different types of traffic control within a certain corridor is not desirable. Therefore, all the intersections from Hurontario Street to Heart Lake Road are eliminated from further analysis. Roundabouts from Chinguacousy Road to Cresthaven Road / Robertson Davies Drive may form a cohesive group and will, therefore, be analyzed in the evaluation of corridor network alternatives.

Table 18 – Roundabout Feasibility Summary

Intersection	General Characteristics	Site Specific Conditions	Capacity			Control	Roundabout Appropriate at this location?
			Capacity Analysis	Queuing Analysis	Conclusion		
Mayfield Rd at Chinguacousy Rd	Location seems suitable, may reduce accidents, but speed reduction needs to be considered	Location seems suitable, but ROW may be insufficient	Worst approach: LOS C (17.69 sec.); RFC 0.8. (Arcady, PM, 2031)	Maximum queue: 3.87 PCU. (Arcady, PM, 2031)	Roundabout offers sufficient capacity, but requires a two-lane flare on the north approach	Site is appropriate for operation with a roundabout	Implementation of a roundabout at this site is feasible, but ROW should be verified
Mayfield Rd at New Collector Rd 1	Location seems suitable	Site seems suitable, but ROW may be insufficient	Worst approach: LOS B (12.19 sec.); RFC 0.3. (Arcady, AM, 2031)	Maximum queue: 1.99 PCU. (Arcady, PM, 2031)	Roundabout offers sufficient capacity	Site is appropriate for operation with a roundabout	Implementation of a roundabout at this site is feasible, but ROW should be verified
Mayfield Rd at New Collector Rd 2	Location seems suitable	It seems suitable, but ROW may be insufficient	Worst approach: LOS B (13.63 sec.); RFC 0.4. (Arcady, AM, 2031)	Maximum queue: 0.57 PCU. (Arcady, PM, 2031)	Roundabout offers sufficient capacity	Site is appropriate for operation with a roundabout	Implementation of a roundabout at this site is feasible, but ROW needs to be verified
Mayfield Rd at McLaughlin Rd	Location seems suitable, may reduce left-turn related accidents	Site seems suitable, but ROW may be insufficient	Worst approach: LOS B (14.26 sec.); RFC 0.9. (Arcady, AM, 2031)	Maximum queue: 7.50 PCU. (Arcady, PM)	Roundabout offers sufficient capacity	Site is appropriate for operation with a roundabout	Implementation of a roundabout at this site is feasible
Mayfield Rd at Van Kirk Dr	Location seems suitable	ROW may be insufficient, access to driveway difficult	Worst approach: LOS A (8.79 sec.); RFC 0.8. (Arcady, PM, 2031)	Maximum queue: 5.44 PCU. (Arcady, PM)	Roundabout offers sufficient capacity	Site is appropriate for operation with a roundabout	Implementation of a roundabout at this site is feasible, but ROW and access to driveways should be verified
Mayfield Rd at Cresthaven Rd / Robertson Dr	Location seems suitable, may reduce rear-end and left-turn related accidents	ROW may be insufficient, accesses need to be relocated	Worst approach: LOS F (64.71 sec.); RFC 0.99. (Arcady, PM)	Maximum queue: 43.24 PCU. (Arcady, PM, 2031)	Roundabout might not provide sufficient capacity. Further analyses should be conducted.	Site may be appropriate for operation with a roundabout	Implementation of a roundabout at this site is feasible, but requires further analysis (ROW, accesses and capacity)
Mayfield Rd at Huontario St	Location seems suitable and roundabout may have positive impact on accidents	Locations does not seem suitable (accesses)	Worst approach: LOS F (>200 sec.); RFC 1.64. (Arcady, PM, 2031)	Roundabout does not offer sufficient capacity	Roundabout does not offer sufficient capacity	Site is not appropriate for operation with a roundabout	Implementation of a roundabout at this site is not feasible (capacity problems)
Mayfield Rd at Colonel Bertram Rd	Location seems suitable, roundabout may reduce accidents	Location seems suitable, but there might be a problem with the access to the shopping centre	Worst approach: LOS D (32.21 sec.); RFC 0.6. (Arcady, PM, 2031)	Queues may form in the shopping centre parking lot, creating possible problems. Spillback from Hurontario may cause blockage.	Roundabout offers sufficient capacity, possible queuing and spillback problems	Site may be appropriate for operation with a roundabout	Implementation of a roundabout at this site is feasible, but requires further analysis (queuing and spillback problems). The site would not form a coherent unit with adjacent intersections and it is not recommended.
Mayfield Rd at Summer Valley Dr	Location seems suitable, roundabout may reduce accidents	Location seems suitable, but there might be a problem with the access to the shopping centre and driveway	Worst approach: LOS F (51.31 sec.); RFC 0.99. (Arcady, PM, 2031)	Maximum queue: 35.33 PCU. (Arcady, PM, 2031)	Roundabout might not provide sufficient capacity. Further analyses should be conducted	Site is appropriate for operation with a roundabout	Implementation of a roundabout at this site is feasible, but requires further analysis (ROW, access, capacity). The site would not form a coherent unit with adjacent intersections and it is not recommended.
Mayfield Rd at Inder Heights Dr / Snellview Blvd	Location seems suitable	Location seems suitable	Worst approach: LOS F (68.73 sec.); RFC 1.00. (Arcady, PM, 2031)	Maximum queue: 50.13 PCU. (Arcady, PM, 2031)	Roundabout might not provide sufficient capacity. Further analyses should be conducted	Site is not appropriate for operation with a roundabout. A different control type should be considered	Implementation of a roundabout at this site is feasible (with further analysis for the capacity), but may be not the best control type and is therefore not recommended.
Mayfield Rd at Kennedy Rd	Location seems suitable, roundabout may reduce risk of accidents	Location seems suitable	Worst approach: LOS F (>200 sec.); RFC 1.16. (Arcady, AM, 2031)	Maximum queue: 349 PCU. (Arcady, AM, 2031)	Roundabout does not offer sufficient capacity	Site is appropriate for operation with a roundabout	Implementation of a roundabout at this site is not feasible (capacity problems).
Mayfield Rd at Stonegate Dr	Location seems suitable	Location seems suitable, but ROW needs to be acquired	Worst approach: LOS D (33 sec.); RFC 0.97. (Arcady, PM)	Maximum queue: 23 PCU. (Arcady, PM, 2031)	Roundabout offers sufficient capacity	Site is not appropriate for operation with a roundabout. A different control type should be considered	Implementation of a roundabout at this site is feasible (ROW needs to be verified), but may be not the best control type and is therefore not recommended.
Mayfield Rd at Heart Lake Rd	Location seems suitable, roundabout may reduce risk of rear-end accidents and may improve road safety	Location seems suitable, but ROW needs to be acquired	Worst approach: LOS F (>200 sec.); RFC 1.56. (Arcady, PM, 2031)	Maximum queue: 1086 PCU. (Arcady, PM, 2031)	Roundabout does not provide sufficient capacity	Site is appropriate for operation with a roundabout	Roundabout does not provide sufficient capacity

3.5 Future Roadway Alternative Networks

The Region of Peel Road Capital Program (2010 to 2031) identifies that by 2021 Mayfield Road should be widened from two to four lanes from Chinguacousy Road to Hurontario Street and from four to six lanes from Hurontario Street to Heart Lake Road, and that by 2031 Mayfield Road from Chinguacousy Road to Hurontario Street should be further widened from four to six lanes (2024). The Region of Peel Long Range Transportation Plan (LRTP) also shows the need to widen Mayfield Road to six lanes within the study limits by 2031.

Future alternative networks were developed to incorporate the long-term widening plans for Mayfield Road and other committed improvements by the City of Brampton and Town of Caledon (outlined in Section 3.1 of this report). One alternative for 2021 was developed to include the "Do Nothing" option as required in an EA study and one 2031 alternative was developed to consider roundabouts in the analysis.

The future alternative roadway networks contained in this report are the following:

→ 2021 Do Nothing Roadway Network Alternative

- committed roadway improvements for Caledon and Brampton roads will be constructed
- two new intersections on Mayfield Road between McLaughlin Road and Chinguacousy Road in conjunction with new development in Mayfield West Secondary Plan Phase 2 and Mount Pleasant Secondary Plan Area 51
- new link on the north side of Mayfield Road aligned with Inder Heights Drive to the south associated with the Fernbrook Homes development
- no changes to lane configurations on Mayfield Road relative to existing conditions

→ 2021 Capital Projects Network Alternative

- 2021 Do Nothing Roadway Network Alternative plus widening Mayfield Road from Chinguacousy Road to Hurontario Street from two to four lanes and from Hurontario Street to Heart Lake Road from four to six lanes

→ 2031 Capital Projects Network Alternative

- same roadway network as 2021 Capital Projects Network Alternative plus widening Mayfield Road from four to six lanes from Chinguacousy Road to Heart Lake Road

→ 2031 Capital Projects Network Alternative with Roundabouts

- roundabouts are constructed at each intersection from Chinguacousy Road to Cresthaven Road / Robertson Davies Drive
- same roadway network as 2031 Capital Projects Network Alternative east of Cresthaven Road / Robertson Davies Drive

3.6 Future Analysis of Orangeville Rail Crossing

As mentioned previously, a cross product (number of trains daily multiplied by the AADT) of 200,000 is often used as an indicator that a grade separation may be warranted, and that a

detailed engineering study should be undertaken. For 2031, the cross product is 55,000 and does not meet the cross product criteria for warranting a grade separation.

Queues backing up towards the rail crossing from adjacent intersections were estimated using the intersection storage calculation spreadsheet that is typically used for queuing analysis for Region of Peel intersections (more details are provided in Section 3.7 of this report: Future Traffic Analysis). The queues were estimated along Mayfield Road at the eastbound approach of Cresthaven Road and westbound approach of Van Kirk Drive.

The summary results are shown in Table 19.

Table 19 – Queuing Analysis at Orangeville Rail Crossing for 2031 Traffic

Location	Storage Length (m)	Queue Length	
		AM Peak Hour	PM Peak Hour
Eastbound at Cresthaven Road	200	160	118
Westbound at Van Kirk Drive	335	87	132

The analysis results for 2031 conditions indicate that the estimated queues do not reach the rail crossing from the adjacent intersections during the AM and PM peak hours.

While it is possible to interconnect the railway warning signals and traffic signals and provide preemption to clear potential queued vehicles from the crossing, the distance is toward the upper end of the range where this is normally used. Furthermore, the queuing analysis shows that there is a low chance of queuing over the rail crossing from the Cresthaven Road and Van Kirk Drive intersections with Mayfield Road. Therefore, the following alternative measures are recommended:

- queue detector loops to allow queues to clear before they reach the track
- use upstream traffic signals to meter traffic so that it does not queue over the crossing
- improve signage at the rail crossing

3.7 Future Traffic Analysis

Intersection capacity analyses were undertaken for the study intersections for future traffic conditions for the AM and PM peak hours for the previously identified future 2021 and 2031 scenarios. The capacity and queuing analysis used the same procedures as for existing conditions, which are:

- capacity analysis completed using HCM methodology and Synchro 7.0 software and the Synchro parameters such as saturation flow rate, etc. were carried forward from the existing conditions
- the queuing analysis for signalized intersections is based on the intersection storage calculation spreadsheet that is typically used for queuing analysis for Region of Peel intersections

- the queuing analysis for unsignalized intersections is based on the HCM methodology
- critical movements are those where the V/C ratios exceed 1.0 for exclusive movements and 0.85 for shared movements as required in the Region of Peel Guidelines for Traffic Impact Studies
- for unsignalized intersections that experience long delays (LOS F) or have V/C ratios exceeding the Region of Peel acceptable thresholds in addition to the capacity analysis for unsignalized intersections, the TAC volume warrant analysis for signalized intersections was conducted

Based on instructions from Region of Peel, the estimated truck percentage on the Mayfield Road through movement and on north-south roads crossing Mayfield Road for both 2021 and 2031 is 10 percent during AM and PM peak hours, or the percentage from existing turning movement counts, whichever higher, up to a maximum of 15 percent.

The minimum flashing don't walk times from existing signal timings were adjusted (if needed) for those cases where widening of a roadway occurs and increased walk times are required to cross the roadway. Traffic signal timing, phasing and cycle lengths were optimized.

The report documents for all scenarios, the overall LOS, overall V/C ratios plus critical movements for all signalized intersections. For unsignalized intersections, the LOS and V/C ratios are provided for all lane groups that experience delay. The 95th percentile queues are also documented in the report for both signalized and unsignalized intersections. For this study critical movements are those where the V/C ratios exceed 1.0 for exclusive movements and 0.85 for shared movements as required in the Region of Peel guidelines for Traffic Impact Studies.

A summary of the capacity analysis showing the overall LOS and overall V/C ratios for signalized intersections and the LOS and V/C ratio for the critical lane group for unsignalized intersections is provided in the report tables for each scenario. A more detailed summary of the intersection capacity analysis and queuing analysis results are presented in Appendix E. Detailed Synchro capacity analysis sheets are provided in Appendix F. Queuing calculation sheets for signalized intersections are provided in Appendix G. The traffic signal warrant analysis sheets are provided in Appendix L.

3.7.1 2021 Do Nothing Roadway Network Alternative – Traffic Analysis

The lane configurations for the 2021 Do Nothing Roadway Network Alternative are shown in Exhibit 21 and Exhibit 22. The capacity analysis results for the 2021 Do Nothing Roadway Network Alternative are provided in Table 20. The queuing analysis results are presented in Appendix E.

Table 20 – Intersection Level of Service, 2021 Do Nothing Alternative

Intersection	AM Peak Hour			PM Peak Hour		
Movement	V/C	Delay (sec.)	LOS	V/C	Delay (sec.)	LOS
Mayfield Road and Chinguacousy Road	0.79	20	C	1.11	91	F
Mayfield Road and New Collector 1						
Northbound Left	0.64	111	F	0.79	230	F
Southbound Left	0.70	151	F	0.64	204	F
Mayfield Road and New Collector Road 2						
Northbound Left	0.75	122	F	1.31	451	F
Mayfield Road and McLaughlin Road	0.90	27	C	0.77	25	C
Mayfield Road and Van Kirk Drive						
Northbound Left	0.45	239	F	0.12	243	F
Mayfield Road and Cresthaven Road/Robertson Davies Drive	1.01	54	D	0.93	35	C
Mayfield Road and Highway 10	1.01	52	D	0.96	46	D
Mayfield Road and Colonel Bertram Road	0.46	7	A	0.48	9	A
Mayfield Road and Summer Valley Drive	0.49	7	A	0.52	7	A
Mayfield Road and Valley View Drive						
Northbound Left	0.01	15	B	0.01	13	B
Mayfield Road and Snellview Boulevard/Inder Heights Drive						
Northbound Left	0.21	98	F	0.07	71	F
Southbound Through	0.91	157	F	1.35	419	F
Mayfield Road and Kennedy Road	0.66	71	E	1.36	83	F
Mayfield Road and Stonegate Drive						
Northbound Left	0.39	24	C	0.11	18	C
Mayfield Road and Heart Lake Road	1.17	85	F	1.33	133	F

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Exhibit 21
Lane Configuration – Do Nothing 2021 (West of Hurontario Street)
Class EA for Mayfield Road from Chinguacousy Road to Heart Lake Road - Traffic Report

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Exhibit 22
Lane Configuration – Do Nothing 2021 (East of Hurontario Street)
Class EA for Mayfield Road from Chinguacousy Road to Heart Lake Road - Traffic Report

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The analysis of the 2021 Do Nothing Roadway Network Alternative shows that the following signalized intersections have an overall V/C ratio of more than 1.0:

- Mayfield Road at Chinguacousy Road in the PM peak hour
- Mayfield Road at Cresthaven Road / Robertson Davies Drive in the AM peak hour
- Mayfield Road at Hurontario Street in the AM peak hour
- Mayfield Road at Kennedy Road in the PM peak hour
- Mayfield Road at Heart Lake Road in the AM and PM peak hours

The following unsignalized intersections have lane groups operating at LOS E or F:

- Mayfield Road at New Collector Road 1 in the AM and PM peak hours
- Mayfield Road at New Collector Road 2 in the AM and PM peak hours
- Mayfield Road at Van Kirk Drive in the AM and PM peak hours
- Mayfield Road at Inder Heights Drive / Snellview Boulevard in the AM and PM peak hours

The results of the capacity analysis clearly show that if no improvements are made along Mayfield Road between Chinguacousy Road and Hurontario Street, there will not be sufficient capacity to accommodate traffic demand and vehicles will experience long delays by 2021. The operational characteristics of intersections along Mayfield Road would further worsen for 2031 conditions without roadway improvements.

Results of the vehicle queuing analyses show that at five intersections along the corridor the predicted queue lengths for one or more turning movement would exceed the available storage length. The queues would spillback from the storage lanes into the through traffic lanes at these intersections.

Based on this analysis, the following input to the problem statement can be provided:

"**As presently configured, Mayfield Road will not have sufficient capacity to accommodate the anticipated traffic demand by 2021 and 2031**"

3.7.2 2021 Capital Projects Network Alternative – Traffic Analysis

The analysis of the 2021 Do Nothing Roadway Network Alternative showed that the following unsignalized intersections have lane groups operating at LOS E or F

- Mayfield Road at New Collector Road 1
- Mayfield Road at New Collector Road 2
- Mayfield Road at Van Kirk Drive
- Mayfield Road at Inder Heights Drive / Snellview Boulevard

Based on TAC volume warrants, the only unsignalized intersection which warrants a signal in 2021 is Mayfield Road at Van Kirk Drive.

The improvements that are required relative to the 2021 Do Nothing Roadway Network Alternative are shown in Exhibit 23 and Exhibit 24 and include the following:

- widen Mayfield Road from two to four lanes from Chinguacousy Road to Hurontario Street
- widen Mayfield Road from four to six lanes from Hurontario Street to Heart Lake Road
- signalize Mayfield Road at Van Kirk Drive
- modify the southbound lane configuration on Heart Lake Road at Mayfield Road from an exclusive left-turn, through and right-turn lane to a dual left-turn and through/right-turn lanes
- construct a 30m southbound left turn lane, a 30m eastbound left-turn lane and a 80m westbound left-turn lane at Chinguacousy Road
- construct 30m eastbound and westbound left-turn lanes at New Collector Road 1
- construct a 30m westbound left-turn lane at New Collector Road 2
- extend the length of the westbound left-turn lane at McLaughlin Road from 30m to 60m
- extend the length of the westbound left-turn lane at Van Kirk Drive from 35m to 50m
- extend the following lengths of the storage lanes at Hurontario Street:
  - southbound right from 75m to 135m
  - westbound right from 55m to 85m
  - westbound left from 50m to 60m
  - northbound right from 60m to 105m
  - northbound left from 45m to 85m
  - eastbound right from 100m to 120m
  - eastbound left from 110m to 120m
- extend the following lengths of the storage lanes at Kennedy Road:
  - westbound left from 20m to 75m
  - northbound left from 45m to 70m
  - eastbound left from 25m to 90m
- extend the length of the westbound right-turn lane at Heart Lake Road from 155m to 195m

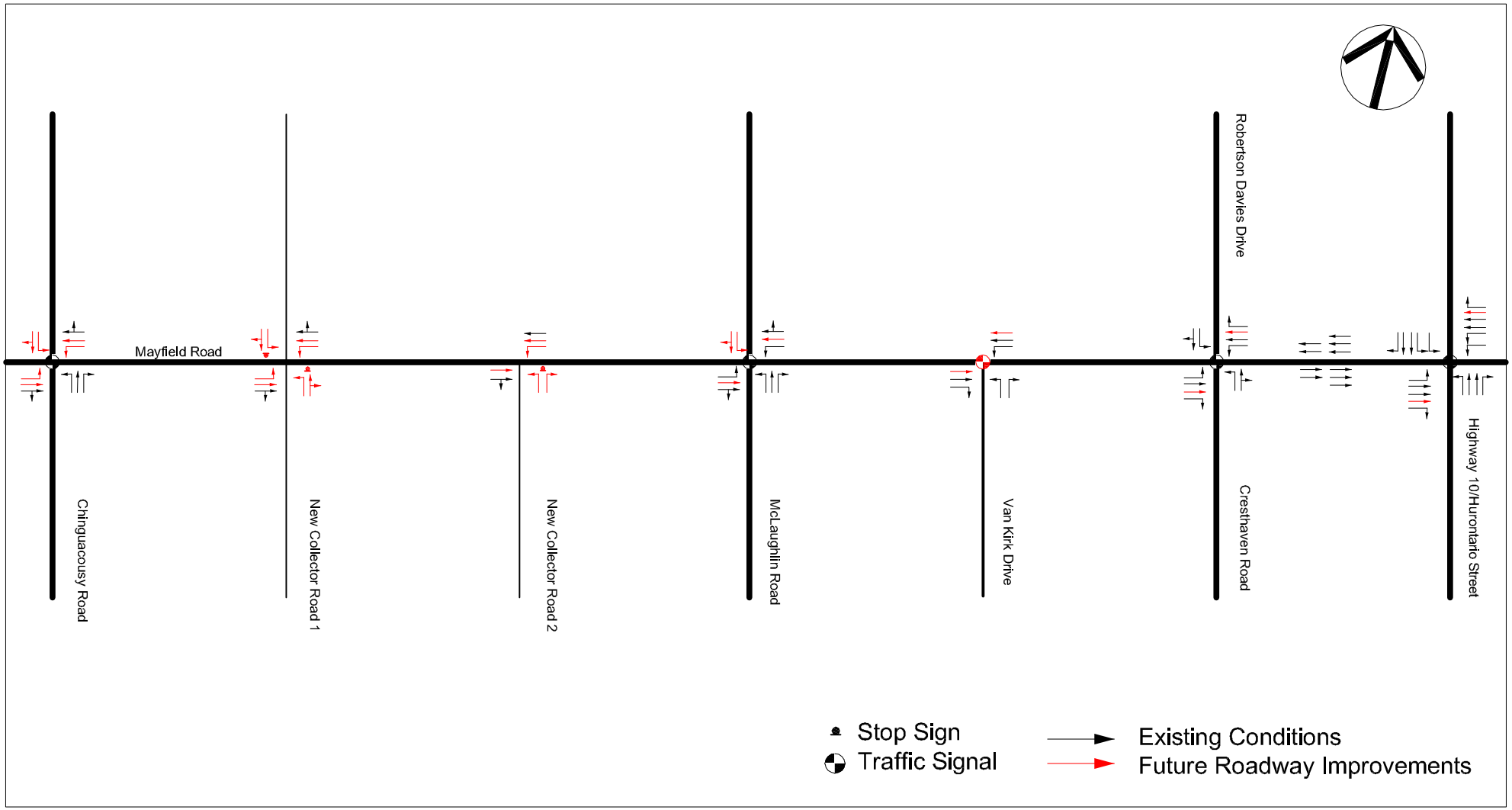

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Exhibit 23
Lane Configuration – Capital Improvements 2021 (West of Hurontario Street)
Class EA for Mayfield Road from Chinguacousy Road to Heart Lake Road - Traffic Report

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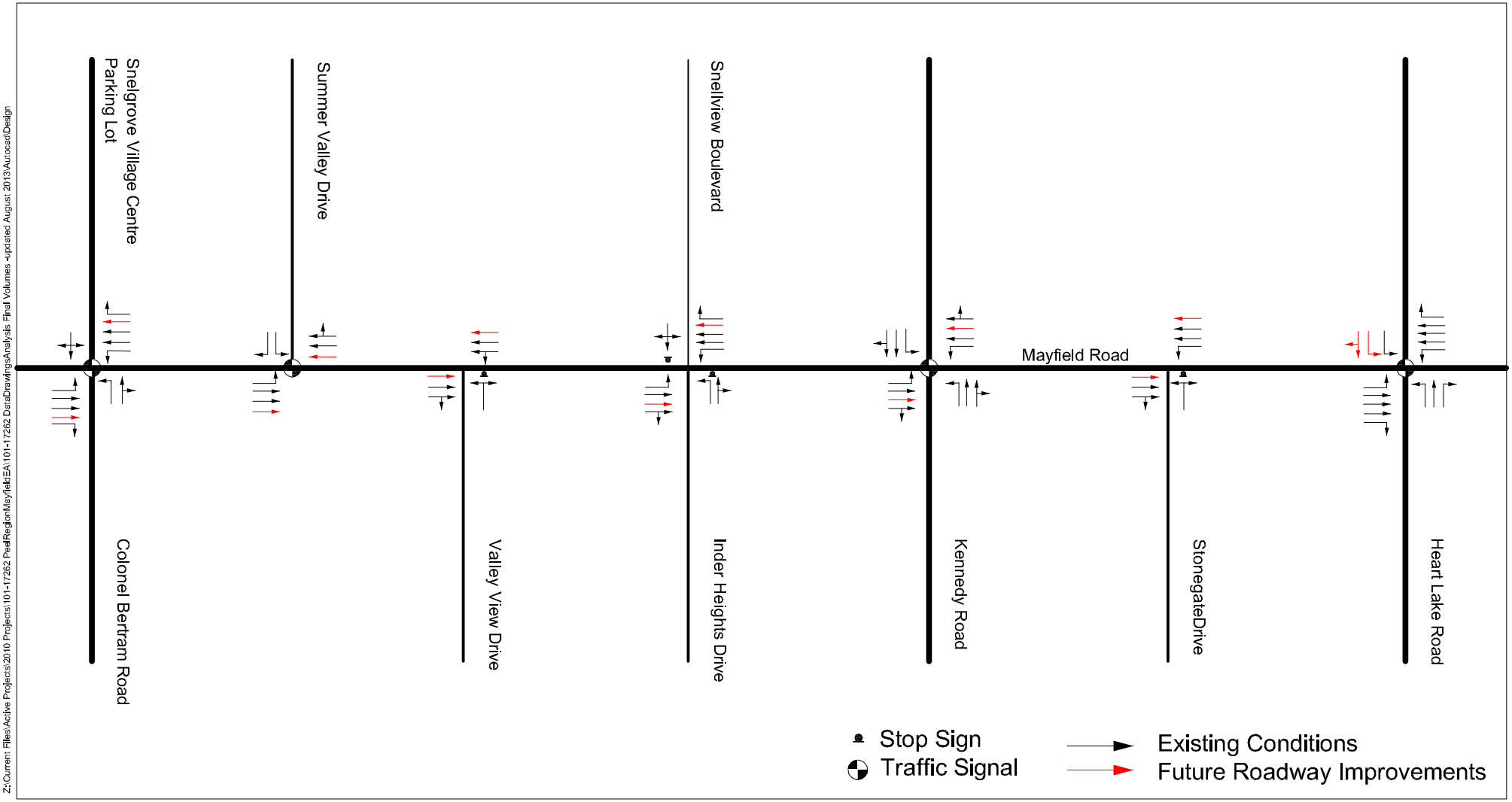

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Exhibit 24
Lane Configuration – Capital Improvements 2021 (East of Hurontario Street)
Class EA for Mayfield Road from Chinguacousy Road to Heart Lake Road - Traffic Report

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The capacity analysis results for the 2021 Capital Projects Network Alternative are provided in Table 21. The queuing analysis results are presented in Appendix E.

Table 21 – Intersection Level of Service, 2021 Capital Projects Network Alternative

Intersection	AM Peak Hour			PM Peak Hour		
Movement	V/C	Delay (sec.)	LOS	V/C	Delay (sec.)	LOS
Mayfield Road and Chinguacousy Road	0.39	11	B	0.59	15	B
Mayfield Road and New Collector Road 1						
Southbound Left	0.39	57	F	0.28	63	F
Mayfield Road and New Collector Road 2						
Northbound Left	0.33	33	D	0.25	33	D
Mayfield Road and McLaughlin Road	0.62	18	B	0.61	14	B
Mayfield Road and Van Kirk Drive	0.52	10	A	0.43	6	A
Mayfield Road and Cresthaven Road/Robertson Davies Drive	0.60	11	B	0.52	8	A
Mayfield Road and Highway 10	0.84	34	C	0.80	40	D
Mayfield Road and Colonel Bertram Road	0.33	6	A	0.35	8	A
Mayfield Road and Summer Valley Drive	0.35	6	A	0.37	6	A
Mayfield Road and Valley View Drive						
Northbound Left	0.01	13	B	0.01	11	B
Mayfield Road and Snellview Boulevard/Inder Heights Drive	n/a (see note 1)			n/a (see note 1)		
Mayfield Road and Kennedy Road	0.56	25	C	0.89	35	D
Mayfield Road and Stonegate Drive						
Northbound Left	0.29	17	C	0.09	15	B
Mayfield Road and Heart Lake Road	0.77	38	D	0.85	38	D

Note 1: too many lanes for analysis

With the recommended improvements in place, the analysis of the 2021 Capital Projects Network Alternative identifies that the signalized intersections have an overall V/C ratio ranging from 0.33 to 0.84 in the AM peak hour and from 0.35 to 0.89 in the PM peak hour with no critical lane group movements, which indicates that the intersections will be operating with reserve capacity during both AM and PM peak hours. The overall LOS for signalized intersections ranges from LOS A to LOS D in the AM and PM peak hours. These are good operational characteristics for signalized intersections.

At unsignalized intersections, all individual lane group V/C ratios are below 0.85 in both the AM and PM peak hours, which indicates that the intersections are operating with reserve capacity. The northbound and southbound left-turn vehicles exiting New Collector Road 1 and New Collector Road 2 will experience the longest delays resulting in LOS E or LOS F in both the AM and PM peak hours.

As mentioned previously, signals are not warranted at these intersections. The predicted left-turn volume for these movements that will experience longer delays are less than 50 vehicles per hour which is approximately one vehicle arriving at the intersection per minute. For low volume roadways intersecting with high volume arterial roads, this is a typical operational characteristic during peak hours in urban environments. It is important to realize that all of these left-turn movements will have other route options to enter onto Mayfield Road. These are acceptable operational characteristics for unsignalized intersections.

The results of the capacity analysis clearly show that with the recommended roadway improvements, in addition to implementing the improvements identified in the capital works programs (Peel, Brampton, Caledon), intersections along Mayfield Road can operate with satisfactory operational characteristics under the 2021 Capital Projects Network Alternative and provides significant improvements to intersection operations compared to the 2021 Do Nothing Roadway Network Alternative.

With the recommended extension of storage lanes, results of the vehicle queuing analyses show that the predicted queue lengths would not exceed the storage lengths.

3.7.3 2031 Capital Projects Network Alternative – Traffic Analysis

When compared to the 2021 Capital Projects Network Alternative, the Mayfield Road at Collector Road 1 and Collector Road 2 intersections warrant a signal in 2031 based on TAC volume warrants.

The improvements that are required relative to the 2021 Capital Projects Network Alternative are shown in Exhibit 25 and Exhibit 26 and include the following:

- widen Mayfield Road from four to six lanes from Chinguacousy Road to Hurontario Street
- signalize Mayfield Road at New Collector Road 1 and New Collector Road 2
- construct a 60m eastbound right-turn lane at McLaughlin Road
- construct a second eastbound left-turn lane at Hurontario Street
- construct the following right-turn lanes at Kennedy Road:
  - 75m eastbound right
  - 55m westbound right
  - 115m northbound right
  - 140m southbound right
- modify the Heart Lake Road intersection:
  - add second southbound through lane

- re-stripe the northbound right-turn lane to a shared through-right lane
- two through lanes are required in each direction through intersection; lane drop from four to two lanes must occur south of Mayfield
- prohibit pedestrian crossing at the east leg of the intersection

→ construct an 80m dual westbound left-turn lane at Chinguacousy Road

→ extend the following lengths of the storage lanes at McLaughlin Road:

- westbound left from 60m to 120m and protect property for dual westbound left turn lanes
- northbound left from 30m to 50m

→ extend the following lengths of the storage lanes at Cresthaven Road / Robertson Davies Drive:

- southbound left from 30m to 70m
- westbound right from 30m to 70m
- eastbound left from 30m to 60m

→ extend the following lengths of the storage lanes at Hurontario Street:

- southbound right from 135m to 165m
- westbound right from 85m to Colonel Bertram intersection
- westbound left from 60m to 75m
- northbound right from 105m to 150m
- northbound left from 85m to 130m
- eastbound right from 120m to 165m

→ extend the length of the westbound left-turn lane at Colonel Bertram Road from 50m to 55m

→ extend the following lengths of the storage lanes at Kennedy Road:

- southbound left from 45m to 60m
- westbound left from 75m to 115m
- northbound left from 70m to 90m
- eastbound left from 90m to 130m

→ extend the following lengths of the storage lanes at Heart Lake Road:

- southbound left from 130m to 150m
- westbound right from 195m to 260m

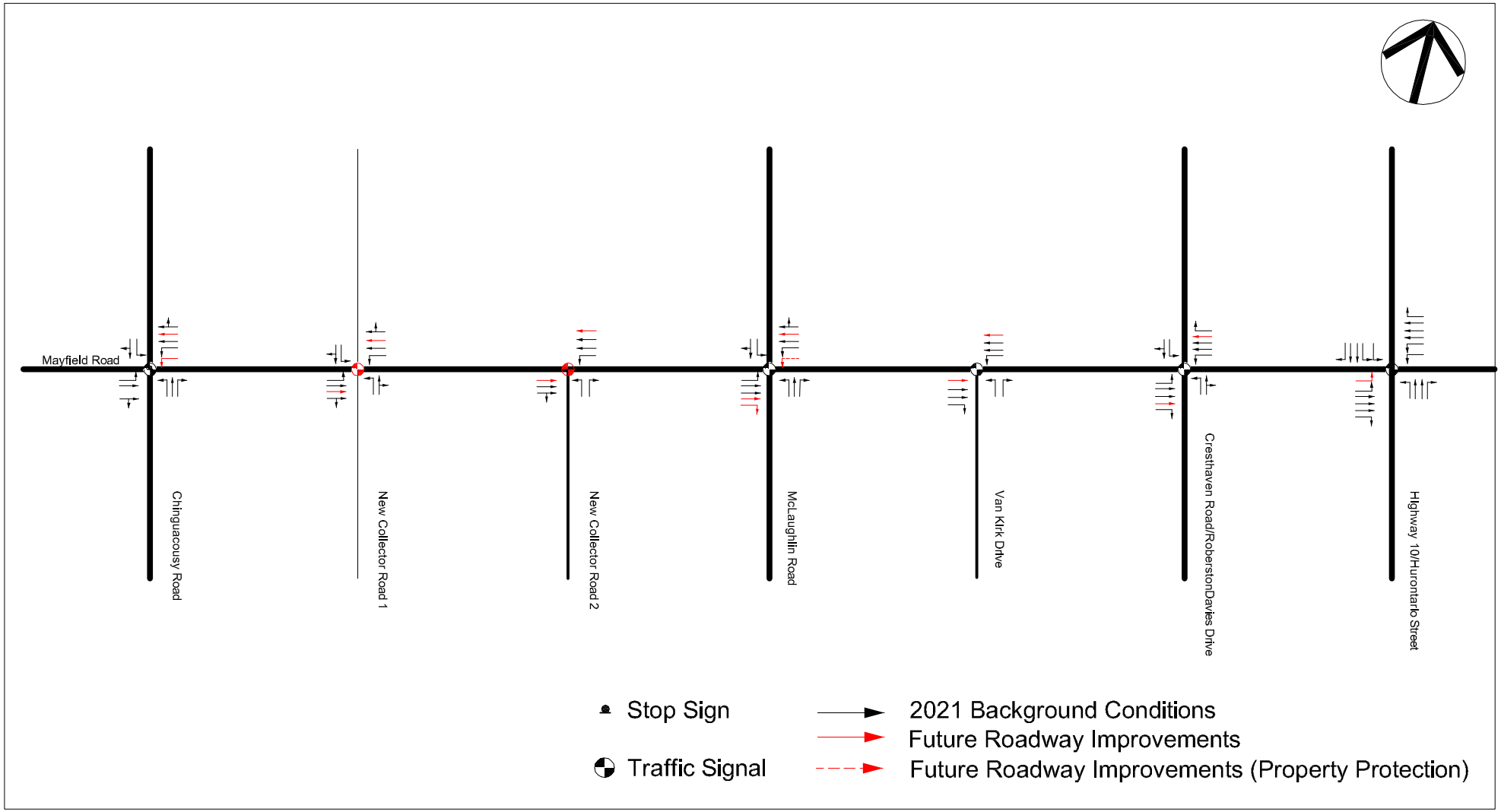

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Exhibit 25
Lane Configuration - Capital Improvements 2031 (West of Hurontario Street)
Class EA for Mayfield Road from Chinguacousy Road to Heart Lake Road - Traffic Report

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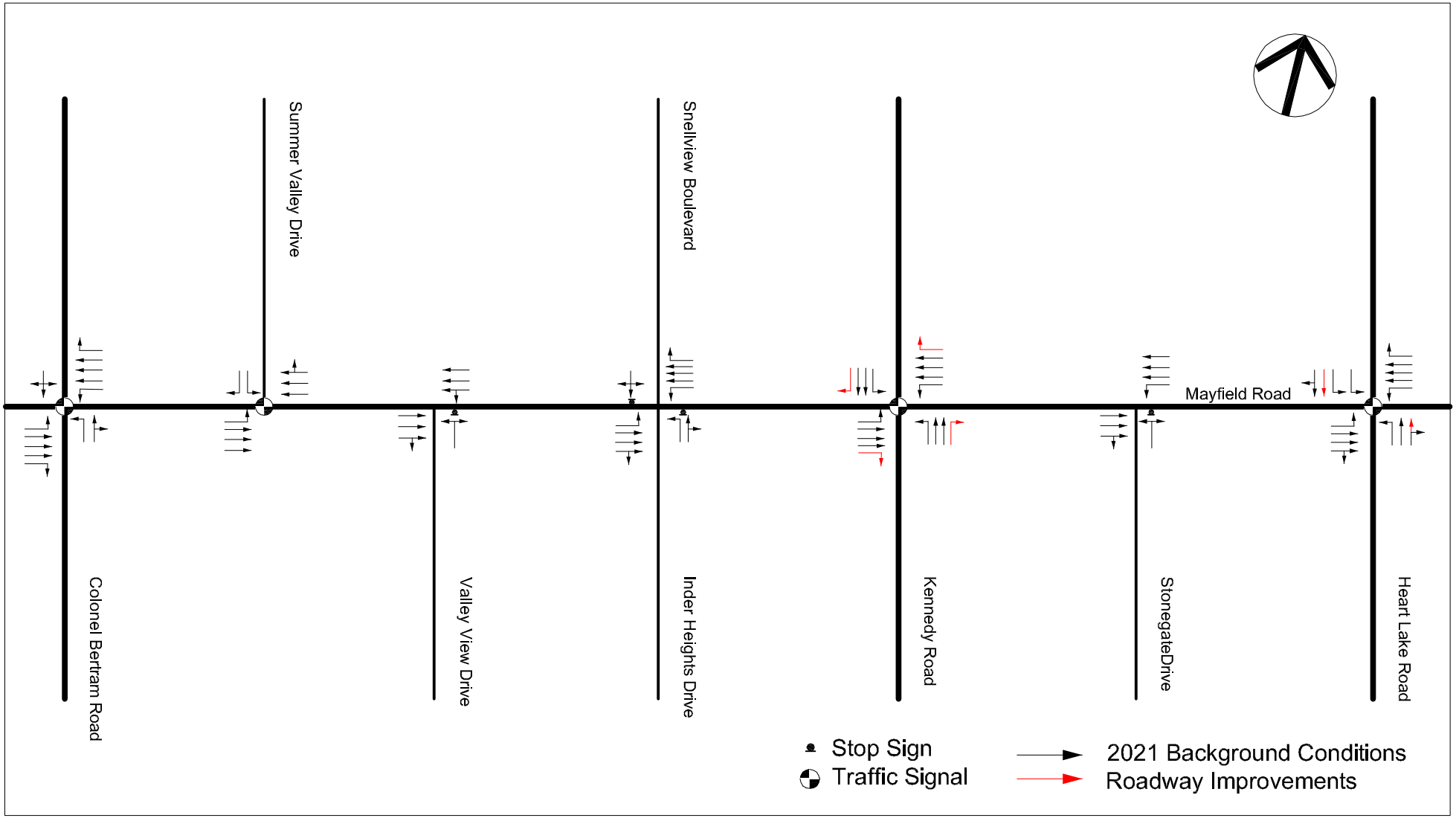

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Exhibit 26
Lane Configuration - Capital Improvements 2031 (East of Hurontario Street)
Class EA for Mayfield Road from Chinguacousy Road to Heart Lake Road - Traffic Report

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The capacity analysis results for the 2031 Capital Projects Network Alternative are provided in Table 22. The intersection queuing analysis results are presented in Appendix E.

Table 22 – Intersection Level of Service, 2031 Capital Projects Network Alternative

Intersection	AM Peak Hour			PM Peak Hour		
Movement	V/C	Delay (sec.)	LOS	V/C	Delay (sec.)	LOS
Mayfield Road and Chinguacousy Road	0.68	22	C	0.68	22	C
Mayfield Road and New Collector Road 1	0.55	9	A	0.54	8	A
Mayfield Road and New Collector Road 2	0.53	7	A	0.51	5	A
Mayfield Road and McLaughlin Road	0.73	23	C	0.87	31	C
Mayfield Road and Van Kirk Drive	0.66	11	B	0.73	8	A
Mayfield Road and Cresthaven Road/Robertson Davies Drive	0.76	17	B	0.81	21	C
Mayfield Road and Highway 10	0.99	57	E	0.96	62	E
Mayfield Road and Colonel Bertram Road	0.70	13	B	0.65	11	B
Mayfield Road and Summer Valley Drive	0.60	8	A	0.73	15	B
Mayfield Road and Valley View Drive						
Northbound Left	0.01	21	C	0.01	14	B
Mayfield Road and Snellview Boulevard/Inder Heights Drive	n/a (see note 1)			n/a (see note 1)		
Mayfield Road and Kennedy Road	0.76	30	C	0.93	52	D
Mayfield Road and Stonegate Drive						
Northbound Left	0.88	111	F	0.30	48	E
Mayfield Road and Heart Lake Road	0.96	49	D	0.96	44	D

Note 1: too many lanes for analysis

The analysis of 2031 Capital Projects Network Alternative identifies that the signalized intersections have an overall V/C ratio ranging from 0.53 to 0.99 in the AM peak hour and from 0.51 to 0.96 in the PM peak hour with no critical lane group movements, which indicates that some intersections would have reserve capacity during peak hours and some intersections would operate near capacity (Mayfield Road intersections with Hurontario Street and Heart Lake Road). The overall LOS for signalized intersections ranges from LOS A to LOS E in the AM and PM peak hours. These are acceptable signalized intersection operational characteristics.

At unsignalized intersections, some left-turn movements attempting to turn onto Mayfield Road would experience longer delays but would have other route options to enter onto Mayfield Road

4. Evaluation of Corridor Networks

As documented in the previous section of the report, the following corridors were analyzed in this report:

- 2021 Do Nothing Roadway Network Alternative
- 2021 Capital Projects Network Alternative
- 2031 Capital Projects Network Alternative
- 2031 Capital Projects Network Alternative with Roundabouts

The summary results of the corridors are shown in Table 23.

The evaluation presented in Table 23 shows that as presently configured, Mayfield Road will not have sufficient capacity to accommodate the anticipated traffic demand by 2021 and 2031. Implementing roundabouts along the corridor from Chinguacousy Road to Cresthaven Road would reduce the corridor speeds compared to the corridor without roundabouts. Roundabouts also result in longer overall delays when minor street traffic volumes are low compared to major street traffic volumes, require initial public education, usually cost more to construct, construction staging for retrofits is costly and complicated, and are not suitable for accommodating the high truck volumes that are anticipated on Mayfield Road.

The following corridors are recommended for the 2021 and 2031 horizon years:

- 2021 Capital Projects Network Alternative
- 2031 Capital Projects Network Alternative

4. Evaluation of Corridor Networks

As documented in the previous section of the report, the following corridors were analyzed in this report:

- 2021 Do Nothing Roadway Network Alternative
- 2021 Capital Projects Network Alternative
- 2031 Capital Projects Network Alternative
- 2031 Capital Projects Network Alternative with Roundabouts

The summary results of the corridors are shown in Table 23.

The evaluation presented in Table 23 shows that as presently configured, Mayfield Road will not have sufficient capacity to accommodate the anticipated traffic demand by 2021 and 2031. Implementing roundabouts along the corridor from Chinguacousy Road to Cresthaven Road would reduce the corridor speeds compared to the corridor without roundabouts. Roundabouts also result in longer overall delays when minor street traffic volumes are low compared to major street traffic volumes, require initial public education, usually cost more to construct, construction staging for retrofits is costly and complicated, and are not suitable for accommodating the high truck volumes that are anticipated on Mayfield Road.

The following corridors are recommended for the 2021 and 2031 horizon years:

- 2021 Capital Projects Network Alternative
- 2031 Capital Projects Network Alternative

Table 23 – Corridor Evaluation Summary

Evaluation Criteria	2021				2031			
	Do Nothing Alternative		2021 Capital Projects Alternative		2031 Capital Projects Alternative		2031 Capital Projects with Roundabouts Alternative	
	AM	PM	AM	PM	AM	PM	AM	PM
Intersection V/C Ratio, LOS								
Mayfield Road at Chinguacousy Rd (Signalized)	0.79 LOS C	1.11 LOS F	0.39 LOS B	0.59 LOS B	0.68 LOS C	0.68 LOS C	Worst approach: LOS C (17.69 sec.); RFC 0.8. (Arcady, PM, 2031)	
Mayfield Rd at New Collector Rd 1 (Unsignalized)	0.70 LOS F	0.79 LOS F	0.39 LOS F	0.28 LOS F	0.55 LOS A	0.54 LOS A	Worst approach: LOS B (12.19 sec.); RFC 0.3. (Arcady, AM, 2031)	
			Signal not warranted		Signal warranted			
Mayfield Rd at New Collector Rd 2 (Unsignalized)	0.75 LOS F	1.31 LOS F	0.33 LOS D	0.25 LOS D	0.53 LOS A	0.51 LOS A	Worst approach: LOS B (13.63 sec.); RFC 0.4. (Arcady, AM, 2031)	
			Signal not warranted		Signal warranted			
Mayfield Rd at McLaughlin Rd (Signalized)	0.90 LOS C	0.77 LOS C	0.62 LOS B	0.61 LOS B	0.73 LOS C	0.87 LOS C	Worst approach: LOS B (14.26 sec.); RFC 0.9. (Arcady, AM, 2031)	
Mayfield Rd at Van Kirk Dr (Unsignalized)	0.45 LOS F	0.12 LOS F	0.52 LOS A	0.43 LOS A	0.66 LOS B	0.73 LOS A	Worst approach: LOS A (8.79 sec.); RFC 0.8. (Arcady, PM, 2031)	
			Signal warranted		Signal warranted			
Mayfield Rd at Cresthaven Rd / Robertson Davies Dr (Signalized)	1.01 LOS D	0.93 LOS C	0.60 LOS B	0.52 LOS A	0.76 LOS B	0.81 LOS C	Worst approach: LOS F (64.71 sec.); RFC 0.99. (Arcady, PM)	
Mayfield Rd at Hurontario St (Signalized)	1.01 LOS D	0.96 LOS D	0.84 LOS C	0.80 LOS D	0.99 LOS E	0.96 LOS E	0.99 LOS E	0.96 LOS E
Mayfield Rd at Colonel Bertram Rd (Signalized)	0.46 LOS A	0.48 LOS A	0.33 LOS A	0.35 LOS A	0.70 LOS B	0.65 LOS B	0.70 LOS B	0.65 LOS B
Mayfield Rd at Summer Valley Dr (Signalized)	0.49 LOS A	0.52 LOS A	0.35 LOS A	0.37 LOS A	0.60 LOS A	0.73 LOS B	0.60 LOS A	0.73 LOS B
Valley View Drive (Unsignalized)	0.01 LOS B	0.01 LOS B	0.01 LOS B	0.01 LOS B	0.01 LOS C	0.01 LOS B	0.01 LOS C	0.01 LOS B
Mayfield Rd at Inder Heights Dr / Snellview Blvd (Unsignalized)	0.91 LOS F	1.35 LOS F	Not analyzed	Not analyzed	Not analyzed	Not analyzed	Not analyzed	Not analyzed
			Signal not warranted		Signal not warranted		Signal not warranted	
Mayfield Rd at Kennedy Rd (Signalized)	0.66 LOS E	1.36 LOS F	0.56 LOS C	0.89 LOS D	0.76 LOS C	0.93 LOS D	0.76 LOS C	0.93 LOS D
Mayfield Rd at Stonegate Dr (Unsignalized)	0.39 LOS C	0.11 LOS C	0.29 LOS C	0.09 LOS B	0.88 LOS F	0.30 LOS E	0.88 LOS F	0.30 LOS E
					Signal not warranted		Signal not warranted	
Mayfield Rd at Heart Lake Rd (Signalized)	1.17 LOS F	1.33 LOS F	0.77 LOS D	0.85 LOS D	0.96 LOS D	0.96 LOS D	0.96 LOS D	0.96 LOS D
SimTraffic Arterial Speed								
Eastbound					35 km/h	39 km/h	18 km/h	32 km/h
Westbound					41 km/h	32 km/h	32 km/h	15 km/h
Evaluation	As presently configured, Mayfield Road will not have sufficient capacity to accommodate the anticipated traffic demand by 2021 and 2031.		The capacity analysis shows that widening Mayfield Road to 6 lanes east of Hurontario Street and 4 lanes west of Hurontario Street in 2021 provides improvements to the corridor compared to 2021 Do Nothing Roadway Network Alternative.		In 2031 widening the corridor to 6 lanes west of Hurontario Street and additional turn lanes at certain intersections provide sufficient improvements to accommodate projected traffic growth.		Implementing roundabouts along the corridor from Chinguacousy Road to Cresthaven Road / Robertson Davies Drive would reduce the corridor speed compared to the 2031 Capital Projects Alternative.	

5. Summary and Recommendations

5.1 Summary

The Traffic Study associated with the Class Environmental Assessment for Mayfield Road from Chinguacousy Road to Heart Lake Road, in the Region of Peel is summarized as follows:

- Mayfield Road is located on the boundary between Brampton and Caledon within the Region of Peel. The length of Mayfield Road within the project limits is approximately 5.8km.
- The existing corridor has 12 intersections of which eight are signalized and four are unsignalized.
- Currently, the approximate range of two-way traffic volumes along Mayfield Road within the study limits are from 800 to 1,800 vehicles per hour in the AM and PM peak hours. The midday peak hour volumes are significantly lower than the AM and PM peak hour volumes along the corridor and are, therefore, not included in the analysis sections of the report.
- There are currently two transit routes operating along Mayfield Road: Route 7 Kennedy and Route 24 Van Kirk Industrial.
- There is an Orangeville rail crossing over Mayfield Road approximately 200m west of Cresthaven Road. The rail traffic over the Mayfield Road crossing is four trains per week. Excursion trains generally operate on Saturday and Sunday and add one train in each direction on these days.
- A grade separation is not warranted at the Orangeville rail crossing over Mayfield Road under existing conditions.
- Mayfield Road from Chinguacousy Road to Heart Lake Road is performing relatively well from a safety perspective with a low, or low to moderate potential for collision reduction.
- The capacity analysis shows that under existing conditions, all signalized and unsignalized intersections have good operational characteristics with low delays, reserve capacity and no critical movements.
- The corridor is located in a general area where a number of roadway improvements from different agencies (Peel, Brampton, Caledon) are included in capital programs and are anticipated to be completed by the 2021 and 2031 horizon years. The exception is the GTA-West Corridor for which the study is still under the formal EA process and it is not anticipated at this time that the corridor will be constructed by 2031.
- The Brampton Transportation and Transit Master Plan Sustainable Update 2009 identifies that there will be a number of transit improvements in the Study Area, including BRT on Hurontario Street. By 2021, there will be five transit corridors anticipated within the Study Area:
  - Mayfield Road
  - Chinguacousy Road
  - McLaughlin Road

- Hurontario Street
- Kennedy Road

→ GENIVAR has developed turning movement volumes for the 2021 and 2031 corridor networks and the projected turning movement volumes were approved by the Region of Peel on June 30, 2011. Subsequent to developing the turning movement projections in 2011, new information was provided to GENIVAR by the Region and as a result, the traffic projections for Mayfield Road have been revised for the corridor between Chinguacousy Road and McLaughlin Road and these were agreed upon by the Region on June 6, 2013.

→ A roundabout feasibility analysis was undertaken for the intersections along Mayfield Road and it was found that roundabouts from Chinguacousy Road to Cresthaven Road / Robertson Davies Drive may form a cohesive group and were, therefore, analyzed in the evaluation of corridor network alternatives.

→ The following network alternatives were developed for this study:

- 2021 Do Nothing Roadway Network Alternative
- 2021 Capital Projects Network Alternative
- 2031 Capital Projects Network Alternative
- 2031 Capital Projects Network Alternative with Roundabouts

→ A grade separation is not warranted at the Orangeville rail crossing over Mayfield Road under 2031 traffic conditions.

→ The detailed capacity analysis showed that as presently configured Mayfield Road will not have sufficient capacity to accommodate the anticipated traffic demand by 2021 and 2031.

→ Traffic analysis of the 2021 Capital Projects Network Alternative shows that widening Mayfield Road to six lanes east of Hurontario Street and four lanes west of Hurontario Street in 2021 provides improvements to the corridor compared to 2021 Do Nothing Roadway Network Alternative.

→ Traffic analysis shows that in 2031 widening the corridor to six lanes west of Hurontario Street and additional turn lanes at certain intersections provide sufficient improvements to accommodate projected traffic growth.

→ The evaluation of corridors shows that implementing roundabouts along the corridor from Chinguacousy Road to Cresthaven Road / Robertson Davies Drive would reduce the corridor speeds compared to the 2031 Capital Projects Alternative. Furthermore, roundabouts result in longer overall delays when minor street traffic volumes are low compared to major street traffic volumes, require initial public education, usually cost more to construct, construction staging for retrofits is costly and complicated, and are not suitable for accommodating the high truck volumes that are anticipated on Mayfield Road.

5.2 Recommendations

The following corridors are recommended for the 2021 and 2031 horizon years:

→ 2021 Capital Projects Network Alternative

→ 2031 Capital Projects Network Alternative

The following roadway improvements are recommended:

	Horizon YEAR	
	2021	2031
Roadway Improvements		
Mayfield Road		
Chinguacousy Road to Hurontario Street	Widen to four lanes	Widen to six lanes
Hurontario Street to Heart Lake Road	Widen to six lanes	Widen to six lanes
Chinguacousy Road		
Wanless Drive to Mayfield Road	Widen to four lanes	Widen to four lanes
New Collector Road 1		
Wanless Drive to Old School Road	New two lane Road	New two lane Road
New Collector Road 1 at Mayfield Road		Signalize
New Collector Road 2		
Wanless Drive to Mayfield Road	New two lane Road	New two lane Road
New Collector Road 2 at Mayfield Road		Signalize
McLaughlin Road		
Wanless Drive to Mayfield Road	Widen to four lanes	Widen to four lanes
Van Kirk Drive		
Van Kirk Drive at Mayfield Road	Signalize	Signalize
Kennedy Road		
Mayfield Road to south of Old School Road	Widen to four lanes	Widen to four lanes
Heart Lake Road		
Mayfield Road to south of Old School Road	Widen to four lanes	Widen to four lanes

The storage lane requirements at the study intersections for each horizon year are:

		Horizon Year		
		Existing	2021	2031
Intersection Storage Lane Requirements				
Chinguacousy Road	NB Left	N/A	30m	30m
	NB Right	N/A	Continued from through lane	Continued from through lane
	SB Left	N/A	30m	30m
	WB Left	N/A	80m	Dual 80m
	EB Left	N/A	30m	30m
New Collector Road 1	NB Left	N/A	30m	30m
	SB Left	N/A	30m	30m
	WB Left	N/A	30m	30m
	EB Left	N/A	30m	30m
New Collector Road 2	NB Left	N/A	30m	30m
	NB Right	N/A	Continued from through lane	Continued from through lane
	WB Left	N/A	30m	30m
McLaughlin Road	NB Left	N/A	30m	50m
	NB Right	25m	Continued from through lane	Continued from through lane
	SB Left	N/A	30m	30m
	WB Left	30m	60m	120m (protect property for 2 WBL)
	EB Left	30m	30m	30m
	EB Right	N/A	N/A	60m
Van Kirk Drive	NB Left	40m	40m	40m
	NB Right	N/A	Continued from through lane	Continued from through lane
	WB Left	35m	50m	50m
	EB Right	30m	30m	30m
Cresthaven/Robertson Davies	NB Left	35m	35m	35m
	SB Left	30m	30m	70m
	WB Left	30m	30m	30m
	WB Right	30m	30m	70m
	EB Left	30m	30m	60m
	EB Right	25m	25m	25m

		Horizon Year		
		Existing	2021	2031
Intersection Storage Lane Requirements				
Hurontario Street	NB Left	45m	85m	130m
	NB Right	60m	105m	150m
	SB Left	Dual 75m	Dual 75m	Dual 75m
	SB Right	75m	135m	165m
	WB Left	Dual 50m	Dual 60m	Dual 75m
	WB Right	55m	85m	120m
	EB Left	110m	120m	Dual 120m
	EB Right	100m	120m	165m
Colonel Bertram Road	NB Left	20m	20m	20m
	WB Left	50m	50m	50m
	WB Right	20m	20m	20m
	EB Left	30m	20m	20m
	EB Right	Continued from through lane	30m	30m
Summer Valley Drive	SB Left	30m	30m	30m
	SB Right	Continued from through lane	Continued from through lane	Continued from through lane
	EB Left	65m	65m	65m
Valley View Drive	NB Left/Through/Right	Continued from through lane	Continued from through lane	Continued from through lane
	WB Through/Right	Continued from through lane	Continued from through lane	Continued from through lane
	EB Through/Right	Continued from through lane	Continued from through lane	Continued from through lane
Inder Heights Drive/Snellview Boulevard	NB Left	15m	15m	15m
	WB Left	30m	30m	30m
	WB Right	N/A	30m	30m
	EB Left	N/A	30m	30m
Kennedy Road	NB Left	45m	70m	90m
	NB Right	Continued from through lane	N/A	115m
	SB Left	45m	45m	60m
	SB Right	N/A	N/A	140m

		Horizon Year		
		Existing	2021	2031
Intersection Storage Lane Requirements				
	WB Left	20m	75m	115m
	WB Right	N/A	N/A	55m
	EB Left	25m	90m	130m
	EB Right	Continued from through lane	N/A	75m
Stonegate Drive	WB Left	100m	100m	100m
Heart Lake Road	NB Left	105m	105m	105m
	NB Right	40m	40m	N/A
	SB Left	20m	Dual 130m	Dual 150m
	SB Right	20m	N/A	N/A
	WB Left	155m	155m	155m
	WB Right	155m	195m	260m
	EB Left	115m	115m	115m
	EB Right	175m	175m	175m

At the intersection of Cresthaven Road at Mayfield Road and the Orangeville rail track, the following alternative measures are recommended for 2021 and 2031:

- queue detector loops to allow queues to clear before they reach the track
- use upstream traffic signals to meter traffic so that it does not queue over the crossing
- improve signage at the rail crossing

Appendices

A. Turning Movement Count Sheets

B. List of Collisions 2005 to 2009

C. Peel Region Accident Analysis by Location Report

D. Signal Timing Plans for Intersections along Mayfield Road

E. Intersection and Queuing Analysis Summary Results

F. Intersection Capacity Analysis Sheets

G. Queue Calculation Sheets

H. 2031 Total Volumes from Class Environmental Assessments for Improvements to Chinguacousy Road from Wanless Drive to Mayfield Road and for McLaughlin Road from Wanless Drive to Mayfield Road

I. 2016 Traffic Volumes from Mount Please Block 51-2 Collector Road Environmental Assessment Study and Transportation Study, September 2011, prepared by BA Group Transportation Consultants

J. EMME-2 Model Screenline Growth Rates and Calculation of Traffic Volumes for Collector Road 1 and Collector Road 2

K. Roundabout Feasibility Analysis

L. Traffic Signal Warrants

M. SimTraffic Corridor Simulation

Appendix A

Turning Movement Count Sheets

MG8 ENG

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 7:15:00
To: 8:15:00

Municipality: Region of Peel
Site #: 0001419287
Intersection: Mayfield Road & Chinguacousy Roa
TFR File #: 5
Count date: 10-Mar-2010

Weather conditions:
Sunny, cold

Person(s) who counted:
ZORAN

**** Signalized Intersection ****

Major Road: Mayfield Road runs W/E

North Leg Total:	141
North Entering:	92
North Peds:	0
Peds Cross:	⋈

Cyclists	0	0	0	0
Trucks	0	1	1	2
Cars	3	72	15	90
Totals	3	73	16	

Cyclists	0
Trucks	4
Cars	45
Totals	49

East Leg Total:	1015
East Entering:	416
East Peds:	1
Peds Cross:	⧖

Chinguacousy Rd

Cyclists	Trucks	Cars	Totals
0	16	323	339

Cars	Trucks	Cyclists	Totals
5	1	0	6
310	16	0	326
78	6	0	84
393	23	0	

Mayfield Rd

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Cyclists	Trucks	Cars	Totals
0	1	1	2
0	13	491	504
0	1	33	34
0	15	525	

Mayfield Rd

Cars	Trucks	Cyclists	Totals
583	16	0	599

Chinguacousy Rd

Peds Cross:	⧖
West Peds:	0
West Entering:	540
West Leg Total:	879

Cars	183			
Trucks	8			
Cyclists	0			
Totals	191			

Cars	10	39	77	126
Trucks	0	2	2	4
Cyclists	0	0	0	0
Totals	10	41	79	

Peds Cross:	⋈
South Peds:	0
South Entering:	130
South Leg Total:	321

Comments

MG8 ENG

Mid-day Peak Diagram

Specified Period
From: 11:00:00
To: 14:00:00

One Hour Peak
From: 13:00:00
To: 14:00:00

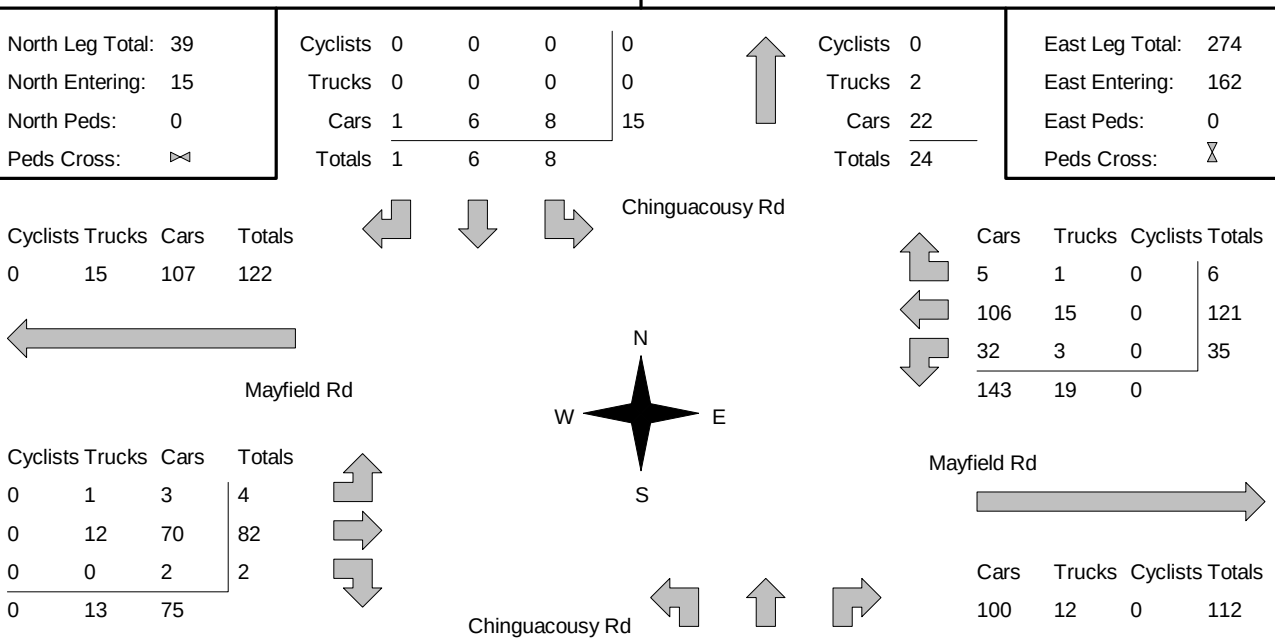
Municipality: Region of Peel
Site #: 0001419287
Intersection: Mayfield Road & Chinguacousy Roa
TFR File #: 5
Count date: 10-Mar-2010

Weather conditions:
Sunny, cold

Person(s) who counted:
ZORAN

**** Signalized Intersection ****

Major Road: Mayfield Road runs W/E



Comments

MG8 ENG

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 18:00:00

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

Municipality: Region of Peel
Site #: 0001419287
Intersection: Mayfield Road & Chinguacousy Roa
TFR File #: 5
Count date: 10-Mar-2010

Weather conditions:
Sunny, cold

Person(s) who counted:
ZORAN

**** Signalized Intersection ****

Major Road: Mayfield Road runs W/E

North Leg Total:	121			
North Entering:	50			
North Peds:	0			
Peds Cross:	⋈			
Cyclists	0	0	0	0
Trucks	0	0	0	0
Cars	2	39	9	50
Totals	2	39	9	
Cyclists	0			
Trucks	1			
Cars	70			
Totals	71			
East Leg Total:	1021			
East Entering:	593			
East Peds:	0			
Peds Cross:	⧖			

Chinguacousy Rd

Cyclists	Trucks	Cars	Totals
0	15	473	488

Mayfield Rd

Cars	Trucks	Cyclists	Totals
12	0	0	12
451	15	0	466
114	1	0	115
577	16	0	

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Cyclists	Trucks	Cars	Totals
0	1	3	4
0	7	331	338
0	0	14	14
0	8	348	

Mayfield Rd

Cars	Trucks	Cyclists	Totals
421	7	0	428

Chinguacousy Rd

Peds Cross:	⧖			
West Peds:	0			
West Entering:	356			
West Leg Total:	844			
Cars	167			
Trucks	1			
Cyclists	0			
Totals	168			
Cars	20	55	81	156
Trucks	0	0	0	0
Cyclists	0	0	0	0
Totals	20	55	81	
Peds Cross:	⋈			
South Peds:	0			
South Entering:	156			
South Leg Total:	324			

Comments

MG8 ENG

Total Count Diagram

Municipality: Region of Peel
Site #: 0001419287
Intersection: Mayfield Road & Chinguacousy Roa
TFR File #: 5
Count date: 10-Mar-2010

Weather conditions:
Sunny, cold

Person(s) who counted:
ZORAN

**** Signalized Intersection ****

Major Road: Mayfield Road runs W/E

North Leg Total:	771
North Entering:	385
North Peds:	0
Peds Cross:	⋈

Cyclists	0	0	0	0
Trucks	4	3	3	10
Cars	23	276	76	375
Totals	27	279	79	

Cyclists	0
Trucks	20
Cars	366
Totals	386

East Leg Total:	5368
East Entering:	2721
East Peds:	1
Peds Cross:	⧖

Chinguacousy Rd

Cyclists	Trucks	Cars	Totals
2	153	2108	2263

Cars	Trucks	Cyclists	Totals
78	8	0	86
1977	147	2	2126
493	16	0	509
2548	171	2	

Mayfield Rd

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W E
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Cyclists	Trucks	Cars	Totals
0	6	19	25
3	140	1970	2113
1	3	119	123
4	149	2108	

Mayfield Rd

Cars	Trucks	Cyclists	Totals
2485	158	4	2647

Chinguacousy Rd

Peds Cross:	⧖
West Peds:	0
West Entering:	2261
West Leg Total:	4524

Cars	888			
Trucks	22			
Cyclists	1			
Totals	911			

Cars	108	269	439	816
Trucks	2	6	15	23
Cyclists	0	0	1	1
Totals	110	275	455	

Peds Cross:	⋈
South Peds:	0
South Entering:	840
South Leg Total:	1751

Comments

MG8 ENG
Traffic Count Summary

Intersection: Mayfield Road & Chinguacousy Rd | **Count Date:** 10-Mar-2010 | **Municipality:** Region of Peel

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	North/South Total Approaches
7:00:00	0	2	0	2	0	7
8:00:00	14	58	3	75	0	205
9:00:00	11	69	9	89	0	194
11:00:00	0	0	1	1	0	1
12:00:00	9	15	4	28	0	77
13:00:00	7	17	2	26	0	74
14:00:00	9	16	1	26	0	74
15:00:00	1	1	0	2	0	6
16:00:00	9	14	3	26	0	165
17:00:00	10	42	3	55	0	213
18:00:00	9	45	1	55	0	209
Totals:	79	279	27	385	0	1225

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	1	1	3	5	0
8:00:00	10	39	81	130	0
9:00:00	15	23	67	105	0
11:00:00	0	0	0	0	0
12:00:00	5	16	28	49	0
13:00:00	4	14	30	48	0
14:00:00	0	20	28	48	0
15:00:00	1	0	3	4	0
16:00:00	31	47	61	139	0
17:00:00	26	61	71	158	0
18:00:00	17	54	83	154	0
Totals:	110	275	455	840	0

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	East/West Total Approaches
7:00:00	1	4	0	5	0	16
8:00:00	66	300	4	370	0	901
9:00:00	72	254	9	335	1	727
11:00:00	0	0	0	0	0	0
12:00:00	21	103	8	132	0	277
13:00:00	28	109	8	145	0	288
14:00:00	47	159	7	213	0	348
15:00:00	1	7	0	8	0	14
16:00:00	67	320	21	408	0	659
17:00:00	85	436	16	537	0	815
18:00:00	121	434	13	568	0	937
Totals:	509	2126	86	2721	1	4982

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	11	0	11	0
8:00:00	1	493	37	531	0
9:00:00	2	362	28	392	0
11:00:00	0	0	0	0	0
12:00:00	2	137	6	145	0
13:00:00	3	132	8	143	0
14:00:00	4	127	4	135	0
15:00:00	1	4	1	6	0
16:00:00	6	232	13	251	0
17:00:00	3	262	13	278	0
18:00:00	3	353	13	369	0
Totals:	25	2113	123	2261	0

Calculated Values for Traffic Crossing Major Street

Hours Ending:	8:00	9:00	12:00	13:00	14:00	16:00	17:00	18:00
Crossing Values:	82	96	30	28	29	87	97	80

MG8 ENG

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

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

Municipality: Region of Peel
Site #: 0001417895
Intersection: Mayfield Road & McLaughlin Road
TFR File #: 4
Count date: 10-Mar-2010

Weather conditions:
Sunny and cold

Person(s) who counted:
VELE

**** Signalized Intersection ****

Major Road: Mayfield Road runs W/E

North Leg Total:	242			
North Entering:	164			
North Peds:	0			
Peds Cross:	⋈			
Cyclists	0	0	0	0
Trucks	0	2	1	3
Cars	6	136	19	161
Totals	6	138	20	
Cyclists	0			
Trucks	3			
Cars	75			
Totals	78			
East Leg Total:	1167			
East Entering:	547			
East Peds:	0			
Peds Cross:	⋈			

McLaughlin Rd

Cyclists	Trucks	Cars	Totals
0	22	396	418

Mayfield Rd

Cars	Trucks	Cyclists	Totals
9	2	0	11
373	20	0	393
137	6	0	143
519	28	0	

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Cyclists	Trucks	Cars	Totals
0	0	17	17
0	8	499	507
0	1	76	77
0	9	592	

Mayfield Rd

Cars	Trucks	Cyclists	Totals
610	10	0	620

McLaughlin Rd

Peds Cross:	⋈			
West Peds:	0			
West Entering:	601			
West Leg Total:	1019			
Cars	349			
Trucks	9			
Cyclists	0			
Totals	358			
Cars	17	49	92	158
Trucks	2	1	1	4
Cyclists	0	0	0	0
Totals	19	50	93	
Peds Cross:	⋈			
South Peds:	0			
South Entering:	162			
South Leg Total:	520			

Comments

MG8 ENG

Mid-day Peak Diagram

Specified Period
From: 11:00:00
To: 14:00:00

One Hour Peak
From: 12:45:00
To: 13:45:00

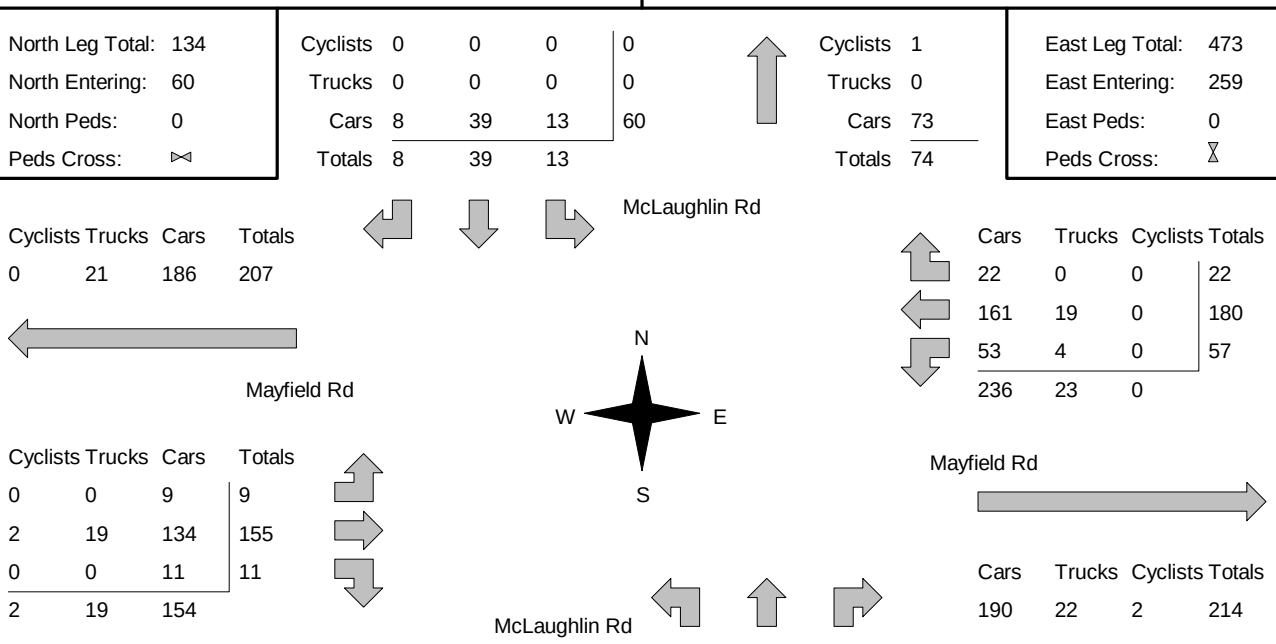
Municipality: Region of Peel
Site #: 0001417895
Intersection: Mayfield Road & McLaughlin Road
TFR File #: 4
Count date: 10-Mar-2010

Weather conditions:
Sunny and cold

Person(s) who counted:
VELE

**** Signalized Intersection ****

Major Road: Mayfield Road runs W/E



Comments

MG8 ENG

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 18:00:00

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

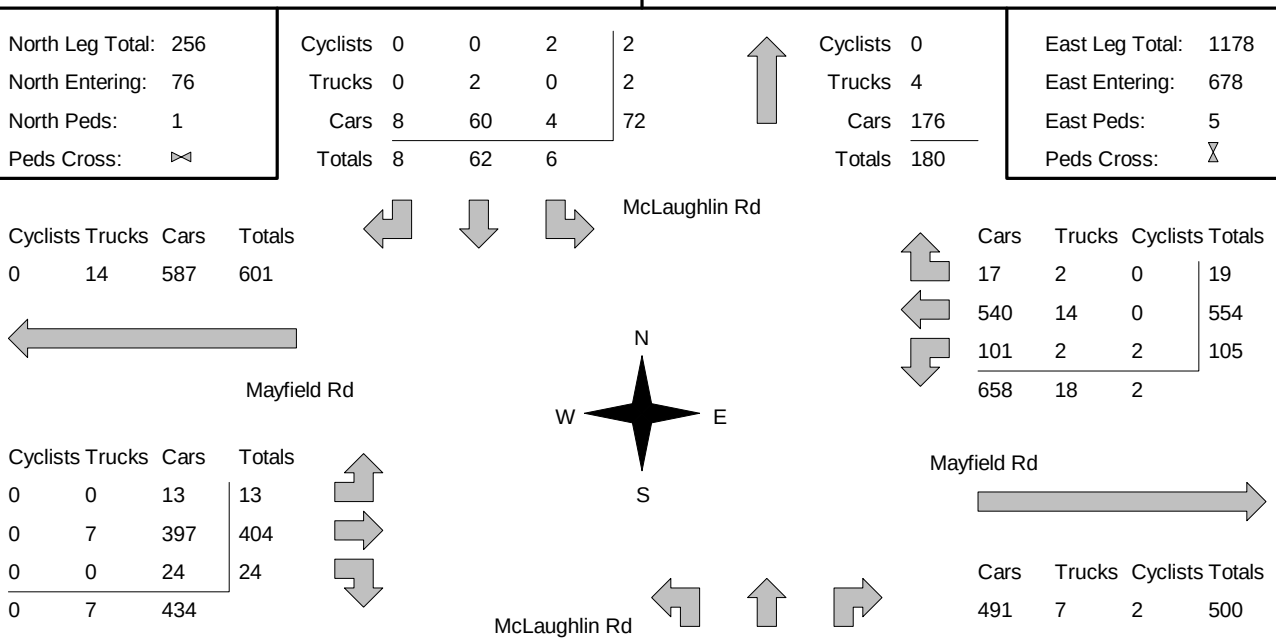
Municipality: Region of Peel
Site #: 0001417895
Intersection: Mayfield Road & McLaughlin Road
TFR File #: 4
Count date: 10-Mar-2010

Weather conditions:
Sunny and cold

Person(s) who counted:
VELE

**** Signalized Intersection ****

Major Road: Mayfield Road runs W/E



Comments

MG8 ENG

Total Count Diagram

Municipality: Region of Peel
Site #: 0001417895
Intersection: Mayfield Road & McLaughlin Road
TFR File #: 4
Count date: 10-Mar-2010

Weather conditions:
Sunny and cold

Person(s) who counted:
VELE

**** Signalized Intersection ****

Major Road: Mayfield Road runs W/E

North Leg Total:	1453
North Entering:	674
North Peds:	4
Peds Cross:	⋈

Cyclists	0	0	5	5
Trucks	2	11	5	18
Cars	57	506	88	651
Totals	59	517	98	

Cyclists	4
Trucks	14
Cars	761
Totals	779

East Leg Total:	6458
East Entering:	3351
East Peds:	7
Peds Cross:	⧖

McLaughlin Rd

Cyclists	Trucks	Cars	Totals
2	166	2618	2786

Cars	Trucks	Cyclists	Totals
125	7	2	134
2374	153	2	2529
656	29	3	688
3155	189	7	

Mayfield Rd

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W E
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Cyclists	Trucks	Cars	Totals
0	0	76	76
5	151	2247	2403
1	6	225	232
6	157	2548	

Mayfield Rd

Cars	Trucks	Cyclists	Totals
2913	180	14	3107

McLaughlin Rd

Peds Cross:	⧖
West Peds:	2
West Entering:	2711
West Leg Total:	5497

Cars	1387
Trucks	46
Cyclists	4
Totals	1437

Cars	187	560	578	1325
Trucks	11	7	24	42
Cyclists	0	2	4	6
Totals	198	569	606	

Peds Cross:	⋈
South Peds:	1
South Entering:	1373
South Leg Total:	2810

Comments

MG8 ENG
Traffic Count Summary

Intersection: Mayfield Road & McLaughlin Road | **Count Date:** 10-Mar-2010 | **Municipality:** Region of Peel

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	North/South Total Approaches
7:00:00	0	0	0	0	0	0
8:00:00	14	137	3	154	0	281
9:00:00	18	108	10	136	0	296
11:00:00	0	0	0	0	0	0
12:00:00	3	29	3	35	2	120
13:00:00	11	28	8	47	0	157
14:00:00	18	40	7	65	0	170
15:00:00	0	0	0	0	0	0
16:00:00	13	41	8	62	1	292
17:00:00	18	65	15	98	0	382
18:00:00	3	69	5	77	1	349
Totals:	98	517	59	674	4	2047

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	0	0	0	0
8:00:00	19	38	70	127	0
9:00:00	15	49	96	160	0
11:00:00	0	0	0	0	0
12:00:00	8	37	40	85	0
13:00:00	14	37	59	110	0
14:00:00	17	46	42	105	0
15:00:00	0	0	0	0	0
16:00:00	35	91	104	230	1
17:00:00	48	134	102	284	0
18:00:00	42	137	93	272	0
Totals:	198	569	606	1373	1

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	East/West Total Approaches
7:00:00	0	0	0	0	0	6
8:00:00	114	365	9	488	0	1081
9:00:00	137	321	18	476	0	932
11:00:00	1	12	1	14	0	17
12:00:00	45	126	15	186	0	367
13:00:00	47	140	19	206	0	386
14:00:00	49	192	20	261	0	432
15:00:00	0	6	1	7	0	11
16:00:00	80	367	18	465	1	775
17:00:00	107	481	13	601	2	949
18:00:00	107	518	19	644	4	1102
Totals:	687	2528	133	3348	7	6058

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	6	0	6	0
8:00:00	12	517	64	593	0
9:00:00	10	386	60	456	0
11:00:00	0	3	0	3	0
12:00:00	4	164	13	181	1
13:00:00	6	159	15	180	0
14:00:00	7	154	10	171	0
15:00:00	0	4	0	4	0
16:00:00	11	275	24	310	1
17:00:00	15	315	18	348	0
18:00:00	11	419	28	458	0
Totals:	76	2402	232	2710	2

Calculated Values for Traffic Crossing Major Street

Hours Ending:	8:00	9:00	12:00	13:00	14:00	16:00	17:00	18:00
Crossing Values:	170	141	49	62	81	141	202	186

MG8 ENG

Morning Peak Diagram

Specified Period	One Hour Peak
From: 7:00:00	**From:** 7:30:00
To: 9:00:00	**To:** 8:30:00

Municipality: Region of Peel
Site #: 0000000005
Intersection: Mayfield Road & Van Kirk Drive
TFR File #: 8
Count date: 22-Apr-2010

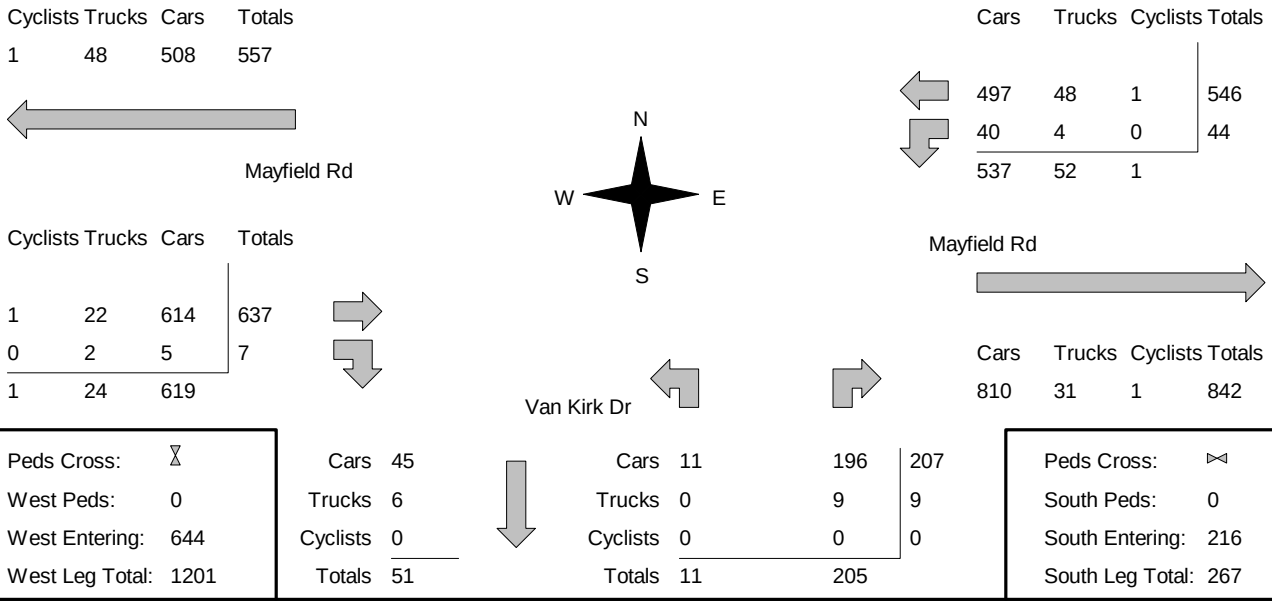
Weather conditions:
Sunny and warm

Person(s) who counted:
BOJAN

**** Non-Signalized Intersection ****

Major Road: Mayfield Road runs W/E

East Leg Total: 1432
East Entering: 590
East Peds: 0
Peds Cross:



Peds Cross:
West Peds: 0
West Entering: 644
West Leg Total: 1201

Cars 45
Trucks 6
Cyclists 0
Totals 51

Cars 11 196 207
Trucks 0 9 9
Cyclists 0 0 0
Totals 11 205

Peds Cross:
South Peds: 0
South Entering: 216
South Leg Total: 267

Comments

MG8 ENG

Mid-day Peak Diagram

Specified Period
From: 11:00:00
To: 14:00:00

One Hour Peak
From: 11:15:00
To: 12:15:00

Municipality: Region of Peel
Site #: 0000000005
Intersection: Mayfield Road & Van Kirk Drive
TFR File #: 8
Count date: 22-Apr-2010

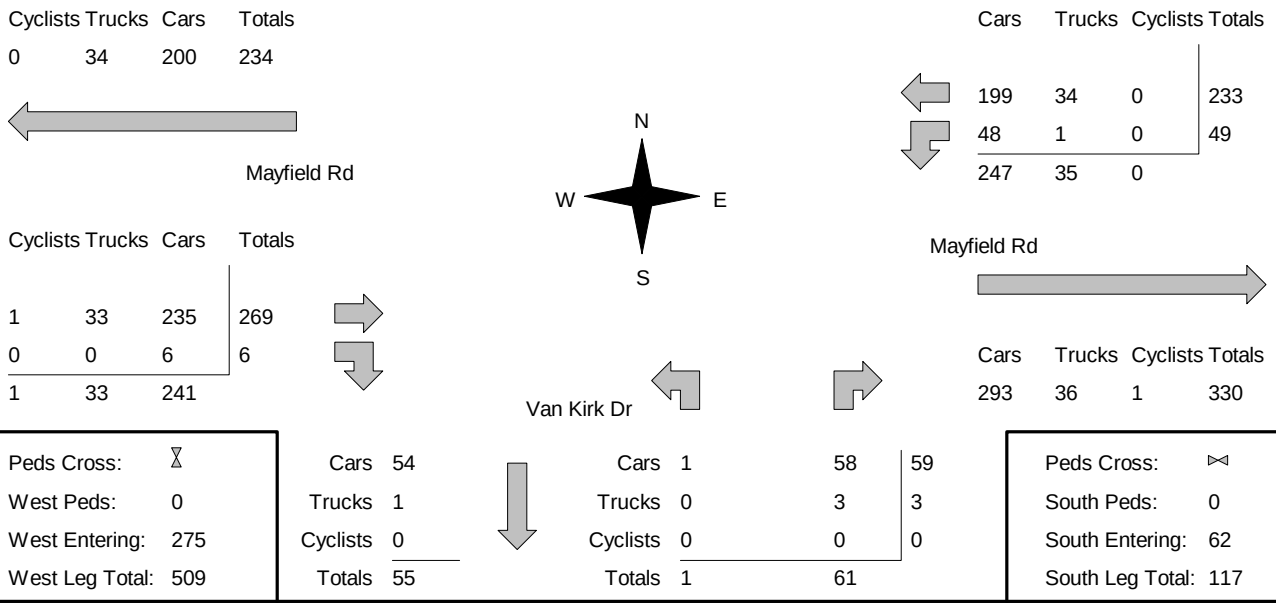
Weather conditions:
Sunny and warm

Person(s) who counted:
BOJAN

**** Non-Signalized Intersection ****

Major Road: Mayfield Road runs W/E

East Leg Total: 612
East Entering: 282
East Peds: 0
Peds Cross:



Peds Cross:
West Peds: 0
West Entering: 275
West Leg Total: 509

Cars 54
Trucks 1
Cyclists 0
Totals 55

Cars 1 58 59
Trucks 0 3 3
Cyclists 0 0 0
Totals 1 61

Peds Cross:
South Peds: 0
South Entering: 62
South Leg Total: 117

Comments

MG8 ENG

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 18:00:00

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

Municipality: Region of Peel
Site #: 0000000005
Intersection: Mayfield Road & Van Kirk Drive
TFR File #: 8
Count date: 22-Apr-2010

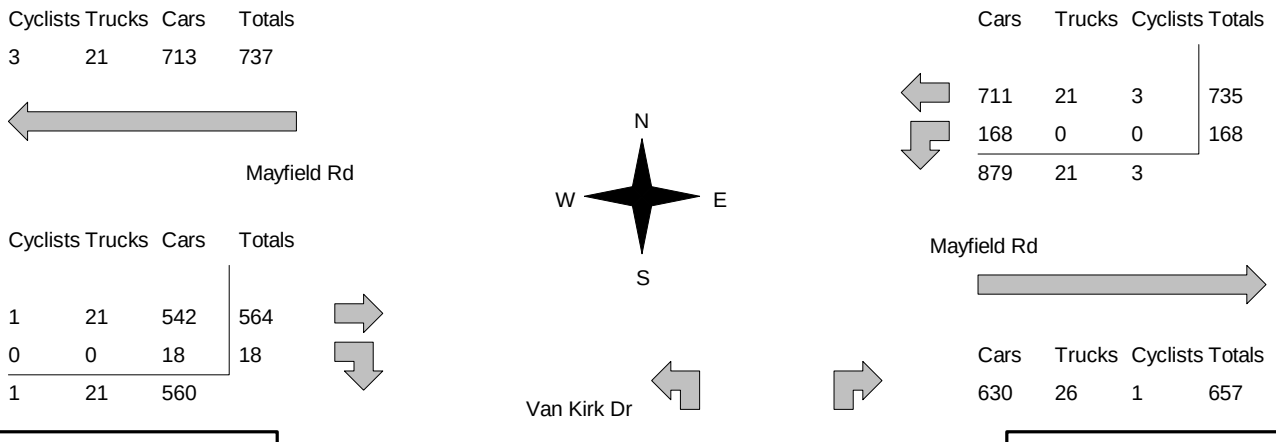
Weather conditions:
Sunny and warm

Person(s) who counted:
BOJAN

**** Non-Signalized Intersection ****

Major Road: Mayfield Road runs W/E

East Leg Total:	1560
East Entering:	903
East Peds:	0
Peds Cross:	⧖



Peds Cross:	⧖
West Peds:	0
West Entering:	582
West Leg Total:	1319

Cars	186		
Trucks	0		
Cyclists	0		
Totals	186		

Cars	2	88	90
Trucks	0	5	5
Cyclists	0	0	0
Totals	2	93	

Peds Cross:	⋈
South Peds:	1
South Entering:	95
South Leg Total:	281

Comments

MG8 ENG

Total Count Diagram

Municipality: Region of Peel
Site #: 0000000005
Intersection: Mayfield Road & Van Kirk Drive
TFR File #: 8
Count date: 22-Apr-2010

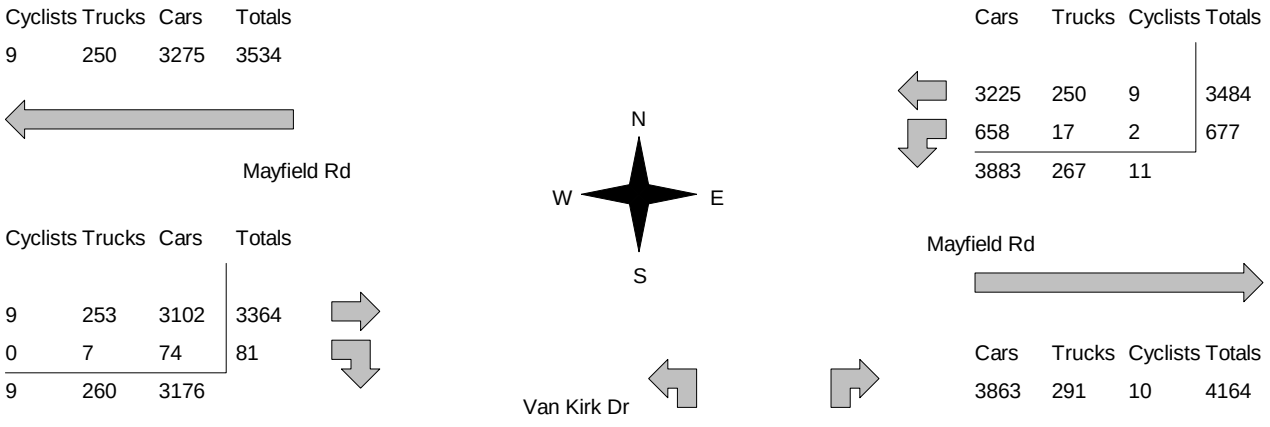
Weather conditions:
Sunny and warm

Person(s) who counted:
BOJAN

**** Non-Signalized Intersection ****

Major Road: Mayfield Road runs W/E

East Leg Total: 8325
East Entering: 4161
East Peds: 0
Peds Cross: ⧖



Peds Cross: ⧖
West Peds: 0
West Entering: 3445
West Leg Total: 6979

Cars 732
Trucks 24
Cyclists 2
Totals 758

Cars 50 761 811
Trucks 0 38 38
Cyclists 0 1 1
Totals 50 800

Peds Cross: ⋈
South Peds: 1
South Entering: 850
South Leg Total: 1608

Comments

MG8 ENG
Traffic Count Summary

Intersection: Mayfield Road & Van Kirk Drive | **Count Date:** 22-Apr-2010 | **Municipality:** Region of Peel

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	North/South Total Approaches
7:00:00	0	0	0	0	0	4
8:00:00	0	0	0	0	0	201
9:00:00	0	0	0	0	0	169
11:00:00	0	0	0	0	0	8
12:00:00	0	0	0	0	0	67
13:00:00	0	0	0	0	0	59
14:00:00	0	0	0	0	0	50
15:00:00	0	0	0	0	0	10
16:00:00	0	0	0	0	0	84
17:00:00	0	0	0	0	0	105
18:00:00	0	0	0	0	0	93
Totals:	0	0	0	0	0	850

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	1	0	3	4	0
8:00:00	10	0	191	201	0
9:00:00	10	0	159	169	0
11:00:00	0	0	8	8	0
12:00:00	2	0	65	67	0
13:00:00	3	0	56	59	0
14:00:00	4	0	46	50	0
15:00:00	0	0	10	10	0
16:00:00	6	0	78	84	0
17:00:00	8	0	97	105	1
18:00:00	6	0	87	93	0
Totals:	50	0	800	850	1

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	East/West Total Approaches
7:00:00	0	4	0	4	0	18
8:00:00	52	485	0	537	0	1181
9:00:00	48	482	0	530	0	1055
11:00:00	1	17	0	18	0	41
12:00:00	49	211	0	260	0	520
13:00:00	52	230	0	282	0	526
14:00:00	50	226	0	276	0	517
15:00:00	5	42	0	47	0	78
16:00:00	107	475	0	582	0	1002
17:00:00	142	624	0	766	0	1241
18:00:00	171	688	0	859	0	1427
Totals:	677	3484	0	4161	0	7606

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	13	1	14	0
8:00:00	0	643	1	644	0
9:00:00	0	509	16	525	0
11:00:00	0	22	1	23	0
12:00:00	0	255	5	260	0
13:00:00	0	239	5	244	0
14:00:00	0	234	7	241	0
15:00:00	0	30	1	31	0
16:00:00	0	411	9	420	0
17:00:00	0	460	15	475	0
18:00:00	0	548	20	568	0
Totals:	0	3364	81	3445	0

Calculated Values for Traffic Crossing Major Street

Hours Ending:	8:00	9:00	12:00	13:00	14:00	16:00	17:00	18:00
Crossing Values:	10	10	2	3	4	6	8	6

MG8 ENG

Count Date: 22-Apr-2010
Intersection: Mayfield Road & Van Kirk Drive **Municipality:** Region of Peel
Major Road: Mayfield Road **Major Road Runs:** E/W one lane each way
Operating Speed of Major Road: 80 km/hr **Operating under free flow conditions**

Warrant #1: Minimum Vehicular Volumes.

A. All Approaches. **Not Satisfied**

No. of Lanes	Minimum Requirements					Hours Ending								Percentage Warrant
	1 Lane Each Way		2 Lanes Each Way		3 Lanes									
Flow Condition	1 Lane F. Flow (Code 1)	1 Lane R. Flow (Code 2)	2 Lane F. Flow (Code 3)	2 Lane R. Flow (Code 4)	or More R. Flow (Code 5)	8:00	9:00	12:00	13:00	14:00	16:00	17:00	18:00	
100%	480	720	600	900	1125	1382	1224	587	585	567	1086	1346	1520	100%
80%	385	575	480	720	900									Yes: X / No:
All Approaches	100% Fulfilled					100	100	100	100	100	100	100	100	800
	80% Fulfilled													0
	Actual % if Below 80%													0

Total:	800
Actual Average (Total/8):	100%

B. Minor Street Both Approaches.

100%	180	255	180	255	255	201	169	67	59	50	84	105	93	100%
80%	143	203	143	203	203									Yes: / No: X
Minor Street Both Approaches	100% Fulfilled					100								100
	80% Fulfilled						80							80
	Actual % if Below 80%							37	33	28	47	58	52	254

Total:	434
Actual Average (Total/8):	54%

MG8 ENG

Count Date: 22-Apr-2010
Intersection: Mayfield Road & Van Kirk Drive **Municipality:** Region of Peel
Major Road: Mayfield Road **Major Road Runs:** E/W one lane each way
Operating Speed of Major Road: 80 km/hr **Operating under free flow conditions**

Warrant #2: Delay to Cross Traffic.

A. Major Street Both Approaches. **Not Satisfied**

No. of Lanes	Minimum Requirements					Hours Ending								Percentage Warrant
	1 Lane Each Way		2 Lanes Each Way		3 Lanes									
Flow Condition	1 Lane F. Flow (Code 1)	1 Lane R. Flow (Code 2)	2 Lane F. Flow (Code 3)	2 Lane R. Flow (Code 4)	or More R. Flow (Code 5)	8:00	9:00	12:00	13:00	14:00	16:00	17:00	18:00	
100%	480	720	600	900	1125	1181	1055	520	526	517	1002	1241	1427	100%
80%	385	575	480	720	900									Yes: X No:
All Approaches	100% Fulfilled					100	100	100	100	100	100	100	100	800
	80% Fulfilled													0
	Actual % if Below 80%													0

Total:	800
Actual Average (Total/8):	100%

B. Traffic Crossing Major Street.

100%	50	75	50	75	75	10	10	2	3	4	6	8	6	100%
80%	40	60	40	60	60									Yes: No: X
All Approaches	100% Fulfilled													0
	80% Fulfilled													0
	Actual % if Below 80%					20	20	4	6	8	12	16	12	98

Total:	98
Actual Average (Total/8):	12%

MG8 ENG

Count Date: 22-Apr-2010
Intersection: Mayfield Road & Van Kirk Drive
Municipality: Region of Peel
Major Road: Mayfield Road
Major Road Runs: E/W one lane each way
Operating Speed of Major Road: 80 km/hr
Operating under free flow conditions

Warrant #3: Accident Experience.

Not Satisfied

A. Reportable accidents within a twelve month period averaged over 36 consequtive months susceptible to correction by a traffic signal.

Minimum Requirements	Actual Number of Accidents	Average Number of Accidents	Fulfilled
5	0 in 3 years	0 per year	0%

B. Adequate trial of less restrictive remedies has failed to reduce accident frequency.	No
C. Either Warrant 1 (Minimum Vehicular Volume) or Warrant 2 (Delay to Cross Traffic) satisfied 80% or more.	No

Warrant #4: Combination Warrant.
(Used if no warrant satisfied 100%)

Not Satisfied

Minimum Requirements	Warrant Satisfied 80% or More	Fulfilled
Two Warrants Satisfied 80%	Warrant 1 (Minimum Vehicular Volume) Warrant 2 (Delay to Cross Traffic) Warrant 3 (Accident Experience)	No No No

Conclusion: Traffic signal not warranted.

MG8 ENG

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 7:15:00
To: 8:15:00

Municipality: Region of Peel
Site #: 0001416983
Intersection: Mayfield Road & Cresthaven/Rober
TFR File #: 1
Count date: 9-Mar-2010

Weather conditions:
Sunny and cold

Person(s) who counted:
CARMELO

**** Signalized Intersection ****

Major Road: Mayfield Road runs W/E

North Leg Total:	224
North Entering:	175
North Peds:	0
Peds Cross:	⋈

Cyclists	0	0	0	0
Trucks	3	4	0	7
Cars	62	18	88	168
Totals	65	22	88	

Cyclists	0
Trucks	10
Cars	39
Totals	49

East Leg Total:	1478
East Entering:	505
East Peds:	1
Peds Cross:	⧖

Robertson Davies Dr

Cyclists	Trucks	Cars	Totals
0	48	520	568

Cars	Trucks	Cyclists	Totals
12	3	0	15
415	45	0	460
26	4	0	30
453	52	0	

Mayfield Rd

N
W E
S

Cyclists	Trucks	Cars	Totals
0	6	24	30
0	21	734	755
0	1	5	6
0	28	763	

Mayfield Rd

Cars	Trucks	Cyclists	Totals
950	23	0	973

Cresthaven Rd

Peds Cross:	⧖
West Peds:	0
West Entering:	791
West Leg Total:	1359

Cars	49			
Trucks	9			
Cyclists	0			
Totals	58			

Cars	43	3	128	174
Trucks	0	1	2	3
Cyclists	0	0	0	0
Totals	43	4	130	

Peds Cross:	⋈
South Peds:	1
South Entering:	177
South Leg Total:	235

Comments

MG8 ENG

Mid-day Peak Diagram

Specified Period
From: 11:00:00
To: 14:00:00

One Hour Peak
From: 12:30:00
To: 13:30:00

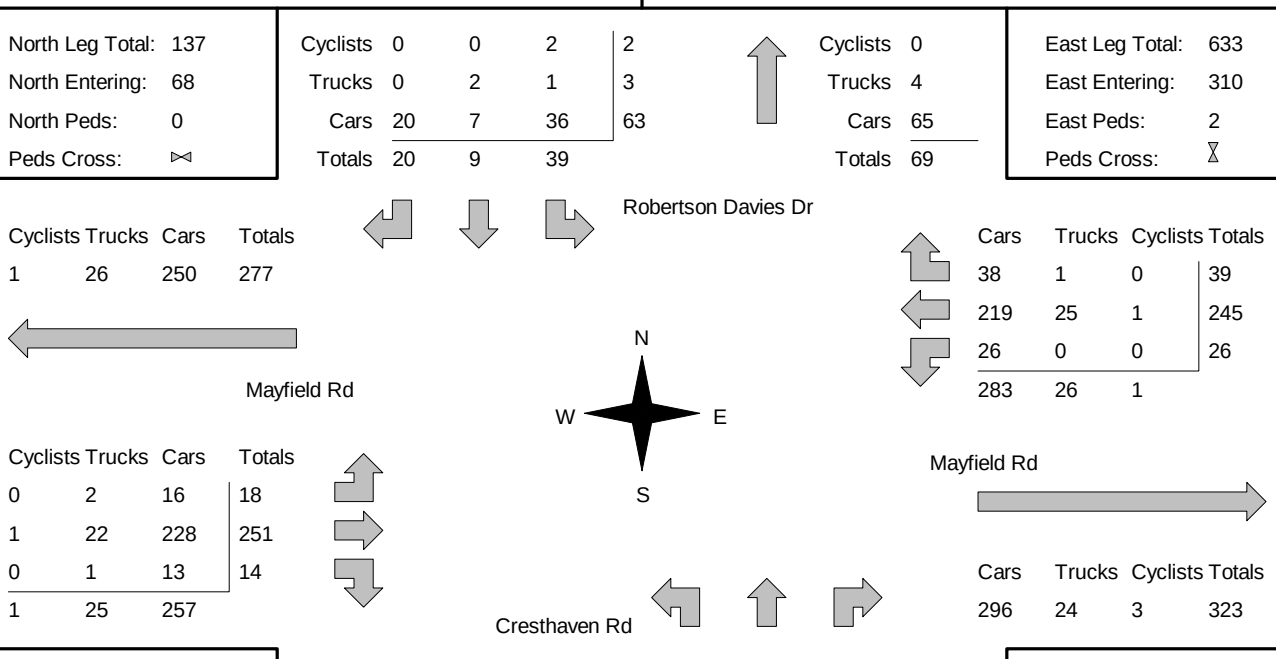
Municipality: Region of Peel
Site #: 0001416983
Intersection: Mayfield Road & Cresthaven/Rober
TFR File #: 1
Count date: 9-Mar-2010

Weather conditions:
Sunny and cold

Person(s) who counted:
CARMELO

**** Signalized Intersection ****

Major Road: Mayfield Road runs W/E



Comments

MG8 ENG

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 18:00:00

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

Municipality: Region of Peel
Site #: 0001416983
Intersection: Mayfield Road & Cresthaven/Rober
TFR File #: 1
Count date: 9-Mar-2010

Weather conditions:
Sunny and cold

Person(s) who counted:
CARMELO

**** Signalized Intersection ****

Major Road: Mayfield Road runs W/E

North Leg Total:	278
North Entering:	88
North Peds:	0
Peds Cross:	⋈

Cyclists	0	0	1	1
Trucks	0	0	0	0
Cars	33	10	44	87
Totals	33	10	45	

Cyclists	1
Trucks	5
Cars	184
Totals	190

East Leg Total:	1468
East Entering:	943
East Peds:	4
Peds Cross:	⧖

Robertson Davies Dr

Cyclists	Trucks	Cars	Totals
1	15	811	827

Cars	Trucks	Cyclists	Totals
80	1	1	82
761	14	1	776
84	1	0	85
925	16	2	

Mayfield Rd

N
W E
S

Cyclists	Trucks	Cars	Totals
0	4	69	73
4	11	435	450
0	0	47	47
4	15	551	

Mayfield Rd

Cars	Trucks	Cyclists	Totals
509	11	5	525

Cresthaven Rd

Peds Cross:	⧖
West Peds:	3
West Entering:	570
West Leg Total:	1397

Cars	141			
Trucks	1			
Cyclists	0			
Totals	142			

Cars	17	35	30	82
Trucks	1	0	0	1
Cyclists	0	0	0	0
Totals	18	35	30	

Peds Cross:	⋈
South Peds:	2
South Entering:	83
South Leg Total:	225

Comments

MG8 ENG

Total Count Diagram

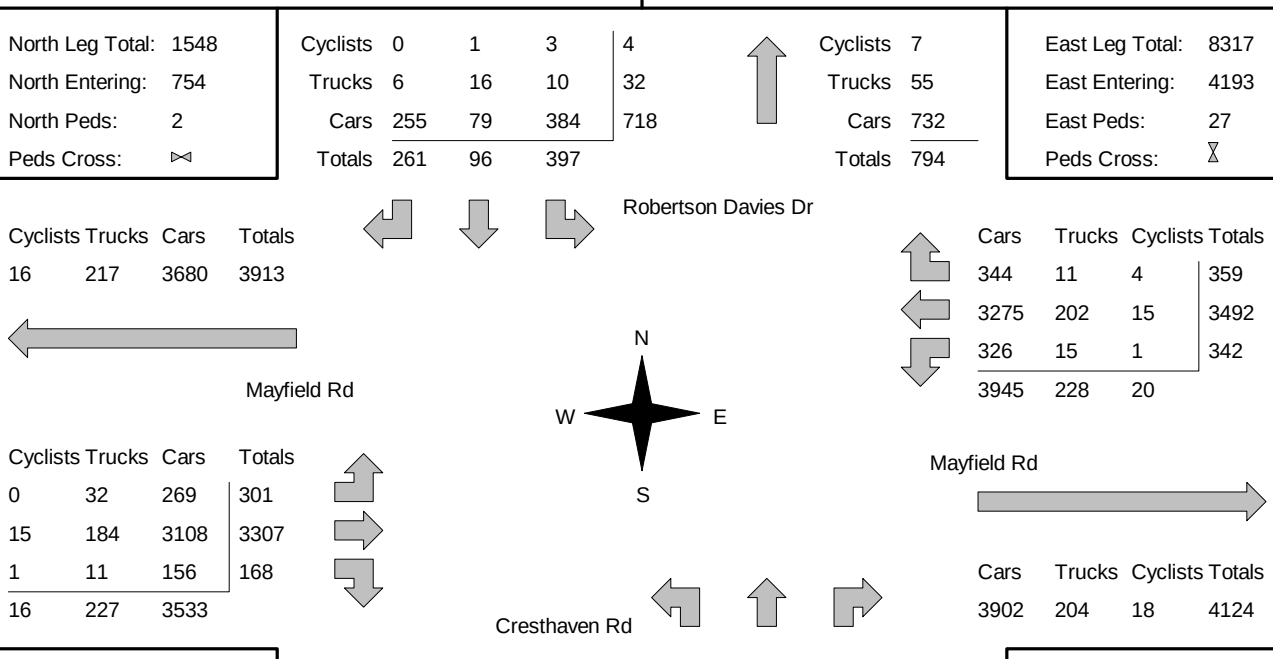
Municipality: Region of Peel
Site #: 0001416983
Intersection: Mayfield Road & Cresthaven/Rober
TFR File #: 1
Count date: 9-Mar-2010

Weather conditions:
Sunny and cold

Person(s) who counted:
CARMELO

**** Signalized Intersection ****

Major Road: Mayfield Road runs W/E



Comments

MG8 ENG
Traffic Count Summary

Intersection: Mayfield Road & Cresthaven/Robe | **Count Date:** 9-Mar-2010 | **Municipality:** Region of Peel

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	North/South Total Approaches
7:00:00	2	0	2	4	0	4
8:00:00	93	17	74	184	0	357
9:00:00	74	10	46	130	0	257
11:00:00	0	0	0	0	0	2
12:00:00	32	14	11	57	0	113
13:00:00	42	9	21	72	0	115
14:00:00	35	7	15	57	0	114
15:00:00	1	1	0	2	0	2
16:00:00	30	12	28	70	1	158
17:00:00	35	13	31	79	1	158
18:00:00	53	13	33	99	0	188
Totals:	397	96	261	754	2	1468

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	0	0	0	0
8:00:00	42	3	128	173	1
9:00:00	32	12	83	127	0
11:00:00	0	0	2	2	0
12:00:00	9	15	32	56	0
13:00:00	5	9	29	43	0
14:00:00	15	12	30	57	0
15:00:00	0	0	0	0	0
16:00:00	19	23	46	88	1
17:00:00	24	20	35	79	1
18:00:00	14	40	35	89	3
Totals:	160	134	420	714	6

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	East/West Total Approaches
7:00:00	0	3	0	3	0	7
8:00:00	20	439	17	476	1	1236
9:00:00	21	374	15	410	4	1059
11:00:00	0	2	0	2	0	4
12:00:00	19	215	33	267	4	537
13:00:00	21	211	34	266	1	558
14:00:00	26	251	38	315	1	575
15:00:00	1	4	1	6	0	18
16:00:00	65	535	60	660	5	1124
17:00:00	81	696	77	854	7	1373
18:00:00	88	761	84	933	4	1477
Totals:	342	3491	359	4192	27	7968

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	4	0	4	0
8:00:00	25	730	5	760	0
9:00:00	29	604	16	649	0
11:00:00	2	0	0	2	0
12:00:00	18	239	13	270	3
13:00:00	20	260	12	292	2
14:00:00	17	233	10	260	0
15:00:00	1	10	1	12	0
16:00:00	53	380	31	464	9
17:00:00	64	416	39	519	7
18:00:00	72	431	41	544	3
Totals:	301	3307	168	3776	24

Calculated Values for Traffic Crossing Major Street

Hours Ending:	8:00	9:00	12:00	13:00	14:00	16:00	17:00	18:00
Crossing Values:	153	122	63	59	63	86	93	114

MG8 ENG

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 7:15:00
To: 8:15:00

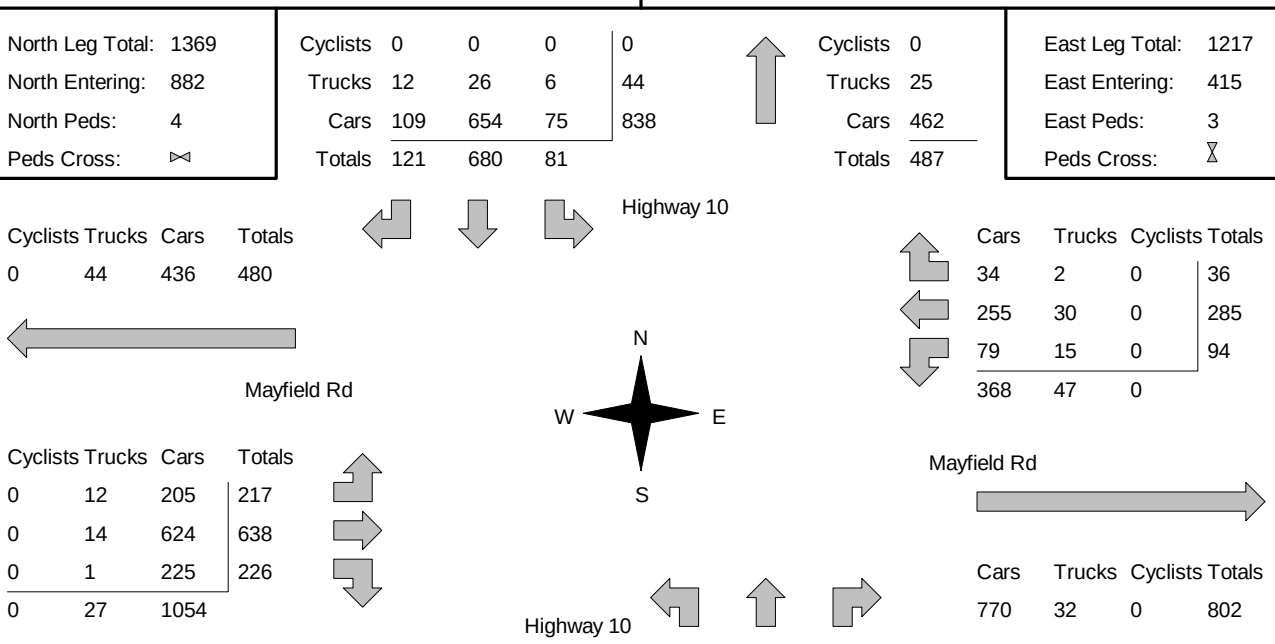
Municipality: Region of Peel
Site #: 0001416512
Intersection: Mayfield Road & Highway 10
TFR File #: 1
Count date: 9-Mar-2010

Weather conditions:
Cloudy

Person(s) who counted:
ZORAN
VELE

**** Signalized Intersection ****

Major Road: Mayfield Road runs W/E



Comments

MG8 ENG

Mid-day Peak Diagram

Specified Period
From: 11:00:00
To: 14:00:00

One Hour Peak
From: 12:15:00
To: 13:15:00

Municipality: Region of Peel
Site #: 0001416512
Intersection: Mayfield Road & Highway 10
TFR File #: 1
Count date: 9-Mar-2010

Weather conditions:
Cloudy

Person(s) who counted:
ZORAN
VELE

**** Signalized Intersection ****

Major Road: Mayfield Road runs W/E

North Leg Total:	836			
North Entering:	388			
North Peds:	1			
Peds Cross:	⋈			

Cyclists	1	5	0	6
Trucks	6	21	2	29
Cars	57	248	48	353
Totals	64	274	50	

Cyclists	3
Trucks	31
Cars	414
Totals	448

East Leg Total:	650
East Entering:	317
East Peds:	16
Peds Cross:	⧖

Highway 10

Cyclists	Trucks	Cars	Totals
4	27	269	300

Cars	Trucks	Cyclists	Totals
51	2	1	54
138	19	2	159
96	7	1	104
285	28	4	

Mayfield Rd

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Cyclists	Trucks	Cars	Totals
0	5	70	75
0	25	169	194
1	1	54	56
1	31	293	

Mayfield Rd

Cars	Trucks	Cyclists	Totals
291	42	0	333

Highway 10

Peds Cross:	⧖		
West Peds:	3		
West Entering:	325		
West Leg Total:	625		

Cars	398			
Trucks	29			
Cyclists	7			
Totals	434			

Cars	74	293	74	441
Trucks	2	24	15	41
Cyclists	1	2	0	3
Totals	77	319	89	

Peds Cross:	⋈
South Peds:	8
South Entering:	485
South Leg Total:	919

Comments

MG8 ENG

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 18:00:00

One Hour Peak
From: 16:30:00
To: 17:30:00

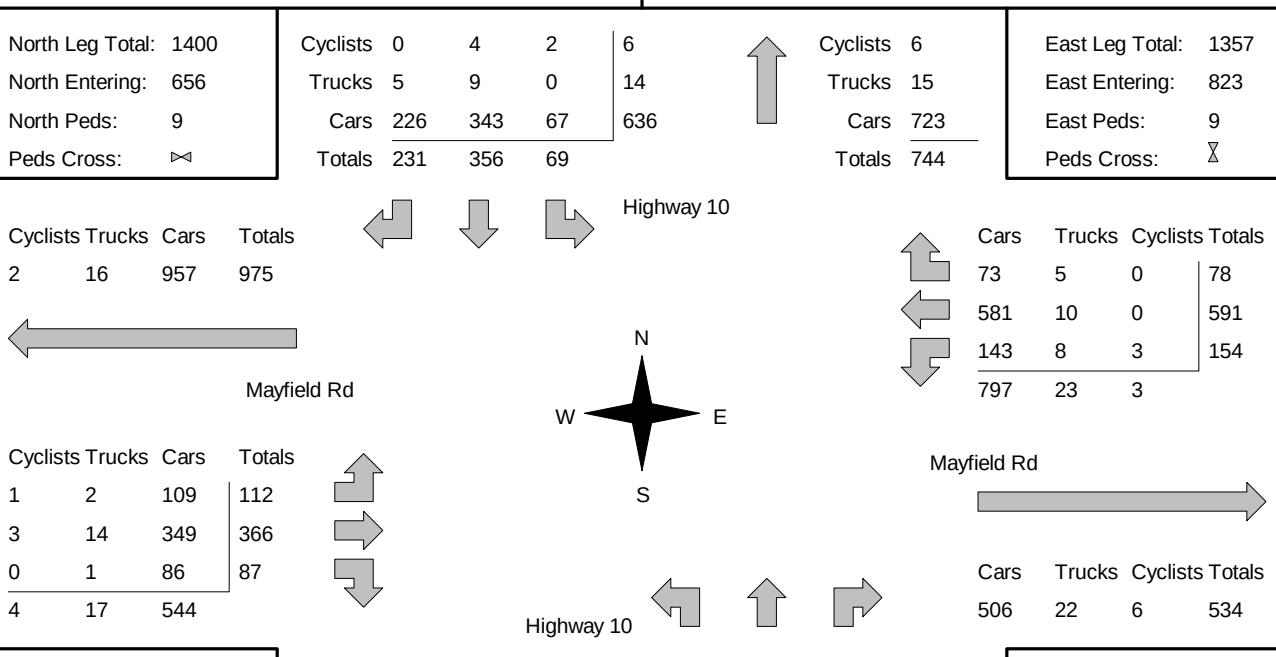
Municipality: Region of Peel
Site #: 0001416512
Intersection: Mayfield Road & Highway 10
TFR File #: 1
Count date: 9-Mar-2010

Weather conditions:
Cloudy

Person(s) who counted:
ZORAN
VELE

**** Signalized Intersection ****

Major Road: Mayfield Road runs W/E



Comments

MG8 ENG

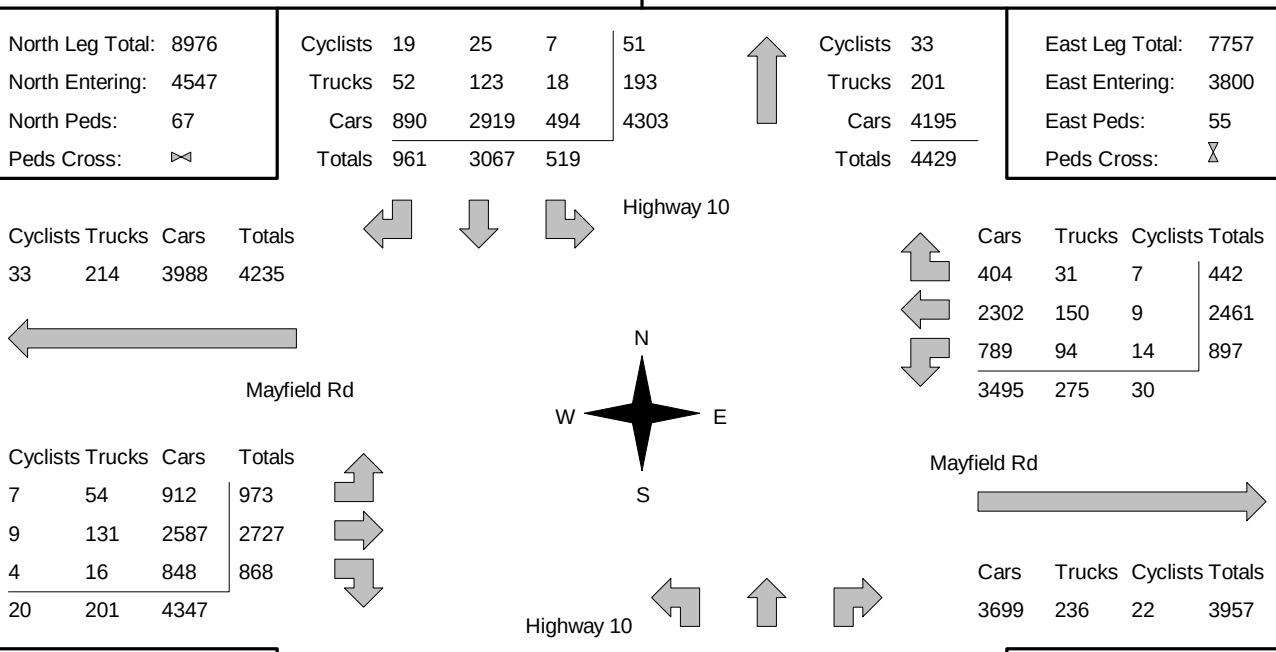
Total Count Diagram

Municipality: Region of Peel
Site #: 0001416512
Intersection: Mayfield Road & Highway 10
TFR File #: 1
Count date: 9-Mar-2010

Weather conditions: Cloudy
Person(s) who counted: ZORAN, VELE

**** Signalized Intersection ****

Major Road: Mayfield Road runs W/E



Comments

MG8 ENG
Traffic Count Summary

Intersection: Mayfield Road & Highway 10 | **Count Date:** 9-Mar-2010 | **Municipality:** Region of Peel

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	North/South Total Approaches
7:00:00	0	5	2	7	0	20
8:00:00	74	660	119	853	4	1251
9:00:00	88	622	95	805	5	1265
11:00:00	0	1	1	2	0	11
12:00:00	59	241	62	362	6	802
13:00:00	44	280	60	384	1	855
14:00:00	39	217	50	306	2	761
15:00:00	0	1	0	1	0	46
16:00:00	74	315	162	551	21	1242
17:00:00	73	355	201	629	13	1403
18:00:00	68	370	208	646	15	1428
Totals:	519	3067	960	4546	67	9084

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	2	8	3	13	0
8:00:00	79	234	85	398	6
9:00:00	84	309	67	460	8
11:00:00	0	7	2	9	0
12:00:00	77	274	89	440	5
13:00:00	76	310	85	471	10
14:00:00	81	293	81	455	8
15:00:00	14	26	5	45	0
16:00:00	103	492	96	691	13
17:00:00	148	528	98	774	7
18:00:00	149	533	100	782	15
Totals:	813	3014	711	4538	72

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	East/West Total Approaches
7:00:00	5	8	6	19	2	22
8:00:00	75	262	35	372	1	1434
9:00:00	112	222	51	385	5	1220
11:00:00	0	3	3	6	0	23
12:00:00	91	134	41	266	4	609
13:00:00	108	134	47	289	2	639
14:00:00	100	171	49	320	18	631
15:00:00	2	6	0	8	0	16
16:00:00	130	403	80	613	5	1116
17:00:00	140	517	73	730	7	1259
18:00:00	134	601	57	792	11	1396
Totals:	897	2461	442	3800	55	8365

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	1	0	2	3	0
8:00:00	201	669	192	1062	6
9:00:00	184	453	198	835	6
11:00:00	4	11	2	17	0
12:00:00	68	216	59	343	4
13:00:00	76	200	74	350	4
14:00:00	71	179	61	311	10
15:00:00	4	4	0	8	0
16:00:00	115	295	93	503	16
17:00:00	113	322	94	529	16
18:00:00	133	378	93	604	18
Totals:	970	2727	868	4565	80

Calculated Values for Traffic Crossing Major Street

Hours Ending:	8:00	9:00	12:00	13:00	14:00	16:00	17:00	18:00
Crossing Values:	820	805	418	436	441	690	772	779

MG8 ENG

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 7:15:00
To: 8:15:00

Municipality: Region of Peel
Site #: 0001416342
Intersection: Mayfield Road & Colonel Bertram R
TFR File #: 1
Count date: 9-Mar-2010

Weather conditions:
Cloudy

Person(s) who counted:
ZELJKO

**** Signalized Intersection ****

Major Road: Mayfield Road runs W/E

North Leg Total:	77
North Entering:	41
North Peds:	0
Peds Cross:	⋈

Cyclists	0	0	0	0
Trucks	0	0	1	1
Cars	24	2	14	40
Totals	24	2	15	

Cyclists	0
Trucks	1
Cars	35
Totals	36

East Leg Total:	1237
East Entering:	465
East Peds:	4
Peds Cross:	⧖

Access

Cyclists	Trucks	Cars	Totals
0	50	385	435

Cars	Trucks	Cyclists	Totals
3	0	0	3
340	50	0	390
70	2	0	72
413	52	0	

Mayfield Rd

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Cyclists	Trucks	Cars	Totals
0	1	32	33
0	31	657	688
0	1	11	12
0	33	700	

Mayfield Rd

Cars	Trucks	Cyclists	Totals
738	34	0	772

Colonel Bertram Road

Peds Cross:	⧖
West Peds:	1
West Entering:	733
West Leg Total:	1168

Cars	83			
Trucks	3			
Cyclists	0			
Totals	86			

Cars	21	0	67	88
Trucks	0	0	2	2
Cyclists	0	0	0	0
Totals	21	0	69	

Peds Cross:	⋈
South Peds:	4
South Entering:	90
South Leg Total:	176

Comments

MG8 ENG

Mid-day Peak Diagram

Specified Period
From: 11:00:00
To: 14:00:00

One Hour Peak
From: 12:45:00
To: 13:45:00

Municipality: Region of Peel
Site #: 0001416342
Intersection: Mayfield Road & Colonel Bertram R
TFR File #: 1
Count date: 9-Mar-2010

Weather conditions:
Cloudy

Person(s) who counted:
ZELJKO

**** Signalized Intersection ****

Major Road: Mayfield Road runs W/E

North Leg Total:	98
North Entering:	61
North Peds:	3
Peds Cross:	⋈

Cyclists	0	0	0	0
Trucks	2	0	0	2
Cars	34	9	16	59
Totals	36	9	16	

Cyclists	0
Trucks	0
Cars	37
Totals	37

East Leg Total:	636
East Entering:	328
East Peds:	0
Peds Cross:	⧖

Access

Cyclists	Trucks	Cars	Totals
0	35	294	329

Cars	Trucks	Cyclists	Totals
8	0	0	8
235	33	0	268
52	0	0	52
295	33	0	

Mayfield Rd

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Cyclists	Trucks	Cars	Totals
0	0	27	27
0	35	214	249
0	0	5	5
0	35	246	

Mayfield Rd

Cars	Trucks	Cyclists	Totals
272	36	0	308

Colonel Bertram Road

Peds Cross:	⧖
West Peds:	6
West Entering:	281
West Leg Total:	610

Cars	66
Trucks	0
Cyclists	0
Totals	66

Cars	25	2	42	69
Trucks	0	0	1	1
Cyclists	0	0	0	0
Totals	25	2	43	

Peds Cross:	⋈
South Peds:	4
South Entering:	70
South Leg Total:	136

Comments

MG8 ENG

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 18:00:00

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

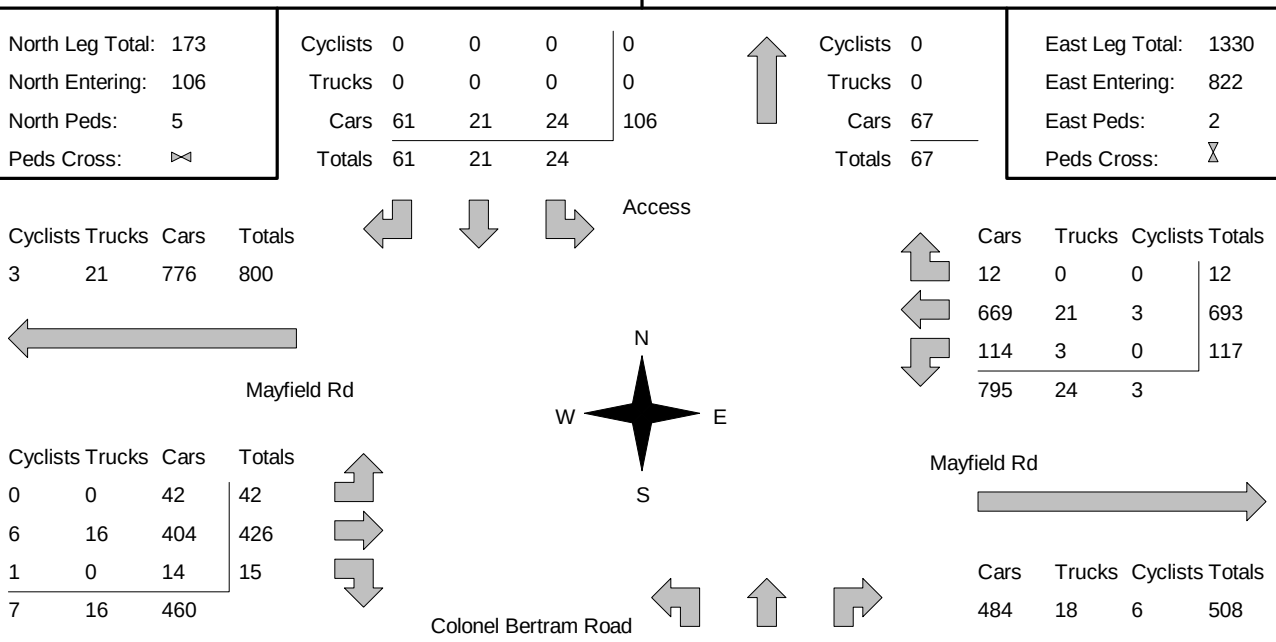
Municipality: Region of Peel
Site #: 0001416342
Intersection: Mayfield Road & Colonel Bertram R
TFR File #: 1
Count date: 9-Mar-2010

Weather conditions:
Cloudy

Person(s) who counted:
ZELJKO

**** Signalized Intersection ****

Major Road: Mayfield Road runs W/E



Comments

MG8 ENG

Total Count Diagram

Municipality: Region of Peel
Site #: 0001416342
Intersection: Mayfield Road & Colonel Bertram R
TFR File #: 1
Count date: 9-Mar-2010

Weather conditions: Cloudy
Person(s) who counted: ZELJKO

**** Signalized Intersection ****

Major Road: Mayfield Road runs W/E

North Leg Total:	878			
North Entering:	481			
North Peds:	25			
Peds Cross:	⋈			
Cyclists	1	0	0	1
Trucks	5	0	1	6
Cars	296	77	101	474
Totals	302	77	102	
Cyclists	2			
Trucks	4			
Cars	391			
Totals	397			
East Leg Total:	7669			
East Entering:	3974			
East Peds:	14			
Peds Cross:	⧖			

Access

Cyclists	Trucks	Cars	Totals
16	291	3467	3774

Cars	Trucks	Cyclists	Totals
67	0	0	67
2965	284	15	3264
621	14	8	643
3653	298	23	

Mayfield Rd

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Cyclists	Trucks	Cars	Totals
1	4	270	275
14	244	2873	3131
3	2	78	83
18	250	3221	

Mayfield Rd

Cars	Trucks	Cyclists	Totals
3422	256	17	3695

Colonel Bertram Road

Peds Cross:	⧖			
West Peds:	22			
West Entering:	3489			
West Leg Total:	7263			
Cars	776			
Trucks	16			
Cyclists	11			
Totals	803			
Cars	206	54	448	708
Trucks	2	0	11	13
Cyclists	0	1	3	4
Totals	208	55	462	
Peds Cross:	⋈			
South Peds:	49			
South Entering:	725			
South Leg Total:	1528			

Comments

MG8 ENG
Traffic Count Summary

Intersection: Mayfield Road & Colonel Bertram | **Count Date:** 9-Mar-2010 | **Municipality:** Region of Peel

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	North/South Total Approaches
7:00:00	0	0	0	0	0	0
8:00:00	13	1	16	30	0	130
9:00:00	6	1	24	31	0	126
11:00:00	0	0	0	0	0	0
12:00:00	13	12	29	54	2	118
13:00:00	10	10	34	54	2	129
14:00:00	12	10	32	54	2	123
15:00:00	0	0	0	0	0	0
16:00:00	8	6	50	64	5	165
17:00:00	19	21	56	96	3	202
18:00:00	21	16	61	98	11	213
Totals:	102	77	302	481	25	1206

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	0	0	0	0
8:00:00	14	1	85	100	4
9:00:00	21	3	71	95	2
11:00:00	0	0	0	0	0
12:00:00	19	6	39	64	5
13:00:00	23	11	41	75	5
14:00:00	24	4	41	69	2
15:00:00	0	0	0	0	0
16:00:00	33	6	62	101	8
17:00:00	36	11	59	106	9
18:00:00	38	13	64	115	14
Totals:	208	55	462	725	49

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	East/West Total Approaches
7:00:00	2	0	0	2	0	2
8:00:00	67	350	3	420	2	1167
9:00:00	66	332	3	401	2	935
11:00:00	1	2	0	3	0	12
12:00:00	55	219	5	279	1	580
13:00:00	51	231	8	290	0	570
14:00:00	52	255	5	312	0	575
15:00:00	2	9	0	11	0	11
16:00:00	113	544	19	676	4	1108
17:00:00	125	651	13	789	3	1236
18:00:00	109	670	11	790	2	1266
Totals:	643	3263	67	3973	14	7462

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	0	0	0	0
8:00:00	31	703	13	747	1
9:00:00	30	489	15	534	1
11:00:00	2	7	0	9	0
12:00:00	40	256	5	301	2
13:00:00	26	252	2	280	5
14:00:00	28	230	5	263	3
15:00:00	0	0	0	0	0
16:00:00	35	383	14	432	5
17:00:00	39	393	15	447	1
18:00:00	44	418	14	476	4
Totals:	275	3131	83	3489	22

Calculated Values for Traffic Crossing Major Street

Hours Ending:	8:00	9:00	12:00	13:00	14:00	16:00	17:00	18:00
Crossing Values:	31	33	47	49	49	56	80	81

MG8 ENG

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 7:15:00
To: 8:15:00

Municipality: Region of Peel
Site #: 0001416141
Intersection: Mayfield Road & Summer Valley Dr
TFR File #: 8
Count date: 4-Mar-2010

Weather conditions:
Sunny w clouds

Person(s) who counted:
CARMELO

**** Signalized Intersection ****

Major Road: Mayfield Road runs W/E

North Leg Total: 120
North Entering: 81
North Peds: 0
Peds Cross: ⋈

Cyclists	0	0	0
Trucks	2	1	3
Cars	48	30	78
Totals	50	31	

Cyclists	0
Trucks	3
Cars	36
Totals	39

East Leg Total: 1180
East Entering: 422
East Peds: 2
Peds Cross: ⧖

Summer Valley Dr

Cyclists	Trucks	Cars	Totals
0	61	397	458

Cars	Trucks	Cyclists	Totals
12	2	0	14
349	59	0	408
361	61	0	

Mayfield Rd

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Cyclists	Trucks	Cars	Totals
0	1	24	25
0	37	690	727
0	38	714	

Mayfield Rd

Cars	Trucks	Cyclists	Totals
720	38	0	758

Peds Cross: ⧖
West Peds: 5
West Entering: 752
West Leg Total: 1210

Comments

MG8 ENG

Mid-day Peak Diagram

Specified Period
From: 11:00:00
To: 14:00:00

One Hour Peak
From: 12:15:00
To: 13:15:00

Municipality: Region of Peel
Site #: 0001416141
Intersection: Mayfield Road & Summer Valley Dr
TFR File #: 8
Count date: 4-Mar-2010

Weather conditions:
Sunny w clouds

Person(s) who counted:
CARMELO

**** Signalized Intersection ****

Major Road: Mayfield Road runs W/E

North Leg Total: 108
North Entering: 55
North Peds: 0
Peds Cross: ⋈

Cyclists	0	0	0
Trucks	1	2	3
Cars	34	18	52
Totals	35	20	

Cyclists	0
Trucks	4
Cars	49
Totals	53

East Leg Total: 630
East Entering: 316
East Peds: 0
Peds Cross: ⧖

Summer Valley Dr

Cyclists	Trucks	Cars	Totals
0	30	304	334

Mayfield Rd

Cyclists	Trucks	Cars	Totals
0	4	32	36
0	32	262	294
0	36	294	

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Cars	Trucks	Cyclists	Totals
17	0	0	17
270	29	0	299
287	29	0	

Mayfield Rd

Cars	Trucks	Cyclists	Totals
280	34	0	314

Peds Cross: ⧖
West Peds: 0
West Entering: 330
West Leg Total: 664

Comments

MG8 ENG

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 18:00:00

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

Municipality: Region of Peel
Site #: 0001416141
Intersection: Mayfield Road & Summer Valley Dr
TFR File #: 8
Count date: 4-Mar-2010

Weather conditions:
Sunny w clouds

Person(s) who counted:
CARMELO

**** Signalized Intersection ****

Major Road: Mayfield Road runs W/E

North Leg Total: 163
North Entering: 81
North Peds: 0
Peds Cross: ⋈

Cyclists	0	0	0
Trucks	0	0	0
Cars	67	14	81
Totals	67	14	

Cyclists	0
Trucks	0
Cars	82
Totals	82

East Leg Total: 1273
East Entering: 859
East Peds: 1
Peds Cross: ⧖

Summer Valley Dr

Cyclists	Trucks	Cars	Totals
0	31	856	887

Cars	Trucks	Cyclists	Totals
39	0	0	39
789	31	0	820
828	31	0	

Mayfield Rd

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Cyclists	Trucks	Cars	Totals
0	0	43	43
0	11	389	400
0	11	432	

Mayfield Rd

Cars	Trucks	Cyclists	Totals
403	11	0	414

Peds Cross: ⧖
West Peds: 1
West Entering: 443
West Leg Total: 1330

Comments

MG8 ENG

Total Count Diagram

Municipality: Region of Peel
Site #: 0001416141
Intersection: Mayfield Road & Summer Valley Dr
TFR File #: 8
Count date: 4-Mar-2010

Weather conditions:
Sunny w clouds

Person(s) who counted:
CARMELO

**** Signalized Intersection ****

Major Road: Mayfield Road runs W/E

North Leg Total: 1125
North Entering: 600
North Peds: 5
Peds Cross: ⋈

Cyclists	0	0	0
Trucks	27	10	37
Cars	384	179	563
Totals	411	189	

Cyclists	0
Trucks	39
Cars	486
Totals	525

East Leg Total: 7338
East Entering: 3854
East Peds: 4
Peds Cross: ⧖

Summer Valley Dr

Cyclists	Trucks	Cars	Totals
0	317	3745	4062

Mayfield Rd

Cyclists	Trucks	Cars	Totals
0	26	296	322
0	229	3066	3295
0	255	3362	

Cars	Trucks	Cyclists	Totals
190	13	0	203
3361	290	0	3651
3551	303	0	

Mayfield Rd

Cars	Trucks	Cyclists	Totals
3245	239	0	3484

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Peds Cross: ⧖
West Peds: 17
West Entering: 3617
West Leg Total: 7679

Comments

MG8 ENG
Traffic Count Summary

Intersection: Mayfield Road & Summer Valley D | **Count Date:** 4-Mar-2010 | **Municipality:** Region of Peel

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	North/South Total Approaches
7:00:00	0	0	0	0	0	0
8:00:00	31	0	47	78	0	78
9:00:00	39	0	41	80	0	80
11:00:00	0	0	2	2	0	2
12:00:00	20	0	42	62	0	62
13:00:00	16	0	40	56	0	56
14:00:00	18	0	35	53	0	53
15:00:00	0	0	0	0	0	0
16:00:00	21	0	75	96	4	96
17:00:00	31	0	67	98	0	98
18:00:00	13	0	62	75	1	75
Totals:	189	0	411	600	5	600

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	0	0	0	0
8:00:00	0	0	0	0	0
9:00:00	0	0	0	0	0
11:00:00	0	0	0	0	0
12:00:00	0	0	0	0	0
13:00:00	0	0	0	0	0
14:00:00	0	0	0	0	0
15:00:00	0	0	0	0	0
16:00:00	0	0	0	0	0
17:00:00	0	0	0	0	0
18:00:00	0	0	0	0	0
Totals:	0	0	0	0	0

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	East/West Total Approaches
7:00:00	0	0	0	0	0	0
8:00:00	0	373	9	382	2	1127
9:00:00	0	369	28	397	0	1025
11:00:00	0	0	0	0	0	0
12:00:00	0	262	18	280	0	609
13:00:00	0	285	17	302	0	615
14:00:00	0	297	13	310	0	626
15:00:00	0	5	0	5	0	10
16:00:00	0	558	42	600	0	1004
17:00:00	0	732	33	765	0	1199
18:00:00	0	770	43	813	2	1255
Totals:	0	3651	203	3854	4	7470

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	0	0	0	0
8:00:00	19	726	0	745	3
9:00:00	55	573	0	628	4
11:00:00	0	0	0	0	0
12:00:00	39	290	0	329	1
13:00:00	31	282	0	313	0
14:00:00	28	288	0	316	1
15:00:00	1	4	0	5	0
16:00:00	71	333	0	404	3
17:00:00	32	402	0	434	5
18:00:00	46	396	0	442	0
Totals:	322	3294	0	3616	17

Calculated Values for Traffic Crossing Major Street

Hours Ending:	8:00	9:00	12:00	13:00	14:00	16:00	17:00	18:00
Crossing Values:	36	43	21	16	19	24	36	15

MG8 ENG

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 7:15:00
To: 8:15:00

Municipality: Region of Peel
Site #: 0001415535
Intersection: Mayfield Road & Inder Heights Driv
TFR File #: 7
Count date: 4-Mar-2010

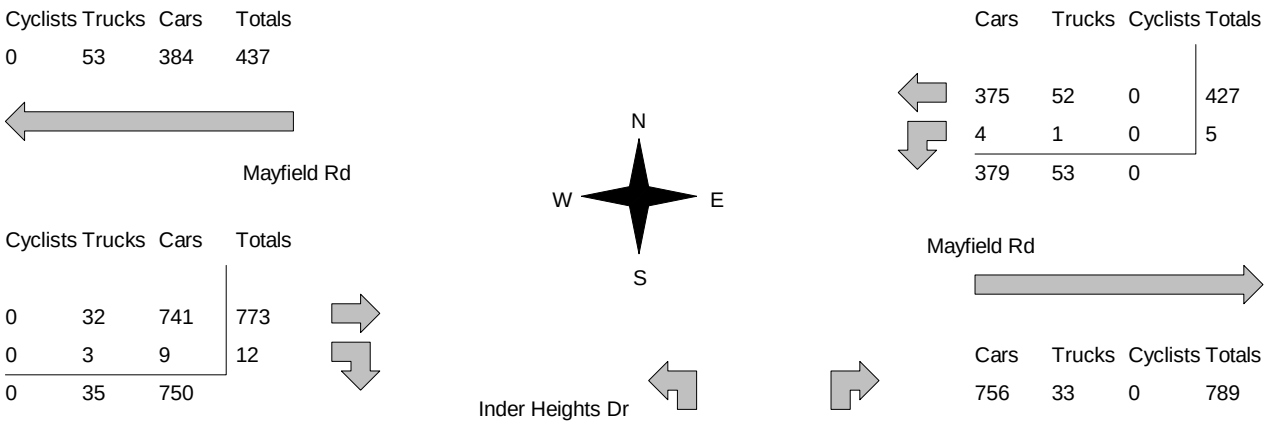
Weather conditions:
Sunny with clouds and wind

Person(s) who counted:
ZORAN

**** Non-Signalized Intersection ****

Major Road: Mayfield Road runs W/E

East Leg Total: 1221
East Entering: 432
East Peds: 0
Peds Cross: ⧖



Peds Cross: ⧖
West Peds: 0
West Entering: 785
West Leg Total: 1222

Cars	13		
Trucks	4		
Cyclists	0		
Totals	17		

Cars	9	15	24
Trucks	1	1	2
Cyclists	0	0	0
Totals	10	16	

Peds Cross: ⋈
South Peds: 0
South Entering: 26
South Leg Total: 43

Comments

MG8 ENG

Mid-day Peak Diagram

Specified Period
From: 11:00:00
To: 14:00:00

One Hour Peak
From: 12:15:00
To: 13:15:00

Municipality: Region of Peel
Site #: 0001415535
Intersection: Mayfield Road & Inder Heights Driv
TFR File #: 7
Count date: 4-Mar-2010

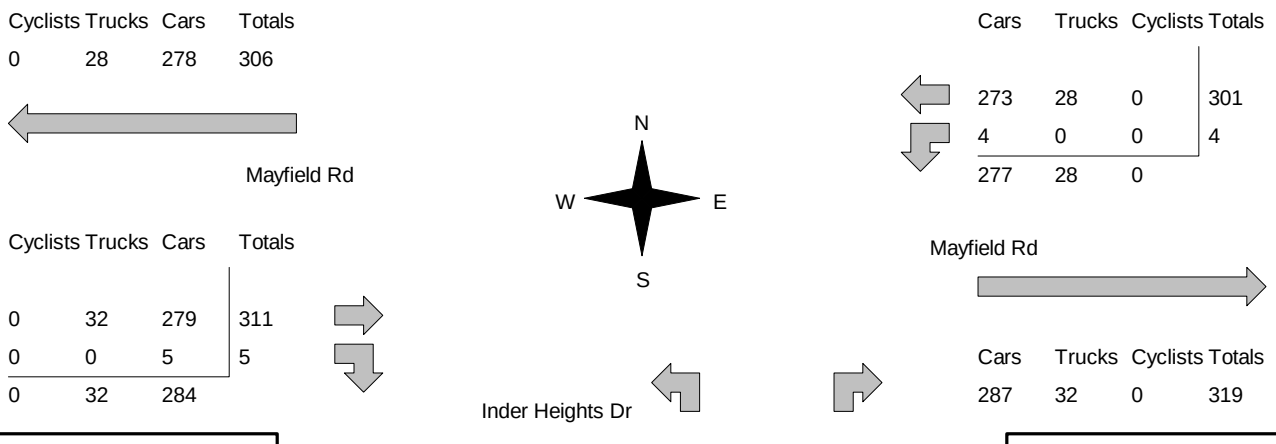
Weather conditions:
Sunny with clouds and wind

Person(s) who counted:
ZORAN

**** Non-Signalized Intersection ****

Major Road: Mayfield Road runs W/E

East Leg Total: 624
East Entering: 305
East Peds: 0
Peds Cross: ⧖



Peds Cross: ⧖
West Peds: 0
West Entering: 316
West Leg Total: 622

Cars 9
Trucks 0
Cyclists 0
Totals 9

Cars 5 8 13
Trucks 0 0 0
Cyclists 0 0 0
Totals 5 8

Peds Cross: ⋈
South Peds: 3
South Entering: 13
South Leg Total: 22

Comments

MG8 ENG

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 18:00:00

One Hour Peak
From: 16:30:00
To: 17:30:00

Municipality: Region of Peel
Site #: 0001415535
Intersection: Mayfield Road & Inder Heights Driv
TFR File #: 7
Count date: 4-Mar-2010

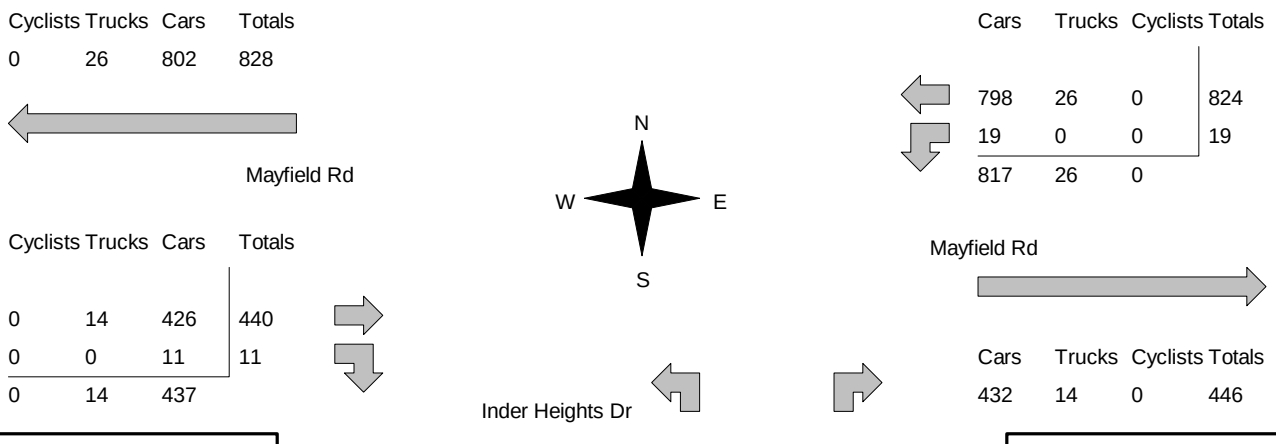
Weather conditions:
Sunny with clouds and wind

Person(s) who counted:
ZORAN

**** Non-Signalized Intersection ****

Major Road: Mayfield Road runs W/E

East Leg Total: 1289
East Entering: 843
East Peds: 0
Peds Cross: ⧖



Peds Cross: ⧖
West Peds: 0
West Entering: 451
West Leg Total: 1279

Cars 30
Trucks 0
Cyclists 0
Totals 30

Cars 4 6 10
Trucks 0 0 0
Cyclists 0 0 0
Totals 4 6

Peds Cross: ⋈
South Peds: 0
South Entering: 10
South Leg Total: 40

Comments

MG8 ENG

Total Count Diagram

Municipality: Region of Peel
Site #: 0001415535
Intersection: Mayfield Road & Inder Heights Driv
TFR File #: 7
Count date: 4-Mar-2010

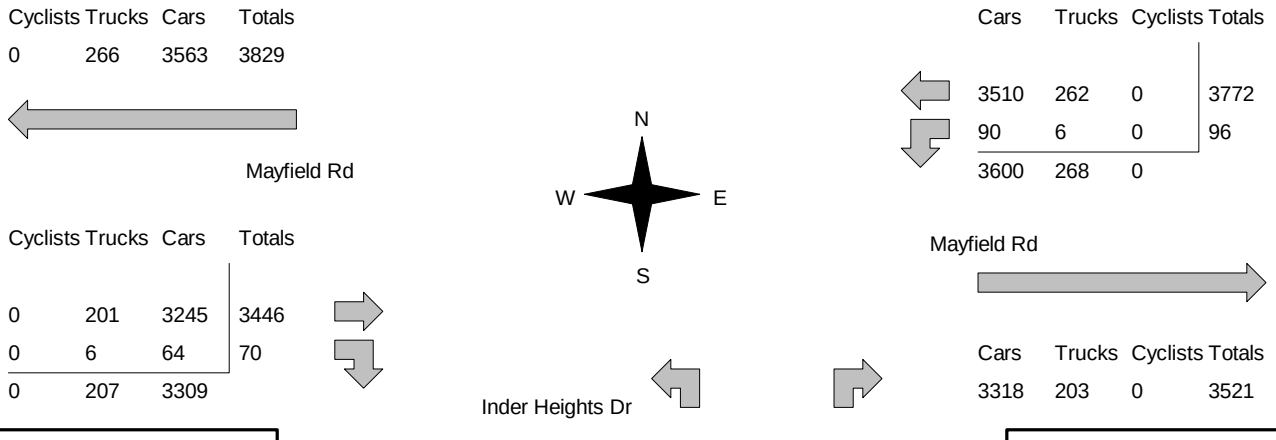
Weather conditions:
Sunny with clouds and wind

Person(s) who counted:
ZORAN

**** Non-Signalized Intersection ****

Major Road: Mayfield Road runs W/E

East Leg Total: 7389
East Entering: 3868
East Peds: 0
Peds Cross: ⧖



Peds Cross: ⧖
West Peds: 0
West Entering: 3516
West Leg Total: 7345

Cars 154
Trucks 12
Cyclists 0
Totals 166

Cars 53 73 126
Trucks 4 2 6
Cyclists 0 0 0
Totals 57 75

Peds Cross: ⋈
South Peds: 4
South Entering: 132
South Leg Total: 298

Comments

MG8 ENG
Traffic Count Summary

Intersection: Mayfield Road & Inder Heights Driv | **Count Date:** 4-Mar-2010 | **Municipality:** Region of Peel

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	North/South Total Approaches
7:00:00	0	0	0	0	0	0
8:00:00	0	0	0	0	0	36
9:00:00	0	0	0	0	0	19
11:00:00	0	0	0	0	0	2
12:00:00	0	0	0	0	0	11
13:00:00	0	0	0	0	0	15
14:00:00	0	0	0	0	0	10
15:00:00	0	0	0	0	0	1
16:00:00	0	0	0	0	0	15
17:00:00	0	0	0	0	0	13
18:00:00	0	0	0	0	0	9
Totals:	0	0	0	0	0	131

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	0	0	0	0
8:00:00	12	0	24	36	0
9:00:00	11	0	8	19	0
11:00:00	1	0	1	2	0
12:00:00	8	0	3	11	0
13:00:00	4	0	11	15	2
14:00:00	6	0	4	10	1
15:00:00	0	0	1	1	0
16:00:00	6	0	9	15	0
17:00:00	5	0	8	13	0
18:00:00	4	0	5	9	1
Totals:	57	0	74	131	4

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	East/West Total Approaches
7:00:00	0	0	0	0	0	0
8:00:00	4	378	0	382	0	1163
9:00:00	7	377	0	384	0	999
11:00:00	1	8	0	9	0	29
12:00:00	12	262	0	274	0	567
13:00:00	7	289	0	296	0	601
14:00:00	8	307	0	315	0	616
15:00:00	0	7	0	7	0	14
16:00:00	19	576	0	595	0	941
17:00:00	16	769	0	785	0	1221
18:00:00	22	788	0	810	0	1216
Totals:	96	3761	0	3857	0	7367

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	0	0	0	0
8:00:00	0	774	7	781	0
9:00:00	0	600	15	615	0
11:00:00	0	20	0	20	0
12:00:00	0	289	4	293	0
13:00:00	0	299	6	305	0
14:00:00	0	297	4	301	0
15:00:00	0	7	0	7	0
16:00:00	0	336	10	346	0
17:00:00	0	416	20	436	0
18:00:00	0	402	4	406	0
Totals:	0	3440	70	3510	0

Calculated Values for Traffic Crossing Major Street

Hours Ending:	8:00	9:00	12:00	13:00	14:00	16:00	17:00	18:00
Crossing Values:	12	11	8	4	6	6	5	4

MG8 ENG

Count Date: 4-Mar-2010
Intersection: Mayfield Road & Inder Heights Drive **Municipality:** Region of Peel
Major Road: Mayfield Road **Major Road Runs:** E/W one lane each way
Operating Speed of Major Road: 60 km/hr **Operating under restricted flow conditions**

Warrant #1: Minimum Vehicular Volumes.

A. All Approaches. **Not Satisfied**

No. of Lanes	Minimum Requirements					Hours Ending								Percentage Warrant
	1 Lane Each Way		2 Lanes Each Way		3 Lanes									
Flow Condition	1 Lane F. Flow (Code 1)	1 Lane R. Flow (Code 2)	2 Lane F. Flow (Code 3)	2 Lane R. Flow (Code 4)	or More R. Flow (Code 5)	8:00	9:00	12:00	13:00	14:00	16:00	17:00	18:00	
100%	480	720	600	900	1125	1199	1018	578	616	626	956	1234	1225	100%
80%	385	575	480	720	900									Yes: No: X
All Approaches	100% Fulfilled					100	100				100	100	100	500
	80% Fulfilled							80	80	80				240
	Actual % if Below 80%													0

Total:	740
Actual Average (Total/8):	93%

B. Minor Street Both Approaches.

100%	180	255	180	255	255	36	19	11	15	10	15	13	9	100%
80%	143	203	143	203	203									Yes: No: X
Minor Street Both Approaches	100% Fulfilled													0
	80% Fulfilled													0
	Actual % if Below 80%					14	7	4	6	4	6	5	4	50

Total:	50
Actual Average (Total/8):	6%

MG8 ENG

Count Date: 4-Mar-2010

Intersection: Mayfield Road & Inder Heights Drive **Municipality:** Region of Peel

Major Road: Mayfield Road **Major Road Runs:** E/W one lane each way

Operating Speed of Major Road: 60 km/hr **Operating under restricted flow conditions**

Warrant #2: Delay to Cross Traffic.

A. Major Street Both Approaches. **Not Satisfied**

No. of Lanes	Minimum Requirements					Hours Ending								
	1 Lane Each Way		2 Lanes Each Way		3 Lanes									
Flow Condition	1 Lane F. Flow (Code 1)	1 Lane R. Flow (Code 2)	2 Lane F. Flow (Code 3)	2 Lane R. Flow (Code 4)	or More R. Flow (Code 5)	8:00	9:00	12:00	13:00	14:00	16:00	17:00	18:00	Percentage Warrant
100%	480	720	600	900	1125	1163	999	567	601	616	941	1221	1216	100%
80%	385	575	480	720	900									Yes: / No: X
All Approaches	100% Fulfilled					100	100				100	100	100	500
	80% Fulfilled								80	80				160
	Actual % if Below 80%							79						79

Total:	739
Actual Average (Total/8):	92%

B. Traffic Crossing Major Street.

100%	50	75	50	75	75	12	11	8	4	6	6	5	4	100%
80%	40	60	40	60	60									Yes: / No: X
All Approaches	100% Fulfilled													0
	80% Fulfilled													0
	Actual % if Below 80%					16	15	11	5	8	8	7	5	75

Total:	75
Actual Average (Total/8):	9%

MG8 ENG

Count Date: 4-Mar-2010
Intersection: Mayfield Road & Inder Heights Drive **Municipality:** Region of Peel
Major Road: Mayfield Road **Major Road Runs:** E/W one lane each way
Operating Speed of Major Road: 60 km/hr **Operating under restricted flow conditions**

Warrant #3: Accident Experience.

Not Satisfied

A. Reportable accidents within a twelve month period averaged over 36 consequtive months susceptible to correction by a traffic signal.

Minimum Requirements	Actual Number of Accidents	Average Number of Accidents	Fulfilled
5	1 in 3 years	0 per year	7%

B. Adequate trial of less restrictive remedies has failed to reduce accident frequency.	No
C. Either Warrant 1 (Minimum Vehicular Volume) or Warrant 2 (Delay to Cross Traffic) satisfied 80% or more.	No

Warrant #4: Combination Warrant.
(Used if no warrant satisfied 100%)

Not Satisfied

Minimum Requirements	Warrant Satisfied 80% or More	Fulfilled
Two Warrants Satisfied 80%	Warrant 1 (Minimum Vehicular Volume) Warrant 2 (Delay to Cross Traffic) Warrant 3 (Accident Experience)	No No No

Conclusion: Traffic signal not warranted.

MG8 ENG

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

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

Municipality: Region of Peel
Site #: 0001415126
Intersection: Mayfield Road & Kennedy Road
TFR File #: 7
Count date: 4-Mar-2010

Weather conditions:
Sunny w clouds, cold

Person(s) who counted:
VELE

**** Signalized Intersection ****

Major Road: Mayfield Road runs W/E

North Leg Total:	125
North Entering:	45
North Peds:	0
Peds Cross:	⋈

Cyclists	0	0	0	0
Trucks	6	1	3	10
Cars	13	11	11	35
Totals	19	12	14	

Cyclists	0
Trucks	9
Cars	71
Totals	80

East Leg Total:	1268
East Entering:	510
East Peds:	0
Peds Cross:	⧖

Kennedy Rd

Cyclists	Trucks	Cars	Totals
0	48	401	449

Cars	Trucks	Cyclists	Totals
42	7	0	49
356	37	0	393
65	3	0	68
463	47	0	

Mayfield Rd

N
W E
S

Cyclists	Trucks	Cars	Totals
0	0	20	20
0	25	644	669
0	4	77	81
0	29	741	

Mayfield Rd

Cars	Trucks	Cyclists	Totals
728	30	0	758

Kennedy Rd

Peds Cross:	⧖
West Peds:	0
West Entering:	770
West Leg Total:	1219

Cars	153			
Trucks	8			
Cyclists	0			
Totals	161			

Cars	32	9	73	114
Trucks	5	2	2	9
Cyclists	0	0	0	0
Totals	37	11	75	

Peds Cross:	⋈
South Peds:	0
South Entering:	123
South Leg Total:	284

Comments

MG8 ENG

Mid-day Peak Diagram

Specified Period
From: 11:00:00
To: 14:00:00

One Hour Peak
From: 12:00:00
To: 13:00:00

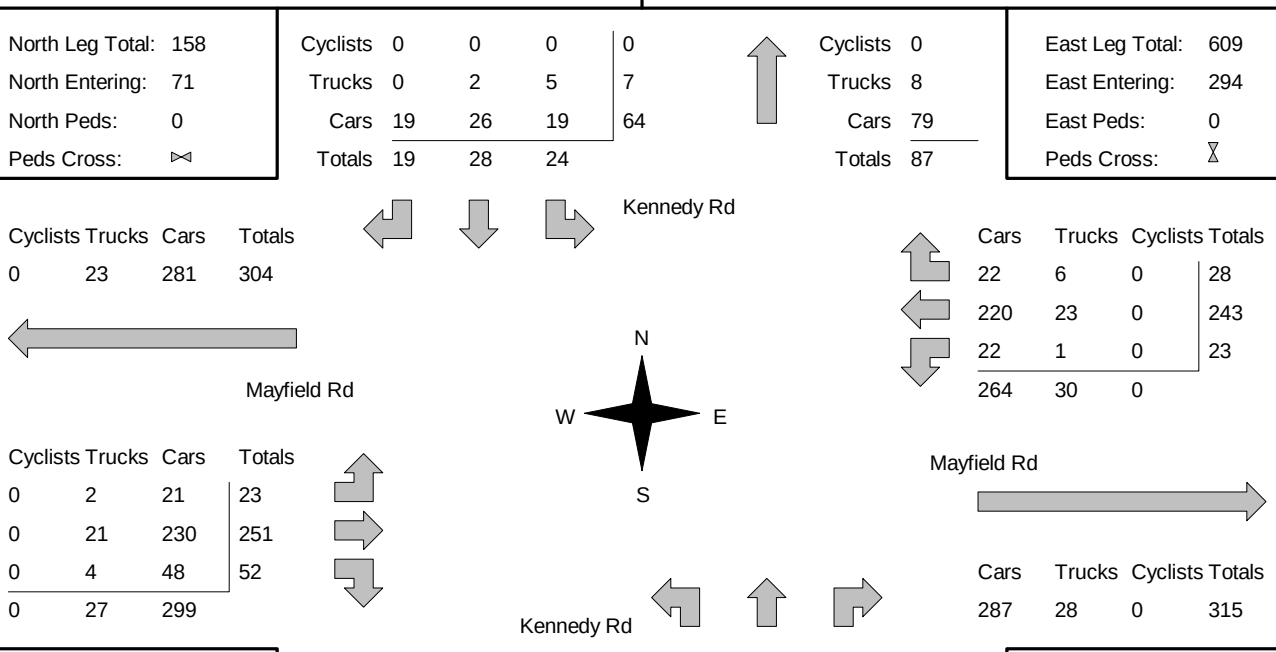
Municipality: Region of Peel
Site #: 0001415126
Intersection: Mayfield Road & Kennedy Road
TFR File #: 7
Count date: 4-Mar-2010

Weather conditions:
Sunny w clouds, cold

Person(s) who counted:
VELE

**** Signalized Intersection ****

Major Road: Mayfield Road runs W/E



Comments

MG8 ENG

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 18:00:00

One Hour Peak
From: 16:30:00
To: 17:30:00

Municipality: Region of Peel
Site #: 0001415126
Intersection: Mayfield Road & Kennedy Road
TFR File #: 7
Count date: 4-Mar-2010

Weather conditions:
Sunny w clouds, cold

Person(s) who counted:
VELE

**** Signalized Intersection ****

Major Road: Mayfield Road runs W/E

North Leg Total:	188
North Entering:	107
North Peds:	0
Peds Cross:	⋈

Cyclists	0	0	0	0
Trucks	2	0	3	5
Cars	23	17	62	102
Totals	25	17	65	

Cyclists	0
Trucks	2
Cars	79
Totals	81

East Leg Total:	1296
East Entering:	795
East Peds:	0
Peds Cross:	⧖

Kennedy Rd

Cyclists	Trucks	Cars	Totals
0	26	820	846

Cars	Trucks	Cyclists	Totals
7	1	0	8
686	22	0	708
77	2	0	79
770	25	0	

Mayfield Rd

N
W E
S

Cyclists	Trucks	Cars	Totals
0	0	10	10
0	13	361	374
0	3	60	63
0	16	431	

Mayfield Rd

Cars	Trucks	Cyclists	Totals
484	17	0	501

Kennedy Rd

Peds Cross:	⧖
West Peds:	2
West Entering:	447
West Leg Total:	1293

Cars	154			
Trucks	5			
Cyclists	0			
Totals	159			

Cars	111	62	61	234
Trucks	2	1	1	4
Cyclists	0	0	0	0
Totals	113	63	62	

Peds Cross:	⋈
South Peds:	0
South Entering:	238
South Leg Total:	397

Comments

MG8 ENG

Total Count Diagram

Municipality: Region of Peel
Site #: 0001415126
Intersection: Mayfield Road & Kennedy Road
TFR File #: 7
Count date: 4-Mar-2010

Weather conditions:
Sunny w clouds, cold

Person(s) who counted:
VELE

**** Signalized Intersection ****

Major Road: Mayfield Road runs W/E

North Leg Total:	1117
North Entering:	517
North Peds:	0
Peds Cross:	⋈

Cyclists	0	0	0	0
Trucks	31	5	47	83
Cars	108	120	206	434
Totals	139	125	253	

Cyclists	0
Trucks	51
Cars	549
Totals	600

East Leg Total:	7633
East Entering:	3980
East Peds:	1
Peds Cross:	⧖

Kennedy Rd

Cyclists	Trucks	Cars	Totals
1	266	3737	4004

Cars	Trucks	Cyclists	Totals
175	37	0	212
3162	216	0	3378
375	15	0	390
3712	268	0	

Mayfield Rd

N
W E
S

Cyclists	Trucks	Cars	Totals
0	10	121	131
0	157	2827	2984
0	36	402	438
0	203	3350	

Mayfield Rd

Cars	Trucks	Cyclists	Totals
3434	219	0	3653

Kennedy Rd

Peds Cross:	⧖
West Peds:	2
West Entering:	3553
West Leg Total:	7557

Cars	897
Trucks	56
Cyclists	0
Totals	953

Cars	467	253	401	1121
Trucks	19	4	15	38
Cyclists	1	0	0	1
Totals	487	257	416	

Peds Cross:	⋈
South Peds:	3
South Entering:	1160
South Leg Total:	2113

Comments

MG8 ENG
Traffic Count Summary

Intersection: Mayfield Road & Kennedy Road | **Count Date:** 4-Mar-2010 | **Municipality:** Region of Peel

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	North/South Total Approaches
7:00:00	0	0	0	0	0	2
8:00:00	14	8	10	32	0	147
9:00:00	20	18	16	54	0	176
11:00:00	4	0	0	4	0	5
12:00:00	21	13	11	45	0	137
13:00:00	24	28	19	71	0	189
14:00:00	31	17	8	56	0	154
15:00:00	0	0	0	0	0	2
16:00:00	26	10	31	67	0	228
17:00:00	54	19	18	91	0	306
18:00:00	59	12	26	97	0	331
Totals:	253	125	139	517	0	1677

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	1	1	2	0
8:00:00	31	18	66	115	0
9:00:00	40	14	68	122	0
11:00:00	0	0	1	1	0
12:00:00	48	23	21	92	0
13:00:00	42	36	40	118	0
14:00:00	34	24	40	98	1
15:00:00	1	1	0	2	1
16:00:00	69	31	61	161	0
17:00:00	103	53	59	215	1
18:00:00	119	56	59	234	0
Totals:	487	257	416	1160	3

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	East/West Total Approaches
7:00:00	0	7	0	7	0	16
8:00:00	43	340	81	464	0	1244
9:00:00	59	351	24	434	0	1048
11:00:00	0	5	0	5	0	9
12:00:00	29	229	19	277	0	589
13:00:00	23	243	28	294	0	620
14:00:00	31	270	20	321	1	625
15:00:00	0	6	0	6	0	13
16:00:00	56	529	15	600	0	954
17:00:00	77	704	13	794	0	1225
18:00:00	72	693	12	777	0	1189
Totals:	390	3377	212	3979	1	7532

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	9	0	9	0
8:00:00	27	689	64	780	0
9:00:00	15	523	76	614	0
11:00:00	0	3	1	4	0
12:00:00	19	255	38	312	0
13:00:00	23	251	52	326	0
14:00:00	18	251	35	304	0
15:00:00	0	5	2	7	0
16:00:00	11	294	49	354	0
17:00:00	11	363	57	431	0
18:00:00	7	341	64	412	2
Totals:	131	2984	438	3553	2

Calculated Values for Traffic Crossing Major Street

Hours Ending:	8:00	9:00	12:00	13:00	14:00	16:00	17:00	18:00
Crossing Values:	63	78	92	102	90	126	210	236

MG8 ENG

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 7:15:00
To: 8:15:00

Municipality: Region of Peel
Site #: 0001415997
Intersection: Mayfield Road & Valley View Drive
TFR File #: 10
Count date: 4-Mar-2010

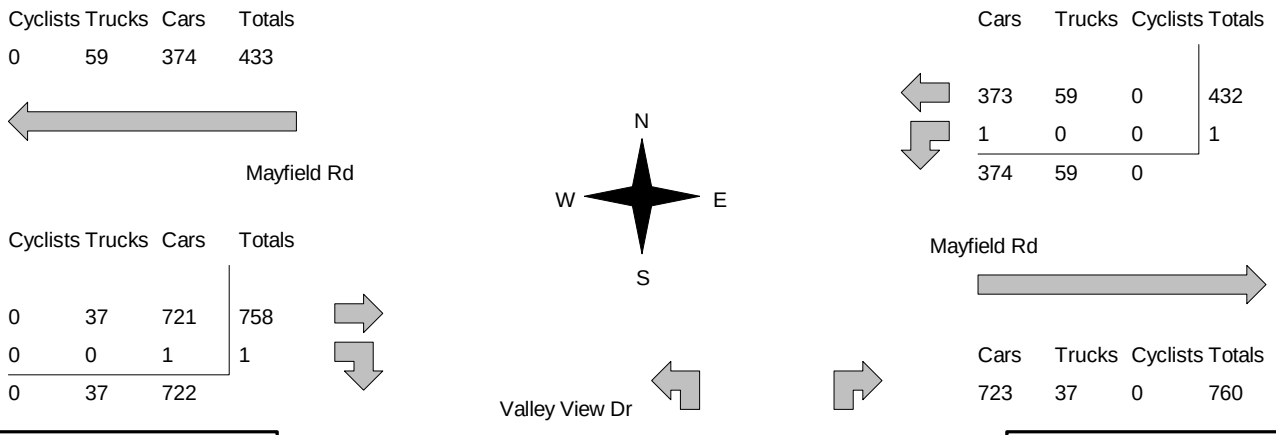
Weather conditions:
Sunny w clouds

Person(s) who counted:
ZELJKO

**** Non-Signalized Intersection ****

Major Road: Mayfield Road runs W/E

East Leg Total: 1193
East Entering: 433
East Peds: 1
Peds Cross:



Peds Cross:
West Peds: 0
West Entering: 759
West Leg Total: 1192

Cars 2
Trucks 0
Cyclists 0
Totals 2

Cars 1 2 3
Trucks 0 0 0
Cyclists 0 0 0
Totals 1 2

Peds Cross:
South Peds: 0
South Entering: 3
South Leg Total: 5

Comments

MG8 ENG

Mid-day Peak Diagram

Specified Period	One Hour Peak
From: 11:00:00	**From:** 12:15:00
To: 14:00:00	**To:** 13:15:00

Municipality: Region of Peel
Site #: 0001415997
Intersection: Mayfield Road & Valley View Drive
TFR File #: 10
Count date: 4-Mar-2010

Weather conditions:
Sunny w clouds

Person(s) who counted:
ZELJKO

**** Non-Signalized Intersection ****

Major Road: Mayfield Road runs W/E

East Leg Total: 621
East Entering: 304
East Peds: 0
Peds Cross: ⧖

	Cyclists	Trucks	Cars	Totals
	1	28	277	306

Mayfield Rd

	Cyclists	Trucks	Cars	Totals
	1	32	283	316
	0	0	2	2
	1	32	285	

	Cars	Trucks	Cyclists	Totals
	275	28	1	304
	0	0	0	0
	275	28	1	

Mayfield Rd

	Cars	Trucks	Cyclists	Totals
	284	32	1	317

N
W E
S

Valley View Dr

Peds Cross: ⧖
West Peds: 0
West Entering: 318
West Leg Total: 624

Cars	2		
Trucks	0		
Cyclists	0		
Totals	2		

Cars	2	1	3
Trucks	0	0	0
Cyclists	0	0	0
Totals	2	1	

Peds Cross: ⋈
South Peds: 1
South Entering: 3
South Leg Total: 5

Comments

MG8 ENG

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 18:00:00

One Hour Peak
From: 16:30:00
To: 17:30:00

Municipality: Region of Peel
Site #: 0001415997
Intersection: Mayfield Road & Valley View Drive
TFR File #: 10
Count date: 4-Mar-2010

Weather conditions:
Sunny w clouds

Person(s) who counted:
ZELJKO

**** Non-Signalized Intersection ****

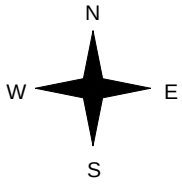
Major Road: Mayfield Road runs W/E

East Leg Total: 1271
East Entering: 825
East Peds: 0
Peds Cross: ⧖

Cyclists	Trucks	Cars	Totals
0	26	799	825

Mayfield Rd

Cyclists	Trucks	Cars	Totals
0	19	427	446
0	0	4	4
0	19	431	



Cars	Trucks	Cyclists	Totals
797	26	0	823
2	0	0	2
799	26	0	

Mayfield Rd

Cars	Trucks	Cyclists	Totals
427	19	0	446

Valley View Dr

Peds Cross: ⧖
West Peds: 0
West Entering: 450
West Leg Total: 1275

Cars	6
Trucks	0
Cyclists	0
Totals	6

Cars	2	0	2
Trucks	0	0	0
Cyclists	0	0	0
Totals	2	0	

Peds Cross: ⋈
South Peds: 0
South Entering: 2
South Leg Total: 8

Comments

MG8 ENG

Total Count Diagram

Municipality: Region of Peel
Site #: 0001415997
Intersection: Mayfield Road & Valley View Drive
TFR File #: 10
Count date: 4-Mar-2010

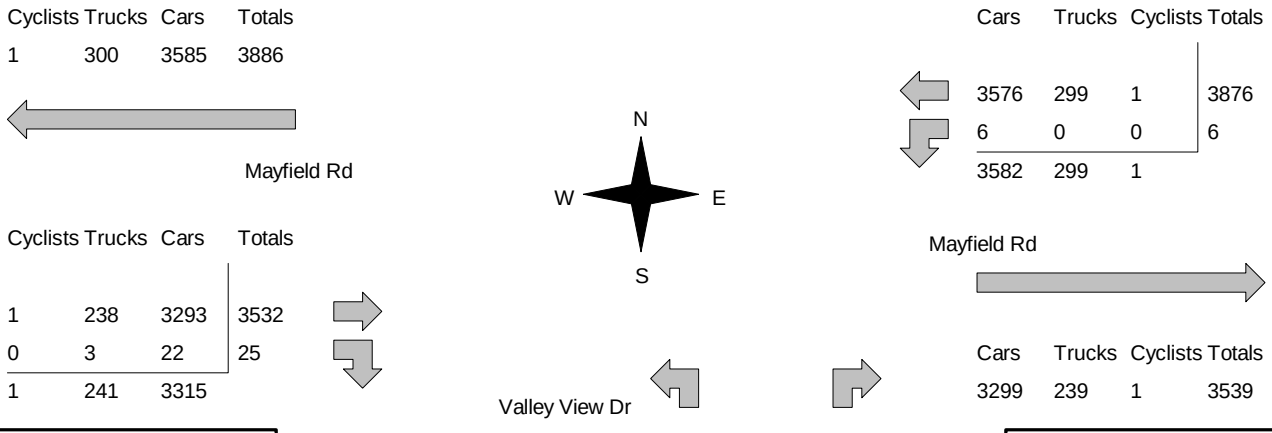
Weather conditions:
Sunny w clouds

Person(s) who counted:
ZELJKO

**** Non-Signalized Intersection ****

Major Road: Mayfield Road runs W/E

East Leg Total: 7421
East Entering: 3882
East Peds: 1
Peds Cross:



Peds Cross:
West Peds: 0
West Entering: 3557
West Leg Total: 7443

Cars	28		
Trucks	3		
Cyclists	0		
Totals	31		

Cars	9	6	15
Trucks	1	1	2
Cyclists	0	0	0
Totals	10	7	

Peds Cross:
South Peds: 2
South Entering: 17
South Leg Total: 48

Comments

MG8 ENG
Traffic Count Summary

Intersection: Mayfield Road & Valley View Drive | **Count Date:** 4-Mar-2010 | **Municipality:** Region of Peel

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	North/South Total Approaches
7:00:00	0	0	0	0	0	0
8:00:00	0	0	0	0	0	2
11:00:00	0	0	0	0	0	3
12:00:00	0	0	0	0	0	1
13:00:00	0	0	0	0	0	4
14:00:00	0	0	0	0	0	1
15:00:00	0	0	0	0	0	0
16:00:00	0	0	0	0	0	2
17:00:00	0	0	0	0	0	1
Totals:	0	0	0	0	0	14

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	0	0	0	0
8:00:00	1	0	1	2	0
11:00:00	2	0	1	3	0
12:00:00	0	0	1	1	0
13:00:00	3	0	1	4	1
14:00:00	0	0	1	1	1
15:00:00	0	0	0	0	0
16:00:00	2	0	0	2	0
17:00:00	0	0	1	1	0
Totals:	8	0	6	14	2

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	East/West Total Approaches
7:00:00	0	12	0	12	0	50
8:00:00	0	383	0	383	1	1144
11:00:00	2	404	0	406	0	1025
12:00:00	1	281	0	282	0	596
13:00:00	0	295	0	295	0	600
14:00:00	0	304	0	304	0	613
15:00:00	0	33	0	33	0	50
16:00:00	0	596	0	596	0	950
17:00:00	1	767	0	768	0	1201
Totals:	4	3075	0	3079	1	6229

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	38	0	38	0
8:00:00	0	761	0	761	0
11:00:00	0	616	3	619	0
12:00:00	0	311	3	314	0
13:00:00	0	304	1	305	0
14:00:00	0	306	3	309	0
15:00:00	0	17	0	17	0
16:00:00	0	350	4	354	0
17:00:00	0	429	4	433	0
Totals:	0	3132	18	3150	0

Calculated Values for Traffic Crossing Major Street

Hours Ending:	8:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00
Crossing Values:	2	2	0	3	0	0	2	0

MG8 ENG

Count Date: 4-Mar-2010
Intersection: Mayfield Road & Valley View Drive **Municipality:** Region of Peel
Major Road: Mayfield Road **Major Road Runs:** E/W two lanes each way
Operating Speed of Major Road: 60 km/hr **Operating under restricted flow conditions**

Warrant #1: Minimum Vehicular Volumes.

A. All Approaches. **Not Satisfied**

No. of Lanes	Minimum Requirements					Hours Ending								Percentage Warrant
	1 Lane Each Way		2 Lanes Each Way		3 Lanes									
Flow Condition	1 Lane F. Flow (Code 1)	1 Lane R. Flow (Code 2)	2 Lane F. Flow (Code 3)	2 Lane R. Flow (Code 4)	or More R. Flow (Code 5)	8:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	
100%	480	720	600	900	1125	1146	1028	597	604	614	50	952	1202	100%
80%	385	575	480	720	900									Yes: No: X
All Approaches	100% Fulfilled					100	100					100	100	400
	80% Fulfilled													0
	Actual % if Below 80%							66	67	68	6			207
												Total:		607
												Actual Average (Total/8):		76%

B. Minor Street Both Approaches.

100%	180	255	180	255	255	2	3	1	4	1	0	2	1	100%
80%	143	203	143	203	203									Yes: No: X
Minor Street Both Approaches	100% Fulfilled													0
	80% Fulfilled													0
	Actual % if Below 80%					1	1	0	2	0	0	1	0	5
												Total:		5
												Actual Average (Total/8):		1%

MG8 ENG

Count Date: 4-Mar-2010
Intersection: Mayfield Road & Valley View Drive **Municipality:** Region of Peel
Major Road: Mayfield Road **Major Road Runs:** E/W two lanes each way
Operating Speed of Major Road: 60 km/hr **Operating under restricted flow conditions**

Warrant #2: Delay to Cross Traffic.

A. Major Street Both Approaches. **Not Satisfied**

No. of Lanes	Minimum Requirements					Hours Ending								
	1 Lane Each Way		2 Lanes Each Way		3 Lanes									
Flow Condition	1 Lane F. Flow (Code 1)	1 Lane R. Flow (Code 2)	2 Lane F. Flow (Code 3)	2 Lane R. Flow (Code 4)	or More R. Flow (Code 5)	8:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	Percentage Warrant
100%	480	720	600	900	1125	1144	1025	596	600	613	50	950	1201	100%
80%	385	575	480	720	900									Yes: / No: X
All Approaches	100% Fulfilled					100	100					100	100	400
	80% Fulfilled													0
	Actual % if Below 80%							66	67	68	6			207

Total:	607
Actual Average (Total/8):	76%

B. Traffic Crossing Major Street.

100%	50	75	50	75	75	2	2	0	3	0	0	2	0	100%
80%	40	60	40	60	60									Yes: / No: X
All Approaches	100% Fulfilled													0
	80% Fulfilled													0
	Actual % if Below 80%					3	3	0	4	0	0	3	0	12

Total:	12
Actual Average (Total/8):	2%

MG8 ENG

Count Date: 4-Mar-2010
Intersection: Mayfield Road & Valley View Drive **Municipality:** Region of Peel
Major Road: Mayfield Road **Major Road Runs:** E/W two lanes each way
Operating Speed of Major Road: 60 km/hr **Operating under restricted flow conditions**

Warrant #3: Accident Experience.

Not Satisfied

A. Reportable accidents within a twelve month period averaged over 36 consequtive months susceptible to correction by a traffic signal.

Minimum Requirements	Actual Number of Accidents	Average Number of Accidents	Fulfilled
5	1 in 3 years	0 per year	7%

B. Adequate trial of less restrictive remedies has failed to reduce accident frequency.	No
C. Either Warrant 1 (Minimum Vehicular Volume) or Warrant 2 (Delay to Cross Traffic) satisfied 80% or more.	No

Warrant #4: Combination Warrant.
(Used if no warrant satisfied 100%)

Not Satisfied

Minimum Requirements	Warrant Satisfied 80% or More	Fulfilled
Two Warrants Satisfied 80%	Warrant 1 (Minimum Vehicular Volume) Warrant 2 (Delay to Cross Traffic) Warrant 3 (Accident Experience)	No No No

Conclusion: Traffic signal not warranted.

MG8 ENG

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 7:15:00
To: 8:15:00

Municipality: Region of Peel
Site #: 0001414592
Intersection: Mayfield Road & Stonegate Drive
TFR File #: 5
Count date: 3-Mar-2010

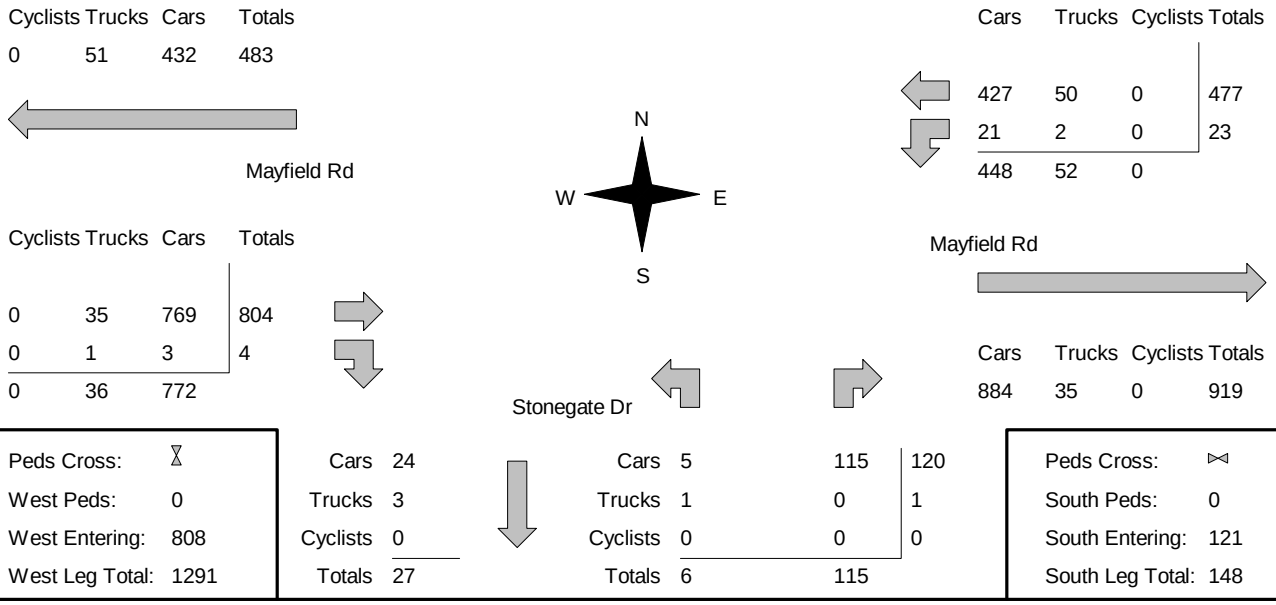
Weather conditions:
Cloudy

Person(s) who counted:
CARMELO

**** Non-Signalized Intersection ****

Major Road: Mayfield Road runs W/E

East Leg Total: 1419
East Entering: 500
East Peds: 0
Peds Cross:



Peds Cross:
West Peds: 0
West Entering: 808
West Leg Total: 1291

Cars 24
Trucks 3
Cyclists 0
Totals 27

Cars 5 115 120
Trucks 1 0 1
Cyclists 0 0 0
Totals 6 115

Peds Cross:
South Peds: 0
South Entering: 121
South Leg Total: 148

Comments

MG8 ENG

Mid-day Peak Diagram

Specified Period	One Hour Peak
From: 11:00:00	**From:** 13:00:00
To: 14:00:00	**To:** 14:00:00

Municipality: Region of Peel
Site #: 0001414592
Intersection: Mayfield Road & Stonegate Drive
TFR File #: 5
Count date: 3-Mar-2010

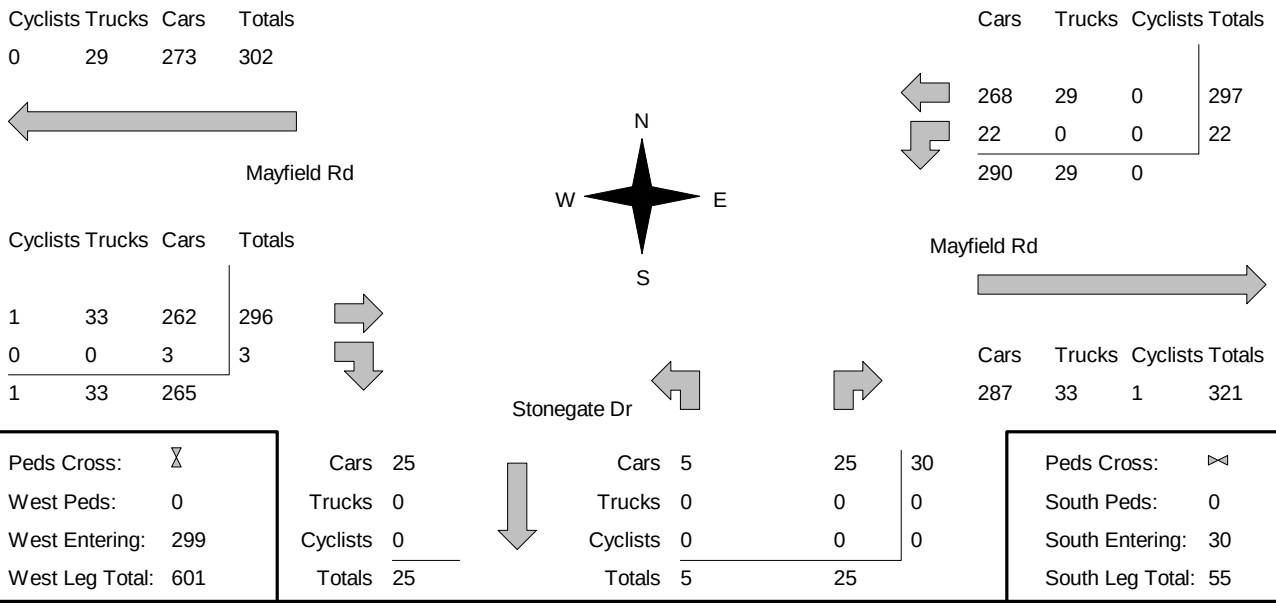
Weather conditions:
Cloudy

Person(s) who counted:
CARMELO

**** Non-Signalized Intersection ****

Major Road: Mayfield Road runs W/E

East Leg Total: 640
East Entering: 319
East Peds: 1
Peds Cross: ⧖



Peds Cross: ⧖
West Peds: 0
West Entering: 299
West Leg Total: 601

Cars 25
Trucks 0
Cyclists 0
Totals 25

Cars 5 25 30
Trucks 0 0 0
Cyclists 0 0 0
Totals 5 25

Peds Cross: ⋈
South Peds: 0
South Entering: 30
South Leg Total: 55

Comments

MG8 ENG

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 18:00:00

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

Municipality: Region of Peel
Site #: 0001414592
Intersection: Mayfield Road & Stonegate Drive
TFR File #: 5
Count date: 3-Mar-2010

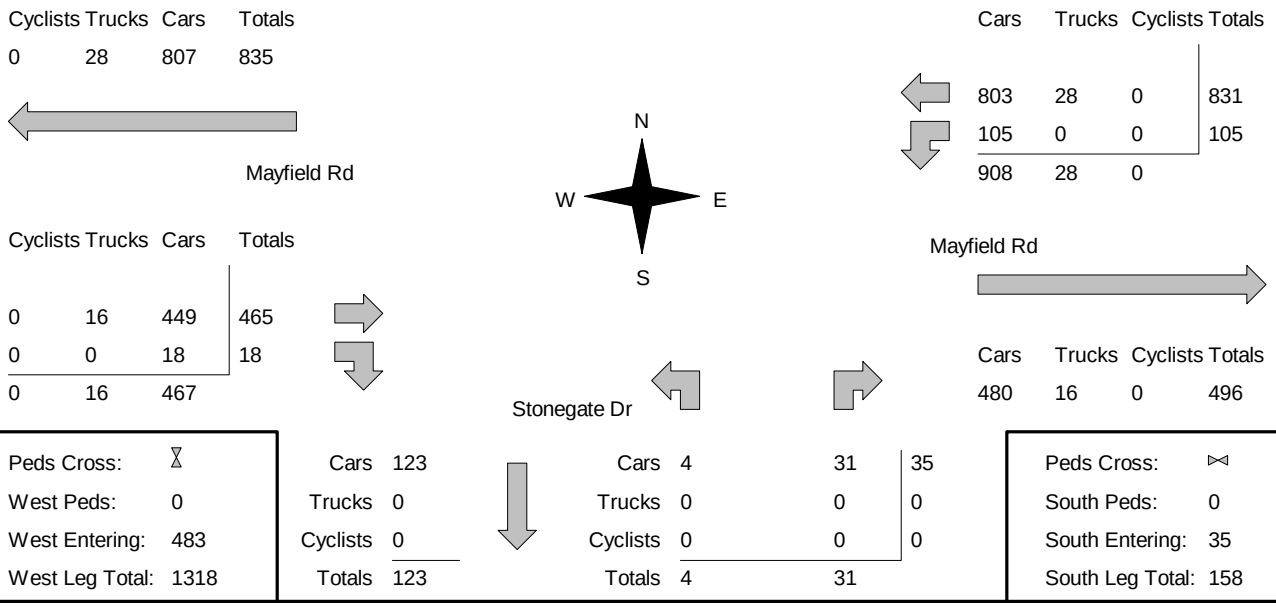
Weather conditions:
Cloudy

Person(s) who counted:
CARMELO

**** Non-Signalized Intersection ****

Major Road: Mayfield Road runs W/E

East Leg Total: 1432
East Entering: 936
East Peds: 0
Peds Cross:



Peds Cross:
West Peds: 0
West Entering: 483
West Leg Total: 1318

Cars 123
Trucks 0
Cyclists 0
Totals 123

Cars 4 31 35
Trucks 0 0 0
Cyclists 0 0 0
Totals 4 31

Peds Cross:
South Peds: 0
South Entering: 35
South Leg Total: 158

Comments

MG8 ENG

Total Count Diagram

Municipality: Region of Peel
Site #: 0001414592
Intersection: Mayfield Road & Stonegate Drive
TFR File #: 5
Count date: 3-Mar-2010

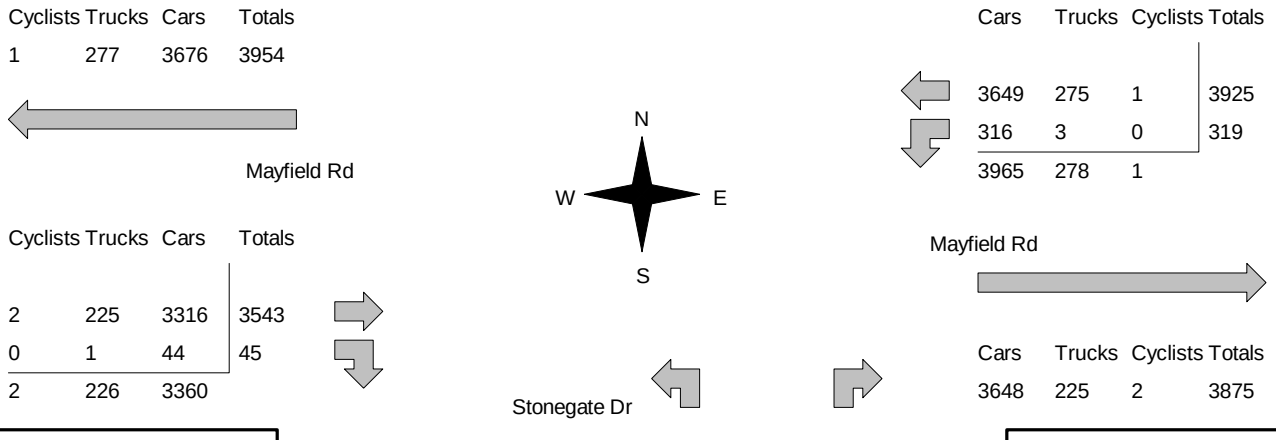
Weather conditions:
Cloudy

Person(s) who counted:
CARMELO

**** Non-Signalized Intersection ****

Major Road: Mayfield Road runs W/E

East Leg Total: 8119
East Entering: 4244
East Peds: 1
Peds Cross: ⧖



Peds Cross: ⧖
West Peds: 0
West Entering: 3588
West Leg Total: 7542

Cars 360
Trucks 4
Cyclists 0
Totals 364

Cars 27 332 359
Trucks 2 0 2
Cyclists 0 0 0
Totals 29 332

Peds Cross: ⋈
South Peds: 0
South Entering: 361
South Leg Total: 725

Comments

MG8 ENG
Traffic Count Summary

Intersection: Mayfield Road & Stonegate Drive | **Count Date:** 3-Mar-2010 | **Municipality:** Region of Peel

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	North/South Total Approaches
7:00:00	0	0	0	0	0	0
8:00:00	0	0	0	0	0	123
9:00:00	0	0	0	0	0	66
11:00:00	0	0	0	0	0	1
12:00:00	0	0	0	0	1	26
13:00:00	0	0	0	0	0	26
14:00:00	0	0	0	0	0	30
15:00:00	0	0	0	0	0	0
16:00:00	0	0	0	0	0	22
17:00:00	0	0	0	0	1	32
18:00:00	0	0	0	0	0	35
Totals:	0	0	0	0	2	361

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	0	0	0	0
8:00:00	4	0	119	123	0
9:00:00	6	0	60	66	0
11:00:00	0	0	1	1	0
12:00:00	4	0	22	26	0
13:00:00	1	0	25	26	0
14:00:00	5	0	25	30	0
15:00:00	0	0	0	0	0
16:00:00	3	0	19	22	0
17:00:00	2	0	30	32	0
18:00:00	4	0	31	35	0
Totals:	29	0	332	361	0

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	East/West Total Approaches
7:00:00	0	1	0	1	0	4
8:00:00	23	453	0	476	0	1298
9:00:00	19	420	0	439	0	1040
11:00:00	0	5	0	5	0	9
12:00:00	15	248	0	263	0	537
13:00:00	16	267	0	283	0	563
14:00:00	22	297	0	319	1	618
15:00:00	1	4	0	5	0	12
16:00:00	49	623	0	672	0	1087
17:00:00	69	775	0	844	0	1244
18:00:00	105	831	0	936	0	1419
Totals:	319	3924	0	4243	1	7831

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	3	0	3	0
8:00:00	0	818	4	822	0
9:00:00	0	599	2	601	0
11:00:00	0	4	0	4	0
12:00:00	0	271	3	274	0
13:00:00	0	280	0	280	0
14:00:00	0	296	3	299	0
15:00:00	0	7	0	7	0
16:00:00	0	406	9	415	0
17:00:00	0	394	6	400	0
18:00:00	0	465	18	483	0
Totals:	0	3543	45	3588	0

Calculated Values for Traffic Crossing Major Street

Hours Ending:	8:00	9:00	12:00	13:00	14:00	16:00	17:00	18:00
Crossing Values:	4	6	4	1	6	3	2	4

MG8 ENG

Count Date: 3-Mar-2010
Intersection: Mayfield Road & Stonegate Drive **Municipality:** Region of Peel
Major Road: Mayfield Road **Major Road Runs:** E/W one lane each way
Operating Speed of Major Road: 60 km/hr **Operating under restricted flow conditions**

Warrant #1: Minimum Vehicular Volumes.

A. All Approaches. **Not Satisfied**

No. of Lanes	Minimum Requirements					Hours Ending								
	1 Lane Each Way		2 Lanes Each Way		3 Lanes									
Flow Condition	1 Lane F. Flow (Code 1)	1 Lane R. Flow (Code 2)	2 Lane F. Flow (Code 3)	2 Lane R. Flow (Code 4)	or More R. Flow (Code 5)	8:00	9:00	12:00	13:00	14:00	16:00	17:00	18:00	Percentage Warrant
100%	480	720	600	900	1125	1421	1106	563	589	648	1109	1276	1454	100%
80%	385	575	480	720	900									Yes: / No: X
All Approaches	100% Fulfilled					100	100				100	100	100	500
	80% Fulfilled								80	80				160
	Actual % if Below 80%							78						78

Total:	738
Actual Average (Total/8):	92%

B. Minor Street Both Approaches.

100%	180	255	180	255	255	123	66	26	26	30	22	32	35	100%
80%	143	203	143	203	203									Yes: / No: X
Minor Street Both Approaches	100% Fulfilled													0
	80% Fulfilled													0
	Actual % if Below 80%					48	26	10	10	12	9	13	14	141

Total:	141
Actual Average (Total/8):	18%

MG8 ENG

Count Date: 3-Mar-2010
Intersection: Mayfield Road & Stonegate Drive **Municipality:** Region of Peel
Major Road: Mayfield Road **Major Road Runs:** E/W one lane each way
Operating Speed of Major Road: 60 km/hr **Operating under restricted flow conditions**

Warrant #2: Delay to Cross Traffic.

A. Major Street Both Approaches. **Not Satisfied**

No. of Lanes	Minimum Requirements					Hours Ending								
	1 Lane Each Way		2 Lanes Each Way		3 Lanes									
Flow Condition	1 Lane F. Flow (Code 1)	1 Lane R. Flow (Code 2)	2 Lane F. Flow (Code 3)	2 Lane R. Flow (Code 4)	or More R. Flow (Code 5)	8:00	9:00	12:00	13:00	14:00	16:00	17:00	18:00	Percentage Warrant
100%	480	720	600	900	1125	1298	1040	537	563	618	1087	1244	1419	100%
80%	385	575	480	720	900									Yes: / No: X
All Approaches	100% Fulfilled					100	100				100	100	100	500
	80% Fulfilled									80				80
	Actual % if Below 80%							75	78					153

Total:	733
Actual Average (Total/8):	92%

B. Traffic Crossing Major Street.

100%	50	75	50	75	75	4	6	4	1	6	3	2	4	100%
80%	40	60	40	60	60									Yes: / No: X
All Approaches	100% Fulfilled													0
	80% Fulfilled													0
	Actual % if Below 80%					5	8	5	1	8	4	3	5	40

Total:	40
Actual Average (Total/8):	5%

MG8 ENG

Count Date: 3-Mar-2010
Intersection: Mayfield Road & Stonegate Drive **Municipality:** Region of Peel
Major Road: Mayfield Road **Major Road Runs:** E/W one lane each way
Operating Speed of Major Road: 60 km/hr **Operating under restricted flow conditions**

Warrant #3: Accident Experience.

Not Satisfied

A. Reportable accidents within a twelve month period averaged over 36 consequtive months susceptible to correction by a traffic signal.

Minimum Requirements	Actual Number of Accidents	Average Number of Accidents	Fulfilled
5	2 in 3 years	0 per year	13%

B. Adequate trial of less restrictive remedies has failed to reduce accident frequency.	No
C. Either Warrant 1 (Minimum Vehicular Volume) or Warrant 2 (Delay to Cross Traffic) satisfied 80% or more.	No

Warrant #4: Combination Warrant.
(Used if no warrant satisfied 100%)

Not Satisfied

Minimum Requirements	Warrant Satisfied 80% or More	Fulfilled
Two Warrants Satisfied 80%	Warrant 1 (Minimum Vehicular Volume) Warrant 2 (Delay to Cross Traffic) Warrant 3 (Accident Experience)	No No No

Conclusion: Traffic signal not warranted.

MG8 ENG

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 7:15:00
To: 8:15:00

Municipality: Region of Peel
Site #: 0001413759
Intersection: Mayfield Road & Heart Lake Road
TFR File #: 7
Count date: 3-Mar-2010

Weather conditions:
Cloudy

Person(s) who counted:
ZELJKO

**** Signalized Intersection ****

Major Road: Mayfield Road runs W/E

North Leg Total:	113
North Entering:	79
North Peds:	1
Peds Cross:	⋈

Cyclists	0	0	1	1
Trucks	1	0	3	4
Cars	22	22	30	74
Totals	23	22	34	

Cyclists	0
Trucks	3
Cars	31
Totals	34

East Leg Total:	1353
East Entering:	488
East Peds:	0
Peds Cross:	⧖

Heart Lake Rd

Cyclists	Trucks	Cars	Totals
0	53	461	514

Cars	Trucks	Cyclists	Totals
6	3	0	9
417	49	0	466
12	1	0	13
435	53	0	

Mayfield Rd

N
W E
S

Cyclists	Trucks	Cars	Totals
0	0	11	11
0	35	788	823
0	1	73	74
0	36	872	

Mayfield Rd

Cars	Trucks	Cyclists	Totals
826	38	1	865

Heart Lake Rd

Peds Cross:	⧖
West Peds:	0
West Entering:	908
West Leg Total:	1422

Cars	107			
Trucks	2			
Cyclists	0			
Totals	109			

Cars	22	14	8	44
Trucks	3	0	0	3
Cyclists	0	0	0	0
Totals	25	14	8	

Peds Cross:	⋈
South Peds:	0
South Entering:	47
South Leg Total:	156

Comments

MG8 ENG

Mid-day Peak Diagram

Specified Period
From: 11:00:00
To: 14:00:00

One Hour Peak
From: 12:45:00
To: 13:45:00

Municipality: Region of Peel
Site #: 0001413759
Intersection: Mayfield Road & Heart Lake Road
TFR File #: 7
Count date: 3-Mar-2010

Weather conditions:
Cloudy

Person(s) who counted:
ZELJKO

**** Signalized Intersection ****

Major Road: Mayfield Road runs W/E

North Leg Total: 56
North Entering: 34
North Peds: 0
Peds Cross: ⋈

Cyclists	0	0	0	0
Trucks	1	0	2	3
Cars	8	13	10	31
Totals	9	13	12	

Cyclists	0
Trucks	0
Cars	22
Totals	22

East Leg Total: 471
East Entering: 238
East Peds: 0
Peds Cross: ⧖

Heart Lake Rd

Cyclists	Trucks	Cars	Totals
0	26	209	235

Cars	Trucks	Cyclists	Totals
12	0	0	12
185	25	0	210
15	1	0	16
212	26	0	

Mayfield Rd

N
W E
S

Cyclists	Trucks	Cars	Totals
0	0	5	5
0	25	191	216
0	0	9	9
0	25	205	

Mayfield Rd

Cars	Trucks	Cyclists	Totals
206	27	0	233

Heart Lake Rd

Peds Cross: ⧖
West Peds: 0
West Entering: 230
West Leg Total: 465

Cars	37
Trucks	1
Cyclists	0
Totals	38

Cars	16	5	5	26
Trucks	0	0	0	0
Cyclists	0	0	0	0
Totals	16	5	5	

Peds Cross: ⋈
South Peds: 0
South Entering: 26
South Leg Total: 64

Comments

MG8 ENG

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 18:00:00

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

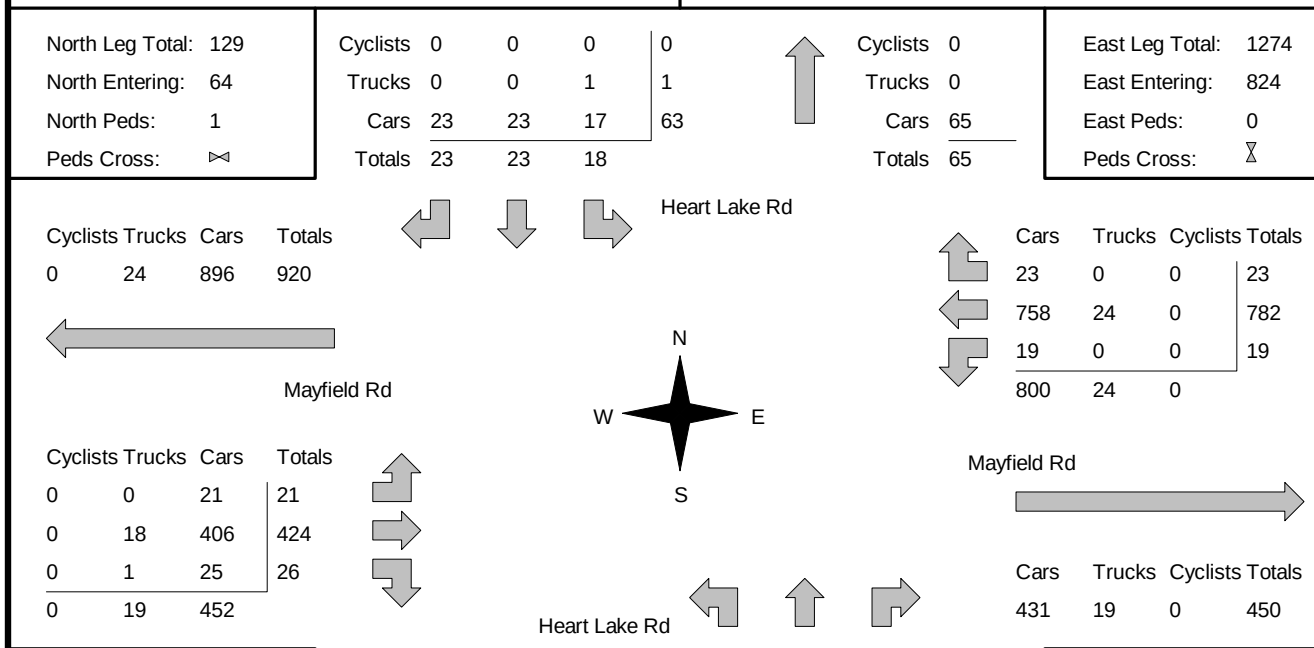
Municipality: Region of Peel
Site #: 0001413759
Intersection: Mayfield Road & Heart Lake Road
TFR File #: 7
Count date: 3-Mar-2010

Weather conditions:
Cloudy

Person(s) who counted:
ZELJKO

**** Signalized Intersection ****

Major Road: Mayfield Road runs W/E



Comments

MG8 ENG

Total Count Diagram

Municipality: Region of Peel
Site #: 0001413759
Intersection: Mayfield Road & Heart Lake Road
TFR File #: 7
Count date: 3-Mar-2010

Weather conditions:
Cloudy

Person(s) who counted:
ZELJKO

**** Signalized Intersection ****

Major Road: Mayfield Road runs W/E

North Leg Total:	870
North Entering:	519
North Peds:	2
Peds Cross:	⋈

Cyclists	0	0	1	1
Trucks	9	0	13	22
Cars	134	139	223	496
Totals	143	139	237	

Cyclists	1
Trucks	18
Cars	332
Totals	351

East Leg Total:	7946
East Entering:	4059
East Peds:	3
Peds Cross:	⧖

Heart Lake Rd

Cyclists	Trucks	Cars	Totals
1	276	3999	4276

Cars	136	11	1	148
Trucks	3534	257	1	3792
Cyclists	112	6	1	119
Totals	3782	274	3	

Mayfield Rd

N
W E
S

Cyclists	Trucks	Cars	Totals
0	7	95	102
2	221	3370	3593
0	6	250	256
2	234	3715	

Mayfield Rd

Cars	Trucks	Cyclists	Totals
3649	235	3	3887

Heart Lake Rd

Peds Cross:	⧖
West Peds:	0
West Entering:	3951
West Leg Total:	8227

Cars	501			
Trucks	12			
Cyclists	1			
Totals	514			

Cars	331	101	56	488
Trucks	10	0	1	11
Cyclists	0	0	0	0
Totals	341	101	57	

Peds Cross:	⋈
South Peds:	0
South Entering:	499
South Leg Total:	1013

Comments

MG8 ENG
Traffic Count Summary

Intersection: Mayfield Road & Heart Lake Road | **Count Date:** 3-Mar-2010 | **Municipality:** Region of Peel

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	North/South Total Approaches
7:00:00	2	2	2	6	0	10
8:00:00	43	21	24	88	1	123
9:00:00	39	16	18	73	0	116
11:00:00	3	2	2	7	0	8
12:00:00	34	13	9	56	0	77
13:00:00	24	15	7	46	0	83
15:00:00	20	17	16	53	0	93
16:00:00	27	10	13	50	0	137
17:00:00	23	21	31	75	0	173
18:00:00	22	22	21	65	1	198
Totals:	237	139	143	519	2	1018

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	1	2	1	4	0
8:00:00	22	6	7	35	0
9:00:00	22	13	8	43	0
11:00:00	1	0	0	1	0
12:00:00	12	4	5	21	0
13:00:00	16	14	7	37	0
15:00:00	26	9	5	40	0
16:00:00	63	13	11	87	0
17:00:00	72	19	7	98	0
18:00:00	106	21	6	133	0
Totals:	341	101	57	499	0

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	East/West Total Approaches
7:00:00	2	17	0	19	0	66
8:00:00	13	427	9	449	0	1363
9:00:00	14	394	8	416	1	1077
11:00:00	1	29	0	30	0	70
12:00:00	14	249	7	270	0	570
13:00:00	11	248	18	277	0	585
15:00:00	16	333	17	366	1	717
16:00:00	11	591	25	627	1	1047
17:00:00	16	738	33	787	0	1213
18:00:00	21	766	31	818	0	1302
Totals:	119	3792	148	4059	3	8010

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	1	45	1	47	0
8:00:00	11	828	75	914	0
9:00:00	10	603	48	661	0
11:00:00	1	37	2	40	0
12:00:00	13	272	15	300	0
13:00:00	7	286	15	308	0
15:00:00	7	321	23	351	0
16:00:00	17	383	20	420	0
17:00:00	13	386	27	426	0
18:00:00	22	432	30	484	0
Totals:	102	3593	256	3951	0

Calculated Values for Traffic Crossing Major Street

Hours Ending:	8:00	9:00	12:00	13:00	15:00	16:00	17:00	18:00
Crossing Values:	86	78	59	55	64	104	116	150

Appendix B

List of Collisions 2005 to 2009

List of Collisions 2005-2009

Site	#	Date and Time	Light	Weather	Road Surface	Type of Impact	Severity	Collision ID
Mayfield Road / Chinguacousy Road	1	2005-02-06 11:40	Daylight	Fog, mist, smoke, dust	Wet	Sideswipe	Non-fatal injury	2000214
	2	2005-12-16 14:00	Daylight	Clear	Dry	Turning movement	Non-fatal injury	5001455
	3	2006-02-20 22:30	Dark	Clear	Dry	Sideswipe	P.D. only	06031636S
	4	2006-09-23 18:10	Daylight	Clear	Dry	Rear end	P.D. only	6000977
	5	2007-04-03 08:00	Dark	Rain	Wet	Sideswipe	P.D. only	07059792S
	6	2007-11-06 16:30	Daylight	Clear	Dry	Rear end	P.D. only	7001205
	7	2009-01-09 16:15	Dawn	Clear	Dry	Angle (t-bone)	P.D. only	9000049
	8	2009-01-14 06:30	Dark	Drifting snow	Ice	Rear end	P.D. only	9000219
	9	2009-07-26 20:00	Daylight	Rain	Wet	SMV - Skid to the right	P.D. only	9000867
	10	2009-12-04 05:50	Dark	Clear	Dry	Approaching (head on)	Non-fatal injury	9001365
Mayfield Road between Chinguacousy Road and McLaughlin Road	1	2005-12-04 07:20	Daylight	Clear	Packed snow	SMV - Skid to the left	Non-fatal injury	5001350
	2	2008-11-30 05:00	Dark	Clear	Dry	SMV - Skid to the left	Fatal injury	8020932
	3	2009-01-21 07:15	Dawn	Clear	Dry	SMV - Object	P.D. only	9000132
	4	2009-04-24 21:45	Dark	Clear	Dry	SMV - Animal	P.D. only	9000518
Mayfield Road / McLaughlin Road	1	2005-01-28 07:20	Daylight	Clear	Packed snow	Rear end	P.D. only	5000181
	2	2005-02-23 10:00	Daylight	Clear	Dry	Turning movement	P.D. only	5000282
	3	2005-07-17 10:30	Daylight	Clear	Wet	Angle (t-bone)	P.D. only	5000786
	4	2005-10-08 04:50	Dark	Clear	Dry	Angle (t-bone)	P.D. only	5001047
	5	2005-10-19 22:05	Dark	Clear	Dry	Angle (t-bone)	P.D. only	5001119
	6	2006-12-07 08:15	Daylight	Snow	Loose snow	SMV - Skid to the right	P.D. only	60001320
	7	2007-07-30 15:25	Daylight	Clear	Dry	SMV - Skid to the right	P.D. only	7000884
	8	2007-08-31 02:45	Dark	Clear	Dry	Angle (t-bone)	P.D. only	7168999
	9	2008-06-10 08:30	Daylight	Rain	Wet	Angle (t-bone)	Non-fatal injury	8020307
	10	2008-11-19 18:00	Dark	Snow	Ice	Angle (t-bone)	P.D. only	8223930
	11	2009-01-16 14:10	Daylight	Clear	Loose snow	Angle (t-bone)	P.D. only	9000098
	12	2009-07-11 18:10	Daylight	Clear	Dry	Angle (t-bone)	Non-fatal injury	9000828
Mayfield Road between McLaughlin Road and Robertson Davies Drive / Cresthaven Road	1	2005-12-12 14:50	Daylight	Clear	Dry	Rear end	Non-fatal injury	5001429
	2	2008-05-02 08:20	Daylight	Rain	Wet	Rear end	P.D. only	8020205
	3	2009-01-07 07:50	Daylight	Snow	Slush	Rear end	P.D. only	9000020
Mayfield Road / Robertson Davies Drive / Cresthaven Road	1	2005-04-26 18:00	Daylight	Clear	Dry	Angle (t-bone)	Non-fatal injury	5000511
	2	2008-08-06 17:30	Daylight	Clear	Dry	Turning movement	Non-fatal injury	8150167
	3	2008-10-11 14:45	Daylight	Clear	Dry	SMV - Skid to the right	Non-fatal injury	8020799
	4	2009-09-28 17:25	Daylight	Rain	Wet	Rear end	P.D. only	9180258
Mayfield Road between Robertson Davies Drive / Cresthaven Road and Hurontatio Street	1	2005-05-09 16:35	Daylight	Clear	Dry	Rear end	P.D. only	5083888
	2	2006-03-25 10:00	Daylight	Rain	Wet	Rear end	Non-fatal injury	63000071
	3	2006-09-17 00:48	Dark	Clear	Dry	SMV - Animal	P.D. only	6000959
	4	2006-10-30 12:40	Daylight	Clear	Dry	Sideswipe	P.D. only	6212468
	5	2006-10-31 07:30	Daylight	Clear	Dry	Angle (t-bone)	P.D. only	6213019
	6	2007-09-04 10:30	Daylight	Clear	Dry	Sideswipe	P.D. only	7007949
	7	2007-10-01 14:28	Daylight	Clear	Dry	Rear end	Non-fatal injury	7001067
	8	2008-02-06 05:32	Dark	Snow	Slush	Rear end	P.D. only	8000176
	9	2008-05-26 17:39	Daylight	Clear	Dry	Sideswipe	P.D. only	8020353
	10	2009-11-24 05:36	Dawn	Rain	Wet	SMV - Animal	P.D. only	9001316
Mayfield Road / Hurontario Street	1	2005-04-14 14:04	Daylight	Clear	Dry	Angle (t-bone)	P.D. only	5067001
	2	2005-06-17 12:30	Daylight	Clear	Dry	Angle (t-bone)	P.D. only	05113251S
	3	2005-06-20 08:50	Daylight	Clear	Dry	Angle (t-bone)	P.D. only	5000699
	4	2005-11-14 06:50	Daylight	Clear	Dry	Sideswipe	P.D. only	05223225S
	5	2006-02-28 14:15	Daylight	Clear	Dry	Angle (t-bone)	Non-fatal injury	60000284
	6	2006-04-11 07:40	Daylight	Clear	Dry	Rear end	P.D. only	60000431
	7	2006-07-08 16:10	Daylight	Clear	Dry	Sideswipe	P.D. only	6000737
	8	2006-08-12 00:23	Dark	Clear	Dry	Rear end	P.D. only	6000869
	9	2006-08-24 14:55	Daylight	Clear	Dry	Turning movement	Non-fatal injury	6000900
	10	2006-08-31 07:05	Daylight	Clear	Dry	Rear end	P.D. only	60000925
	11	2006-09-14 16:45	Daylight	Rain	Wet	Rear end	P.D. only	06185942S
	12	2006-09-29 08:00	Daylight	Clear	Dry	Rear end	P.D. only	6000989
	13	2006-10-06 23:30	Dark	Clear	Dry	Angle (t-bone)	P.D. only	6195570
	14	2006-10-20 05:40	Dark	Clear	Dry	Sideswipe	P.D. only	60001069
	15	2007-01-10 12:20	Daylight	Clear	Dry	Turning movement	Non-fatal injury	7006001
	16	2007-02-21 09:25	Daylight	Clear	Dry	Rear end	P.D. only	7032220
	17	2007-04-22 19:24	Daylight	Clear	Dry	SMV - Pedestrian	Non-fatal injury	7071802
	18	2007-10-17 09:15	Daylight	Fog, mist, smoke, dust	Wet	Angle (t-bone)	P.D. only	7001097
	19	2008-01-26 07:48	Daylight	Clear	Ice	SMV - Skid to the left	P.D. only	8000122
	20	2008-02-11 06:21	Dawn	Clear	Wet	Turning movement	P.D. only	8026166
	21	2008-08-07 17:37	Daylight	Clear	Dry	Rear end	P.D. only	8020494
	22	2008-08-16 13:30	Daylight	Clear	Dry	Rear end	P.D. only	8202509
	23	2008-09-07 12:30	Daylight	Rain	Wet	Sideswipe	P.D. only	8020617
	24	2008-09-10 15:20	Daylight	Clear	Dry	Turning movement	P.D. only	8020663
	25	2008-10-16 19:20	Dark	Clear	Dry	Rear end	P.D. only	8020744
	26	2008-10-20 10:55	Daylight	Clear	Dry	Sideswipe	P.D. only	8020936
	27	2009-01-16 16:00	Dusk	Clear	Loose snow	Angle (t-bone)	P.D. only	9000135
	28	2009-01-26 18:20	Dark	Clear	Mud	Angle (t-bone)	P.D. only	9014817
	29	2009-04-19 10:20	Daylight	Clear	Dry	Rear end	P.D. only	9065562
	30	2009-05-03 04:19	Dark	Clear	Dry	Angle (t-bone)	P.D. only	9000575
	31	2009-07-09 11:13	Daylight	Clear	Dry	Angle (t-bone)	P.D. only	9000831

List of Collisions 2005-2009

Site	#	Date and Time	Light	Weather	Road Surface	Type of Impact	Severity	Collision ID
Mayfield Road / Colonel Bertram Road	1	2005-01-20 18:15	Dark	Clear	Loose snow	Rear end	P.D. only	05012024S
	2	2005-09-06 18:35	Daylight	Clear	Dry	Sideswipe	P.D. only	5174902
	3	2006-01-31 18:25	Dusk	Clear	Dry	Rear end	P.D. only	6000122
	4	2006-06-21 13:30	Daylight	Clear	Dry	Turning movement	P.D. only	6000702
	5	2006-08-08 15:00	Daylight	Clear	Dry	Rear end	P.D. only	6000848
	6	2008-10-24 20:40	Dark	Rain	Wet	SMV - Skid to the right	P.D. only	8205825
	7	2008-10-28 09:16	Daylight	Clear	Dry	Rear end	Non-fatal injury	8020801
	8	2009-08-09 21:00	Dark	Rain	Wet	Angle (t-bone)	P.D. only	9000924
	9	2009-11-16 12:39	Daylight	Clear	Dry	Angle (t-bone)	P.D. only	9001328
Mayfield Road / Summer Valley Drive	1	2005-05-04 12:05	Daylight	Clear	Dry	Sideswipe	P.D. only	5000531
	2	2005-09-23 18:14	Daylight	Clear	Dry	Rear end	P.D. only	5001004
	3	2006-04-05 09:15	Daylight	Clear	Dry	Sideswipe	P.D. only	06059506S
	4	2007-01-03 08:18	Daylight	Clear	Ice	Rear end	P.D. only	7001379
	5	2008-01-26 08:45	Daylight	Clear	Dry	Rear end	P.D. only	8015924
	6	2008-05-05 06:58	Daylight	Clear	Dry	Rear end	P.D. only	8020224
	7	2009-07-01 14:59	Daylight	Clear	Dry	Rear end	P.D. only	9000795
Mayfield Road between Summer Valley Drive and Inder Heights Drive	1	2005-08-31 16:20	Daylight	Clear	Dry	Rear end	P.D. only	5000935
	2	2005-12-11 23:00	Dark	Clear	Dry	Rear end	P.D. only	5001411
	3	2006-03-28 05:30	Dark	Clear	Dry	SMV - Skid to the left	Non-fatal injury	60000381
	4	2006-04-02 12:05	Daylight	Clear	Dry	SMV - Animal	P.D. only	6000408
	5	2007-02-28 14:30	Daylight	Clear	Dry	Angle (t-bone)	P.D. only	7037158
	6	2007-09-20 16:20	Daylight	Clear	Dry	Rear end	P.D. only	7001017
	7	2009-05-05 15:40	Daylight	Clear	Dry	Rear end	P.D. only	9000577
Mayfield Road / Inder Heights Drive	1	2005-06-09 07:22	Daylight	Clear	Dry	Angle (t-bone)	P.D. only	5106656
	2	2008-02-08 17:50	Dusk	Clear	Dry	Angle (t-bone)	Non-fatal injury	8000195
Mayfield Road between Inder Heights Drive and Kennedy Road	1	2005-03-24 20:30	Dark	Clear	Dry	SMV - Animal	Non-fatal injury	5000387
	2	2005-09-07 10:30	Daylight	Clear	Dry	Rear end	P.D. only	05175300S
	3	2005-10-22 15:40	Daylight	Rain	Wet	SMV - Skid to the left	P.D. only	5001104
	4	2008-05-25 16:00	Daylight	Clear	Dry	Rear end	P.D. only	8020263
	5	2008-09-20 17:30	Daylight	Clear	Dry	Rear end	P.D. only	8020646
	6	2009-03-30 06:40	Dawn	Clear	Dry	Rear end	Non-fatal injury	9000463
	7	2009-06-24 19:25	Daylight	Clear	Dry	Rear end	P.D. only	9000730
Mayfield Road / Kennedy Road	1	2005-04-12 14:30	Daylight	Clear	Dry	Angle (t-bone)	P.D. only	05065692S
	2	2005-08-09 17:55	Daylight	Clear	Dry	SMV - Pedestrian	Non-fatal injury	5154054
	3	2005-10-14 16:20	Daylight	Clear	Dry	Rear end	Non-fatal injury	5001073
	4	2006-07-03 22:10	Dark	Clear	Dry	SMV - Animal	P.D. only	60000720
	5	2007-08-19 18:50	Daylight	Clear	Dry	Angle (t-bone)	P.D. only	7000905
	6	2007-10-01 18:00	Daylight	Clear	Dry	Sideswipe	P.D. only	7001047
	7	2007-10-22 17:20	Daylight	Clear	Dry	SMV - Pedestrian	Non-fatal injury	7001122
	8	2007-10-27 16:30	Daylight	Rain	Wet	Rear end	Non-fatal injury	7001146
	9	2008-02-08 08:15	Daylight	Clear	Dry	Rear end	P.D. only	8000200
	10	2008-04-05 12:10	Daylight	Clear	Dry	Rear end	P.D. only	8020148
	11	2008-04-20 16:22	Daylight	Clear	Dry	Turning movement	P.D. only	8020140
	12	2009-01-01 18:30	Dark	Clear	Dry	Rear end	P.D. only	9001025
	13	2009-01-20 15:54	Daylight	Clear	Dry	Rear end	P.D. only	9011275
	14	2009-01-22 23:15	Dark	Clear	Wet	Angle (t-bone)	P.D. only	9000133
	15	2009-01-28 07:20	Daylight	Snow	Loose snow	Approaching (head on)	Non-fatal injury	9000167
	16	2009-02-26 12:01	Daylight	Clear	Loose sand or gravel	Rear end	P.D. only	9000315
	17	2009-10-29 13:30	Daylight	Clear	Dry	Approaching (head on)	P.D. only	9001216
	18	2009-11-02 19:05	Dark	Rain	Wet	SMV - Object	P.D. only	9001190
Mayfiield Road between Kennedy Road and Stonegate Drive	1	2005-12-05 04:40	Dark	Clear	Dry	Sideswipe	Non-fatal injury	5001353
	2	2006-01-12 07:55	Daylight	Clear	Dry	Angle (t-bone)	P.D. only	6000029
	3	2006-09-20 17:40	Daylight	Clear	Dry	SMV - Skid to the right	P.D. only	6000966
	4	2007-04-26 16:45	Daylight	Rain	Wet	Rear end	P.D. only	7000516
	5	2007-07-08 18:15	Daylight	Rain	Wet	Rear end	P.D. only	7000781
	6	2007-07-17 16:45	Daylight	Clear	Dry	Rear end	Non-fatal injury	7000807
	7	2008-08-18 20:45	Dusk	Clear	Dry	Sideswipe	P.D. only	8020554
	8	2008-10-21 05:30	Dark	Strong wind	Dry	SMV - Object	P.D. only	8205619
	9	2008-12-18 21:00	Dark	Clear	Wet	Sideswipe	P.D. only	8021167
	10	2009-01-16 17:10	Dusk	Clear	Loose snow	Rear end	P.D. only	9000142
	11	2009-03-07 12:03	Daylight	Rain	Wet	Rear end	P.D. only	9000496
	12	2009-06-01 14:32	Daylight	Clear	Dry	Sideswipe	Non-fatal injury	9000645
Mayfield Road / Stonegate Drive	1	2008-01-11 07:40	Daylight	Clear	Wet	Rear end	P.D. only	8007901
	2	2008-09-27 15:31	Daylight	Rain	Dry	Rear end	P.D. only	8020660
Mayfield Road between Stonegate Drive and Heart Lake Road	1	2005-05-09 07:25	Daylight	Clear	Dry	Angle (t-bone)	P.D. only	5000550
	2	2005-05-09 07:45	Daylight	Clear	Dry	Rear end	P.D. only	5000556
	3	2005-06-14 15:40	Daylight	Clear	Dry	Approaching (head on)	P.D. only	5000665
	4	2005-12-09 08:44	Daylight	Clear	Wet	SMV - Skid to the right	P.D. only	5001385
	5	2006-08-15 18:30	Daylight	Clear	Dry	SMV - Skid to the right	P.D. only	60000863
	6	2007-09-22 11:45	Dark	Clear	Dry	SMV - Animal	P.D. only	07001074S
	7	2007-10-15 19:45	Dark	Clear	Dry	Other	P.D. only	7001094
	8	2007-11-16 12:56	Daylight	Clear	Dry	Rear end	Non-fatal injury	7001258
	9	2008-01-11 09:45	Daylight	Clear	Dry	Rear end	P.D. only	8000039
	10	2008-05-09 15:30	Daylight	Clear	Dry	Rear end	P.D. only	9000580
	11	2009-01-11 01:44	Dark	Snow	Ice	Rear end	P.D. only	9000083
	12	2009-05-02 09:08	Daylight	Clear	Dry	Sideswipe	P.D. only	9000566
	13	2009-11-27 22:40	Dark	Clear	Dry	SMV - Animal	P.D. only	9001311

List of Collisions 2005-2009

Site	#	Date and Time	Light	Weather	Road Surface	Type of Impact	Severity	Collision ID
	1	2005-01-13 19:00	Dark	Rain	Wet	Approaching (head on)	P.D. only	5007658
	2	2005-01-28 09:01	Daylight	Clear	Dry	Rear end	P.D. only	5007175
	3	2005-07-14 10:06	Daylight	Clear	Dry	Turning movement	P.D. only	5000775
	4	2005-08-01 13:44	Daylight	Clear	Dry	Rear end	P.D. only	5000835
	5	2005-10-12 07:00	Daylight	Clear	Dry	Turning movement	P.D. only	5001089
	6	2005-11-18 18:36	Dusk	Clear	Dry	Rear end	P.D. only	6000072
	7	2005-11-24 08:30	Daylight	Snow	Loose snow	SMV - Skid to the right	P.D. only	5001306
	8	2005-12-02 10:30	Daylight	Clear	Dry	Angle (t-bone)	P.D. only	5001345
	9	2006-01-04 16:45	Dusk	Fog, mist, smoke, dust	Wet	Rear end	P.D. only	06002194S
	10	2006-06-04 16:30	Daylight	Clear	Dry	Turning movement	Non-fatal injury	60000604
	11	2006-08-20 20:55	Dark	Clear	Dry	Rear end	Non-fatal injury	6000879
	12	2006-10-19 22:10	Dark	Clear	Dry	Rear end	Non-fatal injury	6001067
	13	2007-05-10 14:15	Daylight	Clear	Dry	Rear end	P.D. only	07000562S
	14	2007-10-21 05:25	Dark	Fog, mist, smoke, dust	Dry	SMV - Animal	P.D. only	07205762S
	15	2007-12-05 07:05	Daylight	Clear	Dry	Rear end	P.D. only	07001452S
	16	2007-12-05 18:25	Dark	Clear	Dry	Turning movement	P.D. only	7001397
Mayfield Road /	17	2008-01-03 12:50	Daylight	Clear	Dry	Rear end	P.D. only	8000006
Heart Lake Road	18	2008-01-21 07:56	Daylight	Clear	Ice	Rear end	P.D. only	8000088
	19	2008-01-22 07:50	Daylight	Snow	Slush	Sideswipe	P.D. only	8013333
	20	2008-02-20 18:30	Dark	Clear	Dry	Angle (t-bone)	P.D. only	8000253
	21	2008-03-28 07:09	Daylight	Clear	Dry	Rear end	P.D. only	8020121
	22	2008-05-08 12:30	Daylight	Clear	Dry	Sideswipe	P.D. only	8083266
	23	2008-07-09 08:54	Daylight	Clear	Dry	Sideswipe	P.D. only	8020411
	24	2008-09-29 17:39	Daylight	Clear	Dry	Rear end	Non-fatal injury	8020685
	25	2008-10-20 12:30	Daylight	Rain	Wet	Rear end	P.D. only	8202879
	26	2008-11-02 21:45	Dark	Clear	Dry	Rear end	P.D. only	8214684
	27	2009-02-06 08:45	Daylight	Clear	Dry	Rear end	P.D. only	9000231
	28	2009-03-20 19:55	Dark	Clear	Dry	Rear end	P.D. only	9000416
	29	2009-04-14 16:15	Daylight	Clear	Dry	Rear end	P.D. only	9000454
	30	2009-04-26 19:15	Daylight	Clear	Dry	Rear end	P.D. only	9000540
	31	2009-05-31 12:31	Daylight	Clear	Dry	Turning movement	Non-fatal injury	9000651
	32	2009-07-26 09:20	Daylight	Clear	Dry	Rear end	P.D. only	9000971
	33	2009-08-01 15:45	Daylight	Clear	Dry	Turning movement	P.D. only	9000877
	34	2009-09-15 08:00	Daylight	Clear	Dry	Rear end	P.D. only	9170896

Appendix C

Peel Region Accident Analysis by Location Report

Traffic Engineering Software

Region of Peel

6/23/2010
Corrected 2011/06/23 DR

ACCIDENT ANALYSIS BY LOCATION REPORT

consice report

FROM: January 01, 2005 **TO:** December 31, 2009

INTERSECTION ID: INT_4813 **MUNICIPALITY:** BRAMPTON **DESCRIPTION:** CHINGUACOUSY RD @ MAYFIELD RD

1

Accident ID	Date & Time	Environment Condition 1	Light	Road 1 Surface Condition	Initial Impact Type	Classification of Accident		
02000214	06-Feb-05 11:40 AM	Fog, mist, smoke, dust	Daylight	Wet	Sideswipe	Non-fatal injury	1	
05001455	16-Dec-05 2:00 PM	Clear	Daylight	Dry	~~Angle (t-bone)~~	Non-fatal injury	2	TM
06031636S	20-Feb-06 10:30 PM	Clear	Daylight, artificial	Dry	~~Turning movement~~	P.D. only	3	Sideswipe
06000977	23-Sep-06 6:10 PM	Clear	Daylight	Dry	Rear end	P.D. only	4	
07059792S	03-Apr-07 8:00 AM	Rain	Dark	Wet	Sideswipe	P.D. only	5	
07001205	06-Nov-07 4:30 PM	Clear	Daylight	Dry	Rear end	P.D. only	6	
09000049	09-Jan-09 4:15 PM	Clear	Dawn	Dry	~~Turning movement~~	P.D. only	7	Angle
09000219	14-Jan-09 6:30 AM	Drifting snow	Dark	Ice	Rear end	P.D. only	8	
09000867	26-Jul-09 8:00 PM	Rain	Daylight	Wet	~~Approaching (head on)~~	P.D. only	9	SMV - Right
09001365	04-Dec-09 5:50 AM	Clear	Dark	Dry	Approaching (head on)	Non-fatal injury	10	

LOCATION TOTAL COLLISIONS: 10

INTERSECTION ID: INT_3318 **MUNICIPALITY:** BRAMPTON **DESCRIPTION:** COLONEL BERTRAM RD @ MAYFIELD RD

8

Accident ID	Date & Time	Environment Condition 1	Light	Road 1 Surface Condition	Initial Impact Type	Classification of Accident		
05012024S	20-Jan-05 6:15 PM	Clear	Dark	Loose snow	Rear end	P.D. only	1	
05174902	06-Sep-05 6:35 PM	Clear	Daylight	Dry	Sideswipe	P.D. only	2	
06000122	31-Jan-06 6:25 PM	Clear		Dry	Rear end	P.D. only	3	
06000702	21-Jun-06 1:30 PM	Clear	Daylight	Dry	~~Angle (t-bone)~~	P.D. only	4	TM
06000848	08-Aug-06 3:00 PM	Clear	Daylight	Dry	Rear end	P.D. only	5	
08205825	24-Oct-08 8:40 PM	Rain	Dark	Wet	~~Angle (t-bone)~~	P.D. only	6	SMV - Right
08020801	28-Oct-08 9:16 AM	Clear	Daylight	Dry	Rear end	Non-fatal injury	7	
09000924	09-Aug-09 9:00 PM	Rain	Dark	Wet	~~Turning movement~~	P.D. only	8	Angle
09001328	16-Nov-09 12:39 PM	Clear	Daylight	Dry	Angle (t-bone)	P.D. only	9	

LOCATION TOTAL COLLISIONS: 9

INTERSECTION ID: INT_2533 **MUNICIPALITY:** BRAMPTON **DESCRIPTION:** HEART LAKE RD @ MAYFIELD RD

18

Accident ID	Date & Time	Environment Condition 1	Light	Road 1 Surface Condition	Initial Impact Type	Classification of Accident		
05007658	13-Jan-05 7:00 PM	Rain	Dark	Wet	~~Turning movement~~	P.D. only	1	Head-on
05007175	28-Jan-05 9:01 AM	Clear	Daylight	Dry	Rear end	P.D. only	2	
05000775	14-Jul-05 10:06 AM	Clear	Daylight	Dry	~~Angle (t-bone)~~	P.D. only	3	TM
05000835	01-Aug-05 1:44 PM	Clear	Daylight	Dry	Rear end	P.D. only	4	
05001089	12-Oct-05 7:00 AM	Clear	Daylight	Dry	Turning movement	P.D. only	5	
06000072	18-Nov-05 6:36 PM	Clear	Dusk	Dry	Rear end	P.D. only	6	
05001306	24-Nov-05 8:30 AM	Snow	Daylight	Loose snow	SMV - Other	P.D. only	7	SMV - Right
05001345	02-Dec-05 10:30 AM	Clear	Daylight	Dry	Angle (t-bone)	P.D. only	8	
06002194S	04-Jan-06 4:45 PM	Fog, mist, smoke, dust	Dusk	Wet	Rear end	P.D. only	9	
60000604	04-Jun-06 4:30 PM	Clear	Daylight	Dry	Turning movement	Non-fatal injury	10	
06000879	20-Aug-06 8:55 PM	Clear	Dark	Dry	Rear end	Non-fatal injury	11	
06001067	19-Oct-06 10:10 PM	Clear	Dark	Dry	Rear end	Non-fatal injury	12	
07000562S	10-May-07 2:15 PM	Clear	Daylight	Dry	Rear end	P.D. only	13	
07205762S	21-Oct-07 5:25 AM	Fog, mist, smoke, dust	Dark	Dry	~~Approaching (head on)~~	P.D. only	14	SMV - Animal
07001452S	05-Dec-07 7:05 AM	Clear	Daylight	Dry	Rear end	P.D. only	15	
07001397	05-Dec-07 6:25 PM	Clear	Dark, artificial	Dry	Turning movement	P.D. only	16	
08000006	03-Jan-08 12:50 PM	Clear	Daylight	Dry	Rear end	P.D. only	17	
08000088	21-Jan-08 7:56 AM	Clear	Daylight	Ice	Rear end	P.D. only	18	
08013333	22-Jan-08 7:50 AM	Snow	Daylight	Slush	Sideswipe	Other	19	P.D. Only
08000253	20-Feb-08 6:30 PM	Clear	Dark	Dry	Angle (t-bone)	P.D. only	20	
08020121	28-Mar-08 7:09 AM	Clear	Daylight	Dry	Rear end	P.D. only	21	

08083266	08-May-08 12:30 PM	Clear	Daylight	Dry	Sideswipe	P.D. only	22		
08129795	09-Jul-08 8:30 AM	Clear	Daylight	Dry	Sideswipe	Other			This and the collision below are the same
08020411	09-Jul-08 8:54 AM	Clear	Daylight	Dry	~~Rear end~~	P.D. only	23	Sideswipe	
08020685	29-Sep-08 5:39 PM	Clear	Daylight	Dry	Rear end	Non-fatal injury	24		
08202879	20-Oct-08 12:30 PM	Rain	Daylight	Wet	Rear end	Other	25	P.D. Only	
08214684	02-Nov-08 9:45 PM	Clear	Dark	Dry	Rear end	Other	26	P.D. Only	
09000231	06-Feb-09 8:45 AM	Clear	Daylight	Dry	Rear end	P.D. only	27		
09000416	20-Mar-09 7:55 PM	Clear	Dark	Dry	Rear end	P.D. only	28		
09000454	14-Apr-09 4:15 PM	Clear	Daylight, artificial	Dry	Rear end	Other	29	P.D. Only	
09000540	26-Apr-09 7:15 PM	Clear	Daylight	Dry	Rear end	P.D. only	30		
09000651	31-May-09 12:31 PM	Clear	Daylight	Dry	Turning movement	Non-fatal injury	31		
09000971	26-Jul-09 9:20 AM	Clear	Daylight	Dry	Rear end	P.D. only	32		
09000877	01-Aug-09 3:45 PM	Clear	Daylight	Dry	Turning movement	P.D. only	33		
09170896	15-Sep-09 8:00 AM	Clear	Daylight	Dry	Rear end	Other	34		

LOCATION TOTAL COLLISIONS: 35

INTERSECTION ID: INT_3397 **MUNICIPALITY: BRAMPTON** **DESCRIPTION: HURONTARIO ST @ MAYFIELD RD**

7

Accident ID	Date & Time	Environment Condition 1	Light	Road 1 Surface Condition	Initial Impact Type	Classification of Accident			
05067001	14-Apr-05 2:04 PM	Clear	Daylight	Dry	Angle (t-bone)	P.D. only	1		
05113251S	17-Jun-05 12:30 PM	Clear	Daylight	Dry	Angle (t-bone)	P.D. only	2		
05000699	20-Jun-05 8:50 AM	Clear	Daylight	Dry	Angle (t-bone)	P.D. only	3		Listed as between Hurontario and RD/Cresthaven
05223225S	14-Nov-05 6:50 AM	Clear	Daylight	Dry	Sideswipe	P.D. only	4		
60000284	28-Feb-06 2:15 PM	Clear	Daylight	Dry	Angle (t-bone)	Non-fatal injury	5		
60000431	11-Apr-06 7:40 AM	Clear	Daylight	Dry	Rear end	P.D. only	6		
06000737	08-Jul-06 4:10 PM	Clear	Daylight	Dry	Sideswipe	P.D. only	7		
06000869	12-Aug-06 12:23 AM	Clear	Dark	Dry	Rear end	P.D. only	8		
06000900	24-Aug-06 2:55 PM	Clear	Daylight	Dry	Turning movement	Non-fatal injury	9		
60000925	31-Aug-06 7:05 AM	Clear	Daylight	Dry	Rear end	P.D. only	10		
06185942S	14-Sep-06 4:45 PM	Rain	Daylight	Wet	Rear end	P.D. only	11		
06000989	29-Sep-06 8:00 AM	Clear	Daylight	Dry	Rear end	P.D. only	12		Listed as between Hurontario and RD/Cresthaven
06195570	06-Oct-06 11:30 PM	Clear	Dark, artificial	Dry	~~Approaching (head on)~~	P.D. only	13	Angle	
60001069	20-Oct-06 5:40 AM	Clear	Dark	Dry	~~Angle (t-bone)~~	P.D. only	14	Sideswipe	
07006001	10-Jan-07 12:20 PM	Clear	Daylight	Dry	Turning movement	Non-fatal injury	15		
07032220	21-Feb-07 9:25 AM	Clear	Daylight	Dry	Rear end	P.D. only	16		
07071802	22-Apr-07 7:24 PM	~~Other~~	Daylight	Dry	~~Turning movement~~	Non-fatal injury	17	SMV - Ped	Clear
07134621	16-Jul-07 10:10 AM	Clear	Daylight	Dry	Turning movement	P.D. only			Collision in a parking lot, not on road
07001097	17-Oct-07 9:15 AM	Fog, mist, smoke, dust	Daylight	Wet	Angle (t-bone)	P.D. only	18		
08000122	26-Jan-08 7:48 AM	Clear	Daylight	Ice	SMV - Other	P.D. only	19	SMV - Left	
08026166	11-Feb-08 6:21 AM	Clear	Dawn	Wet	~~Approaching (head on)~~	P.D. only	20	TM	
08149564	05-Aug-08 7:30 PM	Rain	Dusk, artificial	Wet	SMV - Other	Other			Not on Mayfield Road
08020494	07-Aug-08 5:37 PM	Clear	Daylight	Dry	Rear end	P.D. only	21		
08202509	16-Aug-08 1:30 PM	Clear	Daylight	Dry	Rear end	Other	22		
08020617	07-Sep-08 12:30 PM	Rain	Daylight	Wet	~~Turning movement~~	Other	23	Sideswipe	
08020663	10-Sep-08 3:20 PM	Clear	Daylight	Dry	~~Angle (t-bone)~~	P.D. only	24	TM	
08020744	16-Oct-08 7:20 PM	Clear	Dark, artificial	Dry	Rear end	P.D. only	25		
08020936	20-Oct-08 10:55 AM	Clear	Daylight	Dry	~~Turning movement~~	P.D. only	26	Sideswipe	
09000135	16-Jan-09 4:00 PM	Clear	Dusk	Loose snow	Angle (t-bone)	P.D. only	27		
09014817	26-Jan-09 6:20 PM	Clear	Dark, artificial	Mud	~~Sideswipe~~	Other	28	Angle	
09065562	19-Apr-09 10:20 AM	Clear	Daylight	Dry	Rear end	Other	29		
09000575	03-May-09 4:19 AM	Clear	Dark	Dry	Angle (t-bone)	P.D. only	30		
09000831	09-Jul-09 11:13 AM	Clear	Daylight	Dry	Angle (t-bone)	P.D. only	31		

LOCATION TOTAL COLLISIONS: 31

INTERSECTION ID: INT_2982 **MUNICIPALITY: BRAMPTON** **DESCRIPTION: INDER HEIGHTS DR @ MAYFIELD RD**

12

Accident ID	Date & Time	Environment Condition 1	Light	Road 1 Surface Condition	Initial Impact Type	Classification of Accident		
05106656	09-Jun-05 7:22 AM	Clear	Daylight	Dry	Angle (t-bone)	P.D. only	1	
08000195	08-Feb-08 5:50 PM	Clear	Dusk	Dry	~~Turning movement~~	Non-fatal injury	2	Angle

LOCATION TOTAL COLLISIONS: 2

INTERSECTION ID: INT_2852 **MUNICIPALITY:** BRAMPTON **DESCRIPTION:** KENNEDY RD N @ MAYFIELD RD

14

Accident ID	Date & Time	Environment Condition 1	Light	Road 1 Surface Condition	Initial Impact Type	Classification of Accident			
05065692S	12-Apr-05 2:30 PM	Clear	Daylight	Dry	Angle (t-bone)	P.D. only	1		
05154054	09-Aug-05 5:55 PM	Clear	Daylight	Dry	~~Turning movement~~	Non-fatal injury	2	SMV - Ped	
05001073	14-Oct-05 4:20 PM	Clear	Daylight	Dry	Rear end	Non-fatal injury	3		
60000720	03-Jul-06 10:10 PM	Clear	Dark	Dry	SMV - Other	P.D. only	4	SMV - Animal	
07000905	19-Aug-07 6:50 PM	Clear	Daylight	Dry	Angle (t-bone)	P.D. only	5		
07001047	01-Oct-07 6:00 PM	Clear	Daylight	Dry	~~Turning movement~~	P.D. only	6	Sideswipe	
07001122	22-Oct-07 5:20 PM	Clear	Daylight	Dry	SMV - Other	Non-fatal injury	7	SMV - Ped	
07001146	27-Oct-07 4:30 PM	Rain	Daylight	Wet	Rear end	Non-fatal injury	8		Listed as between Kennedy and Stonegate
08000200	08-Feb-08 8:15 AM	Clear	Daylight	Dry	Rear end	P.D. only	9		
08020148	05-Apr-08 12:10 PM	Clear	Daylight	Dry	Rear end	P.D. only	10		
08020140	20-Apr-08 4:22 PM	Clear	Daylight	Dry	Turning movement	P.D. only	11		
08205619	21-Oct-08 5:30 AM	Strong wind	Dark	Other	Sideswipe	Other			Occured on Mayfield Rd east of Kennedy
09001025	01-Jan-09 6:30 PM	Clear	Dark	Dry	Rear end	Other	12	P.D. Only	
09011275	20-Jan-09 3:54 PM	Clear	Daylight	Dry	Rear end	P.D. only	13		
09000133	22-Jan-09 11:15 PM	Clear	Dark, artificial	Wet	Angle (t-bone)	P.D. only	14		
09000167	28-Jan-09 7:20 AM	Snow	Daylight	Loose snow	Approaching (head on)	Non-fatal injury	15		
09000315	26-Feb-09 12:01 PM	Clear	Daylight	Loose sand or gravel	Rear end	P.D. only	16		
09001216	29-Oct-09 1:30 PM	Clear	Daylight	Dry	Approaching (head on)	P.D. only	17		
09001190	02-Nov-09 7:05 PM	Rain	Dark, artificial	Wet	SMV - Other	P.D. only	18	SMV - Object	

LOCATION TOTAL COLLISIONS: 18

INTERSECTION ID: INT_4096 **MUNICIPALITY:** BRAMPTON **DESCRIPTION:** MAYFIELD RD @ MCLAUGHLIN RD N

3

Accident ID	Date & Time	Environment Condition 1	Light	Road 1 Surface Condition	Initial Impact Type	Classification of Accident			
05000181	28-Jan-05 7:20 AM	Clear	Daylight	Packed snow	Rear end	P.D. only	1		
05000282	23-Feb-05 10:00 AM	Clear	Daylight	Dry	~~Angle (t-bone)~~	P.D. only	2	TM	
05000786	17-Jul-05 10:30 AM	Clear	Daylight	Wet	Angle (t-bone)	P.D. only	3		
05001047	08-Oct-05 4:50 AM	Clear	Dark	Dry	Angle (t-bone)	P.D. only	4		
05001119	19-Oct-05 10:05 PM	Clear	Daylight, artificial	Dry	Angle (t-bone)	P.D. only	5		
60001320	07-Dec-06 8:15 AM	Snow	Daylight	Loose snow	SMV - Other	P.D. only	6	SMV - Right	
07000884	30-Jul-07 3:25 PM	Clear	Daylight	Dry	SMV - Other	P.D. only	7	SMV - Right	
07168999	31-Aug-07 2:45 AM	Clear	Dark	Dry	Angle (t-bone)	P.D. only	8		
08020307	10-Jun-08 8:30 AM	Rain	Daylight	Wet	Angle (t-bone)	Non-fatal injury	9		
08223930	19-Nov-08 6:00 PM	Snow	Dark	~~Other~~	Angle (t-bone)	Other	10	P.D. Only	Ice
09000098	16-Jan-09 2:10 PM	Clear	Daylight	Loose snow	Angle (t-bone)	P.D. only	11		
09000828	11-Jul-09 6:10 PM	Clear	Daylight	Dry	Angle (t-bone)	Non-fatal injury	12		

LOCATION TOTAL COLLISIONS: 12

INTERSECTION ID: INT_3629 **MUNICIPALITY:** BRAMPTON **DESCRIPTION:** MAYFIELD RD @ ROBERTSON DAVIES DR/CRESTHAVEN RD

5

Accident ID	Date & Time	Environment Condition 1	Light	Road 1 Surface Condition	Initial Impact Type	Classification of Accident		
05000511	26-Apr-05 6:00 PM	Clear	Daylight	Dry	Angle (t-bone)	Non-fatal injury	1	
08150167	06-Aug-08 5:30 PM	Clear	Daylight	Dry	Turning movement	Non-fatal injury	2	
08020799	11-Oct-08 2:45 PM	Clear	Daylight	Dry	SMV - Other	Non-fatal injury	3	SMV - Right
09180258	28-Sep-09 5:25 PM	Rain	Daylight	Wet	Rear end	Other	4	P.D. Only

LOCATION TOTAL COLLISIONS: 4

INTERSECTION ID: INT_2707 **MUNICIPALITY:** BRAMPTON **DESCRIPTION:** MAYFIELD RD @ STONEGATE DR

16

Accident ID	Date & Time	Environment Condition 1	Light	Road 1 Surface Condition	Initial Impact Type	Classification of Accident			
08007901	11-Jan-08 7:40 AM	Other	Daylight	Wet	Rear end	Other	1	P.D. Only	Overcast
08020660	27-Sep-08 3:31 PM	Rain	Daylight	Dry	Rear end	P.D. only	2		

LOCATION TOTAL COLLISIONS: 2

INTERSECTION ID: INT_3205 **MUNICIPALITY: BRAMPTON** **DESCRIPTION: MAYFIELD RD @ SUMMER VALLEY DR** 10

Accident ID	Date & Time	Environment Condition 1	Light	Road 1 Surface Condition	Initial Impact Type	Classification of Accident		
05000531	04-May-05 12:05 PM	Clear	Daylight	Dry	Sideswipe	P.D. only	1	
05001004	23-Sep-05 6:14 PM	Clear	Daylight	Dry	Rear end	P.D. only	2	
06059506S	05-Apr-06 9:15 AM	Clear	Daylight	Dry	Sideswipe	P.D. only	3	
07001379	03-Jan-07 8:18 AM	Clear	Daylight	Ice	Rear end	P.D. only	4	
08015924	26-Jan-08 8:45 AM	Clear	Daylight	Dry	Rear end	P.D. only	5	
08020224	05-May-08 6:58 AM	Clear	Daylight	Dry	Rear end		6	P.D. Only
09000795	01-Jul-09 2:59 PM	Clear	Daylight	Dry	Rear end	P.D. only	7	

LOCATION TOTAL COLLISIONS: 7

INTERSECTION ID: INT_3143 **MUNICIPALITY: BRAMPTON** **DESCRIPTION: MAYFIELD RD @ VALLEYVIEW RD** 11

Accident ID	Date & Time	Environment Condition 1	Light	Road 1 Surface Condition	Initial Impact Type	Classification of Accident		
07037158	28-Feb-07 2:30 PM	Clear	Daylight	Dry	~~Sideswipe~~	P.D. only	5	Angle

LOCATION TOTAL COLLISIONS: 1

MIDBLOCK ID: 762 **MUNICIPALITY: BRAMPTON** **DESCRIPTION: MAYFIELD RD btwn HEART LAKE RD & STONEGATE DR** 17

Accident ID	Date & Time	Environment Condition 1	Light	Road 1 Surface Condition	Initial Impact Type	Classification of Accident			
05000550	09-May-05 7:25 AM	Clear	Daylight	Dry	Angle (t-bone)	P.D. only	1		
05000556	09-May-05 7:45 AM	Clear	Daylight	Dry	Rear end	P.D. only	2		
05000665	14-Jun-05 3:40 PM	Clear	Daylight	Dry	Approaching (head on)	P.D. only	3		
05001385	09-Dec-05 8:44 AM	Clear	Daylight	Wet	SMV - Other	P.D. only	4	SMV - Right	
06000179	06-Feb-06 12:00 PM	Snow	Daylight	Loose snow	SMV - Other	P.D. only			Not on Mayfield Road
60000863	15-Aug-06 6:30 PM	Clear	Daylight	Dry	SMV - Other	P.D. only	5	SMV - Right	
07001074S	22-Sep-07 11:45 AM	Clear	Dark	Dry	~~Approaching (head on)~~	P.D. only	6	SMV - Animal	Listed as between Kennedy and Stonegate
07001094	15-Oct-07 7:45 PM	Clear	Dark	Dry	Other	P.D. only	7	Animal (involves 2 vehicles)	
07001258	16-Nov-07 12:56 PM	Clear	Daylight	Dry	Rear end	Non-fatal injury	8		
07001526	29-Dec-07 6:23 AM	Clear	Dark	Wet	Sideswipe	Non-fatal injury			Occured outside study area
08000039	11-Jan-08 9:45 AM	Clear	Daylight	Dry	Rear end	P.D. only	9		
09000580	09-May-08 3:30 PM	Clear	Daylight	Dry	Rear end	P.D. only	10		Listed as between Kennedy and Stonegate
09000083	11-Jan-09 1:44 AM	Snow	Dark	Ice	Rear end	P.D. only	11		
09000566	02-May-09 9:08 AM	Clear	Daylight	Dry	Sideswipe	P.D. only	12		
09001311	27-Nov-09 10:40 PM	Clear	Dark	Dry	SMV - Other	P.D. only	13	SMV - Animal	

LOCATION TOTAL COLLISIONS: 13

MIDBLOCK ID: 907 **MUNICIPALITY: BRAMPTON** **DESCRIPTION: MAYFIELD RD btwn HURONTARIO ST & ROBERTSON DAVIES DR/CRESTHAVEN RD** 6

Accident ID	Date & Time	Environment Condition 1	Light	Road 1 Surface Condition	Initial Impact Type	Classification of Accident			
05083888	09-May-05 4:35 PM	Clear	Daylight	Dry	Rear end	P.D. only	1		
05000699	20-Jun-05 8:50 AM	Clear	Daylight	Dry	Angle (t-bone)	P.D. only			Occured at Mayfield / Hurontario
63000071	25-Mar-06 10:00 AM	Rain	Daylight	Wet	Rear end	Non-fatal injury	2		
06000959	17-Sep-06 12:48 AM	Clear	Dark	Dry	SMV - Other	P.D. only	3	SMV - Animal	
06000989	29-Sep-06 8:00 AM	Clear	Daylight	Dry	Rear end	P.D. only			Occured at Mayfield / Hurontario
06212468	30-Oct-06 12:40 PM	Clear	Daylight	Dry	Sideswipe	P.D. only	4		
06213019	31-Oct-06 7:30 AM	Clear	Daylight	Dry	~~Turning movement~~	P.D. only	5	Angle	
07007949	04-Sep-07 10:30 AM	Clear	Daylight	Dry	Sideswipe	P.D. only	6		
07001067	01-Oct-07 2:28 PM	Clear	Daylight	Dry	Rear end	Non-fatal injury	7		
08000176	06-Feb-08 5:32 AM	Snow	Dark	Slush	Rear end	P.D. only	8		
08020353	26-May-08 5:39 PM	Clear	Daylight	Dry	Sideswipe	P.D. only	9		
09001316	24-Nov-09 5:36 AM	Rain	Dawn, artificial	Wet	~~Angle (t-bone)~~	P.D. only	10	SMV - Animal	

LOCATION TOTAL COLLISIONS: 12

MIDBLOCK ID: 392 **MUNICIPALITY: BRAMPTON** **DESCRIPTION: MAYFIELD RD btwn INDER HEIGHTS DR & VALLEYVIEW RD** 11

Accident ID	Date & Time	Environment Condition 1	Light	Road 1 Surface Condition	Initial Impact Type	Classification of Accident	
09000577	05-May-09 3:40 PM	Clear	Daylight	Dry	Rear end	P.D. only	7

LOCATION TOTAL COLLISIONS: 1

MIDBLOCK ID: 264 **MUNICIPALITY: BRAMPTON** **DESCRIPTION: MAYFIELD RD btwn KENNEDY RD N & INDER HEIGHTS DR**

13

Accident ID	Date & Time	Environment Condition 1	Light	Road 1 Surface Condition	Initial Impact Type	Classification of Accident				
05000387	24-Mar-05 8:30 PM	Clear	Dark	Dry	SMV - Other	Non-fatal injury	1	SMV - Animal		
05175300S	07-Sep-05 10:30 AM	Clear	Daylight	Dry	Rear end	P.D. only	2			
05001104	22-Oct-05 3:40 PM	Rain	Daylight	Wet	SMV - Other	P.D. only	3	SMV - Left		
60000381	28-Mar-06 5:30 AM	Clear	Dark	Dry	SMV - Other	Non-fatal injury				Occured between Inder Heights and Summer Valley
07000807	17-Jul-07 4:45 PM	Clear	Daylight	Dry	Rear end	Non-fatal injury				Occured between Kennedy and Stonegate
07001017	20-Sep-07 4:20 PM	Clear	Daylight	Dry	Rear end	P.D. only				Occured between Inder Heights and Summer Valley
08020263	25-May-08 4:00 PM	Clear	Daylight	Dry	Rear end	P.D. only	4			
08020646	20-Sep-08 5:30 PM	Clear	Daylight	Dry	Rear end	P.D. only	5			
08021167	18-Dec-08 9:00 PM	Clear	Dark	Wet	Sideswipe	P.D. only				Occured between Kennedy and Stonegate
09000463	30-Mar-09 6:40 AM	Clear	Dawn	Dry	Rear end	Non-fatal injury	6			
09000730	24-Jun-09 7:25 PM	Clear	Daylight	Dry	Rear end	Other	7	P.D. Only		

LOCATION TOTAL COLLISIONS: 11

MIDBLOCK ID: 233 **MUNICIPALITY: BRAMPTON** **DESCRIPTION: MAYFIELD RD btwn MCLAUGHLIN RD N & CHINGUACOUSY RD**

2

Accident ID	Date & Time	Environment Condition 1	Light	Road 1 Surface Condition	Initial Impact Type	Classification of Accident			
05001350	04-Dec-05 7:20 AM	Clear	Daylight	Packed snow	SMV - Other	Non-fatal injury	1	SMV - Left	
64000088	26-Apr-06 3:20 PM	Clear	Daylight	Dry	SMV - Other	P.D. only			Not on Mayfield Road
08020932	30-Nov-08 5:00 AM	Clear	Dark	Dry	SMV - Other	Fatal injury	2	SMV - Left	
09000132	21-Jan-09 7:15 AM	Clear	Dawn	Dry	SMV - Other	P.D. only	3	SMV - Object	Listed as between McLaughlin and RD/Cresthaven
09000518	24-Apr-09 9:45 PM	Clear	Dark	Dry	~~Angle (t-bone)~~	P.D. only	4	SMV - Animal	

LOCATION TOTAL COLLISIONS: 4

MIDBLOCK ID: 795 **MUNICIPALITY: BRAMPTON** **DESCRIPTION: MAYFIELD RD btwn ROBERTSON DAVIES DR/CRESTHAVEN RD & MCLAUGHLIN RD N**

4

Accident ID	Date & Time	Environment Condition 1	Light	Road 1 Surface Condition	Initial Impact Type	Classification of Accident		
05162274	20-Aug-05 8:54 PM	Clear	Dark	Dry	Turning movement	Non-reportable		Not on Mayfield Road
05001429	12-Dec-05 2:50 PM	Clear	Daylight	Dry	Rear end	Non-fatal injury	1	
08020205	02-May-08 8:20 AM	Rain	Daylight	Wet	Rear end	P.D. only	2	
09000020	07-Jan-09 7:50 AM	Snow	Daylight	Slush	Rear end	P.D. only	3	
09000132	21-Jan-09 7:15 AM	Clear	Dawn	Dry	SMV - Other	P.D. only		Occured between Chinguacousy and McLaughlin

LOCATION TOTAL COLLISIONS: 5

MIDBLOCK ID: 312 **MUNICIPALITY: BRAMPTON** **DESCRIPTION: MAYFIELD RD btwn STONEGATE DR & KENNEDY RD N**

15

Accident ID	Date & Time	Environment Condition 1	Light	Road 1 Surface Condition	Initial Impact Type	Classification of Accident				
05001353	05-Dec-05 4:40 AM	Clear	Dark	Dry	Sideswipe	Non-fatal injury	1			
06000029	12-Jan-06 7:55 AM	Clear	Daylight	Dry	Angle (t-bone)	P.D. only	2			
06000966	20-Sep-06 5:40 PM	Clear	Daylight	Dry	SMV - Other	P.D. only	3	SMV - Right		
07000516	26-Apr-07 4:45 PM	Rain	Daylight	Wet	Rear end	P.D. only	4			
07000781	08-Jul-07 6:15 PM	Rain	Daylight	Wet	Rear end	P.D. only	5			
07000807	17-Jul-07 4:45 PM	Clear	Daylight	Dry	Rear end	Non-fatal injury	6			Listed as between Kennedy and Inder Heights
07001074S	22-Sep-07 11:45 AM	Clear	Dark	Dry	Approaching (head on)	P.D. only				Occured between Stonegate and Heart Lake
07001146	27-Oct-07 4:30 PM	Rain	Daylight	Wet	Rear end	Non-fatal injury				Occured at the Mayfield / Kennedy intersection
09000580	09-May-08 3:30 PM	Clear	Daylight	Dry	Rear end	P.D. only				Occured between Stonegate and Heart Lake
08020554	18-Aug-08 8:45 PM	Clear	Dusk	Dry	~~Approaching (head on)~~	P.D. only	7	Sideswipe		
08205619	21-Oct-08 5:30 AM	Strong wind	Dark	~~Other~~	~~Sideswipe~~	Other	8	SMV - Debris	P.D. Only	Dry Listed as intersection collision (Mayfield/Kennedy)
08021167	18-Dec-08 9:00 PM	Clear	Dark	Wet	Sideswipe	P.D. only	9			Listed as between Kennedy and Inder Heights
09000142	16-Jan-09 5:10 PM	Clear	Dusk	Loose snow	Rear end	P.D. only	10			
09000496	07-Mar-09 12:03 PM	Rain	Daylight	Wet	Rear end	P.D. only	11			
09000645	01-Jun-09 2:32 PM	Clear	Daylight	Dry	Sideswipe	Non-fatal injury	12			

LOCATION TOTAL COLLISIONS: 12

MIDBLOCK ID: 170 **MUNICIPALITY: BRAMPTON** **DESCRIPTION: MAYFIELD RD btwn SUMMER VALLEY DR & COLONEL BERTRAM RD**

9

Accident ID	Date & Time	Environment Condition 1	Light	Road 1 Surface Condition	Initial Impact Type	Classification of Accident	
61000022	31-Jan-06 6:25 PM	Clear		Dry	Rear end	P.D. only	Occured at the Mayfield / Col. Bertram intersection

LOCATION TOTAL COLLISIONS: 1

MIDBLOCK ID: 398 **MUNICIPALITY:** BRAMPTON **DESCRIPTION:** MAYFIELD RD btwn VALLEYVIEW RD & SUMMER VALLEY DR

Accident ID	Date & Time	Environment Condition 1	Light	Road 1 Surface Condition	Initial Impact Type	Classification of Accident			
05000935	31-Aug-05 4:20 PM	Clear	Daylight	Dry	Rear end	P.D. only	1		
05001411	11-Dec-05 11:00 PM	Clear	Dark	Dry	Rear end	P.D. only	2		
60000381	28-Mar-06 5:30 AM	Clear	Dark	Dry	SMV - Other	Non-fatal injury	3	SMV - Left	Listed as between Inder Heights and Kennedy
06000408	02-Apr-06 12:05 PM	Clear	Daylight	Dry	SMV - Other	P.D. only	4		
07001017	20-Sep-07 4:20 PM	Clear	Daylight	Dry	Rear end	P.D. only	6		Listed as between Inder Heights and Kennedy

LOCATION TOTAL COLLISIONS: 3

Grand Total:193

Appendix D

Signal Timing Plans for Intersections along Mayfield Road

REGIONAL MUNICIPALITY OF PEEL

Traffic Signal Timing Parameters

DATE:	June 30, 2009		**Completed By:**	**MF**
Database Rev		**7**	**Approved By:**	
Timing Card / Field rev		**-**		

Location:	Mayfield Road @ Colonel Bertram Road						**TIME PERIOD (sec.) (Green+Amber+All Red)**			
Phase #	**Direction**	**Vehicle Minimum (sec.)**	**Pedestrian Minimum (sec.)**	**Amber (sec.)**	**All Red (sec.)**		**AM MAX**	**PM MAX**	**Midday MAX**	**All Other Times**
1										
2	**Mayfield Road - E/B**	8.0	22.0	4.0	2.5		85.0	85.0	75.0	55.5
3										
4	**Colonel Bertram - N/B**	8.0	27.0	4.0	3.0		35.0	35.0	35.0	32.0
5										
6	**Mayfield Road - W/B**	8.0	22.0	4.0	2.5		85.0	85.0	75.0	55.5
7										
8	**Private Drive - S/B**	8.0	27.0	4.0	3.0		35.0	35.0	35.0	32.0

System Control	NO
Local Control	YES
Semi-Actuated Mode	YES

TIME	**PEAK**	**CYCLE LENGTH (sec.)**
06:00-09:30	**AM**	**120**
15:00-20:00	**PM**	**120**
09:30-15:00	**Midday**	**110**
All other times		**LOCAL**

REGIONAL MUNICIPALITY OF PEEL

Traffic Signal Timing Parameters

DATE:	June 8, 2010		**Completed By:**	**MF**	
Database Rev	**18**		**Approved By:**		
Timing Card / Field rev	**-**				

Location:	Mayfield Road @ Heart Lake Road						**TIME PERIOD (sec.) (Green+Amber+All Red)**		
Phase #	**Direction**	**Vehicle Minimum (sec.)**	**Pedestrian Minimum (sec.)**	**Amber (sec.)**	**All Red (sec.)**		**AM MAX**	**PM MAX**	**All Other Times**
1	**Mayfield Road - W/B P.P. LT**	5.0	-	3.0	-		-	-	-
2	**Mayfield Road - E/B**	12.0	29.0	4.6	2.1		100.0	85.0	31.7
3									
4	**Heart Lake Road - N/B**	8.0	33.0	4.0	2.9		40.0	35.0	31.9
5									
6	**Mayfield Road - W/B**	12.0	29.0	4.6	2.1		100.0	85.0	31.7
7	**Heart Lake Road - N/B P.P. LT**	5.0	-	30.0	-		-	9.0	-
8	**Heart Lake Road - S/B**	8.0	33.0	4.0	2.9		40.0	26.0	31.9

System Control	NO
Local Control	YES
Fully-Actuated Mode	YES

TIME	**PEAK**	**CYCLE LENGTH (sec.)**
06:00-09:30	**AM**	**140**
15:00-20:00	**PM**	**120**
All other times		**LOCAL**

REGIONAL MUNICIPALITY OF PEEL

Traffic Signal Timing Parameters

DATE:	November 22, 1999		**Completed By:**	MF
Database Rev	4		**Approved By:**	
Timing Card / Field rev	-			

Location:	Mayfield Road @ Mclaughlin Road						**TIME PERIOD (sec.) (Green+Amber+All Red)**
Phase #	**Direction**	**Vehicle Minimum (sec.)**	**Pedestrian Minimum (sec.)**	**Amber (sec.)**	**All Red (sec.)**		**All Other Times**
1							
2	**Mayfield Road - EW**	18.0	26.0	4.6	2.0		46.6
3							
4	**Mclaughlin Road - NS**	17.0	24.0	4.6	2.0		31.6

System Control	NO
Local Control	YES
Fully-Actuated Mode	YES

TIME	**PEAK**	**CYCLE LENGTH (sec.)**
All other times		**LOCAL**

REGIONAL MUNICIPALITY OF PEEL

Traffic Signal Timing Parameters

DATE:	November 18, 2009		**Completed By:**	**MF**
Database Rev		**21**	**Approved By:**	
Timing Card / Field rev		-		

Location:	Mayfield Road @ Chingacousy Road						**TIME PERIOD (sec.) (Green+Amber+All Red)**		
Phase #	**Direction**	**Vehicle Minimum (sec.)**	**Pedestrian Minimum (sec.)**	**Amber (sec.)**	**All Red (sec.)**		**AM MAX**	**PM MAX**	**All Other Times**
1									
2	**Mayfield Road - E/B**	12.0	13.0	4.6	2.0		61.6	46.6	46.6
3									
4	**Chingacousy Road - N/B**	12.0	13.0	4.6	2.0		26.6	31.6	26.6
5									
6	**Mayfield Road - W/B**	12.0	13.0	4.6	2.0		61.6	46.6	46.6
7									
8	**Chingacousy Road - S/B**	12.0	13.0	4.6	2.0		26.6	31.6	26.6

System Control	NO
Local Control	YES
Fully-Actuated Mode	YES

TIME	**PEAK**	**CYCLE LENGTH (sec.)**
07:00-09:00	**AM**	**LOCAL**
15:30-19:00	**PM**	**LOCAL**
All other times		**LOCAL**

REGIONAL MUNICIPALITY OF PEEL

Traffic Signal Timing Parameters

DATE:	February 19, 2009		**Completed By:**	MF	
Database Rev		8	**Approved By:**		
Timing Card / Field rev		-			

Location:	Mayfield Road @ HWY 10 / Main Street						**TIME PERIOD (sec.) (Green+Amber+All Red)**			
Phase #	**Direction**	**Vehicle Minimum (sec.)**	**Pedestrian Minimum (sec.)**	**Amber (sec.)**	**All Red (sec.)**		**AM MAX**	**PM MAX**	**Midday MAX**	**All Other Times**
1										
2	HWY 10 - S/B	8.0	38.0	4.0	3.1		66.0	66.0	66.0	27.1
3										
4	Mayfield Road - W/B	8.0	37.0	4.0	3.0		54.0	54.0	44.0	47.0
5	HWY 10 - S/B Prot. LT	8.0	-	4.0	3.1		20.0	18.0	20.0	27.1
6	HWY 10 - N/B	8.0	38.0	4.0	3.1		46.0	48.0	46.0	27.1
7	Mayfield Road - W/B Prot. LT	8.0	-	4.0	3.0		17.0	17.0	16.0	22.0
8	Mayfield Road - E/B	8.0	37.0	4.0	3.0		37.0	37.0	28.0	47.0

System Control	NO
Local Control	YES
Fully-Actuated Mode	YES

TIME	**PEAK**	**CYCLE LENGTH (sec.)**
06:00-09:30	**AM**	**120**
15:00-20:00	**PM**	**120**
09:30-15:00	**Midday**	**110**
All other times		**LOCAL**

REGIONAL MUNICIPALITY OF PEEL

Traffic Signal Timing Parameters

DATE:	June 30, 2009			Completed By:	MF
Database Rev		5		Approved By:	
Timing Card / Field rev		-			

Location:	Mayfield Road @ Summer Valley Drive						TIME PERIOD (sec.) (Green+Amber+All Red)			
Phase #	Direction	Vehicle Minimum (sec.)	Pedestrian Minimum (sec.)	Amber (sec.)	All Red (sec.)		AM MAX	PM MAX	Midday MAX	All Other Times
1										
2	Mayfield Road - E/B	8.0	18.0	4.0	2.5		85.0	92.0	80.0	45.5
3										
4	Computer Phase - N/B	8.0	20.0	4.0	3.0		35.0	28.0	30.0	32.0
5										
6	Mayfield Road - W/B	8.0	18.0	4.0	2.5		85.0	92.0	80.0	45.5
7										
8	Summer Valley - S/B	8.0	20.0	4.0	3.0		35.0	28.0	30.0	32.0

System Control	NO
Local Control	YES
Semi-Actuated Mode	YES

TIME	PEAK	CYCLE LENGTH (sec.)
06:00-09:30	AM	120
15:00-20:00	PM	120
09:30-15:00	Midday	110
All other times		LOCAL

REGIONAL MUNICIPALITY OF PEEL

Traffic Signal Timing Parameters

DATE:	June 30, 2009			Completed By:	MF
Database Rev		24		Approved By:	
Timing Card / Field rev		-			

Location:	Mayfield Road @ Kennedy Road						TIME PERIOD (sec.) (Green+Amber+All Red)		
Phase #	Direction	Vehicle Minimum (sec.)	Pedestrian Minimum (sec.)	Amber (sec.)	All Red (sec.)		AM MAX	PM MAX	All Other Times
1									
2	Mayfield Road - E/W	12.0	25.0	4.6	2.0		115.0	90.0	53.6
3									
4	Kennedy Road - N/S	8.0	21.0	4.0	2.0		25.0	30.0	36.0

System Control	NO
Local Control	YES
Semi-Actuated Mode	YES

TIME	PEAK	CYCLE LENGTH (sec.)
06:00-09:30	AM	140
15:00-20:00	PM	120
All other times		LOCAL

REGIONAL MUNICIPALITY OF PEEL

Traffic Signal Timing Parameters

DATE:	June 29, 2009			**Completed By:**	MF
Database Rev		2		**Approved By:**	
Timing Card / Field rev		-			

Location: Mayfield Road @ Robertson Davies Drive / Cresthaven Road

Phase #	Direction	Vehicle Minimum (sec.)	Pedestrian Minimum (sec.)	Amber (sec.)	All Red (sec.)		TIME PERIOD (sec.) (Green+Amber+All Red) AM MAX	PM MAX	All Other Times
1									
2	Mayfield Road - EW	8.0	19.0	4.0	2.0		35.0	40.0	62.0
3									
4	Robertson Davies Dr - NS	8.0	21.0	4.0	2.0		25.0	20.0	26.3

System Control	YES
Local Control	YES
Semi-Actuated Mode	YES

TIME	PEAK	CYCLE LENGTH (sec.)
06:00-09:00	AM	60
15:00-18:00	PM	60
All other times		LOCAL

Appendix E

Intersection and Queuing Analysis Summary Results

Intersection Level of Service, Existing Traffic Volumes

Intersection	AM Peak Hour			PM Peak Hour		
Movement	V/C	Delay (sec.)	LOS	V/C	Delay (sec.)	LOS
Mayfield Road & Chinguacousy Road	0.47	10	B	0.58	11	B
Mayfield Road & McLaughlin Road	0.52	12	B	0.53	14	B
Mayfield Road & Van Kirk Drive						
Westbound Left	0.05	9	A	0.16	9	A
Northbound Left	0.06	26	D	0.02	40	E
Northbound Right	0.39	16	C	0.15	12	B
Mayfield Road & Cresthaven Road/Robertson Davies Drive	0.62	12	B	0.56	8	A
Mayfield Road & Highway 10	0.62	26	C	0.55	26	C
Mayfield Road & Colonel Bertram Road	0.24	8	A	0.27	10	B
Mayfield Road & Summer Valley Drive	0.27	6	A	0.27	6	A
Mayfield Road & Valley View Drive						
Westbound Left	0.00	0	A	0.00	0	A
Northbound Left	0.01	11	B	0.00	10	B
Mayfield Road & Inder Heights Drive						
Westbound Left	0.01	10	A	0.02	8	A
Northbound Left	0.04	22	C	0.01	18	C
Northbound Right	0.03	11	B	0.01	10	A
Mayfield Road & Kennedy Road	0.44	10	A	0.32	14	B
Mayfield Road & Stonegate Drive						
Westbound Left	0.03	10	A	0.10	9	A
Northbound Left	0.30	18	C	0.07	13	B
Mayfield Road & Heart Lake Road	0.56	17	B	0.39	13	B

Existing Traffic Conditions – Queue Lengths

Intersection Movement	Available Storage Length (m)	Queue Length (metres) AM Peak Hour	Queue Length (metres) PM Peak Hour
Mayfield Road & McLaughlin Road			
Westbound Left	30	28	21
Northbound Right	25	21	21
Eastbound Left	30	7	0
Mayfield Road & Van Kirk Drive			
Westbound Left	35	0	7
Northbound Left	40	0	0
Eastbound Right	30	0	0
Mayfield Road & Cresthaven Road/ Robertson Davies Drive			
Southbound Left	30	14	7
Westbound Right	30	0	14
Westbound Left	30	7	14
Northbound Left	35	7	0
Eastbound Right	25	0	7
Eastbound Left	30	7	14
Mayfield Road & Highway 10			
Southbound Right	75	52	63
Southbound Left	75	14	14
Westbound Right	55	14	21
Westbound Left	50	14	21
Northbound Right	60	38	28
Northbound Left	45	21	42
Eastbound Right	100	63	28
Eastbound Left	110	73	35
Mayfield Road & Colonel Bertram Road			
Westbound Right	20	0	7
Westbound Left	50	21	35
Northbound Left	20	7	14
Eastbound Right	130	7	7
Eastbound Left	30	14	14
Mayfield Road & Summer Valley Drive			
Southbound Left	30	14	7
Eastbound Left	65	7	14
Mayfield Road & Inder Heights Drive			
Westbound Left	30	0	0
Mayfield Road & Kennedy Road			
Southbound Left	45	7	21
Westbound Left	20	21	21
Northbound Left	45	14	35
Eastbound Left	25	7	7
Mayfield Road & Stonegate Drive			
Westbound Left	100	0	0
Mayfield Road & Heart Lake Road			
Southbound Right	20	7	7
Southbound Left	20	126	49
Westbound Right	155	35	105
Westbound Left	155	7	7
Northbound Right	40	7	0
Northbound Left	105	7	35
Eastbound Right	175	28	7
Eastbound Left	115	7	7

Intersection Level of Service, 2021 Capital Projects Network Alternative

Intersection	AM Peak Hour			PM Peak Hour		
Movement	V/C	Delay (sec.)	LOS	V/C	Delay (sec.)	LOS
Mayfield Road & Chinguacousy Road	0.39	11	B	0.59	15	B
Mayfield Road & New Collector Road 1						
Eastbound Left	0.01	9	A	0.03	10	B
Westbound Left	0.03	10	A	0.08	9	A
Northbound Left	0.37	48	E	0.31	55	F
Northbound Through	0.19	15	C	0.16	19	C
Southbound Left	0.39	57	F	0.28	63	F
Southbound Through	0.08	17	C	0.15	33	D
Mayfield Road & New Collector Road 2						
Westbound Left	0.04	10	A	0.09	10	A
Northbound Left	0.33	33	D	0.25	33	D
Northbound Right	0.15	12	B	0.06	11	B
Mayfield Road & McLaughlin Road	0.62	18	B	0.61	14	B
Mayfield Road & Van Kirk Drive	0.52	10	A	0.43	6	A
Mayfield Road & Cresthaven Road/Robertson Davies Drive	0.60	11	B	0.52	8	A
Mayfield Road & Highway 10	0.84	34	C	0.80	40	D
Mayfield Road & Colonel Bertram Road	0.33	6	A	0.35	8	A
Mayfield Road & Summer Valley Drive	0.35	6	A	0.37	6	A
Mayfield Road & Valley View Drive						
Westbound Left	0.00	0	A	0.00	0	A
Northbound Left	0.01	13	B	0.01	11	B
Mayfield Road & Snellview Boulevard/Inder Heights Drive						
Eastbound Left	Too many lanes to be analyzed			Too many lanes to be analyzed		
Westbound Left						
Northbound Left						
Northbound Through						
Southbound Left						
Southbound Through						
Mayfield Road & Kennedy Road	0.56	25	C	0.89	35	D
Mayfield Road & Stonegate Drive						
Westbound Left	0.05	13	B	0.14	10	B
Northbound Left	0.29	17	C	0.09	15	B
Mayfield Road & Heart Lake Road	0.77	38	D	0.85	38	D

2021 Capital Projects Network Alternative – Queue Lengths

Intersection Movement	Available Storage Length (m)	Queue Length (metres) AM Peak Hour	Queue Length (metres) PM Peak Hour
Mayfield at Chinguacousy Road			
Southbound Left	30	7	0
Westbound Left	55	52	80
Northbound Left	30	7	21
Eastbound Left	30	0	0
Mayfield at New Collector Road 1			
Southbound Left	30	14	7
Westbound Left	30	0	0
Northbound Left	30	14	14
Eastbound Left	30	0	0
Mayfield at New Collector Road 2			
Westbound Left	30	0	0
Northbound Left	30	14	7
Mayfield Road & McLaughlin Road			
Southbound Left	30	7	0
Westbound Left	30	45	59
Northbound Left	30	7	14
Eastbound Left	30	7	7
Mayfield Road & Van Kirk Drive			
Westbound Left	35	7	45
Northbound Left	40	0	0
Eastbound Right	30	0	7
Mayfield Road & Cresthaven Road/ Robertson Davies Drive			
Southbound Left	30	21	14
Westbound Right	30	7	21
Westbound Left	30	7	14
Northbound Left	35	7	0
Eastbound Right	25	0	7
Eastbound Left	30	7	14
Mayfield Road & Highway 10			
Southbound Right	75	66	132
Southbound Left	75	21	14
Westbound Right	55	59	80
Westbound Left	50	45	59
Northbound Right	60	104	59
Northbound Left	45	52	80
Eastbound Right	100	118	59
Eastbound Left	110	118	66
Mayfield Road & Colonel Bertram Road			
Westbound Right	20	0	7
Westbound Left	50	21	52
Northbound Left	20	7	14
Eastbound Right	30	7	7
Eastbound Left	20	7	14
Mayfield Road & Summer Valley Drive			
Southbound Left	30	14	7
Eastbound Left	65	14	21
Mayfield Road & Inder Heights Drive/Snellview Boulevard			
Westbound Right	30	Unable	Unable
Westbound Left	30	to	to
Northbound Left	15	analyze	analyze
Eastbound Left	30		
Mayfield Road & Kennedy Road			
Southbound Left	45	45	45
Westbound Left	20	52	73
Northbound Left	45	38	66
Eastbound Left	25	87	73
Mayfield Road & Stonegate Drive			
Westbound Left	100	0	0
Mayfield Road & Heart Lake Road			
Southbound Left	130	125	52
Westbound Right	155	66	190
Westbound Left	155	7	7
Northbound Right	40	7	7
Northbound Left	105	14	66
Eastbound Right	175	52	14
Eastbound Left	115	7	14

Intersection Level of Service, 2021 Do Nothing Alternative

Intersection	AM Peak Hour			PM Peak Hour		
Movement	V/C	Delay (sec.)	LOS	V/C	Delay (sec.)	LOS
Mayfield Road & Chinguacousy Road	0.79	20	C	1.11	91	F
Westbound Through	0.89	23	C	1.35	181	F
Mayfield Road & New Collector 1						
Eastbound Left	0.01	0	A	0.03	1	A
Westbound Left	0.03	1	A	0.08	2	A
Northbound Left	0.64	111	F	0.79	230	F
Northbound Through	0.25	20	C	0.22	27	D
Southbound Left	0.70	151	F	0.64	204	F
Southbound Through	0.10	20	C	0.2	45	E
Mayfield Road & New Collector Road 2						
Westbound Left	0.03	1	A	0.09	3	A
Northbound Left	0.75	122	F	1.31	451	F
Northbound Right	0.23	18	C	0.09	14	B
Mayfield Road & McLaughlin Road	0.90	27	C	0.77	25	C
Westbound Left	1.06	107	F	0.95	57	E
Mayfield Road & Van Kirk Drive						
Westbound Left	0.09	13	B	0.23	11	B
Northbound Left	0.45	239	F	0.12	243	F
Northbound Right	0.80	59	F	0.22	16	C
Mayfield Road & Cresthaven Road/Robertson Davies Drive	1.01	54	D	0.93	35	C
Eastbound Through	1.16	96	F	0.61	9	A
Westbound Through	0.68	12	B	1.06	53	D
Mayfield Road & Highway 10	1.01	52	D	0.96	46	D
Eastbound Left	1.42	249	F	1.16	168	F
Westbound Left	0.69	57	E	1.08	132	F
Mayfield Road & Colonel Bertram Road	0.46	7	A	0.48	9	A
Mayfield Road & Summer Valley Drive	0.49	7	A	0.52	7	A
Mayfield Road & Valley View Drive						
Westbound Left	0.00	0	A	0.00	0	A
Northbound Left	0.01	15	B	0.01	13	B
Mayfield Road & Snellview Boulevard/Inder Heights Drive						
Eastbound Left	0.00	10	A	0.03	14	B
Westbound Left	0.01	13	B	0.03	10	A
Northbound Left	0.21	98	F	0.07	71	F
Northbound Through	0.04	15	C	0.01	12	B
Southbound Through	0.91	157	F	1.35	419	F
Mayfield Road & Kennedy Road	0.66	71	E	1.36	83	F
Northbound Left	1.23	268	F	3.11	1042	F
Southbound Left	1.74	468	F	1.47	323	F
Southbound Through	1.30	213	F	0.86	60	E
Mayfield Road & Stonegate Drive						
Westbound Left	0.05	13	B	0.14	10	B
Northbound Left	0.39	24	C	0.11	18	C

2021 Do Nothing Alternative – Queue Lengths

Intersection Movement	Available Storage Length (m)	Queue Length (metres) AM Peak Hour	Queue Length (metres) PM Peak Hour
Mayfield at Chinguacousy Road			
Northbound Left	30	7	21
Mayfield at New Collector Road 1			
Southbound Left	30	21	21
Northbound Left	30	21	21
Mayfield at New Collector Road 2			
Northbound Left	30	28	28
Mayfield Road & McLaughlin Road			
Westbound Left	30	45	59
Northbound Left	30	7	14
Eastbound Left	30	7	7
Mayfield Road & Van Kirk Drive			
Westbound Left	35	0	7
Northbound Left	40	14	0
Eastbound Right	30	0	0
Mayfield Road & Cresthaven Road/ Robertson Davies Drive			
Southbound Left	30	21	14
Westbound Right	30	7	21
Westbound Left	30	7	14
Northbound Left	35	7	0
Eastbound Right	25	0	7
Eastbound Left	30	7	14
Mayfield Road & Highway 10			
Southbound Right	75	66	125
Southbound Left	75	21	14
Westbound Right	55	59	73
Westbound Left	50	45	59
Northbound Right	60	104	59
Northbound Left	45	52	80
Eastbound Right	100	118	52
Eastbound Left	110	118	66
Mayfield Road & Colonel Bertram Road			
Westbound Right	20	0	7
Westbound Left	50	21	52
Northbound Left	20	7	14
Eastbound Right	130	7	7
Eastbound Left	30	7	14
Mayfield Road & Summer Valley Drive			
Southbound Left	30	14	7
Eastbound Left	65	14	21
Mayfield Road & Inder Heights Drive/Snellview Boulevard			
Westbound Right	30	0	0
Westbound Left	30	0	0
Northbound Left	15	7	0
Eastbound Left	30	0	0
Mayfield Road & Kennedy Road			
Southbound Left	45	45	45
Westbound Left	20	52	73
Northbound Left	45	38	66
Eastbound Left	25	87	73
Mayfield Road & Stonegate Drive			
Westbound Left	100	0	0
Mayfield Road & Heart Lake Road			
Southbound Right	20	14	14
Southbound Left	20	225	80
Westbound Right	155	66	167
Westbound Left	155	7	7
Northbound Right	40	7	7
Northbound Left	105	14	66
Eastbound Right	175	52	14
Eastbound Left	115	7	7

Intersection Level of Service, 2021 Do Nothing Alternative

Mayfield Road & Heart Lake Road	1.17	85	F	1.33	133	F
Northbound Left	0.09	16	B	1.02	107	F
Northbound Through	0.45	20	B	1.12	111	F
Southbound Left	1.80	395	F	3.30	1110	F
Southbound Through	0.33	18	B	1.63	334	F

Intersection Level of Service, 2031 Capital Projects Network Alternative

Intersection	AM Peak Hour			PM Peak Hour		
Movement	V/C	Delay (sec.)	LOS	V/C	Delay (sec.)	LOS
Mayfield Road & Chinguacousy Road	0.68	22	C	0.68	22	C
Mayfield Road & New Collector Road 1	0.55	9	A	0.54	8	A
Mayfield Road & New Collector Road 2	0.53	7	A	0.51	5	A
Mayfield Road & McLaughlin Road	0.73	23	C	0.87	31	C
Mayfield Road & Van Kirk Drive	0.66	11	B	0.73	8	A
Mayfield Road & Cresthaven Road/Robertson Davies Drive	0.76	17	B	0.81	21	C
Mayfield Road & Highway 10	0.99	57	E	0.96	62	E
Mayfield Road & Colonel Bertram Road	0.70	13	B	0.65	11	B
Mayfield Road & Summer Valley Drive	0.60	8	A	0.73	15	B
Mayfield Road & Valley View Drive						
Westbound Left	0.00	0	A	0.00	0	A
Northbound Left	0.01	21	C	0.01	14	B
Mayfield Road & Snellview Boulevard/Inder Heights Drive						
Eastbound Left	Too many lanes to be analyzed			Too many lanes to be analyzed		
Westbound Left						
Northbound Left						
Northbound Through						
Southbound Left						
Southbound Through						
Mayfield Road & Kennedy Road	0.76	30	C	0.93	52	D
Mayfield Road & Stonegate Drive						
Westbound Left	0.12	27	D	0.24	16	C
Northbound Left	0.88	111	F	0.30	48	E
Mayfield Road & Heart Lake Road	0.96	49	D	0.96	44	D

2031 Capital Projects Network Alternative – Queue Lengths

Intersection Movement	Available Storage Length (m)	Queue Length (metres) AM Peak Hour	Queue Length (metres) PM Peak Hour
Mayfield at Chinguacousy Road			
Southbound Left	30	7	7
Westbound Left	80	45	80
Northbound Left	30	7	21
Eastbound Left	30	0	0
Mayfield at New Collector Road 1			
Southbound Left	30	21	14
Westbound Left	30	7	14
Northbound Left	30	7	7
Eastbound Left	30	0	14
Mayfield at New Collector Road 2			
Westbound Left	30	7	14
Northbound Left	30	14	7
Mayfield Road & McLaughlin Road			
Southbound Left	30	7	0
Westbound Left	60	59	111
Northbound Left	30	14	45
Eastbound Right	60	52	14
Eastbound Left	30	14	7
Mayfield Road & Van Kirk Drive			
Westbound Left	50	7	45
Northbound Left	40	0	0
Eastbound Right	30	0	7
Mayfield Road & Cresthaven Road/ Robertson Davies Drive			
Southbound Left	30	66	45
Westbound Right	30	7	66
Westbound Left	30	7	21
Northbound Left	35	7	7
Eastbound Right	25	0	14
Eastbound Left	30	31	59
Mayfield Road & Highway 10			
Southbound Right	135	87	160
Southbound Left	75	45	21
Westbound Right	85	80	118
Westbound Left	60	52	73
Northbound Right	105	148	73
Northbound Left	85	66	125
Eastbound Right	120	160	73
Eastbound Left	120	80	52
Mayfield Road & Colonel Bertram Road			
Westbound Right	20	0	7
Westbound Left	50	21	52
Northbound Left	20	7	14
Eastbound Right	30	7	7
Eastbound Left	20	7	14
Mayfield Road & Summer Valley Drive			
Southbound Left	30	21	7
Eastbound Left	65	14	21
Mayfield Road & Inder Heights Drive/Snellview Boulevard			
Westbound Right	30	Unable	Unable
Westbound Left	30	to	to
Northbound Left	15	analyze	analyze
Eastbound Left	30		
Mayfield Road & Kennedy Road			
Southbound Right	140	104	139
Southbound Left	45	45	59
Westbound Right	55	7	52
Westbound Left	75	59	111
Northbound Right	115	111	66
Northbound Left	70	38	87
Eastbound Right	75	73	52
Eastbound Left	90	125	111
Mayfield Road & Stonegate Drive			
Westbound Left	100	0	7
Mayfield Road & Heart Lake Road			
Southbound Left	130	146	66
Westbound Right	195	73	256
Westbound Left	155	7	14
Northbound Left	105	14	87
Eastbound Right	175	66	14
Eastbound Left	115	7	14

Appendix F

Intersection Capacity Analysis Sheets

2010 Existing AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (vph)	2	492	34	57	318	6	10	41	79	16	73	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)		6.6			6.6			6.6			6.6	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		1.00			1.00			0.99			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.99			1.00			0.92			1.00	
Flt Protected		1.00			0.99			1.00			0.99	
Satd. Flow (prot)		1849			1794			1677			1861	
Flt Permitted		1.00			0.87			0.97			0.91	
Satd. Flow (perm)		1846			1566			1624			1710	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	2	492	34	57	318	6	10	41	79	16	73	3
RTOR Reduction (vph)	0	3	0	0	1	0	0	63	0	0	2	0
Lane Group Flow (vph)	0	525	0	0	380	0	0	67	0	0	90	0
Confl. Peds. (#/hr)									1	1		
Heavy Vehicles (%)	2%	3%	3%	11%	5%	17%	0%	5%	3%	6%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		23.5			23.5			9.4			9.4	
Effective Green, g (s)		23.5			23.5			9.4			9.4	
Actuated g/C Ratio		0.51			0.51			0.20			0.20	
Clearance Time (s)		6.6			6.6			6.6			6.6	
Vehicle Extension (s)		5.0			5.0			5.0			5.0	
Lane Grp Cap (vph)		941			798			331			348	
v/s Ratio Prot												
v/s Ratio Perm		c0.28			0.24			0.04			c0.05	
v/c Ratio		0.56			0.48			0.20			0.26	
Uniform Delay, d1		7.7			7.3			15.2			15.4	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.2			0.9			0.6			0.8	
Delay (s)		9.0			8.3			15.9			16.3	
Level of Service		A			A			B			B	
Approach Delay (s)		9.0			8.3			15.9			16.3	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	46.1	Sum of lost time (s)	13.2
Intersection Capacity Utilization	74.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	17	493	77	143	356	11	19	50	93	20	138	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.6	6.6		6.6	6.6			6.6	6.6		6.6	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.98		1.00	1.00			1.00	0.85		1.00	
Flt Protected	0.95	1.00		0.95	1.00			0.99	1.00		0.99	
Satd. Flow (prot)	1785	1848		1716	1815			1814	1581		1873	
Flt Permitted	0.54	1.00		0.36	1.00			0.88	1.00		0.95	
Satd. Flow (perm)	1016	1848		653	1815			1611	1581		1797	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	17	493	77	143	356	11	19	50	93	20	138	6
RTOR Reduction (vph)	0	7	0	0	1	0	0	0	71	0	2	0
Lane Group Flow (vph)	17	563	0	143	366	0	0	69	22	0	162	0
Heavy Vehicles (%)	0%	2%	1%	4%	5%	18%	11%	2%	1%	5%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	28.1	28.1		28.1	28.1			13.0	13.0		13.0	
Effective Green, g (s)	28.1	28.1		28.1	28.1			13.0	13.0		13.0	
Actuated g/C Ratio	0.52	0.52		0.52	0.52			0.24	0.24		0.24	
Clearance Time (s)	6.6	6.6		6.6	6.6			6.6	6.6		6.6	
Vehicle Extension (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	
Lane Grp Cap (vph)	525	956		337	939			385	378		430	
v/s Ratio Prot		c0.30			0.20							
v/s Ratio Perm	0.02			0.22				0.04	0.01		c0.09	
v/c Ratio	0.03	0.59		0.42	0.39			0.18	0.06		0.38	
Uniform Delay, d1	6.4	9.1		8.1	7.9			16.4	15.9		17.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.1	1.4		1.8	0.6			0.5	0.1		1.2	
Delay (s)	6.5	10.5		9.9	8.5			16.9	16.1		18.4	
Level of Service	A	B		A	A			B	B		B	
Approach Delay (s)		10.4			8.9			16.4			18.4	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	11.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	54.3	Sum of lost time (s)	13.2
Intersection Capacity Utilization	77.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	599	7	44	499	11	205
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	599	7	44	499	11	205
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	329					
pX, platoon unblocked			0.83		0.83	0.83
vC, conflicting volume			606		1186	599
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			427		1123	418
tC, single (s)			4.2		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.3
p0 queue free %			95		94	61
cM capacity (veh/h)			913		182	525

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2
Volume Total	599	7	44	499	11	205
Volume Left	0	0	44	0	11	0
Volume Right	0	7	0	0	0	205
cSH	1700	1700	913	1700	182	525
Volume to Capacity	0.35	0.00	0.05	0.29	0.06	0.39
Queue Length 95th (m)	0.0	0.0	1.1	0.0	1.3	12.9
Control Delay (s)	0.0	0.0	9.1	0.0	26.1	16.2
Lane LOS			A		D	C
Approach Delay (s)	0.0		0.7		16.7	
Approach LOS					C	

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	50.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	768	6	30	435	15	43	4	130	88	22	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	0.98		1.00	1.00	
Flpb, ped/bikes	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	0.85		1.00	0.89	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1487	1865	1325	1579	1746	1331	1785	1565		1783	1575	
Flt Permitted	0.49	1.00	1.00	0.26	1.00	1.00	0.70	1.00		0.67	1.00	
Satd. Flow (perm)	774	1865	1325	424	1746	1331	1316	1565		1260	1575	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	768	6	30	435	15	43	4	130	88	22	65
RTOR Reduction (vph)	0	0	2	0	0	6	0	106	0	0	53	0
Lane Group Flow (vph)	30	768	4	30	435	9	43	28	0	88	34	0
Confl. Peds. (#/hr)			1	1					1	1		
Heavy Vehicles (%)	20%	3%	17%	13%	10%	20%	0%	25%	2%	0%	18%	5%
Bus Blockages (#/hr)	0	0	2	0	0	0	0	0	0	0	0	2
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	32.3	32.3	32.3	32.3	32.3	32.3	9.9	9.9		9.9	9.9	
Effective Green, g (s)	32.3	32.3	32.3	32.3	32.3	32.3	9.9	9.9		9.9	9.9	
Actuated g/C Ratio	0.60	0.60	0.60	0.60	0.60	0.60	0.18	0.18		0.18	0.18	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	461	1111	789	252	1040	793	240	285		230	287	
v/s Ratio Prot		c0.41			0.25			0.02			0.02	
v/s Ratio Perm	0.04		0.00	0.07		0.01	0.03			c0.07		
v/c Ratio	0.07	0.69	0.00	0.12	0.42	0.01	0.18	0.10		0.38	0.12	
Uniform Delay, d1	4.6	7.5	4.4	4.8	5.9	4.5	18.7	18.4		19.5	18.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	3.5	0.0	1.0	1.2	0.0	0.8	0.3		2.2	0.4	
Delay (s)	4.9	11.1	4.4	5.7	7.1	4.5	19.5	18.7		21.7	18.9	
Level of Service	A	B	A	A	A	A	B	B		C	B	
Approach Delay (s)		10.8			7.0			18.9			20.3	
Approach LOS		B			A			B			C	

Intersection Summary			
HCM 2000 Control Delay	11.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	54.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

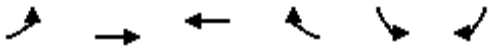
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	217	638	226	94	285	36	74	234	83	81	680	121
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.1	7.1	7.1	7.1	7.1	7.1
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99
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)	1713	3579	1572	2985	3288	1466	1731	3476	1353	3236	3510	1419
Flt Permitted	0.58	1.00	1.00	0.95	1.00	1.00	0.39	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1040	3579	1572	2985	3288	1466	716	3476	1353	3236	3510	1419
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	217	638	226	94	285	36	74	234	83	81	680	121
RTOR Reduction (vph)	0	0	130	0	0	20	0	0	63	0	0	73
Lane Group Flow (vph)	217	638	96	94	285	16	74	234	20	81	680	48
Confl. Peds. (#/hr)	4		4	4		4	4		3	3		4
Heavy Vehicles (%)	4%	2%	0%	16%	11%	6%	3%	5%	14%	7%	4%	10%
Bus Blockages (#/hr)	0	0	0	0	0	3	0	0	5	0	0	2
Turn Type	Perm	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Prot	NA	Perm
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4		4			8	2		2			6
Actuated Green, G (s)	27.9	27.9	27.9	7.1	42.0	42.0	21.9	21.9	21.9	7.5	36.5	36.5
Effective Green, g (s)	27.9	27.9	27.9	7.1	42.0	42.0	21.9	21.9	21.9	7.5	36.5	36.5
Actuated g/C Ratio	0.30	0.30	0.30	0.08	0.45	0.45	0.24	0.24	0.24	0.08	0.39	0.39
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.1	7.1	7.1	7.1	7.1	7.1
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	313	1078	473	228	1491	664	169	822	319	262	1383	559
v/s Ratio Prot		0.18		c0.03	0.09			0.07		0.03	c0.19	
v/s Ratio Perm	c0.21		0.06			0.01	0.10		0.01			0.03
v/c Ratio	0.69	0.59	0.20	0.41	0.19	0.02	0.44	0.28	0.06	0.31	0.49	0.09
Uniform Delay, d1	28.6	27.5	24.1	40.8	15.1	14.0	30.1	28.9	27.4	40.1	21.1	17.6
Progression 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
Incremental Delay, d2	8.2	1.3	0.4	2.5	0.1	0.0	3.8	0.4	0.2	1.4	0.6	0.1
Delay (s)	36.8	28.8	24.5	43.3	15.3	14.0	33.9	29.3	27.6	41.5	21.7	17.7
Level of Service	D	C	C	D	B	B	C	C	C	D	C	B
Approach Delay (s)		29.5			21.5			29.8			22.9	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	26.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	92.6	Sum of lost time (s)	28.2
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	33	688	12	72	390	3	21	0	69	15	2	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5	6.5	7.0	7.0			7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00	1.00	0.98			0.99	
Flpb, ped/bikes	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	0.85			0.92	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.98	
Satd. Flow (prot)	1733	3476	1418	1726	3230	1578	1783	1559			1678	
Flt Permitted	0.52	1.00	1.00	0.39	1.00	1.00	0.73	1.00			0.85	
Satd. Flow (perm)	951	3476	1418	709	3230	1578	1371	1559			1454	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	33	688	12	72	390	3	21	0	69	15	2	24
RTOR Reduction (vph)	0	0	3	0	0	1	0	62	0	0	22	0
Lane Group Flow (vph)	33	688	9	72	390	2	21	7	0	0	19	0
Confl. Peds. (#/hr)			4	4			1		4	4		1
Heavy Vehicles (%)	3%	5%	8%	3%	13%	0%	0%	0%	3%	7%	0%	0%
Bus Blockages (#/hr)	0	0	3	0	0	3	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	85.5	85.5	85.5	85.5	85.5	85.5	10.4	10.4			10.4	
Effective Green, g (s)	85.5	85.5	85.5	85.5	85.5	85.5	10.4	10.4			10.4	
Actuated g/C Ratio	0.78	0.78	0.78	0.78	0.78	0.78	0.10	0.10			0.10	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	7.0	7.0			7.0	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0			5.0	
Lane Grp Cap (vph)	743	2716	1108	554	2524	1233	130	148			138	
v/s Ratio Prot		c0.20			0.12			0.00				
v/s Ratio Perm	0.03		0.01	0.10		0.00	c0.02				0.01	
v/c Ratio	0.04	0.25	0.01	0.13	0.15	0.00	0.16	0.04			0.14	
Uniform Delay, d1	2.7	3.3	2.6	2.9	3.0	2.6	45.5	45.0			45.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	0.1	0.2	0.0	0.5	0.1	0.0	1.2	0.3			1.0	
Delay (s)	2.8	3.5	2.6	3.4	3.1	2.6	46.7	45.2			46.4	
Level of Service	A	A	A	A	A	A	D	D			D	
Approach Delay (s)		3.4			3.1			45.6			46.4	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	7.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.24		
Actuated Cycle Length (s)	109.4	Sum of lost time (s)	13.5
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	25	747	413	14	31	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.5		7.0	7.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1716	3455	3167		1733	1505
Flt Permitted	0.50	1.00	1.00		0.95	1.00
Satd. Flow (perm)	909	3455	3167		1733	1505
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	747	413	14	31	50
RTOR Reduction (vph)	0	0	1	0	0	46
Lane Group Flow (vph)	25	747	426	0	31	4
Confl. Peds. (#/hr)					2	5
Heavy Vehicles (%)	4%	5%	14%	14%	3%	4%
Bus Blockages (#/hr)	0	3	3	0	0	0
Turn Type	Perm	NA	NA		NA	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)	88.8	88.8	88.8		9.4	9.4
Effective Green, g (s)	88.8	88.8	88.8		9.4	9.4
Actuated g/C Ratio	0.79	0.79	0.79		0.08	0.08
Clearance Time (s)	6.5	6.5	6.5		7.0	7.0
Vehicle Extension (s)	5.0	5.0	5.0		5.0	5.0
Lane Grp Cap (vph)	722	2746	2517		145	126
v/s Ratio Prot		c0.22	0.13		c0.02	
v/s Ratio Perm	0.03					0.00
v/c Ratio	0.03	0.27	0.17		0.21	0.03
Uniform Delay, d1	2.4	3.0	2.7		47.7	47.0
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.1	0.2	0.1		1.5	0.2
Delay (s)	2.5	3.2	2.9		49.2	47.2
Level of Service	A	A	A		D	D
Approach Delay (s)		3.2	2.9		48.0	
Approach LOS		A	A		D	

Intersection Summary			
HCM 2000 Control Delay	5.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	111.7	Sum of lost time (s)	13.5
Intersection Capacity Utilization	40.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	766	12	5	417	10	16
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	766	12	5	417	10	16
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			778		990	389
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			778		990	389
tC, single (s)			4.5		7.0	7.0
tC, 2 stage (s)						
tF (s)			2.4		3.6	3.4
p0 queue free %			99		96	97
cM capacity (veh/h)			727		228	598

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	511	267	5	208	208	10	16
Volume Left	0	0	5	0	0	10	0
Volume Right	0	12	0	0	0	0	16
cSH	1700	1700	727	1700	1700	228	598
Volume to Capacity	0.30	0.16	0.01	0.12	0.12	0.04	0.03
Queue Length 95th (m)	0.0	0.0	0.1	0.0	0.0	1.0	0.6
Control Delay (s)	0.0	0.0	10.0	0.0	0.0	21.5	11.2
Lane LOS			A			C	B
Approach Delay (s)	0.0		0.1			15.2	
Approach LOS						C	

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	31.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	681	81	68	366	49	37	11	75	14	12	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.6	6.6	6.6	6.6	6.6		6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1785	1847	1503	1716	3246		1566	1628	1532	1475	1422	
Flt Permitted	0.51	1.00	1.00	0.38	1.00		0.74	1.00	1.00	0.75	1.00	
Satd. Flow (perm)	956	1847	1503	687	3246		1215	1628	1532	1165	1422	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	681	81	68	366	49	37	11	75	14	12	19
RTOR Reduction (vph)	0	0	14	0	6	0	0	0	69	0	18	0
Lane Group Flow (vph)	20	681	67	68	409	0	37	11	6	14	13	0
Heavy Vehicles (%)	0%	4%	5%	4%	10%	14%	14%	18%	3%	21%	8%	32%
Bus Blockages (#/hr)	0	0	3	0	0	0	0	0	3	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8		8	4		
Actuated Green, G (s)	109.7	109.7	109.7	109.7	109.7		9.7	9.7	9.7	9.7	9.7	
Effective Green, g (s)	109.7	109.7	109.7	109.7	109.7		9.7	9.7	9.7	9.7	9.7	
Actuated g/C Ratio	0.83	0.83	0.83	0.83	0.83		0.07	0.07	0.07	0.07	0.07	
Clearance Time (s)	6.6	6.6	6.6	6.6	6.6		6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	794	1534	1249	570	2697		89	119	112	85	104	
v/s Ratio Prot		c0.37			0.13			0.01			0.01	
v/s Ratio Perm	0.02		0.04	0.10			c0.03		0.00	0.01		
v/c Ratio	0.03	0.44	0.05	0.12	0.15		0.42	0.09	0.05	0.16	0.13	
Uniform Delay, d1	1.9	3.0	2.0	2.1	2.2		58.4	57.0	56.9	57.4	57.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	0.9	0.1	0.4	0.1		6.5	0.7	0.4	1.9	1.2	
Delay (s)	2.0	3.9	2.1	2.5	2.3		64.9	57.8	57.2	59.3	58.4	
Level of Service	A	A	A	A	A		E	E	E	E	E	
Approach Delay (s)		3.7			2.3			59.6			58.6	
Approach LOS		A			A			E			E	

Intersection Summary			
HCM 2000 Control Delay	9.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	132.0	Sum of lost time (s)	12.6
Intersection Capacity Utilization	70.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	766	4	23	477	6	115
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	766	4	23	477	6	115
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	Raised			Raised		
Median storage veh)	1			1		
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			770		1291	768
vC1, stage 1 conf vol					768	
vC2, stage 2 conf vol					523	
vCu, unblocked vol			770		1291	768
tC, single (s)			4.2		6.6	6.2
tC, 2 stage (s)					5.6	
tF (s)			2.3		3.7	3.3
p0 queue free %			97		98	72
cM capacity (veh/h)			814		294	405

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	770	23	477	121
Volume Left	0	23	0	6
Volume Right	4	0	0	115
cSH	1700	814	1700	397
Volume to Capacity	0.45	0.03	0.28	0.30
Queue Length 95th (m)	0.0	0.6	0.0	8.9
Control Delay (s)	0.0	9.6	0.0	18.0
Lane LOS		A		C
Approach Delay (s)	0.0	0.4		18.0
Approach LOS				C

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	54.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	796	74	13	452	100	25	14	8	400	100	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.9	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98	1.00	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	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)	1784	5043	1581	1653	4725	1518	1594	1921	1597	1767	1921	1536
Flt Permitted	0.48	1.00	1.00	0.30	1.00	1.00	0.69	1.00	1.00	0.75	1.00	1.00
Satd. Flow (perm)	904	5043	1581	525	4725	1518	1161	1921	1597	1392	1921	1536
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	11	796	74	13	452	100	25	14	8	400	100	23
RTOR Reduction (vph)	0	0	51	0	0	69	0	0	4	0	0	12
Lane Group Flow (vph)	11	796	23	13	452	31	25	14	4	400	100	11
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	0%	4%	1%	8%	11%	3%	12%	0%	0%	1%	0%	4%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	21.3	21.3	21.3	21.3	21.3	21.3	33.2	33.2	33.2	33.2	33.2	33.2
Effective Green, g (s)	21.3	21.3	21.3	21.3	21.3	21.3	33.2	33.2	33.2	33.2	33.2	33.2
Actuated g/C Ratio	0.31	0.31	0.31	0.31	0.31	0.31	0.49	0.49	0.49	0.49	0.49	0.49
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.9	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	282	1577	494	164	1477	474	566	936	778	678	936	748
v/s Ratio Prot		c0.16			0.10			0.01			0.05	
v/s Ratio Perm	0.01		0.01	0.02		0.02	0.02		0.00	c0.29		0.01
v/c Ratio	0.04	0.50	0.05	0.08	0.31	0.07	0.04	0.01	0.01	0.59	0.11	0.01
Uniform Delay, d1	16.3	19.1	16.3	16.5	17.8	16.4	9.1	9.0	9.0	12.6	9.4	9.0
Progression 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
Incremental Delay, d2	0.1	0.5	0.1	0.4	0.2	0.1	0.1	0.0	0.0	2.0	0.1	0.0
Delay (s)	16.4	19.6	16.4	16.9	18.0	16.5	9.2	9.0	9.0	14.6	9.5	9.0
Level of Service	B	B	B	B	B	B	A	A	A	B	A	A
Approach Delay (s)		19.3			17.7			9.1			13.4	
Approach LOS		B			B			A			B	

Intersection Summary			
HCM 2000 Control Delay	17.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	68.1	Sum of lost time (s)	13.6
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	777	1	1	426	1	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	777	1	1	426	1	2
Pedestrians				1	3	
Lane Width (m)				3.7	3.5	
Walking Speed (m/s)				4.0	4.0	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (m)	137					
pX, platoon unblocked			0.95		0.95	0.95
vC, conflicting volume			781		996	393
vC1, stage 1 conf vol					780	
vC2, stage 2 conf vol					215	
vCu, unblocked vol			661		887	251
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			888		431	715

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	518	260	143	284	3
Volume Left	0	0	1	0	1
Volume Right	0	1	0	0	2
cSH	1700	1700	888	1700	586
Volume to Capacity	0.30	0.15	0.00	0.17	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.1
Control Delay (s)	0.0	0.0	0.1	0.0	11.2
Lane LOS			A		B
Approach Delay (s)	0.0		0.0		11.2
Approach LOS					B

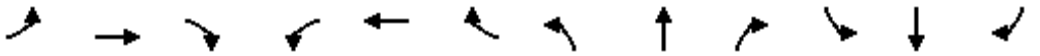
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	31.8%	ICU Level of Service	A
Analysis Period (min)	15		

2010 Existing PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (vph)	4	346	14	115	455	12	20	55	81	9	39	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.6			6.6			6.6			6.6	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.99			1.00			0.93			0.99	
Flt Protected		1.00			0.99			0.99			0.99	
Satd. Flow (prot)		1828			1796			1736			1852	
Flt Permitted		0.99			0.85			0.95			0.91	
Satd. Flow (perm)		1819			1537			1652			1700	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	4	346	14	115	455	12	20	55	81	9	39	2
RTOR Reduction (vph)	0	2	0	0	1	0	0	60	0	0	2	0
Lane Group Flow (vph)	0	362	0	0	581	0	0	96	0	0	48	0
Heavy Vehicles (%)	25%	2%	0%	1%	4%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		30.4			30.4			9.7			9.7	
Effective Green, g (s)		30.4			30.4			9.7			9.7	
Actuated g/C Ratio		0.57			0.57			0.18			0.18	
Clearance Time (s)		6.6			6.6			6.6			6.6	
Vehicle Extension (s)		5.0			5.0			5.0			5.0	
Lane Grp Cap (vph)		1037			876			300			309	
v/s Ratio Prot												
v/s Ratio Perm		0.20			c0.38			c0.06			0.03	
v/c Ratio		0.35			0.66			0.32			0.16	
Uniform Delay, d1		6.1			7.9			18.9			18.4	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.4			2.5			1.3			0.5	
Delay (s)		6.6			10.4			20.2			18.9	
Level of Service		A			B			C			B	
Approach Delay (s)		6.6			10.4			20.2			18.9	
Approach LOS		A			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	53.3	Sum of lost time (s)	13.2
Intersection Capacity Utilization	77.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



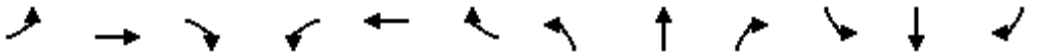
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	13	399	24	105	535	19	39	148	90	6	62	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.6		6.6	6.6			6.6	6.6		6.6	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.97		1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.99		1.00	0.99			1.00	0.85		0.99	
Flt Protected	0.95	1.00		0.95	1.00			0.99	1.00		1.00	
Satd. Flow (prot)	1784	1828		1750	1809			1845	1556		1800	
Flt Permitted	0.33	1.00		0.46	1.00			0.92	1.00		0.97	
Satd. Flow (perm)	623	1828		841	1809			1719	1556		1758	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	13	399	24	105	535	19	39	148	90	6	62	8
RTOR Reduction (vph)	0	3	0	0	2	0	0	0	62	0	5	0
Lane Group Flow (vph)	13	420	0	105	552	0	0	187	28	0	71	0
Confl. Peds. (#/hr)	1					1			5	5		
Heavy Vehicles (%)	0%	2%	0%	2%	3%	11%	0%	1%	0%	0%	3%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	27.2	27.2		27.2	27.2			18.4	18.4		18.4	
Effective Green, g (s)	27.2	27.2		27.2	27.2			18.4	18.4		18.4	
Actuated g/C Ratio	0.46	0.46		0.46	0.46			0.31	0.31		0.31	
Clearance Time (s)	6.6	6.6		6.6	6.6			6.6	6.6		6.6	
Vehicle Extension (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	
Lane Grp Cap (vph)	288	845		389	836			537	486		550	
v/s Ratio Prot		0.23			c0.31							
v/s Ratio Perm	0.02			0.12				c0.11	0.02		0.04	
v/c Ratio	0.05	0.50		0.27	0.66			0.35	0.06		0.13	
Uniform Delay, d1	8.7	11.0		9.7	12.2			15.6	14.1		14.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.1	1.0		0.8	2.6			0.8	0.1		0.2	
Delay (s)	8.8	12.0		10.5	14.8			16.4	14.2		14.7	
Level of Service	A	B		B	B			B	B		B	
Approach Delay (s)		11.9			14.1			15.7			14.7	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	13.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	58.8	Sum of lost time (s)	13.2
Intersection Capacity Utilization	77.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	477	18	168	657	2	93
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	477	18	168	657	2	93
Pedestrians					1	
Lane Width (m)					3.5	
Walking Speed (m/s)					4.0	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	329					
pX, platoon unblocked			0.90		0.90	0.90
vC, conflicting volume			496		1471	478
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			384		1468	364
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			84		98	85
cM capacity (veh/h)			1066		108	607

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2
Volume Total	477	18	168	657	2	93
Volume Left	0	0	168	0	2	0
Volume Right	0	18	0	0	0	93
cSH	1700	1700	1066	1700	108	607
Volume to Capacity	0.28	0.01	0.16	0.39	0.02	0.15
Queue Length 95th (m)	0.0	0.0	3.9	0.0	0.4	3.8
Control Delay (s)	0.0	0.0	9.0	0.0	39.1	12.0
Lane LOS			A		E	B
Approach Delay (s)	0.0		1.8		12.6	
Approach LOS					B	

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	73	450	47	85	774	82	18	35	30	45	10	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	0.99		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93		1.00	0.88	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1700	1883	1548	1764	1883	1581	1674	1765		1771	1666	
Flt Permitted	0.30	1.00	1.00	0.50	1.00	1.00	0.73	1.00		0.71	1.00	
Satd. Flow (perm)	534	1883	1548	930	1883	1581	1285	1765		1332	1666	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	73	450	47	85	774	82	18	35	30	45	10	33
RTOR Reduction (vph)	0	0	15	0	0	25	0	27	0	0	29	0
Lane Group Flow (vph)	73	450	32	85	774	57	18	38	0	45	14	0
Confl. Peds. (#/hr)			2	2			3		4	4		3
Heavy Vehicles (%)	5%	2%	0%	1%	2%	1%	6%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	2	0	0	0	0	0	0	0	0	2
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	40.2	40.2	40.2	40.2	40.2	40.2	6.5	6.5		6.5	6.5	
Effective Green, g (s)	40.2	40.2	40.2	40.2	40.2	40.2	6.5	6.5		6.5	6.5	
Actuated g/C Ratio	0.68	0.68	0.68	0.68	0.68	0.68	0.11	0.11		0.11	0.11	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	365	1289	1060	636	1289	1082	142	195		147	184	
v/s Ratio Prot		0.24			c0.41			0.02			0.01	
v/s Ratio Perm	0.14		0.02	0.09		0.04	0.01			c0.03		
v/c Ratio	0.20	0.35	0.03	0.13	0.60	0.05	0.13	0.20		0.31	0.07	
Uniform Delay, d1	3.4	3.8	3.0	3.2	5.0	3.0	23.5	23.7		24.0	23.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.2	0.7	0.1	0.4	2.1	0.1	0.8	1.0		2.5	0.4	
Delay (s)	4.6	4.6	3.0	3.6	7.0	3.1	24.4	24.8		26.5	23.8	
Level of Service	A	A	A	A	A	A	C	C		C	C	
Approach Delay (s)		4.5			6.4			24.7			25.2	
Approach LOS		A			A			C			C	

Intersection Summary				
HCM 2000 Control Delay	7.6	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.56			
Actuated Cycle Length (s)	58.7	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	71.8%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

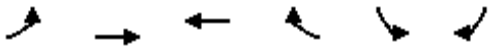
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	112	346	87	154	557	78	153	554	99	69	356	231
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.1	7.1	7.1	7.1	7.1	7.1
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	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)	1744	3510	1546	3298	3579	1461	1750	3614	1422	3463	3544	1510
Flt Permitted	0.44	1.00	1.00	0.95	1.00	1.00	0.54	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	814	3510	1546	3298	3579	1461	992	3614	1422	3463	3544	1510
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	112	346	87	154	557	78	153	554	99	69	356	231
RTOR Reduction (vph)	0	0	67	0	0	46	0	0	71	0	0	89
Lane Group Flow (vph)	112	346	20	154	557	32	153	554	28	69	356	142
Confl. Peds. (#/hr)	9		11	11		9	22		9	9		22
Heavy Vehicles (%)	2%	4%	1%	5%	2%	6%	1%	1%	8%	0%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	3	0	0	5	0	0	2
Turn Type	Perm	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Prot	NA	Perm
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4		4			8	2		2			6
Actuated Green, G (s)	21.1	21.1	21.1	10.4	38.5	38.5	26.5	26.5	26.5	7.2	40.8	40.8
Effective Green, g (s)	21.1	21.1	21.1	10.4	38.5	38.5	26.5	26.5	26.5	7.2	40.8	40.8
Actuated g/C Ratio	0.23	0.23	0.23	0.11	0.41	0.41	0.28	0.28	0.28	0.08	0.44	0.44
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.1	7.1	7.1	7.1	7.1	7.1
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	183	792	349	367	1475	602	281	1025	403	266	1548	659
v/s Ratio Prot		0.10		0.05	c0.16			0.15		0.02	c0.10	
v/s Ratio Perm	c0.14		0.01			0.02	c0.15		0.02			0.09
v/c Ratio	0.61	0.44	0.06	0.42	0.38	0.05	0.54	0.54	0.07	0.26	0.23	0.22
Uniform Delay, d1	32.5	31.0	28.3	38.7	19.1	16.5	28.3	28.3	24.4	40.6	16.5	16.4
Progression 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
Incremental Delay, d2	8.5	0.8	0.1	1.6	0.3	0.1	3.8	1.0	0.2	1.1	0.2	0.3
Delay (s)	40.9	31.9	28.5	40.3	19.4	16.6	32.1	29.3	24.6	41.7	16.6	16.7
Level of Service	D	C	C	D	B	B	C	C	C	D	B	B
Approach Delay (s)		33.2			23.2			29.3			19.3	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	26.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	93.4	Sum of lost time (s)	28.2
Intersection Capacity Utilization	79.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	42	399	15	117	693	12	46	13	58	24	21	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5	6.5	7.0	7.0			7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.95	1.00	0.99			0.99	
Flpb, ped/bikes	0.99	1.00	1.00	0.99	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	0.88			0.92	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.99	
Satd. Flow (prot)	1763	3510	1527	1721	3544	1497	1778	1626			1734	
Flt Permitted	0.39	1.00	1.00	0.52	1.00	1.00	0.68	1.00			0.90	
Satd. Flow (perm)	717	3510	1527	936	3544	1497	1264	1626			1581	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	42	399	15	117	693	12	46	13	58	24	21	61
RTOR Reduction (vph)	0	0	4	0	0	3	0	51	0	0	46	0
Lane Group Flow (vph)	42	399	11	117	693	9	46	20	0	0	60	0
Confl. Peds. (#/hr)	13		5	5		13	4		2	2		4
Heavy Vehicles (%)	0%	4%	0%	3%	3%	0%	0%	0%	3%	0%	0%	0%
Bus Blockages (#/hr)	0	0	3	0	0	3	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	81.7	81.7	81.7	81.7	81.7	81.7	13.4	13.4			13.4	
Effective Green, g (s)	81.7	81.7	81.7	81.7	81.7	81.7	13.4	13.4			13.4	
Actuated g/C Ratio	0.75	0.75	0.75	0.75	0.75	0.75	0.12	0.12			0.12	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	7.0	7.0			7.0	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0			5.0	
Lane Grp Cap (vph)	539	2640	1148	704	2666	1126	155	200			195	
v/s Ratio Prot		0.11			c0.20			0.01				
v/s Ratio Perm	0.06		0.01	0.12		0.01	0.04				c0.04	
v/c Ratio	0.08	0.15	0.01	0.17	0.26	0.01	0.30	0.10			0.31	
Uniform Delay, d1	3.5	3.8	3.4	3.8	4.1	3.4	43.3	42.3			43.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	0.3	0.1	0.0	0.5	0.2	0.0	2.2	0.5			1.9	
Delay (s)	3.8	3.9	3.4	4.3	4.4	3.4	45.6	42.7			45.2	
Level of Service	A	A	A	A	A	A	D	D			D	
Approach Delay (s)		3.9			4.4			43.8			45.2	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	10.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	108.6	Sum of lost time (s)	13.5
Intersection Capacity Utilization	56.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	43	438	792	39	14	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.5		7.0	7.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1785	3523	3524		1785	1575
Flt Permitted	0.34	1.00	1.00		0.95	1.00
Satd. Flow (perm)	632	3523	3524		1785	1575
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	43	438	792	39	14	67
RTOR Reduction (vph)	0	0	2	0	0	62
Lane Group Flow (vph)	43	438	829	0	14	5
Confl. Peds. (#/hr)					1	1
Heavy Vehicles (%)	0%	3%	3%	0%	0%	0%
Bus Blockages (#/hr)	0	3	0	3	0	0
Turn Type	Perm	NA	NA		NA	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)	95.0	95.0	95.0		8.9	8.9
Effective Green, g (s)	95.0	95.0	95.0		8.9	8.9
Actuated g/C Ratio	0.81	0.81	0.81		0.08	0.08
Clearance Time (s)	6.5	6.5	6.5		7.0	7.0
Vehicle Extension (s)	5.0	5.0	5.0		5.0	5.0
Lane Grp Cap (vph)	511	2850	2851		135	119
v/s Ratio Prot		0.12	c0.24		c0.01	
v/s Ratio Perm	0.07					0.00
v/c Ratio	0.08	0.15	0.29		0.10	0.04
Uniform Delay, d1	2.3	2.4	2.8		50.5	50.3
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.3	0.1	0.3		0.7	0.3
Delay (s)	2.6	2.6	3.1		51.2	50.6
Level of Service	A	A	A		D	D
Approach Delay (s)		2.6	3.1		50.7	
Approach LOS		A	A		D	

Intersection Summary			
HCM 2000 Control Delay	5.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	117.4	Sum of lost time (s)	13.5
Intersection Capacity Utilization	53.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	441	11	19	827	4	6
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	441	11	19	827	4	6
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			452		898	226
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			452		898	226
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		99	99
cM capacity (veh/h)			1119		278	783

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	294	158	19	414	414	4	6
Volume Left	0	0	19	0	0	4	0
Volume Right	0	11	0	0	0	0	6
cSH	1700	1700	1119	1700	1700	278	783
Volume to Capacity	0.17	0.09	0.02	0.24	0.24	0.01	0.01
Queue Length 95th (m)	0.0	0.0	0.4	0.0	0.0	0.3	0.2
Control Delay (s)	0.0	0.0	8.3	0.0	0.0	18.1	9.6
Lane LOS			A			C	A
Approach Delay (s)	0.0		0.2			13.0	
Approach LOS						B	

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	32.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	374	63	79	708	8	113	63	62	65	17	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.6	6.6	6.6	6.6	6.6		6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	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		1.00	1.00	0.85	1.00	0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1785	1865	1503	1733	3534		1744	1883	1547	1700	1655	
Flt Permitted	0.37	1.00	1.00	0.53	1.00		0.73	1.00	1.00	0.72	1.00	
Satd. Flow (perm)	703	1865	1503	971	3534		1340	1883	1547	1281	1655	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	10	374	63	79	708	8	113	63	62	65	17	25
RTOR Reduction (vph)	0	0	16	0	1	0	0	0	53	0	21	0
Lane Group Flow (vph)	10	374	47	79	715	0	113	63	9	65	21	0
Confl. Peds. (#/hr)							2					2
Heavy Vehicles (%)	0%	3%	5%	3%	3%	13%	2%	2%	2%	5%	0%	8%
Bus Blockages (#/hr)	0	0	3	0	0	0	0	0	3	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8		8	4		
Actuated Green, G (s)	86.1	86.1	86.1	86.1	86.1		16.8	16.8	16.8	16.8	16.8	
Effective Green, g (s)	86.1	86.1	86.1	86.1	86.1		16.8	16.8	16.8	16.8	16.8	
Actuated g/C Ratio	0.75	0.75	0.75	0.75	0.75		0.15	0.15	0.15	0.15	0.15	
Clearance Time (s)	6.6	6.6	6.6	6.6	6.6		6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	524	1390	1120	723	2634		194	273	225	186	240	
v/s Ratio Prot		0.20			c0.20			0.03			0.01	
v/s Ratio Perm	0.01		0.03	0.08			c0.08		0.01	0.05		
v/c Ratio	0.02	0.27	0.04	0.11	0.27		0.58	0.23	0.04	0.35	0.09	
Uniform Delay, d1	3.8	4.7	3.9	4.1	4.7		46.1	43.6	42.4	44.4	42.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	0.5	0.1	0.3	0.3		6.7	0.9	0.2	2.4	0.3	
Delay (s)	3.9	5.2	3.9	4.4	4.9		52.8	44.5	42.6	46.8	43.0	
Level of Service	A	A	A	A	A		D	D	D	D	D	
Approach Delay (s)		5.0			4.9			48.0			45.3	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	14.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	115.5	Sum of lost time (s)	12.6
Intersection Capacity Utilization	58.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	483	18	105	791	4	31
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	483	18	105	791	4	31
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	Raised			Raised		
Median storage veh)	1			1		
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			501		1493	492
vC1, stage 1 conf vol					492	
vC2, stage 2 conf vol					1001	
vCu, unblocked vol			501		1493	492
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			90		98	95
cM capacity (veh/h)			1074		243	581

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	501	105	791	35
Volume Left	0	105	0	4
Volume Right	18	0	0	31
cSH	1700	1074	1700	501
Volume to Capacity	0.29	0.10	0.47	0.07
Queue Length 95th (m)	0.0	2.3	0.0	1.6
Control Delay (s)	0.0	8.7	0.0	12.7
Lane LOS		A		B
Approach Delay (s)	0.0	1.0		12.7
Approach LOS				B

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	51.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	21	467	26	19	758	350	115	50	8	150	100	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98	1.00	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	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)	1784	5043	1536	1785	5092	1564	1785	1921	1597	1767	1921	1597
Flt Permitted	0.35	1.00	1.00	0.47	1.00	1.00	0.57	1.00	1.00	0.72	1.00	1.00
Satd. Flow (perm)	662	5043	1536	891	5092	1564	1074	1921	1597	1348	1921	1597
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	21	467	26	19	758	350	115	50	8	150	100	23
RTOR Reduction (vph)	0	0	16	0	0	214	0	0	5	0	0	17
Lane Group Flow (vph)	21	467	10	19	758	136	115	50	3	150	100	6
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	0%	4%	4%	0%	3%	0%	0%	0%	0%	1%	0%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2			6		3	8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	22.3	22.3	22.3	22.3	22.3	22.3	21.7	21.7	21.7	14.2	14.2	14.2
Effective Green, g (s)	22.3	22.3	22.3	22.3	22.3	22.3	21.7	21.7	21.7	14.2	14.2	14.2
Actuated g/C Ratio	0.39	0.39	0.39	0.39	0.39	0.39	0.38	0.38	0.38	0.25	0.25	0.25
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	256	1952	594	344	1971	605	460	723	601	332	473	393
v/s Ratio Prot		0.09			c0.15		c0.02	0.03			0.05	
v/s Ratio Perm	0.03		0.01	0.02		0.09	0.07		0.00	c0.11		0.00
v/c Ratio	0.08	0.24	0.02	0.06	0.38	0.22	0.25	0.07	0.01	0.45	0.21	0.01
Uniform Delay, d1	11.2	11.9	10.9	11.1	12.7	11.8	12.0	11.5	11.2	18.4	17.2	16.4
Progression 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
Incremental Delay, d2	0.3	0.1	0.0	0.1	0.3	0.4	0.6	0.1	0.0	2.0	0.5	0.0
Delay (s)	11.5	12.1	10.9	11.2	13.0	12.2	12.6	11.6	11.2	20.4	17.7	16.4
Level of Service	B	B	B	B	B	B	B	B	B	C	B	B
Approach Delay (s)		12.0			12.7			12.3			19.1	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	13.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	57.6	Sum of lost time (s)	16.6
Intersection Capacity Utilization	55.4%	ICU Level of Service	B
Analysis Period (min)	15		

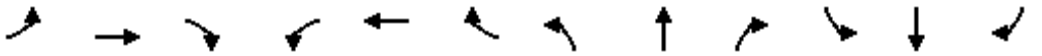
c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	451	1	2	829	1	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	451	1	2	829	1	2
Pedestrians					2	
Lane Width (m)					3.5	
Walking Speed (m/s)					4.0	
Percent Blockage					0	
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (m)	137					
pX, platoon unblocked			0.99		0.99	0.99
vC, conflicting volume			454		872	228
vC1, stage 1 conf vol					454	
vC2, stage 2 conf vol					418	
vCu, unblocked vol			417		841	188
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1136		511	816

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	301	151	278	553	3
Volume Left	0	0	2	0	1
Volume Right	0	1	0	0	2
cSH	1700	1700	1136	1700	680
Volume to Capacity	0.18	0.09	0.00	0.33	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.1
Control Delay (s)	0.0	0.0	0.1	0.0	10.3
Lane LOS			A		B
Approach Delay (s)	0.0		0.0		10.3
Approach LOS					B

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	34.3%	ICU Level of Service	A
Analysis Period (min)	15		

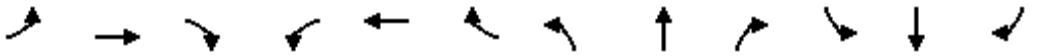
2021 Cap Network 4+6 Lanes AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	454	47	158	593	22	22	86	245	26	121	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.6	6.6		6.6	6.6		6.6	6.6	6.6	6.6	6.6	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1623	3272		1608	3295		1623	1746	1433	1621	1732	
Flt Permitted	0.42	1.00		0.47	1.00		0.67	1.00	1.00	0.70	1.00	
Satd. Flow (perm)	716	3272		792	3295		1153	1746	1433	1197	1732	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	2	454	47	158	593	22	22	86	245	26	121	7
RTOR Reduction (vph)	0	13	0	0	5	0	0	0	176	0	2	0
Lane Group Flow (vph)	2	488	0	158	610	0	22	86	69	26	126	0
Confl. Peds. (#/hr)									1	1		
Heavy Vehicles (%)	10%	10%	10%	11%	10%	15%	10%	10%	10%	10%	10%	10%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	18.8	18.8		18.8	18.8		12.6	12.6	12.6	12.6	12.6	
Effective Green, g (s)	18.8	18.8		18.8	18.8		12.6	12.6	12.6	12.6	12.6	
Actuated g/C Ratio	0.42	0.42		0.42	0.42		0.28	0.28	0.28	0.28	0.28	
Clearance Time (s)	6.6	6.6		6.6	6.6		6.6	6.6	6.6	6.6	6.6	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	301	1379		333	1388		325	493	404	338	489	
v/s Ratio Prot		0.15			0.19			0.05			c0.07	
v/s Ratio Perm	0.00			c0.20			0.02		0.05	0.02		
v/c Ratio	0.01	0.35		0.47	0.44		0.07	0.17	0.17	0.08	0.26	
Uniform Delay, d1	7.5	8.8		9.3	9.2		11.7	12.1	12.1	11.7	12.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.0	0.3		2.2	0.5		0.2	0.4	0.4	0.2	0.6	
Delay (s)	7.5	9.1		11.6	9.6		11.9	12.4	12.5	11.9	13.0	
Level of Service	A	A		B	A		B	B	B	B	B	
Approach Delay (s)		9.1			10.0			12.4			12.8	
Approach LOS		A			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	10.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	44.6	Sum of lost time (s)	13.2
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



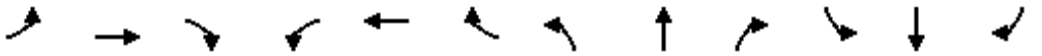
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	737	104	157	631	14	35	170	271	20	225	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.6	6.6		6.0	6.6		6.6	6.6	6.6	6.6	6.6	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	1.00		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1623	3257		1623	3304		1608	1746	1452	1623	1722	
Flt Permitted	0.41	1.00		0.18	1.00		0.55	1.00	1.00	0.65	1.00	
Satd. Flow (perm)	695	3257		313	3304		939	1746	1452	1110	1722	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	50	737	104	157	631	14	35	170	271	20	225	23
RTOR Reduction (vph)	0	14	0	0	2	0	0	0	198	0	5	0
Lane Group Flow (vph)	50	827	0	157	643	0	35	170	73	20	243	0
Heavy Vehicles (%)	10%	10%	10%	10%	10%	15%	11%	10%	10%	10%	10%	10%
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	24.9	24.9		37.9	37.9		18.7	18.7	18.7	18.7	18.7	
Effective Green, g (s)	24.9	24.9		37.9	37.9		18.7	18.7	18.7	18.7	18.7	
Actuated g/C Ratio	0.36	0.36		0.54	0.54		0.27	0.27	0.27	0.27	0.27	
Clearance Time (s)	6.6	6.6		6.0	6.6		6.6	6.6	6.6	6.6	6.6	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	247	1161		301	1794		251	467	389	297	461	
v/s Ratio Prot		c0.25		c0.05	0.19			0.10			c0.14	
v/s Ratio Perm	0.07			0.23			0.04		0.05	0.02		
v/c Ratio	0.20	0.71		0.52	0.36		0.14	0.36	0.19	0.07	0.53	
Uniform Delay, d1	15.6	19.4		10.0	9.1		19.4	20.7	19.7	19.0	21.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.8	2.6		3.1	0.3		0.5	1.0	0.5	0.2	2.1	
Delay (s)	16.4	22.0		13.1	9.3		20.0	21.7	20.2	19.2	23.8	
Level of Service	B	C		B	A		B	C	C	B	C	
Approach Delay (s)		21.6			10.1			20.7			23.5	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	17.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	69.8	Sum of lost time (s)	19.2
Intersection Capacity Utilization	78.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1022	7	44	791	11	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.5	3.7	3.5	3.5
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3318	1389	1623	3305	1623	1440
Flt Permitted	1.00	1.00	0.24	1.00	0.95	1.00
Satd. Flow (perm)	3318	1389	412	3305	1623	1440
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1022	7	44	791	11	205
RTOR Reduction (vph)	0	3	0	0	0	42
Lane Group Flow (vph)	1022	4	44	791	11	163
Heavy Vehicles (%)	10%	15%	10%	10%	10%	10%
Bus Blockages (#/hr)	0	0	0	2	0	2
Turn Type	NA	Perm	Perm	NA	NA	Perm
Protected Phases	2			6	8	
Permitted Phases		2	6			8
Actuated Green, G (s)	35.3	35.3	35.3	35.3	13.6	13.6
Effective Green, g (s)	35.3	35.3	35.3	35.3	13.6	13.6
Actuated g/C Ratio	0.58	0.58	0.58	0.58	0.22	0.22
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	1923	805	238	1915	362	321
v/s Ratio Prot	c0.31			0.24	0.01	
v/s Ratio Perm		0.00	0.11			c0.11
v/c Ratio	0.53	0.01	0.18	0.41	0.03	0.51
Uniform Delay, d1	7.8	5.4	6.0	7.1	18.5	20.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.1	0.0	1.7	0.7	0.1	2.6
Delay (s)	8.8	5.4	7.7	7.7	18.6	23.4
Level of Service	A	A	A	A	B	C
Approach Delay (s)	8.8			7.7	23.1	
Approach LOS	A			A	C	

Intersection Summary			
HCM 2000 Control Delay	9.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	60.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	50.9%	ICU Level of Service	A
Analysis Period (min)	15		

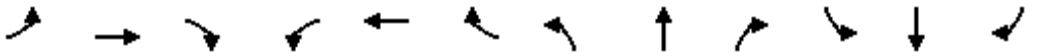
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	46	1175	6	30	692	23	43	4	130	135	22	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	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	0.85		1.00	0.88	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1552	3318	1348	1579	3318	1389	1623	1472		1621	1519	
Flt Permitted	0.39	1.00	1.00	0.19	1.00	1.00	0.68	1.00		0.67	1.00	
Satd. Flow (perm)	635	3318	1348	322	3318	1389	1159	1472		1146	1519	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	46	1175	6	30	692	23	43	4	130	135	22	100
RTOR Reduction (vph)	0	0	3	0	0	10	0	33	0	0	79	0
Lane Group Flow (vph)	46	1175	3	30	692	13	43	101	0	135	43	0
Confl. Peds. (#/hr)			1	1					1	1		
Heavy Vehicles (%)	15%	10%	15%	13%	10%	15%	10%	15%	10%	10%	15%	10%
Bus Blockages (#/hr)	0	0	2	0	0	0	0	0	0	0	0	2
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	32.4	32.4	32.4	32.4	32.4	32.4	11.5	11.5		11.5	11.5	
Effective Green, g (s)	32.4	32.4	32.4	32.4	32.4	32.4	11.5	11.5		11.5	11.5	
Actuated g/C Ratio	0.58	0.58	0.58	0.58	0.58	0.58	0.21	0.21		0.21	0.21	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	368	1923	781	186	1923	805	238	302		235	312	
v/s Ratio Prot		c0.35			0.21			0.07			0.03	
v/s Ratio Perm	0.07		0.00	0.09		0.01	0.04			c0.12		
v/c Ratio	0.12	0.61	0.00	0.16	0.36	0.02	0.18	0.34		0.57	0.14	
Uniform Delay, d1	5.3	7.6	5.0	5.4	6.2	5.0	18.3	18.9		20.0	18.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	1.5	0.0	1.9	0.5	0.0	0.8	1.4		5.3	0.4	
Delay (s)	6.0	9.1	5.0	7.3	6.8	5.0	19.1	20.3		25.3	18.6	
Level of Service	A	A	A	A	A	A	B	C		C	B	
Approach Delay (s)		9.0			6.7			20.0			22.1	
Approach LOS		A			A			C			C	

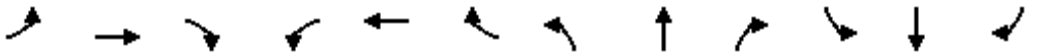
Intersection Summary			
HCM 2000 Control Delay	10.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	55.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



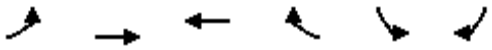
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	334	832	348	195	445	166	114	261	278	125	845	186
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.1	7.1	7.1	7.1	7.1	7.1
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.98
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)	1621	4768	1429	3011	4725	1412	1621	3318	1353	3148	3318	1418
Flt Permitted	0.49	1.00	1.00	0.95	1.00	1.00	0.33	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	828	4768	1429	3011	4725	1412	570	3318	1353	3148	3318	1418
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	334	832	348	195	445	166	114	261	278	125	845	186
RTOR Reduction (vph)	0	0	118	0	0	115	0	0	147	0	0	109
Lane Group Flow (vph)	334	832	230	195	445	51	114	261	131	125	845	77
Confl. Peds. (#/hr)	4		4	4		4	4		3	3		4
Heavy Vehicles (%)	10%	10%	10%	15%	11%	10%	10%	10%	14%	10%	10%	10%
Bus Blockages (#/hr)	0	0	0	0	0	3	0	0	5	0	0	2
Turn Type	pm+pt	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8			2		1	6	
Permitted Phases	4		4			8	2		2			6
Actuated Green, G (s)	38.1	29.9	29.9	10.2	31.9	31.9	27.9	27.9	27.9	8.2	43.2	43.2
Effective Green, g (s)	38.1	29.9	29.9	10.2	31.9	31.9	27.9	27.9	27.9	8.2	43.2	43.2
Actuated g/C Ratio	0.36	0.29	0.29	0.10	0.31	0.31	0.27	0.27	0.27	0.08	0.41	0.41
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.1	7.1	7.1	7.1	7.1	7.1
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	364	1365	409	294	1443	431	152	886	361	247	1372	586
v/s Ratio Prot	c0.07	0.17		0.06	0.09			0.08		0.04	c0.25	
v/s Ratio Perm	c0.26		0.16			0.04	c0.20		0.10			0.05
v/c Ratio	0.92	0.61	0.56	0.66	0.31	0.12	0.75	0.29	0.36	0.51	0.62	0.13
Uniform Delay, d1	28.9	32.2	31.7	45.4	27.8	26.1	35.1	30.4	31.0	46.2	24.1	19.0
Progression 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
Incremental Delay, d2	28.4	1.1	2.9	7.3	0.3	0.3	21.7	0.4	1.3	3.4	1.2	0.2
Delay (s)	57.3	33.3	34.6	52.7	28.0	26.4	56.8	30.8	32.4	49.5	25.3	19.2
Level of Service	E	C	C	D	C	C	E	C	C	D	C	B
Approach Delay (s)		38.9			33.7			36.0			26.9	
Approach LOS		D			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	34.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	104.4	Sum of lost time (s)	28.2
Intersection Capacity Utilization	84.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	33	1268	12	72	780	3	21	0	69	15	2	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5	6.5	7.0	7.0			7.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00	1.00	0.98			0.99	
Flpb, ped/bikes	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	0.85			0.92	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.98	
Satd. Flow (prot)	1623	4768	1394	1620	4641	1434	1621	1461			1565	
Flt Permitted	0.34	1.00	1.00	0.20	1.00	1.00	0.73	1.00			0.85	
Satd. Flow (perm)	588	4768	1394	344	4641	1434	1246	1461			1356	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	33	1268	12	72	780	3	21	0	69	15	2	24
RTOR Reduction (vph)	0	0	3	0	0	1	0	55	0	0	21	0
Lane Group Flow (vph)	33	1268	9	72	780	2	21	14	0	0	20	0
Confl. Peds. (#/hr)			4	4			1		4	4		1
Heavy Vehicles (%)	10%	10%	10%	10%	13%	10%	10%	10%	10%	10%	10%	10%
Bus Blockages (#/hr)	0	0	3	0	0	3	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	66.6	66.6	66.6	66.6	66.6	66.6	10.2	10.2			10.2	
Effective Green, g (s)	66.6	66.6	66.6	66.6	66.6	66.6	10.2	10.2			10.2	
Actuated g/C Ratio	0.74	0.74	0.74	0.74	0.74	0.74	0.11	0.11			0.11	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	7.0	7.0			7.0	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0			5.0	
Lane Grp Cap (vph)	433	3516	1028	253	3422	1057	140	165			153	
v/s Ratio Prot		c0.27			0.17			0.01				
v/s Ratio Perm	0.06		0.01	0.21		0.00	c0.02				0.01	
v/c Ratio	0.08	0.36	0.01	0.28	0.23	0.00	0.15	0.08			0.13	
Uniform Delay, d1	3.3	4.2	3.1	3.9	3.7	3.1	36.1	35.9			36.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	0.3	0.3	0.0	2.8	0.2	0.0	1.0	0.5			0.8	
Delay (s)	3.6	4.5	3.1	6.7	3.9	3.1	37.2	36.3			36.8	
Level of Service	A	A	A	A	A	A	D	D			D	
Approach Delay (s)		4.5			4.1			36.5			36.8	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	6.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	90.3	Sum of lost time (s)	13.5
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	38	1314	753	22	48	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.5		7.0	7.0
Lane Util. Factor	1.00	0.91	0.91		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1623	4749	4563		1623	1423
Flt Permitted	0.35	1.00	1.00		0.95	1.00
Satd. Flow (perm)	591	4749	4563		1623	1423
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	38	1314	753	22	48	77
RTOR Reduction (vph)	0	0	2	0	0	70
Lane Group Flow (vph)	38	1314	773	0	48	7
Confl. Peds. (#/hr)					2	5
Heavy Vehicles (%)	10%	10%	14%	14%	10%	10%
Bus Blockages (#/hr)	0	3	3	0	0	0
Turn Type	Perm	NA	NA		NA	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)	85.5	85.5	85.5		10.1	10.1
Effective Green, g (s)	85.5	85.5	85.5		10.1	10.1
Actuated g/C Ratio	0.78	0.78	0.78		0.09	0.09
Clearance Time (s)	6.5	6.5	6.5		7.0	7.0
Vehicle Extension (s)	5.0	5.0	5.0		5.0	5.0
Lane Grp Cap (vph)	463	3721	3575		150	131
v/s Ratio Prot		c0.28	0.17		c0.03	
v/s Ratio Perm	0.06					0.01
v/c Ratio	0.08	0.35	0.22		0.32	0.05
Uniform Delay, d1	2.7	3.5	3.1		46.3	45.1
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.3	0.3	0.1		2.6	0.4
Delay (s)	3.1	3.8	3.2		48.9	45.5
Level of Service	A	A	A		D	D
Approach Delay (s)		3.8	3.2		46.8	
Approach LOS		A	A		D	

Intersection Summary			
HCM 2000 Control Delay	6.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	109.1	Sum of lost time (s)	13.5
Intersection Capacity Utilization	46.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection has too many lanes per leg.

HCM All-Way analysis is limited to two lanes per leg.

Channelized right turn lanes are not counted.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	244	1048	142	107	538	22	58	274	210	80	401	188
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.6	6.6		6.6	6.6		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	0.98		1.00	0.99		1.00	0.93		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1623	4683		1623	4733		1566	3024		1552	3114	
Flt Permitted	0.43	1.00		0.21	1.00		0.22	1.00		0.31	1.00	
Satd. Flow (perm)	737	4683		352	4733		369	3024		514	3114	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	244	1048	142	107	538	22	58	274	210	80	401	188
RTOR Reduction (vph)	0	11	0	0	3	0	0	91	0	0	42	0
Lane Group Flow (vph)	244	1179	0	107	557	0	58	393	0	80	547	0
Heavy Vehicles (%)	10%	10%	10%	10%	10%	14%	14%	15%	10%	15%	10%	15%
Bus Blockages (#/hr)	0	0	3	0	0	0	0	0	3	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	87.6	87.6		87.6	87.6		31.0	31.0		31.0	31.0	
Effective Green, g (s)	87.6	87.6		87.6	87.6		31.0	31.0		31.0	31.0	
Actuated g/C Ratio	0.67	0.67		0.67	0.67		0.24	0.24		0.24	0.24	
Clearance Time (s)	6.6	6.6		6.6	6.6		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	492	3126		235	3160		87	714		121	735	
v/s Ratio Prot		0.25			0.12			0.13			c0.18	
v/s Ratio Perm	c0.33			0.30			0.16			0.16		
v/c Ratio	0.50	0.38		0.46	0.18		0.67	0.55		0.66	0.74	
Uniform Delay, d1	10.8	9.7		10.4	8.2		45.4	44.0		45.3	46.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.5	0.3		6.2	0.1		22.7	1.6		16.5	4.9	
Delay (s)	14.4	10.0		16.7	8.3		68.1	45.5		61.9	51.3	
Level of Service	B	B		B	A		E	D		E	D	
Approach Delay (s)		10.8			9.7			48.0			52.6	
Approach LOS		B			A			D			D	

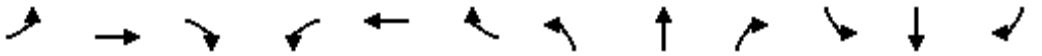
Intersection Summary			
HCM 2000 Control Delay	25.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	131.2	Sum of lost time (s)	12.6
Intersection Capacity Utilization	78.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1288	50	23	661	6	115
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1288	50	23	661	6	115
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			1338		1579	454
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1338		1579	454
tC, single (s)			4.3		7.1	7.1
tC, 2 stage (s)						
tF (s)			2.3		3.6	3.4
p0 queue free %			95		93	78
cM capacity (veh/h)			471		84	532

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1
Volume Total	515	515	308	23	220	220	220	121
Volume Left	0	0	0	23	0	0	0	6
Volume Right	0	0	50	0	0	0	0	115
cSH	1700	1700	1700	471	1700	1700	1700	420
Volume to Capacity	0.30	0.30	0.18	0.05	0.13	0.13	0.13	0.29
Queue Length 95th (m)	0.0	0.0	0.0	1.1	0.0	0.0	0.0	8.2
Control Delay (s)	0.0	0.0	0.0	13.0	0.0	0.0	0.0	17.0
Lane LOS				B				C
Approach Delay (s)	0.0			0.4				17.0
Approach LOS								C

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	40.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	17	1272	114	20	611	154	38	312	12	616	232	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.9	6.9	6.9	6.9	6.9	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	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	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	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1622	4768	1452	1623	4725	1433	1594	1746	1452	3148	1712	
Flt Permitted	0.36	1.00	1.00	0.10	1.00	1.00	0.59	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	623	4768	1452	178	4725	1433	998	1746	1452	3148	1712	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	17	1272	114	20	611	154	38	312	12	616	232	35
RTOR Reduction (vph)	0	0	74	0	0	100	0	0	9	0	4	0
Lane Group Flow (vph)	17	1272	40	20	611	54	38	312	3	616	263	0
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	10%	10%	10%	10%	11%	10%	12%	10%	10%	10%	10%	10%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Prot	NA	
Protected Phases		2			6			8		7	4	
Permitted Phases	2		2	6		6	8		8			
Actuated Green, G (s)	43.6	43.6	43.6	43.6	43.6	43.6	29.0	29.0	29.0	31.4	67.3	
Effective Green, g (s)	43.6	43.6	43.6	43.6	43.6	43.6	29.0	29.0	29.0	31.4	67.3	
Actuated g/C Ratio	0.35	0.35	0.35	0.35	0.35	0.35	0.23	0.23	0.23	0.25	0.54	
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.9	6.9	6.9	6.9	6.9	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	218	1669	508	62	1654	501	232	406	338	793	925	
v/s Ratio Prot		c0.27			0.13			c0.18		c0.20	0.15	
v/s Ratio Perm	0.03		0.03	0.11		0.04	0.04		0.00			
v/c Ratio	0.08	0.76	0.08	0.32	0.37	0.11	0.16	0.77	0.01	0.78	0.28	
Uniform Delay, d1	27.0	35.9	27.0	29.6	30.2	27.3	38.1	44.6	36.7	43.3	15.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.3	2.5	0.1	6.2	0.3	0.2	0.7	9.9	0.0	5.6	0.4	
Delay (s)	27.3	38.4	27.2	35.9	30.5	27.5	38.8	54.6	36.7	48.9	15.9	
Level of Service	C	D	C	D	C	C	D	D	D	D	B	
Approach Delay (s)		37.3			30.0			52.3			38.9	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	37.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	124.5	Sum of lost time (s)	20.5
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	704	15	23	702	1	49	8	73	42	5	22
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	6	704	15	23	702	1	49	8	73	42	5	22
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		370										
pX, platoon unblocked												
vC, conflicting volume	703			719			1145	1472	360	1190	1480	352
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	703			719			1145	1472	360	1190	1480	352
tC, single (s)	4.3			4.3			7.7	6.7	7.1	7.7	6.7	7.1
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	99			97			63	93	88	61	96	96
cM capacity (veh/h)	839			827			132	113	615	109	112	622

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1	SB 2
Volume Total	6	469	250	23	468	235	49	81	42	27
Volume Left	6	0	0	23	0	0	49	0	42	0
Volume Right	0	0	15	0	0	1	0	73	0	22
cSH	839	1700	1700	827	1700	1700	132	427	109	337
Volume to Capacity	0.01	0.28	0.15	0.03	0.28	0.14	0.37	0.19	0.39	0.08
Queue Length 95th (m)	0.2	0.0	0.0	0.6	0.0	0.0	10.8	4.8	11.1	1.8
Control Delay (s)	9.3	0.0	0.0	9.5	0.0	0.0	47.8	15.4	57.4	16.6
Lane LOS	A			A			E	C	F	C
Approach Delay (s)	0.1			0.3			27.6		41.4	
Approach LOS							D		E	

Intersection Summary				
Average Delay	4.1			
Intersection Capacity Utilization	36.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	806	13	27	662	64	85
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	806	13	27	662	64	85
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				176		
pX, platoon unblocked					0.91	
vC, conflicting volume			819		1198	410
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			819		1028	410
tC, single (s)			4.3		7.0	7.1
tC, 2 stage (s)						
tF (s)			2.3		3.6	3.4
p0 queue free %			96		67	85
cM capacity (veh/h)			756		191	569

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	537	282	27	331	331	64	85
Volume Left	0	0	27	0	0	64	0
Volume Right	0	13	0	0	0	0	85
cSH	1700	1700	756	1700	1700	191	569
Volume to Capacity	0.32	0.17	0.04	0.19	0.19	0.33	0.15
Queue Length 95th (m)	0.0	0.0	0.8	0.0	0.0	9.7	3.7
Control Delay (s)	0.0	0.0	9.9	0.0	0.0	33.0	12.4
Lane LOS			A			D	B
Approach Delay (s)	0.0		0.4			21.3	
Approach LOS						C	

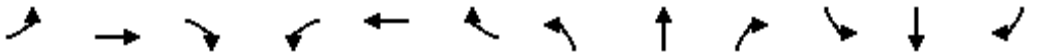
Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	34.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1361	1	1	774	1	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1361	1	1	774	1	2
Pedestrians				1	3	
Lane Width (m)				3.7	3.5	
Walking Speed (m/s)				4.0	4.0	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (m)	137					
pX, platoon unblocked			0.93		0.93	0.93
vC, conflicting volume			1365		1624	458
vC1, stage 1 conf vol					1364	
vC2, stage 2 conf vol					260	
vCu, unblocked vol			1112		1392	132
tC, single (s)			4.3		7.0	7.1
tC, 2 stage (s)					6.0	
tF (s)			2.3		3.6	3.4
p0 queue free %			100		100	100
cM capacity (veh/h)			536		231	803

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1
Volume Total	544	544	273	156	310	310	3
Volume Left	0	0	0	1	0	0	1
Volume Right	0	0	1	0	0	0	2
cSH	1700	1700	1700	536	1700	1700	439
Volume to Capacity	0.32	0.32	0.16	0.00	0.18	0.18	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Control Delay (s)	0.0	0.0	0.0	0.1	0.0	0.0	13.3
Lane LOS				A			B
Approach Delay (s)	0.0			0.0			13.3
Approach LOS							B

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	36.6%	ICU Level of Service	A
Analysis Period (min)	15		

2021 Cap Network 4+6 Lanes PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	537	55	353	443	53	99	61	178	14	48	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.6		3.0	6.6		6.6	6.6	6.6	6.6	6.6	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1552	3200		1623	3193		1623	1708	1452	1623	1660	
Flt Permitted	0.47	1.00		0.32	1.00		0.72	1.00	1.00	0.72	1.00	
Satd. Flow (perm)	769	3200		546	3193		1227	1708	1452	1225	1660	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	6	537	55	353	443	53	99	61	178	14	48	11
RTOR Reduction (vph)	0	10	0	0	14	0	0	0	140	0	9	0
Lane Group Flow (vph)	6	582	0	353	482	0	99	61	38	14	50	0
Heavy Vehicles (%)	15%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	19.1	19.1		36.4	36.4		13.5	13.5	13.5	13.5	13.5	
Effective Green, g (s)	19.1	19.1		36.4	36.4		13.5	13.5	13.5	13.5	13.5	
Actuated g/C Ratio	0.30	0.30		0.58	0.58		0.21	0.21	0.21	0.21	0.21	
Clearance Time (s)	6.6	6.6		3.0	6.6		6.6	6.6	6.6	6.6	6.6	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	232	968		559	1841		262	365	310	262	355	
v/s Ratio Prot		0.18		c0.14	0.15			0.04			0.03	
v/s Ratio Perm	0.01			c0.22			c0.08		0.03	0.01		
v/c Ratio	0.03	0.60		0.63	0.26		0.38	0.17	0.12	0.05	0.14	
Uniform Delay, d1	15.5	18.8		7.7	6.7		21.2	20.2	20.0	19.7	20.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	1.6		3.2	0.2		1.9	0.5	0.4	0.2	0.4	
Delay (s)	15.6	20.3		10.9	6.8		23.1	20.7	20.4	19.9	20.5	
Level of Service	B	C		B	A		C	C	C	B	C	
Approach Delay (s)		20.3			8.5			21.2			20.4	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	15.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	63.1	Sum of lost time (s)	16.2
Intersection Capacity Utilization	62.6%	ICU Level of Service	B
Analysis Period (min)	15		

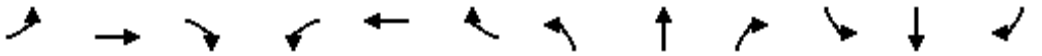
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	31	651	35	249	831	23	92	165	117	9	77	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.6		6.6	6.6		6.6	6.6	6.6	6.6	6.6	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	1.00		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1622	3221		1623	3230		1623	1708	1429	1617	1635	
Flt Permitted	0.29	1.00		0.37	1.00		0.69	1.00	1.00	0.65	1.00	
Satd. Flow (perm)	499	3221		640	3230		1174	1708	1429	1111	1635	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	31	651	35	249	831	23	92	165	117	9	77	31
RTOR Reduction (vph)	0	5	0	0	2	0	0	0	84	0	19	0
Lane Group Flow (vph)	31	681	0	249	852	0	92	165	33	9	89	0
Confl. Peds. (#/hr)	1					1			5	5		
Heavy Vehicles (%)	10%	10%	10%	10%	10%	11%	10%	10%	10%	10%	10%	10%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	33.6	33.6		33.6	33.6		18.6	18.6	18.6	18.6	18.6	
Effective Green, g (s)	33.6	33.6		33.6	33.6		18.6	18.6	18.6	18.6	18.6	
Actuated g/C Ratio	0.51	0.51		0.51	0.51		0.28	0.28	0.28	0.28	0.28	
Clearance Time (s)	6.6	6.6		6.6	6.6		6.6	6.6	6.6	6.6	6.6	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	256	1654		328	1659		333	485	406	315	465	
v/s Ratio Prot		0.21			0.26			c0.10			0.05	
v/s Ratio Perm	0.06			c0.39			0.08		0.02	0.01		
v/c Ratio	0.12	0.41		0.76	0.51		0.28	0.34	0.08	0.03	0.19	
Uniform Delay, d1	8.2	9.8		12.7	10.5		18.2	18.5	17.1	16.9	17.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.4	0.4		11.4	0.5		0.9	0.9	0.2	0.1	0.4	
Delay (s)	8.7	10.2		24.1	11.0		19.1	19.4	17.3	17.0	18.1	
Level of Service	A	B		C	B		B	B	B	B	B	
Approach Delay (s)		10.1			14.0			18.7			18.0	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	13.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	65.4	Sum of lost time (s)	13.2
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱	↰	↑↑	↰	↱
Volume (vph)	759	18	168	1101	2	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3245	1418	1622	3232	1623	1440
Flt Permitted	1.00	1.00	0.36	1.00	0.95	1.00
Satd. Flow (perm)	3245	1418	621	3232	1623	1440
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	759	18	168	1101	2	93
RTOR Reduction (vph)	0	6	0	0	0	83
Lane Group Flow (vph)	759	12	168	1101	2	10
Confl. Peds. (#/hr)		1	1			
Confl. Bikes (#/hr)		4				
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%
Bus Blockages (#/hr)	0	0	0	2	0	2
Turn Type	NA	Perm	Perm	NA	NA	Perm
Protected Phases	2			6	8	
Permitted Phases		2	6			8
Actuated Green, G (s)	42.3	42.3	42.3	42.3	6.9	6.9
Effective Green, g (s)	42.3	42.3	42.3	42.3	6.9	6.9
Actuated g/C Ratio	0.69	0.69	0.69	0.69	0.11	0.11
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	2242	980	429	2233	182	162
v/s Ratio Prot	0.23			c0.34	0.00	
v/s Ratio Perm		0.01	0.27			c0.01
v/c Ratio	0.34	0.01	0.39	0.49	0.01	0.06
Uniform Delay, d1	3.8	2.9	4.0	4.4	24.1	24.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.0	2.7	0.8	0.1	0.4
Delay (s)	4.2	3.0	6.7	5.2	24.2	24.6
Level of Service	A	A	A	A	C	C
Approach Delay (s)	4.2			5.4	24.6	
Approach LOS	A			A	C	

Intersection Summary			
HCM 2000 Control Delay	5.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	61.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	48.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	112	693	47	85	1200	126	18	35	30	69	10	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	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	0.93		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1623	3318	1407	1621	3318	1452	1617	1613		1615	1507	
Flt Permitted	0.20	1.00	1.00	0.39	1.00	1.00	0.72	1.00		0.71	1.00	
Satd. Flow (perm)	346	3318	1407	662	3318	1452	1221	1613		1215	1507	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	112	693	47	85	1200	126	18	35	30	69	10	51
RTOR Reduction (vph)	0	0	16	0	0	44	0	26	0	0	43	0
Lane Group Flow (vph)	112	693	31	85	1200	82	18	39	0	69	18	0
Confl. Peds. (#/hr)			2	2			3		4	4		3
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Bus Blockages (#/hr)	0	0	2	0	0	0	0	0	0	0	0	2
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	39.3	39.3	39.3	39.3	39.3	39.3	9.0	9.0		9.0	9.0	
Effective Green, g (s)	39.3	39.3	39.3	39.3	39.3	39.3	9.0	9.0		9.0	9.0	
Actuated g/C Ratio	0.65	0.65	0.65	0.65	0.65	0.65	0.15	0.15		0.15	0.15	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	225	2162	917	431	2162	946	182	240		181	224	
v/s Ratio Prot		0.21			c0.36			0.02			0.01	
v/s Ratio Perm	0.32		0.02	0.13		0.06	0.01			c0.06		
v/c Ratio	0.50	0.32	0.03	0.20	0.56	0.09	0.10	0.16		0.38	0.08	
Uniform Delay, d1	5.4	4.6	3.7	4.2	5.7	3.9	22.1	22.4		23.1	22.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.7	0.4	0.1	1.0	1.0	0.2	0.5	0.7		2.8	0.3	
Delay (s)	13.1	5.0	3.8	5.2	6.8	4.1	22.6	23.0		25.9	22.4	
Level of Service	B	A	A	A	A	A	C	C		C	C	
Approach Delay (s)		6.0			6.4			23.0			24.3	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	7.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	60.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	15		

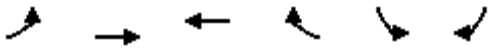
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	172	533	134	287	819	220	236	963	152	106	443	356
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.1	7.1	7.1	7.1	7.1	7.1
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.97
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)	1622	4768	1416	3148	4768	1405	1617	3318	1394	3148	3318	1393
Flt Permitted	0.26	1.00	1.00	0.95	1.00	1.00	0.37	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	448	4768	1416	3148	4768	1405	637	3318	1394	3148	3318	1393
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	172	533	134	287	819	220	236	963	152	106	443	356
RTOR Reduction (vph)	0	0	105	0	0	153	0	0	99	0	0	212
Lane Group Flow (vph)	172	533	29	287	819	67	236	963	53	106	443	144
Confl. Peds. (#/hr)	9		11	11		9	22		9	9		22
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Bus Blockages (#/hr)	0	0	0	0	0	3	0	0	5	0	0	2
Turn Type	pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4			8	2		2			6
Actuated Green, G (s)	37.2	26.1	26.1	16.6	31.6	31.6	55.0	42.0	42.0	8.1	37.1	37.1
Effective Green, g (s)	37.2	26.1	26.1	16.6	31.6	31.6	55.0	42.0	42.0	8.1	37.1	37.1
Actuated g/C Ratio	0.31	0.22	0.22	0.14	0.26	0.26	0.45	0.35	0.35	0.07	0.31	0.31
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.1	7.1	7.1	7.1	7.1	7.1
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	245	1028	305	431	1245	366	394	1151	483	210	1017	427
v/s Ratio Prot	0.06	0.11		c0.09	c0.17		c0.06	c0.29		0.03	0.13	
v/s Ratio Perm	0.15		0.02			0.05	0.21		0.04			0.10
v/c Ratio	0.70	0.52	0.09	0.67	0.66	0.18	0.60	0.84	0.11	0.50	0.44	0.34
Uniform Delay, d1	32.6	41.9	38.0	49.6	39.9	34.7	21.7	36.3	26.8	54.5	33.6	32.4
Progression 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
Incremental Delay, d2	10.9	0.9	0.3	5.1	1.7	0.5	3.7	6.0	0.2	3.9	0.6	1.0
Delay (s)	43.5	42.8	38.3	54.7	41.6	35.2	25.4	42.4	27.0	58.5	34.2	33.4
Level of Service	D	D	D	D	D	D	C	D	C	E	C	C
Approach Delay (s)		42.2			43.4			37.7			36.7	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	40.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	121.0	Sum of lost time (s)	28.2
Intersection Capacity Utilization	88.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	42	812	15	117	1267	12	46	13	58	24	21	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5	6.5	7.0	7.0			7.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.95	1.00	0.99			0.99	
Flpb, ped/bikes	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	0.88			0.92	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.99	
Satd. Flow (prot)	1614	4768	1388	1616	4768	1361	1616	1514			1577	
Flt Permitted	0.20	1.00	1.00	0.33	1.00	1.00	0.68	1.00			0.90	
Satd. Flow (perm)	340	4768	1388	567	4768	1361	1150	1514			1437	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	42	812	15	117	1267	12	46	13	58	24	21	61
RTOR Reduction (vph)	0	0	4	0	0	3	0	51	0	0	46	0
Lane Group Flow (vph)	42	812	11	117	1267	9	46	20	0	0	60	0
Confl. Peds. (#/hr)	13		5	5		13	4		2	2		4
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Bus Blockages (#/hr)	0	0	3	0	0	3	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	81.7	81.7	81.7	81.7	81.7	81.7	13.6	13.6			13.6	
Effective Green, g (s)	81.7	81.7	81.7	81.7	81.7	81.7	13.6	13.6			13.6	
Actuated g/C Ratio	0.75	0.75	0.75	0.75	0.75	0.75	0.12	0.12			0.12	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	7.0	7.0			7.0	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0			5.0	
Lane Grp Cap (vph)	255	3580	1042	425	3580	1022	143	189			179	
v/s Ratio Prot		0.17			c0.27			0.01				
v/s Ratio Perm	0.12		0.01	0.21		0.01	0.04				c0.04	
v/c Ratio	0.16	0.23	0.01	0.28	0.35	0.01	0.32	0.11			0.33	
Uniform Delay, d1	3.9	4.1	3.4	4.3	4.6	3.4	43.4	42.2			43.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	1.4	0.1	0.0	1.6	0.3	0.0	2.7	0.5			2.3	
Delay (s)	5.2	4.2	3.4	5.9	4.9	3.4	46.1	42.7			45.8	
Level of Service	A	A	A	A	A	A	D	D			D	
Approach Delay (s)		4.3			4.9			44.1			45.8	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	8.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	108.8	Sum of lost time (s)	13.5
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	66	828	1394	60	22	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.5		7.0	7.0
Lane Util. Factor	1.00	0.91	0.91		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1623	4749	4738		1623	1432
Flt Permitted	0.16	1.00	1.00		0.95	1.00
Satd. Flow (perm)	278	4749	4738		1623	1432
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	66	828	1394	60	22	103
RTOR Reduction (vph)	0	0	3	0	0	73
Lane Group Flow (vph)	66	828	1451	0	22	30
Confl. Peds. (#/hr)					1	1
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%
Bus Blockages (#/hr)	0	3	0	3	0	0
Turn Type	Perm	NA	NA		NA	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)	91.4	91.4	91.4		11.3	11.3
Effective Green, g (s)	91.4	91.4	91.4		11.3	11.3
Actuated g/C Ratio	0.79	0.79	0.79		0.10	0.10
Clearance Time (s)	6.5	6.5	6.5		7.0	7.0
Vehicle Extension (s)	5.0	5.0	5.0		5.0	5.0
Lane Grp Cap (vph)	218	3735	3726		157	139
v/s Ratio Prot		0.17	c0.31		0.01	
v/s Ratio Perm	0.24					c0.02
v/c Ratio	0.30	0.22	0.39		0.14	0.21
Uniform Delay, d1	3.5	3.2	3.8		48.0	48.4
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	3.5	0.1	0.3		0.9	1.6
Delay (s)	7.0	3.3	4.1		48.9	50.0
Level of Service	A	A	A		D	D
Approach Delay (s)		3.6	4.1		49.8	
Approach LOS		A	A		D	

Intersection Summary			
HCM 2000 Control Delay	6.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	116.2	Sum of lost time (s)	13.5
Intersection Capacity Utilization	58.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection has too many lanes per leg.

HCM All-Way analysis is limited to two lanes per leg.

Channelized right turn lanes are not counted.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	208	576	94	213	1090	98	174	444	121	100	366	277
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.0	6.6		6.6	6.6		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.97		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1623	4668		1623	4698		1623	3212		1623	3083	
Flt Permitted	0.13	1.00		0.39	1.00		0.13	1.00		0.44	1.00	
Satd. Flow (perm)	221	4668		659	4698		218	3212		751	3083	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	208	576	94	213	1090	98	174	444	121	100	366	277
RTOR Reduction (vph)	0	19	0	0	9	0	0	21	0	0	116	0
Lane Group Flow (vph)	208	651	0	213	1179	0	174	544	0	100	527	0
Confl. Peds. (#/hr)							2					2
Heavy Vehicles (%)	10%	10%	10%	10%	10%	13%	10%	10%	10%	10%	10%	10%
Bus Blockages (#/hr)	0	0	3	0	0	0	0	0	3	0	0	0
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases	5	2			6		3	8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	63.4	63.4		46.4	46.4		42.3	42.3		25.3	25.3	
Effective Green, g (s)	63.4	63.4		46.4	46.4		42.3	42.3		25.3	25.3	
Actuated g/C Ratio	0.54	0.54		0.39	0.39		0.36	0.36		0.21	0.21	
Clearance Time (s)	6.0	6.6		6.6	6.6		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	248	2501		258	1842		208	1148		160	659	
v/s Ratio Prot	c0.08	0.14			0.25		c0.08	0.17			0.17	
v/s Ratio Perm	c0.37			0.32			c0.22			0.13		
v/c Ratio	0.84	0.26		0.83	0.64		0.84	0.47		0.62	0.80	
Uniform Delay, d1	19.2	14.8		32.3	29.2		30.0	29.4		42.2	44.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	23.3	0.3		25.0	1.7		26.6	0.6		10.3	7.9	
Delay (s)	42.5	15.1		57.3	30.9		56.5	30.0		52.5	52.0	
Level of Service	D	B		E	C		E	C		D	D	
Approach Delay (s)		21.6			34.9			36.3			52.0	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	35.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	118.3	Sum of lost time (s)	24.6
Intersection Capacity Utilization	84.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	779	18	105	1397	4	31
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	779	18	105	1397	4	31
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			797		1464	269
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			797		1464	269
tC, single (s)			4.3		7.0	7.1
tC, 2 stage (s)						
tF (s)			2.3		3.6	3.4
p0 queue free %			86		96	96
cM capacity (veh/h)			771		96	706

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1
Volume Total	312	312	174	105	466	466	466	35
Volume Left	0	0	0	105	0	0	0	4
Volume Right	0	0	18	0	0	0	0	31
cSH	1700	1700	1700	771	1700	1700	1700	408
Volume to Capacity	0.18	0.18	0.10	0.14	0.27	0.27	0.27	0.09
Queue Length 95th (m)	0.0	0.0	0.0	3.3	0.0	0.0	0.0	2.0
Control Delay (s)	0.0	0.0	0.0	10.4	0.0	0.0	0.0	14.7
Lane LOS				B				B
Approach Delay (s)	0.0			0.7				14.7
Approach LOS								B

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	37.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	32	738	40	29	1290	539	177	581	12	231	576	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	6.7	3.0	6.9	6.9	6.9	6.9	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	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	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	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1622	4768	1452	1623	4768	1433	1623	1746	1452	3148	1731	
Flt Permitted	0.11	1.00	1.00	0.30	1.00	1.00	0.20	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	186	4768	1452	505	4768	1433	339	1746	1452	3148	1731	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	32	738	40	29	1290	539	177	581	12	231	576	35
RTOR Reduction (vph)	0	0	27	0	0	246	0	0	7	0	2	0
Lane Group Flow (vph)	32	738	13	29	1290	293	177	581	5	231	609	0
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	Prot	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8			
Actuated Green, G (s)	36.7	36.7	36.7	36.7	36.7	36.7	55.8	44.2	44.2	10.2	46.7	
Effective Green, g (s)	36.7	36.7	36.7	36.7	36.7	36.7	55.8	44.2	44.2	10.2	46.7	
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33	0.33	0.50	0.40	0.40	0.09	0.42	
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	3.0	6.9	6.9	6.9	6.9	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	61	1567	477	166	1567	471	302	691	575	287	724	
v/s Ratio Prot		0.15			c0.27		0.06	0.33		c0.07	c0.35	
v/s Ratio Perm	0.17		0.01	0.06		0.20	0.23		0.00			
v/c Ratio	0.52	0.47	0.03	0.17	0.82	0.62	0.59	0.84	0.01	0.80	0.84	
Uniform Delay, d1	30.4	29.7	25.4	26.7	34.5	31.6	19.0	30.5	20.4	49.7	29.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	14.6	0.5	0.0	1.1	4.1	3.6	4.5	10.0	0.0	16.9	9.6	
Delay (s)	45.0	30.2	25.4	27.7	38.6	35.2	23.5	40.5	20.4	66.6	38.8	
Level of Service	D	C	C	C	D	D	C	D	C	E	D	
Approach Delay (s)		30.6			37.4			36.3			46.4	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	37.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	111.6	Sum of lost time (s)	20.5
Intersection Capacity Utilization	91.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	25	659	45	67	804	47	32	8	39	24	10	13
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	25	659	45	67	804	47	32	8	39	24	10	13
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		370										
pX, platoon unblocked				0.95			0.95	0.95	0.95	0.95	0.95	
vC, conflicting volume	851			704			1286	1716	352	1384	1716	426
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	851			570			1186	1642	198	1290	1641	426
tC, single (s)	4.3			4.3			7.7	6.7	7.1	7.7	6.7	7.1
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	97			92			69	90	95	72	87	98
cM capacity (veh/h)	734			893			103	77	743	85	77	556

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1	SB 2
Volume Total	25	439	265	67	536	315	32	47	24	23
Volume Left	25	0	0	67	0	0	32	0	24	0
Volume Right	0	0	45	0	0	47	0	39	0	13
cSH	734	1700	1700	893	1700	1700	103	301	85	151
Volume to Capacity	0.03	0.26	0.16	0.08	0.32	0.19	0.31	0.16	0.28	0.15
Queue Length 95th (m)	0.7	0.0	0.0	1.7	0.0	0.0	8.3	3.8	7.2	3.7
Control Delay (s)	10.1	0.0	0.0	9.4	0.0	0.0	54.7	19.2	62.8	33.2
Lane LOS	B			A			F	C	F	D
Approach Delay (s)	0.3			0.7			33.6		48.3	
Approach LOS							D		E	

Intersection Summary				
Average Delay	3.3			
Intersection Capacity Utilization	45.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	678	44	78	876	42	39
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	678	44	78	876	42	39
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				176		
pX, platoon unblocked					0.86	
vC, conflicting volume			722		1294	361
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			722		1021	361
tC, single (s)			4.3		7.0	7.1
tC, 2 stage (s)						
tF (s)			2.3		3.6	3.4
p0 queue free %			91		75	94
cM capacity (veh/h)			825		171	613

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	452	270	78	438	438	42	39
Volume Left	0	0	78	0	0	42	0
Volume Right	0	44	0	0	0	0	39
cSH	1700	1700	825	1700	1700	171	613
Volume to Capacity	0.27	0.16	0.09	0.26	0.26	0.25	0.06
Queue Length 95th (m)	0.0	0.0	2.2	0.0	0.0	6.5	1.4
Control Delay (s)	0.0	0.0	9.8	0.0	0.0	32.8	11.3
Lane LOS			A			D	B
Approach Delay (s)	0.0		0.8			22.4	
Approach LOS						C	

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	37.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	849	1	2	1452	1	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	849	1	2	1452	1	2
Pedestrians					2	
Lane Width (m)					3.5	
Walking Speed (m/s)					4.0	
Percent Blockage					0	
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (m)	137					
pX, platoon unblocked			0.97		0.97	0.97
vC, conflicting volume			852		1340	286
vC1, stage 1 conf vol					852	
vC2, stage 2 conf vol					488	
vCu, unblocked vol			732		1236	147
tC, single (s)			4.3		7.0	7.1
tC, 2 stage (s)					6.0	
tF (s)			2.3		3.6	3.4
p0 queue free %			100		100	100
cM capacity (veh/h)			791		347	821

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1
Volume Total	340	340	171	292	581	581	3
Volume Left	0	0	0	2	0	0	1
Volume Right	0	0	1	0	0	0	2
cSH	1700	1700	1700	791	1700	1700	564
Volume to Capacity	0.20	0.20	0.10	0.00	0.34	0.34	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.1	0.0	0.0	0.1
Control Delay (s)	0.0	0.0	0.0	0.1	0.0	0.0	11.4
Lane LOS				A			B
Approach Delay (s)	0.0			0.0			11.4
Approach LOS							B

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	39.4%	ICU Level of Service	A
Analysis Period (min)	15		

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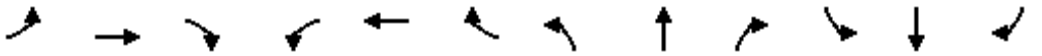


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↑	↱		↔	
Volume (vph)	2	454	47	158	593	22	22	86	245	26	121	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)		6.6			6.6		6.6	6.6	6.6		6.6	
Lane Util. Factor		1.00			1.00		1.00	1.00	1.00		1.00	
Frpb, ped/bikes		1.00			1.00		1.00	1.00	0.98		1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00	1.00		1.00	
Frt		0.99			1.00		1.00	1.00	0.85		0.99	
Flt Protected		1.00			0.99		0.95	1.00	1.00		0.99	
Satd. Flow (prot)		1724			1717		1623	1746	1419		1720	
Flt Permitted		1.00			0.80		0.67	1.00	1.00		0.93	
Satd. Flow (perm)		1721			1390		1138	1746	1419		1614	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	2	454	47	158	593	22	22	86	245	26	121	7
RTOR Reduction (vph)	0	4	0	0	1	0	0	0	196	0	2	0
Lane Group Flow (vph)	0	499	0	0	772	0	22	86	49	0	152	0
Confl. Peds. (#/hr)									1	1		
Heavy Vehicles (%)	10%	10%	10%	11%	10%	15%	10%	10%	10%	10%	10%	10%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)		47.8			47.8		15.2	15.2	15.2		15.2	
Effective Green, g (s)		47.8			47.8		15.2	15.2	15.2		15.2	
Actuated g/C Ratio		0.63			0.63		0.20	0.20	0.20		0.20	
Clearance Time (s)		6.6			6.6		6.6	6.6	6.6		6.6	
Vehicle Extension (s)		5.0			5.0		5.0	5.0	5.0		5.0	
Lane Grp Cap (vph)		1079			871		227	348	283		321	
v/s Ratio Prot								0.05				
v/s Ratio Perm		0.29			c0.56		0.02		0.03		c0.09	
v/c Ratio		0.46			0.89		0.10	0.25	0.17		0.47	
Uniform Delay, d1		7.5			11.9		24.9	25.7	25.3		27.0	
Progression Factor		1.00			1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2		0.7			11.5		0.4	0.8	0.6		2.3	
Delay (s)		8.1			23.4		25.3	26.5	25.9		29.2	
Level of Service		A			C		C	C	C		C	
Approach Delay (s)		8.1			23.4			26.0			29.2	
Approach LOS		A			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	20.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	76.2	Sum of lost time (s)	13.2
Intersection Capacity Utilization	99.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

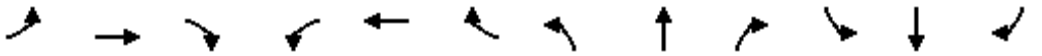
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	737	104	157	631	14	35	170	271	20	225	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.6	6.6		6.6	6.6		6.6	6.6	6.6		6.6	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	
Frt	1.00	0.98		1.00	1.00		1.00	1.00	0.85		0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (prot)	1623	1714		1623	1739		1608	1746	1452		1720	
Flt Permitted	0.30	1.00		0.16	1.00		0.51	1.00	1.00		0.97	
Satd. Flow (perm)	510	1714		270	1739		870	1746	1452		1669	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	50	737	104	157	631	14	35	170	271	20	225	23
RTOR Reduction (vph)	0	6	0	0	1	0	0	0	120	0	4	0
Lane Group Flow (vph)	50	835	0	157	644	0	35	170	151	0	264	0
Heavy Vehicles (%)	10%	10%	10%	10%	10%	15%	11%	10%	10%	10%	10%	10%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	40.1	40.1		40.1	40.1		19.4	19.4	19.4		19.4	
Effective Green, g (s)	40.1	40.1		40.1	40.1		19.4	19.4	19.4		19.4	
Actuated g/C Ratio	0.55	0.55		0.55	0.55		0.27	0.27	0.27		0.27	
Clearance Time (s)	6.6	6.6		6.6	6.6		6.6	6.6	6.6		6.6	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0		5.0	
Lane Grp Cap (vph)	281	945		148	959		232	465	387		445	
v/s Ratio Prot		0.49			0.37			0.10				
v/s Ratio Perm	0.10			c0.58			0.04		0.10		c0.16	
v/c Ratio	0.18	0.88		1.06	0.67		0.15	0.37	0.39		0.59	
Uniform Delay, d1	8.1	14.3		16.3	11.6		20.4	21.7	21.8		23.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.6	10.6		91.1	2.4		0.6	1.0	1.4		3.2	
Delay (s)	8.7	24.8		107.4	14.0		21.0	22.7	23.2		26.4	
Level of Service	A	C		F	B		C	C	C		C	
Approach Delay (s)		23.9			32.3			22.8			26.4	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	26.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	72.7	Sum of lost time (s)	13.2
Intersection Capacity Utilization	106.5%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1022	7	44	791	11	205
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1022	7	44	791	11	205
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	329					
pX, platoon unblocked			0.58		0.58	0.58
vC, conflicting volume			1029		1901	1022
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			681		2197	669
tC, single (s)			4.2		6.5	6.3
tC, 2 stage (s)						
tF (s)			2.3		3.6	3.4
p0 queue free %			91		55	20
cM capacity (veh/h)			503		25	255

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2
Volume Total	1022	7	44	791	11	205
Volume Left	0	0	44	0	11	0
Volume Right	0	7	0	0	0	205
cSH	1700	1700	503	1700	25	255
Volume to Capacity	0.60	0.00	0.09	0.47	0.45	0.80
Queue Length 95th (m)	0.0	0.0	2.0	0.0	9.5	43.2
Control Delay (s)	0.0	0.0	12.8	0.0	239.1	58.8
Lane LOS			B		F	F
Approach Delay (s)	0.0		0.7		68.0	
Approach LOS					F	

Intersection Summary			
Average Delay	7.3		
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	46	1175	6	30	692	23	43	4	130	135	22	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	0.98		1.00	1.00	
Flpb, ped/bikes	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	0.85		1.00	0.88	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1552	1746	1348	1580	1746	1389	1623	1459		1621	1519	
Flt Permitted	0.29	1.00	1.00	0.12	1.00	1.00	0.68	1.00		0.67	1.00	
Satd. Flow (perm)	481	1746	1348	205	1746	1389	1159	1459		1145	1519	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	46	1175	6	30	692	23	43	4	130	135	22	100
RTOR Reduction (vph)	0	0	3	0	0	10	0	33	0	0	79	0
Lane Group Flow (vph)	46	1175	3	30	692	13	43	101	0	135	43	0
Confl. Peds. (#/hr)			1	1					1	1		
Heavy Vehicles (%)	15%	10%	15%	13%	10%	15%	10%	15%	10%	10%	15%	10%
Bus Blockages (#/hr)	0	0	2	0	0	0	0	0	0	0	0	2
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	32.4	32.4	32.4	32.4	32.4	32.4	11.5	11.5		11.5	11.5	
Effective Green, g (s)	32.4	32.4	32.4	32.4	32.4	32.4	11.5	11.5		11.5	11.5	
Actuated g/C Ratio	0.58	0.58	0.58	0.58	0.58	0.58	0.21	0.21		0.21	0.21	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	278	1011	781	118	1011	805	238	300		235	312	
v/s Ratio Prot		c0.67			0.40			0.07			0.03	
v/s Ratio Perm	0.10		0.00	0.15		0.01	0.04			c0.12		
v/c Ratio	0.17	1.16	0.00	0.25	0.68	0.02	0.18	0.34		0.57	0.14	
Uniform Delay, d1	5.5	11.8	5.0	5.8	8.2	5.0	18.3	19.0		20.0	18.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.3	84.1	0.0	5.1	3.8	0.0	0.8	1.4		5.3	0.4	
Delay (s)	6.7	95.8	5.0	10.9	12.0	5.0	19.1	20.4		25.3	18.6	
Level of Service	A	F	A	B	B	A	B	C		C	B	
Approach Delay (s)		92.0			11.7			20.0			22.1	
Approach LOS		F			B			C			C	

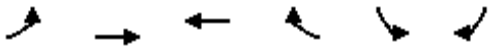
Intersection Summary			
HCM 2000 Control Delay	54.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	55.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	92.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	334	832	348	195	445	166	114	261	278	125	845	186
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.1	7.1	7.1	7.1	7.1	7.1
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.98
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)	1620	3318	1428	3011	3288	1412	1621	3318	1353	3148	3318	1418
Flt Permitted	0.49	1.00	1.00	0.95	1.00	1.00	0.33	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	843	3318	1428	3011	3288	1412	570	3318	1353	3148	3318	1418
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	334	832	348	195	445	166	114	261	278	125	845	186
RTOR Reduction (vph)	0	0	119	0	0	93	0	0	200	0	0	106
Lane Group Flow (vph)	334	832	229	195	445	73	114	261	78	125	845	80
Confl. Peds. (#/hr)	4		4	4		4	4		3	3		4
Heavy Vehicles (%)	10%	10%	10%	15%	11%	10%	10%	10%	14%	10%	10%	10%
Bus Blockages (#/hr)	0	0	0	0	0	3	0	0	5	0	0	2
Turn Type	Perm	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Prot	NA	Perm
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4		4			8	2		2			6
Actuated Green, G (s)	30.4	30.4	30.4	10.1	47.5	47.5	28.3	28.3	28.3	11.2	46.6	46.6
Effective Green, g (s)	30.4	30.4	30.4	10.1	47.5	47.5	28.3	28.3	28.3	11.2	46.6	46.6
Actuated g/C Ratio	0.28	0.28	0.28	0.09	0.44	0.44	0.26	0.26	0.26	0.10	0.43	0.43
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.1	7.1	7.1	7.1	7.1	7.1
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	236	932	401	281	1443	619	149	867	353	325	1429	610
v/s Ratio Prot		0.25		c0.06	0.14			0.08		0.04	c0.25	
v/s Ratio Perm	c0.40		0.16			0.05	c0.20		0.06			0.06
v/c Ratio	1.42	0.89	0.57	0.69	0.31	0.12	0.77	0.30	0.22	0.38	0.59	0.13
Uniform Delay, d1	38.9	37.3	33.3	47.6	19.7	18.0	36.9	32.0	31.3	45.3	23.5	18.6
Progression 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
Incremental Delay, d2	210.0	11.5	3.1	9.1	0.3	0.2	23.8	0.4	0.7	1.6	1.0	0.2
Delay (s)	248.9	48.9	36.5	56.7	19.9	18.1	60.7	32.4	32.0	46.9	24.5	18.8
Level of Service	F	D	D	E	B	B	E	C	C	D	C	B
Approach Delay (s)		90.1			28.5			37.2			26.0	
Approach LOS		F			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	51.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	108.2	Sum of lost time (s)	28.2
Intersection Capacity Utilization	87.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

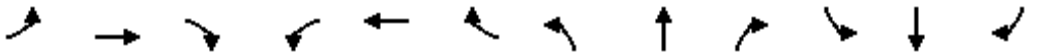
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	33	1268	12	72	780	3	21	0	69	15	2	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5	6.5	7.0	7.0			7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00	1.00	0.98			0.99	
Flpb, ped/bikes	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	0.85			0.92	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.98	
Satd. Flow (prot)	1623	3318	1392	1620	3230	1434	1621	1460			1565	
Flt Permitted	0.35	1.00	1.00	0.20	1.00	1.00	0.73	1.00			0.85	
Satd. Flow (perm)	604	3318	1392	340	3230	1434	1246	1460			1355	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	33	1268	12	72	780	3	21	0	69	15	2	24
RTOR Reduction (vph)	0	0	3	0	0	1	0	62	0	0	22	0
Lane Group Flow (vph)	33	1268	9	72	780	2	21	7	0	0	19	0
Confl. Peds. (#/hr)			4	4			1		4	4		1
Heavy Vehicles (%)	10%	10%	10%	10%	13%	10%	10%	10%	10%	10%	10%	10%
Bus Blockages (#/hr)	0	0	3	0	0	3	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	85.5	85.5	85.5	85.5	85.5	85.5	10.5	10.5			10.5	
Effective Green, g (s)	85.5	85.5	85.5	85.5	85.5	85.5	10.5	10.5			10.5	
Actuated g/C Ratio	0.78	0.78	0.78	0.78	0.78	0.78	0.10	0.10			0.10	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	7.0	7.0			7.0	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0			5.0	
Lane Grp Cap (vph)	471	2590	1086	265	2522	1119	119	140			129	
v/s Ratio Prot		c0.38			0.24			0.00				
v/s Ratio Perm	0.05		0.01	0.21		0.00	c0.02				0.01	
v/c Ratio	0.07	0.49	0.01	0.27	0.31	0.00	0.18	0.05			0.15	
Uniform Delay, d1	2.8	4.3	2.6	3.3	3.5	2.6	45.5	45.0			45.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	0.3	0.7	0.0	2.5	0.3	0.0	1.5	0.3			1.1	
Delay (s)	3.1	4.9	2.7	5.9	3.8	2.6	47.0	45.3			46.5	
Level of Service	A	A	A	A	A	A	D	D			D	
Approach Delay (s)		4.9			4.0			45.7			46.5	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	6.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	109.5	Sum of lost time (s)	13.5
Intersection Capacity Utilization	68.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	38	1314	753	22	48	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.5		7.0	7.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1623	3298	3169		1623	1423
Flt Permitted	0.36	1.00	1.00		0.95	1.00
Satd. Flow (perm)	609	3298	3169		1623	1423
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	38	1314	753	22	48	77
RTOR Reduction (vph)	0	0	1	0	0	70
Lane Group Flow (vph)	38	1314	774	0	48	7
Confl. Peds. (#/hr)					2	5
Heavy Vehicles (%)	10%	10%	14%	14%	10%	10%
Bus Blockages (#/hr)	0	3	3	0	0	0
Turn Type	Perm	NA	NA		NA	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)	85.5	85.5	85.5		10.1	10.1
Effective Green, g (s)	85.5	85.5	85.5		10.1	10.1
Actuated g/C Ratio	0.78	0.78	0.78		0.09	0.09
Clearance Time (s)	6.5	6.5	6.5		7.0	7.0
Vehicle Extension (s)	5.0	5.0	5.0		5.0	5.0
Lane Grp Cap (vph)	477	2584	2483		150	131
v/s Ratio Prot		c0.40	0.24		c0.03	
v/s Ratio Perm	0.06					0.01
v/c Ratio	0.08	0.51	0.31		0.32	0.05
Uniform Delay, d1	2.7	4.2	3.4		46.3	45.1
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.3	0.7	0.3		2.6	0.4
Delay (s)	3.0	5.0	3.7		48.9	45.5
Level of Service	A	A	A		D	D
Approach Delay (s)		4.9	3.7		46.8	
Approach LOS		A	A		D	

Intersection Summary			
HCM 2000 Control Delay	6.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	109.1	Sum of lost time (s)	13.5
Intersection Capacity Utilization	55.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	1347	12	5	755	24	10	0	16	71	0	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	3	1347	12	5	755	24	10	0	16	71	0	10
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	779			1359			1756	2148	680	1460	2130	378
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	779			1359			1756	2148	680	1460	2130	378
tC, single (s)	4.3			4.4			7.7	6.7	7.1	7.7	6.7	7.1
tC, 2 stage (s)												
tF (s)	2.3			2.4			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	100			99			79	100	96	10	100	98
cM capacity (veh/h)	784			439			48	43	376	79	44	598

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	NB 2	SB 1
Volume Total	3	898	461	5	378	378	24	10	16	81
Volume Left	3	0	0	5	0	0	0	10	0	71
Volume Right	0	0	12	0	0	0	24	0	16	10
cSH	784	1700	1700	439	1700	1700	1700	48	376	89
Volume to Capacity	0.00	0.53	0.27	0.01	0.22	0.22	0.01	0.21	0.04	0.91
Queue Length 95th (m)	0.1	0.0	0.0	0.2	0.0	0.0	0.0	4.8	0.9	35.4
Control Delay (s)	9.6	0.0	0.0	13.3	0.0	0.0	0.0	98.3	15.0	156.8
Lane LOS	A			B				F	C	F
Approach Delay (s)	0.0			0.1				47.0		156.8
Approach LOS								E		F

Intersection Summary				
Average Delay	6.2			
Intersection Capacity Utilization	55.5%	ICU Level of Service	B	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	244	1048	142	107	538	22	58	274	210	80	401	188
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.6	6.6		6.6	6.6		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.98		1.00	0.99		1.00	0.93		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1623	3259		1623	3294		1566	3024		1552	3114	
Flt Permitted	0.44	1.00		0.21	1.00		0.21	1.00		0.21	1.00	
Satd. Flow (perm)	755	3259		367	3294		347	3024		344	3114	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	244	1048	142	107	538	22	58	274	210	80	401	188
RTOR Reduction (vph)	0	4	0	0	2	0	0	100	0	0	40	0
Lane Group Flow (vph)	244	1186	0	107	558	0	58	384	0	80	549	0
Heavy Vehicles (%)	10%	10%	10%	10%	10%	14%	14%	15%	10%	15%	10%	15%
Bus Blockages (#/hr)	0	0	3	0	0	0	0	0	3	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	108.4	108.4		108.4	108.4		19.0	19.0		19.0	19.0	
Effective Green, g (s)	108.4	108.4		108.4	108.4		19.0	19.0		19.0	19.0	
Actuated g/C Ratio	0.77	0.77		0.77	0.77		0.14	0.14		0.14	0.14	
Clearance Time (s)	6.6	6.6		6.6	6.6		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	584	2523		284	2550		47	410		46	422	
v/s Ratio Prot		c0.36			0.17			0.13			0.18	
v/s Ratio Perm	0.32			0.29			0.17			c0.23		
v/c Ratio	0.42	0.47		0.38	0.22		1.23	0.94		1.74	1.30	
Uniform Delay, d1	5.3	5.6		5.0	4.3		60.5	59.9		60.5	60.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.2	0.6		3.8	0.2		207.7	29.5		407.7	152.1	
Delay (s)	7.5	6.2		8.8	4.5		268.2	89.4		468.2	212.6	
Level of Service	A	A		A	A		F	F		F	F	
Approach Delay (s)		6.4			5.2			108.5			243.2	
Approach LOS		A			A			F			F	

Intersection Summary			
HCM 2000 Control Delay	70.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.6
Intersection Capacity Utilization	88.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1288	50	23	661	6	115
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1288	50	23	661	6	115
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			1338		1690	669
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1338		1690	669
tC, single (s)			4.3		7.1	7.1
tC, 2 stage (s)						
tF (s)			2.3		3.6	3.4
p0 queue free %			95		91	70
cM capacity (veh/h)			471		70	382

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	859	479	23	330	330	121
Volume Left	0	0	23	0	0	6
Volume Right	0	50	0	0	0	115
cSH	1700	1700	471	1700	1700	313
Volume to Capacity	0.51	0.28	0.05	0.19	0.19	0.39
Queue Length 95th (m)	0.0	0.0	1.1	0.0	0.0	12.3
Control Delay (s)	0.0	0.0	13.0	0.0	0.0	23.6
Lane LOS			B			C
Approach Delay (s)	0.0		0.4			23.6
Approach LOS						C

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	51.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	17	1272	114	20	611	154	38	312	12	616	232	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.9	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	1.00	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	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)	1622	4768	1452	1623	4725	1433	1594	1746	1452	1623	1746	1452
Flt Permitted	0.41	1.00	1.00	0.15	1.00	1.00	0.60	1.00	1.00	0.51	1.00	1.00
Satd. Flow (perm)	699	4768	1452	260	4725	1433	1012	1746	1452	866	1746	1452
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	17	1272	114	20	611	154	38	312	12	616	232	35
RTOR Reduction (vph)	0	0	64	0	0	86	0	0	7	0	0	17
Lane Group Flow (vph)	17	1272	50	20	611	68	38	312	5	616	232	18
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	10%	10%	10%	10%	11%	10%	12%	10%	10%	10%	10%	10%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	37.1	37.1	37.1	37.1	37.1	37.1	33.4	33.4	33.4	33.4	33.4	33.4
Effective Green, g (s)	37.1	37.1	37.1	37.1	37.1	37.1	33.4	33.4	33.4	33.4	33.4	33.4
Actuated g/C Ratio	0.44	0.44	0.44	0.44	0.44	0.44	0.40	0.40	0.40	0.40	0.40	0.40
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.9	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	308	2103	640	114	2084	632	401	693	576	343	693	576
v/s Ratio Prot		c0.27			0.13			0.18			0.13	
v/s Ratio Perm	0.02		0.03	0.08		0.05	0.04		0.00	c0.71		0.01
v/c Ratio	0.06	0.60	0.08	0.18	0.29	0.11	0.09	0.45	0.01	1.80	0.33	0.03
Uniform Delay, d1	13.5	17.9	13.6	14.2	15.1	13.8	15.9	18.6	15.3	25.3	17.6	15.5
Progression 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
Incremental Delay, d2	0.2	0.7	0.1	1.5	0.2	0.2	0.2	1.0	0.0	369.6	0.6	0.0
Delay (s)	13.6	18.6	13.7	15.8	15.2	13.9	16.1	19.6	15.3	395.0	18.2	15.5
Level of Service	B	B	B	B	B	B	B	B	B	F	B	B
Approach Delay (s)		18.2			15.0			19.1			281.0	
Approach LOS		B			B			B			F	

Intersection Summary			
HCM 2000 Control Delay	85.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	84.1	Sum of lost time (s)	13.6
Intersection Capacity Utilization	92.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	704	15	23	702	1	49	8	73	42	5	22
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	6	704	15	23	702	1	49	8	73	42	5	22
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		370										
pX, platoon unblocked				0.90			0.90	0.90	0.90	0.90	0.90	
vC, conflicting volume	703			719			1496	1472	712	1549	1480	702
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	703			628			1496	1469	619	1555	1477	702
tC, single (s)	4.2			4.2			7.2	6.6	6.3	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	99			97			36	92	83	30	95	95
cM capacity (veh/h)	859			821			77	106	425	60	105	425

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	725	726	49	81	42	27
Volume Left	6	23	49	0	42	0
Volume Right	15	1	0	73	0	22
cSH	859	821	77	327	60	271
Volume to Capacity	0.01	0.03	0.64	0.25	0.70	0.10
Queue Length 95th (m)	0.1	0.6	20.1	6.7	21.0	2.3
Control Delay (s)	0.2	0.7	111.3	19.6	151.2	19.7
Lane LOS	A	A	F	C	F	C
Approach Delay (s)	0.2	0.7	54.2		99.7	
Approach LOS			F		F	

Intersection Summary				
Average Delay	8.8			
Intersection Capacity Utilization	68.0%	ICU Level of Service	C	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	806	13	27	662	64	85
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	806	13	27	662	64	85
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				176		
pX, platoon unblocked					0.73	
vC, conflicting volume			819		1528	812
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			819		1539	812
tC, single (s)			4.2		6.5	6.3
tC, 2 stage (s)						
tF (s)			2.3		3.6	3.4
p0 queue free %			97		25	77
cM capacity (veh/h)			776		86	367

Direction, Lane #	EB 1	WB 1	NB 1	NB 2
Volume Total	819	689	64	85
Volume Left	0	27	64	0
Volume Right	13	0	0	85
cSH	1700	776	86	367
Volume to Capacity	0.48	0.03	0.75	0.23
Queue Length 95th (m)	0.0	0.8	26.2	6.2
Control Delay (s)	0.0	0.9	122.4	17.8
Lane LOS		A	F	C
Approach Delay (s)	0.0	0.9	62.7	
Approach LOS			F	

Intersection Summary			
Average Delay	6.0		
Intersection Capacity Utilization	66.9%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1361	1	1	774	1	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1361	1	1	774	1	2
Pedestrians				1	3	
Lane Width (m)				3.7	3.5	
Walking Speed (m/s)				4.0	4.0	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (m)	137					
pX, platoon unblocked			0.85		0.85	0.85
vC, conflicting volume			1365		1754	685
vC1, stage 1 conf vol					1364	
vC2, stage 2 conf vol					389	
vCu, unblocked vol			1085		1540	288
tC, single (s)			4.3		7.0	7.1
tC, 2 stage (s)					6.0	
tF (s)			2.3		3.6	3.4
p0 queue free %			100		100	100
cM capacity (veh/h)			507		216	584

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	907	455	259	516	3
Volume Left	0	0	1	0	1
Volume Right	0	1	0	0	2
cSH	1700	1700	507	1700	373
Volume to Capacity	0.53	0.27	0.00	0.30	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.2
Control Delay (s)	0.0	0.0	0.1	0.0	14.7
Lane LOS			A		B
Approach Delay (s)	0.0		0.0		14.7
Approach LOS					B

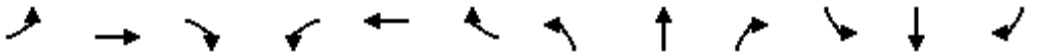
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	48.0%	ICU Level of Service	A
Analysis Period (min)	15		

2021 Do Nothing PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	537	55	353	443	53	99	61	178	14	48	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.6			6.6		6.6	6.6	6.6		6.6	
Lane Util. Factor		1.00			1.00		1.00	1.00	1.00		1.00	
Frt		0.99			0.99		1.00	1.00	0.85		0.98	
Flt Protected		1.00			0.98		0.95	1.00	1.00		0.99	
Satd. Flow (prot)		1685			1659		1623	1708	1452		1657	
Flt Permitted		0.99			0.61		0.71	1.00	1.00		0.94	
Satd. Flow (perm)		1673			1032		1212	1708	1452		1566	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	6	537	55	353	443	53	99	61	178	14	48	11
RTOR Reduction (vph)	0	4	0	0	2	0	0	0	142	0	9	0
Lane Group Flow (vph)	0	594	0	0	847	0	99	61	36	0	64	0
Heavy Vehicles (%)	15%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)		42.8			42.8		14.3	14.3	14.3		14.3	
Effective Green, g (s)		42.8			42.8		14.3	14.3	14.3		14.3	
Actuated g/C Ratio		0.61			0.61		0.20	0.20	0.20		0.20	
Clearance Time (s)		6.6			6.6		6.6	6.6	6.6		6.6	
Vehicle Extension (s)		5.0			5.0		5.0	5.0	5.0		5.0	
Lane Grp Cap (vph)		1018			628		246	347	295		318	
v/s Ratio Prot								0.04				
v/s Ratio Perm		0.36			c0.82		c0.08		0.02		0.04	
v/c Ratio		0.58			1.35		0.40	0.18	0.12		0.20	
Uniform Delay, d1		8.3			13.8		24.3	23.1	22.9		23.3	
Progression Factor		1.00			1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2		1.3			167.1		2.2	0.5	0.4		0.7	
Delay (s)		9.7			180.8		26.5	23.6	23.3		23.9	
Level of Service		A			F		C	C	C		C	
Approach Delay (s)		9.7			180.8			24.3			23.9	
Approach LOS		A			F			C			C	

Intersection Summary			
HCM 2000 Control Delay	91.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	70.3	Sum of lost time (s)	13.2
Intersection Capacity Utilization	106.6%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



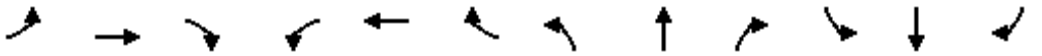
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	31	651	35	249	831	23	92	165	117	9	77	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.6		6.6	6.6		6.6	6.6	6.6		6.6	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.97		1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	
Frt	1.00	0.99		1.00	1.00		1.00	1.00	0.85		0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (prot)	1622	1695		1623	1700		1623	1708	1412		1640	
Flt Permitted	0.16	1.00		0.28	1.00		0.78	1.00	1.00		0.97	
Satd. Flow (perm)	269	1695		470	1700		1327	1708	1412		1599	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	31	651	35	249	831	23	92	165	117	9	77	31
RTOR Reduction (vph)	0	2	0	0	1	0	0	0	87	0	18	0
Lane Group Flow (vph)	31	684	0	249	853	0	92	165	30	0	99	0
Confl. Peds. (#/hr)	1					1			5	5		
Heavy Vehicles (%)	10%	10%	10%	10%	10%	11%	10%	10%	10%	10%	10%	10%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	40.1	40.1		40.1	40.1		18.3	18.3	18.3		18.3	
Effective Green, g (s)	40.1	40.1		40.1	40.1		18.3	18.3	18.3		18.3	
Actuated g/C Ratio	0.56	0.56		0.56	0.56		0.26	0.26	0.26		0.26	
Clearance Time (s)	6.6	6.6		6.6	6.6		6.6	6.6	6.6		6.6	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0		5.0	
Lane Grp Cap (vph)	150	949		263	952		339	436	360		408	
v/s Ratio Prot		0.40			0.50			c0.10				
v/s Ratio Perm	0.12			c0.53			0.07		0.02		0.06	
v/c Ratio	0.21	0.72		0.95	0.90		0.27	0.38	0.08		0.24	
Uniform Delay, d1	7.8	11.6		14.8	13.9		21.3	22.0	20.3		21.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2	1.4	3.3		41.7	11.6		0.9	1.2	0.2		0.7	
Delay (s)	9.3	15.0		56.5	25.5		22.2	23.1	20.5		21.8	
Level of Service	A	B		E	C		C	C	C		C	
Approach Delay (s)		14.7			32.5			22.1			21.8	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	24.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	71.6	Sum of lost time (s)	13.2
Intersection Capacity Utilization	91.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	759	18	168	1101	2	93
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	759	18	168	1101	2	93
Pedestrians					1	
Lane Width (m)					3.5	
Walking Speed (m/s)					4.0	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	329					
pX, platoon unblocked			0.71		0.71	0.71
vC, conflicting volume			778		2197	760
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			487		2478	462
tC, single (s)			4.2		6.5	6.3
tC, 2 stage (s)						
tF (s)			2.3		3.6	3.4
p0 queue free %			77		88	78
cM capacity (veh/h)			738		17	416

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2
Volume Total	759	18	168	1101	2	93
Volume Left	0	0	168	0	2	0
Volume Right	0	18	0	0	0	93
cSH	1700	1700	738	1700	17	416
Volume to Capacity	0.45	0.01	0.23	0.65	0.12	0.22
Queue Length 95th (m)	0.0	0.0	6.1	0.0	2.4	5.9
Control Delay (s)	0.0	0.0	11.3	0.0	243.3	16.1
Lane LOS			B		F	C
Approach Delay (s)	0.0		1.5		20.9	
Approach LOS					C	

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	67.9%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	112	693	47	85	1200	126	18	35	30	69	10	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	0.99		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1623	1746	1407	1621	1746	1452	1613	1604		1610	1494	
Flt Permitted	0.10	1.00	1.00	0.33	1.00	1.00	0.72	1.00		0.71	1.00	
Satd. Flow (perm)	174	1746	1407	561	1746	1452	1218	1604		1211	1494	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	112	693	47	85	1200	126	18	35	30	69	10	51
RTOR Reduction (vph)	0	0	16	0	0	27	0	26	0	0	43	0
Lane Group Flow (vph)	112	693	31	85	1200	99	18	39	0	69	18	0
Confl. Peds. (#/hr)			2	2			3		4	4		3
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Bus Blockages (#/hr)	0	0	2	0	0	0	0	0	0	0	0	2
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	39.3	39.3	39.3	39.3	39.3	39.3	9.0	9.0		9.0	9.0	
Effective Green, g (s)	39.3	39.3	39.3	39.3	39.3	39.3	9.0	9.0		9.0	9.0	
Actuated g/C Ratio	0.65	0.65	0.65	0.65	0.65	0.65	0.15	0.15		0.15	0.15	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	113	1137	917	365	1137	946	181	239		180	222	
v/s Ratio Prot		0.40			c0.69			0.02			0.01	
v/s Ratio Perm	0.64		0.02	0.15		0.07	0.01			c0.06		
v/c Ratio	0.99	0.61	0.03	0.23	1.06	0.10	0.10	0.17		0.38	0.08	
Uniform Delay, d1	10.3	6.1	3.7	4.3	10.5	3.9	22.2	22.4		23.1	22.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	82.3	2.4	0.1	1.5	42.6	0.2	0.5	0.7		2.8	0.3	
Delay (s)	92.7	8.5	3.8	5.8	53.1	4.1	22.7	23.1		26.0	22.4	
Level of Service	F	A	A	A	D	A	C	C		C	C	
Approach Delay (s)		19.3			45.9			23.0			24.3	
Approach LOS		B			D			C			C	

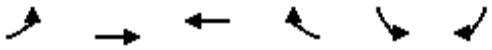
Intersection Summary			
HCM 2000 Control Delay	34.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	60.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	95.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	172	533	134	287	819	220	236	963	152	106	443	356
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.1	7.1	7.1	7.1	7.1	7.1
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	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)	1618	3318	1416	3148	3318	1405	1605	3318	1394	3148	3318	1394
Flt Permitted	0.34	1.00	1.00	0.95	1.00	1.00	0.50	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	584	3318	1416	3148	3318	1405	837	3318	1394	3148	3318	1394
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	172	533	134	287	819	220	236	963	152	106	443	356
RTOR Reduction (vph)	0	0	100	0	0	133	0	0	101	0	0	52
Lane Group Flow (vph)	172	533	34	287	819	87	236	963	51	106	443	304
Confl. Peds. (#/hr)	9		11	11		9	22		9	9		22
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Bus Blockages (#/hr)	0	0	0	0	0	3	0	0	5	0	0	2
Turn Type	Perm	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Prot	NA	Perm
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4		4			8	2		2			6
Actuated Green, G (s)	30.0	30.0	30.0	10.0	47.0	47.0	39.7	39.7	39.7	10.3	57.1	57.1
Effective Green, g (s)	30.0	30.0	30.0	10.0	47.0	47.0	39.7	39.7	39.7	10.3	57.1	57.1
Actuated g/C Ratio	0.25	0.25	0.25	0.08	0.40	0.40	0.34	0.34	0.34	0.09	0.48	0.48
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.1	7.1	7.1	7.1	7.1	7.1
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	148	842	359	266	1319	558	281	1114	468	274	1602	673
v/s Ratio Prot		0.16		c0.09	0.25			c0.29		0.03	0.13	
v/s Ratio Perm	c0.29		0.02			0.06	0.28		0.04			c0.22
v/c Ratio	1.16	0.63	0.09	1.08	0.62	0.16	0.84	0.86	0.11	0.39	0.28	0.45
Uniform Delay, d1	44.1	39.2	33.7	54.1	28.5	22.9	36.3	36.7	27.1	51.0	18.2	20.2
Progression 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
Incremental Delay, d2	124.2	2.2	0.2	77.8	1.3	0.3	21.2	7.8	0.2	1.9	0.2	1.0
Delay (s)	168.3	41.4	34.0	131.9	29.8	23.1	57.5	44.5	27.3	52.9	18.4	21.2
Level of Service	F	D	C	F	C	C	E	D	C	D	B	C
Approach Delay (s)		66.2			50.8			44.8			23.6	
Approach LOS		E			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	46.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	118.2	Sum of lost time (s)	28.2
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

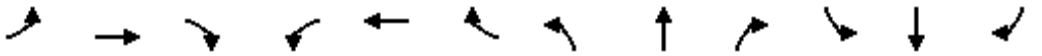
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	42	812	15	117	1267	12	46	13	58	24	21	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5	6.5	7.0	7.0			7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.95	1.00	0.99			0.99	
Flpb, ped/bikes	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	0.88			0.92	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.99	
Satd. Flow (prot)	1616	3318	1388	1616	3318	1361	1616	1514			1577	
Flt Permitted	0.19	1.00	1.00	0.34	1.00	1.00	0.68	1.00			0.90	
Satd. Flow (perm)	330	3318	1388	574	3318	1361	1150	1514			1437	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	42	812	15	117	1267	12	46	13	58	24	21	61
RTOR Reduction (vph)	0	0	4	0	0	3	0	51	0	0	46	0
Lane Group Flow (vph)	42	812	11	117	1267	9	46	20	0	0	60	0
Confl. Peds. (#/hr)	13		5	5		13	4		2	2		4
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Bus Blockages (#/hr)	0	0	3	0	0	3	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	81.7	81.7	81.7	81.7	81.7	81.7	13.6	13.6			13.6	
Effective Green, g (s)	81.7	81.7	81.7	81.7	81.7	81.7	13.6	13.6			13.6	
Actuated g/C Ratio	0.75	0.75	0.75	0.75	0.75	0.75	0.12	0.12			0.12	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	7.0	7.0			7.0	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0			5.0	
Lane Grp Cap (vph)	247	2491	1042	431	2491	1022	143	189			179	
v/s Ratio Prot		0.24			c0.38			0.01				
v/s Ratio Perm	0.13		0.01	0.20		0.01	0.04				c0.04	
v/c Ratio	0.17	0.33	0.01	0.27	0.51	0.01	0.32	0.11			0.33	
Uniform Delay, d1	3.9	4.5	3.4	4.2	5.5	3.4	43.4	42.2			43.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	1.5	0.3	0.0	1.5	0.7	0.0	2.7	0.5			2.3	
Delay (s)	5.4	4.8	3.4	5.8	6.2	3.4	46.1	42.7			45.8	
Level of Service	A	A	A	A	A	A	D	D			D	
Approach Delay (s)		4.8			6.1			44.1			45.8	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	9.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	108.8	Sum of lost time (s)	13.5
Intersection Capacity Utilization	72.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	66	828	1394	60	22	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.5		7.0	7.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1623	3298	3298		1623	1432
Flt Permitted	0.16	1.00	1.00		0.95	1.00
Satd. Flow (perm)	270	3298	3298		1623	1432
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	66	828	1394	60	22	103
RTOR Reduction (vph)	0	0	2	0	0	73
Lane Group Flow (vph)	66	828	1452	0	22	30
Confl. Peds. (#/hr)					1	1
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%
Bus Blockages (#/hr)	0	3	0	3	0	0
Turn Type	Perm	NA	NA		NA	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)	91.4	91.4	91.4		11.3	11.3
Effective Green, g (s)	91.4	91.4	91.4		11.3	11.3
Actuated g/C Ratio	0.79	0.79	0.79		0.10	0.10
Clearance Time (s)	6.5	6.5	6.5		7.0	7.0
Vehicle Extension (s)	5.0	5.0	5.0		5.0	5.0
Lane Grp Cap (vph)	212	2594	2594		157	139
v/s Ratio Prot		0.25	c0.44		0.01	
v/s Ratio Perm	0.24					c0.02
v/c Ratio	0.31	0.32	0.56		0.14	0.21
Uniform Delay, d1	3.5	3.5	4.7		48.0	48.4
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	3.8	0.3	0.9		0.9	1.6
Delay (s)	7.3	3.9	5.6		48.9	50.0
Level of Service	A	A	A		D	D
Approach Delay (s)		4.1	5.6		49.8	
Approach LOS		A	A		D	

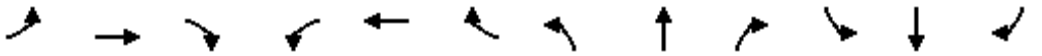
Intersection Summary			
HCM 2000 Control Delay	7.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	116.2	Sum of lost time (s)	13.5
Intersection Capacity Utilization	70.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	13	826	11	19	1442	80	4	0	6	46	0	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	13	826	11	19	1442	80	4	0	6	46	0	8
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1522			837			1624	2418	418	1925	2343	721
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1522			837			1624	2418	418	1925	2343	721
tC, single (s)	4.3			4.3			7.7	6.7	7.1	7.7	6.7	7.1
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	97			97			93	100	99	0	100	98
cM capacity (veh/h)	397			744			59	27	562	35	30	352

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	NB 2	SB 1
Volume Total	13	551	286	19	721	721	80	4	6	54
Volume Left	13	0	0	19	0	0	0	4	0	46
Volume Right	0	0	11	0	0	0	80	0	6	8
cSH	397	1700	1700	744	1700	1700	1700	59	562	40
Volume to Capacity	0.03	0.32	0.17	0.03	0.42	0.42	0.05	0.07	0.01	1.35
Queue Length 95th (m)	0.7	0.0	0.0	0.6	0.0	0.0	0.0	1.5	0.2	38.2
Control Delay (s)	14.4	0.0	0.0	10.0	0.0	0.0	0.0	70.9	11.5	419.2
Lane LOS	B			A				F	B	F
Approach Delay (s)	0.2			0.1				35.3		419.2
Approach LOS								E		F

Intersection Summary				
Average Delay	9.5			
Intersection Capacity Utilization	56.2%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	208	576	94	213	1090	98	174	444	121	100	366	277
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.6	6.6		6.6	6.6		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.97		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1623	3248		1623	3270		1621	3212		1623	3083	
Flt Permitted	0.20	1.00		0.39	1.00		0.17	1.00		0.20	1.00	
Satd. Flow (perm)	343	3248		659	3270		284	3212		344	3083	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	208	576	94	213	1090	98	174	444	121	100	366	277
RTOR Reduction (vph)	0	11	0	0	5	0	0	21	0	0	110	0
Lane Group Flow (vph)	208	659	0	213	1183	0	174	544	0	100	533	0
Confl. Peds. (#/hr)							2					2
Heavy Vehicles (%)	10%	10%	10%	10%	10%	13%	10%	10%	10%	10%	10%	10%
Bus Blockages (#/hr)	0	0	3	0	0	0	0	0	3	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	83.4	83.4		83.4	83.4		24.0	24.0		24.0	24.0	
Effective Green, g (s)	83.4	83.4		83.4	83.4		24.0	24.0		24.0	24.0	
Actuated g/C Ratio	0.70	0.70		0.70	0.70		0.20	0.20		0.20	0.20	
Clearance Time (s)	6.6	6.6		6.6	6.6		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	238	2257		458	2272		56	642		68	616	
v/s Ratio Prot		0.20			0.36			0.17			0.17	
v/s Ratio Perm	c0.61			0.32			c0.61			0.29		
v/c Ratio	0.87	0.29		0.47	0.52		3.11	0.85		1.47	0.86	
Uniform Delay, d1	14.2	7.0		8.2	8.7		48.0	46.2		48.0	46.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	33.1	0.3		3.4	0.9		993.5	11.1		275.4	13.1	
Delay (s)	47.3	7.3		11.6	9.6		1041.5	57.4		323.4	59.5	
Level of Service	D	A		B	A		F	E		F	E	
Approach Delay (s)		16.8			9.9			289.1			95.0	
Approach LOS		B			A			F			F	

Intersection Summary			
HCM 2000 Control Delay	83.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.36		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.6
Intersection Capacity Utilization	94.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	779	18	105	1397	4	31
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	779	18	105	1397	4	31
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			797		1696	398
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			797		1696	398
tC, single (s)			4.3		7.0	7.1
tC, 2 stage (s)						
tF (s)			2.3		3.6	3.4
p0 queue free %			86		94	95
cM capacity (veh/h)			771		66	579

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	519	278	105	698	698	35
Volume Left	0	0	105	0	0	4
Volume Right	0	18	0	0	0	31
cSH	1700	1700	771	1700	1700	307
Volume to Capacity	0.31	0.16	0.14	0.41	0.41	0.11
Queue Length 95th (m)	0.0	0.0	3.3	0.0	0.0	2.7
Control Delay (s)	0.0	0.0	10.4	0.0	0.0	18.2
Lane LOS			B			C
Approach Delay (s)	0.0		0.7			18.2
Approach LOS						C

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	48.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	32	738	40	29	1290	539	177	581	12	231	576	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	1.00	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	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)	1622	4768	1452	1623	4768	1433	1623	1746	1452	1623	1746	1452
Flt Permitted	0.17	1.00	1.00	0.35	1.00	1.00	0.18	1.00	1.00	0.20	1.00	1.00
Satd. Flow (perm)	292	4768	1452	605	4768	1433	300	1746	1452	345	1746	1452
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	32	738	40	29	1290	539	177	581	12	231	576	35
RTOR Reduction (vph)	0	0	17	0	0	28	0	0	8	0	0	28
Lane Group Flow (vph)	32	738	23	29	1290	511	177	581	4	231	576	7
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2			6		3	8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	54.8	54.8	54.8	54.8	54.8	54.8	29.0	29.0	29.0	19.8	19.8	19.8
Effective Green, g (s)	54.8	54.8	54.8	54.8	54.8	54.8	29.0	29.0	29.0	19.8	19.8	19.8
Actuated g/C Ratio	0.56	0.56	0.56	0.56	0.56	0.56	0.30	0.30	0.30	0.20	0.20	0.20
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	164	2682	816	340	2682	806	173	519	432	70	354	295
v/s Ratio Prot		0.15			0.27		0.06	c0.33			0.33	
v/s Ratio Perm	0.11		0.02	0.05		c0.36	0.24		0.00	c0.67		0.00
v/c Ratio	0.20	0.28	0.03	0.09	0.48	0.63	1.02	1.12	0.01	3.30	1.63	0.02
Uniform Delay, d1	10.5	11.0	9.5	9.8	12.8	14.5	32.4	34.2	24.1	38.8	38.8	31.1
Progression 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
Incremental Delay, d2	1.2	0.1	0.0	0.2	0.3	2.3	74.6	76.6	0.0	1070.7	294.8	0.1
Delay (s)	11.7	11.1	9.5	10.0	13.1	16.8	107.0	110.8	24.1	1109.5	333.6	31.1
Level of Service	B	B	A	B	B	B	F	F	C	F	F	C
Approach Delay (s)		11.1			14.1			108.6			533.9	
Approach LOS		B			B			F			F	

Intersection Summary			
HCM 2000 Control Delay	132.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.33		
Actuated Cycle Length (s)	97.4	Sum of lost time (s)	16.6
Intersection Capacity Utilization	91.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	25	659	45	67	804	47	32	8	39	24	10	13
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	25	659	45	67	804	47	32	8	39	24	10	13
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		370										
pX, platoon unblocked				0.83			0.83	0.83	0.83	0.83	0.83	
vC, conflicting volume	851			704			1711	1716	682	1736	1716	828
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	851			540			1754	1761	513	1785	1760	828
tC, single (s)	4.2			4.2			7.2	6.6	6.3	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	97			92			21	87	91	36	83	96
cM capacity (veh/h)	754			820			41	59	452	38	60	359

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	729	918	32	47	24	23
Volume Left	25	67	32	0	24	0
Volume Right	45	47	0	39	0	13
cSH	754	820	41	213	38	113
Volume to Capacity	0.03	0.08	0.79	0.22	0.64	0.20
Queue Length 95th (m)	0.7	1.9	20.8	5.7	15.9	5.1
Control Delay (s)	0.9	2.2	230.0	26.6	203.5	45.0
Lane LOS	A	A	F	D	F	E
Approach Delay (s)	0.9	2.2	109.0		125.9	
Approach LOS			F		F	

Intersection Summary				
Average Delay	9.7			
Intersection Capacity Utilization	88.8%	ICU Level of Service	E	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	678	44	78	876	42	39
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	678	44	78	876	42	39
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				176		
pX, platoon unblocked					0.52	
vC, conflicting volume			722		1732	700
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			722		1944	700
tC, single (s)			4.2		6.5	6.3
tC, 2 stage (s)						
tF (s)			2.3		3.6	3.4
p0 queue free %			91		0	91
cM capacity (veh/h)			844		32	426

Direction, Lane #	EB 1	WB 1	NB 1	NB 2
Volume Total	722	954	42	39
Volume Left	0	78	42	0
Volume Right	44	0	0	39
cSH	1700	844	32	426
Volume to Capacity	0.42	0.09	1.31	0.09
Queue Length 95th (m)	0.0	2.1	32.4	2.1
Control Delay (s)	0.0	2.5	451.1	14.3
Lane LOS		A	F	B
Approach Delay (s)	0.0	2.5	240.8	
Approach LOS			F	

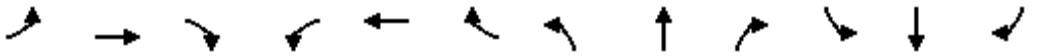
Intersection Summary			
Average Delay	12.5		
Intersection Capacity Utilization	102.1%	ICU Level of Service	G
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	849	1	2	1452	1	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	849	1	2	1452	1	2
Pedestrians					2	
Lane Width (m)					3.5	
Walking Speed (m/s)					4.0	
Percent Blockage					0	
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (m)	137					
pX, platoon unblocked			0.93		0.93	0.93
vC, conflicting volume			852		1582	427
vC1, stage 1 conf vol					852	
vC2, stage 2 conf vol					730	
vCu, unblocked vol			700		1481	245
tC, single (s)			4.3		7.0	7.1
tC, 2 stage (s)					6.0	
tF (s)			2.3		3.6	3.4
p0 queue free %			100		100	100
cM capacity (veh/h)			785		300	683

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	566	284	486	968	3
Volume Left	0	0	2	0	1
Volume Right	0	1	0	0	2
cSH	1700	1700	785	1700	479
Volume to Capacity	0.33	0.17	0.00	0.57	0.01
Queue Length 95th (m)	0.0	0.0	0.1	0.0	0.1
Control Delay (s)	0.0	0.0	0.1	0.0	12.6
Lane LOS			A		B
Approach Delay (s)	0.0		0.0		12.6
Approach LOS					B

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	51.5%	ICU Level of Service	A
Analysis Period (min)	15		

2031 Cap Network 6 Lanes AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	1088	60	219	1164	28	34	165	491	36	168	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.6	6.6		6.6	6.6		6.6	6.6	6.6	6.6	6.6	
Lane Util. Factor	1.00	0.91		0.97	0.91		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	1.00		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1623	4730		3120	4746		1623	1746	1433	1622	1732	
Flt Permitted	0.22	1.00		0.95	1.00		0.64	1.00	1.00	0.65	1.00	
Satd. Flow (perm)	383	4730		3120	4746		1098	1746	1433	1114	1732	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	2	1088	60	219	1164	28	34	165	491	36	168	10
RTOR Reduction (vph)	0	6	0	0	2	0	0	0	208	0	2	0
Lane Group Flow (vph)	2	1142	0	219	1190	0	34	165	283	36	176	0
Confl. Peds. (#/hr)									1	1		
Heavy Vehicles (%)	10%	10%	10%	11%	10%	15%	10%	10%	10%	10%	10%	10%
Turn Type	Perm	NA		Prot	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2						8		8	4		
Actuated Green, G (s)	29.8	29.8		11.3	47.7		23.2	23.2	23.2	23.2	23.2	
Effective Green, g (s)	29.8	29.8		11.3	47.7		23.2	23.2	23.2	23.2	23.2	
Actuated g/C Ratio	0.35	0.35		0.13	0.57		0.28	0.28	0.28	0.28	0.28	
Clearance Time (s)	6.6	6.6		6.6	6.6		6.6	6.6	6.6	6.6	6.6	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	135	1676		419	2691		302	481	395	307	477	
v/s Ratio Prot		c0.24		0.07	c0.25			0.09			0.10	
v/s Ratio Perm	0.01						0.03		c0.20	0.03		
v/c Ratio	0.01	0.68		0.52	0.44		0.11	0.34	0.72	0.12	0.37	
Uniform Delay, d1	17.6	23.1		33.9	10.5		22.8	24.4	27.5	22.8	24.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	1.5		2.2	0.2		0.3	0.9	7.5	0.4	1.0	
Delay (s)	17.7	24.6		36.1	10.8		23.1	25.3	35.0	23.1	25.6	
Level of Service	B	C		D	B		C	C	D	C	C	
Approach Delay (s)		24.6			14.7			32.1			25.2	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	22.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	84.1	Sum of lost time (s)	19.8
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	62	1643	140	171	1240	17	50	231	324	27	276	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.6	6.6	6.6	6.0	6.6		6.6	6.6	6.6	6.6	6.6	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1623	4768	1452	1623	4755		1608	1746	1452	1623	1725	
Flt Permitted	0.21	1.00	1.00	0.07	1.00		0.35	1.00	1.00	0.48	1.00	
Satd. Flow (perm)	358	4768	1452	126	4755		590	1746	1452	824	1725	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	62	1643	140	171	1240	17	50	231	324	27	276	25
RTOR Reduction (vph)	0	0	71	0	1	0	0	0	177	0	3	0
Lane Group Flow (vph)	62	1643	69	171	1256	0	50	231	147	27	298	0
Heavy Vehicles (%)	10%	10%	10%	10%	10%	15%	11%	10%	10%	10%	10%	10%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6			8		8	4		
Actuated Green, G (s)	48.1	48.1	48.1	65.9	65.9		23.5	23.5	23.5	23.5	23.5	
Effective Green, g (s)	48.1	48.1	48.1	65.9	65.9		23.5	23.5	23.5	23.5	23.5	
Actuated g/C Ratio	0.47	0.47	0.47	0.64	0.64		0.23	0.23	0.23	0.23	0.23	
Clearance Time (s)	6.6	6.6	6.6	6.0	6.6		6.6	6.6	6.6	6.6	6.6	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	167	2235	680	253	3054		135	399	332	188	395	
v/s Ratio Prot		c0.34		c0.08	0.26			0.13			c0.17	
v/s Ratio Perm	0.17		0.05	0.36			0.08		0.10	0.03		
v/c Ratio	0.37	0.74	0.10	0.68	0.41		0.37	0.58	0.44	0.14	0.75	
Uniform Delay, d1	17.5	22.1	15.2	22.1	8.9		33.3	35.2	33.9	31.5	36.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.9	1.6	0.1	9.0	0.2		3.6	3.2	2.0	0.7	9.4	
Delay (s)	20.4	23.7	15.3	31.0	9.1		36.9	38.4	35.9	32.3	46.3	
Level of Service	C	C	B	C	A		D	D	D	C	D	
Approach Delay (s)		22.9			11.7			36.9			45.1	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	22.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	102.6	Sum of lost time (s)	19.2
Intersection Capacity Utilization	92.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1987	7	44	1417	11	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.5	3.7	3.5	3.5
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	4768	1389	1623	4755	1623	1440
Flt Permitted	1.00	1.00	0.11	1.00	0.95	1.00
Satd. Flow (perm)	4768	1389	194	4755	1623	1440
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1987	7	44	1417	11	205
RTOR Reduction (vph)	0	3	0	0	0	36
Lane Group Flow (vph)	1987	4	44	1417	11	169
Heavy Vehicles (%)	10%	15%	10%	10%	10%	10%
Bus Blockages (#/hr)	0	0	0	2	0	2
Turn Type	NA	Perm	Perm	NA	NA	Perm
Protected Phases	2			6	8	
Permitted Phases		2	6			8
Actuated Green, G (s)	35.3	35.3	35.3	35.3	13.9	13.9
Effective Green, g (s)	35.3	35.3	35.3	35.3	13.9	13.9
Actuated g/C Ratio	0.58	0.58	0.58	0.58	0.23	0.23
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	2750	801	111	2742	368	327
v/s Ratio Prot	c0.42			0.30	0.01	
v/s Ratio Perm		0.00	0.23			c0.12
v/c Ratio	0.72	0.01	0.40	0.52	0.03	0.52
Uniform Delay, d1	9.4	5.5	7.1	7.8	18.4	20.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.7	0.0	10.3	0.7	0.1	2.7
Delay (s)	11.1	5.5	17.4	8.5	18.5	23.4
Level of Service	B	A	B	A	B	C
Approach Delay (s)	11.1			8.8	23.2	
Approach LOS	B			A	C	

Intersection Summary			
HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	61.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

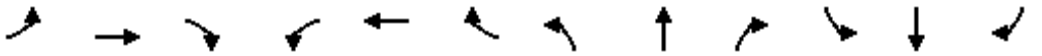
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	82	2104	6	30	1239	41	43	4	130	242	22	179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	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	0.85		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1552	4768	1347	1580	4768	1389	1623	1472		1622	1506	
Flt Permitted	0.19	1.00	1.00	0.09	1.00	1.00	0.60	1.00		0.67	1.00	
Satd. Flow (perm)	304	4768	1347	144	4768	1389	1018	1472		1146	1506	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	82	2104	6	30	1239	41	43	4	130	242	22	179
RTOR Reduction (vph)	0	0	3	0	0	18	0	2	0	0	30	0
Lane Group Flow (vph)	82	2104	3	30	1239	23	43	132	0	242	171	0
Confl. Peds. (#/hr)			1	1					1	1		
Heavy Vehicles (%)	15%	10%	15%	13%	10%	15%	10%	15%	10%	10%	15%	10%
Bus Blockages (#/hr)	0	0	2	0	0	0	0	0	0	0	0	2
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	46.3	46.3	46.3	46.3	46.3	46.3	23.6	23.6		23.6	23.6	
Effective Green, g (s)	46.3	46.3	46.3	46.3	46.3	46.3	23.6	23.6		23.6	23.6	
Actuated g/C Ratio	0.57	0.57	0.57	0.57	0.57	0.57	0.29	0.29		0.29	0.29	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	171	2695	761	81	2695	785	293	424		330	433	
v/s Ratio Prot		c0.44			0.26			0.09			0.11	
v/s Ratio Perm	0.27		0.00	0.21		0.02	0.04			c0.21		
v/c Ratio	0.48	0.78	0.00	0.37	0.46	0.03	0.15	0.31		0.73	0.40	
Uniform Delay, d1	10.6	13.8	7.8	9.8	10.5	7.9	21.7	22.8		26.3	23.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.3	2.3	0.0	12.5	0.6	0.1	0.5	0.9		9.8	1.2	
Delay (s)	19.9	16.2	7.8	22.3	11.0	7.9	22.2	23.7		36.2	24.7	
Level of Service	B	B	A	C	B	A	C	C		D	C	
Approach Delay (s)		16.3			11.2			23.3			30.9	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	81.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	89.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	428	1690	445	250	926	212	146	288	356	160	1030	238
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0	7.0	4.0	7.1	7.1	7.1	7.1	7.1
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98
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)	3147	4768	1426	3011	4725	1411	1623	3318	1352	3148	3318	1417
Flt Permitted	0.17	1.00	1.00	0.95	1.00	1.00	0.10	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	551	4768	1426	3011	4725	1411	171	3318	1352	3148	3318	1417
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	428	1690	445	250	926	212	146	288	356	160	1030	238
RTOR Reduction (vph)	0	0	111	0	0	146	0	0	152	0	0	163
Lane Group Flow (vph)	428	1690	334	250	926	66	146	288	204	160	1030	75
Confl. Peds. (#/hr)	4		4	4		4	4		3	3		4
Heavy Vehicles (%)	10%	10%	10%	15%	11%	10%	10%	10%	14%	10%	10%	10%
Bus Blockages (#/hr)	0	0	0	0	0	3	0	0	5	0	0	2
Turn Type	pm+pt		Perm	Prot		Perm	pm+pt		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4			8	2		2			6
Actuated Green, G (s)	68.5	50.0	50.0	12.0	43.5	43.5	48.9	39.9	39.9	9.9	43.9	43.9
Effective Green, g (s)	68.5	50.0	50.0	12.0	43.5	43.5	48.9	39.9	39.9	9.9	43.9	43.9
Actuated g/C Ratio	0.49	0.36	0.36	0.09	0.31	0.31	0.35	0.28	0.28	0.07	0.31	0.31
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	4.0	7.1	7.1	7.1	7.1	7.1
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	613	1703	509	258	1468	438	153	946	385	223	1040	444
v/s Ratio Prot	0.09	c0.35		c0.08	0.20		c0.06	0.09		0.05	c0.31	
v/s Ratio Perm	0.25		0.23			0.05	0.27		0.15			0.05
v/c Ratio	0.70	0.99	0.66	0.97	0.63	0.15	0.95	0.30	0.53	0.72	0.99	0.17
Uniform Delay, d1	24.2	44.8	37.8	63.8	41.4	34.9	36.7	39.2	42.1	63.7	47.8	34.8
Progression 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
Incremental Delay, d2	4.4	20.0	4.1	47.5	1.2	0.3	59.7	0.4	2.5	12.8	25.6	0.4
Delay (s)	28.6	64.8	41.8	111.3	42.6	35.2	96.5	39.6	44.6	76.5	73.4	35.2
Level of Service	C	E	D	F	D	D	F	D	D	E	E	D
Approach Delay (s)		54.7			53.9			52.4			67.4	
Approach LOS		D			D			D			E	

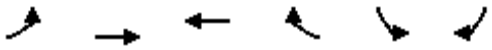
Intersection Summary			
HCM Average Control Delay	57.2	HCM Level of Service	E
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	25.1
Intersection Capacity Utilization	97.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	33	2271	12	72	1397	3	21	0	69	15	2	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5	6.5	7.0	7.0			7.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00	1.00	0.98			0.99	
Flpb, ped/bikes	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	0.85			0.92	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.98	
Satd. Flow (prot)	1623	4768	1395	1623	4641	1434	1621	1461			1566	
Flt Permitted	0.18	1.00	1.00	0.07	1.00	1.00	0.73	1.00			0.85	
Satd. Flow (perm)	309	4768	1395	118	4641	1434	1246	1461			1356	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	33	2271	12	72	1397	3	21	0	69	15	2	24
RTOR Reduction (vph)	0	0	5	0	0	1	0	61	0	0	21	0
Lane Group Flow (vph)	33	2271	7	72	1397	2	21	8	0	0	20	0
Confl. Peds. (#/hr)			4	4			1		4	4		1
Heavy Vehicles (%)	10%	10%	10%	10%	13%	10%	10%	10%	10%	10%	10%	10%
Bus Blockages (#/hr)	0	0	3	0	0	3	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	51.5	51.5	51.5	64.4	64.4	64.4	10.1	10.1			10.1	
Effective Green, g (s)	51.5	51.5	51.5	64.4	64.4	64.4	10.1	10.1			10.1	
Actuated g/C Ratio	0.59	0.59	0.59	0.73	0.73	0.73	0.11	0.11			0.11	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	7.0	7.0			7.0	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0			5.0	
Lane Grp Cap (vph)	180	2790	816	195	3396	1049	143	167			155	
v/s Ratio Prot		c0.48		0.03	c0.30			0.01				
v/s Ratio Perm	0.11		0.01	0.24		0.00	c0.02				0.01	
v/c Ratio	0.18	0.81	0.01	0.37	0.41	0.00	0.15	0.05			0.13	
Uniform Delay, d1	8.5	14.5	7.6	11.1	4.5	3.2	35.1	34.7			35.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	2.2	2.7	0.0	2.5	0.4	0.0	1.0	0.2			0.8	
Delay (s)	10.7	17.2	7.6	13.5	4.9	3.2	36.1	34.9			35.8	
Level of Service	B	B	A	B	A	A	D	C			D	
Approach Delay (s)		17.0			5.3			35.2			35.8	
Approach LOS		B			A			D			D	

Intersection Summary					
HCM 2000 Control Delay	13.3	HCM 2000 Level of Service	B		
HCM 2000 Volume to Capacity ratio	0.70				
Actuated Cycle Length (s)	88.0	Sum of lost time (s)	20.0		
Intersection Capacity Utilization	76.8%	ICU Level of Service	D		
Analysis Period (min)	15				
c Critical Lane Group					



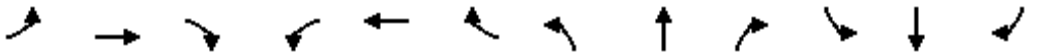
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	49	2306	1349	28	61	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.5		7.0	7.0
Lane Util. Factor	1.00	0.91	0.91		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1623	4749	4568		1623	1426
Flt Permitted	0.18	1.00	1.00		0.95	1.00
Satd. Flow (perm)	299	4749	4568		1623	1426
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	49	2306	1349	28	61	99
RTOR Reduction (vph)	0	0	1	0	0	58
Lane Group Flow (vph)	49	2306	1376	0	61	41
Confl. Peds. (#/hr)					2	5
Heavy Vehicles (%)	10%	10%	14%	14%	10%	10%
Bus Blockages (#/hr)	0	3	3	0	0	0
Turn Type	Perm	NA	NA		NA	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)	82.0	82.0	82.0		13.9	13.9
Effective Green, g (s)	82.0	82.0	82.0		13.9	13.9
Actuated g/C Ratio	0.75	0.75	0.75		0.13	0.13
Clearance Time (s)	6.5	6.5	6.5		7.0	7.0
Vehicle Extension (s)	5.0	5.0	5.0		5.0	5.0
Lane Grp Cap (vph)	224	3559	3423		206	181
v/s Ratio Prot		c0.49	0.30		c0.04	
v/s Ratio Perm	0.16					0.03
v/c Ratio	0.22	0.65	0.40		0.30	0.22
Uniform Delay, d1	4.1	6.7	4.9		43.3	42.9
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	2.2	0.9	0.4		1.7	1.3
Delay (s)	6.3	7.6	5.3		45.0	44.2
Level of Service	A	A	A		D	D
Approach Delay (s)		7.6	5.3		44.5	
Approach LOS		A	A		D	

Intersection Summary			
HCM 2000 Control Delay	8.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	109.4	Sum of lost time (s)	13.5
Intersection Capacity Utilization	65.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection has too many lanes per leg.

HCM All-Way analysis is limited to two lanes per leg.

Channelized right turn lanes are not counted.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	312	1945	182	137	1071	28	74	303	269	102	489	241
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.6	6.6	6.6	6.6	6.6	6.6	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	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)	1623	4768	1434	1623	4768	1401	1566	3174	1434	1552	3318	1389
Flt Permitted	0.18	1.00	1.00	0.07	1.00	1.00	0.30	1.00	1.00	0.50	1.00	1.00
Satd. Flow (perm)	308	4768	1434	118	4768	1401	500	3174	1434	814	3318	1389
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	312	1945	182	137	1071	28	74	303	269	102	489	241
RTOR Reduction (vph)	0	0	66	0	0	15	0	0	126	0	0	186
Lane Group Flow (vph)	312	1945	116	137	1071	13	74	303	143	102	489	55
Heavy Vehicles (%)	10%	10%	10%	10%	10%	14%	14%	15%	10%	15%	10%	15%
Bus Blockages (#/hr)	0	0	3	0	0	0	0	0	3	0	0	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	84.5	67.6	67.6	68.2	57.9	57.9	28.4	28.4	28.4	28.4	28.4	28.4
Effective Green, g (s)	84.5	67.6	67.6	68.2	57.9	57.9	28.4	28.4	28.4	28.4	28.4	28.4
Actuated g/C Ratio	0.67	0.54	0.54	0.54	0.46	0.46	0.23	0.23	0.23	0.23	0.23	0.23
Clearance Time (s)	6.6	6.6	6.6	6.6	6.6	6.6	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	416	2568	772	187	2199	646	113	718	324	184	750	314
v/s Ratio Prot	c0.12	c0.41		0.06	0.22			0.10			0.15	
v/s Ratio Perm	0.38		0.08	0.34		0.01	c0.15		0.10	0.13		0.04
v/c Ratio	0.75	0.76	0.15	0.73	0.49	0.02	0.65	0.42	0.44	0.55	0.65	0.17
Uniform Delay, d1	13.6	22.6	14.5	24.5	23.5	18.4	44.1	41.5	41.7	43.0	44.1	39.1
Progression 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
Incremental Delay, d2	8.8	2.1	0.4	16.5	0.8	0.1	16.9	0.8	2.0	6.0	2.7	0.6
Delay (s)	22.4	24.7	14.9	40.9	24.3	18.4	61.0	42.4	43.7	49.0	46.8	39.7
Level of Service	C	C	B	D	C	B	E	D	D	D	D	D
Approach Delay (s)		23.7			26.0			45.1			45.0	
Approach LOS		C			C			D			D	

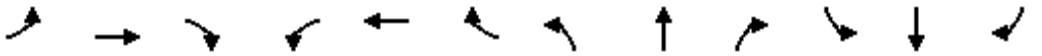
Intersection Summary			
HCM 2000 Control Delay	30.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	125.5	Sum of lost time (s)	19.2
Intersection Capacity Utilization	86.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	2266	50	23	1230	6	115
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	2266	50	23	1230	6	115
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			2316		2747	780
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			2316		2747	780
tC, single (s)			4.3		7.1	7.1
tC, 2 stage (s)						
tF (s)			2.3		3.6	3.4
p0 queue free %			88		47	64
cM capacity (veh/h)			189		11	321

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1
Volume Total	906	906	503	23	410	410	410	121
Volume Left	0	0	0	23	0	0	0	6
Volume Right	0	0	50	0	0	0	0	115
cSH	1700	1700	1700	189	1700	1700	1700	137
Volume to Capacity	0.53	0.53	0.30	0.12	0.24	0.24	0.24	0.88
Queue Length 95th (m)	0.0	0.0	0.0	2.9	0.0	0.0	0.0	40.7
Control Delay (s)	0.0	0.0	0.0	26.7	0.0	0.0	0.0	110.8
Lane LOS				D				F
Approach Delay (s)	0.0			0.5				110.8
Approach LOS								F

Intersection Summary			
Average Delay	3.8		
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	2213	146	26	1159	197	49	345	15	789	283	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.9	6.9		6.9	6.9	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95		0.97	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	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	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1622	4768	1452	1623	4725	1432	1594	3298		3148	3250	
Flt Permitted	0.17	1.00	1.00	0.06	1.00	1.00	0.55	1.00		0.95	1.00	
Satd. Flow (perm)	298	4768	1452	105	4725	1432	929	3298		3148	3250	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	22	2213	146	26	1159	197	49	345	15	789	283	45
RTOR Reduction (vph)	0	0	78	0	0	105	0	3	0	0	9	0
Lane Group Flow (vph)	22	2213	68	26	1159	92	49	357	0	789	319	0
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	10%	10%	10%	10%	11%	10%	12%	10%	10%	10%	10%	10%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Prot	NA	
Protected Phases		2			6			8		7	4	
Permitted Phases	2		2	6		6	8					
Actuated Green, G (s)	65.3	65.3	65.3	65.3	65.3	65.3	16.1	16.1		37.8	60.8	
Effective Green, g (s)	65.3	65.3	65.3	65.3	65.3	65.3	16.1	16.1		37.8	60.8	
Actuated g/C Ratio	0.47	0.47	0.47	0.47	0.47	0.47	0.12	0.12		0.27	0.44	
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.9	6.9		6.9	6.9	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	139	2228	678	49	2208	669	107	380		851	1414	
v/s Ratio Prot		c0.46			0.25			c0.11		c0.25	0.10	
v/s Ratio Perm	0.07		0.05	0.25		0.06	0.05					
v/c Ratio	0.16	0.99	0.10	0.53	0.52	0.14	0.46	0.94		0.93	0.23	
Uniform Delay, d1	21.4	37.0	20.8	26.3	26.3	21.2	57.7	61.3		49.6	24.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.1	17.5	0.1	18.7	0.4	0.2	6.4	32.0		16.5	0.2	
Delay (s)	22.5	54.4	20.9	45.0	26.7	21.4	64.1	93.3		66.1	24.9	
Level of Service	C	D	C	D	C	C	E	F		E	C	
Approach Delay (s)		52.1			26.3			89.8			54.0	
Approach LOS		D			C			F			D	

Intersection Summary			
HCM 2000 Control Delay	48.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	139.7	Sum of lost time (s)	20.5
Intersection Capacity Utilization	92.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	16	1584	15	23	1300	29	49	10	73	116	12	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.87		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1623	4656		1623	4648		1623	1483		1623	1493	
Flt Permitted	0.18	1.00		0.13	1.00		0.71	1.00		0.70	1.00	
Satd. Flow (perm)	309	4656		214	4648		1211	1483		1201	1493	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	16	1584	15	23	1300	29	49	10	73	116	12	62
RTOR Reduction (vph)	0	1	0	0	2	0	0	7	0	0	19	0
Lane Group Flow (vph)	16	1598	0	23	1327	0	49	76	0	116	55	0
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	35.3	35.3		35.3	35.3		10.7	10.7		10.7	10.7	
Effective Green, g (s)	35.3	35.3		35.3	35.3		10.7	10.7		10.7	10.7	
Actuated g/C Ratio	0.61	0.61		0.61	0.61		0.18	0.18		0.18	0.18	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	188	2833		130	2828		223	273		221	275	
v/s Ratio Prot		c0.34			0.29			0.05			0.04	
v/s Ratio Perm	0.05			0.11			0.04			c0.10		
v/c Ratio	0.09	0.56		0.18	0.47		0.22	0.28		0.52	0.20	
Uniform Delay, d1	4.7	6.8		5.0	6.2		20.1	20.3		21.4	20.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.9	0.8		3.0	0.6		1.0	1.2		4.2	0.8	
Delay (s)	5.6	7.6		7.9	6.8		21.1	21.5		25.6	20.8	
Level of Service	A	A		A	A		C	C		C	C	
Approach Delay (s)		7.6			6.8			21.4			23.7	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	8.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	58.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1760	13	27	1288	64	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0	6.0
Lane Util. Factor	0.91		1.00	0.91	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	4658		1623	4663	1623	1452
Flt Permitted	1.00		0.10	1.00	0.95	1.00
Satd. Flow (perm)	4658		178	4663	1623	1452
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1760	13	27	1288	64	85
RTOR Reduction (vph)	1	0	0	0	0	41
Lane Group Flow (vph)	1772	0	27	1288	64	44
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%
Turn Type	NA		Perm	NA	NA	Perm
Protected Phases	2			6	8	
Permitted Phases			6			8
Actuated Green, G (s)	38.5		38.5	38.5	8.1	8.1
Effective Green, g (s)	38.5		38.5	38.5	8.1	8.1
Actuated g/C Ratio	0.66		0.66	0.66	0.14	0.14
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0
Vehicle Extension (s)	5.0		5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	3060		116	3063	224	200
v/s Ratio Prot	c0.38			0.28	c0.04	
v/s Ratio Perm			0.15			0.03
v/c Ratio	0.58		0.23	0.42	0.29	0.22
Uniform Delay, d1	5.6		4.1	4.8	22.7	22.5
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8		4.6	0.4	1.5	1.2
Delay (s)	6.4		8.7	5.2	24.1	23.6
Level of Service	A		A	A	C	C
Approach Delay (s)	6.4			5.3	23.8	
Approach LOS	A			A	C	

Intersection Summary			
HCM 2000 Control Delay	6.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	58.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	2366	1	1	1376	1	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	2366	1	1	1376	1	2
Pedestrians				1	3	
Lane Width (m)				3.7	3.5	
Walking Speed (m/s)				4.0	4.0	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (m)	137					
pX, platoon unblocked			0.76		0.76	0.76
vC, conflicting volume			2370		2830	793
vC1, stage 1 conf vol					2370	
vC2, stage 2 conf vol					461	
vCu, unblocked vol			1688		2295	0
tC, single (s)			4.3		7.0	7.1
tC, 2 stage (s)					6.0	
tF (s)			2.3		3.6	3.4
p0 queue free %			100		99	100
cM capacity (veh/h)			258		91	801

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1
Volume Total	946	946	474	276	550	550	3
Volume Left	0	0	0	1	0	0	1
Volume Right	0	0	1	0	0	0	2
cSH	1700	1700	1700	258	1700	1700	222
Volume to Capacity	0.56	0.56	0.28	0.00	0.32	0.32	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.1	0.0	0.0	0.3
Control Delay (s)	0.0	0.0	0.0	0.2	0.0	0.0	21.4
Lane LOS				A			C
Approach Delay (s)	0.0			0.0			21.4
Approach LOS							C

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	56.1%	ICU Level of Service	B
Analysis Period (min)	15		

2031 Cap Network 6 Lanes PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	1031	96	562	1003	119	88	145	288	19	160	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.6		6.0	6.6		6.6	6.6	6.6	6.6	6.6	
Lane Util. Factor	1.00	0.91		0.97	0.91		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1552	4603		3148	4589		1623	1708	1452	1623	1687	
Flt Permitted	0.24	1.00		0.95	1.00		0.63	1.00	1.00	0.66	1.00	
Satd. Flow (perm)	395	4603		3148	4589		1071	1708	1452	1135	1687	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	11	1031	96	562	1003	119	88	145	288	19	160	14
RTOR Reduction (vph)	0	10	0	0	11	0	0	0	232	0	4	0
Lane Group Flow (vph)	11	1117	0	562	1111	0	88	145	56	19	170	0
Heavy Vehicles (%)	15%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	Perm	NA		Prot	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2						8		8	4		
Actuated Green, G (s)	27.1	27.1		20.1	53.2		16.1	16.1	16.1	16.1	16.1	
Effective Green, g (s)	27.1	27.1		20.1	53.2		16.1	16.1	16.1	16.1	16.1	
Actuated g/C Ratio	0.33	0.33		0.24	0.64		0.20	0.20	0.20	0.20	0.20	
Clearance Time (s)	6.6	6.6		6.0	6.6		6.6	6.6	6.6	6.6	6.6	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	129	1512		766	2959		209	333	283	221	329	
v/s Ratio Prot		c0.24		c0.18	0.24			0.08			c0.10	
v/s Ratio Perm	0.03						0.08		0.04	0.02		
v/c Ratio	0.09	0.74		0.73	0.38		0.42	0.44	0.20	0.09	0.52	
Uniform Delay, d1	19.1	24.6		28.7	6.9		29.1	29.2	27.8	27.2	29.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.6	2.3		4.4	0.2		2.9	1.9	0.7	0.4	2.7	
Delay (s)	19.7	26.9		33.2	7.0		32.0	31.1	28.5	27.5	32.4	
Level of Service	B	C		C	A		C	C	C	C	C	
Approach Delay (s)		26.8			15.8			29.8			31.9	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	22.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	82.5	Sum of lost time (s)	19.2
Intersection Capacity Utilization	79.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	1235	50	400	1666	26	145	288	144	12	265	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.6	6.6	6.6	6.6		6.6	6.6	6.6	6.6	6.6	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	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		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1622	4663	1452	1623	4650		1623	1708	1426	1617	1674	
Flt Permitted	0.14	1.00	1.00	0.11	1.00		0.40	1.00	1.00	0.42	1.00	
Satd. Flow (perm)	236	4663	1452	192	4650		676	1708	1426	721	1674	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	37	1235	50	400	1666	26	145	288	144	12	265	40
RTOR Reduction (vph)	0	0	36	0	1	0	0	0	105	0	5	0
Lane Group Flow (vph)	37	1235	14	400	1691	0	145	288	39	12	300	0
Confl. Peds. (#/hr)	1					1			5	5		
Heavy Vehicles (%)	10%	10%	10%	10%	10%	11%	10%	10%	10%	10%	10%	10%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6			8		8	4		
Actuated Green, G (s)	28.9	28.9	28.9	60.0	60.0		26.8	26.8	26.8	26.8	26.8	
Effective Green, g (s)	28.9	28.9	28.9	60.0	60.0		26.8	26.8	26.8	26.8	26.8	
Actuated g/C Ratio	0.29	0.29	0.29	0.60	0.60		0.27	0.27	0.27	0.27	0.27	
Clearance Time (s)	6.6	6.6	6.6	6.6	6.6		6.6	6.6	6.6	6.6	6.6	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	68	1347	419	465	2790		181	457	382	193	448	
v/s Ratio Prot		0.26		c0.21	0.36			0.17			0.18	
v/s Ratio Perm	0.16		0.01	c0.30			c0.21		0.03	0.02		
v/c Ratio	0.54	0.92	0.03	0.86	0.61		0.80	0.63	0.10	0.06	0.67	
Uniform Delay, d1	30.0	34.4	25.5	26.3	12.6		34.1	32.2	27.5	27.2	32.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	14.7	10.5	0.1	16.1	0.6		24.5	3.9	0.2	0.3	5.0	
Delay (s)	44.7	44.9	25.6	42.4	13.1		58.6	36.1	27.8	27.5	37.6	
Level of Service	D	D	C	D	B		E	D	C	C	D	
Approach Delay (s)		44.1			18.7			39.7			37.2	
Approach LOS		D			B			D			D	

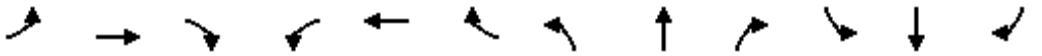
Intersection Summary			
HCM 2000 Control Delay	30.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.8
Intersection Capacity Utilization	100.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↱	↰	↑↑↑	↰	↱
Volume (vph)	1373	18	168	2090	2	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	1.00
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	4663	1417	1622	4651	1623	1440
Flt Permitted	1.00	1.00	0.18	1.00	0.95	1.00
Satd. Flow (perm)	4663	1417	304	4651	1623	1440
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1373	18	168	2090	2	93
RTOR Reduction (vph)	0	6	0	0	0	41
Lane Group Flow (vph)	1373	12	168	2090	2	52
Confl. Peds. (#/hr)		1	1			
Confl. Bikes (#/hr)		4				
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%
Bus Blockages (#/hr)	0	0	0	2	0	2
Turn Type	NA	Perm	Perm	NA	NA	Perm
Protected Phases	2			6	8	
Permitted Phases		2	6			8
Actuated Green, G (s)	42.4	42.4	42.4	42.4	8.0	8.0
Effective Green, g (s)	42.4	42.4	42.4	42.4	8.0	8.0
Actuated g/C Ratio	0.68	0.68	0.68	0.68	0.13	0.13
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	3168	962	206	3160	208	184
v/s Ratio Prot	0.29			0.45	0.00	
v/s Ratio Perm		0.01	c0.55			c0.04
v/c Ratio	0.43	0.01	0.82	0.66	0.01	0.28
Uniform Delay, d1	4.5	3.2	7.2	5.8	23.7	24.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.0	28.7	1.1	0.0	1.8
Delay (s)	5.0	3.3	35.9	6.9	23.8	26.4
Level of Service	A	A	D	A	C	C
Approach Delay (s)	5.0			9.1	26.3	
Approach LOS	A			A	C	

Intersection Summary			
HCM 2000 Control Delay	8.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	62.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	201	1218	47	85	2149	226	18	35	30	124	10	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	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	0.93		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1623	4768	1405	1621	4768	1452	1619	1614		1618	1491	
Flt Permitted	0.08	1.00	1.00	0.22	1.00	1.00	0.69	1.00		0.71	1.00	
Satd. Flow (perm)	141	4768	1405	373	4768	1452	1179	1614		1217	1491	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	201	1218	47	85	2149	226	18	35	30	124	10	91
RTOR Reduction (vph)	0	0	13	0	0	99	0	24	0	0	73	0
Lane Group Flow (vph)	201	1218	34	85	2149	127	18	41	0	124	28	0
Confl. Peds. (#/hr)			2	2			3		4	4		3
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Bus Blockages (#/hr)	0	0	2	0	0	0	0	0	0	0	0	2
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	56.4	56.4	56.4	42.3	42.3	42.3	17.1	17.1		17.1	17.1	
Effective Green, g (s)	56.4	56.4	56.4	42.3	42.3	42.3	17.1	17.1		17.1	17.1	
Actuated g/C Ratio	0.66	0.66	0.66	0.49	0.49	0.49	0.20	0.20		0.20	0.20	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	233	3145	926	184	2358	718	235	322		243	298	
v/s Ratio Prot	c0.08	0.26			0.45			0.03			0.02	
v/s Ratio Perm	c0.48		0.02	0.23		0.09	0.02			c0.10		
v/c Ratio	0.86	0.39	0.04	0.46	0.91	0.18	0.08	0.13		0.51	0.09	
Uniform Delay, d1	22.1	6.7	5.1	14.1	19.9	12.0	27.8	28.1		30.5	27.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	28.3	0.4	0.1	8.1	6.7	0.5	0.3	0.4		3.6	0.3	
Delay (s)	50.4	7.0	5.1	22.3	26.6	12.5	28.1	28.4		34.0	28.2	
Level of Service	D	A	A	C	C	B	C	C		C	C	
Approach Delay (s)		12.9			25.1			28.4			31.4	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	21.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	85.5	Sum of lost time (s)	18.0
Intersection Capacity Utilization	82.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

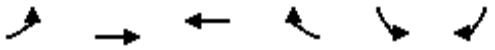


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	220	1055	172	367	1702	282	302	1064	195	136	540	456
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0	7.0	4.0	7.1	7.1	7.1	7.1	7.1
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.96
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)	3148	4768	1413	3148	4768	1403	1619	3318	1392	3148	3318	1389
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.28	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3148	4768	1413	3148	4768	1403	475	3318	1392	3148	3318	1389
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	220	1055	172	367	1702	282	302	1064	195	136	540	456
RTOR Reduction (vph)	0	0	122	0	0	81	0	0	132	0	0	144
Lane Group Flow (vph)	220	1055	50	367	1702	201	302	1064	63	136	540	312
Confl. Peds. (#/hr)	9		11	11		9	22		9	9		22
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Bus Blockages (#/hr)	0	0	0	0	0	3	0	0	5	0	0	2
Turn Type	Prot		Perm	Prot		Perm	pm+pt		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8	2		2			6
Actuated Green, G (s)	9.9	40.7	40.7	19.6	50.4	50.4	58.6	45.4	45.4	6.1	38.0	38.0
Effective Green, g (s)	9.9	40.7	40.7	19.6	50.4	50.4	58.6	45.4	45.4	6.1	38.0	38.0
Actuated g/C Ratio	0.07	0.29	0.29	0.14	0.36	0.36	0.42	0.32	0.32	0.04	0.27	0.27
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	4.0	7.1	7.1	7.1	7.1	7.1
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	223	1386	411	441	1716	505	334	1076	451	137	901	377
v/s Ratio Prot	0.07	0.22		c0.12	c0.36		c0.11	c0.32		0.04	0.16	
v/s Ratio Perm			0.04			0.14	0.27		0.05			0.22
v/c Ratio	0.99	0.76	0.12	0.83	0.99	0.40	0.90	0.99	0.14	0.99	0.60	0.83
Uniform Delay, d1	65.0	45.2	36.5	58.6	44.6	33.5	32.4	47.0	33.5	66.9	44.4	47.9
Progression 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
Incremental Delay, d2	56.3	3.0	0.3	13.9	19.8	1.1	27.8	24.6	0.3	74.6	1.6	15.3
Delay (s)	121.3	48.2	36.8	72.5	64.4	34.5	60.2	71.7	33.8	141.5	46.0	63.2
Level of Service	F	D	D	E	E	C	E	E	C	F	D	E
Approach Delay (s)		58.0			62.1			64.7			64.4	
Approach LOS		E			E			E			E	

Intersection Summary			
HCM Average Control Delay	62.2	HCM Level of Service	E
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	100.8%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	42	1485	15	117	2369	12	46	13	58	24	21	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5	6.5	7.0	7.0			7.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.95	1.00	0.99			0.99	
Flpb, ped/bikes	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	0.88			0.92	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.99	
Satd. Flow (prot)	1622	4768	1388	1620	4768	1360	1616	1514			1577	
Flt Permitted	0.05	1.00	1.00	0.15	1.00	1.00	0.68	1.00			0.91	
Satd. Flow (perm)	84	4768	1388	260	4768	1360	1157	1514			1445	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	42	1485	15	117	2369	12	46	13	58	24	21	61
RTOR Reduction (vph)	0	0	4	0	0	3	0	44	0	0	6	0
Lane Group Flow (vph)	42	1485	11	117	2369	9	46	27	0	0	100	0
Confl. Peds. (#/hr)	13		5	5		13	4		2	2		4
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Bus Blockages (#/hr)	0	0	3	0	0	3	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	81.6	81.6	81.6	81.6	81.6	81.6	15.8	15.8			15.8	
Effective Green, g (s)	81.6	81.6	81.6	81.6	81.6	81.6	15.8	15.8			15.8	
Actuated g/C Ratio	0.74	0.74	0.74	0.74	0.74	0.74	0.14	0.14			0.14	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	7.0	7.0			7.0	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0			5.0	
Lane Grp Cap (vph)	61	3508	1021	191	3508	1000	164	215			205	
v/s Ratio Prot		0.31			0.50			0.02				
v/s Ratio Perm	c0.50		0.01	0.45		0.01	0.04				c0.07	
v/c Ratio	0.69	0.42	0.01	0.61	0.68	0.01	0.28	0.13			0.49	
Uniform Delay, d1	7.8	5.6	3.9	7.0	7.7	3.9	42.5	41.5			43.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	48.5	0.4	0.0	13.8	1.1	0.0	2.0	0.6			3.8	
Delay (s)	56.3	6.0	3.9	20.9	8.8	3.9	44.4	42.1			47.6	
Level of Service	E	A	A	C	A	A	D	D			D	
Approach Delay (s)		7.3			9.3			43.0			47.6	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	10.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	110.9	Sum of lost time (s)	13.5
Intersection Capacity Utilization	83.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	84	1483	2496	77	28	132
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.5		7.0	7.0
Lane Util. Factor	1.00	0.91	0.91		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1623	4749	4746		1623	1433
Flt Permitted	0.05	1.00	1.00		0.95	1.00
Satd. Flow (perm)	89	4749	4746		1623	1433
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	84	1483	2496	77	28	132
RTOR Reduction (vph)	0	0	2	0	0	109
Lane Group Flow (vph)	84	1483	2571	0	28	23
Confl. Peds. (#/hr)					1	1
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%
Bus Blockages (#/hr)	0	3	0	3	0	0
Turn Type	pm+pt	NA	NA		NA	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)	82.9	82.9	69.9		12.5	12.5
Effective Green, g (s)	82.9	82.9	69.9		12.5	12.5
Actuated g/C Ratio	0.76	0.76	0.64		0.11	0.11
Clearance Time (s)	6.5	6.5	6.5		7.0	7.0
Vehicle Extension (s)	5.0	5.0	5.0		5.0	5.0
Lane Grp Cap (vph)	159	3615	3046		186	164
v/s Ratio Prot	0.03	c0.31	c0.54		c0.02	
v/s Ratio Perm	0.37					0.02
v/c Ratio	0.53	0.41	0.84		0.15	0.14
Uniform Delay, d1	17.6	4.5	15.2		43.4	43.4
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	5.9	0.3	3.1		0.8	0.8
Delay (s)	23.5	4.9	18.3		44.2	44.2
Level of Service	C	A	B		D	D
Approach Delay (s)		5.9	18.3		44.2	
Approach LOS		A	B		D	

Intersection Summary			
HCM 2000 Control Delay	14.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	108.9	Sum of lost time (s)	20.0
Intersection Capacity Utilization	80.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Intersection has too many lanes per leg.

HCM All-Way analysis is limited to two lanes per leg.

Channelized right turn lanes are not counted.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	266	1153	120	273	2082	125	223	490	155	128	446	355
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	4.0	6.6	6.6	4.6	6.6	6.6	4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99
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)	1623	4768	1434	1623	4768	1413	1622	3318	1434	1623	3318	1430
Flt Permitted	0.07	1.00	1.00	0.16	1.00	1.00	0.28	1.00	1.00	0.26	1.00	1.00
Satd. Flow (perm)	117	4768	1434	265	4768	1413	470	3318	1434	444	3318	1430
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	266	1153	120	273	2082	125	223	490	155	128	446	355
RTOR Reduction (vph)	0	0	69	0	0	37	0	0	125	0	0	212
Lane Group Flow (vph)	266	1153	51	273	2082	88	223	490	30	128	446	143
Confl. Peds. (#/hr)							2					2
Heavy Vehicles (%)	10%	10%	10%	10%	10%	13%	10%	10%	10%	10%	10%	10%
Bus Blockages (#/hr)	0	0	3	0	0	0	0	0	3	0	0	0
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	77.2	58.2	58.2	81.8	60.8	60.8	38.4	26.7	26.7	36.4	25.7	25.7
Effective Green, g (s)	77.2	58.2	58.2	81.8	60.8	60.8	38.4	26.7	26.7	36.4	25.7	25.7
Actuated g/C Ratio	0.56	0.42	0.42	0.59	0.44	0.44	0.28	0.19	0.19	0.26	0.19	0.19
Clearance Time (s)	4.0	6.6	6.6	4.6	6.6	6.6	4.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	273	2014	606	364	2104	623	229	643	278	209	619	267
v/s Ratio Prot	c0.13	0.24		c0.11	c0.44		c0.08	0.15		0.05	0.13	
v/s Ratio Perm	0.41		0.04	0.33		0.06	c0.19		0.02	0.11		0.10
v/c Ratio	0.97	0.57	0.08	0.75	0.99	0.14	0.97	0.76	0.11	0.61	0.72	0.53
Uniform Delay, d1	45.1	30.3	23.8	19.3	38.2	22.9	45.8	52.5	45.7	41.1	52.7	50.6
Progression 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
Incremental Delay, d2	47.5	1.2	0.3	9.9	17.3	0.5	52.2	6.3	0.4	7.5	5.0	3.7
Delay (s)	92.6	31.5	24.1	29.2	55.5	23.4	98.0	58.8	46.1	48.5	57.7	54.4
Level of Service	F	C	C	C	E	C	F	E	D	D	E	D
Approach Delay (s)		41.5			51.0			66.6			55.2	
Approach LOS		D			D			E			E	

Intersection Summary			
HCM Average Control Delay	51.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	137.8	Sum of lost time (s)	12.6
Intersection Capacity Utilization	97.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1418	18	105	2476	4	31
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1418	18	105	2476	4	31
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			1436		2462	482
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1436		2462	482
tC, single (s)			4.3		7.0	7.1
tC, 2 stage (s)						
tF (s)			2.3		3.6	3.4
p0 queue free %			76		76	94
cM capacity (veh/h)			430		17	510

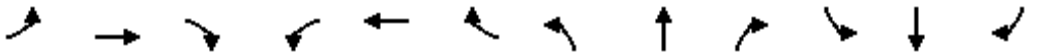
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1
Volume Total	567	567	302	105	825	825	825	35
Volume Left	0	0	0	105	0	0	0	4
Volume Right	0	0	18	0	0	0	0	31
cSH	1700	1700	1700	430	1700	1700	1700	118
Volume to Capacity	0.33	0.33	0.18	0.24	0.49	0.49	0.49	0.30
Queue Length 95th (m)	0.0	0.0	0.0	6.6	0.0	0.0	0.0	8.0
Control Delay (s)	0.0	0.0	0.0	16.0	0.0	0.0	0.0	47.9
Lane LOS				C				E
Approach Delay (s)	0.0			0.7				47.9
Approach LOS								E

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	41	1357	51	37	2309	690	227	642	15	296	702	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	6.7	3.0	6.9		6.9	6.9	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95		0.97	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	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	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1623	4768	1452	1623	4768	1432	1623	3307		3148	3288	
Flt Permitted	0.06	1.00	1.00	0.14	1.00	1.00	0.19	1.00		0.95	1.00	
Satd. Flow (perm)	99	4768	1452	232	4768	1432	321	3307		3148	3288	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	41	1357	51	37	2309	690	227	642	15	296	702	45
RTOR Reduction (vph)	0	0	25	0	0	167	0	2	0	0	4	0
Lane Group Flow (vph)	41	1357	26	37	2309	523	227	655	0	296	743	0
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA		Prot	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2		2	6		6	8					
Actuated Green, G (s)	69.3	69.3	69.3	69.3	69.3	69.3	46.7	32.7		15.1	37.7	
Effective Green, g (s)	69.3	69.3	69.3	69.3	69.3	69.3	46.7	32.7		15.1	37.7	
Actuated g/C Ratio	0.50	0.50	0.50	0.50	0.50	0.50	0.34	0.24		0.11	0.27	
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	3.0	6.9		6.9	6.9	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	49	2401	731	116	2401	721	241	785		345	900	
v/s Ratio Prot		0.28			c0.48		c0.10	0.20		0.09	c0.23	
v/s Ratio Perm	0.42		0.02	0.16		0.37	c0.22					
v/c Ratio	0.84	0.57	0.04	0.32	0.96	0.73	0.94	0.84		0.86	0.83	
Uniform Delay, d1	29.3	23.7	17.3	20.2	32.9	26.7	37.3	49.9		60.2	46.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	75.7	0.5	0.0	3.3	11.0	4.5	43.0	8.5		20.1	7.0	
Delay (s)	105.0	24.2	17.3	23.5	43.9	31.2	80.3	58.4		80.3	53.9	
Level of Service	F	C	B	C	D	C	F	E		F	D	
Approach Delay (s)		26.2			40.8			64.0			61.4	
Approach LOS		C			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	44.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	137.6	Sum of lost time (s)	20.5
Intersection Capacity Utilization	92.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	69	1224	45	67	1618	130	32	15	39	64	14	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.89		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1623	4638		1623	4611		1623	1523		1623	1527	
Flt Permitted	0.11	1.00		0.20	1.00		0.73	1.00		0.72	1.00	
Satd. Flow (perm)	182	4638		342	4611		1240	1523		1233	1527	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	69	1224	45	67	1618	130	32	15	39	64	14	34
RTOR Reduction (vph)	0	4	0	0	9	0	0	25	0	0	7	0
Lane Group Flow (vph)	69	1265	0	67	1739	0	32	29	0	64	41	0
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	37.6	37.6		37.6	37.6		8.7	8.7		8.7	8.7	
Effective Green, g (s)	37.6	37.6		37.6	37.6		8.7	8.7		8.7	8.7	
Actuated g/C Ratio	0.64	0.64		0.64	0.64		0.15	0.15		0.15	0.15	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	117	2991		220	2973		185	227		183	227	
v/s Ratio Prot		0.27			0.38			0.02			0.03	
v/s Ratio Perm	c0.38			0.20			0.03			c0.05		
v/c Ratio	0.59	0.42		0.30	0.59		0.17	0.13		0.35	0.18	
Uniform Delay, d1	5.9	5.1		4.6	5.9		21.7	21.5		22.3	21.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	20.0	0.4		3.5	0.8		0.9	0.5		2.4	0.8	
Delay (s)	25.9	5.5		8.1	6.8		22.6	22.1		24.7	22.5	
Level of Service	C	A		A	A		C	C		C	C	
Approach Delay (s)		6.5			6.8			22.3			23.7	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	7.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	58.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1283	44	78	1773	42	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0	6.0
Lane Util. Factor	0.91		1.00	0.91	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	4640		1623	4663	1623	1452
Flt Permitted	1.00		0.19	1.00	0.95	1.00
Satd. Flow (perm)	4640		329	4663	1623	1452
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1283	44	78	1773	42	39
RTOR Reduction (vph)	3	0	0	0	0	35
Lane Group Flow (vph)	1324	0	78	1773	42	4
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%
Turn Type	NA		Perm	NA	NA	Perm
Protected Phases	2			6	8	
Permitted Phases			6			8
Actuated Green, G (s)	42.3		42.3	42.3	5.6	5.6
Effective Green, g (s)	42.3		42.3	42.3	5.6	5.6
Actuated g/C Ratio	0.71		0.71	0.71	0.09	0.09
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0
Vehicle Extension (s)	5.0		5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	3276		232	3292	151	135
v/s Ratio Prot	0.29			c0.38	c0.03	
v/s Ratio Perm			0.24			0.00
v/c Ratio	0.40		0.34	0.54	0.28	0.03
Uniform Delay, d1	3.6		3.4	4.2	25.3	24.7
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4		3.9	0.6	2.1	0.2
Delay (s)	4.0		7.3	4.8	27.4	24.8
Level of Service	A		A	A	C	C
Approach Delay (s)	4.0			4.9	26.2	
Approach LOS	A			A	C	

Intersection Summary			
HCM 2000 Control Delay	5.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	59.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1510	1	2	2571	1	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1510	1	2	2571	1	2
Pedestrians					2	
Lane Width (m)					3.5	
Walking Speed (m/s)					4.0	
Percent Blockage					0	
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (m)	137					
pX, platoon unblocked			0.90		0.90	0.90
vC, conflicting volume			1513		2374	506
vC1, stage 1 conf vol					1512	
vC2, stage 2 conf vol					861	
vCu, unblocked vol			1172		2131	50
tC, single (s)			4.3		7.0	7.1
tC, 2 stage (s)					6.0	
tF (s)			2.3		3.6	3.4
p0 queue free %			100		99	100
cM capacity (veh/h)			492		181	881

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1
Volume Total	604	604	303	516	1028	1028	3
Volume Left	0	0	0	2	0	0	1
Volume Right	0	0	1	0	0	0	2
cSH	1700	1700	1700	492	1700	1700	384
Volume to Capacity	0.36	0.36	0.18	0.00	0.60	0.60	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.1	0.0	0.0	0.2
Control Delay (s)	0.0	0.0	0.0	0.1	0.0	0.0	14.4
Lane LOS				A			B
Approach Delay (s)	0.0			0.0			14.4
Approach LOS							B

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		

Appendix G

Queue Calculation Sheets

2010 Existing AM

Mayfield Road EA

Intersection Queue Summary - Peel Region Methodology

Existing Intersection Queue Lengths, Weekday AM Peak Hour

No.	Intersection Movement	Available Storage (m)	Link Distance (m)	Cycle Length (sec.)	Volumes Passenger Cars (veh)	Percent Heavies	Volumes Heavies (veh)	Volumes All Traffic	No. of Lanes	"m" Values		"X" Values		Queue Length (m)
1	**Mayfield at Chinguacousy Road**													
	Southbound Left/Through/Right			88.2	90	2%	2	92	1	2.2	0.0	3	0	21
	Westbound Left/Through/Right		1340	88.2	358	6%	23	381	1	8.8	0.6	11	1	94
	Northbound Left/Through/Right			88.2	126	3%	4	130	1	3.1	0.1	4	0	28
	Eastbound Left/Through/Right			88.2	513	3%	15	528	1	12.6	0.4	15	1	122
2	**Mayfield Road & McLaughlin Road**													
	Southbound Left/Through/Right			78.2	161	2%	3	164	1	3.5	0.1	5	0	35
	Westbound Through/Right		280	78.2	345	6%	22	367	1	7.5	0.5	9	1	80
	Westbound Left	30		78.2	137	4%	6	143	1	3.0	0.1	4	0	28
	Northbound Right	25		78.2	92	1%	1	93	1	2.0	0.0	3	0	21
	Northbound Left/Through			78.2	66	4%	3	69	1	1.4	0.1	2	0	14
	Eastbound Through/Right		1340	78.2	561	2%	9	570	1	12.2	0.2	14	0	98
	Eastbound Left	30		78.2	17	0%	0	17	1	0.4	0.0	1	0	7
3	**Mayfield Road & Van Kirk Drive**													
	Westbound Through		530	Minor	451	10%	48	499	1					
	Westbound Left	35		Street	40	9%	4	44	1					
	Northbound Right			Stop	196	4%	9	205	1					
	Northbound Left	40		Controlled	11	0%	0	11	1					
	Eastbound Right	30			5	29%	2	7	1					
	Eastbound Through		280		577	4%	22	599	1					
4	**Mayfield Road & Cresthaven Road/ Robertson Davies Drive**													
	Southbound Through/Right			60	80	8%	7	87	1	1.3	0.1	2	0	14
	Southbound Left	30		60	88	0%	0	88	1	1.5	0.0	2	0	14
	Westbound Right	30		60	12	20%	3	15	1	0.2	0.1	0	0	0
	Westbound Through		420	60	390	10%	45	435	1	6.5	0.8	8	1	73
	Westbound Left	30		60	26	13%	4	30	1	0.4	0.1	1	0	7
	Northbound Through/Right			60	131	2%	3	134	1	2.2	0.1	3	0	21
	Northbound Left	35		60	43	0%	0	43	1	0.7	0.0	1	0	7
	Eastbound Right	25		60	5	17%	1	6	1	0.1	0.0	0	0	0
	Eastbound Through		530	60	747	3%	21	768	1	12.5	0.4	15	1	122
	Eastbound Left	30		60	24	20%	6	30	1	0.4	0.1	1	0	7
5	**Mayfield Road & Highway 10**													
	Southbound Right	75		120	109	10%	12	121	1	3.6	0.4	5	1	52
	Southbound Through		130	120	654	4%	26	680	2	10.9	0.4	13	1	108
	Southbound Left	75		120	75	7%	6	81	2	1.3	0.1	2	0	14
	Westbound Right	55		120	34	6%	2	36	1	1.1	0.1	2	0	14
	Westbound Through			120	255	11%	30	285	2	4.3	0.5	5	1	52
	Westbound Left	50		120	79	16%	15	94	2	1.3	0.3	2	0	14
	Northbound Right	60		120	71	14%	12	83	1	2.4	0.4	3	1	38
	Northbound Through			120	223	5%	11	234	2	3.7	0.2	5	0	35
	Northbound Left	45		120	72	3%	2	74	1	2.4	0.1	3	0	21
	Eastbound Right	100		120	225	0%	1	226	1	7.5	0.0	9	0	63
	Eastbound Through		420	120	624	2%	14	638	2	10.4	0.2	12	0	84
	Eastbound Left	110		120	205	6%	12	217	1	6.8	0.4	8	1	73
6	**Mayfield Road & Colonel Bertram Road**													
	Southbound Left/Through/Right			120	40	2%	1	41	1	1.3	0.0	2	0	14
	Westbound Right	20		120	3	0%	0	3	1	0.1	0.0	0	0	0
	Westbound Through		160	120	340	13%	50	390	2	5.7	0.8	7	1	66
	Westbound Left	50		120	70	3%	2	72	1	2.3	0.1	3	0	21
	Northbound Through/Right			120	67	3%	2	69	1	2.2	0.1	3	0	21
	Northbound Left	20		120	21	0%	0	21	1	0.7	0.0	1	0	7
	Eastbound Right		130	120	11	8%	1	12	1	0.4	0.0	1	0	7
	Eastbound Through		130	120	657	5%	31	688	2	11.0	0.5	13	1	108
	Eastbound Left	30		120	32	3%	1	33	1	1.1	0.0	2	0	14
7	**Mayfield Road & Summer Valley Drive**													
	Southbound Right			120	48	4%	2	50	1	1.6	0.1	2	0	14
	Southbound Left	30		120	30	3%	1	31	1	1.0	0.0	2	0	14
	Westbound Through/Right		90	120	189	14%	31	220	1	6.3	1.0	8	2	90

Mayfield Road EA

Intersection Queue Summary - Peel Region Methodology

Existing Intersection Queue Lengths, Weekday AM Peak Hour

No.	Intersection Movement	Available Storage (m)	Link Distance (m)	Cycle Length (sec.)	Volumes Passenger Cars (veh)	Percent Heavies	Volumes Heavies (veh)	Volumes All Traffic	No. of Lanes	"m" Values		"X" Values		Queue Length (m)
	Westbound Through		90	120	177	14%	30	207	1	5.9	1.0	7	2	83
	Eastbound Through		160	120	710	5%	37	747	2	11.8	0.6	14	1	115
	Eastbound Left	65		120	24	4%	1	25	1	0.8	0.0	1	0	7
8	**Mayfield Road & Valley View Drive**													
	Westbound Through		405	Minor	0	14%	0		1					
	Westbound Through/Left		405	Street	0	14%	0		1					
	Northbound Left/Right			Stop	0	0%	0		1					
	Eastbound Through/Right		90	Controlled	0	5%	0		1					
	Eastbound Through		90		0	5%	0		1					
9	**Mayfield Road & Inder Heights Drive**													
	Westbound Through		360	Minor	365	12%	52	417	2					
	Westbound Left	30		Street	4	20%	1	5	1					
	Northbound Right			Stop	15	6%	1	16	1					
	Northbound Left			Controlled	9	10%	1	10	1					
	Eastbound Through/Right		405		376	5%	19	395	1					
	Eastbound Through		405		367	4%	16	383	1					
10	**Mayfield Road & Kennedy Road**													
	Southbound Through/Right			140	24	23%	7	31	1	0.9	0.3	1	0	7
	Southbound Left	45		140	11	21%	3	14	1	0.4	0.1	1	0	7
	Westbound Through/Right		480	140	207	11%	25	232	1	8.1	1.0	10	1	87
	Westbound Through		480	140	164	10%	19	183	1	6.4	0.7	8	1	73
	Westbound Left	20		140	65	4%	3	68	1	2.5	0.1	3	0	21
	Northbound Right			140	73	3%	2	75	1	2.8	0.1	4	0	28
	Northbound Through			140	9	18%	2	11	1	0.4	0.1	1	0	7
	Northbound Left	45		140	32	14%	5	37	1	1.2	0.2	2	0	14
	Eastbound Right		360	140	77	5%	4	81	1	3.0	0.2	4	0	28
	Eastbound Through		360	140	657	4%	24	681	1	25.6	0.9	29	1	220
	Eastbound Left	25		140	20	0%	0	20	1	0.8	0.0	1	0	7
11	**Mayfield Road & Stonegate Drive**													
	Westbound Through		780	Minor	427	10%	50	477	1					
	Westbound Left	100		Street	21	9%	2	23	1					
	Northbound Left/Right			Stop	120	1%	1	121	1					
	Eastbound Through/Right		480	Controlled	734	5%	36	770	1					
12	**Mayfield Road & Heart Lake Road**													
	Southbound Right	20		140	22	4%	1	23	1	0.9	0.0	1	0	7
	Southbound Through			140	100	0%	0	100	1	3.9	0.0	5	0	35
	Southbound Left	20		140	397	1%	3	400	1	15.4	0.1	18	0	126
	Westbound Right	155		140	97	3%	3	100	1	3.8	0.1	5	0	35
	Westbound Through			140	404	11%	48	452	3	5.2	0.6	7	1	66
	Westbound Left	155		140	12	8%	1	13	1	0.5	0.0	1	0	7
	Northbound Right	40		140	8	0%	0	8	1	0.3	0.0	1	0	7
	Northbound Through			140	14	0%	0	14	1	0.5	0.0	1	0	7
	Northbound Left	105		140	22	12%	3	25	1	0.9	0.1	1	0	7
	Eastbound Right	175		140	73	1%	1	74	1	2.8	0.0	4	0	28
	Eastbound Through		780	140	761	4%	35	796	3	9.9	0.5	12	1	101
	Eastbound Left	115		140	11	0%	0	11	1	0.4	0.0	1	0	7

2010 Existing PM

Mayfield Road EA

Intersection Queue Summary - Peel Region Methodology

Existing Intersection Queue Lengths, Weekday PM Peak Hour

No.	Intersection Movement	Available Storage (m)	Link Distance (m)	Cycle Length (sec.)	Volumes Passenger Cars (veh)	Percent Heavies	Volumes Heavies (veh)	Volumes All Traffic	No. of Lanes	"m" Values		"X" Values		Queue Length (m)
1	**Mayfield at Chinguacousy Road**													
	Southbound Left/Through/Right			78.2	50	0%		50	1	1.1	0.0	2	0	14
	Westbound Left/Through/Right		1340	78.2	566	3%	16	582	1	12.3	0.3	14	1	115
	Northbound Left/Through/Right			78.2	156	0%		156	1	3.4	0.0	4	0	28
	Eastbound Left/Through/Right			78.2	356	2%	8	364	1	7.7	0.2	9	0	63
2	**Mayfield Road & McLaughlin Road**													
	Southbound Left/Through/Right			78.2	74	3%	2	76	1	1.6	0.0	2	0	14
	Westbound Through/Right		280	78.2	538	3%	16	554	1	11.7	0.3	14	1	115
	Westbound Left	30		78.2	103	2%	2	105	1	2.2	0.0	3	0	21
	Northbound Right	25		78.2	90	0%		90	1	2.0	0.0	3	0	21
	Northbound Left/Through			78.2	185	1%	2	187	1	4.0	0.0	5	0	35
	Eastbound Through/Right		1340	78.2	416	2%	7	423	1	9.0	0.2	11	0	77
	Eastbound Left	30		78.2	13			13	1	0.3	0.0	0	0	0
3	**Mayfield Road & Van Kirk Drive**													
	Westbound Through		530	Minor	636	3%	21	657	1					
	Westbound Left	35		Street	168	0%		168	1					
	Northbound Right			Stop	88	5%	5	93	1					
	Northbound Left	40		Controlled	2	0%		2	1					
	Eastbound Right	30			18	0%		18	1					
	Eastbound Through		280		456	4%	21	477	1					
4	**Mayfield Road & Cresthaven Road/ Robertson Davies Drive**													
	Southbound Through/Right			60	43	0%		43	1	0.7	0.0	1	0	7
	Southbound Left	30		60	45	0%		45	1	0.8	0.0	1	0	7
	Westbound Right	30		60	81	1%	1	82	1	1.4	0.0	2	0	14
	Westbound Through		420	60	760	2%	14	774	1	12.7	0.2	15	0	105
	Westbound Left	30		60	84	1%	1	85	1	1.4	0.0	2	0	14
	Northbound Through/Right			60	65	0%		65	1	1.1	0.0	2	0	14
	Northbound Left	35		60	17	6%	1	18	1	0.3	0.0	0	0	0
	Eastbound Right	25		60	47	0%		47	1	0.8	0.0	1	0	7
	Eastbound Through		530	60	439	2%	11	450	1	7.3	0.2	9	0	63
	Eastbound Left	30		60	69	5%	4	73	1	1.2	0.1	2	0	14
5	**Mayfield Road & Highway 10**													
	Southbound Right	75		120	226	2%	5	231	1	7.5	0.2	9	0	63
	Southbound Through		130	120	347	3%	9	356	2	5.8	0.2	7	0	49
	Southbound Left	75		120	69	0%		69	2	1.2	0.0	2	0	14
	Westbound Right	55		120	73	6%	5	78	1	2.4	0.2	3	0	21
	Westbound Through			120	547	2%	10	557	2	9.1	0.2	11	0	77
	Westbound Left	50		120	146	5%	8	154	2	2.4	0.1	3	0	21
	Northbound Right	60		120	91	8%	8	99	1	3.0	0.3	4	0	28
	Northbound Through			120	546	1%	8	554	2	9.1	0.1	11	0	77
	Northbound Left	45		120	152	1%	1	153	1	5.1	0.0	6	0	42
	Eastbound Right	100		120	86	1%	1	87	1	2.9	0.0	4	0	28
	Eastbound Through		420	120	332	4%	14	346	2	5.5	0.2	7	0	49
	Eastbound Left	110		120	110	2%	2	112	1	3.7	0.1	5	0	35
6	**Mayfield Road & Colonel Bertram Road**													
	Southbound Left/Through/Right			120	106	0%		106	1	3.5	0.0	5	0	35
	Westbound Right	20		120	12	0%		12	1	0.4	0.0	1	0	7
	Westbound Through		160	120	672	3%	21	693	2	11.2	0.4	13	1	108
	Westbound Left	50		120	114	3%	3	117	1	3.8	0.1	5	0	35
	Northbound Through/Right			120	69	3%	2	71	1	2.3	0.1	3	0	21
	Northbound Left	20		120	46	0%		46	1	1.5	0.0	2	0	14
	Eastbound Right		130	120	15	0%		15	1	0.5	0.0	1	0	7
	Eastbound Through		130	120	383	4%	16	399	2	6.4	0.3	8	0	56
	Eastbound Left	30		120	42	0%		42	1	1.4	0.0	2	0	14
7	**Mayfield Road & Summer Valley Drive**													
	Southbound Right			120	67	0%		67	1	2.2	0.0	3	0	21
	Southbound Left	30		120	14	0%		14	1	0.5	0.0	1	0	7
	Westbound Through/Right		90	120	420	3%	15	435	1	14.0	0.5	16	1	129

Mayfield Road EA

Intersection Queue Summary - Peel Region Methodology

Existing Intersection Queue Lengths, Weekday PM Peak Hour

No.	Intersection Movement	Available Storage (m)	Link Distance (m)	Cycle Length (sec.)	Volumes Passenger Cars (veh)	Percent Heavies	Volumes Heavies (veh)	Volumes All Traffic	No. of Lanes	"m" Values		"X" Values		Queue Length (m)
	Westbound Through		90	120	380	4%	16	396	1	12.7	0.5	15	1	122
	Eastbound Through		160	120	427	3%	11	438	2	7.1	0.2	9	0	63
	Eastbound Left	65		120	43	0%		43	1	1.4	0.0	2	0	14
8	**Mayfield Road & Valley View Drive**													
	Westbound Through		405	Minor	-26		26		1					
	Westbound Through/Left		405	Street	0				1					
	Northbound Left/Right			Stop	0				1					
	Eastbound Through/Right		90	Controlled	0				1					
	Eastbound Through		90		-19		19		1					
9	**Mayfield Road & Inder Heights Drive**													
	Westbound Through		360	Minor	801	3%	26	827	2					
	Westbound Left	30		Street	19	0%		19	1					
	Northbound Right			Stop	6	0%		6	1					
	Northbound Left			Controlled	4	0%		4	1					
	Eastbound Through/Right		405		224	3%	7	231	1					
	Eastbound Through		405		214	3%	7	221	1					
10	**Mayfield Road & Kennedy Road**													
	Southbound Through/Right			120	40	5%	2	42	1	1.3	0.1	2	0	14
	Southbound Left	45		120	62	5%	3	65	1	2.1	0.1	3	0	21
	Westbound Through/Right		480	120	350	3%	12	362	1	11.7	0.4	14	1	115
	Westbound Through		480	120	343	3%	11	354	1	11.4	0.4	14	1	115
	Westbound Left	20		120	77	3%	2	79	1	2.6	0.1	3	0	21
	Northbound Right			120	61	2%	1	62	1	2.0	0.0	3	0	21
	Northbound Through			120	62	2%	1	63	1	2.1	0.0	3	0	21
	Northbound Left	45		120	111	2%	2	113	1	3.7	0.1	5	0	35
	Eastbound Right		360	120	60	5%	3	63	1	2.0	0.1	3	0	21
	Eastbound Through		360	120	361	3%	13	374	1	12.0	0.4	14	1	115
	Eastbound Left	25		120	10	0%		10	1	0.3	0.0	1	0	7
11	**Mayfield Road & Stonegate Drive**													
	Westbound Through		780	Minor	763	4%	28	791	1					
	Westbound Left	100		Street	105	0%		105	1					
	Northbound Left/Right			Stop	35	0%		35	1					
	Eastbound Through/Right		480	Controlled	485	3%	16	501	1					
12	**Mayfield Road & Heart Lake Road**													
	Southbound Right	20		132.9	23	0%		23	1	0.8	0.0	1	0	7
	Southbound Through			132.9	100	0%		100	1	3.7	0.0	5	0	35
	Southbound Left	20		132.9	149	1%	1	150	1	5.5	0.0	7	0	49
	Westbound Right	155		132.9	350	0%		350	1	12.9	0.0	15	0	105
	Westbound Through			132.9	734	3%	24	758	3	9.0	0.3	11	0	77
	Westbound Left	155		132.9	19	0%		19	1	0.7	0.0	1	0	7
	Northbound Right	40		132.9	8	0%		8	1	0.3	0.0	0	0	0
	Northbound Through			132.9	50	0%		50	1	1.8	0.0	3	0	21
	Northbound Left	105		132.9	115	0%		115	1	4.2	0.0	5	0	35
	Eastbound Right	175		132.9	25	4%	1	26	1	0.9	0.0	1	0	7
	Eastbound Through		780	132.9	449	4%	18	467	3	5.5	0.2	7	0	49
	Eastbound Left	115		132.9	21	0%		21	1	0.8	0.0	1	0	7

2021 Cap Network 4+6 Lanes AM

Mayfield Road EA

Intersection Queue Summary - Peel Region Methodology

2021 Capital Improvements, Intersection Queue Lengths, Weekday AM Peak Hour

No.	Intersection Movement	Available Storage (m)	Link Distance (m)	Cycle Length (sec.)	Volumes Passenger Cars (veh)	Percent Heavies	Volumes Heavies (veh)	Volumes All Traffic	No. of Lanes	"m" Values		"X" Values		Queue Length (m)
1	***Mayfield at Chinguacousy Road***													
	Southbound Left	30		88.2	26	10%	3	29	1	0.6	0.1	1	0	7
	Southbound Through/Right			88.2	115	10%	13	128	1	2.8	0.3	4	1	45
	Westbound Through/Right		320	88.2	285	10%	33	318	1	7.0	0.8	9	1	80
	Westbound Through		320	88.2	267	10%	30	297	1	6.5	0.7	8	1	73
	Westbound Left	55		88.2	141	11%	17	158	1	3.4	0.4	5	1	52
	Northbound Right			88.2	221	10%	25	245	1	5.4	0.6	7	1	66
	Northbound Through			88.2	77	10%	9	86	1	1.9	0.2	3	0	21
	Northbound Left	30		88.2	20	10%	2	22	1	0.5	0.1	1	0	7
	Eastbound Through/Right			88.2	247	10%	27	274	1	6.0	0.7	8	1	73
	Eastbound Through			88.2	204	10%	23	227	1	5.0	0.6	6	1	59
	Eastbound Left	30		88.2	2	10%	0	2	1	0.0	0.0	0	0	0
2	***Mayfield at New Collector Road 1***													
	Southbound Through/Right			Minor	24	10%	3	27	1					
	Southbound Left	30		Street	38	10%	4	42	1					
	Westbound Through/Right		795	Stop	317	10%	35	352	1					
	Westbound Through		795	Controlled	316	10%	35	351	1					
	Westbound Left	30			21	10%	2	23	1					
	Northbound Through/Right				73	10%	8	81	1					
	Northbound Left	30			44	10%	5	49	1					
	Eastbound Through/Right		320		330	10%	37	367	1					
	Eastbound Through		320		317	10%	35	352	1					
	Eastbound Left	30			5	10%	1	6	1					
3	***Mayfield at New Collector Road 2***													
	Westbound Through		125	Minor	596	10%	66	662	2					
	Westbound Left	30		Street	24	10%	3	27	1					
	Northbound Right			Stop	77	10%	9	85	1					
	Northbound Left	30		Controlled	58	10%	6	64	1					
	Eastbound Through/Right		795		374	10%	42	416	1					
	Eastbound Through		795		363	10%	40	403	1					
4	***Mayfield Road & McLaughlin Road***													
	Southbound Left			78.2	18	10%	2	20	1	0.4	0.0	1	0	7
	Southbound Through/Right			78.2	223	10%	25	248	1	4.8	0.5	6	1	59
	Westbound Through/Right		280	78.2	296	10%	34	330	1	6.4	0.7	8	1	73
	Westbound Through		280	78.2	284	10%	32	315	1	6.2	0.7	8	1	73
	Westbound Left	60		78.2	141	10%	16	157	1	3.1	0.3	4	1	45
	Northbound Right			78.2	244	10%	27	271	1	5.3	0.6	7	1	66
	Northbound Through			78.2	153	10%	17	170	1	3.3	0.4	4	1	45
	Northbound Left	30		78.2	31	11%	4	35	1	0.7	0.1	1	0	7
	Eastbound Through/Right		125	78.2	426	10%	47	473	1	9.2	1.0	11	2	111
	Eastbound Through		125	78.2	331	10%	37	368	1	7.2	0.8	9	1	80
	Eastbound Left	30		78.2	45	10%	5	50	1	1.0	0.1	1	0	7
5	***Mayfield Road & Van Kirk Drive***													
	Westbound Through		530	70	712	10%	79	791	2	6.9	0.8	9	1	80
	Westbound Left	50		70	40	10%	4	44	1	0.8	0.1	1	0	7
	Northbound Right			70	185	10%	21	205	1	3.6	0.4	5	1	52
	Northbound Left	40		70	10	10%	1	11	1	0.2	0.0	0	0	0
	Eastbound Right	30		70	6	15%	1	7	1	0.1	0.0	0	0	0
	Eastbound Through		280	70	920	10%	102	1022	2	8.9	1.0	11	1	94
6	***Mayfield Road & Cresthaven Road/ Robertson Davies Drive***													
	Southbound Through/Right			60	109	11%	13	122	1	1.8	0.2	3	0	21
	Southbound Left	30		60	122	10%	14	135	1	2.0	0.2	3	0	21
	Westbound Right	30		60	20	15%	3	23	1	0.3	0.1	1	0	7
	Westbound Through		420	60	623	10%	69	692	2	5.2	0.6	7	1	66
	Westbound Left	30		60	26	13%	4	30	1	0.4	0.1	1	0	7
	Northbound Through/Right			60	120	10%	14	134	1	2.0	0.2	3	0	21
	Northbound Left	35		60	39	10%	4	43	1	0.6	0.1	1	0	7
	Eastbound Right	25		60	5	15%	1	6	1	0.1	0.0	0	0	0
	Eastbound Through		530	60	1058	10%	118	1175	2	8.8	1.0	11	1	94

Mayfield Road EA

Intersection Queue Summary - Peel Region Methodology

2021 Capital Improvements, Intersection Queue Lengths, Weekday AM Peak Hour

No.	Intersection Movement	Available Storage (m)	Link Distance (m)	Cycle Length (sec.)	Volumes Passenger Cars (veh)	Percent Heavies	Volumes Heavies (veh)	Volumes All Traffic	No. of Lanes	"m" Values		"X" Values		Queue Length (m)
	Eastbound Left	30		60	39	15%	7	46	1	0.7	0.1	1	0	7
7	***Mayfield Road & Highway 10***													
	Southbound Right	135		120	168	10%	18	186	1	5.6	0.6	7	1	66
	Southbound Through			120	761	10%	85	845	2	12.7	1.4	15	2	139
	Southbound Left	75		120	113	10%	13	125	2	1.9	0.2	3	0	21
	Westbound Right	85		120	149	10%	17	166	1	5.0	0.6	6	1	59
	Westbound Through		130	120	396	11%	49	445	3	4.4	0.5	6	1	59
	Westbound Left	60		120	166	15%	29	195	2	2.8	0.5	4	1	45
	Northbound Right	105		120	238	14%	40	278	1	7.9	1.3	10	2	104
	Northbound Through			120	235	10%	26	261	2	3.9	0.4	5	1	52
	Northbound Left	85		120	103	10%	11	114	1	3.4	0.4	5	1	52
	Eastbound Right	120		120	313	10%	35	348	1	10.4	1.2	12	2	118
	Eastbound Through		420	120	749	10%	83	832	3	8.3	0.9	10	1	87
	Eastbound Left	120		120	301	10%	33	334	1	10.0	1.1	12	2	118
8	***Mayfield Road & Colonel Bertram Road***													
	Southbound Left/Through/Right			100	37	10%	4	41	1	1.0	0.1	2	0	14
	Westbound Right	20		100	3	10%	0	3	1	0.1	0.0	0	0	0
	Westbound Through		160	100	680	13%	100	780	3	6.3	0.9	8	1	73
	Westbound Left	50		100	65	10%	7	72	1	1.8	0.2	3	0	21
	Northbound Through/Right			100	62	10%	7	69	1	1.7	0.2	2	0	14
	Northbound Left	20		100	19	10%	2	21	1	0.5	0.1	1	0	7
	Eastbound Right	30		100	11	10%	1	12	1	0.3	0.0	1	0	7
	Eastbound Through		130	100	1141	10%	127	1268	3	10.6	1.2	13	2	125
	Eastbound Left	20		100	30	10%	3	33	1	0.8	0.1	1	0	7
9	***Mayfield Road & Summer Valley Drive***													
	Southbound Right			120	69	10%	8	77	1	2.3	0.3	3	0	21
	Southbound Left	30		120	43	10%	5	48	1	1.4	0.2	2	0	14
	Westbound Through/Right		90	120	235	14%	38	273	1	7.8	1.3	10	2	104
	Westbound Through		90	120	432	14%	70	502	2	7.2	1.2	9	2	97
	Eastbound Through		160	120	1183	10%	131	1314	3	13.1	1.5	15	2	139
	Eastbound Left	65		120	34	10%	4	38	1	1.1	0.1	2	0	14
10	***Mayfield Road & Valley View Drive***													
	Westbound Through			Minor	0	14%	0		2					
	Westbound Through/Left			Street	0	14%	0		1					
	Northbound Left/Right			Stop	0	10%	0		1					
	Eastbound Through/Right			Controlled	0	10%	0		1					
	Eastbound Through				0	10%	0		2					
11	***Mayfield Road & Inder Heights Drive/Snellview Boulevard***													
	Southbound Left/Through/Right			Minor	73	10%	8	81	1					
	Westbound Right	30		Street	22	10%	2	24	1					
	Westbound Through		360	Stop	664	12%	91	755	3					
	Westbound Left	30		Controlled	4	15%	1	5	1					
	Northbound Through/Right				14	10%	2	16	1					
	Northbound Left	15			9	10%	1	10	1					
	Eastbound Through/Right		405		414	10%	47	461	1					
	Eastbound Through		405		808	10%	90	898	2					
	Eastbound Left	30			3	10%	0	3	1					
12	***Mayfield Road & Kennedy Road***													
	Southbound Through/Right			140	340	12%	48	388	1	13.2	1.9	16	3	162
	Southbound Through			140	181	10%	20	201	1	7.0	0.8	9	1	80
	Southbound Left	45		140	68	15%	12	80	1	2.6	0.5	4	1	45
	Westbound Through/Right		480	140	180	10%	21	201	1	7.0	0.8	9	1	80
	Westbound Through		480	140	323	10%	36	359	2	6.3	0.7	8	1	73
	Westbound Left	75		140	96	10%	11	107	1	3.7	0.4	5	1	52
	Northbound Through/Right			140	305	12%	42	347	1	11.9	1.6	14	2	132
	Northbound Through			140	116	15%	21	137	1	4.5	0.8	6	1	59
	Northbound Left	70		140	50	14%	8	58	1	2.0	0.3	3	1	38
	Eastbound Through/Right		360	140	442	10%	49	491	1	17.2	1.9	20	3	190

Mayfield Road EA

Intersection Queue Summary - Peel Region Methodology

2021 Capital Improvements, Intersection Queue Lengths, Weekday AM Peak Hour

No.	Intersection Movement	Available Storage (m)	Link Distance (m)	Cycle Length (sec.)	Volumes Passenger Cars (veh)	Percent Heavies	Volumes Heavies (veh)	Volumes All Traffic	No. of Lanes	"m" Values		"X" Values		Queue Length (m)
	Eastbound Through		360	140	629	10%	70	699	2	12.2	1.4	14	2	132
	Eastbound Left	90		140	220	10%	24	244	1	8.5	0.9	10	1	87
13	***Mayfield Road & Stonegate Drive***													
	Westbound Through		780	Minor	592	10%	69	661	3					
	Westbound Left	100		Street	21	10%	2	23	1					
	Northbound Left/Right			Stop	109	10%	12	121	1					
	Eastbound Through/Right		480	Controlled	429	10%	50	479	1					
	Eastbound Through		480		773	10%	86	859	2					
14	***Mayfield Road & Heart Lake Road***													
	Southbound Through/Right			140	240	10%	27	267	1	9.3	1.0	11	2	111
	Southbound Left	130		140	554	10%	62	616	2	10.8	1.2	13	2	125
	Westbound Right	195		140	139	10%	15	154	1	5.4	0.6	7	1	66
	Westbound Through			140	546	11%	65	611	3	7.1	0.8	9	1	80
	Westbound Left	155		140	18	10%	2	20	1	0.7	0.1	1	0	7
	Northbound Right	40		140	11	10%	1	12	1	0.4	0.0	1	0	7
	Northbound Through			140	281	10%	31	312	1	10.9	1.2	13	2	125
	Northbound Left	105		140	33	12%	5	38	1	1.3	0.2	2	0	14
	Eastbound Right	175		140	103	10%	11	114	1	4.0	0.4	5	1	52
	Eastbound Through		780	140	1145	10%	127	1272	3	14.8	1.6	17	2	153
	Eastbound Left	115		140	15	10%	2	17	1	0.6	0.1	1	0	7

2021 Cap Network 4+6 Lanes PM

Mayfield Road EA

Intersection Queue Summary - Peel Region Methodology

2021 Capital Improvements, Intersection Queue Lengths, Weekday PM Peak Hour

No.	Intersection Movement	Available Storage (m)	Link Distance (m)	Cycle Length (sec.)	Volumes Passenger Cars (veh)	Percent Heavies	Volumes Heavies (veh)	Volumes All Traffic	No. of Lanes	"m" Values		"X" Values		Queue Length (m)
1	***Mayfield at Chinguacousy Road***													
	Southbound Left			78.2	13	10%	1	14	1	0.3	0.0	0	0	0
	Southbound Through/Right			78.2	53	10%	6	59	1	1.2	0.1	2	0	14
	Westbound Through/Right		320	78.2	248	10%	28	275	1	5.4	0.6	7	1	66
	Westbound Through		320	78.2	199	10%	22	221	1	4.3	0.5	6	1	59
	Westbound Left	55		78.2	318	10%	35	353	1	6.9	0.8	9	1	80
	Northbound Right			78.2	160	10%	18	178	1	3.5	0.4	5	1	52
	Northbound Through			78.2	55	10%	6	61	1	1.2	0.1	2	0	14
	Northbound Left	30		78.2	89	10%	10	99	1	1.9	0.2	3	0	21
	Eastbound Through/Right			78.2	291	10%	32	323	1	6.3	0.7	8	1	73
	Eastbound Through			78.2	241	10%	27	268	1	5.2	0.6	7	1	66
	Eastbound Left	30		78.2	5	15%	1	6	1	0.1	0.0	0	0	0
2	***Mayfield at New Collector Road 1***													
	Southbound Through/Right			Minor	21	10%	2	23	1					
	Southbound Left	30		Street	22	10%	2	24	1					
	Westbound Through/Right		795	Stop	404	10%	45	449	1					
	Westbound Through		795	Controlled	362	10%	40	402	1					
	Westbound Left	30			60	10%	7	67	1					
	Northbound Through/Right				42	10%	5	47	1					
	Northbound Left	30			29	10%	3	32	1					
	Eastbound Through/Right		320		338	10%	38	375	1					
	Eastbound Through		320		296	10%	33	329	1					
	Eastbound Left	30			23	10%	3	25	1					
3	***Mayfield at New Collector Road 2***													
	Westbound Through		125	Minor	394	10%	44	438	2					
	Westbound Left	30		Street	70	10%	8	78	1					
	Northbound Right			Stop	35	10%	4	39	1					
	Northbound Left	30		Controlled	38	10%	4	42	1					
	Eastbound Through/Right		795		345	10%	38	383	1					
	Eastbound Through		795		305	10%	34	339	1					
4	***Mayfield Road & McLaughlin Road***													
	Southbound Left			78.2	8	10%	1	9	1	0.2	0.0	0	0	0
	Southbound Through/Right			78.2	97	10%	11	108	1	2.1	0.2	3	0	21
	Westbound Through/Right		280	78.2	394	10%	44	438	1	8.6	1.0	10	1	87
	Westbound Through		280	78.2	374	10%	42	415	1	8.1	0.9	10	1	87
	Westbound Left	60		78.2	224	10%	25	249	1	4.9	0.5	6	1	59
	Northbound Right			78.2	105	10%	12	117	1	2.3	0.3	3	0	21
	Northbound Through			78.2	149	10%	17	165	1	3.2	0.4	4	1	45
	Northbound Left	30		78.2	83	10%	9	92	1	1.8	0.2	2	0	14
	Eastbound Through/Right		125	78.2	324	10%	36	360	1	7.0	0.8	9	1	80
	Eastbound Through		125	78.2	293	10%	33	326	1	6.4	0.7	8	1	73
	Eastbound Left	30		78.2	28	10%	3	31	1	0.6	0.1	1	0	7
5	***Mayfield Road & Van Kirk Drive***													
	Westbound Through		530	70	991	10%	110	1101	2	9.6	1.1	12	2	118
	Westbound Left	50		70	151	10%	17	168	1	2.9	0.3	4	1	45
	Northbound Right			70	84	10%	9	93	1	1.6	0.2	2	0	14
	Northbound Left	40		70	2	10%	0	2	1	0.0	0.0	0	0	0
	Eastbound Right	30		70	16	10%	2	18	1	0.3	0.0	1	0	7
	Eastbound Through		280	70	683	10%	76	759	2	6.6	0.7	8	1	73
6	***Mayfield Road & Cresthaven Road/ Robertson Davies Drive***													
	Southbound Through/Right			60	55	10%	6	61	1	0.9	0.1	1	0	7
	Southbound Left	30		60	62	10%	7	69	1	1.0	0.1	2	0	14
	Westbound Right	30		60	113	10%	13	126	1	1.9	0.2	3	0	21
	Westbound Through		420	60	1080	10%	120	1200	2	9.0	1.0	11	2	111
	Westbound Left	30		60	77	10%	9	85	1	1.3	0.1	2	0	14
	Northbound Through/Right			60	59	10%	7	65	1	1.0	0.1	1	0	7
	Northbound Left	35		60	16	10%	2	18	1	0.3	0.0	0	0	0
	Eastbound Right	25		60	42	10%	5	47	1	0.7	0.1	1	0	7
	Eastbound Through		530	60	624	10%	69	693	2	5.2	0.6	7	1	66

Mayfield Road EA

Intersection Queue Summary - Peel Region Methodology

2021 Capital Improvements, Intersection Queue Lengths, Weekday PM Peak Hour

No.	Intersection Movement	Available Storage (m)	Link Distance (m)	Cycle Length (sec.)	Volumes Passenger Cars (veh)	Percent Heavies	Volumes Heavies (veh)	Volumes All Traffic	No. of Lanes	"m" Values		"X" Values		Queue Length (m)
	Eastbound Left	30		60	101	10%	11	112	1	1.7	0.2	2	0	14
7	***Mayfield Road & Highway 10***													
	Southbound Right	135		130	320	10%	36	356	1	11.6	1.3	14	2	132
	Southbound Through			130	399	10%	44	443	2	7.2	0.8	9	1	80
	Southbound Left	75		130	95	10%	11	106	2	1.7	0.2	2	0	14
	Westbound Right	85		130	198	10%	22	220	1	7.2	0.8	9	1	80
	Westbound Through		130	130	737	10%	82	819	3	8.9	1.0	11	1	94
	Westbound Left	60		130	258	10%	29	287	2	4.7	0.5	6	1	59
	Northbound Right	105		130	137	10%	15	152	1	4.9	0.5	6	1	59
	Northbound Through			130	867	10%	96	963	2	15.6	1.7	18	2	160
	Northbound Left	85		130	212	10%	24	236	1	7.7	0.9	9	1	80
	Eastbound Right	120		130	121	10%	13	134	1	4.4	0.5	6	1	59
	Eastbound Through		420	130	480	10%	53	533	3	5.8	0.6	7	1	66
	Eastbound Left	120		130	155	10%	17	172	1	5.6	0.6	7	1	66
8	***Mayfield Road & Colonel Bertram Road***													
	Southbound Left/Through/Right			120	95	10%	11	106	1	3.2	0.4	4	1	45
	Westbound Right	20		120	11	10%	1	12	1	0.4	0.0	1	0	7
	Westbound Through		160	120	1140	10%	127	1267	3	12.7	1.4	15	2	139
	Westbound Left	50		120	105	10%	12	117	1	3.5	0.4	5	1	52
	Northbound Through/Right			120	64	10%	7	71	1	2.1	0.2	3	0	21
	Northbound Left	20		120	41	10%	5	46	1	1.4	0.2	2	0	14
	Eastbound Right	30		120	14	10%	2	15	1	0.5	0.1	1	0	7
	Eastbound Through		130	120	731	10%	81	812	3	8.1	0.9	10	1	87
	Eastbound Left	20		120	38	10%	4	42	1	1.3	0.1	2	0	14
9	***Mayfield Road & Summer Valley Drive***													
	Southbound Right			120	93	10%	10	103	1	3.1	0.3	4	1	45
	Southbound Left	30		120	20	10%	2	22	1	0.7	0.1	1	0	7
	Westbound Through/Right		90	120	472	10%	52	524	1	15.7	1.7	18	2	160
	Westbound Through		90	120	837	10%	93	930	2	14.0	1.6	16	2	146
	Eastbound Through		160	120	745	10%	83	828	3	8.3	0.9	10	1	87
	Eastbound Left	65		120	59	10%	7	66	1	2.0	0.2	3	0	21
10	***Mayfield Road & Valley View Drive***													
	Westbound Through			Minor	0	10%	0		2					
	Westbound Through/Left			Street	0	10%	0		1					
	Northbound Left/Right			Stop	0	10%	0		1					
	Eastbound Through/Right			Controlled	0	10%	0		1					
	Eastbound Through				0	10%	0		2					
11	***Mayfield Road & Inder Heights Drive/Snellview Boulevard***													
	Southbound Left/Through/Right			Minor	49	10%	5	54	1					
	Westbound Right	30		Street	72	10%	8	80	1					
	Westbound Through		360	Stop	1298	10%	144	1442	3					
	Westbound Left	30		Controlled	17	10%	2	19	1					
	Northbound Through/Right				5	10%	1	6	1					
	Northbound Left	15			4	10%	0	4	1					
	Eastbound Through/Right		405		257	10%	29	286	1					
	Eastbound Through		405		496	10%	55	551	2					
	Eastbound Left	30			12	10%	1	13	1					
12	***Mayfield Road & Kennedy Road***													
	Southbound Through/Right			120	414	10%	46	460	1	13.8	1.5	16	2	146
	Southbound Through			120	165	10%	18	183	1	5.5	0.6	7	1	66
	Southbound Left	45		120	90	10%	10	100	1	3.0	0.3	4	1	45
	Westbound Through/Right		480	120	412	11%	49	461	1	13.7	1.6	16	2	146
	Westbound Through		480	120	654	10%	73	727	2	10.9	1.2	13	2	125
	Westbound Left	75		120	192	10%	21	213	1	6.4	0.7	8	1	73
	Northbound Through/Right			120	309	10%	34	343	1	10.3	1.1	12	2	118
	Northbound Through			120	200	10%	22	222	1	6.7	0.7	8	1	73
	Northbound Left	70		120	157	10%	17	174	1	5.2	0.6	7	1	66
	Eastbound Through/Right		360	120	257	10%	29	286	1	8.6	1.0	10	1	87

Mayfield Road EA

Intersection Queue Summary - Peel Region Methodology

2021 Capital Improvements, Intersection Queue Lengths, Weekday PM Peak Hour

No.	Intersection Movement	Available Storage (m)	Link Distance (m)	Cycle Length (sec.)	Volumes Passenger Cars (veh)	Percent Heavies	Volumes Heavies (veh)	Volumes All Traffic	No. of Lanes	"m" Values		"X" Values		Queue Length (m)
	Eastbound Through		360	120	346	10%	38	384	2	5.8	0.6	7	1	66
	Eastbound Left	90		120	187	10%	21	208	1	6.2	0.7	8	1	73
13	***Mayfield Road & Stonegate Drive***													
	Westbound Through		780	Minor	1257	10%	140	1397	3					
	Westbound Left	100		Street	95	10%	11	105	1					
	Northbound Left/Right			Stop	32	10%	4	35	1					
	Eastbound Through/Right		480	Controlled	468	10%	52	520	1					
	Eastbound Through		480		249	10%	28	277	2					
14	***Mayfield Road & Heart Lake Road***													
	Southbound Through/Right			130	550	10%	61	611	1	19.9	2.2	23	3	211
	Southbound Left	130		130	208	10%	23	231	2	3.8	0.4	5	1	52
	Westbound Right	195		130	485	10%	54	539	1	17.5	1.9	20	3	190
	Westbound Through			130	1161	10%	129	1290	3	14.0	1.6	16	2	146
	Westbound Left	155		130	26	10%	3	29	1	0.9	0.1	1	0	7
	Northbound Right	40		130	11	10%	1	12	1	0.4	0.0	1	0	7
	Northbound Through			130	523	10%	58	581	1	18.9	2.1	22	3	204
	Northbound Left	105		130	159	10%	18	177	1	5.8	0.6	7	1	66
	Eastbound Right	175		130	36	10%	4	40	1	1.3	0.1	2	0	14
	Eastbound Through		780	130	664	10%	74	738	3	8.0	0.9	10	1	87
	Eastbound Left	115		130	29	10%	3	32	1	1.0	0.1	2	0	14

2021 Do Nothing AM

Mayfield Road EA

Intersection Queue Summary - Peel Region Methodology

2021 Do Nothing Intersection Queue Lengths, Weekday AM Peak Hour

No.	Intersection Movement	Available Storage (m)	Link Distance (m)	Cycle Length (sec.)	Volumes Passenger Cars (veh)	Percent Heavies	Volumes Heavies (veh)	Volumes All Traffic	No. of Lanes	"m" Values		"X" Values		Queue Length (m)
1	***Mayfield at Chinguacousy Road***													
	Southbound Left/Through/Right			88.2	138	10%	15	153	1	3.4	0.4	4	1	45
	Westbound Left/Through/Right		320	88.2	694	10%	79	773	1	17.0	1.9	20	3	190
	Northbound Right			88.2	221	10%	25	245	1	5.4	0.6	7	1	66
	Northbound Through			88.2	77	10%	9	86	1	1.9	0.2	3	0	21
	Northbound Left	30		88.2	20	10%	2	22	1	0.5	0.1	1	0	7
	Eastbound Left/Through/Right			88.2	453	10%	50	503	1	11.1	1.2	13	2	125
2	***Mayfield at New Collector Road 1***													
	Southbound Through/Right			Minor	24	10%	3	27	1					
	Southbound Left	30		Street	38	10%	4	42	1					
	Westbound Left/Through/Right		795	Stop	653	10%	73	726	1					
	Northbound Through/Right			Controlled	73	10%	8	81	1					
	Northbound Left	30			44	10%	5	49	1					
	Eastbound Left/Through/Right		320		653	10%	73	725	1					
3	***Mayfield at New Collector Road 2***													
	Westbound Left/Through		125	Minor	620	10%	69	689	1					
	Northbound Right			Street	77	10%	9	85	1					
	Northbound Left	30		Stop	58	10%	6	64	1					
	Eastbound Through/Right		795	Controlled	737	10%	82	819	1					
4	***Mayfield Road & McLaughlin Road***													
	Southbound Left/Through/Right			78.2	242	10%	27	269	1	5.3	0.6	7	1	66
	Westbound Through/Right		280	78.2	721	10%	81	802	1	15.7	1.8	18	2	160
	Westbound Left	30		78.2	141	10%	16	157	1	3.1	0.3	4	1	45
	Northbound Right			78.2	244	10%	27	271	1	5.3	0.6	7	1	66
	Northbound Through			78.2	153	10%	17	170	1	3.3	0.4	4	1	45
	Northbound Left	30		78.2	31	11%	4	35	1	0.7	0.1	1	0	7
	Eastbound Through/Right		125	78.2	757	10%	84	841	1	16.4	1.8	19	3	183
	Eastbound Left	30		78.2	45	10%	5	50	1	1.0	0.1	1	0	7
5	***Mayfield Road & Van Kirk Drive***													
	Westbound Through		530	Minor	712	10%	79	791	1					
	Westbound Left	35		Street	40	10%	4	44	1					
	Northbound Right			Stop	185	10%	21	205	1					
	Northbound Left	40		Controlled	10	10%	1	11	1					
	Eastbound Right	30			6	15%	1	7	1					
	Eastbound Through		280		920	10%	102	1022	1					
6	***Mayfield Road & Cresthaven Road/ Robertson Davies Drive***													
	Southbound Through/Right			60	109	11%	13	122	1	1.8	0.2	3	0	21
	Southbound Left	30		60	122	10%	14	135	1	2.0	0.2	3	0	21
	Westbound Right	30		60	20	15%	3	23	1	0.3	0.1	1	0	7
	Westbound Through		420	60	620	10%	72	692	1	10.3	1.2	12	2	118
	Westbound Left	30		60	26	13%	4	30	1	0.4	0.1	1	0	7
	Northbound Through/Right			60	120	10%	14	134	1	2.0	0.2	3	0	21
	Northbound Left	35		60	39	10%	4	43	1	0.6	0.1	1	0	7
	Eastbound Right	25		60	5	15%	1	6	1	0.1	0.0	0	0	0
	Eastbound Through		530	60	1058	10%	118	1175	1	17.6	2.0	20	3	190
	Eastbound Left	30		60	39	15%	7	46	1	0.7	0.1	1	0	7
7	***Mayfield Road & Highway 10***													
	Southbound Right	75		120	168	10%	18	186	1	5.6	0.6	7	1	66
	Southbound Through			120	761	10%	85	845	2	12.7	1.4	15	2	139
	Southbound Left	75		120	113	10%	13	125	2	1.9	0.2	3	0	21
	Westbound Right	55		120	149	10%	17	166	1	5.0	0.6	6	1	59
	Westbound Through		130	120	398	11%	47	445	2	6.6	0.8	8	1	73
	Westbound Left	50		120	166	15%	29	195	2	2.8	0.5	4	1	45
	Northbound Right	60		120	239	14%	39	278	1	8.0	1.3	10	2	104
	Northbound Through			120	235	10%	26	261	2	3.9	0.4	5	1	52
	Northbound Left	45		120	103	10%	11	114	1	3.4	0.4	5	1	52
	Eastbound Right	100		120	313	10%	35	348	1	10.4	1.2	12	2	118
	Eastbound Through		420	120	749	10%	83	832	2	12.5	1.4	15	2	139
	Eastbound Left	110		120	301	10%	33	334	1	10.0	1.1	12	2	118

Mayfield Road EA

Intersection Queue Summary - Peel Region Methodology

2021 Do Nothing Intersection Queue Lengths, Weekday AM Peak Hour

No.	Intersection Movement	Available Storage (m)	Link Distance (m)	Cycle Length (sec.)	Volumes Passenger Cars (veh)	Percent Heavies	Volumes Heavies (veh)	Volumes All Traffic	No. of Lanes	"m" Values		"X" Values		Queue Length (m)
8	***Mayfield Road & Colonel Bertram Road***													
	Southbound Left/Through/Right			120	37	10%	4	41	1	1.2	0.1	2	0	14
	Westbound Right	20		120	3	10%	0	3	1	0.1	0.0	0	0	0
	Westbound Through		160	120	680	13%	100	780	2	11.3	1.7	13	2	125
	Westbound Left	50		120	65	10%	7	72	1	2.2	0.2	3	0	21
	Northbound Through/Right			120	62	10%	7	69	1	2.1	0.2	3	0	21
	Northbound Left	20		120	19	10%	2	21	1	0.6	0.1	1	0	7
	Eastbound Right		130	120	11	10%	1	12	1	0.4	0.0	1	0	7
	Eastbound Through		130	120	1141	10%	127	1268	2	19.0	2.1	22	3	204
	Eastbound Left	30		120	30	10%	3	33	1	1.0	0.1	1	0	7
9	***Mayfield Road & Summer Valley Drive***													
	Southbound Right			120	69	10%	8	77	1	2.3	0.3	3	0	21
	Southbound Left	30		120	43	10%	5	48	1	1.4	0.2	2	0	14
	Westbound Through/Right		90	120	342	14%	56	398	1	11.4	1.9	13	3	141
	Westbound Through		90	120	322	14%	55	377	1	10.7	1.8	13	3	141
	Eastbound Through		160	120	1183	10%	131	1314	2	19.7	2.2	23	3	211
	Eastbound Left	65		120	34	10%	4	38	1	1.1	0.1	2	0	14
10	***Mayfield Road & Valley View Drive***													
	Westbound Through		405	Minor	0	14%	0		1					
	Westbound Through/Left		405	Street	0	14%	0		1					
	Northbound Left/Right			Stop	0	10%	0		1					
	Eastbound Through/Right		90	Controlled	0	10%	0		1					
	Eastbound Through		90		0	10%	0		1					
11	***Mayfield Road & Inder Heights Drive/Snellview Boulevard***													
	Southbound Left/Through/Right			Minor	73	10%	8	81	1					
	Westbound Right	30		Street	22	10%	2	24	1					
	Westbound Through		360	Stop	661	12%	94	755	2					
	Westbound Left	30		Controlled	4	15%	1	5	1					
	Northbound Through/Right				14	10%	2	16	1					
	Northbound Left	15			9	10%	1	10	1					
	Eastbound Through/Right		405		617	10%	69	685	1					
	Eastbound Through		405		607	10%	67	674	1					
	Eastbound Left	30			3	10%	0	3	1					
12	***Mayfield Road & Kennedy Road***													
	Southbound Through/Right			140	340	12%	48	388	1	13.2	1.9	16	3	162
	Southbound Through			140	181	10%	20	201	1	7.0	0.8	9	1	80
	Southbound Left	45		140	68	15%	12	80	1	2.6	0.5	4	1	45
	Westbound Through/Right		480	140	261	10%	30	291	1	10.2	1.2	12	2	118
	Westbound Through		480	140	242	10%	27	269	1	9.4	1.1	11	2	111
	Westbound Left	20		140	96	10%	11	107	1	3.7	0.4	5	1	52
	Northbound Through/Right			140	305	12%	42	347	1	11.9	1.6	14	2	132
	Northbound Through			140	116	15%	21	137	1	4.5	0.8	6	1	59
	Northbound Left	45		140	50	14%	8	58	1	2.0	0.3	3	1	38
	Eastbound Through/Right		360	140	599	10%	67	666	1	23.3	2.6	26	3	232
	Eastbound Through		360	140	472	10%	52	524	1	18.3	2.0	21	3	197
	Eastbound Left	25		140	220	10%	24	244	1	8.5	0.9	10	1	87
13	***Mayfield Road & Stonegate Drive***													
	Westbound Through		780	Minor	592	10%	69	661	2					
	Westbound Left	100		Street	21	10%	2	23	1					
	Northbound Left/Right			Stop	109	10%	12	121	1					
	Eastbound Through/Right		480	Controlled	622	10%	72	694	1					
	Eastbound Through		480		580	10%	64	644	1					
14	***Mayfield Road & Heart Lake Road***													
	Southbound Right	20		140	32	10%	4	35	1	1.2	0.1	2	0	14
	Southbound Through			140	209	10%	23	232	1	8.1	0.9	10	1	87
	Southbound Left	20		140	554	10%	62	616	1	21.6	2.4	25	3	225
	Westbound Right	155		140	139	10%	15	154	1	5.4	0.6	7	1	66
	Westbound Through			140	546	11%	65	611	3	7.1	0.8	9	1	80

Mayfield Road EA

Intersection Queue Summary - Peel Region Methodology

2021 Do Nothing Intersection Queue Lengths, Weekday AM Peak Hour

No.	Intersection Movement	Available Storage (m)	Link Distance (m)	Cycle Length (sec.)	Volumes Passenger Cars (veh)	Percent Heavies	Volumes Heavies (veh)	Volumes All Traffic	No. of Lanes	"m" Values		"X" Values		Queue Length (m)
	Westbound Left	155		140	18	10%	2	20	1	0.7	0.1	1	0	7
	Northbound Right	40		140	12	10%	1	12	1	0.5	0.0	1	0	7
	Northbound Through			140	312	10%	31	312	1	12.1	1.2	14	2	132
	Northbound Left	105		140	33	12%	5	38	1	1.3	0.2	2	0	14
	Eastbound Right	175		140	103	10%	11	114	1	4.0	0.4	5	1	52
	Eastbound Through		780	140	1145	10%	127	1272	3	14.8	1.6	17	2	153
	Eastbound Left	115		140	15	10%	2	17	1	0.6	0.1	1	0	7

2021 Do Nothing PM

Mayfield Road EA

Intersection Queue Summary - Peel Region Methodology

2021 Do Nothing Intersection Queue Lengths, Weekday PM Peak Hour

No.	Intersection Movement	Available Storage (m)	Link Distance (m)	Cycle Length (sec.)	Volumes Passenger Cars (veh)	Percent Heavies	Volumes Heavies (veh)	Volumes All Traffic	No. of Lanes	"m" Values		"X" Values		Queue Length (m)
1	***Mayfield at Chinguacousy Road***													
	Southbound Left/Through/Right			78.2	66	10%	7	73	1	1.4	0.2	2	0	14
	Westbound Left/Through/Right		320	78.2	764	10%	85	849	1	16.6	1.8	19	3	183
	Northbound Right			78.2	160	10%	18	178	1	3.5	0.4	5	1	52
	Northbound Through			78.2	55	10%	6	61	1	1.2	0.1	2	0	14
	Northbound Left	30		78.2	89	10%	10	99	1	1.9	0.2	3	0	21
	Eastbound Left/Through/Right			78.2	538	10%	60	598	1	11.7	1.3	14	2	132
2	***Mayfield at New Collector Road 1***													
	Southbound Through/Right			Minor	21	10%	2	23	1					
	Southbound Left	30		Street	22	10%	2	24	1					
	Westbound Left/Through/Right		795	Stop	826	10%	92	918	1					
	Northbound Through/Right			Controlled	42	10%	5	47	1					
	Northbound Left	30			29	10%	3	32	1					
	Eastbound Left/Through/Right		320		656	10%	73	729	1					
3	***Mayfield at New Collector Road 2***													
	Westbound Left/Through		125	Minor	859	10%	95	954	1					
	Northbound Right			Street	35	10%	4	39	1					
	Northbound Left	30		Stop	38	10%	4	42	1					
	Eastbound Through/Right		795	Controlled	650	10%	72	722	1					
4	***Mayfield Road & McLaughlin Road***													
	Southbound Left/Through/Right			78.2	105	10%	12	117	1	2.3	0.3	3	0	21
	Westbound Through/Right		280	78.2	769	10%	85	854	1	16.7	1.9	19	3	183
	Westbound Left	30		78.2	224	10%	25	249	1	4.9	0.5	6	1	59
	Northbound Right			78.2	105	10%	12	117	1	2.3	0.3	3	0	21
	Northbound Through			78.2	149	10%	17	165	1	3.2	0.4	4	1	45
	Northbound Left	30		78.2	83	10%	9	92	1	1.8	0.2	2	0	14
	Eastbound Through/Right		125	78.2	617	10%	69	686	1	13.4	1.5	16	2	146
	Eastbound Left	30		78.2	28	10%	3	31	1	0.6	0.1	1	0	7
5	***Mayfield Road & Van Kirk Drive***													
	Westbound Through		530	Minor	991	10%	110	1101	1			0	0	
	Westbound Left	35		Street	151	10%	17	168	1			0	0	
	Northbound Right			Stop	84	10%	9	93	1			0	0	
	Northbound Left	40		Controlled	2	10%	0	2	1			0	0	
	Eastbound Right	30			16	10%	2	18	1			0	0	
	Eastbound Through		280		683	10%	76	759	1			0	0	
6	***Mayfield Road & Cresthaven Road/ Robertson Davies Drive***													
	Southbound Through/Right			60	55	10%	6	61	1	0.9	0.1	1	0	7
	Southbound Left	30		60	62	10%	7	69	1	1.0	0.1	2	0	14
	Westbound Right	30		60	113	10%	13	126	1	1.9	0.2	3	0	21
	Westbound Through		420	60	1080	10%	120	1200	1	18.0	2.0	21	3	197
	Westbound Left	30		60	77	10%	9	85	1	1.3	0.1	2	0	14
	Northbound Through/Right			60	59	10%	7	65	1	1.0	0.1	1	0	7
	Northbound Left	35		60	16	10%	2	18	1	0.3	0.0	0	0	0
	Eastbound Right	25		60	42	10%	5	47	1	0.7	0.1	1	0	7
	Eastbound Through		530	60	624	10%	69	693	1	10.4	1.2	12	2	118
	Eastbound Left	30		60	101	10%	11	112	1	1.7	0.2	2	0	14
7	***Mayfield Road & Highway 10***													
	Southbound Right	75		120	320	10%	36	356	1	10.7	1.2	13	2	125
	Southbound Through			120	399	10%	44	443	2	6.6	0.7	8	1	73
	Southbound Left	75		120	95	10%	11	106	2	1.6	0.2	2	0	14
	Westbound Right	55		120	198	10%	22	220	1	6.6	0.7	8	1	73
	Westbound Through		130	120	737	10%	82	819	2	12.3	1.4	14	2	132
	Westbound Left	50		120	258	10%	29	287	2	4.3	0.5	6	1	59
	Northbound Right	60		120	137	10%	15	152	1	4.6	0.5	6	1	59
	Northbound Through			120	867	10%	96	963	2	14.4	1.6	17	2	153
	Northbound Left	45		120	212	10%	24	236	1	7.1	0.8	9	1	80
	Eastbound Right	100		120	121	10%	13	134	1	4.0	0.4	5	1	52
	Eastbound Through		420	120	480	10%	53	533	2	8.0	0.9	10	1	87
	Eastbound Left	110		120	155	10%	17	172	1	5.2	0.6	7	1	66

Mayfield Road EA

Intersection Queue Summary - Peel Region Methodology

2021 Do Nothing Intersection Queue Lengths, Weekday PM Peak Hour

No.	Intersection Movement	Available Storage (m)	Link Distance (m)	Cycle Length (sec.)	Volumes Passenger Cars (veh)	Percent Heavies	Volumes Heavies (veh)	Volumes All Traffic	No. of Lanes	"m" Values		"X" Values		Queue Length (m)
8	***Mayfield Road & Colonel Bertram Road***													
	Southbound Left/Through/Right			120	95	10%	11	106	1	3.2	0.4	4	1	45
	Westbound Right	20		120	11	10%	1	12	1	0.4	0.0	1	0	7
	Westbound Through		160	120	1140	10%	127	1267	2	19.0	2.1	22	3	204
	Westbound Left	50		120	105	10%	12	117	1	3.5	0.4	5	1	52
	Northbound Through/Right			120	64	10%	7	71	1	2.1	0.2	3	0	21
	Northbound Left	20		120	41	10%	5	46	1	1.4	0.2	2	0	14
	Eastbound Right		130	120	14	10%	2	15	1	0.5	0.1	1	0	7
	Eastbound Through		130	120	731	10%	81	812	2	12.2	1.4	14	2	132
	Eastbound Left	30		120	38	10%	4	42	1	1.3	0.1	2	0	14
9	***Mayfield Road & Summer Valley Drive***													
	Southbound Right			120	93	10%	10	103	1	3.1	0.3	4	1	45
	Southbound Left	30		120	20	10%	2	22	1	0.7	0.1	1	0	7
	Westbound Through/Right		90	120	681	10%	76	757	1	22.7	2.5	26	3	232
	Westbound Through		90	120	627	10%	70	697	1	20.9	2.3	24	3	218
	Eastbound Through		160	120	745	10%	83	828	2	12.4	1.4	15	2	139
	Eastbound Left	65		120	59	10%	7	66	1	2.0	0.2	3	0	21
10	***Mayfield Road & Valley View Drive***											0	0	
	Westbound Through		405	Minor	0	10%	0		1			0	0	
	Westbound Through/Left		405	Street	0	10%	0		1			0	0	
	Northbound Left/Right			Stop	0	10%	0		1			0	0	
	Eastbound Through/Right		90	Controlled	0	10%	0		1			0	0	
	Eastbound Through		90		0	10%	0		1			0	0	
11	***Mayfield Road & Inder Heights Drive/Snellview Boulevard***													
	Southbound Left/Through/Right			Minor	49	10%	5	54	1					
	Westbound Right	30		Street	72	10%	8	80	1					
	Westbound Through		360	Stop	1298	10%	144	1442	2					
	Westbound Left	30		Controlled	17	10%	2	19	1					
	Northbound Through/Right				5	10%	1	6	1					
	Northbound Left	15			4	10%	0	4	1					
	Eastbound Through/Right		405		382	10%	42	424	1					
	Eastbound Through		405		372	10%	41	413	1					
	Eastbound Left	30			12	10%	1	13	1					
12	***Mayfield Road & Kennedy Road***													
	Southbound Through/Right			120	414	10%	46	460	1	13.8	1.5	16	2	146
	Southbound Through			120	165	10%	18	183	1	5.5	0.6	7	1	66
	Southbound Left	45		120	90	10%	10	100	1	3.0	0.3	4	1	45
	Westbound Through/Right		480	120	576	10%	67	643	1	19.2	2.2	22	3	204
	Westbound Through		480	120	491	10%	55	545	1	16.4	1.8	19	3	183
	Westbound Left	20		120	192	10%	21	213	1	6.4	0.7	8	1	73
	Northbound Through/Right			120	309	10%	34	343	1	10.3	1.1	12	2	118
	Northbound Through			120	200	10%	22	222	1	6.7	0.7	8	1	73
	Northbound Left	45		120	157	10%	17	174	1	5.2	0.6	7	1	66
	Eastbound Through/Right		360	120	344	10%	38	382	1	11.5	1.3	14	2	132
	Eastbound Through		360	120	259	10%	29	288	1	8.6	1.0	10	1	87
	Eastbound Left	25		120	187	10%	21	208	1	6.2	0.7	8	1	73
13	***Mayfield Road & Stonegate Drive***													
	Westbound Through		780	Minor	1257	10%	140	1397	2					
	Westbound Left	100		Street	95	10%	11	105	1					
	Northbound Left/Right			Stop	32	10%	4	35	1					
	Eastbound Through/Right		480	Controlled	366	10%	41	407	1					
	Eastbound Through		480		351	10%	39	390	1					
14	***Mayfield Road & Heart Lake Road***													
	Southbound Right	20		120	32	10%	4	35	1	1.1	0.1	2	0	14
	Southbound Through			120	518	10%	58	576	1	17.3	1.9	20	3	190
	Southbound Left	20		120	208	10%	23	231	1	6.9	0.8	9	1	80
	Westbound Right	155		120	485	10%	54	539	1	16.2	1.8	19	2	167
	Westbound Through			120	1161	10%	129	1290	3	12.9	1.4	15	2	139

Mayfield Road EA

Intersection Queue Summary - Peel Region Methodology

2021 Do Nothing Intersection Queue Lengths, Weekday PM Peak Hour

No.	Intersection Movement	Available Storage (m)	Link Distance (m)	Cycle Length (sec.)	Volumes Passenger Cars (veh)	Percent Heavies	Volumes Heavies (veh)	Volumes All Traffic	No. of Lanes	"m" Values		"X" Values		Queue Length (m)
	Westbound Left	155		120	26	10%	3	29	1	0.9	0.1	1	0	7
	Northbound Right	40		120	12	10%	1	12	1	0.4	0.0	1	0	7
	Northbound Through			120	581	10%	58	581	1	19.4	1.9	22	3	204
	Northbound Left	105		120	159	10%	18	177	1	5.3	0.6	7	1	66
	Eastbound Right	175		120	36	10%	4	40	1	1.2	0.1	2	0	14
	Eastbound Through		780	120	664	10%	74	738	3	7.4	0.8	9	1	80
	Eastbound Left	115		120	29	10%	3	32	1	1.0	0.1	1	0	7

2031 Cap Network 6 Lanes AM

Mayfield Road EA

Intersection Queue Summary - Peel Region Methodology

2031 Capital Improvements, Intersection Queue Lengths, Weekday AM Peak Hour

No.	Intersection Movement	Available Storage (m)	Link Distance (m)	Cycle Length (sec.)	Volumes Passenger Cars (veh)	Percent Heavies	Volumes Heavies (veh)	Volumes All Traffic	No. of Lanes	"m" Values		"X" Values		Queue Length (m)
1	***Mayfield at Chinguacousy Road***													
	Southbound Left			100	32	10%	4	36	1	0.9	0.1	1	0	7
	Southbound Through/Right			100	160	10%	18	178	1	4.5	0.5	6	1	59
	Westbound Through/Right		320	100	373	10%	43	416	1	10.4	1.2	12	2	118
	Westbound Through		320	100	698	10%	78	776	2	9.7	1.1	12	2	118
	Westbound Left	90		100	195	11%	24	219	2	2.7	0.3	4	1	45
	Northbound Right			100	442	10%	49	491	1	12.3	1.4	14	2	132
	Northbound Through			100	149	10%	17	165	1	4.1	0.5	5	1	52
	Northbound Left	30		100	31	10%	3	34	1	0.9	0.1	1	0	7
	Eastbound Through/Right			100	380	10%	42	422	1	10.6	1.2	13	2	125
	Eastbound Through			100	653	10%	73	725	2	9.1	1.0	11	2	111
	Eastbound Left	30		100	2	10%	0	2	1	0.1	0.0	0	0	0
2	***Mayfield at New Collector Road 1***													
	Southbound Through/Right			70	67	10%	7	74	1	1.3	0.1	2	0	14
	Southbound Left	30		70	104	10%	12	116	1	2.0	0.2	3	0	21
	Westbound Through/Right		795	70	416	10%	46	462	1	8.1	0.9	10	1	87
	Westbound Through		795	70	779	10%	87	866	2	7.6	0.8	9	1	80
	Westbound Left	30		70	21	10%	2	23	1	0.4	0.0	1	0	7
	Northbound Through/Right			70	75	10%	8	83	1	1.5	0.2	2	0	14
	Northbound Left	30		70	44	10%	5	49	1	0.9	0.1	1	0	7
	Eastbound Through/Right		320	70	489	10%	54	543	1	9.5	1.1	11	2	111
	Eastbound Through		320	70	950	10%	106	1056	2	9.2	1.0	11	2	111
	Eastbound Left	30		70	14	10%	2	16	1	0.3	0.0	0	0	0
3	***Mayfield at New Collector Road 2***													
	Westbound Through		125	70	1159	10%	129	1288	3	7.5	0.8	9	1	80
	Westbound Left	30		70	24	10%	3	27	1	0.5	0.1	1	0	7
	Northbound Right			70	77	10%	9	85	1	1.5	0.2	2	0	14
	Northbound Left	30		70	58	10%	6	64	1	1.1	0.1	2	0	14
	Eastbound Through/Right		795	70	540	10%	60	600	1	10.5	1.2	13	2	125
	Eastbound Through		795	70	1056	10%	117	1173	2	10.3	1.1	12	2	118
4	***Mayfield Road & McLaughlin Road***													
	Southbound Left			110	24	10%	3	27	1	0.7	0.1	1	0	7
	Southbound Through/Right			110	271	10%	30	301	1	8.3	0.9	10	1	87
	Westbound Through/Right		280	110	385	10%	45	430	1	11.8	1.4	14	2	132
	Westbound Through		280	110	744	10%	83	827	2	11.4	1.3	13	2	125
	Westbound Left	130		110	154	10%	17	171	1	4.7	0.5	6	1	59
	Northbound Right			110	292	10%	32	324	1	8.9	1.0	11	1	94
	Northbound Through			110	208	10%	23	231	1	6.4	0.7	8	1	73
	Northbound Left	30		110	45	11%	6	50	1	1.4	0.2	2	0	14
	Eastbound Right	70		110	126	10%	14	140	1	3.9	0.4	5	1	52
	Eastbound Through		125	110	1479	10%	164	1643	3	15.1	1.7	18	2	160
	Eastbound Left	30		110	56	10%	6	62	1	1.7	0.2	2	0	14
5	***Mayfield Road & Van Kirk Drive***													
	Westbound Through		530	70	1275	10%	142	1417	3	8.3	0.9	10	1	87
	Westbound Left	50		70	40	10%	4	44	1	0.8	0.1	1	0	7
	Northbound Right			70	185	10%	21	205	1	3.6	0.4	5	1	52
	Northbound Left	40		70	10	10%	1	11	1	0.2	0.0	0	0	0
	Eastbound Right	30		70	6	15%	1	7	1	0.1	0.0	0	0	0
	Eastbound Through		280	70	1788	10%	199	1987	3	11.6	1.3	14	2	132
6	***Mayfield Road & Cresthaven Road/ Robertson Davies Drive***													
	Southbound Through/Right			90	179	11%	22	201	1	4.5	0.5	6	1	59
	Southbound Left	70		90	218	10%	24	242	1	5.4	0.6	7	1	66
	Westbound Right	70		90	35	15%	6	41	1	0.9	0.2	1	0	7
	Westbound Through		420	90	1115	10%	124	1239	3	9.3	1.0	11	2	111
	Westbound Left	30		90	26	13%	4	30	1	0.7	0.1	1	0	7
	Northbound Through/Right			90	120	10%	14	134	1	3.0	0.3	4	1	45
	Northbound Left	35		90	39	10%	4	43	1	1.0	0.1	1	0	7
	Eastbound Right	25		90	5	15%	1	6	1	0.1	0.0	0	0	0
	Eastbound Through		530	90	1894	10%	210	2104	3	15.8	1.8	18	2	160

Mayfield Road EA

Intersection Queue Summary - Peel Region Methodology

2031 Capital Improvements, Intersection Queue Lengths, Weekday AM Peak Hour

No.	Intersection Movement	Available Storage (m)	Link Distance (m)	Cycle Length (sec.)	Volumes Passenger Cars (veh)	Percent Heavies	Volumes Heavies (veh)	Volumes All Traffic	No. of Lanes	"m" Values		"X" Values		Queue Length (m)
	Eastbound Left	60		90	70	15%	12	82	1	1.7	0.3	2	1	31
7	***Mayfield Road & Highway 10***													
	Southbound Right	165		140	214	10%	24	238	1	8.3	0.9	10	1	87
	Southbound Through			140	927	10%	103	1030	2	18.0	2.0	21	3	197
	Southbound Left	75		140	144	10%	16	160	2	2.8	0.3	4	1	45
	Westbound Right		130	140	191	10%	21	212	1	7.4	0.8	9	1	80
	Westbound Through		130	140	824	11%	102	926	3	10.7	1.3	13	2	125
	Westbound Left	75		140	213	15%	38	250	2	4.1	0.7	5	1	52
	Northbound Right	150		140	305	14%	51	356	1	11.8	2.0	14	3	148
	Northbound Through			140	259	10%	29	288	2	5.0	0.6	6	1	59
	Northbound Left	130		140	131	10%	15	146	1	5.1	0.6	7	1	66
	Eastbound Right	165		140	401	10%	45	445	1	15.6	1.7	18	2	160
	Eastbound Through		420	140	1521	10%	169	1690	3	19.7	2.2	23	3	211
	Eastbound Left	120		140	385	10%	43	428	2	7.5	0.8	9	1	80
8	***Mayfield Road & Colonel Bertram Road***													
	Southbound Left/Through/Right			100	37	10%	4	41	1	1.0	0.1	2	0	14
	Westbound Right	20		100	3	10%	0	3	1	0.1	0.0	0	0	0
	Westbound Through		160	100	1218	13%	179	1397	3	11.3	1.7	13	2	125
	Westbound Left	55		100	65	10%	7	72	1	1.8	0.2	3	0	21
	Northbound Through/Right			100	62	10%	7	69	1	1.7	0.2	2	0	14
	Northbound Left	20		100	19	10%	2	21	1	0.5	0.1	1	0	7
	Eastbound Right	30		100	11	10%	1	12	1	0.3	0.0	1	0	7
	Eastbound Through		130	100	2044	10%	227	2271	3	18.9	2.1	22	3	204
	Eastbound Left	20		100	30	10%	3	33	1	0.8	0.1	1	0	7
9	***Mayfield Road & Summer Valley Drive***													
	Southbound Right			120	89	10%	10	99	1	3.0	0.3	4	1	45
	Southbound Left	30		120	55	10%	6	61	1	1.8	0.2	3	0	21
	Westbound Through/Right		90	120	410	14%	67	477	1	13.7	2.2	16	3	162
	Westbound Through		90	120	774	14%	126	900	2	12.9	2.1	15	3	155
	Eastbound Through		160	120	2075	10%	231	2306	3	23.1	2.6	26	3	232
	Eastbound Left	65		120	44	10%	5	49	1	1.5	0.2	2	0	14
10	***Mayfield Road & Valley View Drive***													
	Westbound Through			Minor	0	14%	0		2					
	Westbound Through/Left			Street	0	14%	0		1					
	Northbound Left/Right			Stop	0	10%	0		1					
	Eastbound Through/Right			Controlled	0	10%	0		1					
	Eastbound Through				0	10%	0		2					
11	***Mayfield Road & Inder Heights Drive/Snellview Boulevard***													
	Southbound Left/Through/Right			Minor	73	10%	8	81	1					
	Westbound Right	30		Street	22	10%	2	24	1					
	Westbound Through		360	Stop	1194	12%	163	1357	3					
	Westbound Left	30		Controlled	4	15%	1	5	1					
	Northbound Through/Right				14	10%	2	16	1					
	Northbound Left	15			9	10%	1	10	1					
	Eastbound Through/Right		405		715	10%	81	796	1					
	Eastbound Through		405		1411	10%	157	1568	2					
	Eastbound Left	30			3	10%	0	3	1					
12	***Mayfield Road & Kennedy Road***													
	Southbound Right	140		140	205	15%	36	241	1	8.0	1.4	10	2	104
	Southbound Through			140	440	10%	49	489	2	8.6	1.0	10	1	87
	Southbound Left	60		140	87	15%	15	102	1	3.4	0.6	4	1	45
	Westbound Right	55		140	24	14%	4	28	1	0.9	0.2	1	0	7
	Westbound Through		480	140	964	10%	107	1071	3	12.5	1.4	15	2	139
	Westbound Left	115		140	123	10%	14	137	1	4.8	0.5	6	1	59
	Northbound Right	115		140	242	10%	27	269	1	9.4	1.0	11	2	111
	Northbound Through			140	258	15%	45	303	2	5.0	0.9	6	1	59
	Northbound Left	90		140	64	14%	10	74	1	2.5	0.4	3	1	38
	Eastbound Right	75		140	164	10%	18	182	1	6.4	0.7	8	1	73

Mayfield Road EA

Intersection Queue Summary - Peel Region Methodology

2031 Capital Improvements, Intersection Queue Lengths, Weekday AM Peak Hour

No.	Intersection Movement	Available Storage (m)	Link Distance (m)	Cycle Length (sec.)	Volumes Passenger Cars (veh)	Percent Heavies	Volumes Heavies (veh)	Volumes All Traffic	No. of Lanes	"m" Values		"X" Values		Queue Length (m)
	Eastbound Through		360	140	1751	10%	195	1945	3	22.7	2.5	26	3	232
	Eastbound Left	130		140	281	10%	31	312	1	10.9	1.2	13	2	125
13	***Mayfield Road & Stonegate Drive***													
	Westbound Through		780	Minor	1107	10%	123	1230	3					
	Westbound Left	100		Street	21	10%	2	23	1					
	Northbound Left/Right			Stop	109	10%	12	121	1					
	Eastbound Through/Right		480	Controlled	722	10%	83	805	1					
	Eastbound Through		480		1360	10%	151	1511	2					
14	***Mayfield Road & Heart Lake Road***													
	Southbound Through/Right			140	167	10%	19	186	1	6.5	0.7	8	1	73
	Southbound Through			140	128	10%	14	142	1	5.0	0.6	6	1	59
	Southbound Left	150		140	710	10%	79	789	2	13.8	1.5	16	2	146
	Westbound Right	260		140	177	10%	20	197	1	6.9	0.8	8	1	73
	Westbound Through			140	1032	11%	127	1159	3	13.4	1.7	16	2	146
	Westbound Left	155		140	23	10%	3	26	1	0.9	0.1	1	0	7
	Northbound Through/Right			140	168	10%	19	187	1	6.5	0.7	8	1	73
	Northbound Through			140	156	10%	17	173	1	6.1	0.7	8	1	73
	Northbound Left	105		140	43	12%	6	49	1	1.7	0.2	2	0	14
	Eastbound Right	175		140	131	10%	15	146	1	5.1	0.6	7	1	66
	Eastbound Through		780	140	1992	10%	221	2213	3	25.8	2.9	29	4	270
	Eastbound Left	115		140	20	10%	2	22	1	0.8	0.1	1	0	7

2031 Cap Network 6 Lanes PM

Mayfield Road EA

Intersection Queue Summary - Peel Region Methodology

2031 Capital Improvements, Intersection Queue Lengths, Weekday PM Peak Hour

No.	Intersection Movement	Available Storage (m)	Link Distance (m)	Cycle Length (sec.)	Volumes Passenger Cars (veh)	Percent Heavies	Volumes Heavies (veh)	Volumes All Traffic	No. of Lanes	"m" Values		"X" Values		Queue Length (m)
1	***Mayfield at Chinguacousy Road***													
	Southbound Left			100	17	10%	2	19	1	0.5	0.1	1	0	7
	Southbound Through/Right			100	157	10%	17	174	1	4.4	0.5	6	1	59
	Westbound Through/Right		320	100	408	10%	45	453	1	11.3	1.3	13	2	125
	Westbound Through		320	100	602	10%	67	669	2	8.4	0.9	10	1	87
	Westbound Left	90		100	506	10%	56	562	2	7.0	0.8	9	1	80
	Northbound Right			100	259	10%	29	288	1	7.2	0.8	9	1	80
	Northbound Through			100	131	10%	15	145	1	3.6	0.4	5	1	52
	Northbound Left	30		100	79	10%	9	88	1	2.2	0.2	3	0	21
	Eastbound Through/Right			100	396	10%	44	440	1	11.0	1.2	13	2	125
	Eastbound Through			100	618	10%	69	687	2	8.6	1.0	10	1	87
	Eastbound Left	30		100	9	15%	2	11	1	0.3	0.0	0	0	0
2	***Mayfield at New Collector Road 1***													
	Southbound Through/Right			70	43	10%	5	48	1	0.8	0.1	1	0	7
	Southbound Left	30		70	58	10%	6	64	1	1.1	0.1	2	0	14
	Westbound Through/Right		795	70	602	10%	67	669	1	11.7	1.3	14	2	132
	Westbound Through		795	70	971	10%	108	1079	2	9.4	1.0	11	2	111
	Westbound Left	30		70	60	10%	7	67	1	1.2	0.1	2	0	14
	Northbound Through/Right			70	49	10%	5	54	1	0.9	0.1	1	0	7
	Northbound Left	30		70	29	10%	3	32	1	0.6	0.1	1	0	7
	Eastbound Through/Right		320	70	408	10%	45	453	1	7.9	0.9	10	1	87
	Eastbound Through		320	70	734	10%	82	816	2	7.1	0.8	9	1	80
	Eastbound Left	30		70	62	10%	7	69	1	1.2	0.1	2	0	14
3	***Mayfield at New Collector Road 2***													
	Westbound Through		125	70	1596	10%	177	1773	3	10.3	1.1	12	2	118
	Westbound Left	30		70	70	10%	8	78	1	1.4	0.2	2	0	14
	Northbound Right			70	35	10%	4	39	1	0.7	0.1	1	0	7
	Northbound Left	30		70	38	10%	4	42	1	0.7	0.1	1	0	7
	Eastbound Through/Right		795	70	425	10%	47	472	1	8.3	0.9	10	1	87
	Eastbound Through		795	70	770	10%	86	855	2	7.5	0.8	9	1	80
4	***Mayfield Road & McLaughlin Road***													
	Southbound Left			90	11	10%	1	12	1	0.3	0.0	0	0	0
	Southbound Through/Right			90	275	10%	31	305	1	6.9	0.8	8	1	73
	Westbound Through/Right		280	90	522	10%	59	581	1	13.1	1.5	15	2	139
	Westbound Through		280	90	1000	10%	111	1111	2	12.5	1.4	15	2	139
	Westbound Left	130		90	360	10%	40	400	1	9.0	1.0	11	2	111
	Northbound Right			90	130	10%	14	144	1	3.2	0.4	4	1	45
	Northbound Through			90	259	10%	29	288	1	6.5	0.7	8	1	73
	Northbound Left	30		90	131	10%	15	145	1	3.3	0.4	4	1	45
	Eastbound Right	70		90	45	10%	5	50	1	1.1	0.1	2	0	14
	Eastbound Through		125	90	741	10%	82	823	3	6.2	0.7	8	1	73
	Eastbound Left	30		90	33	10%	4	37	1	0.8	0.1	1	0	7
5	***Mayfield Road & Van Kirk Drive***													
	Westbound Through		530	70	1881	10%	209	2090	3	12.2	1.4	14	2	132
	Westbound Left	50		70	151	10%	17	168	1	2.9	0.3	4	1	45
	Northbound Right			70	84	10%	9	93	1	1.6	0.2	2	0	14
	Northbound Left	40		70	2	10%	0	2	1	0.0	0.0	0	0	0
	Eastbound Right	30		70	16	10%	2	18	1	0.3	0.0	1	0	7
	Eastbound Through		280	70	1236	10%	137	1373	3	8.0	0.9	10	1	87
6	***Mayfield Road & Cresthaven Road/ Robertson Davies Drive***													
	Southbound Through/Right			100	91	10%	10	101	1	2.5	0.3	3	0	21
	Southbound Left	70		100	112	10%	12	124	1	3.1	0.3	4	1	45
	Westbound Right	70		100	203	10%	23	226	1	5.7	0.6	7	1	66
	Westbound Through		420	100	1934	10%	215	2149	3	17.9	2.0	21	3	197
	Westbound Left	30		100	77	10%	9	85	1	2.1	0.2	3	0	21
	Northbound Through/Right			100	59	10%	7	65	1	1.6	0.2	2	0	14
	Northbound Left	35		100	16	10%	2	18	1	0.5	0.1	1	0	7
	Eastbound Right	25		100	42	10%	5	47	1	1.2	0.1	2	0	14
	Eastbound Through		530	100	1096	10%	122	1218	3	10.2	1.1	12	2	118

Mayfield Road EA

Intersection Queue Summary - Peel Region Methodology

2031 Capital Improvements, Intersection Queue Lengths, Weekday PM Peak Hour

No.	Intersection Movement	Available Storage (m)	Link Distance (m)	Cycle Length (sec.)	Volumes Passenger Cars (veh)	Percent Heavies	Volumes Heavies (veh)	Volumes All Traffic	No. of Lanes	"m" Values		"X" Values		Queue Length (m)
	Eastbound Left	60		100	181	10%	20	201	1	5.0	0.6	6	1	59
7	***Mayfield Road & Highway 10***													
	Southbound Right	165		140	410	10%	46	456	1	16.0	1.8	18	2	160
	Southbound Through			140	486	10%	54	540	2	9.5	1.1	11	2	111
	Southbound Left	75		140	122	10%	14	136	2	2.4	0.3	3	0	21
	Westbound Right		130	140	254	10%	28	282	1	9.9	1.1	12	2	118
	Westbound Through		130	140	1532	10%	170	1702	3	19.9	2.2	23	3	211
	Westbound Left	75		140	330	10%	37	367	2	6.4	0.7	8	1	73
	Northbound Right	150		140	176	10%	20	195	1	6.8	0.8	8	1	73
	Northbound Through			140	958	10%	106	1064	2	18.6	2.1	21	3	197
	Northbound Left	130		140	272	10%	30	302	1	10.6	1.2	13	2	125
	Eastbound Right	165		140	155	10%	17	172	1	6.0	0.7	8	1	73
	Eastbound Through		420	140	950	10%	106	1055	3	12.3	1.4	15	2	139
	Eastbound Left	120		140	198	10%	22	220	2	3.9	0.4	5	1	52
8	***Mayfield Road & Colonel Bertram Road***													
	Southbound Left/Through/Right			120	95	10%	11	106	1	3.2	0.4	4	1	45
	Westbound Right	20		120	11	10%	1	12	1	0.4	0.0	1	0	7
	Westbound Through		160	120	2132	10%	237	2369	3	23.7	2.6	27	4	256
	Westbound Left	55		120	105	10%	12	117	1	3.5	0.4	5	1	52
	Northbound Through/Right			120	64	10%	7	71	1	2.1	0.2	3	0	21
	Northbound Left	20		120	41	10%	5	46	1	1.4	0.2	2	0	14
	Eastbound Right	30		120	14	10%	2	15	1	0.5	0.1	1	0	7
	Eastbound Through		130	120	1337	10%	149	1485	3	14.9	1.7	17	2	153
	Eastbound Left	20		120	38	10%	4	42	1	1.3	0.1	2	0	14
9	***Mayfield Road & Summer Valley Drive***													
	Southbound Right			120	119	10%	13	132	1	4.0	0.4	5	1	52
	Southbound Left	30		120	25	10%	3	28	1	0.8	0.1	1	0	7
	Westbound Through/Right		90	120	818	10%	91	909	1	27.3	3.0	31	4	284
	Westbound Through		90	120	1498	10%	166	1664	2	25.0	2.8	28	4	263
	Eastbound Through		160	120	1335	10%	148	1483	3	14.8	1.6	17	2	153
	Eastbound Left	65		120	76	10%	8	84	1	2.5	0.3	3	0	21
10	***Mayfield Road & Valley View Drive***													
	Westbound Through			Minor	0	10%	0		2					
	Westbound Through/Left			Street	0	10%	0		1					
	Northbound Left/Right			Stop	0	10%	0		1					
	Eastbound Through/Right			Controlled	0	10%	0		1					
	Eastbound Through				0	10%	0		2					
11	***Mayfield Road & Inder Heights Drive/Snellview Boulevard***													
	Southbound Left/Through/Right			Minor	49	10%	5	54	1					
	Westbound Right	30		Street	72	10%	8	80	1					
	Westbound Through		360	Stop	2305	10%	256	2561	3					
	Westbound Left	30		Controlled	17	10%	2	19	1					
	Northbound Through/Right				5	10%	1	6	1					
	Northbound Left	15			4	10%	0	4	1					
	Eastbound Through/Right		405		455	10%	51	506	1					
	Eastbound Through		405		893	10%	99	992	2					
	Eastbound Left	30			12	10%	1	13	1					
12	***Mayfield Road & Kennedy Road***													
	Southbound Right	140		140	320	10%	36	355	1	12.4	1.4	15	2	139
	Southbound Through			140	401	10%	45	446	2	7.8	0.9	10	1	87
	Southbound Left	60		140	115	10%	13	128	1	4.5	0.5	6	1	59
	Westbound Right	55		140	109	13%	16	125	1	4.2	0.6	5	1	52
	Westbound Through		480	140	1874	10%	208	2082	3	24.3	2.7	27	4	256
	Westbound Left	115		140	246	10%	27	273	1	9.6	1.1	11	2	111
	Northbound Right	115		140	140	10%	16	155	1	5.4	0.6	7	1	66
	Northbound Through			140	441	10%	49	490	2	8.6	1.0	10	1	87
	Northbound Left	90		140	201	10%	22	223	1	7.8	0.9	10	1	87
	Eastbound Right	75		140	108	10%	12	120	1	4.2	0.5	5	1	52

Mayfield Road EA

Intersection Queue Summary - Peel Region Methodology

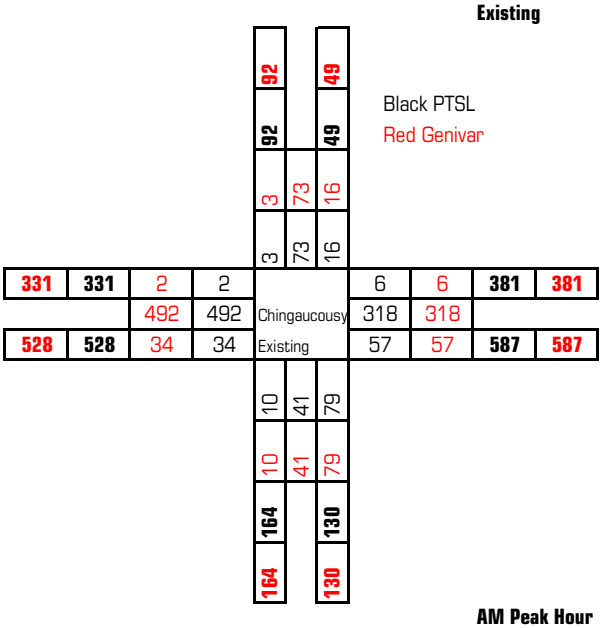
2031 Capital Improvements, Intersection Queue Lengths, Weekday PM Peak Hour

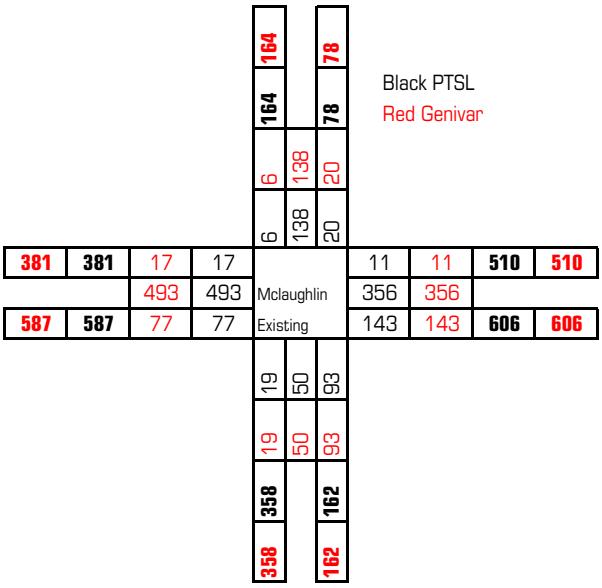
No.	Intersection Movement	Available Storage (m)	Link Distance (m)	Cycle Length (sec.)	Volumes Passenger Cars (veh)	Percent Heavies	Volumes Heavies (veh)	Volumes All Traffic	No. of Lanes	"m" Values		"X" Values		Queue Length (m)
	Eastbound Through		360	140	1038	10%	115	1153	3	13.5	1.5	16	2	146
	Eastbound Left	130		140	239	10%	27	266	1	9.3	1.0	11	2	111
13	***Mayfield Road & Stonegate Drive***													
	Westbound Through		780	Minor	2228	10%	248	2476	3					
	Westbound Left	100		Street	95	10%	11	105	1					
	Northbound Left/Right			Stop	32	10%	4	35	1					
	Eastbound Through/Right		480	Controlled	441	10%	49	490	1					
	Eastbound Through		480		851	10%	95	946	2					
14	***Mayfield Road & Heart Lake Road***													
	Southbound Through/Right			140	356	10%	40	396	1	13.9	1.5	16	2	146
	Southbound Through			140	316	10%	35	351	1	12.3	1.4	14	2	132
	Southbound Left	150		140	266	10%	30	296	2	5.2	0.6	7	1	66
	Westbound Right	260		140	621	10%	69	690	1	24.2	2.7	27	4	256
	Westbound Through			140	2078	10%	231	2309	3	26.9	3.0	30	4	277
	Westbound Left	155		140	33	10%	4	37	1	1.3	0.1	2	0	14
	Northbound Through/Right			140	302	10%	34	336	1	11.8	1.3	14	2	132
	Northbound Through			140	289	10%	32	321	1	11.2	1.2	13	2	125
	Northbound Left	105		140	204	10%	23	227	1	7.9	0.9	10	1	87
	Eastbound Right	175		140	46	10%	5	51	1	1.8	0.2	2	0	14
	Eastbound Through		780	140	1221	10%	136	1357	3	15.8	1.8	18	2	160
	Eastbound Left	115		140	37	10%	4	41	1	1.4	0.2	2	0	14

Appendix H

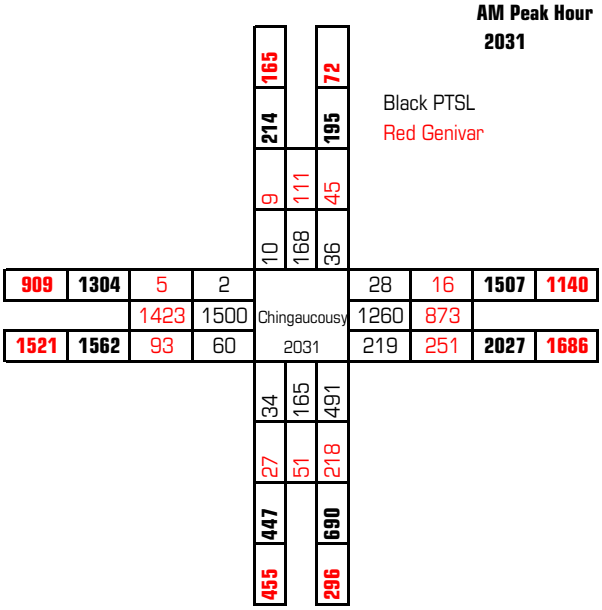
2031 Traffic Volumes from Class Environmental Assessments for Improvements to Chinguacousy Road from Wanless Drive to Mayfield Road and for McLaughlin Road from Wanless Drive to Mayfield Road

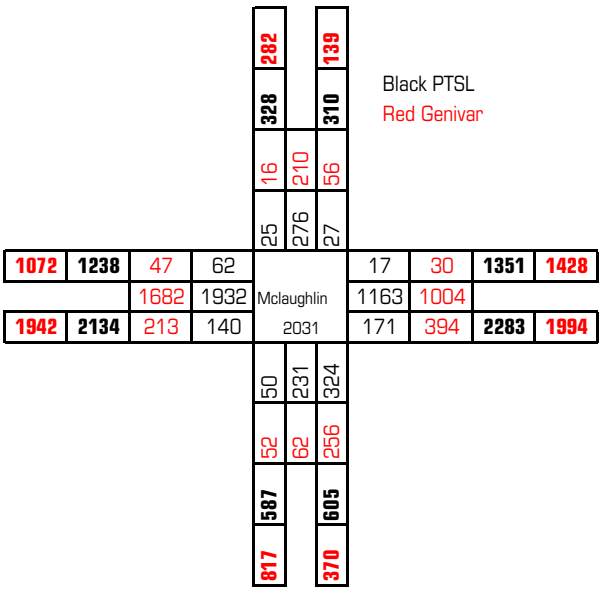
AM Peak Hour
Existing



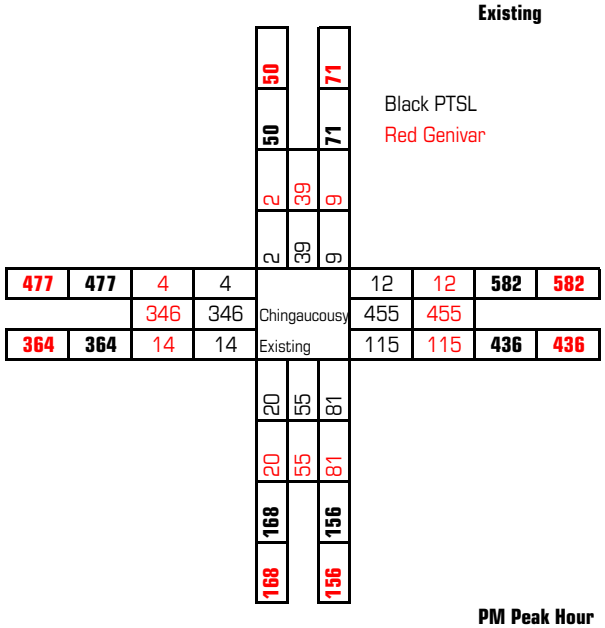


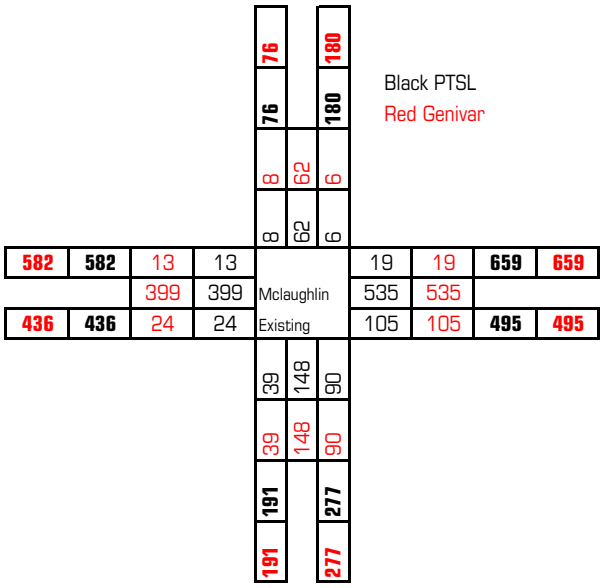
AM Peak Hour
2031



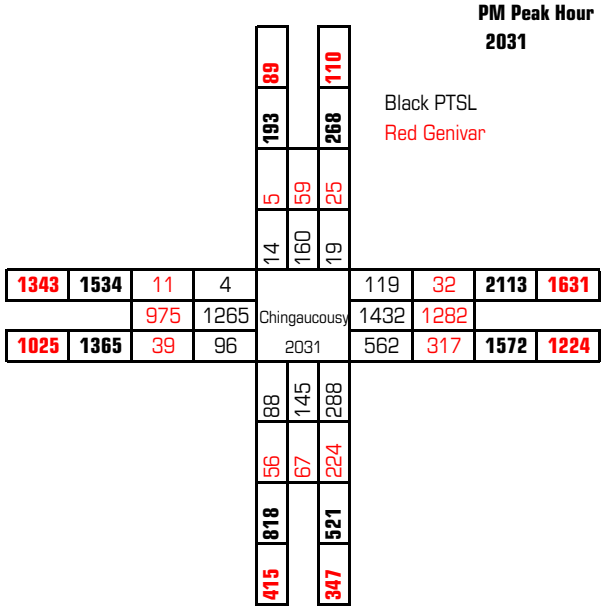


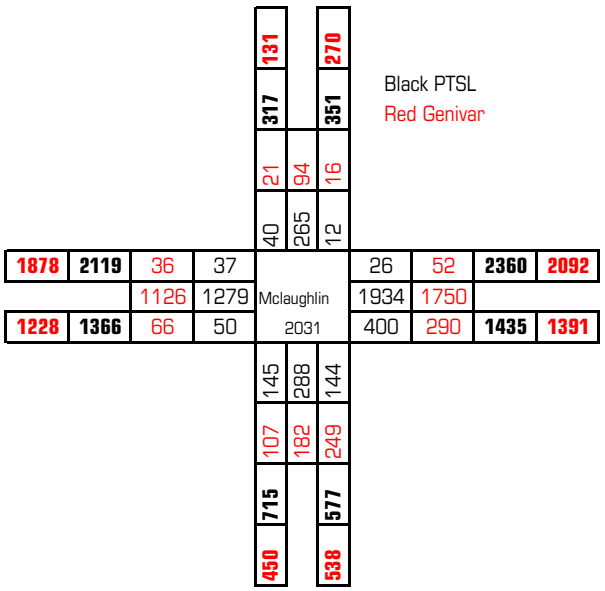
PM Peak Hour
Existing





PM Peak Hour
2031





Appendix I

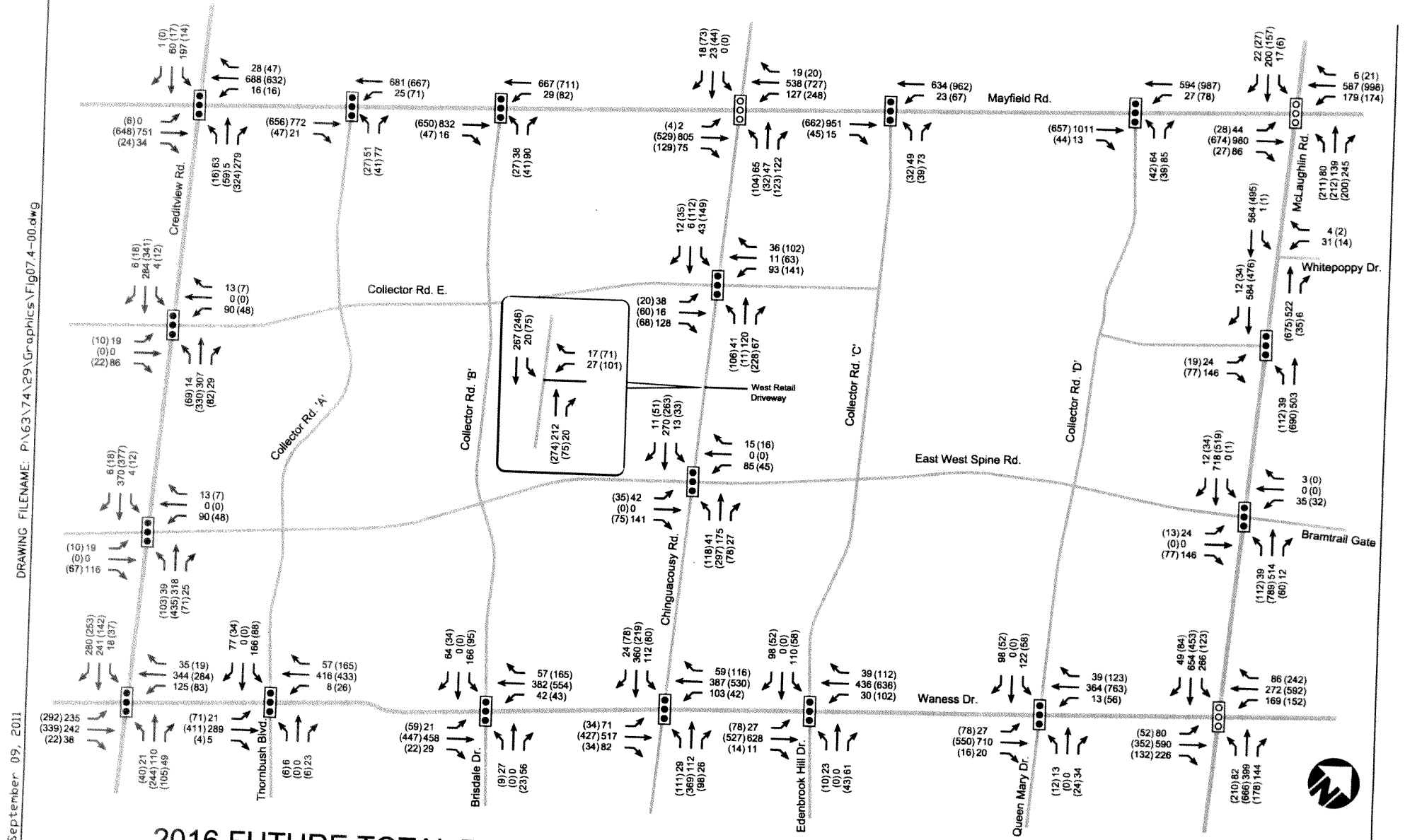
2016 Traffic Volumes from Mount Pleasant 51-2 Collector Road Environmental Assessment Study and Transportation Study, September 2011, prepared by BA Group Transportation Consultants

BA GROUP
Transportation Consultants

Mount Pleasant Block 51-2
Collector Road Environmental Assessment Study and Transportation Study (DRAFT)
Volume 1: Study Report

Prepared For:
Mount Pleasant Block 51-2 Landowner's Group

Draft Submission, v4.0
September, 2011



2016 FUTURE TOTAL TRAFFIC VOLUMES

00 AM Peak Hour

(00) PM Peak Hour

Existing Traffic Signal

Proposed Traffic Signal

DRAWING FILENAME: P:\63\74\29\Graphics\Fig07.4-00.dwg

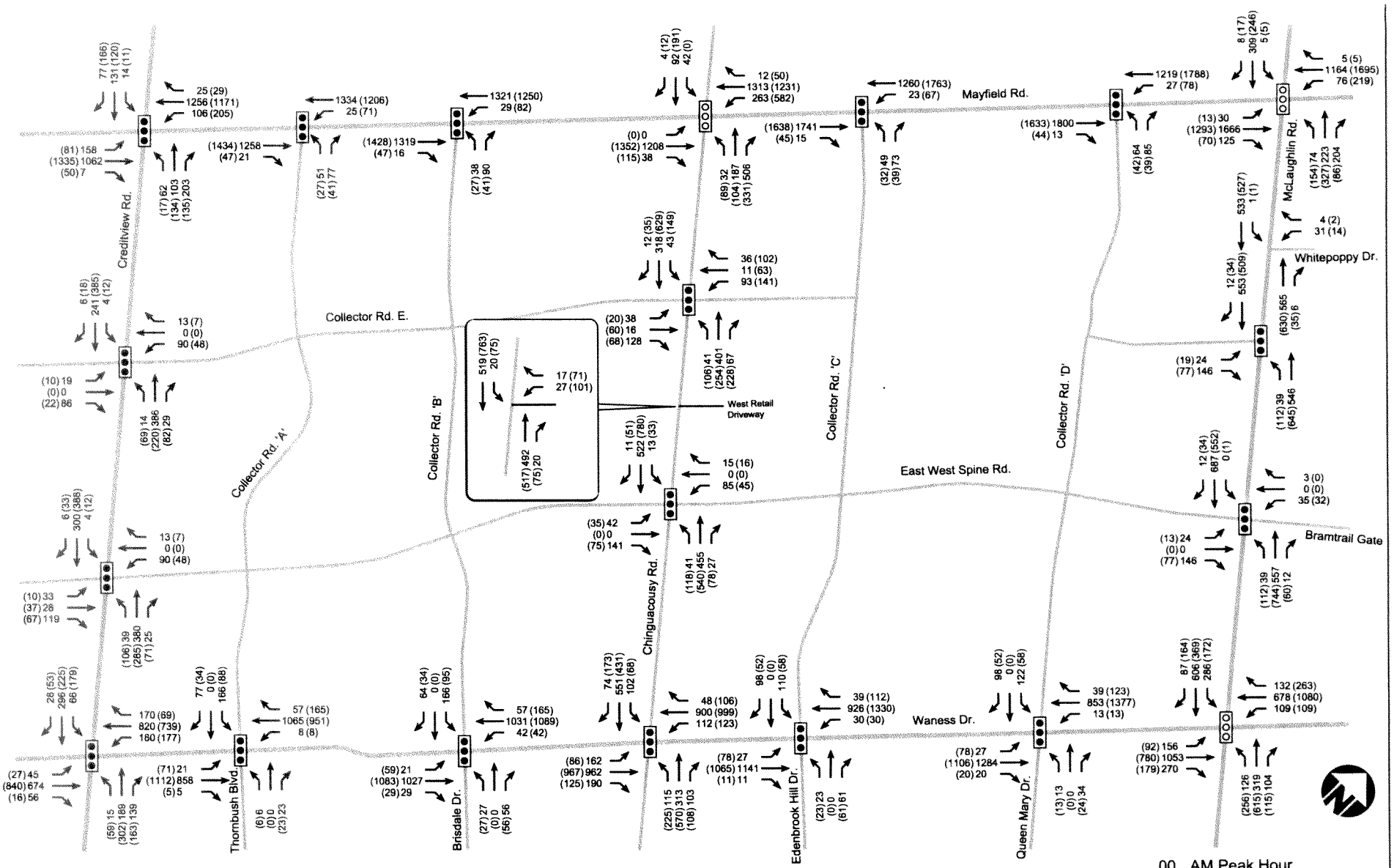
DATE PLOTTED: September 09, 2011

GROUP

Mount Pleasant Block Plan 51-2

6374-29, September 2011

Figure 7.4



2031 FUTURE TOTAL TRAFFIC VOLUMES

DRAWING FILENAME: P:\63\74\29\Graphics\Fig08.3-00.dwg

DATE PLOTTED: September 08, 2011

Appendix J

EMME-2 Model Screenline Growth Rates and Calculation of Traffic Volumes for Collector Road 1 and Collector Road 2

Calculation of Growth Rates for North-South Roadways North of Mayfield Rd from EMME model plots

Roadway	From	To	Direction	AM Peak Hour Model Volumes			Compound Growth Rates	
				2011	2021	2031 without GTAW	2011-2021	2021-2031 without GTAW
Chinguacousy Rd	Old School Rd	Mayfield Rd	NB	134	98	250	-3.08%	9.82%
			SB	27	54	164	7.18%	11.75%
			Total	161	152	414	-0.57%	10.54%
McLaughlin Rd	Old School Rd	Mayfield Rd	NB	79	344	431	15.85%	2.28%
			SB	77	105	254	3.15%	9.24%
			Total	156	449	685	11.15%	4.31%
Hurontario St	Old School Rd	Mayfield Rd	NB	1499	1421	790	-0.53%	-5.70%
			SB	120	122	452	0.17%	13.99%
			Total	1619	1543	1242	-0.48%	-2.15%
Kennedy Rd	Old School Rd	Mayfield Rd	NB	352	205	157	-5.26%	-2.63%
			SB	18	139	368	22.68%	10.23%
			Total	370	344	525	-0.73%	4.32%
Heart Lake Rd	Old School Rd	Mayfield Rd	NB	71	293	304	15.23%	0.37%
			SB	348	499	807	3.67%	4.92%
			Total	419	792	1111	6.57%	3.44%
Screenline N of Mayfield Rd	Old School Rd	Mayfield Rd	NB	2135	2361	1932	1.01%	-1.99%
			SB	590	919	2045	4.53%	8.33%
			Total	2725	3280	3977	**1.87%**	**1.95%**
Rounded							**2%**	**2%**

Calculation of Growth Rates for North-South Roadways South of Mayfield Rd from EMME model plots

Roadway	From	To	Direction	AM Peak Hour Model Volumes			Calculated Compound Growth Rates	
				2011	2021	2031 without GTAW	2011-2021	2021-2031 without GTAW
Chinguacousy Rd	Mayfield Rd	Wanless Dr	NB	411	80	135	-15.10%	5.37%
			SB	90	143	648	4.74%	16.31%
			Total	501	223	783	**-7.78%**	**13.38%**
McLaughlin Rd	Mayfield Rd	Wanless Dr	NB	110	844	712	22.60%	-1.69%
			SB	63	173	102	10.63%	-5.15%
			Total	173	1017	814	**19.38%**	**-2.20%**
Hurontario St	Mayfield Rd	Wanless Dr	NB	1691	1665	1608	-0.15%	-0.35%
			SB	320	414	494	2.61%	1.78%
			Total	2011	2079	2102	**0.33%**	**0.11%**
Kennedy Rd	Mayfield Rd	Conservation Dr	NB	1171	859	764	-3.05%	-1.17%
			SB	70	98	144	3.42%	3.92%
			Total	1241	957	908	**-2.57%**	**-0.52%**
Heart Lake Rd	Mayfield Rd	Conservation Dr	NB	1	4	37	14.87%	24.91%
			SB	735	808	968	0.95%	1.82%
			Total	736	812	1005	**0.99%**	**2.16%**
Screenline S of Mayfield Rd	Mayfield Rd	Wanless Dr / Conservation Dr	NB	3384	3452	3256	0.20%	-0.58%
			SB	1278	1636	2356	2.50%	3.71%
			Total	4662	5088	5612	**0.88%**	**0.99%**
Rounded							**1%**	**1%**

Traffic volumes for the additional links associated with the Mayfield West Boundary Area Expansion and Mount Pleasant Secondary Plan Area were not projected in the two transportation studies for these areas[1]. Traffic volumes were therefore estimated based on the following principles with detailed calculations provided hereafter:

- Population and employment information from TAZ 1737 covering the area between Chinguacousy Road, McLaughlin Road, Mayfield Road and Wanless Drive was used as a base for determining traffic growth at the two new collector roads in Brampton. The population would grow from 50 in 2011 to 8,500 in 2021 and 9,440 in 2031. The employment would grow from no employment in 2011 to 360 in 2021 and 390 in 2031.
- Population and employment information from TAZ 1688 covering the large area bounded by Winston Churchill Boulevard, Hurontario Street, Mayfield Road and Old School Road was used as a base for determining traffic growth at the new collector road in Caledon. The population would grow from 610 in 2011 to 4,868 in 2021 and 12,304 in 2031. The employment would grow from 287 in 2011 to 588 in 2021 and 1,346 in 2031.
- It was assumed that 20 percent of the trips associated with population and employment growth in TAZ 1737 would use the two new collector road connections in Brampton.
- It was assumed that 10 percent of the trips associated with population and employment growth in TAZ 1688 would use the new collector road connection in Caledon.
- The conversion of population growth to assigned AM and PM peak hour trips was based on 3 persons per household and a trip generation rate of 0.6 trips per household in the AM peak hour (20 percent in and 80 percent out) and 0.8 trips per household in the PM peak hour (37 percent in and 63 percent out). The trip generation rate is a blended rate calculated using information from the ITE Trip Generation Manual, 8th Edition, Land Use 210 Single Family and Land Use 230 Condominium / Townhouse.
- Trip distribution and assignment is based on traffic patterns on Mayfield Road (33 percent west; 62 percent east and 5 percent north/south between the two secondary plan areas).

[1] Mount Pleasant Secondary Plan Area Transportation Master Plan (TMP), ENTRA Consultants, June 2009

Mayfield West Phase Two Secondary Plan Transportation Impact Study – Part A: Existing Conditions, Paradigm Transportation Solutions Ltd., January 26, 2009

MOUNT PLEASANT

Trip Generation 2021

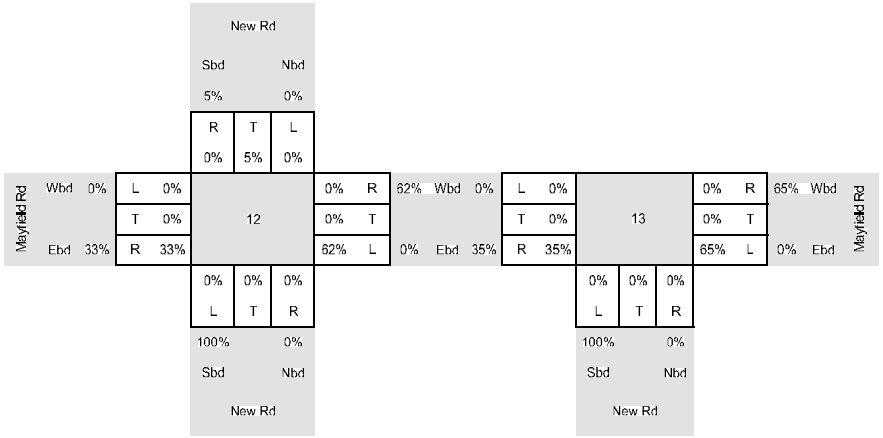
	Check +/-	Enter:	Enter X:	Enter:	Synergy	Transit Split	Trips	Rate	ITE Page	ITE Code	Ratio In/Out	Trips In/Out		
	Residential (AM)													
1	1690.000	0.600	2816.00	0.000			1690	0.60			0.20	338		
	Residential (PM)										0.80	1352		
2	2253.000	0.800	2816.00	0.000			2253	0.80			0.67	1510		
											0.33	743		
	Employment (AM)													
3	173.000	0.480	360.00	0.000			173	0.48	1197	710	0.88	152		
	Employment (PM)										0.12	21		
4	166.000	0.460	360.00	0.000			166	0.46	1198	710	0.17	28		
											0.83	138		
													Collector Rd 1	Collector Rd 2
Total											AM	490	49	49
												1373	137	137
											PM	1538	154	154
												881	88	88

Trip Generation 2031

	Check +/-	Enter:	Enter X:	Enter:	Synergy	Transit Split	Trips	Rate	ITE Page	ITE Code	Ratio In/Out	Trips In/Out		
	Residential (AM)													
1	1878.000	0.600	3130.00	0.000			1878	0.60			0.20	376		
	Residential (PM)										0.80	1502		
2	2504.000	0.800	3130.00	0.000			2504	0.80			0.67	1678		
											0.33	826		
	Employment (AM)													
3	187.000	0.480	390.00	0.000			187	0.48	1197	710	0.88	165		
	Employment (PM)										0.12	22		
4	179.000	0.460	390.00	0.000			179	0.46	1198	710	0.17	30		
											0.83	149		
													Collector Rd 1	Collector Rd 2
Total											AM	541	54	54
												1524	152	152
											PM	1708	171	171
												975	98	98

Mt Pleasant Projected Traffic Volumes 2021

Distribution (In)



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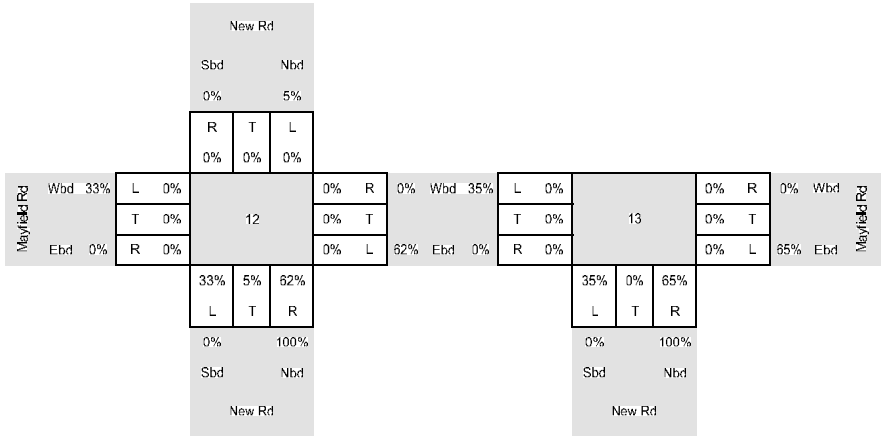
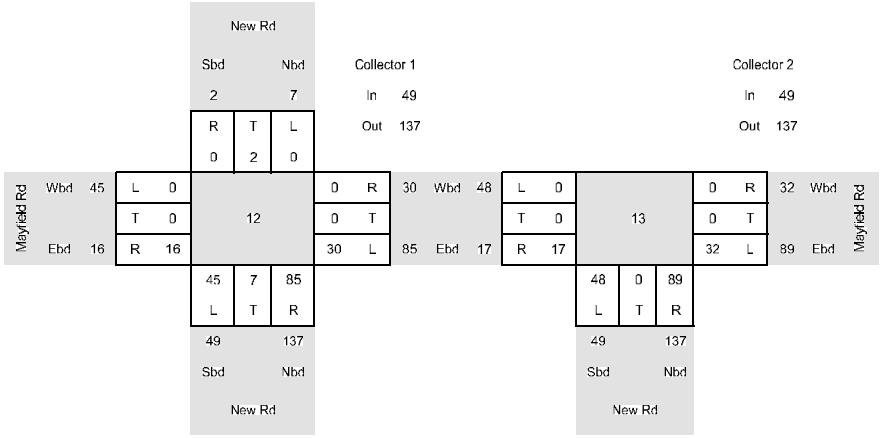
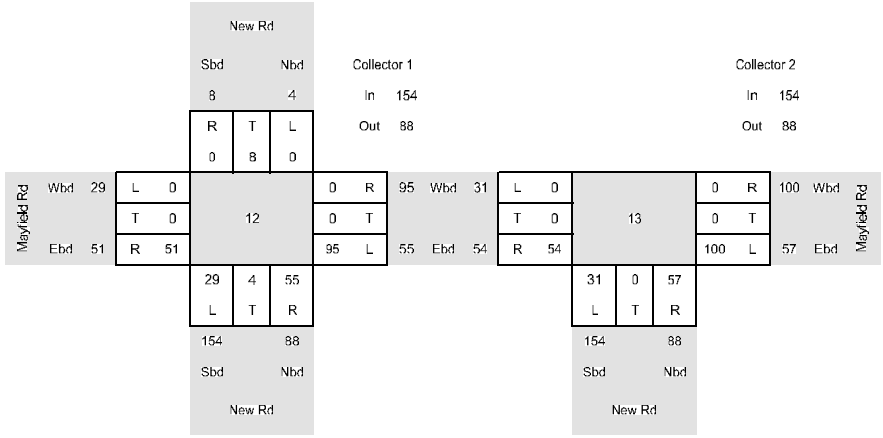


Traffic AM

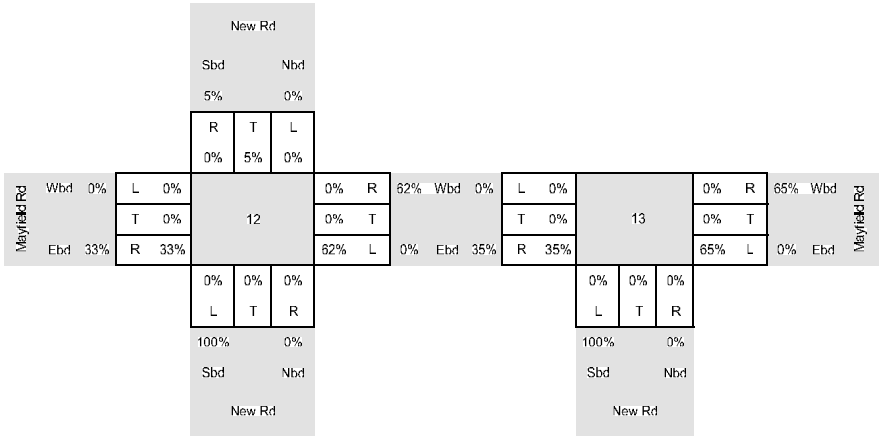


Traffic PM

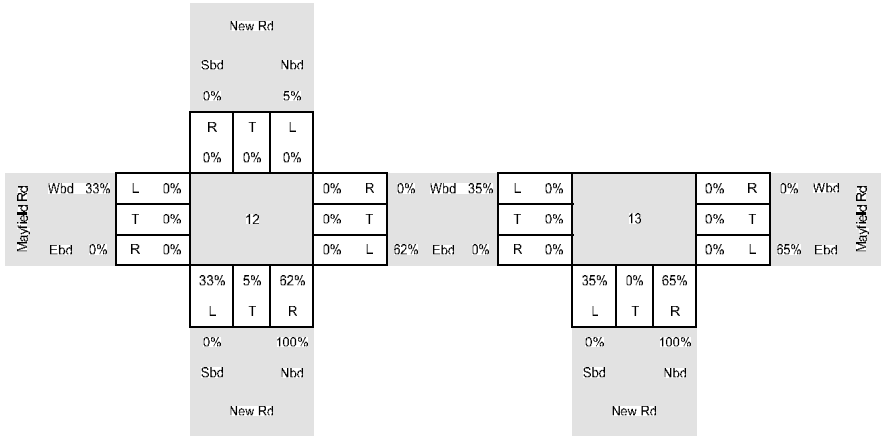


Mt Pleasant Projected Traffic Volumes 2031

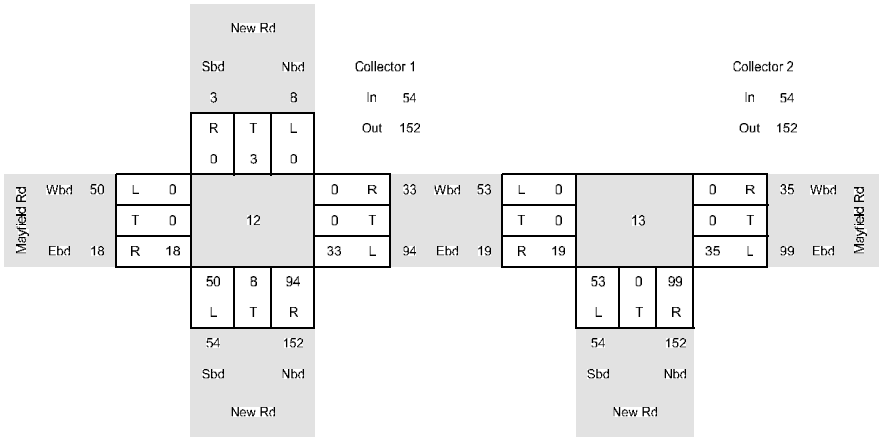
Distribution (In)



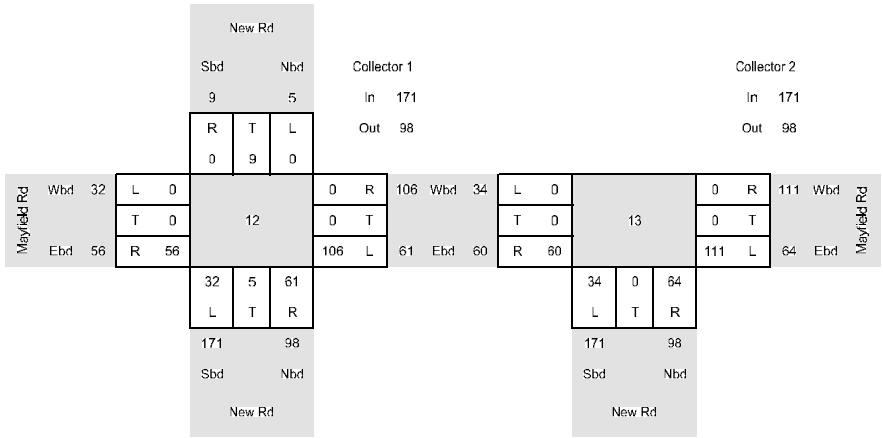
Distribution (Out)



Traffic AM



Traffic PM



MAYFIELD WEST

Trip Generation 2021

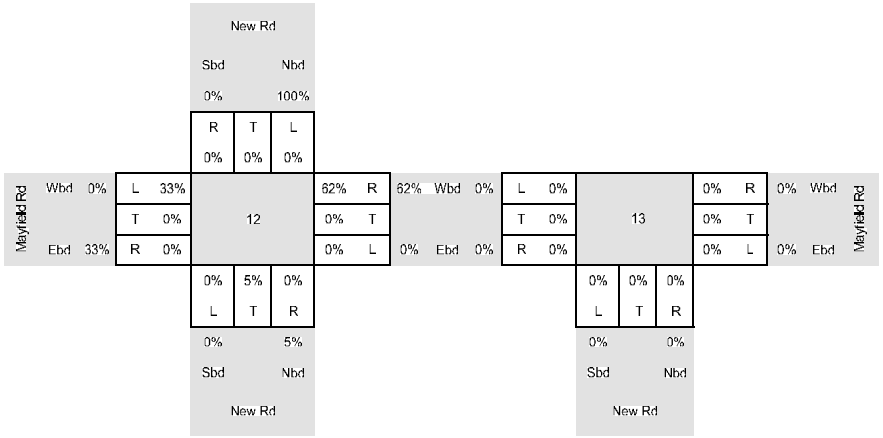
	Check +/-	Enter:	Enter X:	Enter:	Synergy	Transit Split	Trips	Rate	ITE Page	ITE Code	Ratio In/Out	Trips In/Out		
	Residential (AM)													
1	851.000	0.600	1419.00	0.000			851	0.60			0.20	170		
	Residential (PM)										0.80	681		
2	1135.000	0.800	1419.00	0.000			1135	0.80			0.67	760		
											0.33	375		
	Employment (AM)													
3	0.000	0.480	0.00	0.000			0	#DIV/0!	1197	710	0.88	0		
	Employment (PM)										0.12	0		
4	0.000	0.460	0.00	0.000			0	#DIV/0!	1198	710	0.17	0		
											0.83	0		
													Collector Rd 1	Collector Rd 2
Total											AM	170	17	0
												681	68	0
											PM	760	76	0
												375	38	0

Trip Generation 2031

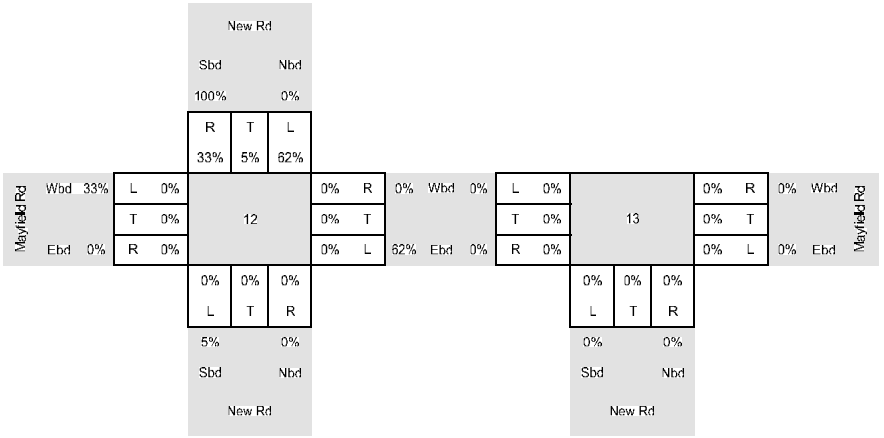
	Check +/-	Enter:	Enter X:	Enter:	Synergy	Transit Split	Trips	Rate	ITE Page	ITE Code	Ratio In/Out	Trips In/Out		
	Residential (AM)													
1	2339.000	0.600	3898.00	0.000			2339	0.60			0.20	468		
	Residential (PM)										0.80	1871		
2	3118.000	0.800	3898.00	0.000			3118	0.80			0.67	2089		
											0.33	1029		
	Employment (AM)													
3	0.000	0.480	0.00	0.000			0	#DIV/0!	1197	710	0.88	0		
	Employment (PM)										0.12	0		
4	0.000	0.460	0.00	0.000			0	#DIV/0!	1198	710	0.17	0		
											0.83	0		
													Collector Rd 1	Collector Rd 2
Total											AM	468	47	0
												1871	187	0
											PM	2089	209	0
												1029	103	0

Mayfield West Projected Traffic Volumes 2021

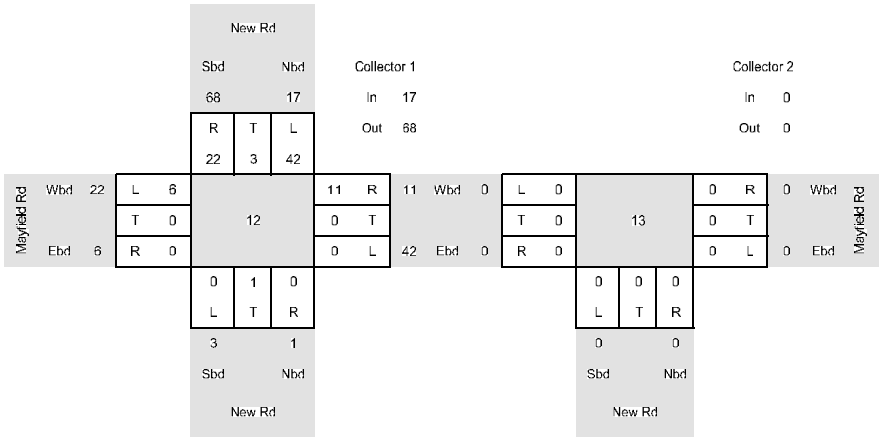
Distribution (In)



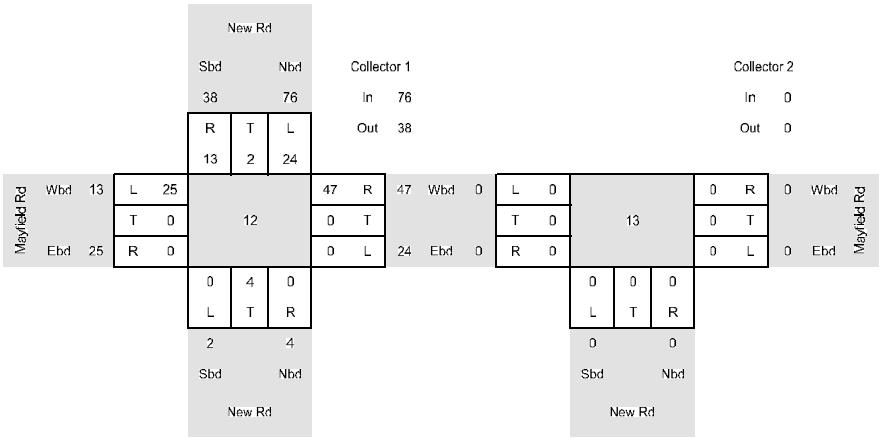
Distribution (Out)



Traffic AM

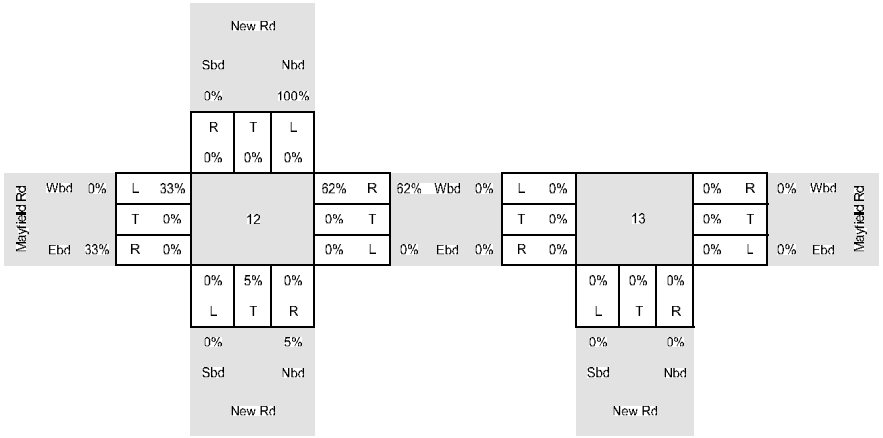


Traffic PM

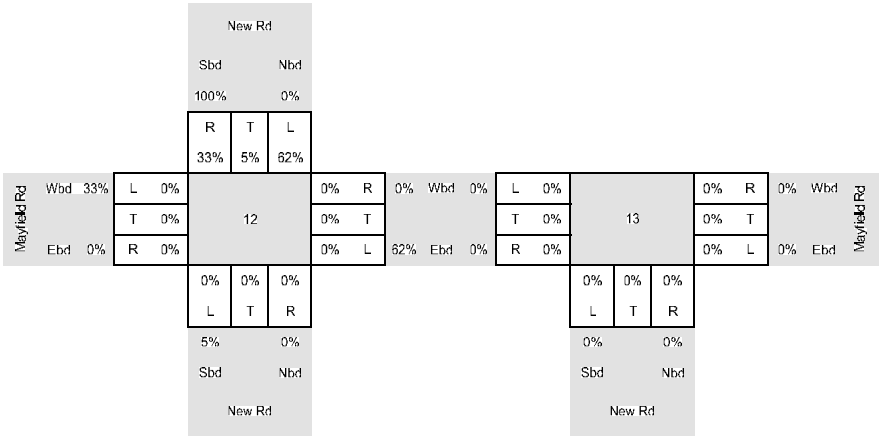


Mayfield West Projected Traffic Volumes 2031

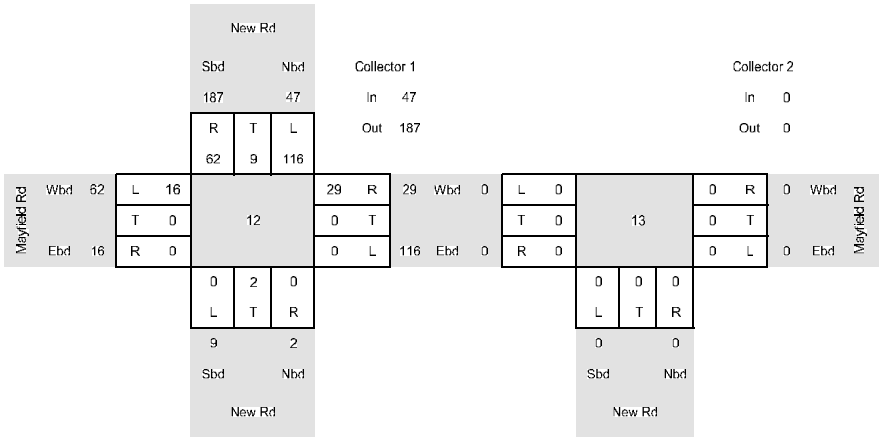
Distribution (In)



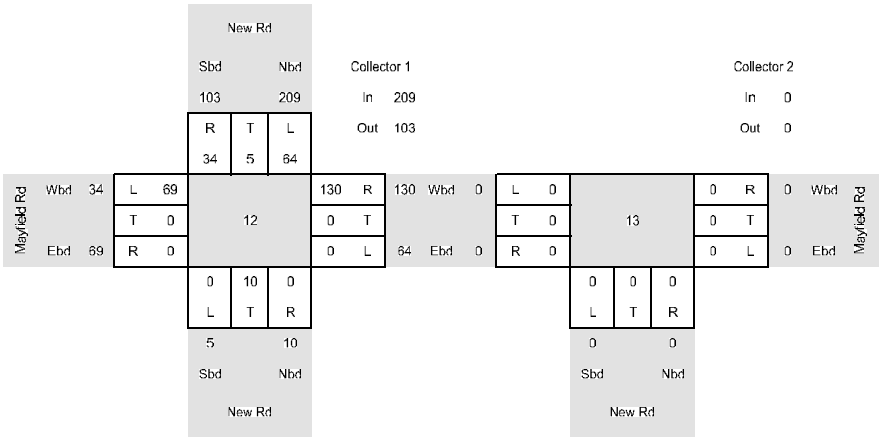
Distribution (Out)

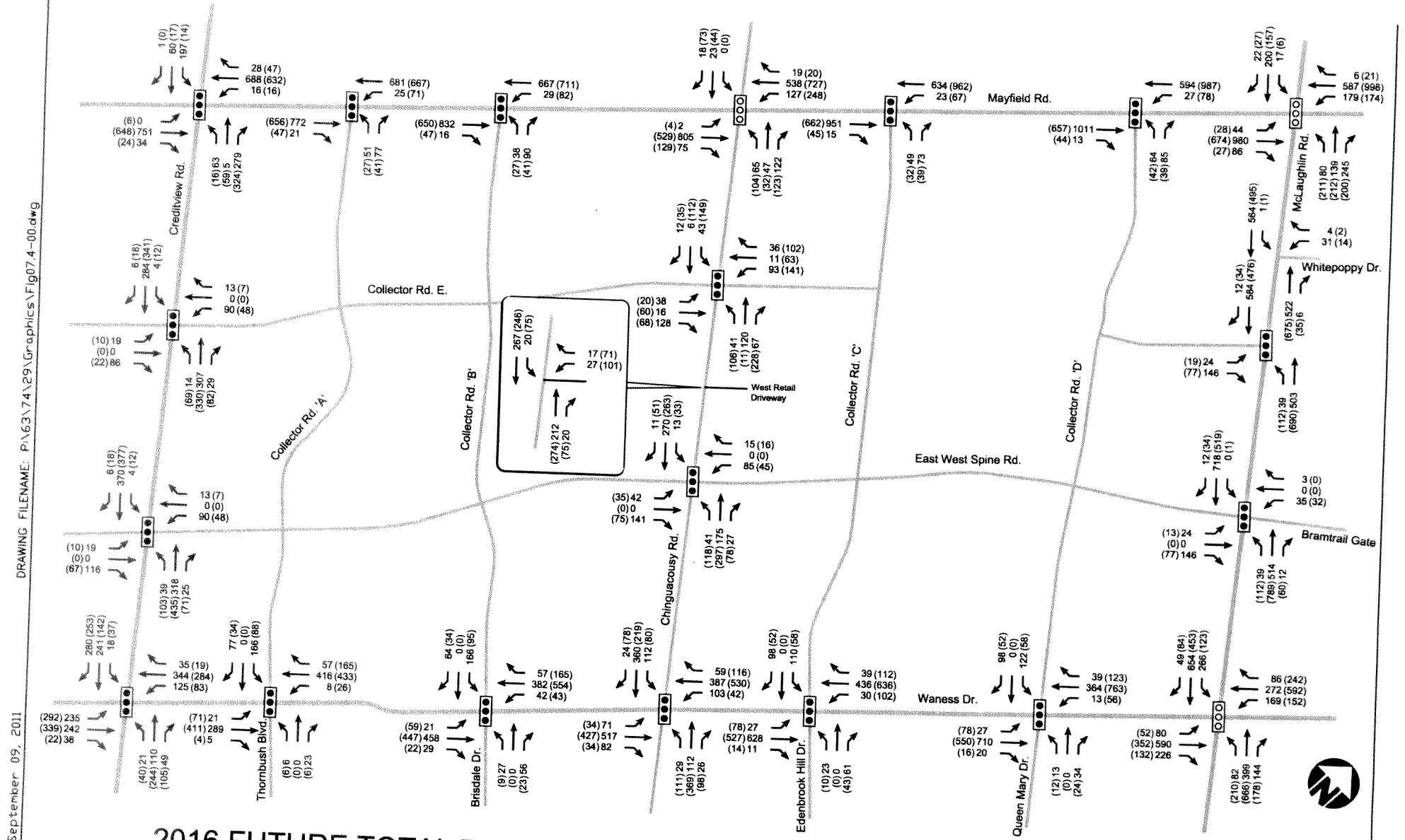


Traffic AM



Traffic PM





2016 FUTURE TOTAL TRAFFIC VOLUMES

00 AM Peak Hour

(00) PM Peak Hour

Existing Traffic Signal

Proposed Traffic Signal

DRAWING FILENAME: P:\63\74\29\Graphics\Fig07.4-00.dwg

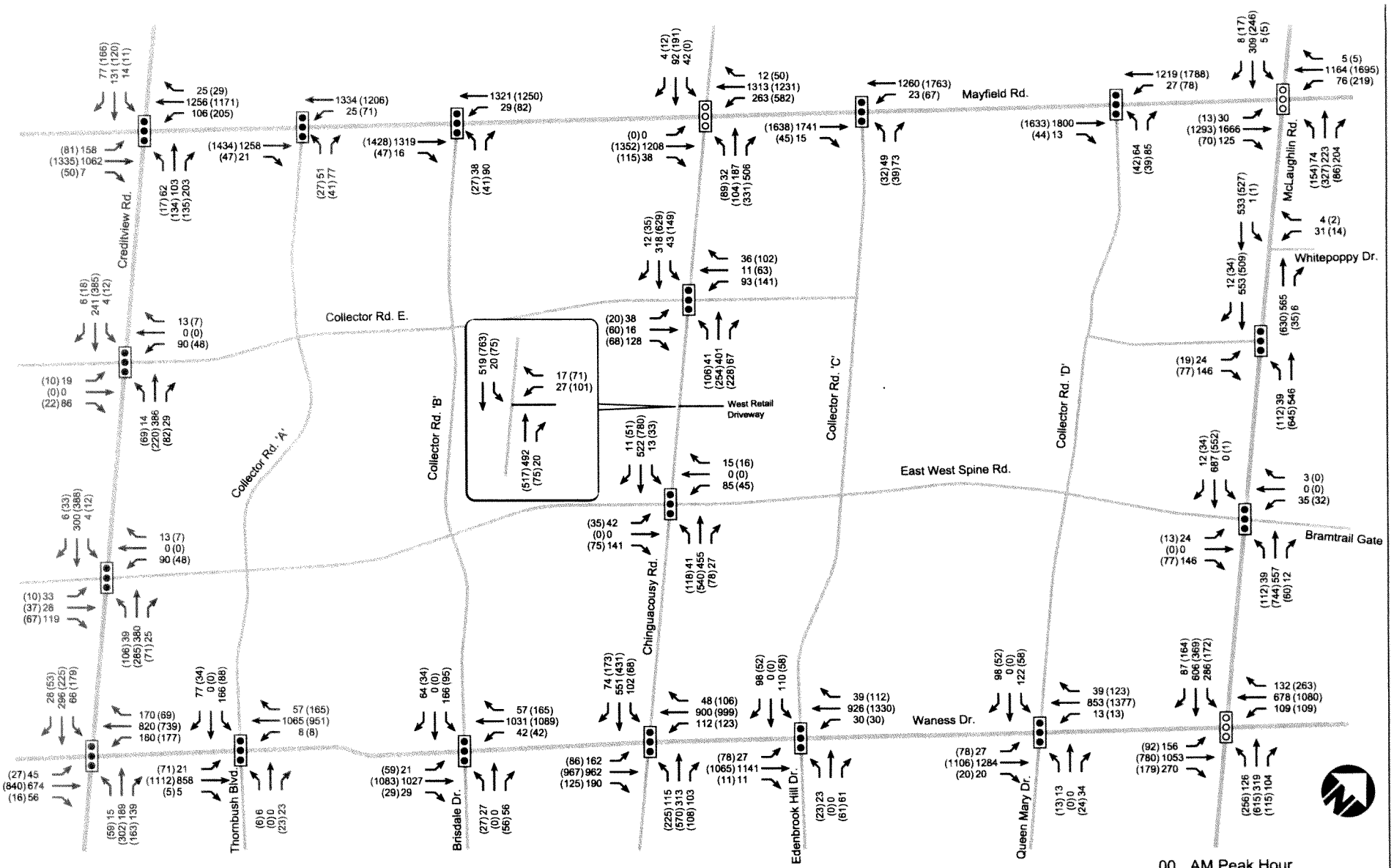
DATE PLOTTED: September 09, 2011

GROUP

Mount Pleasant Block Plan 51-2

6374-29, September 2011

Figure 7.4



2031 FUTURE TOTAL TRAFFIC VOLUMES

DRAWING FILENAME: P:\63\74\29\Graphics\Fig08.3-00.dwg

DATE PLOTTED: September 08, 2011

Appendix K

Roundabout Feasibility Study

GENIVAR

Region of Peel
Mayfield EA
101-17262-00

Roundabout Feasibility Analysis

Date: 7/25/2011

Site: Chinguacousy Road / Mayfield Road (1)

Analyst: Stephan Kellner, ing., M.Sc.A.
Nicolas Maltais-Tariant, ing. jr

	General characteristics	
Criterion	Safety	
Explication	Problems in the past? Good roundabout designs encourage speed control.	
Analysis	Accident data 2005-2009: Most accidents are probably related to traffic signal operations (left-turning and rear-end).	
Recommendation	Roundabout may reduce this type of accidents.	
Criterion	Visibility	
Explication	The roundabout shall be clearly visible, to provide for proper stopping distance and to allow for speed adjustments..	
Analysis	The location provides excellent visibility.	
Recommendation	None.	
Criterion	Transition zone	
Explication	Roundabouts may be used at the transition from a rural, high-speed environment to a low-speed urban environment.	
Analysis	The intersection is within a more rural setting, but is the first of a network of signalized intersections.	
Recommendation	Design shall take transition (speed reduction) into consideration.	
Criterion	Pedestrians	
Explication	Pedestrians require specific design elements. Roundabouts reduce crossing distance Roundabouts reduce crossing distances.	
Analysis	No sidewalks. Possibly no pedestrians in intersection.	
Recommendation	Verification of new pedestrian corridors due to future developements prior to design phase.	
Criterion	Visually impaired persons	
Explication	Visually impaired persons may perceive roundabouts as undesirable.	
Analysis	No data available.	
Recommendation	If new developements add pedestrian corrifors, meeting with association of visually impaired persons should be planned.	
Criterion	Bicyclists	
Explication	Bicycle lanes require specific design elements.	
Analysis	No bicycle lanes. Possibly few bicycles in intersection.	
Recommendation	Verification of existing or planned bicycle lanes pior to design phase (paved shoulder).	Bicycle lanes are not recommended on the circulatory roadway.
Criterion	Transit	
Explication	Bus stops require special consideration.	
Analysis	No data available.	
Recommendation	Bus stop locations should be verified prior to design phase.	Buses should not need to use a truck apron to negotiate a roundabout.
Conclusion	General characteristics	
	Location seems suitable, may reduce accidents, but speed reduction needs to be considered.	
	Site-specific conditions	
Criterion	Topography	
Explication	Level terrain allows for easiest design.	
Analysis	The site is level.	
Recommendation	Appropriate site. No impact on design.	
Criterion	Speed	
Explication	High-speed approches require special considerations.	
Analysis	Posted speed: 80 km/h.	
Recommendation	Design shall provide for speed reduction mesures well upstream of intersection.	
Criterion	Access management	
Explication	Existing mid-block accesses may be impacted. Existing accesses close to the intersection may be problematic, as well as corner properties.	
Analysis	Two existing driveways (north and west approaches).	
Recommendation	Driveways are rather far. However, design should take their existence into consideration.	
Criterion	Design vehicle	
Explication	The design should accommodate the largest vehicle that can reasonably be expected.	
Analysis	Preliminary design considers WB-20.	
Recommendation	Verification of over -sized trucks (farm equipment) prior to design phase.	
Criterion	Rail Crossings	
Explication	Rail crossings require special considerations.	
Analysis	No rail-crossings.	
Recommendation	None.	
Criterion	Right-of-way	
Explication	Right-of-way requirements for a roundabout are different to those of a signal-controlled intersection.	
Analysis	The preliminary geometry fits not within the ROW. (all approaches).	
Recommendation	ROW should be acquired before design phase.	
Criterion	Geometry	
Explication	Numbers of lanes and space requirements are important.	
Analysis	2-lane roundabout used. See capacity section.	
Recommendation	Exact geometry shall be determined during design phase.	
Criterion	Lanes mid-block	
Explication	Roundabouts may require less lanes between intersections	
Analysis	None.	
Recommendation	None.	
Criterion	Aesthetics	
Explication	Roundabouts offer an opportunity to provide attractive entries.	
Analysis	A roundabout at this intersection may provide a apealing transition.	
Recommendation	The roundabout may provide an attractive element at the entry of the developed, more urban zone.	
Criterion	Traffic calming	
Explication	Roundabouts may reduce speeds.	
Analysis	The roundabout may reduce speed by providing good progression for cars between intersections w/out platoons.	
Recommendation	Speed reduction upsetram necessary. Roundabout may provide for low speeds in the urban zone.	
Conclusion	Site-specific conditions	
	Location seems suitable, but ROW may be insufficient	
	Capacity	
Criterion	Capacity	
Explication	Roundabout needs to provide sufficient capacity.	
Analysis	Worst approach: LOS C (17,69 sec.); RFC 0,8. (Arcady, PM, 2031 w/ GTA)	
Recommendation	Roundabout provides sufficient capacity.	
Criterion	Hierarchy	
Explication	A roundabout does not provide good hierarchy division.	
Analysis	The roundabout is located at the intersection of a major and a minor road.	
Recommendation	The roundabout may provide a good transition between zones and does not seem to have a negative impact on traffic conditions.	
Criterion	Left-turns	
Explication	Heavy left-turns from the major street favour roundabouts.	
Analysis	WBL are heavy (AM & PM).	
Recommendation	A roundabout may accomodate left-turns well.	
Criterion	Lanes	
Explication	Number of lanes as required to accomodate future traffic flows.	
Analysis	According to analysis, 2 lanes are needed on all approches to accomodate future traffic flows. (FHWA)	
Recommendation	2-lane roundabout.	
Criterion	Queuing	
Explication	Queues may extend to the next intersection. Queues may be shorter than for signal controlled intersections	
Analysis	Maximum queue: 3,87 PCU. (Arcady, PM, 2031 w/ GTA)	
Recommendation	None.	
Criterion	Bottlenecks	
Explication	Nearby bottlenecks may backup into intersections.	
Analysis	No data available.	
Recommendation	Intersection seems sufficiently far away from adjacent intersections.	
Conclusion	Capacity	
	Roundabout offers sufficient capacity, but necessites a two-lane flare on the north approach	
	Control	
Criterion	AWSC	
Explication	A roundabout will always provide a higher capacity and lower delays than all-way stop-control (AWSC) operating with the same traffic volumes.	
Analysis	Existing signal control: traffic light.	
Recommendation	None	
Criterion	TWSC	
Explication	A roundabout will always provide a higher capacity and lower delays than all-way stop-control (AWSC) operating with the same traffic volumes.	
Analysis	Existing signal control: traffic light.	
Recommendation	None	
Conclusion	Control	
	Site is appropriate for operation with a roundabout.	
Overall conclusion	Roundabout appropriate for this location?	

GENIVAR

Region of Peel
Mayfield EA
101-17262-00

Roundabout Feasibility Analysis

Date: 7/25/2011

Site: New Road / Mayfield Road (12)

Analyst: Stephan Kellner, ing., M.Sc.A.
Nicolas Maltais-Tariant, ing. jr

	General characteristics	
Criterion	Safety	
Explication	Problems in the past? Good roundabout designs encourage speed control.	
Analysis	No accident data available.	
Recommendation	Design shall take speed control into account.	
Criterion	Visibility	
Explication	The roundabout shall be clearly visible, to provide for proper stopping distance and to allow for speed adjustments..	
Analysis	The location provides excellent visibility.	
Recommendation	None.	
Criterion	Transition zone	
Explication	Roundabouts may be used at the transition from a rural, high-speed environment to a low-speed urban environment.	
Analysis	The intersection will be within a more developped environment.	
Recommendation	None.	
Criterion	Pedestrians	
Explication	Pedestrians require specific design elements. Roundabouts reduce crossing distances.	
Analysis	No sidewalks. Possibly no pedestrians in intersection.	
Recommendation	Verification of new pedestrian corridors due to future developements prior to design phase.	
Criterion	Visually impaired persons	
Explication	Visually impaired persons may perceive roundabouts as undesirable.	
Analysis	No data available.	
Recommendation	If new developements add pedestrian corrifors, meeting with association of visually impaired persons should be planned.	
Criterion	Bicyclists	
Explication	Bicycle lanes require specific design elements.	
Analysis	No bicycle lanes. Possibly few bicycles in intersection.	
Recommendation	Verification of existing or planned bicycle lanes pior to design phase (paved shoulder	Bicycle lanes are not recommended on the circulatory roadway.
Criterion	Transit	
Explication	Bus stops require special consideration.	
Analysis	No data available.	
Recommendation	Bus stop locations should be verified prior to design phase.	Buses should not need to use a truck apron to negotiate a roundabout.

Conclusion	General characteristics
	Location seems suitable

	Site-specific conditions	
Criterion	Topography	
Explication	Level terrain allows for easiest design.	
Analysis	The site is level.	
Recommendation	Appropriate site. No impact on design.	
Criterion	Speed	
Explication	High-speed approches require special considerations.	
Analysis	Posted speed: 80 km/h, possibly 60 km/h in the future.	
Recommendation	Safe speed for the road-segment shall be determined prior to design phase.	
Criterion	Access management	
Explication	Existing mid-block accesses may be impacted. Existing accesses close to the intersection may be problematic, as well as corner properties.	
Analysis	No data avalable.	
Recommendation	Accesses should be placed sufficiently far from intersection during planning phase.	
Criterion	Design vehicle	
Explication	The design should accommodate the largest vehicle that can reasonably be expected.	
Analysis	Preliminary design considers WB-20.	
Recommendation	Verification of over -sized trucks prior to design phase.	
Criterion	Rail Crossings	
Explication	Rail crossings require special considerations.	
Analysis	No rail-crossings.	
Recommendation	None.	
Criterion	Right-of-way	
Explication	Right-of-way requirements for a roundabout are different to those of a signal-controlled intersection.	
Analysis	The preliminary geometry fits not within the ROW. (all approaches).	
Recommendation	ROW should be acquired before design phase.	
Criterion	Geometry	
Explication	Numbers of lanes and space requirements are important.	
Analysis	2-lane roundabout used. See capacity section.	
Recommendation	Exact geometry shall be determined during design phase.	
Criterion	Lanes mid-block	
Explication	Roundabouts may require less lanes between intersections	
Analysis	None.	
Recommendation	None.	
Criterion	Aesthetics	
Explication	Roundabouts offer an opportunity to provide attractive entries.	
Analysis	A roundabout at this intersection may provide a apealing transition.	
Recommendation	The roundabout may provide an attractive element at the entry to a new development.	
Criterion	Traffic calming	
Explication	Roundabouts may reduce speeds.	
Analysis	The roundabout may reduce speed by providing good progression for cars between intersections w/out platoons.	
Recommendation	None.	

Conclusion	Site-specific conditions
	Site seems suitable, but ROW may be insufficient

	Capacity	
Criterion	Capacity	
Explication	Roundabout needs to provide sufficient capacity.	
Analysis	Worst approach: LOS B (12,19 sec.); RFC 0,3. (Arcady, AM, 2031-v20110629).	
Recommendation	Roundabout provides sufficient capacity.	
Criterion	Hierarchy	
Explication	A roundabout does not provide good hierarchy division.	
Analysis	The roundabout is located at the intersection of a major and a minor road.	
Recommendation	Depending on urban-planning considerations and treatment of adjacent intersections, a roundabout may be an interseting possibility.	
Criterion	Left-turns	
Explication	Heavy left-turns from the major street favour roundabouts.	
Analysis	LT are low.	
Recommendation	None.	
Criterion	Lanes	
Explication	Number of lanes as required to accomodate future traffic flows.	
Analysis	According to analysis, 1 lane is needed on the north and south approches, and 2 lanes ont the east and west approaches (Arcady)	
Recommendation	2-lanes on main-street, 1 lane on side-street.	
Criterion	Queuing	
Explication	Queues may extend to the next intersection. Queues may be shorter than for signal controlled intersections	
Analysis	Maximum queue: 1,99 PCU. (Arcady, PM, 2031-v20110629)	
Recommendation	None.	
Criterion	Bottlenecks	
Explication	Nearby bottlenecks may backup into intersections.	
Analysis	No data available.	
Recommendation	Detailed traffic analysis of the entire network should be conducted, taking into account exact location of intersection.	

Conclusion	Capacity
	Roundabout offers sufficient capacity

	Control	
Criterion	AWSC	
Explication	A roundabout will always provide a higher capacity and lower delays than all-way stop-control (AWSC) operating with the same traffic volumes.	
Analysis	Signal warrant analysis states need for traffic lights for 2031 conditions	
Recommendation	Signal control or roundabout	
Criterion	TWSC	
Explication	A roundabout will always provide a higher capacity and lower delays than all-way stop-control (AWSC) operating with the same traffic volumes.	
Analysis	Signal warrant analysis states need for traffic lights for 2031 conditions	
Recommendation	Signal control or roundabout	

Conclusion	Control
	Site is appropriate for operation w/ a roundabout.

Overall conclusion	Roundabout appropriate for this location?

GENIVAR

Region of Peel
Mayfield EA
101-17262-00

Roundabout Feasibility Analysis

Date: 7/25/2011

Site: New Road / Mayfield Road (13)

Analyst: Stephan Kellner, ing., M.Sc.A.
Nicolas Maltais-Tariant, ing. jr

	General characteristics	
Criterion	Safety	
Explication	Problems in the past? Good roundabout designs encourage speed control.	
Analysis	No accident data available.	
Recommendation	Design shall take speed control into account.	
Criterion	Visibility	
Explication	The roundabout shall be clearly visible, to provide for proper stopping distance and to allow for speed adjustments..	
Analysis	The location provides excellent visibility.	
Recommendation	None.	
Criterion	Transition zone	
Explication	Roundabouts may be used at the transition from a rural, high-speed environment to a low-speed urban environment.	
Analysis	The intersection will be within a more developped environment.	
Recommendation	None.	
Criterion	Pedestrians	
Explication	Pedestrians require specific design elements. Roundabouts reduce crossing distances.	
Analysis	No sidewalks. Possibly no pedestrians in intersection.	
Recommendation	Verification of new pedestrian corridors due to future developements prior to design phase.	
Criterion	Visually impaired persons	
Explication	Visually impaired persons may perceive roundabouts as undesirable.	
Analysis	No data available.	
Recommendation	If new developements add pedestrian corrifors, meeting with association of visually impaired persons should be planned.	
Criterion	Bicyclists	
Explication	Bicycle lanes require specific design elements.	
Analysis	No bicycle lanes. Possibly few bicycles in intersection.	
Recommendation	Verification of existing or planned bicycle lanes pior to design phase (paved shoulder	Bicycle lanes are not recommended on the circulatory roadway.
Criterion	Transit	
Explication	Bus stops require special consideration.	
Analysis	No data available.	
Recommendation	Bus stop locations should be verified prior to design phase.	Buses should not need to use a truck apron to negotiate a roundabout.

Conclusion	General characteristics
	Location seems suitable

	Site-specific conditions	
Criterion	Topography	
Explication	Level terrain allows for easiest design.	
Analysis	The site is level.	
Recommendation	Appropriate site. No impact on design.	
Criterion	Speed	
Explication	High-speed approches require special considerations.	
Analysis	Posted speed: 80 km/h, possibly 60 km/h in the future.	
Recommendation	Safe speed for the road-segment shall be determined prior to design phase.	
Criterion	Access management	
Explication	Existing mid-block accesses may be impacted. Existing accesses close to the intersection may be problematic, as well as corner properties.	
Analysis	No data avalable.	
Recommendation	Accesses should be placed sufficiently far from intersection during planning phase.	
Criterion	Design vehicle	
Explication	The design should accommodate the largest vehicle that can reasonably be expected.	
Analysis	Preliminary design considers WB-20.	
Recommendation	Verification of over -sized trucks prior to design phase.	
Criterion	Rail Crossings	
Explication	Rail crossings require special considerations.	
Analysis	No rail-crossings.	
Recommendation	None.	
Criterion	Right-of-way	
Explication	Right-of-way requirements for a roundabout are different to those of a signal-controlled intersection.	
Analysis	The preliminary geometry fits not within the ROW. (all approaches).	
Recommendation	ROW should be acquired before design phase.	
Criterion	Geometry	
Explication	Numbers of lanes and space requirements are important.	
Analysis	2-lane roundabout used. See capacity section.	
Recommendation	Exact geometry shall be determined during design phase.	
Criterion	Lanes mid-block	
Explication	Roundabouts may require less lanes between intersections	
Analysis	None.	
Recommendation	None.	
Criterion	Aesthetics	
Explication	Roundabouts offer an opportunity to provide attractive entries.	
Analysis	The roundabout may provide an attractive element at the entry to a new development	
Recommendation	Need for traffic control should be established.	
Criterion	Traffic calming	
Explication	Roundabouts may reduce speeds.	
Analysis	The roundabout may reduce speed by providing good progression for cars between intersections w/out platoons.	
Recommendation	None.	

Conclusion	Site-specific conditions
	Site seems suitable, but ROW may be insufficient

	Capacity	
Criterion	Capacity	
Explication	Roundabout needs to provide sufficient capacity.	
Analysis	Worst approach: LOS B (13,63 sec.); RFC 0,4. (Arcady, AM, 2031-v20110629).	
Recommendation	Roundabout provides sufficient capacity.	
Criterion	Hierarchy	
Explication	A roundabout does not provide good hierarchy division.	
Analysis	The roundabout is located at the intersection of a major and a minor road.	
Recommendation	Depending on urban-planning considerations and treatment of adjacent intersections, a roundabout may be an interseting possibility.	
Criterion	Left-turns	
Explication	Heavy left-turns from the major street favour roundabouts.	
Analysis	LT are low.	
Recommendation	None.	
Criterion	Lanes	
Explication	Number of lanes as required to accomodate future traffic flows.	
Analysis	According to analysis, 1 lane is needed on the north and south approches, and 2 lanes ont the east and west approaches (Arcady)	
Recommendation	2-lanes on main-street, 1 lane on side-street.	
Criterion	Queuing	
Explication	Queues may extend to the next intersection. Queues may be shorter than for signal controlled intersections	
Analysis	Maximum queue: 0,57 PCU. (Arcady, PM, 2031-v20110629).	
Recommendation	None.	
Criterion	Bottlenecks	
Explication	Nearby bottlenecks may backup into intersections.	
Analysis	No data available.	
Recommendation	Detailed traffic analysis of the entire network should be conducted, taking into account exact location of intersection.	

Conclusion	Capacity
	Roundabout offers sufficient capacity

	Control	
Criterion	AWSC	
Explication	A roundabout will always provide a higher capacity and lower delays than all-way stop-control (AWSC) operating with the same traffic volumes.	
Analysis	Signal warrant analysis states need for traffic lights for 2031 conditions	
Recommendation	None	
Criterion	TWSC	
Explication	A roundabout will always provide a higher capacity and lower delays than all-way stop-control (AWSC) operating with the same traffic volumes.	
Analysis	Signal warrant analysis states need for traffic lights for 2031 conditions	
Recommendation	None	

Conclusion	Control
	Site is appropriate for operation w/ a roundabout.

Overall conclusion	Roundabout appropriate for this location?

GENIVAR

Region of Peel
Mayfield EA
101-17262-00

Roundabout Feasibility Analysis

Date: 7/25/2011
Site: McLaughlin Road / Mayfield Road (2)
Analyst: Stephan Kellner, ing., M.Sc.A.
Nicolas Maltais-Tariant, ing. jr

	General characteristics	
Criterion	Safety	
Explication	Problems in the past? Good roundabout designs encourage speed control.	
Analysis	Accident data 2005-2009: Most accidents are probably related to traffic signal operations (left-turning and rear-end).	
Recommendation	Roundabout may reduce this type of accidents.	
Criterion	Visibility	
Explication	The roundabout shall be clearly visible, to provide for proper stopping distance and to allow for speed adjustments..	
Analysis	The location provides excellent visibility.	
Recommendation	None.	
Criterion	Transition zone	
Explication	Roundabouts may be used at the transition from a rural, high-speed environment to a low-speed urban environment.	
Analysis	The intersection will be within a more developped environment.	
Recommendation	None.	
Criterion	Pedestrians	
Explication	Pedestrians require specific design elements. Roundabouts reduce crossing distances.	
Analysis	No sidewalks. Possibly no pedestrians in intersection.	
Recommendation	Verification of new pedestrian corridors due to future developements prior to design phase.	
Criterion	Visually impaired persons	
Explication	Visually impaired persons may perceive roundabouts as undesirable.	
Analysis	No data available.	
Recommendation	If new developements add pedestrian corrifors, meeting with association of visually impaired persons should be planned.	
Criterion	Bicyclists	
Explication	Bicycle lanes require specific design elements.	
Analysis	No bicycle lanes. Possibly few bicycles in intersection.	
Recommendation	Verification of existing or planned bicycle lanes pior to design phase (paved shoulder	Bicycle lanes are not recommended on the circulatory roadway.
Criterion	Transit	
Explication	Bus stops require special consideration.	
Analysis	No data available.	
Recommendation	Bus stop locations should be verified prior to design phase.	Buses should not need to use a truck apron to negotiate a roundabout.

Conclusion	**General characteristics**
	Location seems suitable, may reduce left-turn related accidents.

	Site-specific conditions
Criterion	Topography
Explication	Level terrain allows for easiest design.
Analysis	The site is level.
Recommendation	Appropriate site. No impact on design.
Criterion	Speed
Explication	High-speed approches require special considerations.
Analysis	Posted speed: 70 km/h, possibly 60 km/h in the future.
Recommendation	Safe speed for the road-segment shall be determined prior to design phase.
Criterion	Access management
Explication	Existing mid-block accesses may be impacted. Existing accesses close to the intersection may be problematic, as well as corner properties.
Analysis	No driveways close to intersection.
Recommendation	Accesses should be placed sufficiently far from intersection during planning phase.
Criterion	Design vehicle
Explication	The design should accommodate the largest vehicle that can reasonably be expected.
Analysis	Preliminary design considers WB-20.
Recommendation	Verification of over -sized trucks prior to design phase.
Criterion	Rail Crossings
Explication	Rail crossings require special considerations.
Analysis	No rail-crossings.
Recommendation	None.
Criterion	Right-of-way
Explication	Right-of-way requirements for a roundabout are different to those of a signal-controlled intersection.
Analysis	The preliminary geometry fits not within the ROW. (all approaches).
Recommendation	ROW should be acquired before design phase.
Criterion	Geometry
Explication	Numbers of lanes and space requirements are important.
Analysis	2-lane roundabout used. See capacity section.
Recommendation	Exact geometry shall be determined during design phase.
Criterion	Lanes mid-block
Explication	Roundabouts may require less lanes between intersections
Analysis	None.
Recommendation	None.
Criterion	Aesthetics
Explication	Roundabouts offer an opportunity to provide attractive entries.
Analysis	None.
Recommendation	None.
Criterion	Traffic calming
Explication	Roundabouts may reduce speeds.
Analysis	The roundabout may reduce speed by providing good progression for cars between intersections w/out platoons.
Recommendation	None.

Conclusion	**Site-specific conditions**
	Site seems suitable, but ROW may be insufficient

	Capacity
Criterion	Capacity
Explication	Roundabout needs to provide sufficient capacity.
Analysis	Worst approach: LOS B (14,26 sec.); RFC 0,9. (Arcady, AM, 2031-v20110629).
Recommendation	Roundabout provides sufficient capacity.
Criterion	Hierarchy
Explication	A roundabout does not provide good hierarchy division.
Analysis	The roundabout is located at the intersection of a major and a minor road.
Recommendation	The roundabout may provide a good transition and does not seem to have a negative impact on traffic conditions.
Criterion	Left-turns
Explication	Heavy left-turns from the major street favour roundabouts.
Analysis	WBL are heavy.
Recommendation	A roundabout may accomodate left-turns well.
Criterion	Lanes
Explication	Number of lanes as required to accomodate future traffic flows.
Analysis	According to analysis, 2 lanes are needed on all approches to accomodate future traffic flows. (FHWA)
Recommendation	2-lane roundabout.
Criterion	Queuing
Explication	Queues may extend to the next intersection. Queues may be shorter than for signal controlled intersections
Analysis	Maximum queue: 7,50 PCU. (Arcady, PM, 2031-v20110629)
Recommendation	None.
Criterion	Bottlenecks
Explication	Nearby bottlenecks may backup into intersections.
Analysis	No data available.
Recommendation	Detailed traffic analysis of the entire network should be conducted.

Conclusion	**Capacity**
	Roundabout offers sufficient capacity

	Control
Criterion	AWSC
Explication	A roundabout will always provide a higher capacity and lower delays than all-way stop-control (AWSC) operating with the same traffic volumes.
Analysis	Existing signal control: traffic light.
Recommendation	None
Criterion	TWSC
Explication	A roundabout will always provide a higher capacity and lower delays than all-way stop-control (AWSC) operating with the same traffic volumes.
Analysis	Existing signal control: traffic light.
Recommendation	None

Conclusion	**Control**
	Site is appropriate for operation with a roundabout.

Overall conclusion	**Roundabout appropriate for this location?**
	Implementation of a roundabout at this site is feasible.

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Region of Peel
Mayfield EA
101-17262-00

Roundabout Feasibility Analysis

Date: 7/25/2011
Site: Van Kirk Drive / Mayfield Road (3)
Analyst: Stephan Kellner, ing., M.Sc.A.
Nicolas Maltais-Tariant, ing. jr

	General characteristics	
Criterion	Safety	
Explication	Problems in the past? Good roundabout designs encourage speed control.	
Analysis	No accident data available.	
Recommendation	Design shall take speed control into account.	
Criterion	Visibility	
Explication	The roundabout shall be clearly visible, to provide for proper stopping distance and to allow for speed adjustments..	
Analysis	The location provides excellent visibility.	
Recommendation	None.	
Criterion	Transition zone	
Explication	Roundabouts may be used at the transition from a rural, high-speed environment to a low-speed urban environment.	
Analysis	The intersection will be within a more developped environment.	
Recommendation	None.	
Criterion	Pedestrians	
Explication	Pedestrians require specific design elements. Roundabouts reduce crossing distances.	
Analysis	Existing sidewalks.	
Recommendation	Design shall pedestrian crossings into account.	
Criterion	Visually impaired persons	
Explication	Visually impaired persons may perceive roundabouts as undesirable.	
Analysis	No data available.	
Recommendation	Proximity of corridors or homes of visually impaired persons should be verified and a meeting with their association planned.	
Criterion	Bicyclists	
Explication	Bicycle lanes require specific design elements.	
Analysis	No bicycle lanes. Possibly few bicycles in intersection.	
Recommendation	Verification of existing or planned bicycle lanes pior to design phase.	Bicycle lanes are not recommended on the circulatory roadway.
Criterion	Transit	
Explication	Bus stops require special consideration.	
Analysis	No data available.	
Recommendation	Bus stop locations should be verified prior to design phase.	Buses should not need to use a truck apron to negotiate a roundabout.

Conclusion	**General characteristics**
	Location seems suitable

	Site-specific conditions	
Criterion	Topography	
Explication	Level terrain allows for easiest design.	
Analysis	The site is level.	
Recommendation	Appropriate site. No impact on design.	
Criterion	Speed	
Explication	High-speed approches require special considerations.	
Analysis	Posted speed: 70 km/h, possibly 60 km/h in the future.	
Recommendation	Safe speed for the road-segment shall be determined prior to design phase.	
Criterion	Access management	
Explication	Existing mid-block accesses may be impacted. Existing accesses close to the intersection may be problematic, as well as corner properties.	
Analysis	Driveway on north approach, slightly off-center.	
Recommendation	Access to driveway must be integrated into design.	
Criterion	Design vehicle	
Explication	The design should accommodate the largest vehicle that can reasonably be expected.	
Analysis	Preliminary design considers WB-20.	
Recommendation	Verification of over -sized trucks prior to design phase.	
Criterion	Rail Crossings	
Explication	Rail crossings require special considerations.	
Analysis	Rail-crossing sufficiently for to the west (approx. 350 m).	
Recommendation	None.	
Criterion	Right-of-way	
Explication	Right-of-way requirements for a roundabout are different to those of a signal-controlled intersection.	
Analysis	The preliminary geometry fits not within the ROW. (North approach).	
Recommendation	ROW should be acquired before design phase.	
Criterion	Geometry	
Explication	Numbers of lanes and space requirements are important planning analysis results.	
Analysis	2-lane roundabout used. See capacity section.	
Recommendation	Exact geometry shall be determined during design phase.	
Criterion	Lanes mid-block	
Explication	Roundabouts may require less lanes between intersections	
Analysis	None.	
Recommendation	None.	
Criterion	Aesthetics	
Explication	Roundabouts offer an opportunity to provide attractive entries.	
Analysis	The roundabout may provide an attractive element at the entry to the existing development.	
Recommendation	See control section.	
Criterion	Traffic calming	
Explication	Roundabouts may reduce speeds.	
Analysis	The roundabout may reduce speed by providing good progression for cars between intersections w/out platoons.	
Recommendation	None.	

Conclusion	**Site-specific conditions**
	ROW may be insufficient, acces to driveway difficult.

	Capacity	
Criterion	Capacity	
Explication	Roundabout needs to provide sufficient capacity.	
Analysis	Worst approach: LOS A (8,79 sec.); RFC 0,8. (Arcady, PM, 2031-v20110629).	
Recommendation	Roundabout provides sufficient capacity.	
Criterion	Hierarchy	
Explication	A roundabout does not provide good hierarchy division.	
Analysis	The roundabout is located at the intersection of a major and a minor road.	
Recommendation	None.	
Criterion	Left-turns	
Explication	Heavy left-turns from the major street favour roundabouts.	
Analysis	LT are light.	
Recommendation	None.	
Criterion	Lanes	
Explication	Number of lanes as required to accomodate future traffic flows.	
Analysis	According to analysis, 2 lanes are needed on all approches to accomodate future traffic flows. (FHWA)	
Recommendation	2-lane roundabout.	
Criterion	Queuing	
Explication	Queues may extend to the next intersection. Queues may be shorter than for signal controlled intersections	
Analysis	Maximum queue: 5,44 PCU. (Arcady, PM, 2031-v20110629).	
Recommendation	None.	
Criterion	Bottlenecks	
Explication	Nearby bottlenecks may backup into intersections.	
Analysis	No data available.	
Recommendation	Detailed traffic analysis of the entire network should be conducted.	

Conclusion	**Capacity**
	Roundabout offers sufficient capacity.

	Control	
Criterion	AWSC	
Explication	A roundabout will always provide a higher capacity and lower delays than all-way stop-control (AWSC) operating with the same traffic volumes.	
Analysis	Signal warrant analysis states need for traffic lights for 2021	
Recommendation	Signal control or roundabout.	
Criterion	TWSC	
Explication	A roundabout will always provide a higher capacity and lower delaysthan all-way stop-control (AWSC) operating with the same trafficvolumes.	
Analysis	Signal warrant analysis states need for traffic lights for 2021	
Recommendation	Signal control or roundabout.	

Conclusion	**Control**
	Site is appropriate for operation w/ a roundabout.

Overall conclusion	**Roundabout appropriate for this location?**
	Implementation of a roundabout at this site is feasible, but ROW and acces to driveways should be verified.

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Region of Peel
Mayfield EA
101-17262-00

Roundabout Feasibility Analysis

Date: 7/25/2011
Site: Cresthaven Road / Robertson Drive / Mayfield Road (4)
Analyst: Stephan Kellner, ing., M.Sc.A.
Nicolas Maltais-Tariant, ing. jr

	General characteristics	
Criterion	Safety	
Explication	Problems in the past? Good roundabout designs encourage speed control.	
Analysis	Accident data 2005-2009: Most accidents are probably related to traffic signal operations (left-turning and rear-end).	
Recommendation	Roundabout may reduce this type of accidents.	
Criterion	Visibility	
Explication	The roundabout shall be clearly visible, to provide for proper stopping distance and to allow for speed adjustments..	
Analysis	The location provides excellent visibility.	
Recommendation	None.	
Criterion	Transition zone	
Explication	Roundabouts may be used at the transition from a rural, high-speed environment to a low-speed urban environment.	
Analysis	The intersection is within a transition to 60 km/h and a more densely populatetd zone..	
Recommendation	Transition needs to be considered during design phase.	
Criterion	Pedestrians	
Explication	Pedestrians require specific design elements. Roundabouts reduce crossing distance	Roundabouts reduce crossing distances.
Analysis	Existing sidewalks.	
Recommendation	Design shall pedestrian crossings into account.	
Criterion	Visually impaired persons	
Explication	Visually impaired persons may perceive roundabouts as undesirable.	
Analysis	No data available.	
Recommendation	Proximity of corridors or homes of visually impaired persons should be verified and a meeting with their association planned.	
Criterion	Bicyclists	
Explication	Bicycle lanes require specific design elements.	
Analysis	No bicycle lanes. Possibly few bicycles in intersection.	
Recommendation	Verification of existing or planned bicycle lanes pior to design phase.	Bicycle lanes are not recommended on the circulatory roadway.
Criterion	Transit	
Explication	Bus stops require special consideration.	
Analysis	No data available.	
Recommendation	Bus stop locations should be verified prior to design phase.	Buses should not need to use a truck apron to negotiate a roundabout.

Conclusion	**General characteristics**	
	Location seems suitable, may reduce rear-end and left-turn related accidents.	

	Site-specific conditions	
Criterion	Topography	
Explication	Level terrain allows for easiest design.	
Analysis	The site is level.	
Recommendation	Appropriate site. No impact on design.	
Criterion	Speed	
Explication	High-speed approches require special considerations.	
Analysis	Posted speed: 70 km/h	
Recommendation	Safe speed for the road-segment shall be determined prior to design phase.	
Criterion	Access management	
Explication	Existing mid-block accesses may be impacted. Existing accesses close to the intersection may be problematic, as well as corner properties.	
Analysis	Existing access on west approach very close to intersection.	
Recommendation	Access need to be relocated.	
Criterion	Design vehicle	
Explication	The design should accommodate the largest vehicle that can reasonably be expected.	
Analysis	Preliminary design considers WB-20.	
Recommendation	Verification of over -sized trucks prior to design phase.	
Criterion	Rail Crossings	
Explication	Rail crossings require special considerations.	
Analysis	Rail-crossing sufficiently far to the west (approx. 250 m).	
Recommendation	None.	
Criterion	Right-of-way	
Explication	Right-of-way requirements for a roundabout are different to those of a signal-controlled intersection.	
Analysis	The preliminary geometry fits not within the ROW. (South approach).	
Recommendation	ROW should be acquired before design phase.	
Criterion	Geometry	
Explication	Numbers of lanes and space requirements are important planning analysis results.	
Analysis	2-lane roundabout used. See capacity section.	
Recommendation	Exact geometry shall be determined during design phase.	
Criterion	Lanes mid-block	
Explication	Roundabouts may require less lanes between intersections	
Analysis	None.	
Recommendation	None.	
Criterion	Aesthetics	
Explication	Roundabouts offer an opportunity to provide attractive entries.	
Analysis	The roundabout may provide an attractive element at the entry to a new development	
Recommendation	None.	
Criterion	Traffic calming	
Explication	Roundabouts may reduce speeds.	
Analysis	The roundabout may reduce speed by providing good progression for cars between intersections w/out platoons.	
Recommendation	None.	

Conclusion	**Site-specific conditions**	
	ROW may be insufficient, accesses need to be relocated.	

	Capacity	
Criterion	Capacity	
Explication	Roundabout needs to provide sufficient capacity.	
Analysis	Worst approach: LOS F (64,71 sec.); RFC 0,99. (Arcady, PM, 2031-v20110629).	
Recommendation	Roundabout is at capacity on the east approach.	
Criterion	Hierarchy	
Explication	A roundabout does not provide good hierarchy division.	
Analysis	The roundabout is located at the intersection of a major and a minor road.	
Recommendation	The roundabout may provide a good division and does not seem to have a negative impact on traffic conditions.	
Criterion	Left-turns	
Explication	Heavy left-turns from the major street favour roundabouts.	
Analysis	LT are light to moderate.	
Recommendation	None.	
Criterion	Lanes	
Explication	Number of lanes as required to accomodate future traffic flows.	
Analysis	According to analysis, 2 lanes are needed on all approches to accomodate future traffic flows. (FHWA)	
Recommendation	2-lane roundabout.	
Criterion	Queuing	
Explication	Queues may extend to the next intersection. Queues may be shorter than for signal controlled intersections	
Analysis	Maximum queue: 43,24 PCU. (Arcady, PM, 2031-v20110629).	
Recommendation	None.	
Criterion	Bottlenecks	
Explication	Nearby bottlenecks may backup into intersections.	
Analysis	No data available.	
Recommendation	Detailed traffic analysis of the entire network should be conducted.	

Conclusion	**Capacity**	
	Roundabout might not provide sufficient capacity. Further analyses should be conducted.	

	Control	
Criterion	AWSC	
Explication	A roundabout will always provide a higher capacity and lower delays than all-way stop-control (AWSC) operating with the same traffic volumes.	
Analysis	Existing signal control: traffic light.	
Recommendation	None	
Criterion	TWSC	
Explication	A roundabout will always provide a higher capacity and lower delays than all-way stop-control (AWSC) operating with the same traffic volumes.	
Analysis	Existing signal control: traffic light.	
Recommendation	None	

Conclusion	**Control**	
	Site is appropriate for operation with a roundabout.	

Overall conclusion	**Roundabout appropriate for this location?**	
	Implementation of a roundabout at this site is feasible, but requires further analysis(ROW, accesses and capacity)	

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Region of Peel
Mayfield EA
101-17262-00

Roundabout Feasibility Analysis

Date: 7/25/2011

Site: Hurontario Street / Mayfield Road (5)

Analyst: Stephan Kellner, ing., M.Sc.A.
Nicolas Maltais-Tariant, ing. jr

	General characteristics	
Criterion	Safety	
Explication	Problems in the past? Good roundabout designs encourage speed control.	
Analysis	Accident data 2005-2009: Most accidents are probably related to traffic signal operations (left-turning and rear-end).	
Recommendation	Roundabout may reduce this type of accidents.	
Criterion	Visibility	
Explication	The roundabout shall be clearly visible, to provide for proper stopping distance and to allow for speed adjustments..	
Analysis	The location provides excellent visibility.	
Recommendation	None.	
Criterion	Transition zone	
Explication	Roundabouts may be used at the transition from a rural, high-speed environment to a low-speed urban environment.	
Analysis	The intersection is within a transition to a more urbain area.	
Recommendation	Depending on urban-planning considerations for the entire network, a roundabout may provide a transition.	
Criterion	Pedestrians	
Explication	Pedestrians require specific design elements. Roundabouts reduce crossing distances.	
Analysis	Existing sidewalks.	
Recommendation	Design shall pedestrian crossings into account.	
Criterion	Visually impaired persons	
Explication	Visually impaired persons may perceive roundabouts as undesirable.	
Analysis	No data available.	
Recommendation	Proximity of corridors or homes of visually impaired persons should be verified and a meeting with their association planned.	
Criterion	Bicyclists	
Explication	Bicycle lanes require specific design elements.	
Analysis	No bicycle lanes. Possibly few bicycles in intersection.	
Recommendation	Verification of existing or planned bicycle lanes pior to design phase.	Bicycle lanes are not recommended on the circulatory roadway.
Criterion	Transit	
Explication	Bus stops require special consideration.	
Analysis	No data available.	
Recommendation	Bus stop locations should be verified prior to design phase.	Buses should not need to use a truck apron to negotiate a roundabout.

Conclusion	General characteristics
	Location seems suitable and roundabout may have positive impact on accidents.

	Site-specific conditions	
Criterion	Topography	
Explication	Level terrain allows for easiest design.	
Analysis	The site is level.	
Recommendation	Appropriate site. No impact on design.	
Criterion	Speed	
Explication	High-speed approches require special considerations.	
Analysis	Posted speed: 60 km/h.	
Recommendation	None.	
Criterion	Access management	
Explication	Existing mid-block accesses may be impacted. Existing accesses close to the intersection may be problematic, as well as corner properties.	
Analysis	Accesses are very close to the intersection (gas stations).	
Recommendation	Accesses this close may provide problems.	
Criterion	Design vehicle	
Explication	The design should accommodate the largest vehicle that can reasonably be expected.	
Analysis	Preliminary design considers WB-20.	
Recommendation	Verification of over -sized trucks prior to design phase.	
Criterion	Rail Crossings	
Explication	Rail crossings require special considerations.	
Analysis	No rail-crossings.	
Recommendation	None.	
Criterion	Right-of-way	
Explication	Right-of-way requirements for a roundabout are different to those of a signal-controlled intersection.	
Analysis	The preliminary geometry fits within the ROW.	
Recommendation	None.	
Criterion	Geometry	
Explication	Numbers of lanes and space requirements are important planning analysis results.	
Analysis	2-lane roundabout used. See capacity section.	
Recommendation	Exact geometry shall be determined during design phase.	
Criterion	Lanes mid-block	
Explication	Roundabouts may require less lanes between intersections	
Analysis	None.	
Recommendation	None.	
Criterion	Aesthetics	
Explication	Roundabouts offer an opportunity to provide attractive entries.	
Analysis	None.	
Recommendation	None.	
Criterion	Traffic calming	
Explication	Roundabouts may reduce speeds.	
Analysis	The roundabout may reduce speed by providing good progression for cars between intersections w/out platoons.	
Recommendation	None.	

Conclusion	Site-specific conditions
	Locations does not seem suitable (accesses).

	Capacity	
Criterion	Capacity	
Explication	Roundabout needs to provide sufficient capacity.	
Analysis	Worst approach: LOS F (>200 sec.); RFC 1,64. (Arcady, PM, 2031-v20110629).	
Recommendation	Roundabout does not provide sufficient capacity.	
Criterion	Hierarchy	
Explication	A roundabout does not provide good hierarchy division.	
Analysis	The roundabout is located at the intersection of two major roads.	
Recommendation	None.	
Criterion	Left-turns	
Explication	Heavy left-turns from the major street favour roundabouts.	
Analysis	LT are heavy.	
Recommendation	None.	
Criterion	Lanes	
Explication	Number of lanes as required to accomodate future traffic flows.	
Analysis	According to analysis, 2+ lanes are needed on Hurontario and Mayfield to accomodate future traffic flows. (FHWA)	
Recommendation	2-lane roundabout.	
Criterion	Queuing	
Explication	Queues may extend to the next intersection. Queues may be shorter than for signal controlled intersections	
Analysis	Maximum queues too long. (Arcady, AM).	
Recommendation	Major queuing problem on the west approach.	
Criterion	Bottlenecks	
Explication	Nearby bottlenecks may backup into intersections.	
Analysis	No data available.	
Recommendation	Detailed traffic analysis of the entire network should be conducted.	

Conclusion	Capacity
	Roundabout does not offer sufficient capacity

	Control	
Criterion	AWSC	
Explication	A roundabout will always provide a higher capacity and lower delays than all-way stop-control (AWSC) operating with the same traffic volumes.	
Analysis	Existing signal control: traffic light.	
Recommendation	None	
Criterion	TWSC	
Explication	A roundabout will always provide a higher capacity and lower delays than all-way stop-control (AWSC) operating with the same traffic volumes.	
Analysis	Existing signal control: traffic light.	
Recommendation	None	

Conclusion	Control
	Site is appropriate for operation with a roundabout.

Overall conclusion	Roundabout appropriate for this location?

GENIVAR

Region of Peel
Mayfield EA
101-17262-00

Roundabout Feasibility Analysis

Date: 7/25/2011

Site: Colonel Bertram Road / Mayfield Road (6)

Analyst: Stephan Kellner, ing., M.Sc.A.
Nicolas Maltais-Tariant, ing. jr

	General characteristics	
Criterion	Safety	
Explication	Problems in the past? Good roundabout designs encourage speed control.	
Analysis	Accident data 2008-2009: Most accidents are probably related to traffic signal operations (left-turning and rear-end).	
Recommendation	Roundabout may reduce this type of accidents.	
Criterion	Visibility	
Explication	The roundabout shall be clearly visible, to provide for proper stopping distance and to allow for speed adjustments..	
Analysis	The location provides excellent visibility.	
Recommendation	None.	
Criterion	Transition zone	
Explication	Roundabouts may be used at the transition from a rural, high-speed environment to a low-speed urban environment.	
Analysis	The intersection is within an urban zone.	
Recommendation	None.	
Criterion	Pedestrians	
Explication	Pedestrians require specific design elements. Roundabouts reduce crossing distances.	
Analysis	Existing sidewalks.	
Recommendation	Design shall pedestrian crossings into account.	
Criterion	Visually impaired persons	
Explication	Visually impaired persons may perceive roundabouts as undesirable.	
Analysis	No data available.	
Recommendation	Proximity of corridors or homes of visually impaired persons should be verified and a meeting with their association planned.	
Criterion	Bicyclists	
Explication	Bicycle lanes require specific design elements.	
Analysis	No bicycle lanes. Possibly few bicycles in intersection.	
Recommendation	Verification of existing or planned bicycle lanes pior to design phase.	Bicycle lanes are not recommended on the circulatory roadway.
Criterion	Transit	
Explication	Bus stops require special consideration.	
Analysis	No data available.	
Recommendation	Bus stop locations should be verified prior to design phase.	Buses should not need to use a truck apron to negotiate a roundabout.

Conclusion	General characteristics
	Location seems suitable, roundabout may reduce accidents.

	Site-specific conditions	
Criterion	Topography	
Explication	Level terrain allows for easiest design.	
Analysis	The site is level.	
Recommendation	Appropriate site. No impact on design.	
Criterion	Speed	
Explication	High-speed approches require special considerations.	
Analysis	Posted speed: 60 km/h.	
Recommendation	None.	
Criterion	Access management	
Explication	Existing mid-block accesses may be impacted. Existing accesses close to the intersection may be problematic, as well as corner properties.	
Analysis	Mid-block accesses are close to the intersection (shopping centre), but existing mall makes access management easier.	
Recommendation	Design should take existence of accesses into consideration (right-in/right-out).	
Criterion	Design vehicle	
Explication	The design should accommodate the largest vehicle that can reasonably be expected.	
Analysis	Preliminary design considers WB-20.	
Recommendation	Verification of over -sized trucks prior to design phase.	
Criterion	Rail Crossings	
Explication	Rail crossings require special considerations.	
Analysis	No rail-crossings.	
Recommendation	None.	
Criterion	Right-of-way	
Explication	Right-of-way requirements for a roundabout are different to those of a signal-controlled intersection.	
Analysis	The preliminary geometry extends into the ROW of the shopping centre.	
Recommendation	Discussions with the shopping centre should be planned prior to planning phase.	
Criterion	Geometry	
Explication	Numbers of lanes and space requirements are important planning analysis results.	
Analysis	2-lane roundabout used. See capacity section.	
Recommendation	Exact geometry shall be determined during design phase.	
Criterion	Lanes mid-block	
Explication	Roundabouts may require less lanes between intersections	
Analysis	None.	
Recommendation	None.	
Criterion	Aesthetics	
Explication	Roundabouts offer an opportunity to provide attractive entries.	
Analysis	None.	
Recommendation	None.	
Criterion	Traffic calming	
Explication	Roundabouts may reduce speeds.	
Analysis	The roundabout may reduce speed by providing good progression for cars between intersections w/out platoons.	
Recommendation	None.	

Conclusion	Site-specific conditions
	Location seems suitable, but there might be a problem with the access to the shopping centre.

	Capacity	
Criterion	Capacity	
Explication	Roundabout needs to provide sufficient capacity.	
Analysis	Worst approach: LOS D (32,21 sec.); RFC 0,96. (Arcady, PM, 2031-v20110629).	
Recommendation	Roundabout provides sufficient capacity.	
Criterion	Hierarchy	
Explication	A roundabout does not provide good hierarchy division.	
Analysis	The roundabout is located at the intersection of a major and a minor road.	
Recommendation	The roundabout may not provide division.	
Criterion	Left-turns	
Explication	Heavy left-turns from the major street favour roundabouts.	
Analysis	LT moderate.	
Recommendation	None.	
Criterion	Lanes	
Explication	Number of lanes as required to accomodate future traffic flows.	
Analysis	According to analysis, 2 lanes are needed on all approaches to accomodate future traffic flows. (FHWA)	
Recommendation	2-lane roundabout.	
Criterion	Queuing	
Explication	Queues may extend to the next intersection. Queues may be shorter than for signal controlled intersections	
Analysis	Queues may form in the shopping centre parking lot, creating possible problems. Spillback from Hurontario may cause blockage.	
Recommendation	Detailed analysis of interaction with accesses to shopping centre and Hurontario.	
Criterion	Bottlenecks	
Explication	Nearby bottlenecks may backup into intersections.	
Analysis	Close proximity of Hurontario may cause problems.	
Recommendation	Detailed traffic analysis of the entire network should be conducted.	

Conclusion	Capacity
	Roundabout offers sufficient capacity, possible queuing and spillback problems.

	Control	
Criterion	AWSC	
Explication	A roundabout will always provide a higher capacity and lower delays than all-way stop-control (AWSC) operating with the same traffic volumes.	
Analysis	Existing signal control: traffic light.	
Recommendation	None	
Criterion	TWSC	
Explication	A roundabout will always provide a higher capacity and lower delays than all-way stop-control (AWSC) operating with the same traffic volumes.	
Analysis	Existing signal control: traffic light.	
Recommendation	None	

Conclusion	Control
	Site is appropriate for operation with a roundabout.

Overall conclusion	Roundabout appropriate for this location?

GENIVAR

Roundabout Feasibility Analysis

Region of Peel
Mayfield EA
101-17262-00

Date: 7/25/2011

Site: Summer Valley Drive / Mayfield Road (7)

Analyst: Stephan Kellner, ing., M.Sc.A.
Nicolas Maltais-Tariant, ing. jr

	General characteristics	
Criterion	Safety	
Explication	Problems in the past? Good roundabout designs encourage speed control.	
Analysis	Accident data 2005-2009: Most accidents are probably related to traffic signal operations (rear-end).	
Recommendation	Roundabout may reduce this type of accidents.	
Criterion	Visibility	
Explication	The roundabout shall be clearly visible, to provide for proper stopping distance and to allow for speed adjustments..	
Analysis	The location provides excellent visibility.	
Recommendation	None.	
Criterion	Transition zone	
Explication	Roundabouts may be used at the transition from a rural, high-speed environment to a low-speed urban environment.	
Analysis	The intersection is within an urban zone.	
Recommendation	None.	
Criterion	Pedestrians	
Explication	Pedestrians require specific design elements. Roundabouts reduce crossing distances.	
Analysis	Existing sidewalks.	
Recommendation	Design shall pedestrian crossings into account.	
Criterion	Visually impaired persons	
Explication	Visually impaired persons may perceive roundabouts as undesirable.	
Analysis	No data available.	
Recommendation	Proximity of corridors or homes of visually impaired persons should be verified and a meeting with their association planned.	
Criterion	Bicyclists	
Explication	Bicycle lanes require specific design elements.	
Analysis	No bicycle lanes. Possibly few bicycles in intersection.	
Recommendation	Verification of existing or planned bicycle lanes pior to design phase.	Bicycle lanes are not recommended on the circulatory roadway.
Criterion	Transit	
Explication	Bus stops require special consideration.	
Analysis	No data available.	
Recommendation	Bus stop locations should be verified prior to design phase.	Buses should not need to use a truck apron to negotiate a roundabout.

Conclusion	General characteristics
	Location seems suitable, roundabout may reduce accidents.

	Site-specific conditions	
Criterion	Topography	
Explication	Level terrain allows for easiest design.	
Analysis	The site is level.	
Recommendation	Appropriate site. No impact on design.	
Criterion	Speed	
Explication	High-speed approches require special considerations.	
Analysis	Posted speed: 60 km/h.	
Recommendation	None.	
Criterion	Access management	
Explication	Existing mid-block accesses may be impacted. Existing accesses close to the intersection may be problematic, as well as corner properties.	
Analysis	Driveways close to the intersection: east approach.	
Recommendation	Design needs to integrate accesses.	
Criterion	Design vehicle	
Explication	The design should accommodate the largest vehicle that can reasonably be expected.	
Analysis	Preliminary design considers WB-20.	
Recommendation	Verification of over -sized trucks prior to design phase.	
Criterion	Rail Crossings	
Explication	Rail crossings require special considerations.	
Analysis	No rail-crossings.	
Recommendation	None.	
Criterion	Right-of-way	
Explication	Right-of-way requirements for a roundabout are different to those of a signal-controlled intersection.	
Analysis	The preliminary geometry does not seem to fit within the ROW. (South side)	
Recommendation	Verification of ROW should be conducted prior to planning phase.	
Criterion	Geometry	
Explication	Numbers of lanes and space requirements are important planning analysis results.	
Analysis	2-lane roundabout used. See capacity section.	
Recommendation	Exact geometry shall be determined during design phase.	
Criterion	Lanes mid-block	
Explication	Roundabouts may require less lanes between intersections	
Analysis	None.	
Recommendation	None.	
Criterion	Aesthetics	
Explication	Roundabouts offer an opportunity to provide attractive entries.	
Analysis	None.	
Recommendation	None.	
Criterion	Traffic calming	
Explication	Roundabouts may reduce speeds.	
Analysis	The roundabout may reduce speed by providing good progression for cars between intersections w/out platoons.	
Recommendation	None.	

Conclusion	Site-specific conditions
	Location seems suitable, but there might be a problem with the access to the shopping centre and driveway.

	Capacity	
Criterion	Capacity	
Explication	Roundabout needs to provide sufficient capacity.	
Analysis	Worst approach: LOS F (51,31 sec.); RFC 0,99. (Arcady, PM, 2031-v20110629).	
Recommendation	Roundabout is at capacity on the east approache.	
Criterion	Hierarchy	
Explication	A roundabout does not provide good hierarchy division.	
Analysis	The roundabout is located at the intersection of a major and a minor road.	
Recommendation	The roundabout may provide a good transition and does not seem to have a negative impact on traffic conditions.	
Criterion	Left-turns	
Explication	Heavy left-turns from the major street favour roundabouts.	
Analysis	LT are light.	
Recommendation	None.	
Criterion	Lanes	
Explication	Number of lanes as required to accomodate future traffic flows.	
Analysis	According to analysis, 2 lanes are needed on west approache, 1 lane on north and east approaches to accomodate future traffic flows. (FHWA)	
Recommendation	2-lane roundabout.	
Criterion	Queuing	
Explication	Queues may extend to the next intersection. Queues may be shorter than for signal controlled intersections	
Analysis	Maximum queue: 35,33 PCU. (Arcady, PM, 2031-v20110629).	
Recommendation	None.	
Criterion	Bottlenecks	
Explication	Nearby bottlenecks may backup into intersections.	
Analysis	No data available.	
Recommendation	Detailed traffic analysis of the entire network should be conducted.	

Conclusion	Capacity
	Roundabout might not provide sufficient capacity. Further analyses should be conducted.

	Control	
Criterion	AWSC	
Explication	A roundabout will always provide a higher capacity and lower delays than all-way stop-control (AWSC) operating with the same traffic volumes.	
Analysis	Existing signal control: traffic light.	
Recommendation	None	
Criterion	TWSC	
Explication	A roundabout will always provide a higher capacity and lower delays than all-way stop-control (AWSC) operating with the same traffic volumes.	
Analysis	Existing signal control: traffic light.	
Recommendation	None	

Conclusion	Control
	Site is appropriate for operation with a roundabout.

Overall conclusion	Roundabout appropriate for this location?

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Roundabout Feasibility Analysis

Region of Peel
Mayfield EA
101-17262-00

Date: 7/25/2011

Site: Inder Heights Drive / Snellview Boulevard / Mayfield Road (8)

Analyst: Stephan Kellner, ing., M.Sc.A.
Nicolas Maltais-Tariant, ing. jr

	General characteristics	
Criterion	Safety	
Explication	Problems in the past? Good roundabout designs encourage speed control.	
Analysis	Accident data 2005-2009: Most accidents are probably related to traffic signal operations (left-turns).	
Recommendation	Roundabout may reduce this type of accidents.	
Criterion	Visibility	
Explication	The roundabout shall be clearly visible, to provide for proper stopping distance and to allow for speed adjustments..	
Analysis	The location provides excellent visibility.	
Recommendation	None.	
Criterion	Transition zone	
Explication	Roundabouts may be used at the transition from a rural, high-speed environment to a low-speed urban environment.	
Analysis	The intersection is within an urban zone.	
Recommendation	None.	
Criterion	Pedestrians	
Explication	Pedestrians require specific design elements. Roundabouts reduce crossing distances.	
Analysis	Existing sidewalks.	
Recommendation	Design shall pedestrian crossings into account.	
Criterion	Visually impaired persons	
Explication	Visually impaired persons may perceive roundabouts as undesirable.	
Analysis	No data available.	
Recommendation	Proximity of corridors or homes of visually impaired persons should be verified and a meeting with their association planned.	
Criterion	Bicyclists	
Explication	Bicycle lanes require specific design elements.	
Analysis	No bicycle lanes. Possibly few bicycles in intersection.	
Recommendation	Verification of existing or planned bicycle lanes pior to design phase.	Bicycle lanes are not recommended on the circulatory roadway.
Criterion	Transit	
Explication	Bus stops require special consideration.	
Analysis	No data available.	
Recommendation	Bus stop locations should be verified prior to design phase.	Buses should not need to use a truck apron to negotiate a roundabout.

Conclusion	General characteristics
	Location seems suitable.

	Site-specific conditions	
Criterion	Topography	
Explication	Level terrain allows for easiest design.	
Analysis	The site is level.	
Recommendation	Appropriate site. No impact on design.	
Criterion	Speed	
Explication	High-speed approches require special considerations.	
Analysis	Posted speed: 60 km/h.	
Recommendation	None.	
Criterion	Access management	
Explication	Existing mid-block accesses may be impacted. Existing accesses close to the intersection may be problematic, as well as corner properties.	
Analysis	Driveways close to the intersection: east approach.	
Recommendation	Design needs to integrate accesses.	
Criterion	Design vehicle	
Explication	The design should accommodate the largest vehicle that can reasonably be expected.	
Analysis	Preliminary design considers WB-20.	
Recommendation	Verification of over -sized trucks prior to design phase.	
Criterion	Rail Crossings	
Explication	Rail crossings require special considerations.	
Analysis	No rail-crossings.	
Recommendation	None.	
Criterion	Right-of-way	
Explication	Right-of-way requirements for a roundabout are different to those of a signal-controlled intersection.	
Analysis	The preliminary geometry seems to fit within the ROW.	
Recommendation	Attention should be given to ROW of new road (Snellview).	
Criterion	Geometry	
Explication	Numbers of lanes and space requirements are important planning analysis results.	
Analysis	2-lane roundabout used. See capacity section.	
Recommendation	Exact geometry shall be determined during design phase.	
Criterion	Lanes mid-block	
Explication	Roundabouts may require less lanes between intersections	
Analysis	None.	
Recommendation	None.	
Criterion	Aesthetics	
Explication	Roundabouts offer an opportunity to provide attractive entries.	
Analysis	None.	
Recommendation	None.	
Criterion	Traffic calming	
Explication	Roundabouts may reduce speeds.	
Analysis	The roundabout may reduce speed by providing good progression for cars between intersections w/out platoons.	
Recommendation	None.	

Conclusion	Site-specific conditions
	Location seems suitable.

	Capacity	
Criterion	Capacity	
Explication	Roundabout needs to provide sufficient capacity.	
Analysis	Worst approach: LOS F (68,73 sec.); RFC 1,00. (Arcady, PM, 2031-v20110629).	
Recommendation	Roundabout is at capacity on the east approache.	
Criterion	Hierarchy	
Explication	A roundabout does not provide good hierarchy division.	
Analysis	The roundabout is located at the intersection of a major and a minor road.	
Recommendation	The roundabout may provide a good transition and does not seem to have a negative impact on traffic conditions.	
Criterion	Left-turns	
Explication	Heavy left-turns from the major street favour roundabouts.	
Analysis	WBL are light.	
Recommendation	None.	
Criterion	Lanes	
Explication	Number of lanes as required to accomodate future traffic flows.	
Analysis	According to analysis, 2 lanes are needed on west, south approaches, 1 lane on north and east approaches to accomodate future traffic flows. (FHWA)	
Recommendation	2-lane roundabout.	
Criterion	Queuing	
Explication	Queues may extend to the next intersection. Queues may be shorter than for signal controlled intersections	
Analysis	Maximum queue: 50,13 PCU. (Arcady, PM, 2031-v20110629).	
Recommendation	None.	
Criterion	Bottlenecks	
Explication	Nearby bottlenecks may backup into intersections.	
Analysis	No data available.	
Recommendation	Detailed traffic analysis of the entire network should be conducted.	

Conclusion	Capacity
	Roundabout might not provide sufficient capacity. Further analyses should be conducted..

	Control	
Criterion	AWSC	
Explication	A roundabout will always provide a higher capacity and lower delays than all-way stop-control (AWSC) operating with the same traffic volumes.	
Analysis	Signal warrant analysis states no need for traffic lights for 2031	
Recommendation	None.	
Criterion	TWSC	
Explication	A roundabout will always provide a higher capacity and lower delays than all-way stop-control (AWSC) operating with the same traffic volumes.	
Analysis	Signal warrant analysis states no need for traffic lights for 2031	
Recommendation	Implementation of TWSC.	

Conclusion	Control
	Site is not appropriate for operation with a roundabout. A different control type should be considered.

Overall conclusion	Roundabout appropriate for this location?

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Roundabout Feasibility Analysis

Region of Peel
Mayfield EA
101-17262-00

Site: Kennedy Road / Mayfield Road (9)

Date: 7/25/2011
Analyst: Stephan Kellner, ing., M.Sc.A.
Nicolas Maltais-Tariant, ing. jr

	General characteristics	
Criterion	Safety	
Explication	Problems in the past? Good roundabout designs encourage speed control.	
Analysis	Accident data 2005-2009: Most accidents are probably related to traffic signal operations (rear-end and left-turns).	
Recommendation	Roundabout may reduce this type of accidents.	
Criterion	Visibility	
Explication	The roundabout shall be clearly visible, to provide for proper stopping distance and to allow for speed adjustments..	
Analysis	The location provides excellent visibility.	
Recommendation	None.	
Criterion	Transition zone	
Explication	Roundabouts may be used at the transition from a rural, high-speed environment to a low-speed urban environment.	
Analysis	The intersection is within more rural environnement.	
Recommendation	Depending on urban-planning considerations, a roundabout may provide a transition.	
Criterion	Pedestrians	
Explication	Pedestrians require specific design elements. Roundabouts reduce crossing distances.	
Analysis	No existing sidewalks.	
Recommendation	Design shall pedestrian crossings into account.	
Criterion	Visually impaired persons	
Explication	Visually impaired persons may perceive roundabouts as undesirable.	
Analysis	No data available.	
Recommendation	Proximity of corridors or homes of visually impaired persons should be verified and a meeting with their association planned.	
Criterion	Bicyclists	
Explication	Bicycle lanes require specific design elements.	
Analysis	No bicycle lanes. Possibly few bicycles in intersection.	
Recommendation	Verification of existing or planned bicycle lanes pior to design phase.	Bicycle lanes are not recommended on the circulatory roadway.
Criterion	Transit	
Explication	Bus stops require special consideration.	
Analysis	No data available.	
Recommendation	Bus stop locations should be verified prior to design phase.	Buses should not need to use a truck apron to negotiate a roundabout.

Conclusion	General characteristics
	Location seems suitable, roundabout may reduce risk of accidents.

	Site-specific conditions	
Criterion	Topography	
Explication	Level terrain allows for easiest design.	
Analysis	The site is level.	
Recommendation	Appropriate site. No impact on design.	
Criterion	Speed	
Explication	High-speed approches require special considerations.	
Analysis	Posted speed: 60 km/h.	
Recommendation	None.	
Criterion	Access management	
Explication	Existing mid-block accesses may be impacted. Existing accesses close to the intersection may be problematic, as well as corner properties.	
Analysis	Existing driveway on south approach close to the intersection.	
Recommendation	Design should take existence of future driveways into consideration. Existing driveway rather far.	
Criterion	Design vehicle	
Explication	The design should accommodate the largest vehicle that can reasonably be expected.	
Analysis	Preliminary design considers WB-20.	
Recommendation	Verification of over -sized trucks prior to design phase.	
Criterion	Rail Crossings	
Explication	Rail crossings require special considerations.	
Analysis	No rail-crossings.	
Recommendation	None.	
Criterion	Right-of-way	
Explication	Right-of-way requirements for a roundabout are different to those of a signal-controlled intersection.	
Analysis	The preliminary geometry seems to fit within the ROW.	
Recommendation	None.	
Criterion	Geometry	
Explication	Numbers of lanes and space requirements are important planning analysis results.	
Analysis	2-lane roundabout used. See capacity section.	
Recommendation	Exact geometry shall be determined during design phase.	
Criterion	Lanes mid-block	
Explication	Roundabouts may require less lanes between intersections	
Analysis	None.	
Recommendation	None.	
Criterion	Aesthetics	
Explication	Roundabouts offer an opportunity to provide attractive entries.	
Analysis	None.	
Recommendation	None.	
Criterion	Traffic calming	
Explication	Roundabouts may reduce speeds.	
Analysis	The roundabout may reduce speed by providing good progression for cars between intersections w/out platoons.	
Recommendation	None.	

Conclusion	Site-specific conditions
	Location seems suitable.

	Capacity	
Criterion	Capacity	
Explication	Roundabout needs to provide sufficient capacity.	
Analysis	Worst approach: LOS F (>200 sec.); RFC 1,16. (Arcady, AM, 2031-v20110629).	
Recommendation	Roundabout does not provide sufficient capacity.	
Criterion	Hierarchy	
Explication	A roundabout does not provide good hierarchy division.	
Analysis	The roundabout is located at the intersection of two major roads.	
Recommendation	None.	
Criterion	Left-turns	
Explication	Heavy left-turns from the major street favour roundabouts.	
Analysis	WBL are heavy.	
Recommendation	None.	
Criterion	Lanes	
Explication	Number of lanes as required to accomodate future traffic flows.	
Analysis	According to analysis, 2+ lanes are needed on all approaches, except west, to accomodate future traffic flows. (FHWA)	
Recommendation	2-lane roundabout.	
Criterion	Queuing	
Explication	Queues may extend to the next intersection. Queues may be shorter than for signal controlled intersections	
Analysis	Maximum queue: 349 PCU. (Arcady, AM, 2031-v20110629).	
Recommendation	None.	
Criterion	Bottlenecks	
Explication	Nearby bottlenecks may backup into intersections.	
Analysis	No data available.	
Recommendation	Detailed traffic analysis of the entire network should be conducted.	

Conclusion	Capacity
	Roundabout does not offer sufficient capacity

	Control	
Criterion	AWSC	
Explication	A roundabout will always provide a higher capacity and lower delays than all-way stop-control (AWSC) operating with the same traffic volumes.	
Analysis	Existing signal control: traffic light.	
Recommendation	None	
Criterion	TWSC	
Explication	A roundabout will always provide a higher capacity and lower delays than all-way stop-control (AWSC) operating with the same traffic volumes.	
Analysis	Existing signal control: traffic light.	
Recommendation	None	

Conclusion	Control
	Site is appropriate for operation with a roundabout.

Overall conclusion	Roundabout appropriate for this location?

GENIVAR

Region of Peel
Mayfield EA
101-17262-00

Roundabout Feasibility Analysis

Date: 7/25/2011

Site: Stonegate Drive / Mayfield Road (10)

Analyst: Stephan Kellner, ing., M.Sc.A.
Nicolas Maltais-Tariant, ing. jr

	General characteristics	
Criterion	Safety	
Explication	Problems in the past? Good roundabout designs encourage speed control.	
Analysis	Accident data 2005-2009: Most accidents are probably related to traffic signal operations (rear-end).	
Recommendation	Roundabout may reduce this type of accidents.	
Criterion	Visibility	
Explication	The roundabout shall be clearly visible, to provide for proper stopping distance and to allow for speed adjustments..	
Analysis	The location provides excellent visibility.	
Recommendation	None.	
Criterion	Transition zone	
Explication	Roundabouts may be used at the transition from a rural, high-speed environment to a low-speed urban environment.	
Analysis	The intersection is within more rural environnement, but will be close to a new developpement.	
Recommendation	Depending on urban-planning considerations, a roundabout may provide a transition.	
Criterion	Pedestrians	
Explication	Pedestrians require specific design elements. Roundabouts reduce crossing distances.	
Analysis	No existing sidewalks. Possibly future sidewalks.	
Recommendation	Design shall pedestrian crossings into account.	
Criterion	Visually impaired persons	
Explication	Visually impaired persons may perceive roundabouts as undesirable.	
Analysis	No data available.	
Recommendation	Proximity of corridors or homes of visually impaired persons should be verified and a meeting with their association planned.	
Criterion	Bicyclists	
Explication	Bicycle lanes require specific design elements.	
Analysis	No bicycle lanes. Possibly few bicycles in intersection.	
Recommendation	Verification of existing or planned bicycle lanes pior to design phase.	Bicycle lanes are not recommended on the circulatory roadway.
Criterion	Transit	
Explication	Bus stops require special consideration.	
Analysis	No data available.	
Recommendation	Bus stop locations should be verified prior to design phase.	Buses should not need to use a truck apron to negotiate a roundabout.

Conclusion	General characteristics
	Location seems suitable.

	Site-specific conditions
Criterion	Topography
Explication	Level terrain allows for easiest design.
Analysis	The site is level.
Recommendation	Appropriate site. No impact on design.
Criterion	Speed
Explication	High-speed approches require special considerations.
Analysis	Posted speed: 60 km/h.
Recommendation	None.
Criterion	Access management
Explication	Existing mid-block accesses may be impacted. Existing accesses close to the intersection may be problematic, as well as corner properties.
Analysis	No existing driveways close to the intersection. Driveway farther to the east.
Recommendation	Design should take existence of future driveways into consideration.
Criterion	Design vehicle
Explication	The design should accommodate the largest vehicle that can reasonably be expected.
Analysis	Preliminary design considers WB-20.
Recommendation	Verification of over -sized trucks prior to design phase.
Criterion	Rail Crossings
Explication	Rail crossings require special considerations.
Analysis	No rail-crossings.
Recommendation	None.
Criterion	Right-of-way
Explication	Right-of-way requirements for a roundabout are different to those of a signal-controlled intersection.
Analysis	The preliminary geometry does not fit within the ROW on the north side of the intersection.
Recommendation	ROW should be acquired prior to design phase.
Criterion	Geometry
Explication	Numbers of lanes and space requirements are important planning analysis results.
Analysis	2-lane roundabout used. See capacity section.
Recommendation	Exact geometry shall be determined during design phase.
Criterion	Lanes mid-block
Explication	Roundabouts may require less lanes between intersections
Analysis	None.
Recommendation	None.
Criterion	Aesthetics
Explication	Roundabouts offer an opportunity to provide attractive entries.
Analysis	None.
Recommendation	Depending on urban-planning considerations, a roundabout may be interesting.
Criterion	Traffic calming
Explication	Roundabouts may reduce speeds.
Analysis	The roundabout may reduce speed by providing good progression for cars between intersections w/out platoons.
Recommendation	None.

Conclusion	Site-specific conditions
	Location seems suitable, but ROW needs to be acquired.

	Capacity
Criterion	Capacity
Explication	Roundabout needs to provide sufficient capacity.
Analysis	Worst approach: LOS D (33 sec.); RFC 0,97. (Arcady, PM, 2031-v20110629).
Recommendation	Roundabout provides sufficient capacity.
Criterion	Hierarchy
Explication	A roundabout does not provide good hierarchy division.
Analysis	The roundabout is located at the intersection of a major and a minor road.
Recommendation	None.
Criterion	Left-turns
Explication	Heavy left-turns from the major street favour roundabouts.
Analysis	LT are light.
Recommendation	None.
Criterion	Lanes
Explication	Number of lanes as required to accomodate future traffic flows.
Analysis	According to analysis, 2 lanes are needed on south and west approaches, 1 lane on east approach to accomodate future traffic flows. (FHWA)
Recommendation	2-lane roundabout.
Criterion	Queuing
Explication	Queues may extend to the next intersection. Queues may be shorter than for signal controlled intersections
Analysis	Maximum queue: 23 PCU. (Arcady, PM, 2031-v20110629).
Recommendation	None.
Criterion	Bottlenecks
Explication	Nearby bottlenecks may backup into intersections.
Analysis	No data available.
Recommendation	Detailed traffic analysis of the entire network should be conducted.

Conclusion	Capacity
	Roundabout offers sufficient capacity

	Control	
Criterion	AWSC	
Explication	A roundabout will always provide a higher capacity and lower delays than all-way stop-control (AWSC) operating with the same traffic volumes.	
Analysis	Signal warrant analysis states no need for traffic lights for 2031	
Recommendation	None.	
Criterion	TWSC	
Explication	A roundabout will always provide a higher capacity and lower delays than all-way stop-control (AWSC) operating with the same traffic volumes.	
Analysis	Signal warrant analysis states no need for traffic lights for 2031	
Recommendation	Implementation of TWSC.	

Conclusion	Control
	Site is not appropriate for operation with a roundabout. A different control type should be considered.

Overall conclusion	Roundabout appropriate for this location?

GENIVAR

Region of Peel
Mayfield EA
101-17262-00

Roundabout Feasibility Analysis

Date: 7/25/2011

Site: Heart Lake Road / Mayfield Road (11)

Analyst: Stephan Kellner, ing., M.Sc.A.
Nicolas Maltais-Tariant, ing. jr

	General characteristics	
Criterion	Safety	
Explication	Problems in the past? Good roundabout designs encourage speed control.	
Analysis	Accident data 2005-2009: Most accidents are probably related to traffic signal operations (rear-end and some left-turns).	
Recommendation	Roundabout may reduce this type of accidents.	
Criterion	Visibility	
Explication	The roundabout shall be clearly visible, to provide for proper stopping distance and to allow for speed adjustments..	
Analysis	The location provides excellent visibility.	
Recommendation	None.	
Criterion	Transition zone	
Explication	Roundabouts may be used at the transition from a rural, high-speed environment to a low-speed urban environment.	
Analysis	The intersection is within more rural environnement.	
Recommendation	Depending on urban-planning considerations, a roundabout may provide a transition.	
Criterion	Pedestrians	
Explication	Pedestrians require specific design elements. Roundabouts reduce crossing distances.	
Analysis	No existing sidewalks.	
Recommendation	Design shall pedestrian crossings into account.	
Criterion	Visually impaired persons	
Explication	Visually impaired persons may perceive roundabouts as undesirable.	
Analysis	No data available.	
Recommendation	Proximity of corridors or homes of visually impaired persons should be verified and a meeting with their association planned.	
Criterion	Bicyclists	
Explication	Bicycle lanes require specific design elements.	
Analysis	No bicycle lanes. Possibly few bicycles in intersection.	
Recommendation	Verification of existing or planned bicycle lanes pior to design phase.	Bicycle lanes are not recommended on the circulatory roadway.
Criterion	Transit	
Explication	Bus stops require special consideration.	
Analysis	No data available.	
Recommendation	Bus stop locations should be verified prior to design phase.	Buses should not need to use a truck apron to negotiate a roundabout.
Conclusion	**General characteristics**	
	Location seems suitable, roundabout may reduce risk of rear-end accidents and may improve road safety.	
	Site-specific conditions	
Criterion	Topography	
Explication	Level terrain allows for easiest design.	
Analysis	The site is level.	
Recommendation	Appropriate site. No impact on design.	
Criterion	Speed	
Explication	High-speed approches require special considerations.	
Analysis	Posted speed: 60 km/h.	
Recommendation	None.	
Criterion	Access management	
Explication	Existing mid-block accesses may be impacted. Existing accesses close to the intersection may be problematic, as well as corner properties.	
Analysis	No existing driveways close to the intersection.	
Recommendation	Design should take existence of future driveways into consideration.	
Criterion	Design vehicle	
Explication	The design should accommodate the largest vehicle that can reasonably be expected.	
Analysis	Preliminary design considers WB-20.	
Recommendation	Verification of over -sized trucks prior to design phase.	
Criterion	Rail Crossings	
Explication	Rail crossings require special considerations.	
Analysis	No rail-crossings.	
Recommendation	None.	
Criterion	Right-of-way	
Explication	Right-of-way requirements for a roundabout are different to those of a signal-controlled intersection.	
Analysis	The preliminary geometry does not fit within the ROW on the south-east corner of the intersection.	
Recommendation	ROW should be acquired prior to design phase.	
Criterion	Geometry	
Explication	Numbers of lanes and space requirements are important planning analysis results.	
Analysis	2-lane roundabout used. See capacity section.	
Recommendation	Exact geometry shall be determined during design phase.	
Criterion	Lanes mid-block	
Explication	Roundabouts may require less lanes between intersections	
Analysis	None.	
Recommendation	None.	
Criterion	Aesthetics	
Explication	Roundabouts offer an opportunity to provide attractive entries.	
Analysis	None.	
Recommendation	None.	
Criterion	Traffic calming	
Explication	Roundabouts may reduce speeds.	
Analysis	The roundabout may reduce speed by providing good progression for cars between intersections w/out platoons.	
Recommendation	None.	
Conclusion	**Site-specific conditions**	
	Location seems suitable, but ROW needs to be acquired.	
	Capacity	
Criterion	Capacity	
Explication	Roundabout needs to provide sufficient capacity.	
Analysis	Worst approach: LOS F (>200 sec.); RFC 1,56. (Arcady, PM, 2031-v20110629).	
Recommendation	Roundabout is at capacity on the east approache.	
Criterion	Hierarchy	
Explication	A roundabout does not provide good hierarchy division.	
Analysis	The roundabout is located at the intersection of two major roads.	
Recommendation	None.	
Criterion	Left-turns	
Explication	Heavy left-turns from the major street favour roundabouts.	
Analysis	LT are light.	
Recommendation	None.	
Criterion	Lanes	
Explication	Number of lanes as required to accomodate future traffic flows.	
Analysis	According to analysis, 2 lanes are needed on all approaches, south and west approaches may require 2+ lanes to accomodate future traffic flows. (FHWA)	
Recommendation	2-lane roundabout.	
Criterion	Queuing	
Explication	Queues may extend to the next intersection. Queues may be shorter than for signal controlled intersections	
Analysis	Maximum queue: 1086 PCU. (Arcady, PM, 2031-v20110629).	
Recommendation	None.	
Criterion	Bottlenecks	
Explication	Nearby bottlenecks may backup into intersections.	
Analysis	No data available.	
Recommendation	Detailed traffic analysis of the entire network should be conducted.	
Conclusion	**Capacity**	
	Roundabout does not provide sufficient capacity	
	Control	
Criterion	AWSC	
Explication	A roundabout will always provide a higher capacity and lower delays than all-way stop-control (AWSC) operating with the same traffic volumes.	
Analysis	Existing signal control: traffic light.	
Recommendation	None.	
Criterion	TWSC	
Explication	A roundabout will always provide a higher capacity and lower delays than all-way stop-control (AWSC) operating with the same traffic volumes.	
Analysis	Existing signal control: traffic light.	
Recommendation	None.	
Conclusion	**Control**	
	Site is appropriate for operation with a roundabout.	
Overall conclusion	**Roundabout appropriate for this location?**	

Appendix L

Traffic Signal Warrants

Canadian Traffic Signal Warrant Analysis

Main Street — **Mayfield Road (2021)**

Side Street — **New Collector Road 1**

Date: August 3, 2013

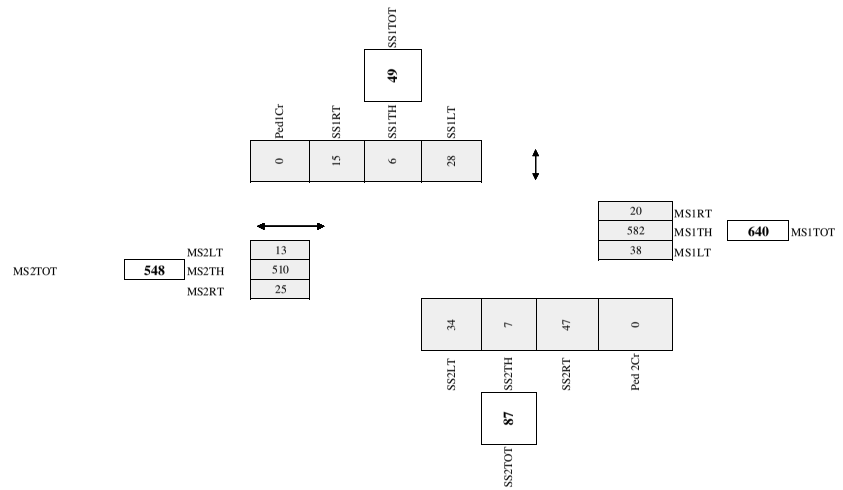
City: Peel Region

MainStreet1Lanes	(#)	2	Distance to next signal	(m)	450
MainStreet2Lanes	(#)	2	Elementary School	(y/n)	n
MainStreet LT Lanes	(#)	1	Senior's Complex	(y/n)	n
SideStreet1Lanes	(#)	1	Pathway to School	(y/n)	n
SideStreet2Lanes	(#)	1	Metro Area Population	(#)	1,500,000
MainStreetSpeedLimit	(km/h)	80	Side Street Bus Route	(y/n)	n
MainStreetTrucks/Buses	(%)	10.0%	Side Street Trucks	(%)	n
Refuge Width on Median	(m)	0.0	T or 1-Way Intersection	(y/n)	n
			Central Business District	(y/n)	n

	MS1LT	MS1TH	MS1RT	MS2LT	MS2TH	MS2RT	SS1LT	SS1TH	SS1RT	SS2LT	SS2TH	SS2RT	PedC1	PedC2
7:00 - 8:00	23	702	1	6	704	15	42	5	22	49	8	73	0	0
8:00 - 9:00	23	702	1	6	704	15	42	5	22	49	8	73	0	0
11:00 - 12:00	23	240	12	8	166	15	17	4	9	20	4	28	0	0
12:00 - 13:00	23	240	12	8	166	15	17	4	9	20	4	28	0	0
16:00 - 17:00	67	804	47	25	659	45	24	10	13	32	8	39	0	0
17:00 - 18:00	67	804	47	25	659	45	24	10	13	32	8	39	0	0
Average	38	582	20	13	510	25	28	6	15	34	7	47	0	0

***** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day**

***** Enter the peak pedestrian volume crossing the main street averaged over the same hours**



W = [Ct1xCbt(Vm1 x Vs)/K1 + (F(Vm2 x Pc)L)/K2] x Cvp

W = **88** **88** **0**

NOT Warranted ***Veh*** ***Ped***

Roadway, Vehicle and Pedestrian Factors			Range			
			Min	@	Max	@
Cs =	(Int SpacingFactor)		0.90	<200 m	1.10	isolated
Cmt =	(MainStTruckFactor)		1.00	<5%	1.15	>20%
Cv =	(SpeedFactor)		1.00	<60 km/h	1.10	>80 km/h
Cp =	(PopDemoFactor)		1.00	>250,000	1.20	<10,000
Csb =	(SideStBusFactor)		1.00	no	1.05	yes
Cst =	(SideStTruckFactor)		1.00	<10%	1.05	>10%
F =	(Ped DemoFactor)					
	(max of)	Elementary School	1.20			
		Seniors Complex	1.10			
		Path to School	1.10			

Vm =	**1,187** (MainSt Vol Total)	Cs =	**0.987** (Int SpacingFactor)
Vs =	**87** (SideSt Vol Highest)	Cmt =	**1.050** (MainStTruckFactor)
Pc =	**0** Peds Crossing Main	Cv =	**1.100** (SpeedFactor)
K1 =	**1,400** veh/veh const	Cp =	**1.000** (PopDemoFactor)
K2 =	**5,000** veh/ped const	Csb =	**1.000** (SideStBusFactor)
L =	**5.0** TotalMainStLanes	Cst =	**1.050** (SideStTruckFactor)
F =	**1.000** (PedDemoFactor)	Vmx =	**640** (MainStHighest)
Vm1 =	**1,187** (MainStVeh-Veh#)	Vm2 =	**1,187** (MainStVeh-Ped#)
Cvp =	**1.140** (product of Cs,Cmt,Cv,Cp)	Cbt =	**1.050** (maximum of Csb,Cst)
Ct1 =	**1.000** T Int / one way Factor		

Explanation of Factors:

Cbt = 1.05 if the side street either is a bus route, or has more than 10% trucks, otherwise = 1.00.
(it is assumed that these two factors only affect the side street vehicles trying to cross the main street, not the pedestrians)

Ci = the product of the other 4 geographic factors
(Cs = intersection spacing, Cmt = main street truck, Cv = Speed, Cp = Population)

Vm1 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=10.0 metres) (averaged over 6 peak hours)

Vm2 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=6.0 metres) (averaged over 6 peak hours)

Vs = the highest side street approach volume (averaged over 6 peak hours)
*** note: it has been determined that Vs must be > 75 for signals to be considered ***

F = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors

Pc = the total pedestrian volume crossing the mainstreet
(averaged over 6 peak hours)

L = number of lanes that the pedestrians have to cross
(only half the street if the median is >=5.0 metres)

Kv = Vehicle - Vehicle denominator constant
(Kv = 1,100 if L<=3, Kv = 1,400 if L >3)

Kp = Vehicle - Pedestrian denominator constant
(Kp = 2,000 if L<=3, Kp = 5,000 if L >3)

Canadian Traffic Signal Warrant Analysis

Main Street: Mayfield Road (2031 Without GTA West)
Side Street: New Collector Road 1

Date: August 3, 2013
City: Peel Region

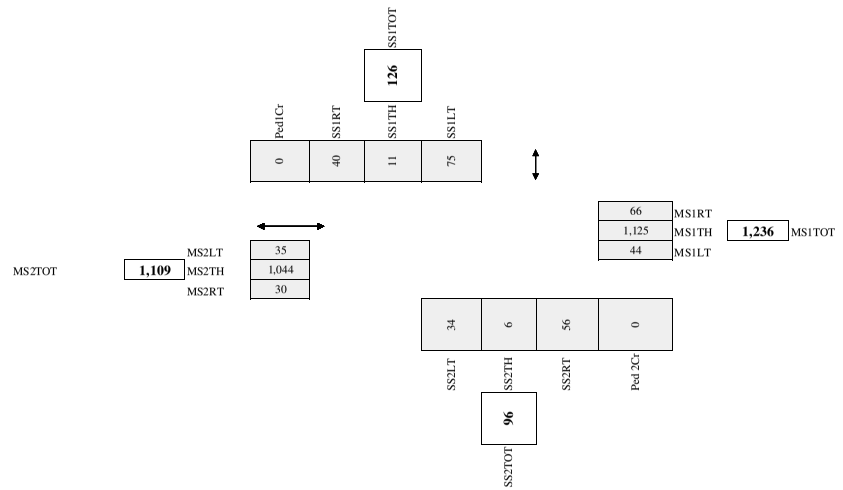
MainStreet1Lanes	(#)	3	Distance to next signal	(m)	450
MainStreet2Lanes	(#)	3	Elementary School	(y/n)	n
MainStreet LT Lanes	(#)	1	Senior's Complex	(y/n)	n
SideStreet1Lanes	(#)	1	Pathway to School	(y/n)	n
SideStreet2Lanes	(#)	1	Metro Area Population	(#)	1,500,000
MainStreetSpeedLimit	(km/h)	80	Side Street Bus Route	(y/n)	n
MainStreetTrucks/Buses	(%)	10.0%	Side Street Trucks	(%)	n
Refuge Width on Median	(m)	0.0	T or 1-Way Intersection	(y/n)	n
			Central Business District	(y/n)	n

	MS1LT	MS1TH	MS1RT	MS2LT	MS2TH	MS2RT	SS1LT	SS1TH	SS1RT	SS2LT	SS2TH	SS2RT	PedC1	PedC2
7:00 - 8:00	23	1300	29	16	1584	15	116	12	62	49	10	73	0	0
8:00 - 9:00	23	1300	29	16	1584	15	116	12	62	49	10	73	0	0
11:00 - 12:00	23	457	40	21	325	18	45	7	24	20	4	34	0	0
12:00 - 13:00	23	457	40	21	325	18	45	7	24	20	4	34	0	0
16:00 - 17:00	67	1618	130	69	1224	56	64	14	34	32	5	61	0	0
17:00 - 18:00	106	1618	130	69	1224	56	64	14	34	32	5	61	0	0
Average	44	1,125	66	35	1,044	30	75	11	40	34	6	56	0	0

***** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day**

***** Enter the peak pedestrian volume crossing the main street averaged over the same hours**

	MS1LT	MS1TH	MS1RT	MS2LT	MS2TH	MS2RT	SS1LT	SS1TH	SS1RT	SS2LT	SS2TH	SS2RT	PedC1	PedC2
Vm =	**2,345** (MainSt Vol Total)			Cs =	**0.987** (Int SpacingFactor)									
Vs =	**126** (SideSt Vol Highest)			Cmt =	**1.050** (MainStTruckFactor)									
Pc =	**0** Peds Crossing Main			Cv =	**1.100** (SpeedFactor)									
K1 =	**1,400** veh/veh const			Cp =	**1.000** (PopDemoFactor)									
K2 =	**5,000** veh/ped const			Csb =	**1.000** (SideStBusFactor)									
L =	**7.0** TotalMainStLanes			Cst =	**1.050** (SideStTruckFactor)									
F =	**1.000** (PedDemoFactor)			Vmx =	**1,236** (MainStHighest)									
Vm1 =	**2,345** (MainStVeh-Veh#)			Vm2 =	**2,345** (MainStVeh-Ped#)									
Cvp =	**1.140** (product of Cs,Cmt,Cv,Cp)			Cbt =	**1.050** (maximum of Csb,Cst)									
Ct1 =	**1.000** T Int / one way Factor													



W = [Ct1xCbt(Vm1 x Vs)/K1 + (F(Vm2 x Pc)L)/K2] x Cvp

W = **253** **253** **0**

Warranted ***Veh*** ***Ped***

Roadway, Vehicle and Pedestrian Factors			Range			
			Min	@	Max	@
Cs =	(Int SpacingFactor)		0.90	<200 m	1.10	isolated
Cmt =	(MainStTruckFactor)		1.00	<5%	1.15	>20%
Cv =	(SpeedFactor)		1.00	<60 km/h	1.10	>80 km/h
Cp =	(PopDemoFactor)		1.00	>250,000	1.20	<10,000
Csb =	(SideStBusFactor)		1.00	no	1.05	yes
Cst =	(SideStTruckFactor)		1.00	<10%	1.05	>10%
F =	(Ped DemoFactor)					
	(max of)	Elementary School	1.20			
		Seniors Complex	1.10			
		Path to School	1.10			

Explanation of Factors:

Cbt = 1.05 if the side street either is a bus route, or has more than 10% trucks, otherwise = 1.00.
(it is assumed that these two factors only affect the side street vehicles trying to cross the main street, not the pedestrians)

Ci = the product of the other 4 geographic factors
(Cs = intersection spacing, Cmt = main street truck, Cv = Speed, Cp = Population)

Vm1 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=10.0 metres) (averaged over 6 peak hours)

Vm2 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=6.0 metres) (averaged over 6 peak hours)

Vs = the highest side street approach volume (averaged over 6 peak hours)
*** note: it has been determined that Vs must be > 75 for signals to be considered ***

F = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors

Pc = the total pedestrian volume crossing the mainstreet
(averaged over 6 peak hours)

L = number of lanes that the pedestrians have to cross
(only half the street if the median is >=5.0 metres)

Kv = Vehicle - Vehicle denominator constant
(Kv = 1,100 if L<=3, Kv = 1,400 if L >3)

Kp = Vehicle - Pedestrian denominator constant
(Kp = 2,000 if L<=3, Kp = 5,000 if L >3)

Canadian Traffic Signal Warrant Analysis

Main Street — **Mayfield Road (2021)**

Side Street — **New Collector Road 2**

Date: August 3, 2013

City: Peel Region

MainStreet1Lanes	(#)	2	Distance to next signal	(m)	450
MainStreet2Lanes	(#)	2	Elementary School	(y/n)	n
MainStreet LT Lanes	(#)	1	Senior's Complex	(y/n)	n
SideStreet1Lanes	(#)	0	Pathway to School	(y/n)	n
SideStreet2Lanes	(#)	1	Metro Area Population	(#)	1,500,000
MainStreetSpeedLimit	(km/h)	80	Side Street Bus Route	(y/n)	n
MainStreetTrucks/Buses	(%)	10.0%	Side Street Trucks	(%)	n
Refuge Width on Median	(m)	0.0	T or 1-Way Intersection	(y/n)	y
			Central Business District	(y/n)	n

	MS1LT	MS1TH	MS1RT	MS2LT	MS2TH	MS2RT	SS1LT	SS1TH	SS1RT	SS2LT	SS2TH	SS2RT	PedC1	PedC2
7:00 - 8:00	27	662	0	0	806	13	0	0	0	64	0	85	0	0
8:00 - 9:00	27	662	0	0	806	13	0	0	0	64	0	85	0	0
11:00 - 12:00	26	240	0	0	162	14	0	0	0	27	0	31	0	0
12:00 - 13:00	26	240	0	0	162	14	0	0	0	27	0	31	0	0
16:00 - 17:00	78	878	0	0	678	44	0	0	0	42	0	39	0	0
17:00 - 18:00	78	878	0	0	678	44	0	0	0	42	0	39	0	0
Average	44	593	0	0	549	24	0	0	0	44	0	52	0	0

***** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day**

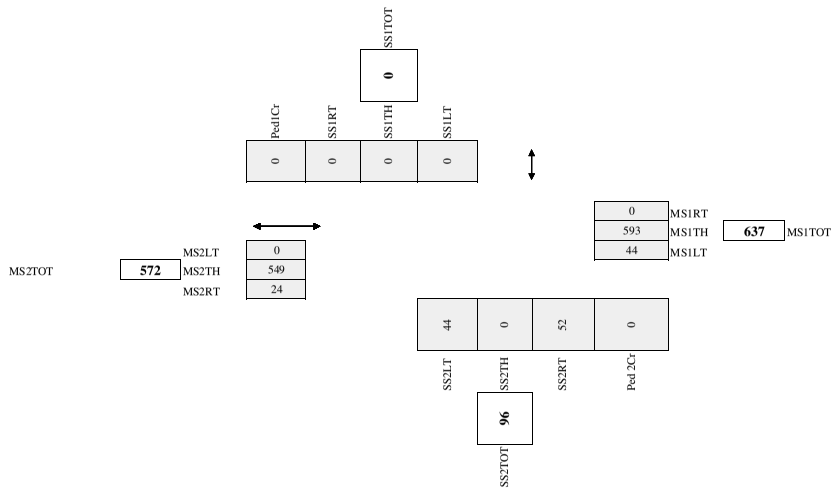
***** Enter the peak pedestrian volume crossing the main street averaged over the same hours**

Vm =	**1,209** (MainSt Vol Total)	Cs =	**0.987** (Int SpacingFactor)
Vs =	**96** (SideSt Vol Highest)	Cmt =	**1.050** (MainStTruckFactor)
Pc =	**0** Peds Crossing Main	Cv =	**1.100** (SpeedFactor)
K1 =	**1,400** veh/veh const	Cp =	**1.000** (PopDemoFactor)
K2 =	**5,000** veh/ped const	Csb =	**1.000** (SideStBusFactor)
L =	**5.0** TotalMainStLanes	Cst =	**1.050** (SideStTruckFactor)
F =	**1.000** (PedDemoFactor)	Vmx =	**637** (MainStHighest)
Vm1 =	**1,209** (MainStVeh-Veh#)	Vm2 =	**1,209** (MainStVeh-Ped#)
Cvp =	**1.140** (product of Cs,Cmt,Cv,Cp)	Cbt =	**1.050** (maximum of Csb,Cst)
Ct1 =	**0.667** T Int / one way Factor		

W = [Ct1xCbt(Vm1 x Vs)/K1 + (F(Vm2 x Pc)L)/K2] x Cvp

W = **66** **66** **0**

NOT Warranted *Veh* *Ped*



Roadway, Vehicle and Pedestrian Factors			Range Min	@	Max	@
Cs =	(Int SpacingFactor)		0.90	<200 m	1.10	isolated
Cmt =	(MainStTruckFactor)		1.00	<5%	1.15	>20%
Cv =	(SpeedFactor)		1.00	<60 km/h	1.10	>80 km/h
Cp =	(PopDemoFactor)		1.00	>250,000	1.20	<10,000
Csb =	(SideStBusFactor)		1.00	no	1.05	yes
Cst =	(SideStTruckFactor)		1.00	<10%	1.05	>10%
F =	(Ped DemoFactor)					
	(max of)	Elementary School	1.20			
		Seniors Complex	1.10			
		Path to School	1.10			

Explanation of Factors:

Cbt = 1.05 if the side street either is a bus route, or has more than 10% trucks, otherwise = 1.00.
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(if the median is >=6.0 metres) (averaged over 6 peak hours)

Vs = the highest side street approach volume (averaged over 6 peak hours)
*** note: it has been determined that Vs must be > 75 for signals to be considered ***

F = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors

Pc = the total pedestrian volume crossing the mainstreet
(averaged over 6 peak hours)

L = number of lanes that the pedestrians have to cross
(only half the street if the median is >=5.0 metres)

Kv = Vehicle - Vehicle denominator constant
(Kv = 1,100 if L<=3, Kv = 1,400 if L >3)

Kp = Vehicle - Pedestrian denominator constant
(Kp = 2,000 if L<=3, Kp = 5,000 if L >3)

Canadian Traffic Signal Warrant Analysis

Main Street: Mayfield Road (2031 Without GTA West)
Side Street: New Collector Road 2

Date: August 3, 2013
City: Peel Region

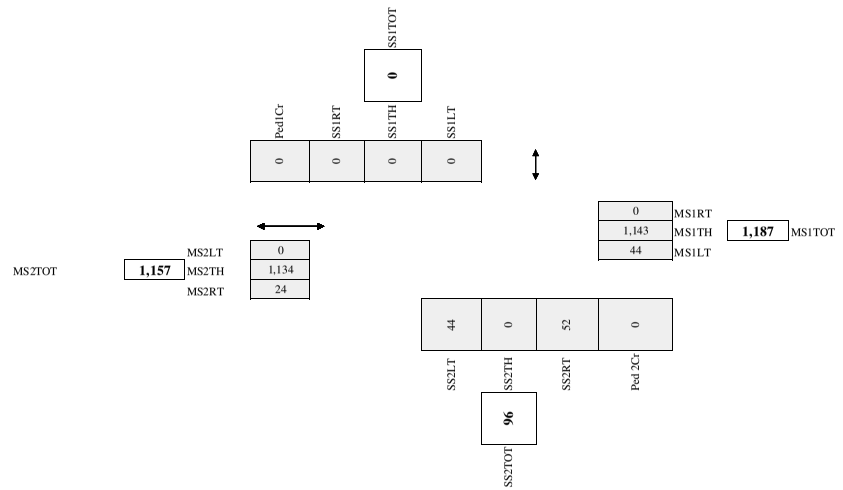
MainStreet1Lanes	(#)	3	Distance to next signal	(m)	450
MainStreet2Lanes	(#)	3	Elementary School	(y/n)	n
MainStreet LT Lanes	(#)	1	Senior's Complex	(y/n)	n
SideStreet1Lanes	(#)	0	Pathway to School	(y/n)	n
SideStreet2Lanes	(#)	1	Metro Area Population	(#)	1,500,000
MainStreetSpeedLimit	(km/h)	80	Side Street Bus Route	(y/n)	n
MainStreetTrucks/Buses	(%)	10.0%	Side Street Trucks	(%)	n
Refuge Width on Median	(m)	0.0	T or 1-Way Intersection	(y/n)	y
			Central Business District	(y/n)	n

Vm =	**2,344** (MainSt Vol Total)	Cs =	**0.987** (Int SpacingFactor)
Vs =	**96** (SideSt Vol Highest)	Cmt =	**1.050** (MainStTruckFactor)
Pc =	**0** Peds Crossing Main	Cv =	**1.100** (SpeedFactor)
K1 =	**1,400** veh/veh const	Cp =	**1.000** (PopDemoFactor)
K2 =	**5,000** veh/ped const	Csb =	**1.000** (SideStBusFactor)
L =	**7.0** TotalMainStLanes	Cst =	**1.050** (SideStTruckFactor)
F =	**1.000** (PedDemoFactor)	Vmx =	**1,187** (MainStHighest)
Vm1 =	**2,344** (MainStVeh-Veh#)	Vm2 =	**2,344** (MainStVeh-Ped#)
Cvp =	**1.140** (product of Cs,Cmt,Cv,Cp)	Cbt =	**1.050** (maximum of Csb,Cst)
Ct1 =	**0.667** T Int / one way Factor		

	MS1LT	MS1TH ←	MS1RT	MS2LT	MS2TH →	MS2RT	SS1LT	SS1TH ↓	SS1RT	SS2LT	SS2TH ↑	SS2RT	PedC1	PedC2
7:00 - 8:00	27	1288	0	0	1760	13	0	0	0	64	0	85	0	0
8:00 - 9:00	27	1288	0	0	1760	13	0	0	0	64	0	85	0	0
11:00 - 12:00	26	368	0	0	358	14	0	0	0	27	0	31	0	0
12:00 - 13:00	26	368	0	0	358	14	0	0	0	27	0	31	0	0
16:00 - 17:00	78	1773	0	0	1283	44	0	0	0	42	0	39	0	0
17:00 - 18:00	78	1773	0	0	1283	44	0	0	0	42	0	39	0	0
Average	44	1,143	0	0	1,134	24	0	0	0	44	0	52	0	0

***** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day**

***** Enter the peak pedestrian volume crossing the main street averaged over the same hours**



W = [Ct1xCbt(Vm1 x Vs)/K1 + (F(Vm2 x Pc)L)/K2] x Cvp

W = **128** **128** **0**

Warranted ***Veh*** ***Ped***

Roadway, Vehicle and Pedestrian Factors			**Range**			
			Min	**@**	**Max**	**@**
Cs =	(Int SpacingFactor)		0.90	<200 m	1.10	isolated
Cmt =	(MainStTruckFactor)		1.00	<5%	1.15	>20%
Cv =	(SpeedFactor)		1.00	<60 km/h	1.10	>80 km/h
Cp =	(PopDemoFactor)		1.00	>250,000	1.20	<10,000
Csb =	(SideStBusFactor)		1.00	no	1.05	yes
Cst =	(SideStTruckFactor)		1.00	<10%	1.05	>10%
F =	(Ped DemoFactor)					
	(max of)	Elementary School	1.20			
		Seniors Complex	1.10			
		Path to School	1.10			

Explanation of Factors:

Cbt = 1.05 if the side street either is a bus route, or has more than 10% trucks, otherwise = 1.00.
(it is assumed that these two factors only affect the side street vehicles trying to cross the main street, not the pedestrians)

Ci = the product of the other 4 geographic factors
(Cs = intersection spacing, Cmt = main street truck, Cv = Speed, Cp = Population)

Vm1 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=10.0 metres) (averaged over 6 peak hours)

Vm2 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=6.0 metres) (averaged over 6 peak hours)

Vs = the highest side street approach volume (averaged over 6 peak hours)
*** note: it has been determined that Vs must be > 75 for signals to be considered ***

F = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors

Pc = the total pedestrian volume crossing the mainstreet
(averaged over 6 peak hours)

L = number of lanes that the pedestrians have to cross
(only half the street if the median is >=5.0 metres)

Kv = Vehicle - Vehicle denominator constant
(Kv = 1,100 if L<=3, Kv = 1,400 if L >3)

Kp = Vehicle - Pedestrian denominator constant
(Kp = 2,000 if L<=3, Kp = 5,000 if L >3)

Canadian Traffic Signal Warrant Analysis

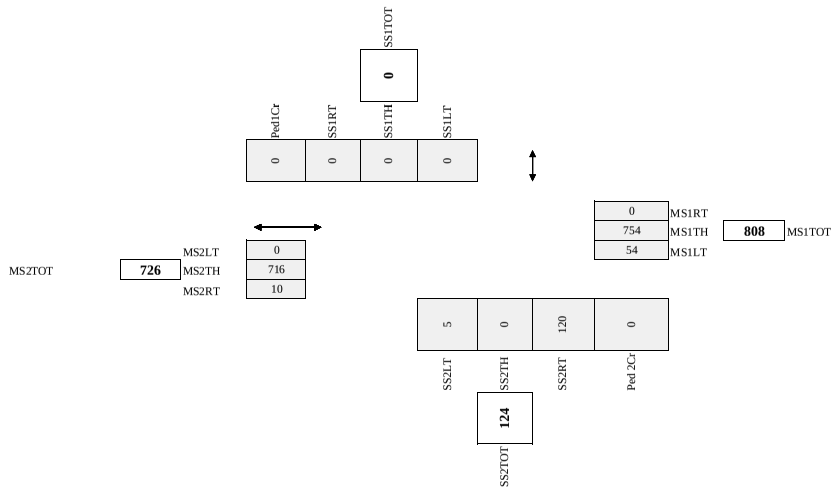
Main Street	**Mayfield Road (2021)**	**Date:** **August 10, 2011**
Side Street	**Van Kirk Rd**	**City:** **Peel Region**

MainStreet1Lanes	(#)	2	Distance to next signal	(m)	330	Vm =	**1,534** (MainSt Vol Total)	Cs =	**0.954** (Int SpacingFactor)
MainStreet2Lanes	(#)	2	Elementary School	(y/n)	n	Vs =	**124** (SideSt Vol Highest)	Cmt =	**1.050** (MainStTruckFactor)
MainStreet LT Lanes	(#)	1	Senior's Complex	(y/n)	n	Pc =	**0** Peds Crossing Main	Cv =	**1.100** (SpeedFactor)
SideStreet1Lanes	(#)	0	Pathway to School	(y/n)	n	K1 =	**1,400** veh/veh const	Cp =	**1.000** (PopDemoFactor)
SideStreet2Lanes	(#)	1	Metro Area Population	(#)	1,500,000	K2 =	**5,000** veh/ped const	Csb =	**1.000** (SideStBusFactor)
MainStreetSpeedLimit	(km/h)	80	Side Street Bus Route	(y/n)	n	L =	**5.0** TotalMainStLanes	Cst =	**1.050** (SideStTruckFactor)
MainStreetTrucks/Buses	(%)	10.0%	Side Street Trucks	(%)	n	F =	**1.000** (PedDemoFactor)	Vmx =	**808** (MainStHighest)
Refuge Width on Median	(m)	0.0	T or 1-Way Intersection	(y/n)	y	Vm1 =	**1,534** (MainStVeh-Veh#)	Vm2 =	**1,534** (MainStVeh-Ped#)
			Central Business District	(y/n)	n	Cvp =	**1.102** (product of Cs,Cmt,Cv,Cp)	Cbt =	**1.050** (maximum of Csb,Cst)
						Ct1 =	**0.667** T Int / one way Factor		

	MS1LT	MS1TH	MS1RT	MS2LT	MS2TH	MS2RT	SS1LT	SS1TH	SS1RT	SS2LT	SS2TH	SS2RT	PedC1	PedC2
	←				→			↓			↑			
7:00 - 8:00	44	791	0	0	1022	7	0	0	0	11	0	205	0	0
8:00 - 9:00	44	791	0	0	1022	7	0	0	0	11	0	205	0	0
11:00 - 12:00	49	371	0	0	367	6	0	0	0	1	0	61	0	0
12:00 - 13:00	49	371	0	0	367	6	0	0	0	1	0	61	0	0
16:00 - 17:00	68	1101	0	0	759	18	0	0	0	2	0	93	0	1
17:00 - 18:00	68	1101	0	0	759	18	0	0	0	2	0	93	0	1
Average	54	754	0	0	716	10	0	0	0	5	0	120	0	0

***** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day**

***** Enter the peak pedestrian volume crossing the main street averaged over the same hours**



W = [Ct1xCbt(Vm1 x Vs)/K1 + (F(Vm2 x Pc)L)/K2] x Cvp

W =	**106**	**105**	**1**
	Warranted	***Veh***	***Ped***

Roadway, Vehicle and Pedestrian Factors			**Range**			
			Min	**@**	**Max**	**@**
Cs =	(Int SpacingFactor)		0.90	<200 m	1.10	isolated
Cmt =	(MainStTruckFactor)		1.00	<5%	1.15	>20%
Cv =	(SpeedFactor)		1.00	<60 km/h	1.10	>80 km/h
Cp =	(PopDemoFactor)		1.00	>250,000	1.20	<10,000
Csb =	(SideStBusFactor)		1.00	no	1.05	yes
Cst =	(SideStTruckFactor)		1.00	<10%	1.05	>10%
F =	(Ped DemoFactor)					
	(max of)	Elementary School	1.20			
		Seniors Complex	1.10			
		Path to School	1.10			

Explanation of Factors:

Cbt = 1.05 if the side street either is a bus route, or has more than 10% trucks, otherwise = 1.00.
(it is assumed that these two factors only affect the side street vehicles trying to cross the main street, not the pedestrians)

Ci = the product of the other 4 geographic factors
(Cs = intersection spacing, Cmt = main street truck, Cv = Speed, Cp = Population)

Vm1 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=10.0 metres) (averaged over 6 peak hours)

Vm2 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=6.0 metres) (averaged over 6 peak hours)

Vs = the highest side street approach volume (averaged over 6 peak hours)
*** note: it has been determined that Vs must be > 75 for signals to be considered ***

F = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors

Pc = the total pedestrian volume crossing the mainstreet
(averaged over 6 peak hours)

L = number of lanes that the pedestrians have to cross
(only half the street if the median is >=5.0 metres)

Kv = Vehicle - Vehicle denominator constant
(Kv = 1,100 if L<=3, Kv = 1,400 if L >3)

Kp = Vehicle - Pedestrian denominator constant
(Kp = 2,000 if L<=3, Kp = 5,000 if L >3)

Canadian Traffic Signal Warrant Analysis

Main Street — **Mayfield Road (2021)**

Side Street — **Inder Heights Drive / Snellview Boulevard**

Date: August 10, 2011

City: Peel Region

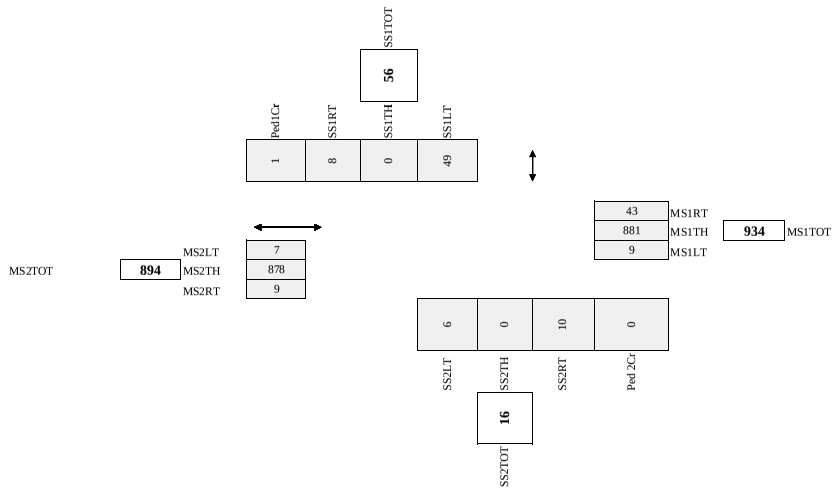
MainStreet1Lanes	(#)	3	Distance to next signal	(m)	410
MainStreet2Lanes	(#)	3	Elementary School	(y/n)	n
MainStreet LT Lanes	(#)	1	Senior's Complex	(y/n)	n
SideStreet1Lanes	(#)	1	Pathway to School	(y/n)	n
SideStreet2Lanes	(#)	1	Metro Area Population	(#)	1,500,000
MainStreetSpeedLimit	(km/h)	60	Side Street Bus Route	(y/n)	n
MainStreetTrucks/Buses	(%)	10.0%	Side Street Trucks	(%)	n
Refuge Width on Median	(m)	0.0	T or 1-Way Intersection	(y/n)	n
			Central Business District	(y/n)	n

Vm =	**1,827**	(MainSt Vol Total)	Cs =	**0.978**	(Int SpacingFactor)
Vs =	**56**	(SideSt Vol Highest)	Cmt =	**1.050**	(MainStTruckFactor)
Pc =	**1**	Peds Crossing Main	Cv =	**1.000**	(SpeedFactor)
K1 =	**1,400**	veh/veh const	Cp =	**1.000**	(PopDemoFactor)
K2 =	**5,000**	veh/ped const	Csb =	**1.000**	(SideStBusFactor)
L =	**7.0**	TotalMainStLanes	Cst =	**1.050**	(SideStTruckFactor)
F =	**1.000**	(PedDemoFactor)	Vmx =	**934**	(MainStHighest)
Vm1 =	**1,827**	(MainStVeh-Veh#)	Vm2 =	**1,827**	(MainStVeh-Ped#)
Cvp =	**1.026**	(product of Cs,Cmt,Cv,Cp)	Cbt =	**1.050**	(maximum of Csb,Cst)
Ct1 =	**1.000**	T Int / one way Factor			

	MS1LT	MS1TH	MS1RT	MS2LT	MS2TH	MS2RT	SS1LT	SS1TH	SS1RT	SS2LT	SS2TH	SS2RT	PedC1	PedC2
7:00 - 8:00	5	755	24	3	1347	12	71	0	10	10	0	16	0	0
8:00 - 9:00	5	755	24	3	1347	12	71	0	10	10	0	16	0	0
11:00 - 12:00	4	446	26	4	460	5	29	0	5	5	0	8	3	0
12:00 - 13:00	4	446	26	4	460	5	29	0	5	5	0	8	3	0
16:00 - 17:00	19	1442	80	13	826	11	46	0	8	4	0	6	0	0
17:00 - 18:00	19	1442	80	13	826	11	46	0	8	4	0	6	0	0
Average	9	881	43	7	878	9	49	0	8	6	0	10	1	0

***** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day**

***** Enter the peak pedestrian volume crossing the main street averaged over the same hours**



W = [Ct1xCbt(Vm1 x Vs)/K1 + (F(Vm2 x Pc)L)/K2] x Cvp

W = **82** **79** **3**

Not Warranted - Vs<75 ***Veh*** ***Ped***

Roadway, Vehicle and Pedestrian Factors			Range Min	@	Max	@
Cs =	(Int SpacingFactor)		0.90	<200 m	1.10	isolated
Cmt =	(MainStTruckFactor)		1.00	<5%	1.15	>20%
Cv =	(SpeedFactor)		1.00	<60 km/h	1.10	>80 km/h
Cp =	(PopDemoFactor)		1.00	>250,000	1.20	<10,000
Csb =	(SideStBusFactor)		1.00	no	1.05	yes
Cst =	(SideStTruckFactor)		1.00	<10%	1.05	>10%
F =	(Ped DemoFactor)					
	(max of)	Elementary School	1.20			
		Seniors Complex	1.10			
		Path to School	1.10			

Explanation of Factors:

Cbt = 1.05 if the side street either is a bus route, or has more than 10% trucks, otherwise = 1.00.
(it is assumed that these two factors only affect the side street vehicles trying to cross the main street, not the pedestrians)

Ci = the product of the other 4 geographic factors
(Cs = intersection spacing, Cmt = main street truck, Cv = Speed, Cp = Population)

Vm1 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=10.0 metres) (averaged over 6 peak hours)

Vm2 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=6.0 metres) (averaged over 6 peak hours)

Vs = the highest side street approach volume (averaged over 6 peak hours)
*** note: it has been determined that Vs must be > 75 for signals to be considered ***

F = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors

Pc = the total pedestrian volume crossing the mainstreet
(averaged over 6 peak hours)

L = number of lanes that the pedestrians have to cross
(only half the street if the median is >=5.0 metres)

Kv = Vehicle - Vehicle denominator constant
(Kv = 1,100 if L<=3, Kv = 1,400 if L >3)

Kp = Vehicle - Pedestrian denominator constant
(Kp = 2,000 if L<=3, Kp = 5,000 if L >3)

Canadian Traffic Signal Warrant Analysis

Main Street: Mayfield Road (2031 Without GTA-W)

Side Street: Inder Heights Drive / Snellview Boulevard

Date: August 10, 2011

City: Peel Region

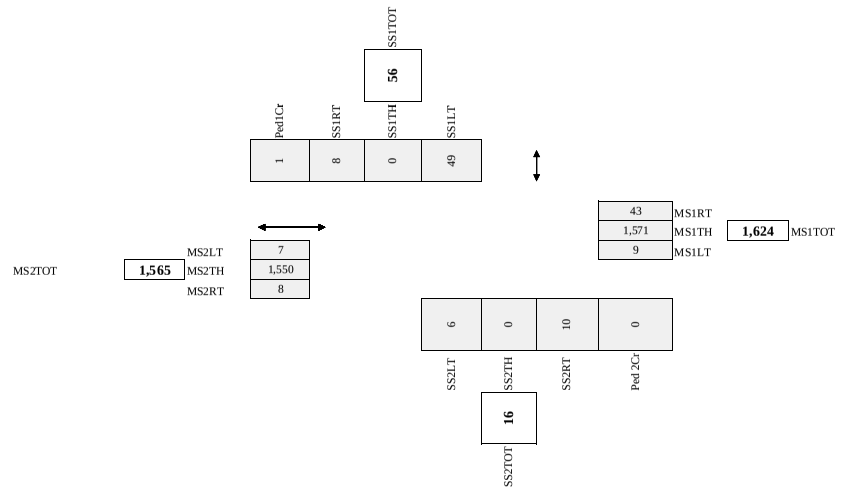
MainStreet1Lanes	(#)	3	Distance to next signal	(m)	410
MainStreet2Lanes	(#)	3	Elementary School	(y/n)	n
MainStreet LT Lanes	(#)	1	Senior's Complex	(y/n)	n
SideStreet1Lanes	(#)	1	Pathway to School	(y/n)	n
SideStreet2Lanes	(#)	1	Metro Area Population	(#)	1,500,000
MainStreetSpeedLimit	(km/h)	60	Side Street Bus Route	(y/n)	n
MainStreetTrucks/Buses	(%)	10.0%	Side Street Trucks	(%)	n
Refuge Width on Median	(m)	0.0	T or 1-Way Intersection	(y/n)	n
			Central Business District	(y/n)	n

Vm =	**3,189**	(MainSt Vol Total)	Cs =	**0.978**	(Int SpacingFactor)
Vs =	**56**	(SideSt Vol Highest)	Cmt =	**1.050**	(MainStTruckFactor)
Pc =	**1**	Peds Crossing Main	Cv =	**1.000**	(SpeedFactor)
K1 =	**1,400**	veh/veh const	Cp =	**1.000**	(PopDemoFactor)
K2 =	**5,000**	veh/ped const	Csb =	**1.000**	(SideStBusFactor)
L =	**7.0**	TotalMainStLanes	Cst =	**1.050**	(SideStTruckFactor)
F =	**1.000**	(PedDemoFactor)	Vmx =	**1,624**	(MainStHighest)
Vm1 =	**3,189**	(MainStVeh-Veh#)	Vm2 =	**3,189**	(MainStVeh-Ped#)
Cvp =	**1.026**	(product of Cs,Cmt,Cv,Cp)	Cbt =	**1.050**	(maximum of Csb,Cst)
Ct1 =	**1.000**	T Int / one way Factor			

	MS1LT	MS1TH	MS1RT	MS2LT	MS2TH	MS2RT	SS1LT	SS1TH	SS1RT	SS2LT	SS2TH	SS2RT	PedC1	PedC2
7:00 - 8:00	5	1357	24	3	2352	12	71	0	10	10	0	16	0	0
8:00 - 9:00	5	1357	24	3	2352	12	71	0	10	10	0	16	0	0
11:00 - 12:00	4	795	26	4	812	5	29	0	5	5	0	8	3	0
12:00 - 13:00	4	795	26	4	812	5	29	0	5	5	0	8	3	0
16:00 - 17:00	19	2561	80	13	1487	7	46	0	8	4	0	6	0	0
17:00 - 18:00	19	2561	80	13	1487	7	46	0	8	4	0	6	0	0
Average	9	1,571	43	7	1,550	8	49	0	8	6	0	10	1	0

***** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day**

***** Enter the peak pedestrian volume crossing the main street averaged over the same hours**



W = [Ct1xCbt(Vm1 x Vs)/K1 + (F(Vm2 x Pc)L)/K2] x Cvp

W = **143** **138** **5**

Not Warranted - Vs<75 ***Veh*** ***Ped***

Roadway, Vehicle and Pedestrian Factors			Range Min	@	Max	@
Cs =	(Int SpacingFactor)		0.90	<200 m	1.10	isolated
Cmt =	(MainStTruckFactor)		1.00	<5%	1.15	>20%
Cv =	(SpeedFactor)		1.00	<60 km/h	1.10	>80 km/h
Cp =	(PopDemoFactor)		1.00	>250,000	1.20	<10,000
Csb =	(SideStBusFactor)		1.00	no	1.05	yes
Cst =	(SideStTruckFactor)		1.00	<10%	1.05	>10%
F =	(Ped DemoFactor)					
	(max of)	Elementary School	1.20			
		Seniors Complex	1.10			
		Path to School	1.10			

Explanation of Factors:

Cbt = 1.05 if the side street either is a bus route, or has more than 10% trucks, otherwise = 1.00.
(it is assumed that these two factors only affect the side street vehicles trying to cross the main street, not the pedestrians)

Ci = the product of the other 4 geographic factors
(Cs = intersection spacing, Cmt = main street truck, Cv = Speed, Cp = Population)

Vm1 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=10.0 metres) (averaged over 6 peak hours)

Vm2 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=6.0 metres) (averaged over 6 peak hours)

Vs = the highest side street approach volume (averaged over 6 peak hours)
*** note: it has been determined that Vs must be > 75 for signals to be considered ***

F = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors

Pc = the total pedestrian volume crossing the mainstreet
(averaged over 6 peak hours)

L = number of lanes that the pedestrians have to cross
(only half the street if the median is >=5.0 metres)

Kv = Vehicle - Vehicle denominator constant
(Kv = 1,100 if L<=3, Kv = 1,400 if L >3)

Kp = Vehicle - Pedestrian denominator constant
(Kp = 2,000 if L<=3, Kp = 5,000 if L >3)

Canadian Traffic Signal Warrant Analysis

Main Street	**Mayfield Road (2031 Without GTA-W)**
Side Street	**Stonegate Drive**

Date: **August 10, 2011**

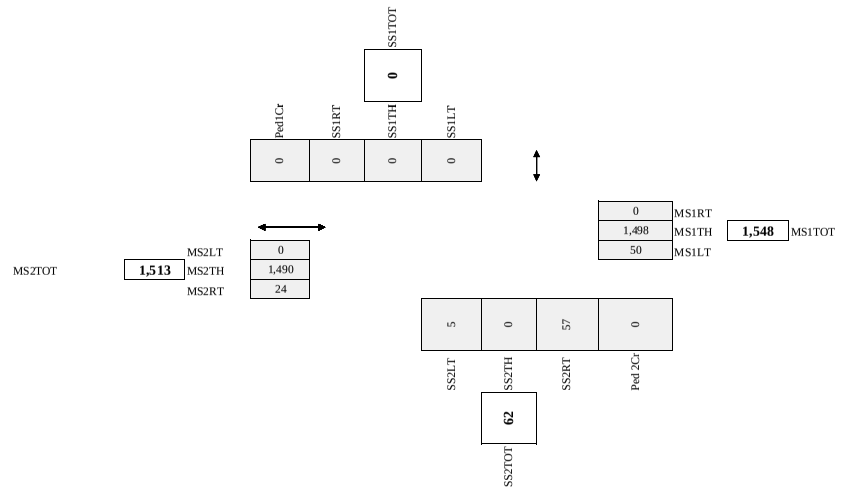
City: **Peel Region**

MainStreet1Lanes	(#)	3		Distance to next signal	(m)	530	Vm =	**3,061**	(MainSt Vol Total)
MainStreet2Lanes	(#)	3		Elementary School	(y/n)	n	Vs =	**62**	(SideSt Vol Highest)
MainStreet LT Lanes	(#)	1		Senior's Complex	(y/n)	n	Pc =	**0**	Peds Crossing Main
SideStreet1Lanes	(#)			Pathway to School	(y/n)	n	K1 =	**1,400**	veh/veh const
SideStreet2Lanes	(#)	1		Metro Area Population	(#)	1,500,000	K2 =	**5,000**	veh/ped const
MainStreetSpeedLimit	(km/h)	60		Side Street Bus Route	(y/n)	n	L =	**7.0**	TotalMainStLanes
MainStreetTrucks/Buses	(%)	10.0%		Side Street Trucks	(%)	n	F =	**1.000**	(PedDemoFactor)
Refuge Width on Median	(m)	0.0		T or 1-Way Intersection	(y/n)	y	Vm1 =	**3,061**	(MainStVeh-Veh#)
				Central Business District	(y/n)	n	Cvp =	**1.052**	(product of Cs,Cmt,Cv,Cp)
							Ct1 =	**0.667**	T Int / one way Factor

	MS1LT	MS1TH	MS1RT	MS2LT	MS2TH	MS2RT	SS1LT	SS1TH	SS1RT	SS2LT	SS2TH	SS2RT	PedC1	PedC2
7:00 - 8:00	23	1230	0	0	2266	50	0	0	0	6	0	115	0	0
8:00 - 9:00	23	1230	0	0	2266	50	0	0	0	6	0	115	0	0
11:00 - 12:00	22	788	0	0	785	3	0	0	0	5	0	25	0	1
12:00 - 13:00	22	788	0	0	785	3	0	0	0	5	0	25	0	1
16:00 - 17:00	105	2476	0	0	1418	18	0	0	0	4	0	31	0	0
17:00 - 18:00	105	2476	0	0	1418	18	0	0	0	4	0	31	0	0
Average	50	1,498	0	0	1,490	24	0	0	0	5	0	57	0	0

***** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day**

***** Enter the peak pedestrian volume crossing the main street averaged over the same hours**



W = [Ct1xCbt(Vm1 x Vs)/K1 + (F(Vm2 x Pc)L)/K2] x Cvp

W = **101** **100** **2**

Not Warranted - Vs<75 ***Veh*** ***Ped***

Roadway, Vehicle and Pedestrian Factors			**Range**			
			Min	**@**	**Max**	**@**
Cs =	(Int SpacingFactor)		0.90	<200 m	1.10	isolated
Cmt =	(MainStTruckFactor)		1.00	<5%	1.15	>20%
Cv =	(SpeedFactor)		1.00	<60 km/h	1.10	>80 km/h
Cp =	(PopDemoFactor)		1.00	>250,000	1.20	<10,000
Csb =	(SideStBusFactor)		1.00	no	1.05	yes
Cst =	(SideStTruckFactor)		1.00	<10%	1.05	>10%
F =	(Ped DemoFactor)					
	(max of)	Elementary School	1.20			
		Seniors Complex	1.10			
		Path to School	1.10			

Explanation of Factors:

Cbt = 1.05 if the side street either is a bus route, or has more than 10% trucks, otherwise = 1.00.
(it is assumed that these two factors only affect the side street vehicles trying to cross the main street, not the pedestrians)

Ci = the product of the other 4 geographic factors
(Cs = intersection spacing, Cmt = main street truck, Cv = Speed, Cp = Population)

Vm1 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=10.0 metres) (averaged over 6 peak hours)

Vm2 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=6.0 metres) (averaged over 6 peak hours)

Vs = the highest side street approach volume (averaged over 6 peak hours)
*** note: it has been determined that Vs must be > 75 for signals to be considered ***

F = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors

Pc = the total pedestrian volume crossing the mainstreet
(averaged over 6 peak hours)

L = number of lanes that the pedestrians have to cross
(only half the street if the median is >=5.0 metres)

Kv = Vehicle - Vehicle denominator constant
(Kv = 1,100 if L<=3, Kv = 1,400 if L >3)

Kp = Vehicle - Pedestrian denominator constant
(Kp = 2,000 if L<=3, Kp = 5,000 if L >3)

Appendix M

SimTraffic Corridor Simulation

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	7:20	7:20	7:20	7:20	7:20	7:20
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	40	40	40	40	40	40
Time Recorded (min)	30	30	30	30	30	30
# of Intervals	2	2	2	2	2	2
# of Recorded mScheduledIntervals	1	1	1	1	1	1
Vehs Entered	5829	5898	5710	5918	5883	5846
Vehs Exited	5696	5662	5636	5588	5599	5639
Starting Vehs	904	777	903	792	834	841
Ending Vehs	1037	1013	977	1122	1118	1044
Denied Entry Before	4	2	2	3	5	1
Travel Distance (km)	17786	17533	17526	17339	17800	17597
Travel Time (hr)	508.5	497.7	478.6	488.2	510.2	496.7
Total Delay (hr)	230.5	223.5	205.8	216.5	231.2	221.5
Total Stops	14572	14196	13949	14190	14478	14276
Fuel Used (l)	1596.0	1578.1	1557.7	1540.6	1594.4	1573.4

Interval #0 Information Seeding

Start Time	7:20
End Time	7:30
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:30
End Time	8:00
Total Time (min)	30

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	5829	5898	5710	5918	5883	5846
Vehs Exited	5696	5662	5636	5588	5599	5639
Starting Vehs	904	777	903	792	834	841
Ending Vehs	1037	1013	977	1122	1118	1044
Denied Entry Before	4	2	2	3	5	1
Travel Distance (km)	17786	17533	17526	17339	17800	17597
Travel Time (hr)	508.5	497.7	478.6	488.2	510.2	496.7
Total Delay (hr)	230.5	223.5	205.8	216.5	231.2	221.5
Total Stops	14572	14196	13949	14190	14478	14276
Fuel Used (l)	1596.0	1578.1	1557.7	1540.6	1594.4	1573.4

Arterial Level of Service: EB Mayfield Road

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (km)	Arterial Speed
Chinguacousy Road	1	27.9	86.7	1.4	57
New Collector Road 1	12	15.5	32.0	0.4	42
New Collector Road 2	13	15.0	51.9	0.8	59
McLaughlin Road	2	27.8	36.7	0.2	17
Van Kirk Drive	3	17.8	34.4	0.3	34
Cresthaven Road/Robe	4	23.0	52.4	0.6	40
	1236	6.4	17.2	0.2	37
Highway 10	5	92.1	109.2	0.3	10
Colonel Bertram Road	6	18.7	29.4	0.2	22
Summer Valley Drive	7	12.5	25.1	0.2	30
Valley View Drive	14	2.6	10.8	0.1	46
Inder Heights Drive	8	3.7	30.5	0.5	54
Kennedy Road	9	30.2	54.0	0.4	27
Stonegate Drive	10	7.8	39.5	0.5	48
	146	2.8	30.3	0.5	55
Heart Lake Road	11	46.0	62.7	0.4	21
Total		349.7	702.6	6.9	35

Arterial Level of Service: WB Mayfield Road

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (km)	Arterial Speed
Heart Lake Road	11	26.3	85.1	1.4	58
	146	7.5	24.6	0.4	54
Stonegate Drive	10	2.0	29.5	0.5	56
Kennedy Road	9	47.4	77.1	0.5	25
Snellview Boulevard	8	6.1	30.7	0.4	48
Valley View Drive	14	2.3	28.9	0.5	56
Summer Valley Drive	7	7.0	14.9	0.1	33
Colonel Bertram Road	6	9.7	21.9	0.2	34
Highway 10	5	48.1	58.2	0.2	11
	1236	5.7	23.7	0.3	44
Cresthaven Road/Robe	4	13.9	23.2	0.2	28
Van Kirk Drive	3	14.7	43.9	0.6	48
McLaughlin Road	2	14.4	31.2	0.3	38
New Collector Road 2	13	8.5	17.7	0.2	36
New Collector Road 1	12	14.3	51.5	0.8	59
Chinguacousy Road	1	19.7	36.2	0.4	37
Total		247.5	598.4	6.9	41

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	4:20	4:20	4:20	4:20	4:20	4:20
End Time	5:00	5:00	5:00	5:00	5:00	5:00
Total Time (min)	40	40	40	40	40	40
Time Recorded (min)	30	30	30	30	30	30
# of Intervals	2	2	2	2	2	2
# of Recorded mScheduledIntervals	1	1	1	1	1	1
Vehs Entered	6749	6796	6768	6768	6723	6760
Vehs Exited	6353	6362	6477	6445	6323	6392
Starting Vehs	1046	1020	1066	1075	980	1035
Ending Vehs	1442	1454	1357	1398	1380	1400
Denied Entry Before	3	4	5	7	1	1
Travel Distance (km)	18638	18559	18727	18632	18612	18634
Travel Time (hr)	639.9	630.8	614.4	602.9	591.0	615.8
Total Delay (hr)	347.8	339.4	320.6	310.4	299.5	323.5
Total Stops	19871	18745	16803	17026	17041	17891
Fuel Used (l)	1769.9	1753.8	1749.7	1738.0	1720.4	1746.3

Interval #0 Information Seeding

Start Time	4:20
End Time	4:30
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	4:30
End Time	5:00
Total Time (min)	30

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	6749	6796	6768	6768	6723	6760
Vehs Exited	6353	6362	6477	6445	6323	6392
Starting Vehs	1046	1020	1066	1075	980	1035
Ending Vehs	1442	1454	1357	1398	1380	1400
Denied Entry Before	3	4	5	7	1	1
Travel Distance (km)	18638	18559	18727	18632	18612	18634
Travel Time (hr)	639.9	630.8	614.4	602.9	591.0	615.8
Total Delay (hr)	347.8	339.4	320.6	310.4	299.5	323.5
Total Stops	19871	18745	16803	17026	17041	17891
Fuel Used (l)	1769.9	1753.8	1749.7	1738.0	1720.4	1746.3

Arterial Level of Service: EB Mayfield Road

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (km)	Arterial Speed
Chinguacousy Road	1	32.7	92.0	1.4	54
New Collector Road 1	12	15.0	31.4	0.4	42
New Collector Road 2	13	12.7	50.2	0.8	61
McLaughlin Road	2	61.3	69.8	0.2	9
Van Kirk Drive	3	12.2	29.2	0.3	41
Cresthaven Road/Robe	4	13.6	42.9	0.6	49
	1236	3.1	12.4	0.2	52
Highway 10	5	45.8	61.9	0.3	17
Colonel Bertram Rd	6	11.0	21.2	0.2	30
Summer Valley Drive	7	8.9	21.5	0.2	35
Valley View Drive	14	1.9	10.1	0.1	49
Inder Heights Drive	8	2.6	29.3	0.5	56
Kennedy Road	9	27.7	51.6	0.4	29
Stonegate Drive	10	6.0	38.0	0.5	50
	146	2.0	29.6	0.5	56
Heart Lake Road	11	32.5	49.7	0.4	27
Total		289.0	640.9	6.9	39

Arterial Level of Service: WB Mayfield Road

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (km)	Arterial Speed
Heart Lake Road	11	94.4	152.5	1.4	32
	146	12.9	29.6	0.4	45
Stonegate Drive	10	3.5	30.8	0.5	54
Kennedy Road	9	54.2	84.3	0.5	23
Snellview Boulevard	8	8.2	33.0	0.4	45
Valley View Drive	14	5.9	33.0	0.5	49
Summer Valley Drive	7	17.8	25.6	0.1	19
Colonel Bertram Road	6	29.2	41.3	0.2	18
Highway 10	5	55.0	64.7	0.2	10
	1236	8.5	26.5	0.3	40
Cresthaven Road/Robe	4	40.2	49.4	0.2	13
Van Kirk Drive	3	16.5	45.9	0.6	46
McLaughlin Road	2	18.5	37.9	0.3	31
New Collector Road 2	13	11.0	20.4	0.2	31
New Collector Road 1	12	18.5	56.0	0.8	54
Chinguacousy Road	1	18.0	34.4	0.4	39
Total		412.3	765.4	6.9	32

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	7:20	7:20	7:20	7:20	7:20	7:20
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	40	40	40	40	40	40
Time Recorded (min)	30	30	30	30	30	30
# of Intervals	2	2	2	2	2	2
# of Recorded mScheduledIntervals	1	1	1	1	1	1
Vehs Entered	5766	5707	5728	5799	5648	5729
Vehs Exited	5046	5117	4943	5045	5072	5046
Starting Vehs	862	961	875	906	980	910
Ending Vehs	1582	1551	1660	1660	1556	1593
Denied Entry Before	2	2	4	3	5	1
Travel Distance (km)	15627	15537	15271	14830	15523	15358
Travel Time (hr)	657.6	697.4	652.5	639.2	668.7	663.1
Total Delay (hr)	394.9	435.8	396.2	391.0	408.0	405.2
Total Stops	14382	15196	15664	13662	15170	14814
Fuel Used (l)	1564.6	1593.0	1538.8	1492.9	1562.0	1550.3

Interval #0 Information Seeding

Start Time	7:20
End Time	7:30
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:30
End Time	8:00
Total Time (min)	30

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	5766	5707	5728	5799	5648	5729
Vehs Exited	5046	5117	4943	5045	5072	5046
Starting Vehs	862	961	875	906	980	910
Ending Vehs	1582	1551	1660	1660	1556	1593
Denied Entry Before	2	2	4	3	5	1
Travel Distance (km)	15627	15537	15271	14830	15523	15358
Travel Time (hr)	657.6	697.4	652.5	639.2	668.7	663.1
Total Delay (hr)	394.9	435.8	396.2	391.0	408.0	405.2
Total Stops	14382	15196	15664	13662	15170	14814
Fuel Used (l)	1564.6	1593.0	1538.8	1492.9	1562.0	1550.3

Arterial Level of Service: EB Mayfield Road

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (km)	Arterial Speed
	20	41.7	94.9	1.2	47
Chinguacousy Road	1	44.4	47.8	0.1	7
	23	16.6	33.4	0.1	11
	26	42.6	50.5	0.2	12
New Collector Road 1	12	32.4	36.2	0.1	11
	29	32.7	44.8	0.1	8
	32	324.4	349.1	0.6	7
New Collector Road 2	13	56.4	59.7	0.1	6
McLaughlin Road	2	98.3	116.3	0.2	5
	35	2.6	20.8	0.1	18
	38	2.2	8.8	0.1	49
Van Kirk Drive	3	8.8	13.1	0.1	28
	41	1.1	18.7	0.1	20
	44	52.4	71.3	0.4	19
Cresthaven Road/Robe	4	44.5	50.3	0.1	8
	1236	1.9	23.7	0.2	27
Highway 10	5	36.2	52.4	0.3	20
Colonel Bertram Road	6	13.5	23.7	0.2	27
Summer Valley Drive	7	9.8	22.5	0.2	33
Valley View Drive	14	2.1	10.3	0.1	48
Inder Heights Drive	8	2.9	29.9	0.5	54
Kennedy Road	9	27.6	51.3	0.4	29
Stonegate Drive	10	6.6	38.5	0.5	49
	146	2.3	30.0	0.5	55
Heart Lake Road	11	31.2	48.1	0.4	28
Total		935.3	1346.2	6.8	18

Arterial Level of Service: WB Mayfield Road

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (km)	Arterial Speed
Heart Lake Road	11	26.4	85.3	1.4	58
	146	7.4	24.3	0.4	55
Stonegate Drive	10	2.1	29.4	0.5	56
Kennedy Road	9	35.0	64.9	0.5	29
Snellview Boulevard	8	4.7	29.3	0.4	51
Valley View Drive	14	2.3	29.2	0.5	56
Summer Valley Drive	7	7.6	15.4	0.1	32
Colonel Bertram Road	6	11.6	23.7	0.2	32
Highway 10	5	57.4	67.1	0.2	10
	1236	25.3	40.9	0.3	26
Cresthaven Road/Robe	4	30.9	40.2	0.2	16
	44	1.4	19.6	0.1	20
	41	5.8	25.2	0.4	53
Van Kirk Drive	3	14.3	18.6	0.1	20
	38	16.1	33.6	0.1	11
	35	43.4	49.6	0.1	9
McLaughlin Road	2	47.7	52.1	0.1	7
New Collector Road 2	13	7.2	27.4	0.2	23
	32	0.3	17.8	0.1	20
	29	3.1	33.3	0.6	70
New Collector Road 1	12	6.1	9.8	0.1	38
	26	0.6	14.1	0.1	27
	23	2.8	11.0	0.2	54
Chinguacousy Road	1	8.9	12.4	0.1	28
	20	0.7	18.4	0.1	19
Total		369.3	792.6	7.0	32

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	4:20	4:20	4:20	4:20	4:20	4:20
End Time	5:00	5:00	5:00	5:00	5:00	5:00
Total Time (min)	40	40	40	40	40	40
Time Recorded (min)	30	30	30	30	30	30
# of Intervals	2	2	2	2	2	2
# of Recorded mScheduledIntervals	1	1	1	1	1	1
Vehs Entered	6623	6783	6637	6878	6668	6719
Vehs Exited	5489	5552	5445	5546	5432	5493
Starting Vehs	1013	950	1052	1022	990	997
Ending Vehs	2147	2181	2244	2354	2226	2221
Denied Entry Before	2	1	0	3	0	0
Travel Distance (km)	15777	16376	16001	16307	15994	16091
Travel Time (hr)	794.9	810.5	839.2	815.1	825.1	817.0
Total Delay (hr)	533.2	539.8	574.6	545.7	560.1	550.7
Total Stops	17588	19107	19436	19807	19985	19182
Fuel Used (l)	1691.4	1745.1	1738.3	1746.2	1733.0	1730.8

Interval #0 Information Seeding

Start Time	4:20
End Time	4:30
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	4:30
End Time	5:00
Total Time (min)	30

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	6623	6783	6637	6878	6668	6719
Vehs Exited	5489	5552	5445	5546	5432	5493
Starting Vehs	1013	950	1052	1022	990	997
Ending Vehs	2147	2181	2244	2354	2226	2221
Denied Entry Before	2	1	0	3	0	0
Travel Distance (km)	15777	16376	16001	16307	15994	16091
Travel Time (hr)	794.9	810.5	839.2	815.1	825.1	817.0
Total Delay (hr)	533.2	539.8	574.6	545.7	560.1	550.7
Total Stops	17588	19107	19436	19807	19985	19182
Fuel Used (l)	1691.4	1745.1	1738.3	1746.2	1733.0	1730.8

Arterial Level of Service: EB Mayfield Road

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (km)	Arterial Speed
	20	7.7	60.9	1.2	73
Chinguacousy Road	1	25.1	28.8	0.1	13
	26	2.0	19.7	0.1	19
	29	2.5	10.7	0.2	54
New Collector Road 1	12	6.7	10.7	0.1	36
	32	0.5	13.4	0.1	27
	35	43.4	72.9	0.6	32
New Collector Road 2	13	32.3	35.7	0.1	10
McLaughlin Road	2	89.0	104.0	0.2	6
	44	1.9	19.7	0.1	18
	47	1.6	8.8	0.1	53
Van Kirk Drive	3	5.8	10.2	0.1	37
	50	0.4	13.6	0.1	28
	53	6.0	25.2	0.4	53
Cresthaven Road/Robe	4	14.5	19.0	0.1	20
	1236	0.9	22.8	0.2	28
Highway 10	5	38.9	55.4	0.3	19
Colonel Bertram Rd	6	12.3	22.3	0.2	29
Summer Valley Drive	7	12.2	24.8	0.2	30
Valley View Drive	14	2.1	10.2	0.1	48
Inder Heights Drive	8	2.5	29.5	0.5	55
Kennedy Road	9	27.6	51.7	0.4	29
Stonegate Drive	10	5.2	35.7	0.5	53
	146	1.9	29.6	0.5	56
Heart Lake Road	11	16.1	33.4	0.4	40
Total		359.4	768.7	6.8	32

Arterial Level of Service: WB Mayfield Road

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (km)	Arterial Speed
Heart Lake Road	11	93.3	151.2	1.4	33
	146	12.9	29.5	0.4	45
Stonegate Drive	10	14.7	41.4	0.5	40
Kennedy Road	9	124.2	152.3	0.5	12
Snellview Boulevard	8	82.7	104.6	0.4	14
Valley View Drive	14	187.6	212.7	0.5	8
Summer Valley Drive	7	76.8	84.6	0.1	6
Colonel Bertram Road	6	120.6	132.0	0.2	6
Highway 10	5	161.9	171.1	0.2	4
	1236	111.4	127.5	0.3	8
Cresthaven Road/Robe	4	81.8	90.3	0.2	7
	53	1.5	19.6	0.1	20
	50	11.7	31.0	0.4	43
Van Kirk Drive	3	18.3	22.6	0.1	17
	47	29.7	42.3	0.1	9
	44	71.1	77.7	0.1	6
McLaughlin Road	2	49.6	53.5	0.1	7
New Collector Road 2	13	6.6	26.9	0.2	23
	35	0.2	13.1	0.1	27
	32	3.1	33.1	0.6	70
New Collector Road 1	12	6.0	9.6	0.1	37
	29	0.4	13.9	0.1	28
	26	2.3	10.3	0.2	56
Chinguacousy Road	1	8.3	12.1	0.1	30
	20	0.7	18.4	0.1	20
Total		1277.6	1681.1	7.0	15

Roundabout Memo

GENIVAR

MEMORANDUM

Date: December 16, 2011

To: Neal Smith, C.E.T., Region of Peel

Copies: Bruce Grundon, GENIVAR
Sharon Sterling, GENIVAR,
Stephan Kellner, GENIVAR

From: David Lukezic, GENIVAR
Owen McGaughey, GENIVAR

Project No.: 101-17262

Subject: Further Review of Mid-block Intersections between Chinguacousy Road and McLaughlin Road

Public Information Centre (PIC) #1 of the Schedule C Class Environmental Assessment Study for Mayfield Road from Chinguacousy Road to Heart Lake Road was held on November 30, 2011. At this PIC, Regional Councillor Allan Thompson expressed concern about the proposed mid-block intersections between Chinguacousy Road and McLaughlin Road and the impact that two mid-block signalized intersections will have on goods movement along Mayfield Road. Councillor Thompson noted that the regional goods movement working group has recommended no more than one signal between Chinguacousy Road and McLaughlin Road.

GENIVAR has completed additional assessment of the section of Mayfield Road from Chinguacousy Road to McLaughlin Road. Four alternatives were assessed for the 2031 horizon year, for which the cross section for Mayfield Road includes three through lanes per direction, with turn lanes as required. The alternatives include:

- two mid-block signalized intersections (as included in the Draft Traffic Report), one with four legs and one with three legs
- one mid-block signalized intersection with four legs
- two mid-block roundabouts, one with four legs and one with three legs
- one mid-block roundabout with four legs

Evaluation of Alternatives

To evaluate the alternatives, GENIVAR developed an evaluation matrix with both quantitative and qualitative criteria. The detailed matrix is in the appendix; a summarized matrix is shown in Table 1.

The quantitative criteria resulting from intersection capacity analysis were derived using Synchro and SimTraffic analysis software, consistent with the traffic assessment used to determine the preliminary preferred alternative. Roundabout assessments using both Arcady and HCM 2010 methodology were also conducted. A brief description of each of these criteria is below, with the results of these criteria shown in the Appendix.

- Average travel speed along Mayfield Road: This is a measure of the average travel speed, in km/h, from west of Chinguacousy Road to east of McLaughlin Road, with separate outputs for each direction. It is measured using SimTraffic 7. This speed is based on a speed limit of 60km/h and includes the effect of traffic signals and delays due to queues.
- Average intersection delay: This criterion is the average delay per vehicle, in seconds, that a vehicle experiences at an intersection. Since the signals are not coordinated in any of the alternatives, intersection delays were identical for all alternatives at Chinguacousy Road and McLaughlin Road. For signalized intersections, Synchro 7 was used, using Highway Capacity Manual (HCM) 2000 methodology. Since multi-lane roundabouts cannot be analyzed with this methodology, the new HCM 2010 methodology was used to determine the average delay at roundabouts. An assessment using Arcady was also performed, which found that the 2031 volumes were between 75 and 80 percent of capacity on the peak approaches, which is approaching capacity.
- Stops per vehicle: This criterion is the average number of stops that a vehicle experiences within the assessed network, which includes Mayfield Road and Chinguacousy Road, Mayfield Road and McLaughlin Road, and Mayfield Road and the mid-block collectors (one or two, depending on the alternative). SimTraffic 7 was used to determine this statistic.

It should be noted that two-lane roundabouts were assumed for the roundabout alternatives. Along a six-lane corridor with three through lanes per direction, one lane would end prior to the roundabout approach and resume after the roundabout exit. It is expected that two-lane roundabouts would have only a small amount of additional property acquisition, compared to the standard 50m right-of-way. Implementing three-lane roundabouts instead of two-lane roundabouts would result in less delay and improved travel times compared to two-lane roundabouts. However, three-lane roundabouts are significantly larger and would require significantly more property acquisition near the intersections. Also, three-lane roundabouts would be more expensive and less safe than two-lane roundabouts.

As shown in Table 1 and in the Appendix, the alternative of having two mid-block signalized intersections is the highest-scoring alternative. Though roundabouts are frequently more adept at handling traffic volumes with less stopping and delay, the roundabouts along this corridor would experience more delay and stopping than signalized intersections. Since it is expected that 10 to 15 percent of the vehicles on Mayfield will be trucks or other heavy vehicles, trucks will be frequently side-by-side each other and other vehicles. At a roundabout, these heavy truck movements are more difficult unless design modifications are made, such as wider entry lanes, that can increase speeds and negatively impact safety.

Further, having two collectors is more beneficial than having one collector. Having one mid-block signalized intersection *does* result in the least amount of stopping within the network compared to other alternatives. However, having one mid-block collector results in poorer overall transportation connectivity, since the spacing between parallel through routes is reduced. In particular, this has the most negative impact on transit and active transportation. Having two collectors provides the opportunity for two parallel transit routes, reducing the average access distance to transit. Having two intersections on Mayfield Road also provides the opportunity for two mid-block bus stops with safe, controlled crossing facilities. Having more through roads also decreases overall travel distance for pedestrians and cyclists. Another

challenge with providing only one collector south of Mayfield Road is the woodlot located about halfway between Chinguacousy Road and McLaughlin Road. A single collector would either pass very close to the woodlot (resulting in development primarily on only one side of the collector) or disproportionately serve only one half of the block, leaving the other half with poor north-south connectivity.

Table 1 – Summarized Evaluation Matrix of Alternatives between Chinguacousy Road and McLaughlin Road

Criterion	Total Number of Points	Two Signalized Intersections		One Signalized Intersection		Two Roundabout Intersections		One Roundabout Intersection	
		Comment	Total Score	Comment	Total Score	Comment	Total Score	Comment	Total Score
Intersection Capacity Analysis / Traffic Assessment	35	Provides excellent level of service, least amount of delay, moderate amount of stopping, and good travel speeds.	32	Provides very good level of service, low delay, least amount of stopping, and good travel speeds.	33	Provides fair level of service, high delay, more stopping, and lower travel speeds, especially westbound in PM peak hour.	21	Provides poor level of service, unacceptable delay, the most amount of stopping, and the lowest travel speeds, especially westbound in PM peak hour.	17
Qualitative Transportation Considerations	30	Signalized intersections accommodate transit, visually impaired persons, and high truck volumes well, but provide lower level of safety for pedestrians and cyclists. Remainder of Mayfield corridor will be signalized, as previously determined in the Draft Traffic Report. Public education not required.	23	Signalized intersections accommodate transit, visually impaired persons, and high truck volumes well, but provide lower level of safety for pedestrians and cyclists. Remainder of Mayfield corridor will be signalized, as previously determined in the Draft Traffic Report. Public education not required.	21	Roundabouts provide better safety for pedestrians and cyclists, but are not as adept at accommodating transit, visually impaired persons, and high truck volumes. Remainder of Mayfield corridor will be signalized, as previously determined in the Draft Traffic Report. Roundabouts will require careful planning and public education.	20	Roundabouts provide better safety for pedestrians and cyclists, but are not as adept at accommodating transit, visually impaired persons, and high truck volumes. Remainder of Mayfield corridor will be signalized, as previously determined in the Draft Traffic Report. Roundabouts will require careful planning and public education.	18
Neighbourhood and Environmental Impacts	25	Roundabouts provide the opportunity for better aesthetics than signalized intersections, though additional right-of-way is likely required. Providing two collectors results in better connections within the Mount Pleasant Secondary Plan, avoids environmentally sensitive areas and improves transportation connectivity, especially for transit and active transportation.	22	Roundabouts provide the opportunity for better aesthetics than signalized intersections, though additional right-of-way is likely required. Providing one collector results in poorer connections within the Mount Pleasant Secondary Plan, especially if the midblock woodlot is avoided, and results in poorer transportation connectivity, with worse impacts on transit and active transportation.	14	Roundabouts provide the opportunity for better aesthetics than signalized intersections, though additional right-of-way is likely required. Providing two collectors results in better connections within the Mount Pleasant Secondary Plan, avoids environmentally sensitive areas and improves transportation connectivity, especially for transit and active transportation.	23	Roundabouts provide the opportunity for better aesthetics than signalized intersections, though additional right-of-way is likely required. Providing one collector results in poorer connections within the Mount Pleasant Secondary Plan, especially if the midblock woodlot is avoided, and results in poorer transportation connectivity, with worse impacts on transit and active transportation.	15
Cost	10	High-level estimate indicates this will be the most expensive alternative due to the fact that there are two intersections and that injury collision costs will likely be higher.	2	High-level estimate indicates this will be a less expensive alternative because only one intersection is being provided.	8	High-level estimate indicates this will be an expensive alternative due to the fact that there are two intersections.	4	High-level estimate indicates this will be the least expensive alternative because only one intersection is being provided and injury collision costs will be lower.	10
TOTAL	100	Providing signalized intersections will result in less delay and stopping and cause less disruption to adjacent developable lands compared to roundabouts. Constructing two collectors south of Mayfield Road will enhance transportation connectivity for all modes and provide the least disruption to mid-block environmental sensitivities.	79	This alternative results in the least stopping along Mayfield Road, though the deletion of one collector south of Mayfield Road will have negative impacts on the structure, urban design, and transportation options within Mount Pleasant.	76	Roundabouts would provide improved safety compared to signalized intersections. However, more stopping and higher delay are expected with roundabouts, and the impact of further enlargement of the right-of-way will impact Mount Pleasant and Mayfield West.	68	High congestion at single roundabout results in unacceptable delay and the most stopping of any alternative. Deletion of one collector south of Mayfield Road will have negative impacts on Mount Pleasant.	60

Colour Key:
- 0%–50% of possible points
- > 50%–75% of possible points
- > 75%–100% of possible points

Appendix

A. Detailed Evaluation Matrix and Supporting Documentation

Appendix A

Detailed Evaluation Matrix and Supporting Documentation

Detailed Evaluation Matrix of Alternatives between Chinguacousy Road and McLaughlin Road

Criterion	Weighting	Two Signalized Intersections		One Signalized Intersection		Two Roundabout Intersections		One Roundabout Intersection	
		Comment	Score (1-5)	Comment	Score (1-5)	Comment	Score (1-5)	Comment	Score (1-5)
Intersection Capacity Analysis / Traffic Assessment									
Average Eastbound Travel Speed along Mayfield Road (km/h)	1	AM: 35 PM: 40	5	AM: 35 PM: 41	5	AM: 32 PM: 37	3	AM: 30 PM: 39	3
Average Westbound Travel Speed along Mayfield Road (km/h)	1	AM: 42 PM: 41	4	AM: 44 PM: 42	5	AM: 39 PM: 24	1	AM: 42 PM: 23	1
Average Intersection Delay (sec)	2	AM: 9 for Collector 1, 7 for Collector 2 (both LOS A) PM: 8 for Collector 1, 5 for Collector 2 (both LOS A)	5	AM: 11 (LOS B) PM: 9 (LOS A)	4	HCM 2010: AM: 28 for Collector 1, 28 for Collector 2 (both LOS D) PM: 35 for Collector 1, 29 for Collector 2 (both LOS D) Arcady: Ratio of Flow to Capacity (RFC) (worst approach): AM 0.78, PM 0.79	3	HCM 2010: AM: 40 (LOS E) PM: 44 (LOS E) Arcady: Ratio of Flow to Capacity (RFC) (worst approach): AM 0.75, PM 0.81	2
Stops per Vehicle (in network, including Chinguacousy and McLaughlin intersections)	2	AM: 1.83 PM: 1.43	4	AM: 1.62 PM: 1.32	5	AM: 1.83 PM: 2.17	3	AM: 1.91 PM: 2.32	2
Queuing	1	Queues can be accommodated within storage lanes for turn lanes and do not extend to the upstream intersection	5	Queues can be accommodated within storage lanes for turn lanes and do not extend to the upstream intersection	5	Queues can be accommodated within storage lanes for turn lanes and do not extend to the upstream intersection	5	Queues can be accommodated within storage lanes for turn lanes and do not extend to the upstream intersection	5
Qualitative Transportation Considerations									
Overall Transportation Safety and Collision Frequency	1	Signalized intersections tend to have more severe collisions than roundabouts.	2	Signalized intersections tend to have more severe collisions than roundabouts.	2	Accidents at roundabouts tend to be less severe and less frequent than at signalized intersections.	5	Accidents at roundabouts tend to be less severe and less frequent than at signalized intersections.	5
Ability to Handle Large Truck Volumes	1	Through trucks on Mayfield can continue through intersections side-by-side as on a typical arterial	5	Through trucks on Mayfield can continue through intersections side-by-side as on a typical arterial	5	Through trucks on Mayfield can circulate roundabout well in low-volume conditions, but extra care is required during peak periods (especially if a truck is side-by-side in an adjacent lane)	3	Through trucks on Mayfield can circulate roundabout well in low-volume conditions, but extra care is required during peak periods (especially if a truck is side-by-side in an adjacent lane)	3
Pedestrians in Crosswalks / Cyclists on Multi-use Trail	1	Turning vehicles are supposed to yield to trail users as they would to pedestrians; high accident rates between vehicular left turns and cyclists due to sight lines	2	Turning vehicles are supposed to yield to trail users as they would to pedestrians; high accident rates between vehicular left turns and cyclists due to sight lines	2	Turning vehicles would cross multi-use trail perpendicularly, resulting in lower accident rates; splitter islands provide pedestrian refuge; pedestrian / cyclist travel distance increases due to setback of crosswalk from roundabout	4	Turning vehicles would cross multi-use trail perpendicularly, resulting in lower accident rates; splitter islands provide pedestrian refuge; pedestrian / cyclist travel distance increases due to setback of crosswalk from roundabout	4
Accommodation of Transit	1	Bus stops can be close to intersection and crosswalks, decreasing access distance from cross streets; two intersections offer double the crossing opportunities and more optimal local bus stop location	5	Bus stops can be close to intersection and crosswalks, decreasing access distance from cross streets; one mid-block intersection results in increased walking distance to bus stops and/or mid-block stops without crosswalks	3	Roundabouts result in bus stops being set back from intersection, further from the crosswalk, increasing walking distance; two intersections offer double the crossing opportunities and more optimal local bus stop location	4	Roundabouts result in bus stops being set back from intersection, further from the crosswalk, increasing walking distance; one mid-block intersection results in increased walking distance to bus stops and/or mid-block stops without crosswalks	2
Visually Impaired Users	1	Audible device can be added to pedestrian signal to assist crossing	4	Audible device can be added to pedestrian signal to assist crossing	4	Visually impaired persons have more difficulty negotiating roundabouts due to the noise of circulating traffic; audible pedestrian signals could be added to roundabout legs, reducing capacity and increasing cost	2	Visually impaired persons have more difficulty negotiating roundabouts due to the noise of circulating traffic; audible pedestrian signals could be added to roundabout legs, reducing capacity and increasing cost	2
Consistency with Nearby Intersections and Other Studies	0.5	Roundabouts were previously eliminated in the Draft Traffic Report for the rest of the corridor; roundabouts also eliminated during the screening for the Mayfield Road EA from Airport Road to Coleraine Drive; signalization permits coordination as traffic volumes increase	5	Roundabouts were previously eliminated in the Draft Traffic Report for the rest of the corridor; roundabouts also eliminated during the screening for the Mayfield Road EA from Airport Road to Coleraine Drive; signalization permits coordination as traffic volumes increase	5	Roundabouts were previously eliminated in the Draft Traffic Report for the rest of the corridor; roundabouts also eliminated during the screening for the Mayfield Road EA from Airport Road to Coleraine Drive; signalization permits coordination as traffic volumes increase	2	Roundabouts were previously eliminated in the Draft Traffic Report for the rest of the corridor; roundabouts also eliminated during the screening for the Mayfield Road EA from Airport Road to Coleraine Drive; signalization permits coordination as traffic volumes increase	2
Public Education and Acceptance	0.5	Education programs not necessary due to familiarity	5	Education programs not necessary due to familiarity	5	Will require careful planning and public education due to scarcity of multi-lane roundabouts in area	2	Will require careful planning and public education due to scarcity of multi-lane roundabouts in area	2

Criterion	Weighting	Two Signalized Intersections		One Signalized Intersection		Two Roundabout Intersections		One Roundabout Intersection	
		Comment	Score (1-5)	Comment	Score (1-5)	Comment	Score (1-5)	Comment	Score (1-5)
Neighbourhood and Environmental Impacts									
Right-of-way Requirements	1	Signalized intersections will fit within proposed 50m ROW	5	Signalized intersections will fit within proposed 50m ROW	5	Two-lane roundabouts would require acquisition of only a small amount of additional ROW from adjacent developable land; two-lane roundabout would have inscribed diameter of 55m, plus boulevard on each side	4	Two-lane roundabout would require acquisition of only a small amount of additional ROW from adjacent developable land; two-lane roundabout would have inscribed diameter of 55m, plus boulevard on each side	4
Aesthetic Value	1	Typical intersection in Peel Region	3	Typical intersection in Peel Region	3	Opportunities for plantings in roundabout or on splitter islands	5	Opportunities for plantings in roundabout or on splitter islands	5
Impact on Environmental Features (watercourses, woodlots, etc.)	1	Two collectors have less impact on woodlots and valley lands mid-block between Chinguacousy and McLaughlin	4	Mid-block collector roadway would either travel very close to mid-block woodlots and green corridors or, if shifted away from woodlot, would favour one half of the block over another	2	Two collectors have less impact on woodlots and valley lands mid-block between Chinguacousy and McLaughlin	4	Mid-block collector roadway would either travel very close to mid-block woodlots and green corridors or, if shifted away from woodlot, would favour one half of the block over another	2
Network Connectivity / Permeability of Grid	1	More frequent collectors distribute traffic and provide more opportunities for through transit, cyclist, and pedestrian connections; two mid-block collectors already exist south of Wanless Drive	5	One collector results in more concentration of mid-block traffic and fewer opportunities for through routing of transit, cycling, and pedestrian routes	2	More frequent collectors distribute traffic and provide more opportunities for through transit, cyclist, and pedestrian connections; two mid-block collectors already exist south of Wanless Drive	5	One collector results in more concentration of mid-block traffic and fewer opportunities for through routing of transit, cycling, and pedestrian routes	2
Integration with Mount Pleasant and Mayfield West Block Plans	1	In Mount Pleasant, the Chinguacousy-McLaughlin block is divided into two halves, each with a centre along a mid-block collector (resulting in two mid-block collectors)	5	Constructing only one mid-block collector results in larger blocks in Mount Pleasant and would require modifications of the existing block plan	2	In Mount Pleasant, the Chinguacousy-McLaughlin block is divided into two halves, each with a centre along a mid-block collector (resulting in two mid-block collectors)	5	Constructing only one mid-block collector results in larger blocks in Mount Pleasant and would require modifications of the existing block plan	2
Cost									
High-level Estimate of Life Cycle Cost (20 years)	2	Implementation Cost: $1,000,000 Injury Collision Cost: $13,741,100 TOTAL: $14,741,100	1	Implementation Cost: $500,000 Injury Collision Cost: $6,870,550 TOTAL: $7,370,550	4	Implementation Cost: $1,500,000 Injury Collision Cost: $10,030,000 TOTAL: $11,530,000	2	Implementation Cost: $750,000 Injury Collision Cost: $5,015,000 TOTAL: $5,765,000	5
TOTAL									
TOTAL	20 Score out of 100	Providing signalized intersections will result in less delay and stopping and cause less disruption to adjacent developable lands compared to roundabouts. Constructing two collectors south of Mayfield Road will enhance transportation connectivity for all modes and provide the least disruption to mid-block environmental sensitivities.	79	This alternative results in the least stopping along Mayfield Road, though the deletion of one collector south of Mayfield Road will have negative impacts on the structure, urban design, and transportation options within Mount Pleasant.	76	Roundabouts would provide improved safety compared to signalized intersections. However, more stopping and higher delay are expected with roundabouts, and the impact of further enlargement of the right-of-way will impact Mount Pleasant and Mayfield West.	68	High congestion at single roundabout results in unacceptable delay and the most stopping of any alternative. Deletion of one collector south of Mayfield Road will have negative impacts on Mount Pleasant.	60

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Roundabout Feasibility Screening Tool
Collector Road 1 and 2 combined

		Roundabout Supportive?
1)	Project name, File #, Intersection Location (B/C/M, Street name, distance from major intersections, etc.): Mayfield Road and New Collector Road 1 and 2 (combined), approximately 600m east of Chinguacousy Road (to provide buffer from woodlot)	
2)	Brief description of Intersection (No. of legs, Lanes on each leg, Total AADT, ADDT on each road). Attach or sketch a diagram of existing and horizon year TMCs: 4-leg intersection: EB and WB legs each will have three travel lanes per direction, NB and SB legs each will have one travel lane per direction Existing AADT on Mayfield Road 10,000; 2031 AADT on Mayfield Road 30,000 2031 AADT on New Collector Road 1&2 combined N of Mayfield Road 3,000 2031 AADT on New Collector Road 1&2 combined S of Mayfield Road 4,000 See attached for existing and 2031 AM / PM TMCs	**YES** ☐ **NO** ☐ **NEUTRAL** ☒
3)	What operational problems are being experienced at this location? No operational problems are being experienced currently because the intersection does not exist. By 2031, with two-way stop control, delays on New Collector Road 1&2 combined are expected to be LOS F.	**YES** ☒ **NO** ☐ **NEUTRAL** ☐
4)	Is it a new intersection or a retrofit of an existing intersection? If existing, what is the existing type of traffic control? New intersection along an existing roadway.	**YES** ☒ **NO** ☐ **NEUTRAL** ☐

5)	Is the intersection near a major intersection or a railroad crossing? If so, how close and what type of traffic control exists at the adjacent intersection(s)? Will queues be a problem? Describe the corridor (eg.: average intersection spacing). Closest major intersection is signalized and about 600m to the west (Chinguacousy Road). Queues are not expected to be a problem. Average intersection spacing along this portion of Mayfield Road will be 700m.	**YES** ☐ **NO** ☐ **NEUTRAL** ☒
6)	Would the intersection be located within a coordinated signal network? The signal network is suitable for coordination due to the average intersection spacing of 700m, though it is not required to be coordinated.	**YES** ☐ **NO** ☐ **NEUTRAL** ☒
7)	Would the intersection be located on a preferred roundabout corridor? If yes why? The Mayfield Road corridor is not a preferred roundabout corridor because the average arterial travel speed is higher using signalized intersections than roundabouts, overall delays can be longer when minor-street traffic volumes are low compared to major-street traffic volumes.	**YES** ☐ **NO** ☒ **NEUTRAL** ☐
8)	What is the collision history of the intersection over the past five years? Is there a collision problem that needs to be addressed? There is no collision history at the intersection because it is not an existing intersection.	**YES** ☐ **NO** ☐ **NEUTRAL** ☒
9)	Is the intersection scheduled for improvements or is it located within a corridor that is scheduled for improvements in the next 10 years? What is the ultimate cross-section of the approaching legs? Mayfield Road is scheduled to be widened from two to four lanes by 2015 and from four to six lanes by 2024. Construction staging for retrofits is costly and complicated. Therefore, the roundabout would need to be designed to accommodate both a four-lane and six-lane cross section so that no retrofits are required.	**YES** ☐ **NO** ☐ **NEUTRAL** ☒

10)	Are there expected to be special users at this intersection in the near future (ie. a person with disability, pedestrians, cyclists, large agricultural machinery, horses, etc.)? If yes, what special considerations would be required? A sidewalk is planned on the north side of Mayfield Road and a multi-use trail is planned on the south side of Mayfield Road. Pedestrian signals may be required if visually impaired pedestrians are anticipated using the sidewalks and multi-use trails. There is a high volume of through truck traffic expected on Mayfield Road (10-15% heavy vehicles).	**YES** ☐ **NO** ☒ **NEUTRAL** ☐
11)	What traditional improvements are proposed for this intersection (traffic signals, all-way stop, auxiliary lanes, off-set re-alignment, etc)? Single left turn lanes on all approaches and traffic signals are proposed.	**YES** ☐ **NO** ☐ **NEUTRAL** ☒
12)	If traffic signals are considered, does it meet the warrant for the horizon year? Traffic signals are warranted for 2031.	**YES** ☒ **NO** ☐ **NEUTRAL** ☐
13)	What size of roundabout is being considered for this intersection (ie. single, two, three lane entry)? Please attach a Traffic Flow Worksheet, a lane configuration diagram and a sketch of how a roundabout would fit into the ROW. A roundabout with two-lane entries on the Mayfield Road legs would result in an Inscribed Circle Diameter (ICD) of 60m, though such a roundabout would be near capacity by 2031. Traffic assessment indicates that a two-lane roundabout would function poorer than a three-lane roundabout. A roundabout with three-lane entries on the Mayfield Road legs would result in an ICD of at least 70m.	**YES** ☐ **NO** ☐ **NEUTRAL** ☒

14) Are there property constraints at/near the intersection or is it restricted by a watercourse/parks/cemeteries/etc? If yes, what are they?

The latest block plans / concept plans identify residential uses at or near the intersection. Also, the location of this intersection closer to the mid-block point positions it closer to the woodlot south of Mayfield Road.

YES ☐
NO ☐
NEUTRAL ☒

15) Terrain – Is the area on a grade/flat/rolling?

The surrounding area is flat.

YES ☒
NO ☐
NEUTRAL ☐

16) 20 Year Life Cycle Cost Estimate

Injury Collision Cost (ICC): Injury: $175,000; Crash: $11,500

Discount Rate (i): _____

YES ☒
NO ☐
NEUTRAL ☐

20 YEAR LIFE- CYCLE COST COMPARISON		
Cost Item	Other Traffic Control	Roundabout
Implementation Cost	$ 500,000	$ 750,000
Injury Collision Cost (Present Value)	$ 6,870,550	$ 5,015,000
Total Life Cycle Cost	$ 7,370,550	$ 5,765,000

Notes:

- Implementation Cost
  = sum of costs for construction, property, utility relocation, illumination, engineering (20%), contingency (20%) and maintenance (5%)
- Present Value of 20 Year Injury Collision Cost
  = expected annual collision frequency x ICC $((1+i)^{20}-1)/i(1+i)^{20}$
- Monte Carlo Analysis may be required. If so, a range for the implementation cost (i.e. 10%, 50%, 90% probability) is required

17)	Conclusions and Recommendations: A roundabout is not recommended at this intersection. A two-lane roundabout will have less impact than a three-lane roundabout due to its smaller footprint, though traffic assessment indicates that it will operate at a poor level of service. A three-lane roundabout will require a roundabout that is significantly larger than the standard ROW along Mayfield Road. Left turn volumes at this intersection are low and function well with single left turn lanes (the ROW does not need to be widened to handle multiple turn lanes if signalized). Truck volumes are expected to be 10% to 15% along Mayfield Road; this heavy volume of trucks will reduce operating speeds through the roundabout and increase delay. The average arterial speed along Mayfield Road is higher using a series of signalized intersections than a series of roundabouts and roundabouts would disrupt traffic platoons if the signals along Mayfield Road ever need to be coordinated. Pedestrian signals on the roundabout legs may be required if visually impaired pedestrians are anticipated, reducing capacity.	**YES** ☐ **NO** ☒

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Roundabout Feasibility Screening Tool
Collector Road 1

		Roundabout Supportive?
1)	Project name, File #, Intersection Location (B/C/M, Street name, distance from major intersections, etc.): Mayfield Road and New Collector Road 1, approximately 300m east of Chinguacousy Road	
2)	Brief description of Intersection (No. of legs, Lanes on each leg, Total AADT, ADDT on each road). Attach or sketch a diagram of existing and horizon year TMCs: 4-leg intersection: EB and WB legs each will have three travel lanes per direction, NB and SB legs will have one travel lane per direction Existing AADT on Mayfield Road 10,000; 2031 AADT on Mayfield Road 30,000 2031 AADT on New Collector Road 1 N of Mayfield Road 3,000 2031 AADT on New Collector Road 1 S of Mayfield Road 2,000 See attached for existing and 2031 AM / PM TMCs	**YES** ☐ **NO** ☐ **NEUTRAL** ☒
3)	What operational problems are being experienced at this location? No operational problems are being experienced currently because the intersection does not exist. By 2031, with two-way stop control, delays on New Collector Road 1 are expected to be LOS F.	**YES** ☒ **NO** ☐ **NEUTRAL** ☐
4)	Is it a new intersection or a retrofit of an existing intersection? If existing, what is the existing type of traffic control? New intersection along an existing roadway.	**YES** ☒ **NO** ☐ **NEUTRAL** ☐

5)	Is the intersection near a major intersection or a railroad crossing? If so, how close and what type of traffic control exists at the adjacent intersection(s)? Will queues be a problem? Describe the corridor (eg.: average intersection spacing). Closest major intersection is signalized and about 300m to the west (Chinguacousy Road). Queues are not expected to be a problem. Average intersection spacing along this portion of Mayfield Road is 400m-500m.	**YES** ☐ **NO** ☐ **NEUTRAL** ☒
6)	Would the intersection be located within a coordinated signal network? The signal network is suitable for coordination due to the average intersection spacing of 400m-500m, though it is not required to be coordinated.	**YES** ☐ **NO** ☐ **NEUTRAL** ☒
7)	Would the intersection be located on a preferred roundabout corridor? If yes why? The Mayfield Road corridor is not a preferred roundabout corridor because the average arterial travel speed is higher using signalized intersections than roundabouts, overall delays can be longer when minor-street traffic volumes are low compared to major-street traffic volumes.	**YES** ☐ **NO** ☒ **NEUTRAL** ☐
8)	What is the collision history of the intersection over the past five years? Is there a collision problem that needs to be addressed? There is no collision history at the intersection because it is not an existing intersection.	**YES** ☐ **NO** ☐ **NEUTRAL** ☒
9)	Is the intersection scheduled for improvements or is it located within a corridor that is scheduled for improvements in the next 10 years? What is the ultimate cross-section of the approaching legs? Mayfield Road is scheduled to be widened from two to four lanes by 2015 and from four to six lanes by 2024. Construction staging for retrofits is costly and complicated. Therefore, the roundabout would need to be designed to accommodate both a four-lane and six-lane cross section so that no retrofits are required.	**YES** ☐ **NO** ☐ **NEUTRAL** ☒

10)	Are there expected to be special users at this intersection in the near future (ie. a person with disability, pedestrians, cyclists, large agricultural machinery, horses, etc.)? If yes, what special considerations would be required? A sidewalk is planned on the north side of Mayfield Road and a multi-use trail is planned on the south side of Mayfield Road. Pedestrian signals may be required if visually impaired pedestrians are anticipated using the sidewalks and multi-use trails. There is a high volume of through truck traffic expected on Mayfield Road (10-15% heavy vehicles).	**YES** ☐ **NO** ☒ **NEUTRAL** ☐
11)	What traditional improvements are proposed for this intersection (traffic signals, all-way stop, auxiliary lanes, off-set re-alignment, etc)? Single left turn lanes on all approaches and traffic signals are proposed.	**YES** ☐ **NO** ☐ **NEUTRAL** ☒
12)	If traffic signals are considered, does it meet the warrant for the horizon year? Traffic signals are warranted for 2031.	**YES** ☒ **NO** ☐ **NEUTRAL** ☐
13)	What size of roundabout is being considered for this intersection (ie. single, two, three lane entry)? Please attach a Traffic Flow Worksheet, a lane configuration diagram and a sketch of how a roundabout would fit into the ROW. A roundabout with two-lane entries on the Mayfield Road legs would result in an Inscribed Circle Diameter (ICD) of 60m, though such a roundabout would be near capacity by 2031. Traffic assessment indicates that a two-lane roundabout would function poorer than a three-lane roundabout. A roundabout with three-lane entries on the Mayfield Road legs would result in an ICD of at least 70m.	**YES** ☐ **NO** ☐ **NEUTRAL** ☒

14) Are there property constraints at/near the intersection or is it restricted by a watercourse/parks/cemeteries/etc? If yes, what are they?

The latest block plans / concept plans identify residential uses at or near the intersection.

YES ☐
NO ☐
NEUTRAL ☒

15) Terrain – Is the area on a grade/flat/rolling?

The surrounding area is flat.

YES ☒
NO ☐
NEUTRAL ☐

16) 20 Year Life Cycle Cost Estimate

Injury Collision Cost (ICC): Injury: $175,000; Crash: $11,500

Discount Rate (i): _____

YES ☒
NO ☐
NEUTRAL ☐

20 YEAR LIFE- CYCLE COST COMPARISON		
Cost Item	Other Traffic Control	Roundabout
Implementation Cost	$ 500,000	$ 750,000
Injury Collision Cost (Present Value)	$ 6,870,550	$ 5,015,000
Total Life Cycle Cost	$ 7,370,550	$ 5,765,000

Notes:

- Implementation Cost
  = sum of costs for construction, property, utility relocation, illumination, engineering (20%), contingency (20%) and maintenance (5%)
- Present Value of 20 Year Injury Collision Cost
  = expected annual collision frequency x ICC $((1+i)^{20}-1)/i(1+i)^{20}$
- Monte Carlo Analysis may be required. If so, a range for the implementation cost (i.e. 10%, 50%, 90% probability) is required

17)	Conclusions and Recommendations: A roundabout is not recommended at this intersection. A two-lane roundabout will have less impact than a three-lane roundabout due to its smaller footprint, though traffic assessment indicates that it will operate at a poor level of service. A three-lane roundabout will require a roundabout that is significantly larger than the standard ROW along Mayfield Road. Left turn volumes at this intersection are low and function well with single left turn lanes (the ROW does not need to be widened to handle multiple turn lanes if signalized). Truck volumes are expected to be 10% to 15% along Mayfield Road; this heavy volume of trucks will reduce operating speeds through the roundabout and increase delay. The average arterial speed along Mayfield Road is higher using a series of signalized intersections than a series of roundabouts and roundabouts would disrupt traffic platoons if the signals along Mayfield Road ever need to be coordinated. Pedestrian signals on the roundabout legs may be required if visually impaired pedestrians are anticipated, reducing capacity.	**YES** ☐ **NO** ☒

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Collector Road 2

		Roundabout Supportive?
1)	Project name, File #, Intersection Location (B/C/M, Street name, distance from major intersections, etc.): Mayfield Road and New Collector Road 2, approximately 300m west of McLaughlin Road	
2)	Brief description of Intersection (No. of legs, Lanes on each leg, Total AADT, ADDT on each road). Attach or sketch a diagram of existing and horizon year TMCs: 3-leg intersection: EB and WB will have three travel lanes per direction, NB will one travel lane per direction Existing AADT on Mayfield Road 10,000; 2031 AADT on Mayfield Road 30,000 2031 AADT on New Collector Road 2 S of Mayfield Road 2,000 See attached for existing and 2031 AM / PM TMCs	**YES** ☐ **NO** ☐ **NEUTRAL** ☒
3)	What operational problems are being experienced at this location? No operational problems are being experienced currently because the intersection does not exist. By 2031, with stop control on minor street, delays on New Collector Road 2 are expected to be LOS F.	**YES** ☒ **NO** ☐ **NEUTRAL** ☐
4)	Is it a new intersection or a retrofit of an existing intersection? If existing, what is the existing type of traffic control? New intersection along an existing roadway.	**YES** ☒ **NO** ☐ **NEUTRAL** ☐

5)	Is the intersection near a major intersection or a railroad crossing? If so, how close and what type of traffic control exists at the adjacent intersection(s)? Will queues be a problem? Describe the corridor (eg.: average intersection spacing). Closest major intersection is signalized and about 300m to the east (McLaughlin Road). Queues are not expected to be a problem. Average intersection spacing along this portion of Mayfield Road is 400m-500m.	**YES** ☐ **NO** ☐ **NEUTRAL** ☒
6)	Would the intersection be located within a coordinated signal network? The signal network is suitable for coordination due to the average intersection spacing of 400m-500m, though it is not required to be coordinated.	**YES** ☐ **NO** ☐ **NEUTRAL** ☒
7)	Would the intersection be located on a preferred roundabout corridor? If yes why? The Mayfield Road corridor is not a preferred roundabout corridor because the average arterial travel speed is higher using signalized intersections than roundabouts, overall delays can be longer when minor-street traffic volumes are low compared to major-street traffic volumes.	**YES** ☐ **NO** ☒ **NEUTRAL** ☐
8)	What is the collision history of the intersection over the past five years? Is there a collision problem that needs to be addressed? There is no collision history at the intersection because it is not an existing intersection.	**YES** ☐ **NO** ☐ **NEUTRAL** ☒
9)	Is the intersection scheduled for improvements or is it located within a corridor that is scheduled for improvements in the next 10 years? What is the ultimate cross-section of the approaching legs? Mayfield Road is scheduled to be widened from two to four lanes by 2015 and from four to six lanes by 2024. Construction staging for retrofits is costly and complicated. Therefore, the roundabout would need to be designed to accommodate both a four-lane and six-lane cross section so that no retrofits are required.	**YES** ☐ **NO** ☐ **NEUTRAL** ☒

10)	Are there expected to be special users at this intersection in the near future (ie. a person with disability, pedestrians, cyclists, large agricultural machinery, horses, etc.)? If yes, what special considerations would be required? A sidewalk is planned on the north side of Mayfield Road and a multi-use trail is planned on the south side of Mayfield Road. Pedestrian signals may be required if visually impaired pedestrians are anticipated using the sidewalks and multi-use trails. There is a high volume of through truck traffic expected on Mayfield Road (10-15% heavy vehicles).	**YES** ☐ **NO** ☒ **NEUTRAL** ☐
11)	What traditional improvements are proposed for this intersection (traffic signals, all-way stop, auxiliary lanes, off-set re-alignment, etc)? Single left turn lanes on all approaches and traffic signals are proposed.	**YES** ☐ **NO** ☐ **NEUTRAL** ☒
12)	If traffic signals are considered, does it meet the warrant for the horizon year? Traffic signals are warranted for 2031.	**YES** ☒ **NO** ☐ **NEUTRAL** ☐
13)	What size of roundabout is being considered for this intersection (ie. single, two, three lane entry)? Please attach a Traffic Flow Worksheet, a lane configuration diagram and a sketch of how a roundabout would fit into the ROW. A roundabout with two-lane entries on the Mayfield Road legs would result in an Inscribed Circle Diameter (ICD) of 60m, though such a roundabout would be near capacity by 2031. Traffic assessment indicates that a two-lane roundabout would function poorer than a three-lane roundabout. A roundabout with three-lane entries on the Mayfield Road legs would result in an ICD of at least 70m.	**YES** ☐ **NO** ☐ **NEUTRAL** ☒
14)	Are there property constraints at/near the intersection or is it restricted by a watercourse/parks/cemeteries/etc? If yes, what are they? The latest block plans / concept plans identify residential uses at or near the intersection.	**YES** ☐ **NO** ☐ **NEUTRAL** ☒

15) Terrain – Is the area on a grade/flat/rolling?

The surrounding area is flat.

YES ☒
NO ☐
NEUTRAL ☐

16) 20 Year Life Cycle Cost Estimate

Injury Collision Cost (ICC): Injury: $175,000; Crash: $11,500

Discount Rate (i): _____

YES ☒
NO ☐
NEUTRAL ☐

20 YEAR LIFE- CYCLE COST COMPARISON		
Cost Item	Other Traffic Control	Roundabout
Implementation Cost	$ 500,000	$ 750,000
Injury Collision Cost (Present Value)	$ 6,870,550	$ 5,015,000
Total Life Cycle Cost	$ 7,370,550	$ 5,765,000

Notes:

- Implementation Cost
  = sum of costs for construction, property, utility relocation, illumination, engineering (20%), contingency (20%) and maintenance (5%)
- Present Value of 20 Year Injury Collision Cost
  = expected annual collision frequency x ICC $((1+i)^{20}-1)/i(1+i)^{20}$
- Monte Carlo Analysis may be required. If so, a range for the implementation cost (i.e. 10%, 50%, 90% probability) is required

17)	Conclusions and Recommendations: A roundabout is not recommended at this intersection. A two-lane roundabout will have less impact than a three-lane roundabout due to its smaller footprint, though traffic assessment indicates that it will operate at a poor level of service. A three-lane roundabout will require a roundabout that is significantly larger than the standard ROW along Mayfield Road. Left turn volumes at this intersection are low and function well with single left turn lanes (the ROW does not need to be widened to handle multiple turn lanes if signalized). Truck volumes are expected to be 10% to 15% along Mayfield Road; this heavy volume of trucks will reduce operating speeds through the roundabout and increase delay. The average arterial speed along Mayfield Road is higher using a series of signalized intersections than a series of roundabouts and roundabouts would disrupt traffic platoons if the signals along Mayfield Road ever need to be coordinated. Pedestrian signals on the roundabout legs may be required if visually impaired pedestrians are anticipated, reducing capacity.	**YES** ☐ **NO** ☒

Roundabout Memo