APPENDIX I

Transportation Study Update

The Corporation of the City of Markham

Transportation Study Update

Highway 404 Ramp Extension at Major Mackenzie Drive, Markham, ON

Final Report

October 21, 2024

Transportation Study Update

Highway 404 Ramp Extension at Major Mackenzie Drive, Markham, ON

October 21, 2024

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Contents

1 Introduction 1
1.1 Study Area 2
2 Planning Context and Policy Review 4
2.1 York Region Transportation Master Plan, 2022 4
2.2 City of Markham Transportation Planning Study Update, 2002 4
2.3 City of Markham Active Transportation Master Plan, 2021 4
2.4 City of Markham Official Plan, 2014 4
2.5 Relevant Background Studies 5
2.5.1 Road Crossing of Highway 404 Between Major Mackenzie Drive and Elgin Mills Road Environmental Study Report (December 2017) and Traffic Analysis Report (October 2017) .. 5
2.5.2 Proposed Road Extension at Highway 404 Northbound Exit Ramp and Major Mackenzie Drive Intersection Class Environmental Assessment Report (September 2009) 6
3 2024 Existing Conditions 7
3.1 Existing Road Network 7
3.2 Study Area Transit Network 10
3.3 Study Area Active Transportation Network 11
3.3.1 Walking 11
3.3.2 Cycling 12
3.4 Traffic Data 14
3.4.1 Turning Movement Counts 14
3.4.2 Other Data Provided by York Region and City of Markham 17
3.4.3 Synchro Saturation Flow Parameters 17
3.4.4 Existing Modal Split 17
3.5 2024 Existing Conditions Analysis 18
3.5.1 Signalized Intersections 18
3.5.2 Unsignalized Intersections 21
3.6 Existing Pedestrian Mode Performance 22
3.7 Existing Bicycle Mode Performance 25
4 2051 Future Road Network and Traffic Growth 27
4.1 Future Horizon Year and Planned Transportation Network Improvements 27

4.2 York Region Activity Based Model (ABM) 32
4.3 Annual Traffic Growth Calculation Methodology 33
4.4 Future Anticipated Traffic Pattern Changes 33
4.5 Future Anticipated Active Travel Forecast 37
5 2051 Future Conditions Analysis 38
5.1 Methodology 39
5.2 Scenario 1: Without Off-Ramp Extension ("Do Nothing") 42
5.2.1 Signalized Intersections 42
5.2.2 Unsignalized Intersections 46
5.3 Scenario 2: Highway 404 Northbound Off-Ramp Extension (Three-Lane Cross Section) 46
5.3.1 Signalized Intersections 46
5.3.2 Unsignalized Intersections 51
5.4 Scenario 3: Highway 404 Northbound Off-Ramp Extension (Four Lane Cross Section) 52
5.4.1 Signalized Intersections 52
5.4.2 Unsignalized Intersections 57
5.5 2051 Pedestrian Mode Performance 57
5.6 2051 Bicycle Mode Performance 59
6 Traffic Analysis Summary 61
6.1 Comparison of Key Movements at Intersections 61
6.2 Comparison of Overall Intersection Operations 64
7 Sensitivity Analysis 66
7.1 Highway 404 Northbound Off-Ramp and Major Mackenzie Drive 67
7.2 Off-Ramp Extension and Markland Street 69
8 Off-Ramp Extension Design Considerations 71
8.1 Existing Pedestrian and Cycling Facilities 71
8.2 Right of Way Concept 74
8.3 Intersection Mode of Control Analysis 75
9 Recommendations and Conclusions 76

Exhibits

Exhibit 1-1: Preferred Alignment 1
Exhibit 1-2: Study Area 3
Exhibit 2-1: Preferred Alignment Proximity to Road Crossing 6
Exhibit 3-1: Study Area Intersection Traffic Control and Lane Configuration 9
Exhibit 3-2: Transit Services in Development Area 10
Exhibit 3-3: Bus Stops and GO Station Locations 11
Exhibit 3-4: Existing Pedestrian Facilities 12
Exhibit 3-5: Cycling Network Plan 13
Exhibit 3-6: Existing Conditions Traffic Volumes 16
Exhibit 4-1: Assumed Future Major Mackenzie Drive Six-Lane Cross Section 28
Exhibit 4-2: Scenario 1 ("Do Nothing") - Future Intersection Traffic Control and Lane Configuration 29
Exhibit 4-3: Scenario 2 – Future Intersection Traffic Control and Lane Configuration 30
Exhibit 4-4: Scenario 3 - Future Intersection Traffic Control and Lane Configuration 31
Exhibit 4-5: Modal Share for Trips Starting in York Region (Morning Peak Period) 33
Exhibit 4-6: Trip Pattern Change Assumptions – AM Peak Hour 35
Exhibit 4-7: Trip Pattern Change Assumptions – PM Peak Hour 36
Exhibit 5-1: Preferred Alternative Details (Intersection with Markland Street and Major Mackenzie Drive) 38
Exhibit 5-2: *2051 "Do Nothing" Scenario Traffic Volumes* 40
Exhibit 5-3: 2051 Off-Ramp Extension Scenario Traffic Volumes 41
Exhibit 5-4: Scenario 2 Highway 404 Northbound Off-Ramp / Major Mackenzie Drive Lane Configuration 47
Exhibit 5-5: 2051 Scenario 2 AM Peak Period Signal Timing Plan 47
Exhibit 5-6: 2051 Scenario 2 PM Peak Period Optimized Signal Timing Plan 47
Exhibit 5-7: Scenario 3 Highway 404 Northbound Off-Ramp / Major Mackenzie Drive Lane Configuration 52
Exhibit 5-8: 2051 Scenario 3 AM Peak Period Signal Timing Plan 53
Exhibit 5-9: 2015 Scenario 3 PM Peak Period Optimized Signal Timing Plan 53
Exhibit 5-10: 2051 Pedestrian Network Map 58
Exhibit 6-1: Weekday Peak Hours: Highway 404 Northbound Ramp / Major Mackenzie Drive Intersection 62
Exhibit 6-2: Weekday Peak Hours: Markland Street / Major Mackenzie Drive Intersection 63
Exhibit 6-3: Weekday Peak Hours: Markland Street & Russell Dawson Road Intersection 64
Exhibit 7-1: Sensitivity Analysis - Future Intersection Traffic Control and Lane Configuration 66
Exhibit 8-1: Existing Pedestrian Crossing Facilities 71
Exhibit 8-2: Norman Bethune Avenue / Aristotle Avenue References 73

Tables

Table 3-1: Study Area Existing Road Network 8
Table 3-2: Existing Transit Service Patterns 10
Table 3-3: Traffic Turning Movement Count Data – Provided by Arcadis 14
Table 3-4: Traffic Turning Movement Count Data – Provided by York Region 15
Table 3-5: Breakdown of Study Area Modal Split 17
Table 3-6: 2024 Existing Conditions Traffic Operations – Signalized Intersections 18
Table 3-7: 2024 Existing Conditions Traffic Operations – Unsignalized Intersections 22
Table 3-8: Existing Pedestrian Counts 22
Table 3-9: Existing Pedestrian Mode Performance 24
Table 3-10: Existing Cyclist Counts 25
Table 3-11: Existing Bicycle Mode Performance 26
Table 4-1: Trip Pattern Change Assumptions 34
Table 4-2: Active Travel Growth Rates 37
Table 5-1: 2051 Scenario 1 Future Conditions Traffic Operations - Signalized Intersections 42
Table 5-2: 2051 Future Conditions Traffic Operations - Unsignalized Intersections 46
Table 5-3: 2051 3-Lanes Future Conditions Traffic Operations - Signalized Intersections 48
Table 5-4: 2051 3-Lanes Future Conditions Traffic Operations - Unsignalized Intersections 51
Table 5-5: 2051 4-Lanes Future Conditions Traffic Operations - Signalized Intersections 53
Table 5-6: 2051 4-Lanes Future Conditions Traffic Operations - Unsignalized Intersections 57
Table 5-7: Future Pedestrian Mode Performance 58
Table 5-8: Future Bicycle Mode Performance 60
Table 6-1: Weekday Peak Hours: Key Intersection Delay Comparison 61
Table 6-2: Intersection Traffic Operations – Overall Intersection Comparison (Signalized) 65
Table 6-3: Intersection Traffic Operations – Overall Intersection Comparison (Unsignalized) 65
Table 7-1: 2051 2-Lanes Future Conditions Traffic Operations - Highway 404 Northbound Off-Ramp & Major Mackenzie Drive 67
Table 7-2: Highway 404 Northbound Off-Ramp & Major Mackenzie Drive – Northbound Movements Comparison 68
Table 7-3: 2-Lanes Future Conditions Traffic Operations - Off-Ramp Extension and Markland Street AWS 69
Table 7-4:Off-Ramp Extension and Markland Street – Mode of Control Comparison 70

Appendices

Appendix A: Synchro Outputs

Appendix B: AT Level of Service Criteria

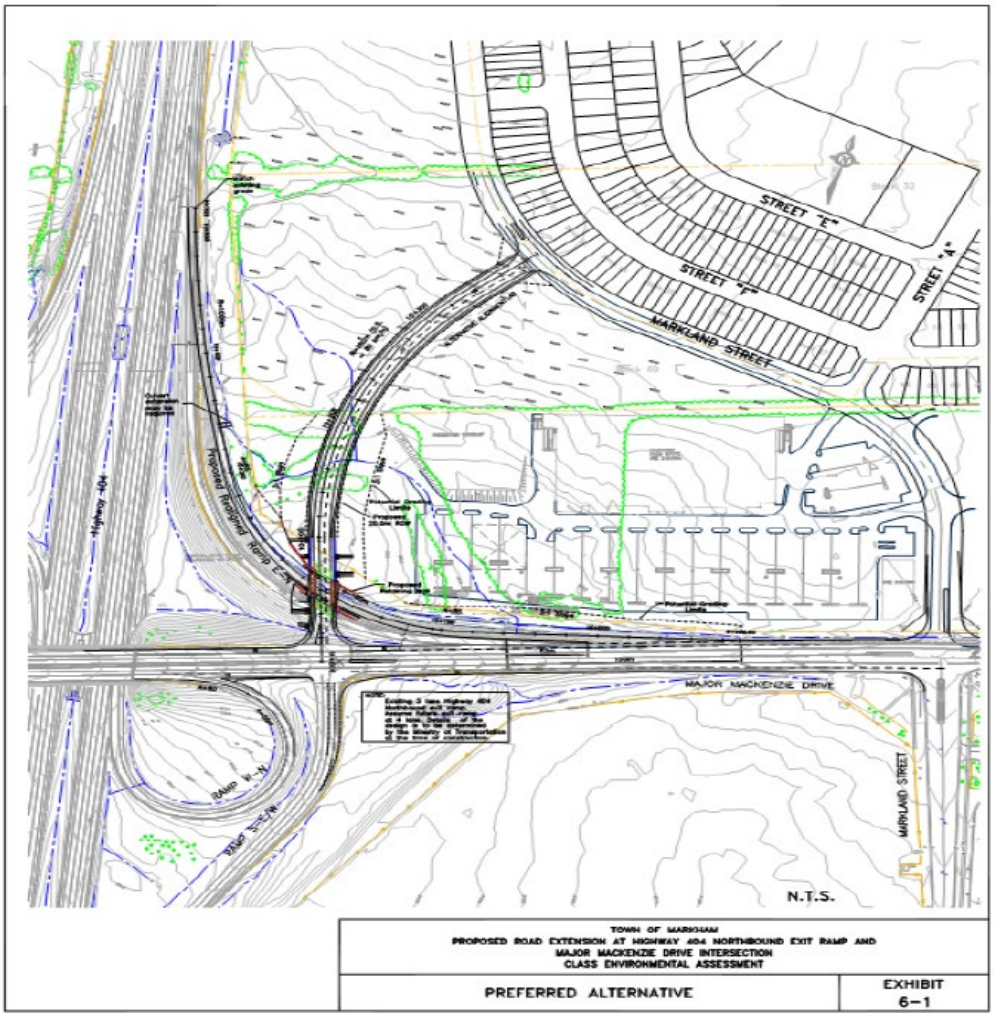
Appendix C: ABM Annual Growth Rate Summary

Appendix D: Markland Street & Highway 404 Off Ramp Extension Mode of Control Warrant Analysis

1 Introduction

Arcadis was retained by the City of Markham (the "City") to perform traffic analysis and develop a Transportation Study Update to the 2009 Municipal Class Environmental Assessment (MCEA) for the Highway 404 northbound ramp extension at Major Mackenzie Drive. The 2009 MCEA Study confirmed the need for a road extension and identified a preferred alternative. That extension assumed a two-way (two northbound lanes, one southbound lane) segment from north of Major Mackenzie Drive to Markland Street. The preferred alignment illustrated in the project terms of reference is provided in **Exhibit 1-1**.

Exhibit 1-1: Preferred Alignment



Detailed design work from 2011 to 2013 was paused in October 2013. Since then, a similar ramp extension has been constructed at Highway 7, and an MCEA Study for Highway 404 mid-block crossing north of Major Mackenzie Drive was conducted by York Region. Changes in the study environment and development in the area and a lapse of over 10 years prompted the initiation of an

addendum to the MCEA Study in March 2023 to reassess the transportation requirements for the road extension.

The purpose of this study update is to reassess the need for the Highway 404 northbound off-ramp road extension from Major Mackenzie Drive to Markland Street. As part of the study update, it will confirm the validity of the approved design and its ability to meet future travel demands.

This report investigates the future (2051 horizon year) traffic pattern changes and the resulting traffic operations in the project study area based on future traffic growth, background development activity, implementation of a six-lane cross section widening of Major Mackenzie Drive (curbside HOV / transit lane), and a Highway 404 mid-block crossing north of Major Mackenzie Drive from Leslie Street to Markland Street.

This report considers future road configuration and background traffic growth in the area developed from the York Region Activity Based Model (ABM).

This report is outlined in the following sections:

- Section 2 discusses planning context and policy review;
- Section 3 discusses the 2024 existing conditions and operations;
- Section 4 discusses the 2051 future road network and traffic growth;
- Section 5 discusses the 2051 future operations under the 3 scenarios;
- Section 6 summarizes the traffic operations analysis;
- Section 7 discusses the traffic operations of a reduced 2-lane scenario;
- Section 8 discusses off-ramp extension design considerations; and,
- Section 9 discusses recommendations and conclusions.

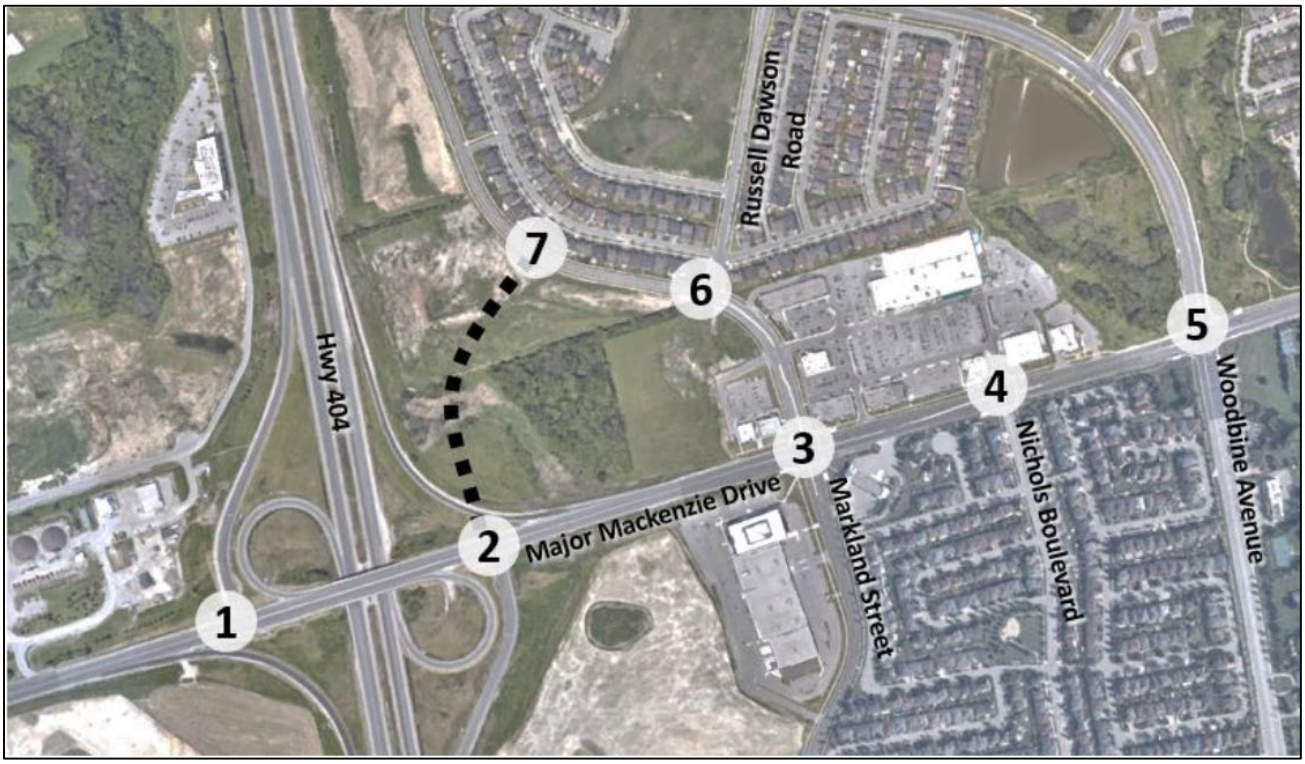
This report references the ***York Region Transportation Mobility Plan Guidelines (2016).***

1.1 Study Area

The proposed off-ramp extension is from the Highway 404 northbound off-ramp / Major Mackenzie Drive intersection to Markland Street. The study area intersections, as illustrated in **Exhibit 1-2** consist of the following locations:

1. Highway 404 southbound off-ramp at Major Mackenzie Drive;
2. Highway 404 northbound off-ramp at Major Mackenzie Drive;
3. Markland Street and Major Mackenzie Drive;
4. Nichols Boulevard and Major Mackenzie Drive;
5. Woodbine Avenue and Major Mackenzie Drive;
6. Markland Street and Russell Dawson Road; and,
7. Markland Street and off-ramp extension (Future scenarios only).

Exhibit 1-2: Study Area



The existing study area primarily consists of residential uses south of Major Mackenzie Drive. Existing and future commercial uses are located along the north side of Major Mackenzie Drive. The northeast quadrant of Highway 404 / Major Mackenzie Drive, known as Cathedraltown, contains a variety of residential densities (single detached, townhouse, condominium) and mixed-use (ground floor retail townhouse style) land uses.

2 Planning Context and Policy Review

2.1 York Region Transportation Master Plan, 2022

The York Region Transportation Master Plan (TMP) is the long-term vision for York Region's transportation network. The plan outlines strategy, initiatives, and infrastructure for the next 30 years and considers the Region's transportation infrastructure needs to support growth and the changing needs of travelers. The plan aims to support healthy communities and economic growth in York Region by planning for safe, reliable travel, and efficient movement of goods.

The TMP outlines 2051 regional transportation network improvements. The study area includes road and cycling infrastructure improvements and rapid transit for Major Mackenzie Drive. Additionally, the TMP included a new mid-block crossing over Highway 404 between Major Mackenzie Drive and Elgin Mills Road.

2.2 City of Markham Transportation Planning Study Update, 2002

The 2002 City of Markham Transportation Planning Study Update includes a four-point strategy for road improvements, transit, education, and policy. The objective of the road network is to provide for a balanced transportation system, with road widening and improvements where they are most needed to ensure a reasonable level of service.

2.3 City of Markham Active Transportation Master Plan, 2021

The Active Transportation Master Plan (ATMP) is a long-term strategic plan to improve walking, cycling, and other modes of active transportation for everyone in the City of Markham. The ATMP identifies a well-connected and safe active transportation network and recommends infrastructure projects, policies, and strategies with an action-oriented phasing plan.

The ATMP includes a priority cycling and trails network for the City of Markham. Within the study area, the ATMP identifies Major Makenzie Drive from Highway 404 to Woodbine Avenue as part of the long-term network.

2.4 City of Markham Official Plan, 2014

Policy 7.1.3.6 of Chapter 7 in the City of Markham Official plan outlines policy for the design and construction of all new roads to ensure appropriate right-of-way design standards and having regard for urban design guidelines are applied. This includes:

- Balance safety, accessibility, convenience, and comfort for all street users, regardless of age or ability, including pedestrians, cyclists, and transit riders, to offer diverse travel options;
- Encourage a more compact and sustainable urban form to reduce trip lengths, encourage walking, cycling, and transit use, and decrease reliance on cars;

- Improve the streetscape to enhance attractiveness and vibrancy in communities, allowing for more street trees and green infrastructure;
- Achieve better integration with neighboring land uses, improve connections to trail systems, and encourage social interaction; and,
- Transform the road network by prioritizing the movement of people over vehicles while ensuring the safety of all road users.

Since the proposed road will impact a wetland, policy 3.1.2.19 outlined in Chapter 3 of the Official Plan includes measures to protect and enhance wetlands. This includes undergoing an appropriate study and in consultation with the City and appropriate agencies to ensure the impact of the infrastructure is minimized.

2.5 Relevant Background Studies

2.5.1 Road Crossing of Highway 404 Between Major Mackenzie Drive and Elgin Mills Road Environmental Study Report (December 2017) and Traffic Analysis Report (October 2017)

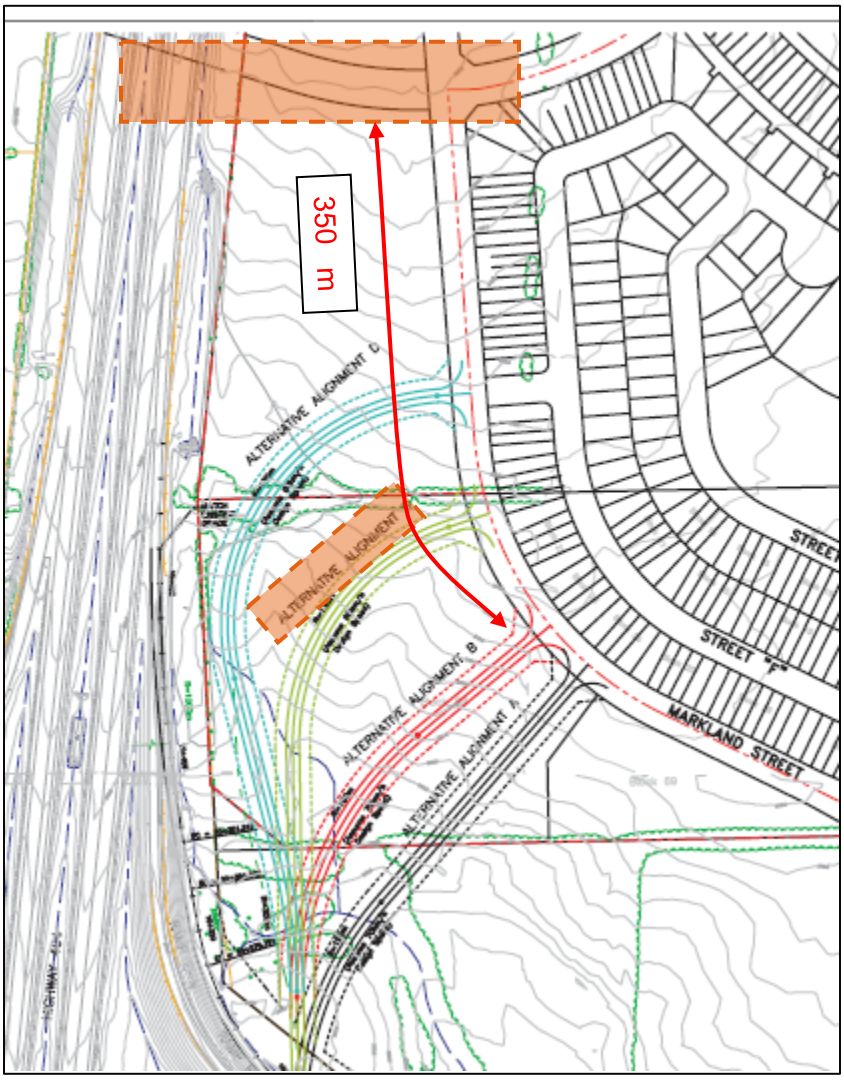
York Region carried out an MCEA Study of the Highway 404 mid-block crossing north of Major Mackenzie Drive and filed the Environmental Study Report (ESR) with the Ministry of the Environment, Conservation and Parks (MECP) in December 2017. The preferred ramp extension alignment (Alternative B) from the 2009 MCEA Study is indicated in **Exhibit 2-1** to show its proximity to the proposed mid-block crossing, which is approximately 350 metres north. The study included an extension of Highway 404 northbound off-ramp from Major Mackenzie Drive to Markland Street as part of their analysis.

The report highlights that Highway 404 is a physical barrier between communities in Markham and Richmond Hill, the regional road network will be very congested without additional east-west capacity. The report also highlights the limited existing facilities for active transportation in the study area. The report identified a supporting need and justification for a road crossing over Highway 404 between Leslie Street and Woodbine Avenue to be located between Major Mackenzie Drive and Elgin Mills Road.

The crossing aims to be a solution that will support growth and development, create a more refined and connected road network, manage traffic congestion while providing connections between communities, and support and encourage walking, cycling, and transit use.

The detailed design for the Highway 404 mid-block crossing north of Major Mackenzie Drive has not commenced. Construction is not identified in York Region's 2024 10-year Roads and Transit Capital Construction Program.

Exhibit 2-1: Preferred Alignment Proximity to Road Crossing



Source: Class Environmental Assessment Study, September 2009, Exhibit 5-1 Alternative Alignments

2.5.2 Proposed Road Extension at Highway 404 Northbound Exit Ramp and Major Mackenzie Drive Intersection Class Environmental Assessment Report (September 2009)

In August 2006, the City of Markham began a Schedule 'C' Municipal Class Environmental Assessment (MCEA) Study for a road extension from the Highway 404 northbound exit ramp to Markland Street.

The study addressed anticipated growth and traffic demands in the Cathedraltown community and surrounding areas, particularly the Business Corridor near Highway 404 and Major Mackenzie Drive interchange. The study assessed the need for the road extension, evaluated its environmental impacts, considered design alternatives, and identified a preferred alternative.

A consultant (McCormick Rankin Corporation) was retained to conduct the study, and the resulting ESR was completed in September 2009, approved by City Council in October 2009, and filed with the MECP in November 2009. The ESR recommended a preferred alternative for the road extension as a two-way road extending north of Major Mackenzie Drive to Markland Street, including the realignment of the E-N ramp from Major Mackenzie Drive to northbound Highway 404.

3 2024 Existing Conditions

This section documents the transportation network in the study area in 2024, including existing roads, traffic control measures, intersection performance, walking and cycling facilities, and transit operations.

3.1 Existing Road Network

The existing road network characteristics within the study area are summarized in **Table 3-1**. The lane configuration for study area roads is illustrated in **Exhibit 3-1**.

Table 3-1: Study Area Existing Road Network

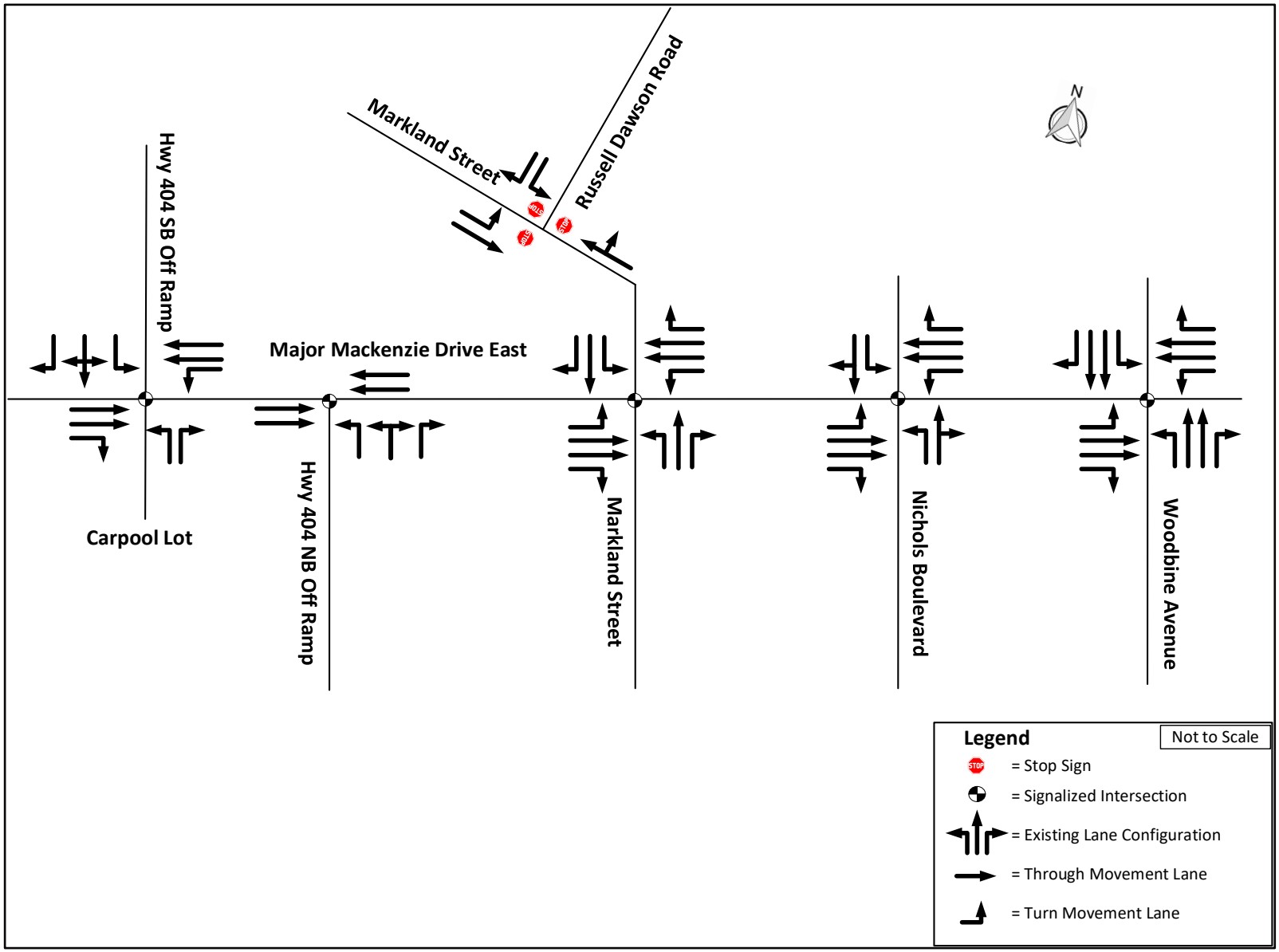


Exhibit 3-1: Study Area Intersection Traffic Control and Lane Configuration

Street Name	Jurisdiction	Class	Orientation	Road Width (Lanes)	Traffic Direction	From	To	On-Street Parking	Speed Limit
Major Mackenzie Drive	York Region	Major Arterial	East / West	4	Two-way	Highway 50	York Durham Line	Prohibited	70 km/h
Woodbine Avenue	York Region	Major Arterial	North / South	4	Two-way	Lake Drive East	Steeles Avenue	Prohibited	60 km/h
Markland Street	Markham	Collector	North / South	2	Two-way	Woodbine Avenue	Woodbine Avenue	Prohibited	50 km/h
Russell Dawson Road	Markham	Local	North / South	2	Two-way	Donald Buttress Boulevard	Markland Street	Prohibited	40 km/h
Nichols Boulevard	Markham	Local	North / South	2	Two-way	Major Mackenzie Drive	Oakford Drive	Prohibited	40 km/h
Highway 404 NB Off-ramp	MTO	Freeway	North / South	3	One-way	Highway 404 NB	Major Mackenzie Drive	Prohibited	60 km/h advisory
Highway 404 SB Off-ramp	MTO	Freeway	North / South	3	One-way	Highway 404 SB	Major Mackenzie Drive	Prohibited	60 km/h advisory

3.2 Study Area Transit Network

The study area is directly served by York Region Transit (YRT) routes 4 and 25, which provide east/west services on Major Mackenzie Drive East. Additionally, the study area is served by Route 24 which provides north/south service on Woodbine Avenue.

Regarding the regional transit services, the Major Mackenzie Drive East at Highway 404 Park 'n' Ride is located in the study area and facilitates connections between YRT and GO Transit.

Transit services in the study area are illustrated in **Exhibit 3-2**, while service patterns and destinations of the routes in close proximity to the site are summarized in **Table 3-2**.

Exhibit 3-2: Transit Services in Development Area

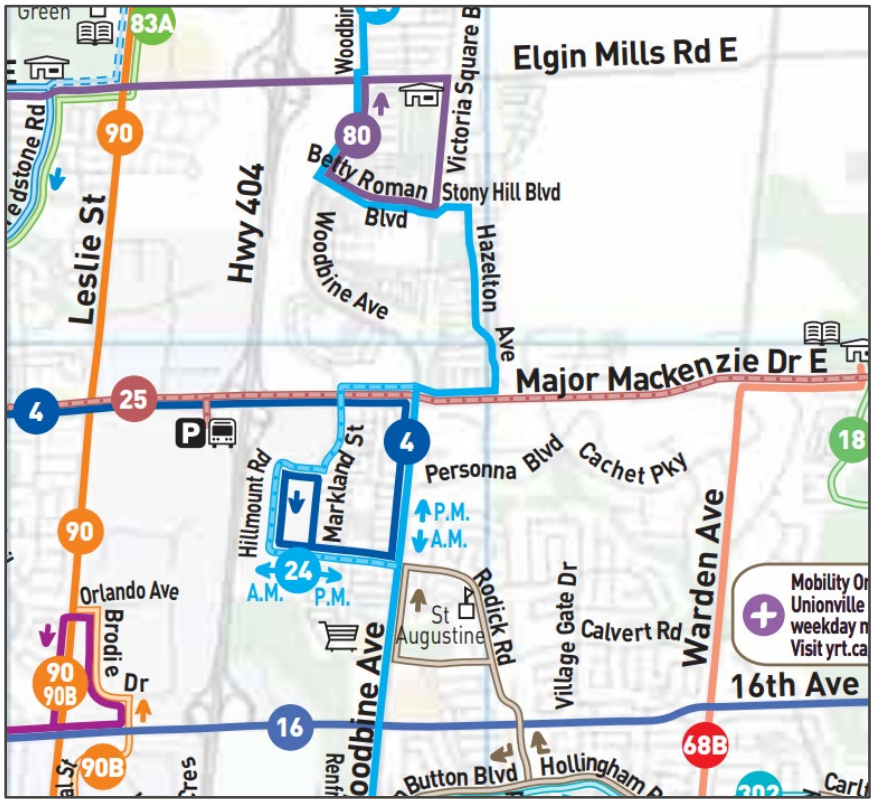


Table 3-2: Existing Transit Service Patterns

Route	Onward Transit Connections	Average Peak Hour Frequency
Route 4	Yonge & Major Mackenzie, Major Mackenzie West Terminal	15 minutes
Route 25	Yonge & Major Mackenzie, Cornell Bus Terminal	20 minutes
Route 24	Don Mills	10 minutes

The location of York Region Transit bus stops in the study area and GO Transit stations are illustrated in **Exhibit 3-3.**

Exhibit 3-3: Bus Stops and GO Station Locations



3.3 Study Area Active Transportation Network

3.3.1 Walking

Pedestrian sidewalks are provided throughout the study area on:

- Major Mackenzie Drive: Sidewalks are provided on both sides of the roadway from Markland Street to Woodbine Avenue;
- Woodbine Avenue: Sidewalks are provided on both sides of the roadway;
- Markland Street: Sidewalks are provided on both sides of the roadway;
- Nichols Boulevard: Sidewalks are provided on both sides of the roadway; and,
- Russell Dawson Road: Sidewalks are provided on both sides of the roadway.

Exhibit 3-4 depicts existing pedestrian facilities in the study area.

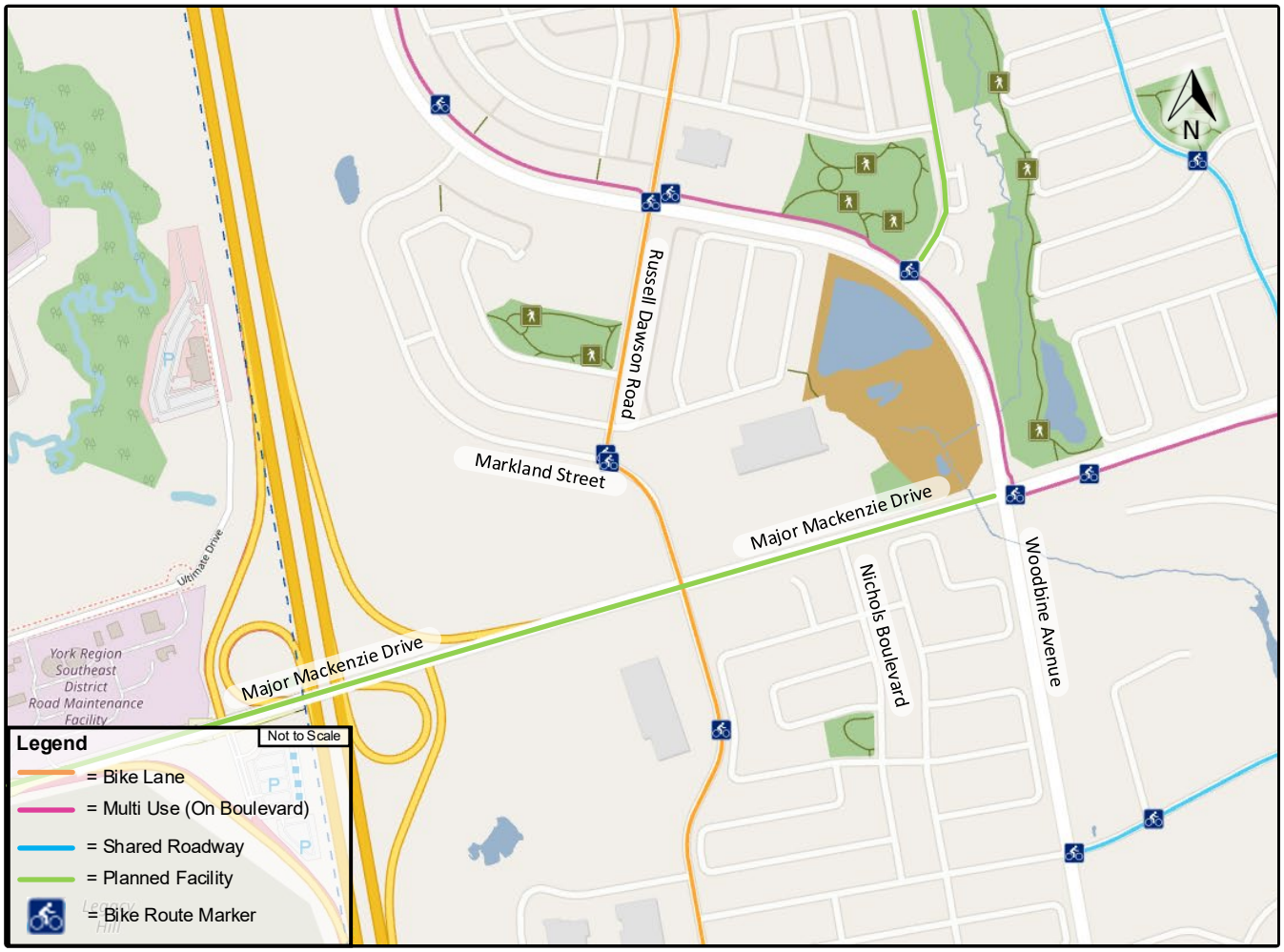
Exhibit 3-4: Existing Pedestrian Facilities



3.3.2 Cycling

The City of Markham Pathway and Cycling Map demonstrates the existing cycling infrastructure in the study area as depicted in **Exhibit 3-5**.

Exhibit 3-5: Cycling Network Plan



The City of Markham Active Transportation Master Plan (2021) identifies installing a cycle track along Victoria Square Boulevard from Woodbine Avenue to Elgin Mills Road in its 5-year priority network. Additionally, a 1.5-metre separated cycling track along the expanded section of Major Mackenzie Drive from Leslie Street to Woodbine Avenue is proposed in the 2051 Regional Road Cycling Network in the York Region Transportation Master Plan.

3.4 Traffic Data

3.4.1 Turning Movement Counts

Existing traffic turning movement counts were commissioned by Arcadis and conducted by Ontario Traffic Inc. 2-hour counts were conducted on Thursday, February 8, 2024, from 7:00 – 9:00 and from 16:00 – 18:00. The peak hour periods are outlined in **Table 3-3**. The peak hour periods determined from the traffic counts capture the peak periods as they generally align with the peak hours from the historical turning movement count data provided by York Region outlined in **Table 3-4**.

Table 3-3: Traffic Turning Movement Count Data – Provided by Arcadis

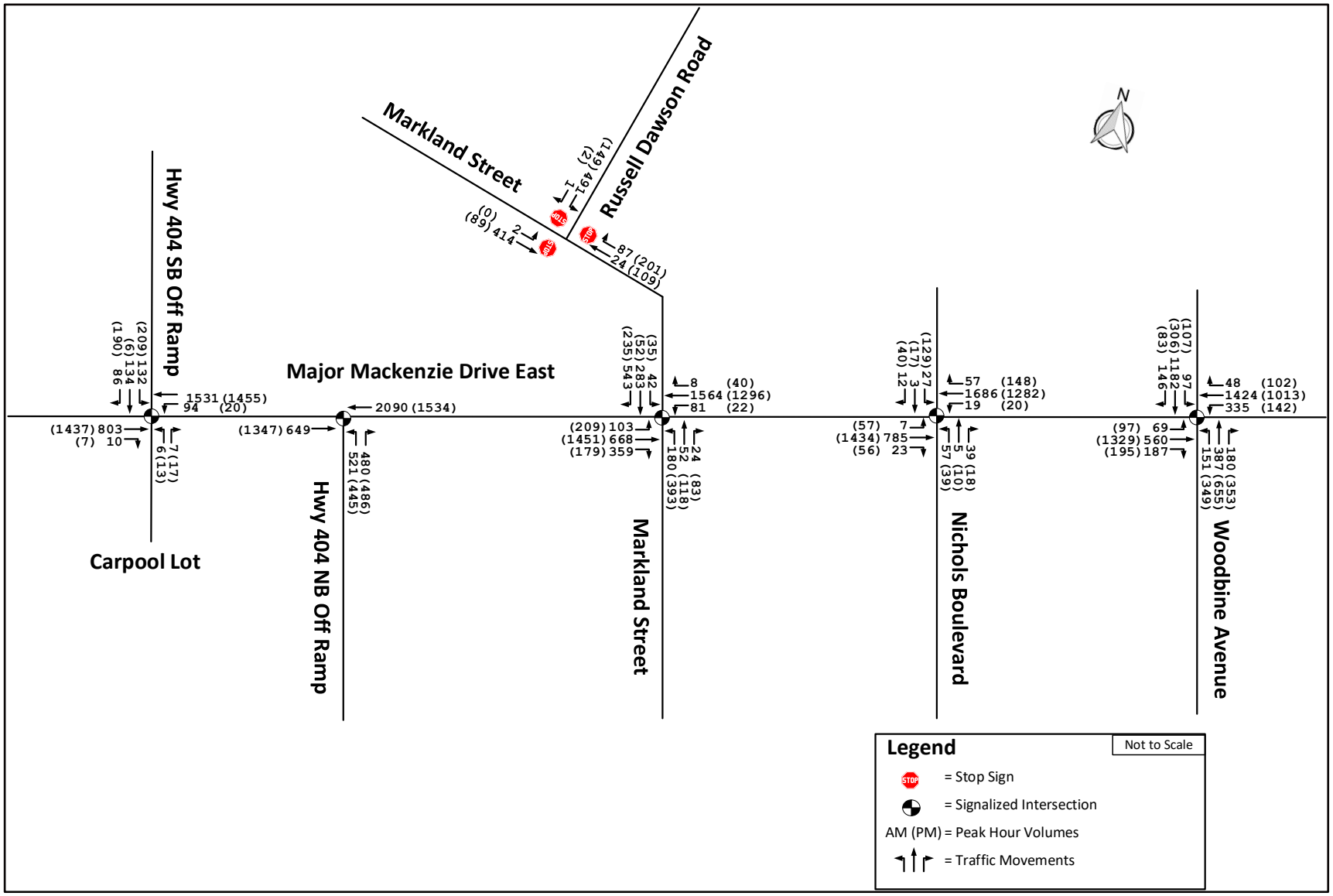
Intersection	Data Source	Date	Weekday Peak Hour	
			AM	PM
Major Mackenzie Drive / Highway 404 SB Off-ramp / Carpool Lot	Ontario Traffic Inc. (OTI)	Thursday, February 8, 2024 07:00-09:00 & 16:00 – 18:00	08:00 – 09:00	17:00 – 18:00
Major Mackenzie Drive / Highway 404 NB Off-ramp			07:45 – 08:45	17:00 – 18:00
Major Mackenzie Drive / Markland Street			08:00 – 09:00	17:00 – 18:00
Major Mackenzie Drive / Nichols Boulevard / Plaza Driveway			07:45 – 08:45	17:00 – 18:00
Major Mackenzie Drive / Woodbine Avenue			08:00 – 09:00	17:00 – 18:00
Markland Street / Russell Dawson Road			08:00 – 09:00	17:00 – 18:00

Table 3-4: Traffic Turning Movement Count Data – Provided by York Region

Intersection	Data Source	Date	Weekday Peak Hour	
			AM	PM
Major Mackenzie Drive / Highway 404 SB Off-ramp / Carpool Lot	York Region	Tuesday, September 22, 2009	07:45 – 08:45	17:00 – 18:00
Major Mackenzie Drive / Highway 404 NB Off-ramp		Wednesday, September 23, 2009	07:30 – 08:30	17:00 – 18:00
Major Mackenzie Drive / Markland Street		Tuesday, April 24, 2018	07:45 – 08:45	17:00 – 18:00
Major Mackenzie Drive / Nichols Boulevard / Plaza Driveway		Thursday, September 24, 2009	07:30 – 08:30	16:45 – 17:45
Major Mackenzie Drive / Woodbine Avenue		Tuesday, April 24, 2018	07:45 – 08:45	17:00 – 18:00

Due to residential and commercial accesses in the study area, including gas station access, shopping centre, and on and off ramps to Highway 404, no volume balancing was applied. All TMC data was collected at the same time by the same surveyor. A summary of the 2024 existing conditions vehicle volumes is presented in **Exhibit 3-6**.

Exhibit 3-6: Existing Conditions Traffic Volumes



3.4.2 Other Data Provided by York Region and City of Markham

The following traffic data were provided by York Region and City of Markham:

- Truck traffic – percentage of medium and heavy trucks;
- Vehicle classification, average daily traffic (ADT), annual average daily traffic (AADT), speed and older turning movement count (TMC) data;
- Signal timing plans; and,
- York Region Activity Based Model (ABM) Outputs (2016 and 2051).

3.4.3 Synchro Saturation Flow Parameters

Synchro saturation flow rate of 2,000 vphpl (vehicles per hour per lane) was used for the purposes of this study, consistent with the York Region Mobility Plan Guidelines for Development Applications.

3.4.4 Existing Modal Split

The existing modal split was determined using the Transportation Tomorrow Survey (2016) for the Traffic Analysis Zones within the study area. The average non-auto modal split for the study area is approximately 10.7%. The breakdown of the modal split across all modes is shown in **Table 3-5**.

Table 3-5: Breakdown of Study Area Modal Split

Mode	Mode Split
Cycle	0.2%
Walk	2.9%
Transit	5.2%
Auto Passenger	15.9%
Auto Driver	73.5%
Non-auto Other	2.4%

3.5 2024 Existing Conditions Analysis

3.5.1 Signalized Intersections

The results of the 2024 existing conditions traffic operations analysis for signalized intersections are presented in **Table 3-6**. Full Synchro model traffic operations data outputs (based on the Highway Capacity Manual methodology) for the 2024 existing conditions scenario is presented in **Appendix A**.

Table 3-6: 2024 Existing Conditions Traffic Operations – Signalized Intersections

Intersection	Intersection			Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Length (m)
	LOS	Delay (s)	v/c Ratio						
AM Peak Hour									
Carpool Lot/Highway 404 Southbound Ramp & Major Mackenzie Drive	C	24.1	0.71	EBT	B	18	0.42	102.8	-
				EBR	B	13.4	0.01	-	95
				WBL	B	12.9	0.28	14.7	55
				WBT	B	18.1	0.7	180.8	-
				NBL	E	66.3	0.2	5.6	-
				NBR	E	64.3	0.01	-	-
				SBL	E	58.4	0.58	52.9	-
				SBT	E	67.1	0.73	70.8	-
				SBR	D	51.2	0.05	5.2	170
Highway 404 Northbound Ramp & Major Mackenzie Drive	C	24.3	0.88	EBT	A	9.8	0.28	21.2	-
				WBT	B	12.2	0.88	99.3	-
				NBL	E	64.3	0.89	122.4	-
				NBR	D	46.4	0.39	46.9	180
Markland Street & Major Mackenzie Drive	D	50.6	1.02	EBL	E	69.3	0.81	36.4	90
				EBT	B	16.8	0.42	62.8	-
				EBR	B	16.4	0.24	16	100
				WBL	B	11.9	0.26	6.8	160
				WBT	C	30.7	0.95	277.5	-
				WBR	B	19.3	0	-	187
				NBL	E	74.9	0.88	73.3	180
				NBT	C	33	0.15	18.4	-
				NBR	C	31.5	0.03	-	97
				SBL	D	41.7	0.17	20	60
				SBT	D	53.7	0.73	107.7	-
				SBR	F	168.6	1.21	239.8	-
Nichols Boulevard	A	9.1	0.63	EBL	A	5.1	0.08	1	55
				EBT	A	2.7	0.33	30.2	-

Intersection	Intersection			Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Length (m)
	LOS	Delay (s)	v/c Ratio						
/Plaza & Major Mackenzie Drive				EBR	A	0.7	0.02	0.3	100
				WBL	A	2.8	0.09	1.6	45
				WBT	A	7.7	0.67	46.6	-
				WBR	A	0.9	0.06	0.1	45
				NBL	E	58.8	0.43	25.1	70
				NBT	D	54.7	0.07	5.5	-
				SBL	E	56.7	0.26	13	30
				SBT	D	54.6	0.05	1.9	-
Woodbine Avenue & Major Mackenzie Drive	E	64.4	1.14	EBL	D	53.2	0.57	19.7	120
				EBT	D	36.7	0.69	63.9	-
				EBR	C	28.2	0.22	13.2	80
				WBL	E	62.3	0.95	123.3	300
				WBT	F	96.5	1.09	293.2	-
				WBR	C	28.1	0.04	0.2	120
				NBL	F	168	1.19	77	150
				NBT	C	34.6	0.36	59.4	-
				NBR	C	31.7	0.14	12.2	70
				SBL	C	28	0.41	26.5	165
				SBT	E	60.1	0.95	219.2	-
				SBR	C	32.2	0.16	21.5	70
PM Peak Hour									
Carpool Lot/Highway 404 Southbound Ramp & Major Mackenzie Drive	C	26.1	0.65	EBT	C	21.9	0.68	219.5	-
				EBR	B	12.3	0.01	-	95
				WBL	B	15.8	0.24	4.2	55
				WBT	B	19.2	0.65	204.3	-
				NBL	E	64.5	0.25	9.4	-
				NBR	E	62.4	0.02	-	-
				SBL	E	62.5	0.65	60.8	-
				SBT	E	60.9	0.6	29	-
				SBR	D	53.6	0.18	24.9	170
Highway 404 Northbound Ramp & Major Mackenzie Drive	C	30.6	0.71	EBT	C	21.7	0.56	177.6	-
				WBT	C	23	0.69	209.4	-
				NBL	D	54	0.78	100.2	-
				NBR	E	59	0.77	109.1	180
Markland Street & Major	D	46.5	1.20	EBL	F	153.4	1.18	106.6	90
				EBT	C	25.7	0.72	214.4	-

Intersection	Intersection			Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Length (m)
	LOS	Delay (s)	v/c Ratio						
Mackenzie Drive				EBR	C	20.6	0.18	10.4	100
				WBL	C	34.1	0.25	8.3	160
				WBT	C	32.3	0.73	171.5	-
				WBR	F	91.8	0.04	3.9	187
				NBL	F	112.9	1.06	148	180
				NBT	D	40.4	0.25	42.2	-
				NBR	D	38.4	0.08	4	97
				SBL	E	59.3	0.37	18.5	60
				SBT	E	58.1	0.3	25.5	-
				SBR	E	67.2	0.65	55.7	-
Nichols Boulevard /Plaza & Major Mackenzie Drive	B	13.1	0.63	EBL	A	8.2	0.39	1.6	55
				EBT	A	7	0.55	75.1	-
				EBR	A	0.8	0.04	-	100
				WBL	A	7.3	0.13	2.8	45
				WBT	A	8.8	0.58	67.7	-
				WBR	A	5.1	0.15	5.8	45
				NBL	D	49.7	0.26	17.6	70
				NBT	D	47.4	0.06	7.4	-
				SBL	E	68	0.77	49.7	30
				SBT	D	48.2	0.13	6.5	-
Woodbine Avenue & Major Mackenzie Drive	D	43	1.08	EBL	C	23.1	0.57	14.2	120
				EBT	B	18.9	0.8	188.6	-
				EBR	A	4.1	0.22	2.4	80
				WBL	F	121.7	1.05	72.3	300
				WBT	C	31.5	0.65	161.2	-
				WBR	C	21.8	0.07	11.8	120
				NBL	F	131.9	1.13	138.9	150
				NBT	D	53.6	0.8	111.5	-
				NBR	D	51.9	0.68	89.3	70
				SBL	D	45	0.66	32	165
				SBT	D	43.9	0.38	50.6	-
				SBR	D	40.3	0.07	5.1	70

As shown in **Table 3-6**, study area signalized intersections were observed to be operating below overall capacity limits during weekday AM and PM peak hours, except at the Markland Street / Major Mackenzie Drive intersection and Woodbine Avenue / Major Mackenzie Drive intersection.

It should be noted that all signal timing plans along the Major Mackenzie corridor in this study area have 140 second cycle lengths, which contribute to longer delays despite below capacity v/c ratios and shorter queue lengths that do not exceed storage capacity.

The specific movements at the **Markland Street / Major Mackenzie Drive** intersection that are experiencing capacity constraints are:

- During the weekday AM peak hour:
  - The southbound right turn exceeds capacity (v/c ratio of 1.21) and experiences a delay of 168.6 seconds.
- During the weekday PM peak hour:
  - The eastbound left turn exceeds capacity (v/c ratio of 1.18) and experiences a delay of 153.4 seconds. Additionally, the 95th percentile queue length exceeds the available storage length by approximately three car lengths.
  - The northbound left turn exceeds capacity (v/c ratio of 1.06) and experiences a delay of 112.9 seconds.

The specific movements at the **Woodbine Avenue & Major Mackenzie Drive** intersection that are experiencing capacity constraints:

- During the weekday AM peak hour:
  - The westbound through movement exceeds capacity (v/c ratio of 1.09) and experiences a delay of 96.5 seconds.
  - The northbound left turn exceeds capacity (v/c ratio of 1.19) and experiences a delay of 168 seconds.
- During the weekday PM peak hour:
  - The westbound left turn exceeds capacity (v/c ratio of 1.05) and experiences a delay of 121.7 seconds.
  - The northbound left turn exceeds capacity (v/c ratio of 1.13) and experiences a delay of 131.9 seconds.
  - The northbound right turn 95th percentile queue length exceeds the available storage length by approximately three car lengths.

3.5.2 Unsignalized Intersections

The results of the 2024 existing conditions traffic operations analysis for unsignalized intersections are presented in **Table 3-7**. During the weekday AM peak hour, the eastbound through and southbound left turn movements experience some congestion.

Table 3-7: 2024 Existing Conditions Traffic Operations – Unsignalized Intersections

Intersection	Intersection Delay (s)	Lane	Lane LOS	Lane Delay (s)	Lane v/c Ratio
AM Peak Hour					
Markland Street & Russell Dawson Road	64.9	EBL	A	9.9	0.01
		EBT	E	42.5	0.90
		WBT	B	12.5	0.28
		SBL	F	98.5	1.11
		SBR	A	7.7	0.01
PM Peak Hour					
Markland Street & Russell Dawson Road	10.7	EBL	A	7.2	0.00
		EBT	A	8.2	0.16
		WBT	B	11.6	0.47
		SBL	B	10.3	0.27
		SBR	A	6.8	0.01

3.6 Existing Pedestrian Mode Performance

The pedestrian counts at all study area intersections during peak periods are presented in **Table 3-8**. The pedestrian counts were observed during the turning movement count data collection on Thursday, February 8, 2024.

Table 3-8: Existing Pedestrian Counts

Intersection	Direction	Pedestrian Counts	
		AM Peak	PM Peak
Major Mackenzie Drive East & Highway 404 SB Off Ramp - Carpool Lot	Eastbound	0	1
	Westbound	0	0
	Northbound	0	0
	Southbound	0	1
Major Mackenzie Drive East & Highway 404 NB Off-Ramp	Eastbound	0	0
	Westbound	0	0
	Northbound	0	0
Major Mackenzie Drive East & Markland Street	Eastbound	9	4
	Westbound	2	1
	Northbound	7	9
	Southbound	3	0
	Eastbound	3	4

Intersection	Direction	Pedestrian Counts	
		AM Peak	PM Peak
Major Mackenzie Drive East & Nichols Boulevard - Plaza Driveway	Westbound	2	9
	Northbound	4	6
	Southbound	6	3
Major Mackenzie Drive East & Woodbine Avenue	Eastbound	3	14
	Westbound	3	5
	Northbound	2	0
	Southbound	5	4
Markland Street & Russell Dawson Road	Eastbound	1	9
	Westbound	0	0
	Northbound	0	1
	Southbound	0	0

As demonstrated in **Table 3-8**, pedestrian volumes in the study area are relatively low. However, as the counts were conducted in the winter, it is expected that pedestrian counts would be higher in the warmer seasons.

The pedestrian level of service criteria provided in Table 6 of the Region's TMP Guidelines were referenced to assess the pedestrian mode performance in the existing conditions. This table can be found in **Appendix B**.

According to the existing pedestrian facilities explained in **Section 3.3.1**, a summary of pedestrian mode performance in the existing conditions is in **Table 3-9.**

Table 3-9: Existing Pedestrian Mode Performance

Intersection	Direction	Segment		Intersection
		Description	LOS	LOS
Major Mackenzie Drive East & Highway 404 SB Off Ramp - Carpool Lot	Eastbound	Major Mackenzie Drive	E	C
	Westbound	Major Mackenzie Drive	E	C
	Northbound	Carpool Lot	C	F
	Southbound	Highway 404 SB Off Ramp	F	C
Major Mackenzie Drive East & Highway 404 NB Off-Ramp	Eastbound	Major Mackenzie Drive	E	F
	Westbound	Major Mackenzie Drive	E	F
	Northbound	Highway 404 NB Off Ramp	F	F
Major Mackenzie Drive East & Markland Street	Eastbound	Major Mackenzie Drive	E	C
	Westbound	Major Mackenzie Drive	B	B
	Northbound	Markland Street	B	B
	Southbound	Markland Street	B	B
Major Mackenzie Drive East & Nichols Boulevard - Plaza Driveway	Eastbound	Major Mackenzie Drive	B	B
	Westbound	Major Mackenzie Drive	B	B
	Northbound	Nichols Boulevard	B	B
	Southbound	Plaza Driveway	C	C
Major Mackenzie Drive East & Woodbine Avenue	Eastbound	Major Mackenzie Drive	B	C
	Westbound	Major Mackenzie Drive	B	C
	Northbound	Woodbine Avenue	C	C
	Southbound	Woodbine Avenue	B	C
Markland Street & Russell Dawson Road	Eastbound	Markland Street	B	-
	Westbound	Markland Street	B	F
	Southbound	Russell Dawson Road	B	F

Overall, the existing pedestrian network performance in the study area typically has a segment and intersection Level of Service (LOS) of B and C. However, the network has substandard operations and connectivity issues particularly along Major Mackenzie Drive between the Highway 404 Southbound Off-ramp and Markland Street. The lack of sidewalks and delineated crosswalks along this stretch of Major Mackenzie Drive results in poor connectivity and safety concerns for pedestrians. Additionally, clearly delineated crosswalks are absent at the intersection of Markland Street & Russell Dawson Road.

3.7 Existing Bicycle Mode Performance

The bicycle traffic counts at all study area intersections during peak periods are presented in **Table 3-10**. The counts were observed during the turning movement count data collection on Thursday, February 8, 2024.

Table 3-10: Existing Cyclist Counts

Intersection	Direction	Pedestrian Volumes	
		AM Peak	PM Peak
Major Mackenzie Drive East & Highway 404 SB Off Ramp - Carpool Lot	Eastbound	0	0
	Westbound	0	0
	Northbound	0	0
	Southbound	0	0
Major Mackenzie Drive East & Highway 404 NB Off-Ramp	Eastbound	0	0
	Westbound	0	0
	Northbound	0	0
Major Mackenzie Drive East & Markland Street	Eastbound	0	0
	Westbound	0	0
	Northbound	0	0
	Southbound	0	0
Major Mackenzie Drive East & Nichols Boulevard - Plaza Driveway	Eastbound	0	0
	Westbound	0	0
	Northbound	0	0
	Southbound	0	0
Major Mackenzie Drive East & Woodbine Avenue	Eastbound	0	0
	Westbound	0	0
	Northbound	0	0
	Southbound	0	0
Markland Street & Russell Dawson Road	Eastbound	0	0
	Westbound	0	0
	Southbound	0	0

As demonstrated in **Table 3-10**, there were no cyclist volumes recorded in the study area; however, as the counts were conducted in the winter, it is expected that cyclist counts would be higher in the warmer seasons. The absence of cyclists could also be attributed to the to the lack of cycling facilities in the area.

The bicycle level of service criteria provided in Table 8 of the Region's TMP Guidelines were referred to in order to assess the bicycle mode performance in the existing conditions. This table can be found in **Appendix B**.

According to the existing cycling facilities explained in **Section 3.3.2**, a summary of bicycle LOS in the existing conditions is in **Table 3-11**.

Table 3-11: Existing Bicycle Mode Performance

Intersection	Direction	Segment		Intersection
		Description	LOS	LOS
Major Mackenzie Drive East & Highway 404 SB Off Ramp - Carpool Lot	Eastbound	Major Mackenzie Drive	F	F
	Westbound	Major Mackenzie Drive	F	F
	Northbound	Carpool Lot	F	F
	Southbound	Highway 404 SB Off Ramp	F	F
Major Mackenzie Drive East & Highway 404 NB Off-Ramp	Eastbound	Major Mackenzie Drive	F	F
	Westbound	Major Mackenzie Drive	F	F
	Northbound	Highway 404 NB Off Ramp	F	F
Major Mackenzie Drive East & Markland Street	Eastbound	Major Mackenzie Drive	F	F
	Westbound	Major Mackenzie Drive	F	F
	Northbound	Markland Street	D	F
	Southbound	Markland Street	D	F
Major Mackenzie Drive East & Nichols Boulevard - Plaza Driveway	Eastbound	Major Mackenzie Drive	F	F
	Westbound	Major Mackenzie Drive	F	F
	Northbound	Nichols Boulevard	F	F
	Southbound	Plaza Driveway	F	F
Major Mackenzie Drive East & Woodbine Avenue	Eastbound	Major Mackenzie Drive	F	F
	Westbound	Major Mackenzie Drive	F	F
	Northbound	Woodbine Avenue	F	F
	Southbound	Woodbine Avenue	F	F
Markland Street & Russell Dawson Road	Eastbound	Markland Street	F	F
	Westbound	Markland Street	D	F
	Southbound	Russell Dawson Road	D	F

Overall, the existing cycling network performance in the study area typically has a segment and intersection Level of Service (LOS) of F. However, the network has substandard operations and connectivity issues due to the lack of cycling infrastructure.

4 2051 Future Road Network and Traffic Growth

This section discusses the proposed future conditions horizon year, the background growth rate developed from the York Region ABM, and the anticipated future road network improvements.

To understand the need for and benefits of the proposed Highway 404 northbound off-ramp extension from Major Mackenzie Drive to Markland street, the future traffic operations performance for the study area road network was evaluated under three scenarios for the 2051 horizon year:

- Scenario 1: Without off-ramp extension (“do nothing”);
- Scenario 2: With 3-lane off-ramp extension; and,
- Scenario 3: With 4-lane off-ramp extension.

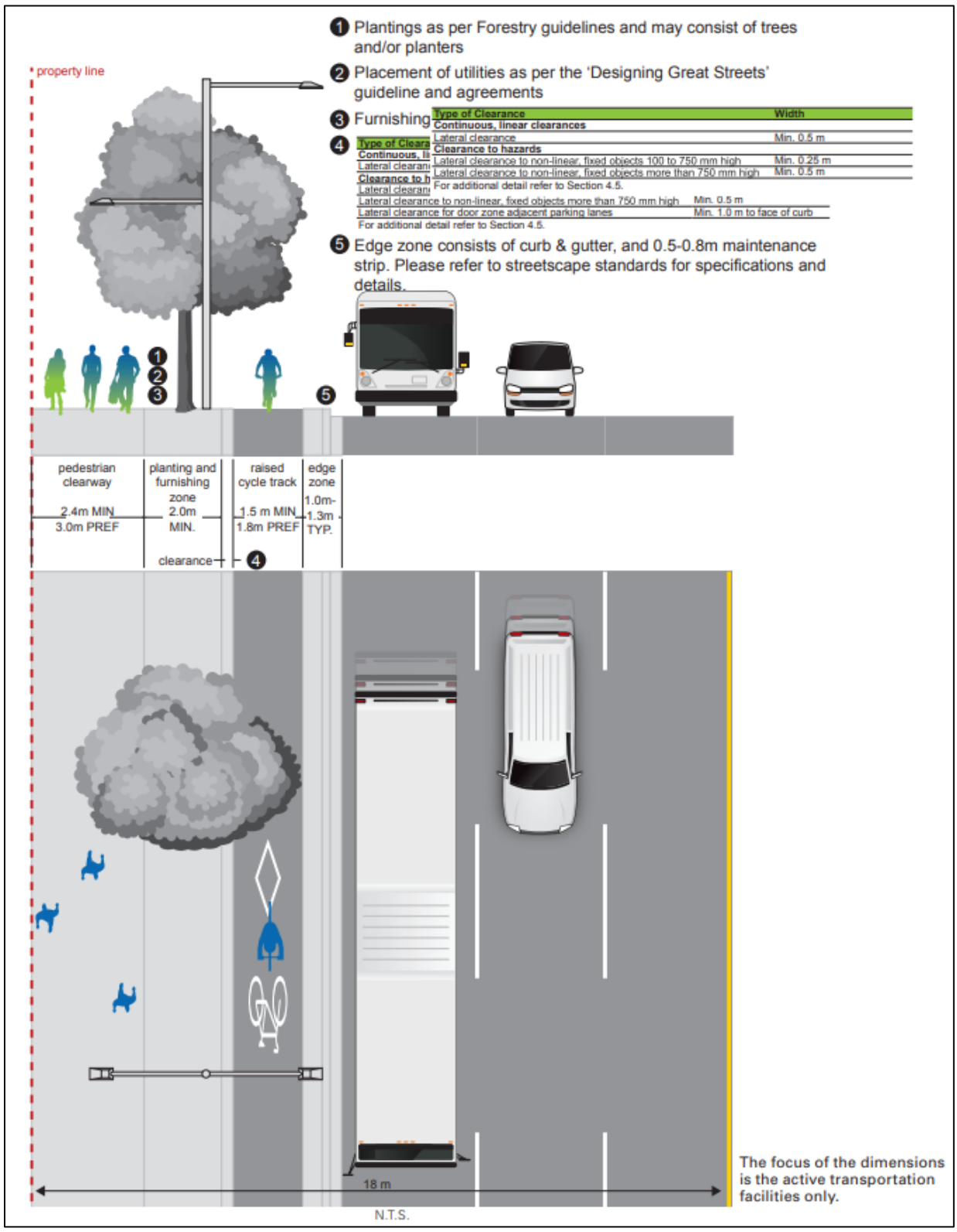
The details of the future road network improvements are discussed below.

4.1 Future Horizon Year and Planned Transportation Network Improvements

To align with the York Region Transportation Master Plan (2022) and the York Region ABM datasets provided, the horizon year of 2051 was selected. This coincides with the planned completion of the following future transportation network improvements within the study area, including:

- Expansion of Major Mackenzie Drive from Leslie Street to Woodbine Avenue from 4 lanes to 6 lanes. The Regional standard for six-lane roads requires the inclusion of two all-purpose travel lanes and one HOV lane in each direction, a 1.5-metre cycling track on both sides and sidewalks. Major Mackenzie Drive is proposed to be a Rapid Transit Corridor (road cross-section based on York Region “Pedestrian and Cycling Planning & Design Guidelines (version 2018)) is provided in **Exhibit 4-1**;
- A new mid-block crossing over Highway 404 between Major Mackenzie Drive and Elgin Mills Road connecting from Leslie Street to Woodbine Avenue; and,
- Background development activity adjacent to the Cathedraltown community.

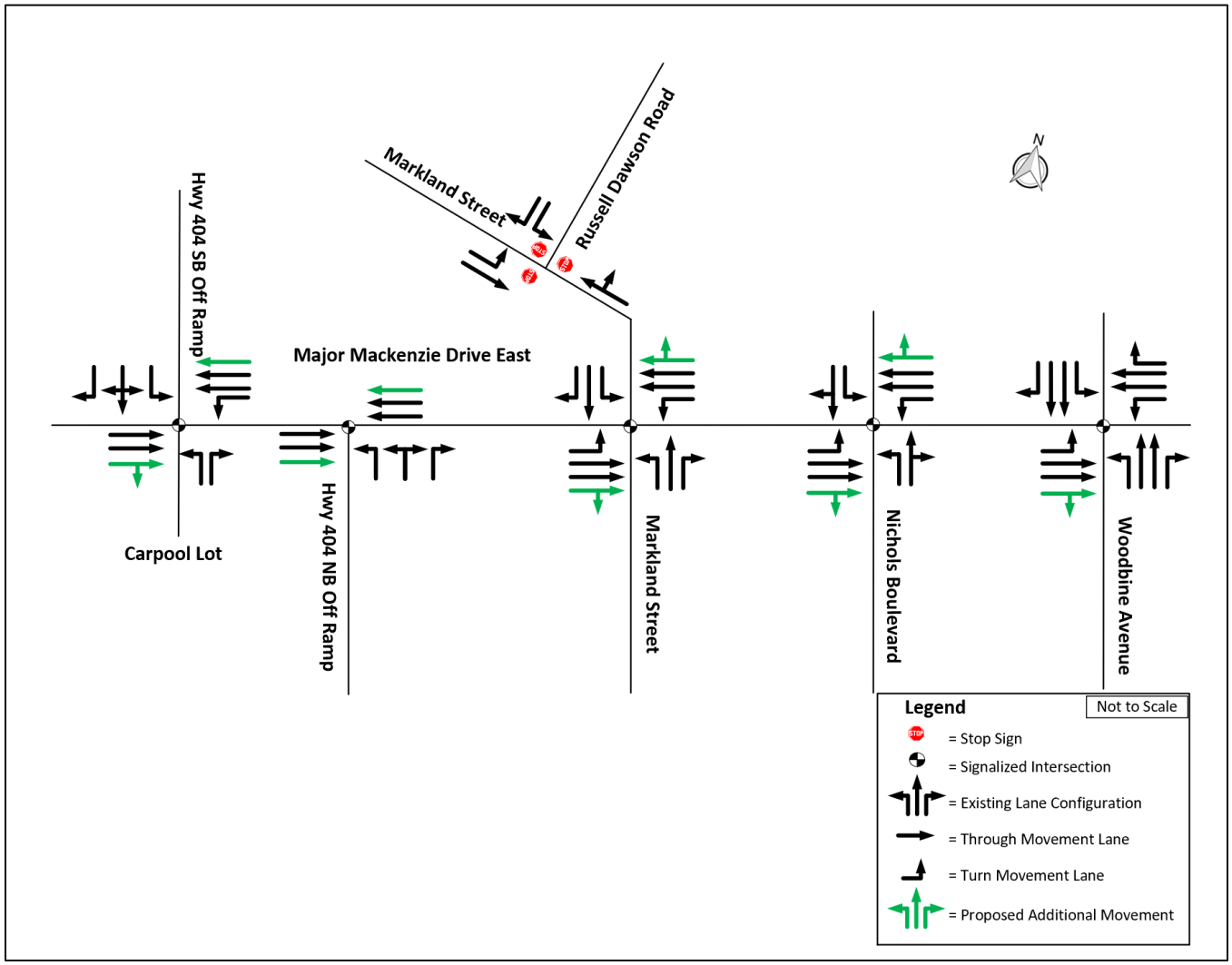
Exhibit 4-1: Assumed Future Major Mackenzie Drive Six-Lane Cross Section



Source: https://ontario-traffic-council.s3.amazonaws.com/uploads/2020/03/PedestrianAndCyclingPlanningAndDesignGuidelines_York-Reg.pdf

The Scenario 1 (“Do nothing”) future planned road configuration in the study area is illustrated in **Exhibit 4-2**. This scenario contains the widened Major Mackenzie Drive six lane cross section configuration with curbside HOV lanes.

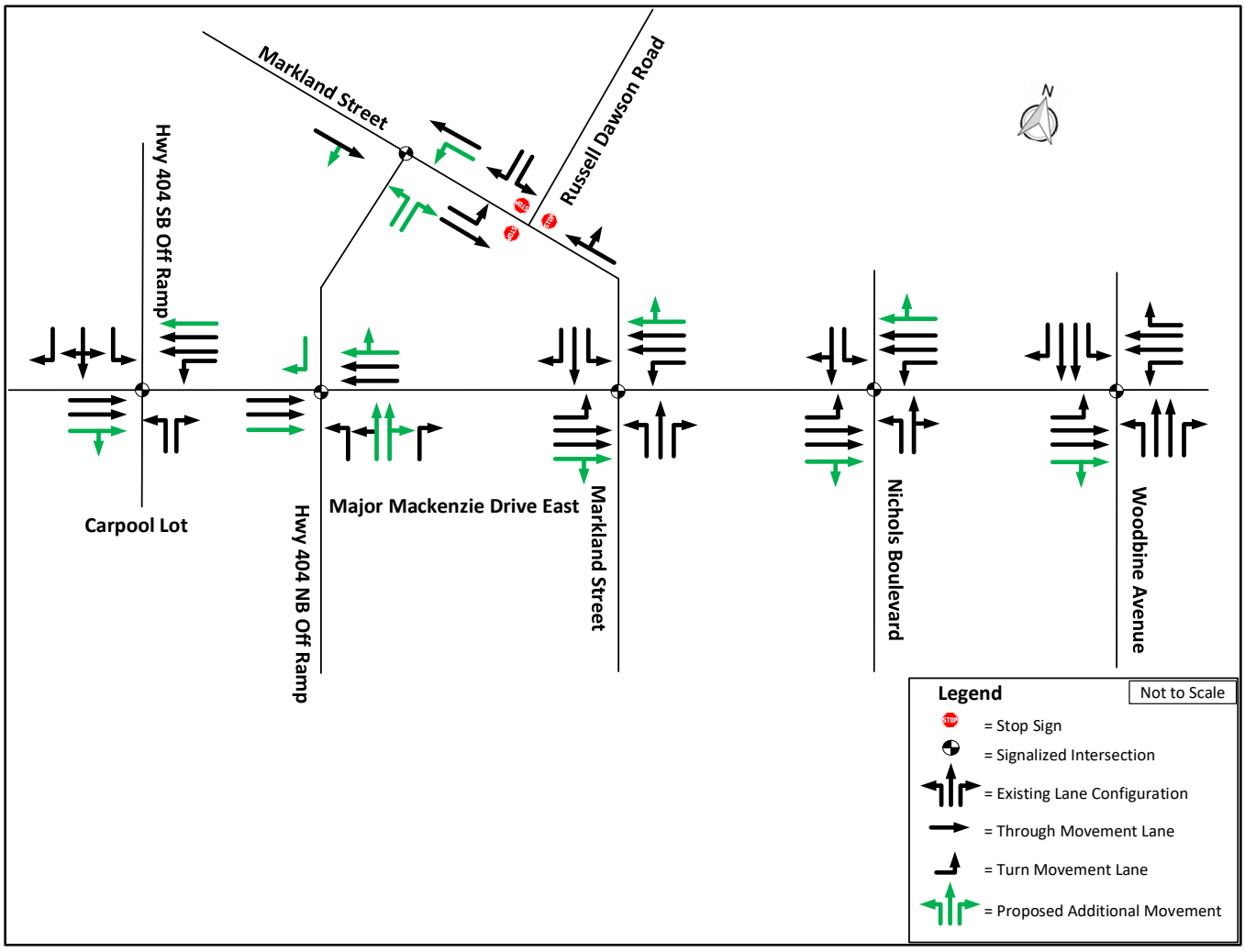
Exhibit 4-2: Scenario 1 (“Do Nothing”) - Future Intersection Traffic Control and Lane Configuration



The Scenario 2 (three lane off-ramp extension) future planned road configuration in the study area is illustrated in **Exhibit 4-3**. This road cross section presumes two lanes northbound with one lane southbound.

It is assumed that the north end of the extension will be signalized, and the south end terminates with a southbound right turn only movement. The off-ramp extension / Major Mackenzie Drive intersection is assumed to operate with a three-phase traffic signal timing plan, with the southbound right-turn also assumed to be restricted during its red phase. The south leg (Highway 404 NB Off Ramp) to the intersection has been assumed to be widened from the existing 3 lanes to 4 lanes, subject to confirmation by MTO.

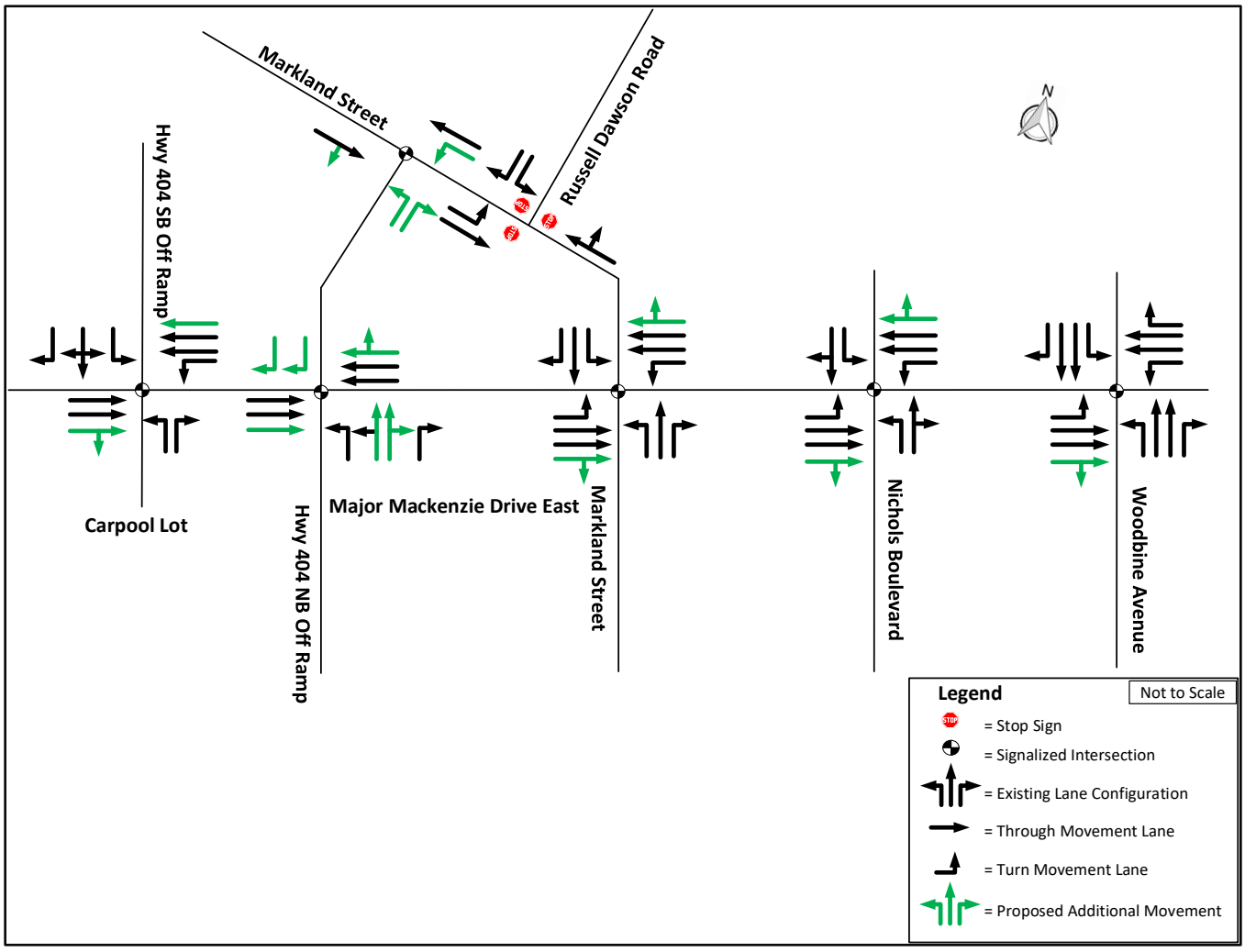
Exhibit 4-3: Scenario 2 – Future Intersection Traffic Control and Lane Configuration



The Scenario 3 (four lane off-ramp extension) future planned road configuration in the study area is illustrated in **Exhibit 4-4**. This road cross section presumes two lanes northbound with two lanes southbound.

It is assumed that the north end of the extension will be signalized, and the south end terminates with a dual southbound right-turn only movement. The off-ramp extension / Major Mackenzie Drive intersection is assumed to operate with a three-phase traffic signal timing plan, with the dual southbound right turn restricted during the red phase, with a protected green phase. The south leg (Highway 404 NB Off Ramp) to the intersection has been assumed to be widened from the existing 3 lanes to 4 lanes, subject to confirmation by MTO.

Exhibit 4-4: Scenario 3 - Future Intersection Traffic Control and Lane Configuration



4.2 York Region Activity Based Model (ABM)

The Region employs an activity-based model to analyze travel demand and predict the effects of growth on the transportation network. This model, based on data collected in the 2016 Transportation Tomorrow Survey and Cordon Count Program, replicates the daily travel behaviors of drivers, carpoolers, pedestrians, cyclists, and transit users, encompassing GO Transit bus and rail, within York Region and the broader Greater Golden Horseshoe Area.

It considers various factors influencing travel patterns, including changes in household composition, car availability, projected employment growth, trip organization, and the potential for traffic congestion to prompt modal shifts towards transit, walking, or cycling.

The EMME model was provided by the Region, which was refined to represent the finer road network within the study area, and to represent the existing road network conditions. This model was utilized for the screenline analysis.

The model was provided for the existing (2016) and future planning horizon (2051) conditions. The model simulates the AM and PM peak hour traffic conditions on a typical weekday, which is calibrated using the 2016 Transportation Tomorrow Survey (TTS) data and adopts the traffic analysis zone system developed by the Region.

The simulated volumes were calculated utilizing and applying the screenline growth rates between the 2016 and 2051 ABM outputs to the network. Outputs for the study area scenario were developed for the weekday AM and PM Peak hours.

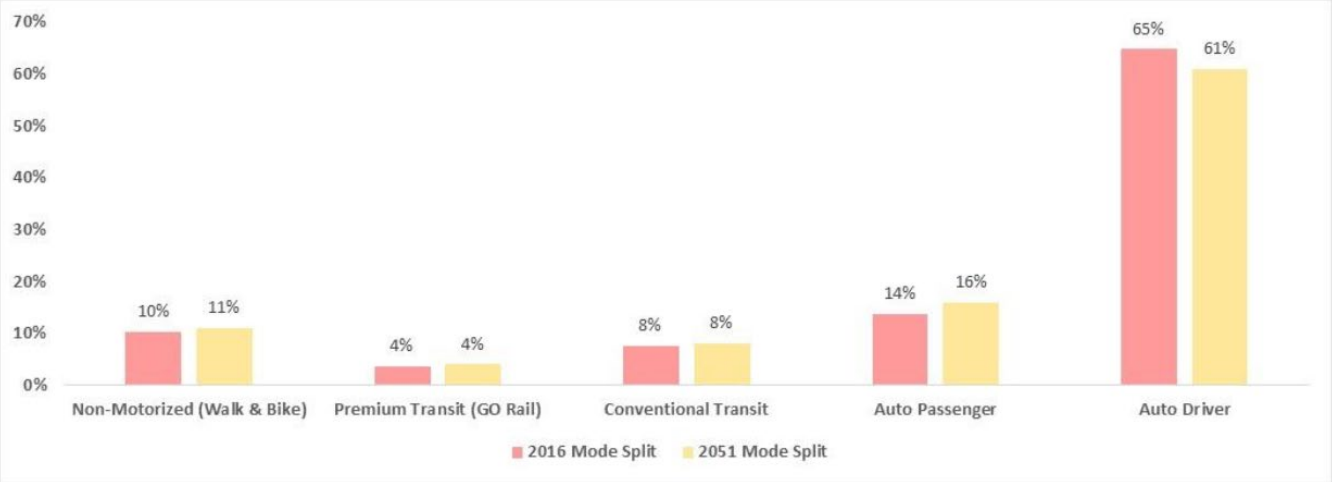
The York Region ABM incorporates future development forecasts by the Region's Long-Range Planning in the context of Regional Official Plan. Thus, the growth rates derived from the York Region ABM includes background growth, network improvements, and resulting changes in traffic patterns and volumes.

The York Region ABM assumptions are outlined in the Travel Demand Analysis Report in Appendix C2 of the York Region Transportation Master Plan. Assumptions incorporated into the York Region ABM include:

- Population and Employment Growth;
- Travel Demand Growth;
    - Origin-Destination Travel Patterns
    - Travel Modes; and,
- Future Network Assumptions

The modal share for trips starting in York Region utilized by the ABM for the 2016 and 2051 scenarios are shown in **Exhibit 4-5**.

Exhibit 4-5: Modal Share for Trips Starting in York Region (Morning Peak Period)



4.3 Annual Traffic Growth Calculation Methodology

The York Region ABM output datasets for the 2016 and 2051 weekday AM and PM peak hours were compared to determine individual annual growth rates for each major road segment within east-west and north-south corridors (i.e., screenlines) in the project study area. The growth rates for each of these segments are summarized in **Appendix C** for the weekday AM and PM peak hours, respectively.

Note that the growth rates derived from the 2016 and modified 2051 ABM models without Highway 404 Ramp extension were used as a basis. Engineering judgement and assumptions were then applied to balance key traffic volumes between study area intersections and to consider fundamental traffic pattern changes on a turning movement count level of detail due to the Highway 404 road crossing and subject off-ramp extension, which the ABM model outputs is incapable of detailing (i.e., only screenline road segment mid-block volume level of detail).

4.4 Future Anticipated Traffic Pattern Changes

Based on a comparison of the ABM 2051 full build out model and ABM 2051 model without Highway 404 Ramp extension, traffic redistribution assumptions were made. The assumptions applied to derive traffic pattern changes at key turning movements associated with the new Highway 404 road crossing and the northbound off-ramp extension to Markland Street are summarized in **Table 4-1**. Visual representations of the trip pattern changes are shown in **Exhibit 4-6** and **Exhibit 4-7**.

Table 4-1: Trip Pattern Change Assumptions

Intersection	Movement	Weekday AM Peak Hour	Weekday PM Peak Hour
Highway 404 NB off-ramp / Major Mackenzie Drive	NBT	+18% (taken from NBR)	+53% (taken from NBR)
	NBR	-18%	-53%
	SBR	+39% (taken from SBR at Markland Street and Major Mackenzie Drive intersection)	+62% (taken from SBR at Markland Street and Major Mackenzie Drive intersection)
	WBR	+33% (taken from WBR at Markland Street and Major Mackenzie Drive intersection)	+33% (taken from WBR at Markland Street and Major Mackenzie Drive intersection)
Markland Street / Major Mackenzie Drive	EBL	-83%	-72%
	WBR	-33%	-33%
Markland Street / Russell Dawson Road	SBL	-20%	-93%
	SBR	+20% (taken from SBL)	+93% (taken from SBL)
	EBT	-40%	-42%
Markland Street / NB off-ramp extension	EBR	+40% (taken from EBT at Markland Street / Russell Dawson Road intersection)	+42% (taken from EBT at Markland Street / Russell Dawson Road intersection)

Exhibit 4-6: Trip Pattern Change Assumptions – AM Peak Hour

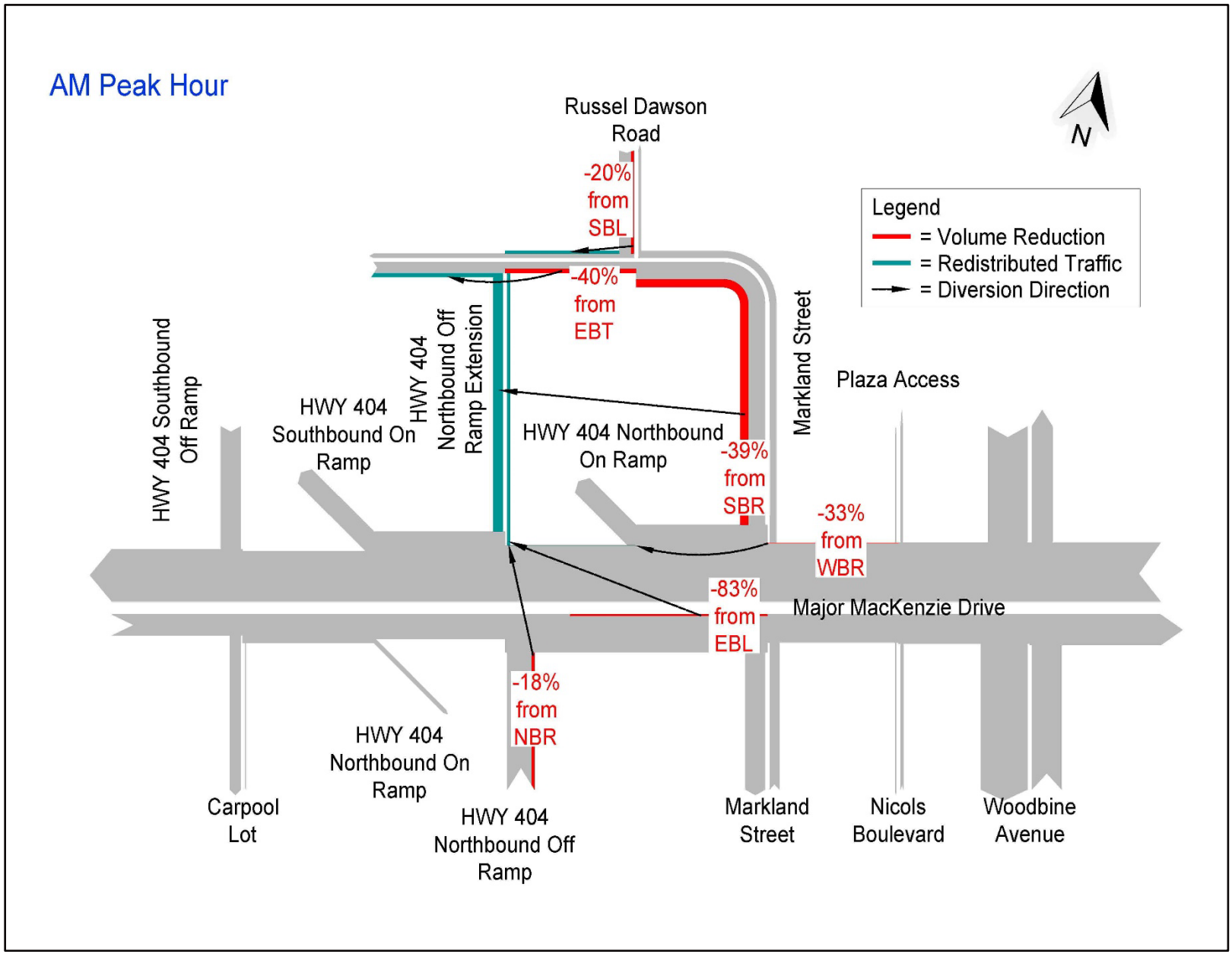
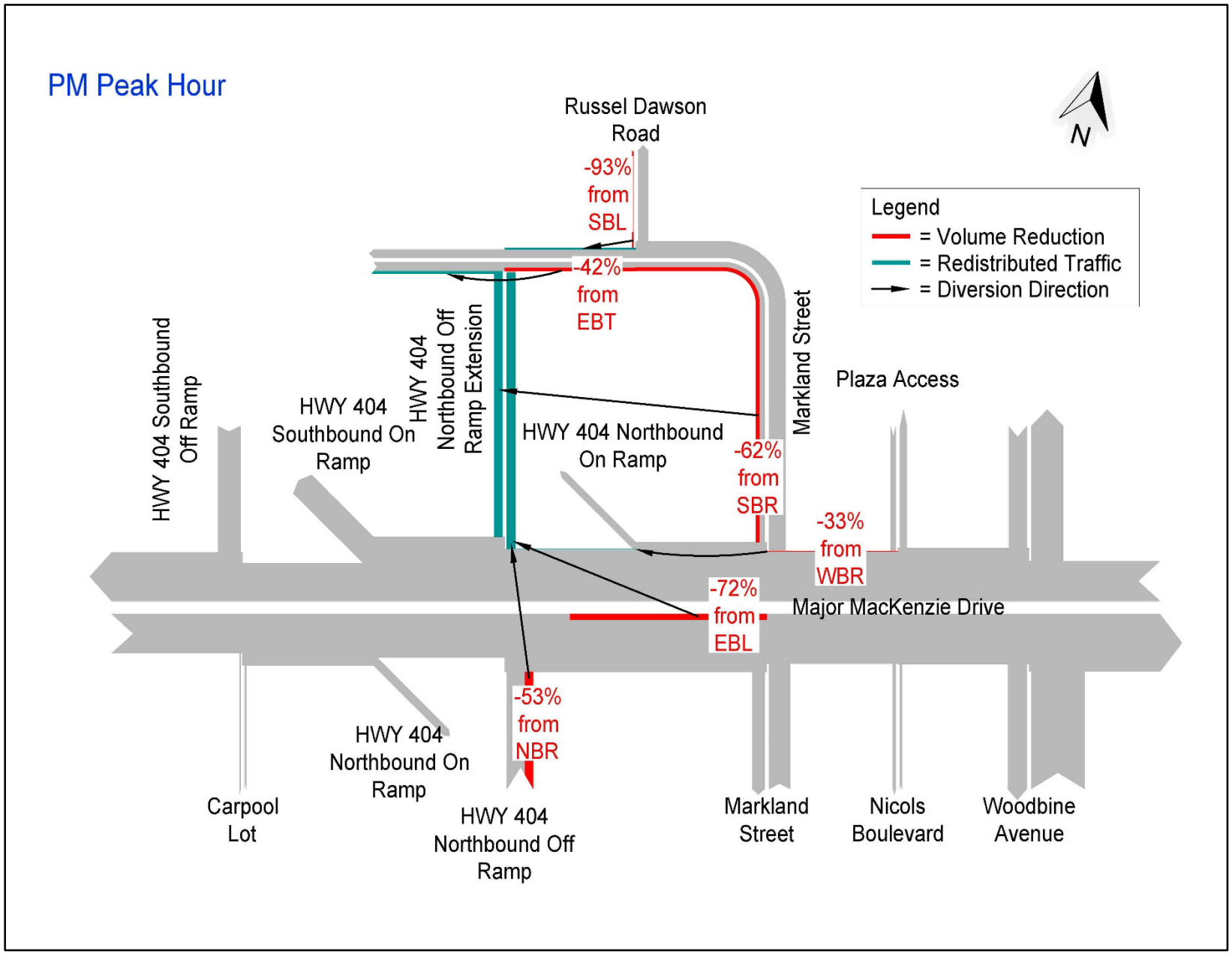


Exhibit 4-7: Trip Pattern Change Assumptions – PM Peak Hour



During correspondence with City staff, it was noted that the planned two lanes per direction for the future Highway 404 east-west overpass should provide sufficient capacity to accommodate higher link volumes than considered in the ABM model. Specifically, it was assumed that the 500 vehicles per lane capacity from the ABM model can be increased to 600 vehicles per lane. Based on this, it was assumed that 200 westbound vehicles will divert from using the study intersections in favour of the future Highway 404 overpass for westbound oriented travel.

This corresponds to less southbound right-turn traffic at the Highway 404 / Major Mackenzie Drive, Markland Street / Major Mackenzie Drive, and Woodbine Avenue / Major Mackenzie Drive intersections and the associated westbound through movements along Major Mackenzie Drive. Our future conditions analysis proportionally reported 200 southbound right-turn vehicles from these three study area intersections toward the westbound crossing of the future Highway 404 bypass.

4.5 Future Anticipated Active Travel Forecast

The York Region ABM provides origin and destination active travel forecasts for 2051. A growth rate for pedestrian and cyclist travel was developed by comparing the 2016 and 2051 origin and destination active travel trips for the Traffic Analysis Zones within the study area. The active travel growth rates for the study area for the AM and PM peak periods are presented in **Table 4-2**.

Table 4-2: Active Travel Growth Rates

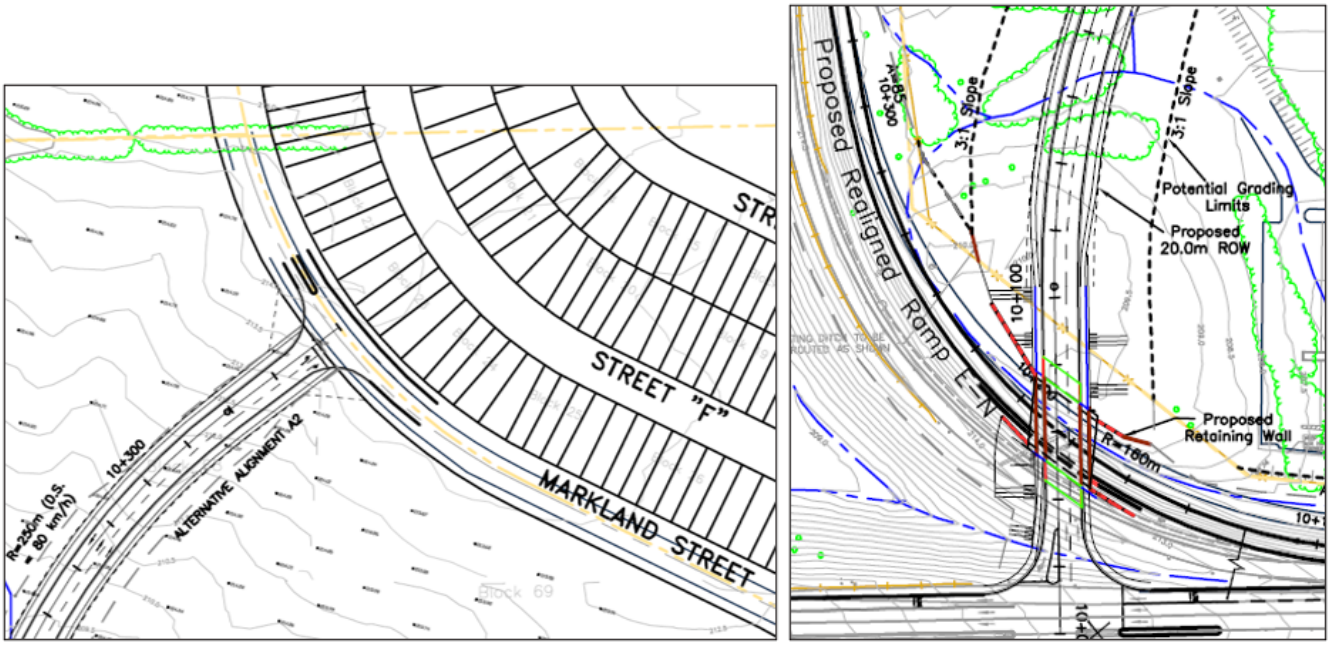
	Pedestrian	Cyclist
AM	0.29%	0.93%
PM	0.63%	0.80%

As the future growth rates for the study area are relatively low and existing active travel counts presented in **Sections 3.6** and **3.7** are negligible, it is expected that active travel volumes will see minor growth into 2051 according to the York Region ABM.

5 2051 Future Conditions Analysis

From the 2009 MCEA Study, the preferred lane configuration of the proposed off-ramp extension from Major Mackenzie Drive to Markland Street is illustrated in detail in **Exhibit 5-1**.

Exhibit 5-1: Preferred Alternative Details (Intersection with Markland Street and Major Mackenzie Drive)



Source: Class Environmental Assessment Study, September 2009, Exhibit 6-1 Preferred Alternative

The 2009 MCEA preferred design included two northbound lanes and one southbound lane. Potential refinements to the previous design are analyzed in this section such as:

- An expansion of the off-ramp extension from three lanes (two northbound, one southbound) to four lanes (two northbound, two southbound);
- Southbound traffic at the off-ramp extension would be restricted to right turns only at Major Mackenzie Drive, similar to the off-ramp extension southbound lane configuration at Highway 7;
- The mode of traffic control at the off-ramp extension / Markland Street intersection is currently undefined and is investigated in this report, with potential solutions involving a traffic signal; and,
- Pedestrian and cyclist modes are considered in these potential traffic control alternatives.

5.1 Methodology

The Synchro traffic model coding methodology and assumptions were kept consistent for the three scenarios outlined in **Section 4**, which are the following:

- The widening of Major Mackenzie Drive to 6 lanes to accommodate transit/HOV lanes in both directions is assumed throughout the extents of the study area.
- To model the HOV lane in Synchro, a lane utilization factor of 0.85 was calculated based on the lane capacity assumed in the York Region ABM model and applied to the relevant lane groups in the three 2051 Synchro model scenarios.
- Peak hour factors on an intersection level were based on existing traffic count data.
    - For new intersections that don't currently exist, peak hour factors are based on adjacent existing intersections.
    - For intersections that operate over capacity, an intersection PHF of 1.0 was applied.
- The general lane configuration was based on the Class Environmental Assessment Study (September 2009), with traffic signal operations based on the existing Highway 7 / Highway 404 northbound off-ramp extension (i.e. Aristotle Avenue) operations,
- A speed limit of 50 km/h along the off-ramp extension is deemed appropriate to be consistent with the Markland Street posted speed limit and to facilitate safer operations with other road users (i.e., pedestrians, cyclists).

The 2051 forecasted traffic volumes for the do-nothing and off-ramp extension scenarios are illustrated in **Exhibit 5-2** and **Exhibit 5-3**, respectively.

The three future traffic operations scenarios are separately discussed in the following sections. A side-by-side comparison of traffic operation scenarios is tabulated in **Section 6**.

Exhibit 5-2: *2051 "Do Nothing" Scenario Traffic Volumes*

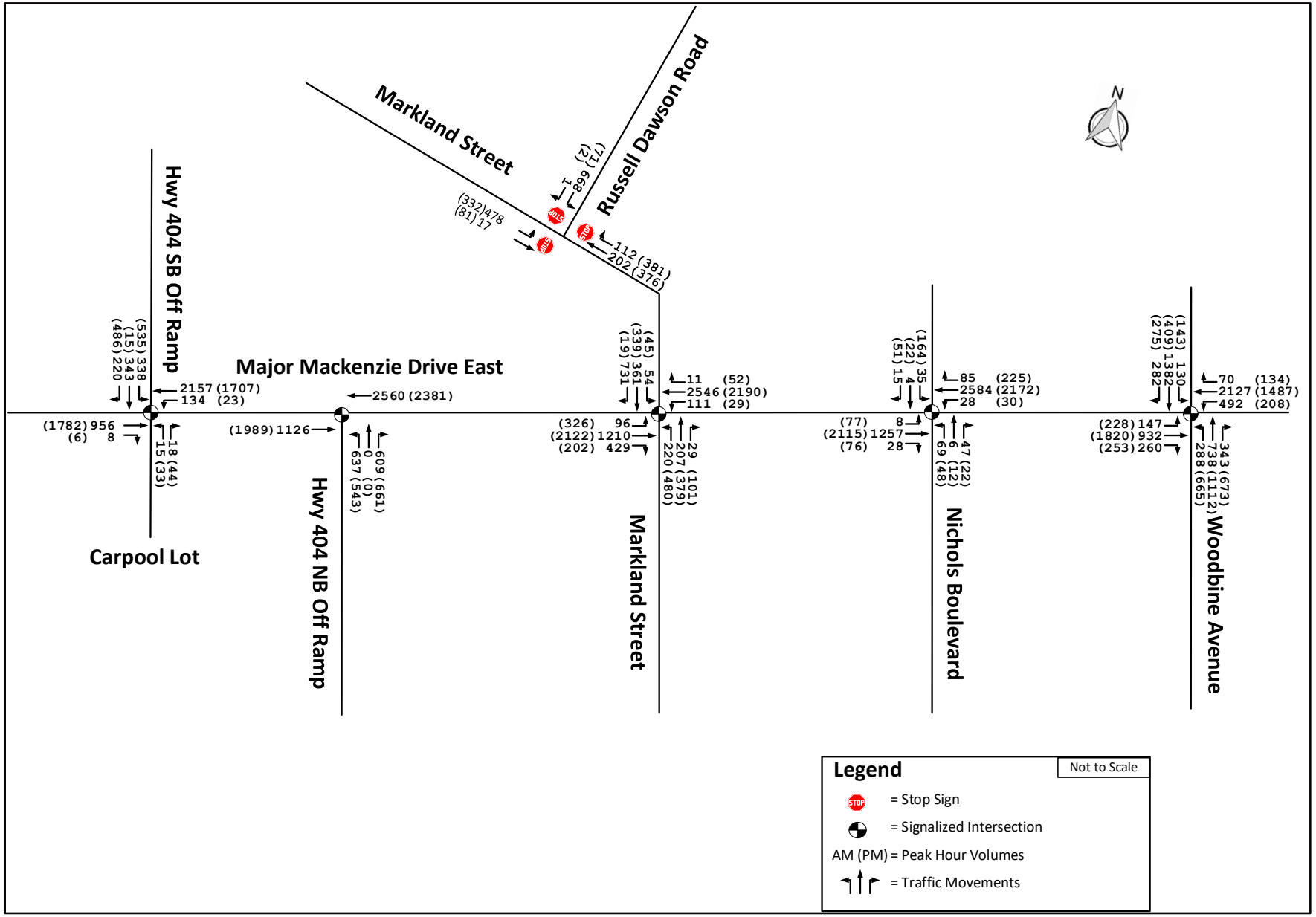
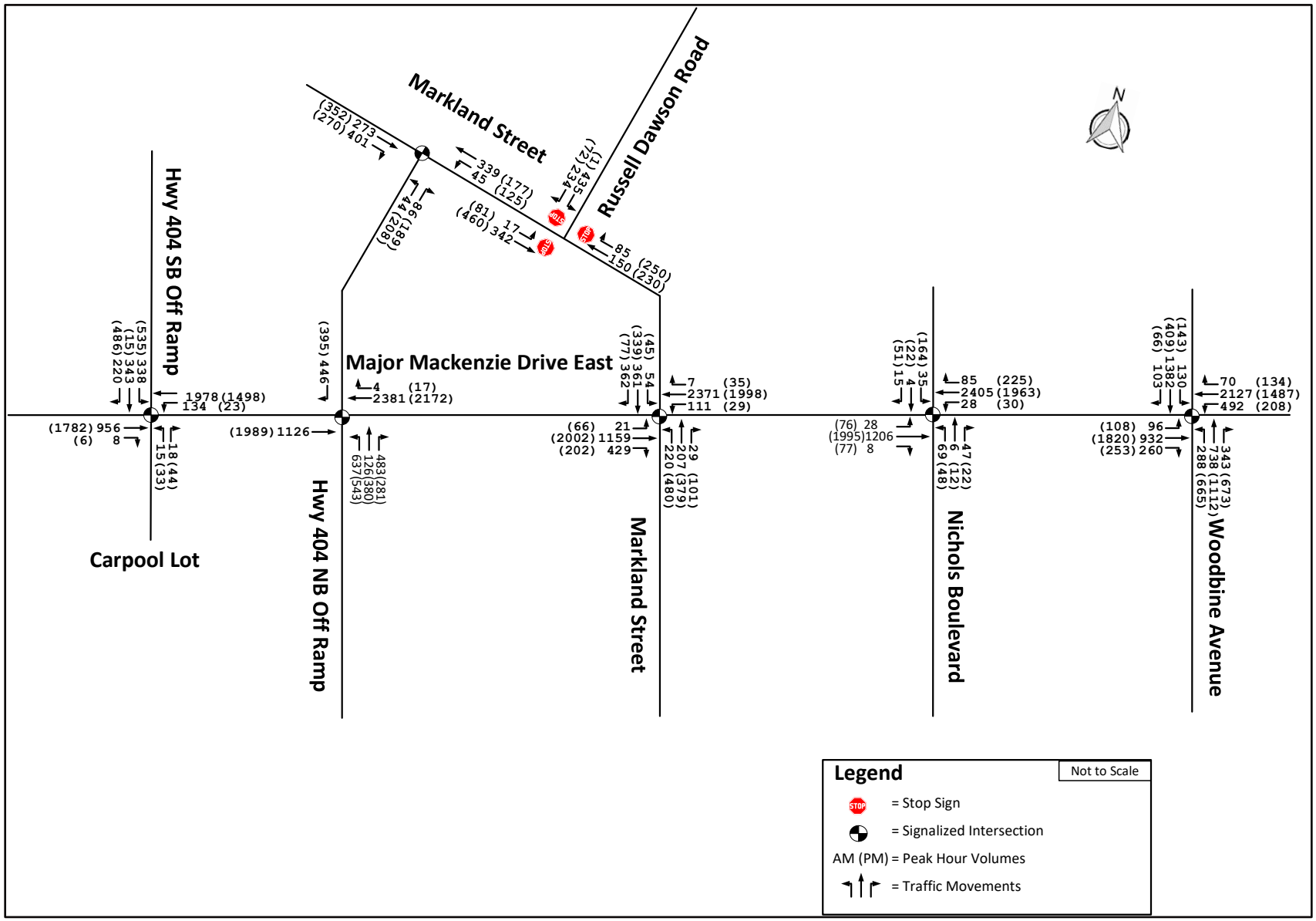


Exhibit 5-3: 2051 Off-Ramp Extension Scenario Traffic Volumes



5.2 Scenario 1: Without Off-Ramp Extension ("Do Nothing")

The results of Scenario 1 traffic operations analysis for the study area intersections are presented in this section. Full Synchro model traffic operations data outputs (based on the Highway Capacity Manual methodology) for this scenario are presented in **Appendix A**. As documented in **Exhibit 4-2**, this scenario assumes that the widened Major Mackenzie Drive 6-lane cross section configuration with curbside HOV lanes will be completed by the 2051 horizon year.

5.2.1 Signalized Intersections

The results of the 2051 Scenario 1 Future Conditions traffic operations analysis for signalized intersections are presented in **Table 5-1**.

Table 5-1: 2051 Scenario 1 Future Conditions Traffic Operations - Signalized Intersections

Intersection	Intersection			Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Length (m)
	LOS	Delay (s)	v/c Ratio						
AM Peak Hour									
Carpool Lot/Highway 404 Southbound Ramp & Major Mackenzie Drive	D	37.4	0.87	EBT	C	24.4	0.43	89.1	-
				WBL	B	19	0.5	21.3	55
				WBT	C	27.4	0.81	193.8	-
				NBL	E	67.2	0.26	11.9	-
				NBR	E	64.3	0.02	-	-
				SBL	E	59.6	0.78	132.6	-
				SBT	F	106.2	1.03	208.9	-
				SBR	D	44.9	0.31	46.1	170
Highway 404 Northbound Ramp & Major Mackenzie Drive	C	29.2	0.86	EBT	A	7.4	0.36	39.9	-
				WBT	A	8.7	0.79	66.1	-
				NBL	F	94.3	1.04	173.4	-
				NBR	F	83.7	0.93	165.6	180
Markland Street & Major Mackenzie Drive	F	81.5	1.19	EBL	D	48.8	0.62	21.8	90
				EBT	C	21.8	0.73	118.5	-
				WBL	D	46.1	0.61	27.6	160
				WBT	E	63.3	1.07	330.6	-
				NBL	F	114.8	1.03	95.3	180
				NBT	D	35	0.31	63.6	-
				NBR	C	31.5	0.02	-	97
				SBL	D	41.9	0.18	23.9	60
				SBT	D	54.1	0.73	127.9	-
				SBR	F	310.2	1.55	**323.1**	-

Intersection	Intersection			Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Length (m)
	LOS	Delay (s)	v/c Ratio						
Nichols Blvd/Plaza & Major Mackenzie Drive	B	10.9	0.72	EBL	A	7.8	0.12	0.5	55
				EBT	A	2.5	0.37	30.8	-
				WBL	A	2.8	0.14	1.6	45
				WBT	B	12.1	0.77	47.8	-
				NBL	E	58.8	0.42	29.5	70
				NBT	D	54.8	0.06	12	-
				SBL	E	56.4	0.22	17.3	30
				SBT	D	54.6	0.03	7.4	-
Woodbine Avenue & Major Mackenzie Drive	F	159.2	1.7	EBL	F	127.9	0.98	64.6	120
				EBT	E	55.5	0.9	122.5	-
				WBL	F	278.4	1.49	237.9	300
				WBT	F	295.5	1.55	476.1	-
				WBR	C	28.5	0.04	5.1	120
				NBL	F	426	1.81	**161.4**	150
				NBT	D	37.6	0.57	107.6	-
				NBR	C	32.3	0.21	20.1	70
				SBL	C	29.9	0.52	33.7	165
				SBT	F	84.6	1.05	261.2	-
				SBR	C	34.5	0.35	55.5	70
PM Peak Hour									
Carpool Lot/Highway 404 Southbound Ramp & Major Mackenzie Drive	D	35.5	0.75	EBT	C	28.1	0.71	184.2	-
				WBL	B	14.6	0.24	2.6	55
				WBT	B	16.8	0.61	151.4	-
				NBL	E	65.3	0.34	20.3	-
				NBR	E	62.2	0.03	-	-
				SBL	F	85	0.94	165.7	-
				SBT	F	89.6	0.95	165.9	-
				SBR	E	55.9	0.68	95.7	170
Highway 404 Northbound Ramp & Major Mackenzie Drive	D	37.1	0.84	EBT	C	21.2	0.68	182.3	-
				WBT	D	40	0.82	224.9	-
				NBL	D	53.2	0.84	137.3	-
				NBR	E	67.6	0.9	171.8	180
Markland Street & Major Mackenzie Drive	F	93.7	1.88	EBL	F	505.3	2.00	**181.4**	90
				EBT	D	43.5	0.97	284.8	-
				WBL	E	55.2	0.32	7.5	160
				WBT	E	63.1	0.99	300.1	-
				NBL	F	286.7	1.52	**218.2**	180

Intersection	Intersection			Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Length (m)
	LOS	Delay (s)	v/c Ratio						
				NBT	D	36.1	0.52	104.9	-
				NBR	C	29.4	0.06	11.3	97
				SBL	D	47.2	0.22	21	60
				SBT	E	67	0.83	119.5	-
				SBR	D	44.7	0.01	-	-
Nichols Boulevard/Plaza & Major Mackenzie Drive	B	10.7	0.75	EBL	E	62.7	0.51	12.6	55
				EBT	A	2.2	0.61	16.2	-
				WBL	B	10.8	0.5	3.7	45
				WBT	B	10.6	0.77	97.3	-
				NBL	D	51	0.21	21.3	70
				NBT	D	49.7	0.09	14.2	-
				SBL	E	65.4	0.72	62.2	30
				SBT	D	49.8	0.11	17.1	-
Woodbine Avenue & Major Mackenzie Drive	F	102.3	1.59	EBL	F	301.5	1.48	**122.7**	120
				EBT	D	53.1	1.05	269.8	-
				WBL	F	200.2	1.28	104.9	300
				WBT	E	68.2	1.01	270.5	-
				WBR	C	27.2	0.09	15.5	120
				NBL	F	372.6	1.71	**337.7**	150
				NBT	E	59.7	0.93	197.7	-
				NBR	F	125.9	1.12	**254.8**	70
				SBL	D	51.1	0.76	51.9	165
				SBT	D	37.7	0.35	60.5	-
				SBR	D	38	0.36	58.2	70

As shown in **Table 5-1**, all signalized intersections in the study area except Nichols Boulevard & Major Mackenzie Drive experience capacity constraints.

It should be noted that all signal timing plans along the Major Mackenzie corridor within the study area have 140 second cycle lengths, which contribute to longer delays despite below capacity v/c ratios and shorter queue lengths that do not exceed storage capacity.

The specific movements at the **Carpool Lot / Highway 404 Southbound Ramp & Major Mackenzie Drive** intersection that are forecast to experience capacity constraints are:

- During the weekday AM peak hour:
    - The southbound through movement is forecast to exceed capacity (v/c ratio of 1.03) and experience a delay of 106.2 seconds.

The specific movements at the **Highway 404 Northbound Ramp & Major Mackenzie Drive** intersection that are forecast to experience capacity constraints are:

- During the weekday AM peak hour:
    - The northbound left movement is forecast to exceed capacity (v/c ratio of 1.04) and experience a delay of 94.3 seconds.

The specific movements at the **Markland Street / Major Mackenzie Drive** intersection that are forecast to experience capacity constraints are:

- During the weekday AM peak hour:
    - The southbound right turn is forecast to exceed capacity (v/c ratio of 1.55) and experience a delay of 310.2 seconds.
    - The westbound through movement is forecast to exceed capacity (v/c ratio of 1.07) and experience a delay of 63.3 seconds.
    - The northbound left turn is forecast to exceed capacity (v/c ratio of 1.03) and experience a delay of 114.8 seconds.
- During the weekday PM peak hour:
    - The eastbound left turn is forecast to exceed capacity (v/c ratio of 2.00) and experience a delay of 505.3 seconds. Additionally, the 95th percentile queue length exceeds the available storage length by approximately twelve car lengths.
    - The northbound left turn is forecast to exceed capacity (v/c ratio of 1.52) and experience a delay of 286.7 seconds. Additionally, the 95th percentile queue length exceeds the available storage length by approximately five car lengths.

The specific movements at the **Woodbine Avenue & Major Mackenzie Drive** intersection that are forecast to experience capacity constraints:

- During the weekday AM peak hour:
    - The westbound left turn is forecast to exceed capacity (v/c ratio of 1.49) and experience a delay of 278.4 seconds.
    - The westbound through movement is forecast to exceed capacity (v/c ratio of 1.55) and experience a delay of 295.5 seconds.
    - The northbound left turn is forecast to exceed capacity (v/c ratio of 1.81) and experience a delay of 426 seconds.
    - The southbound through movement is forecast to exceed capacity (v/c ratio of 1.05) and experience a delay of 84.6 seconds.
- During the weekday PM peak hour:
    - The eastbound left turn is forecast to exceed capacity (v/c ratio of 1.48) and experience a delay of 301.5 seconds.
    - The eastbound through movement is forecast to exceed capacity (v/c ratio of 1.05) and experience a delay of 53.1 seconds.
    - The westbound left turn is forecast to exceed capacity (v/c ratio of 1.28) and experience a delay of 200.2 seconds.

- The westbound through movement is forecast to exceed capacity (v/c ratio of 1.01) and experience a delay of 68.2 seconds.
- The northbound left turn is forecast to exceed capacity (v/c ratio of 1.71) and experience a delay of 372.6 seconds. Additionally, the 95th percentile queue length exceeds the available storage length by approximately twenty-five car lengths.
- The northbound right turn is forecast to exceed capacity (v/c ratio of 1.12) and experience a delay of 125.9 seconds.

5.2.2 Unsignalized Intersections

The traffic operations analysis for the unsignalized intersection at Markland Street and Russell Dawson Road are presented in **Table 5-2**. During the weekday AM peak hour, the eastbound through and southbound left turn movements are forecast to experience significant congestion. In the PM peak hour, the westbound through movement is forecast to be over capacity.

Table 5-2: 2051 Future Conditions Traffic Operations - Unsignalized Intersections

Intersection	Intersection Delay (s)	Lane	Lane LOS	Lane Delay (s)	Lane v/c Ratio
AM Peak Hour					
Markland Street & Russell Dawson Road	147.7	EBL	B	10.7	0.04
		EBT	F	70.8	1.02
		WBT	C	23.6	0.67
		SBL	F	264.7	1.52
		SBR	A	8.3	0
PM Peak Hour					
Markland Street & Russell Dawson Road	52.4	EBL	A	8.7	0.14
		EBT	B	13.2	0.53
		WBT	F	78.2	1.08
		SBL	B	10.8	0.16
		SBR	A	8.2	0

5.3 Scenario 2: Highway 404 Northbound Off-Ramp Extension (Three-Lane Cross Section)

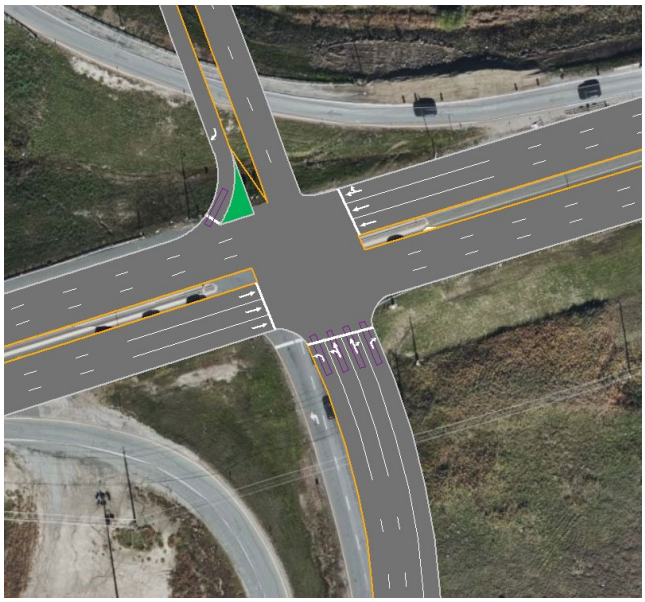
The results of Scenario 2 traffic operations analysis for the study area intersections are presented in this section. Full Synchro model traffic operations data outputs for this scenario are presented in **Appendix A**. As configured in **Exhibit 4-3**, this scenario assumes a three-lane cross section for the northbound off-ramp extension (2 lanes northbound, 1 lane southbound).

5.3.1 Signalized Intersections

For the Highway 404 Northbound Off-Ramp / Major Mackenzie Drive intersection, the existing traffic signal cycle length of 140 seconds is maintained in this scenario. Green time from the existing east-west and north phases is reallocated to facilitate a new southbound right-turn phase.

The phasing from the Highway 7 and Aristotle Avenue intersection was utilized to develop a timing plan for this intersection. The southbound right-turn movement is assumed to be signed with "no right turn on red" restrictions. The Scenario 2 lane configuration is illustrated **Exhibit 5-4**.

Exhibit 5-4: Scenario 2 Highway 404 Northbound Off-Ramp / Major Mackenzie Drive Lane Configuration



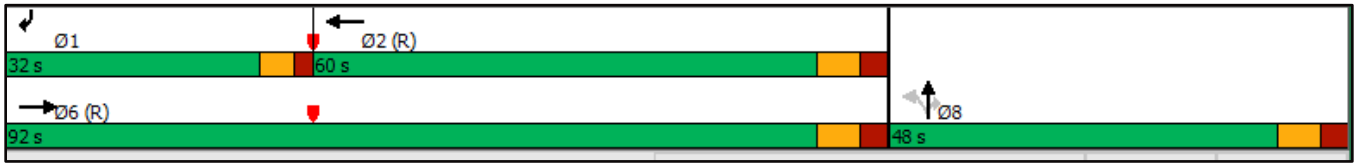
The specifics of the optimized signal timing plan at the Highway 404 Northbound Ramp / Major Mackenzie Drive intersection for the AM peak period are shown in **Exhibit 5-5**.

Exhibit 5-5: 2051 Scenario 2 AM Peak Period Signal Timing Plan



The specifics of the optimized signal timing plan at the Highway 404 Northbound Ramp / Major Mackenzie Drive intersection for the PM peak period are shown in **Exhibit 5-6**.

Exhibit 5-6: 2051 Scenario 2 PM Peak Period Optimized Signal Timing Plan



The resulting traffic operations for the signalized intersections are summarized in **Table 5-3**.

Table 5-3: 2051 3-Lanes Future Conditions Traffic Operations - Signalized Intersections

Intersection	Intersection			Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Length (m)
	LOS	Delay (s)	v/c Ratio						
AM Peak Hour									
Carpool Lot/ Highway 404 Southbound Ramp & Major Mackenzie Drive	D	43.1	0.83	EBT	C	24.4	0.43	89.1	-
				WBL	C	28.4	0.5	24.6	55
				WBT	D	37.3	0.75	163.9	-
				NBL	E	67.2	0.26	11.9	-
				NBR	E	64.3	0.02	-	-
				SBL	E	59.6	0.78	132.6	-
				SBT	F	106.2	1.03	208.9	-
				SBR	D	44.9	0.31	46.1	170
Highway 404 Northbound Ramp & Major Mackenzie Drive	F	80.7	1.09	EBT	A	9.5	0.35	38.5	-
				WBT	F	108.5	1.18	352	-
				NBL	E	59.1	0.79	124.1	-
				NBT	E	55.7	0.8	108.7	-
				NBR	D	50.4	0.62	86	180
				SBR	F	182.9	1.24	217.9	-
Markland Street & Major Mackenzie Drive	D	35.2	1.04	EBL	B	14.4	0.19	2.6	90
				EBT	B	14.9	0.66	74	-
				WBL	D	43.9	0.57	27.1	160
				WBT	C	23.2	0.89	287	-
				NBL	F	211.3	1.29	107.2	180
				NBT	D	38.7	0.34	63.6	-
				NBR	C	34.7	0.02	-	97
				SBL	D	45.8	0.21	23.9	60
				SBT	E	67.3	0.85	127.9	-
				SBR	E	59.2	0.74	97.3	-
Nichols Boulevard /Plaza & Major Mackenzie Drive	B	10.3	0.68	EBL	A	6.4	0.12	0.6	55
				EBT	A	2.4	0.36	29.8	-
				WBL	A	2.3	0.13	1	45
				WBT	B	11.1	0.72	31.7	-
				NBL	E	58.8	0.42	29.5	70
				NBT	D	54.8	0.06	12	-
				SBL	E	56.4	0.22	17.3	30
				SBT	D	54.6	0.03	7.4	-
Woodbine Avenue & Major	F	160	1.7	EBL	E	59.6	0.65	29.5	120
				EBT	D	50.8	0.9	120.1	-
				WBL	F	278.4	1.49	237.9	300

Intersection	Intersection			Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Length (m)
	LOS	Delay (s)	v/c Ratio						
Mackenzie Drive				WBT	F	292.9	1.54	476.1	-
				WBR	C	28.4	0.04	5.1	120
				NBL	F	426	1.81	**161.4**	150
				NBT	D	37.6	0.57	107.6	-
				NBR	C	32.3	0.21	20.1	70
				SBL	C	29.9	0.52	33.7	165
				SBT	F	84.6	1.05	261.2	-
				SBR	C	30.7	0.07	7.4	70
Off-Ramp Extension & Markland Street	B	11.8	0.42	EBT	B	13	0.63	66.6	-
				WBL	A	9.6	0.21	8	50
				WBT	A	9	0.35	34.7	-
				NBL	B	13.9	0.07	9.1	-
				NBR	B	13.8	0.05	7.7	-
PM Peak Hour									
Carpool Lot/ Highway 404 Southbound Ramp & Major Mackenzie Drive	D	38.4	0.74	EBT	C	28.1	0.71	184.2	-
				WBL	C	28.2	0.24	2.9	55
				WBT	C	22.6	0.53	80	-
				NBL	E	65.3	0.34	20.3	-
				NBR	E	62.2	0.03	-	-
				SBL	F	85	0.94	165.7	-
				SBT	F	89.6	0.95	165.9	-
				SBR	E	55.9	0.68	95.7	170
Highway 404 Northbound Ramp & Major Mackenzie Drive	D	40	1	EBT	A	6.5	0.6	67.4	-
				WBT	D	39.3	1.02	268.2	-
				NBL	E	57	0.75	117.2	-
				NBT	E	55.4	0.8	113.6	-
				NBR	D	47.6	0.52	73.8	180
				SBR	F	169.6	1.19	195	-
Markland Street & Major Mackenzie Drive	E	63.7	1.18	EBL	D	43.9	0.48	18.8	90
				EBT	C	34.8	0.92	292.3	-
				WBL	E	56.7	0.32	8	160
				WBT	D	50.6	0.87	253.8	-
				NBL	F	286.7	1.52	**218.2**	180
				NBT	D	36.1	0.52	104.9	-
				NBR	C	29.4	0.06	11.3	97
				SBL	D	47.2	0.22	21	60
				SBT	E	67	0.83	119.5	-

Intersection	Intersection			Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Length (m)
	LOS	Delay (s)	v/c Ratio						
				SBR	D	45	0.05	8.2	-
Nichols Boulevard /Plaza & Major Mackenzie Drive	A	9.5	0.7	EBL	D	53.3	0.51	13.6	55
				EBT	A	1.8	0.57	11.2	-
				WBL	A	7.9	0.41	2.9	45
				WBT	A	8.2	0.7	75.4	-
				NBL	D	51	0.21	21.3	70
				NBT	D	49.6	0.08	13.5	-
				SBL	E	65.4	0.72	62.2	30
				SBT	D	49.8	0.11	17.1	-
Woodbine Avenue & Major Mackenzie Drive	F	97	1.48	EBL	E	67.3	0.71	39.4	120
				EBT	D	53.2	1.05	269.4	-
				WBL	F	200.3	1.28	104.9	300
				WBT	E	67.2	1.01	270.5	-
				WBR	C	27.1	0.09	15.5	120
				NBL	F	372.6	1.71	**337.7**	150
				NBT	E	59.7	0.93	197.7	-
				NBR	F	125.9	1.12	**254.8**	70
				SBL	D	51.1	0.76	51.9	165
				SBT	D	37.7	0.35	60.5	-
				SBR	C	33.9	0.04	4.7	70
Off-Ramp Extension & Markland Street	B	12.2	0.51	EBT	B	10.6	0.58	60.4	-
				WBL	B	11.6	0.43	19.6	50
				WBT	A	6.5	0.16	16.5	-
				NBL	B	18.6	0.39	34.9	-
				NBR	B	15.7	0.12	11.9	-

As shown in **Table 5-3**, some of the study area signalized intersections anticipate congested operations except for the Nichols Boulevard /Plaza & Major Mackenzie Drive intersection, and Carpool Lot / Highway 404 Southbound Ramp & Major Mackenzie Drive intersection.

It should be noted that all signal timing plans along the Major Mackenzie corridor in this report's study area have 140 second cycle lengths, which contribute to longer delays despite below capacity v/c ratios and shorter queue lengths that do not exceed storage capacity.

The specific movements at the **Highway 404 Northbound Ramp & Major Mackenzie Drive** intersection that are forecast to experience capacity constraints are:

- During the weekday AM peak hour:

  - The westbound through movement is forecast to exceed capacity (v/c ratio of 1.18) and experience a delay of 108.5 seconds.
  - The southbound right turn is forecast to exceed capacity (v/c ratio of 1.24) and experience a delay of 182.9 seconds.
- During the weekday PM peak hour:
  - The westbound through movement is forecast to exceed capacity (v/c ratio of 1.02) and experience a delay of 39.3 seconds.
  - The southbound right turn is forecast to exceed capacity (v/c ratio of 1.19) and experience a delay of 169.6 seconds.

The specific movements at the **Markland Street / Major Mackenzie Drive** intersection that are forecast to experience capacity constraints are:

- During the weekday AM peak hour:
  - The northbound left turn is forecast to exceed capacity (v/c ratio of 1.29) and experience a delay of 211.3 seconds.
- During the weekday PM peak hour:
  - The northbound left turn is forecast to exceed capacity (v/c ratio of 1.52) and experience a delay of 286.7 seconds. Additionally, the 95th percentile queue length exceeds the available storage length by approximately five car lengths.

The specific movements at the **Woodbine Avenue & Major Mackenzie Drive** and at the **Carpool Lot / Highway 404 Southbound Ramp & Major Mackenzie Drive** intersections that are forecast to experience capacity constraints are similar to those outlined in **Section 5.2.1**.

5.3.2 Unsignalized Intersections

The traffic operations analysis for unsignalized intersections are presented in **Table 5-4**.

Table 5-4: 2051 3-Lanes Future Conditions Traffic Operations - Unsignalized Intersections

Intersection	Intersection Delay (s)	Lane	Lane LOS	Lane Delay (s)	Lane v/c Ratio
AM Peak Hour					
Markland Street & Russell Dawson Road	28.2	EBL	B	10.6	0.04
		EBT	D	25.2	0.72
		WBT	C	16.1	0.48
		SBL	E	46.7	0.91
		SBR	B	11.6	0.41
PM Peak Hour					
Markland Street & Russell Dawson Road	17.1	EBL	A	8.4	0.14
		EBT	C	18.7	0.71
		WBT	C	18.2	0.69
		SBL	A	9.3	0
		SBR	A	9	0.13

At Markland Street & Russell Dawson Road, the southbound left lane is forecast to approach capacity in the AM peak period. There are no movements of concern in the PM peak hour for this intersection.

5.4 Scenario 3: Highway 404 Northbound Off-Ramp Extension (Four Lane Cross Section)

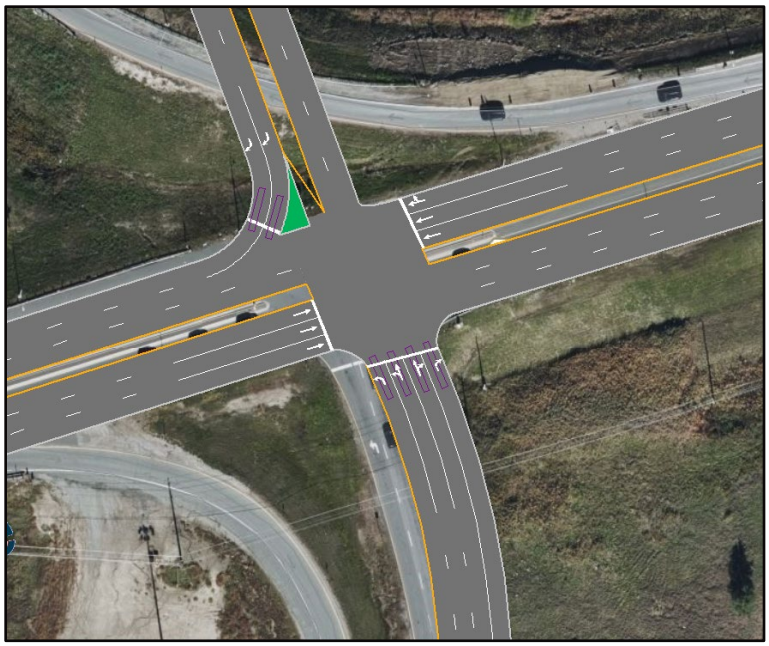
The results of Scenario 3 traffic operations analysis for the study area intersections are presented in this section. Full Synchro model traffic operations data outputs for this scenario are presented in **Appendix A**. This road cross section presumes two lanes northbound with a two-lane southbound arrangement.

5.4.1 Signalized Intersections

For the Highway 404 Northbound Off-Ramp / Major Mackenzie Drive intersection, the existing traffic signal cycle length of 140 seconds is maintained in this scenario. Green time from the existing east-west and north phases is reallocated to facilitate a new southbound right-turn phase.

The phasing from the Highway 7 and Aristotle Avenue intersection was utilized to develop a timing plan for this intersection. The southbound right-turn movement is assumed to be signed with "no right turn on red" restrictions. The Scenario 3 lane configuration is illustrated in **Exhibit 5-7**.

Exhibit 5-7: Scenario 3 Highway 404 Northbound Off-Ramp / Major Mackenzie Drive Lane Configuration



The specifics of the optimized signal timing plan at the Highway 404 Northbound Ramp / Major Mackenzie Drive intersection for the AM peak period are shown in **Exhibit 5-8**.

Exhibit 5-8: 2051 Scenario 3 AM Peak Period Signal Timing Plan



The specifics of the optimized signal timing plan at the Highway 404 Northbound Ramp / Major Mackenzie Drive intersection for the PM peak period are shown in **Exhibit 5-9**.

Exhibit 5-9: 2015 Scenario 3 PM Peak Period Optimized Signal Timing Plan



The resulting traffic operations for the signalized intersections are summarized in **Table 5-5**.

Table 5-5: 2051 4-Lanes Future Conditions Traffic Operations - Signalized Intersections

Intersection	Intersection			Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Length (m)
	LOS	Delay (s)	v/c Ratio						
AM Peak Hour									
Carpool Lot/ Highway 404 Southbound Ramp & Major Mackenzie Drive	D	40.6	0.83	EBT	C	24.4	0.43	89.1	-
				WBL	C	24.1	0.5	24	55
				WBT	C	32.6	0.75	165.7	-
				NBL	E	67.2	0.26	11.9	-
				NBR	E	64.3	0.02	-	-
				SBL	E	59.6	0.78	132.6	-
				SBT	F	106.2	1.03	208.9	-
				SBR	D	44.9	0.31	46.1	170
Highway 404 Northbound Ramp & Major Mackenzie Drive	D	40.7	0.96	EBT	A	10	0.35	38.5	-
				WBT	C	31.2	1	310.1	-
				NBL	E	59.1	0.79	124.1	-
				NBT	E	55.7	0.8	108.7	-
				NBR	D	50.4	0.62	86	180
				SBR	F	127.6	1.08	115.3	-
Markland Street & Major Mackenzie Drive	D	35.1	1.04	EBL	B	14.5	0.19	2.5	90
				EBT	B	14.6	0.66	74	-
				WBL	D	43.9	0.57	27.1	160
				WBT	C	23.2	0.89	287	-
				NBL	F	211.3	1.29	107.2	180

Intersection	Intersection			Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Length (m)
	LOS	Delay (s)	v/c Ratio						
				NBT	D	38.7	0.34	63.6	-
				NBR	C	34.7	0.02	-	97
				SBL	D	45.8	0.21	23.9	60
				SBT	E	67.3	0.85	127.9	-
				SBR	E	59.2	0.74	97.3	-
Nichols Boulevard /Plaza & Major Mackenzie Drive	B	10.3	0.68	EBL	A	6.4	0.12	0.6	55
				EBT	A	2.4	0.36	29.8	-
				WBL	A	2.3	0.13	1	45
				WBT	B	11.1	0.72	31.7	-
				NBL	E	58.8	0.42	29.5	70
				NBT	D	54.8	0.06	12	-
				SBL	E	56.4	0.22	17.3	30
				SBT	D	54.6	0.03	7.4	-
Woodbine Avenue & Major Mackenzie Drive	F	160.1	1.7	EBL	E	59.8	0.65	29.5	120
				EBT	D	51.6	0.9	119.9	-
				WBL	F	278.4	1.49	237.9	300
				WBT	F	292.9	1.54	476.1	-
				WBR	C	28.4	0.04	5.1	120
				NBL	F	426	1.81	**161.4**	150
				NBT	D	37.6	0.57	107.6	-
				NBR	C	32.3	0.21	20.1	70
				SBL	C	29.9	0.52	33.7	165
				SBT	F	84.6	1.05	261.2	-
				SBR	C	30.7	0.07	7.4	70
Off-Ramp Extension & Markland Street	B	11.8	0.42	EBT	B	13	0.63	66.6	-
				WBL	A	9.6	0.21	8	50
				WBT	A	9	0.35	34.7	-
				NBL	B	13.9	0.07	9.1	-
				NBR	B	13.8	0.05	7.7	-
PM Peak Hour									
Carpool Lot/ Highway 404 Southbound Ramp & Major Mackenzie Drive	D	38	0.74	EBT	C	28.1	0.71	184.2	-
				WBL	C	24.4	0.24	3.2	55
				WBT	C	21.3	0.53	91.2	-
				NBL	E	65.3	0.34	20.3	-
				NBR	E	62.2	0.03	-	-
				SBL	F	85	0.94	165.7	-
				SBT	F	89.6	0.95	165.9	-

Intersection	Intersection			Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Length (m)
	LOS	Delay (s)	v/c Ratio						
				SBR	E	55.9	0.68	95.7	170
Highway 404 Northbound Ramp & Major Mackenzie Drive	C	27.4	0.88	EBT	A	6.4	0.6	65.5	-
				WBT	B	18.1	0.9	110.7	-
				NBL	E	57	0.75	117.2	-
				NBT	E	55.4	0.8	113.6	-
				NBR	D	47.6	0.52	73.8	180
				SBR	F	102.6	0.99	99.6	-
Markland Street & Major Mackenzie Drive	E	63.8	1.18	EBL	D	44.7	0.48	19.9	90
				EBT	D	35	0.92	292.3	-
				WBL	E	56.7	0.32	8	160
				WBT	D	50.6	0.87	253.8	-
				NBL	F	286.7	1.52	**218.2**	180
				NBT	D	36.1	0.52	104.9	-
				NBR	C	29.4	0.06	11.3	97
				SBL	D	47.2	0.22	21	60
				SBT	E	67	0.83	119.5	-
				SBR	D	45	0.05	8.2	-
Nichols Boulevard /Plaza & Major Mackenzie Drive	A	9.5	0.7	EBL	D	53.4	0.51	13.6	55
				EBT	A	1.8	0.57	11.2	-
				WBL	A	7.9	0.41	2.9	45
				WBT	A	8.2	0.7	75.4	-
				NBL	D	51	0.21	21.3	70
				NBT	D	49.6	0.08	13.5	-
				SBL	E	65.4	0.72	62.2	30
				SBT	D	49.8	0.11	17.1	-
Woodbine Avenue & Major Mackenzie Drive	F	96.9	1.48	EBL	E	67.9	0.71	39.4	120
				EBT	D	52.6	1.05	269.4	-
				WBL	F	200.3	1.28	104.9	300
				WBT	E	67.2	1.01	270.5	-
				WBR	C	27.1	0.09	15.5	120
				NBL	F	372.6	1.71	**337.7**	150
				NBT	E	59.7	0.93	197.7	-
				NBR	F	125.9	1.12	254.8	70
				SBL	D	51.1	0.76	51.9	165
				SBT	D	37.7	0.35	60.5	-
				SBR	C	33.9	0.04	4.7	70
	B	12.2	0.51	EBT	B	10.6	0.58	60.4	-

Intersection	Intersection			Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Length (m)
	LOS	Delay (s)	v/c Ratio						
Off-Ramp Extension & Markland Street				WBL	B	11.6	0.43	19.6	50
				WBT	A	6.5	0.16	16.5	-
				NBL	B	18.6	0.39	34.9	-
				NBR	B	15.7	0.12	11.9	-

As shown in **Table 5-5**, some of the study area signalized intersections anticipate congested operations except for the Nichols Boulevard /Plaza & Major Mackenzie Drive intersection, and Carpool Lot / Highway 404 Southbound Ramp & Major Mackenzie Drive intersection.

It should be noted that all signal timing plans along the Major Mackenzie corridor within the study area have 140 second cycle lengths, which contribute to longer delays despite below capacity v/c ratios and shorter queue lengths that do not exceed storage capacity.

The specific movements at the **Highway 404 Northbound Ramp & Major Mackenzie Drive** intersection that are forecast to experience capacity constraints are:

- During the weekday AM peak hour:
  - The westbound through movement is forecast to be at capacity (v/c ratio of 1.00) and experience a delay of 31.2 seconds.
  - The southbound right turn is forecast to exceed capacity (v/c ratio of 1.08) and experience a delay of 127.6 seconds.
- During the weekday PM peak hour:
  - The southbound right turn is forecast to approach capacity (v/c ratio of 0.99) and experience a delay of 102.6 seconds.

The specific movements at the **Markland Street / Major Mackenzie Drive** intersection that are forecast to experience capacity constraints are similar to those outlined in **Section 5.3.1**.

The specific movements at the **Woodbine Avenue & Major Mackenzie Drive** and at the **Markland Street & Major Mackenzie Drive** intersections that are forecast to experience capacity constraints are similar to those outlined in **Section 5.2.1**.

5.4.2 Unsignalized Intersections

The traffic operations analysis for unsignalized intersections are presented in **Table 5-6**.

Table 5-6: 2051 4-Lanes Future Conditions Traffic Operations - Unsignalized Intersections

Intersection	Intersection Delay (s)	Lane	Lane LOS	Lane Delay (s)	Lane v/c Ratio
AM Peak Hour					
Markland Street & Russell Dawson Road	28.2	EBL	B	10.6	0.04
		EBT	D	25.2	0.72
		WBT	C	16.1	0.49
		SBL	E	46.7	0.91
		SBR	B	11.6	0.41
PM Peak Hour					
Markland Street & Russell Dawson Road	17.1	EBL	A	8.4	0.14
		EBT	C	18.7	0.71
		WBT	C	18.2	0.72
		SBL	A	9.3	0
		SBR	A	9	0.13

There are no movements of concern in the AM or PM peak hour for the unsignalized intersection of Markland Street & Russell Dawson Road.

5.5 2051 Pedestrian Mode Performance

Based on the York Region TMP and City of Markham ATMP, the following pedestrian network improvements were assumed for the 2051 pedestrian future conditions:

- A minimum 2.4 metre pedestrian clearway with a minimum 4.5 metre buffer along the expanded section of Major Mackenzie Drive from Leslie Street to Woodbine Avenue.

It is also expected that pedestrian treatments will be implemented at Markland Street and Russell Dawson Road. A map of the existing and planned pedestrian facilities in 2051 are presented in **Exhibit 5-10**.

Exhibit 5-10: 2051 Pedestrian Network Map



The anticipated 2051 pedestrian mode performance across study area intersections is presented in **Table 5-7**. LOS highlighted in green indicated an improvement compared to existing conditions.

Table 5-7: Future Pedestrian Mode Performance

Intersection	Direction	Segment		Intersection
		Description	LOS	LOS
Major Mackenzie Drive East & Highway 404 SB Off Ramp - Carpool Lot	Eastbound	Major Mackenzie Drive	A	A
	Westbound	Major Mackenzie Drive	A	A
	Northbound	Carpool Lot	C	F
	Southbound	Highway 404 SB Off Ramp	F	C
Major Mackenzie Drive East & Highway 404 NB Off-Ramp	Eastbound	Major Mackenzie Drive	A	A
	Westbound	Major Mackenzie Drive	A	A
	Northbound	Highway 404 NB Off Ramp	F	B
Major Mackenzie Drive East & Markland Street	Eastbound	Major Mackenzie Drive	A	A
	Westbound	Major Mackenzie Drive	A	A
	Northbound	Markland Street	B	B
	Southbound	Markland Street	B	B

Intersection	Direction	Segment		Intersection
		Description	LOS	LOS
Major Mackenzie Drive East & Nichols Boulevard - Plaza Driveway	Eastbound	Major Mackenzie Drive	A	A
	Westbound	Major Mackenzie Drive	A	A
	Northbound	Nichols Boulevard	B	B
	Southbound	Plaza Driveway	C	C
Major Mackenzie Drive East & Woodbine Avenue	Eastbound	Major Mackenzie Drive	A	C
	Westbound	Major Mackenzie Drive	B	C
	Northbound	Woodbine Avenue	C	C
	Southbound	Woodbine Avenue	B	C
Markland Street & Russell Dawson Road	Eastbound	Markland Street	B	-
	Westbound	Markland Street	B	B
	Southbound	Russell Dawson Road	B	B
Markland Street & Off-Ramp Extension	Eastbound	Markland Street	B	B
	Westbound	Markland Street	B	B
	Northbound	Off-Ramp Extension	B	B

The improvement in pedestrian facilities along Major Mackenzie Drive will provide improved LOS within the study area with a typical LOS of A and B.

5.6 2051 Bicycle Mode Performance

The 2051 Regional Road Cycling Network in the York Region Transportation Master Plan indicates that there will be cycling facilities along Major Mackenzie Drive through the study area to be determined in consultation with the Pedestrian and Cycling Planning and Design Guidelines.

Based on the York Region TMP and City of Markham ATMP, as discussed in **Section 3.3.2** the following cycling network improvements were assumed for the 2051 bicycle future conditions:

- A 1.5 metre separated cycling track along the expanded section of Major Mackenzie Drive from Leslie Street to Woodbine Avenue including associated intersection cycling treatments.

The anticipated 2051 bicycle mode performance across study area intersections is presented in **Table 5-8**.

Table 5-8: Future Bicycle Mode Performance

Intersection	Direction	Segment		Intersection
		Description	LOS	LOS
Major Mackenzie Drive East & Highway 404 SB Off Ramp - Carpool Lot	Eastbound	Major Mackenzie Drive	A	A
	Westbound	Major Mackenzie Drive	A	A
	Northbound	Carpool Lot	F	F
	Southbound	Highway 404 SB Off Ramp	F	F
Major Mackenzie Drive East & Highway 404 NB Off-Ramp	Eastbound	Major Mackenzie Drive	A	A
	Westbound	Major Mackenzie Drive	A	A
	Northbound	Highway 404 NB Off Ramp	F	D
	Southbound	Off Ramp Extension	D	-
Major Mackenzie Drive East & Markland Street	Eastbound	Major Mackenzie Drive	A	A
	Westbound	Major Mackenzie Drive	A	A
	Northbound	Markland Street	D	D
	Southbound	Markland Street	D	D
Major Mackenzie Drive East & Nichols Boulevard - Plaza Driveway	Eastbound	Major Mackenzie Drive	A	A
	Westbound	Major Mackenzie Drive	A	A
	Northbound	Nichols Boulevard	F	F
	Southbound	Plaza Driveway	F	F
Major Mackenzie Drive East & Woodbine Avenue	Eastbound	Major Mackenzie Drive	A	F
	Westbound	Major Mackenzie Drive	F	F
	Northbound	Woodbine Avenue	F	F
	Southbound	Woodbine Avenue	F	F
Markland Street & Russell Dawson Road	Eastbound	Markland Street	F	F
	Westbound	Markland Street	D	F
	Southbound	Russell Dawson Road	D	F
Markland Street & Off-Ramp Extension	Eastbound	Markland Street	F	F
	Westbound	Markland Street	F	F
	Northbound	Off-Ramp Extension	A	A

The addition of a cycle track along Major Mackenzie Drive will provide a higher level of service along the corridor and significantly improve bicycle connectivity.

6 Traffic Analysis Summary

This section focuses on a comparison of traffic operations at key movements at the intersections of interest affected by the proposed road improvements, then provides a comparison of overall intersection operations.

6.1 Comparison of Key Movements at Intersections

As discussed in **Section 4.4**, traffic pattern changes associated with the Highway 404 road crossing and the northbound off-ramp extension to Markland Street are expected, specifically with regards to the turning movements identified below in **Table 6-1**.

Table 6-1: Weekday Peak Hours: Key Intersection Delay Comparison

Intersection	Movement	2024: Existing	2051: Do Nothing	2051: 3-Lane Extension	2051: 4-Lane Extension
		Delay (s)	Delay (s)	Delay (s)	Delay (s)
Weekday AM Peak Hour					
Highway 404 Northbound Ramp & Major Mackenzie Drive	NBL	64.3	94.3	59.1	59.1
	NBT			55.7	55.7
	NBR	46.4	83.7	50.4	50.4
	SBR			182.9	127.6
Markland Street & Major Mackenzie Drive	EBL	69.3	48.8	14.4	14.5
	SBR	168.6	310.2	59.2	59.2
Markland Street & Russell Dawson Road	EBT	42.5	70.8	25.2	25.2
	SBL	98.5	264.7	46.7	46.7
Weekday PM Peak Hour					
Highway 404 Northbound Ramp & Major Mackenzie Drive	NBL	54	53.2	57	57
	NBT			55.4	55.4
	NBR	59	67.6	47.6	47.6
	SBR			169.6	102.6
Markland Street & Major Mackenzie Drive	EBL	153.4	505.3	43.9	44.7
	SBR	67.2	44.7	45	45
Markland Street & Russell Dawson Road	EBT	8.2	13.2	18.7	18.7
	SBL	10.3	10.8	9.3	9.3

The off-ramp extension provides significant reductions in delays at each of these three key intersections. It can also be observed that the 3-lane and 4-lane extension scenarios provide similar levels of reduction in delay across these intersections, however significant delays are observed at the

Highway 404 Northbound Ramp / Major Mackenzie Drive intersection for the southbound right turn in the AM and PM peak periods due to limited capacity of the single southbound right-turn lane.

The delays observed at the Highway 404 Northbound Ramp / Major Mackenzie Drive Intersection for key movements are shown in **Exhibit 6-1**.

Exhibit 6-1: Weekday Peak Hours: Highway 404 Northbound Ramp / Major Mackenzie Drive Intersection

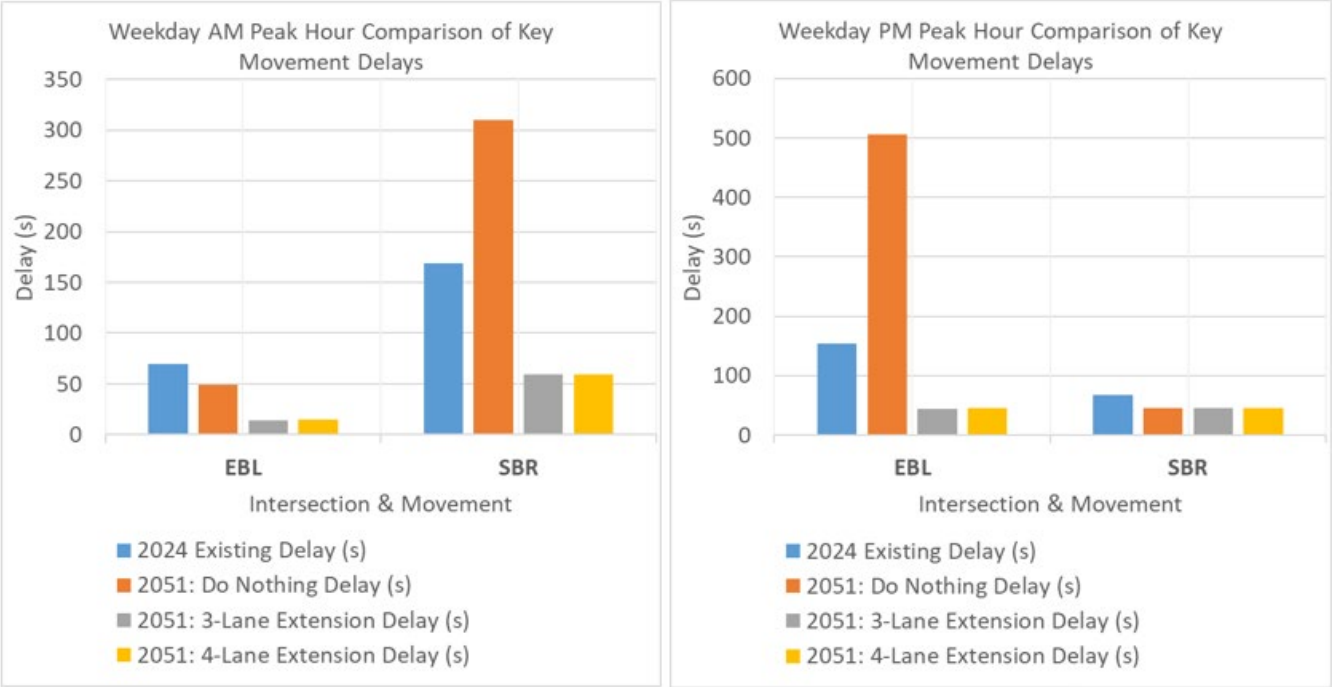


The off-ramp extension reduces the northbound left and right turn delays at the Highway 404 Northbound Ramp / Major Mackenzie Drive Intersection in both the AM and PM peak periods for the future scenarios.

For the southbound right turn, in the 3-lane extension scenario, there are significant delays observed when there is only one southbound lane. In the 4-lane extension scenario, a 55 second and 70 second reduction in delay can be observed for the AM and PM periods, respectively. The 3-lane and 4-lane future scenarios are both subject to high SBR delays due to the long 140 second cycle length, no right turns on red, and low green time due to the need to maintain sufficient east-west operations along Major Mackenzie Drive.

The delays observed at the Markland Street / Major Mackenzie Drive Intersection for key movements are shown in **Exhibit 6-2.**

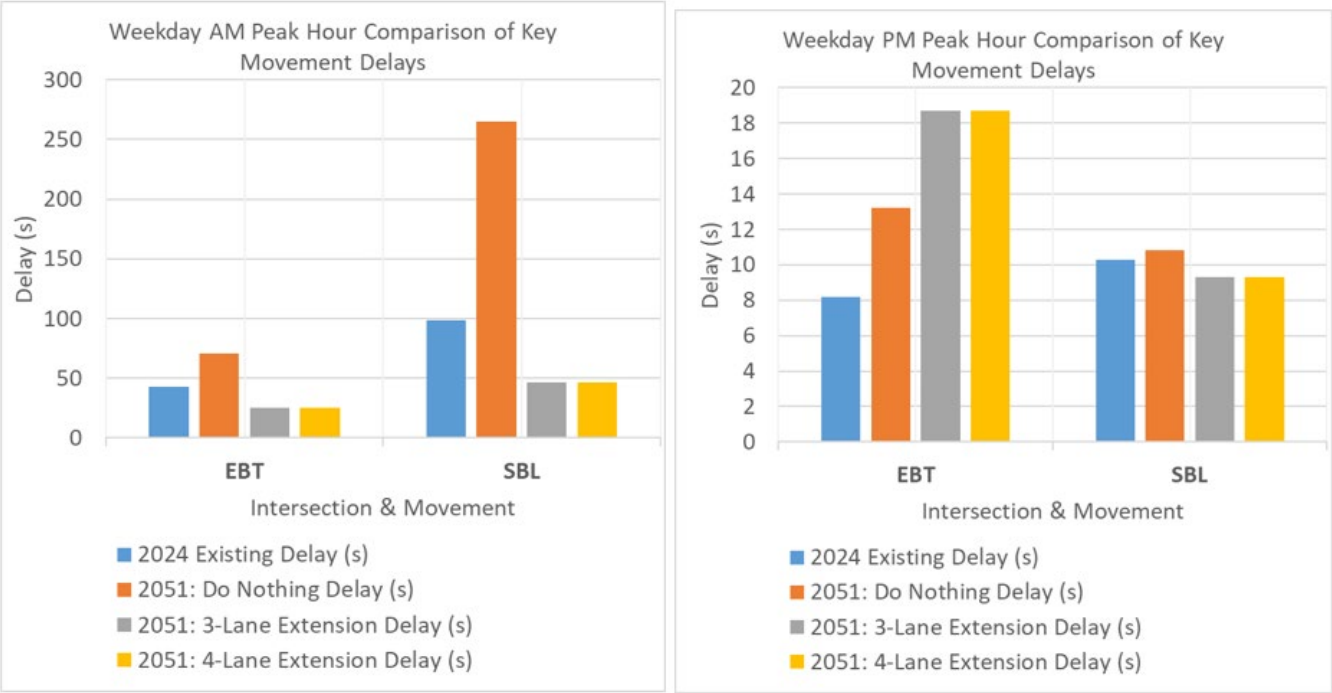
Exhibit 6-2: Weekday Peak Hours: Markland Street / Major Mackenzie Drive Intersection



As demonstrated in **Exhibit 6-2**, there are significant delays in the southbound right turn and eastbound left turn phases at Markland Street and Major Mackenzie Drive for the AM and PM peak periods, respectively under the “Do-Nothing” conditions. The off-ramp extension would provide a significant reduction in delays for these movements at the Markland Street / Major Mackenzie Drive Intersection.

The delays observed at the Markland Street & Russell Dawson Road Intersection for key movements are shown in **Exhibit 6-3**.

Exhibit 6-3: Weekday Peak Hours: Markland Street & Russell Dawson Road Intersection



As demonstrated in **Exhibit 6-3**, in the AM peak period, the off-ramp extension would provide significant delay relief for the eastbound through and southbound left turn in 2051. In the 2051 PM peak period, the extension would increase delays slightly for the eastbound through, while also reducing delays slightly for southbound left.

6.2 Comparison of Overall Intersection Operations

An overview of the traffic operations at signalized intersections is presented in **Table 6-2**.

- At the Highway 404 southbound ramp / Major Mackenzie Drive intersection, operations are currently acceptable and operating below capacity under existing 2024 Conditions.
- At the Highway 404 northbound ramp / Major Mackenzie Drive intersection, some congestion is forecasted in all three 2051 scenarios. The three-lane and four-lane ramp extension lane configurations exhibit capacity constraints due to limitations with the added southbound-right turn lane. Due to the capacity restraints in the 3-lane configuration for the southbound right, congestion is higher compared to the 4-lane configuration.
- At the Markland Street / Major Mackenzie Drive intersection, existing operations note capacity constraints, with congestion worsening under the 2051 “Do-Nothing” scenario. The two off-ramp extension scenarios serve to favorably maintain existing operational level of service at this intersection in the 2051 horizon year despite forecasted traffic growth in the area.
- At the Woodbine Avenue / Major Mackenzie Drive intersection, peak hour operations are currently congested with constraints worsening in all three 2051 horizon year scenarios.

Table 6-2: Intersection Traffic Operations – Overall Intersection Comparison (Signalized)

Intersection	2024 Existing			2051: Do Nothing			2051: 3-Lane Extension			2051: 4-Lane Extension		
	LOS	Delay (s)	v/c Ratio	LOS	Delay (s)	v/c Ratio	LOS	Delay (s)	v/c Ratio	LOS	Delay (s)	v/c Ratio
Weekday AM Peak Hour												
Carpool Lot/Highway 404 Southbound Ramp & Major Mackenzie Drive	C	24.1	0.71	D	37.4	0.87	D	43.1	0.83	D	40.6	0.83
Highway 404 Northbound Ramp & Major Mackenzie Drive	C	24.3	0.88	C	29.2	0.86	F	80.7	1.09	D	40.7	0.96
Markland Street & Major Mackenzie Drive	D	50.6	1.02	F	81.5	1.19	D	35.2	1.04	D	35.1	1.04
Nichols Boulevard /Plaza & Major Mackenzie Drive	A	9.1	0.63	B	10.9	0.72	B	10.3	0.68	B	10.3	0.68
Woodbine Avenue & Major Mackenzie Drive	E	64.4	1.14	F	159.2	1.7	F	160	1.7	F	160.1	1.7
Off-Ramp Extension & Markland Street	-	-	-	-	-	-	B	11.8	0.42	B	11.8	0.42
Weekday PM Peak Hour												
Carpool Lot/Highway 404 Southbound Ramp & Major Mackenzie Drive	C	26.1	0.65	D	35.5	0.75	D	38.4	0.74	D	38	0.74
Highway 404 Northbound Ramp & Major Mackenzie Drive	C	30.6	0.71	D	37.1	0.84	D	40	1	C	27.4	0.88
Markland Street & Major Mackenzie Drive	D	46.5	1.2	F	93.7	1.88	E	63.7	1.18	E	63.8	1.18
Nichols Boulevard /Plaza & Major Mackenzie Drive	B	13.1	0.63	B	10.7	0.75	A	9.5	0.7	A	9.5	0.7
Woodbine Avenue & Major Mackenzie Drive	D	43	1.08	F	102.3	1.59	F	97	1.48	F	96.9	1.48
Off-Ramp Extension & Markland Street	-	-	-	-	-	-	B	12.2	0.51	B	12.2	0.51

An overview of the traffic operations at unsignalized intersections is presented in **Table 6-3**.

Table 6-3: Intersection Traffic Operations – Overall Intersection Comparison (Unsignalized)

Intersection	2024 Existing			Do Nothing			3-Lane Extension			4-Lane Extension		
	LOS	Delay (s)	v/c Ratio	LOS	Delay (s)	v/c Ratio	LOS	Delay (s)	v/c Ratio	LOS	Delay (s)	v/c Ratio
Weekday AM Peak Hour												
Markland Street & Russell Dawson Road	F	64.9	1.11	F	147.7	1.52	D	28.2	0.91	D	28.2	0.91
Weekday PM Peak Hour												
Markland Street & Russell Dawson Road	B	10.7	0.47	F	52.4	1.08	C	17.1	0.71	C	17.1	0.71

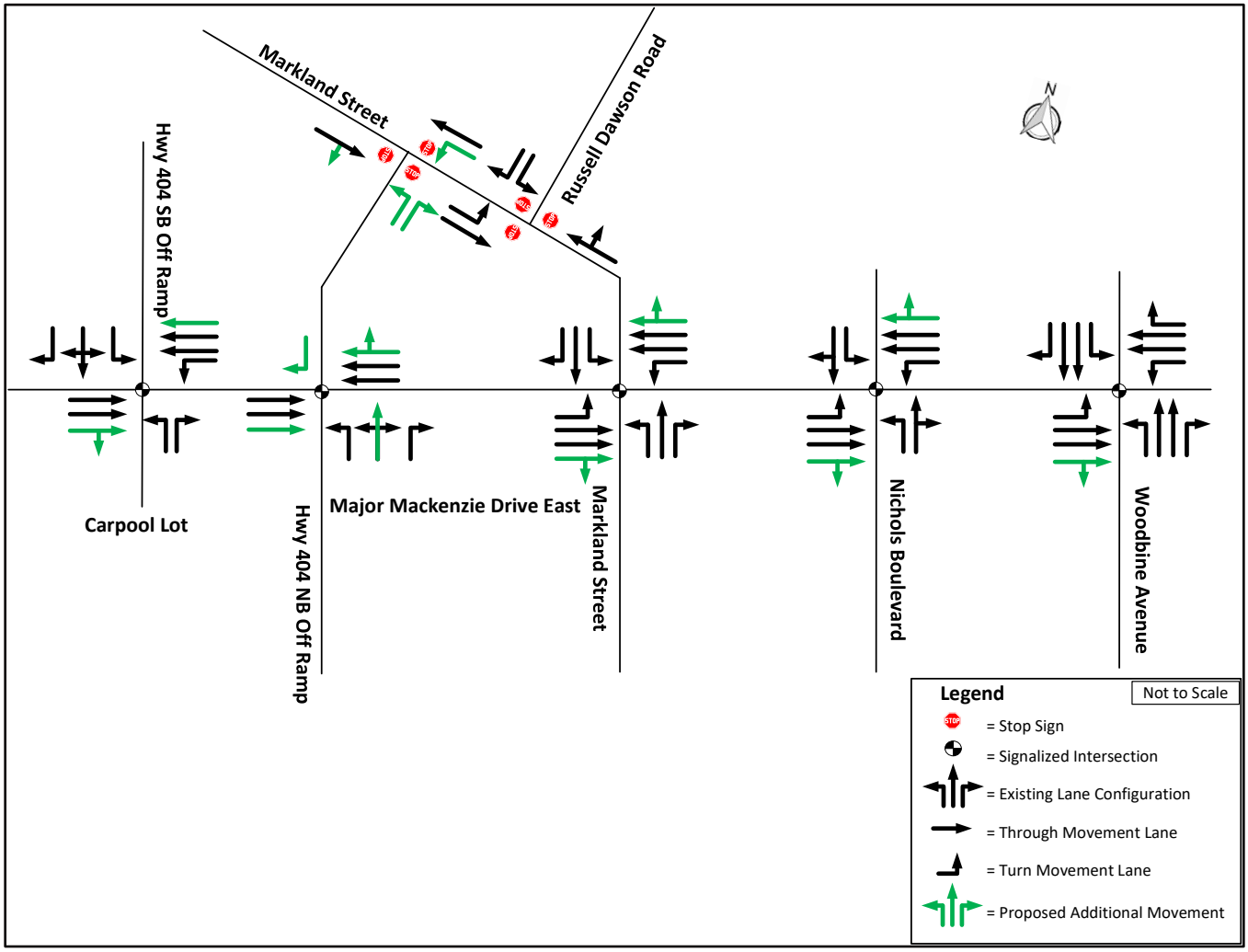
At the Markland Street / Russell Dawson Road unsignalized intersection, current operations are constrained in the weekday AM peak hour, with capacity constraints forecasted in the AM and PM peak hours in the future "Do-Nothing" scenario. The extension would provide relief in congestion at this intersection for both peak periods.

7 Sensitivity Analysis

In consultation with the Ministry of Transportation (MTO), a sensitivity analysis was conducted for the future scenario consisting of 1 northbound and 1 southbound lane for the Highway 404 off-ramp extension. At Major Mackenzie Drive, the existing 3 lane configuration would be maintained on the south leg of the intersection, with the middle lane of the northbound approach changed to a shared left-through-right lane.

Approaching Markland Street, a northbound right turn lane is proposed. The lane configuration at this intersection remains the same as the future 3-lane and 4-lane scenarios. This intersection was analyzed as an all-way stop and signalized intersection. The intersection traffic controls and lane configurations for the sensitivity analysis scenario are shown in **Exhibit 7-1.** Full Synchro model traffic operations data outputs for this scenario are presented in **Appendix A**.

Exhibit 7-1: Sensitivity Analysis - Future Intersection Traffic Control and Lane Configuration



7.1 Highway 404 Northbound Off-Ramp and Major Mackenzie Drive

At Highway 404 Northbound Off-Ramp & Major Mackenzie Drive, the results of the 2-lane 2051 Future Conditions traffic operations analysis are presented in **Table 7-1**.

Table 7-1: 2051 2-Lanes Future Conditions Traffic Operations - Highway 404 Northbound Off-Ramp & Major Mackenzie Drive

Intersection	Intersection			Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Length (m)
	LOS	Delay (s)	v/c Ratio						
AM Peak Hour									
Highway 404 Northbound Ramp & Major Mackenzie Drive	F	105.7	1.15	EBT	B	12.3	0.37	38.5	-
				WBT	F	156.7	1.29	352	-
				NBL	E	66.1	0.89	175.1	-
				NBT	E	73.2	0.92	184.8	-
				NBR	D	54.4	0.76	122.2	180
				SBR	F	182.9	1.24	217.9	-
PM Peak Hour									
Highway 404 Northbound Ramp & Major Mackenzie Drive	E	63.4	1.09	EBT	A	9.5	0.64	67.4	-
				WBT	F	91.2	1.14	268.2	-
				NBL	E	70.9	0.92	195.4	-
				NBT	E	77.3	0.95	215.9	-
				NBR	D	41.6	0.43	69.8	180
				SBR	F	169.6	1.19	195	-

The specific movements at the **Highway 404 Northbound Off-Ramp & Major Mackenzie Drive** intersection that are forecast to experience capacity constraints are:

- During the weekday AM peak hour:
  - The westbound through movement is forecast to exceed capacity (v/c ratio of 1.29) and experience a delay of 156.7 seconds.
  - The southbound right movement is forecast to exceed capacity (v/c ratio of 1.24) and experience a delay of 182.9 seconds.
- During the weekday PM peak hour:
  - The westbound through movement is forecast to exceed capacity (v/c ratio of 1.14) and experience a delay of 91.2 seconds.
  - The southbound right movement is forecast to exceed capacity (v/c ratio of 1.19) and experience a delay of 169.6 seconds.

The results indicate that the southbound delays will remain the same as in 3-lane scenario. However, a change from the 3-lane scenario to the 2-lane scenario will impact the northbound movement due to the

reduction in off-ramp lanes at the south leg of the intersection. A comparison between the 3-lane and 2-lane future scenario northbound movements at Highway 404 Northbound Off-Ramp & Major Mackenzie Drive is presented in **Table 7-2**.

Table 7-2: Highway 404 Northbound Off-Ramp & Major Mackenzie Drive – Northbound Movements Comparison

Intersection	Movement	2051: 3-Lane Extension				2051: 2-Lane Extension			
		LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)
Weekday AM Peak Hour									
Highway 404 Northbound Ramp & Major Mackenzie Drive	NBL	E	59.1	0.79	124.1	E	66.1	0.89	175.1
	NBT	E	55.7	0.80	108.7	E	73.2	0.92	184.8
	NBR	D	50.4	0.62	86	D	54.4	0.76	122.2
Weekday PM Peak Hour									
Highway 404 Northbound Ramp & Major Mackenzie Drive	NBL	E	57	0.75	117.2	E	70.9	0.92	195.4
	NBT	E	55.4	0.80	113.6	E	77.3	0.95	215.9
	NBR	D	47.6	0.52	73.8	D	41.6	0.43	69.8

Compared to the 3-lane scenario, the northbound left and northbound through movements are forecast to be approaching capacity. Additionally, the 2-lane scenario is forecast to experience longer delays and queues. However, the northbound movements are still forecast to be operating under capacity, with acceptable delays and queues.

7.2 Off-Ramp Extension and Markland Street

At the Off-Ramp Extension and Markland Street, the intersection operations are expected to remain the same as the 3-lane and 4-lane scenario if the intersection is signalized.

A sensitivity analysis was conducted with an all-way stop at the Off-Ramp Extension and Markland Street intersection. A northbound storage length of 50 metres was assumed for analysis. The results of the 2-lane 2051 Future Conditions traffic operations analysis are presented in **Table 7-3**.

Table 7-3: 2-Lanes Future Conditions Traffic Operations - Off-Ramp Extension and Markland Street AWS

Intersection	Intersection Delay (s)	Lane	Lane LOS	Lane Delay (s)	Lane v/c Ratio
AM Peak Hour					
Off-Ramp Extension & Markland Street	33.6	EBT	E	49.3	0.97
		WBL	A	8.7	0.08
		WBT	B	15	0.57
		NBL	B	10.3	0.1
		NBR	A	9.5	0.16
PM Peak Hour					
Off-Ramp Extension & Markland Street	46.4	EBT	F	84.1	1.08
		WBL	B	11.6	0.27
		WBT	B	12.1	0.35
		NBL	C	15.6	0.46
		NBR	B	11.5	0.35

The specific movements at the **Off-Ramp Extension and Markland Street** intersection that are forecast to experience capacity constraints are:

- During the weekday AM peak hour:
  - The eastbound through movement is forecast to approach capacity (v/c ratio of 0.97) and experience a delay of 49.3 seconds.
- During the weekday PM peak hour:
  - The eastbound through movement is forecast to exceed capacity (v/c ratio of 1.08) and experience a delay of 84.1 seconds.

A comparison between a signalized and all-way stop (unsignalized) mode of control for the Off-Ramp Extension and Markland Street intersection is presented in **Table 7-4**.

Table 7-4:Off-Ramp Extension and Markland Street – Mode of Control Comparison

Intersection	Movement	2051: Signalized			2051: Unsignalized		
		LOS	Delay (s)	v/c Ratio	LOS	Delay (s)	v/c Ratio
Weekday AM Peak Hour							
Off-Ramp Extension & Markland Street	EBT	B	13	0.63	E	49.3	0.97
	WBL	A	9.6	0.21	A	8.7	0.08
	WBT	A	9	0.35	B	15	0.57
	NBL	B	13.9	0.07	B	10.3	0.1
	NBR	B	13.8	0.05	A	9.5	0.16
Weekday PM Peak Hour							
Off-Ramp Extension & Markland Street	EBT	B	10.6	0.58	F	84.1	1.08
	WBL	B	11.6	0.43	B	11.6	0.27
	WBT	A	6.5	0.16	B	12.1	0.35
	NBL	B	18.6	0.39	C	15.6	0.46
	NBR	B	15.7	0.12	B	11.5	0.35

As shown in **Table 7-4**, the signalization of the Off-Ramp Extension and Markland Street would provide significant improvements in capacity and lower delays particularly for the eastbound through movement.

8 Off-Ramp Extension Design Considerations

This assessment is based on a desktop review of the existing and proposed future conceptual configurations of the key intersections affected by the Highway 404 northbound off-ramp extension between Markland Street and Major Mackenzie Drive. Potential enhancements to existing non-automobile road user operations from a behaviour and safety improvement perspective are considered to improve safety and comfort for all users.

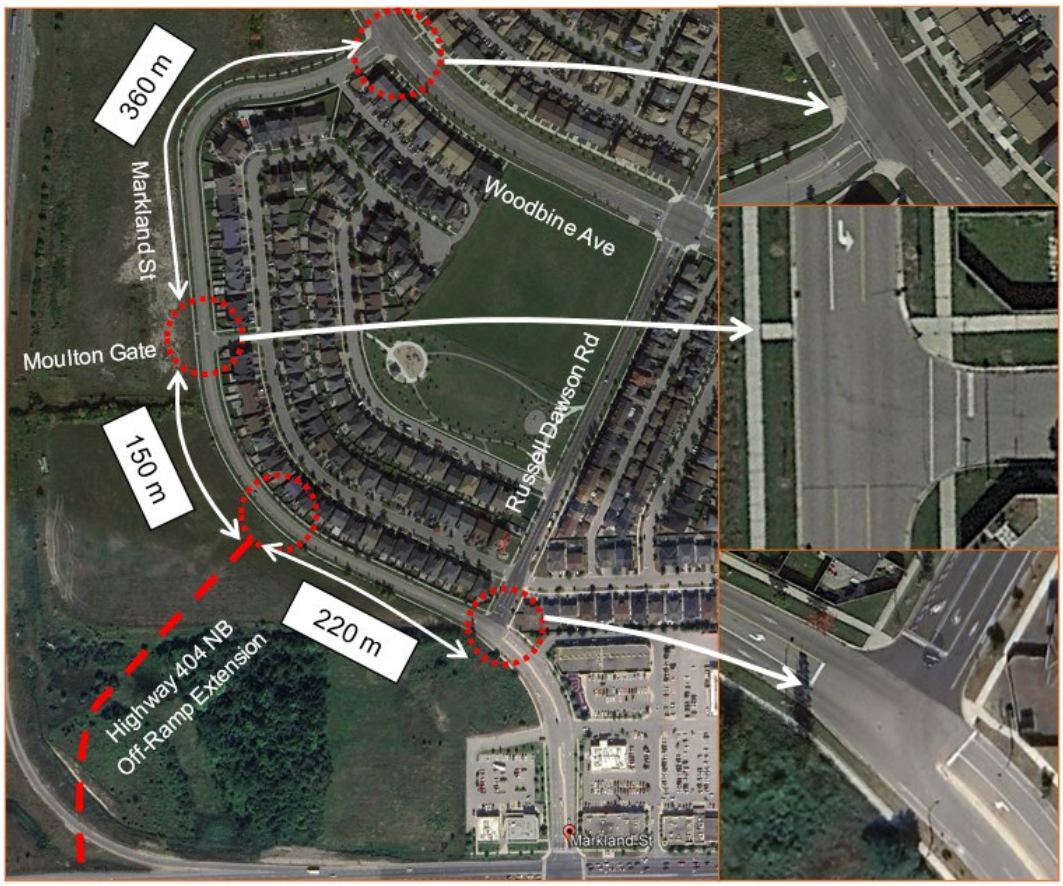
The recommended off-ramp extension configuration and the following associated details are therefore discussed:

- Potential road user behaviour / safety improvements to pre-existing road conditions
- Future lane configuration
- Potential traffic operation improvements (e.g. traffic pattern alterations via turning restrictions)
- Method of traffic control (e.g. all-way stop, traffic signal)

8.1 Existing Pedestrian and Cycling Facilities

Existing pedestrian crossing facilities along Markland Street are summarized in **Exhibit 8-1**.

Exhibit 8-1: Existing Pedestrian Crossing Facilities



At the Woodbine Avenue / Markland Street intersection, an east-west painted crossing with two parallel lines is provided. It is noted that there are no other Markland Street crossings along its entire length until reaching Major Mackenzie Drive, which is presumed to be due to no existing development activity on the west side of Markland Street. It should be noted the Highway 404 Road Crossing EA (2017) proposes signalization for the Woodbine Avenue / Markland Street intersection.

In the 2051 horizon year, with background development activity planned for the west side of Markland Street, it is expected that crossing facilities will be warranted at the other locations highlighted in **Exhibit 8-1**. For example, crossings on the north and south legs of the Moulton Gate/ Markland Street intersection can be installed, which is 150 metres west of the proposed off-ramp extension intersection point with Markland Street. Given this spacing distance between adjacent intersections, the proposed off-ramp extension intersection should also have pedestrian crosswalks integrated into the design.

It should also be noted that the Russell Dawson Road / Markland Street intersection approximately 220 metres south of the off-ramp extension planned connection point, currently has no painted crosswalks, despite a clear pedestrian east-west desire line along the north leg. Future improvements here should consider painted crosswalks on the west, north, and east legs.

Although there are currently no cycling facilities along Markland Street from Russel Dawson Road to Major Mackenzie Drive, if facilities such as those on Norman Bethune Avenue are desired in the future, the imagery in **Exhibit 8-2** can be referenced. Per Ontario Traffic Manual (OTM) Book 18 guidelines, assuming the 50 km/hr posted speed limit is maintained throughout the Markland Street study area, a minimum buffer of 0.3 metres and a minimum cycle track width of 1.5 metres is desired.

Exhibit 8-2: Norman Bethune Avenue / Aristotle Avenue References



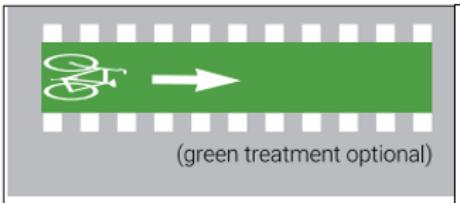


Figure 6.9 – Conflict Zone Markings (Crossrides)

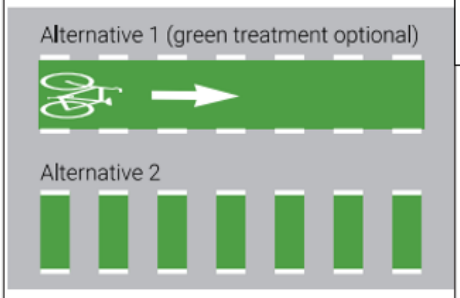


Figure 6.10 – Conflict Zone Markings (Dashed Guide Lines)

Source (left): Google Maps, Airbus, First Base Solutions, Maxar Technologies (Accessed April 1, 2024)

Source (right and bottom): Ontario Traffic Manual Book 18 (June 2021) Cycling Facilities

Table 4.6 – Desired and Suggested Minimum Buffer Widths for Cycle Tracks and Multi-Use Paths

Facility Type	Posted Speed Limit	Desired Width (excluding curb)	Suggested Minimum (excluding curb)
One-way	≤ 50 km/h	0.6 – 1.0 m	0.3 m [a,b]
	60 km/h	1.5 – 2.5 m	0.6 m [c]

Regarding the future lane configuration, based on the operations performance of the two off-ramp scenarios presented in **Section 5** and the sensitivity analysis presented in **Section 7**, a two-lane cross section is preferrable for the following reasons:

- Shorter pedestrian crossing distance across the ramp extension intersection at Markland Street leads to a safer intersection for all road users;
- Narrower road cross section provides inherient traffic calming properties; and,
- Oversupplying lanes and road capacity tends to incentivise increased traffic volumes.

8.2 Right of Way Concept

Based on the literature review of York Region, City of Markham guidelines, and OTM Book 18 cycling facilities, the following requirements were established for the subject cross section. These requirements ensure the design adheres to local and regional standards, providing a safe and efficient roadway.

1. **Literature Review**

The guidelines from York Region specify that an inside travel lane should have a width of 3.3 metres, while an outside travel lane should be 3.5 metres wide. Additionally, York Region mandates a minimum sidewalk width of 1.8 metres for a collector road. For separated cycling facilities, the region specifies a minimum width of 1.5 metres, ensuring sufficient space for cyclists and enhancing road safety.

The City of Markham's standards, particularly the Standard Cross Section Drawing MR 8 for a major collector road, specify a driving lane width of 3.5 metres. This dimension is crucial for accommodating various types of vehicles and ensuring smooth traffic flow.

OTM Book 18, which provides guidelines for cycling facilities, recommends a width of 1.8 metres for a conventional separated cycling facility, measured to the face of the curb or the edge of the roadway. The suggested minimum width for a separated cycling facility is 1.5 metres, which aligns with York Region's requirements and ensures adequate space for cyclists.

2. **Lane and Curb Dimensions**

- **Lane Width**: Each lane is designed to be 3.5 metres wide, as specified by the City of Markham's Standard Cross Section Drawing MR 8.
- **Curb Width**: The width of the curb is set at 0.25 metres.

3. **Street Pole Space**

- **Pole Space**: This dimension was derived from a review of the City of Markham's cross sections, indicating a requirement for a 1-metre pole area. Typical pole offset requirement is 0.5-metre clear zone from the curb. Thus, the total pole area space combines the curb width (0.25 metres) and the pole setback space (0.5 metres), totaling 0.75 metres.

4. **Additional Features**

- **Separated cycling facility**: Aligning with OTM Book 18, which recommends a conventional bicycle lane width of 1.8 metres and a suggested minimum width of 1.5 metres.
- **Tactile Strip**: There is a 0.6-metre tactile strip between the sidewalk and the separated cycling facility to ensure safety and accessibility.
- **Sidewalk**: A 1.8-metre sidewalk meets the minimum sidewalk width specified for a collector road by York Region.

The cross-sectional design elements aim to balance safety, utility, and adherence to local and regulatory standards. MTO standards will be reviewed along with other standards during preliminary design.

8.3 Intersection Mode of Control Analysis

The estimated future 2051 total AM and PM peak hour volumes for the intersection of Highway 404 Off-Ramp and Markland Street were used to complete an all-way stop control warrant and traffic signal warrant.

An all-way stop control warrant analysis was conducted following the guidelines outlined in MTO's Ontario Traffic Manual Book 5: Regulatory Signs. All-way stop control conditions were met for the PM peak period, but not for AM peak period. The All-Way Stop Control Warrant Condition is presented in **Appendix D.**

A traffic signal warrant was conducted following the guidelines outlined in the MTO's Ontario Traffic Manual Book 12: Traffic Signals – Justification 7 and can be found in **Appendix D**. This approach ensures that the traffic signal warrant is based on projected traffic volumes, providing a forward-looking perspective on the intersection's traffic needs, and contributing to a safer and more efficient traffic management plan.

Based on the OTM calculation, an all-way stop is not warranted; furthermore, a traffic signal is not warranted at the intersection of Highway 404 Off-Ramp and Markland Street. However, Arcadis carried out the analysis using a traffic signal as the off-ramp extension is expected to have bicycle lanes and pedestrians at the intersection. The inclusion of a traffic signal in the design aims to enhance safety for cyclists and pedestrians, ensuring that all road users can navigate the intersection safely and efficiently. This proactive measure underscores the commitment to creating a transportation network that prioritizes the safety and accessibility of all users.

9 Recommendations and Conclusions

2024 Existing Conditions

- Existing traffic operations indicate congested operations at the southbound right-turn movement at the Major Mackenzie Drive / Markland Street intersection in the weekday AM peak hour, while the eastbound left-turn is congested during the weekday PM peak hour.
- This traffic pattern suggests that there is a need to reduce congestion into and out of the Cathedraltown area in the northeast quadrant of the Highway 404 / Major Mackenzie Drive area.

2051 Future Conditions Scenarios

- When compared to the “Do-Nothing” base scenario, the off-ramp extension provides significant reductions to delays at each of the three existing key intersections.
- It can also be observed that the 3-lane and 4-lane extension scenarios provide similar levels of reduction in delays across these intersections. In particular, the off-ramp extension provides much needed relief at the Markland Street / Major Mackenzie Drive Intersection.
- When focusing solely on southbound right-turn operations at the Highway 404 Ramp Extension / Major Mackenzie Drive intersection, both the 3-lane and 4-lane extension scenarios experience heightened delays due to the limitations of the signal timing plan and no right turns on red restrictions. The 3-lane scenario experiences increased delays compared to the 4-lane scenario due to the single southbound lane configuration which results in less vehicular capacity.
- The 2-lane sensitivity analysis scenario found that operations would be similar to the 3-lane at the Highway 404 Ramp Extension / Major Mackenzie Drive intersection. A reduction in northbound off-ramp lanes in the 2-lane scenario results in northbound movements approaching capacity. However, the northbound movements are still forecast to be operating under capacity, with acceptable delays and queues.

Recommendations

All future scenarios face significant congestion concerns due to the forecasted vehicular growth rates. However, oversupplying lanes and road capacity tends to incentive automobile usage and traffic volumes. Therefore, the 2-lane scenario is recommended compared to the 3-lane and 4-lane scenarios.

The City can focus their effort on managing the future travel demand in the area in partnership with the Region. The York Region TMP places a focus on less accommodation for vehicular traffic operations, while promoting the use of other modes of travel. Additionally, the City of Markham Official Plan includes policy to prioritize the movement of people over vehicles while ensuring the safety of all road users.

Off-Ramp Extension Design Considerations

Based on the literature review of York Region, City of Markham guidelines, and OTM Book 18 cycling facilities, the following requirements were established for the off-ramp extension design considerations to ensure the design adheres to local and regional standards, providing a safe and efficient roadway.

Each lane shall be designed to be 3.5 metres wide, as specified by the City of Markham's Standard Cross Section Drawing MR 8 major collector road, with the curb width set at 0.25 metres.

The total pole area space combines the curb width (0.25 metres) and the pole setback space (0.5 metres), totaling 0.75 metres.

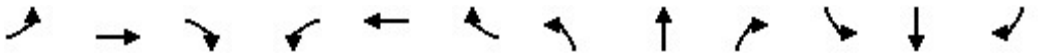
A separated cycling facility shall be provided in alignment with OTM Book 18's recommendation of a 1.8-metre width and a suggested minimum width of 1.5 metres, with a 0.6-metre tactile strip between the sidewalk and the separated cycling facility to ensure safety and accessibility. A 1.8-metre sidewalk is recommended to meet the minimum sidewalk width specified for a collector road by York Region.

With background development activity planned for the west side of Markland Street, additional pedestrian crossing facilities should be installed at the existing intersections north and south of the proposed off-ramp extension intersection location.

- Given this spacing distance between adjacent intersections, the proposed off-ramp extension intersection should also have pedestrian crosswalks integrated into the design.
- Per Ontario Traffic Manual (OTM) Book 18 guidelines, assuming the 50 km/hr posted speed limit is maintained throughout the Markland Street study area, a minimum buffer of 0.3 metres and a minimum cycle lane width of 1.5 metres is desired.
- Based on the 2009 alternative and current-day general best practices to increase multi-modal connectivity, especially near residential and commercial areas, a speed limit of 50 km/hr should be considered instead of the 80 km/hr cited in previous studies (2009 ESR, 2017 ESR) to provide a more uniform expected operating speed as drivers travel through the surrounding urban areas.

Appendix A

Synchro Outputs



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	803	10	94	1531	0	6	0	7	132	134	86
Future Volume (vph)	0	803	10	94	1531	0	6	0	7	132	134	86
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.7	3.7	3.5	3.5	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Storage Length (m)	0.0		95.0	55.0		0.0	0.0		0.0	0.0		170.0
Storage Lanes	0		1	1		0	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.91	0.95
Frt			0.850						0.850		0.992	0.850
Flt Protected				0.950			0.950			0.950	0.996	
Satd. Flow (prot)	0	3730	1401	1842	3730	0	1444	0	1095	1789	1768	1617
Flt Permitted				0.253			0.950			0.950	0.996	
Satd. Flow (perm)	0	3730	1401	491	3730	0	1444	0	1095	1789	1768	1617
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			125						125		2	125
Link Speed (k/h)		70			70			40			60	
Link Distance (m)		369.9			313.7			147.8			449.4	
Travel Time (s)		19.0			16.1			13.3			27.0	
Peak Hour Factor	0.92	0.91	0.63	0.87	0.90	0.92	0.50	0.92	0.58	0.77	0.80	0.90
Heavy Vehicles (%)	0%	3%	20%	2%	3%	0%	33%	0%	57%	2%	3%	1%
Adj. Flow (vph)	0	882	16	108	1701	0	12	0	12	171	168	96
Shared Lane Traffic (%)										10%		10%
Lane Group Flow (vph)	0	882	16	108	1701	0	12	0	12	154	195	86
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.92	0.92	0.95	0.95	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors		0	0	1	0		1		1	1	1	1
Detector Template												
Leading Detector (m)		0.0	0.0	15.2	0.0		7.5		7.5	7.5	7.5	7.5
Trailing Detector (m)		0.0	0.0	6.2	0.0		-1.5		-1.5	-1.5	-1.5	-1.5
Detector 1 Position(m)		0.0	0.0	6.2	0.0		-1.5		-1.5	-1.5	-1.5	-1.5
Detector 1 Size(m)		1.8	6.1	9.0	1.8		9.0		9.0	9.0	9.0	9.0
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Turn Type		NA	Perm	pm+pt	NA		Prot		Perm	Perm	NA	Perm
Protected Phases		2		1	6		3				4	
Permitted Phases			2	6					3	4		4
Detector Phase		2	2	1	6		3		3	4	4	4
Switch Phase												
Minimum Initial (s)		20.0	20.0	7.0	20.0		10.0		10.0	15.0	15.0	15.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)		38.0	38.0	11.0	38.0		18.0		18.0	36.5	36.5	36.5
Total Split (s)		69.0	69.0	12.0	81.0		19.0		19.0	40.0	40.0	40.0
Total Split (%)		49.3%	49.3%	8.6%	57.9%		13.6%		13.6%	28.6%	28.6%	28.6%
Maximum Green (s)		61.5	61.5	8.0	73.5		11.5		11.5	32.5	32.5	32.5
Yellow Time (s)		4.5	4.5	3.0	4.5		3.5		3.5	3.5	3.5	3.5
All-Red Time (s)		3.0	3.0	1.0	3.0		4.0		4.0	4.0	4.0	4.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)		7.5	7.5	4.0	7.5		7.5		7.5	7.5	7.5	7.5
Lead/Lag		Lag	Lag	Lead			Lead		Lead	Lag	Lag	Lag
Lead-Lag Optimize?		Yes	Yes	Yes			Yes		Yes	Yes	Yes	Yes
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0	3.0
Recall Mode		C-Min	C-Min	None	C-Min		None		None	None	None	None
Walk Time (s)		7.0	7.0		7.0					7.0	7.0	7.0
Flash Dont Walk (s)		23.0	23.0		23.0					22.0	22.0	22.0
Pedestrian Calls (#/hr)		0	0		0					0	0	0
Act Effct Green (s)		82.0	82.0	97.1	93.6		10.0		10.0	20.9	20.9	20.9
Actuated g/C Ratio		0.59	0.59	0.69	0.67		0.07		0.07	0.15	0.15	0.15
v/c Ratio		0.40	0.02	0.26	0.68		0.12		0.06	0.58	0.74	0.25
Control Delay		18.5	0.0	11.9	18.8		63.7		0.6	63.4	72.2	3.9
Queue Delay		0.0	0.0	0.0	0.1		0.0		0.0	0.0	0.0	0.0
Total Delay		18.5	0.0	11.9	18.9		63.7		0.6	63.4	72.2	3.9
LOS		B	A	B	B		E		A	E	E	A
Approach Delay		18.1			18.5			32.1			55.6	
Approach LOS		B			B			C			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 68 (49%), Referenced to phase 2:EBT and 6:WBTL, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 23.6		Intersection LOS: C	
Intersection Capacity Utilization 71.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Carpool Lot/HWY 404 Southbound Ramp & Major Mackenzie Drive





Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	882	16	108	1701	12	12	154	195	86
v/c Ratio	0.40	0.02	0.26	0.68	0.12	0.06	0.58	0.74	0.25
Control Delay	18.5	0.0	11.9	18.8	63.7	0.6	63.4	72.2	3.9
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay	18.5	0.0	11.9	18.9	63.7	0.6	63.4	72.2	3.9
Queue Length 50th (m)	75.8	0.0	13.4	171.2	3.2	0.0	42.4	57.0	0.0
Queue Length 95th (m)	102.8	0.0	m14.7	180.8	5.6	0.0	52.9	70.8	5.2
Internal Link Dist (m)	345.9			289.7				425.4	
Turn Bay Length (m)		95.0	55.0						170.0
Base Capacity (vph)	2184	872	417	2493	118	204	415	411	471
Starvation Cap Reductn	0	0	0	109	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.02	0.26	0.71	0.10	0.06	0.37	0.47	0.18

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	803	10	94	1531	0	6	0	7	132	134	86
Future Volume (vph)	0	803	10	94	1531	0	6	0	7	132	134	86
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.7	3.7	3.5	3.5	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Total Lost time (s)		7.5	7.5	4.0	7.5		7.5		7.5	7.5	7.5	7.5
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00		1.00	0.95	0.91	0.95
Frt		1.00	0.85	1.00	1.00		1.00		0.85	1.00	0.99	0.85
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00	0.95	1.00	1.00
Satd. Flow (prot)		3730	1401	1842	3730		1444		1095	1789	1768	1617
Flt Permitted		1.00	1.00	0.25	1.00		0.95		1.00	0.95	1.00	1.00
Satd. Flow (perm)		3730	1401	492	3730		1444		1095	1789	1768	1617
Peak-hour factor, PHF	0.92	0.91	0.63	0.87	0.90	0.92	0.50	0.92	0.58	0.77	0.80	0.90
Adj. Flow (vph)	0	882	16	108	1701	0	12	0	12	171	168	96
RTOR Reduction (vph)	0	0	7	0	0	0	0	0	11	0	2	73
Lane Group Flow (vph)	0	882	9	108	1701	0	12	0	1	154	193	13
Heavy Vehicles (%)	0%	3%	20%	2%	3%	0%	33%	0%	57%	2%	3%	1%
Turn Type		NA	Perm	pm+pt	NA		Prot		Perm	Perm	NA	Perm
Protected Phases		2		1	6		3				4	
Permitted Phases			2	6					3	4		4
Actuated Green, G (s)		79.0	79.0	90.6	90.6		6.0		6.0	20.9	20.9	20.9
Effective Green, g (s)		79.0	79.0	90.6	90.6		6.0		6.0	20.9	20.9	20.9
Actuated g/C Ratio		0.56	0.56	0.65	0.65		0.04		0.04	0.15	0.15	0.15
Clearance Time (s)		7.5	7.5	4.0	7.5		7.5		7.5	7.5	7.5	7.5
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		2104	790	391	2413		61		46	267	263	241
v/s Ratio Prot		0.24		0.01	c0.46		c0.01					
v/s Ratio Perm			0.01	0.16					0.00	0.09	0.11	0.01
v/c Ratio		0.42	0.01	0.28	0.70		0.20		0.01	0.58	0.73	0.05
Uniform Delay, d1		17.4	13.4	10.6	16.0		64.7		64.2	55.4	56.9	51.1
Progression Factor		1.00	1.00	1.20	1.08		1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2		0.6	0.0	0.2	0.8		1.6		0.1	3.0	10.2	0.1
Delay (s)		18.0	13.4	12.9	18.1		66.3		64.3	58.4	67.1	51.2
Level of Service		B	B	B	B		E		E	E	E	D
Approach Delay (s)		17.9			17.8			65.3			60.9	
Approach LOS		B			B			E			E	

Intersection Summary			
HCM 2000 Control Delay	24.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	26.5
Intersection Capacity Utilization	71.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

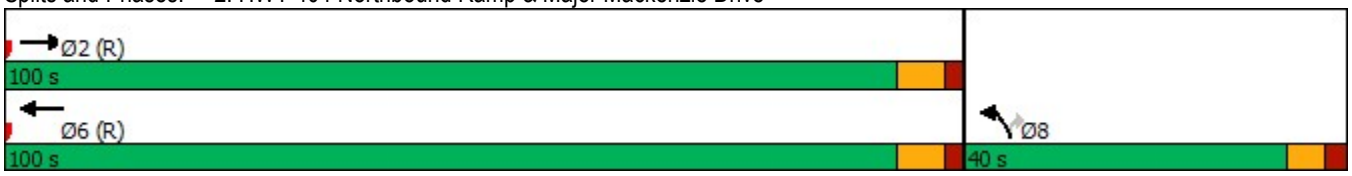


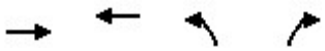
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	649	0	0	2090	521	480
Future Volume (vph)	649	0	0	2090	521	480
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000
Storage Length (m)		0.0	0.0		0.0	180.0
Storage Lanes		0	0		2	1
Taper Length (m)			7.6		7.6	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	0.91
Frt					0.958	0.850
Flt Protected					0.965	
Satd. Flow (prot)	3694	0	0	3767	3483	1462
Flt Permitted					0.965	
Satd. Flow (perm)	3694	0	0	3767	3483	1462
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)					41	274
Link Speed (k/h)	70			70	60	
Link Distance (m)	313.7			395.3	470.8	
Travel Time (s)	16.1			20.3	28.2	
Peak Hour Factor	0.92	0.92	0.92	0.94	0.98	0.87
Heavy Vehicles (%)	4%	0%	0%	2%	3%	7%
Adj. Flow (vph)	705	0	0	2223	532	552
Shared Lane Traffic (%)						38%
Lane Group Flow (vph)	705	0	0	2223	742	342
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	7.4	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	0.92	0.92	0.92	0.92	0.92	0.92
Turning Speed (k/h)		14	24		24	14
Number of Detectors	0			0	1	1
Detector Template						
Leading Detector (m)	0.0			0.0	7.5	7.5
Trailing Detector (m)	0.0			0.0	-1.5	-1.5
Detector 1 Position(m)	0.0			0.0	-1.5	-1.5
Detector 1 Size(m)	1.8			1.8	9.0	9.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases						8
Detector Phase	2			6	8	8
Switch Phase						
Minimum Initial (s)	20.0			20.0	10.0	10.0
Minimum Split (s)	27.0			27.0	23.0	23.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Split (s)	100.0			100.0	40.0	40.0
Total Split (%)	71.4%			71.4%	28.6%	28.6%
Maximum Green (s)	93.0			93.0	33.5	33.5
Yellow Time (s)	5.0			5.0	4.0	4.0
All-Red Time (s)	2.0			2.0	2.5	2.5
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	7.0			7.0	6.5	6.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	4.0			4.0	3.0	3.0
Recall Mode	C-Min			C-Min	None	None
Act Effct Green (s)	94.4			94.4	32.1	32.1
Actuated g/C Ratio	0.67			0.67	0.23	0.23
v/c Ratio	0.28			0.87	0.90	0.63
Control Delay	10.0			12.8	63.6	15.9
Queue Delay	0.0			0.2	0.0	0.0
Total Delay	10.0			13.0	63.6	15.9
LOS	B			B	E	B
Approach Delay	10.0			13.0	48.5	
Approach LOS	B			B	D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 67 (48%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay: 22.1		Intersection LOS: C	
Intersection Capacity Utilization 85.0%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 2: HWY 404 Northbound Ramp & Major Mackenzie Drive





Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	705	2223	742	342
v/c Ratio	0.28	0.87	0.90	0.63
Control Delay	10.0	12.8	63.6	15.9
Queue Delay	0.0	0.2	0.0	0.0
Total Delay	10.0	13.0	63.6	15.9
Queue Length 50th (m)	64.8	98.7	97.1	16.7
Queue Length 95th (m)	21.2	m99.3	#122.4	46.9
Internal Link Dist (m)	289.7	371.3	446.8	
Turn Bay Length (m)				180.0
Base Capacity (vph)	2491	2541	864	558
Starvation Cap Reductn	0	33	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.28	0.89	0.86	0.61

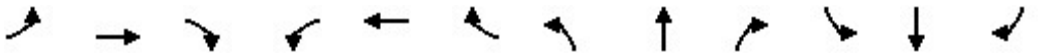
Intersection Summary

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



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	649	0	0	2090	521	480
Future Volume (vph)	649	0	0	2090	521	480
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000
Total Lost time (s)	7.0			7.0	6.5	6.5
Lane Util. Factor	0.95			0.95	0.97	0.91
Frt	1.00			1.00	0.96	0.85
Flt Protected	1.00			1.00	0.97	1.00
Satd. Flow (prot)	3694			3767	3483	1462
Flt Permitted	1.00			1.00	0.97	1.00
Satd. Flow (perm)	3694			3767	3483	1462
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.98	0.87
Adj. Flow (vph)	705	0	0	2223	532	552
RTOR Reduction (vph)	0	0	0	0	32	211
Lane Group Flow (vph)	705	0	0	2223	710	131
Heavy Vehicles (%)	4%	0%	0%	2%	3%	7%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases						8
Actuated Green, G (s)	94.4			94.4	32.1	32.1
Effective Green, g (s)	94.4			94.4	32.1	32.1
Actuated g/C Ratio	0.67			0.67	0.23	0.23
Clearance Time (s)	7.0			7.0	6.5	6.5
Vehicle Extension (s)	4.0			4.0	3.0	3.0
Lane Grp Cap (vph)	2490			2540	798	335
v/s Ratio Prot	0.19			c0.59	c0.20	
v/s Ratio Perm						0.09
v/c Ratio	0.28			0.88	0.89	0.39
Uniform Delay, d1	9.2			18.1	52.2	45.7
Progression Factor	1.04			0.61	1.00	1.00
Incremental Delay, d2	0.3			1.1	12.1	0.8
Delay (s)	9.8			12.2	64.3	46.4
Level of Service	A			B	E	D
Approach Delay (s)	9.8			12.2	58.7	
Approach LOS	A			B	E	

Intersection Summary			
HCM 2000 Control Delay	24.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	85.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

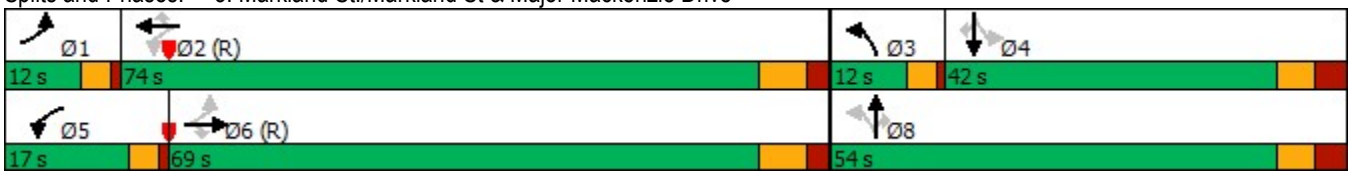


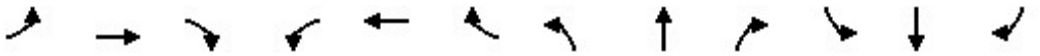
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	103	668	359	81	1564	8	180	52	24	42	283	543
Future Volume (vph)	103	668	359	81	1564	8	180	52	24	42	283	543
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	90.0		100.0	160.0		187.0	180.0		97.0	60.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97	1.00		0.98			0.98	0.99		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1824	3659	1648	1842	3730	1681	1773	2022	1303	1879	2002	1664
Flt Permitted	0.061			0.304			0.225			0.690		
Satd. Flow (perm)	117	3659	1602	588	3730	1644	420	2022	1273	1351	2002	1664
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			390			97			97			133
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		395.3			249.0			215.0			229.3	
Travel Time (s)		20.3			12.8			15.5			16.5	
Confl. Peds. (#/hr)	1		4	4		1			9	9		
Peak Hour Factor	0.80	0.93	0.92	0.78	0.93	1.00	0.94	0.50	0.67	0.75	0.79	0.91
Heavy Vehicles (%)	3%	5%	2%	2%	3%	0%	6%	0%	29%	0%	1%	1%
Adj. Flow (vph)	129	718	390	104	1682	8	191	104	36	56	358	597
Shared Lane Traffic (%)												
Lane Group Flow (vph)	129	718	390	104	1682	8	191	104	36	56	358	597
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.95	0.92	0.95	0.95	0.92	0.95	0.95	0.92	0.95	0.95	0.92	0.95
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	0	0	1	0	0	1	1	1	1	1	1
Detector Template												
Leading Detector (m)	15.2	0.0	0.0	15.2	0.0	0.0	7.5	7.5	7.5	7.5	7.5	7.5
Trailing Detector (m)	6.2	0.0	0.0	6.2	0.0	0.0	-1.5	-0.2	-1.5	-1.5	-1.5	-1.5
Detector 1 Position(m)	6.2	0.0	0.0	6.2	0.0	0.0	-1.5	-0.2	-1.5	-1.5	-1.5	-1.5
Detector 1 Size(m)	9.0	1.8	6.1	9.0	1.8	6.1	9.0	7.7	9.0	9.0	9.0	9.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Detector Phase	1	6	6	5	2	2	3	8	8	4	4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	7.0	35.0	35.0	7.0	35.0	35.0	7.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.0	43.0	43.0	11.0	43.0	43.0	11.0	41.0	41.0	41.0	41.0	41.0
Total Split (s)	12.0	69.0	69.0	17.0	74.0	74.0	12.0	54.0	54.0	42.0	42.0	42.0
Total Split (%)	8.6%	49.3%	49.3%	12.1%	52.9%	52.9%	8.6%	38.6%	38.6%	30.0%	30.0%	30.0%
Maximum Green (s)	8.0	61.5	61.5	13.0	66.5	66.5	8.0	46.5	46.5	34.5	34.5	34.5
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	2.5	2.5	1.0	2.5	2.5	1.0	3.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5	7.5	7.5	7.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		28.0	28.0		28.0	28.0		26.0	26.0	26.0	26.0	26.0
Pedestrian Calls (#/hr)		9	9		2	2		7	7	3	3	3
Act Effct Green (s)	77.2	65.7	65.7	78.8	66.5	66.5	50.0	46.5	46.5	34.5	34.5	34.5
Actuated g/C Ratio	0.55	0.47	0.47	0.56	0.48	0.48	0.36	0.33	0.33	0.25	0.25	0.25
v/c Ratio	0.80	0.42	0.41	0.25	0.95	0.01	0.84	0.15	0.07	0.17	0.73	1.17
Control Delay	64.4	17.0	2.6	10.2	31.4	0.0	66.3	33.7	0.3	43.2	58.1	131.9
Queue Delay	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.4	17.0	2.6	10.2	32.8	0.0	66.3	33.7	0.3	43.2	58.1	131.9
LOS	E	B	A	B	C	A	E	C	A	D	E	F
Approach Delay		17.4			31.3			48.9			100.9	
Approach LOS		B			C			D			F	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 74 (53%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green			
Natural Cycle: 140			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.17			
Intersection Signal Delay: 44.8		Intersection LOS: D	
Intersection Capacity Utilization 98.3%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 3: Markland St./Markland St & Major Mackenzie Drive





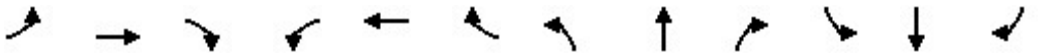
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	129	718	390	104	1682	8	191	104	36	56	358	597
v/c Ratio	0.80	0.42	0.41	0.25	0.95	0.01	0.84	0.15	0.07	0.17	0.73	1.17
Control Delay	64.4	17.0	2.6	10.2	31.4	0.0	66.3	33.7	0.3	43.2	58.1	131.9
Queue Delay	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.4	17.0	2.6	10.2	32.8	0.0	66.3	33.7	0.3	43.2	58.1	131.9
Queue Length 50th (m)	18.8	48.5	5.6	10.0	109.2	0.0	38.0	20.3	0.0	12.3	91.6	~167.5
Queue Length 95th (m)	m#36.4	m62.8	m16.0	6.8	#277.5	m0.0	#73.3	18.4	0.0	20.0	107.7	#239.8
Internal Link Dist (m)		371.3			225.0			191.0			205.3	
Turn Bay Length (m)	90.0		100.0	160.0		187.0	180.0		97.0	60.0		
Base Capacity (vph)	162	1717	958	460	1771	831	227	671	487	332	493	510
Starvation Cap Reductn	0	0	0	0	28	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	19	0	0	0	0	0	0	1
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.42	0.41	0.23	0.97	0.01	0.84	0.15	0.07	0.17	0.73	1.17

Intersection Summary

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

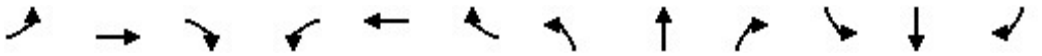
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	103	668	359	81	1564	8	180	52	24	42	283	543
Future Volume (vph)	103	668	359	81	1564	8	180	52	24	42	283	543
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
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	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5	7.5	7.5	7.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	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)	1824	3659	1602	1841	3730	1644	1773	2022	1273	1860	2002	1664
Flt Permitted	0.06	1.00	1.00	0.30	1.00	1.00	0.22	1.00	1.00	0.69	1.00	1.00
Satd. Flow (perm)	117	3659	1602	590	3730	1644	419	2022	1273	1351	2002	1664
Peak-hour factor, PHF	0.80	0.93	0.92	0.78	0.93	1.00	0.94	0.50	0.67	0.75	0.79	0.91
Adj. Flow (vph)	129	718	390	104	1682	8	191	104	36	56	358	597
RTOR Reduction (vph)	0	0	207	0	0	4	0	0	24	0	0	100
Lane Group Flow (vph)	129	718	183	104	1682	4	191	104	12	56	358	497
Confl. Peds. (#/hr)	1		4	4		1			9	9		
Heavy Vehicles (%)	3%	5%	2%	2%	3%	0%	6%	0%	29%	0%	1%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Actuated Green, G (s)	73.7	65.7	65.7	75.3	66.5	66.5	46.5	46.5	46.5	34.5	34.5	34.5
Effective Green, g (s)	73.7	65.7	65.7	75.3	66.5	66.5	46.5	46.5	46.5	34.5	34.5	34.5
Actuated g/C Ratio	0.53	0.47	0.47	0.54	0.48	0.48	0.33	0.33	0.33	0.25	0.25	0.25
Clearance Time (s)	4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5	7.5	7.5	7.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	159	1717	751	395	1771	780	216	671	422	332	493	410
v/s Ratio Prot	c0.05	0.20		0.02	c0.45		c0.05	0.05			0.18	
v/s Ratio Perm	0.38		0.11	0.12		0.00	0.24		0.01	0.04		c0.30
v/c Ratio	0.81	0.42	0.24	0.26	0.95	0.00	0.88	0.15	0.03	0.17	0.73	1.21
Uniform Delay, d1	34.6	24.5	22.3	16.6	35.2	19.3	43.0	32.9	31.5	41.5	48.4	52.8
Progression Factor	1.32	0.66	0.70	0.70	0.58	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	23.8	0.7	0.7	0.3	10.3	0.0	31.9	0.1	0.0	0.2	5.3	115.9
Delay (s)	69.3	16.8	16.4	11.9	30.7	19.3	74.9	33.0	31.5	41.7	53.7	168.6
Level of Service	E	B	B	B	C	B	E	C	C	D	D	F
Approach Delay (s)		22.1			29.5			57.0			120.9	
Approach LOS		C			C			E			F	

Intersection Summary			
HCM 2000 Control Delay	50.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	98.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

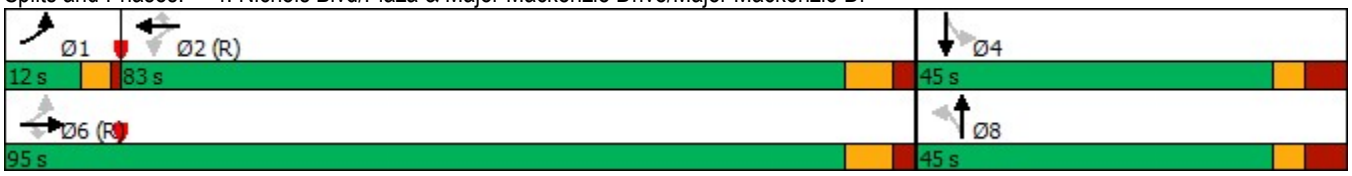


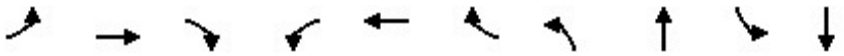
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	785	23	19	1686	57	57	5	39	27	3	12
Future Volume (vph)	7	785	23	19	1686	57	57	5	39	27	3	12
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.5	3.5	3.5
Storage Length (m)	55.0		100.0	45.0		45.0	70.0		0.0	30.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97	1.00		0.98	0.99	0.99		1.00	0.99	
Frt			0.850			0.850		0.871			0.900	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1879	3558	1616	1620	3767	1601	1879	1693	0	1879	1579	0
Flt Permitted	0.077			0.319			0.742			0.720		
Satd. Flow (perm)	152	3558	1572	543	3767	1561	1458	1693	0	1418	1579	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			39			70		48			16	
Link Speed (k/h)		70			70			40			40	
Link Distance (m)		249.0			251.3			209.6			112.0	
Travel Time (s)		12.8			12.9			18.9			10.1	
Confl. Peds. (#/hr)	2		3	3		2	6		4	4		6
Peak Hour Factor	0.58	0.88	0.72	0.53	0.93	0.65	0.75	0.63	0.81	0.61	0.38	0.75
Heavy Vehicles (%)	0%	8%	4%	16%	2%	5%	0%	0%	3%	0%	0%	17%
Adj. Flow (vph)	12	892	32	36	1813	88	76	8	48	44	8	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	892	32	36	1813	88	76	56	0	44	24	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.95	0.92	0.95	0.95	0.92	0.95	0.95	0.92	0.92	0.95	0.95	0.95
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0	0	0	0	0	1	1		1	1	
Detector Template												
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	7.5	7.5		7.5	7.5	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	-1.5	-0.2		-1.5	-1.5	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	-1.5	-0.2		-1.5	-1.5	
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8	6.1	9.0	7.7		9.0	9.0	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6			2			8			4	
Permitted Phases	6		6	2		2	8			4		
Detector Phase	1	6	6	2	2	2	8	8		4	4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	7.0	30.0	30.0	30.0	30.0	30.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	11.0	38.0	38.0	38.0	38.0	38.0	44.0	44.0		44.0	44.0	
Total Split (s)	12.0	95.0	95.0	83.0	83.0	83.0	45.0	45.0		45.0	45.0	
Total Split (%)	8.6%	67.9%	67.9%	59.3%	59.3%	59.3%	32.1%	32.1%		32.1%	32.1%	
Maximum Green (s)	8.0	87.5	87.5	75.5	75.5	75.5	37.0	37.0		37.0	37.0	
Yellow Time (s)	3.0	5.0	5.0	5.0	5.0	5.0	3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	2.5	2.5	2.5	2.5	2.5	4.5	4.5		4.5	4.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	7.5	7.5	7.5	7.5	7.5	8.0	8.0		8.0	8.0	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max	None	None		None	None	
Walk Time (s)		7.0	7.0	7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		21.0	21.0	21.0	21.0	21.0	29.0	29.0		29.0	29.0	
Pedestrian Calls (#/hr)		3	3	2	2	2	4	4		6	6	
Act Effct Green (s)	111.1	107.6	107.6	103.2	103.2	103.2	16.9	16.9		16.9	16.9	
Actuated g/C Ratio	0.79	0.77	0.77	0.74	0.74	0.74	0.12	0.12		0.12	0.12	
v/c Ratio	0.06	0.33	0.03	0.09	0.65	0.08	0.43	0.23		0.26	0.12	
Control Delay	3.1	3.3	0.4	4.4	9.0	0.5	62.0	17.6		55.7	26.5	
Queue Delay	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0		0.0	0.0	
Total Delay	3.1	3.3	0.4	4.4	9.1	0.5	62.0	17.6		55.7	26.5	
LOS	A	A	A	A	A	A	E	B		E	C	
Approach Delay		3.2			8.6			43.2			45.4	
Approach LOS		A			A			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 60 (43%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green			
Natural Cycle: 115			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 9.3		Intersection LOS: A	
Intersection Capacity Utilization 81.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 4: Nichols Blvd/Plaza & Major Mackenzie Drive/Major Mackenzie Dr

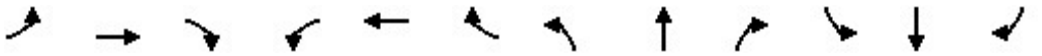




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	12	892	32	36	1813	88	76	56	44	24
v/c Ratio	0.06	0.33	0.03	0.09	0.65	0.08	0.43	0.23	0.26	0.12
Control Delay	3.1	3.3	0.4	4.4	9.0	0.5	62.0	17.6	55.7	26.5
Queue Delay	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay	3.1	3.3	0.4	4.4	9.1	0.5	62.0	17.6	55.7	26.5
Queue Length 50th (m)	0.2	11.1	0.0	1.0	38.4	0.2	20.5	2.1	11.6	2.1
Queue Length 95th (m)	1.0	30.2	0.3	m1.6	m46.6	m0.1	25.1	5.5	13.0	1.9
Internal Link Dist (m)		225.0			227.3			185.6		88.0
Turn Bay Length (m)	55.0		100.0	45.0		45.0	70.0		30.0	
Base Capacity (vph)	219	2735	1217	400	2777	1169	385	482	374	429
Starvation Cap Reductn	0	0	0	0	148	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	76	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.33	0.03	0.09	0.69	0.08	0.20	0.12	0.12	0.06

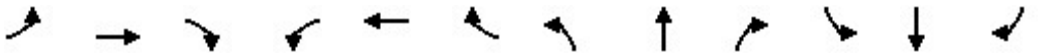
Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	785	23	19	1686	57	57	5	39	27	3	12
Future Volume (vph)	7	785	23	19	1686	57	57	5	39	27	3	12
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.5	3.5	3.5
Total Lost time (s)	4.0	7.5	7.5	7.5	7.5	7.5	8.0	8.0		8.0	8.0	
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	0.97	1.00	1.00	0.98	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.87		1.00	0.90	
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)	1879	3558	1572	1616	3767	1561	1866	1694		1871	1579	
Flt Permitted	0.08	1.00	1.00	0.32	1.00	1.00	0.74	1.00		0.72	1.00	
Satd. Flow (perm)	152	3558	1572	543	3767	1561	1457	1694		1419	1579	
Peak-hour factor, PHF	0.58	0.88	0.72	0.53	0.93	0.65	0.75	0.63	0.81	0.61	0.38	0.75
Adj. Flow (vph)	12	892	32	36	1813	88	76	8	48	44	8	16
RTOR Reduction (vph)	0	0	7	0	0	20	0	42	0	0	14	0
Lane Group Flow (vph)	12	892	25	36	1813	68	76	14	0	44	10	0
Confl. Peds. (#/hr)	2		3	3		2	6		4	4		6
Heavy Vehicles (%)	0%	8%	4%	16%	2%	5%	0%	0%	3%	0%	0%	17%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6			2			8			4	
Permitted Phases	6		6	2		2	8			4		
Actuated Green, G (s)	107.6	107.6	107.6	100.8	100.8	100.8	16.9	16.9		16.9	16.9	
Effective Green, g (s)	107.6	107.6	107.6	100.8	100.8	100.8	16.9	16.9		16.9	16.9	
Actuated g/C Ratio	0.77	0.77	0.77	0.72	0.72	0.72	0.12	0.12		0.12	0.12	
Clearance Time (s)	4.0	7.5	7.5	7.5	7.5	7.5	8.0	8.0		8.0	8.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	151	2734	1208	390	2712	1123	175	204		171	190	
v/s Ratio Prot	0.00	c0.25			c0.48			0.01			0.01	
v/s Ratio Perm	0.06		0.02	0.07		0.04	c0.05			0.03		
v/c Ratio	0.08	0.33	0.02	0.09	0.67	0.06	0.43	0.07		0.26	0.05	
Uniform Delay, d1	10.0	5.0	3.8	5.9	10.6	5.7	57.1	54.6		55.9	54.5	
Progression Factor	0.49	0.49	0.19	0.46	0.70	0.15	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.3	0.0	0.1	0.3	0.0	1.7	0.1		0.8	0.1	
Delay (s)	5.1	2.7	0.7	2.8	7.7	0.9	58.8	54.7		56.7	54.6	
Level of Service	A	A	A	A	A	A	E	D		E	D	
Approach Delay (s)		2.7			7.3			57.1			55.9	
Approach LOS		A			A			E			E	

Intersection Summary			
HCM 2000 Control Delay	9.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	81.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

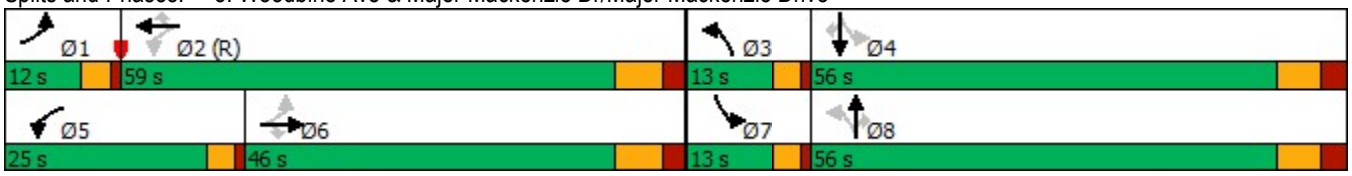


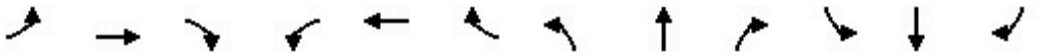
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	69	560	187	335	1424	48	151	387	180	97	1182	146
Future Volume (vph)	69	560	187	335	1424	48	151	387	180	97	1182	146
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.0	3.7	3.5	3.5	3.7	3.5	3.0	3.7	3.5	3.0	3.7	3.7
Storage Length (m)	120.0		80.0	300.0		120.0	150.0		70.0	165.0		70.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98	1.00		0.98			0.99	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1722	3591	1616	1842	3730	1681	1689	3730	1632	1673	3804	1592
Flt Permitted	0.102			0.191			0.083			0.415		
Satd. Flow (perm)	185	3591	1592	370	3730	1655	148	3730	1609	730	3804	1564
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			163			97			217			129
Link Speed (k/h)		70			70			60			60	
Link Distance (m)		251.3			460.0			545.1			346.9	
Travel Time (s)		12.9			23.7			32.7			20.8	
Confl. Peds. (#/hr)	3		3	3		3	5		2	2		5
Peak Hour Factor	0.82	0.81	0.87	0.91	0.94	0.75	0.80	0.83	0.83	0.67	0.95	0.85
Heavy Vehicles (%)	3%	7%	4%	2%	3%	0%	5%	3%	3%	6%	1%	8%
Adj. Flow (vph)	84	691	215	368	1515	64	189	466	217	145	1244	172
Shared Lane Traffic (%)												
Lane Group Flow (vph)	84	691	215	368	1515	64	189	466	217	145	1244	172
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.0			3.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.02	0.92	0.95	0.95	0.92	0.95	1.02	0.92	0.95	1.02	0.92	0.92
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	0	0	1	0	0	1	1	1	1	1	1
Detector Template												
Leading Detector (m)	15.2	0.0	0.0	15.2	0.0	0.0	15.2	7.5	7.5	15.2	7.5	7.5
Trailing Detector (m)	6.2	0.0	0.0	6.2	0.0	0.0	6.2	-1.5	-1.5	6.2	-1.5	-1.5
Detector 1 Position(m)	6.2	0.0	0.0	6.2	0.0	0.0	6.2	-1.5	-1.5	6.2	-1.5	-1.5
Detector 1 Size(m)	9.0	1.8	6.1	9.0	1.8	6.1	9.0	9.0	9.0	9.0	9.0	9.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6		6	2		2	8		8	4		4
Detector Phase	1	6	6	5	2	2	3	8	8	7	4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	7.0	36.0	36.0	7.0	36.0	36.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	44.0	44.0	11.0	44.0	44.0	11.0	45.0	45.0	11.0	45.0	45.0
Total Split (s)	12.0	46.0	46.0	25.0	59.0	59.0	13.0	56.0	56.0	13.0	56.0	56.0
Total Split (%)	8.6%	32.9%	32.9%	17.9%	42.1%	42.1%	9.3%	40.0%	40.0%	9.3%	40.0%	40.0%
Maximum Green (s)	8.0	38.5	38.5	21.0	51.5	51.5	9.0	48.5	48.5	9.0	48.5	48.5
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	1.0	2.5	2.5	1.0	2.5	2.5	1.0	3.0	3.0	1.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		29.0	29.0		29.0	29.0		30.0	30.0		30.0	30.0
Pedestrian Calls (#/hr)		3	3		3	3		0	0		5	5
Act Effct Green (s)	50.4	39.2	39.2	67.5	52.2	52.2	60.6	48.1	48.1	60.4	48.0	48.0
Actuated g/C Ratio	0.36	0.28	0.28	0.48	0.37	0.37	0.43	0.34	0.34	0.43	0.34	0.34
v/c Ratio	0.56	0.69	0.38	0.93	1.09	0.09	1.16	0.36	0.31	0.39	0.95	0.28
Control Delay	44.6	37.2	9.8	57.0	93.4	2.0	151.2	35.4	5.1	25.8	61.1	10.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.6	37.2	9.8	57.0	93.4	2.0	151.2	35.4	5.1	25.8	61.1	10.7
LOS	D	D	A	E	F	A	F	D	A	C	E	B
Approach Delay		31.9			83.5			53.0			52.2	
Approach LOS		C			F			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 69 (49%), Referenced to phase 2:WBTL, Start of Green			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.16			
Intersection Signal Delay: 59.9		Intersection LOS: E	
Intersection Capacity Utilization 105.8%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 5: Woodbine Ave & Major Mackenzie Dr/Major Mackenzie Drive



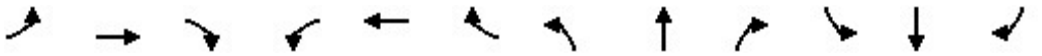


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	84	691	215	368	1515	64	189	466	217	145	1244	172
v/c Ratio	0.56	0.69	0.38	0.93	1.09	0.09	1.16	0.36	0.31	0.39	0.95	0.28
Control Delay	44.6	37.2	9.8	57.0	93.4	2.0	151.2	35.4	5.1	25.8	61.1	10.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.6	37.2	9.8	57.0	93.4	2.0	151.2	35.4	5.1	25.8	61.1	10.7
Queue Length 50th (m)	12.2	55.8	3.3	65.1	~250.6	0.0	~45.6	50.6	0.0	23.1	175.6	8.0
Queue Length 95th (m)	19.7	63.9	13.2	#123.3	#293.2	0.2	#77.0	59.4	12.2	26.5	#219.2	21.5
Internal Link Dist (m)		227.3			436.0			521.1			322.9	
Turn Bay Length (m)	120.0		80.0	300.0		120.0	150.0		70.0	165.0		70.0
Base Capacity (vph)	154	1004	562	398	1392	678	163	1292	699	375	1317	626
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.69	0.38	0.92	1.09	0.09	1.16	0.36	0.31	0.39	0.94	0.27

Intersection Summary

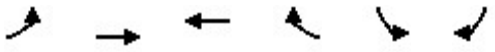
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



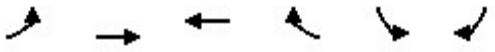
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	69	560	187	335	1424	48	151	387	180	97	1182	146
Future Volume (vph)	69	560	187	335	1424	48	151	387	180	97	1182	146
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.7	3.5	3.5	3.7	3.5	3.0	3.7	3.5	3.0	3.7	3.7
Total Lost time (s)	4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	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)	1722	3591	1592	1842	3730	1655	1689	3730	1609	1672	3804	1564
Flt Permitted	0.10	1.00	1.00	0.19	1.00	1.00	0.08	1.00	1.00	0.41	1.00	1.00
Satd. Flow (perm)	185	3591	1592	370	3730	1655	148	3730	1609	730	3804	1564
Peak-hour factor, PHF	0.82	0.81	0.87	0.91	0.94	0.75	0.80	0.83	0.83	0.67	0.95	0.85
Adj. Flow (vph)	84	691	215	368	1515	64	189	466	217	145	1244	172
RTOR Reduction (vph)	0	0	117	0	0	40	0	0	142	0	0	85
Lane Group Flow (vph)	84	691	98	368	1515	24	189	466	75	145	1244	87
Confl. Peds. (#/hr)	3		3	3		3	5		2	2		5
Heavy Vehicles (%)	3%	7%	4%	2%	3%	0%	5%	3%	3%	6%	1%	8%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6		6	2		2	8		8	4		4
Actuated Green, G (s)	47.0	39.2	39.2	64.0	52.2	52.2	57.1	48.1	48.1	56.9	48.0	48.0
Effective Green, g (s)	47.0	39.2	39.2	64.0	52.2	52.2	57.1	48.1	48.1	56.9	48.0	48.0
Actuated g/C Ratio	0.34	0.28	0.28	0.46	0.37	0.37	0.41	0.34	0.34	0.41	0.34	0.34
Clearance Time (s)	4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	147	1005	445	387	1390	617	159	1281	552	356	1304	536
v/s Ratio Prot	0.03	0.19		c0.14	c0.41		c0.08	0.12		0.03	0.33	
v/s Ratio Perm	0.16		0.06	0.29		0.01	c0.41		0.05	0.14		0.06
v/c Ratio	0.57	0.69	0.22	0.95	1.09	0.04	1.19	0.36	0.14	0.41	0.95	0.16
Uniform Delay, d1	37.1	44.9	38.7	29.2	43.9	27.9	36.9	34.5	31.6	27.2	44.9	32.0
Progression Factor	1.30	0.73	0.70	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.1	3.7	1.1	33.1	52.6	0.1	131.1	0.2	0.1	0.8	15.2	0.1
Delay (s)	53.2	36.7	28.2	62.3	96.5	28.1	168.0	34.6	31.7	28.0	60.1	32.2
Level of Service	D	D	C	E	F	C	F	C	C	C	E	C
Approach Delay (s)		36.3			87.8			62.8			54.0	
Approach LOS		D			F			E			D	

Intersection Summary			
HCM 2000 Control Delay	64.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	105.8%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	2	414	24	87	491	1
Future Volume (vph)	2	414	24	87	491	1
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.7
Storage Length (m)	50.0			0.0	30.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.6				7.6	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.905			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1281	1983	1788	0	1860	1719
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1281	1983	1788	0	1860	1719
Link Speed (k/h)		50	50		40	
Link Distance (m)		517.2	229.3		191.9	
Travel Time (s)		37.2	16.5		17.3	
Confl. Peds. (#/hr)	1			1		
Peak Hour Factor	0.50	0.86	0.55	0.84	0.87	0.25
Heavy Vehicles (%)	50%	2%	8%	0%	1%	0%
Adj. Flow (vph)	4	481	44	104	564	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	4	481	148	0	564	4
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	4.9		4.9	
Two way Left Turn Lane						
Headway Factor	0.92	0.92	0.92	0.92	0.95	0.92
Turning Speed (k/h)	24			14	24	14
Sign Control		Stop	Stop		Stop	

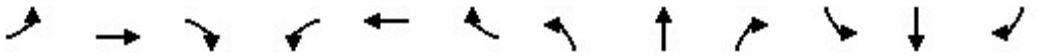
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.2%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	2	414	24	87	491	1
Future Volume (vph)	2	414	24	87	491	1
Peak Hour Factor	0.50	0.86	0.55	0.84	0.87	0.25
Hourly flow rate (vph)	4	481	44	104	564	4

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total (vph)	4	481	148	564	4
Volume Left (vph)	4	0	0	564	0
Volume Right (vph)	0	0	104	0	4
Hadj (s)	1.35	0.03	-0.38	0.52	-0.70
Departure Headway (s)	8.0	6.7	6.8	7.1	5.9
Degree Utilization, x	0.01	0.90	0.28	1.11	0.01
Capacity (veh/h)	440	532	512	510	592
Control Delay (s)	9.9	42.5	12.5	98.5	7.7
Approach Delay (s)	42.3		12.5	97.8	
Approach LOS	E		B	F	

Intersection Summary			
Delay	64.9		
Level of Service	F		
Intersection Capacity Utilization	53.2%	ICU Level of Service	A
Analysis Period (min)	15		

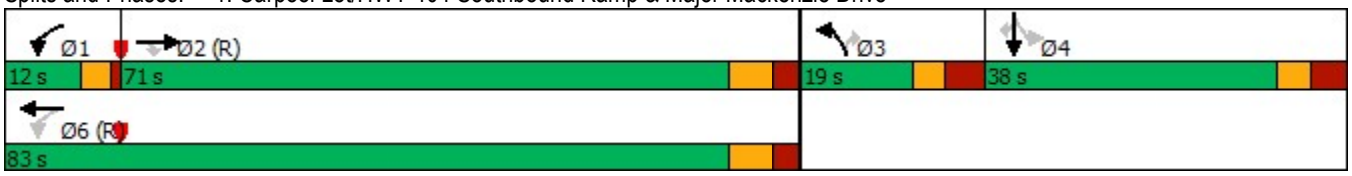


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1437	7	20	1455	0	13	0	17	209	6	190
Future Volume (vph)	0	1437	7	20	1455	0	13	0	17	209	6	190
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.7	3.7	3.5	3.5	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Storage Length (m)	0.0		95.0	55.0		0.0	0.0		0.0	0.0		170.0
Storage Lanes	0		1	1		0	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.91	0.95
Ped Bike Factor							1.00				0.99	0.99
Frt			0.850						0.850		0.942	0.850
Flt Protected				0.950			0.950			0.950	0.974	
Satd. Flow (prot)	0	3804	1303	1566	3767	0	1671	0	1457	1825	1680	1633
Flt Permitted				0.085			0.950			0.950	0.974	
Satd. Flow (perm)	0	3804	1303	140	3767	0	1669	0	1457	1825	1680	1611
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			125						125		21	125
Link Speed (k/h)		70			70			40			60	
Link Distance (m)		369.9			313.7			147.8			449.4	
Travel Time (s)		19.0			16.1			13.3			27.0	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.92	0.95	0.58	0.63	0.93	0.92	0.54	0.92	0.53	0.84	0.50	0.91
Heavy Vehicles (%)	2%	1%	29%	20%	2%	2%	15%	2%	18%	0%	0%	0%
Adj. Flow (vph)	0	1513	12	32	1565	0	24	0	32	249	12	209
Shared Lane Traffic (%)										34%		29%
Lane Group Flow (vph)	0	1513	12	32	1565	0	24	0	32	164	158	148
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.92	0.92	0.95	0.95	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors		0	0	1	0		1		1	1	1	1
Detector Template												
Leading Detector (m)		0.0	0.0	15.2	0.0		7.5		7.5	7.5	7.5	7.5
Trailing Detector (m)		0.0	0.0	6.2	0.0		-1.5		-1.5	-1.5	-1.5	-1.5
Detector 1 Position(m)		0.0	0.0	6.2	0.0		-1.5		-1.5	-1.5	-1.5	-1.5
Detector 1 Size(m)		1.8	6.1	9.0	1.8		9.0		9.0	9.0	9.0	9.0
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Turn Type		NA	Perm	pm+pt	NA		Prot		Perm	Perm	NA	Perm
Protected Phases		2		1	6		3				4	
Permitted Phases			2	6					3	4		4
Detector Phase		2	2	1	6		3		3	4	4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)		20.0	20.0	7.0	20.0		10.0		10.0	15.0	15.0	15.0
Minimum Split (s)		38.0	38.0	11.0	38.0		18.0		18.0	36.5	36.5	36.5
Total Split (s)		71.0	71.0	12.0	83.0		19.0		19.0	38.0	38.0	38.0
Total Split (%)		50.7%	50.7%	8.6%	59.3%		13.6%		13.6%	27.1%	27.1%	27.1%
Maximum Green (s)		63.5	63.5	8.0	75.5		11.5		11.5	30.5	30.5	30.5
Yellow Time (s)		4.5	4.5	3.0	4.5		3.5		3.5	3.5	3.5	3.5
All-Red Time (s)		3.0	3.0	1.0	3.0		4.0		4.0	4.0	4.0	4.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)		7.5	7.5	4.0	7.5		7.5		7.5	7.5	7.5	7.5
Lead/Lag		Lag	Lag	Lead			Lead		Lead	Lag	Lag	Lag
Lead-Lag Optimize?		Yes	Yes	Yes			Yes		Yes	Yes	Yes	Yes
Vehicle Extension (s)		4.0	4.0	3.0	4.0		3.0		3.0	3.0	3.0	3.0
Recall Mode		C-Min	C-Min	None	C-Min		None		None	None	None	None
Walk Time (s)		7.0	7.0		7.0					7.0	7.0	7.0
Flash Dont Walk (s)		23.0	23.0		23.0					22.0	22.0	22.0
Pedestrian Calls (#/hr)		0	0		0					1	1	1
Act Effct Green (s)		84.7	84.7	95.0	91.5		10.0		10.0	19.5	19.5	19.5
Actuated g/C Ratio		0.60	0.60	0.68	0.65		0.07		0.07	0.14	0.14	0.14
v/c Ratio		0.66	0.01	0.19	0.64		0.20		0.15	0.65	0.63	0.45
Control Delay		23.0	0.0	11.1	20.4		65.6		1.4	68.1	59.4	16.4
Queue Delay		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Total Delay		23.0	0.0	11.1	20.4		65.6		1.4	68.1	59.4	16.4
LOS		C	A	B	C		E		A	E	E	B
Approach Delay		22.8			20.2			28.9			48.9	
Approach LOS		C			C			C			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 24 (17%), Referenced to phase 2:EBT and 6:WBTL, Start of Green			
Natural Cycle: 115			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 25.1		Intersection LOS: C	
Intersection Capacity Utilization 77.7%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Carpool Lot/HWY 404 Southbound Ramp & Major Mackenzie Drive

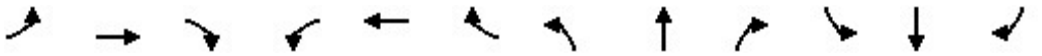




Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1513	12	32	1565	24	32	164	158	148
v/c Ratio	0.66	0.01	0.19	0.64	0.20	0.15	0.65	0.63	0.45
Control Delay	23.0	0.0	11.1	20.4	65.6	1.4	68.1	59.4	16.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.0	0.0	11.1	20.4	65.6	1.4	68.1	59.4	16.4
Queue Length 50th (m)	154.7	0.0	0.0	185.3	6.4	0.0	46.5	40.4	6.0
Queue Length 95th (m)	219.0	0.0	m4.2	204.3	9.4	0.0	60.8	29.0	24.9
Internal Link Dist (m)	345.9			289.7				425.4	
Turn Bay Length (m)		95.0	55.0						170.0
Base Capacity (vph)	2301	837	176	2460	137	234	397	382	448
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.01	0.18	0.64	0.18	0.14	0.41	0.41	0.33

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1437	7	20	1455	0	13	0	17	209	6	190
Future Volume (vph)	0	1437	7	20	1455	0	13	0	17	209	6	190
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.7	3.7	3.5	3.5	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Total Lost time (s)		7.5	7.5	4.0	7.5		7.5		7.5	7.5	7.5	7.5
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00		1.00	0.95	0.91	0.95
Frpb, ped/bikes		1.00	1.00	1.00	1.00		1.00		1.00	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	0.85	1.00	1.00		1.00		0.85	1.00	0.94	0.85
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00	0.95	0.97	1.00
Satd. Flow (prot)		3804	1303	1566	3767		1671		1457	1825	1679	1611
Flt Permitted		1.00	1.00	0.09	1.00		0.95		1.00	0.95	0.97	1.00
Satd. Flow (perm)		3804	1303	141	3767		1671		1457	1825	1679	1611
Peak-hour factor, PHF	0.92	0.95	0.58	0.63	0.93	0.92	0.54	0.92	0.53	0.84	0.50	0.91
Adj. Flow (vph)	0	1513	12	32	1565	0	24	0	32	249	12	209
RTOR Reduction (vph)	0	0	5	0	0	0	0	0	30	0	18	108
Lane Group Flow (vph)	0	1513	7	32	1565	0	24	0	2	164	140	40
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	2%	1%	29%	20%	2%	2%	15%	2%	18%	0%	0%	0%
Turn Type		NA	Perm	pm+pt	NA		Prot		Perm	Perm	NA	Perm
Protected Phases		2		1	6		3				4	
Permitted Phases			2	6					3	4		4
Actuated Green, G (s)		81.6	81.6	90.0	90.0		8.0		8.0	19.5	19.5	19.5
Effective Green, g (s)		81.6	81.6	90.0	90.0		8.0		8.0	19.5	19.5	19.5
Actuated g/C Ratio		0.58	0.58	0.64	0.64		0.06		0.06	0.14	0.14	0.14
Clearance Time (s)		7.5	7.5	4.0	7.5		7.5		7.5	7.5	7.5	7.5
Vehicle Extension (s)		4.0	4.0	3.0	4.0		3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		2217	759	135	2421		95		83	254	233	224
v/s Ratio Prot		c0.40		0.01	c0.42		c0.01					
v/s Ratio Perm			0.01	0.14					0.00	c0.09	0.08	0.03
v/c Ratio		0.68	0.01	0.24	0.65		0.25		0.02	0.65	0.60	0.18
Uniform Delay, d1		20.2	12.2	16.5	15.3		63.1		62.3	57.0	56.6	53.2
Progression Factor		1.00	1.00	0.92	1.19		1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2		1.7	0.0	0.7	1.0		1.4		0.1	5.5	4.3	0.4
Delay (s)		21.9	12.3	15.8	19.2		64.5		62.4	62.5	60.9	53.6
Level of Service		C	B	B	B		E		E	E	E	D
Approach Delay (s)		21.9			19.1			63.3			59.2	
Approach LOS		C			B			E			E	

Intersection Summary			
HCM 2000 Control Delay	26.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	26.5
Intersection Capacity Utilization	77.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

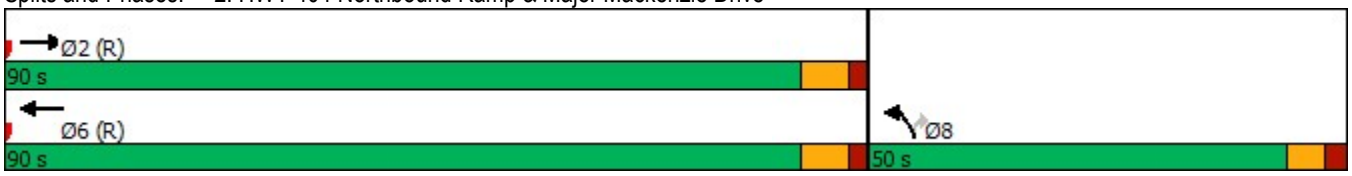


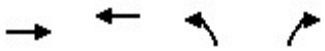
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1347	0	0	1538	445	486
Future Volume (vph)	1347	0	0	1538	445	486
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000
Storage Length (m)		0.0	0.0		0.0	180.0
Storage Lanes		0	0		2	1
Taper Length (m)			7.6		7.6	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	0.91
Frt					0.956	0.850
Flt Protected					0.966	
Satd. Flow (prot)	3804	0	0	3767	3562	1549
Flt Permitted					0.966	
Satd. Flow (perm)	3804	0	0	3767	3562	1549
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)					45	45
Link Speed (k/h)	70			70	60	
Link Distance (m)	313.7			395.3	470.8	
Travel Time (s)	16.1			20.3	28.2	
Peak Hour Factor	0.96	0.92	0.92	0.90	0.90	0.92
Heavy Vehicles (%)	1%	2%	2%	2%	2%	1%
Adj. Flow (vph)	1403	0	0	1709	494	528
Shared Lane Traffic (%)						39%
Lane Group Flow (vph)	1403	0	0	1709	700	322
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	7.4	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	0.92	0.92	0.92	0.92	0.92	0.92
Turning Speed (k/h)		14	24		24	14
Number of Detectors	0			0	1	1
Detector Template						
Leading Detector (m)	0.0			0.0	7.5	7.5
Trailing Detector (m)	0.0			0.0	-1.5	-1.5
Detector 1 Position(m)	0.0			0.0	-1.5	-1.5
Detector 1 Size(m)	1.8			1.8	9.0	9.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases						8
Detector Phase	2			6	8	8
Switch Phase						
Minimum Initial (s)	20.0			20.0	10.0	10.0
Minimum Split (s)	27.0			27.0	23.0	23.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Split (s)	90.0			90.0	50.0	50.0
Total Split (%)	64.3%			64.3%	35.7%	35.7%
Maximum Green (s)	83.0			83.0	43.5	43.5
Yellow Time (s)	5.0			5.0	4.0	4.0
All-Red Time (s)	2.0			2.0	2.5	2.5
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	7.0			7.0	6.5	6.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	4.0			4.0	3.0	3.0
Recall Mode	C-Min			C-Min	None	None
Act Effct Green (s)	92.7			92.7	33.8	33.8
Actuated g/C Ratio	0.66			0.66	0.24	0.24
v/c Ratio	0.56			0.69	0.78	0.79
Control Delay	23.4			25.0	52.4	56.1
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	23.4			25.0	52.4	56.1
LOS	C			C	D	E
Approach Delay	23.4			25.0	53.6	
Approach LOS	C			C	D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 113 (81%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 31.5		Intersection LOS: C	
Intersection Capacity Utilization 68.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: HWY 404 Northbound Ramp & Major Mackenzie Drive





Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1403	1709	700	322
v/c Ratio	0.56	0.69	0.78	0.79
Control Delay	23.4	25.0	52.4	56.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	23.4	25.0	52.4	56.1
Queue Length 50th (m)	154.5	196.3	89.0	81.0
Queue Length 95th (m)	177.0	m209.4	100.2	109.1
Internal Link Dist (m)	289.7	371.3	446.8	
Turn Bay Length (m)				180.0
Base Capacity (vph)	2517	2493	1137	512
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.56	0.69	0.62	0.63

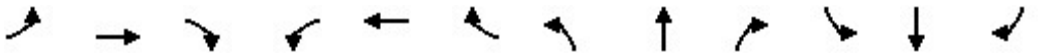
Intersection Summary

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



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1347	0	0	1538	445	486
Future Volume (vph)	1347	0	0	1538	445	486
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000
Total Lost time (s)	7.0			7.0	6.5	6.5
Lane Util. Factor	0.95			0.95	0.97	0.91
Frt	1.00			1.00	0.96	0.85
Flt Protected	1.00			1.00	0.97	1.00
Satd. Flow (prot)	3804			3767	3561	1549
Flt Permitted	1.00			1.00	0.97	1.00
Satd. Flow (perm)	3804			3767	3561	1549
Peak-hour factor, PHF	0.96	0.92	0.92	0.90	0.90	0.92
Adj. Flow (vph)	1403	0	0	1709	494	528
RTOR Reduction (vph)	0	0	0	0	34	34
Lane Group Flow (vph)	1403	0	0	1709	666	288
Heavy Vehicles (%)	1%	2%	2%	2%	2%	1%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases						8
Actuated Green, G (s)	92.7			92.7	33.8	33.8
Effective Green, g (s)	92.7			92.7	33.8	33.8
Actuated g/C Ratio	0.66			0.66	0.24	0.24
Clearance Time (s)	7.0			7.0	6.5	6.5
Vehicle Extension (s)	4.0			4.0	3.0	3.0
Lane Grp Cap (vph)	2518			2494	859	373
v/s Ratio Prot	0.37			c0.45	c0.19	
v/s Ratio Perm						0.19
v/c Ratio	0.56			0.69	0.78	0.77
Uniform Delay, d1	12.7			14.6	49.6	49.5
Progression Factor	1.65			1.50	1.00	1.00
Incremental Delay, d2	0.7			1.0	4.4	9.5
Delay (s)	21.7			23.0	54.0	59.0
Level of Service	C			C	D	E
Approach Delay (s)	21.7			23.0	55.6	
Approach LOS	C			C	E	

Intersection Summary			
HCM 2000 Control Delay	30.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	68.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

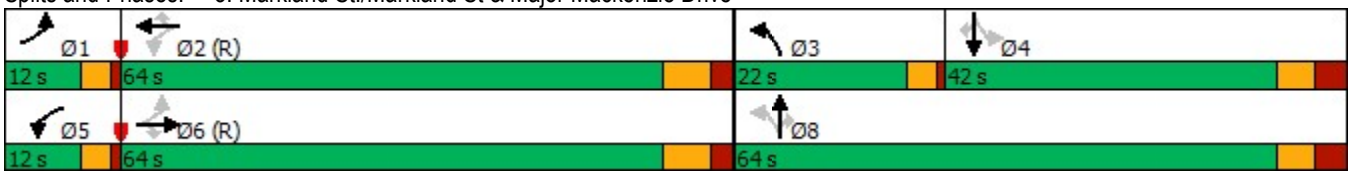


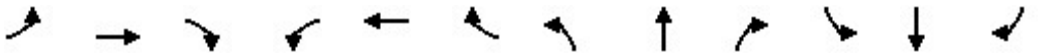
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	209	1451	179	22	1296	40	393	118	83	35	52	235
Future Volume (vph)	209	1451	179	22	1296	40	393	118	83	35	52	235
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	90.0		100.0	160.0		187.0	180.0		97.0	60.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97			0.98			0.98	0.99		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1879	3804	1664	1479	3767	1681	1860	2022	1648	1824	2022	1681
Flt Permitted	0.077			0.081			0.567			0.672		
Satd. Flow (perm)	152	3804	1618	126	3767	1644	1110	2022	1610	1278	2022	1681
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			187			97			124			151
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		395.3			249.0			215.0			229.3	
Travel Time (s)		20.3			12.8			15.5			16.5	
Confl. Peds. (#/hr)	1		4	4		1			9	9		
Peak Hour Factor	0.92	0.94	0.72	0.79	0.88	0.59	0.94	0.89	0.67	0.67	0.76	0.92
Heavy Vehicles (%)	0%	1%	1%	27%	2%	0%	1%	0%	2%	3%	0%	0%
Adj. Flow (vph)	227	1544	249	28	1473	68	418	133	124	52	68	255
Shared Lane Traffic (%)												
Lane Group Flow (vph)	227	1544	249	28	1473	68	418	133	124	52	68	255
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.95	0.92	0.95	0.95	0.92	0.95	0.95	0.92	0.95	0.95	0.92	0.95
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	0	0	1	0	0	1	1	1	1	1	1
Detector Template												
Leading Detector (m)	15.2	0.0	0.0	15.2	0.0	0.0	7.5	7.5	7.5	7.5	7.5	7.5
Trailing Detector (m)	6.2	0.0	0.0	6.2	0.0	0.0	-1.5	-0.2	-1.5	-1.5	-1.5	-1.5
Detector 1 Position(m)	6.2	0.0	0.0	6.2	0.0	0.0	-1.5	-0.2	-1.5	-1.5	-1.5	-1.5
Detector 1 Size(m)	9.0	1.8	6.1	9.0	1.8	6.1	9.0	7.7	9.0	9.0	9.0	9.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Detector Phase	1	6	6	5	2	2	3	8	8	4	4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	7.0	35.0	35.0	7.0	35.0	35.0	7.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.0	43.0	43.0	11.0	43.0	43.0	11.0	41.0	41.0	41.0	41.0	41.0
Total Split (s)	12.0	64.0	64.0	12.0	64.0	64.0	22.0	64.0	64.0	42.0	42.0	42.0
Total Split (%)	8.6%	45.7%	45.7%	8.6%	45.7%	45.7%	15.7%	45.7%	45.7%	30.0%	30.0%	30.0%
Maximum Green (s)	8.0	56.5	56.5	8.0	56.5	56.5	18.0	56.5	56.5	34.5	34.5	34.5
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	2.5	2.5	1.0	2.5	2.5	1.0	3.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5	7.5	7.5	7.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		28.0	28.0		28.0	28.0		26.0	26.0	26.0	26.0	26.0
Pedestrian Calls (#/hr)		4	4		1	1		0	0	0	0	0
Act Effct Green (s)	89.0	80.7	80.7	86.1	75.5	75.5	41.0	37.5	37.5	15.5	15.5	15.5
Actuated g/C Ratio	0.64	0.58	0.58	0.62	0.54	0.54	0.29	0.27	0.27	0.11	0.11	0.11
v/c Ratio	1.16	0.70	0.25	0.19	0.73	0.07	0.99	0.25	0.24	0.37	0.30	0.80
Control Delay	138.6	26.8	7.5	20.5	33.9	8.7	88.4	40.1	6.7	63.0	58.8	42.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	138.6	26.8	7.5	20.5	33.9	8.7	88.4	40.1	6.7	63.0	58.8	42.0
LOS	F	C	A	C	C	A	F	D	A	E	E	D
Approach Delay		37.0			32.5			63.9			48.0	
Approach LOS		D			C			E			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 23 (16%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.16			
Intersection Signal Delay: 40.3		Intersection LOS: D	
Intersection Capacity Utilization 88.3%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 3: Markland St./Markland St & Major Mackenzie Drive





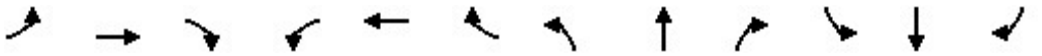
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	227	1544	249	28	1473	68	418	133	124	52	68	255
v/c Ratio	1.16	0.70	0.25	0.19	0.73	0.07	0.99	0.25	0.24	0.37	0.30	0.80
Control Delay	138.6	26.8	7.5	20.5	33.9	8.7	88.4	40.1	6.7	63.0	58.8	42.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	138.6	26.8	7.5	20.5	33.9	8.7	88.4	40.1	6.7	63.0	58.8	42.0
Queue Length 50th (m)	~50.3	156.1	23.3	3.5	134.0	1.9	~108.7	29.3	0.0	13.7	17.8	28.7
Queue Length 95th (m)	#106.5	214.0	10.4	m8.3	171.5	3.9	#148.0	42.2	4.0	18.5	25.5	55.7
Internal Link Dist (m)		371.3			225.0			191.0			205.3	
Turn Bay Length (m)	90.0		100.0	160.0		187.0	180.0		97.0	60.0		
Base Capacity (vph)	195	2193	1012	155	2030	931	421	816	723	314	498	528
Starvation Cap Reductn	0	0	0	0	17	0	0	0	0	0	0	0
Spillback Cap Reductn	0	21	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.16	0.71	0.25	0.18	0.73	0.07	0.99	0.16	0.17	0.17	0.14	0.48

Intersection Summary

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

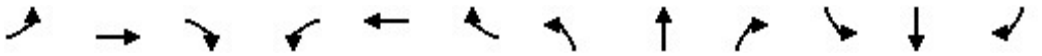
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	209	1451	179	22	1296	40	393	118	83	35	52	235
Future Volume (vph)	209	1451	179	22	1296	40	393	118	83	35	52	235
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
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	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5	7.5	7.5	7.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	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)	1879	3804	1618	1479	3767	1644	1860	2022	1610	1807	2022	1681
Flt Permitted	0.08	1.00	1.00	0.08	1.00	1.00	0.57	1.00	1.00	0.67	1.00	1.00
Satd. Flow (perm)	152	3804	1618	125	3767	1644	1109	2022	1610	1278	2022	1681
Peak-hour factor, PHF	0.92	0.94	0.72	0.79	0.88	0.59	0.94	0.89	0.67	0.67	0.76	0.92
Adj. Flow (vph)	227	1544	249	28	1473	68	418	133	124	52	68	255
RTOR Reduction (vph)	0	0	81	0	0	31	0	0	91	0	0	134
Lane Group Flow (vph)	227	1544	168	28	1473	37	418	133	33	52	68	121
Confl. Peds. (#/hr)	1		4	4		1			9	9		
Heavy Vehicles (%)	0%	1%	1%	27%	2%	0%	1%	0%	2%	3%	0%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Actuated Green, G (s)	87.2	79.2	79.2	79.8	75.5	75.5	37.5	37.5	37.5	15.5	15.5	15.5
Effective Green, g (s)	87.2	79.2	79.2	79.8	75.5	75.5	37.5	37.5	37.5	15.5	15.5	15.5
Actuated g/C Ratio	0.62	0.57	0.57	0.57	0.54	0.54	0.27	0.27	0.27	0.11	0.11	0.11
Clearance Time (s)	4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5	7.5	7.5	7.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	193	2151	915	112	2031	886	393	541	431	141	223	186
v/s Ratio Prot	c0.07	0.41		0.01	0.39		c0.14	0.07			0.03	
v/s Ratio Perm	c0.66		0.10	0.13		0.02	c0.15		0.02	0.04		0.07
v/c Ratio	1.18	0.72	0.18	0.25	0.73	0.04	1.06	0.25	0.08	0.37	0.30	0.65
Uniform Delay, d1	33.0	22.2	14.7	19.2	24.4	15.2	49.6	40.2	38.3	57.7	57.3	59.6
Progression Factor	1.15	1.08	1.37	1.72	1.24	6.04	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	115.4	1.8	0.4	1.0	2.0	0.1	63.3	0.2	0.1	1.6	0.8	7.6
Delay (s)	153.4	25.7	20.6	34.1	32.3	91.8	112.9	40.4	38.4	59.3	58.1	67.2
Level of Service	F	C	C	C	C	F	F	D	D	E	E	E
Approach Delay (s)		39.4			34.9			84.9			64.5	
Approach LOS		D			C			F			E	

Intersection Summary			
HCM 2000 Control Delay	46.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	88.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

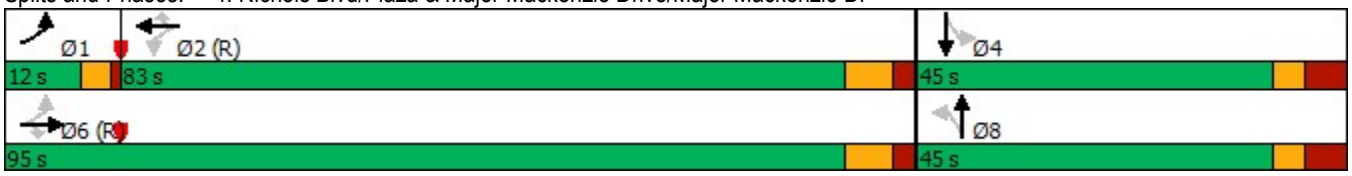


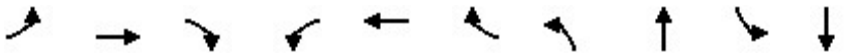
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	1434	56	20	1282	148	39	10	18	129	17	40
Future Volume (vph)	57	1434	56	20	1282	148	39	10	18	129	17	40
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.5	3.5	3.5
Storage Length (m)	55.0		100.0	45.0		45.0	70.0		0.0	30.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97	1.00		0.96	1.00	0.99		0.99	0.99	
Frt			0.850			0.850		0.910			0.902	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1842	3804	1681	1879	3767	1664	1879	1819	0	1842	1766	0
Flt Permitted	0.130			0.153			0.697			0.731		
Satd. Flow (perm)	252	3804	1631	302	3767	1594	1374	1819	0	1408	1766	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			64			100		24			60	
Link Speed (k/h)		70			70			40			40	
Link Distance (m)		249.0			251.3			209.6			112.0	
Travel Time (s)		12.8			12.9			18.9			10.1	
Confl. Peds. (#/hr)	9		4	4		9	3		6	6		3
Peak Hour Factor	0.55	0.97	0.88	0.83	0.94	0.80	0.61	0.63	0.75	0.65	0.53	0.67
Heavy Vehicles (%)	2%	1%	0%	0%	2%	1%	0%	0%	0%	2%	0%	0%
Adj. Flow (vph)	104	1478	64	24	1364	185	64	16	24	198	32	60
Shared Lane Traffic (%)												
Lane Group Flow (vph)	104	1478	64	24	1364	185	64	40	0	198	92	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.95	0.92	0.95	0.95	0.92	0.95	0.95	0.92	0.92	0.95	0.95	0.95
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0	0	0	0	0	1	1		1	1	
Detector Template												
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	7.5	7.5		7.5	7.5	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	-1.5	-0.2		-1.5	-1.5	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	-1.5	-0.2		-1.5	-1.5	
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8	6.1	9.0	7.7		9.0	9.0	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6			2			8			4	
Permitted Phases	6		6	2		2	8			4		
Detector Phase	1	6	6	2	2	2	8	8		4	4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	7.0	30.0	30.0	30.0	30.0	30.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	11.0	38.0	38.0	38.0	38.0	38.0	44.0	44.0		44.0	44.0	
Total Split (s)	12.0	95.0	95.0	83.0	83.0	83.0	45.0	45.0		45.0	45.0	
Total Split (%)	8.6%	67.9%	67.9%	59.3%	59.3%	59.3%	32.1%	32.1%		32.1%	32.1%	
Maximum Green (s)	8.0	87.5	87.5	75.5	75.5	75.5	37.0	37.0		37.0	37.0	
Yellow Time (s)	3.0	5.0	5.0	5.0	5.0	5.0	3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	2.5	2.5	2.5	2.5	2.5	4.5	4.5		4.5	4.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	7.5	7.5	7.5	7.5	7.5	8.0	8.0		8.0	8.0	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max	None	None		None	None	
Walk Time (s)		7.0	7.0	7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		21.0	21.0	21.0	21.0	21.0	29.0	29.0		29.0	29.0	
Pedestrian Calls (#/hr)		4	4	9	9	9	6	6		3	3	
Act Effct Green (s)	102.5	99.0	99.0	87.2	87.2	87.2	25.5	25.5		25.5	25.5	
Actuated g/C Ratio	0.73	0.71	0.71	0.62	0.62	0.62	0.18	0.18		0.18	0.18	
v/c Ratio	0.38	0.55	0.05	0.13	0.58	0.18	0.26	0.11		0.77	0.25	
Control Delay	7.3	7.7	0.3	9.4	9.5	3.0	49.2	23.1		73.5	19.7	
Queue Delay	0.0	0.5	0.0	0.0	0.1	0.0	0.0	0.0		0.0	0.0	
Total Delay	7.3	8.2	0.3	9.4	9.5	3.0	49.2	23.1		73.5	19.7	
LOS	A	A	A	A	A	A	D	C		E	B	
Approach Delay		7.9			8.8			39.2			56.4	
Approach LOS		A			A			D			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 44 (31%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 13.1		Intersection LOS: B	
Intersection Capacity Utilization 79.6%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 4: Nichols Blvd/Plaza & Major Mackenzie Drive/Major Mackenzie Dr

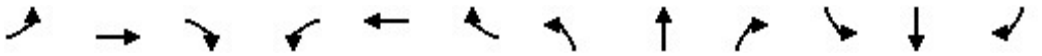




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	104	1478	64	24	1364	185	64	40	198	92
v/c Ratio	0.38	0.55	0.05	0.13	0.58	0.18	0.26	0.11	0.77	0.25
Control Delay	7.3	7.7	0.3	9.4	9.5	3.0	49.2	23.1	73.5	19.7
Queue Delay	0.0	0.5	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay	7.3	8.2	0.3	9.4	9.5	3.0	49.2	23.1	73.5	19.7
Queue Length 50th (m)	1.2	77.0	0.0	1.6	57.8	2.7	15.5	3.7	53.0	7.5
Queue Length 95th (m)	1.6	75.1	m0.0	m2.8	m67.7	m5.8	17.6	7.4	49.7	6.5
Internal Link Dist (m)		225.0			227.3			185.6		88.0
Turn Bay Length (m)	55.0		100.0	45.0		45.0	70.0		30.0	
Base Capacity (vph)	279	2690	1172	188	2345	1029	363	498	372	510
Starvation Cap Reductn	0	701	0	0	111	0	0	0	0	0
Spillback Cap Reductn	0	61	0	0	3	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.74	0.05	0.13	0.61	0.18	0.18	0.08	0.53	0.18

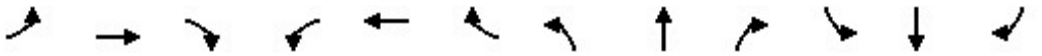
Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	1434	56	20	1282	148	39	10	18	129	17	40
Future Volume (vph)	57	1434	56	20	1282	148	39	10	18	129	17	40
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.5	3.5	3.5
Total Lost time (s)	4.0	7.5	7.5	7.5	7.5	7.5	8.0	8.0		8.0	8.0	
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	0.97	1.00	1.00	0.96	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		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.91		1.00	0.90	
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)	1842	3804	1631	1877	3767	1594	1873	1819		1830	1766	
Flt Permitted	0.13	1.00	1.00	0.15	1.00	1.00	0.70	1.00		0.73	1.00	
Satd. Flow (perm)	252	3804	1631	303	3767	1594	1375	1819		1408	1766	
Peak-hour factor, PHF	0.55	0.97	0.88	0.83	0.94	0.80	0.61	0.63	0.75	0.65	0.53	0.67
Adj. Flow (vph)	104	1478	64	24	1364	185	64	16	24	198	32	60
RTOR Reduction (vph)	0	0	19	0	0	38	0	20	0	0	49	0
Lane Group Flow (vph)	104	1478	45	24	1364	147	64	20	0	198	43	0
Confl. Peds. (#/hr)	9		4	4		9	3		6	6		3
Heavy Vehicles (%)	2%	1%	0%	0%	2%	1%	0%	0%	0%	2%	0%	0%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6			2			8			4	
Permitted Phases	6		6	2		2	8			4		
Actuated Green, G (s)	99.0	99.0	99.0	87.1	87.1	87.1	25.5	25.5		25.5	25.5	
Effective Green, g (s)	99.0	99.0	99.0	87.1	87.1	87.1	25.5	25.5		25.5	25.5	
Actuated g/C Ratio	0.71	0.71	0.71	0.62	0.62	0.62	0.18	0.18		0.18	0.18	
Clearance Time (s)	4.0	7.5	7.5	7.5	7.5	7.5	8.0	8.0		8.0	8.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	267	2689	1153	188	2343	991	250	331		256	321	
v/s Ratio Prot	0.02	c0.39			c0.36			0.01			0.02	
v/s Ratio Perm	0.25		0.03	0.08		0.09	0.05			c0.14		
v/c Ratio	0.39	0.55	0.04	0.13	0.58	0.15	0.26	0.06		0.77	0.13	
Uniform Delay, d1	11.2	9.8	6.2	10.9	15.7	11.0	49.1	47.4		54.5	48.0	
Progression Factor	0.66	0.65	0.13	0.58	0.52	0.45	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.6	0.0	1.0	0.7	0.2	0.5	0.1		13.5	0.2	
Delay (s)	8.2	7.0	0.8	7.3	8.8	5.1	49.7	47.4		68.0	48.2	
Level of Service	A	A	A	A	A	A	D	D		E	D	
Approach Delay (s)		6.9			8.4			48.8			61.7	
Approach LOS		A			A			D			E	

Intersection Summary			
HCM 2000 Control Delay	13.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	79.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

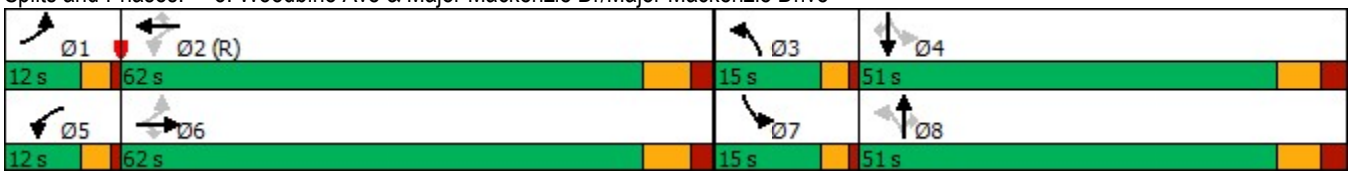


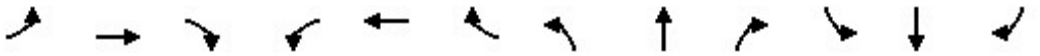
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	97	1329	195	142	1013	102	349	655	353	107	306	83
Future Volume (vph)	97	1329	195	142	1013	102	349	655	353	107	306	83
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.0	3.7	3.5	3.5	3.7	3.5	3.0	3.7	3.5	3.0	3.7	3.7
Storage Length (m)	120.0		80.0	300.0		120.0	150.0		70.0	165.0		70.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.97			0.98			0.98	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1773	3842	1601	1879	3767	1664	1739	3842	1664	1773	3804	1702
Flt Permitted	0.142			0.063			0.459			0.127		
Satd. Flow (perm)	265	3842	1556	125	3767	1635	840	3842	1637	237	3804	1702
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			161			112			167			120
Link Speed (k/h)		70			70			60			60	
Link Distance (m)		251.3			460.0			545.1			346.9	
Travel Time (s)		12.9			23.7			32.7			20.8	
Confl. Peds. (#/hr)	5		14	14		5			4	4		
Peak Hour Factor	0.78	0.96	0.81	0.83	0.92	0.91	0.89	0.85	0.87	0.84	0.86	0.69
Heavy Vehicles (%)	0%	0%	5%	0%	2%	1%	2%	0%	1%	0%	1%	1%
Adj. Flow (vph)	124	1384	241	171	1101	112	392	771	406	127	356	120
Shared Lane Traffic (%)												
Lane Group Flow (vph)	124	1384	241	171	1101	112	392	771	406	127	356	120
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.0			3.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.02	0.92	0.95	0.95	0.92	0.95	1.02	0.92	0.95	1.02	0.92	0.92
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	0	0	1	0	0	1	1	1	1	1	1
Detector Template												
Leading Detector (m)	15.2	0.0	0.0	15.2	0.0	0.0	15.2	7.5	7.5	15.2	7.5	7.5
Trailing Detector (m)	6.2	0.0	0.0	6.2	0.0	0.0	6.2	-1.5	-1.5	6.2	-1.5	-1.5
Detector 1 Position(m)	6.2	0.0	0.0	6.2	0.0	0.0	6.2	-1.5	-1.5	6.2	-1.5	-1.5
Detector 1 Size(m)	9.0	1.8	6.1	9.0	1.8	6.1	9.0	9.0	9.0	9.0	9.0	9.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6		6	2		2	8		8	4		4
Detector Phase	1	6	6	5	2	2	3	8	8	7	4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	7.0	36.0	36.0	7.0	36.0	36.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	44.0	44.0	11.0	44.0	44.0	11.0	45.0	45.0	11.0	45.0	45.0
Total Split (s)	12.0	62.0	62.0	12.0	62.0	62.0	15.0	51.0	51.0	15.0	51.0	51.0
Total Split (%)	8.6%	44.3%	44.3%	8.6%	44.3%	44.3%	10.7%	36.4%	36.4%	10.7%	36.4%	36.4%
Maximum Green (s)	8.0	54.5	54.5	8.0	54.5	54.5	11.0	43.5	43.5	11.0	43.5	43.5
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	1.0	2.5	2.5	1.0	2.5	2.5	1.0	3.0	3.0	1.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		29.0	29.0		29.0	29.0		30.0	30.0		30.0	30.0
Pedestrian Calls (#/hr)		14	14		5	5		4	4		0	0
Act Effct Green (s)	74.5	63.2	63.2	74.9	63.4	63.4	49.8	35.3	35.3	48.7	34.8	34.8
Actuated g/C Ratio	0.53	0.45	0.45	0.54	0.45	0.45	0.36	0.25	0.25	0.35	0.25	0.25
v/c Ratio	0.55	0.80	0.30	1.02	0.64	0.14	1.06	0.80	0.76	0.64	0.38	0.23
Control Delay	22.8	20.0	2.2	108.4	32.8	4.8	102.8	55.3	36.9	43.1	43.9	7.1
Queue Delay	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.8	20.1	2.2	108.4	32.8	4.8	102.8	55.3	36.9	43.1	43.9	7.1
LOS	C	C	A	F	C	A	F	E	D	D	D	A
Approach Delay		17.8			39.9			62.4			36.4	
Approach LOS		B			D			E			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 53 (38%), Referenced to phase 2:WBTL, Start of Green			
Natural Cycle: 115			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.06			
Intersection Signal Delay: 38.9		Intersection LOS: D	
Intersection Capacity Utilization 88.2%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 5: Woodbine Ave & Major Mackenzie Dr/Major Mackenzie Drive



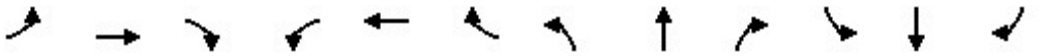


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	124	1384	241	171	1101	112	392	771	406	127	356	120
v/c Ratio	0.55	0.80	0.30	1.02	0.64	0.14	1.06	0.80	0.76	0.64	0.38	0.23
Control Delay	22.8	20.0	2.2	108.4	32.8	4.8	102.8	55.3	36.9	43.1	43.9	7.1
Queue Delay	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.8	20.1	2.2	108.4	32.8	4.8	102.8	55.3	36.9	43.1	43.9	7.1
Queue Length 50th (m)	5.2	173.8	5.9	~32.9	123.0	0.0	~94.4	106.0	63.5	23.2	43.1	0.0
Queue Length 95th (m)	14.2	#188.6	2.4	#72.3	161.2	11.8	#138.9	111.5	89.3	32.0	50.6	5.1
Internal Link Dist (m)		227.3			436.0			521.1			322.9	
Turn Bay Length (m)	120.0		80.0	300.0		120.0	150.0		70.0	165.0		70.0
Base Capacity (vph)	227	1735	791	167	1707	802	369	1193	623	204	1181	611
Starvation Cap Reductn	0	34	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.81	0.30	1.02	0.64	0.14	1.06	0.65	0.65	0.62	0.30	0.20

Intersection Summary

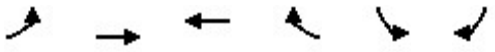
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



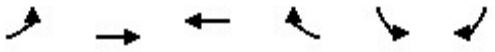
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	97	1329	195	142	1013	102	349	655	353	107	306	83
Future Volume (vph)	97	1329	195	142	1013	102	349	655	353	107	306	83
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.7	3.5	3.5	3.7	3.5	3.0	3.7	3.5	3.0	3.7	3.7
Total Lost time (s)	4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	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	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)	1773	3842	1556	1879	3767	1635	1739	3842	1637	1773	3804	1702
Flt Permitted	0.14	1.00	1.00	0.06	1.00	1.00	0.46	1.00	1.00	0.13	1.00	1.00
Satd. Flow (perm)	264	3842	1556	125	3767	1635	840	3842	1637	238	3804	1702
Peak-hour factor, PHF	0.78	0.96	0.81	0.83	0.92	0.91	0.89	0.85	0.87	0.84	0.86	0.69
Adj. Flow (vph)	124	1384	241	171	1101	112	392	771	406	127	356	120
RTOR Reduction (vph)	0	0	88	0	0	61	0	0	125	0	0	90
Lane Group Flow (vph)	124	1384	153	171	1101	51	392	771	281	127	356	30
Confl. Peds. (#/hr)	5		14	14		5			4	4		
Heavy Vehicles (%)	0%	0%	5%	0%	2%	1%	2%	0%	1%	0%	1%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6		6	2		2	8		8	4		4
Actuated Green, G (s)	71.0	63.2	63.2	71.4	63.4	63.4	46.3	35.3	35.3	45.3	34.8	34.8
Effective Green, g (s)	71.0	63.2	63.2	71.4	63.4	63.4	46.3	35.3	35.3	45.3	34.8	34.8
Actuated g/C Ratio	0.51	0.45	0.45	0.51	0.45	0.45	0.33	0.25	0.25	0.32	0.25	0.25
Clearance Time (s)	4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	217	1734	702	163	1705	740	348	968	412	192	945	423
v/s Ratio Prot	0.03	0.36		c0.06	0.29		c0.09	0.20		0.05	0.09	
v/s Ratio Perm	0.26		0.10	c0.47		0.03	c0.28		0.17	0.16		0.02
v/c Ratio	0.57	0.80	0.22	1.05	0.65	0.07	1.13	0.80	0.68	0.66	0.38	0.07
Uniform Delay, d1	22.2	32.9	23.4	37.6	29.6	21.6	44.8	49.0	47.3	36.7	43.6	40.2
Progression Factor	0.90	0.47	0.15	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.1	3.4	0.6	84.1	1.9	0.2	87.0	4.6	4.6	8.3	0.3	0.1
Delay (s)	23.1	18.9	4.1	121.7	31.5	21.8	131.9	53.6	51.9	45.0	43.9	40.3
Level of Service	C	B	A	F	C	C	F	D	D	D	D	D
Approach Delay (s)		17.2			41.9			72.7			43.4	
Approach LOS		B			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	43.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	88.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	89	109	201	149	2
Future Volume (vph)	0	89	109	201	149	2
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.7
Storage Length (m)	50.0			0.0	30.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.6				7.6	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.910			0.850
Flt Protected					0.950	
Satd. Flow (prot)	1983	2002	1840	0	1879	1547
Flt Permitted					0.950	
Satd. Flow (perm)	1983	2002	1840	0	1879	1547
Link Speed (k/h)		50	50		40	
Link Distance (m)		517.2	229.3		191.9	
Travel Time (s)		37.2	16.5		17.3	
Confl. Peds. (#/hr)				9	1	
Peak Hour Factor	0.92	0.82	0.88	0.82	0.93	0.50
Heavy Vehicles (%)	2%	1%	0%	0%	0%	0%
Parking (#/hr)						0
Adj. Flow (vph)	0	109	124	245	160	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	109	369	0	160	4
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	4.9		4.9	
Two way Left Turn Lane						
Headway Factor	0.92	0.92	0.92	0.92	0.95	1.06
Turning Speed (k/h)	24			14	24	14
Sign Control		Stop	Stop		Stop	

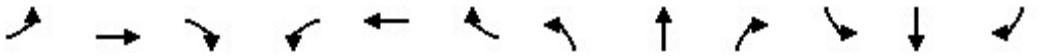
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 32.3%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	0	89	109	201	149	2
Future Volume (vph)	0	89	109	201	149	2
Peak Hour Factor	0.92	0.82	0.88	0.82	0.93	0.50
Hourly flow rate (vph)	0	109	124	245	160	4

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total (vph)	0	109	369	160	4
Volume Left (vph)	0	0	0	160	0
Volume Right (vph)	0	0	245	0	4
Hadj (s)	0.00	0.02	-0.40	0.50	-0.70
Departure Headway (s)	5.4	5.4	4.6	6.2	5.0
Degree Utilization, x	0.00	0.16	0.47	0.27	0.01
Capacity (veh/h)	645	634	759	549	669
Control Delay (s)	7.2	8.2	11.6	10.3	6.8
Approach Delay (s)	8.2		11.6	10.2	
Approach LOS	A		B	B	

Intersection Summary			
Delay	10.7		
Level of Service	B		
Intersection Capacity Utilization	32.3%	ICU Level of Service	A
Analysis Period (min)	15		



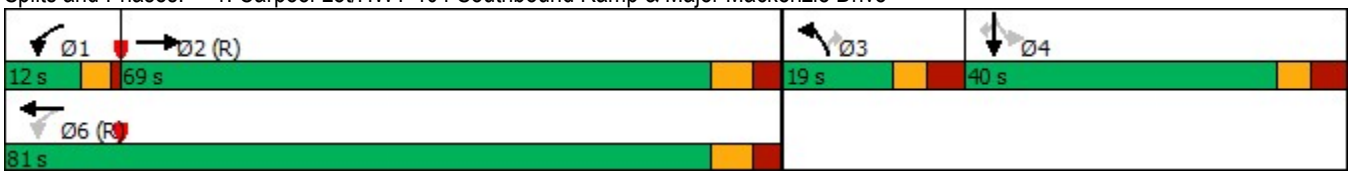
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	956	8	134	2157	0	15	0	18	338	343	220
Future Volume (vph)	0	956	8	134	2157	0	15	0	18	338	343	220
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.7	3.7	3.5	3.5	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Storage Length (m)	0.0		95.0	55.0		0.0	0.0		0.0	0.0		170.0
Storage Lanes	0		0	1		0	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	*0.85	0.91	1.00	*0.85	1.00	1.00	1.00	1.00	0.95	0.91	0.95
Frt		0.999							0.850		0.992	0.850
Flt Protected				0.950			0.950			0.950	0.996	
Satd. Flow (prot)	0	4994	0	1842	5006	0	1444	0	1095	1789	1769	1617
Flt Permitted				0.187			0.950			0.950	0.996	
Satd. Flow (perm)	0	4994	0	363	5006	0	1444	0	1095	1789	1769	1617
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1							125		2	125
Link Speed (k/h)		70			70			40			60	
Link Distance (m)		369.9			313.7			147.8			449.4	
Travel Time (s)		19.0			16.1			13.3			27.0	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	3%	20%	2%	3%	0%	33%	0%	57%	2%	3%	1%
Adj. Flow (vph)	0	1017	9	143	2295	0	16	0	19	360	365	234
Shared Lane Traffic (%)										10%		10%
Lane Group Flow (vph)	0	1026	0	143	2295	0	16	0	19	324	424	211
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.92	0.92	0.95	0.95	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors		0		1	0		1		1	1	1	1
Detector Template												
Leading Detector (m)		0.0		15.2	0.0		7.5		7.5	7.5	7.5	7.5
Trailing Detector (m)		0.0		6.2	0.0		-1.5		-1.5	-1.5	-1.5	-1.5
Detector 1 Position(m)		0.0		6.2	0.0		-1.5		-1.5	-1.5	-1.5	-1.5
Detector 1 Size(m)		1.8		9.0	1.8		9.0		9.0	9.0	9.0	9.0
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)		0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)		0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Turn Type		NA		pm+pt	NA		Prot		Perm	Perm	NA	Perm
Protected Phases		2		1	6		3				4	
Permitted Phases				6					3	4		4
Detector Phase		2		1	6		3		3	4	4	4
Switch Phase												
Minimum Initial (s)		20.0		7.0	20.0		10.0		10.0	15.0	15.0	15.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)		38.0		11.0	38.0		18.0		18.0	36.5	36.5	36.5
Total Split (s)		69.0		12.0	81.0		19.0		19.0	40.0	40.0	40.0
Total Split (%)		49.3%		8.6%	57.9%		13.6%		13.6%	28.6%	28.6%	28.6%
Maximum Green (s)		61.5		8.0	73.5		11.5		11.5	32.5	32.5	32.5
Yellow Time (s)		4.5		3.0	4.5		3.5		3.5	3.5	3.5	3.5
All-Red Time (s)		3.0		1.0	3.0		4.0		4.0	4.0	4.0	4.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)		7.5		4.0	7.5		7.5		7.5	7.5	7.5	7.5
Lead/Lag		Lag		Lead			Lead		Lead	Lag	Lag	Lag
Lead-Lag Optimize?		Yes		Yes			Yes		Yes	Yes	Yes	Yes
Vehicle Extension (s)		3.0		3.0	3.0		3.0		3.0	3.0	3.0	3.0
Recall Mode		C-Min		None	C-Min		None		None	None	None	None
Walk Time (s)		7.0			7.0					7.0	7.0	7.0
Flash Dont Walk (s)		23.0			23.0					22.0	22.0	22.0
Pedestrian Calls (#/hr)		0			0					0	0	0
Act Effct Green (s)		70.2		85.5	82.0		10.0		10.0	32.5	32.5	32.5
Actuated g/C Ratio		0.50		0.61	0.59		0.07		0.07	0.23	0.23	0.23
v/c Ratio		0.41		0.47	0.78		0.16		0.10	0.78	1.03	0.45
Control Delay		23.6		17.7	26.4		64.8		1.0	64.6	103.7	21.9
Queue Delay		0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Total Delay		23.6		17.7	26.4		64.8		1.0	64.6	103.7	21.9
LOS		C		B	C		E		A	E	F	C
Approach Delay		23.6			25.9			30.2			72.5	
Approach LOS		C			C			C			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 68 (49%), Referenced to phase 2:EBT and 6:WBTL, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.03			
Intersection Signal Delay: 35.5		Intersection LOS: D	
Intersection Capacity Utilization 78.3%		ICU Level of Service D	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 1: Carpool Lot/HWY 404 Southbound Ramp & Major Mackenzie Drive





Lane Group	EBT	WBL	WBT	NBL	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1026	143	2295	16	19	324	424	211
v/c Ratio	0.41	0.47	0.78	0.16	0.10	0.78	1.03	0.45
Control Delay	23.6	17.7	26.4	64.8	1.0	64.6	103.7	21.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.6	17.7	26.4	64.8	1.0	64.6	103.7	21.9
Queue Length 50th (m)	75.8	19.0	216.3	4.2	0.0	89.2	~137.1	20.5
Queue Length 95th (m)	89.1	m21.3	m193.8	11.9	0.0	#132.6	#208.9	46.1
Internal Link Dist (m)	345.9		289.7				425.4	
Turn Bay Length (m)		55.0						170.0
Base Capacity (vph)	2504	306	2931	118	204	415	412	471
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.47	0.78	0.14	0.09	0.78	1.03	0.45

Intersection Summary

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

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	956	8	134	2157	0	15	0	18	338	343	220
Future Volume (vph)	0	956	8	134	2157	0	15	0	18	338	343	220
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.7	3.7	3.5	3.5	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Total Lost time (s)		7.5		4.0	7.5		7.5		7.5	7.5	7.5	7.5
Lane Util. Factor		*0.85		1.00	*0.85		1.00		1.00	0.95	0.91	0.95
Frt		1.00		1.00	1.00		1.00		0.85	1.00	0.99	0.85
Flt Protected		1.00		0.95	1.00		0.95		1.00	0.95	1.00	1.00
Satd. Flow (prot)		4993		1842	5006		1444		1095	1789	1768	1617
Flt Permitted		1.00		0.19	1.00		0.95		1.00	0.95	1.00	1.00
Satd. Flow (perm)		4993		362	5006		1444		1095	1789	1768	1617
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	1017	9	143	2295	0	16	0	19	360	365	234
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	18	0	2	96
Lane Group Flow (vph)	0	1025	0	143	2295	0	16	0	1	324	422	115
Heavy Vehicles (%)	0%	3%	20%	2%	3%	0%	33%	0%	57%	2%	3%	1%
Turn Type		NA		pm+pt	NA		Prot		Perm	Perm	NA	Perm
Protected Phases		2		1	6		3				4	
Permitted Phases				6					3	4		4
Actuated Green, G (s)		67.2		79.0	79.0		6.0		6.0	32.5	32.5	32.5
Effective Green, g (s)		67.2		79.0	79.0		6.0		6.0	32.5	32.5	32.5
Actuated g/C Ratio		0.48		0.56	0.56		0.04		0.04	0.23	0.23	0.23
Clearance Time (s)		7.5		4.0	7.5		7.5		7.5	7.5	7.5	7.5
Vehicle Extension (s)		3.0		3.0	3.0		3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		2396		286	2824		61		46	415	410	375
v/s Ratio Prot		0.21		0.03	c0.46		c0.01					
v/s Ratio Perm				0.25					0.00	0.18	0.24	0.07
v/c Ratio		0.43		0.50	0.81		0.26		0.02	0.78	1.03	0.31
Uniform Delay, d1		23.8		16.0	24.5		64.9		64.2	50.4	53.8	44.4
Progression Factor		1.00		1.15	1.06		1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2		0.6		0.7	1.4		2.3		0.2	9.2	52.5	0.5
Delay (s)		24.4		19.0	27.4		67.2		64.3	59.6	106.2	44.9
Level of Service		C		B	C		E		E	E	F	D
Approach Delay (s)		24.4			26.9			65.6			77.0	
Approach LOS		C			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	37.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	26.5
Intersection Capacity Utilization	78.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

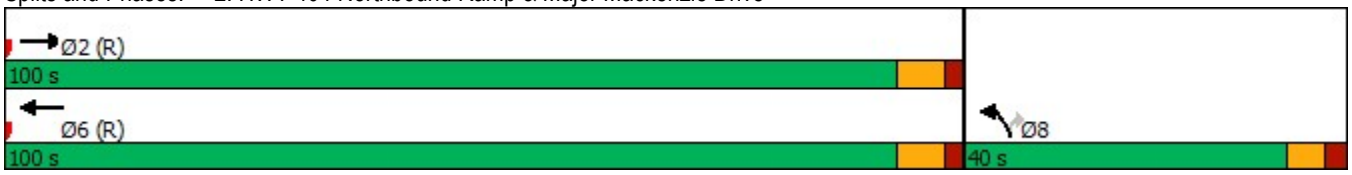


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1126	0	0	2560	637	609
Future Volume (vph)	1126	0	0	2560	637	609
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000
Storage Length (m)		0.0	0.0		0.0	180.0
Storage Lanes		0	0		2	1
Taper Length (m)			7.6		7.6	
Lane Util. Factor	*0.85	1.00	1.00	*0.85	0.97	0.91
Frt					0.962	0.850
Flt Protected					0.964	
Satd. Flow (prot)	4958	0	0	5056	3497	1462
Flt Permitted					0.964	
Satd. Flow (perm)	4958	0	0	5056	3497	1462
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)					33	105
Link Speed (k/h)	70			70	60	
Link Distance (m)	313.7			395.3	470.8	
Travel Time (s)	16.1			20.3	28.2	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	0%	0%	2%	3%	7%
Adj. Flow (vph)	1173	0	0	2667	664	634
Shared Lane Traffic (%)						36%
Lane Group Flow (vph)	1173	0	0	2667	892	406
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	7.4	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	0.92	0.92	0.92	0.92	0.92	0.92
Turning Speed (k/h)		14	24		24	14
Number of Detectors	0			0	1	1
Detector Template						
Leading Detector (m)	0.0			0.0	7.5	7.5
Trailing Detector (m)	0.0			0.0	-1.5	-1.5
Detector 1 Position(m)	0.0			0.0	-1.5	-1.5
Detector 1 Size(m)	1.8			1.8	9.0	9.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases						8
Detector Phase	2			6	8	8
Switch Phase						
Minimum Initial (s)	20.0			20.0	10.0	10.0
Minimum Split (s)	27.0			27.0	23.0	23.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Split (s)	100.0			100.0	40.0	40.0
Total Split (%)	71.4%			71.4%	28.6%	28.6%
Maximum Green (s)	93.0			93.0	33.5	33.5
Yellow Time (s)	5.0			5.0	4.0	4.0
All-Red Time (s)	2.0			2.0	2.5	2.5
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	7.0			7.0	6.5	6.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	4.0			4.0	3.0	3.0
Recall Mode	C-Min			C-Min	None	None
Walk Time (s)	5.0				5.0	5.0
Flash Dont Walk (s)	11.0				11.0	11.0
Pedestrian Calls (#/hr)	0				0	0
Act Effct Green (s)	93.0			93.0	33.5	33.5
Actuated g/C Ratio	0.66			0.66	0.24	0.24
v/c Ratio	0.36			0.79	1.04	0.95
Control Delay	7.4			8.8	89.7	70.6
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	7.4			8.8	89.7	70.6
LOS	A			A	F	E
Approach Delay	7.4			8.8	83.8	
Approach LOS	A			A	F	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 67 (48%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.04			
Intersection Signal Delay: 27.4		Intersection LOS: C	
Intersection Capacity Utilization 81.6%		ICU Level of Service D	
Analysis Period (min) 15			
* User Entered Value			

Splits and Phases: 2: HWY 404 Northbound Ramp & Major Mackenzie Drive





Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1173	2667	892	406
v/c Ratio	0.36	0.79	1.04	0.95
Control Delay	7.4	8.8	89.7	70.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	7.4	8.8	89.7	70.6
Queue Length 50th (m)	35.7	78.5	~132.8	95.1
Queue Length 95th (m)	m39.9	m66.1	#173.4	#165.6
Internal Link Dist (m)	289.7	371.3	446.8	
Turn Bay Length (m)				180.0
Base Capacity (vph)	3293	3358	861	429
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.36	0.79	1.04	0.95

Intersection Summary

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

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

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



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1126	0	0	2560	637	609
Future Volume (vph)	1126	0	0	2560	637	609
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000
Total Lost time (s)	7.0			7.0	6.5	6.5
Lane Util. Factor	*0.85			*0.85	0.97	0.91
Frt	1.00			1.00	0.96	0.85
Flt Protected	1.00			1.00	0.96	1.00
Satd. Flow (prot)	4958			5056	3497	1462
Flt Permitted	1.00			1.00	0.96	1.00
Satd. Flow (perm)	4958			5056	3497	1462
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	1173	0	0	2667	664	634
RTOR Reduction (vph)	0	0	0	0	25	80
Lane Group Flow (vph)	1173	0	0	2667	867	326
Heavy Vehicles (%)	4%	0%	0%	2%	3%	7%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases						8
Actuated Green, G (s)	93.0			93.0	33.5	33.5
Effective Green, g (s)	93.0			93.0	33.5	33.5
Actuated g/C Ratio	0.66			0.66	0.24	0.24
Clearance Time (s)	7.0			7.0	6.5	6.5
Vehicle Extension (s)	4.0			4.0	3.0	3.0
Lane Grp Cap (vph)	3293			3358	836	349
v/s Ratio Prot	0.24			c0.53	c0.25	
v/s Ratio Perm						0.22
v/c Ratio	0.36			0.79	1.04	0.93
Uniform Delay, d1	10.3			16.7	53.2	52.2
Progression Factor	0.69			0.51	1.00	1.00
Incremental Delay, d2	0.3			0.2	41.1	31.5
Delay (s)	7.4			8.7	94.3	83.7
Level of Service	A			A	F	F
Approach Delay (s)	7.4			8.7	91.0	
Approach LOS	A			A	F	

Intersection Summary			
HCM 2000 Control Delay	29.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	81.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

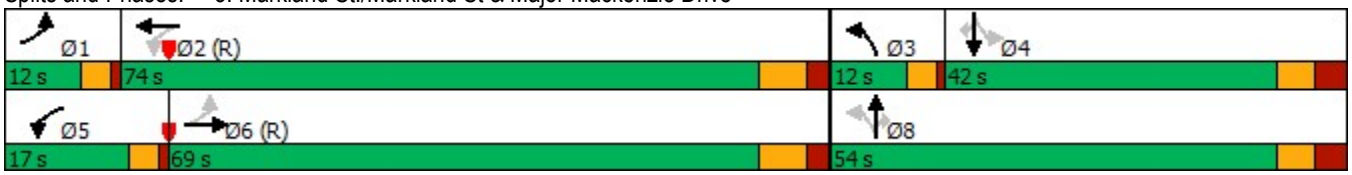
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	1210	429	111	2546	11	220	207	29	54	361	731
Future Volume (vph)	96	1210	429	111	2546	11	220	207	29	54	361	731
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	90.0		100.0	160.0		187.0	180.0		97.0	60.0		0.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	*0.85	0.91	1.00	*0.85	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			1.00				0.98	0.99		
Frt		0.961			0.999				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1824	4720	0	1842	5002	0	1773	2022	1303	1879	2002	1664
Flt Permitted	0.062			0.060			0.220			0.628		
Satd. Flow (perm)	119	4720	0	116	5002	0	410	2022	1273	1231	2002	1664
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		81			1				97			129
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		395.3			249.0			215.0			229.3	
Travel Time (s)		20.3			12.8			15.5			16.5	
Confl. Peds. (#/hr)	1		4	4		1			9	9		
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
Heavy Vehicles (%)	3%	5%	2%	2%	3%	0%	6%	0%	29%	0%	1%	1%
Adj. Flow (vph)	96	1210	429	111	2546	11	220	207	29	54	361	731
Shared Lane Traffic (%)												
Lane Group Flow (vph)	96	1639	0	111	2557	0	220	207	29	54	361	731
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.95	0.92	0.95	0.95	0.92	0.95	0.95	0.92	0.95	0.95	0.92	0.95
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	0		1	0		1	1	1	1	1	1
Detector Template												
Leading Detector (m)	15.2	0.0		15.2	0.0		7.5	7.5	7.5	7.5	7.5	7.5
Trailing Detector (m)	6.2	0.0		6.2	0.0		-1.5	-0.2	-1.5	-1.5	-1.5	-1.5
Detector 1 Position(m)	6.2	0.0		6.2	0.0		-1.5	-0.2	-1.5	-1.5	-1.5	-1.5
Detector 1 Size(m)	9.0	1.8		9.0	1.8		9.0	7.7	9.0	9.0	9.0	9.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases	6			2			8		8	4		4
Detector Phase	1	6		5	2		3	8	8	4	4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	7.0	35.0		7.0	35.0		7.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.0	43.0		11.0	43.0		11.0	41.0	41.0	41.0	41.0	41.0
Total Split (s)	12.0	69.0		17.0	74.0		12.0	54.0	54.0	42.0	42.0	42.0
Total Split (%)	8.6%	49.3%		12.1%	52.9%		8.6%	38.6%	38.6%	30.0%	30.0%	30.0%
Maximum Green (s)	8.0	61.5		13.0	66.5		8.0	46.5	46.5	34.5	34.5	34.5
Yellow Time (s)	3.0	5.0		3.0	5.0		3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	2.5		1.0	2.5		1.0	3.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.5		4.0	7.5		4.0	7.5	7.5	7.5	7.5	7.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		None	None	None	None	None	None
Walk Time (s)		7.0			7.0			7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		28.0			28.0			26.0	26.0	26.0	26.0	26.0
Pedestrian Calls (#/hr)		9			2			7	7	3	3	3
Act Effct Green (s)	76.1	64.9		79.7	66.8		50.0	46.5	46.5	34.5	34.5	34.5
Actuated g/C Ratio	0.54	0.46		0.57	0.48		0.36	0.33	0.33	0.25	0.25	0.25
v/c Ratio	0.61	0.73		0.61	1.07		0.98	0.31	0.06	0.18	0.73	1.44
Control Delay	43.3	21.1		46.7	64.1		94.4	36.4	0.2	43.6	58.5	241.5
Queue Delay	0.0	0.0		0.0	3.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.3	21.1		46.7	67.1		94.4	36.4	0.2	43.6	58.5	241.5
LOS	D	C		D	E		F	D	A	D	E	F
Approach Delay		22.4			66.3			62.1			174.5	
Approach LOS		C			E			E			F	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 74 (53%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.44			
Intersection Signal Delay: 73.9		Intersection LOS: E	
Intersection Capacity Utilization 117.4%		ICU Level of Service H	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 3: Markland St./Markland St & Major Mackenzie Drive





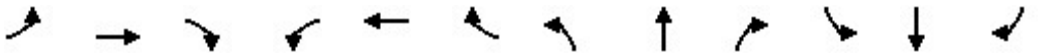
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	96	1639	111	2557	220	207	29	54	361	731
v/c Ratio	0.61	0.73	0.61	1.07	0.98	0.31	0.06	0.18	0.73	1.44
Control Delay	43.3	21.1	46.7	64.1	94.4	36.4	0.2	43.6	58.5	241.5
Queue Delay	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.3	21.1	46.7	67.1	94.4	36.4	0.2	43.6	58.5	241.5
Queue Length 50th (m)	8.4	107.9	19.6	~302.9	44.6	42.6	0.0	11.9	92.6	~247.4
Queue Length 95th (m)	m21.8	m118.5	m27.6	#330.6	#95.3	63.6	0.0	23.9	127.9	#323.1
Internal Link Dist (m)		371.3		225.0		191.0			205.3	
Turn Bay Length (m)	90.0		160.0		180.0		97.0	60.0		
Base Capacity (vph)	162	2232	228	2387	224	671	487	303	493	507
Starvation Cap Reductn	0	0	0	16	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.73	0.49	1.08	0.98	0.31	0.06	0.18	0.73	1.44

Intersection Summary

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

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	1210	429	111	2546	11	220	207	29	54	361	731
Future Volume (vph)	96	1210	429	111	2546	11	220	207	29	54	361	731
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
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	7.5		4.0	7.5		4.0	7.5	7.5	7.5	7.5	7.5
Lane Util. Factor	1.00	*0.85		1.00	*0.85		1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	0.99	1.00	1.00
Frt	1.00	0.96		1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1824	4719		1842	5003		1773	2022	1273	1863	2002	1664
Flt Permitted	0.06	1.00		0.06	1.00		0.22	1.00	1.00	0.63	1.00	1.00
Satd. Flow (perm)	118	4719		116	5003		411	2022	1273	1232	2002	1664
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)	96	1210	429	111	2546	11	220	207	29	54	361	731
RTOR Reduction (vph)	0	43	0	0	1	0	0	0	19	0	0	97
Lane Group Flow (vph)	96	1596	0	111	2556	0	220	207	10	54	361	634
Confl. Peds. (#/hr)	1		4	4		1			9	9		
Heavy Vehicles (%)	3%	5%	2%	2%	3%	0%	6%	0%	29%	0%	1%	1%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases	6			2			8		8	4		4
Actuated Green, G (s)	72.6	64.9		76.4	66.8		46.5	46.5	46.5	34.5	34.5	34.5
Effective Green, g (s)	72.6	64.9		76.4	66.8		46.5	46.5	46.5	34.5	34.5	34.5
Actuated g/C Ratio	0.52	0.46		0.55	0.48		0.33	0.33	0.33	0.25	0.25	0.25
Clearance Time (s)	4.0	7.5		4.0	7.5		4.0	7.5	7.5	7.5	7.5	7.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	155	2187		181	2387		214	671	422	303	493	410
v/s Ratio Prot	0.03	0.34		c0.04	c0.51		c0.06	0.10			0.18	
v/s Ratio Perm	0.29			0.29			0.28		0.01	0.04		c0.38
v/c Ratio	0.62	0.73		0.61	1.07		1.03	0.31	0.02	0.18	0.73	1.55
Uniform Delay, d1	31.1	30.4		23.7	36.6		45.8	34.8	31.5	41.6	48.5	52.8
Progression Factor	1.38	0.66		1.77	0.68		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.0	1.8		4.1	38.3		69.0	0.3	0.0	0.3	5.6	257.5
Delay (s)	48.8	21.8		46.1	63.3		114.8	35.0	31.5	41.9	54.1	310.2
Level of Service	D	C		D	E		F	D	C	D	D	F
Approach Delay (s)		23.3			62.6			73.3			216.9	
Approach LOS		C			E			E			F	

Intersection Summary			
HCM 2000 Control Delay	81.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	117.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

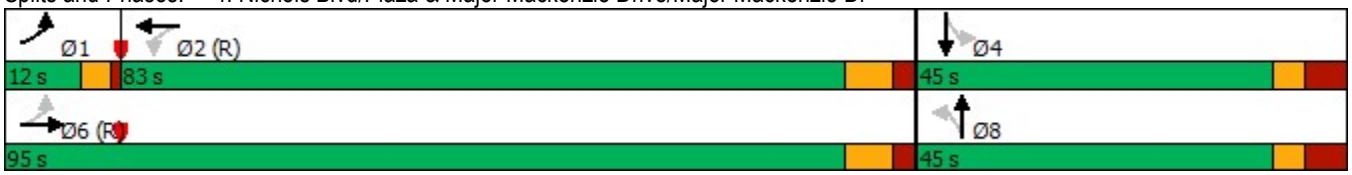
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	1257	28	28	2584	85	69	6	47	35	4	15
Future Volume (vph)	8	1257	28	28	2584	85	69	6	47	35	4	15
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.5	3.5	3.5
Storage Length (m)	55.0		100.0	45.0		45.0	70.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	*0.85	0.91	1.00	*0.85	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00	1.00		0.99	0.99		1.00	0.98	
Frt		0.997			0.995			0.866			0.880	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1879	4761	0	1620	5022	0	1879	1680	0	1879	1509	0
Flt Permitted	0.038			0.167			0.744			0.720		
Satd. Flow (perm)	75	4761	0	284	5022	0	1461	1680	0	1418	1509	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			5			50			16	
Link Speed (k/h)		70			70			40			40	
Link Distance (m)		249.0			251.3			209.6			112.0	
Travel Time (s)		12.8			12.9			18.9			10.1	
Confl. Peds. (#/hr)	2		3	3		2	6		4	4		6
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	8%	4%	16%	2%	5%	0%	0%	3%	0%	0%	17%
Adj. Flow (vph)	9	1337	30	30	2749	90	73	6	50	37	4	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	9	1367	0	30	2839	0	73	56	0	37	20	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.95	0.92	0.95	0.95	0.92	0.95	0.95	0.92	0.92	0.95	0.95	0.95
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		1	1		1	1	
Detector Template												
Leading Detector (m)	0.0	0.0		0.0	0.0		7.5	7.5		7.5	7.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		-1.5	-0.2		-1.5	-1.5	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		-1.5	-0.2		-1.5	-1.5	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		9.0	7.7		9.0	9.0	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2			8			4		
Detector Phase	1	6		2	2		8	8		4	4	

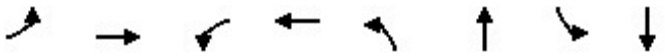
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	7.0	30.0		30.0	30.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.0	38.0		38.0	38.0		44.0	44.0		44.0	44.0	
Total Split (s)	12.0	95.0		83.0	83.0		45.0	45.0		45.0	45.0	
Total Split (%)	8.6%	67.9%		59.3%	59.3%		32.1%	32.1%		32.1%	32.1%	
Maximum Green (s)	8.0	87.5		75.5	75.5		37.0	37.0		37.0	37.0	
Yellow Time (s)	3.0	5.0		5.0	5.0		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	2.5		2.5	2.5		4.5	4.5		4.5	4.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	7.5		7.5	7.5		8.0	8.0		8.0	8.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)		7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		21.0		21.0	21.0		29.0	29.0		29.0	29.0	
Pedestrian Calls (#/hr)		3		2	2		4	4		6	6	
Act Effct Green (s)	111.3	107.8		105.6	105.6		16.7	16.7		16.7	16.7	
Actuated g/C Ratio	0.80	0.77		0.75	0.75		0.12	0.12		0.12	0.12	
v/c Ratio	0.06	0.37		0.14	0.75		0.42	0.23		0.22	0.10	
Control Delay	3.0	3.0		4.7	13.0		61.7	16.6		54.7	23.5	
Queue Delay	0.0	0.0		0.0	0.3		0.0	0.0		0.0	0.0	
Total Delay	3.0	3.0		4.7	13.3		61.7	16.6		54.7	23.5	
LOS	A	A		A	B		E	B		D	C	
Approach Delay		3.0			13.2			42.1			43.7	
Approach LOS		A			B			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 60 (43%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green			
Natural Cycle: 135			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 11.2		Intersection LOS: B	
Intersection Capacity Utilization 74.9%		ICU Level of Service D	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 4: Nichols Blvd/Plaza & Major Mackenzie Drive/Major Mackenzie Dr





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	9	1367	30	2839	73	56	37	20
v/c Ratio	0.06	0.37	0.14	0.75	0.42	0.23	0.22	0.10
Control Delay	3.0	3.0	4.7	13.0	61.7	16.6	54.7	23.5
Queue Delay	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0
Total Delay	3.0	3.0	4.7	13.3	61.7	16.6	54.7	23.5
Queue Length 50th (m)	0.1	9.6	0.9	86.4	19.7	1.6	9.8	1.0
Queue Length 95th (m)	m0.5	30.8	m1.6	m47.8	29.5	12.0	17.3	7.4
Internal Link Dist (m)		225.0		227.3		185.6		88.0
Turn Bay Length (m)	55.0		45.0		70.0		30.0	
Base Capacity (vph)	162	3667	214	3790	386	480	374	410
Starvation Cap Reductn	0	0	0	340	0	0	0	0
Spillback Cap Reductn	0	0	0	317	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.37	0.14	0.82	0.19	0.12	0.10	0.05

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	1257	28	28	2584	85	69	6	47	35	4	15
Future Volume (vph)	8	1257	28	28	2584	85	69	6	47	35	4	15
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.5	3.5	3.5
Total Lost time (s)	4.0	7.5		7.5	7.5		8.0	8.0		8.0	8.0	
Lane Util. Factor	1.00	*0.85		1.00	*0.85		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	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.87		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1879	4760		1618	5023		1866	1680		1871	1509	
Flt Permitted	0.04	1.00		0.17	1.00		0.74	1.00		0.72	1.00	
Satd. Flow (perm)	74	4760		285	5023		1462	1680		1419	1509	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	9	1337	30	30	2749	90	73	6	50	37	4	16
RTOR Reduction (vph)	0	1	0	0	1	0	0	44	0	0	14	0
Lane Group Flow (vph)	9	1366	0	30	2838	0	73	12	0	37	6	0
Confl. Peds. (#/hr)	2		3	3		2	6		4	4		6
Heavy Vehicles (%)	0%	8%	4%	16%	2%	5%	0%	0%	3%	0%	0%	17%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	107.8	107.8		102.4	102.4		16.7	16.7		16.7	16.7	
Effective Green, g (s)	107.8	107.8		102.4	102.4		16.7	16.7		16.7	16.7	
Actuated g/C Ratio	0.77	0.77		0.73	0.73		0.12	0.12		0.12	0.12	
Clearance Time (s)	4.0	7.5		7.5	7.5		8.0	8.0		8.0	8.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	75	3665		208	3673		174	200		169	180	
v/s Ratio Prot	0.00	c0.29			c0.56			0.01			0.00	
v/s Ratio Perm	0.09			0.11			c0.05			0.03		
v/c Ratio	0.12	0.37		0.14	0.77		0.42	0.06		0.22	0.03	
Uniform Delay, d1	16.2	5.2		5.6	11.6		57.2	54.7		55.8	54.5	
Progression Factor	0.45	0.44		0.48	1.03		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.2		0.1	0.1		1.6	0.1		0.7	0.1	
Delay (s)	7.8	2.5		2.8	12.1		58.8	54.8		56.4	54.6	
Level of Service	A	A		A	B		E	D		E	D	
Approach Delay (s)		2.6			12.0			57.1			55.8	
Approach LOS		A			B			E			E	

Intersection Summary			
HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	74.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

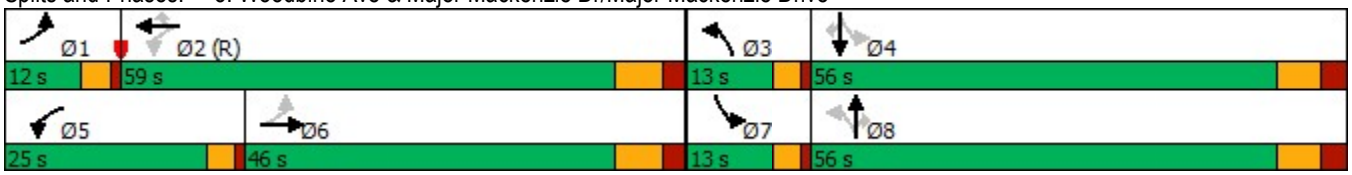
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	147	932	260	492	2127	70	288	738	343	130	1382	282
Future Volume (vph)	147	932	260	492	2127	70	288	738	343	130	1382	282
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.0	3.7	3.5	3.5	3.7	3.5	3.0	3.7	3.5	3.0	3.7	3.7
Storage Length (m)	120.0		80.0	300.0		120.0	150.0		70.0	165.0		70.0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	*0.85	0.91	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		1.00		1.00		0.98			0.99	1.00		0.98
Frt		0.967				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1722	4673	0	1842	3730	1681	1689	3730	1632	1673	3804	1592
Flt Permitted	0.104			0.094			0.082			0.239		
Satd. Flow (perm)	188	4673	0	182	3730	1655	146	3730	1609	421	3804	1564
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		45				97			343			138
Link Speed (k/h)		70			70			60			60	
Link Distance (m)		251.3			460.0			545.1			346.9	
Travel Time (s)		12.9			23.7			32.7			20.8	
Confl. Peds. (#/hr)	3		3	3		3	5		2	2		5
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
Heavy Vehicles (%)	3%	7%	4%	2%	3%	0%	5%	3%	3%	6%	1%	8%
Adj. Flow (vph)	147	932	260	492	2127	70	288	738	343	130	1382	282
Shared Lane Traffic (%)												
Lane Group Flow (vph)	147	1192	0	492	2127	70	288	738	343	130	1382	282
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.0			3.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.02	0.92	0.95	0.95	0.92	0.95	1.02	0.92	0.95	1.02	0.92	0.92
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	0		1	0	0	1	1	1	1	1	1
Detector Template												
Leading Detector (m)	15.2	0.0		15.2	0.0	0.0	15.2	7.5	7.5	15.2	7.5	7.5
Trailing Detector (m)	6.2	0.0		6.2	0.0	0.0	6.2	-1.5	-1.5	6.2	-1.5	-1.5
Detector 1 Position(m)	6.2	0.0		6.2	0.0	0.0	6.2	-1.5	-1.5	6.2	-1.5	-1.5
Detector 1 Size(m)	9.0	1.8		9.0	1.8	6.1	9.0	9.0	9.0	9.0	9.0	9.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2		2	8		8	4		4
Detector Phase	1	6		5	2	2	3	8	8	7	4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	7.0	36.0		7.0	36.0	36.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	44.0		11.0	44.0	44.0	11.0	45.0	45.0	11.0	45.0	45.0
Total Split (s)	12.0	46.0		25.0	59.0	59.0	13.0	56.0	56.0	13.0	56.0	56.0
Total Split (%)	8.6%	32.9%		17.9%	42.1%	42.1%	9.3%	40.0%	40.0%	9.3%	40.0%	40.0%
Maximum Green (s)	8.0	38.5		21.0	51.5	51.5	9.0	48.5	48.5	9.0	48.5	48.5
Yellow Time (s)	3.0	5.0		3.0	5.0	5.0	3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	1.0	2.5		1.0	2.5	2.5	1.0	3.0	3.0	1.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.5		4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		29.0			29.0	29.0		30.0	30.0		30.0	30.0
Pedestrian Calls (#/hr)		3			3	3		0	0		5	5
Act Effct Green (s)	50.0	38.5		67.0	51.5	51.5	61.3	48.8	48.8	60.7	48.5	48.5
Actuated g/C Ratio	0.36	0.28		0.48	0.37	0.37	0.44	0.35	0.35	0.43	0.35	0.35
v/c Ratio	0.95	0.91		1.46	1.55	0.10	1.78	0.57	0.44	0.50	1.05	0.45
Control Delay	104.3	54.0		256.5	283.4	2.5	396.1	39.2	5.0	29.2	82.9	19.8
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	104.3	54.0		256.5	283.4	2.5	396.1	39.2	5.0	29.2	82.9	19.8
LOS	F	D		F	F	A	F	D	A	C	F	B
Approach Delay		59.5			271.2			105.7			69.1	
Approach LOS		E			F			F			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 69 (49%), Referenced to phase 2:WBTL, Start of Green			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.78			
Intersection Signal Delay: 149.8		Intersection LOS: F	
Intersection Capacity Utilization 134.2%		ICU Level of Service H	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 5: Woodbine Ave & Major Mackenzie Dr/Major Mackenzie Drive



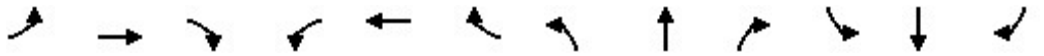


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	147	1192	492	2127	70	288	738	343	130	1382	282
v/c Ratio	0.95	0.91	1.46	1.55	0.10	1.78	0.57	0.44	0.50	1.05	0.45
Control Delay	104.3	54.0	256.5	283.4	2.5	396.1	39.2	5.0	29.2	82.9	19.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	104.3	54.0	256.5	283.4	2.5	396.1	39.2	5.0	29.2	82.9	19.8
Queue Length 50th (m)	30.4	73.1	~169.7	~435.6	0.0	~103.7	87.3	0.0	20.6	~218.6	29.6
Queue Length 95th (m)	#64.6	#122.5	#237.9	#476.1	5.1	#161.4	107.6	20.1	33.7	#261.2	55.5
Internal Link Dist (m)		227.3		436.0			521.1			322.9	
Turn Bay Length (m)	120.0		300.0		120.0	150.0		70.0	165.0		70.0
Base Capacity (vph)	154	1317	336	1372	670	162	1299	784	263	1317	632
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.95	0.91	1.46	1.55	0.10	1.78	0.57	0.44	0.49	1.05	0.45

Intersection Summary

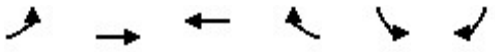
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



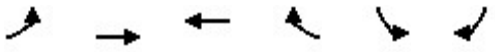
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	147	932	260	492	2127	70	288	738	343	130	1382	282
Future Volume (vph)	147	932	260	492	2127	70	288	738	343	130	1382	282
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.7	3.5	3.5	3.7	3.5	3.0	3.7	3.5	3.0	3.7	3.7
Total Lost time (s)	4.0	7.5		4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5
Lane Util. Factor	1.00	*0.85		1.00	0.95	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	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
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1722	4675		1842	3730	1655	1689	3730	1609	1673	3804	1564
Flt Permitted	0.10	1.00		0.09	1.00	1.00	0.08	1.00	1.00	0.24	1.00	1.00
Satd. Flow (perm)	188	4675		182	3730	1655	146	3730	1609	421	3804	1564
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)	147	932	260	492	2127	70	288	738	343	130	1382	282
RTOR Reduction (vph)	0	33	0	0	0	44	0	0	223	0	0	90
Lane Group Flow (vph)	147	1159	0	492	2127	26	288	738	120	130	1382	192
Confl. Peds. (#/hr)	3		3	3		3	5		2	2		5
Heavy Vehicles (%)	3%	7%	4%	2%	3%	0%	5%	3%	3%	6%	1%	8%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2		2	8		8	4		4
Actuated Green, G (s)	46.5	38.5		63.5	51.5	51.5	57.8	48.8	48.8	57.2	48.5	48.5
Effective Green, g (s)	46.5	38.5		63.5	51.5	51.5	57.8	48.8	48.8	57.2	48.5	48.5
Actuated g/C Ratio	0.33	0.28		0.45	0.37	0.37	0.41	0.35	0.35	0.41	0.35	0.35
Clearance Time (s)	4.0	7.5		4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	150	1285		331	1372	608	159	1300	560	249	1317	541
v/s Ratio Prot	0.06	0.25		c0.22	c0.57		c0.12	0.20		0.03	0.36	
v/s Ratio Perm	0.27			0.45		0.02	c0.63		0.07	0.18		0.12
v/c Ratio	0.98	0.90		1.49	1.55	0.04	1.81	0.57	0.21	0.52	1.05	0.35
Uniform Delay, d1	40.9	48.9		44.0	44.2	28.4	37.2	37.0	32.1	27.9	45.8	34.1
Progression Factor	1.54	0.93		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	64.9	10.0		234.4	251.3	0.1	388.8	0.6	0.2	2.0	38.8	0.4
Delay (s)	127.9	55.5		278.4	295.5	28.5	426.0	37.6	32.3	29.9	84.6	34.5
Level of Service	F	E		F	F	C	F	D	C	C	F	C
Approach Delay (s)		63.4			285.4			118.0			72.7	
Approach LOS		E			F			F			E	

Intersection Summary			
HCM 2000 Control Delay	159.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.70		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	134.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	17	478	202	112	668	1
Future Volume (vph)	17	478	202	112	668	1
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.7
Storage Length (m)	50.0			0.0	30.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.6				7.6	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.952			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1281	1983	1831	0	1860	1719
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1281	1983	1831	0	1860	1719
Link Speed (k/h)		50	50		40	
Link Distance (m)		517.2	229.3		191.9	
Travel Time (s)		37.2	16.5		17.3	
Confl. Peds. (#/hr)	1			1		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	50%	2%	8%	0%	1%	0%
Adj. Flow (vph)	18	509	215	119	711	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	18	509	334	0	711	1
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	4.9		4.9	
Two way Left Turn Lane						
Headway Factor	0.92	0.92	0.92	0.92	0.95	0.92
Turning Speed (k/h)	24			14	24	14
Sign Control		Stop	Stop		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 65.7%		ICU Level of Service C	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	17	478	202	112	668	1
Future Volume (vph)	17	478	202	112	668	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	18	509	215	119	711	1

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total (vph)	18	509	334	711	1
Volume Left (vph)	18	0	0	711	0
Volume Right (vph)	0	0	119	0	1
Hadj (s)	1.35	0.03	-0.13	0.52	-0.70
Departure Headway (s)	8.5	7.2	7.2	7.7	6.5
Degree Utilization, x	0.04	1.02	0.67	1.52	0.00
Capacity (veh/h)	415	509	489	471	546
Control Delay (s)	10.7	70.8	23.6	264.7	8.3
Approach Delay (s)	68.8		23.6	264.4	
Approach LOS	F		C	F	

Intersection Summary			
Delay	147.7		
Level of Service	F		
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		

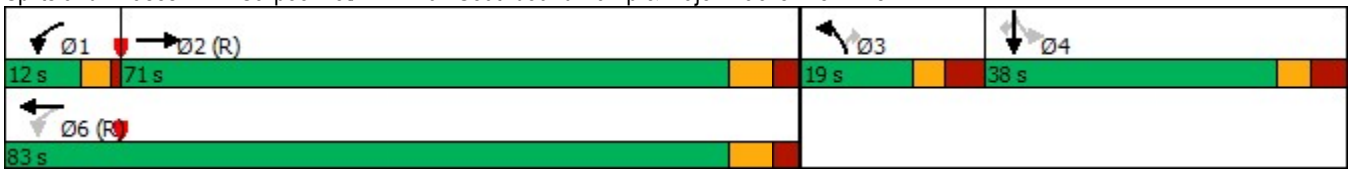
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1782	6	23	1707	0	33	0	44	535	15	486
Future Volume (vph)	0	1782	6	23	1707	0	33	0	44	535	15	486
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.7	3.7	3.5	3.5	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Storage Length (m)	0.0		95.0	55.0		0.0	0.0		0.0	0.0		170.0
Storage Lanes	0		0	1		0	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	*0.85	0.91	1.00	*0.85	1.00	1.00	1.00	1.00	0.95	0.91	0.95
Ped Bike Factor							1.00				0.99	0.99
Frt									0.850		0.931	0.850
Flt Protected				0.950			0.950			0.950	0.976	
Satd. Flow (prot)	0	5101	0	1566	5056	0	1671	0	1457	1825	1662	1633
Flt Permitted				0.053			0.950			0.950	0.976	
Satd. Flow (perm)	0	5101	0	87	5056	0	1669	0	1457	1825	1662	1611
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)									125		28	125
Link Speed (k/h)		70			70			40			60	
Link Distance (m)		369.9			313.7			147.8			449.4	
Travel Time (s)		19.0			16.1			13.3			27.0	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	2%	1%	29%	20%	2%	2%	15%	2%	18%	0%	0%	0%
Adj. Flow (vph)	0	1818	6	23	1742	0	34	0	45	546	15	496
Shared Lane Traffic (%)										33%		33%
Lane Group Flow (vph)	0	1824	0	23	1742	0	34	0	45	366	359	332
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.92	0.92	0.95	0.95	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors		0		1	0		1		1	1	1	1
Detector Template												
Leading Detector (m)		0.0		15.2	0.0		7.5		7.5	7.5	7.5	7.5
Trailing Detector (m)		0.0		6.2	0.0		-1.5		-1.5	-1.5	-1.5	-1.5
Detector 1 Position(m)		0.0		6.2	0.0		-1.5		-1.5	-1.5	-1.5	-1.5
Detector 1 Size(m)		1.8		9.0	1.8		9.0		9.0	9.0	9.0	9.0
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)		0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)		0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Turn Type		NA		pm+pt	NA		Prot		Perm	Perm	NA	Perm
Protected Phases		2		1	6		3				4	
Permitted Phases				6					3	4		4
Detector Phase		2		1	6		3		3	4	4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)		20.0		7.0	20.0		10.0		10.0	15.0	15.0	15.0
Minimum Split (s)		38.0		11.0	38.0		18.0		18.0	36.5	36.5	36.5
Total Split (s)		71.0		12.0	83.0		19.0		19.0	38.0	38.0	38.0
Total Split (%)		50.7%		8.6%	59.3%		13.6%		13.6%	27.1%	27.1%	27.1%
Maximum Green (s)		63.5		8.0	75.5		11.5		11.5	30.5	30.5	30.5
Yellow Time (s)		4.5		3.0	4.5		3.5		3.5	3.5	3.5	3.5
All-Red Time (s)		3.0		1.0	3.0		4.0		4.0	4.0	4.0	4.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)		7.5		4.0	7.5		7.5		7.5	7.5	7.5	7.5
Lead/Lag		Lag		Lead			Lead		Lead	Lag	Lag	Lag
Lead-Lag Optimize?		Yes		Yes			Yes		Yes	Yes	Yes	Yes
Vehicle Extension (s)		4.0		3.0	4.0		3.0		3.0	3.0	3.0	3.0
Recall Mode		C-Min		None	C-Min		None		None	None	None	None
Walk Time (s)		7.0			7.0					7.0	7.0	7.0
Flash Dont Walk (s)		23.0			23.0					22.0	22.0	22.0
Pedestrian Calls (#/hr)		0			0					1	1	1
Act Effct Green (s)		74.2		84.3	80.8		10.3		10.3	29.9	29.9	29.9
Actuated g/C Ratio		0.53		0.60	0.58		0.07		0.07	0.21	0.21	0.21
v/c Ratio		0.68		0.18	0.60		0.28		0.20	0.94	0.95	0.75
Control Delay		27.7		10.7	16.8		67.2		2.0	87.1	86.4	43.3
Queue Delay		0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Total Delay		27.7		10.7	16.8		67.2		2.0	87.1	86.4	43.3
LOS		C		B	B		E		A	F	F	D
Approach Delay		27.7			16.8			30.1			73.1	
Approach LOS		C			B			C			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 24 (17%), Referenced to phase 2:EBT and 6:WBTL, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.95			
Intersection Signal Delay: 33.8		Intersection LOS: C	
Intersection Capacity Utilization 79.3%		ICU Level of Service D	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 1: Carpool Lot/HWY 404 Southbound Ramp & Major Mackenzie Drive

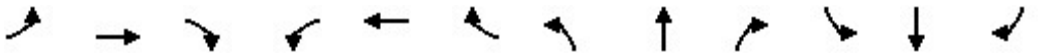




Lane Group	EBT	WBL	WBT	NBL	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1824	23	1742	34	45	366	359	332
v/c Ratio	0.68	0.18	0.60	0.28	0.20	0.94	0.95	0.75
Control Delay	27.7	10.7	16.8	67.2	2.0	87.1	86.4	43.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.7	10.7	16.8	67.2	2.0	87.1	86.4	43.3
Queue Length 50th (m)	159.8	1.8	130.7	9.1	0.0	105.2	100.9	57.8
Queue Length 95th (m)	184.2	m2.6	151.4	20.3	0.0	#165.7	#165.9	95.7
Internal Link Dist (m)	345.9		289.7				425.4	
Turn Bay Length (m)		55.0						170.0
Base Capacity (vph)	2702	136	2919	137	234	397	383	448
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.17	0.60	0.25	0.19	0.92	0.94	0.74

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1782	6	23	1707	0	33	0	44	535	15	486
Future Volume (vph)	0	1782	6	23	1707	0	33	0	44	535	15	486
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.7	3.7	3.5	3.5	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Total Lost time (s)		7.5		4.0	7.5		7.5		7.5	7.5	7.5	7.5
Lane Util. Factor		*0.85		1.00	*0.85		1.00		1.00	0.95	0.91	0.95
Frpb, ped/bikes		1.00		1.00	1.00		1.00		1.00	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
Frt		1.00		1.00	1.00		1.00		0.85	1.00	0.93	0.85
Flt Protected		1.00		0.95	1.00		0.95		1.00	0.95	0.98	1.00
Satd. Flow (prot)		5098		1566	5056		1671		1457	1825	1662	1611
Flt Permitted		1.00		0.05	1.00		0.95		1.00	0.95	0.98	1.00
Satd. Flow (perm)		5098		88	5056		1671		1457	1825	1662	1611
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1818	6	23	1742	0	34	0	45	546	15	496
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	42	0	22	98
Lane Group Flow (vph)	0	1824	0	23	1742	0	34	0	3	366	337	234
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	2%	1%	29%	20%	2%	2%	15%	2%	18%	0%	0%	0%
Turn Type		NA		pm+pt	NA		Prot		Perm	Perm	NA	Perm
Protected Phases		2		1	6		3				4	
Permitted Phases				6					3	4		4
Actuated Green, G (s)		71.0		79.3	79.3		8.3		8.3	29.9	29.9	29.9
Effective Green, g (s)		71.0		79.3	79.3		8.3		8.3	29.9	29.9	29.9
Actuated g/C Ratio		0.51		0.57	0.57		0.06		0.06	0.21	0.21	0.21
Clearance Time (s)		7.5		4.0	7.5		7.5		7.5	7.5	7.5	7.5
Vehicle Extension (s)		4.0		3.0	4.0		3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		2585		95	2863		99		86	389	354	344
v/s Ratio Prot		c0.36		0.01	c0.34		c0.02					
v/s Ratio Perm				0.13					0.00	0.20	0.20	0.15
v/c Ratio		0.71		0.24	0.61		0.34		0.03	0.94	0.95	0.68
Uniform Delay, d1		26.5		20.5	20.1		63.2		62.1	54.2	54.3	50.6
Progression Factor		1.00		0.68	0.81		1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2		1.6		0.7	0.5		2.1		0.1	30.8	35.2	5.3
Delay (s)		28.1		14.6	16.8		65.3		62.2	85.0	89.6	55.9
Level of Service		C		B	B		E		E	F	F	E
Approach Delay (s)		28.1			16.7			63.5			77.4	
Approach LOS		C			B			E			E	

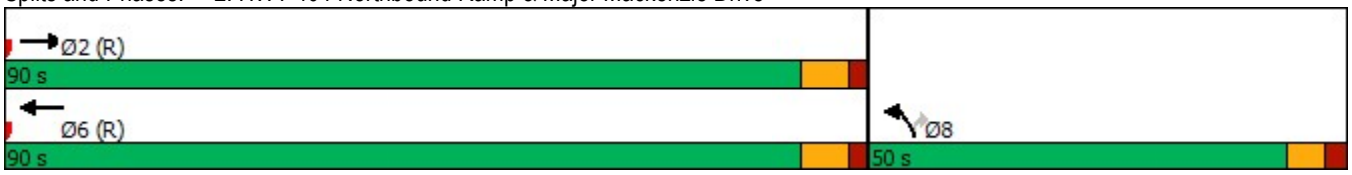
Intersection Summary			
HCM 2000 Control Delay	35.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	26.5
Intersection Capacity Utilization	79.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

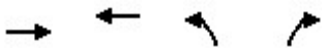
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1989	0	0	2381	543	661
Future Volume (vph)	1989	0	0	2381	543	661
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000
Storage Length (m)		0.0	0.0		0.0	180.0
Storage Lanes		0	0		2	1
Taper Length (m)			7.6		7.6	
Lane Util. Factor	*0.85	1.00	1.00	*0.85	0.97	0.91
Frt					0.949	0.850
Flt Protected					0.968	
Satd. Flow (prot)	5106	0	0	5056	3545	1549
Flt Permitted					0.968	
Satd. Flow (perm)	5106	0	0	5056	3545	1549
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)					8	8
Link Speed (k/h)	70			70	60	
Link Distance (m)	313.7			395.3	470.8	
Travel Time (s)	16.1			20.3	28.2	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	2%	2%	2%	2%	1%
Adj. Flow (vph)	2116	0	0	2533	578	703
Shared Lane Traffic (%)						42%
Lane Group Flow (vph)	2116	0	0	2533	873	408
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	7.4	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	0.92	0.92	0.92	0.92	0.92	0.92
Turning Speed (k/h)		14	24		24	14
Number of Detectors	0			0	1	1
Detector Template						
Leading Detector (m)	0.0			0.0	7.5	7.5
Trailing Detector (m)	0.0			0.0	-1.5	-1.5
Detector 1 Position(m)	0.0			0.0	-1.5	-1.5
Detector 1 Size(m)	1.8			1.8	9.0	9.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases						8
Detector Phase	2			6	8	8
Switch Phase						
Minimum Initial (s)	20.0			20.0	10.0	10.0
Minimum Split (s)	27.0			27.0	23.0	23.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Split (s)	90.0			90.0	50.0	50.0
Total Split (%)	64.3%			64.3%	35.7%	35.7%
Maximum Green (s)	83.0			83.0	43.5	43.5
Yellow Time (s)	5.0			5.0	4.0	4.0
All-Red Time (s)	2.0			2.0	2.5	2.5
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	7.0			7.0	6.5	6.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	4.0			4.0	3.0	3.0
Recall Mode	C-Min			C-Min	None	None
Walk Time (s)	5.0				5.0	5.0
Flash Dont Walk (s)	11.0				11.0	11.0
Pedestrian Calls (#/hr)	0				0	0
Act Effct Green (s)	85.9			85.9	40.6	40.6
Actuated g/C Ratio	0.61			0.61	0.29	0.29
v/c Ratio	0.68			0.82	0.85	0.90
Control Delay	21.9			41.7	54.7	69.9
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	21.9			41.7	54.7	69.9
LOS	C			D	D	E
Approach Delay	21.9			41.7	59.6	
Approach LOS	C			D	E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 113 (81%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay: 38.5		Intersection LOS: D	
Intersection Capacity Utilization 76.3%		ICU Level of Service D	
Analysis Period (min) 15			
* User Entered Value			

Splits and Phases: 2: HWY 404 Northbound Ramp & Major Mackenzie Drive





Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	2116	2533	873	408
v/c Ratio	0.68	0.82	0.85	0.90
Control Delay	21.9	41.7	54.7	69.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	21.9	41.7	54.7	69.9
Queue Length 50th (m)	127.2	221.9	113.0	113.9
Queue Length 95th (m)	182.3	m224.9	137.3	#171.8
Internal Link Dist (m)	289.7	371.3	446.8	
Turn Bay Length (m)				180.0
Base Capacity (vph)	3134	3103	1106	486
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.68	0.82	0.79	0.84

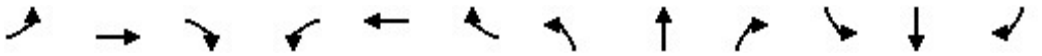
Intersection Summary

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



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1989	0	0	2381	543	661
Future Volume (vph)	1989	0	0	2381	543	661
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000
Total Lost time (s)	7.0			7.0	6.5	6.5
Lane Util. Factor	*0.85			*0.85	0.97	0.91
Frt	1.00			1.00	0.95	0.85
Flt Protected	1.00			1.00	0.97	1.00
Satd. Flow (prot)	5106			5056	3546	1549
Flt Permitted	1.00			1.00	0.97	1.00
Satd. Flow (perm)	5106			5056	3546	1549
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	2116	0	0	2533	578	703
RTOR Reduction (vph)	0	0	0	0	6	6
Lane Group Flow (vph)	2116	0	0	2533	867	402
Heavy Vehicles (%)	1%	2%	2%	2%	2%	1%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases						8
Actuated Green, G (s)	85.9			85.9	40.6	40.6
Effective Green, g (s)	85.9			85.9	40.6	40.6
Actuated g/C Ratio	0.61			0.61	0.29	0.29
Clearance Time (s)	7.0			7.0	6.5	6.5
Vehicle Extension (s)	4.0			4.0	3.0	3.0
Lane Grp Cap (vph)	3132			3102	1028	449
v/s Ratio Prot	0.41			c0.50	0.24	
v/s Ratio Perm						c0.26
v/c Ratio	0.68			0.82	0.84	0.90
Uniform Delay, d1	17.9			20.9	46.7	47.7
Progression Factor	1.14			1.90	1.00	1.00
Incremental Delay, d2	0.8			0.2	6.4	20.0
Delay (s)	21.2			40.0	53.2	67.6
Level of Service	C			D	D	E
Approach Delay (s)	21.2			40.0	57.8	
Approach LOS	C			D	E	

Intersection Summary			
HCM 2000 Control Delay	37.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	76.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



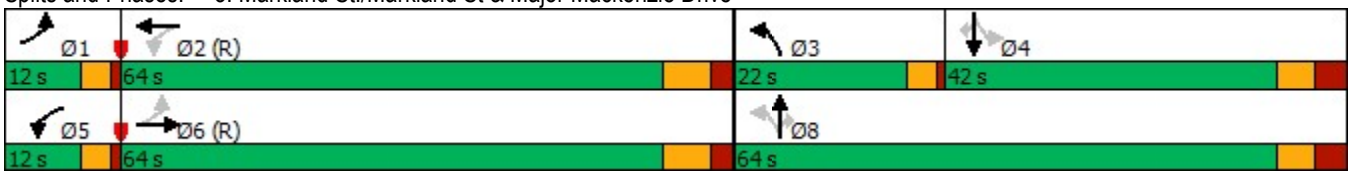
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	326	2122	202	29	2190	52	480	379	101	45	339	19
Future Volume (vph)	326	2122	202	29	2190	52	480	379	101	45	339	19
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	90.0		100.0	160.0		187.0	180.0		97.0	60.0		0.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	*0.85	0.91	1.00	*0.85	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00				0.98	0.99		
Frt		0.987			0.997				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1879	5027	0	1479	5040	0	1860	2022	1648	1824	2022	1681
Flt Permitted	0.060			0.064			0.170			0.537		
Satd. Flow (perm)	119	5027	0	100	5040	0	333	2022	1610	1024	2022	1681
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			3				101			97
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		395.3			249.0			215.0			229.3	
Travel Time (s)		20.3			12.8			15.5			16.5	
Confl. Peds. (#/hr)	1		4	4		1			9	9		
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
Heavy Vehicles (%)	0%	1%	1%	27%	2%	0%	1%	0%	2%	3%	0%	0%
Adj. Flow (vph)	326	2122	202	29	2190	52	480	379	101	45	339	19
Shared Lane Traffic (%)												
Lane Group Flow (vph)	326	2324	0	29	2242	0	480	379	101	45	339	19
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.95	0.92	0.95	0.95	0.92	0.95	0.95	0.92	0.95	0.95	0.92	0.95
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	0		1	0		1	1	1	1	1	1
Detector Template												
Leading Detector (m)	15.2	0.0		15.2	0.0		7.5	7.5	7.5	7.5	7.5	7.5
Trailing Detector (m)	6.2	0.0		6.2	0.0		-1.5	-0.2	-1.5	-1.5	-1.5	-1.5
Detector 1 Position(m)	6.2	0.0		6.2	0.0		-1.5	-0.2	-1.5	-1.5	-1.5	-1.5
Detector 1 Size(m)	9.0	1.8		9.0	1.8		9.0	7.7	9.0	9.0	9.0	9.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases	6			2			8		8	4		4
Detector Phase	1	6		5	2		3	8	8	4	4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	7.0	35.0		7.0	35.0		7.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.0	43.0		11.0	43.0		11.0	41.0	41.0	41.0	41.0	41.0
Total Split (s)	12.0	64.0		12.0	64.0		22.0	64.0	64.0	42.0	42.0	42.0
Total Split (%)	8.6%	45.7%		8.6%	45.7%		15.7%	45.7%	45.7%	30.0%	30.0%	30.0%
Maximum Green (s)	8.0	56.5		8.0	56.5		18.0	56.5	56.5	34.5	34.5	34.5
Yellow Time (s)	3.0	5.0		3.0	5.0		3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	2.5		1.0	2.5		1.0	3.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.5		4.0	7.5		4.0	7.5	7.5	7.5	7.5	7.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		None	None	None	None	None	None
Walk Time (s)		7.0			7.0			7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		28.0			28.0			26.0	26.0	26.0	26.0	26.0
Pedestrian Calls (#/hr)		4			1			0	0	0	0	0
Act Effct Green (s)	76.2	67.9		73.4	62.7		53.8	50.3	50.3	28.3	28.3	28.3
Actuated g/C Ratio	0.54	0.48		0.52	0.45		0.38	0.36	0.36	0.20	0.20	0.20
v/c Ratio	1.98	0.95		0.24	0.99		1.48	0.52	0.16	0.22	0.83	0.05
Control Delay	476.6	40.1		29.8	61.7		260.9	37.6	5.3	47.3	70.6	0.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	476.6	40.1		29.8	61.7		260.9	37.6	5.3	47.3	70.6	0.2
LOS	F	D		C	E		F	D	A	D	E	A
Approach Delay		93.8			61.3			145.8			64.7	
Approach LOS		F			E			F			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 23 (16%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.98			
Intersection Signal Delay: 88.1		Intersection LOS: F	
Intersection Capacity Utilization 119.8%		ICU Level of Service H	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 3: Markland St./Markland St & Major Mackenzie Drive





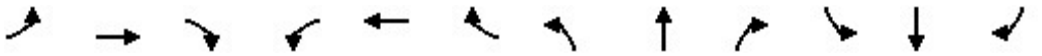
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	326	2324	29	2242	480	379	101	45	339	19
v/c Ratio	1.98	0.95	0.24	0.99	1.48	0.52	0.16	0.22	0.83	0.05
Control Delay	476.6	40.1	29.8	61.7	260.9	37.6	5.3	47.3	70.6	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	476.6	40.1	29.8	61.7	260.9	37.6	5.3	47.3	70.6	0.2
Queue Length 50th (m)	~122.6	~175.7	4.8	~256.8	~158.0	81.9	0.0	10.5	90.4	0.0
Queue Length 95th (m)	m#181.4	#284.8	m7.5	#300.1	#218.2	104.9	11.3	21.0	119.5	0.0
Internal Link Dist (m)		371.3		225.0		191.0			205.3	
Turn Bay Length (m)	90.0		160.0		180.0		97.0	60.0		
Base Capacity (vph)	165	2444	131	2259	324	816	709	252	498	487
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.98	0.95	0.22	0.99	1.48	0.46	0.14	0.18	0.68	0.04

Intersection Summary

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

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	326	2122	202	29	2190	52	480	379	101	45	339	19
Future Volume (vph)	326	2122	202	29	2190	52	480	379	101	45	339	19
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
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	7.5		4.0	7.5		4.0	7.5	7.5	7.5	7.5	7.5
Lane Util. Factor	1.00	*0.85		1.00	*0.85		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	0.98	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	0.99	1.00	1.00
Frt	1.00	0.99		1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1879	5027		1479	5038		1860	2022	1610	1812	2022	1681
Flt Permitted	0.06	1.00		0.06	1.00		0.17	1.00	1.00	0.54	1.00	1.00
Satd. Flow (perm)	119	5027		99	5038		334	2022	1610	1024	2022	1681
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)	326	2122	202	29	2190	52	480	379	101	45	339	19
RTOR Reduction (vph)	0	6	0	0	2	0	0	0	65	0	0	15
Lane Group Flow (vph)	326	2318	0	29	2240	0	480	379	36	45	339	4
Confl. Peds. (#/hr)	1		4	4		1			9	9		
Heavy Vehicles (%)	0%	1%	1%	27%	2%	0%	1%	0%	2%	3%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases	6			2			8		8	4		4
Actuated Green, G (s)	74.3	66.3		67.1	62.7		50.3	50.3	50.3	28.3	28.3	28.3
Effective Green, g (s)	74.3	66.3		67.1	62.7		50.3	50.3	50.3	28.3	28.3	28.3
Actuated g/C Ratio	0.53	0.47		0.48	0.45		0.36	0.36	0.36	0.20	0.20	0.20
Clearance Time (s)	4.0	7.5		4.0	7.5		4.0	7.5	7.5	7.5	7.5	7.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	163	2380		90	2256		316	726	578	206	408	339
v/s Ratio Prot	c0.11	0.46		0.01	0.44		c0.20	0.19			0.17	
v/s Ratio Perm	c0.94			0.14			c0.35		0.02	0.04		0.00
v/c Ratio	2.00	0.97		0.32	0.99		1.52	0.52	0.06	0.22	0.83	0.01
Uniform Delay, d1	41.1	36.0		31.9	38.4		37.5	35.4	29.4	46.6	53.6	44.7
Progression Factor	0.99	0.92		1.69	1.28		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	464.7	10.3		1.4	13.8		249.2	0.7	0.0	0.5	13.4	0.0
Delay (s)	505.3	43.5		55.2	63.1		286.7	36.1	29.4	47.2	67.0	44.7
Level of Service	F	D		E	E		F	D	C	D	E	D
Approach Delay (s)		100.3			63.0			160.7			63.7	
Approach LOS		F			E			F			E	

Intersection Summary			
HCM 2000 Control Delay	93.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.88		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	119.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

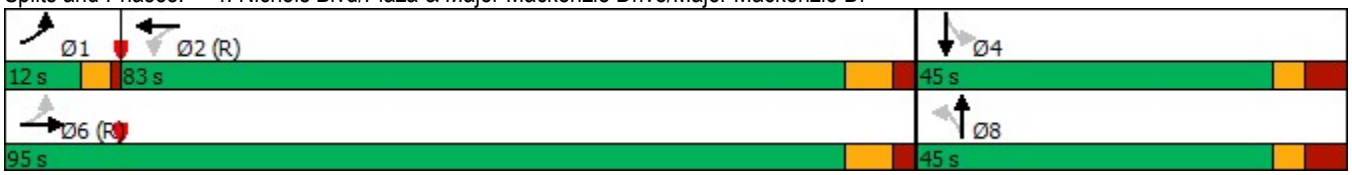
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	2115	76	30	2172	225	48	12	22	164	22	51
Future Volume (vph)	77	2115	76	30	2172	225	48	12	22	164	22	51
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.5	3.5	3.5
Storage Length (m)	55.0		100.0	45.0		45.0	70.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	*0.85	0.91	1.00	*0.85	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00		1.00	0.99		0.99	0.99	
Frt		0.995			0.986			0.903			0.895	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1842	5077	0	1879	4970	0	1879	1804	0	1842	1751	0
Flt Permitted	0.043			0.050			0.709			0.735		
Satd. Flow (perm)	83	5077	0	99	4970	0	1398	1804	0	1416	1751	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			18			9			52	
Link Speed (k/h)		70			70			40			40	
Link Distance (m)		249.0			251.3			209.6			112.0	
Travel Time (s)		12.8			12.9			18.9			10.1	
Confl. Peds. (#/hr)	9		4	4		9	3		6	6		3
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	2%	1%	0%	0%	2%	1%	0%	0%	0%	2%	0%	0%
Adj. Flow (vph)	79	2158	78	31	2216	230	49	12	22	167	22	52
Shared Lane Traffic (%)												
Lane Group Flow (vph)	79	2236	0	31	2446	0	49	34	0	167	74	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.95	0.92	0.95	0.95	0.92	0.95	0.95	0.92	0.92	0.95	0.95	0.95
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		1	1		1	1	
Detector Template												
Leading Detector (m)	0.0	0.0		0.0	0.0		7.5	7.5		7.5	7.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		-1.5	-0.2		-1.5	-1.5	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		-1.5	-0.2		-1.5	-1.5	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		9.0	7.7		9.0	9.0	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2			8			4		
Detector Phase	1	6		2	2		8	8		4	4	

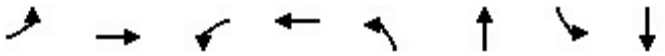
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	7.0	30.0		30.0	30.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.0	38.0		38.0	38.0		44.0	44.0		44.0	44.0	
Total Split (s)	12.0	95.0		83.0	83.0		45.0	45.0		45.0	45.0	
Total Split (%)	8.6%	67.9%		59.3%	59.3%		32.1%	32.1%		32.1%	32.1%	
Maximum Green (s)	8.0	87.5		75.5	75.5		37.0	37.0		37.0	37.0	
Yellow Time (s)	3.0	5.0		5.0	5.0		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	2.5		2.5	2.5		4.5	4.5		4.5	4.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	7.5		7.5	7.5		8.0	8.0		8.0	8.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)		7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		21.0		21.0	21.0		29.0	29.0		29.0	29.0	
Pedestrian Calls (#/hr)		4		9	9		6	6		3	3	
Act Effct Green (s)	104.9	101.4		89.7	89.7		23.1	23.1		23.1	23.1	
Actuated g/C Ratio	0.75	0.72		0.64	0.64		0.16	0.16		0.16	0.16	
v/c Ratio	0.50	0.61		0.49	0.77		0.21	0.11		0.72	0.22	
Control Delay	49.3	2.4		19.4	11.7		49.4	36.5		70.9	18.9	
Queue Delay	0.0	0.7		0.0	0.2		0.0	0.0		0.0	0.0	
Total Delay	49.3	3.0		19.4	12.0		49.4	36.5		70.9	18.9	
LOS	D	A		B	B		D	D		E	B	
Approach Delay		4.6			12.1			44.1			55.0	
Approach LOS		A			B			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 44 (31%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green			
Natural Cycle: 115			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 11.2		Intersection LOS: B	
Intersection Capacity Utilization 90.4%		ICU Level of Service E	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 4: Nichols Blvd/Plaza & Major Mackenzie Drive/Major Mackenzie Dr

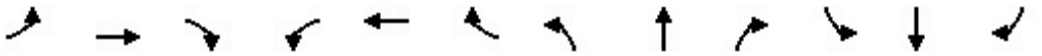




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	79	2236	31	2446	49	34	167	74
v/c Ratio	0.50	0.61	0.49	0.77	0.21	0.11	0.72	0.22
Control Delay	49.3	2.4	19.4	11.7	49.4	36.5	70.9	18.9
Queue Delay	0.0	0.7	0.0	0.2	0.0	0.0	0.0	0.0
Total Delay	49.3	3.0	19.4	12.0	49.4	36.5	70.9	18.9
Queue Length 50th (m)	10.4	9.2	2.9	101.4	12.0	6.0	44.8	5.3
Queue Length 95th (m)	m12.6	m16.2	m3.7	m97.3	21.3	14.2	62.2	17.1
Internal Link Dist (m)		225.0		227.3		185.6		88.0
Turn Bay Length (m)	55.0		45.0		70.0		30.0	
Base Capacity (vph)	166	3678	63	3191	369	483	374	501
Starvation Cap Reductn	0	946	0	184	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.82	0.49	0.81	0.13	0.07	0.45	0.15

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	2115	76	30	2172	225	48	12	22	164	22	51
Future Volume (vph)	77	2115	76	30	2172	225	48	12	22	164	22	51
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.5	3.5	3.5
Total Lost time (s)	4.0	7.5		7.5	7.5		8.0	8.0		8.0	8.0	
Lane Util. Factor	1.00	*0.85		1.00	*0.85		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	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.90		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)	1842	5075		1878	4969		1873	1804		1830	1750	
Flt Permitted	0.04	1.00		0.05	1.00		0.71	1.00		0.73	1.00	
Satd. Flow (perm)	83	5075		98	4969		1397	1804		1416	1750	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	79	2158	78	31	2216	230	49	12	22	167	22	52
RTOR Reduction (vph)	0	2	0	0	6	0	0	8	0	0	43	0
Lane Group Flow (vph)	79	2234	0	31	2440	0	49	26	0	167	31	0
Confl. Peds. (#/hr)	9		4	4		9	3		6	6		3
Heavy Vehicles (%)	2%	1%	0%	0%	2%	1%	0%	0%	0%	2%	0%	0%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	101.4	101.4		89.7	89.7		23.1	23.1		23.1	23.1	
Effective Green, g (s)	101.4	101.4		89.7	89.7		23.1	23.1		23.1	23.1	
Actuated g/C Ratio	0.72	0.72		0.64	0.64		0.17	0.17		0.17	0.17	
Clearance Time (s)	4.0	7.5		7.5	7.5		8.0	8.0		8.0	8.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	156	3675		62	3183		230	297		233	288	
v/s Ratio Prot	0.03	c0.44			c0.49			0.01			0.02	
v/s Ratio Perm	0.34			0.32			0.04			c0.12		
v/c Ratio	0.51	0.61		0.50	0.77		0.21	0.09		0.72	0.11	
Uniform Delay, d1	23.0	9.5		13.3	17.8		50.6	49.5		55.4	49.7	
Progression Factor	2.67	0.19		0.62	0.59		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.2	0.3		2.6	0.2		0.5	0.1		10.0	0.2	
Delay (s)	62.7	2.2		10.8	10.6		51.0	49.7		65.4	49.8	
Level of Service	E	A		B	B		D	D		E	D	
Approach Delay (s)		4.2			10.6			50.5			60.6	
Approach LOS		A			B			D			E	

Intersection Summary			
HCM 2000 Control Delay	10.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	90.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

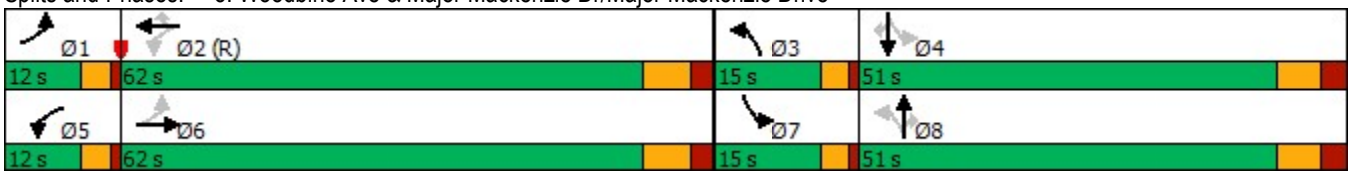
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	228	1820	253	208	1487	134	665	1112	673	143	409	275
Future Volume (vph)	228	1820	253	208	1487	134	665	1112	673	143	409	275
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.0	3.7	3.5	3.5	3.7	3.5	3.0	3.7	3.5	3.0	3.7	3.7
Storage Length (m)	120.0		80.0	300.0		120.0	150.0		70.0	165.0		70.0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	*0.85	0.91	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		1.00				0.98			0.98			
Frt		0.982				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1773	5016	0	1879	3767	1664	1739	3842	1664	1773	3804	1702
Flt Permitted	0.073			0.073			0.442			0.093		
Satd. Flow (perm)	136	5016	0	144	3767	1635	809	3842	1637	174	3804	1702
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		19				121			150			126
Link Speed (k/h)		70			70			60			60	
Link Distance (m)		251.3			460.0			545.1			346.9	
Travel Time (s)		12.9			23.7			32.7			20.8	
Confl. Peds. (#/hr)	5		14	14		5			4	4		
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
Heavy Vehicles (%)	0%	0%	5%	0%	2%	1%	2%	0%	1%	0%	1%	1%
Adj. Flow (vph)	228	1820	253	208	1487	134	665	1112	673	143	409	275
Shared Lane Traffic (%)												
Lane Group Flow (vph)	228	2073	0	208	1487	134	665	1112	673	143	409	275
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.0			3.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.02	0.92	0.95	0.95	0.92	0.95	1.02	0.92	0.95	1.02	0.92	0.92
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	0		1	0	0	1	1	1	1	1	1
Detector Template												
Leading Detector (m)	15.2	0.0		15.2	0.0	0.0	15.2	7.5	7.5	15.2	7.5	7.5
Trailing Detector (m)	6.2	0.0		6.2	0.0	0.0	6.2	-1.5	-1.5	6.2	-1.5	-1.5
Detector 1 Position(m)	6.2	0.0		6.2	0.0	0.0	6.2	-1.5	-1.5	6.2	-1.5	-1.5
Detector 1 Size(m)	9.0	1.8		9.0	1.8	6.1	9.0	9.0	9.0	9.0	9.0	9.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2		2	8		8	4		4
Detector Phase	1	6		5	2	2	3	8	8	7	4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	7.0	36.0		7.0	36.0	36.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	44.0		11.0	44.0	44.0	11.0	45.0	45.0	11.0	45.0	45.0
Total Split (s)	12.0	62.0		12.0	62.0	62.0	15.0	51.0	51.0	15.0	51.0	51.0
Total Split (%)	8.6%	44.3%		8.6%	44.3%	44.3%	10.7%	36.4%	36.4%	10.7%	36.4%	36.4%
Maximum Green (s)	8.0	54.5		8.0	54.5	54.5	11.0	43.5	43.5	11.0	43.5	43.5
Yellow Time (s)	3.0	5.0		3.0	5.0	5.0	3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	1.0	2.5		1.0	2.5	2.5	1.0	3.0	3.0	1.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.5		4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		29.0			29.0	29.0		30.0	30.0		30.0	30.0
Pedestrian Calls (#/hr)		14			5	5		4	4		0	0
Act Effct Green (s)	66.3	54.8		66.3	54.8	54.8	58.0	43.5	43.5	57.5	43.2	43.2
Actuated g/C Ratio	0.47	0.39		0.47	0.39	0.39	0.41	0.31	0.31	0.41	0.31	0.31
v/c Ratio	1.45	1.05		1.25	1.01	0.19	1.63	0.93	1.10	0.74	0.35	0.45
Control Delay	263.0	54.4		178.6	68.0	6.5	322.0	61.1	101.6	50.7	38.4	22.9
Queue Delay	0.0	0.0		0.0	8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	263.0	54.4		178.6	76.0	6.5	322.0	61.1	101.6	50.7	38.4	22.9
LOS	F	D		F	E	A	F	E	F	D	D	C
Approach Delay		75.1			82.5			143.0			35.4	
Approach LOS		E			F			F			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 53 (38%), Referenced to phase 2:WBTL, Start of Green			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.63			
Intersection Signal Delay: 95.0		Intersection LOS: F	
Intersection Capacity Utilization 116.0%		ICU Level of Service H	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 5: Woodbine Ave & Major Mackenzie Dr/Major Mackenzie Drive



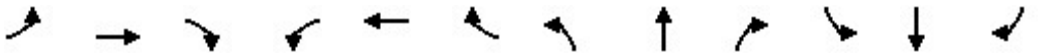


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	228	2073	208	1487	134	665	1112	673	143	409	275
v/c Ratio	1.45	1.05	1.25	1.01	0.19	1.63	0.93	1.10	0.74	0.35	0.45
Control Delay	263.0	54.4	178.6	68.0	6.5	322.0	61.1	101.6	50.7	38.4	22.9
Queue Delay	0.0	0.0	0.0	8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	263.0	54.4	178.6	76.0	6.5	322.0	61.1	101.6	50.7	38.4	22.9
Queue Length 50th (m)	~67.7	~245.8	~54.2	~222.2	2.2	~264.8	157.4	~180.8	23.7	46.1	32.1
Queue Length 95th (m)	#122.7	#269.8	#104.9	#270.5	15.5	#337.7	#197.7	#254.8	#51.9	60.5	58.2
Internal Link Dist (m)		227.3		436.0			521.1			322.9	
Turn Bay Length (m)	120.0		300.0		120.0	150.0		70.0	165.0		70.0
Base Capacity (vph)	157	1973	167	1473	713	408	1193	612	197	1181	615
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	36	0	0	0	0	0	0	1
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.45	1.05	1.25	1.03	0.19	1.63	0.93	1.10	0.73	0.35	0.45

Intersection Summary

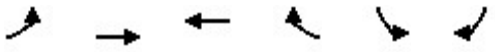
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



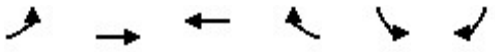
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	228	1820	253	208	1487	134	665	1112	673	143	409	275
Future Volume (vph)	228	1820	253	208	1487	134	665	1112	673	143	409	275
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.7	3.5	3.5	3.7	3.5	3.0	3.7	3.5	3.0	3.7	3.7
Total Lost time (s)	4.0	7.5		4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5
Lane Util. Factor	1.00	*0.85		1.00	0.95	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	0.98	1.00	1.00	0.98	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	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1773	5014		1879	3767	1635	1739	3842	1637	1773	3804	1702
Flt Permitted	0.07	1.00		0.07	1.00	1.00	0.44	1.00	1.00	0.09	1.00	1.00
Satd. Flow (perm)	136	5014		144	3767	1635	809	3842	1637	173	3804	1702
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)	228	1820	253	208	1487	134	665	1112	673	143	409	275
RTOR Reduction (vph)	0	12	0	0	0	74	0	0	103	0	0	87
Lane Group Flow (vph)	228	2061	0	208	1487	60	665	1112	570	143	409	188
Confl. Peds. (#/hr)	5		14	14		5			4	4		
Heavy Vehicles (%)	0%	0%	5%	0%	2%	1%	2%	0%	1%	0%	1%	1%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2		2	8		8	4		4
Actuated Green, G (s)	62.8	54.8		62.8	54.8	54.8	54.5	43.5	43.5	53.9	43.2	43.2
Effective Green, g (s)	62.8	54.8		62.8	54.8	54.8	54.5	43.5	43.5	53.9	43.2	43.2
Actuated g/C Ratio	0.45	0.39		0.45	0.39	0.39	0.39	0.31	0.31	0.38	0.31	0.31
Clearance Time (s)	4.0	7.5		4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	154	1962		163	1474	639	388	1193	508	188	1173	525
v/s Ratio Prot	c0.08	0.41		0.07	0.39		c0.13	0.29		0.06	0.11	
v/s Ratio Perm	c0.58			0.50		0.04	c0.53		0.35	0.23		0.11
v/c Ratio	1.48	1.05		1.28	1.01	0.09	1.71	0.93	1.12	0.76	0.35	0.36
Uniform Delay, d1	37.2	42.6		37.1	42.6	26.9	40.6	46.8	48.2	34.7	37.5	37.6
Progression Factor	1.59	0.46		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	242.3	33.3		163.1	25.6	0.3	332.0	12.9	77.6	16.5	0.2	0.4
Delay (s)	301.5	53.1		200.2	68.2	27.2	372.6	59.7	125.9	51.1	37.7	38.0
Level of Service	F	D		F	E	C	F	E	F	D	D	D
Approach Delay (s)		77.7			80.2			162.8			40.1	
Approach LOS		E			F			F			D	

Intersection Summary			
HCM 2000 Control Delay	102.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.59		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	116.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	81	332	376	381	71	2
Future Volume (vph)	81	332	376	381	71	2
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.7
Storage Length (m)	50.0			0.0	30.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.6				7.6	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.932			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1883	2002	1885	0	1879	1547
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1883	2002	1885	0	1879	1547
Link Speed (k/h)		50	50		40	
Link Distance (m)		517.2	229.3		191.9	
Travel Time (s)		37.2	16.5		17.3	
Confl. Peds. (#/hr)				9	1	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	1%	0%	0%	0%	0%
Parking (#/hr)						0
Adj. Flow (vph)	86	353	400	405	76	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	86	353	805	0	76	2
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	4.9		4.9	
Two way Left Turn Lane						
Headway Factor	0.92	0.92	0.92	0.92	0.95	1.06
Turning Speed (k/h)	24			14	24	14
Sign Control		Stop	Stop		Stop	

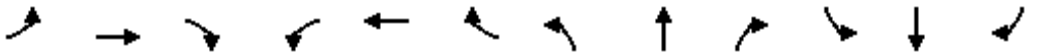
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 59.4%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	81	332	376	381	71	2
Future Volume (vph)	81	332	376	381	71	2
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	86	353	400	405	76	2

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total (vph)	86	353	805	76	2
Volume Left (vph)	86	0	0	76	0
Volume Right (vph)	0	0	405	0	2
Hadj (s)	0.53	0.02	-0.30	0.50	-0.70
Departure Headway (s)	5.9	5.4	4.8	7.6	6.4
Degree Utilization, x	0.14	0.53	1.08	0.16	0.00
Capacity (veh/h)	599	656	738	455	535
Control Delay (s)	8.7	13.2	78.2	10.8	8.2
Approach Delay (s)	12.3		78.2	10.8	
Approach LOS	B		F	B	

Intersection Summary			
Delay	52.4		
Level of Service	F		
Intersection Capacity Utilization	59.4%	ICU Level of Service	B
Analysis Period (min)	15		



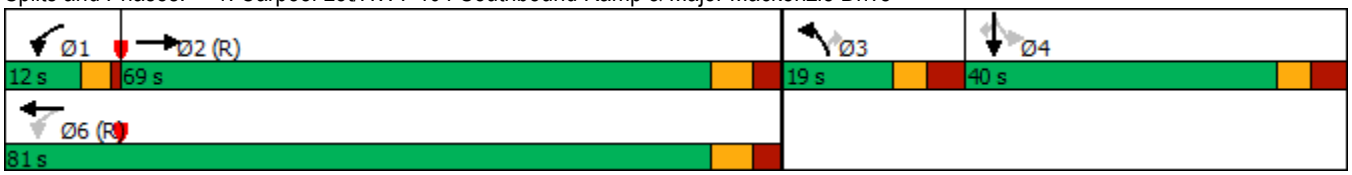
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	956	8	134	1978	0	15	0	18	338	343	220
Future Volume (vph)	0	956	8	134	1978	0	15	0	18	338	343	220
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.7	3.7	3.5	3.5	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Storage Length (m)	0.0		95.0	55.0		0.0	0.0		0.0	0.0		170.0
Storage Lanes	0		0	1		0	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	*0.85	0.91	1.00	*0.85	1.00	1.00	1.00	1.00	0.95	0.91	0.95
Frt		0.999							0.850		0.992	0.850
Flt Protected				0.950			0.950			0.950	0.996	
Satd. Flow (prot)	0	4994	0	1842	5006	0	1444	0	1095	1789	1769	1617
Flt Permitted				0.187			0.950			0.950	0.996	
Satd. Flow (perm)	0	4994	0	363	5006	0	1444	0	1095	1789	1769	1617
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1							125		2	125
Link Speed (k/h)		70			70			40			60	
Link Distance (m)		369.9			313.7			147.8			449.4	
Travel Time (s)		19.0			16.1			13.3			27.0	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	3%	20%	2%	3%	0%	33%	0%	57%	2%	3%	1%
Adj. Flow (vph)	0	1017	9	143	2104	0	16	0	19	360	365	234
Shared Lane Traffic (%)										10%		10%
Lane Group Flow (vph)	0	1026	0	143	2104	0	16	0	19	324	424	211
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.92	0.92	0.95	0.95	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors		0		1	0		1		1	1	1	1
Detector Template												
Leading Detector (m)		0.0		15.2	0.0		7.5		7.5	7.5	7.5	7.5
Trailing Detector (m)		0.0		6.2	0.0		-1.5		-1.5	-1.5	-1.5	-1.5
Detector 1 Position(m)		0.0		6.2	0.0		-1.5		-1.5	-1.5	-1.5	-1.5
Detector 1 Size(m)		1.8		9.0	1.8		9.0		9.0	9.0	9.0	9.0
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)		0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)		0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Turn Type		NA		pm+pt	NA		Prot		Perm	Perm	NA	Perm
Protected Phases		2		1	6		3				4	
Permitted Phases				6					3	4		4
Detector Phase		2		1	6		3		3	4	4	4
Switch Phase												
Minimum Initial (s)		20.0		7.0	20.0		10.0		10.0	15.0	15.0	15.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)		38.0		11.0	38.0		18.0		18.0	36.5	36.5	36.5
Total Split (s)		69.0		12.0	81.0		19.0		19.0	40.0	40.0	40.0
Total Split (%)		49.3%		8.6%	57.9%		13.6%		13.6%	28.6%	28.6%	28.6%
Maximum Green (s)		61.5		8.0	73.5		11.5		11.5	32.5	32.5	32.5
Yellow Time (s)		4.5		3.0	4.5		3.5		3.5	3.5	3.5	3.5
All-Red Time (s)		3.0		1.0	3.0		4.0		4.0	4.0	4.0	4.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)		7.5		4.0	7.5		7.5		7.5	7.5	7.5	7.5
Lead/Lag		Lag		Lead			Lead		Lead	Lag	Lag	Lag
Lead-Lag Optimize?		Yes		Yes			Yes		Yes	Yes	Yes	Yes
Vehicle Extension (s)		3.0		3.0	3.0		3.0		3.0	3.0	3.0	3.0
Recall Mode		C-Min		None	C-Min		None		None	None	None	None
Walk Time (s)		7.0			7.0					7.0	7.0	7.0
Flash Dont Walk (s)		23.0			23.0					22.0	22.0	22.0
Pedestrian Calls (#/hr)		0			0					0	0	0
Act Effct Green (s)		70.2		85.5	82.0		10.0		10.0	32.5	32.5	32.5
Actuated g/C Ratio		0.50		0.61	0.59		0.07		0.07	0.23	0.23	0.23
v/c Ratio		0.41		0.47	0.72		0.16		0.10	0.78	1.03	0.45
Control Delay		23.6		23.7	36.2		64.8		1.0	64.6	103.7	21.9
Queue Delay		0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Total Delay		23.6		23.7	36.2		64.8		1.0	64.6	103.7	21.9
LOS		C		C	D		E		A	E	F	C
Approach Delay		23.6			35.4			30.2			72.5	
Approach LOS		C			D			C			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 68 (49%), Referenced to phase 2:EBT and 6:WBTL, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.03			
Intersection Signal Delay: 40.9		Intersection LOS: D	
Intersection Capacity Utilization 75.0%		ICU Level of Service D	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 1: Carpool Lot/HWY 404 Southbound Ramp & Major Mackenzie Drive





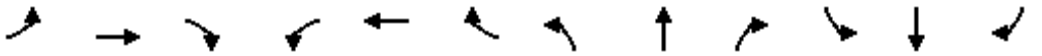
Lane Group	EBT	WBL	WBT	NBL	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1026	143	2104	16	19	324	424	211
v/c Ratio	0.41	0.47	0.72	0.16	0.10	0.78	1.03	0.45
Control Delay	23.6	23.7	36.2	64.8	1.0	64.6	103.7	21.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.6	23.7	36.2	64.8	1.0	64.6	103.7	21.9
Queue Length 50th (m)	75.8	28.0	217.2	4.2	0.0	89.2	~137.1	20.5
Queue Length 95th (m)	89.1	m24.6	m163.9	11.9	0.0	#132.6	#208.9	46.1
Internal Link Dist (m)	345.9		289.7				425.4	
Turn Bay Length (m)		55.0						170.0
Base Capacity (vph)	2504	306	2931	118	204	415	412	471
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.47	0.72	0.14	0.09	0.78	1.03	0.45

Intersection Summary

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

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

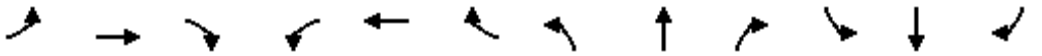
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	956	8	134	1978	0	15	0	18	338	343	220
Future Volume (vph)	0	956	8	134	1978	0	15	0	18	338	343	220
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.7	3.7	3.5	3.5	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Total Lost time (s)		7.5		4.0	7.5		7.5		7.5	7.5	7.5	7.5
Lane Util. Factor		*0.85		1.00	*0.85		1.00		1.00	0.95	0.91	0.95
Frt		1.00		1.00	1.00		1.00		0.85	1.00	0.99	0.85
Flt Protected		1.00		0.95	1.00		0.95		1.00	0.95	1.00	1.00
Satd. Flow (prot)		4993		1842	5006		1444		1095	1789	1768	1617
Flt Permitted		1.00		0.19	1.00		0.95		1.00	0.95	1.00	1.00
Satd. Flow (perm)		4993		362	5006		1444		1095	1789	1768	1617
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	1017	9	143	2104	0	16	0	19	360	365	234
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	18	0	2	96
Lane Group Flow (vph)	0	1025	0	143	2104	0	16	0	1	324	422	115
Heavy Vehicles (%)	0%	3%	20%	2%	3%	0%	33%	0%	57%	2%	3%	1%
Turn Type		NA		pm+pt	NA		Prot		Perm	Perm	NA	Perm
Protected Phases		2		1	6		3				4	
Permitted Phases				6					3	4		4
Actuated Green, G (s)		67.2		79.0	79.0		6.0		6.0	32.5	32.5	32.5
Effective Green, g (s)		67.2		79.0	79.0		6.0		6.0	32.5	32.5	32.5
Actuated g/C Ratio		0.48		0.56	0.56		0.04		0.04	0.23	0.23	0.23
Clearance Time (s)		7.5		4.0	7.5		7.5		7.5	7.5	7.5	7.5
Vehicle Extension (s)		3.0		3.0	3.0		3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		2396		286	2824		61		46	415	410	375
v/s Ratio Prot		0.21		0.03	c0.42		c0.01					
v/s Ratio Perm				0.25					0.00	0.18	0.24	0.07
v/c Ratio		0.43		0.50	0.75		0.26		0.02	0.78	1.03	0.31
Uniform Delay, d1		23.8		16.0	22.9		64.9		64.2	50.4	53.8	44.4
Progression Factor		1.00		1.77	1.62		1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2		0.6		0.1	0.2		2.3		0.2	9.2	52.5	0.5
Delay (s)		24.4		28.4	37.3		67.2		64.3	59.6	106.2	44.9
Level of Service		C		C	D		E		E	E	F	D
Approach Delay (s)		24.4			36.7			65.6			77.0	
Approach LOS		C			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	43.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	26.5
Intersection Capacity Utilization	75.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

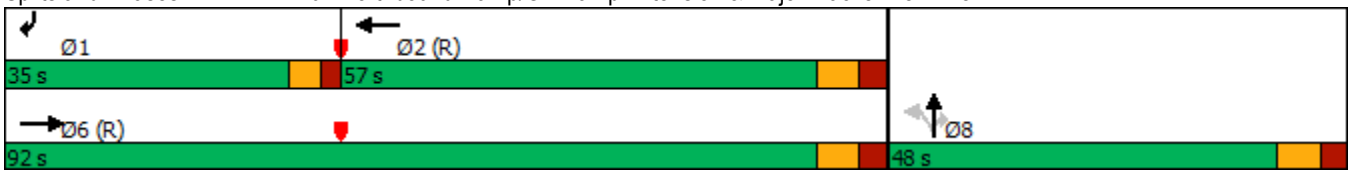


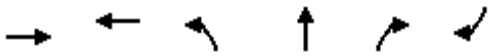
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1126	0	0	2381	4	637	126	483	0	0	446
Future Volume (vph)	0	1126	0	0	2381	4	637	126	483	0	0	446
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		180.0	0.0		0.0
Storage Lanes	0		0	0		0	1		1	0		1
Taper Length (m)	7.6			7.6			7.6			2.5		
Lane Util. Factor	1.00	*0.85	1.00	1.00	*0.85	0.91	0.91	0.86	0.91	1.00	1.00	1.00
Frt								0.954	0.850			0.865
Flt Protected							0.950	0.976				
Satd. Flow (prot)	0	4958	0	0	5056	0	1697	3084	1462	0	0	1715
Flt Permitted							0.950	0.976				
Satd. Flow (perm)	0	4958	0	0	5056	0	1697	3084	1462	0	0	1715
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)								40	92			
Link Speed (k/h)		70			70			60			50	
Link Distance (m)		313.7			395.3			470.8			394.7	
Travel Time (s)		16.1			20.3			28.2			28.4	
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
Heavy Vehicles (%)	2%	4%	0%	0%	2%	2%	3%	7%	7%	2%	2%	2%
Adj. Flow (vph)	0	1126	0	0	2381	4	637	126	483	0	0	446
Shared Lane Traffic (%)							49%		40%			
Lane Group Flow (vph)	0	1126	0	0	2385	0	325	631	290	0	0	446
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			1.6	
Two way Left Turn Lane												
Headway Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors		0			0		1	1	1			1
Detector Template												
Leading Detector (m)		0.0			0.0		7.5	7.5	7.5			7.5
Trailing Detector (m)		0.0			0.0		-1.5	-1.5	-1.5			-1.5
Detector 1 Position(m)		0.0			0.0		-1.5	-1.5	-1.5			-1.5
Detector 1 Size(m)		1.8			1.8		9.0	9.0	9.0			9.0
Detector 1 Type		Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0		0.0	0.0	0.0			0.0
Detector 1 Queue (s)		0.0			0.0		0.0	0.0	0.0			0.0
Detector 1 Delay (s)		0.0			0.0		0.0	0.0	0.0			0.0
Turn Type		NA			NA		Perm	NA	Perm			Prot
Protected Phases		6			2			8				1
Permitted Phases							8		8			
Detector Phase		6			2		8	8	8			1
Switch Phase												
Minimum Initial (s)		20.0			20.0		10.0	10.0	10.0			7.0
Minimum Split (s)		37.5			44.5		47.5	47.5	47.5			33.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (s)		92.0			57.0		48.0	48.0	48.0			35.0
Total Split (%)		65.7%			40.7%		34.3%	34.3%	34.3%			25.0%
Maximum Green (s)		84.5			49.5		40.5	40.5	40.5			29.5
Yellow Time (s)		4.5			4.5		4.5	4.5	4.5			3.5
All-Red Time (s)		3.0			3.0		3.0	3.0	3.0			2.0
Lost Time Adjust (s)		0.0			0.0		0.0	0.0	0.0			0.0
Total Lost Time (s)		7.5			7.5		7.5	7.5	7.5			5.5
Lead/Lag					Lag							Lead
Lead-Lag Optimize?												
Vehicle Extension (s)		4.0			4.0		3.0	3.0	3.0			3.0
Recall Mode		C-Max			C-Max		None	None	None			None
Walk Time (s)		7.0			7.0		7.0	7.0	7.0			
Flash Dont Walk (s)		23.0			30.0		33.0	33.0	33.0			
Pedestrian Calls (#/hr)		0			0		0	0	0			
Act Effct Green (s)		90.9			55.9		34.1	34.1	34.1			29.5
Actuated g/C Ratio		0.65			0.40		0.24	0.24	0.24			0.21
v/c Ratio		0.35			1.18		0.79	0.81	0.68			1.24
Control Delay		10.0			109.5		63.2	54.9	40.1			173.0
Queue Delay		0.0			0.0		0.0	0.0	0.0			0.0
Total Delay		10.0			109.5		63.2	54.9	40.1			173.0
LOS		B			F		E	D	D			F
Approach Delay		10.0			109.5			53.6			173.0	
Approach LOS		B			F			D			F	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 105 (75%), Referenced to phase 2:WBT and 6:EBT, Start of Green			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.24			
Intersection Signal Delay: 80.0		Intersection LOS: F	
Intersection Capacity Utilization 104.3%		ICU Level of Service G	
Analysis Period (min) 15			
* User Entered Value			

Splits and Phases: 2: HWY 404 Northbound Ramp/Off-Ramp Extension & Major Mackenzie Drive





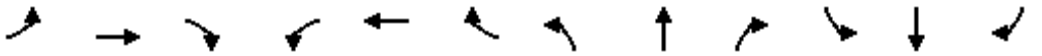
Lane Group	EBT	WBT	NBL	NBT	NBR	SBR
Lane Group Flow (vph)	1126	2385	325	631	290	446
v/c Ratio	0.35	1.18	0.79	0.81	0.68	1.24
Control Delay	10.0	109.5	63.2	54.9	40.1	173.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.0	109.5	63.2	54.9	40.1	173.0
Queue Length 50th (m)	34.3	~310.1	92.5	90.1	55.1	~152.4
Queue Length 95th (m)	m38.5	m#352.0	124.1	108.7	86.0	#217.9
Internal Link Dist (m)	289.7	371.3		446.8		
Turn Bay Length (m)					180.0	
Base Capacity (vph)	3219	2018	490	920	488	361
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.35	1.18	0.66	0.69	0.59	1.24

Intersection Summary

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

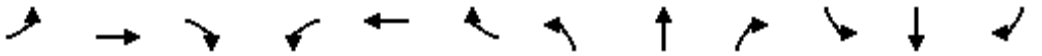
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1126	0	0	2381	4	637	126	483	0	0	446
Future Volume (vph)	0	1126	0	0	2381	4	637	126	483	0	0	446
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Total Lost time (s)		7.5			7.5		7.5	7.5	7.5			5.5
Lane Util. Factor		*0.85			*0.85		0.91	0.86	0.91			1.00
Frt		1.00			1.00		1.00	0.95	0.85			0.86
Flt Protected		1.00			1.00		0.95	0.98	1.00			1.00
Satd. Flow (prot)		4958			5054		1697	3084	1462			1715
Flt Permitted		1.00			1.00		0.95	0.98	1.00			1.00
Satd. Flow (perm)		4958			5054		1697	3084	1462			1715
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)	0	1126	0	0	2381	4	637	126	483	0	0	446
RTOR Reduction (vph)	0	0	0	0	0	0	0	30	70	0	0	0
Lane Group Flow (vph)	0	1126	0	0	2385	0	325	601	220	0	0	446
Heavy Vehicles (%)	2%	4%	0%	0%	2%	2%	3%	7%	7%	2%	2%	2%
Turn Type		NA			NA		Perm	NA	Perm			Prot
Protected Phases		6			2			8				1
Permitted Phases							8		8			
Actuated Green, G (s)		90.9			55.9		34.1	34.1	34.1			29.5
Effective Green, g (s)		90.9			55.9		34.1	34.1	34.1			29.5
Actuated g/C Ratio		0.65			0.40		0.24	0.24	0.24			0.21
Clearance Time (s)		7.5			7.5		7.5	7.5	7.5			5.5
Vehicle Extension (s)		4.0			4.0		3.0	3.0	3.0			3.0
Lane Grp Cap (vph)		3219			2017		413	751	356			361
v/s Ratio Prot		0.23			c0.47							c0.26
v/s Ratio Perm							0.19	0.19	0.15			
v/c Ratio		0.35			1.18		0.79	0.80	0.62			1.24
Uniform Delay, d1		11.1			42.0		49.6	49.7	47.2			55.2
Progression Factor		0.83			0.57		1.00	1.00	1.00			1.00
Incremental Delay, d2		0.3			84.7		9.5	6.0	3.2			127.7
Delay (s)		9.5			108.5		59.1	55.7	50.4			182.9
Level of Service		A			F		E	E	D			F
Approach Delay (s)		9.5			108.5			55.4			182.9	
Approach LOS		A			F			E			F	

Intersection Summary			
HCM 2000 Control Delay	80.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	104.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	1159	429	111	2371	7	220	207	29	54	361	362
Future Volume (vph)	21	1159	429	111	2371	7	220	207	29	54	361	362
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	90.0		100.0	160.0		187.0	180.0		97.0	60.0		0.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	*0.85	0.91	1.00	*0.85	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			1.00				0.98	0.99		
Frt		0.959							0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1824	4711	0	1842	5007	0	1773	2022	1303	1879	2002	1664
Flt Permitted	0.057			0.071			0.156			0.628		
Satd. Flow (perm)	109	4711	0	138	5007	0	291	2022	1273	1231	2002	1664
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		85							97			129
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		395.3			249.0			215.0			229.3	
Travel Time (s)		20.3			12.8			15.5			16.5	
Confl. Peds. (#/hr)	1		4	4		1			9	9		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00
Heavy Vehicles (%)	3%	5%	2%	2%	3%	0%	6%	0%	29%	0%	1%	1%
Adj. Flow (vph)	21	1159	429	111	2371	7	220	207	31	54	361	362
Shared Lane Traffic (%)												
Lane Group Flow (vph)	21	1588	0	111	2378	0	220	207	31	54	361	362
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.95	0.92	0.95	0.95	0.92	0.95	0.95	0.92	0.95	0.95	0.92	0.95
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	0		1	0		1	1	1	1	1	1
Detector Template												
Leading Detector (m)	15.2	0.0		15.2	0.0		7.5	7.5	7.5	7.5	7.5	7.5
Trailing Detector (m)	6.2	0.0		6.2	0.0		-1.5	-0.2	-1.5	-1.5	-1.5	-1.5
Detector 1 Position(m)	6.2	0.0		6.2	0.0		-1.5	-0.2	-1.5	-1.5	-1.5	-1.5
Detector 1 Size(m)	9.0	1.8		9.0	1.8		9.0	7.7	9.0	9.0	9.0	9.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases	6			2			8		8	4		4
Detector Phase	1	6		5	2		3	8	8	4	4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	7.0	35.0		7.0	35.0		7.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.0	43.0		11.0	43.0		11.0	41.0	41.0	41.0	41.0	41.0
Total Split (s)	12.0	69.0		17.0	74.0		12.0	54.0	54.0	42.0	42.0	42.0
Total Split (%)	8.6%	49.3%		12.1%	52.9%		8.6%	38.6%	38.6%	30.0%	30.0%	30.0%
Maximum Green (s)	8.0	61.5		13.0	66.5		8.0	46.5	46.5	34.5	34.5	34.5
Yellow Time (s)	3.0	5.0		3.0	5.0		3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	2.5		1.0	2.5		1.0	3.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.5		4.0	7.5		4.0	7.5	7.5	7.5	7.5	7.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		None	None	None	None	None	None
Walk Time (s)		7.0			7.0			7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		28.0			28.0			26.0	26.0	26.0	26.0	26.0
Pedestrian Calls (#/hr)		9			2			7	7	3	3	3
Act Effct Green (s)	80.2	69.7		86.2	76.6		45.3	41.8	41.8	29.8	29.8	29.8
Actuated g/C Ratio	0.57	0.50		0.62	0.55		0.32	0.30	0.30	0.21	0.21	0.21
v/c Ratio	0.14	0.66		0.56	0.87		1.24	0.34	0.07	0.21	0.85	0.79
Control Delay	7.8	14.9		40.9	23.6		178.4	39.2	0.3	45.6	70.9	46.0
Queue Delay	0.0	0.0		0.0	0.1		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.8	14.9		40.9	23.7		178.4	39.2	0.3	45.6	70.9	46.0
LOS	A	B		D	C		F	D	A	D	E	D
Approach Delay		14.8			24.5			103.4			57.5	
Approach LOS		B			C			F			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 74 (53%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green			
Natural Cycle: 130			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.24			
Intersection Signal Delay: 33.1		Intersection LOS: C	
Intersection Capacity Utilization 98.3%		ICU Level of Service F	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 3: Markland St./Markland St & Major Mackenzie Drive





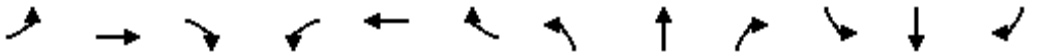
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	21	1588	111	2378	220	207	31	54	361	362
v/c Ratio	0.14	0.66	0.56	0.87	1.24	0.34	0.07	0.21	0.85	0.79
Control Delay	7.8	14.9	40.9	23.6	178.4	39.2	0.3	45.6	70.9	46.0
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.8	14.9	40.9	23.7	178.4	39.2	0.3	45.6	70.9	46.0
Queue Length 50th (m)	0.8	56.6	18.1	127.0	~50.5	44.2	0.0	12.3	95.6	62.6
Queue Length 95th (m)	m2.6	74.0	m27.1	#287.0	#107.2	63.6	0.0	23.9	127.9	97.3
Internal Link Dist (m)		371.3		225.0		191.0			205.3	
Turn Bay Length (m)	90.0		160.0		180.0		97.0	60.0		
Base Capacity (vph)	161	2388	243	2738	178	671	487	303	493	507
Starvation Cap Reductn	0	0	0	32	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.66	0.46	0.88	1.24	0.31	0.06	0.18	0.73	0.71

Intersection Summary

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

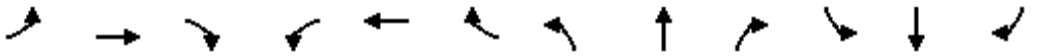
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	1159	429	111	2371	7	220	207	29	54	361	362
Future Volume (vph)	21	1159	429	111	2371	7	220	207	29	54	361	362
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
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	7.5		4.0	7.5		4.0	7.5	7.5	7.5	7.5	7.5
Lane Util. Factor	1.00	*0.85		1.00	*0.85		1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	0.99	1.00	1.00
Frt	1.00	0.96		1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1824	4713		1842	5004		1773	2022	1273	1863	2002	1664
Flt Permitted	0.06	1.00		0.07	1.00		0.16	1.00	1.00	0.63	1.00	1.00
Satd. Flow (perm)	110	4713		138	5004		291	2022	1273	1232	2002	1664
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00
Adj. Flow (vph)	21	1159	429	111	2371	7	220	207	31	54	361	362
RTOR Reduction (vph)	0	43	0	0	0	0	0	0	22	0	0	102
Lane Group Flow (vph)	21	1545	0	111	2378	0	220	207	9	54	361	260
Confl. Peds. (#/hr)	1		4	4		1			9	9		
Heavy Vehicles (%)	3%	5%	2%	2%	3%	0%	6%	0%	29%	0%	1%	1%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases	6			2			8		8	4		4
Actuated Green, G (s)	74.0	69.8		83.2	75.0		41.8	41.8	41.8	29.8	29.8	29.8
Effective Green, g (s)	74.0	69.8		83.2	75.0		41.8	41.8	41.8	29.8	29.8	29.8
Actuated g/C Ratio	0.53	0.50		0.59	0.54		0.30	0.30	0.30	0.21	0.21	0.21
Clearance Time (s)	4.0	7.5		4.0	7.5		4.0	7.5	7.5	7.5	7.5	7.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	109	2349		196	2680		171	603	380	262	426	354
v/s Ratio Prot	0.01	0.33		c0.04	c0.48		c0.07	0.10			0.18	
v/s Ratio Perm	0.10			0.30			c0.31		0.01	0.04		0.16
v/c Ratio	0.19	0.66		0.57	0.89		1.29	0.34	0.02	0.21	0.85	0.74
Uniform Delay, d1	27.8	26.2		19.4	28.8		45.6	38.4	34.7	45.4	52.9	51.4
Progression Factor	0.49	0.52		2.12	0.68		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8	1.3		2.7	3.6		165.7	0.3	0.0	0.4	14.4	7.7
Delay (s)	14.4	14.9		43.9	23.2		211.3	38.7	34.7	45.8	67.3	59.2
Level of Service	B	B		D	C		F	D	C	D	E	E
Approach Delay (s)		14.9			24.2			121.4			62.0	
Approach LOS		B			C			F			E	

Intersection Summary			
HCM 2000 Control Delay	35.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	98.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



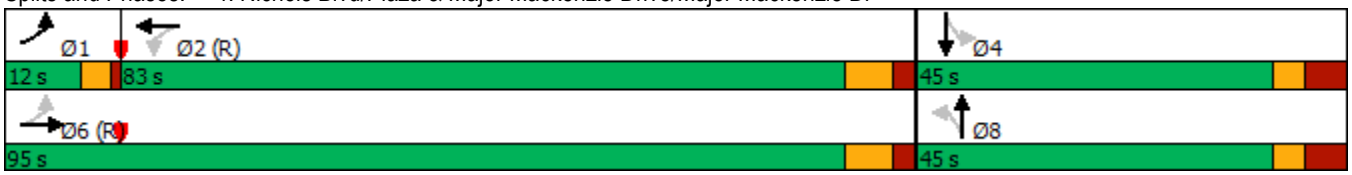
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	1206	28	28	2405	85	69	6	47	35	4	15
Future Volume (vph)	8	1206	28	28	2405	85	69	6	47	35	4	15
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.5	3.5	3.5
Storage Length (m)	55.0		100.0	45.0		45.0	70.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	*0.85	0.91	1.00	*0.85	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00	1.00		0.99	0.99		1.00	0.98	
Frt		0.997			0.995			0.866			0.880	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1879	4761	0	1620	5021	0	1879	1680	0	1879	1509	0
Flt Permitted	0.038			0.179			0.744			0.720		
Satd. Flow (perm)	75	4761	0	305	5021	0	1461	1680	0	1418	1509	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			5			50			16	
Link Speed (k/h)		70			70			40			40	
Link Distance (m)		249.0			251.3			209.6			112.0	
Travel Time (s)		12.8			12.9			18.9			10.1	
Confl. Peds. (#/hr)	2		3	3		2	6		4	4		6
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	8%	4%	16%	2%	5%	0%	0%	3%	0%	0%	17%
Adj. Flow (vph)	9	1283	30	30	2559	90	73	6	50	37	4	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	9	1313	0	30	2649	0	73	56	0	37	20	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.95	0.92	0.95	0.95	0.92	0.95	0.95	0.92	0.92	0.95	0.95	0.95
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		1	1		1	1	
Detector Template												
Leading Detector (m)	0.0	0.0		0.0	0.0		7.5	7.5		7.5	7.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		-1.5	-0.2		-1.5	-1.5	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		-1.5	-0.2		-1.5	-1.5	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		9.0	7.7		9.0	9.0	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2			8			4		
Detector Phase	1	6		2	2		8	8		4	4	

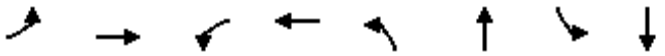
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	7.0	30.0		30.0	30.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.0	38.0		38.0	38.0		44.0	44.0		44.0	44.0	
Total Split (s)	12.0	95.0		83.0	83.0		45.0	45.0		45.0	45.0	
Total Split (%)	8.6%	67.9%		59.3%	59.3%		32.1%	32.1%		32.1%	32.1%	
Maximum Green (s)	8.0	87.5		75.5	75.5		37.0	37.0		37.0	37.0	
Yellow Time (s)	3.0	5.0		5.0	5.0		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	2.5		2.5	2.5		4.5	4.5		4.5	4.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	7.5		7.5	7.5		8.0	8.0		8.0	8.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)		7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		21.0		21.0	21.0		29.0	29.0		29.0	29.0	
Pedestrian Calls (#/hr)		3		2	2		4	4		6	6	
Act Effct Green (s)	111.3	107.8		105.6	105.6		16.7	16.7		16.7	16.7	
Actuated g/C Ratio	0.80	0.77		0.75	0.75		0.12	0.12		0.12	0.12	
v/c Ratio	0.06	0.36		0.13	0.70		0.42	0.23		0.22	0.10	
Control Delay	3.1	2.8		3.9	12.2		61.7	16.6		54.7	23.5	
Queue Delay	0.0	0.0		0.0	0.2		0.0	0.0		0.0	0.0	
Total Delay	3.1	2.8		3.9	12.4		61.7	16.6		54.7	23.5	
LOS	A	A		A	B		E	B		D	C	
Approach Delay		2.8			12.3			42.1			43.7	
Approach LOS		A			B			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 60 (43%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green			
Natural Cycle: 125			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 10.7		Intersection LOS: B	
Intersection Capacity Utilization 71.6%		ICU Level of Service C	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 4: Nichols Blvd/Plaza & Major Mackenzie Drive/Major Mackenzie Dr

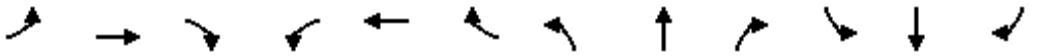




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	9	1313	30	2649	73	56	37	20
v/c Ratio	0.06	0.36	0.13	0.70	0.42	0.23	0.22	0.10
Control Delay	3.1	2.8	3.9	12.2	61.7	16.6	54.7	23.5
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Total Delay	3.1	2.8	3.9	12.4	61.7	16.6	54.7	23.5
Queue Length 50th (m)	0.1	9.8	0.8	67.0	19.7	1.6	9.8	1.0
Queue Length 95th (m)	m0.6	29.8	m1.0	m31.7	29.5	12.0	17.3	7.4
Internal Link Dist (m)		225.0		227.3		185.6		88.0
Turn Bay Length (m)	55.0		45.0		70.0		30.0	
Base Capacity (vph)	162	3667	230	3789	386	480	374	410
Starvation Cap Reductn	0	0	0	364	0	0	0	0
Spillback Cap Reductn	0	0	0	104	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.36	0.13	0.77	0.19	0.12	0.10	0.05

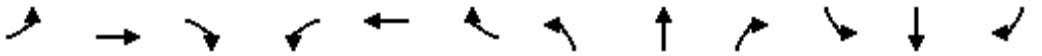
Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	1206	28	28	2405	85	69	6	47	35	4	15
Future Volume (vph)	8	1206	28	28	2405	85	69	6	47	35	4	15
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.5	3.5	3.5
Total Lost time (s)	4.0	7.5		7.5	7.5		8.0	8.0		8.0	8.0	
Lane Util. Factor	1.00	*0.85		1.00	*0.85		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	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.87		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1879	4759		1618	5021		1866	1680		1871	1509	
Flt Permitted	0.04	1.00		0.18	1.00		0.74	1.00		0.72	1.00	
Satd. Flow (perm)	74	4759		305	5021		1462	1680		1419	1509	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	9	1283	30	30	2559	90	73	6	50	37	4	16
RTOR Reduction (vph)	0	1	0	0	1	0	0	44	0	0	14	0
Lane Group Flow (vph)	9	1312	0	30	2648	0	73	12	0	37	6	0
Confl. Peds. (#/hr)	2		3	3		2	6		4	4		6
Heavy Vehicles (%)	0%	8%	4%	16%	2%	5%	0%	0%	3%	0%	0%	17%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	107.8	107.8		102.4	102.4		16.7	16.7		16.7	16.7	
Effective Green, g (s)	107.8	107.8		102.4	102.4		16.7	16.7		16.7	16.7	
Actuated g/C Ratio	0.77	0.77		0.73	0.73		0.12	0.12		0.12	0.12	
Clearance Time (s)	4.0	7.5		7.5	7.5		8.0	8.0		8.0	8.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	75	3664		223	3672		174	200		169	180	
v/s Ratio Prot	0.00	c0.28			c0.53			0.01			0.00	
v/s Ratio Perm	0.09			0.10			c0.05			0.03		
v/c Ratio	0.12	0.36		0.13	0.72		0.42	0.06		0.22	0.03	
Uniform Delay, d1	12.5	5.1		5.6	10.7		57.2	54.7		55.8	54.5	
Progression Factor	0.46	0.42		0.40	1.03		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.2		0.1	0.1		1.6	0.1		0.7	0.1	
Delay (s)	6.4	2.4		2.3	11.1		58.8	54.8		56.4	54.6	
Level of Service	A	A		A	B		E	D		E	D	
Approach Delay (s)		2.4			11.0			57.1			55.8	
Approach LOS		A			B			E			E	

Intersection Summary			
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



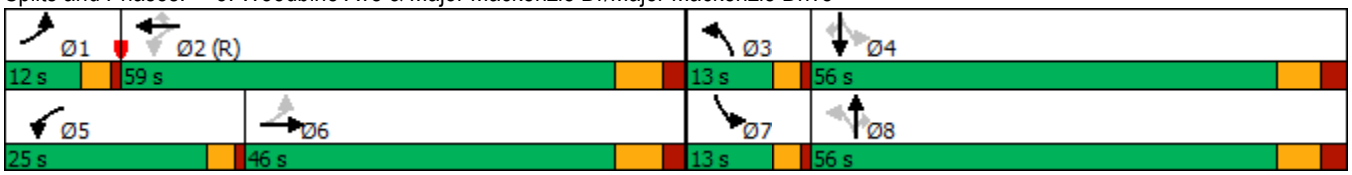
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	932	260	492	2127	70	288	738	343	130	1382	103
Future Volume (vph)	96	932	260	492	2127	70	288	738	343	130	1382	103
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.0	3.7	3.5	3.5	3.7	3.5	3.0	3.7	3.5	3.0	3.7	3.7
Storage Length (m)	120.0		80.0	300.0		120.0	150.0		70.0	165.0		70.0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	*0.85	0.91	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		1.00		1.00		0.98			0.99	1.00		0.98
Frt		0.967				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1722	4673	0	1842	3730	1681	1689	3730	1632	1673	3804	1592
Flt Permitted	0.104			0.094			0.082			0.239		
Satd. Flow (perm)	188	4673	0	182	3730	1655	146	3730	1609	421	3804	1564
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		45				97			343			129
Link Speed (k/h)		70			70			60			60	
Link Distance (m)		251.3			460.0			545.1			346.9	
Travel Time (s)		12.9			23.7			32.7			20.8	
Confl. Peds. (#/hr)	3		3	3		3	5		2	2		5
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
Heavy Vehicles (%)	3%	7%	4%	2%	3%	0%	5%	3%	3%	6%	1%	8%
Adj. Flow (vph)	96	932	260	492	2127	70	288	738	343	130	1382	103
Shared Lane Traffic (%)												
Lane Group Flow (vph)	96	1192	0	492	2127	70	288	738	343	130	1382	103
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.0			3.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.02	0.92	0.95	0.95	0.92	0.95	1.02	0.92	0.95	1.02	0.92	0.92
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	0		1	0	0	1	1	1	1	1	1
Detector Template												
Leading Detector (m)	15.2	0.0		15.2	0.0	0.0	15.2	7.5	7.5	15.2	7.5	7.5
Trailing Detector (m)	6.2	0.0		6.2	0.0	0.0	6.2	-1.5	-1.5	6.2	-1.5	-1.5
Detector 1 Position(m)	6.2	0.0		6.2	0.0	0.0	6.2	-1.5	-1.5	6.2	-1.5	-1.5
Detector 1 Size(m)	9.0	1.8		9.0	1.8	6.1	9.0	9.0	9.0	9.0	9.0	9.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2		2	8		8	4		4
Detector Phase	1	6		5	2	2	3	8	8	7	4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	7.0	36.0		7.0	36.0	36.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	44.0		11.0	44.0	44.0	11.0	45.0	45.0	11.0	45.0	45.0
Total Split (s)	12.0	46.0		25.0	59.0	59.0	13.0	56.0	56.0	13.0	56.0	56.0
Total Split (%)	8.6%	32.9%		17.9%	42.1%	42.1%	9.3%	40.0%	40.0%	9.3%	40.0%	40.0%
Maximum Green (s)	8.0	38.5		21.0	51.5	51.5	9.0	48.5	48.5	9.0	48.5	48.5
Yellow Time (s)	3.0	5.0		3.0	5.0	5.0	3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	1.0	2.5		1.0	2.5	2.5	1.0	3.0	3.0	1.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.5		4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		29.0			29.0	29.0		30.0	30.0		30.0	30.0
Pedestrian Calls (#/hr)		3			3	3		0	0		5	5
Act Effct Green (s)	49.8	38.5		67.0	51.7	51.7	61.3	48.8	48.8	60.7	48.5	48.5
Actuated g/C Ratio	0.36	0.28		0.48	0.37	0.37	0.44	0.35	0.35	0.43	0.35	0.35
v/c Ratio	0.63	0.91		1.46	1.54	0.10	1.78	0.57	0.44	0.50	1.05	0.16
Control Delay	51.1	49.5		256.5	280.8	2.5	396.1	39.2	5.0	29.2	82.9	3.0
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.1	49.5		256.5	280.8	2.5	396.1	39.2	5.0	29.2	82.9	3.0
LOS	D	D		F	F	A	F	D	A	C	F	A
Approach Delay		49.6			269.1			105.7			73.5	
Approach LOS		D			F			F			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 69 (49%), Referenced to phase 2:WBTL, Start of Green			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.78			
Intersection Signal Delay: 151.0		Intersection LOS: F	
Intersection Capacity Utilization 132.3%		ICU Level of Service H	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 5: Woodbine Ave & Major Mackenzie Dr/Major Mackenzie Drive



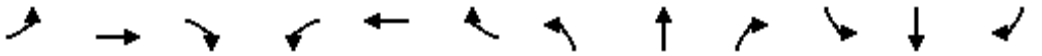


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	96	1192	492	2127	70	288	738	343	130	1382	103
v/c Ratio	0.63	0.91	1.46	1.54	0.10	1.78	0.57	0.44	0.50	1.05	0.16
Control Delay	51.1	49.5	256.5	280.8	2.5	396.1	39.2	5.0	29.2	82.9	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.1	49.5	256.5	280.8	2.5	396.1	39.2	5.0	29.2	82.9	3.0
Queue Length 50th (m)	14.5	87.6	~169.7	~435.6	0.0	~103.7	87.3	0.0	20.6	~218.6	0.0
Queue Length 95th (m)	#29.5	#120.1	#237.9	#476.1	5.1	#161.4	107.6	20.1	33.7	#261.2	7.4
Internal Link Dist (m)		227.3		436.0			521.1			322.9	
Turn Bay Length (m)	120.0		300.0		120.0	150.0		70.0	165.0		70.0
Base Capacity (vph)	154	1317	336	1377	672	162	1299	784	263	1317	626
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.91	1.46	1.54	0.10	1.78	0.57	0.44	0.49	1.05	0.16

Intersection Summary

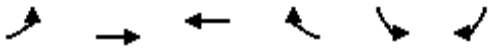
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



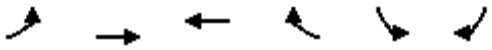
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	932	260	492	2127	70	288	738	343	130	1382	103
Future Volume (vph)	96	932	260	492	2127	70	288	738	343	130	1382	103
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.7	3.5	3.5	3.7	3.5	3.0	3.7	3.5	3.0	3.7	3.7
Total Lost time (s)	4.0	7.5		4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5
Lane Util. Factor	1.00	*0.85		1.00	0.95	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	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
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1722	4675		1842	3730	1655	1689	3730	1609	1673	3804	1564
Flt Permitted	0.10	1.00		0.09	1.00	1.00	0.08	1.00	1.00	0.24	1.00	1.00
Satd. Flow (perm)	188	4675		182	3730	1655	146	3730	1609	421	3804	1564
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)	96	932	260	492	2127	70	288	738	343	130	1382	103
RTOR Reduction (vph)	0	33	0	0	0	44	0	0	223	0	0	67
Lane Group Flow (vph)	96	1159	0	492	2127	26	288	738	120	130	1382	36
Confl. Peds. (#/hr)	3		3	3		3	5		2	2		5
Heavy Vehicles (%)	3%	7%	4%	2%	3%	0%	5%	3%	3%	6%	1%	8%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2		2	8		8	4		4
Actuated Green, G (s)	46.3	38.5		63.5	51.7	51.7	57.8	48.8	48.8	57.2	48.5	48.5
Effective Green, g (s)	46.3	38.5		63.5	51.7	51.7	57.8	48.8	48.8	57.2	48.5	48.5
Actuated g/C Ratio	0.33	0.28		0.45	0.37	0.37	0.41	0.35	0.35	0.41	0.35	0.35
Clearance Time (s)	4.0	7.5		4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	147	1285		331	1377	611	159	1300	560	249	1317	541
v/s Ratio Prot	0.04	0.25		c0.22	c0.57		c0.12	0.20		0.03	0.36	
v/s Ratio Perm	0.18			0.45		0.02	c0.63		0.07	0.18		0.02
v/c Ratio	0.65	0.90		1.49	1.54	0.04	1.81	0.57	0.21	0.52	1.05	0.07
Uniform Delay, d1	37.7	48.9		44.0	44.1	28.3	37.2	37.0	32.1	27.9	45.8	30.6
Progression Factor	1.33	0.83		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.6	10.1		234.4	248.8	0.1	388.8	0.6	0.2	2.0	38.8	0.1
Delay (s)	59.6	50.8		278.4	292.9	28.4	426.0	37.6	32.3	29.9	84.6	30.7
Level of Service	E	D		F	F	C	F	D	C	C	F	C
Approach Delay (s)		51.4			283.4			118.0			76.7	
Approach LOS		D			F			F			E	

Intersection Summary			
HCM 2000 Control Delay	160.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.70		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	132.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	17	342	150	85	435	234
Future Volume (vph)	17	342	150	85	435	234
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.5	3.7	3.7	3.7	3.5	3.7
Storage Length (m)	50.0			0.0	30.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.6				7.6	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.951			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1253	1983	1829	0	1860	1719
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1253	1983	1829	0	1860	1719
Link Speed (k/h)		50	50		40	
Link Distance (m)		238.8	229.3		191.9	
Travel Time (s)		17.2	16.5		17.3	
Confl. Peds. (#/hr)	1			1		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	50%	2%	8%	0%	1%	0%
Adj. Flow (vph)	18	364	160	90	463	249
Shared Lane Traffic (%)						
Lane Group Flow (vph)	18	364	250	0	463	249
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	4.9		4.9	
Two way Left Turn Lane						
Headway Factor	0.95	0.92	0.92	0.92	0.95	0.92
Turning Speed (k/h)	24			14	24	14
Sign Control		Stop	Stop		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 46.7%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	17	342	150	85	435	234
Future Volume (vph)	17	342	150	85	435	234
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	18	364	160	90	463	249

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total (vph)	18	364	250	463	249
Volume Left (vph)	18	0	0	463	0
Volume Right (vph)	0	0	90	0	249
Hadj (s)	1.35	0.03	-0.13	0.52	-0.70
Departure Headway (s)	8.5	7.1	6.9	7.1	5.9
Degree Utilization, x	0.04	0.72	0.48	0.91	0.41
Capacity (veh/h)	414	488	511	496	599
Control Delay (s)	10.6	25.2	16.1	46.7	11.6
Approach Delay (s)	24.6		16.1	34.4	
Approach LOS	C		C	D	

Intersection Summary			
Delay	28.2		
Level of Service	D		
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		

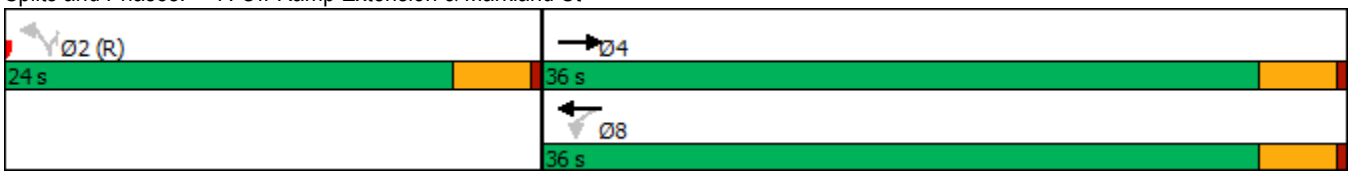


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	273	401	45	339	44	86
Future Volume (vph)	273	401	45	339	44	86
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.7	3.7	3.5	3.7	3.7	3.7
Storage Length (m)		0.0	50.0		0.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			2.5		2.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.920					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1824	0	1740	1872	1865	1669
Flt Permitted			0.225		0.950	
Satd. Flow (perm)	1824	0	412	1872	1865	1669
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	189					90
Link Speed (k/h)	50			50	50	
Link Distance (m)	222.8			238.8	394.7	
Travel Time (s)	16.0			17.2	28.4	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	8%	8%	3%	3%
Adj. Flow (vph)	284	418	47	353	46	90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	702	0	47	353	46	90
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.92	0.92	0.95	0.92	0.92	0.92
Turning Speed (k/h)		14	24		24	14
Turn Type	NA		Perm	NA	Perm	Perm
Protected Phases	4			8		
Permitted Phases			8		2	2
Minimum Split (s)	22.0		22.0	22.0	22.0	22.0
Total Split (s)	36.0		36.0	36.0	24.0	24.0
Total Split (%)	60.0%		60.0%	60.0%	40.0%	40.0%
Maximum Green (s)	32.0		32.0	32.0	20.0	20.0
Yellow Time (s)	3.5		3.5	3.5	3.5	3.5
All-Red Time (s)	0.5		0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Walk Time (s)	7.0		7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0		11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0		0	0	0	0
Act Effct Green (s)	32.0		32.0	32.0	20.0	20.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Actuated g/C Ratio	0.53		0.53	0.53	0.33	0.33
v/c Ratio	0.66		0.21	0.35	0.07	0.15
Control Delay	10.8		10.5	9.3	14.2	4.6
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	10.8		10.5	9.3	14.2	4.6
LOS	B		B	A	B	A
Approach Delay	10.8			9.5	7.8	
Approach LOS	B			A	A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green			
Natural Cycle: 50			
Control Type: Pretimed			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 10.0		Intersection LOS: B	
Intersection Capacity Utilization 49.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 7: Off-Ramp Extension & Markland St





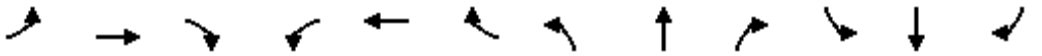
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	702	47	353	46	90
v/c Ratio	0.66	0.21	0.35	0.07	0.15
Control Delay	10.8	10.5	9.3	14.2	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	10.8	10.5	9.3	14.2	4.6
Queue Length 50th (m)	35.0	2.5	20.2	3.4	0.0
Queue Length 95th (m)	66.6	8.0	34.7	9.1	7.7
Internal Link Dist (m)	198.8		214.8	370.7	
Turn Bay Length (m)		50.0			
Base Capacity (vph)	1061	219	998	621	616
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.66	0.21	0.35	0.07	0.15

Intersection Summary



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	273	401	45	339	44	86
Future Volume (vph)	273	401	45	339	44	86
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000
Lane Width	3.7	3.7	3.5	3.7	3.7	3.7
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.92		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1823		1740	1872	1865	1669
Flt Permitted	1.00		0.23	1.00	0.95	1.00
Satd. Flow (perm)	1823		412	1872	1865	1669
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	284	418	47	353	46	90
RTOR Reduction (vph)	88	0	0	0	0	60
Lane Group Flow (vph)	614	0	47	353	46	30
Heavy Vehicles (%)	2%	2%	8%	8%	3%	3%
Turn Type	NA		Perm	NA	Perm	Perm
Protected Phases	4			8		
Permitted Phases			8		2	2
Actuated Green, G (s)	32.0		32.0	32.0	20.0	20.0
Effective Green, g (s)	32.0		32.0	32.0	20.0	20.0
Actuated g/C Ratio	0.53		0.53	0.53	0.33	0.33
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	972		219	998	621	556
v/s Ratio Prot	c0.34			0.19		
v/s Ratio Perm			0.11		c0.02	0.02
v/c Ratio	0.63		0.21	0.35	0.07	0.05
Uniform Delay, d1	9.9		7.4	8.1	13.7	13.6
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	3.1		2.2	1.0	0.2	0.2
Delay (s)	13.0		9.6	9.0	13.9	13.8
Level of Service	B		A	A	B	B
Approach Delay (s)	13.0			9.1	13.8	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	11.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



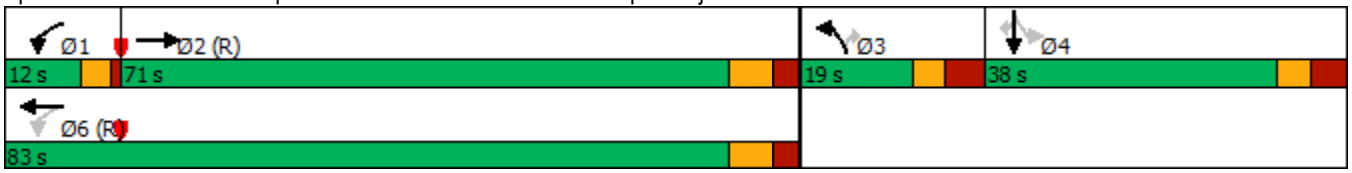
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1782	6	23	1498	0	33	0	44	535	15	486
Future Volume (vph)	0	1782	6	23	1498	0	33	0	44	535	15	486
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.7	3.7	3.5	3.5	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Storage Length (m)	0.0		95.0	55.0		0.0	0.0		0.0	0.0		170.0
Storage Lanes	0		0	1		0	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	*0.85	0.91	1.00	*0.85	1.00	1.00	1.00	1.00	0.95	0.91	0.95
Ped Bike Factor							1.00				0.99	0.99
Frt									0.850		0.931	0.850
Flt Protected				0.950			0.950			0.950	0.976	
Satd. Flow (prot)	0	5101	0	1566	5056	0	1671	0	1457	1825	1662	1633
Flt Permitted				0.053			0.950			0.950	0.976	
Satd. Flow (perm)	0	5101	0	87	5056	0	1669	0	1457	1825	1662	1611
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)									125		28	125
Link Speed (k/h)		70			70			40			60	
Link Distance (m)		369.9			313.7			147.8			449.4	
Travel Time (s)		19.0			16.1			13.3			27.0	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	2%	1%	29%	20%	2%	2%	15%	2%	18%	0%	0%	0%
Adj. Flow (vph)	0	1818	6	23	1529	0	34	0	45	546	15	496
Shared Lane Traffic (%)										33%		33%
Lane Group Flow (vph)	0	1824	0	23	1529	0	34	0	45	366	359	332
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.92	0.92	0.95	0.95	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors		0		1	0		1		1	1	1	1
Detector Template												
Leading Detector (m)		0.0		15.2	0.0		7.5		7.5	7.5	7.5	7.5
Trailing Detector (m)		0.0		6.2	0.0		-1.5		-1.5	-1.5	-1.5	-1.5
Detector 1 Position(m)		0.0		6.2	0.0		-1.5		-1.5	-1.5	-1.5	-1.5
Detector 1 Size(m)		1.8		9.0	1.8		9.0		9.0	9.0	9.0	9.0
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)		0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)		0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Turn Type		NA		pm+pt	NA		Prot		Perm	Perm	NA	Perm
Protected Phases		2		1	6		3				4	
Permitted Phases				6					3	4		4
Detector Phase		2		1	6		3		3	4	4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)		20.0		7.0	20.0		10.0		10.0	15.0	15.0	15.0
Minimum Split (s)		38.0		11.0	38.0		18.0		18.0	36.5	36.5	36.5
Total Split (s)		71.0		12.0	83.0		19.0		19.0	38.0	38.0	38.0
Total Split (%)		50.7%		8.6%	59.3%		13.6%		13.6%	27.1%	27.1%	27.1%
Maximum Green (s)		63.5		8.0	75.5		11.5		11.5	30.5	30.5	30.5
Yellow Time (s)		4.5		3.0	4.5		3.5		3.5	3.5	3.5	3.5
All-Red Time (s)		3.0		1.0	3.0		4.0		4.0	4.0	4.0	4.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)		7.5		4.0	7.5		7.5		7.5	7.5	7.5	7.5
Lead/Lag		Lag		Lead			Lead		Lead	Lag	Lag	Lag
Lead-Lag Optimize?		Yes		Yes			Yes		Yes	Yes	Yes	Yes
Vehicle Extension (s)		4.0		3.0	4.0		3.0		3.0	3.0	3.0	3.0
Recall Mode		C-Min		None	C-Min		None		None	None	None	None
Walk Time (s)		7.0			7.0					7.0	7.0	7.0
Flash Dont Walk (s)		23.0			23.0					22.0	22.0	22.0
Pedestrian Calls (#/hr)		0			0					1	1	1
Act Effct Green (s)		74.2		84.3	80.8		10.3		10.3	29.9	29.9	29.9
Actuated g/C Ratio		0.53		0.60	0.58		0.07		0.07	0.21	0.21	0.21
v/c Ratio		0.68		0.18	0.52		0.28		0.20	0.94	0.95	0.75
Control Delay		27.7		18.9	22.7		67.2		2.0	87.1	86.4	43.3
Queue Delay		0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Total Delay		27.7		18.9	22.7		67.2		2.0	87.1	86.4	43.3
LOS		C		B	C		E		A	F	F	D
Approach Delay		27.7			22.6			30.1			73.1	
Approach LOS		C			C			C			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 24 (17%), Referenced to phase 2:EBT and 6:WBTL, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.95			
Intersection Signal Delay: 36.6		Intersection LOS: D	
Intersection Capacity Utilization 79.3%		ICU Level of Service D	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 1: Carpool Lot/HWY 404 Southbound Ramp & Major Mackenzie Drive

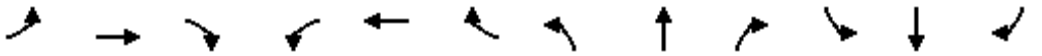




Lane Group	EBT	WBL	WBT	NBL	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1824	23	1529	34	45	366	359	332
v/c Ratio	0.68	0.18	0.52	0.28	0.20	0.94	0.95	0.75
Control Delay	27.7	18.9	22.7	67.2	2.0	87.1	86.4	43.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.7	18.9	22.7	67.2	2.0	87.1	86.4	43.3
Queue Length 50th (m)	159.8	2.9	88.9	9.1	0.0	105.2	100.9	57.8
Queue Length 95th (m)	184.2	m2.9	m80.0	20.3	0.0	#165.7	#165.9	95.7
Internal Link Dist (m)	345.9		289.7				425.4	
Turn Bay Length (m)		55.0						170.0
Base Capacity (vph)	2702	136	2919	137	234	397	383	448
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.17	0.52	0.25	0.19	0.92	0.94	0.74

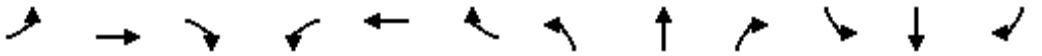
Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1782	6	23	1498	0	33	0	44	535	15	486
Future Volume (vph)	0	1782	6	23	1498	0	33	0	44	535	15	486
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.7	3.7	3.5	3.5	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Total Lost time (s)		7.5		4.0	7.5		7.5		7.5	7.5	7.5	7.5
Lane Util. Factor		*0.85		1.00	*0.85		1.00		1.00	0.95	0.91	0.95
Frpb, ped/bikes		1.00		1.00	1.00		1.00		1.00	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
Frt		1.00		1.00	1.00		1.00		0.85	1.00	0.93	0.85
Flt Protected		1.00		0.95	1.00		0.95		1.00	0.95	0.98	1.00
Satd. Flow (prot)		5098		1566	5056		1671		1457	1825	1662	1611
Flt Permitted		1.00		0.05	1.00		0.95		1.00	0.95	0.98	1.00
Satd. Flow (perm)		5098		88	5056		1671		1457	1825	1662	1611
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1818	6	23	1529	0	34	0	45	546	15	496
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	42	0	22	98
Lane Group Flow (vph)	0	1824	0	23	1529	0	34	0	3	366	337	234
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	2%	1%	29%	20%	2%	2%	15%	2%	18%	0%	0%	0%
Turn Type		NA		pm+pt	NA		Prot		Perm	Perm	NA	Perm
Protected Phases		2		1	6		3				4	
Permitted Phases				6					3	4		4
Actuated Green, G (s)		71.0		79.3	79.3		8.3		8.3	29.9	29.9	29.9
Effective Green, g (s)		71.0		79.3	79.3		8.3		8.3	29.9	29.9	29.9
Actuated g/C Ratio		0.51		0.57	0.57		0.06		0.06	0.21	0.21	0.21
Clearance Time (s)		7.5		4.0	7.5		7.5		7.5	7.5	7.5	7.5
Vehicle Extension (s)		4.0		3.0	4.0		3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		2585		95	2863		99		86	389	354	344
v/s Ratio Prot		c0.36		0.01	c0.30		c0.02					
v/s Ratio Perm				0.13					0.00	0.20	0.20	0.15
v/c Ratio		0.71		0.24	0.53		0.34		0.03	0.94	0.95	0.68
Uniform Delay, d1		26.5		20.5	18.9		63.2		62.1	54.2	54.3	50.6
Progression Factor		1.00		1.36	1.19		1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2		1.6		0.4	0.2		2.1		0.1	30.8	35.2	5.3
Delay (s)		28.1		28.2	22.6		65.3		62.2	85.0	89.6	55.9
Level of Service		C		C	C		E		E	F	F	E
Approach Delay (s)		28.1			22.6			63.5			77.4	
Approach LOS		C			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	38.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	26.5
Intersection Capacity Utilization	79.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

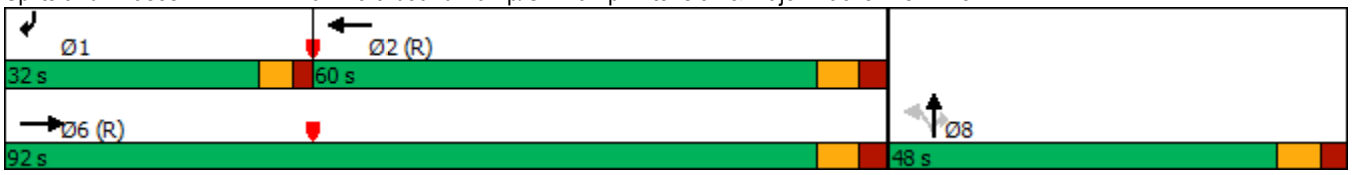


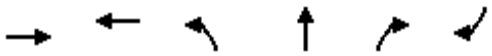
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1989	0	0	2172	17	543	380	281	0	0	395
Future Volume (vph)	0	1989	0	0	2172	17	543	380	281	0	0	395
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		180.0	0.0		0.0
Storage Lanes	0		0	0		0	1		1	0		1
Taper Length (m)	7.6			7.6			7.6			2.5		
Lane Util. Factor	1.00	*0.85	1.00	1.00	*0.85	0.91	0.91	0.86	0.91	1.00	1.00	1.00
Frt					0.999			0.993	0.850			0.865
Flt Protected							0.950	0.982				
Satd. Flow (prot)	0	5106	0	0	5050	0	1714	3346	1549	0	0	1749
Flt Permitted							0.950	0.982				
Satd. Flow (perm)	0	5106	0	0	5050	0	1714	3346	1549	0	0	1749
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)					1			3	78			
Link Speed (k/h)		70			70			60			50	
Link Distance (m)		313.7			395.3			470.8			394.7	
Travel Time (s)		16.1			20.3			28.2			28.4	
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
Heavy Vehicles (%)	2%	1%	2%	2%	2%	2%	2%	1%	1%	2%	2%	0%
Adj. Flow (vph)	0	1989	0	0	2172	17	543	380	281	0	0	395
Shared Lane Traffic (%)							43%		10%			
Lane Group Flow (vph)	0	1989	0	0	2189	0	310	641	253	0	0	395
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			1.6	
Two way Left Turn Lane												
Headway Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Turning Speed (k/h)	97		14	24		97	24		14	97		97
Number of Detectors		0			0		1	1	1			1
Detector Template												
Leading Detector (m)		0.0			0.0		7.5	7.5	7.5			7.5
Trailing Detector (m)		0.0			0.0		-1.5	-1.5	-1.5			-1.5
Detector 1 Position(m)		0.0			0.0		-1.5	-1.5	-1.5			-1.5
Detector 1 Size(m)		1.8			1.8		9.0	9.0	9.0			9.0
Detector 1 Type		Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0		0.0	0.0	0.0			0.0
Detector 1 Queue (s)		0.0			0.0		0.0	0.0	0.0			0.0
Detector 1 Delay (s)		0.0			0.0		0.0	0.0	0.0			0.0
Turn Type		NA			NA		Perm	NA	Perm			Prot
Protected Phases		6			2			8				1
Permitted Phases							8		8			
Detector Phase		6			2		8	8	8			1
Switch Phase												
Minimum Initial (s)		20.0			20.0		10.0	10.0	10.0			7.0
Minimum Split (s)		37.5			44.5		47.5	47.5	47.5			16.5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (s)		92.0			60.0		48.0	48.0	48.0			32.0
Total Split (%)		65.7%			42.9%		34.3%	34.3%	34.3%			22.9%
Maximum Green (s)		84.5			52.5		40.5	40.5	40.5			26.5
Yellow Time (s)		4.5			4.5		4.5	4.5	4.5			3.5
All-Red Time (s)		3.0			3.0		3.0	3.0	3.0			2.0
Lost Time Adjust (s)		0.0			0.0		0.0	0.0	0.0			0.0
Total Lost Time (s)		7.5			7.5		7.5	7.5	7.5			5.5
Lead/Lag					Lag							Lead
Lead-Lag Optimize?												
Vehicle Extension (s)		4.0			4.0		3.0	3.0	3.0			3.0
Recall Mode		C-Max			C-Max		None	None	None			None
Walk Time (s)		7.0			7.0		7.0	7.0	7.0			
Flash Dont Walk (s)		23.0			30.0		33.0	33.0	33.0			
Pedestrian Calls (#/hr)		0			0		0	0	0			
Act Effct Green (s)		91.4			59.4		33.6	33.6	33.6			26.5
Actuated g/C Ratio		0.65			0.42		0.24	0.24	0.24			0.19
v/c Ratio		0.60			1.02		0.75	0.80	0.59			1.19
Control Delay		6.8			41.2		61.0	57.3	37.0			160.7
Queue Delay		0.0			0.0		0.0	0.0	0.0			0.0
Total Delay		6.8			41.2		61.0	57.3	37.0			160.7
LOS		A			D		E	E	D			F
Approach Delay		6.8			41.2			54.0			160.7	
Approach LOS		A			D			D			F	

Intersection Summary	
Area Type:	Other
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 40 (29%), Referenced to phase 2:WBT and 6:EBT, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.19	
Intersection Signal Delay: 40.2	Intersection LOS: D
Intersection Capacity Utilization 99.1%	ICU Level of Service F
Analysis Period (min) 15	
* User Entered Value	

Splits and Phases: 2: HWY 404 Northbound Ramp/Off-Ramp Extension & Major Mackenzie Drive





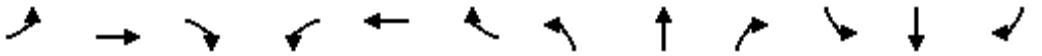
Lane Group	EBT	WBT	NBL	NBT	NBR	SBR
Lane Group Flow (vph)	1989	2189	310	641	253	395
v/c Ratio	0.60	1.02	0.75	0.80	0.59	1.19
Control Delay	6.8	41.2	61.0	57.3	37.0	160.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.8	41.2	61.0	57.3	37.0	160.7
Queue Length 50th (m)	54.4	~178.9	88.1	97.2	47.3	~131.8
Queue Length 95th (m)	67.4	m#268.2	117.2	113.6	73.8	#195.0
Internal Link Dist (m)	289.7	371.3		446.8		
Turn Bay Length (m)					180.0	
Base Capacity (vph)	3332	2142	495	970	503	331
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.60	1.02	0.63	0.66	0.50	1.19

Intersection Summary

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

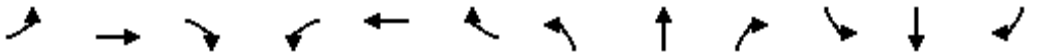
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1989	0	0	2172	17	543	380	281	0	0	395
Future Volume (vph)	0	1989	0	0	2172	17	543	380	281	0	0	395
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Total Lost time (s)		7.5			7.5		7.5	7.5	7.5			5.5
Lane Util. Factor		*0.85			*0.85		0.91	0.86	0.91			1.00
Frt		1.00			1.00		1.00	0.99	0.85			0.86
Flt Protected		1.00			1.00		0.95	0.98	1.00			1.00
Satd. Flow (prot)		5106			5050		1714	3348	1549			1749
Flt Permitted		1.00			1.00		0.95	0.98	1.00			1.00
Satd. Flow (perm)		5106			5050		1714	3348	1549			1749
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)	0	1989	0	0	2172	17	543	380	281	0	0	395
RTOR Reduction (vph)	0	0	0	0	1	0	0	2	59	0	0	0
Lane Group Flow (vph)	0	1989	0	0	2188	0	310	639	194	0	0	395
Heavy Vehicles (%)	2%	1%	2%	2%	2%	2%	2%	1%	1%	2%	2%	0%
Turn Type		NA			NA		Perm	NA	Perm			Prot
Protected Phases		6			2			8				1
Permitted Phases							8		8			
Actuated Green, G (s)		91.4			59.4		33.6	33.6	33.6			26.5
Effective Green, g (s)		91.4			59.4		33.6	33.6	33.6			26.5
Actuated g/C Ratio		0.65			0.42		0.24	0.24	0.24			0.19
Clearance Time (s)		7.5			7.5		7.5	7.5	7.5			5.5
Vehicle Extension (s)		4.0			4.0		3.0	3.0	3.0			3.0
Lane Grp Cap (vph)		3333			2142		411	803	371			331
v/s Ratio Prot		0.39			c0.43							c0.23
v/s Ratio Perm							0.18	0.19	0.13			
v/c Ratio		0.60			1.02		0.75	0.80	0.52			1.19
Uniform Delay, d1		13.8			40.3		49.4	50.0	46.2			56.8
Progression Factor		0.43			0.56		1.00	1.00	1.00			1.00
Incremental Delay, d2		0.5			16.8		7.7	5.5	1.3			112.9
Delay (s)		6.5			39.3		57.0	55.4	47.6			169.6
Level of Service		A			D		E	E	D			F
Approach Delay (s)		6.5			39.3			54.2			169.6	
Approach LOS		A			D			D			F	

Intersection Summary			
HCM 2000 Control Delay	40.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	99.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



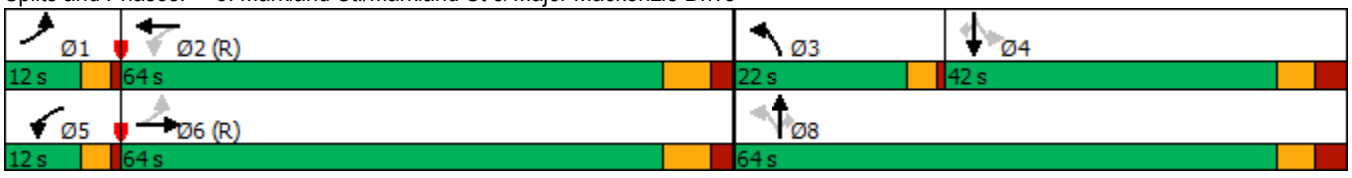
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	2002	202	29	1998	35	480	379	101	45	339	77
Future Volume (vph)	66	2002	202	29	1998	35	480	379	101	45	339	77
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	90.0		100.0	160.0		187.0	180.0		97.0	60.0		0.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	*0.85	0.91	1.00	*0.85	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00				0.98	0.99		
Frt		0.986			0.997				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1879	5021	0	1479	5040	0	1860	2022	1648	1824	2022	1681
Flt Permitted	0.060			0.062			0.170			0.537		
Satd. Flow (perm)	119	5021	0	97	5040	0	333	2022	1610	1024	2022	1681
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13			2				101			97
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		395.3			249.0			215.0			229.3	
Travel Time (s)		20.3			12.8			15.5			16.5	
Confl. Peds. (#/hr)	1		4	4		1			9	9		
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
Heavy Vehicles (%)	0%	1%	1%	27%	2%	0%	1%	0%	2%	3%	0%	0%
Adj. Flow (vph)	66	2002	202	29	1998	35	480	379	101	45	339	77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	66	2204	0	29	2033	0	480	379	101	45	339	77
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.95	0.92	0.95	0.95	0.92	0.95	0.95	0.92	0.95	0.95	0.92	0.95
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	0		1	0		1	1	1	1	1	1
Detector Template												
Leading Detector (m)	15.2	0.0		15.2	0.0		7.5	7.5	7.5	7.5	7.5	7.5
Trailing Detector (m)	6.2	0.0		6.2	0.0		-1.5	-0.2	-1.5	-1.5	-1.5	-1.5
Detector 1 Position(m)	6.2	0.0		6.2	0.0		-1.5	-0.2	-1.5	-1.5	-1.5	-1.5
Detector 1 Size(m)	9.0	1.8		9.0	1.8		9.0	7.7	9.0	9.0	9.0	9.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases	6			2			8		8	4		4
Detector Phase	1	6		5	2		3	8	8	4	4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	7.0	35.0		7.0	35.0		7.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.0	43.0		11.0	43.0		11.0	41.0	41.0	41.0	41.0	41.0
Total Split (s)	12.0	64.0		12.0	64.0		22.0	64.0	64.0	42.0	42.0	42.0
Total Split (%)	8.6%	45.7%		8.6%	45.7%		15.7%	45.7%	45.7%	30.0%	30.0%	30.0%
Maximum Green (s)	8.0	56.5		8.0	56.5		18.0	56.5	56.5	34.5	34.5	34.5
Yellow Time (s)	3.0	5.0		3.0	5.0		3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	2.5		1.0	2.5		1.0	3.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.5		4.0	7.5		4.0	7.5	7.5	7.5	7.5	7.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		None	None	None	None	None	None
Walk Time (s)		7.0			7.0			7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		28.0			28.0			26.0	26.0	26.0	26.0	26.0
Pedestrian Calls (#/hr)		4			1			0	0	0	0	0
Act Effct Green (s)	76.1	67.9		74.8	65.4		53.8	50.3	50.3	28.3	28.3	28.3
Actuated g/C Ratio	0.54	0.48		0.53	0.47		0.38	0.36	0.36	0.20	0.20	0.20
v/c Ratio	0.42	0.90		0.24	0.86		1.48	0.52	0.16	0.22	0.83	0.18
Control Delay	31.4	33.8		31.5	50.5		260.9	37.6	5.3	47.3	70.6	5.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.4	33.8		31.5	50.5		260.9	37.6	5.3	47.3	70.6	5.2
LOS	C	C		C	D		F	D	A	D	E	A
Approach Delay		33.7			50.3			145.8			57.4	
Approach LOS		C			D			F			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 23 (16%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.48			
Intersection Signal Delay: 60.3		Intersection LOS: E	
Intersection Capacity Utilization 108.3%		ICU Level of Service G	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 3: Markland St./Markland St & Major Mackenzie Drive





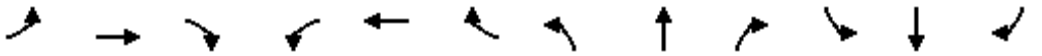
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	66	2204	29	2033	480	379	101	45	339	77
v/c Ratio	0.42	0.90	0.24	0.86	1.48	0.52	0.16	0.22	0.83	0.18
Control Delay	31.4	33.8	31.5	50.5	260.9	37.6	5.3	47.3	70.6	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.4	33.8	31.5	50.5	260.9	37.6	5.3	47.3	70.6	5.2
Queue Length 50th (m)	6.8	160.0	5.2	232.0	~158.0	81.9	0.0	10.5	90.4	0.0
Queue Length 95th (m)	m18.8	#292.3	m8.0	#253.8	#218.2	104.9	11.3	21.0	119.5	8.2
Internal Link Dist (m)		371.3		225.0		191.0			205.3	
Turn Bay Length (m)	90.0		160.0		180.0		97.0	60.0		
Base Capacity (vph)	165	2441	131	2357	324	816	709	252	498	487
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.90	0.22	0.86	1.48	0.46	0.14	0.18	0.68	0.16

Intersection Summary

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

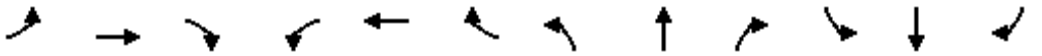
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	2002	202	29	1998	35	480	379	101	45	339	77
Future Volume (vph)	66	2002	202	29	1998	35	480	379	101	45	339	77
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
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	7.5		4.0	7.5		4.0	7.5	7.5	7.5	7.5	7.5
Lane Util. Factor	1.00	*0.85		1.00	*0.85		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	0.98	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	0.99	1.00	1.00
Frt	1.00	0.99		1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1879	5023		1479	5042		1860	2022	1610	1812	2022	1681
Flt Permitted	0.06	1.00		0.06	1.00		0.17	1.00	1.00	0.54	1.00	1.00
Satd. Flow (perm)	119	5023		96	5042		334	2022	1610	1024	2022	1681
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)	66	2002	202	29	1998	35	480	379	101	45	339	77
RTOR Reduction (vph)	0	7	0	0	1	0	0	0	65	0	0	61
Lane Group Flow (vph)	66	2197	0	29	2032	0	480	379	36	45	339	16
Confl. Peds. (#/hr)	1		4	4		1			9	9		
Heavy Vehicles (%)	0%	1%	1%	27%	2%	0%	1%	0%	2%	3%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases	6			2			8		8	4		4
Actuated Green, G (s)	72.4	66.3		69.0	64.6		50.3	50.3	50.3	28.3	28.3	28.3
Effective Green, g (s)	72.4	66.3		69.0	64.6		50.3	50.3	50.3	28.3	28.3	28.3
Actuated g/C Ratio	0.52	0.47		0.49	0.46		0.36	0.36	0.36	0.20	0.20	0.20
Clearance Time (s)	4.0	7.5		4.0	7.5		4.0	7.5	7.5	7.5	7.5	7.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	138	2378		90	2326		316	726	578	206	408	339
v/s Ratio Prot	c0.02	c0.44		0.01	0.40		c0.20	0.19			0.17	
v/s Ratio Perm	0.23			0.15			c0.35		0.02	0.04		0.01
v/c Ratio	0.48	0.92		0.32	0.87		1.52	0.52	0.06	0.22	0.83	0.05
Uniform Delay, d1	28.6	34.5		31.1	34.0		37.5	35.4	29.4	46.6	53.6	45.0
Progression Factor	1.46	0.83		1.78	1.38		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.1	6.3		1.5	3.7		249.2	0.7	0.0	0.5	13.4	0.1
Delay (s)	43.9	34.8		56.7	50.6		286.7	36.1	29.4	47.2	67.0	45.0
Level of Service	D	C		E	D		F	D	C	D	E	D
Approach Delay (s)		35.1			50.7			160.7			61.4	
Approach LOS		D			D			F			E	

Intersection Summary			
HCM 2000 Control Delay	63.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	108.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



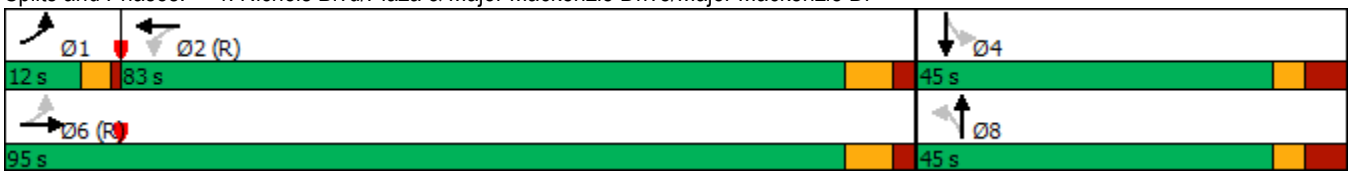
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	1995	76	30	1963	225	48	12	22	164	22	51
Future Volume (vph)	77	1995	76	30	1963	225	48	12	22	164	22	51
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.5	3.5	3.5
Storage Length (m)	55.0		100.0	45.0		45.0	70.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	*0.85	0.91	1.00	*0.85	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00	1.00		1.00	0.99		0.99	0.99	
Frt		0.994			0.985			0.903			0.895	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1842	5071	0	1879	4963	0	1879	1804	0	1842	1751	0
Flt Permitted	0.043			0.060			0.709			0.735		
Satd. Flow (perm)	83	5071	0	119	4963	0	1398	1804	0	1416	1751	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			20			12			52	
Link Speed (k/h)		70			70			40			40	
Link Distance (m)		249.0			251.3			209.6			112.0	
Travel Time (s)		12.8			12.9			18.9			10.1	
Confl. Peds. (#/hr)	9		4	4		9	3		6	6		3
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	2%	1%	0%	0%	2%	1%	0%	0%	0%	2%	0%	0%
Adj. Flow (vph)	79	2036	78	31	2003	230	49	12	22	167	22	52
Shared Lane Traffic (%)												
Lane Group Flow (vph)	79	2114	0	31	2233	0	49	34	0	167	74	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.95	0.92	0.95	0.95	0.92	0.95	0.95	0.92	0.92	0.95	0.95	0.95
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		1	1		1	1	
Detector Template												
Leading Detector (m)	0.0	0.0		0.0	0.0		7.5	7.5		7.5	7.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		-1.5	-0.2		-1.5	-1.5	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		-1.5	-0.2		-1.5	-1.5	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		9.0	7.7		9.0	9.0	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2			8			4		
Detector Phase	1	6		2	2		8	8		4	4	

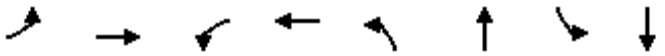
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	7.0	30.0		30.0	30.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.0	38.0		38.0	38.0		44.0	44.0		44.0	44.0	
Total Split (s)	12.0	95.0		83.0	83.0		45.0	45.0		45.0	45.0	
Total Split (%)	8.6%	67.9%		59.3%	59.3%		32.1%	32.1%		32.1%	32.1%	
Maximum Green (s)	8.0	87.5		75.5	75.5		37.0	37.0		37.0	37.0	
Yellow Time (s)	3.0	5.0		5.0	5.0		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	2.5		2.5	2.5		4.5	4.5		4.5	4.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	7.5		7.5	7.5		8.0	8.0		8.0	8.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)		7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		21.0		21.0	21.0		29.0	29.0		29.0	29.0	
Pedestrian Calls (#/hr)		4		9	9		6	6		3	3	
Act Effct Green (s)	104.9	101.4		89.7	89.7		23.1	23.1		23.1	23.1	
Actuated g/C Ratio	0.75	0.72		0.64	0.64		0.16	0.16		0.16	0.16	
v/c Ratio	0.50	0.58		0.41	0.70		0.21	0.11		0.72	0.22	
Control Delay	49.7	2.0		13.2	8.9		49.4	33.2		70.9	18.9	
Queue Delay	0.0	0.5		0.0	0.1		0.0	0.0		0.0	0.0	
Total Delay	49.7	2.4		13.2	9.0		49.4	33.2		70.9	18.9	
LOS	D	A		B	A		D	C		E	B	
Approach Delay		4.1			9.1			42.8			55.0	
Approach LOS		A			A			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 44 (31%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 9.7		Intersection LOS: A	
Intersection Capacity Utilization 90.4%		ICU Level of Service E	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 4: Nichols Blvd/Plaza & Major Mackenzie Drive/Major Mackenzie Dr

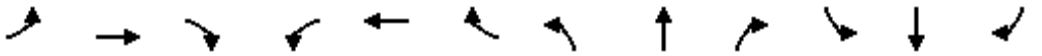




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	79	2114	31	2233	49	34	167	74
v/c Ratio	0.50	0.58	0.41	0.70	0.21	0.11	0.72	0.22
Control Delay	49.7	2.0	13.2	8.9	49.4	33.2	70.9	18.9
Queue Delay	0.0	0.5	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	49.7	2.4	13.2	9.0	49.4	33.2	70.9	18.9
Queue Length 50th (m)	10.5	9.1	2.3	72.5	12.0	5.3	44.8	5.3
Queue Length 95th (m)	m13.6	11.2	m2.9	m75.4	21.3	13.5	62.2	17.1
Internal Link Dist (m)		225.0		227.3		185.6		88.0
Turn Bay Length (m)	55.0		45.0		70.0		30.0	
Base Capacity (vph)	166	3674	76	3187	369	485	374	501
Starvation Cap Reductn	0	945	0	197	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.77	0.41	0.75	0.13	0.07	0.45	0.15

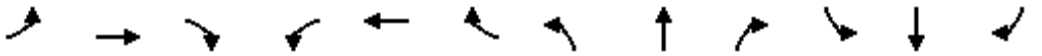
Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	1995	76	30	1963	225	48	12	22	164	22	51
Future Volume (vph)	77	1995	76	30	1963	225	48	12	22	164	22	51
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.5	3.5	3.5
Total Lost time (s)	4.0	7.5		7.5	7.5		8.0	8.0		8.0	8.0	
Lane Util. Factor	1.00	*0.85		1.00	*0.85		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	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.90		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)	1842	5074		1878	4961		1873	1804		1830	1750	
Flt Permitted	0.04	1.00		0.06	1.00		0.71	1.00		0.73	1.00	
Satd. Flow (perm)	83	5074		119	4961		1397	1804		1416	1750	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	79	2036	78	31	2003	230	49	12	22	167	22	52
RTOR Reduction (vph)	0	2	0	0	7	0	0	10	0	0	43	0
Lane Group Flow (vph)	79	2112	0	31	2226	0	49	24	0	167	31	0
Confl. Peds. (#/hr)	9		4	4		9	3		6	6		3
Heavy Vehicles (%)	2%	1%	0%	0%	2%	1%	0%	0%	0%	2%	0%	0%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	101.4	101.4		89.7	89.7		23.1	23.1		23.1	23.1	
Effective Green, g (s)	101.4	101.4		89.7	89.7		23.1	23.1		23.1	23.1	
Actuated g/C Ratio	0.72	0.72		0.64	0.64		0.17	0.17		0.17	0.17	
Clearance Time (s)	4.0	7.5		7.5	7.5		8.0	8.0		8.0	8.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	156	3675		76	3178		230	297		233	288	
v/s Ratio Prot	0.03	c0.42			c0.45			0.01			0.02	
v/s Ratio Perm	0.34			0.26			0.04			c0.12		
v/c Ratio	0.51	0.57		0.41	0.70		0.21	0.08		0.72	0.11	
Uniform Delay, d1	19.6	9.1		12.2	16.4		50.6	49.5		55.4	49.7	
Progression Factor	2.65	0.16		0.53	0.49		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.4	0.3		1.5	0.1		0.5	0.1		10.0	0.2	
Delay (s)	53.3	1.8		7.9	8.2		51.0	49.6		65.4	49.8	
Level of Service	D	A		A	A		D	D		E	D	
Approach Delay (s)		3.6			8.2			50.4			60.6	
Approach LOS		A			A			D			E	

Intersection Summary			
HCM 2000 Control Delay	9.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	90.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



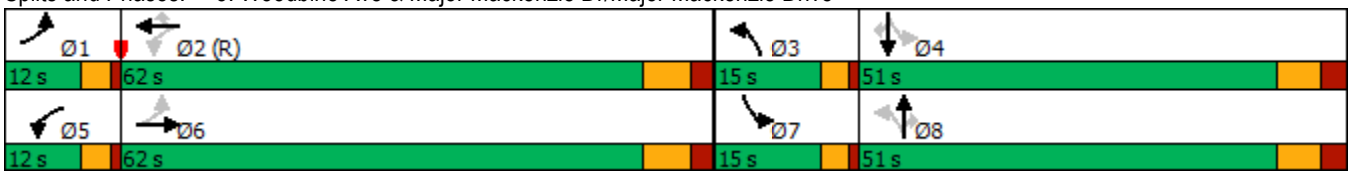
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	108	1820	253	208	1487	134	665	1112	673	143	409	66
Future Volume (vph)	108	1820	253	208	1487	134	665	1112	673	143	409	66
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.0	3.7	3.5	3.5	3.7	3.5	3.0	3.7	3.5	3.0	3.7	3.7
Storage Length (m)	120.0		80.0	300.0		120.0	150.0		70.0	165.0		70.0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	*0.85	0.91	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		1.00				0.98			0.98			
Frt		0.982				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1773	5016	0	1879	3767	1664	1739	3842	1664	1773	3804	1702
Flt Permitted	0.073			0.073			0.442			0.093		
Satd. Flow (perm)	136	5016	0	144	3767	1635	809	3842	1637	174	3804	1702
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		19				121			150			97
Link Speed (k/h)		70			70			60			60	
Link Distance (m)		251.3			460.0			545.1			346.9	
Travel Time (s)		12.9			23.7			32.7			20.8	
Confl. Peds. (#/hr)	5		14	14		5			4	4		
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
Heavy Vehicles (%)	0%	0%	5%	0%	2%	1%	2%	0%	1%	0%	1%	1%
Adj. Flow (vph)	108	1820	253	208	1487	134	665	1112	673	143	409	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	108	2073	0	208	1487	134	665	1112	673	143	409	66
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.0			3.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.02	0.92	0.95	0.95	0.92	0.95	1.02	0.92	0.95	1.02	0.92	0.92
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	0		1	0	0	1	1	1	1	1	1
Detector Template												
Leading Detector (m)	15.2	0.0		15.2	0.0	0.0	15.2	7.5	7.5	15.2	7.5	7.5
Trailing Detector (m)	6.2	0.0		6.2	0.0	0.0	6.2	-1.5	-1.5	6.2	-1.5	-1.5
Detector 1 Position(m)	6.2	0.0		6.2	0.0	0.0	6.2	-1.5	-1.5	6.2	-1.5	-1.5
Detector 1 Size(m)	9.0	1.8		9.0	1.8	6.1	9.0	9.0	9.0	9.0	9.0	9.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2		2	8		8	4		4
Detector Phase	1	6		5	2	2	3	8	8	7	4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	7.0	36.0		7.0	36.0	36.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	44.0		11.0	44.0	44.0	11.0	45.0	45.0	11.0	45.0	45.0
Total Split (s)	12.0	62.0		12.0	62.0	62.0	15.0	51.0	51.0	15.0	51.0	51.0
Total Split (%)	8.6%	44.3%		8.6%	44.3%	44.3%	10.7%	36.4%	36.4%	10.7%	36.4%	36.4%
Maximum Green (s)	8.0	54.5		8.0	54.5	54.5	11.0	43.5	43.5	11.0	43.5	43.5
Yellow Time (s)	3.0	5.0		3.0	5.0	5.0	3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	1.0	2.5		1.0	2.5	2.5	1.0	3.0	3.0	1.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.5		4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		29.0			29.0	29.0		30.0	30.0		30.0	30.0
Pedestrian Calls (#/hr)		14			5	5		4	4		0	0
Act Effct Green (s)	66.1	54.8		66.4	54.9	54.9	58.0	43.5	43.5	57.5	43.2	43.2
Actuated g/C Ratio	0.47	0.39		0.47	0.39	0.39	0.41	0.31	0.31	0.41	0.31	0.31
v/c Ratio	0.70	1.05		1.25	1.01	0.19	1.63	0.93	1.10	0.74	0.35	0.11
Control Delay	58.8	54.5		178.0	67.1	6.5	322.0	61.1	101.6	50.7	38.4	2.6
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.8	54.5		178.0	67.1	6.5	322.0	61.1	101.6	50.7	38.4	2.6
LOS	E	D		F	E	A	F	E	F	D	D	A
Approach Delay		54.7			75.3			143.0			37.4	
Approach LOS		D			E			F			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 53 (38%), Referenced to phase 2:WBTL, Start of Green			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.63			
Intersection Signal Delay: 89.1		Intersection LOS: F	
Intersection Capacity Utilization 114.8%		ICU Level of Service H	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 5: Woodbine Ave & Major Mackenzie Dr/Major Mackenzie Drive



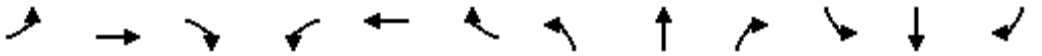


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	108	2073	208	1487	134	665	1112	673	143	409	66
v/c Ratio	0.70	1.05	1.25	1.01	0.19	1.63	0.93	1.10	0.74	0.35	0.11
Control Delay	58.8	54.5	178.0	67.1	6.5	322.0	61.1	101.6	50.7	38.4	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.8	54.5	178.0	67.1	6.5	322.0	61.1	101.6	50.7	38.4	2.6
Queue Length 50th (m)	12.0	~246.9	~54.2	~222.2	2.2	~264.8	157.4	~180.8	23.7	46.1	0.0
Queue Length 95th (m)	#39.4	#269.4	#104.9	#270.5	15.5	#337.7	#197.7	#254.8	#51.9	60.5	4.7
Internal Link Dist (m)		227.3		436.0			521.1			322.9	
Turn Bay Length (m)	120.0		300.0		120.0	150.0		70.0	165.0		70.0
Base Capacity (vph)	157	1973	167	1478	715	408	1193	612	197	1181	595
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	1.05	1.25	1.01	0.19	1.63	0.93	1.10	0.73	0.35	0.11

Intersection Summary

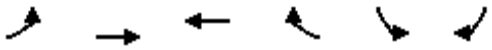
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



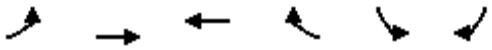
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	108	1820	253	208	1487	134	665	1112	673	143	409	66
Future Volume (vph)	108	1820	253	208	1487	134	665	1112	673	143	409	66
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.7	3.5	3.5	3.7	3.5	3.0	3.7	3.5	3.0	3.7	3.7
Total Lost time (s)	4.0	7.5		4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5
Lane Util. Factor	1.00	*0.85		1.00	0.95	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	0.98	1.00	1.00	0.98	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	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1773	5014		1879	3767	1635	1739	3842	1637	1773	3804	1702
Flt Permitted	0.07	1.00		0.07	1.00	1.00	0.44	1.00	1.00	0.09	1.00	1.00
Satd. Flow (perm)	136	5014		144	3767	1635	809	3842	1637	173	3804	1702
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)	108	1820	253	208	1487	134	665	1112	673	143	409	66
RTOR Reduction (vph)	0	12	0	0	0	73	0	0	103	0	0	46
Lane Group Flow (vph)	108	2061	0	208	1487	61	665	1112	570	143	409	20
Confl. Peds. (#/hr)	5		14	14		5			4	4		
Heavy Vehicles (%)	0%	0%	5%	0%	2%	1%	2%	0%	1%	0%	1%	1%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2		2	8		8	4		4
Actuated Green, G (s)	62.6	54.8		63.0	55.0	55.0	54.5	43.5	43.5	53.9	43.2	43.2
Effective Green, g (s)	62.6	54.8		63.0	55.0	55.0	54.5	43.5	43.5	53.9	43.2	43.2
Actuated g/C Ratio	0.45	0.39		0.45	0.39	0.39	0.39	0.31	0.31	0.38	0.31	0.31
Clearance Time (s)	4.0	7.5		4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	152	1962		163	1479	642	388	1193	508	188	1173	525
v/s Ratio Prot	0.04	0.41		c0.07	0.39		c0.13	0.29		0.06	0.11	
v/s Ratio Perm	0.28			c0.50		0.04	c0.53		0.35	0.23		0.01
v/c Ratio	0.71	1.05		1.28	1.01	0.09	1.71	0.93	1.12	0.76	0.35	0.04
Uniform Delay, d1	32.6	42.6		37.2	42.5	26.8	40.6	46.8	48.2	34.7	37.5	33.9
Progression Factor	1.69	0.46		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	12.3	33.6		163.1	24.7	0.3	332.0	12.9	77.6	16.5	0.2	0.0
Delay (s)	67.3	53.2		200.3	67.2	27.1	372.6	59.7	125.9	51.1	37.7	33.9
Level of Service	E	D		F	E	C	F	E	F	D	D	C
Approach Delay (s)		53.9			79.4			162.8			40.4	
Approach LOS		D			E			F			D	

Intersection Summary			
HCM 2000 Control Delay	97.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.48		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	114.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	81	460	230	250	1	72
Future Volume (vph)	81	460	230	250	1	72
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.5	3.7	3.7	3.7	3.5	3.7
Storage Length (m)	50.0			0.0	30.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.6				7.6	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.930			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1842	2002	1881	0	1879	1547
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1842	2002	1881	0	1879	1547
Link Speed (k/h)		50	50		40	
Link Distance (m)		238.8	229.3		191.9	
Travel Time (s)		17.2	16.5		17.3	
Confl. Peds. (#/hr)				9	1	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	1%	0%	0%	0%	0%
Parking (#/hr)						0
Adj. Flow (vph)	86	489	245	266	1	77
Shared Lane Traffic (%)						
Lane Group Flow (vph)	86	489	511	0	1	77
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	4.9		4.9	
Two way Left Turn Lane						
Headway Factor	0.95	0.92	0.92	0.92	0.95	1.06
Turning Speed (k/h)	24			14	24	14
Sign Control		Stop	Stop		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	44.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	81	460	230	250	1	72
Future Volume (vph)	81	460	230	250	1	72
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	86	489	245	266	1	77

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total (vph)	86	489	511	1	77
Volume Left (vph)	86	0	0	1	0
Volume Right (vph)	0	0	266	0	77
Hadj (s)	0.53	0.02	-0.31	0.50	-0.70
Departure Headway (s)	5.7	5.2	4.9	7.5	6.2
Degree Utilization, x	0.14	0.71	0.69	0.00	0.13
Capacity (veh/h)	618	673	726	438	514
Control Delay (s)	8.4	18.7	18.2	9.3	9.0
Approach Delay (s)	17.1		18.2	9.0	
Approach LOS	C		C	A	

Intersection Summary			
Delay	17.1		
Level of Service	C		
Intersection Capacity Utilization	44.1%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	352	270	125	177	208	189
Future Volume (vph)	352	270	125	177	208	189
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.7	3.7	3.5	3.7	3.7	3.7
Storage Length (m)		0.0	50.0		0.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			2.5		2.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.941					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1884	0	1879	2022	1902	1702
Flt Permitted			0.279		0.950	
Satd. Flow (perm)	1884	0	552	2022	1902	1702
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	106					201
Link Speed (k/h)	50			50	50	
Link Distance (m)	222.8			238.8	394.7	
Travel Time (s)	16.0			17.2	28.4	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	1%	0%	0%	1%	1%
Adj. Flow (vph)	374	287	133	188	221	201
Shared Lane Traffic (%)						
Lane Group Flow (vph)	661	0	133	188	221	201
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.92	0.92	0.95	0.92	0.92	0.92
Turning Speed (k/h)		97	97		97	97
Turn Type	NA		Perm	NA	Perm	Perm
Protected Phases	4			8		
Permitted Phases			8		2	2
Minimum Split (s)	22.0		22.0	22.0	22.0	22.0
Total Split (s)	38.0		38.0	38.0	22.0	22.0
Total Split (%)	63.3%		63.3%	63.3%	36.7%	36.7%
Maximum Green (s)	34.0		34.0	34.0	18.0	18.0
Yellow Time (s)	3.5		3.5	3.5	3.5	3.5
All-Red Time (s)	0.5		0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Walk Time (s)	7.0		7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0		11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0		0	0	0	0
Act Effct Green (s)	34.0		34.0	34.0	18.0	18.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Actuated g/C Ratio	0.57		0.57	0.57	0.30	0.30
v/c Ratio	0.59		0.43	0.16	0.39	0.31
Control Delay	9.7		12.8	6.7	19.1	4.4
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	9.7		12.8	6.7	19.1	4.4
LOS	A		B	A	B	A
Approach Delay	9.7			9.2	12.1	
Approach LOS	A			A	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green			
Natural Cycle: 55			
Control Type: Pretimed			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 10.3		Intersection LOS: B	
Intersection Capacity Utilization 60.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 7: Off-Ramp Extension & Markland St





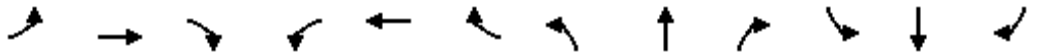
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	661	133	188	221	201
v/c Ratio	0.59	0.43	0.16	0.39	0.31
Control Delay	9.7	12.8	6.7	19.1	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	9.7	12.8	6.7	19.1	4.4
Queue Length 50th (m)	34.0	7.4	8.8	19.0	0.0
Queue Length 95th (m)	60.4	19.6	16.5	34.9	11.9
Internal Link Dist (m)	198.8		214.8	370.7	
Turn Bay Length (m)		50.0			
Base Capacity (vph)	1113	312	1145	570	651
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.59	0.43	0.16	0.39	0.31

Intersection Summary



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	352	270	125	177	208	189
Future Volume (vph)	352	270	125	177	208	189
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000
Lane Width	3.7	3.7	3.5	3.7	3.7	3.7
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.94		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1885		1879	2022	1902	1702
Flt Permitted	1.00		0.28	1.00	0.95	1.00
Satd. Flow (perm)	1885		551	2022	1902	1702
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	374	287	133	188	221	201
RTOR Reduction (vph)	46	0	0	0	0	141
Lane Group Flow (vph)	615	0	133	188	221	60
Heavy Vehicles (%)	1%	1%	0%	0%	1%	1%
Turn Type	NA		Perm	NA	Perm	Perm
Protected Phases	4			8		
Permitted Phases			8		2	2
Actuated Green, G (s)	34.0		34.0	34.0	18.0	18.0
Effective Green, g (s)	34.0		34.0	34.0	18.0	18.0
Actuated g/C Ratio	0.57		0.57	0.57	0.30	0.30
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	1068		312	1145	570	510
v/s Ratio Prot	c0.33			0.09		
v/s Ratio Perm			0.24		c0.12	0.04
v/c Ratio	0.58		0.43	0.16	0.39	0.12
Uniform Delay, d1	8.4		7.4	6.2	16.6	15.2
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	2.3		4.2	0.3	2.0	0.5
Delay (s)	10.6		11.6	6.5	18.6	15.7
Level of Service	B		B	A	B	B
Approach Delay (s)	10.6			8.6	17.2	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	12.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



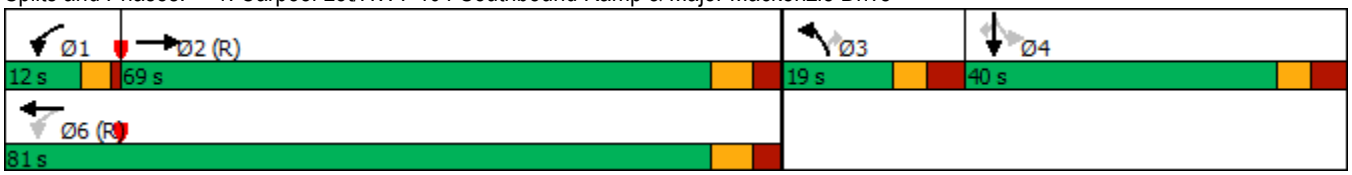
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	956	8	134	1978	0	15	0	18	338	343	220
Future Volume (vph)	0	956	8	134	1978	0	15	0	18	338	343	220
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.7	3.7	3.5	3.5	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Storage Length (m)	0.0		95.0	55.0		0.0	0.0		0.0	0.0		170.0
Storage Lanes	0		0	1		0	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	*0.85	0.91	1.00	*0.85	1.00	1.00	1.00	1.00	0.95	0.91	0.95
Frt		0.999							0.850		0.992	0.850
Flt Protected				0.950			0.950			0.950	0.996	
Satd. Flow (prot)	0	4994	0	1842	5006	0	1444	0	1095	1789	1769	1617
Flt Permitted				0.187			0.950			0.950	0.996	
Satd. Flow (perm)	0	4994	0	363	5006	0	1444	0	1095	1789	1769	1617
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1							125		2	125
Link Speed (k/h)		70			70			40			60	
Link Distance (m)		369.9			313.7			147.8			449.4	
Travel Time (s)		19.0			16.1			13.3			27.0	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	3%	20%	2%	3%	0%	33%	0%	57%	2%	3%	1%
Adj. Flow (vph)	0	1017	9	143	2104	0	16	0	19	360	365	234
Shared Lane Traffic (%)										10%		10%
Lane Group Flow (vph)	0	1026	0	143	2104	0	16	0	19	324	424	211
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.92	0.92	0.95	0.95	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors		0		1	0		1		1	1	1	1
Detector Template												
Leading Detector (m)		0.0		15.2	0.0		7.5		7.5	7.5	7.5	7.5
Trailing Detector (m)		0.0		6.2	0.0		-1.5		-1.5	-1.5	-1.5	-1.5
Detector 1 Position(m)		0.0		6.2	0.0		-1.5		-1.5	-1.5	-1.5	-1.5
Detector 1 Size(m)		1.8		9.0	1.8		9.0		9.0	9.0	9.0	9.0
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)		0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)		0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Turn Type		NA		pm+pt	NA		Prot		Perm	Perm	NA	Perm
Protected Phases		2		1	6		3				4	
Permitted Phases				6					3	4		4
Detector Phase		2		1	6		3		3	4	4	4
Switch Phase												
Minimum Initial (s)		20.0		7.0	20.0		10.0		10.0	15.0	15.0	15.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)		38.0		11.0	38.0		18.0		18.0	36.5	36.5	36.5
Total Split (s)		69.0		12.0	81.0		19.0		19.0	40.0	40.0	40.0
Total Split (%)		49.3%		8.6%	57.9%		13.6%		13.6%	28.6%	28.6%	28.6%
Maximum Green (s)		61.5		8.0	73.5		11.5		11.5	32.5	32.5	32.5
Yellow Time (s)		4.5		3.0	4.5		3.5		3.5	3.5	3.5	3.5
All-Red Time (s)		3.0		1.0	3.0		4.0		4.0	4.0	4.0	4.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)		7.5		4.0	7.5		7.5		7.5	7.5	7.5	7.5
Lead/Lag		Lag		Lead			Lead		Lead	Lag	Lag	Lag
Lead-Lag Optimize?		Yes		Yes			Yes		Yes	Yes	Yes	Yes
Vehicle Extension (s)		3.0		3.0	3.0		3.0		3.0	3.0	3.0	3.0
Recall Mode		C-Min		None	C-Min		None		None	None	None	None
Walk Time (s)		7.0			7.0					7.0	7.0	7.0
Flash Dont Walk (s)		23.0			23.0					22.0	22.0	22.0
Pedestrian Calls (#/hr)		0			0					0	0	0
Act Effct Green (s)		70.2		85.5	82.0		10.0		10.0	32.5	32.5	32.5
Actuated g/C Ratio		0.50		0.61	0.59		0.07		0.07	0.23	0.23	0.23
v/c Ratio		0.41		0.47	0.72		0.16		0.10	0.78	1.03	0.45
Control Delay		23.6		21.2	31.6		64.8		1.0	64.6	103.7	21.9
Queue Delay		0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Total Delay		23.6		21.2	31.6		64.8		1.0	64.6	103.7	21.9
LOS		C		C	C		E		A	E	F	C
Approach Delay		23.6			30.9			30.2			72.5	
Approach LOS		C			C			C			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 68 (49%), Referenced to phase 2:EBT and 6:WBTL, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.03			
Intersection Signal Delay: 38.5		Intersection LOS: D	
Intersection Capacity Utilization 75.0%		ICU Level of Service D	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 1: Carpool Lot/HWY 404 Southbound Ramp & Major Mackenzie Drive





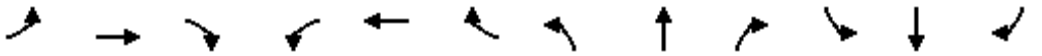
Lane Group	EBT	WBL	WBT	NBL	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1026	143	2104	16	19	324	424	211
v/c Ratio	0.41	0.47	0.72	0.16	0.10	0.78	1.03	0.45
Control Delay	23.6	21.2	31.6	64.8	1.0	64.6	103.7	21.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.6	21.2	31.6	64.8	1.0	64.6	103.7	21.9
Queue Length 50th (m)	75.8	23.8	186.5	4.2	0.0	89.2	~137.1	20.5
Queue Length 95th (m)	89.1	m24.0	m165.7	11.9	0.0	#132.6	#208.9	46.1
Internal Link Dist (m)	345.9		289.7				425.4	
Turn Bay Length (m)		55.0						170.0
Base Capacity (vph)	2504	306	2931	118	204	415	412	471
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.47	0.72	0.14	0.09	0.78	1.03	0.45

Intersection Summary

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

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

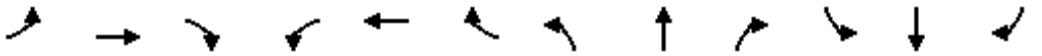
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	956	8	134	1978	0	15	0	18	338	343	220
Future Volume (vph)	0	956	8	134	1978	0	15	0	18	338	343	220
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.7	3.7	3.5	3.5	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Total Lost time (s)		7.5		4.0	7.5		7.5		7.5	7.5	7.5	7.5
Lane Util. Factor		*0.85		1.00	*0.85		1.00		1.00	0.95	0.91	0.95
Frt		1.00		1.00	1.00		1.00		0.85	1.00	0.99	0.85
Flt Protected		1.00		0.95	1.00		0.95		1.00	0.95	1.00	1.00
Satd. Flow (prot)		4993		1842	5006		1444		1095	1789	1768	1617
Flt Permitted		1.00		0.19	1.00		0.95		1.00	0.95	1.00	1.00
Satd. Flow (perm)		4993		362	5006		1444		1095	1789	1768	1617
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	1017	9	143	2104	0	16	0	19	360	365	234
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	18	0	2	96
Lane Group Flow (vph)	0	1025	0	143	2104	0	16	0	1	324	422	115
Heavy Vehicles (%)	0%	3%	20%	2%	3%	0%	33%	0%	57%	2%	3%	1%
Turn Type		NA		pm+pt	NA		Prot		Perm	Perm	NA	Perm
Protected Phases		2		1	6		3				4	
Permitted Phases				6					3	4		4
Actuated Green, G (s)		67.2		79.0	79.0		6.0		6.0	32.5	32.5	32.5
Effective Green, g (s)		67.2		79.0	79.0		6.0		6.0	32.5	32.5	32.5
Actuated g/C Ratio		0.48		0.56	0.56		0.04		0.04	0.23	0.23	0.23
Clearance Time (s)		7.5		4.0	7.5		7.5		7.5	7.5	7.5	7.5
Vehicle Extension (s)		3.0		3.0	3.0		3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		2396		286	2824		61		46	415	410	375
v/s Ratio Prot		0.21		0.03	c0.42		c0.01					
v/s Ratio Perm				0.25					0.00	0.18	0.24	0.07
v/c Ratio		0.43		0.50	0.75		0.26		0.02	0.78	1.03	0.31
Uniform Delay, d1		23.8		16.0	22.9		64.9		64.2	50.4	53.8	44.4
Progression Factor		1.00		1.49	1.40		1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2		0.6		0.4	0.6		2.3		0.2	9.2	52.5	0.5
Delay (s)		24.4		24.1	32.6		67.2		64.3	59.6	106.2	44.9
Level of Service		C		C	C		E		E	E	F	D
Approach Delay (s)		24.4			32.1			65.6			77.0	
Approach LOS		C			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	40.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	26.5
Intersection Capacity Utilization	75.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

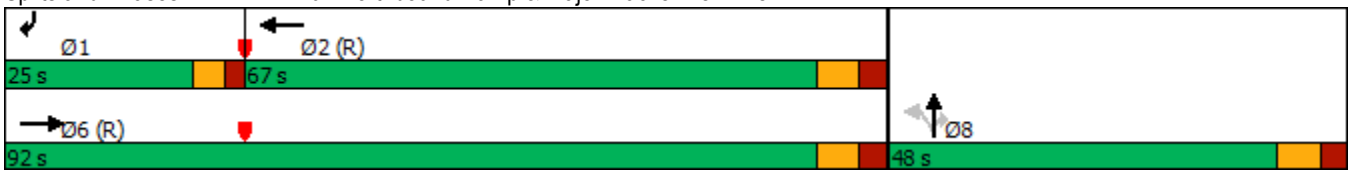


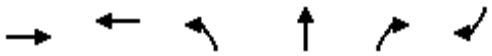
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1126	0	0	2381	4	637	126	483	0	0	446
Future Volume (vph)	0	1126	0	0	2381	4	637	126	483	0	0	446
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		180.0	0.0		0.0
Storage Lanes	0		0	0		0	1		1	0		2
Taper Length (m)	7.6			7.6			7.6			2.5		
Lane Util. Factor	1.00	*0.85	1.00	1.00	*0.85	0.91	0.91	0.86	0.91	1.00	1.00	0.88
Frt								0.954	0.850			0.850
Flt Protected							0.950	0.976				
Satd. Flow (prot)	0	4958	0	0	5056	0	1697	3084	1462	0	0	2966
Flt Permitted							0.950	0.976				
Satd. Flow (perm)	0	4958	0	0	5056	0	1697	3084	1462	0	0	2966
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)								40	92			
Link Speed (k/h)		70			70			60			50	
Link Distance (m)		313.7			395.3			470.8			394.7	
Travel Time (s)		16.1			20.3			28.2			28.4	
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
Heavy Vehicles (%)	2%	4%	0%	0%	2%	2%	3%	7%	7%	2%	2%	2%
Adj. Flow (vph)	0	1126	0	0	2381	4	637	126	483	0	0	446
Shared Lane Traffic (%)							49%		40%			
Lane Group Flow (vph)	0	1126	0	0	2385	0	325	631	290	0	0	446
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			1.6	
Two way Left Turn Lane												
Headway Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors		0			0		1	1	1			1
Detector Template												
Leading Detector (m)		0.0			0.0		7.5	7.5	7.5			7.5
Trailing Detector (m)		0.0			0.0		-1.5	-1.5	-1.5			-1.5
Detector 1 Position(m)		0.0			0.0		-1.5	-1.5	-1.5			-1.5
Detector 1 Size(m)		1.8			1.8		9.0	9.0	9.0			9.0
Detector 1 Type		Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0		0.0	0.0	0.0			0.0
Detector 1 Queue (s)		0.0			0.0		0.0	0.0	0.0			0.0
Detector 1 Delay (s)		0.0			0.0		0.0	0.0	0.0			0.0
Turn Type		NA			NA		Perm	NA	Perm			Prot
Protected Phases		6			2			8				1
Permitted Phases							8		8			
Detector Phase		6			2		8	8	8			1
Switch Phase												
Minimum Initial (s)		20.0			20.0		10.0	10.0	10.0			7.0
Minimum Split (s)		37.5			44.5		47.5	47.5	47.5			16.5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (s)		92.0			67.0		48.0	48.0	48.0			25.0
Total Split (%)		65.7%			47.9%		34.3%	34.3%	34.3%			17.9%
Maximum Green (s)		84.5			59.5		40.5	40.5	40.5			19.5
Yellow Time (s)		4.5			4.5		4.5	4.5	4.5			3.5
All-Red Time (s)		3.0			3.0		3.0	3.0	3.0			2.0
Lost Time Adjust (s)		0.0			0.0		0.0	0.0	0.0			0.0
Total Lost Time (s)		7.5			7.5		7.5	7.5	7.5			5.5
Lead/Lag					Lag							Lead
Lead-Lag Optimize?												
Vehicle Extension (s)		4.0			4.0		3.0	3.0	3.0			3.0
Recall Mode		C-Max			C-Max		None	None	None			None
Walk Time (s)		7.0			7.0		7.0	7.0	7.0			
Flash Dont Walk (s)		23.0			30.0		33.0	33.0	33.0			
Pedestrian Calls (#/hr)		0			0		0	0	0			
Act Effct Green (s)		90.9			65.9		34.1	34.1	34.1			19.5
Actuated g/C Ratio		0.65			0.47		0.24	0.24	0.24			0.14
v/c Ratio		0.35			1.00		0.79	0.81	0.68			1.08
Control Delay		10.5			33.2		63.2	54.9	40.1			122.7
Queue Delay		0.0			0.0		0.0	0.0	0.0			0.0
Total Delay		10.5			33.2		63.2	54.9	40.1			122.7
LOS		B			C		E	D	D			F
Approach Delay		10.5			33.2			53.6			122.7	
Approach LOS		B			C			D			F	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 96 (69%), Referenced to phase 2:WBT and 6:EBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.08			
Intersection Signal Delay: 40.9		Intersection LOS: D	
Intersection Capacity Utilization 92.9%		ICU Level of Service F	
Analysis Period (min) 15			
* User Entered Value			

Splits and Phases: 2: HWY 404 Northbound Ramp & Major Mackenzie Drive





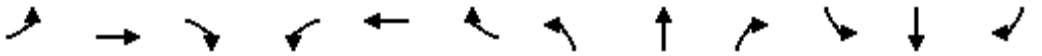
Lane Group	EBT	WBT	NBL	NBT	NBR	SBR
Lane Group Flow (vph)	1126	2385	325	631	290	446
v/c Ratio	0.35	1.00	0.79	0.81	0.68	1.08
Control Delay	10.5	33.2	63.2	54.9	40.1	122.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.5	33.2	63.2	54.9	40.1	122.7
Queue Length 50th (m)	34.3	~235.6	92.5	90.1	55.1	~78.1
Queue Length 95th (m)	m38.5	m#310.1	124.1	108.7	86.0	#115.3
Internal Link Dist (m)	289.7	371.3		446.8		
Turn Bay Length (m)					180.0	
Base Capacity (vph)	3219	2379	490	920	488	413
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.35	1.00	0.66	0.69	0.59	1.08

Intersection Summary

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

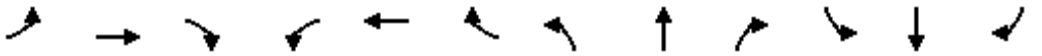
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1126	0	0	2381	4	637	126	483	0	0	446
Future Volume (vph)	0	1126	0	0	2381	4	637	126	483	0	0	446
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Total Lost time (s)		7.5			7.5		7.5	7.5	7.5			5.5
Lane Util. Factor		*0.85			*0.85		0.91	0.86	0.91			0.88
Frt		1.00			1.00		1.00	0.95	0.85			0.85
Flt Protected		1.00			1.00		0.95	0.98	1.00			1.00
Satd. Flow (prot)		4958			5054		1697	3084	1462			2966
Flt Permitted		1.00			1.00		0.95	0.98	1.00			1.00
Satd. Flow (perm)		4958			5054		1697	3084	1462			2966
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)	0	1126	0	0	2381	4	637	126	483	0	0	446
RTOR Reduction (vph)	0	0	0	0	0	0	0	30	70	0	0	0
Lane Group Flow (vph)	0	1126	0	0	2385	0	325	601	220	0	0	446
Heavy Vehicles (%)	2%	4%	0%	0%	2%	2%	3%	7%	7%	2%	2%	2%
Turn Type		NA			NA		Perm	NA	Perm			Prot
Protected Phases		6			2			8				1
Permitted Phases							8		8			
Actuated Green, G (s)		90.9			65.9		34.1	34.1	34.1			19.5
Effective Green, g (s)		90.9			65.9		34.1	34.1	34.1			19.5
Actuated g/C Ratio		0.65			0.47		0.24	0.24	0.24			0.14
Clearance Time (s)		7.5			7.5		7.5	7.5	7.5			5.5
Vehicle Extension (s)		4.0			4.0		3.0	3.0	3.0			3.0
Lane Grp Cap (vph)		3219			2378		413	751	356			413
v/s Ratio Prot		0.23			c0.47							c0.15
v/s Ratio Perm							0.19	0.19	0.15			
v/c Ratio		0.35			1.00		0.79	0.80	0.62			1.08
Uniform Delay, d1		11.1			37.0		49.6	49.7	47.2			60.2
Progression Factor		0.87			0.49		1.00	1.00	1.00			1.00
Incremental Delay, d2		0.3			13.1		9.5	6.0	3.2			67.4
Delay (s)		10.0			31.2		59.1	55.7	50.4			127.6
Level of Service		A			C		E	E	D			F
Approach Delay (s)		10.0			31.2			55.4			127.6	
Approach LOS		A			C			E			F	

Intersection Summary			
HCM 2000 Control Delay	40.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	92.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	1159	429	111	2371	7	220	207	29	54	361	362
Future Volume (vph)	21	1159	429	111	2371	7	220	207	29	54	361	362
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	90.0		100.0	160.0		187.0	180.0		97.0	60.0		0.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	*0.85	0.91	1.00	*0.85	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			1.00				0.98	0.99		
Frt		0.959							0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1824	4711	0	1842	5007	0	1773	2022	1303	1879	2002	1664
Flt Permitted	0.057			0.071			0.156			0.628		
Satd. Flow (perm)	109	4711	0	138	5007	0	291	2022	1273	1231	2002	1664
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		85							97			129
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		395.3			249.0			215.0			229.3	
Travel Time (s)		20.3			12.8			15.5			16.5	
Confl. Peds. (#/hr)	1		4	4		1			9	9		
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
Heavy Vehicles (%)	3%	5%	2%	2%	3%	0%	6%	0%	29%	0%	1%	1%
Adj. Flow (vph)	21	1159	429	111	2371	7	220	207	29	54	361	362
Shared Lane Traffic (%)												
Lane Group Flow (vph)	21	1588	0	111	2378	0	220	207	29	54	361	362
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.95	0.92	0.95	0.95	0.92	0.95	0.95	0.92	0.95	0.95	0.92	0.95
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	0		1	0		1	1	1	1	1	1
Detector Template												
Leading Detector (m)	15.2	0.0		15.2	0.0		7.5	7.5	7.5	7.5	7.5	7.5
Trailing Detector (m)	6.2	0.0		6.2	0.0		-1.5	-0.2	-1.5	-1.5	-1.5	-1.5
Detector 1 Position(m)	6.2	0.0		6.2	0.0		-1.5	-0.2	-1.5	-1.5	-1.5	-1.5
Detector 1 Size(m)	9.0	1.8		9.0	1.8		9.0	7.7	9.0	9.0	9.0	9.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases	6			2			8		8	4		4
Detector Phase	1	6		5	2		3	8	8	4	4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	7.0	35.0		7.0	35.0		7.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.0	43.0		11.0	43.0		11.0	41.0	41.0	41.0	41.0	41.0
Total Split (s)	12.0	69.0		17.0	74.0		12.0	54.0	54.0	42.0	42.0	42.0
Total Split (%)	8.6%	49.3%		12.1%	52.9%		8.6%	38.6%	38.6%	30.0%	30.0%	30.0%
Maximum Green (s)	8.0	61.5		13.0	66.5		8.0	46.5	46.5	34.5	34.5	34.5
Yellow Time (s)	3.0	5.0		3.0	5.0		3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	2.5		1.0	2.5		1.0	3.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.5		4.0	7.5		4.0	7.5	7.5	7.5	7.5	7.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		None	None	None	None	None	None
Walk Time (s)		7.0			7.0			7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		28.0			28.0			26.0	26.0	26.0	26.0	26.0
Pedestrian Calls (#/hr)		9			2			7	7	3	3	3
Act Effct Green (s)	80.2	69.7		86.2	76.6		45.3	41.8	41.8	29.8	29.8	29.8
Actuated g/C Ratio	0.57	0.50		0.62	0.55		0.32	0.30	0.30	0.21	0.21	0.21
v/c Ratio	0.14	0.66		0.56	0.87		1.24	0.34	0.06	0.21	0.85	0.79
Control Delay	7.9	14.5		40.9	23.6		178.4	39.2	0.3	45.6	70.9	46.0
Queue Delay	0.0	0.0		0.0	0.1		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.9	14.5		40.9	23.7		178.4	39.2	0.3	45.6	70.9	46.0
LOS	A	B		D	C		F	D	A	D	E	D
Approach Delay		14.5			24.5			103.9			57.5	
Approach LOS		B			C			F			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 74 (53%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green			
Natural Cycle: 130			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.24			
Intersection Signal Delay: 33.1		Intersection LOS: C	
Intersection Capacity Utilization 98.3%		ICU Level of Service F	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 3: Markland St./Markland St & Major Mackenzie Drive





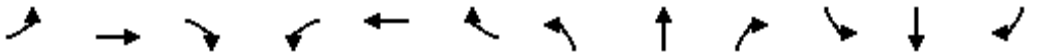
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	21	1588	111	2378	220	207	29	54	361	362
v/c Ratio	0.14	0.66	0.56	0.87	1.24	0.34	0.06	0.21	0.85	0.79
Control Delay	7.9	14.5	40.9	23.6	178.4	39.2	0.3	45.6	70.9	46.0
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.9	14.5	40.9	23.7	178.4	39.2	0.3	45.6	70.9	46.0
Queue Length 50th (m)	0.7	56.2	18.1	127.0	~50.5	44.2	0.0	12.3	95.6	62.6
Queue Length 95th (m)	m2.5	74.0	m27.1	#287.0	#107.2	63.6	0.0	23.9	127.9	97.3
Internal Link Dist (m)		371.3		225.0		191.0			205.3	
Turn Bay Length (m)	90.0		160.0		180.0		97.0	60.0		
Base Capacity (vph)	161	2388	243	2738	178	671	487	303	493	507
Starvation Cap Reductn	0	0	0	32	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.66	0.46	0.88	1.24	0.31	0.06	0.18	0.73	0.71

Intersection Summary

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

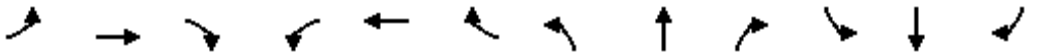
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	1159	429	111	2371	7	220	207	29	54	361	362
Future Volume (vph)	21	1159	429	111	2371	7	220	207	29	54	361	362
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
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	7.5		4.0	7.5		4.0	7.5	7.5	7.5	7.5	7.5
Lane Util. Factor	1.00	*0.85		1.00	*0.85		1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	0.99	1.00	1.00
Frt	1.00	0.96		1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1824	4713		1842	5004		1773	2022	1273	1863	2002	1664
Flt Permitted	0.06	1.00		0.07	1.00		0.16	1.00	1.00	0.63	1.00	1.00
Satd. Flow (perm)	110	4713		138	5004		291	2022	1273	1232	2002	1664
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	1159	429	111	2371	7	220	207	29	54	361	362
RTOR Reduction (vph)	0	43	0	0	0	0	0	0	20	0	0	102
Lane Group Flow (vph)	21	1545	0	111	2378	0	220	207	9	54	361	260
Confl. Peds. (#/hr)	1		4	4		1			9	9		
Heavy Vehicles (%)	3%	5%	2%	2%	3%	0%	6%	0%	29%	0%	1%	1%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases	6			2			8		8	4		4
Actuated Green, G (s)	74.0	69.8		83.2	75.0		41.8	41.8	41.8	29.8	29.8	29.8
Effective Green, g (s)	74.0	69.8		83.2	75.0		41.8	41.8	41.8	29.8	29.8	29.8
Actuated g/C Ratio	0.53	0.50		0.59	0.54		0.30	0.30	0.30	0.21	0.21	0.21
Clearance Time (s)	4.0	7.5		4.0	7.5		4.0	7.5	7.5	7.5	7.5	7.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	109	2349		196	2680		171	603	380	262	426	354
v/s Ratio Prot	0.01	0.33		c0.04	c0.48		c0.07	0.10			0.18	
v/s Ratio Perm	0.10			0.30			c0.31		0.01	0.04		0.16
v/c Ratio	0.19	0.66		0.57	0.89		1.29	0.34	0.02	0.21	0.85	0.74
Uniform Delay, d1	27.8	26.2		19.4	28.8		45.6	38.4	34.7	45.4	52.9	51.4
Progression Factor	0.49	0.51		2.12	0.68		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8	1.3		2.7	3.6		165.7	0.3	0.0	0.4	14.4	7.7
Delay (s)	14.5	14.6		43.9	23.2		211.3	38.7	34.7	45.8	67.3	59.2
Level of Service	B	B		D	C		F	D	C	D	E	E
Approach Delay (s)		14.6			24.2			121.7			62.0	
Approach LOS		B			C			F			E	

Intersection Summary			
HCM 2000 Control Delay	35.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	98.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



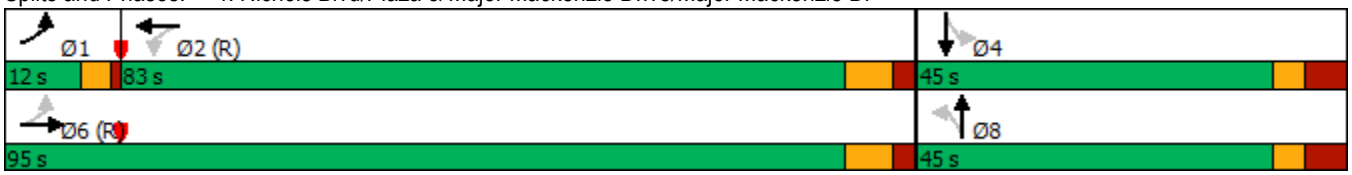
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	1206	28	28	2405	85	69	6	47	35	4	15
Future Volume (vph)	8	1206	28	28	2405	85	69	6	47	35	4	15
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.5	3.5	3.5
Storage Length (m)	55.0		100.0	45.0		45.0	70.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	*0.85	0.91	1.00	*0.85	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00	1.00		0.99	0.99		1.00	0.98	
Frt		0.997			0.995			0.866			0.880	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1879	4761	0	1620	5021	0	1879	1680	0	1879	1509	0
Flt Permitted	0.038			0.179			0.744			0.720		
Satd. Flow (perm)	75	4761	0	305	5021	0	1461	1680	0	1418	1509	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			5			50			16	
Link Speed (k/h)		70			70			40			40	
Link Distance (m)		249.0			251.3			209.6			112.0	
Travel Time (s)		12.8			12.9			18.9			10.1	
Confl. Peds. (#/hr)	2		3	3		2	6		4	4		6
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	8%	4%	16%	2%	5%	0%	0%	3%	0%	0%	17%
Adj. Flow (vph)	9	1283	30	30	2559	90	73	6	50	37	4	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	9	1313	0	30	2649	0	73	56	0	37	20	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.95	0.92	0.95	0.95	0.92	0.95	0.95	0.92	0.92	0.95	0.95	0.95
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		1	1		1	1	
Detector Template												
Leading Detector (m)	0.0	0.0		0.0	0.0		7.5	7.5		7.5	7.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		-1.5	-0.2		-1.5	-1.5	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		-1.5	-0.2		-1.5	-1.5	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		9.0	7.7		9.0	9.0	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2			8			4		
Detector Phase	1	6		2	2		8	8		4	4	

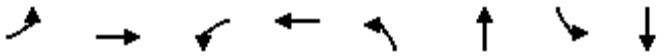
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	7.0	30.0		30.0	30.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.0	38.0		38.0	38.0		44.0	44.0		44.0	44.0	
Total Split (s)	12.0	95.0		83.0	83.0		45.0	45.0		45.0	45.0	
Total Split (%)	8.6%	67.9%		59.3%	59.3%		32.1%	32.1%		32.1%	32.1%	
Maximum Green (s)	8.0	87.5		75.5	75.5		37.0	37.0		37.0	37.0	
Yellow Time (s)	3.0	5.0		5.0	5.0		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	2.5		2.5	2.5		4.5	4.5		4.5	4.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	7.5		7.5	7.5		8.0	8.0		8.0	8.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)		7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		21.0		21.0	21.0		29.0	29.0		29.0	29.0	
Pedestrian Calls (#/hr)		3		2	2		4	4		6	6	
Act Effct Green (s)	111.3	107.8		105.6	105.6		16.7	16.7		16.7	16.7	
Actuated g/C Ratio	0.80	0.77		0.75	0.75		0.12	0.12		0.12	0.12	
v/c Ratio	0.06	0.36		0.13	0.70		0.42	0.23		0.22	0.10	
Control Delay	3.1	2.8		3.9	12.2		61.7	16.6		54.7	23.5	
Queue Delay	0.0	0.0		0.0	0.2		0.0	0.0		0.0	0.0	
Total Delay	3.1	2.8		3.9	12.4		61.7	16.6		54.7	23.5	
LOS	A	A		A	B		E	B		D	C	
Approach Delay		2.8			12.3			42.1			43.7	
Approach LOS		A			B			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 60 (43%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green			
Natural Cycle: 125			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 10.7		Intersection LOS: B	
Intersection Capacity Utilization 71.6%		ICU Level of Service C	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 4: Nichols Blvd/Plaza & Major Mackenzie Drive/Major Mackenzie Dr

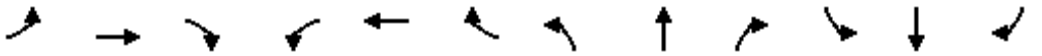




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	9	1313	30	2649	73	56	37	20
v/c Ratio	0.06	0.36	0.13	0.70	0.42	0.23	0.22	0.10
Control Delay	3.1	2.8	3.9	12.2	61.7	16.6	54.7	23.5
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Total Delay	3.1	2.8	3.9	12.4	61.7	16.6	54.7	23.5
Queue Length 50th (m)	0.1	9.8	0.8	67.0	19.7	1.6	9.8	1.0
Queue Length 95th (m)	m0.6	29.8	m1.0	m31.7	29.5	12.0	17.3	7.4
Internal Link Dist (m)		225.0		227.3		185.6		88.0
Turn Bay Length (m)	55.0		45.0		70.0		30.0	
Base Capacity (vph)	162	3667	230	3789	386	480	374	410
Starvation Cap Reductn	0	0	0	364	0	0	0	0
Spillback Cap Reductn	0	0	0	104	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.36	0.13	0.77	0.19	0.12	0.10	0.05

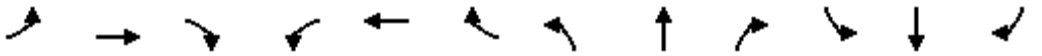
Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	1206	28	28	2405	85	69	6	47	35	4	15
Future Volume (vph)	8	1206	28	28	2405	85	69	6	47	35	4	15
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.5	3.5	3.5
Total Lost time (s)	4.0	7.5		7.5	7.5		8.0	8.0		8.0	8.0	
Lane Util. Factor	1.00	*0.85		1.00	*0.85		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	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.87		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1879	4759		1618	5021		1866	1680		1871	1509	
Flt Permitted	0.04	1.00		0.18	1.00		0.74	1.00		0.72	1.00	
Satd. Flow (perm)	74	4759		305	5021		1462	1680		1419	1509	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	9	1283	30	30	2559	90	73	6	50	37	4	16
RTOR Reduction (vph)	0	1	0	0	1	0	0	44	0	0	14	0
Lane Group Flow (vph)	9	1312	0	30	2648	0	73	12	0	37	6	0
Confl. Peds. (#/hr)	2		3	3		2	6		4	4		6
Heavy Vehicles (%)	0%	8%	4%	16%	2%	5%	0%	0%	3%	0%	0%	17%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	107.8	107.8		102.4	102.4		16.7	16.7		16.7	16.7	
Effective Green, g (s)	107.8	107.8		102.4	102.4		16.7	16.7		16.7	16.7	
Actuated g/C Ratio	0.77	0.77		0.73	0.73		0.12	0.12		0.12	0.12	
Clearance Time (s)	4.0	7.5		7.5	7.5		8.0	8.0		8.0	8.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	75	3664		223	3672		174	200		169	180	
v/s Ratio Prot	0.00	c0.28			c0.53			0.01			0.00	
v/s Ratio Perm	0.09			0.10			c0.05			0.03		
v/c Ratio	0.12	0.36		0.13	0.72		0.42	0.06		0.22	0.03	
Uniform Delay, d1	12.5	5.1		5.6	10.7		57.2	54.7		55.8	54.5	
Progression Factor	0.46	0.42		0.40	1.03		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.2		0.1	0.1		1.6	0.1		0.7	0.1	
Delay (s)	6.4	2.4		2.3	11.1		58.8	54.8		56.4	54.6	
Level of Service	A	A		A	B		E	D		E	D	
Approach Delay (s)		2.4			11.0			57.1			55.8	
Approach LOS		A			B			E			E	

Intersection Summary			
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



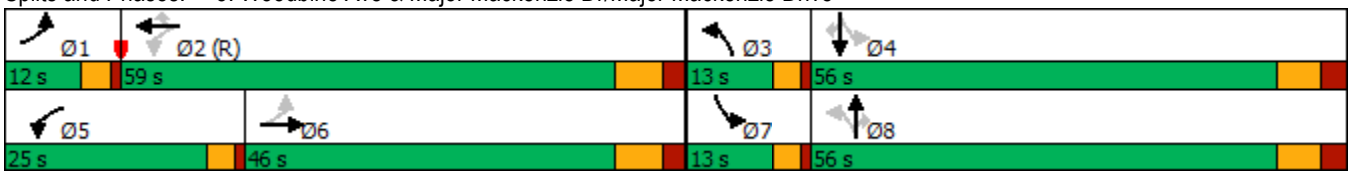
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	932	260	492	2127	70	288	738	343	130	1382	103
Future Volume (vph)	96	932	260	492	2127	70	288	738	343	130	1382	103
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.0	3.7	3.5	3.5	3.7	3.5	3.0	3.7	3.5	3.0	3.7	3.7
Storage Length (m)	120.0		80.0	300.0		120.0	150.0		70.0	165.0		70.0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	*0.85	0.91	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		1.00		1.00		0.98			0.99	1.00		0.98
Frt		0.967				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1722	4673	0	1842	3730	1681	1689	3730	1632	1673	3804	1592
Flt Permitted	0.104			0.094			0.082			0.239		
Satd. Flow (perm)	188	4673	0	182	3730	1655	146	3730	1609	421	3804	1564
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		45				97			343			129
Link Speed (k/h)		70			70			60			60	
Link Distance (m)		251.3			460.0			545.1			346.9	
Travel Time (s)		12.9			23.7			32.7			20.8	
Confl. Peds. (#/hr)	3		3	3		3	5		2	2		5
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
Heavy Vehicles (%)	3%	7%	4%	2%	3%	0%	5%	3%	3%	6%	1%	8%
Adj. Flow (vph)	96	932	260	492	2127	70	288	738	343	130	1382	103
Shared Lane Traffic (%)												
Lane Group Flow (vph)	96	1192	0	492	2127	70	288	738	343	130	1382	103
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.0			3.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.02	0.92	0.95	0.95	0.92	0.95	1.02	0.92	0.95	1.02	0.92	0.92
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	0		1	0	0	1	1	1	1	1	1
Detector Template												
Leading Detector (m)	15.2	0.0		15.2	0.0	0.0	15.2	7.5	7.5	15.2	7.5	7.5
Trailing Detector (m)	6.2	0.0		6.2	0.0	0.0	6.2	-1.5	-1.5	6.2	-1.5	-1.5
Detector 1 Position(m)	6.2	0.0		6.2	0.0	0.0	6.2	-1.5	-1.5	6.2	-1.5	-1.5
Detector 1 Size(m)	9.0	1.8		9.0	1.8	6.1	9.0	9.0	9.0	9.0	9.0	9.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2		2	8		8	4		4
Detector Phase	1	6		5	2	2	3	8	8	7	4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	7.0	36.0		7.0	36.0	36.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	44.0		11.0	44.0	44.0	11.0	45.0	45.0	11.0	45.0	45.0
Total Split (s)	12.0	46.0		25.0	59.0	59.0	13.0	56.0	56.0	13.0	56.0	56.0
Total Split (%)	8.6%	32.9%		17.9%	42.1%	42.1%	9.3%	40.0%	40.0%	9.3%	40.0%	40.0%
Maximum Green (s)	8.0	38.5		21.0	51.5	51.5	9.0	48.5	48.5	9.0	48.5	48.5
Yellow Time (s)	3.0	5.0		3.0	5.0	5.0	3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	1.0	2.5		1.0	2.5	2.5	1.0	3.0	3.0	1.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.5		4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		29.0			29.0	29.0		30.0	30.0		30.0	30.0
Pedestrian Calls (#/hr)		3			3	3		0	0		5	5
Act Effct Green (s)	49.8	38.5		67.0	51.7	51.7	61.3	48.8	48.8	60.7	48.5	48.5
Actuated g/C Ratio	0.36	0.28		0.48	0.37	0.37	0.44	0.35	0.35	0.43	0.35	0.35
v/c Ratio	0.63	0.91		1.46	1.54	0.10	1.78	0.57	0.44	0.50	1.05	0.16
Control Delay	51.2	50.3		256.5	280.8	2.5	396.1	39.2	5.0	29.2	82.9	3.0
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.2	50.3		256.5	280.8	2.5	396.1	39.2	5.0	29.2	82.9	3.0
LOS	D	D		F	F	A	F	D	A	C	F	A
Approach Delay		50.4			269.1			105.7			73.5	
Approach LOS		D			F			F			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 69 (49%), Referenced to phase 2:WBTL, Start of Green			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.78			
Intersection Signal Delay: 151.1		Intersection LOS: F	
Intersection Capacity Utilization 132.3%		ICU Level of Service H	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 5: Woodbine Ave & Major Mackenzie Dr/Major Mackenzie Drive



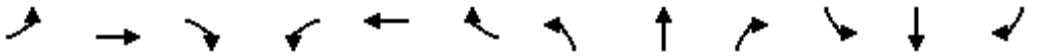


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	96	1192	492	2127	70	288	738	343	130	1382	103
v/c Ratio	0.63	0.91	1.46	1.54	0.10	1.78	0.57	0.44	0.50	1.05	0.16
Control Delay	51.2	50.3	256.5	280.8	2.5	396.1	39.2	5.0	29.2	82.9	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.2	50.3	256.5	280.8	2.5	396.1	39.2	5.0	29.2	82.9	3.0
Queue Length 50th (m)	14.5	94.1	~169.7	~435.6	0.0	~103.7	87.3	0.0	20.6	~218.6	0.0
Queue Length 95th (m)	#29.5	#119.9	#237.9	#476.1	5.1	#161.4	107.6	20.1	33.7	#261.2	7.4
Internal Link Dist (m)		227.3		436.0			521.1			322.9	
Turn Bay Length (m)	120.0		300.0		120.0	150.0		70.0	165.0		70.0
Base Capacity (vph)	154	1317	336	1377	672	162	1299	784	263	1317	626
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.91	1.46	1.54	0.10	1.78	0.57	0.44	0.49	1.05	0.16

Intersection Summary

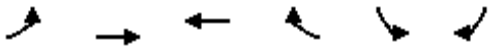
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



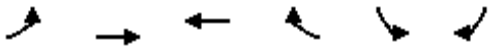
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	932	260	492	2127	70	288	738	343	130	1382	103
Future Volume (vph)	96	932	260	492	2127	70	288	738	343	130	1382	103
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.7	3.5	3.5	3.7	3.5	3.0	3.7	3.5	3.0	3.7	3.7
Total Lost time (s)	4.0	7.5		4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5
Lane Util. Factor	1.00	*0.85		1.00	0.95	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	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
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1722	4675		1842	3730	1655	1689	3730	1609	1673	3804	1564
Flt Permitted	0.10	1.00		0.09	1.00	1.00	0.08	1.00	1.00	0.24	1.00	1.00
Satd. Flow (perm)	188	4675		182	3730	1655	146	3730	1609	421	3804	1564
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)	96	932	260	492	2127	70	288	738	343	130	1382	103
RTOR Reduction (vph)	0	33	0	0	0	44	0	0	223	0	0	67
Lane Group Flow (vph)	96	1159	0	492	2127	26	288	738	120	130	1382	36
Confl. Peds. (#/hr)	3		3	3		3	5		2	2		5
Heavy Vehicles (%)	3%	7%	4%	2%	3%	0%	5%	3%	3%	6%	1%	8%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2		2	8		8	4		4
Actuated Green, G (s)	46.3	38.5		63.5	51.7	51.7	57.8	48.8	48.8	57.2	48.5	48.5
Effective Green, g (s)	46.3	38.5		63.5	51.7	51.7	57.8	48.8	48.8	57.2	48.5	48.5
Actuated g/C Ratio	0.33	0.28		0.45	0.37	0.37	0.41	0.35	0.35	0.41	0.35	0.35
Clearance Time (s)	4.0	7.5		4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	147	1285		331	1377	611	159	1300	560	249	1317	541
v/s Ratio Prot	0.04	0.25		c0.22	c0.57		c0.12	0.20		0.03	0.36	
v/s Ratio Perm	0.18			0.45		0.02	c0.63		0.07	0.18		0.02
v/c Ratio	0.65	0.90		1.49	1.54	0.04	1.81	0.57	0.21	0.52	1.05	0.07
Uniform Delay, d1	37.7	48.9		44.0	44.1	28.3	37.2	37.0	32.1	27.9	45.8	30.6
Progression Factor	1.33	0.85		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.6	10.1		234.4	248.8	0.1	388.8	0.6	0.2	2.0	38.8	0.1
Delay (s)	59.8	51.6		278.4	292.9	28.4	426.0	37.6	32.3	29.9	84.6	30.7
Level of Service	E	D		F	F	C	F	D	C	C	F	C
Approach Delay (s)		52.2			283.4			118.0			76.7	
Approach LOS		D			F			F			E	

Intersection Summary			
HCM 2000 Control Delay	160.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.70		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	132.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	17	342	150	85	435	234
Future Volume (vph)	17	342	150	85	435	234
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.5	3.7	3.7	3.7	3.5	3.7
Storage Length (m)	50.0			0.0	30.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.6				7.6	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.951			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1253	1983	1829	0	1860	1719
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1253	1983	1829	0	1860	1719
Link Speed (k/h)		50	50		40	
Link Distance (m)		238.8	229.3		191.9	
Travel Time (s)		17.2	16.5		17.3	
Confl. Peds. (#/hr)	1			1		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	50%	2%	8%	0%	1%	0%
Adj. Flow (vph)	18	364	160	90	463	249
Shared Lane Traffic (%)						
Lane Group Flow (vph)	18	364	250	0	463	249
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	4.9		4.9	
Two way Left Turn Lane						
Headway Factor	0.95	0.92	0.92	0.92	0.95	0.92
Turning Speed (k/h)	24			14	24	14
Sign Control		Stop	Stop		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 46.7%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	17	342	150	85	435	234
Future Volume (vph)	17	342	150	85	435	234
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	18	364	160	90	463	249

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total (vph)	18	364	250	463	249
Volume Left (vph)	18	0	0	463	0
Volume Right (vph)	0	0	90	0	249
Hadj (s)	1.35	0.03	-0.13	0.52	-0.70
Departure Headway (s)	8.5	7.1	6.9	7.1	5.9
Degree Utilization, x	0.04	0.72	0.48	0.91	0.41
Capacity (veh/h)	414	488	511	496	599
Control Delay (s)	10.6	25.2	16.1	46.7	11.6
Approach Delay (s)	24.6		16.1	34.4	
Approach LOS	C		C	D	

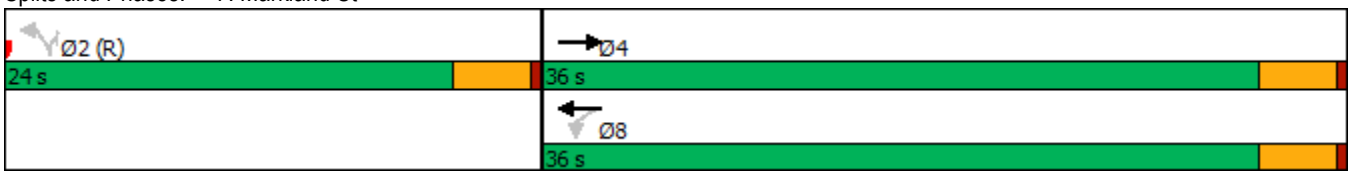
Intersection Summary			
Delay	28.2		
Level of Service	D		
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	273	401	45	339	44	86
Future Volume (vph)	273	401	45	339	44	86
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.7	3.7	3.5	3.7	3.7	3.7
Storage Length (m)		0.0	50.0		0.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			2.5		2.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.920					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1824	0	1740	1872	1883	1685
Flt Permitted			0.225		0.950	
Satd. Flow (perm)	1824	0	412	1872	1883	1685
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	189					90
Link Speed (k/h)	50			50	50	
Link Distance (m)	222.8			238.8	394.7	
Travel Time (s)	16.0			17.2	28.4	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	8%	8%	2%	2%
Adj. Flow (vph)	284	418	47	353	46	90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	702	0	47	353	46	90
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.92	0.92	0.95	0.92	0.92	0.92
Turning Speed (k/h)		14	24		24	14
Turn Type	NA		Perm	NA	Perm	Perm
Protected Phases	4			8		
Permitted Phases			8		2	2
Minimum Split (s)	22.0		22.0	22.0	22.0	22.0
Total Split (s)	36.0		36.0	36.0	24.0	24.0
Total Split (%)	60.0%		60.0%	60.0%	40.0%	40.0%
Maximum Green (s)	32.0		32.0	32.0	20.0	20.0
Yellow Time (s)	3.5		3.5	3.5	3.5	3.5
All-Red Time (s)	0.5		0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Walk Time (s)	7.0		7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0		11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0		0	0	0	0
Act Effct Green (s)	32.0		32.0	32.0	20.0	20.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Actuated g/C Ratio	0.53		0.53	0.53	0.33	0.33
v/c Ratio	0.66		0.21	0.35	0.07	0.14
Control Delay	10.8		10.5	9.3	14.2	4.6
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	10.8		10.5	9.3	14.2	4.6
LOS	B		B	A	B	A
Approach Delay	10.8			9.5	7.8	
Approach LOS	B			A	A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green			
Natural Cycle: 50			
Control Type: Pretimed			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 10.0		Intersection LOS: B	
Intersection Capacity Utilization 49.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 7: Markland St





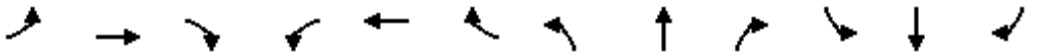
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	702	47	353	46	90
v/c Ratio	0.66	0.21	0.35	0.07	0.14
Control Delay	10.8	10.5	9.3	14.2	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	10.8	10.5	9.3	14.2	4.6
Queue Length 50th (m)	35.0	2.5	20.2	3.4	0.0
Queue Length 95th (m)	66.6	8.0	34.7	9.1	7.7
Internal Link Dist (m)	198.8		214.8	370.7	
Turn Bay Length (m)		50.0			
Base Capacity (vph)	1061	219	998	627	621
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.66	0.21	0.35	0.07	0.14

Intersection Summary



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	273	401	45	339	44	86
Future Volume (vph)	273	401	45	339	44	86
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000
Lane Width	3.7	3.7	3.5	3.7	3.7	3.7
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.92		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1823		1740	1872	1883	1685
Flt Permitted	1.00		0.23	1.00	0.95	1.00
Satd. Flow (perm)	1823		412	1872	1883	1685
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	284	418	47	353	46	90
RTOR Reduction (vph)	88	0	0	0	0	60
Lane Group Flow (vph)	614	0	47	353	46	30
Heavy Vehicles (%)	2%	2%	8%	8%	2%	2%
Turn Type	NA		Perm	NA	Perm	Perm
Protected Phases	4			8		
Permitted Phases			8		2	2
Actuated Green, G (s)	32.0		32.0	32.0	20.0	20.0
Effective Green, g (s)	32.0		32.0	32.0	20.0	20.0
Actuated g/C Ratio	0.53		0.53	0.53	0.33	0.33
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	972		219	998	627	561
v/s Ratio Prot	c0.34			0.19		
v/s Ratio Perm			0.11		c0.02	0.02
v/c Ratio	0.63		0.21	0.35	0.07	0.05
Uniform Delay, d1	9.9		7.4	8.1	13.7	13.6
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	3.1		2.2	1.0	0.2	0.2
Delay (s)	13.0		9.6	9.0	13.9	13.8
Level of Service	B		A	A	B	B
Approach Delay (s)	13.0			9.1	13.8	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	11.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



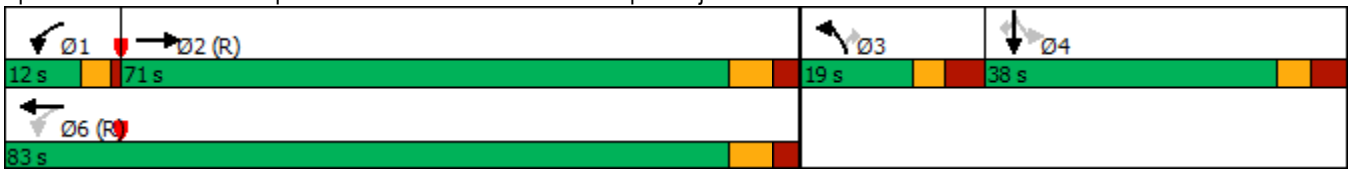
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1782	6	23	1498	0	33	0	44	535	15	486
Future Volume (vph)	0	1782	6	23	1498	0	33	0	44	535	15	486
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.7	3.7	3.5	3.5	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Storage Length (m)	0.0		95.0	55.0		0.0	0.0		0.0	0.0		170.0
Storage Lanes	0		0	1		0	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	*0.85	0.91	1.00	*0.85	1.00	1.00	1.00	1.00	0.95	0.91	0.95
Ped Bike Factor							1.00				0.99	0.99
Frt									0.850		0.931	0.850
Flt Protected				0.950			0.950			0.950	0.976	
Satd. Flow (prot)	0	5101	0	1566	5056	0	1671	0	1457	1825	1662	1633
Flt Permitted				0.053			0.950			0.950	0.976	
Satd. Flow (perm)	0	5101	0	87	5056	0	1669	0	1457	1825	1662	1611
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)									125		28	125
Link Speed (k/h)		70			70			40			60	
Link Distance (m)		369.9			313.7			147.8			449.4	
Travel Time (s)		19.0			16.1			13.3			27.0	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	2%	1%	29%	20%	2%	2%	15%	2%	18%	0%	0%	0%
Adj. Flow (vph)	0	1818	6	23	1529	0	34	0	45	546	15	496
Shared Lane Traffic (%)										33%		33%
Lane Group Flow (vph)	0	1824	0	23	1529	0	34	0	45	366	359	332
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.92	0.92	0.95	0.95	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors		0		1	0		1		1	1	1	1
Detector Template												
Leading Detector (m)		0.0		15.2	0.0		7.5		7.5	7.5	7.5	7.5
Trailing Detector (m)		0.0		6.2	0.0		-1.5		-1.5	-1.5	-1.5	-1.5
Detector 1 Position(m)		0.0		6.2	0.0		-1.5		-1.5	-1.5	-1.5	-1.5
Detector 1 Size(m)		1.8		9.0	1.8		9.0		9.0	9.0	9.0	9.0
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)		0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)		0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Turn Type		NA		pm+pt	NA		Prot		Perm	Perm	NA	Perm
Protected Phases		2		1	6		3				4	
Permitted Phases				6					3	4		4
Detector Phase		2		1	6		3		3	4	4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)		20.0		7.0	20.0		10.0		10.0	15.0	15.0	15.0
Minimum Split (s)		38.0		11.0	38.0		18.0		18.0	36.5	36.5	36.5
Total Split (s)		71.0		12.0	83.0		19.0		19.0	38.0	38.0	38.0
Total Split (%)		50.7%		8.6%	59.3%		13.6%		13.6%	27.1%	27.1%	27.1%
Maximum Green (s)		63.5		8.0	75.5		11.5		11.5	30.5	30.5	30.5
Yellow Time (s)		4.5		3.0	4.5		3.5		3.5	3.5	3.5	3.5
All-Red Time (s)		3.0		1.0	3.0		4.0		4.0	4.0	4.0	4.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)		7.5		4.0	7.5		7.5		7.5	7.5	7.5	7.5
Lead/Lag		Lag		Lead			Lead		Lead	Lag	Lag	Lag
Lead-Lag Optimize?		Yes		Yes			Yes		Yes	Yes	Yes	Yes
Vehicle Extension (s)		4.0		3.0	4.0		3.0		3.0	3.0	3.0	3.0
Recall Mode		C-Min		None	C-Min		None		None	None	None	None
Walk Time (s)		7.0			7.0					7.0	7.0	7.0
Flash Dont Walk (s)		23.0			23.0					22.0	22.0	22.0
Pedestrian Calls (#/hr)		0			0					1	1	1
Act Effct Green (s)		74.2		84.3	80.8		10.3		10.3	29.9	29.9	29.9
Actuated g/C Ratio		0.53		0.60	0.58		0.07		0.07	0.21	0.21	0.21
v/c Ratio		0.68		0.18	0.52		0.28		0.20	0.94	0.95	0.75
Control Delay		27.7		16.9	21.5		67.2		2.0	87.1	86.4	43.3
Queue Delay		0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Total Delay		27.7		16.9	21.5		67.2		2.0	87.1	86.4	43.3
LOS		C		B	C		E		A	F	F	D
Approach Delay		27.7			21.4			30.1			73.1	
Approach LOS		C			C			C			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 24 (17%), Referenced to phase 2:EBT and 6:WBTL, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.95			
Intersection Signal Delay: 36.2		Intersection LOS: D	
Intersection Capacity Utilization 79.3%		ICU Level of Service D	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 1: Carpool Lot/HWY 404 Southbound Ramp & Major Mackenzie Drive

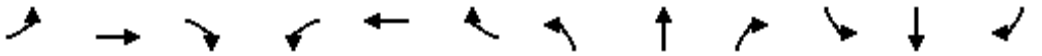




Lane Group	EBT	WBL	WBT	NBL	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1824	23	1529	34	45	366	359	332
v/c Ratio	0.68	0.18	0.52	0.28	0.20	0.94	0.95	0.75
Control Delay	27.7	16.9	21.5	67.2	2.0	87.1	86.4	43.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.7	16.9	21.5	67.2	2.0	87.1	86.4	43.3
Queue Length 50th (m)	159.8	2.6	81.7	9.1	0.0	105.2	100.9	57.8
Queue Length 95th (m)	184.2	m3.2	m91.2	20.3	0.0	#165.7	#165.9	95.7
Internal Link Dist (m)	345.9		289.7				425.4	
Turn Bay Length (m)		55.0						170.0
Base Capacity (vph)	2702	136	2919	137	234	397	383	448
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.17	0.52	0.25	0.19	0.92	0.94	0.74

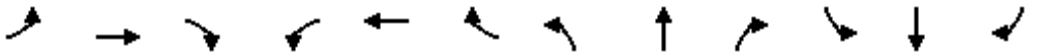
Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1782	6	23	1498	0	33	0	44	535	15	486
Future Volume (vph)	0	1782	6	23	1498	0	33	0	44	535	15	486
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.7	3.7	3.5	3.5	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Total Lost time (s)		7.5		4.0	7.5		7.5		7.5	7.5	7.5	7.5
Lane Util. Factor		*0.85		1.00	*0.85		1.00		1.00	0.95	0.91	0.95
Frpb, ped/bikes		1.00		1.00	1.00		1.00		1.00	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
Frt		1.00		1.00	1.00		1.00		0.85	1.00	0.93	0.85
Flt Protected		1.00		0.95	1.00		0.95		1.00	0.95	0.98	1.00
Satd. Flow (prot)		5098		1566	5056		1671		1457	1825	1662	1611
Flt Permitted		1.00		0.05	1.00		0.95		1.00	0.95	0.98	1.00
Satd. Flow (perm)		5098		88	5056		1671		1457	1825	1662	1611
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1818	6	23	1529	0	34	0	45	546	15	496
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	42	0	22	98
Lane Group Flow (vph)	0	1824	0	23	1529	0	34	0	3	366	337	234
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	2%	1%	29%	20%	2%	2%	15%	2%	18%	0%	0%	0%
Turn Type		NA		pm+pt	NA		Prot		Perm	Perm	NA	Perm
Protected Phases		2		1	6		3				4	
Permitted Phases				6					3	4		4
Actuated Green, G (s)		71.0		79.3	79.3		8.3		8.3	29.9	29.9	29.9
Effective Green, g (s)		71.0		79.3	79.3		8.3		8.3	29.9	29.9	29.9
Actuated g/C Ratio		0.51		0.57	0.57		0.06		0.06	0.21	0.21	0.21
Clearance Time (s)		7.5		4.0	7.5		7.5		7.5	7.5	7.5	7.5
Vehicle Extension (s)		4.0		3.0	4.0		3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		2585		95	2863		99		86	389	354	344
v/s Ratio Prot		c0.36		0.01	c0.30		c0.02					
v/s Ratio Perm				0.13					0.00	0.20	0.20	0.15
v/c Ratio		0.71		0.24	0.53		0.34		0.03	0.94	0.95	0.68
Uniform Delay, d1		26.5		20.5	18.9		63.2		62.1	54.2	54.3	50.6
Progression Factor		1.00		1.16	1.11		1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2		1.6		0.6	0.3		2.1		0.1	30.8	35.2	5.3
Delay (s)		28.1		24.4	21.3		65.3		62.2	85.0	89.6	55.9
Level of Service		C		C	C		E		E	F	F	E
Approach Delay (s)		28.1			21.4			63.5			77.4	
Approach LOS		C			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	38.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	26.5
Intersection Capacity Utilization	79.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

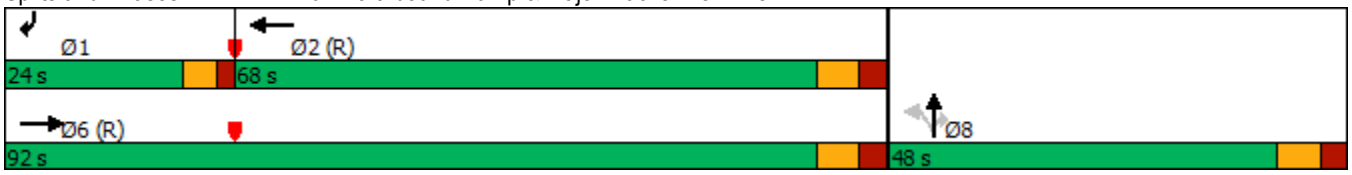


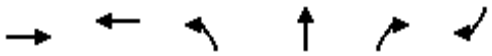
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1989	0	0	2172	17	543	380	281	0	0	395
Future Volume (vph)	0	1989	0	0	2172	17	543	380	281	0	0	395
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		180.0	0.0		0.0
Storage Lanes	0		0	0		0	1		1	0		2
Taper Length (m)	7.6			7.6			7.6			2.5		
Lane Util. Factor	1.00	*0.85	1.00	1.00	*0.85	0.91	0.91	0.86	0.91	1.00	1.00	0.88
Frt					0.999			0.993	0.850			0.850
Flt Protected							0.950	0.982				
Satd. Flow (prot)	0	5106	0	0	5050	0	1714	3346	1549	0	0	3025
Flt Permitted							0.950	0.982				
Satd. Flow (perm)	0	5106	0	0	5050	0	1714	3346	1549	0	0	3025
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)					1			3	78			
Link Speed (k/h)		70			70			60			50	
Link Distance (m)		313.7			395.3			470.8			394.7	
Travel Time (s)		16.1			20.3			28.2			28.4	
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
Heavy Vehicles (%)	2%	1%	2%	2%	2%	2%	2%	1%	1%	2%	2%	0%
Adj. Flow (vph)	0	1989	0	0	2172	17	543	380	281	0	0	395
Shared Lane Traffic (%)							43%		10%			
Lane Group Flow (vph)	0	1989	0	0	2189	0	310	641	253	0	0	395
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			1.6	
Two way Left Turn Lane												
Headway Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Turning Speed (k/h)	97		14	24		97	24		14	97		97
Number of Detectors		0			0		1	1	1			1
Detector Template												
Leading Detector (m)		0.0			0.0		7.5	7.5	7.5			7.5
Trailing Detector (m)		0.0			0.0		-1.5	-1.5	-1.5			-1.5
Detector 1 Position(m)		0.0			0.0		-1.5	-1.5	-1.5			-1.5
Detector 1 Size(m)		1.8			1.8		9.0	9.0	9.0			9.0
Detector 1 Type		Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0		0.0	0.0	0.0			0.0
Detector 1 Queue (s)		0.0			0.0		0.0	0.0	0.0			0.0
Detector 1 Delay (s)		0.0			0.0		0.0	0.0	0.0			0.0
Turn Type		NA			NA		Perm	NA	Perm			Prot
Protected Phases		6			2			8				1
Permitted Phases							8		8			
Detector Phase		6			2		8	8	8			1
Switch Phase												
Minimum Initial (s)		20.0			20.0		10.0	10.0	10.0			7.0
Minimum Split (s)		37.5			44.5		47.5	47.5	47.5			16.5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (s)		92.0			68.0		48.0	48.0	48.0			24.0
Total Split (%)		65.7%			48.6%		34.3%	34.3%	34.3%			17.1%
Maximum Green (s)		84.5			60.5		40.5	40.5	40.5			18.5
Yellow Time (s)		4.5			4.5		4.5	4.5	4.5			3.5
All-Red Time (s)		3.0			3.0		3.0	3.0	3.0			2.0
Lost Time Adjust (s)		0.0			0.0		0.0	0.0	0.0			0.0
Total Lost Time (s)		7.5			7.5		7.5	7.5	7.5			5.5
Lead/Lag					Lag							Lead
Lead-Lag Optimize?												
Vehicle Extension (s)		4.0			4.0		3.0	3.0	3.0			3.0
Recall Mode		C-Max			C-Max		None	None	None			None
Walk Time (s)		7.0			7.0		7.0	7.0	7.0			
Flash Dont Walk (s)		23.0			30.0		33.0	33.0	33.0			
Pedestrian Calls (#/hr)		0			0		0	0	0			
Act Effct Green (s)		91.4			67.4		33.6	33.6	33.6			18.5
Actuated g/C Ratio		0.65			0.48		0.24	0.24	0.24			0.13
v/c Ratio		0.60			0.90		0.75	0.80	0.59			0.99
Control Delay		6.8			19.4		61.0	57.3	37.0			102.6
Queue Delay		0.0			0.0		0.0	0.0	0.0			0.0
Total Delay		6.8			19.4		61.0	57.3	37.0			102.6
LOS		A			B		E	E	D			F
Approach Delay		6.8			19.4			54.0			102.6	
Approach LOS		A			B			D			F	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 37 (26%), Referenced to phase 2:WBT and 6:EBT, Start of Green			
Natural Cycle: 140			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.99			
Intersection Signal Delay: 27.9		Intersection LOS: C	
Intersection Capacity Utilization 89.0%		ICU Level of Service E	
Analysis Period (min) 15			
* User Entered Value			

Splits and Phases: 2: HWY 404 Northbound Ramp & Major Mackenzie Drive



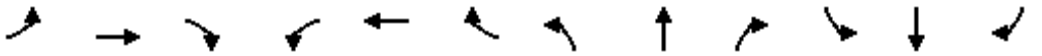


Lane Group	EBT	WBT	NBL	NBT	NBR	SBR
Lane Group Flow (vph)	1989	2189	310	641	253	395
v/c Ratio	0.60	0.90	0.75	0.80	0.59	0.99
Control Delay	6.8	19.4	61.0	57.3	37.0	102.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.8	19.4	61.0	57.3	37.0	102.6
Queue Length 50th (m)	53.7	58.0	88.1	97.2	47.3	62.9
Queue Length 95th (m)	65.5	m110.7	117.2	113.6	73.8	#99.6
Internal Link Dist (m)	289.7	371.3		446.8		
Turn Bay Length (m)					180.0	
Base Capacity (vph)	3332	2431	495	970	503	399
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.90	0.63	0.66	0.50	0.99

Intersection Summary

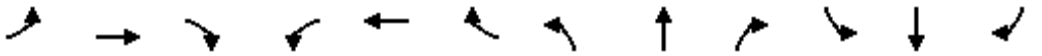
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1989	0	0	2172	17	543	380	281	0	0	395
Future Volume (vph)	0	1989	0	0	2172	17	543	380	281	0	0	395
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Total Lost time (s)		7.5			7.5		7.5	7.5	7.5			5.5
Lane Util. Factor		*0.85			*0.85		0.91	0.86	0.91			0.88
Frt		1.00			1.00		1.00	0.99	0.85			0.85
Flt Protected		1.00			1.00		0.95	0.98	1.00			1.00
Satd. Flow (prot)		5106			5050		1714	3348	1549			3025
Flt Permitted		1.00			1.00		0.95	0.98	1.00			1.00
Satd. Flow (perm)		5106			5050		1714	3348	1549			3025
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)	0	1989	0	0	2172	17	543	380	281	0	0	395
RTOR Reduction (vph)	0	0	0	0	1	0	0	2	59	0	0	0
Lane Group Flow (vph)	0	1989	0	0	2188	0	310	639	194	0	0	395
Heavy Vehicles (%)	2%	1%	2%	2%	2%	2%	2%	1%	1%	2%	2%	0%
Turn Type		NA			NA		Perm	NA	Perm			Prot
Protected Phases		6			2			8				1
Permitted Phases							8		8			
Actuated Green, G (s)		91.4			67.4		33.6	33.6	33.6			18.5
Effective Green, g (s)		91.4			67.4		33.6	33.6	33.6			18.5
Actuated g/C Ratio		0.65			0.48		0.24	0.24	0.24			0.13
Clearance Time (s)		7.5			7.5		7.5	7.5	7.5			5.5
Vehicle Extension (s)		4.0			4.0		3.0	3.0	3.0			3.0
Lane Grp Cap (vph)		3333			2431		411	803	371			399
v/s Ratio Prot		0.39			c0.43							c0.13
v/s Ratio Perm							0.18	0.19	0.13			
v/c Ratio		0.60			0.90		0.75	0.80	0.52			0.99
Uniform Delay, d1		13.8			33.2		49.4	50.0	46.2			60.7
Progression Factor		0.43			0.49		1.00	1.00	1.00			1.00
Incremental Delay, d2		0.5			2.0		7.7	5.5	1.3			41.9
Delay (s)		6.4			18.1		57.0	55.4	47.6			102.6
Level of Service		A			B		E	E	D			F
Approach Delay (s)		6.4			18.1			54.2			102.6	
Approach LOS		A			B			D			F	

Intersection Summary			
HCM 2000 Control Delay	27.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	89.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



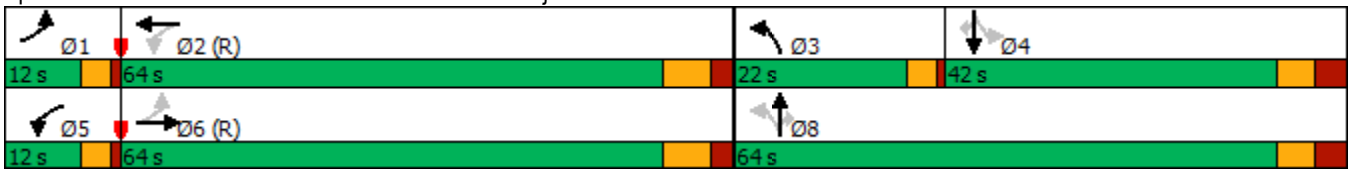
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	2002	202	29	1998	35	480	379	101	45	339	77
Future Volume (vph)	66	2002	202	29	1998	35	480	379	101	45	339	77
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	90.0		100.0	160.0		187.0	180.0		97.0	60.0		0.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	*0.85	0.91	1.00	*0.85	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00				0.98	0.99		
Frt		0.986			0.997				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1879	5021	0	1479	5040	0	1860	2022	1648	1824	2022	1681
Flt Permitted	0.060			0.062			0.170			0.537		
Satd. Flow (perm)	119	5021	0	97	5040	0	333	2022	1610	1024	2022	1681
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13			2				101			97
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		395.3			249.0			215.0			229.3	
Travel Time (s)		20.3			12.8			15.5			16.5	
Confl. Peds. (#/hr)	1		4	4		1			9	9		
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
Heavy Vehicles (%)	0%	1%	1%	27%	2%	0%	1%	0%	2%	3%	0%	0%
Adj. Flow (vph)	66	2002	202	29	1998	35	480	379	101	45	339	77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	66	2204	0	29	2033	0	480	379	101	45	339	77
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.95	0.92	0.95	0.95	0.92	0.95	0.95	0.92	0.95	0.95	0.92	0.95
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	0		1	0		1	1	1	1	1	1
Detector Template												
Leading Detector (m)	15.2	0.0		15.2	0.0		7.5	7.5	7.5	7.5	7.5	7.5
Trailing Detector (m)	6.2	0.0		6.2	0.0		-1.5	-0.2	-1.5	-1.5	-1.5	-1.5
Detector 1 Position(m)	6.2	0.0		6.2	0.0		-1.5	-0.2	-1.5	-1.5	-1.5	-1.5
Detector 1 Size(m)	9.0	1.8		9.0	1.8		9.0	7.7	9.0	9.0	9.0	9.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases	6			2			8		8	4		4
Detector Phase	1	6		5	2		3	8	8	4	4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	7.0	35.0		7.0	35.0		7.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.0	43.0		11.0	43.0		11.0	41.0	41.0	41.0	41.0	41.0
Total Split (s)	12.0	64.0		12.0	64.0		22.0	64.0	64.0	42.0	42.0	42.0
Total Split (%)	8.6%	45.7%		8.6%	45.7%		15.7%	45.7%	45.7%	30.0%	30.0%	30.0%
Maximum Green (s)	8.0	56.5		8.0	56.5		18.0	56.5	56.5	34.5	34.5	34.5
Yellow Time (s)	3.0	5.0		3.0	5.0		3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	2.5		1.0	2.5		1.0	3.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.5		4.0	7.5		4.0	7.5	7.5	7.5	7.5	7.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		None	None	None	None	None	None
Walk Time (s)		7.0			7.0			7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		28.0			28.0			26.0	26.0	26.0	26.0	26.0
Pedestrian Calls (#/hr)		4			1			0	0	0	0	0
Act Effct Green (s)	76.1	67.9		74.8	65.4		53.8	50.3	50.3	28.3	28.3	28.3
Actuated g/C Ratio	0.54	0.48		0.53	0.47		0.38	0.36	0.36	0.20	0.20	0.20
v/c Ratio	0.42	0.90		0.24	0.86		1.48	0.52	0.16	0.22	0.83	0.18
Control Delay	31.9	34.0		31.5	50.5		260.9	37.6	5.3	47.3	70.6	5.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.9	34.0		31.5	50.5		260.9	37.6	5.3	47.3	70.6	5.2
LOS	C	C		C	D		F	D	A	D	E	A
Approach Delay		33.9			50.3			145.8			57.4	
Approach LOS		C			D			F			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 23 (16%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.48			
Intersection Signal Delay: 60.3		Intersection LOS: E	
Intersection Capacity Utilization 108.3%		ICU Level of Service G	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 3: Markland St./Markland St & Major Mackenzie Drive





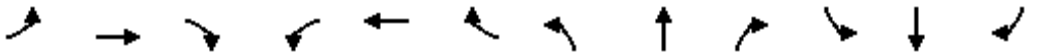
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	66	2204	29	2033	480	379	101	45	339	77
v/c Ratio	0.42	0.90	0.24	0.86	1.48	0.52	0.16	0.22	0.83	0.18
Control Delay	31.9	34.0	31.5	50.5	260.9	37.6	5.3	47.3	70.6	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.9	34.0	31.5	50.5	260.9	37.6	5.3	47.3	70.6	5.2
Queue Length 50th (m)	7.2	160.0	5.2	232.0	~158.0	81.9	0.0	10.5	90.4	0.0
Queue Length 95th (m)	m19.9	#292.3	m8.0	#253.8	#218.2	104.9	11.3	21.0	119.5	8.2
Internal Link Dist (m)		371.3		225.0		191.0			205.3	
Turn Bay Length (m)	90.0		160.0		180.0		97.0	60.0		
Base Capacity (vph)	165	2441	131	2357	324	816	709	252	498	487
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.90	0.22	0.86	1.48	0.46	0.14	0.18	0.68	0.16

Intersection Summary

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

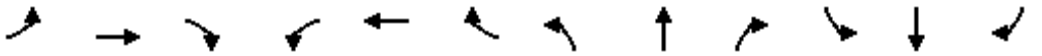
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	2002	202	29	1998	35	480	379	101	45	339	77
Future Volume (vph)	66	2002	202	29	1998	35	480	379	101	45	339	77
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
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	7.5		4.0	7.5		4.0	7.5	7.5	7.5	7.5	7.5
Lane Util. Factor	1.00	*0.85		1.00	*0.85		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	0.98	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	0.99	1.00	1.00
Frt	1.00	0.99		1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1879	5023		1479	5042		1860	2022	1610	1812	2022	1681
Flt Permitted	0.06	1.00		0.06	1.00		0.17	1.00	1.00	0.54	1.00	1.00
Satd. Flow (perm)	119	5023		96	5042		334	2022	1610	1024	2022	1681
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)	66	2002	202	29	1998	35	480	379	101	45	339	77
RTOR Reduction (vph)	0	7	0	0	1	0	0	0	65	0	0	61
Lane Group Flow (vph)	66	2197	0	29	2032	0	480	379	36	45	339	16
Confl. Peds. (#/hr)	1		4	4		1			9	9		
Heavy Vehicles (%)	0%	1%	1%	27%	2%	0%	1%	0%	2%	3%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases	6			2			8		8	4		4
Actuated Green, G (s)	72.4	66.3		69.0	64.6		50.3	50.3	50.3	28.3	28.3	28.3
Effective Green, g (s)	72.4	66.3		69.0	64.6		50.3	50.3	50.3	28.3	28.3	28.3
Actuated g/C Ratio	0.52	0.47		0.49	0.46		0.36	0.36	0.36	0.20	0.20	0.20
Clearance Time (s)	4.0	7.5		4.0	7.5		4.0	7.5	7.5	7.5	7.5	7.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	138	2378		90	2326		316	726	578	206	408	339
v/s Ratio Prot	c0.02	c0.44		0.01	0.40		c0.20	0.19			0.17	
v/s Ratio Perm	0.23			0.15			c0.35		0.02	0.04		0.01
v/c Ratio	0.48	0.92		0.32	0.87		1.52	0.52	0.06	0.22	0.83	0.05
Uniform Delay, d1	28.6	34.5		31.1	34.0		37.5	35.4	29.4	46.6	53.6	45.0
Progression Factor	1.49	0.83		1.78	1.38		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.1	6.3		1.5	3.7		249.2	0.7	0.0	0.5	13.4	0.1
Delay (s)	44.7	35.0		56.7	50.6		286.7	36.1	29.4	47.2	67.0	45.0
Level of Service	D	D		E	D		F	D	C	D	E	D
Approach Delay (s)		35.3			50.7			160.7			61.4	
Approach LOS		D			D			F			E	

Intersection Summary			
HCM 2000 Control Delay	63.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	108.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



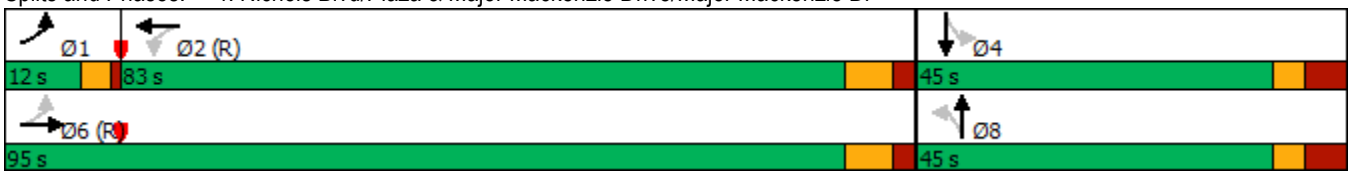
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	1995	76	30	1963	225	48	12	22	164	22	51
Future Volume (vph)	77	1995	76	30	1963	225	48	12	22	164	22	51
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.5	3.5	3.5
Storage Length (m)	55.0		100.0	45.0		45.0	70.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	*0.85	0.91	1.00	*0.85	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00	1.00		1.00	0.99		0.99	0.99	
Frt		0.994			0.985			0.903			0.895	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1842	5071	0	1879	4963	0	1879	1804	0	1842	1751	0
Flt Permitted	0.043			0.060			0.709			0.735		
Satd. Flow (perm)	83	5071	0	119	4963	0	1398	1804	0	1416	1751	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			20			12			52	
Link Speed (k/h)		70			70			40			40	
Link Distance (m)		249.0			251.3			209.6			112.0	
Travel Time (s)		12.8			12.9			18.9			10.1	
Confl. Peds. (#/hr)	9		4	4		9	3		6	6		3
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	2%	1%	0%	0%	2%	1%	0%	0%	0%	2%	0%	0%
Adj. Flow (vph)	79	2036	78	31	2003	230	49	12	22	167	22	52
Shared Lane Traffic (%)												
Lane Group Flow (vph)	79	2114	0	31	2233	0	49	34	0	167	74	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.95	0.92	0.95	0.95	0.92	0.95	0.95	0.92	0.92	0.95	0.95	0.95
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		1	1		1	1	
Detector Template												
Leading Detector (m)	0.0	0.0		0.0	0.0		7.5	7.5		7.5	7.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		-1.5	-0.2		-1.5	-1.5	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		-1.5	-0.2		-1.5	-1.5	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		9.0	7.7		9.0	9.0	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2			8			4		
Detector Phase	1	6		2	2		8	8		4	4	

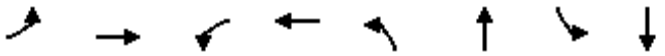
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	7.0	30.0		30.0	30.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.0	38.0		38.0	38.0		44.0	44.0		44.0	44.0	
Total Split (s)	12.0	95.0		83.0	83.0		45.0	45.0		45.0	45.0	
Total Split (%)	8.6%	67.9%		59.3%	59.3%		32.1%	32.1%		32.1%	32.1%	
Maximum Green (s)	8.0	87.5		75.5	75.5		37.0	37.0		37.0	37.0	
Yellow Time (s)	3.0	5.0		5.0	5.0		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	2.5		2.5	2.5		4.5	4.5		4.5	4.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	7.5		7.5	7.5		8.0	8.0		8.0	8.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)		7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		21.0		21.0	21.0		29.0	29.0		29.0	29.0	
Pedestrian Calls (#/hr)		4		9	9		6	6		3	3	
Act Effct Green (s)	104.9	101.4		89.7	89.7		23.1	23.1		23.1	23.1	
Actuated g/C Ratio	0.75	0.72		0.64	0.64		0.16	0.16		0.16	0.16	
v/c Ratio	0.50	0.58		0.41	0.70		0.21	0.11		0.72	0.22	
Control Delay	49.8	2.0		13.2	8.9		49.4	33.2		70.9	18.9	
Queue Delay	0.0	0.5		0.0	0.1		0.0	0.0		0.0	0.0	
Total Delay	49.8	2.4		13.2	9.0		49.4	33.2		70.9	18.9	
LOS	D	A		B	A		D	C		E	B	
Approach Delay		4.1			9.1			42.8			55.0	
Approach LOS		A			A			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 44 (31%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 9.7		Intersection LOS: A	
Intersection Capacity Utilization 90.4%		ICU Level of Service E	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 4: Nichols Blvd/Plaza & Major Mackenzie Drive/Major Mackenzie Dr

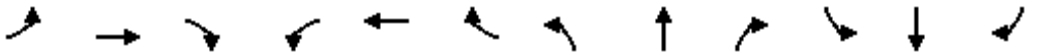




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	79	2114	31	2233	49	34	167	74
v/c Ratio	0.50	0.58	0.41	0.70	0.21	0.11	0.72	0.22
Control Delay	49.8	2.0	13.2	8.9	49.4	33.2	70.9	18.9
Queue Delay	0.0	0.5	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	49.8	2.4	13.2	9.0	49.4	33.2	70.9	18.9
Queue Length 50th (m)	10.5	9.1	2.3	72.5	12.0	5.3	44.8	5.3
Queue Length 95th (m)	m13.6	11.2	m2.9	m75.4	21.3	13.5	62.2	17.1
Internal Link Dist (m)		225.0		227.3		185.6		88.0
Turn Bay Length (m)	55.0		45.0		70.0		30.0	
Base Capacity (vph)	166	3674	76	3187	369	485	374	501
Starvation Cap Reductn	0	945	0	197	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.77	0.41	0.75	0.13	0.07	0.45	0.15

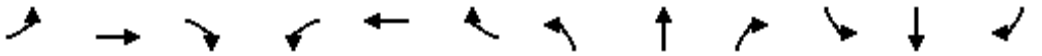
Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	1995	76	30	1963	225	48	12	22	164	22	51
Future Volume (vph)	77	1995	76	30	1963	225	48	12	22	164	22	51
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.5	3.5	3.5
Total Lost time (s)	4.0	7.5		7.5	7.5		8.0	8.0		8.0	8.0	
Lane Util. Factor	1.00	*0.85		1.00	*0.85		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	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.90		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)	1842	5074		1878	4961		1873	1804		1830	1750	
Flt Permitted	0.04	1.00		0.06	1.00		0.71	1.00		0.73	1.00	
Satd. Flow (perm)	83	5074		119	4961		1397	1804		1416	1750	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	79	2036	78	31	2003	230	49	12	22	167	22	52
RTOR Reduction (vph)	0	2	0	0	7	0	0	10	0	0	43	0
Lane Group Flow (vph)	79	2112	0	31	2226	0	49	24	0	167	31	0
Confl. Peds. (#/hr)	9		4	4		9	3		6	6		3
Heavy Vehicles (%)	2%	1%	0%	0%	2%	1%	0%	0%	0%	2%	0%	0%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	101.4	101.4		89.7	89.7		23.1	23.1		23.1	23.1	
Effective Green, g (s)	101.4	101.4		89.7	89.7		23.1	23.1		23.1	23.1	
Actuated g/C Ratio	0.72	0.72		0.64	0.64		0.17	0.17		0.17	0.17	
Clearance Time (s)	4.0	7.5		7.5	7.5		8.0	8.0		8.0	8.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	156	3675		76	3178		230	297		233	288	
v/s Ratio Prot	0.03	c0.42			c0.45			0.01			0.02	
v/s Ratio Perm	0.34			0.26			0.04			c0.12		
v/c Ratio	0.51	0.57		0.41	0.70		0.21	0.08		0.72	0.11	
Uniform Delay, d1	19.6	9.1		12.2	16.4		50.6	49.5		55.4	49.7	
Progression Factor	2.65	0.16		0.53	0.49		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.4	0.3		1.5	0.1		0.5	0.1		10.0	0.2	
Delay (s)	53.4	1.8		7.9	8.2		51.0	49.6		65.4	49.8	
Level of Service	D	A		A	A		D	D		E	D	
Approach Delay (s)		3.6			8.2			50.4			60.6	
Approach LOS		A			A			D			E	

Intersection Summary			
HCM 2000 Control Delay	9.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	90.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



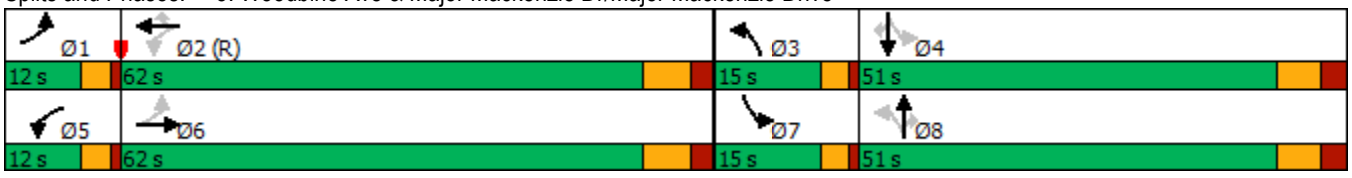
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	108	1820	253	208	1487	134	665	1112	673	143	409	66
Future Volume (vph)	108	1820	253	208	1487	134	665	1112	673	143	409	66
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.0	3.7	3.5	3.5	3.7	3.5	3.0	3.7	3.5	3.0	3.7	3.7
Storage Length (m)	120.0		80.0	300.0		120.0	150.0		70.0	165.0		70.0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	*0.85	0.91	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		1.00				0.98			0.98			
Frt		0.982				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1773	5016	0	1879	3767	1664	1739	3842	1664	1773	3804	1702
Flt Permitted	0.073			0.073			0.442			0.093		
Satd. Flow (perm)	136	5016	0	144	3767	1635	809	3842	1637	174	3804	1702
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		19				121			150			97
Link Speed (k/h)		70			70			60			60	
Link Distance (m)		251.3			460.0			545.1			346.9	
Travel Time (s)		12.9			23.7			32.7			20.8	
Confl. Peds. (#/hr)	5		14	14		5			4	4		
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
Heavy Vehicles (%)	0%	0%	5%	0%	2%	1%	2%	0%	1%	0%	1%	1%
Adj. Flow (vph)	108	1820	253	208	1487	134	665	1112	673	143	409	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	108	2073	0	208	1487	134	665	1112	673	143	409	66
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.0			3.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.02	0.92	0.95	0.95	0.92	0.95	1.02	0.92	0.95	1.02	0.92	0.92
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	0		1	0	0	1	1	1	1	1	1
Detector Template												
Leading Detector (m)	15.2	0.0		15.2	0.0	0.0	15.2	7.5	7.5	15.2	7.5	7.5
Trailing Detector (m)	6.2	0.0		6.2	0.0	0.0	6.2	-1.5	-1.5	6.2	-1.5	-1.5
Detector 1 Position(m)	6.2	0.0		6.2	0.0	0.0	6.2	-1.5	-1.5	6.2	-1.5	-1.5
Detector 1 Size(m)	9.0	1.8		9.0	1.8	6.1	9.0	9.0	9.0	9.0	9.0	9.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2		2	8		8	4		4
Detector Phase	1	6		5	2	2	3	8	8	7	4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	7.0	36.0		7.0	36.0	36.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	44.0		11.0	44.0	44.0	11.0	45.0	45.0	11.0	45.0	45.0
Total Split (s)	12.0	62.0		12.0	62.0	62.0	15.0	51.0	51.0	15.0	51.0	51.0
Total Split (%)	8.6%	44.3%		8.6%	44.3%	44.3%	10.7%	36.4%	36.4%	10.7%	36.4%	36.4%
Maximum Green (s)	8.0	54.5		8.0	54.5	54.5	11.0	43.5	43.5	11.0	43.5	43.5
Yellow Time (s)	3.0	5.0		3.0	5.0	5.0	3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	1.0	2.5		1.0	2.5	2.5	1.0	3.0	3.0	1.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.5		4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		29.0			29.0	29.0		30.0	30.0		30.0	30.0
Pedestrian Calls (#/hr)		14			5	5		4	4		0	0
Act Effct Green (s)	66.1	54.8		66.4	54.9	54.9	58.0	43.5	43.5	57.5	43.2	43.2
Actuated g/C Ratio	0.47	0.39		0.47	0.39	0.39	0.41	0.31	0.31	0.41	0.31	0.31
v/c Ratio	0.70	1.05		1.25	1.01	0.19	1.63	0.93	1.10	0.74	0.35	0.11
Control Delay	59.2	54.0		178.0	67.1	6.5	322.0	61.1	101.6	50.7	38.4	2.6
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.2	54.0		178.0	67.1	6.5	322.0	61.1	101.6	50.7	38.4	2.6
LOS	E	D		F	E	A	F	E	F	D	D	A
Approach Delay		54.3			75.3			143.0			37.4	
Approach LOS		D			E			F			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 53 (38%), Referenced to phase 2:WBTL, Start of Green			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.63			
Intersection Signal Delay: 89.0		Intersection LOS: F	
Intersection Capacity Utilization 114.8%		ICU Level of Service H	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 5: Woodbine Ave & Major Mackenzie Dr/Major Mackenzie Drive



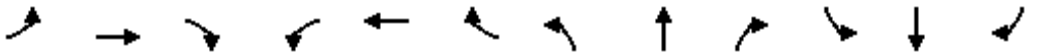


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	108	2073	208	1487	134	665	1112	673	143	409	66
v/c Ratio	0.70	1.05	1.25	1.01	0.19	1.63	0.93	1.10	0.74	0.35	0.11
Control Delay	59.2	54.0	178.0	67.1	6.5	322.0	61.1	101.6	50.7	38.4	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.2	54.0	178.0	67.1	6.5	322.0	61.1	101.6	50.7	38.4	2.6
Queue Length 50th (m)	12.0	~246.7	~54.2	~222.2	2.2	~264.8	157.4	~180.8	23.7	46.1	0.0
Queue Length 95th (m)	#39.4	#269.4	#104.9	#270.5	15.5	#337.7	#197.7	#254.8	#51.9	60.5	4.7
Internal Link Dist (m)		227.3		436.0			521.1			322.9	
Turn Bay Length (m)	120.0		300.0		120.0	150.0		70.0	165.0		70.0
Base Capacity (vph)	157	1973	167	1478	715	408	1193	612	197	1181	595
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	1.05	1.25	1.01	0.19	1.63	0.93	1.10	0.73	0.35	0.11

Intersection Summary

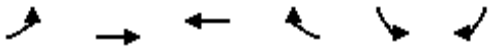
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



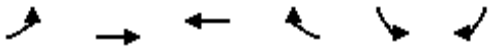
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	108	1820	253	208	1487	134	665	1112	673	143	409	66
Future Volume (vph)	108	1820	253	208	1487	134	665	1112	673	143	409	66
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.7	3.5	3.5	3.7	3.5	3.0	3.7	3.5	3.0	3.7	3.7
Total Lost time (s)	4.0	7.5		4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5
Lane Util. Factor	1.00	*0.85		1.00	0.95	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	0.98	1.00	1.00	0.98	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	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1773	5014		1879	3767	1635	1739	3842	1637	1773	3804	1702
Flt Permitted	0.07	1.00		0.07	1.00	1.00	0.44	1.00	1.00	0.09	1.00	1.00
Satd. Flow (perm)	136	5014		144	3767	1635	809	3842	1637	173	3804	1702
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)	108	1820	253	208	1487	134	665	1112	673	143	409	66
RTOR Reduction (vph)	0	12	0	0	0	73	0	0	103	0	0	46
Lane Group Flow (vph)	108	2061	0	208	1487	61	665	1112	570	143	409	20
Confl. Peds. (#/hr)	5		14	14		5			4	4		
Heavy Vehicles (%)	0%	0%	5%	0%	2%	1%	2%	0%	1%	0%	1%	1%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2		2	8		8	4		4
Actuated Green, G (s)	62.6	54.8		63.0	55.0	55.0	54.5	43.5	43.5	53.9	43.2	43.2
Effective Green, g (s)	62.6	54.8		63.0	55.0	55.0	54.5	43.5	43.5	53.9	43.2	43.2
Actuated g/C Ratio	0.45	0.39		0.45	0.39	0.39	0.39	0.31	0.31	0.38	0.31	0.31
Clearance Time (s)	4.0	7.5		4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	152	1962		163	1479	642	388	1193	508	188	1173	525
v/s Ratio Prot	0.04	0.41		c0.07	0.39		c0.13	0.29		0.06	0.11	
v/s Ratio Perm	0.28			c0.50		0.04	c0.53		0.35	0.23		0.01
v/c Ratio	0.71	1.05		1.28	1.01	0.09	1.71	0.93	1.12	0.76	0.35	0.04
Uniform Delay, d1	32.6	42.6		37.2	42.5	26.8	40.6	46.8	48.2	34.7	37.5	33.9
Progression Factor	1.71	0.45		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	12.3	33.6		163.1	24.7	0.3	332.0	12.9	77.6	16.5	0.2	0.0
Delay (s)	67.9	52.6		200.3	67.2	27.1	372.6	59.7	125.9	51.1	37.7	33.9
Level of Service	E	D		F	E	C	F	E	F	D	D	C
Approach Delay (s)		53.4			79.4			162.8			40.4	
Approach LOS		D			E			F			D	

Intersection Summary			
HCM 2000 Control Delay	96.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.48		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	114.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	81	460	230	250	1	72
Future Volume (vph)	81	460	230	250	1	72
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.5	3.7	3.7	3.7	3.5	3.7
Storage Length (m)	50.0			0.0	30.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.6				7.6	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.930			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1842	2002	1881	0	1879	1547
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1842	2002	1881	0	1879	1547
Link Speed (k/h)		50	50		40	
Link Distance (m)		238.8	229.3		191.9	
Travel Time (s)		17.2	16.5		17.3	
Confl. Peds. (#/hr)				9	1	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	1%	0%	0%	0%	0%
Parking (#/hr)						0
Adj. Flow (vph)	86	489	245	266	1	77
Shared Lane Traffic (%)						
Lane Group Flow (vph)	86	489	511	0	1	77
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	4.9		4.9	
Two way Left Turn Lane						
Headway Factor	0.95	0.92	0.92	0.92	0.95	1.06
Turning Speed (k/h)	24			14	24	14
Sign Control		Stop	Stop		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	44.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	81	460	230	250	1	72
Future Volume (vph)	81	460	230	250	1	72
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	86	489	245	266	1	77

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total (vph)	86	489	511	1	77
Volume Left (vph)	86	0	0	1	0
Volume Right (vph)	0	0	266	0	77
Hadj (s)	0.53	0.02	-0.31	0.50	-0.70
Departure Headway (s)	5.7	5.2	4.9	7.5	6.2
Degree Utilization, x	0.14	0.71	0.69	0.00	0.13
Capacity (veh/h)	618	673	726	438	514
Control Delay (s)	8.4	18.7	18.2	9.3	9.0
Approach Delay (s)	17.1		18.2	9.0	
Approach LOS	C		C	A	

Intersection Summary			
Delay	17.1		
Level of Service	C		
Intersection Capacity Utilization	44.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	352	270	125	177	208	189
Future Volume (vph)	352	270	125	177	208	189
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.7	3.7	3.5	3.7	3.7	3.7
Storage Length (m)		0.0	50.0		0.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			2.5		2.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.941					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1884	0	1879	2022	1902	1702
Flt Permitted			0.279		0.950	
Satd. Flow (perm)	1884	0	552	2022	1902	1702
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	106					201
Link Speed (k/h)	50			50	50	
Link Distance (m)	222.8			238.8	394.7	
Travel Time (s)	16.0			17.2	28.4	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	1%	0%	0%	1%	1%
Adj. Flow (vph)	374	287	133	188	221	201
Shared Lane Traffic (%)						
Lane Group Flow (vph)	661	0	133	188	221	201
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.92	0.92	0.95	0.92	0.92	0.92
Turning Speed (k/h)		97	97		97	97
Turn Type	NA		Perm	NA	Perm	Perm
Protected Phases	4			8		
Permitted Phases			8		2	2
Minimum Split (s)	22.0		22.0	22.0	22.0	22.0
Total Split (s)	38.0		38.0	38.0	22.0	22.0
Total Split (%)	63.3%		63.3%	63.3%	36.7%	36.7%
Maximum Green (s)	34.0		34.0	34.0	18.0	18.0
Yellow Time (s)	3.5		3.5	3.5	3.5	3.5
All-Red Time (s)	0.5		0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Walk Time (s)	7.0		7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0		11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0		0	0	0	0
Act Effct Green (s)	34.0		34.0	34.0	18.0	18.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Actuated g/C Ratio	0.57		0.57	0.57	0.30	0.30
v/c Ratio	0.59		0.43	0.16	0.39	0.31
Control Delay	9.7		12.8	6.7	19.1	4.4
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	9.7		12.8	6.7	19.1	4.4
LOS	A		B	A	B	A
Approach Delay	9.7			9.2	12.1	
Approach LOS	A			A	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green			
Natural Cycle: 55			
Control Type: Pretimed			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 10.3		Intersection LOS: B	
Intersection Capacity Utilization 60.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 7: Markland St





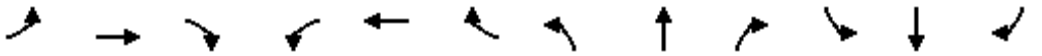
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	661	133	188	221	201
v/c Ratio	0.59	0.43	0.16	0.39	0.31
Control Delay	9.7	12.8	6.7	19.1	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	9.7	12.8	6.7	19.1	4.4
Queue Length 50th (m)	34.0	7.4	8.8	19.0	0.0
Queue Length 95th (m)	60.4	19.6	16.5	34.9	11.9
Internal Link Dist (m)	198.8		214.8	370.7	
Turn Bay Length (m)		50.0			
Base Capacity (vph)	1113	312	1145	570	651
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.59	0.43	0.16	0.39	0.31

Intersection Summary



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	352	270	125	177	208	189
Future Volume (vph)	352	270	125	177	208	189
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000
Lane Width	3.7	3.7	3.5	3.7	3.7	3.7
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.94		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1885		1879	2022	1902	1702
Flt Permitted	1.00		0.28	1.00	0.95	1.00
Satd. Flow (perm)	1885		551	2022	1902	1702
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	374	287	133	188	221	201
RTOR Reduction (vph)	46	0	0	0	0	141
Lane Group Flow (vph)	615	0	133	188	221	60
Heavy Vehicles (%)	1%	1%	0%	0%	1%	1%
Turn Type	NA		Perm	NA	Perm	Perm
Protected Phases	4			8		
Permitted Phases			8		2	2
Actuated Green, G (s)	34.0		34.0	34.0	18.0	18.0
Effective Green, g (s)	34.0		34.0	34.0	18.0	18.0
Actuated g/C Ratio	0.57		0.57	0.57	0.30	0.30
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	1068		312	1145	570	510
v/s Ratio Prot	c0.33			0.09		
v/s Ratio Perm			0.24		c0.12	0.04
v/c Ratio	0.58		0.43	0.16	0.39	0.12
Uniform Delay, d1	8.4		7.4	6.2	16.6	15.2
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	2.3		4.2	0.3	2.0	0.5
Delay (s)	10.6		11.6	6.5	18.6	15.7
Level of Service	B		B	A	B	B
Approach Delay (s)	10.6			8.6	17.2	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	12.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



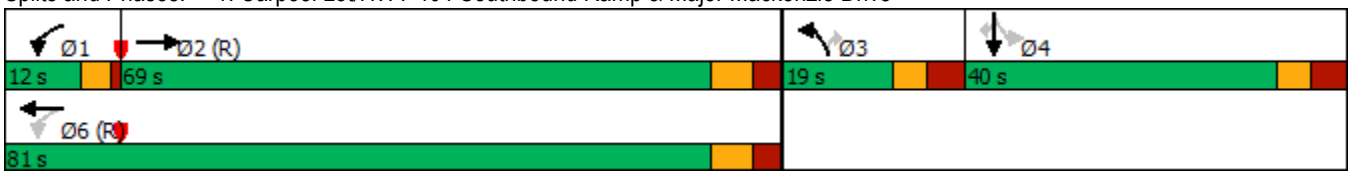
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	956	8	134	1978	0	15	0	18	338	343	220
Future Volume (vph)	0	956	8	134	1978	0	15	0	18	338	343	220
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.7	3.7	3.5	3.5	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Storage Length (m)	0.0		95.0	55.0		0.0	0.0		0.0	0.0		170.0
Storage Lanes	0		0	1		0	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	*0.85	0.91	1.00	*0.85	1.00	1.00	1.00	1.00	0.95	0.91	0.95
Frt		0.999							0.850		0.992	0.850
Flt Protected				0.950			0.950			0.950	0.996	
Satd. Flow (prot)	0	4994	0	1842	5006	0	1444	0	1095	1789	1769	1617
Flt Permitted				0.187			0.950			0.950	0.996	
Satd. Flow (perm)	0	4994	0	363	5006	0	1444	0	1095	1789	1769	1617
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1							125		2	125
Link Speed (k/h)		70			70			40			60	
Link Distance (m)		369.9			313.7			147.8			449.4	
Travel Time (s)		19.0			16.1			13.3			27.0	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	3%	20%	2%	3%	0%	33%	0%	57%	2%	3%	1%
Adj. Flow (vph)	0	1017	9	143	2104	0	16	0	19	360	365	234
Shared Lane Traffic (%)										10%		10%
Lane Group Flow (vph)	0	1026	0	143	2104	0	16	0	19	324	424	211
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.92	0.92	0.95	0.95	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors		0		1	0		1		1	1	1	1
Detector Template												
Leading Detector (m)		0.0		15.2	0.0		7.5		7.5	7.5	7.5	7.5
Trailing Detector (m)		0.0		6.2	0.0		-1.5		-1.5	-1.5	-1.5	-1.5
Detector 1 Position(m)		0.0		6.2	0.0		-1.5		-1.5	-1.5	-1.5	-1.5
Detector 1 Size(m)		1.8		9.0	1.8		9.0		9.0	9.0	9.0	9.0
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)		0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)		0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Turn Type		NA		pm+pt	NA		Prot		Perm	Perm	NA	Perm
Protected Phases		2		1	6		3				4	
Permitted Phases				6					3	4		4
Detector Phase		2		1	6		3		3	4	4	4
Switch Phase												
Minimum Initial (s)		20.0		7.0	20.0		10.0		10.0	15.0	15.0	15.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)		38.0		11.0	38.0		18.0		18.0	36.5	36.5	36.5
Total Split (s)		69.0		12.0	81.0		19.0		19.0	40.0	40.0	40.0
Total Split (%)		49.3%		8.6%	57.9%		13.6%		13.6%	28.6%	28.6%	28.6%
Maximum Green (s)		61.5		8.0	73.5		11.5		11.5	32.5	32.5	32.5
Yellow Time (s)		4.5		3.0	4.5		3.5		3.5	3.5	3.5	3.5
All-Red Time (s)		3.0		1.0	3.0		4.0		4.0	4.0	4.0	4.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)		7.5		4.0	7.5		7.5		7.5	7.5	7.5	7.5
Lead/Lag		Lag		Lead			Lead		Lead	Lag	Lag	Lag
Lead-Lag Optimize?		Yes		Yes			Yes		Yes	Yes	Yes	Yes
Vehicle Extension (s)		3.0		3.0	3.0		3.0		3.0	3.0	3.0	3.0
Recall Mode		C-Min		None	C-Min		None		None	None	None	None
Walk Time (s)		7.0			7.0					7.0	7.0	7.0
Flash Dont Walk (s)		23.0			23.0					22.0	22.0	22.0
Pedestrian Calls (#/hr)		0			0					0	0	0
Act Effct Green (s)		70.2		85.5	82.0		10.0		10.0	32.5	32.5	32.5
Actuated g/C Ratio		0.50		0.61	0.59		0.07		0.07	0.23	0.23	0.23
v/c Ratio		0.41		0.47	0.72		0.16		0.10	0.78	1.03	0.45
Control Delay		23.6		24.0	36.0		64.8		1.0	64.6	103.7	21.9
Queue Delay		0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Total Delay		23.6		24.0	36.0		64.8		1.0	64.6	103.7	21.9
LOS		C		C	D		E		A	E	F	C
Approach Delay		23.6			35.2			30.2			72.5	
Approach LOS		C			D			C			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 68 (49%), Referenced to phase 2:EBT and 6:WBTL, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.03			
Intersection Signal Delay: 40.8		Intersection LOS: D	
Intersection Capacity Utilization 75.0%		ICU Level of Service D	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 1: Carpool Lot/HWY 404 Southbound Ramp & Major Mackenzie Drive





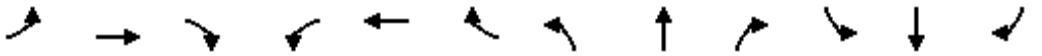
Lane Group	EBT	WBL	WBT	NBL	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1026	143	2104	16	19	324	424	211
v/c Ratio	0.41	0.47	0.72	0.16	0.10	0.78	1.03	0.45
Control Delay	23.6	24.0	36.0	64.8	1.0	64.6	103.7	21.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.6	24.0	36.0	64.8	1.0	64.6	103.7	21.9
Queue Length 50th (m)	75.8	30.2	213.3	4.2	0.0	89.2	~137.1	20.5
Queue Length 95th (m)	89.1	m21.4	m153.6	11.9	0.0	#132.6	#208.9	46.1
Internal Link Dist (m)	345.9		289.7				425.4	
Turn Bay Length (m)		55.0						170.0
Base Capacity (vph)	2504	306	2931	118	204	415	412	471
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.47	0.72	0.14	0.09	0.78	1.03	0.45

Intersection Summary

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

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

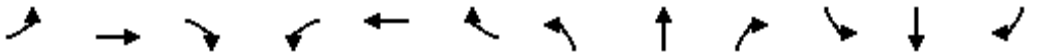
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	956	8	134	1978	0	15	0	18	338	343	220
Future Volume (vph)	0	956	8	134	1978	0	15	0	18	338	343	220
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.7	3.7	3.5	3.5	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Total Lost time (s)		7.5		4.0	7.5		7.5		7.5	7.5	7.5	7.5
Lane Util. Factor		*0.85		1.00	*0.85		1.00		1.00	0.95	0.91	0.95
Frt		1.00		1.00	1.00		1.00		0.85	1.00	0.99	0.85
Flt Protected		1.00		0.95	1.00		0.95		1.00	0.95	1.00	1.00
Satd. Flow (prot)		4993		1842	5006		1444		1095	1789	1768	1617
Flt Permitted		1.00		0.19	1.00		0.95		1.00	0.95	1.00	1.00
Satd. Flow (perm)		4993		362	5006		1444		1095	1789	1768	1617
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	1017	9	143	2104	0	16	0	19	360	365	234
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	18	0	2	96
Lane Group Flow (vph)	0	1025	0	143	2104	0	16	0	1	324	422	115
Heavy Vehicles (%)	0%	3%	20%	2%	3%	0%	33%	0%	57%	2%	3%	1%
Turn Type		NA		pm+pt	NA		Prot		Perm	Perm	NA	Perm
Protected Phases		2		1	6		3				4	
Permitted Phases				6					3	4		4
Actuated Green, G (s)		67.2		79.0	79.0		6.0		6.0	32.5	32.5	32.5
Effective Green, g (s)		67.2		79.0	79.0		6.0		6.0	32.5	32.5	32.5
Actuated g/C Ratio		0.48		0.56	0.56		0.04		0.04	0.23	0.23	0.23
Clearance Time (s)		7.5		4.0	7.5		7.5		7.5	7.5	7.5	7.5
Vehicle Extension (s)		3.0		3.0	3.0		3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		2396		286	2824		61		46	415	410	375
v/s Ratio Prot		0.21		0.03	c0.42		c0.01					
v/s Ratio Perm				0.25					0.00	0.18	0.24	0.07
v/c Ratio		0.43		0.50	0.75		0.26		0.02	0.78	1.03	0.31
Uniform Delay, d1		23.8		16.0	22.9		64.9		64.2	50.4	53.8	44.4
Progression Factor		1.00		1.79	1.61		1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2		0.6		0.1	0.2		2.3		0.2	9.2	52.5	0.5
Delay (s)		24.4		28.7	37.1		67.2		64.3	59.6	106.2	44.9
Level of Service		C		C	D		E		E	E	F	D
Approach Delay (s)		24.4			36.6			65.6			77.0	
Approach LOS		C			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	43.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	26.5
Intersection Capacity Utilization	75.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

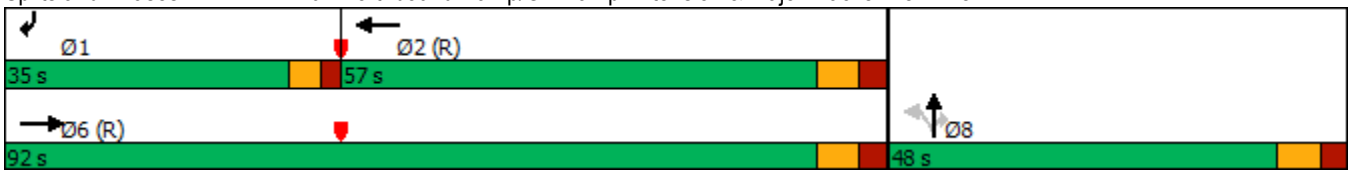


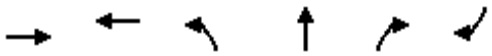
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1126	0	0	2381	4	637	126	483	0	0	446
Future Volume (vph)	0	1126	0	0	2381	4	637	126	483	0	0	446
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		180.0	0.0		0.0
Storage Lanes	0		0	0		0	1		1	0		1
Taper Length (m)	7.6			7.6			7.6			2.5		
Lane Util. Factor	1.00	*0.85	1.00	1.00	*0.85	0.91	0.95	0.91	0.95	1.00	1.00	1.00
Frt								0.966	0.850			0.865
Flt Protected							0.950	0.977				
Satd. Flow (prot)	0	4958	0	0	5056	0	1772	1653	1526	0	0	1715
Flt Permitted							0.950	0.977				
Satd. Flow (perm)	0	4958	0	0	5056	0	1772	1653	1526	0	0	1715
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)								11	92			
Link Speed (k/h)		70			70			60			50	
Link Distance (m)		313.7			395.3			470.8			394.7	
Travel Time (s)		16.1			20.3			28.2			28.4	
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
Heavy Vehicles (%)	2%	4%	0%	0%	2%	2%	3%	7%	7%	2%	2%	2%
Adj. Flow (vph)	0	1126	0	0	2381	4	637	126	483	0	0	446
Shared Lane Traffic (%)							32%		20%			
Lane Group Flow (vph)	0	1126	0	0	2385	0	433	427	386	0	0	446
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			1.6	
Two way Left Turn Lane												
Headway Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors		0			0		1	1	1			1
Detector Template												
Leading Detector (m)		0.0			0.0		7.5	7.5	7.5			7.5
Trailing Detector (m)		0.0			0.0		-1.5	-1.5	-1.5			-1.5
Detector 1 Position(m)		0.0			0.0		-1.5	-1.5	-1.5			-1.5
Detector 1 Size(m)		1.8			1.8		9.0	9.0	9.0			9.0
Detector 1 Type		Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0		0.0	0.0	0.0			0.0
Detector 1 Queue (s)		0.0			0.0		0.0	0.0	0.0			0.0
Detector 1 Delay (s)		0.0			0.0		0.0	0.0	0.0			0.0
Turn Type		NA			NA		Perm	NA	Perm			Prot
Protected Phases		6			2			8				1
Permitted Phases							8		8			
Detector Phase		6			2		8	8	8			1
Switch Phase												
Minimum Initial (s)		20.0			20.0		10.0	10.0	10.0			7.0
Minimum Split (s)		37.5			44.5		47.5	47.5	47.5			33.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (s)		92.0			57.0		48.0	48.0	48.0			35.0
Total Split (%)		65.7%			40.7%		34.3%	34.3%	34.3%			25.0%
Maximum Green (s)		84.5			49.5		40.5	40.5	40.5			29.5
Yellow Time (s)		4.5			4.5		4.5	4.5	4.5			3.5
All-Red Time (s)		3.0			3.0		3.0	3.0	3.0			2.0
Lost Time Adjust (s)		0.0			0.0		0.0	0.0	0.0			0.0
Total Lost Time (s)		7.5			7.5		7.5	7.5	7.5			5.5
Lead/Lag					Lag							Lead
Lead-Lag Optimize?												
Vehicle Extension (s)		4.0			4.0		3.0	3.0	3.0			3.0
Recall Mode		C-Max			C-Max		None	None	None			None
Walk Time (s)		7.0			7.0		7.0	7.0	7.0			
Flash Dont Walk (s)		23.0			30.0		33.0	33.0	33.0			
Pedestrian Calls (#/hr)		0			0		0	0	0			
Act Effct Green (s)		86.4			51.4		38.6	38.6	38.6			29.5
Actuated g/C Ratio		0.62			0.37		0.28	0.28	0.28			0.21
v/c Ratio		0.37			1.29		0.89	0.92	0.79			1.24
Control Delay		12.6			156.5		69.2	74.0	48.0			173.0
Queue Delay		0.0			0.0		0.0	0.0	0.0			0.0
Total Delay		12.6			156.5		69.2	74.0	48.0			173.0
LOS		B			F		E	E	D			F
Approach Delay		12.6			156.5			64.3			173.0	
Approach LOS		B			F			E			F	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 105 (75%), Referenced to phase 2:WBT and 6:EBT, Start of Green			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.29			
Intersection Signal Delay: 104.7		Intersection LOS: F	
Intersection Capacity Utilization 111.7%		ICU Level of Service H	
Analysis Period (min) 15			
* User Entered Value			

Splits and Phases: 2: HWY 404 Northbound Ramp/Off-Ramp Extension & Major Mackenzie Drive





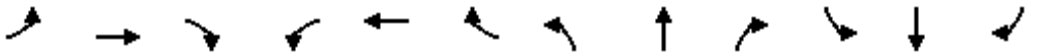
Lane Group	EBT	WBT	NBL	NBT	NBR	SBR
Lane Group Flow (vph)	1126	2385	433	427	386	446
v/c Ratio	0.37	1.29	0.89	0.92	0.79	1.24
Control Delay	12.6	156.5	69.2	74.0	48.0	173.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.6	156.5	69.2	74.0	48.0	173.0
Queue Length 50th (m)	85.8	~334.0	119.0	121.4	80.2	~152.4
Queue Length 95th (m)	m38.5	m#352.0	#175.1	#184.8	122.2	#217.9
Internal Link Dist (m)	289.7	371.3		446.8		
Turn Bay Length (m)					180.0	
Base Capacity (vph)	3059	1856	512	486	506	361
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.37	1.29	0.85	0.88	0.76	1.24

Intersection Summary

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

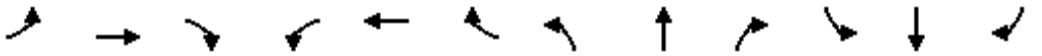
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1126	0	0	2381	4	637	126	483	0	0	446
Future Volume (vph)	0	1126	0	0	2381	4	637	126	483	0	0	446
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Total Lost time (s)		7.5			7.5		7.5	7.5	7.5			5.5
Lane Util. Factor		*0.85			*0.85		0.95	0.91	0.95			1.00
Frt		1.00			1.00		1.00	0.97	0.85			0.86
Flt Protected		1.00			1.00		0.95	0.98	1.00			1.00
Satd. Flow (prot)		4958			5054		1772	1652	1526			1715
Flt Permitted		1.00			1.00		0.95	0.98	1.00			1.00
Satd. Flow (perm)		4958			5054		1772	1652	1526			1715
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)	0	1126	0	0	2381	4	637	126	483	0	0	446
RTOR Reduction (vph)	0	0	0	0	0	0	0	8	67	0	0	0
Lane Group Flow (vph)	0	1126	0	0	2385	0	433	419	319	0	0	446
Heavy Vehicles (%)	2%	4%	0%	0%	2%	2%	3%	7%	7%	2%	2%	2%
Turn Type		NA			NA		Perm	NA	Perm			Prot
Protected Phases		6			2			8				1
Permitted Phases							8		8			
Actuated Green, G (s)		86.4			51.4		38.6	38.6	38.6			29.5
Effective Green, g (s)		86.4			51.4		38.6	38.6	38.6			29.5
Actuated g/C Ratio		0.62			0.37		0.28	0.28	0.28			0.21
Clearance Time (s)		7.5			7.5		7.5	7.5	7.5			5.5
Vehicle Extension (s)		4.0			4.0		3.0	3.0	3.0			3.0
Lane Grp Cap (vph)		3059			1855		488	455	420			361
v/s Ratio Prot		0.23			c0.47							c0.26
v/s Ratio Perm							0.24	0.25	0.21			
v/c Ratio		0.37			1.29		0.89	0.92	0.76			1.24
Uniform Delay, d1		13.3			44.3		48.6	49.2	46.5			55.2
Progression Factor		0.90			0.59		1.00	1.00	1.00			1.00
Incremental Delay, d2		0.3			130.5		17.5	24.0	7.9			127.7
Delay (s)		12.3			156.7		66.1	73.2	54.4			182.9
Level of Service		B			F		E	E	D			F
Approach Delay (s)		12.3			156.7			64.9			182.9	
Approach LOS		B			F			E			F	

Intersection Summary			
HCM 2000 Control Delay	105.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	111.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	1159	429	111	2371	7	220	207	29	54	361	362
Future Volume (vph)	21	1159	429	111	2371	7	220	207	29	54	361	362
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	90.0		100.0	160.0		187.0	180.0		97.0	60.0		0.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	*0.85	0.91	1.00	*0.85	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			1.00				0.98	0.99		
Frt		0.959							0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1824	4711	0	1842	5007	0	1773	2022	1303	1879	2002	1664
Flt Permitted	0.057			0.071			0.156			0.628		
Satd. Flow (perm)	109	4711	0	138	5007	0	291	2022	1273	1231	2002	1664
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		85							97			129
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		395.3			249.0			215.0			229.3	
Travel Time (s)		20.3			12.8			15.5			16.5	
Confl. Peds. (#/hr)	1		4	4		1			9	9		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00
Heavy Vehicles (%)	3%	5%	2%	2%	3%	0%	6%	0%	29%	0%	1%	1%
Adj. Flow (vph)	21	1159	429	111	2371	7	220	207	31	54	361	362
Shared Lane Traffic (%)												
Lane Group Flow (vph)	21	1588	0	111	2378	0	220	207	31	54	361	362
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.95	0.92	0.95	0.95	0.92	0.95	0.95	0.92	0.95	0.95	0.92	0.95
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	0		1	0		1	1	1	1	1	1
Detector Template												
Leading Detector (m)	15.2	0.0		15.2	0.0		7.5	7.5	7.5	7.5	7.5	7.5
Trailing Detector (m)	6.2	0.0		6.2	0.0		-1.5	-0.2	-1.5	-1.5	-1.5	-1.5
Detector 1 Position(m)	6.2	0.0		6.2	0.0		-1.5	-0.2	-1.5	-1.5	-1.5	-1.5
Detector 1 Size(m)	9.0	1.8		9.0	1.8		9.0	7.7	9.0	9.0	9.0	9.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases	6			2			8		8	4		4
Detector Phase	1	6		5	2		3	8	8	4	4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	7.0	35.0		7.0	35.0		7.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.0	43.0		11.0	43.0		11.0	41.0	41.0	41.0	41.0	41.0
Total Split (s)	12.0	69.0		17.0	74.0		12.0	54.0	54.0	42.0	42.0	42.0
Total Split (%)	8.6%	49.3%		12.1%	52.9%		8.6%	38.6%	38.6%	30.0%	30.0%	30.0%
Maximum Green (s)	8.0	61.5		13.0	66.5		8.0	46.5	46.5	34.5	34.5	34.5
Yellow Time (s)	3.0	5.0		3.0	5.0		3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	2.5		1.0	2.5		1.0	3.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.5		4.0	7.5		4.0	7.5	7.5	7.5	7.5	7.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		None	None	None	None	None	None
Walk Time (s)		7.0			7.0			7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		28.0			28.0			26.0	26.0	26.0	26.0	26.0
Pedestrian Calls (#/hr)		9			2			7	7	3	3	3
Act Effct Green (s)	80.2	69.7		86.2	76.6		45.3	41.8	41.8	29.8	29.8	29.8
Actuated g/C Ratio	0.57	0.50		0.62	0.55		0.32	0.30	0.30	0.21	0.21	0.21
v/c Ratio	0.14	0.66		0.56	0.87		1.24	0.34	0.07	0.21	0.85	0.79
Control Delay	7.7	14.0		40.9	23.6		178.4	39.2	0.3	45.6	70.9	46.0
Queue Delay	0.0	0.0		0.0	0.1		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.7	14.0		40.9	23.7		178.4	39.2	0.3	45.6	70.9	46.0
LOS	A	B		D	C		F	D	A	D	E	D
Approach Delay		13.9			24.5			103.4			57.5	
Approach LOS		B			C			F			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 74 (53%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green			
Natural Cycle: 130			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.24			
Intersection Signal Delay: 32.9		Intersection LOS: C	
Intersection Capacity Utilization 98.3%		ICU Level of Service F	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 3: Markland St./Markland St & Major Mackenzie Drive





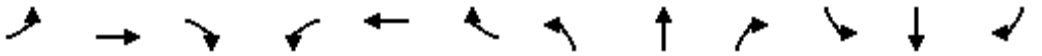
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	21	1588	111	2378	220	207	31	54	361	362
v/c Ratio	0.14	0.66	0.56	0.87	1.24	0.34	0.07	0.21	0.85	0.79
Control Delay	7.7	14.0	40.9	23.6	178.4	39.2	0.3	45.6	70.9	46.0
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.7	14.0	40.9	23.7	178.4	39.2	0.3	45.6	70.9	46.0
Queue Length 50th (m)	0.7	54.7	18.1	127.0	~50.5	44.2	0.0	12.3	95.6	62.6
Queue Length 95th (m)	m2.3	74.3	m27.1	#287.0	#107.2	63.6	0.0	23.9	127.9	97.3
Internal Link Dist (m)		371.3		225.0		191.0			205.3	
Turn Bay Length (m)	90.0		160.0		180.0		97.0	60.0		
Base Capacity (vph)	161	2388	243	2738	178	671	487	303	493	507
Starvation Cap Reductn	0	0	0	32	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.66	0.46	0.88	1.24	0.31	0.06	0.18	0.73	0.71

Intersection Summary

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

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	1159	429	111	2371	7	220	207	29	54	361	362
Future Volume (vph)	21	1159	429	111	2371	7	220	207	29	54	361	362
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
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	7.5		4.0	7.5		4.0	7.5	7.5	7.5	7.5	7.5
Lane Util. Factor	1.00	*0.85		1.00	*0.85		1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	0.99	1.00	1.00
Frt	1.00	0.96		1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1824	4713		1842	5004		1773	2022	1273	1863	2002	1664
Flt Permitted	0.06	1.00		0.07	1.00		0.16	1.00	1.00	0.63	1.00	1.00
Satd. Flow (perm)	110	4713		138	5004		291	2022	1273	1232	2002	1664
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00
Adj. Flow (vph)	21	1159	429	111	2371	7	220	207	31	54	361	362
RTOR Reduction (vph)	0	43	0	0	0	0	0	0	22	0	0	102
Lane Group Flow (vph)	21	1545	0	111	2378	0	220	207	9	54	361	260
Confl. Peds. (#/hr)	1		4	4		1			9	9		
Heavy Vehicles (%)	3%	5%	2%	2%	3%	0%	6%	0%	29%	0%	1%	1%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases	6			2			8		8	4		4
Actuated Green, G (s)	74.0	69.8		83.2	75.0		41.8	41.8	41.8	29.8	29.8	29.8
Effective Green, g (s)	74.0	69.8		83.2	75.0		41.8	41.8	41.8	29.8	29.8	29.8
Actuated g/C Ratio	0.53	0.50		0.59	0.54		0.30	0.30	0.30	0.21	0.21	0.21
Clearance Time (s)	4.0	7.5		4.0	7.5		4.0	7.5	7.5	7.5	7.5	7.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	109	2349		196	2680		171	603	380	262	426	354
v/s Ratio Prot	0.01	0.33		c0.04	c0.48		c0.07	0.10			0.18	
v/s Ratio Perm	0.10			0.30			c0.31		0.01	0.04		0.16
v/c Ratio	0.19	0.66		0.57	0.89		1.29	0.34	0.02	0.21	0.85	0.74
Uniform Delay, d1	27.8	26.2		19.4	28.8		45.6	38.4	34.7	45.4	52.9	51.4
Progression Factor	0.48	0.49		2.12	0.68		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8	1.3		2.7	3.6		165.7	0.3	0.0	0.4	14.4	7.7
Delay (s)	14.2	14.1		43.9	23.2		211.3	38.7	34.7	45.8	67.3	59.2
Level of Service	B	B		D	C		F	D	C	D	E	E
Approach Delay (s)		14.1			24.2			121.4			62.0	
Approach LOS		B			C			F			E	

Intersection Summary			
HCM 2000 Control Delay	35.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	98.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

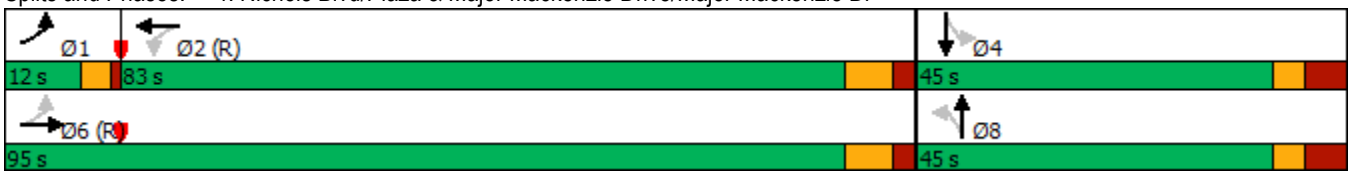
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	1206	28	28	2405	85	69	6	47	35	4	15
Future Volume (vph)	8	1206	28	28	2405	85	69	6	47	35	4	15
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.5	3.5	3.5
Storage Length (m)	55.0		100.0	45.0		45.0	70.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	*0.85	0.91	1.00	*0.85	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00	1.00		0.99	0.99		1.00	0.98	
Frt		0.997			0.995			0.866			0.880	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1879	4761	0	1620	5021	0	1879	1680	0	1879	1509	0
Flt Permitted	0.038			0.179			0.744			0.720		
Satd. Flow (perm)	75	4761	0	305	5021	0	1461	1680	0	1418	1509	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			5			50			16	
Link Speed (k/h)		70			70			40			40	
Link Distance (m)		249.0			251.3			209.6			112.0	
Travel Time (s)		12.8			12.9			18.9			10.1	
Confl. Peds. (#/hr)	2		3	3		2	6		4	4		6
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	8%	4%	16%	2%	5%	0%	0%	3%	0%	0%	17%
Adj. Flow (vph)	9	1283	30	30	2559	90	73	6	50	37	4	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	9	1313	0	30	2649	0	73	56	0	37	20	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.95	0.92	0.95	0.95	0.92	0.95	0.95	0.92	0.92	0.95	0.95	0.95
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		1	1		1	1	
Detector Template												
Leading Detector (m)	0.0	0.0		0.0	0.0		7.5	7.5		7.5	7.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		-1.5	-0.2		-1.5	-1.5	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		-1.5	-0.2		-1.5	-1.5	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		9.0	7.7		9.0	9.0	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2			8			4		
Detector Phase	1	6		2	2		8	8		4	4	

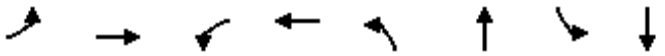
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	7.0	30.0		30.0	30.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.0	38.0		38.0	38.0		44.0	44.0		44.0	44.0	
Total Split (s)	12.0	95.0		83.0	83.0		45.0	45.0		45.0	45.0	
Total Split (%)	8.6%	67.9%		59.3%	59.3%		32.1%	32.1%		32.1%	32.1%	
Maximum Green (s)	8.0	87.5		75.5	75.5		37.0	37.0		37.0	37.0	
Yellow Time (s)	3.0	5.0		5.0	5.0		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	2.5		2.5	2.5		4.5	4.5		4.5	4.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	7.5		7.5	7.5		8.0	8.0		8.0	8.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)		7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		21.0		21.0	21.0		29.0	29.0		29.0	29.0	
Pedestrian Calls (#/hr)		3		2	2		4	4		6	6	
Act Effct Green (s)	111.3	107.8		105.6	105.6		16.7	16.7		16.7	16.7	
Actuated g/C Ratio	0.80	0.77		0.75	0.75		0.12	0.12		0.12	0.12	
v/c Ratio	0.06	0.36		0.13	0.70		0.42	0.23		0.22	0.10	
Control Delay	3.1	2.8		3.9	12.2		61.7	16.6		54.7	23.5	
Queue Delay	0.0	0.0		0.0	0.2		0.0	0.0		0.0	0.0	
Total Delay	3.1	2.8		3.9	12.4		61.7	16.6		54.7	23.5	
LOS	A	A		A	B		E	B		D	C	
Approach Delay		2.8			12.3			42.1			43.7	
Approach LOS		A			B			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 60 (43%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green			
Natural Cycle: 125			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 10.7		Intersection LOS: B	
Intersection Capacity Utilization 71.6%		ICU Level of Service C	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 4: Nichols Blvd/Plaza & Major Mackenzie Drive/Major Mackenzie Dr

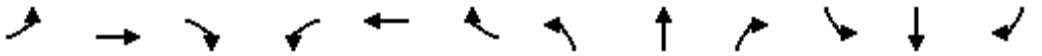




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	9	1313	30	2649	73	56	37	20
v/c Ratio	0.06	0.36	0.13	0.70	0.42	0.23	0.22	0.10
Control Delay	3.1	2.8	3.9	12.2	61.7	16.6	54.7	23.5
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Total Delay	3.1	2.8	3.9	12.4	61.7	16.6	54.7	23.5
Queue Length 50th (m)	0.1	9.8	0.8	67.0	19.7	1.6	9.8	1.0
Queue Length 95th (m)	m0.6	29.8	m1.0	m31.7	29.5	12.0	17.3	7.4
Internal Link Dist (m)		225.0		227.3		185.6		88.0
Turn Bay Length (m)	55.0		45.0		70.0		30.0	
Base Capacity (vph)	162	3667	230	3789	386	480	374	410
Starvation Cap Reductn	0	0	0	364	0	0	0	0
Spillback Cap Reductn	0	0	0	104	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.36	0.13	0.77	0.19	0.12	0.10	0.05

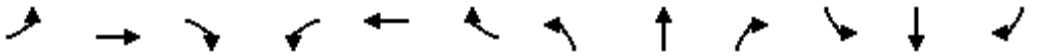
Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	1206	28	28	2405	85	69	6	47	35	4	15
Future Volume (vph)	8	1206	28	28	2405	85	69	6	47	35	4	15
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.5	3.5	3.5
Total Lost time (s)	4.0	7.5		7.5	7.5		8.0	8.0		8.0	8.0	
Lane Util. Factor	1.00	*0.85		1.00	*0.85		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	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.87		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1879	4759		1618	5021		1866	1680		1871	1509	
Flt Permitted	0.04	1.00		0.18	1.00		0.74	1.00		0.72	1.00	
Satd. Flow (perm)	74	4759		305	5021		1462	1680		1419	1509	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	9	1283	30	30	2559	90	73	6	50	37	4	16
RTOR Reduction (vph)	0	1	0	0	1	0	0	44	0	0	14	0
Lane Group Flow (vph)	9	1312	0	30	2648	0	73	12	0	37	6	0
Confl. Peds. (#/hr)	2		3	3		2	6		4	4		6
Heavy Vehicles (%)	0%	8%	4%	16%	2%	5%	0%	0%	3%	0%	0%	17%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	107.8	107.8		102.4	102.4		16.7	16.7		16.7	16.7	
Effective Green, g (s)	107.8	107.8		102.4	102.4		16.7	16.7		16.7	16.7	
Actuated g/C Ratio	0.77	0.77		0.73	0.73		0.12	0.12		0.12	0.12	
Clearance Time (s)	4.0	7.5		7.5	7.5		8.0	8.0		8.0	8.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	75	3664		223	3672		174	200		169	180	
v/s Ratio Prot	0.00	c0.28			c0.53			0.01			0.00	
v/s Ratio Perm	0.09			0.10			c0.05			0.03		
v/c Ratio	0.12	0.36		0.13	0.72		0.42	0.06		0.22	0.03	
Uniform Delay, d1	12.5	5.1		5.6	10.7		57.2	54.7		55.8	54.5	
Progression Factor	0.46	0.42		0.40	1.03		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.2		0.1	0.1		1.6	0.1		0.7	0.1	
Delay (s)	6.4	2.4		2.3	11.1		58.8	54.8		56.4	54.6	
Level of Service	A	A		A	B		E	D		E	D	
Approach Delay (s)		2.4			11.0			57.1			55.8	
Approach LOS		A			B			E			E	

Intersection Summary			
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



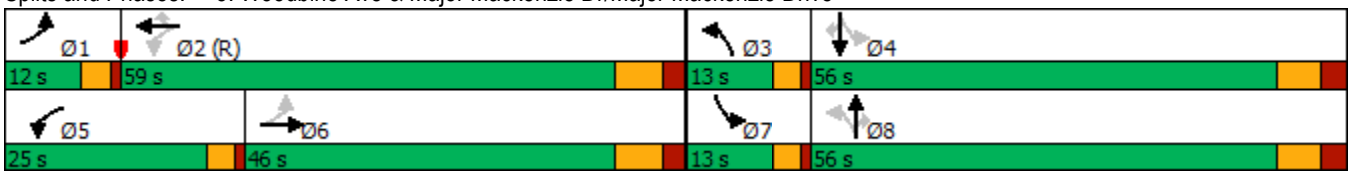
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	932	260	492	2127	70	288	738	343	130	1382	103
Future Volume (vph)	96	932	260	492	2127	70	288	738	343	130	1382	103
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.0	3.7	3.5	3.5	3.7	3.5	3.0	3.7	3.5	3.0	3.7	3.7
Storage Length (m)	120.0		80.0	300.0		120.0	150.0		70.0	165.0		70.0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	*0.85	0.91	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		1.00		1.00		0.98			0.99	1.00		0.98
Frt		0.967				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1722	4673	0	1842	3730	1681	1689	3730	1632	1673	3804	1592
Flt Permitted	0.104			0.094			0.082			0.239		
Satd. Flow (perm)	188	4673	0	182	3730	1655	146	3730	1609	421	3804	1564
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		45				97			343			129
Link Speed (k/h)		70			70			60			60	
Link Distance (m)		251.3			460.0			545.1			346.9	
Travel Time (s)		12.9			23.7			32.7			20.8	
Confl. Peds. (#/hr)	3		3	3		3	5		2	2		5
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
Heavy Vehicles (%)	3%	7%	4%	2%	3%	0%	5%	3%	3%	6%	1%	8%
Adj. Flow (vph)	96	932	260	492	2127	70	288	738	343	130	1382	103
Shared Lane Traffic (%)												
Lane Group Flow (vph)	96	1192	0	492	2127	70	288	738	343	130	1382	103
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.0			3.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.02	0.92	0.95	0.95	0.92	0.95	1.02	0.92	0.95	1.02	0.92	0.92
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	0		1	0	0	1	1	1	1	1	1
Detector Template												
Leading Detector (m)	15.2	0.0		15.2	0.0	0.0	15.2	7.5	7.5	15.2	7.5	7.5
Trailing Detector (m)	6.2	0.0		6.2	0.0	0.0	6.2	-1.5	-1.5	6.2	-1.5	-1.5
Detector 1 Position(m)	6.2	0.0		6.2	0.0	0.0	6.2	-1.5	-1.5	6.2	-1.5	-1.5
Detector 1 Size(m)	9.0	1.8		9.0	1.8	6.1	9.0	9.0	9.0	9.0	9.0	9.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2		2	8		8	4		4
Detector Phase	1	6		5	2	2	3	8	8	7	4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	7.0	36.0		7.0	36.0	36.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	44.0		11.0	44.0	44.0	11.0	45.0	45.0	11.0	45.0	45.0
Total Split (s)	12.0	46.0		25.0	59.0	59.0	13.0	56.0	56.0	13.0	56.0	56.0
Total Split (%)	8.6%	32.9%		17.9%	42.1%	42.1%	9.3%	40.0%	40.0%	9.3%	40.0%	40.0%
Maximum Green (s)	8.0	38.5		21.0	51.5	51.5	9.0	48.5	48.5	9.0	48.5	48.5
Yellow Time (s)	3.0	5.0		3.0	5.0	5.0	3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	1.0	2.5		1.0	2.5	2.5	1.0	3.0	3.0	1.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.5		4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		29.0			29.0	29.0		30.0	30.0		30.0	30.0
Pedestrian Calls (#/hr)		3			3	3		0	0		5	5
Act Effct Green (s)	49.8	38.5		67.0	51.7	51.7	61.3	48.8	48.8	60.7	48.5	48.5
Actuated g/C Ratio	0.36	0.28		0.48	0.37	0.37	0.44	0.35	0.35	0.43	0.35	0.35
v/c Ratio	0.63	0.91		1.46	1.54	0.10	1.78	0.57	0.44	0.50	1.05	0.16
Control Delay	52.9	56.3		256.5	280.8	2.5	396.1	39.2	5.0	29.2	82.9	3.0
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.9	56.3		256.5	280.8	2.5	396.1	39.2	5.0	29.2	82.9	3.0
LOS	D	E		F	F	A	F	D	A	C	F	A
Approach Delay		56.0			269.1			105.7			73.5	
Approach LOS		E			F			F			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 69 (49%), Referenced to phase 2:WBTL, Start of Green			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.78			
Intersection Signal Delay: 152.2		Intersection LOS: F	
Intersection Capacity Utilization 132.3%		ICU Level of Service H	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 5: Woodbine Ave & Major Mackenzie Dr/Major Mackenzie Drive



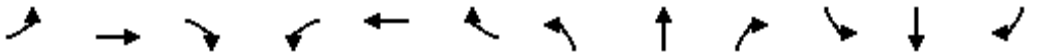


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	96	1192	492	2127	70	288	738	343	130	1382	103
v/c Ratio	0.63	0.91	1.46	1.54	0.10	1.78	0.57	0.44	0.50	1.05	0.16
Control Delay	52.9	56.3	256.5	280.8	2.5	396.1	39.2	5.0	29.2	82.9	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.9	56.3	256.5	280.8	2.5	396.1	39.2	5.0	29.2	82.9	3.0
Queue Length 50th (m)	15.9	121.6	~169.7	~435.6	0.0	~103.7	87.3	0.0	20.6	~218.6	0.0
Queue Length 95th (m)	#29.4	#119.6	#237.9	#476.1	5.1	#161.4	107.6	20.1	33.7	#261.2	7.4
Internal Link Dist (m)		227.3		436.0			521.1			322.9	
Turn Bay Length (m)	120.0		300.0		120.0	150.0		70.0	165.0		70.0
Base Capacity (vph)	154	1317	336	1377	672	162	1299	784	263	1317	626
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.91	1.46	1.54	0.10	1.78	0.57	0.44	0.49	1.05	0.16

Intersection Summary

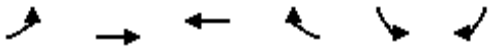
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



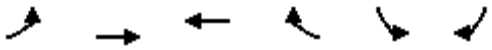
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	932	260	492	2127	70	288	738	343	130	1382	103
Future Volume (vph)	96	932	260	492	2127	70	288	738	343	130	1382	103
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.7	3.5	3.5	3.7	3.5	3.0	3.7	3.5	3.0	3.7	3.7
Total Lost time (s)	4.0	7.5		4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5
Lane Util. Factor	1.00	*0.85		1.00	0.95	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	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
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1722	4675		1842	3730	1655	1689	3730	1609	1673	3804	1564
Flt Permitted	0.10	1.00		0.09	1.00	1.00	0.08	1.00	1.00	0.24	1.00	1.00
Satd. Flow (perm)	188	4675		182	3730	1655	146	3730	1609	421	3804	1564
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)	96	932	260	492	2127	70	288	738	343	130	1382	103
RTOR Reduction (vph)	0	33	0	0	0	44	0	0	223	0	0	67
Lane Group Flow (vph)	96	1159	0	492	2127	26	288	738	120	130	1382	36
Confl. Peds. (#/hr)	3		3	3		3	5		2	2		5
Heavy Vehicles (%)	3%	7%	4%	2%	3%	0%	5%	3%	3%	6%	1%	8%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2		2	8		8	4		4
Actuated Green, G (s)	46.3	38.5		63.5	51.7	51.7	57.8	48.8	48.8	57.2	48.5	48.5
Effective Green, g (s)	46.3	38.5		63.5	51.7	51.7	57.8	48.8	48.8	57.2	48.5	48.5
Actuated g/C Ratio	0.33	0.28		0.45	0.37	0.37	0.41	0.35	0.35	0.41	0.35	0.35
Clearance Time (s)	4.0	7.5		4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	147	1285		331	1377	611	159	1300	560	249	1317	541
v/s Ratio Prot	0.04	0.25		c0.22	c0.57		c0.12	0.20		0.03	0.36	
v/s Ratio Perm	0.18			0.45		0.02	c0.63		0.07	0.18		0.02
v/c Ratio	0.65	0.90		1.49	1.54	0.04	1.81	0.57	0.21	0.52	1.05	0.07
Uniform Delay, d1	37.7	48.9		44.0	44.1	28.3	37.2	37.0	32.1	27.9	45.8	30.6
Progression Factor	1.41	0.98		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.6	10.1		234.4	248.8	0.1	388.8	0.6	0.2	2.0	38.8	0.1
Delay (s)	62.5	57.9		278.4	292.9	28.4	426.0	37.6	32.3	29.9	84.6	30.7
Level of Service	E	E		F	F	C	F	D	C	C	F	C
Approach Delay (s)		58.3			283.4			118.0			76.7	
Approach LOS		E			F			F			E	

Intersection Summary			
HCM 2000 Control Delay	161.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.70		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	132.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	17	342	150	85	435	234
Future Volume (vph)	17	342	150	85	435	234
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.5	3.7	3.7	3.7	3.5	3.7
Storage Length (m)	50.0			0.0	30.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.6				7.6	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.951			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1253	1983	1829	0	1860	1719
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1253	1983	1829	0	1860	1719
Link Speed (k/h)		50	50		40	
Link Distance (m)		238.8	229.3		191.9	
Travel Time (s)		17.2	16.5		17.3	
Confl. Peds. (#/hr)	1			1		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	50%	2%	8%	0%	1%	0%
Adj. Flow (vph)	18	364	160	90	463	249
Shared Lane Traffic (%)						
Lane Group Flow (vph)	18	364	250	0	463	249
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	4.9		4.9	
Two way Left Turn Lane						
Headway Factor	0.95	0.92	0.92	0.92	0.95	0.92
Turning Speed (k/h)	24			14	24	14
Sign Control		Stop	Stop		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 46.7%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	17	342	150	85	435	234
Future Volume (vph)	17	342	150	85	435	234
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	18	364	160	90	463	249

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total (vph)	18	364	250	463	249
Volume Left (vph)	18	0	0	463	0
Volume Right (vph)	0	0	90	0	249
Hadj (s)	1.35	0.03	-0.13	0.52	-0.70
Departure Headway (s)	8.5	7.1	6.9	7.1	5.9
Degree Utilization, x	0.04	0.72	0.48	0.91	0.41
Capacity (veh/h)	414	488	511	496	599
Control Delay (s)	10.6	25.2	16.1	46.7	11.6
Approach Delay (s)	24.6		16.1	34.4	
Approach LOS	C		C	D	

Intersection Summary			
Delay	28.2		
Level of Service	D		
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	273	401	45	339	44	86
Future Volume (vph)	273	401	45	339	44	86
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.7	3.7	3.5	3.7	3.7	3.7
Storage Length (m)		0.0	50.0		0.0	50.0
Storage Lanes		0	1		1	1
Taper Length (m)			2.5		2.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.920					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1824	0	1740	1872	1865	1669
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1824	0	1740	1872	1865	1669
Link Speed (k/h)	50			50	50	
Link Distance (m)	222.8			238.8	394.7	
Travel Time (s)	16.0			17.2	28.4	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	8%	8%	3%	3%
Adj. Flow (vph)	284	418	47	353	46	90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	702	0	47	353	46	90
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.92	0.92	0.95	0.92	0.92	0.92
Turning Speed (k/h)		14	24		24	14
Sign Control	Stop			Stop	Stop	

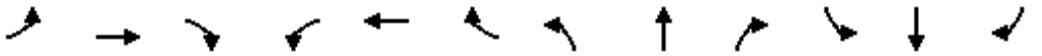
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	48.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	273	401	45	339	44	86
Future Volume (vph)	273	401	45	339	44	86
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	284	418	47	353	46	90

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2
Volume Total (vph)	702	47	353	46	90
Volume Left (vph)	0	47	0	46	0
Volume Right (vph)	418	0	0	0	90
Hadj (s)	-0.32	0.64	0.14	0.55	-0.65
Departure Headway (s)	5.0	6.3	5.8	7.7	6.5
Degree Utilization, x	0.97	0.08	0.57	0.10	0.16
Capacity (veh/h)	713	563	617	453	535
Control Delay (s)	49.3	8.7	15.0	10.3	9.5
Approach Delay (s)	49.3	14.3		9.8	
Approach LOS	E	B		A	

Intersection Summary				
Delay	33.6			
Level of Service	D			
Intersection Capacity Utilization	48.7%	ICU Level of Service	A	
Analysis Period (min)	15			



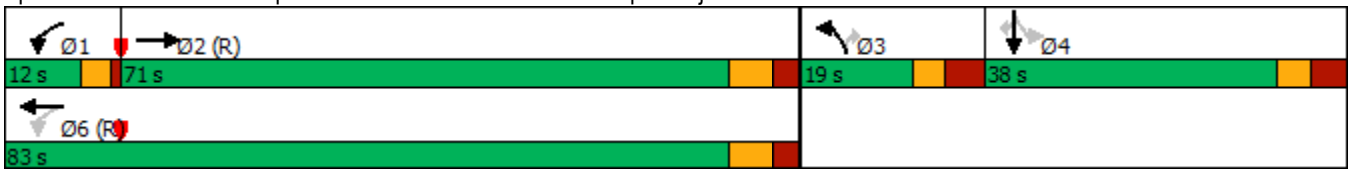
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1782	6	23	1498	0	33	0	44	535	15	486
Future Volume (vph)	0	1782	6	23	1498	0	33	0	44	535	15	486
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.7	3.7	3.5	3.5	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Storage Length (m)	0.0		95.0	55.0		0.0	0.0		0.0	0.0		170.0
Storage Lanes	0		0	1		0	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	*0.85	0.91	1.00	*0.85	1.00	1.00	1.00	1.00	0.95	0.91	0.95
Ped Bike Factor							1.00				0.99	0.99
Frt									0.850		0.931	0.850
Flt Protected				0.950			0.950			0.950	0.976	
Satd. Flow (prot)	0	5101	0	1566	5056	0	1671	0	1457	1825	1662	1633
Flt Permitted				0.053			0.950			0.950	0.976	
Satd. Flow (perm)	0	5101	0	87	5056	0	1669	0	1457	1825	1662	1611
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)									125		28	125
Link Speed (k/h)		70			70			40			60	
Link Distance (m)		369.9			313.7			147.8			449.4	
Travel Time (s)		19.0			16.1			13.3			27.0	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	2%	1%	29%	20%	2%	2%	15%	2%	18%	0%	0%	0%
Adj. Flow (vph)	0	1818	6	23	1529	0	34	0	45	546	15	496
Shared Lane Traffic (%)										33%		33%
Lane Group Flow (vph)	0	1824	0	23	1529	0	34	0	45	366	359	332
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.92	0.92	0.95	0.95	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors		0		1	0		1		1	1	1	1
Detector Template												
Leading Detector (m)		0.0		15.2	0.0		7.5		7.5	7.5	7.5	7.5
Trailing Detector (m)		0.0		6.2	0.0		-1.5		-1.5	-1.5	-1.5	-1.5
Detector 1 Position(m)		0.0		6.2	0.0		-1.5		-1.5	-1.5	-1.5	-1.5
Detector 1 Size(m)		1.8		9.0	1.8		9.0		9.0	9.0	9.0	9.0
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)		0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)		0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Turn Type		NA		pm+pt	NA		Prot		Perm	Perm	NA	Perm
Protected Phases		2		1	6		3				4	
Permitted Phases				6					3	4		4
Detector Phase		2		1	6		3		3	4	4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)		20.0		7.0	20.0		10.0		10.0	15.0	15.0	15.0
Minimum Split (s)		38.0		11.0	38.0		18.0		18.0	36.5	36.5	36.5
Total Split (s)		71.0		12.0	83.0		19.0		19.0	38.0	38.0	38.0
Total Split (%)		50.7%		8.6%	59.3%		13.6%		13.6%	27.1%	27.1%	27.1%
Maximum Green (s)		63.5		8.0	75.5		11.5		11.5	30.5	30.5	30.5
Yellow Time (s)		4.5		3.0	4.5		3.5		3.5	3.5	3.5	3.5
All-Red Time (s)		3.0		1.0	3.0		4.0		4.0	4.0	4.0	4.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)		7.5		4.0	7.5		7.5		7.5	7.5	7.5	7.5
Lead/Lag		Lag		Lead			Lead		Lead	Lag	Lag	Lag
Lead-Lag Optimize?		Yes		Yes			Yes		Yes	Yes	Yes	Yes
Vehicle Extension (s)		4.0		3.0	4.0		3.0		3.0	3.0	3.0	3.0
Recall Mode		C-Min		None	C-Min		None		None	None	None	None
Walk Time (s)		7.0			7.0					7.0	7.0	7.0
Flash Dont Walk (s)		23.0			23.0					22.0	22.0	22.0
Pedestrian Calls (#/hr)		0			0					1	1	1
Act Effct Green (s)		74.2		84.3	80.8		10.3		10.3	29.9	29.9	29.9
Actuated g/C Ratio		0.53		0.60	0.58		0.07		0.07	0.21	0.21	0.21
v/c Ratio		0.68		0.18	0.52		0.28		0.20	0.94	0.95	0.75
Control Delay		27.7		18.7	24.3		67.2		2.0	87.1	86.4	43.3
Queue Delay		0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Total Delay		27.7		18.7	24.3		67.2		2.0	87.1	86.4	43.3
LOS		C		B	C		E		A	F	F	D
Approach Delay		27.7			24.2			30.1			73.1	
Approach LOS		C			C			C			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 24 (17%), Referenced to phase 2:EBT and 6:WBTL, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.95			
Intersection Signal Delay: 37.2		Intersection LOS: D	
Intersection Capacity Utilization 79.3%		ICU Level of Service D	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 1: Carpool Lot/HWY 404 Southbound Ramp & Major Mackenzie Drive

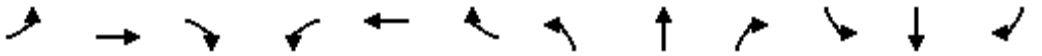




Lane Group	EBT	WBL	WBT	NBL	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1824	23	1529	34	45	366	359	332
v/c Ratio	0.68	0.18	0.52	0.28	0.20	0.94	0.95	0.75
Control Delay	27.7	18.7	24.3	67.2	2.0	87.1	86.4	43.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.7	18.7	24.3	67.2	2.0	87.1	86.4	43.3
Queue Length 50th (m)	159.8	2.8	93.7	9.1	0.0	105.2	100.9	57.8
Queue Length 95th (m)	184.2	m2.3	m73.5	20.3	0.0	#165.7	#165.9	95.7
Internal Link Dist (m)	345.9		289.7				425.4	
Turn Bay Length (m)		55.0						170.0
Base Capacity (vph)	2702	136	2919	137	234	397	383	448
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.17	0.52	0.25	0.19	0.92	0.94	0.74

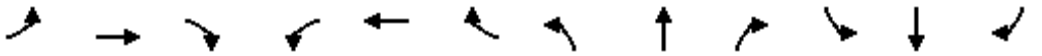
Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1782	6	23	1498	0	33	0	44	535	15	486
Future Volume (vph)	0	1782	6	23	1498	0	33	0	44	535	15	486
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.7	3.7	3.5	3.5	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Total Lost time (s)		7.5		4.0	7.5		7.5		7.5	7.5	7.5	7.5
Lane Util. Factor		*0.85		1.00	*0.85		1.00		1.00	0.95	0.91	0.95
Frpb, ped/bikes		1.00		1.00	1.00		1.00		1.00	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
Frt		1.00		1.00	1.00		1.00		0.85	1.00	0.93	0.85
Flt Protected		1.00		0.95	1.00		0.95		1.00	0.95	0.98	1.00
Satd. Flow (prot)		5098		1566	5056		1671		1457	1825	1662	1611
Flt Permitted		1.00		0.05	1.00		0.95		1.00	0.95	0.98	1.00
Satd. Flow (perm)		5098		88	5056		1671		1457	1825	1662	1611
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1818	6	23	1529	0	34	0	45	546	15	496
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	42	0	22	98
Lane Group Flow (vph)	0	1824	0	23	1529	0	34	0	3	366	337	234
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	2%	1%	29%	20%	2%	2%	15%	2%	18%	0%	0%	0%
Turn Type		NA		pm+pt	NA		Prot		Perm	Perm	NA	Perm
Protected Phases		2		1	6		3				4	
Permitted Phases				6					3	4		4
Actuated Green, G (s)		71.0		79.3	79.3		8.3		8.3	29.9	29.9	29.9
Effective Green, g (s)		71.0		79.3	79.3		8.3		8.3	29.9	29.9	29.9
Actuated g/C Ratio		0.51		0.57	0.57		0.06		0.06	0.21	0.21	0.21
Clearance Time (s)		7.5		4.0	7.5		7.5		7.5	7.5	7.5	7.5
Vehicle Extension (s)		4.0		3.0	4.0		3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		2585		95	2863		99		86	389	354	344
v/s Ratio Prot		c0.36		0.01	c0.30		c0.02					
v/s Ratio Perm				0.13					0.00	0.20	0.20	0.15
v/c Ratio		0.71		0.24	0.53		0.34		0.03	0.94	0.95	0.68
Uniform Delay, d1		26.5		20.5	18.9		63.2		62.1	54.2	54.3	50.6
Progression Factor		1.00		1.38	1.28		1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2		1.6		0.1	0.1		2.1		0.1	30.8	35.2	5.3
Delay (s)		28.1		28.5	24.1		65.3		62.2	85.0	89.6	55.9
Level of Service		C		C	C		E		E	F	F	E
Approach Delay (s)		28.1			24.2			63.5			77.4	
Approach LOS		C			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	38.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	26.5
Intersection Capacity Utilization	79.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

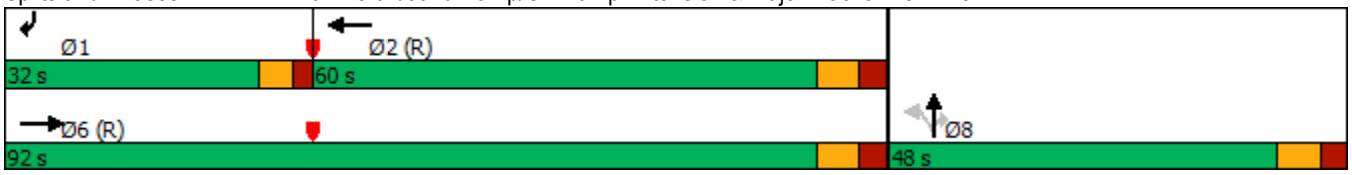


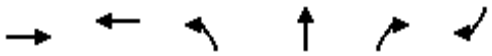
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1989	0	0	2172	17	543	380	281	0	0	395
Future Volume (vph)	0	1989	0	0	2172	17	543	380	281	0	0	395
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		180.0	0.0		0.0
Storage Lanes	0		0	0		0	1		1	0		1
Taper Length (m)	7.6			7.6			7.6			2.5		
Lane Util. Factor	1.00	*0.85	1.00	1.00	*0.85	0.91	0.95	0.91	0.95	1.00	1.00	1.00
Frt					0.999			0.991	0.850			0.865
Flt Protected							0.950	0.992				
Satd. Flow (prot)	0	5106	0	0	5050	0	1789	1788	1617	0	0	1749
Flt Permitted							0.950	0.992				
Satd. Flow (perm)	0	5106	0	0	5050	0	1789	1788	1617	0	0	1749
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)					1			2	78			
Link Speed (k/h)		70			70			60			50	
Link Distance (m)		313.7			395.3			470.8			394.7	
Travel Time (s)		16.1			20.3			28.2			28.4	
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
Heavy Vehicles (%)	2%	1%	2%	2%	2%	2%	2%	1%	1%	2%	2%	0%
Adj. Flow (vph)	0	1989	0	0	2172	17	543	380	281	0	0	395
Shared Lane Traffic (%)							14%		10%			
Lane Group Flow (vph)	0	1989	0	0	2189	0	467	484	253	0	0	395
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			1.6	
Two way Left Turn Lane												
Headway Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Turning Speed (k/h)	97		14	24		97	24		14	97		97
Number of Detectors		0			0		1	1	1			1
Detector Template												
Leading Detector (m)		0.0			0.0		7.5	7.5	7.5			7.5
Trailing Detector (m)		0.0			0.0		-1.5	-1.5	-1.5			-1.5
Detector 1 Position(m)		0.0			0.0		-1.5	-1.5	-1.5			-1.5
Detector 1 Size(m)		1.8			1.8		9.0	9.0	9.0			9.0
Detector 1 Type		Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0		0.0	0.0	0.0			0.0
Detector 1 Queue (s)		0.0			0.0		0.0	0.0	0.0			0.0
Detector 1 Delay (s)		0.0			0.0		0.0	0.0	0.0			0.0
Turn Type		NA			NA		Perm	NA	Perm			Prot
Protected Phases		6			2			8				1
Permitted Phases							8		8			
Detector Phase		6			2		8	8	8			1
Switch Phase												
Minimum Initial (s)		20.0			20.0		10.0	10.0	10.0			7.0
Minimum Split (s)		37.5			44.5		47.5	47.5	47.5			16.5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (s)		92.0			60.0		48.0	48.0	48.0			32.0
Total Split (%)		65.7%			42.9%		34.3%	34.3%	34.3%			22.9%
Maximum Green (s)		84.5			52.5		40.5	40.5	40.5			26.5
Yellow Time (s)		4.5			4.5		4.5	4.5	4.5			3.5
All-Red Time (s)		3.0			3.0		3.0	3.0	3.0			2.0
Lost Time Adjust (s)		0.0			0.0		0.0	0.0	0.0			0.0
Total Lost Time (s)		7.5			7.5		7.5	7.5	7.5			5.5
Lead/Lag					Lag							Lead
Lead-Lag Optimize?												
Vehicle Extension (s)		4.0			4.0		3.0	3.0	3.0			3.0
Recall Mode		C-Max			C-Max		None	None	None			None
Walk Time (s)		7.0			7.0		7.0	7.0	7.0			
Flash Dont Walk (s)		23.0			30.0		33.0	33.0	33.0			
Pedestrian Calls (#/hr)		0			0		0	0	0			
Act Effct Green (s)		85.3			53.3		39.7	39.7	39.7			26.5
Actuated g/C Ratio		0.61			0.38		0.28	0.28	0.28			0.19
v/c Ratio		0.64			1.14		0.92	0.95	0.49			1.19
Control Delay		9.6			91.5		73.3	78.8	31.8			160.7
Queue Delay		0.0			0.0		0.0	0.0	0.0			0.0
Total Delay		9.6			91.5		73.3	78.8	31.8			160.7
LOS		A			F		E	E	C			F
Approach Delay		9.6			91.5			66.8			160.7	
Approach LOS		A			F			E			F	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 40 (29%), Referenced to phase 2:WBT and 6:EBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.19			
Intersection Signal Delay: 62.9		Intersection LOS: E	
Intersection Capacity Utilization 107.0%		ICU Level of Service G	
Analysis Period (min) 15			
* User Entered Value			

Splits and Phases: 2: HWY 404 Northbound Ramp/Off-Ramp Extension & Major Mackenzie Drive





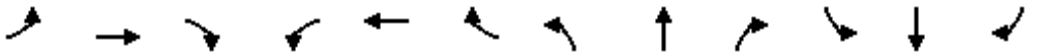
Lane Group	EBT	WBT	NBL	NBT	NBR	SBR
Lane Group Flow (vph)	1989	2189	467	484	253	395
v/c Ratio	0.64	1.14	0.92	0.95	0.49	1.19
Control Delay	9.6	91.5	73.3	78.8	31.8	160.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.6	91.5	73.3	78.8	31.8	160.7
Queue Length 50th (m)	60.5	~274.1	131.3	143.2	41.8	~131.8
Queue Length 95th (m)	67.4	m#268.2	#195.4	#215.9	69.8	#195.0
Internal Link Dist (m)	289.7	371.3		446.8		
Turn Bay Length (m)					180.0	
Base Capacity (vph)	3111	1924	517	518	523	331
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.64	1.14	0.90	0.93	0.48	1.19

Intersection Summary

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

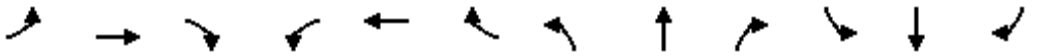
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1989	0	0	2172	17	543	380	281	0	0	395
Future Volume (vph)	0	1989	0	0	2172	17	543	380	281	0	0	395
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Total Lost time (s)		7.5			7.5		7.5	7.5	7.5			5.5
Lane Util. Factor		*0.85			*0.85		0.95	0.91	0.95			1.00
Frt		1.00			1.00		1.00	0.99	0.85			0.86
Flt Protected		1.00			1.00		0.95	0.99	1.00			1.00
Satd. Flow (prot)		5106			5050		1789	1789	1617			1749
Flt Permitted		1.00			1.00		0.95	0.99	1.00			1.00
Satd. Flow (perm)		5106			5050		1789	1789	1617			1749
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)	0	1989	0	0	2172	17	543	380	281	0	0	395
RTOR Reduction (vph)	0	0	0	0	1	0	0	1	56	0	0	0
Lane Group Flow (vph)	0	1989	0	0	2188	0	467	483	197	0	0	395
Heavy Vehicles (%)	2%	1%	2%	2%	2%	2%	2%	1%	1%	2%	2%	0%
Turn Type		NA			NA		Perm	NA	Perm			Prot
Protected Phases		6			2			8				1
Permitted Phases							8		8			
Actuated Green, G (s)		85.3			53.3		39.7	39.7	39.7			26.5
Effective Green, g (s)		85.3			53.3		39.7	39.7	39.7			26.5
Actuated g/C Ratio		0.61			0.38		0.28	0.28	0.28			0.19
Clearance Time (s)		7.5			7.5		7.5	7.5	7.5			5.5
Vehicle Extension (s)		4.0			4.0		3.0	3.0	3.0			3.0
Lane Grp Cap (vph)		3111			1922		507	507	458			331
v/s Ratio Prot		0.39			c0.43							c0.23
v/s Ratio Perm							0.26	0.27	0.12			
v/c Ratio		0.64			1.14		0.92	0.95	0.43			1.19
Uniform Delay, d1		17.5			43.4		48.6	49.2	40.9			56.8
Progression Factor		0.50			0.61		1.00	1.00	1.00			1.00
Incremental Delay, d2		0.7			64.7		22.2	28.1	0.7			112.9
Delay (s)		9.5			91.2		70.9	77.3	41.6			169.6
Level of Service		A			F		E	E	D			F
Approach Delay (s)		9.5			91.2			67.3			169.6	
Approach LOS		A			F			E			F	

Intersection Summary			
HCM 2000 Control Delay	63.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	107.0%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



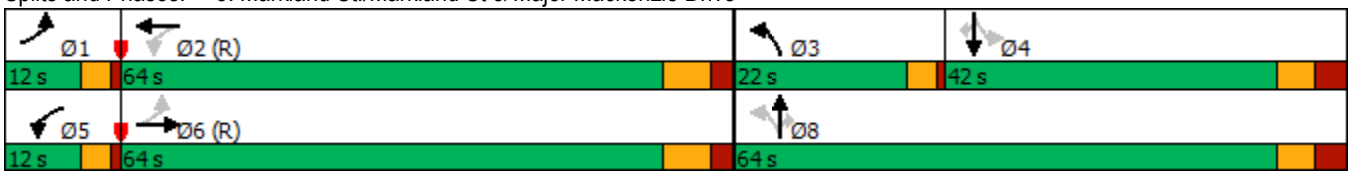
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	2002	202	29	1998	35	480	379	101	45	339	77
Future Volume (vph)	66	2002	202	29	1998	35	480	379	101	45	339	77
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	90.0		100.0	160.0		187.0	180.0		97.0	60.0		0.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	*0.85	0.91	1.00	*0.85	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00				0.98	0.99		
Frt		0.986			0.997				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1879	5021	0	1479	5040	0	1860	2022	1648	1824	2022	1681
Flt Permitted	0.060			0.062			0.170			0.537		
Satd. Flow (perm)	119	5021	0	97	5040	0	333	2022	1610	1024	2022	1681
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13			2				101			97
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		395.3			249.0			215.0			229.3	
Travel Time (s)		20.3			12.8			15.5			16.5	
Confl. Peds. (#/hr)	1		4	4		1			9	9		
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
Heavy Vehicles (%)	0%	1%	1%	27%	2%	0%	1%	0%	2%	3%	0%	0%
Adj. Flow (vph)	66	2002	202	29	1998	35	480	379	101	45	339	77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	66	2204	0	29	2033	0	480	379	101	45	339	77
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.95	0.92	0.95	0.95	0.92	0.95	0.95	0.92	0.95	0.95	0.92	0.95
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	0		1	0		1	1	1	1	1	1
Detector Template												
Leading Detector (m)	15.2	0.0		15.2	0.0		7.5	7.5	7.5	7.5	7.5	7.5
Trailing Detector (m)	6.2	0.0		6.2	0.0		-1.5	-0.2	-1.5	-1.5	-1.5	-1.5
Detector 1 Position(m)	6.2	0.0		6.2	0.0		-1.5	-0.2	-1.5	-1.5	-1.5	-1.5
Detector 1 Size(m)	9.0	1.8		9.0	1.8		9.0	7.7	9.0	9.0	9.0	9.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases	6			2			8		8	4		4
Detector Phase	1	6		5	2		3	8	8	4	4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	7.0	35.0		7.0	35.0		7.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.0	43.0		11.0	43.0		11.0	41.0	41.0	41.0	41.0	41.0
Total Split (s)	12.0	64.0		12.0	64.0		22.0	64.0	64.0	42.0	42.0	42.0
Total Split (%)	8.6%	45.7%		8.6%	45.7%		15.7%	45.7%	45.7%	30.0%	30.0%	30.0%
Maximum Green (s)	8.0	56.5		8.0	56.5		18.0	56.5	56.5	34.5	34.5	34.5
Yellow Time (s)	3.0	5.0		3.0	5.0		3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	2.5		1.0	2.5		1.0	3.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.5		4.0	7.5		4.0	7.5	7.5	7.5	7.5	7.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		None	None	None	None	None	None
Walk Time (s)		7.0			7.0			7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		28.0			28.0			26.0	26.0	26.0	26.0	26.0
Pedestrian Calls (#/hr)		4			1			0	0	0	0	0
Act Effct Green (s)	76.1	67.9		74.8	65.4		53.8	50.3	50.3	28.3	28.3	28.3
Actuated g/C Ratio	0.54	0.48		0.53	0.47		0.38	0.36	0.36	0.20	0.20	0.20
v/c Ratio	0.42	0.90		0.24	0.86		1.48	0.52	0.16	0.22	0.83	0.18
Control Delay	31.1	33.0		31.5	50.5		260.9	37.6	5.3	47.3	70.6	5.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.1	33.0		31.5	50.5		260.9	37.6	5.3	47.3	70.6	5.2
LOS	C	C		C	D		F	D	A	D	E	A
Approach Delay		33.0			50.3			145.8			57.4	
Approach LOS		C			D			F			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 23 (16%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.48			
Intersection Signal Delay: 60.0		Intersection LOS: E	
Intersection Capacity Utilization 108.3%		ICU Level of Service G	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 3: Markland St./Markland St & Major Mackenzie Drive





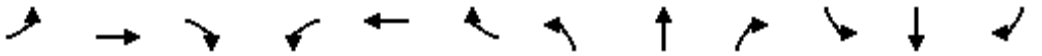
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	66	2204	29	2033	480	379	101	45	339	77
v/c Ratio	0.42	0.90	0.24	0.86	1.48	0.52	0.16	0.22	0.83	0.18
Control Delay	31.1	33.0	31.5	50.5	260.9	37.6	5.3	47.3	70.6	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.1	33.0	31.5	50.5	260.9	37.6	5.3	47.3	70.6	5.2
Queue Length 50th (m)	6.7	159.9	5.2	232.0	~158.0	81.9	0.0	10.5	90.4	0.0
Queue Length 95th (m)	m16.6	#292.3	m8.0	#253.8	#218.2	104.9	11.3	21.0	119.5	8.2
Internal Link Dist (m)		371.3		225.0		191.0			205.3	
Turn Bay Length (m)	90.0		160.0		180.0		97.0	60.0		
Base Capacity (vph)	165	2441	131	2357	324	816	709	252	498	487
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.90	0.22	0.86	1.48	0.46	0.14	0.18	0.68	0.16

Intersection Summary

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

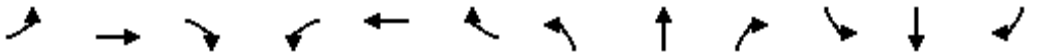
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	2002	202	29	1998	35	480	379	101	45	339	77
Future Volume (vph)	66	2002	202	29	1998	35	480	379	101	45	339	77
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
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	7.5		4.0	7.5		4.0	7.5	7.5	7.5	7.5	7.5
Lane Util. Factor	1.00	*0.85		1.00	*0.85		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	0.98	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	0.99	1.00	1.00
Frt	1.00	0.99		1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1879	5023		1479	5042		1860	2022	1610	1812	2022	1681
Flt Permitted	0.06	1.00		0.06	1.00		0.17	1.00	1.00	0.54	1.00	1.00
Satd. Flow (perm)	119	5023		96	5042		334	2022	1610	1024	2022	1681
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)	66	2002	202	29	1998	35	480	379	101	45	339	77
RTOR Reduction (vph)	0	7	0	0	1	0	0	0	65	0	0	61
Lane Group Flow (vph)	66	2197	0	29	2032	0	480	379	36	45	339	16
Confl. Peds. (#/hr)	1		4	4		1			9	9		
Heavy Vehicles (%)	0%	1%	1%	27%	2%	0%	1%	0%	2%	3%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases	6			2			8		8	4		4
Actuated Green, G (s)	72.4	66.3		69.0	64.6		50.3	50.3	50.3	28.3	28.3	28.3
Effective Green, g (s)	72.4	66.3		69.0	64.6		50.3	50.3	50.3	28.3	28.3	28.3
Actuated g/C Ratio	0.52	0.47		0.49	0.46		0.36	0.36	0.36	0.20	0.20	0.20
Clearance Time (s)	4.0	7.5		4.0	7.5		4.0	7.5	7.5	7.5	7.5	7.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	138	2378		90	2326		316	726	578	206	408	339
v/s Ratio Prot	c0.02	c0.44		0.01	0.40		c0.20	0.19			0.17	
v/s Ratio Perm	0.23			0.15			c0.35		0.02	0.04		0.01
v/c Ratio	0.48	0.92		0.32	0.87		1.52	0.52	0.06	0.22	0.83	0.05
Uniform Delay, d1	28.6	34.5		31.1	34.0		37.5	35.4	29.4	46.6	53.6	45.0
Progression Factor	1.46	0.81		1.78	1.38		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.0	6.1		1.5	3.7		249.2	0.7	0.0	0.5	13.4	0.1
Delay (s)	43.7	34.0		56.7	50.6		286.7	36.1	29.4	47.2	67.0	45.0
Level of Service	D	C		E	D		F	D	C	D	E	D
Approach Delay (s)		34.2			50.7			160.7			61.4	
Approach LOS		C			D			F			E	

Intersection Summary			
HCM 2000 Control Delay	63.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	108.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



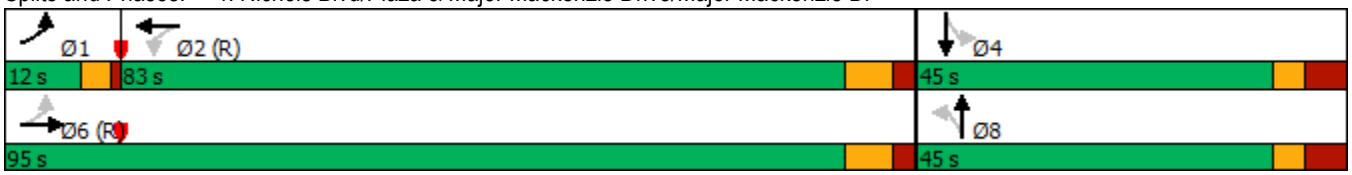
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	1995	76	30	1963	225	48	12	22	164	22	51
Future Volume (vph)	77	1995	76	30	1963	225	48	12	22	164	22	51
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.5	3.5	3.5
Storage Length (m)	55.0		100.0	45.0		45.0	70.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	*0.85	0.91	1.00	*0.85	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00	1.00		1.00	0.99		0.99	0.99	
Frt		0.994			0.985			0.903			0.895	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1842	5071	0	1879	4963	0	1879	1804	0	1842	1751	0
Flt Permitted	0.043			0.060			0.709			0.735		
Satd. Flow (perm)	83	5071	0	119	4963	0	1398	1804	0	1416	1751	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			20			12			52	
Link Speed (k/h)		70			70			40			40	
Link Distance (m)		249.0			251.3			209.6			112.0	
Travel Time (s)		12.8			12.9			18.9			10.1	
Confl. Peds. (#/hr)	9		4	4		9	3		6	6		3
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	2%	1%	0%	0%	2%	1%	0%	0%	0%	2%	0%	0%
Adj. Flow (vph)	79	2036	78	31	2003	230	49	12	22	167	22	52
Shared Lane Traffic (%)												
Lane Group Flow (vph)	79	2114	0	31	2233	0	49	34	0	167	74	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.95	0.92	0.95	0.95	0.92	0.95	0.95	0.92	0.92	0.95	0.95	0.95
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		1	1		1	1	
Detector Template												
Leading Detector (m)	0.0	0.0		0.0	0.0		7.5	7.5		7.5	7.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		-1.5	-0.2		-1.5	-1.5	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		-1.5	-0.2		-1.5	-1.5	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		9.0	7.7		9.0	9.0	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2			8			4		
Detector Phase	1	6		2	2		8	8		4	4	

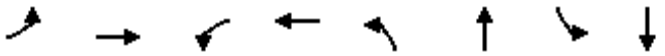
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	7.0	30.0		30.0	30.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.0	38.0		38.0	38.0		44.0	44.0		44.0	44.0	
Total Split (s)	12.0	95.0		83.0	83.0		45.0	45.0		45.0	45.0	
Total Split (%)	8.6%	67.9%		59.3%	59.3%		32.1%	32.1%		32.1%	32.1%	
Maximum Green (s)	8.0	87.5		75.5	75.5		37.0	37.0		37.0	37.0	
Yellow Time (s)	3.0	5.0		5.0	5.0		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	2.5		2.5	2.5		4.5	4.5		4.5	4.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	7.5		7.5	7.5		8.0	8.0		8.0	8.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)		7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		21.0		21.0	21.0		29.0	29.0		29.0	29.0	
Pedestrian Calls (#/hr)		4		9	9		6	6		3	3	
Act Effct Green (s)	104.9	101.4		89.7	89.7		23.1	23.1		23.1	23.1	
Actuated g/C Ratio	0.75	0.72		0.64	0.64		0.16	0.16		0.16	0.16	
v/c Ratio	0.50	0.58		0.41	0.70		0.21	0.11		0.72	0.22	
Control Delay	49.8	2.0		13.2	8.9		49.4	33.2		70.9	18.9	
Queue Delay	0.0	0.5		0.0	0.1		0.0	0.0		0.0	0.0	
Total Delay	49.8	2.4		13.2	9.0		49.4	33.2		70.9	18.9	
LOS	D	A		B	A		D	C		E	B	
Approach Delay		4.1			9.1			42.8			55.0	
Approach LOS		A			A			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 44 (31%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 9.7		Intersection LOS: A	
Intersection Capacity Utilization 90.4%		ICU Level of Service E	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 4: Nichols Blvd/Plaza & Major Mackenzie Drive/Major Mackenzie Dr

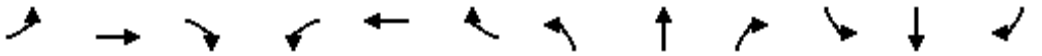




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	79	2114	31	2233	49	34	167	74
v/c Ratio	0.50	0.58	0.41	0.70	0.21	0.11	0.72	0.22
Control Delay	49.8	2.0	13.2	8.9	49.4	33.2	70.9	18.9
Queue Delay	0.0	0.5	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	49.8	2.4	13.2	9.0	49.4	33.2	70.9	18.9
Queue Length 50th (m)	10.5	9.1	2.3	72.5	12.0	5.3	44.8	5.3
Queue Length 95th (m)	m13.7	11.2	m2.9	m75.4	21.3	13.5	62.2	17.1
Internal Link Dist (m)		225.0		227.3		185.6		88.0
Turn Bay Length (m)	55.0		45.0		70.0		30.0	
Base Capacity (vph)	166	3674	76	3187	369	485	374	501
Starvation Cap Reductn	0	945	0	197	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.77	0.41	0.75	0.13	0.07	0.45	0.15

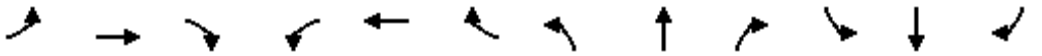
Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	1995	76	30	1963	225	48	12	22	164	22	51
Future Volume (vph)	77	1995	76	30	1963	225	48	12	22	164	22	51
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.5	3.5	3.5
Total Lost time (s)	4.0	7.5		7.5	7.5		8.0	8.0		8.0	8.0	
Lane Util. Factor	1.00	*0.85		1.00	*0.85		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	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.90		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)	1842	5074		1878	4961		1873	1804		1830	1750	
Flt Permitted	0.04	1.00		0.06	1.00		0.71	1.00		0.73	1.00	
Satd. Flow (perm)	83	5074		119	4961		1397	1804		1416	1750	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	79	2036	78	31	2003	230	49	12	22	167	22	52
RTOR Reduction (vph)	0	2	0	0	7	0	0	10	0	0	43	0
Lane Group Flow (vph)	79	2112	0	31	2226	0	49	24	0	167	31	0
Confl. Peds. (#/hr)	9		4	4		9	3		6	6		3
Heavy Vehicles (%)	2%	1%	0%	0%	2%	1%	0%	0%	0%	2%	0%	0%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	101.4	101.4		89.7	89.7		23.1	23.1		23.1	23.1	
Effective Green, g (s)	101.4	101.4		89.7	89.7		23.1	23.1		23.1	23.1	
Actuated g/C Ratio	0.72	0.72		0.64	0.64		0.17	0.17		0.17	0.17	
Clearance Time (s)	4.0	7.5		7.5	7.5		8.0	8.0		8.0	8.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	156	3675		76	3178		230	297		233	288	
v/s Ratio Prot	0.03	c0.42			c0.45			0.01			0.02	
v/s Ratio Perm	0.34			0.26			0.04			c0.12		
v/c Ratio	0.51	0.57		0.41	0.70		0.21	0.08		0.72	0.11	
Uniform Delay, d1	19.6	9.1		12.2	16.4		50.6	49.5		55.4	49.7	
Progression Factor	2.65	0.16		0.53	0.49		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.4	0.3		1.5	0.1		0.5	0.1		10.0	0.2	
Delay (s)	53.4	1.8		7.9	8.2		51.0	49.6		65.4	49.8	
Level of Service	D	A		A	A		D	D		E	D	
Approach Delay (s)		3.7			8.2			50.4			60.6	
Approach LOS		A			A			D			E	

Intersection Summary			
HCM 2000 Control Delay	9.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	90.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



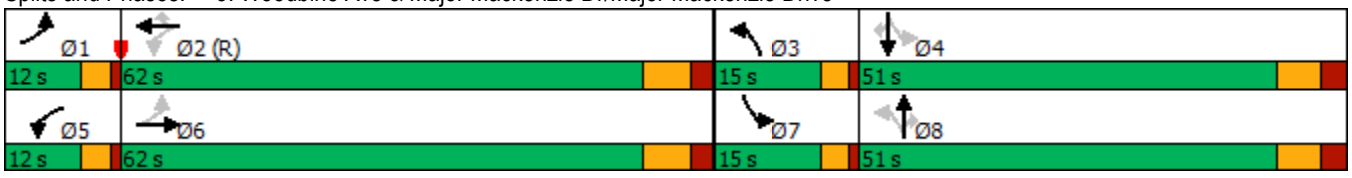
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	108	1820	253	208	1487	134	665	1112	673	143	409	66
Future Volume (vph)	108	1820	253	208	1487	134	665	1112	673	143	409	66
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.0	3.7	3.5	3.5	3.7	3.5	3.0	3.7	3.5	3.0	3.7	3.7
Storage Length (m)	120.0		80.0	300.0		120.0	150.0		70.0	165.0		70.0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	*0.85	0.91	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		1.00				0.98			0.98			
Frt		0.982				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1773	5016	0	1879	3767	1664	1739	3842	1664	1773	3804	1702
Flt Permitted	0.073			0.073			0.442			0.093		
Satd. Flow (perm)	136	5016	0	144	3767	1635	809	3842	1637	174	3804	1702
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		19				121			150			97
Link Speed (k/h)		70			70			60			60	
Link Distance (m)		251.3			460.0			545.1			346.9	
Travel Time (s)		12.9			23.7			32.7			20.8	
Confl. Peds. (#/hr)	5		14	14		5			4	4		
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
Heavy Vehicles (%)	0%	0%	5%	0%	2%	1%	2%	0%	1%	0%	1%	1%
Adj. Flow (vph)	108	1820	253	208	1487	134	665	1112	673	143	409	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	108	2073	0	208	1487	134	665	1112	673	143	409	66
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.0			3.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.02	0.92	0.95	0.95	0.92	0.95	1.02	0.92	0.95	1.02	0.92	0.92
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	0		1	0	0	1	1	1	1	1	1
Detector Template												
Leading Detector (m)	15.2	0.0		15.2	0.0	0.0	15.2	7.5	7.5	15.2	7.5	7.5
Trailing Detector (m)	6.2	0.0		6.2	0.0	0.0	6.2	-1.5	-1.5	6.2	-1.5	-1.5
Detector 1 Position(m)	6.2	0.0		6.2	0.0	0.0	6.2	-1.5	-1.5	6.2	-1.5	-1.5
Detector 1 Size(m)	9.0	1.8		9.0	1.8	6.1	9.0	9.0	9.0	9.0	9.0	9.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2		2	8		8	4		4
Detector Phase	1	6		5	2	2	3	8	8	7	4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	7.0	36.0		7.0	36.0	36.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	44.0		11.0	44.0	44.0	11.0	45.0	45.0	11.0	45.0	45.0
Total Split (s)	12.0	62.0		12.0	62.0	62.0	15.0	51.0	51.0	15.0	51.0	51.0
Total Split (%)	8.6%	44.3%		8.6%	44.3%	44.3%	10.7%	36.4%	36.4%	10.7%	36.4%	36.4%
Maximum Green (s)	8.0	54.5		8.0	54.5	54.5	11.0	43.5	43.5	11.0	43.5	43.5
Yellow Time (s)	3.0	5.0		3.0	5.0	5.0	3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	1.0	2.5		1.0	2.5	2.5	1.0	3.0	3.0	1.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.5		4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		29.0			29.0	29.0		30.0	30.0		30.0	30.0
Pedestrian Calls (#/hr)		14			5	5		4	4		0	0
Act Effct Green (s)	66.1	54.8		66.4	54.9	54.9	58.0	43.5	43.5	57.5	43.2	43.2
Actuated g/C Ratio	0.47	0.39		0.47	0.39	0.39	0.41	0.31	0.31	0.41	0.31	0.31
v/c Ratio	0.70	1.05		1.25	1.01	0.19	1.63	0.93	1.10	0.74	0.35	0.11
Control Delay	58.8	53.0		178.0	67.1	6.5	322.0	61.1	101.6	50.7	38.4	2.6
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.8	53.0		178.0	67.1	6.5	322.0	61.1	101.6	50.7	38.4	2.6
LOS	E	D		F	E	A	F	E	F	D	D	A
Approach Delay		53.3			75.3			143.0			37.4	
Approach LOS		D			E			F			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 53 (38%), Referenced to phase 2:WBTL, Start of Green			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.63			
Intersection Signal Delay: 88.7		Intersection LOS: F	
Intersection Capacity Utilization 114.8%		ICU Level of Service H	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 5: Woodbine Ave & Major Mackenzie Dr/Major Mackenzie Drive



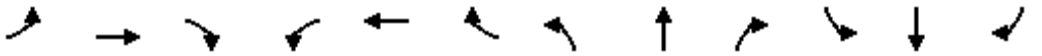


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	108	2073	208	1487	134	665	1112	673	143	409	66
v/c Ratio	0.70	1.05	1.25	1.01	0.19	1.63	0.93	1.10	0.74	0.35	0.11
Control Delay	58.8	53.0	178.0	67.1	6.5	322.0	61.1	101.6	50.7	38.4	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.8	53.0	178.0	67.1	6.5	322.0	61.1	101.6	50.7	38.4	2.6
Queue Length 50th (m)	12.0	~246.8	~54.2	~222.2	2.2	~264.8	157.4	~180.8	23.7	46.1	0.0
Queue Length 95th (m)	#39.4	#269.4	#104.9	#270.5	15.5	#337.7	#197.7	#254.8	#51.9	60.5	4.7
Internal Link Dist (m)		227.3		436.0			521.1			322.9	
Turn Bay Length (m)	120.0		300.0		120.0	150.0		70.0	165.0		70.0
Base Capacity (vph)	157	1973	167	1478	715	408	1193	612	197	1181	595
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	1.05	1.25	1.01	0.19	1.63	0.93	1.10	0.73	0.35	0.11

Intersection Summary

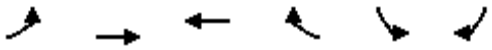
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



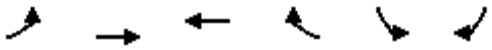
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	108	1820	253	208	1487	134	665	1112	673	143	409	66
Future Volume (vph)	108	1820	253	208	1487	134	665	1112	673	143	409	66
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.7	3.5	3.5	3.7	3.5	3.0	3.7	3.5	3.0	3.7	3.7
Total Lost time (s)	4.0	7.5		4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5
Lane Util. Factor	1.00	*0.85		1.00	0.95	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	0.98	1.00	1.00	0.98	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	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1773	5014		1879	3767	1635	1739	3842	1637	1773	3804	1702
Flt Permitted	0.07	1.00		0.07	1.00	1.00	0.44	1.00	1.00	0.09	1.00	1.00
Satd. Flow (perm)	136	5014		144	3767	1635	809	3842	1637	173	3804	1702
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)	108	1820	253	208	1487	134	665	1112	673	143	409	66
RTOR Reduction (vph)	0	12	0	0	0	73	0	0	103	0	0	46
Lane Group Flow (vph)	108	2061	0	208	1487	61	665	1112	570	143	409	20
Confl. Peds. (#/hr)	5		14	14		5			4	4		
Heavy Vehicles (%)	0%	0%	5%	0%	2%	1%	2%	0%	1%	0%	1%	1%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2		2	8		8	4		4
Actuated Green, G (s)	62.6	54.8		63.0	55.0	55.0	54.5	43.5	43.5	53.9	43.2	43.2
Effective Green, g (s)	62.6	54.8		63.0	55.0	55.0	54.5	43.5	43.5	53.9	43.2	43.2
Actuated g/C Ratio	0.45	0.39		0.45	0.39	0.39	0.39	0.31	0.31	0.38	0.31	0.31
Clearance Time (s)	4.0	7.5		4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	152	1962		163	1479	642	388	1193	508	188	1173	525
v/s Ratio Prot	0.04	0.41		c0.07	0.39		c0.13	0.29		0.06	0.11	
v/s Ratio Perm	0.28			c0.50		0.04	c0.53		0.35	0.23		0.01
v/c Ratio	0.71	1.05		1.28	1.01	0.09	1.71	0.93	1.12	0.76	0.35	0.04
Uniform Delay, d1	32.6	42.6		37.2	42.5	26.8	40.6	46.8	48.2	34.7	37.5	33.9
Progression Factor	1.69	0.42		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	12.3	33.6		163.1	24.7	0.3	332.0	12.9	77.6	16.5	0.2	0.0
Delay (s)	67.4	51.4		200.3	67.2	27.1	372.6	59.7	125.9	51.1	37.7	33.9
Level of Service	E	D		F	E	C	F	E	F	D	D	C
Approach Delay (s)		52.2			79.4			162.8			40.4	
Approach LOS		D			E			F			D	

Intersection Summary			
HCM 2000 Control Delay	96.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.48		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	114.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	81	460	230	250	1	72
Future Volume (vph)	81	460	230	250	1	72
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.5	3.7	3.7	3.7	3.5	3.7
Storage Length (m)	50.0			0.0	30.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.6				7.6	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.930			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1842	2002	1881	0	1879	1547
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1842	2002	1881	0	1879	1547
Link Speed (k/h)		50	50		40	
Link Distance (m)		238.8	229.3		191.9	
Travel Time (s)		17.2	16.5		17.3	
Confl. Peds. (#/hr)				9	1	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	1%	0%	0%	0%	0%
Parking (#/hr)						0
Adj. Flow (vph)	86	489	245	266	1	77
Shared Lane Traffic (%)						
Lane Group Flow (vph)	86	489	511	0	1	77
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	4.9		4.9	
Two way Left Turn Lane						
Headway Factor	0.95	0.92	0.92	0.92	0.95	1.06
Turning Speed (k/h)	24			14	24	14
Sign Control		Stop	Stop		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	44.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	81	460	230	250	1	72
Future Volume (vph)	81	460	230	250	1	72
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	86	489	245	266	1	77

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total (vph)	86	489	511	1	77
Volume Left (vph)	86	0	0	1	0
Volume Right (vph)	0	0	266	0	77
Hadj (s)	0.53	0.02	-0.31	0.50	-0.70
Departure Headway (s)	5.7	5.2	4.9	7.5	6.2
Degree Utilization, x	0.14	0.71	0.69	0.00	0.13
Capacity (veh/h)	618	673	726	438	514
Control Delay (s)	8.4	18.7	18.2	9.3	9.0
Approach Delay (s)	17.1		18.2	9.0	
Approach LOS	C		C	A	

Intersection Summary			
Delay	17.1		
Level of Service	C		
Intersection Capacity Utilization	44.1%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	352	270	125	177	208	189
Future Volume (vph)	352	270	125	177	208	189
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000
Lane Width (m)	3.7	3.7	3.5	3.7	3.7	3.7
Storage Length (m)		0.0	50.0		0.0	50.0
Storage Lanes		0	1		1	1
Taper Length (m)			2.5		2.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.941					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1884	0	1879	2022	1902	1702
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1884	0	1879	2022	1902	1702
Link Speed (k/h)	50			50	50	
Link Distance (m)	222.8			238.8	394.7	
Travel Time (s)	16.0			17.2	28.4	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	1%	0%	0%	1%	1%
Adj. Flow (vph)	374	287	133	188	221	201
Shared Lane Traffic (%)						
Lane Group Flow (vph)	661	0	133	188	221	201
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.92	0.92	0.95	0.92	0.92	0.92
Turning Speed (k/h)		97	97		97	97
Sign Control	Stop			Stop	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 60.8%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	352	270	125	177	208	189
Future Volume (vph)	352	270	125	177	208	189
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	374	287	133	188	221	201

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2
Volume Total (vph)	661	133	188	221	201
Volume Left (vph)	0	133	0	221	0
Volume Right (vph)	287	0	0	0	201
Hadj (s)	-0.24	0.50	0.00	0.52	-0.68
Departure Headway (s)	5.9	7.2	6.7	7.5	6.3
Degree Utilization, x	1.08	0.27	0.35	0.46	0.35
Capacity (veh/h)	601	487	523	471	557
Control Delay (s)	84.1	11.6	12.1	15.6	11.5
Approach Delay (s)	84.1	11.9		13.7	
Approach LOS	F	B		B	

Intersection Summary			
Delay	46.4		
Level of Service	E		
Intersection Capacity Utilization	60.8%	ICU Level of Service	B
Analysis Period (min)	15		

Appendix B

AT Level of Service Criteria

high left turn and right turn traffic volumes, channelized right turn and wide intersection will have negative impacts on pedestrian mode. As such, when conducting intersection capacity analysis, transportation specialists should consider and evaluate the pedestrian mode to provide appropriate mitigation measures and improvements to address these impacts.

Table 6 summarizes the level of service criteria for pedestrian mode.

Pedestrian LOS Target: C or better for these LOS Categories

Table 6 - Pedestrian Level of Service Criteria

Level of Service	Segment	Intersection
A	≥2.0 m sidewalk with minimum 3.5 m buffer including planting and edge zone; or ≥3.0 m multi-use path	▪ ≥2.0 m sidewalk with minimum 3.5 m buffer including planting and edge zone; or ≥3.0 m multi-use path ▪ Pedestrian signal head with sufficient pedestrian clearance time ▪ Clearly delineated cross-walk
B	≥1.5 m sidewalk with minimum 1.0 m buffer including edge zone; or <3.0 m multi-use path	▪ ≥1.5 m sidewalk with minimum 1.0 m buffer including edge zone; or <3.0 m multi-use path ▪ Pedestrian signal head with sufficient pedestrian clearance time ▪ Clearly delineated cross-walk
C	≥1.5 m curb-faced sidewalk (no buffer)	▪ ≥1.5 m curb-faced sidewalk (no buffer) ▪ Pedestrian signal head with sufficient pedestrian clearance time ▪ Clearly delineated cross-walk
D	<1.5 m sidewalk	▪ <1.5 m sidewalk ▪ Pedestrian signal head sufficient pedestrian clearance time ▪ No clearly delineated cross-walk
E	Paved shoulder or no sidewalk provision	▪ Paved shoulder or no sidewalk provision ▪ No pedestrian signal head ▪ No clearly delineated cross-walk
F	No sidewalk provision	▪ No sidewalk provision ▪ No pedestrian signal head ▪ Not clearly delineated cross-walk

Definitions

Buffer: green or landscaped space separating the sidewalk and pavement street curb.

Curb-faced: the sidewalk is located adjacent to the pavement and street curb.

Delineated cross-walk: painted or special pavement to facilitate pedestrians.

Table 8 summarizes the level of service criteria for bicycle mode.

Table 8 - Bicycle Level of Service Criteria

Level of Service	Segment	Intersection
A	Separated cycling facilities (e.g. cycle tracks, multi-use path)	Separated cycling facilities Bicycle box or clearly delineated bicycle treatment or bicycle signal head
B	≥1.8 m dedicated cycling facilities (e.g. bicycle lanes with and without buffer)	>1.8 m dedicated cycling facilities (e.g. bicycle lanes with and without buffer), Bicycle box, clearly delineated bicycle treatment or bicycle signal head
C	<1.8 m dedicated cycling facilities with no buffer	<1.8 m dedicated cycling facilities with no buffer, Bicycle box, clearly delineated bicycle treatment or bicycle signal head
D	≤1.5 m bicycle lane with no buffer	≤1.5 m bicycle lane and no buffer Bicycle treatment
E	Shared facilities (e.g. signed routes, sharrows or paved shoulder with minimum 1.2 m in constrained area)	Shared facilities (e.g. signed routes, sharrows or paved shoulder with minimum 1.2 m in constrained area) No clearly delineated bicycle treatment
F	No bicycle provision	No bicycle provision

Definitions

Shared: Shared facilities include roadways or streets where cyclists and motorists use the same road space. Types of shared facilities include signed routes, bicycle boulevards or shared lanes (“sharrows”). Since cyclists and motorists share the same space, these facilities are appropriate on streets with low traffic volumes and/or low speeds.

Dedicated: Designated or dedicated facilities are those that provide space on the road intended for use by cyclists only. They are generally adjacent to motor vehicle lanes and defined by pavement markings. In urban areas, dedicated facilities typically include bike lanes and buffered bike lanes while paved shoulders provide dedicated space on rural roads.

Separated: Separated bikeways are separated from traffic by more than just a painted line. Separation may consist of bollards or delineators, mountable or barrier curbs, planters, concrete medians, etc. Types of separated facilities can include cycle tracks, raised bike lanes, or multi-use trails. These facilities improve safety and comfort for cyclists along higher-speed, busy roadways.

Buffer: a painted area or physical barrier that separates the bicycle lane from the adjacent traffic lane.

Bicycle box: A bike box is used at intersections with dedicated bike lanes or a cycle track to designate a space for cyclists to wait at a red light or to assist cyclists in making left turns. Cyclists stop in front of motorists and can proceed through the intersection first when the light turns green.

Paved shoulder: Paved shoulders are located next to the travelled portion of the roadway and used to accommodate cyclists on rural roads.

Appendix C

ABM Annual Growth Rate Summary

Annual Growth Rate Summary - Weekday AM Peak Hour

Road	From	To	Peak Hour Traffic Volumes						ANNUAL GROWTH RATE
			2016			2051			
			Dir. A	Dir. B	Total	Dir. A	Dir. B	Total	
Roads of Interest			NB	SB		NB	SB		
Hwy 404 NB Off Ramp	Hwy 404	Major Mackenzie Dr E	840	-	840	1193	-	1193	**1.01%**
Markland St	Major Mackenzie Dr E	Russell Dawson Rd	162	424	586	270	582	852	**1.08%**
East-West Corridor			WB	EB		WB	EB		
Major Mackenzie Dr E	Via Renzo Dr	Leslie St	2343	2262	4605	1838	1766	3604	**-0.70%**
Major Mackenzie Dr E	Markland St	Hwy 404 NB On Ramp	1892	1595	3487	2639	2011	4650	**0.83%**
Major Mackenzie Dr E	Woodbine Ave	Markland St	1508	1167	2675	2600	1693	4293	**1.36%**
Major Mackenzie Dr E	Woodbine Ave	East end	1614	1068	2682	2655	1161	3816	**1.01%**
North-South Corridor			NB	SB		NB	SB		
Woodbine Ave	Oakford Dr	Major Mackenzie Dr E	328	1894	2222	648	2902	3550	**1.35%**
Woodbine Ave	Major Mackenzie Dr E	Victoria Square Blvd	285	1644	1929	726	2394	3120	**1.38%**
Woodbine Ave	Victoria Square Blvd	Russell Dawson Rd	285	1309	1594	601	1695	2296	**1.05%**
Woodbine Ave	Russell Dawson Rd	Markland St	318	1554	1872	734	1879	2613	**0.96%**
Markland St	Hillmount Rd	Major Mackenzie Dr E	233	539	772	302	894	1196	**1.26%**
Russell Dawson Rd	Markland St	Woodbine Ave	143	361	504	173	411	584	**0.42%**
Via Renzo Dr	Major Mackenzie Dr E	Performance Dr	212	565	777	350	1077	1427	**1.75%**
Hwy 404 SB Off Ramp	Hwy 404	Major Mackenzie Dr E		361	361		1221	1221	**3.54%**
								AVERAGE GROWTH RATE	**1.16%**

Annual Growth Rate Summary - Weekday PM Peak Hour

Road	From	To	Peak Hour Traffic Volumes						ANNUAL GROWTH RATE
			2016			2051			
			Dir. A	Dir. B	Total	Dir. A	Dir. B	Total	
Roads of Interest			NB	SB		NB	SB		
Hwy 404 NB Off Ramp	Hwy 404	Major Mackenzie Dr E	-	1288	1288	-	2372	2372	**1.76%**
Markland St	Major Mackenzie Dr E	Russell Dawson Rd	399	194	593	554	276	830	**0.97%**
East-West Corridor			WB	EB		WB	EB		
Major Mackenzie Dr E	Via Renzo Dr	Leslie St	1662	2076	3738	2408	2623	5031	**0.85%**
Major Mackenzie Dr E	Markland St	Hwy 404 NB On Ramp	1891	2166	4057	2458	2886	5344	**0.79%**
Major Mackenzie Dr E	Woodbine Ave	Markland St	1429	1763	3192	2271	2833	5104	**1.35%**
Major Mackenzie Dr E	Woodbine Ave	East end	1399	1759	3158	1709	2628	4337	**0.91%**
North-South Corridor			NB	SB		NB	SB		
Woodbine Ave	Oakford Dr	Major Mackenzie Dr E	1841	630	2471	2728	1472	4200	**1.53%**
Woodbine Ave	Major Mackenzie Dr E	Victoria Square Blvd	1648	463	2111	2318	1417	3735	**1.64%**
Woodbine Ave	Victoria Square Blvd	Russell Dawson Rd	1292	463	1755	1680	1107	2787	**1.33%**
Woodbine Ave	Russell Dawson Rd	Markland St	1555	519	2074	1839	1111	2950	**1.01%**
Markland St	Hillmount Rd	Major Mackenzie Dr E	515	250	765	830	417	1247	**1.41%**
Russell Dawson Rd	Markland St	Woodbine Ave	346	172	518	392	149	541	**0.12%**
Via Renzo Dr	Major Mackenzie Dr E	Performance Dr	437	332	769	981	648	1629	**2.17%**
Hwy 404 SB Off Ramp	Hwy 404	Major Mackenzie Dr E		160	160		488	488	**3.24%**
								AVERAGE GROWTH RATE	**1.36%**

Appendix D

Markland Street & Highway 404 Off Ramp Extension Mode of Control Warrant Analysis

All-Way Stop Control Warrant Analysis

AM Peak Hour:

All-Way Stop Control Warrant Condition	Calculated Value	Warrant Condition Result
2051 Future Total Conditions		
The total vehicle volume on all intersection approaches exceeds 200 vehicles per hour for each of the highest four hours of the day	1188 vph	Condition met
The combined vehicle and pedestrian volume on the minor street exceeds 75 units per hour (all vehicles plus pedestrians wishing to enter the intersection) for each of the same four hours as the total volume	130 units	Condition met
The volume split does not exceed 70/30 (that is the minor street must not be less than 30% of the total volume entering the intersection) as measured over the entire four-hour count period. Volume on the major street is defined as vehicles only. Volume on the minor street includes all vehicles plus any pedestrians wishing to cross the major roadway	89/11	Condition NOT met
	Overall:	**Conditions NOT met**

PM Peak Hour:

All-Way Stop Control Warrant Condition	Calculated Value	Warrant Condition Result
2051 Future Total Conditions		
The total vehicle volume on all intersection approaches exceeds 200 vehicles per hour for each of the highest four hours of the day	1321 vph	Condition met
The combined vehicle and pedestrian volume on the minor street exceeds 75 units per hour (all vehicles plus pedestrians wishing to enter the intersection) for each of the same four hours as the total volume	397 units	Condition met
The volume split does not exceed 70/30 (that is the minor street must not be less than 30% of the total volume entering the intersection) as measured over the entire four-hour count period. Volume on the major street is defined as vehicles only. Volume on the minor street includes all vehicles plus any pedestrians wishing to cross the major roadway	70/30	Condition met
	Overall:	**Conditions met**

Signal Warrant Calculation

Justification 7 - Projected Volumes

Major Street: Markland Street East/West

Minor Street: HWY 404 Northbound Extension

North/South

Traffic Condition: 2051 FT

Number of Approach Lanes: 2

T Intersection: Yes

Existing Intersection: No

Flow Condition: Restricted Flow (Urban)

No. of Peak Hours: 2

Volume	1st Hour	2nd Hour	Factor	Average Hour
1A - All	754	908	4	416
1B - Minor	592	394	4	247
2A - Major	162	514	4	169
2B - Crossing	245	333	4	145

WARRANT 1 - MINIMUM VEHICULAR VOLUME => 46% Satisfied

		Restricted Flow (Urban)	Average Hour	Percent Satisfied
A.	Vehicle volume all approaches (average hour)	900	416	46%
B.	Vehicle volume, along minor streets (average hour)	255	247	97%

WARRANT 2 - DELAY TO CROSS TRAFFIC => 19% Satisfied

		Restricted Flow (Urban)	Average Hour	Percent Satisfied
A.	Vehicle volume, major street (average hour)	900	169	19%
B.	Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	170	145	85%

Overall Warrant => 46% Satisfied

Result => No signals are warranted nor provision for undergrounds needed.

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