TRAFFIC IMPACT STUDY

5160-5170 NINTH LINE
RESIDENTIAL DEVELOPMENT
CITY OF MISSISSAUGA,
REGIONAL MUNICIPALITY OF PEEL

PREPARED FOR:
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CROZIER
CONSULTING ENGINEERS

Revision Number	Date	Comments
Rev. 1	December 2021	Issued for 1st Submission

1.0 Executive Summary

Background

C.F. Crozier & Associates Inc. (Crozier) was retained by Branthaven Developments to prepare a Traffic Impact Study (TIS) in support of the development application for the proposed residential development located at 5160-5170 Ninth Line in the City of Mississauga, Regional Municipality of Peel. The site is bound by a woodlot to the north, Ninth Line to the east, two low-rise detached buildings to the south and vacant lands to the west.

The purpose of the study is to evaluate the transportation-related impacts of the proposed development on the boundary road network and to recommend any required mitigation measures, if warranted. Given the expected two-way trip generation during peak hours is less than 100 trips, the Ministry of Transportation (MTO) noted that a separate Traffic Letter highlighting the immaterial impact of the proposed development on the nearest Highway ramps is adequate and was provided to the MTO accordingly.

Per the Site Plan by ZO1 Architects (dated November 5, 2021), the development scope consists of a 6-storey apartment building with a total of 198 residential dwelling units. A total of 228 parking spaces are proposed, including 2 accessible parking spaces. The proposed bicycle parking supply consists of 119 long-term and 10 short-term spaces. **Table E1** summarizes the proposed development statistics.

Table E1: Development Proposal

Apartment Building Statistics			
Building Storey	One Bedroom Units	Two Bedroom Units	**Total**
Level 1	10	11	21
Level 2	21	14	35
Level 3	25	10	35
Level 4	28	9	37
Level 5	26	9	35
Level 6	26	9	35
Total	**136**	**62**	**198**
Parking Supply			
	Resident Spaces	**Visitor Spaces**	**Total**
Vehicle Parking	198	30	**228**
	Long-Term Bicycle Parking Spaces	**Short-Term Bicycle Parking Spaces**	**Total**
Bicycle Parking	119	10	**129**

The study has been completed in accordance with the City of Mississauga Traffic Impact Study Guidelines. The study has also been completed in accordance with Terms of Reference established with City of Mississauga staff.

Further, previously conducted studies were reviewed and incorporated into the analysis herein. The studies include: the Ninth Line Environmental Study Report (HDR, June 2021), the Ninth Line Corridor Study Transportation Assessment (MMM Group, July 2017), the 5080, 5054, and 5034 Ninth Line Traffic Impact Study (C.F. Crozier & Associates, October 2021), the 5150 Ninth Line Traffic Impact Study (C.F. Crozier & Associates, February 2021) and the 407 Transitway – West of Brant Street to West of Hurontario Street Environmental Project Report (Parsons, August 2020).

The TIS analyzed the following study intersections:

- Ninth Line and Eglinton Avenue West / East Lower Base Line
- Ninth Line and Skyview Street / Street B
- Ninth Line and Candlelight Drive
- Ninth Line and Erin Centre Boulevard
- Ninth Line and Street A

Existing Conditions

The boundary road network is operating at a LOS "E" or better at the intersection of Ninth Line and Eglinton Avenue West / East Lower Base Line, and LOS "D" or better at all other study intersections during the weekday a.m. and p.m. peak hours.

The Ninth Line and Eglinton Avenue West / East Lower Base Line intersection operations are attributed to several movements operating near capacity. The southbound and eastbound through movements experience high volumes in the a.m. peak hour, while the northbound and westbound through movements experience high volumes in the p.m. peak hour. These findings within the existing conditions traffic analysis support the need for roadway expansion on Ninth Line, as recommended in the Ninth Line EA.

A few movements at the intersection of Ninth Line and Eglinton Avenue West / East Lower Base Line are operating at or above capacity under the existing conditions scenario. This is not typically expected for existing conditions analysis. However, the approach to arrive at existing conditions traffic volumes used for analysis employed growth rates to adjust 2019 traffic data to 2021 levels. The results show that the volumes used for the existing conditions analysis herein are higher than practically possible under the existing configuration as operations can only be at or near capacity under existing conditions, but not above.

Future Background Conditions

As confirmed in the Terms of Reference, a horizon year five years from the study date (ie. 2026) was used for the purposes of analysis.

Growth rates provided by the City of Mississauga were applied at the study intersections for through movements, while local roads were assigned a growth rate of 0.5%. Further, the following background developments were identified and are accounted for under future background conditions:

  - Erin Mills Development
  - 407 Transitway
  - Emerging Land Use Concept on Ninth Line
  - 5080, 5054, and 5034 Ninth Line
  - 5150 Ninth Line

Roadway improvements per the Ninth Line Environmental Study Report were incorporated into the future background analysis.

Under the 2026 future background conditions, which incorporates roadway improvements outlined in the Ninth Line EA:

- The signalized intersection of Ninth Line and Eglinton Avenue West / East Lower Base Line is projected to operate at a LOS "D" and "E" during the weekday a.m. and p.m. peak hours.

- The turn queues are forecast to occasionally exceed the turn storage lanes at the intersection during the peak hours as identified by the MMM Group and the Ninth Line EA Studies. These queues may occasionally obstruct some movements at adjacent intersections during the peak hours. These operations are however typical for high traffic arterial intersections during the peak hours and operations are expected to return to acceptable levels during the off-peaks.

- The remaining study intersections are expected to operate efficiently at a LOS "C" or better during the weekday peak hours.

Site Generated Traffic

The proposed development is expected to generate a total of 76 and 78 total two-way trips during the weekday a.m. and p.m. peak hours, respectively. The proposed development trips were assigned to the boundary road network using a combination of 2016 Transportation Tomorrow Survey (TTS) data, existing travel patterns and convenience with regards to ingress/ egress at the accesses.

Future Total Conditions

Under the 2026 future total conditions, the study intersections are forecast to operate at similar levels of services with minor changes.

- The signalized intersection of Ninth Line and Eglinton Avenue West / East Lower Base Line is projected to operate at a LOS "D" and "E" during the weekday a.m. and p.m. peak hours, respectively. Compared to 2026 future background conditions, there is a control delay increase of 0.8 and 4.3 seconds in the a.m. and p.m. peak hours, respectively; therefore, operational issues are largely background related as highlighted in the future background section. Considering several other planned roadway improvements on adjacent roadways as well as future transit intensification on the Ninth Line corridor, forecasted operational issues may be overstated herein.

- The remaining study intersections are expected to continue to operate efficiently at a LOS "D" or better. A maximum control delay increment of 6.4 seconds and volume-to-capacity ratio increase of 0.01 is forecast.

- Signal Warrants were evaluated at the intersection of Ninth Line and Street A. Signalization was not found to be warranted. This finding is consistent with prior analysis undertaken in the Ninth Line Environmental Project Report.

- Left-turn warrants were evaluated for the northbound left-turn movement at the intersection of Ninth Line and Street A. A left-turn storage lane of length 25m is warranted for the aforementioned movement. This finding is consistent with previous studies.

- Given the above results of the traffic analysis, the proposed development can be supported from a traffic operations perspective.

Safety Review

A safety review regarding the proposed Street A and Street B was conducted as required by the City of Mississauga's guidelines. Based on the safety review:

- The available sight distance at the site access connections exceeds the minimum sight distance requirements set out in the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (GDGCR), June 2017.

- The site satisfies the minimum corner clearance and access spacing requirements per the TAC-GDGCR

- There are no expected maneuverability constraints for waste collection.

Therefore, the access connection and the ultimate connections from the lands to Ninth Line is expected to operate safely and functionally serve the site.

Proposed Parking Supply Review

The proposed Parking supply is deficient of the City's Zoning By-law No. 0225-2007; however, the parking supply is forecast to accommodate peak parking demands at the site based on ITE and surrogate site parking data. Given the location of the site and development proposal, the supply is largely consistent with the WSP Parking Regulation Study. Several City of Mississauga zoning by-law exceptions from similar developments further supports the proposed visitor parking supply. The proposed parking supply aligns with the City's findings regarding decreasing vehicle ownership (per City's PMPIS) as well as the City's desire of influencing commuter transportation choices through parking policy and parking supply; with a shift towards more sustainable modes of transportation. Additionally, the site provides the required barrier free accessible parking spaces and bicycle parking spaces.

Recommendations

The findings arising from the analysis have resulted in the following recommendations:

- It is recommended that the signal timing plans at the intersection of Ninth Line and Eglinton Avenue West / East Lower Base Line be revised as needed to optimize future intersection performance.

- Should adequate right-of-way exist, it is recommended that the City investigate potential dual-left turn lanes for the southbound left-turn movement at the intersection of Ninth Line and Eglinton Avenue West / East Lower Base Line as part of the Ninth Line EA roadway improvements or in the future. The movement has peak hour volumes in excess of 300, a threshold identified to warrant dual left turn lanes per the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (GDGCR).

- It is recommended that consideration be given to providing a continuous two-way left turn (TWLT) median lane between Street A and Street B to provide left turn opportunities for the closely spaced connections on the segment. This is aligned with the Ninth Line EA, as a TWLT lane is expected along most of the Ninth Line corridor.

- It is recommended that the Street A connection to Ninth Line include a northbound left-turn lane with a minimum storage length of 25m.

Conclusion

The analysis contained within this report was prepared using the Site Plan prepared by ZO1 Architects (dated November 5, 2021). Any minor revisions to the development concept are not expected to affect the conclusions contained with this report. In conclusion, the proposed development can be supported from a transportation operations and safety perspective.

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2.0 Introduction

2.1 Background

C.F. Crozier & Associates Inc. (Crozier) was retained by Branthaven Developments to prepare a Traffic Impact Study (TIS) in support of the development application for the proposed residential development located at 5160-5170 Ninth Line in the City of Mississauga, Regional Municipality of Peel. The site is bound by a woodlot to the north, Ninth Line to the east, two low-rise detached buildings to the south and vacant lands to the west.

2.2 Development Proposal

Per the Site Plan by ZO1 Architects (dated November 5, 2021, provided within **Appendix A**), the development scope consists of a 6-storey apartment building with a total of 198 residential dwelling units. A total of 228 parking spaces are proposed, including 2 accessible parking spaces. The site is proposed to be serviced by two full-move accesses connecting to CEC Road "F" as indicated in the site plan provided in **Appendix A**. The site connects ultimately to the external roadway via Street A and Street B at Ninth Line as illustrated in the composite plan provided in **Appendix A**. **Table 1** outlines the proposed development statistics.

Table 1: Development Proposal

Apartment Building Statistics			
Building Storey	One Bedroom Units	Two Bedroom Units	**Total**
Level 1	10	11	21
Level 2	21	14	35
Level 3	25	10	35
Level 4	28	9	37
Level 5	26	9	35
Level 6	26	9	35
Total	**136**	**62**	**198**
Parking Supply			
	Resident Spaces	**Visitor Spaces**	**Total**
Vehicle Parking	198	30	**228**
	Long-Term Bicycle Parking Spaces	**Short-Term Bicycle Parking Spaces**	**Total**
Bicycle Parking	119	10	**129**

2.3 Purpose and Scope

The purpose of the study is to evaluate the transportation-related impacts of the proposed development on the boundary road network and to recommend any required mitigation measures, if warranted.

The study reviews the following main aspects of the proposed development from a transportation engineering perspective:

- Existing, future background, and future total traffic operations on the boundary road network during the weekday a.m. and p.m. peak hours
- Forecasted trip generation and distribution of the proposed development
- Mitigation measures to support the proposed development, if required
- Transportation safety components, including: sight distance requirements at the site accesses, access spacing and restrictions, and general safety issues pertaining to road users

The study has been completed in accordance with the City of Mississauga Traffic Impact Study Guidelines. The study has also been completed in accordance with Terms of Reference established with City of Mississauga staff. Per correspondence with the MTO, a separate traffic brief focusing on MTO requirements was requested and has been submitted under a separate cover. **Appendix B** contains the correspondence outlining the approved terms of reference.

The following previously conducted studies were reviewed and incorporated into the analysis herein:

- Ninth Line Environmental Study Report (HDR, June 2021, herein referred to as the "Ninth Line EA")
- Ninth Line Corridor Study Transportation Assessment (MMM Group, July 2017, herein referred to as the "MMM study")
- 5080, 5054, and 5034 Ninth Line Traffic Impact Study (C.F. Crozier & Associates, October 2021, herein referred to as the "5080 Ninth Line TIS")
- 5150 Ninth Line Traffic Impact Study (C.F. Crozier & Associates, February 2021, herein referred to as the "5150 Ninth Line TIS")
- 407 Transitway – West of Brant Street to West of Hurontario Street Environmental Project Report (Parsons, August 2020)

Further, a comprehensive Transportation Demand Management (TDM) Plan has been prepared and submitted separately to support the development application. The TDM Plan analyzes existing and future TDM opportunities to reduce single-occupant vehicle (SOV) trips to and from the site and promote alternative non-auto modes of transportation.

3.0 Existing Conditions

3.1 Development Lands

The subject property forms part of the Ninth Line composite lands located north of Eglinton Avenue. The site is located in a primarily residential area and is bound by a woodlot to the north, Ninth Line to the east, two low-rise detached buildings to the south and vacant lands to the west. The development lands include the following property parcels, with their respective existing conditions outlined:

- 5160 Ninth Line, a 0.295 ha property that currently consists of a single-storey animal hospital
- 0 Ninth Line (located between the 5160 and 5170 Ninth Line parcels), a 0.137 ha property that currently consists of a laneway
- 5170 Ninth Line, a 0.295 ha property that currently consists of a two-storey detached dwelling

Refer to **Appendix A** for City of Mississauga property reports. See **Figure 1** for the site location.

3.2 Study Intersections

The TIS analyzes the following intersections, as confirmed through the Terms of Reference correspondence (provided in **Appendix B**):

- Ninth Line and Eglinton Avenue West / East Lower Base Line
- Ninth Line and Skyview Street / Street B
- Ninth Line and Candlelight Drive
- Ninth Line and Erin Centre Boulevard
- Ninth Line and Street A

The weekday a.m. and p.m. peak hours were analyzed for the study intersections above.

3.3 Boundary Road Network

The boundary road network within the study area is described in **Table 2**.

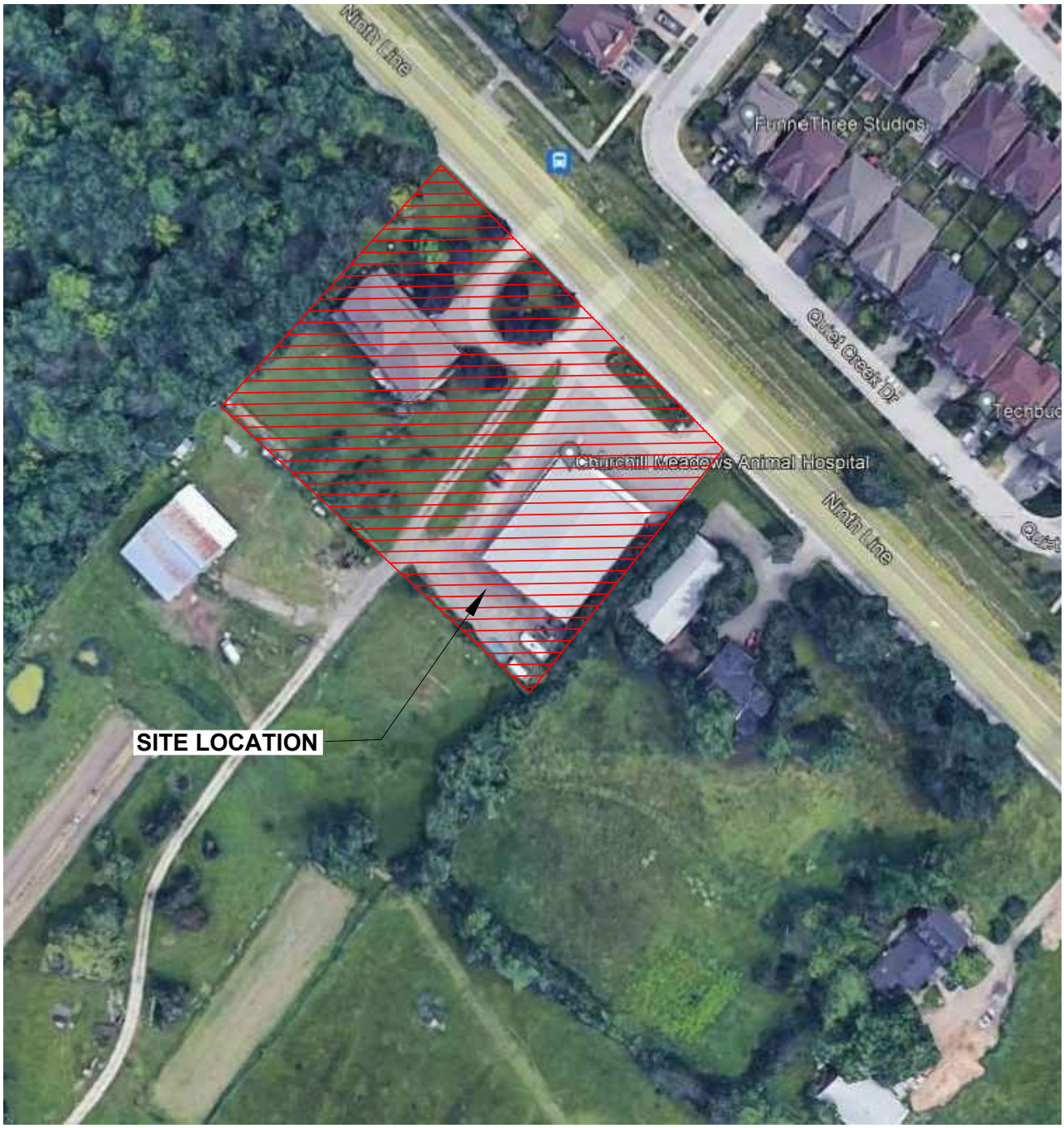


Figure 1: Site Location

Table 2: Boundary Road Network

Feature	Roadways					
	Ninth Line	**Eglinton Avenue West**	**East Lower Base Line**	**Skyview Street**	**Candlelight Drive**	**Erin Centre Boulevard**
Direction	Two-way (North-South)	Two-way (East-West)	Two-way (East-West)	Two-way (East-West)	Two-way (East-West)	Two-way (East-West)
Classification	Arterial	Arterial	Arterial	Local	Local	Minor Collector – west of Tenth Line Major Collector – East of Tenth Line
Jurisdiction	City of Mississauga – North of Dundas Street Town of Oakville – South of Dundas Street	City of Mississauga	City of Mississauga – Highway 407 to Ninth Line Town of Milton – West of Highway 407	City of Mississauga	City of Mississauga	City of Mississauga
Surrounding Uses	Residential	Residential	Rural	Residential	Residential	Residential and commercial
Speed Limit	70 km/h (north of Hwy 403/407 interchange bridge) 60 km/h (south of Hwy 403/407 interchange bridge)	60 km/h	60 km/h	50 km/h[1]	50 km/h[1]	50 km/h[1]
Number of travel lanes	Two	Four	Two	Two	Two	Two
Median type	Two-way left-turn lane	None	None	None	None	None

Note 1: A jurisdictional speed limit of 50 km/h is assumed on the roadways with no posted speed limit.

Table 3 outlines the existing traffic control, configurations, and pedestrian crossing provisions at the study intersections on the boundary road network.

Table 3: Existing Boundary Road Network – Study Intersections

Intersection	Control	App. [1]	Major Street	Lane Configurations	Pedestrian Crossing
Ninth Line and Eglinton Avenue West / East Lower Base Line	Signal Semi-Actuated	4	Eglinton Avenue West	EBL; EBTR WBL; WBT; WBR NBL; NBT; NBR; SBL; SBTR	Marked crosswalks – all approaches
Ninth Line and Erin Centre Boulevard	Signal Semi-Actuated	3	Ninth Line	WBL; WBR; NBT; SBL; SBT	Marked crosswalks, north & east approaches
Ninth Line and Candlelight Drive	Stop (Minor Street)	3	Ninth Line	WBL[2]; WBR[2]; NBT; SBL; SBT	East approach (not marked)
Ninth Line and Skyview Street	Stop (Minor Street)	3	Ninth Line	WBLTR; NBT: SBL; SBT	None

Note 1: Column refers to number of approaches at the intersection.
Note 2: Although not delineated, the width of Candlelight Drive allows for simultaneous westbound left-turns and right-turns.

Figure 2 illustrates the existing boundary road network, including lane configurations, storage lengths, and intersection control.

3.4 Existing Transit Operations

There are several MiWay Transit and GO Transit bus routes in proximity of the proposed development. **Tables 4 and 5** outline the existing transit routes, direction, days of operation, peak hour headways, and the location of bus stops near the proposed development. The transit services described in **Table 5** outline the MiWay service pattern as of September 6, 2021. Local and express bus routes that possess stops within 400m and 800m walking distance of the site, respectively, are included as per the MTO's Transit Supportive Guidelines (2012). Although further than typical walking distances for transit access, bus routes at Winston Churchill Transitway Station were included within existing transit services. This was due to the station possessing high accessibility for bicycle and vehicle transportation with a carpool parking lot and a covered bicycle lock-up area.

Table 4: Existing GO Transit Services

Route	Start and End Points	Times of Operation	Peak Hour Headways (min)	Direction 1 Transit Stop[1]	Direction 2 Transit Stop[1]
25 GO Transit Waterloo / Mississauga	University of Waterloo to Square One	Monday – Sunday	~60 min	Winston Churchill Station (~3.5km ; ~15min by bike)	Winston Churchill Station (~3.5km ; ~15min by bike)
29 GO Transit Guelph / Mississauga	Guelph Central to Square One	Monday – Sunday	~60 min	Winston Churchill Station (~3.5km ; ~15min by bike)	Winston Churchill Station (~3.5km ; ~15min by bike)

Note1: The calculated walking distance to each transit stop was determined from a baseline origin/destination point at the current 5170 Ninth Line driveway connection to Ninth Line. A 1.2m/s average walking speed as outlined in the City of Mississauga TIS guidelines was used. An average speed of 4.0m/s was assumed for biking.

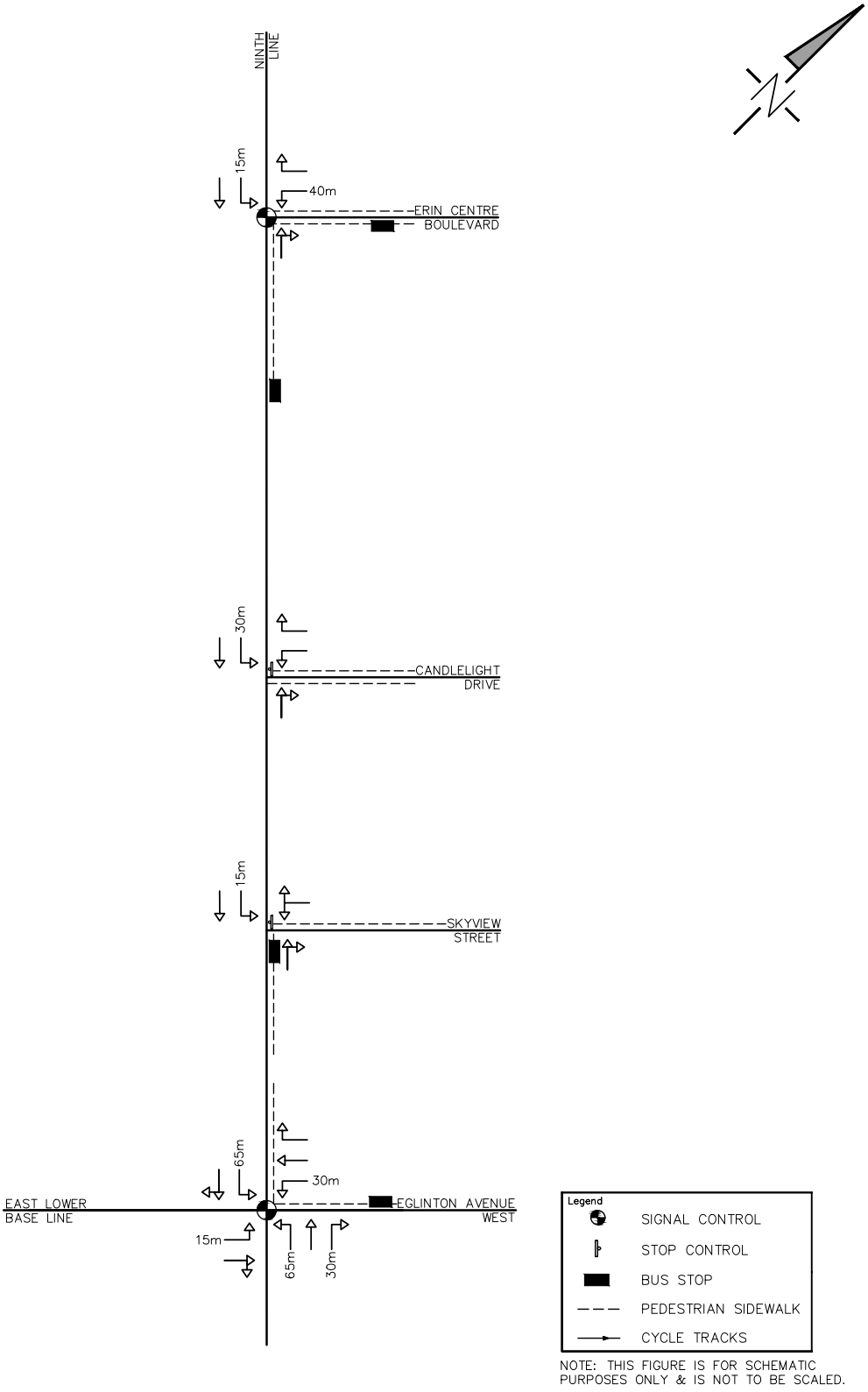


Figure 2: Existing Boundary Road Network

Table 5: Existing MiWay Transit Services

Route	Start and End Points	Times of Operation	Peak Hour Headways (min)	Direction 1 Transit Stop[1]	Direction 2 Transit Stop[1]
9 Rathburn – Thomas	City Centre Transit Terminal to Churchill Meadows Community Centre	Monday - Sunday	~20 min	Erin Centre Boulevard at Longford Drive (400m; ~5.5min walk)	Erin Centre Boulevard at Longford Drive (450m; 6min walk)
35 Eglinton-Ninth Line	Kipling Bus Terminal to Churchill Meadows Community Centre	Monday - Sunday	8-10 min	Ninth Line at Skyview Street (80m ; <2min walk)	N/A
36 Colonial-Ridgeway	Winston Churchill Station to South Common Centre	Monday - Sunday	~30 min	Winston Churchill Station (~3.5km ; ~15min by bike)	N/A
45 Winston Churchill	Meadowvale Town Centre to Clarkson GO Station	Monday - Sunday	~15 min	Winston Churchill Station (~3.5km ; ~15min by bike)	Winston Churchill Station (~3.5km ; ~15min by bike)
109 Meadowvale Express	Meadowvale Town Centre to Kipling Station	Monday – Sunday	10-15 min	Winston Churchill Station (~3.5km ; ~15min by bike)	Winston Churchill Station (~3.5km ; ~15min by bike)

Note1: The calculated walking distance to each transit stop was determined from a baseline origin/destination point at the current 5170 Ninth Line driveway connection to Ninth Line. A 1.2m/s average walking speed as outlined in the City of Mississauga TIS guidelines was used. An average speed of 4.0m/s was assumed for biking.

The two local routes within walking distance from the subject site offers good transit access to local destinations such as Erin Mills Town Centre, Mississauga City Centre, along with Middle and High schools in proximity to the subject site. Route 35 is a major crosstown route that connects with plenty of north-south bus routes. Further, MiWay route 9 provides connectivity to GO Transit at Streetsville GO along the Milton GO line.

Further, the Winston Churchill Station is an excellent transit attractor due to its location along the Mississauga Transitway. The route provides express service to several major destinations within Mississauga. Additionally, the station includes North-South transit service that connects with the Lakeshore GO line. This allows for good transit access both into Toronto to the east and towards Halton Region and Hamilton to the west.

Therefore, the existing transit services in the study area are sufficient to promote transit as a viable mode of transportation.

The boundary road network in **Figure 2** illustrates the existing bus stop locations in the study area. **Appendix C** contains relevant transit information.

3.5 Active Transportation Network

The existing active transportation facilities on the boundary road network are described in **Table 6**. The boundary road network in **Figure 2** illustrates the existing pedestrian and cycling facilities in the study area.

Table 6: Existing Active Transportation Network

Roadway	Pedestrian Facilities	Separation from Roadway	Cycling Facilities	Separation from Roadway
Ninth Line	1.5 metre concrete sidewalk (east side from Eglinton Avenue West to Skyview Street) Asphalt sidewalk (east side from bus stop north of Candlelight Drive to Erin Centre Boulevard)	Grass boulevard	None	N/A
Eglinton Avenue West	1.5 metre concrete sidewalk (north side)	Grass boulevard and Parking Lay-By	None	N/A
E. Lower Base Line	None	N/A	None	N/A
Erin Centre Boulevard	1.5 metre concrete sidewalk (both sides)	Grass boulevard	Bike Lane (both sides)	None
Candlelight Drive	1.5 metre concrete sidewalk (both sides)	Grass boulevard	None	N/A
Skyview Street	1.5 metre concrete sidewalk (north side)	Grass boulevard	None	N/A

3.6 Traffic Data

Turning movement counts were conducted by Spectrum Traffic Data Inc. staff at the study intersections on Tuesday July 16, 2019, between 6:00 a.m. – 10:00 a.m. and 3:00 p.m. – 7:00 p.m.

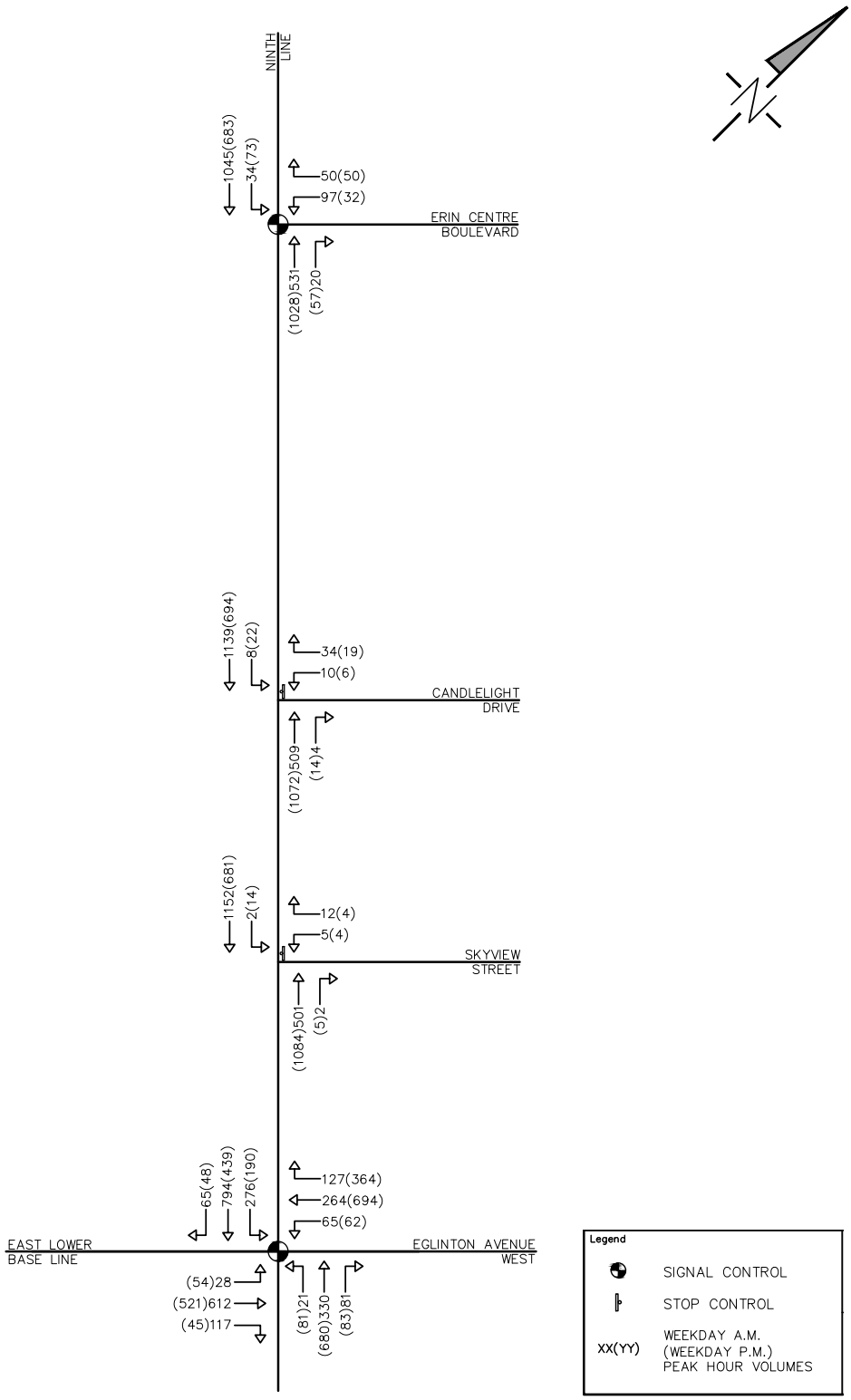
These time periods are reflective of commuter peak hours and thus were considered appropriate for traffic analysis of the proposed development.

Intersection analysis was conducted utilizing peak hour factors (PHFs) as calculated for each intersection from the collected traffic data during each time period. **Table 7** outlines the calculated peak hour factors at each intersection during each peak hour.

Table 7: Intersection Count Peak Hour Factors

Intersection	Count Date	Peak Hour	Peak Hour Factor
Ninth Line and Eglinton Avenue West / East Lower Base Line	Tuesday July 16, 2019	Weekday A.M. 7:45 a.m. – 8:45 a.m.	0.99
		Weekday P.M. 5:00 p.m. – 6:00 p.m.	0.96
Ninth Line and Skyview Street	Tuesday July 16, 2019	Weekday A.M. 7:45 a.m. – 8:45 a.m.	0.99
		Weekday P.M. 5:00 p.m. – 6:00 p.m.	0.96
Ninth Line and Candlelight Drive	Tuesday July 16, 2019	Weekday A.M. 7:45 a.m. – 8:45 a.m.	0.97
		Weekday P.M. 5:00 p.m. – 6:00 p.m.	0.94
Ninth Line and Erin Centre Boulevard	Tuesday July 16, 2019	Weekday A.M. 7:45 a.m. – 8:45 a.m.	0.98
		Weekday P.M. 5:00 p.m. – 6:00 p.m.	0.96

The traffic count data are contained in **Appendix D**. **Figure 3** illustrates the 2019 traffic volumes recorded by Spectrum Traffic.



NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.

Figure 3: 2019 Spectrum Traffic Volumes

3.7 Collision Analysis

To understand existing collision patterns near the subject site, historical collision data was obtained from the City for the Ninth Line segment between Stardust Drive and Candlelight Drive for the most recent available five year period (i.e., from 2015-2019). A collision analysis was conducted to identify any existing collision trends in the area. The collision data is included in **Appendix E**. **Table 8** outlines the collision frequency by type, severity and weather conditions.

Table 8: Collision History

Intersection	Collision Type	Severity	Environment
Ninth Line at Stardust Drive	Rear End – 1	P.D. Only – 1	Clear – 1
Ninth Line at Skyview Street	SMV Other – 1	P.D. Only – 1	Snow – 1
Ninth Line at Candlelight Drive	Turning Movement – 1	P.D. Only – 1	Clear – 1

As shown in **Table 8**, there does not appear to be a pattern of collisions at any of the intersections near the subject site. Therefore, collisions are not expected to be a significant issue for the proposed development.

3.8 Traffic Modelling

3.8.1. Synchro Modelling Guidelines

The boundary road network was modelled in Synchro 11 in conformance with the modelling guidelines per the City of Mississauga's "Traffic Impact Study Guidelines." **Table 9** summarizes the Synchro modelling parameters set out by the City's guidelines. These modelling parameters were applied to all study intersections.

Table 9: City of Mississauga Synchro Modelling Parameters

Parameter	Value
Ideal (base) saturation flow rate	Protected left-turn: 1,860 veh/hr/lane Exclusive through: 1,900 veh/hr/lane Exclusive right-turn: 1,640 veh/hr/lane
Lost Time [1]	Protected left-turn: 1.0 s Back-to-back left-turns: 1.0 s Main Phase: 5.0 s
Peak Hour Factor	As calculated, presented in **Table 7**
Lane widths	Per the Ninth Line EA (June 2021), or as measured

Note 1: Lost time refers to the total lost time for the respective phase (intergreen minus lost time adjustment). Lost time adjustments were calculated so that the total lost time for the respective phases are equal to the values set out in the City's guidelines.

3.8.2. Signal Timing Plans

Signal Timings Plans were obtained from the City of Mississauga for the following intersections:

- Ninth Line and Eglinton Avenue / East Lower Base Line
- Ninth Line and Erin Centre Boulevard

As the intersection of Ninth Line and Eglinton Avenue / East Lower Base Line is operating near capacity under the 2021 existing conditions scenario, while the signal timing cycle length was maintained, the timing splits were optimized for scenario volumes. For all remaining intersections, the existing conditions scenario maintained the existing signal timing plans for analysis.

For future background and future total scenarios, signal timings along Ninth Line that were used for study intersections within the Ninth Line EA Transportation Report were adapted for traffic modelling use (excerpts provided in **Appendix F**). This includes the intersection of Ninth Line and Skyview Street / Street B, which is signalized during all future scenarios. The signal timing cycle lengths were maintained for the intersections, with splits being optimized.

Existing timing plans are included within **Appendix D.** Timing plans used for traffic modelling within this study are included within the detailed capacity analysis Synchro worksheets, provided as **Appendix G**.

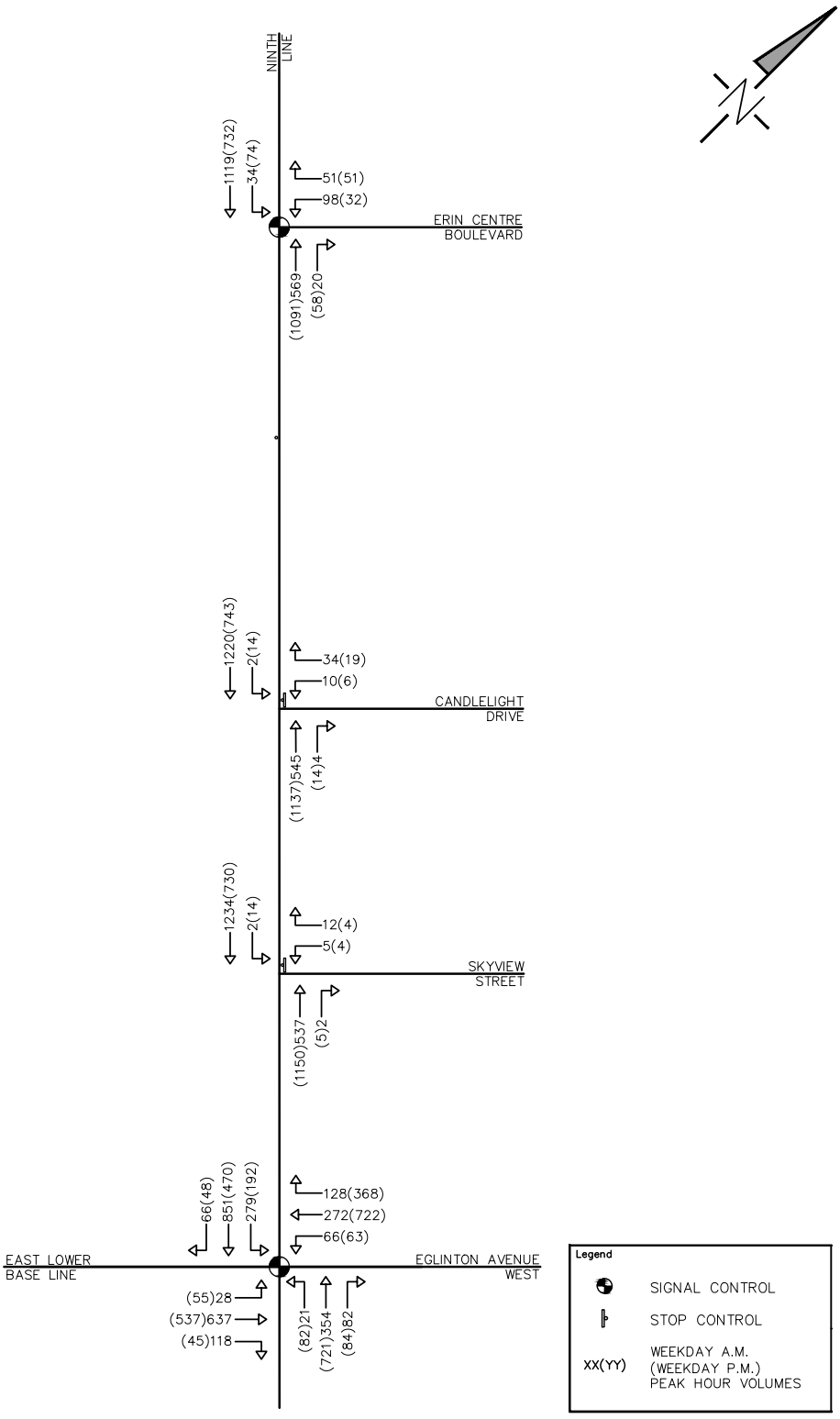
3.8.3. Critical Volume-To-Capacity Thresholds

The City of Mississauga considers a movement to be critical when the volume-to-capacity exceeds 0.85 for through movements or shared through/turning movements, and 0.90 for exclusive movements. Therefore, in the traffic operations analysis, the maximum volume-to-capacity ratio along with the ratios which exceed the critical thresholds identified herein

3.9 Intersection Operations

The existing intersection operations at the study intersections were analyzed using the 2021 existing traffic volumes illustrated in **Figure 4.** As the TMC traffic data was obtained in 2019, growth rates were applied to all traffic movements at the study intersections as outlined in **Section 4.3.** Detailed capacity analysis worksheets are included in **Appendix G**. Level of Service Definitions are provided within **Appendix H**.

Table 10 outlines the 2021 existing traffic operations. Volume-to-capacity ratios which exceeded the critical thresholds outlined in **Section 3.8.3** are bolded within the table.



NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.

Figure 4: 2021 Existing Traffic Volumes

Table 10: 2021 Existing Traffic Operations

Intersection	Control	Peak Hour	Level of Service [1]	Control Delay	Critical v/c ratio [2]	95th Percentile Queue Length > Storage Length [3]
Ninth Line and Eglinton Avenue West / East Lower Base Line	Signal	A.M.	E	68.3s	**1.08 (SBT)** **1.05 (EBT)**	30.7m > 15.0m (EBL) 34.6m > 30.0m (WBL) 54.5m > 30.0m (NBR) 100.1m > 65.0m (SBL)
		P.M.	E	56.1s	**1.04 (NBT)** **1.03 (SBL)** **0.91 (WBT)** **0.86 (EBL)**	55.1m > 15.0m (EBL) 73.2m > 30.0m (WBL) 81.1m > 65.0m (NBL) 54.4m > 30.0m (NBR) 97.0m > 65.0m (SBL)
Ninth Line and Erin Centre Boulevard	Signal	A.M.	B	13.5s	0.80 (SBT)	31.9m > 15.0m (SBL)
		P.M.	B	18.0s	**0.90 (NBT)**	29.3m > 15.0m (SBL)
Ninth Line and Candlelight Drive	Stop (Minor)	A.M.	C	16.7s	0.74 (SBT)	None
		P.M.	D	27.6s	0.72 (NBT)	None
Ninth Line and Skyview Street	Stop (Minor)	A.M.	B	14.1s	0.73 (SBT)	None
		P.M.	D	26.7s	0.71 (NBT)	None

Note 1: The Level of Service of a signalized intersection is based on the average control delay per vehicle. The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach.

Note 2: The critical v/c ratio is considered to be the maximum v/c ratio for movements at the intersection where the maximum v/c ratio does not exceed the critical thresholds. All v/c ratios that exceed the critical thresholds outlined in Section 3.8.3 are bolded.

Note 3: The 95th percentile queue lengths were derived from Sim-Traffic reports using 15-minute seeding, 60-minute simulation and an average of five runs. The 95th percentile queue lengths which are accommodated by the storage or a centre turn lane are not documented in this table.

The signalized intersection of Ninth Line and Eglinton Avenue West / East Lower Base Line is currently operating at a LOS "E" during the weekday a.m. and p.m. peak hours. The intersection has a maximum control delay of 68.3s and volume-to-capacity ratio of 1.08 in the critical a.m. peak hour. Several movements, including all through movement lanes, are operating near or at capacity with volume-to-capacity ratios above one in the p.m. peak hour. These findings support the need for roadway expansion as recommended in the Ninth Line EA. The v/c ratios greater than 1.00 is not practical, but this can be expected as the 2021 existing traffic volumes were forecasted herein from 2019 data and was based on the City supplied growth rates (as outlined in **Section 4.3**) which accounts for the future Ninth Line widening. The results show that the volumes used for the existing conditions analysis herein are higher than practically possible under the existing configuration.

The signalized intersection of Ninth Line and Erin Centre Boulevard is operating at a LOS "B" or better with a maximum control delay of 18.0s and volume-to-capacity ratio of 0.90 during the p.m. peak hour. The southbound-left movement has queue lengths occasionally exceeding the storage length of the lane onto the two-way left turn median lane.

The stop controlled minor connection of Candlelight Drive at Ninth Line is operating at a LOS "D" or better with a maximum control delay of 27.6s and volume-to-capacity ratio of 0.74. Similarly, the stop controlled minor connection of Skyview Street at Ninth Line is operating at a LOS "D" or better with a maximum control delay of 26.7s and volume-to-capacity ratio of 0.71.

4.0 Future Background Conditions

4.1 Horizon Year and Time Periods

Per the City of Mississauga's guidelines, the horizon year of analysis is typically five years from the date of study. Therefore, the 2026 horizon year was used for this study. This approach was confirmed through Terms of Reference correspondence with the City.

4.2 Roadway Improvements

In June 2021, a Class Environment Assessment study was completed by the City of Mississauga concerning the Ninth Line corridor between Eglinton Avenue West and Derry Road West. The study identified roadway improvements to Ninth Line to accommodate future developmental growth on lands adjacent to Ninth Line. The roadway improvements, which included lane configurations and signalization, were identified in the supporting Transportation Report of the Environmental Study Report (Appendix D, section 4.5 "Preferred Alternative"). The improvements are expected to be implemented in 2023 and/or 2024 (per the Ninth Line EA, section 12.3 "Timing of Improvements"). Therefore, the future background and future total analysis herein assumes that the roadway improvements recommended in the study will be implemented by the 2026 horizon year.

Provided in **Figure 5** are the forecasted future lane configurations at the study intersections herein. **Table 11** presents the forecasted roadway improvements at the study intersections.

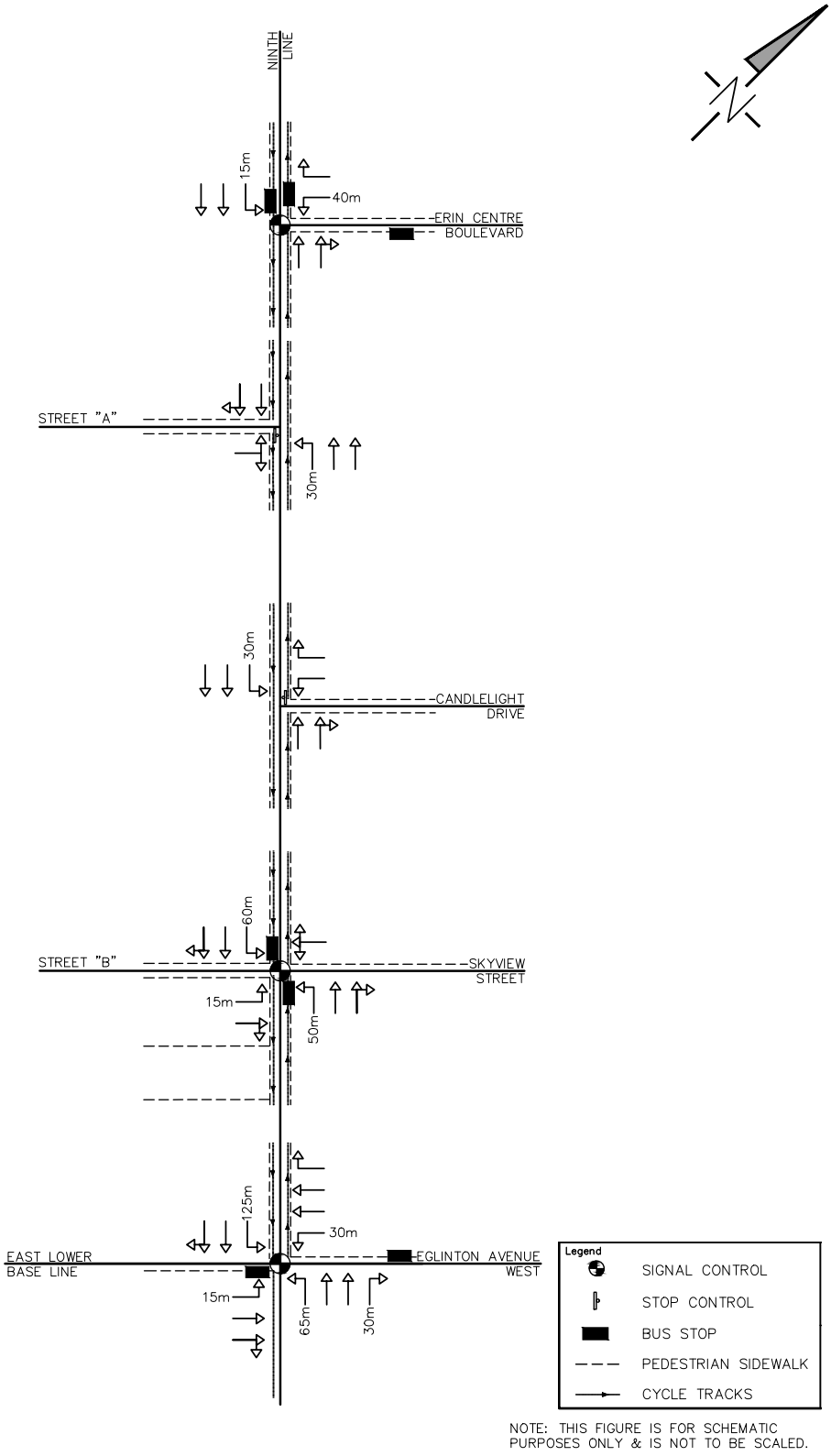


Figure 5: Future Boundary Road Network

Table 11: Boundary Road Network – Improvements at Study Intersections

Intersection/ Roadway	Future Roadway Improvements to Existing	Source
Ninth Line Corridor Widening	One additional NBT and SBT lane	Ninth Line EA / City of Mississauga[1]
Ninth Line and Eglinton Avenue West / East Lower Base Line	Ninth Line widening, and revising the current EBR lane to an EBTR.	Ninth Line EA / City of Mississauga[1]
Ninth Line and Skyview Street/Street B (New approach)	Ninth Line widening, along with new NBL, EBL, and EBTR lanes for the new Street B connection to Ninth Line	Ninth Line EA / City of Mississauga[1]
Ninth Line and Street A (New intersection)	Ninth Line widening, along with new NBL and EBLTR lanes for the new Street A connection to Ninth Line	Ninth Line EA / City of Mississauga[1]

Note 1: Confirmed through correspondence with City of Mississauga Traffic Modelling Department.

Refer to **Appendix F** for Ninth Line EA excerpts.

4.3 Growth Rates

To estimate future traffic on the boundary road network, growth rates were applied to existing traffic movements to account for future traffic growth passing through the boundary road network. Growth rates were applied separately for Arterial Roads, Local and Collector Roads. All growth rates discussed herein refer to the annual growth rate. Each growth rate is compounded annually to account for year over year background traffic growth. The growth rates herein were additionally applied to the 2019 traffic data to arrive at the 2021 existing conditions scenario.

4.3.1. Arterial Roads

As discussed in the Terms of Reference correspondence (refer to **Appendix B**), the City provided through movement growth rates for Ninth Line, Eglinton Avenue West and Winston Churchill Boulevard within the study area. The growth rates that were recommended for Ninth Line through movements between 2021 and 2031 assume lane widening occurring in the near future. As discussed in **Section 4.2,** this study incorporates lane widening for Ninth Line within the future background and future total analysis scenarios. Therefore, growth rates used in this study are expected to be reflective of traffic volume increases as a result of roadway widening.

Furthermore, to maintain consistency with **Section 4.3.2**, a 0.5% growth rate was applied to arterial road turning movements. It is expected that most of the turning movement traffic growth will be captured by the traffic projected from the background developments in **Section 4.4**.

Table 12 outlines the growth rates on the boundary road network for the 2021 to 2026 period.

Table 12: Boundary Road Network Growth Rates from 2021-2026

Street	Ninth Line	
Direction	**Northbound**	**Southbound**
A.M. Peak Hour	3.50% [1]	3.50% [1]
P.M. Peak Hour	3.00% [1]	3.50% [1]
Street	**Eglinton Avenue West**	
Direction	**Eastbound**	**Westbound**
A.M. Peak Hour	2.00%	1.50%
P.M. Peak Hour	1.50%	2.00%

Note 1: A growth rate of 0.5% compounded annually was applied to movements entering and exiting Skyview Street, Candlelight Drive and Erin Centre Boulevard (see Section 4.3.2).

4.3.2. Local and Collector Roads

At the Ninth Line intersections of Skyview Street, Candlelight Drive and Erin Centre Boulevard, the growth rates for Ninth Line outlined in **Table 12** were applied to through movements only. A growth rate of 0.5% compounded annually was applied to movements entering and exiting the local roads, as the surrounding residential neighbourhood east of Ninth Line is fully built-out and thus would not be expected to experience significant background traffic growth.

4.4 Background Developments

Background developments were confirmed through Terms of Reference correspondence with City staff. These background developments were accounted for under future background conditions. The developments are outlined in **Table 13.**

Table 13: Background Developments

Development	Location	Development Proposal	Statistics
Erin Mills Development[1]	North-east quadrant of Highway 403 and Highway 407	Industrial Park including retail and office uses	112,630 sq. m of industrial park 6,762 sq. m of retail 8,074 sq. m of office
407 Transitway	Future stations on Ninth Line: Britannia Road and Derry Road Future station on Trafalgar Road	Provincial transit system with exclusive right-of-way parallel to Highway 407; includes running way, stations, platforms, parking, and passenger pick-up and drop-off facilities.	---
Emerging Land Use Concept	Ninth Line (west side) from Highway 403 to Highway 401	Greenfield community consisting of residential, commercial retail, general office and general light industrial uses divided into seven zones along Ninth Line.	3,543 residential units 5,467 sq. ft of retail 40,009 sq. ft of general office 296,191 sq. ft of general light industrial
5150 Ninth Line	5150 Ninth Line (west side of Ninth Line north of Candlelight Drive)	Townhouse greenfield development	169 residential units
5080, 5054, 5034 Ninth Line	5080, 5054, 5034 Ninth Line (west of Ninth Line south of Candlelight Drive)	Residential development including retail uses	1270 residential units 7,000 sq. ft of retail

Note 1: Through Terms of Reference correspondence with City staff, an additional background development was added to the scope, located at the southwest corner of Eglinton Avenue and Ridgeway Drive. The Erin Mills background development includes this background development within its site location, and thus was considered to capture the associated background traffic. Refer to **Appendix B** for Correspondence and **Appendix I** for MMM study excerpts.

Appendix I contains excerpts from the MMM study on the background developments. The composite plan in **Appendix A** demonstrates the proposed development with the adjacent background developments. A proposed private road will connect the nearby 5080 and 5150 Ninth Line properties upon build-out of the proposed development, enabling vehicular access from the proposed development without needing to use Ninth Line. These developments have been accounted for under future background conditions (see **Sections 4.4.4 and 4.4.5**).

4.4.1. Erin Mills Development

According to the MMM study, the Erin Mills Development is an industrial park development located within the area bounded by Eglinton Avenue West to the north, Ridgeway Drive to the east, Highway 403 to the south and Highway 407 to the west. The development statistics are noted in **Table 13.**

The timing of the Erin Mills development is unknown; although a review of the google street view near the background development showed ongoing construction within the site footprint with portions currently built. Therefore, this development was accounted for under future background conditions.

In Terms of Reference correspondence, an additional background development at the southwest corner of Eglinton Avenue West and Ridgeway Drive was added to the TIS scope by City staff. However, the Erin Mills background development includes this background development within its site location, and thus was considered to capture the associated background traffic. Refer to **Appendix B** for correspondence. **Figure 6** illustrates the background traffic associated with the Erin Mills Development.

4.4.2. 407 Transitway

The MTO is planning the construction of an exclusive grade separated bus rapid transit (BRT) corridor, with the potential to be converted to a Light Rail Transit (LRT) corridor. The 407 Transitway will run parallel to Highway 407 and will span from Burlington to Pickering. The 407 Transitway infrastructure will provide infrastructure including an exclusive right-of-way, stations, park and ride, and passenger pick up and drop off services.

Figure 7 illustrates the background traffic associated with the Britannia Road and Derry Road stations of the 407 Transitway initiative. These volumes were added to the future background scenario as confirmed in the terms of reference. **Appendix J** includes Highway 407 Transitway Environmental Assessment excerpts. It is noted that the timing for implementation of the 407 Transitway is unknow, however, the traffic was considered in the 2026 horizon. Therefore, the results herein may be overstated for the 2026 horizon.

4.4.3. Emerging Land Use Concept (MMM Study)

The MMM study forecasted traffic for the Emerging Land Use Concept along the Ninth Line Corridor for various non-auto modal split scenarios: 5%, 10%, 15%, and 20%. For the purposes of conservative analysis, the site traffic volumes for the lowest non-auto modal split scenario (5%) was applied to this analysis. As the emerging land use concept was set for 2041 buildout, and the existing conditions year of the MMM study was 2015, the number of emerging land use background trips for a given scenario was factored proportionally to reflect ongoing development of Ninth Line properties between 2015 and 2041. This amounted to a factor of 0.423 being applied to the 2041 full buildout volumes.

Zone "1" of the Emerging Land Use Concept spans from Erin Centre Boulevard to Eglinton Avenue West and includes the subject property (see **Appendix I** for excerpts from the MMM study). The background site traffic associated with the area of Zone "1" was removed from the boundary road network. Except for a potential future 4087 East Lower Base Line development (discussed in **Section 6.5**), all developments within Zone "1" with the exception site herein are included as background developments.

The sites which encompass Zone "1" include the subject site, the 5080 Ninth Line background development, the 5150 Ninth Line background development, and any future development occurring on the 4087 East Lower Base Line property. Therefore, removing background traffic associated with Zone "1" as per the MMM study from the boundary road network is an appropriate action as a more informed estimate of Zone "1" trips is provided per the site plans of the various developments as captured in this study.

Figure 8 illustrates the 2026 horizon background traffic volumes associated with the Emerging Land Use Concept background developments.

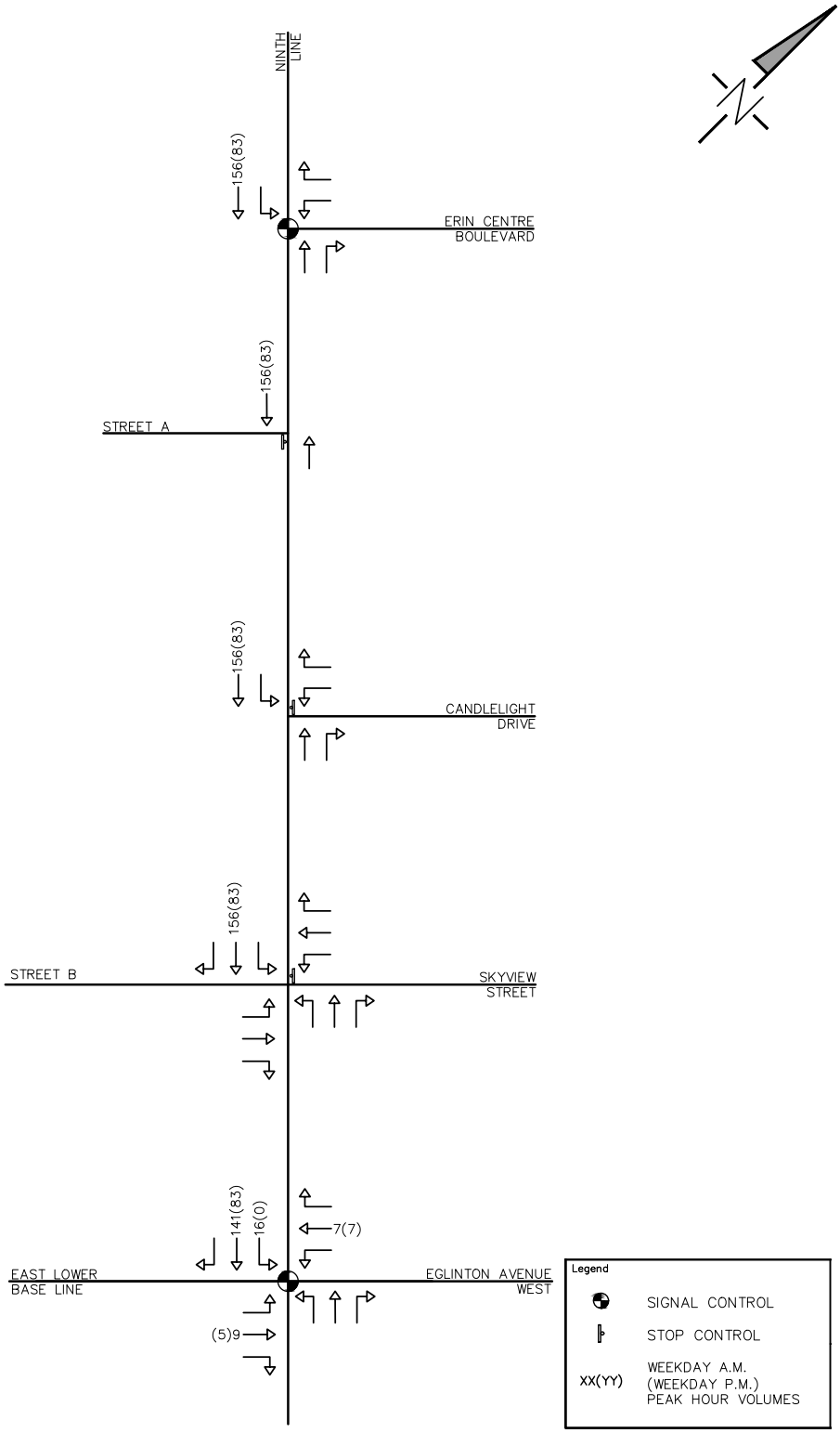


Figure 6: Background Traffic – Erin Mills Industrial Development Volumes

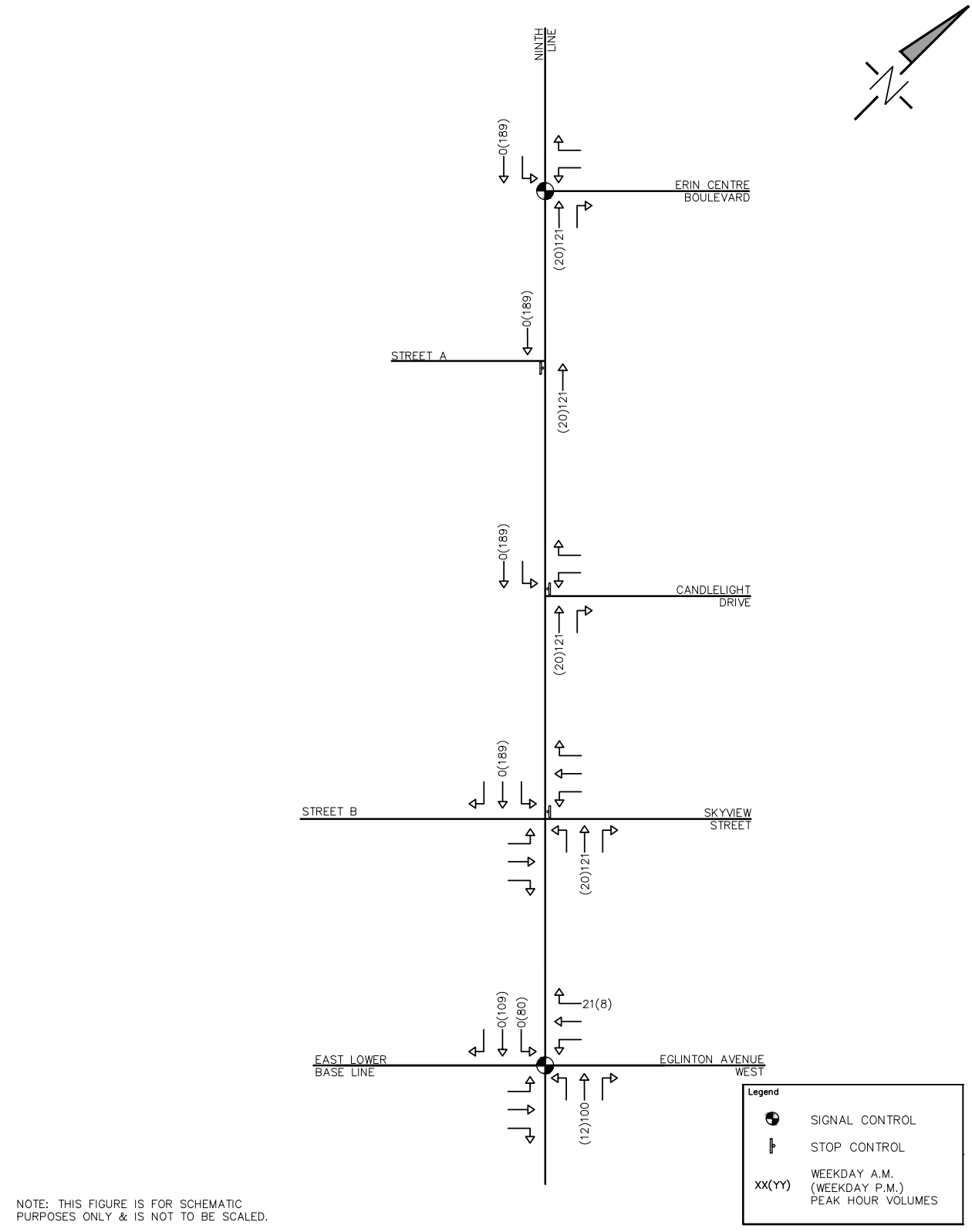


Figure 7: Background Traffic – 407 Transitway Volumes

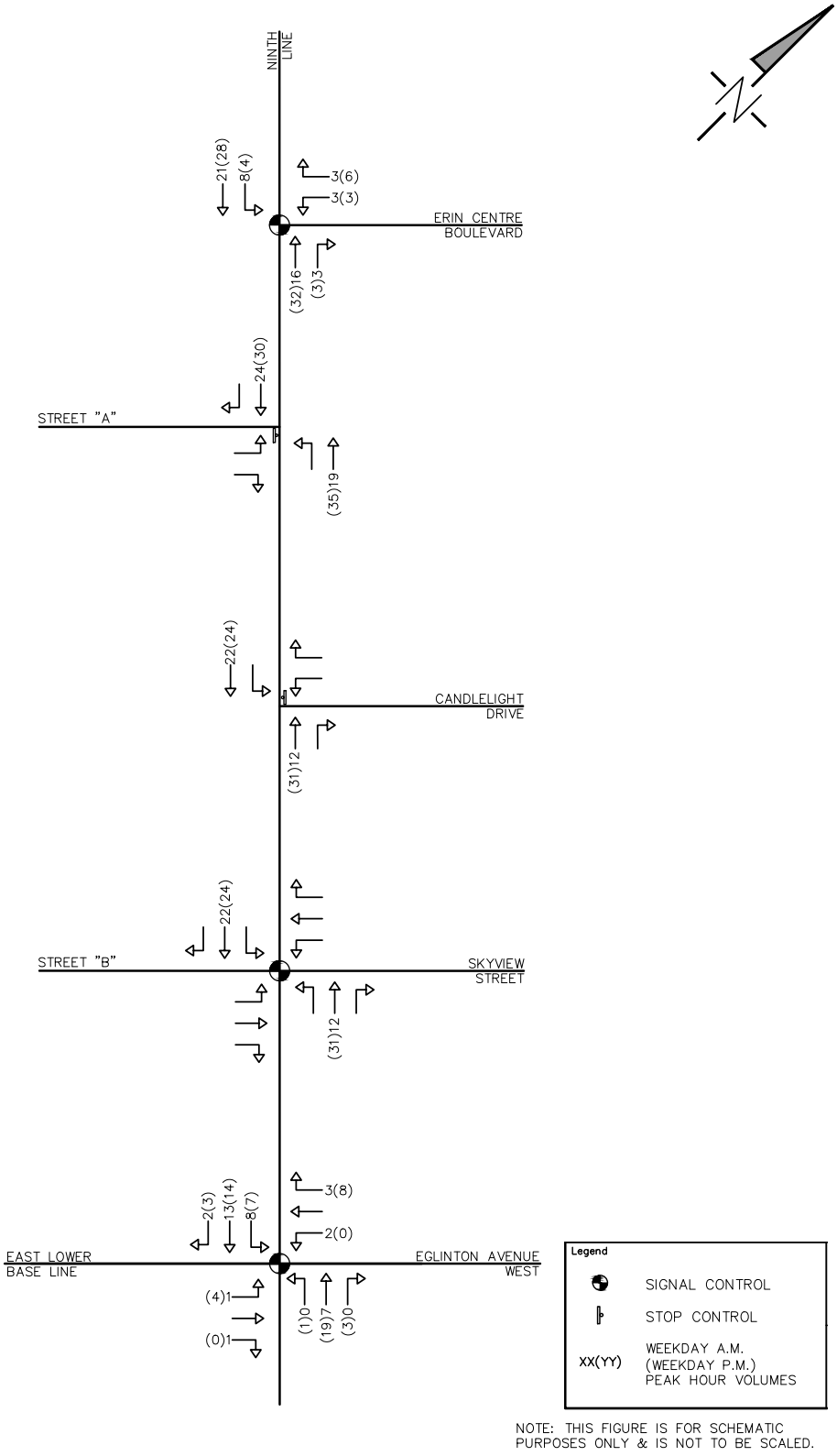


Figure 8: Background Traffic – 2026 Emerging Land Use Concept Volumes

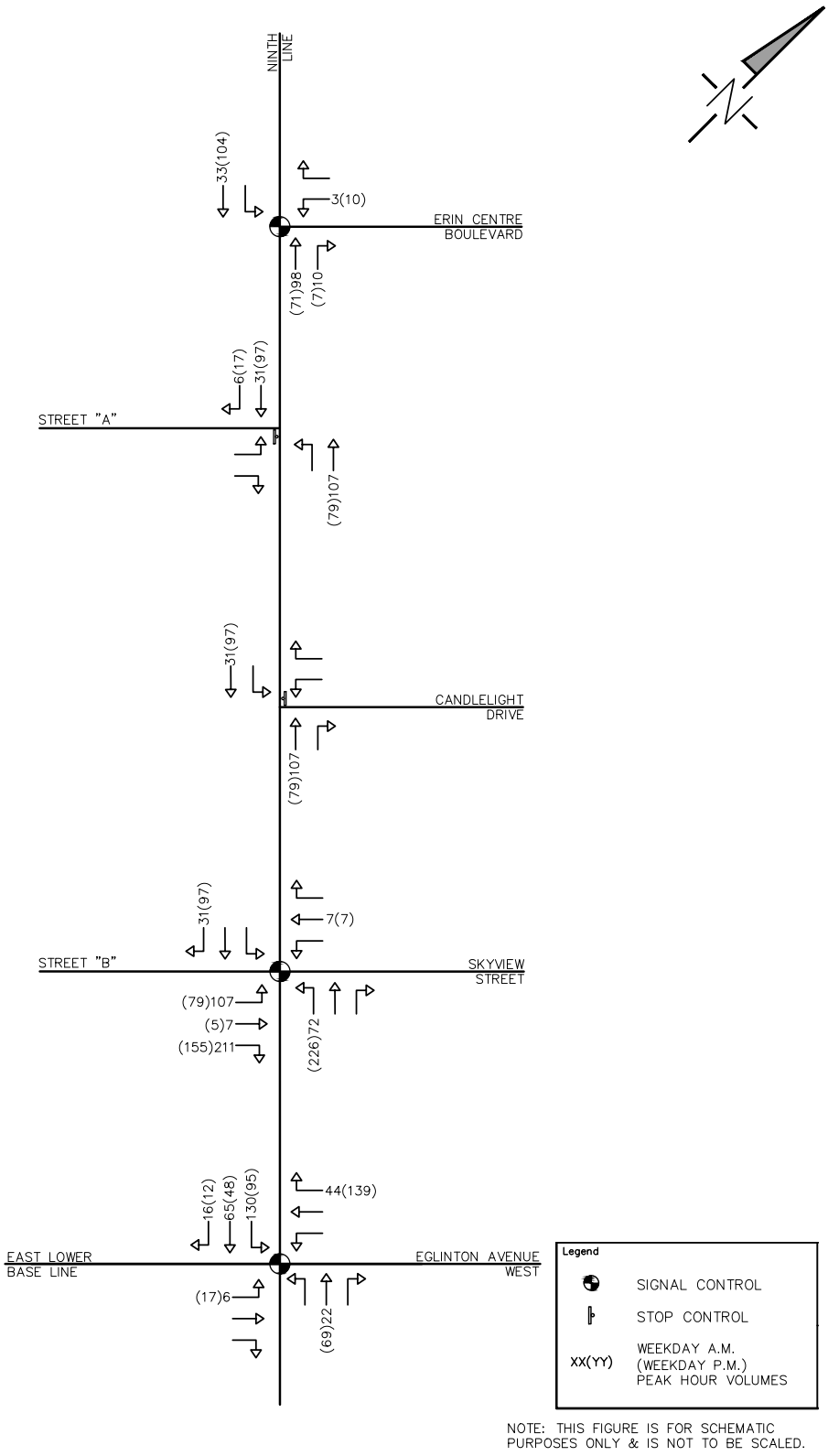


Figure 9: 5080 Ninth Line Volumes

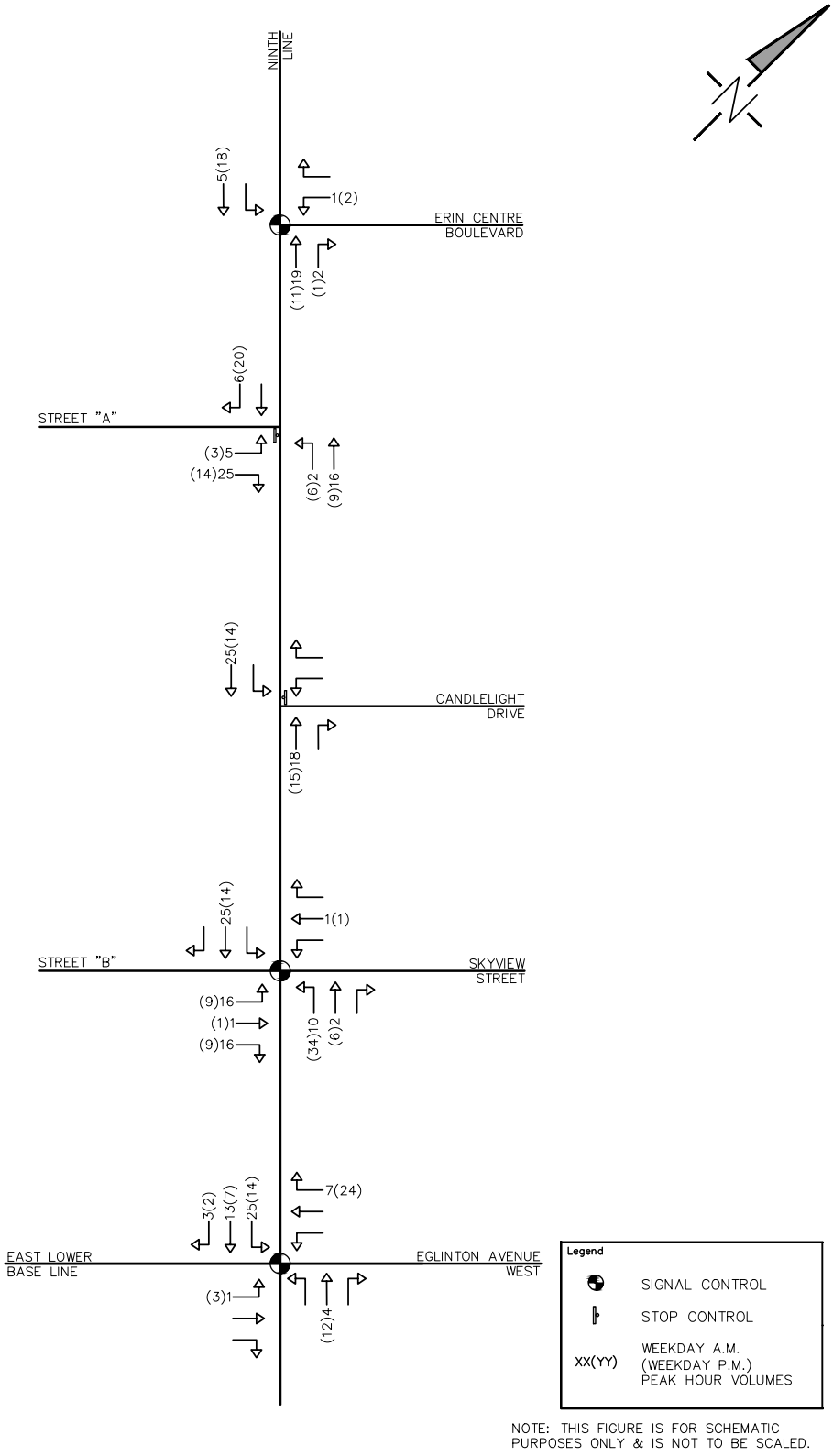


Figure 10: 5150 Ninth Line Volumes

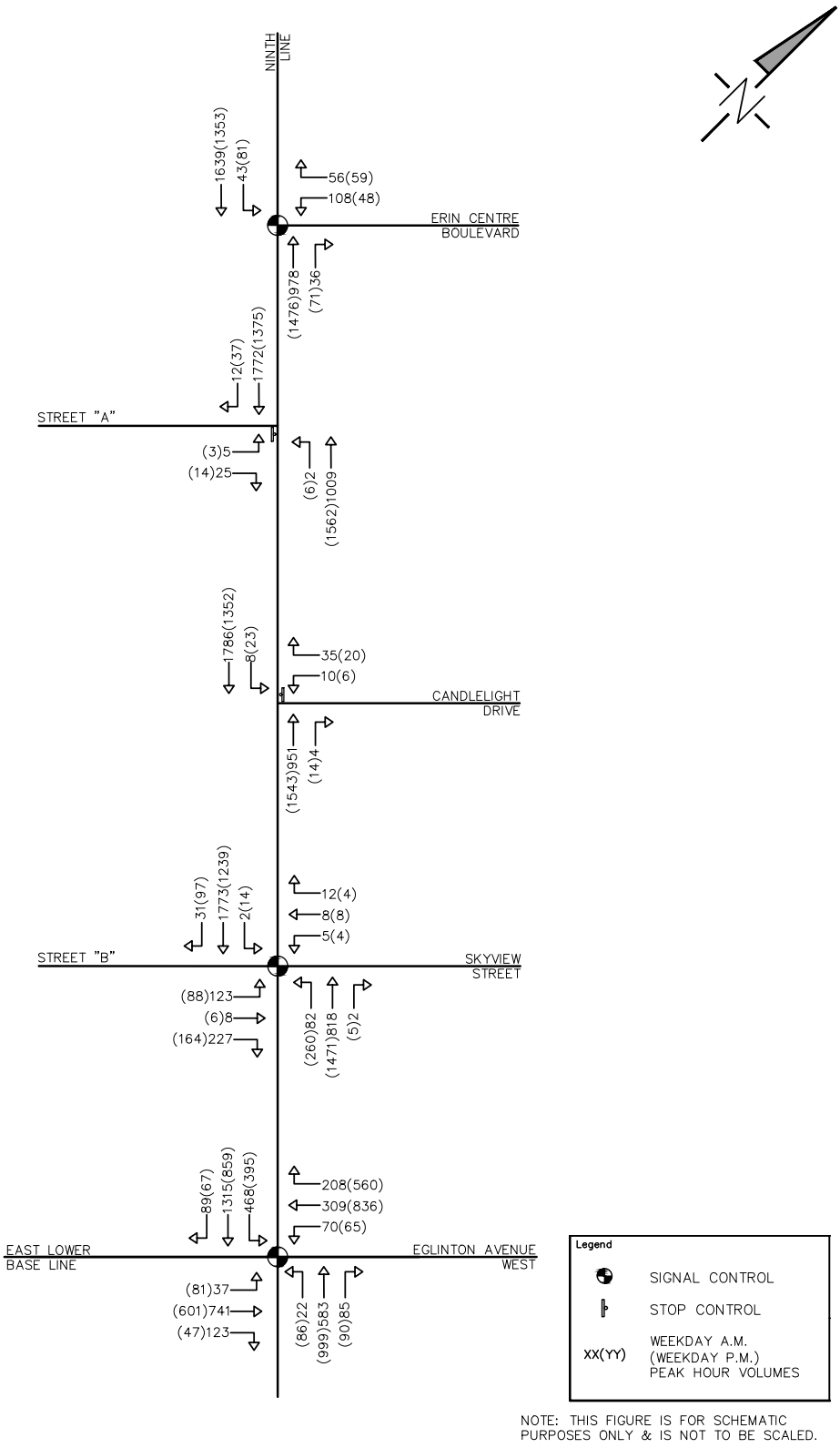


Figure 11: 2026 Future Background Traffic Volumes

4.4.4. 5080, 5054, and 5034 Ninth Line Development

Your Home Developments is proposing a residential development on the 5080, 5054, and 5034 Ninth Line parcels, as shown on the Composite plan in **Figure 2**. The development proposes a total of 1270 residential dwelling units and 7000 square feet of retail. Crozier prepared a Traffic Impact Study in support of the 5080, 5054, and 5034 Ninth Line development that was submitted to the City in October 2021.

Trip Generation and Trip Distribution for 5080, 5054, and 5034 Ninth Line were taken directly from the 5080 Ninth Line TIS. The 5080 Ninth Line TIS trip distribution accounted for demand induced travel patterns within the area that include the 5080, 5150, and 5160-70 developments. The distribution was based upon Transportation Tomorrow Survey Data, existing travel patterns and expected catchment areas.

Figure 9 outlines the traffic volumes from this background development. Excerpts from the 5080 Ninth Line TIS are provided in **Appendix K**.

4.4.5. 5150 Ninth Line Development

Mattamy Homes is proposing a residential development at the adjacent 5150 Ninth Line property as shown in the composite plan in **Appendix A**. The development proposes a total of 169 residential townhouse dwelling units to be constructed in two phases: Phase 1 (with an anticipated build-out of 2021) and Phase 2 (with an anticipated build-out of 2022). Crozier prepared a Traffic Impact Study in support of the 5150 Ninth Line development that was submitted to the City in February 2021.

Trip Generation for 5150 Ninth Line were taken directly from the 5150 Ninth Line TIS (excerpts provided within **Appendix L**). Trips were distributed to the boundary road network using the same trip distribution outlined for the proposed development in **Sections 5.2 and 5.3**. **Figure 10** outlines the traffic volumes from this background development.

4.5 Intersection Operations

Table 14 outlines the 2026 future background traffic operations at the study intersections. The future background intersection operations at the study intersections were analyzed using the 2026 future background traffic volumes illustrated in **Figure 11**. Level of Service Definitions are provided in **Appendix H**. Detailed capacity analysis worksheets are included in **Appendix G**.

Table 14: 2026 Future Background Traffic Operations

Intersection	Control	Peak Hour	Level of Service [1]	Control Delay	Critical v/c ratio [2]	95th Percentile Queue Length > Storage Length [3]
Ninth Line and Eglinton Avenue West / East Lower Base Line	Signal	A.M.	D	38.6s	**0.89 (SBL)** **0.89 (SBT)**	37.6m > 15.0m (EBL) 30.3m > 30.0m (WBL) 45.0m > 30.0m (NBR)
		P.M.	E	70.1s	**1.21 (SBL)** **1.12 (NBT)** **1.05 (WBT)**	50.0m > 15.0m (EBL) 69.3m > 30.0m (WBL) 102.6m > 65.0m (NBL) 58.6m > 30.0m (NBR) 208.1m > 125.0m (SBL)
Ninth Line and Erin Centre Boulevard	Signal	A.M.	B	10.6s	0.66 (SBT)	24.7m > 15.0m (SBL)
		P.M.	B	11.4s	0.73 (NBT)	36.8m > 15.0m (SBL)
Ninth Line and Candlelight Drive	Stop (Minor)	A.M.	B	14.7s	0.54 (SBT)	None
		P.M.	C	18.1s	0.64 (NBT)	44.6m > 30.0m (SBL)
Ninth Line and Skyview Street / Street B	Signal	A.M.	B	16.8s	0.76 (SBT)	21.3m > 15.0m (EBL)
		P.M.	B	11.9s	0.74 (SBT)	21.9m > 15.0m (EBL) 50.6m > 50.0m (NBL)
Ninth Line and Street A	Stop (Minor)	A.M.	C	23.8s	0.76 (SBT)	None
		P.M.	B	14.2s	0.59 (SBT)	None

Note 1: The Level of Service of a signalized intersection is based on the average control delay per vehicle. The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach.

Note 2: The critical v/c ratio is considered to be the maximum v/c ratio for movements at the intersection where the maximum v/c ratio does not exceed the critical thresholds. All v/c ratios that exceed the critical thresholds outlined in Section 3.8.3 are bolded.

Note 3: The 95th percentile queue lengths were derived from Sim-Traffic reports using 15-minute seeding, 60-minute simulation and an average of five runs. The 95th percentile queue lengths which are accommodated by the storage or a centre turn lane are not documented in this table.

Under 2026 future background conditions, the signalized intersection of Ninth Line and Eglinton Avenue West / East Lower Base Line is projected to operate at a LOS "D" and "E" during the weekday a.m. and p.m. peak hours. The turn queues are forecast to occasionally exceed the turn storage lanes at the intersection during the peak hours as identified by the MMM study and the Ninth Line EA Studies. These queues may occasionally obstruct some movements at adjacent intersections during the peak hours. These operations are however typical for high traffic arterial intersections during the peak hours and operations are expected to return to acceptable levels during the off-peaks.

The high volumes and associated volume-to-capacity ratio for the southbound left movement is consistent with the MMM and Ninth Line EA Studies. It is recommended that the intersection be monitored by the City and that the signal timing plan be adjusted as needed in future for optimal performance including increasing effective green time for critical movements. Further, it is noted that section 9.17.5 of the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (GDGCR) identifies the warrant for dual left turn lanes at peak hour volumes greater than 300. Given the southbound left turn traffic is forecast to be in excess of 300 trips in both the a.m. and p.m. peak hours dual southbound left turn lanes may be considered as part of the Ninth Line EA roadway improvements or investigated in the future as a long term measure to further improve the intersection operations.

Given several other planned roadway improvements on adjacent roadways as well as future transit intensification on the Ninth Line corridor, the forecasted issues at the intersection of Ninth Line and Eglinton Avenue / East Lower Base Line may be overstated herein.

The signalized intersection of Ninth Line and Erin Centre Boulevard Line is projected to operate at a LOS "B" or better with a maximum control delay of 11.4s and volume-to-capacity ratio of 0.73 during the peak hours. The southbound-left movement queue lengths are expected to occasionally exceed the storage length of the lane onto the two-way left turn median lane.

The stop controlled minor connection of Candlelight Drive at Ninth Line is projected to operate at a LOC "C" or better with a maximum control delay of 18.1s and volume-to-capacity ratio of 0.64.

The signalized intersection of Ninth Line and Skyview Street / Street B Line is projected to operate at a LOS "B" with a maximum control delay of 16.8s and volume-to-capacity ratio of 0.76.

The stop controlled minor connection of Street A at Ninth Line is projected to operate at a LOS "C" or better in the peak hours, with a maximum control delay of 23.8s. The maximum volume-to-capacity ratio is expected to be 0.76.

The forecasted future background operations herein at the study intersections are consistent with the findings of the MMM study and the Ninth Line EA Study. Further, the boundary road network is projected to operate effectively under the 2026 future background conditions with implementation of the roadway improvements outlined in this section, supported by the Ninth Line EA and the MMM study.

5.0 Site Generated Traffic

The proposed development will result in additional vehicles on the boundary road network that would otherwise not exist. The proposed development will also result in additional turning movements at the study intersections. This section outlines these additional vehicular movements.

5.1 Trip Generation

Trip generation for the proposed development was forecasted using published data from the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition. The ITE Trip Generation Manual is a compendium of industry collected trip generation data across North America for a variety of land uses and is used industry-wide as a source for trip generation forecasts.

Per the site plan, the proposed residential development includes a total of 198 residential units. Multifamily Housing (Mid-Rise) was applied to the proposed development as outlined in **Table 15** below. The greater trip generation estimate of the fitted curve equation and the rate equation was used.

Table 15: Site Trip Generation

Units	Land Use	Peak Hour	Trips Generated		
			Inbound	Outbound	Total
198 Units	LUC 221 "Multifamily Housing (Mid-Rise)"	A.M.	17	59	76
		P.M.	47	31	78

The full build-out of the proposed development is expected to generate a total of 76 and 78 total two-way vehicle trips during the weekday a.m. and p.m. peak hours, respectively.

5.2 Boundary Road Network Trip Distribution

The trips generated by the proposed development were distributed to the boundary road network using a similar methodology employed in the 5150 Ninth Line TIS. Excerpts from this report have been provided in **Appendix L**.

The trip distribution was determined based on 2016 Transportation Tomorrow Survey (TTS) data. TTS is a comprehensive survey of transportation characteristics of households in the Greater Toronto Area (GTA) and surrounding areas.

For the proposed development, TTS results were filtered to auto trips exiting 2006 GTA Zones 3615, 3616, 3809, 3810 and 3811 during the weekday a.m. peak period. These zones consist of the residential zones along the Ninth Line corridor, and thus were considered to be appropriate for trip distribution analysis. The row variable was set to "Planning District of Destination" and the column variable was set to "Use of 407" to quantify the number of trips travelling to each destination that use Highway 407 ETR.

From this query, trip destinations were determined, and percentage of trips assigned to each destination was accounted for. Trips were assumed to travel to and from their destination points based on the most convenient route, considering trips using Highway 407 ETR and trips not using Highway 407 ETR.

It was determined that approximately 65% of the total outbound trips exiting the study area during the weekday a.m. peak period are internal to Mississauga. Accordingly, trip distribution internal to Mississauga was determined using a combination of existing travel patterns, expected destinations, and TTS results for trips travelling within Planning District "Mississauga."

The resultant boundary road network trip distribution is outlined in **Table 16.**

Table 16: Boundary Road Network Trip Distribution

Arriving From / Departing To	Greater Toronto Area (GTA) Trip Locations	Total Percentage
Ninth Line (north)	Northern Mississauga, Brampton, Vaughan, Markham, Milton, etc.	**30%**
Ninth Line (south)	*Hamilton, Oakville, Burlington, Downtown Toronto, etc.*	**20%**
Eglinton Avenue West (east)	*Southern and Eastern Mississauga, Midtown Toronto*	**40%**
***Erin Centre Boulevard* (east)**	*Local Destinations*	**3%**
***Skyview Street* (east)**	*Local Destinations*	**2%**
East Lower Base Line (west)	Brantford, Niagara, etc.	**5%**
Total		**100%**

Trips arriving from and departing to the north via Ninth Line include trips using Highway 407 ETR (east), trips to and from areas internal to northern Mississauga (e.g., Meadowvale) and trips using Highway 401 west toward Milton and greater Waterloo. Trips arriving from and departing to the south via Ninth Line include trips using Highway 403 (west), the Queen Elizabeth Way (QEW), and trips to and from areas internal to Mississauga (e.g., Port Credit).

Trips arriving from and departing to the east via Eglinton Avenue West include trips using Highway 403 (east) via Winston Churchill Boulevard, and trips to and from areas internal to Mississauga along Eglinton Avenue West and Winston Churchill Boulevard. Trips arriving from and departing to the west via East Lower Base Line include trips using Highway 407 ETR (west) via Trafalgar Road.

Appendix M contains the TTS data.

5.3 Access Trip Distribution

Due to the subject site sharing an internal private roadway with the nearby 5080 and 5150 Ninth Line residential developments, it is expected that site traffic will access the site via both the Street B and Street A access connections, similar to the adjacent composite lands.

The site trip distribution (for traffic both entering or exiting the site) is based on the ease of ingress and egress at the two accesses considering traffic from the adjacent lands. For example, given Street B is signalized, it is expected that more outbound left turn movements will favour using this access due to the resulting shorter expected delays. This was incorporated into the access trip distribution. which is presented in **Table 17**.

Table 17: Access Trip Distribution

Ninth Line Access	Roadway Arriving from / Leaving to	Inbound Trip Distribution	Outbound Trip Distribution
Street A	Ninth Line (north)	**33%**	**8%**
Street A	Ninth Line (south)	**10%**	**40%**
Street B	Ninth Line (north)	**0%**	**25%**
Street B	Skyview Street (east)	**2%**	**2%**
Street B	Ninth Line (south)	**55%**	**25%**

Figure 12 outlines the trip distribution for the proposed development.

5.4 Trip Assignment

The trip distribution outlined in **Section 5.2** and **Section 5.3** was applied to the site trip generation to calculate the trip assignment for the proposed development. Trips were assumed to travel to and from their destination points based on the most convenient route. **Figure 13** outlines the trip assignment for the proposed development.

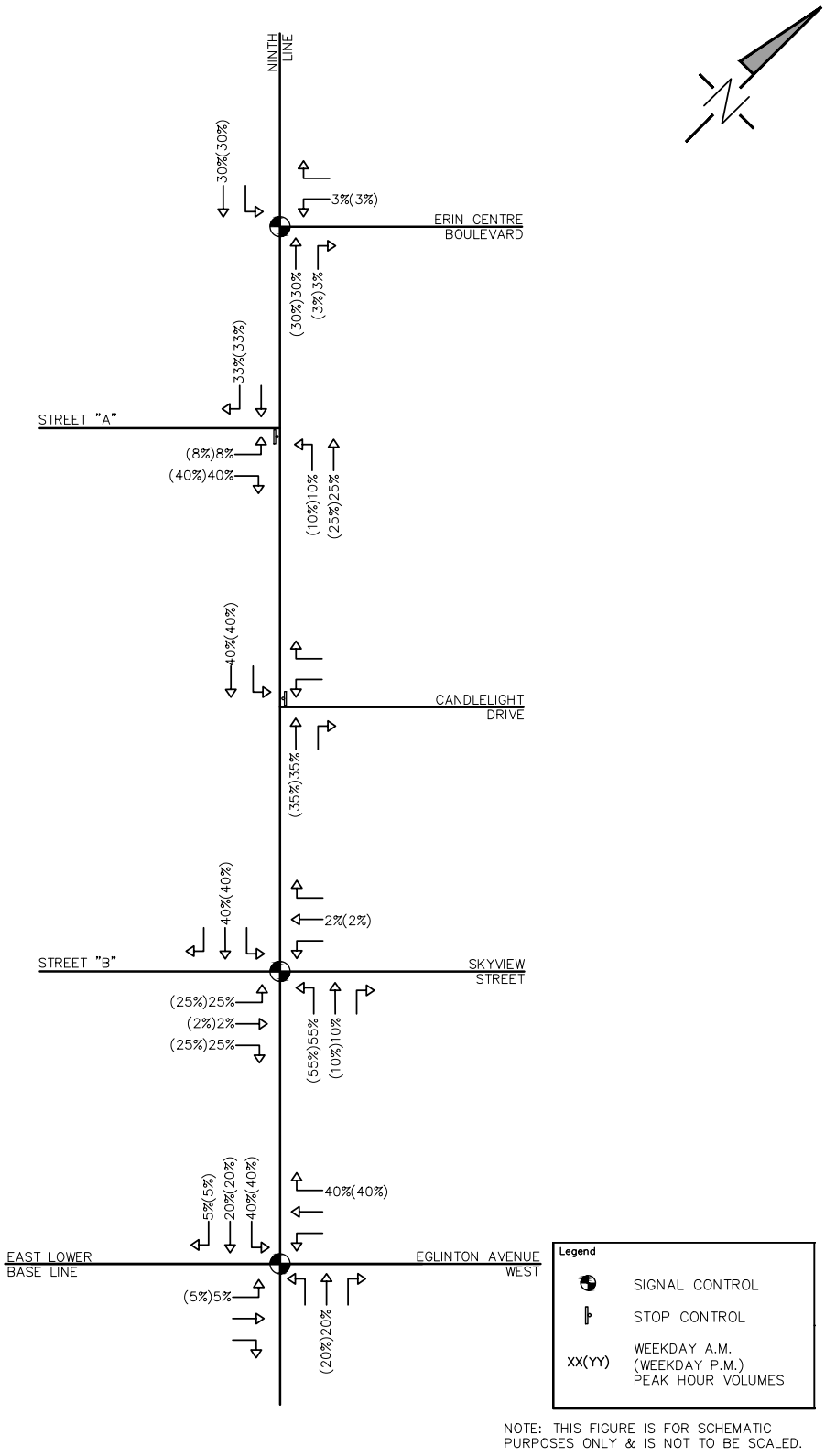


Figure 12: Site Trip Distribution

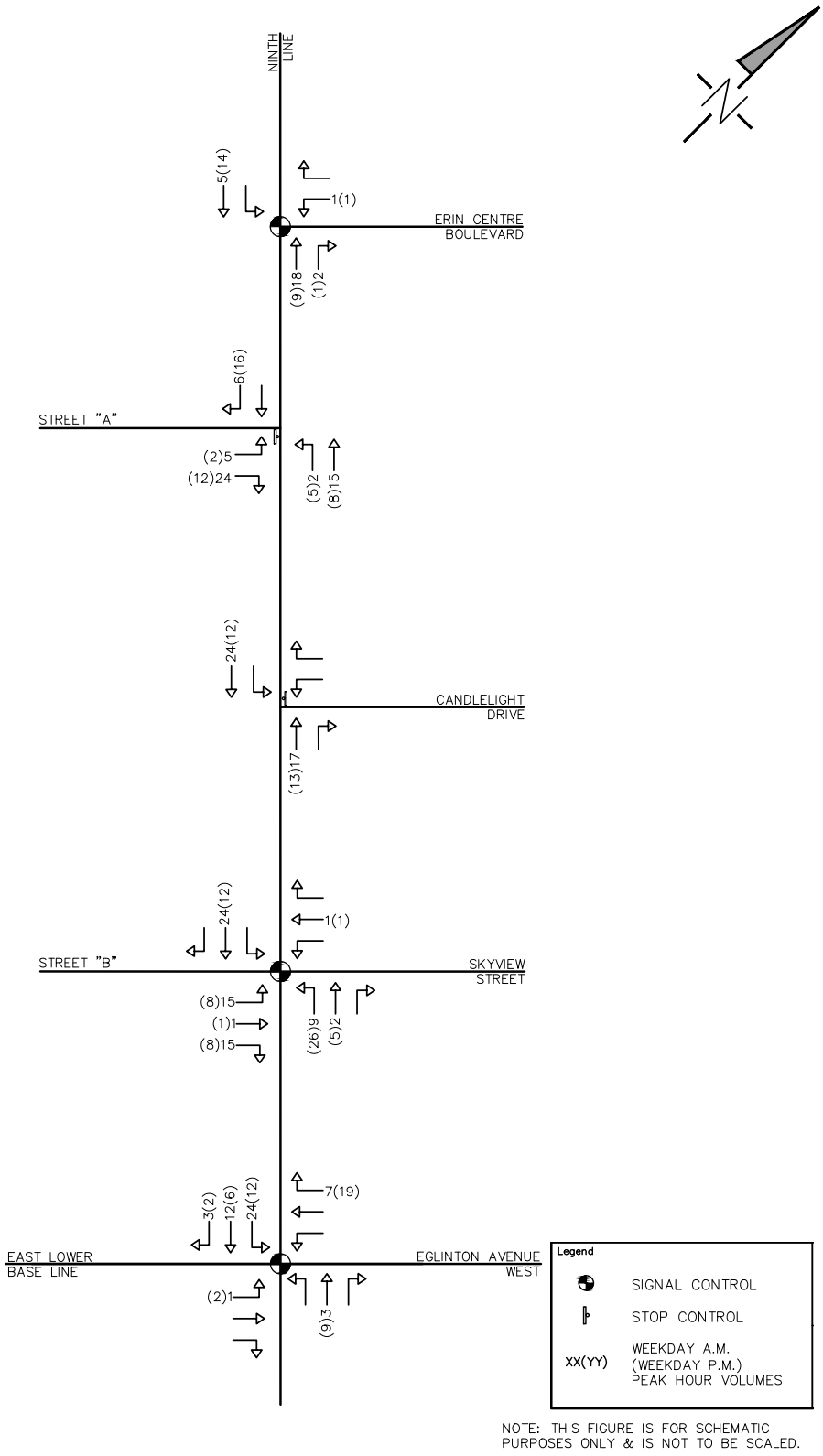


Figure 13: Site Trip Assignment

6.0 Future Total Conditions

6.1 Signal Warrant Analysis

A signal warrant analysis was conducted for the following cases:

- Ninth Line and Street A – 2026 Future Total

The analysis followed the procedures specified in Chapter 4 of the "Ontario Traffic Manual – Book 12", March 2012. Justifications 1 (Minimum Vehicular Volume), 2 (Delay to Cross Traffic), 3 (Combination of Justifications 1 and 2), and 4 (4-Hour Volume) were selected as the most appropriate warrants with which to assess the site connections.

The average hour volume was determined using the following formula from OTM Book 12:

AHV = (amPHV + pmPHV) / 4

Where;
AHV = average hour volume
PHV = peak hour volume

Despite the existing speed limit of 70 km/h on Ninth Line being considered "free flow" in the signal warrant analysis, an "urban" operating environment was applied to the signal warrant analysis to reflect the urbanization of the Ninth Line corridor. **Table 18** outlines the results of the signal warrant analysis.

Table 18: Signal Warrant Analysis Results

Location	Operating Environment	Horizon Year	Number of lanes on major road	Traffic Signals Warranted?
Ninth Line and Street A	Urban	2026 Future Total	Two	No

The results of the signal warrant analysis indicate that traffic signals are not warranted, at the intersection of Ninth Line and Street A. This conclusion reflects the assessment within Section 4.2 of the Traffic Analysis undertaken by HDR in support of the Ninth Line EA (excerpts are provided in **Appendix F**) and the 5080 Ninth Line TIS which recommends stop-control at the Ninth Line and Street A intersection through the 2035 horizon year.

Within this analysis, traffic signals were assumed to be implemented at the intersection of Ninth Line and Street B during the 2026 horizon year. It is noted that signal warrants were undertaken in the 5080 Ninth Line TIS in the 2025 future total scenario, which concluded that signals are warranted at the noted study intersection. Further, the Ninth Line EA and 5080 Ninth Line TIS performed traffic analysis with signals at the noted study intersection. Therefore, it is reasonable to assume that signals will be implemented at the intersection of Ninth Line and Skyview Street / Street B in the 2026 horizon year.

Appendix N contains the signal warrant sheets.

6.2 Left-Turn Lane Analysis

A left-turn warrant analysis was conducted for the northbound left movement at Ninth Line and Street A under 2026 Future Total conditions. This was performed in order to compare the results with

the 5150 Ninth Line TIS and the 5080 Ninth Line TIS and recommend improvements as needed.

The analysis was conducted using the Ministry of Transportation (MTO)'s "Design Supplement for TAC Geometric Design Guide for Canadian Roads – June 2017." (TAC-GDGCR). The analysis was conducted using the warrant for "Left Turn Storage Lanes for Four-Lane Undivided Highways Unsignalized." As Street A will be located on the west side Ninth Line, the northbound left-turn movement was analyzed for left-turn lane requirements. **Table 19** outlines the results of the left-turn lane warrant analysis.

Table 19: Left-Turn Lane Warrant Analysis Results

Location	Movement	Horizon Year	Number of lanes on major road	Left-Turn Lane Storage Requirement?
Ninth Line and Street A	NBL	2026 Future Total	Four	Yes – 25m storage length

The results of the left-turn lane analysis indicate that an auxiliary northbound left-turn lane is warranted at the intersection under 2026 future total conditions, with a storage length of 25m. This is the same conclusion to what was identified in the 5150 Ninth Line TIS under 2024 Future Total conditions, and the 5080 Ninth Line TIS under full buildout conditions. For Synchro modelling purposes, a 30m storage length for the northbound left movement was used to maintain consistency with the aforementioned traffic impact studies. Given the proposed southbound left-turn storage lane for the Ninth Line and Candlelight Drive intersection per the Ninth Line EA design drawings (provided within **Appendix F**), it is recommended the approximately 100m distance between the two intersections be distributed at 25m per left turn and the remaining length be a shared two-way taper; alternatively, as is expected for most of the Ninth Line corridor, a two-way left turn lane median marking may be implemented along the segment from Street A to Street B to provide left turning storage opportunities in both directions at the intersections involved.

Appendix O contains the Left-turn Warrants.

6.3 Right-Turn Lane Warrant Analysis

Per the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (GFGCR), June 2017, a right-turn auxiliary lane on an urban or rural road should be implemented at unsignalized intersections when the volume of decelerating or accelerating vehicles compared with the through traffic volume causes undue hazard. Similarly, consideration for a right turn storage is typically expected for a signalized intersection when there are operational issues and where repurposing a shared lane is expected to greatly improve operations at the intersection. It is also common practise in traffic engineering that an auxiliary right-turn lane be considered where right-turn volumes exceed 60 vehicles per hour.

Per the 5080 Ninth Line TIS findings, no auxiliary right-turn lanes are warrant on Ninth Line at the proposed Street A and Street B connections to Ninth Line all through to the 2035 future horizon. Accordingly, no auxiliary right-turn lanes are projected at full buildout or the 2026 horizon of the development herein.

6.4 Intersection Operations

The future total intersection operations at the study intersections were analyzed using the 2026 future total traffic volumes illustrated in **Figure 14**, and revised signal timings as outlined in **Section 3.8.2**. Detailed capacity analysis worksheets are included in **Appendix G** and Level of Service definitions are provided in **Appendix H**. **Table 20** outlines the 2026, future total traffic operations for the study intersections.

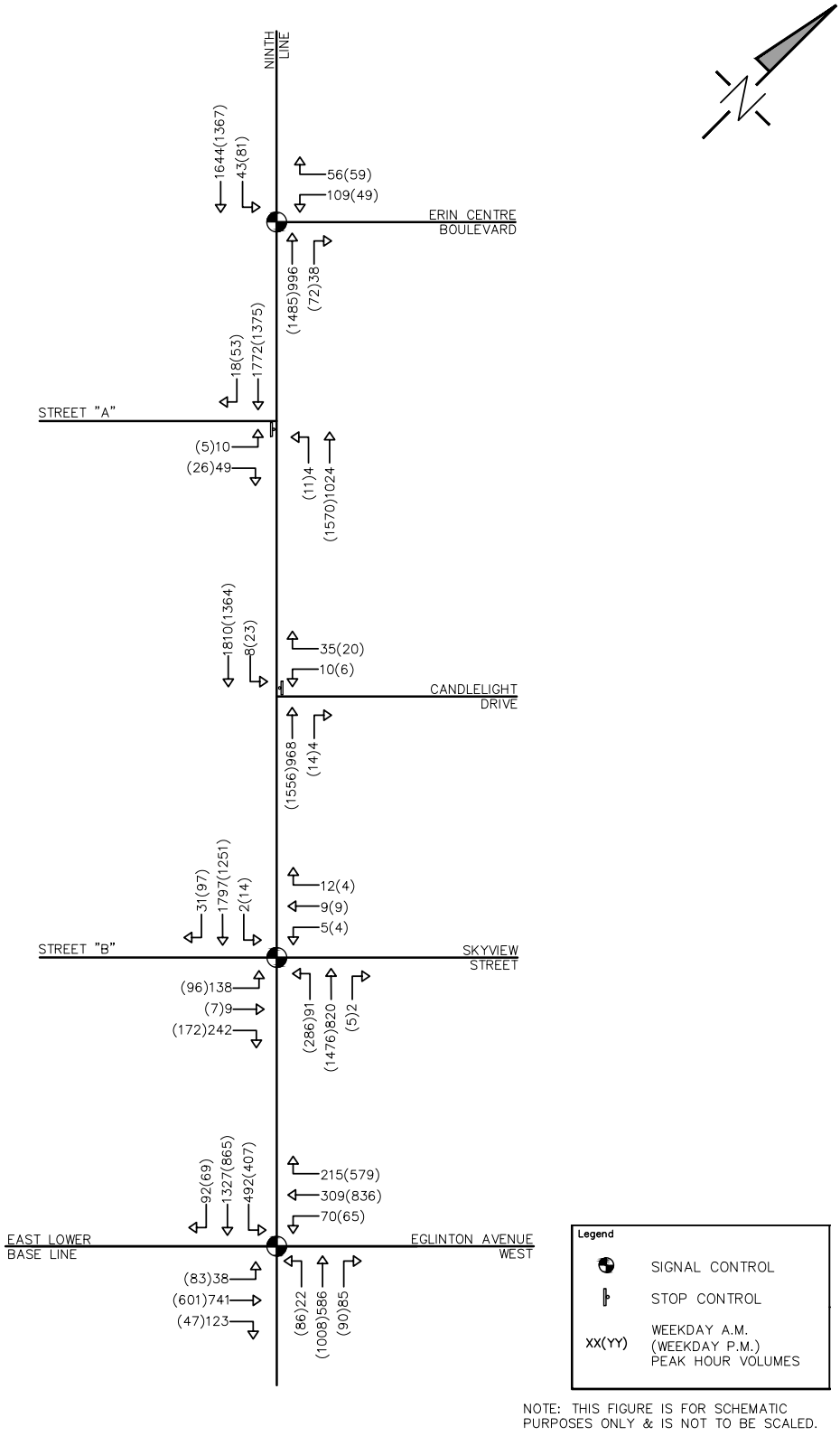


Figure 14: 2026 Future Total Traffic Volumes

Table 20: 2026 Future Total Traffic Operations

Intersection	Control	Peak Hour	Level of Service [1]	Control Delay	Critical v/c ratio [2]	95th Percentile Queue Length > Storage Length [3]
Ninth Line and Eglinton Avenue West / East Lower Base Line	Signal	A.M.	D	39.4s	**0.90 (SBL)** **0.89 (SBT)**	41.9m > 15.0m (EBL) 43.2m > 30.0m (WBL) 49.4m > 30.0m (NBR) 169.3m > 125.0m (SBL)
		P.M.	E	74,4s	**1.24 (SBL)** **1.17 (NBT)** **1.03 (WBT)**	51.5m > 15.0m (EBL) 69.4m > 30.0m (WBL) 101.9m > 65.0m (NBL) 58.0m > 30.0m (NBR) 198.6m > 125.0m (SBL)
Ninth Line and Erin Centre Boulevard	Signal	A.M.	B	10.7s	0.67 (SBT)	24.2m > 15.0m (SBL)
		P.M.	B	11.4s	0.73 (NBT)	42.5m > 15.0m (SBL)
Ninth Line and Candlelight Drive	Stop (Minor)	A.M.	B	14.9s	0.55 (SBT)	None
		P.M.	C	18.4s	0.65 (NBT)	54.3m > 30.0m (SBL)
Ninth Line and Skyview Street / Street "B"	Signal	A.M.	B	18.2s	0.78 (SBT)	22.9m > 15.0m (EBL)
		P.M.	B	13.2s	0.80 (SBT)	22.2m > 15.0m (EBL) 55.5m > 50.0m (NBL)
Ninth Line and Street "A"	Stop (Minor)	A.M.	D	29.9s	0.76 (SBT)	None
		P.M.	B	14.2s	0.59 (SBT)	None

Note 1: The Level of Service of a signalized intersection is based on the average control delay per vehicle. The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach.

Note 2: The critical v/c ratio is considered to be the maximum v/c ratio for movements at the intersection where the maximum v/c ratio does not exceed the critical thresholds. All v/c ratios that exceed the critical thresholds outlined in Section 3.8.3 are bolded.

Note 3: The 95th percentile queue lengths were derived from Sim-Traffic reports using 15-minute seeding, 60-minute simulation and an average of five runs. The 95th percentile queue lengths which are accommodated by the storage or a centre turn lane are not documented in this table.

Under the 2026 future total conditions, the signalized intersection of Ninth Line and Eglinton Avenue West / East Lower Base Line is projected to operate at a LOS "D" and "E" during the weekday a.m. and p.m. peak hours, respectively. Compared to 2026 future background conditions, the control delay increment is expected to be 0.8 and 4.3 seconds in the a.m. and p.m. peak hours, respectively; therefore, operational issues are largely background related. Similar to the future background conditions, the turn queues are forecast to occasionally exceed the turn storage lanes at the intersection during the peak hours as identified by the MMM Group and the Ninth Line EA Studies. Considering several other planned roadway improvements on adjacent roadways as well as future transit intensification on the Ninth Line corridor, these forecasted issues may be overstated herein. Nonetheless, it is recommended that the signal timing plans at the intersection of Ninth Line and Eglinton Avenue West / East Lower Base Line be revised as needed to optimize future intersection performance.

Should adequate right-of-way exist, it is recommended that the City investigate potential dual-left turn lanes for the southbound left-turn movement at the intersection of Ninth Line and Eglinton Avenue West / East Lower Base Line as part of the Ninth Line EA roadway improvements or in future. The movement has peak hour volumes in excess of 300, a threshold identified to warrant dual left turn lanes per the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (GDGCR).

The signalized intersection of Ninth Line and Erin Centre Boulevard Line is projected to operate at a LOS "B" or better with a maximum control delay of 11.4s seconds and volume-to-capacity ratio of 0.79 during the a.m. peak hour. A control delay increment of 0.1 seconds and volume-to-capacity ratio increase of 0.01 is expected. The southbound-left movement queue lengths are expected to occasionally exceed the storage length of the lane onto the two-way left turn median lane.

The stop controlled minor connection of Candlelight Drive at Ninth Line is projected to operate at a LOC "B" or better with a maximum control delay of 18.4s and volume-to-capacity ratio of 0.65. The southbound-left movement queue lengths are expected to occasionally exceed the storage length of the lane in the p.m. peak hour.

The signalized intersection of Street B / Skyview Street at Ninth Line is projected to operate at a LOS "B" or better with a maximum control delay of 18.2 seconds and volume-to-capacity ratio of 0.80.

The stop controlled minor connection of Street A at Ninth Line is projected to operate below capacity at a LOS "D" and "B" in the a.m. and p.m. peak hours, with a maximum control delay of 29.9 seconds in the a.m. peak hour. This represent a control delay increment of 6.1 seconds and no maximum volume-to-capacity ratio increase compared to future background conditions.

The study intersections operations are similar to the future background and consistent with the findings of the MMM study and the Ninth Line EA study. The proposed development does not materially impact traffic operations within the boundary road network and therefore can be supported from a traffic operations perspective.

7.0 Safety Review

Per the City of Mississauga's guidelines, a safety review of the proposed development is required. The purpose of the safety review is to identify any safety deficiencies for auto drivers, pedestrians and cyclists for the proposed development, and to identify how the development proposes to maximize safety for all road users.

7.1 Sight Distance Analysis

The available sightlines at the proposed CEC Road "F" connections were measured and compared to the standards set out in the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (GDGCR). Sight distance was measured from the proposed site accesses using the following assumptions:

- A standard driver eye height of 1.08 metres for a passenger car, and
- A 4.4 metre setback from the approximate extension of the outer curb to represent a vehicle waiting to exit the site.

Intersection sight distance is calculated using equation 9.9.1 from the GDGCR as outlined below:

*ISD = 0.278 * V major * tg*

Where;
ISD = Intersection Sight Distance
V major = design speed of roadway (km/h)
tg = assumed time gap for vehicles to turn from stop onto roadway (s)

The CEC Road "F" is a local roadway and is assumed to have a design speed of 50km/h for the sight distance analysis. The connection at CEC Road "G" and the outbound only access were evaluated. Furthermore, the main ingress/egress points to Ninth Line at Street A and Street B also underwent sight distance analysis.

Table 21 outlines the sight distance analysis for the proposed CEC Road "F" connections.

Table 21: Sight Distance Analysis

Feature	Site Accesses at "CEC Road F"	Street A connection to Ninth Line	Street B connection to Ninth Line
Access Type	Full-Moves	Full-Moves	Full-Moves
Intersection Control	Stop (Minor Street)	Stop (Minor Street)	Signalized
Assumed Speed Limit of Roadway	40 km/h	70 km/h	70 km/h
Assumed Design Speed	50 km/h	90 km/h	90 km/h
Base Time Gap	7.5 s [1]	7.5 s [1]	7.5 s [1]
Additional Time Gap	N/A	1.0 s (time to cross additional through lane and centre turn lane)	1.0 s (time to cross additional through lane and centre turn lane)
Grade of Roadway	Less than 3%	Less than 3%	Less than 3%
Horizontal Alignment of Roadway	Straight	Straight	Straight
Sight Distance Required	105m [2]	215 m [2]	215 m [2]
Measured Sight Distance	Entire "CEC Road F" visible	>400m (to north and south)	>300m (to north and south)
Minimum Sight Distance Satisfied?	Yes	Yes	Yes

Note 1: Time gap for left-turning vehicles from a stop onto a two-lane highway with no median and with a grade less than 3%. Value from Table 9.9.3 in the GDGCR.
Note 2: Sight distance values calculated from Intersection Sight Distance equation 9.9.1 in the GDGCR.

As outlined in **Table 21**, minimum sight distance requirements are satisfied at the proposed site accesses and at the Ninth Line connections. Therefore, the proposed development is supportable from a sight distance perspective.

7.2 Access Spacing and Corner Clearance

The TAC GDGCR was used to review access spacing for the proposed site accesses along CEC Road "F". The site access spacing requirements and proposed spacing are presented in **Table 22**.

Table 22: Access Spacing Review

Site Access	Available Spacing	Minimum Spacing and Corner Clearance Requirements	Evaluation	Source
Southern two-way access	>40m (to the north and south)[1]	15m corner clearance (from stop intersection	Satisfied	TAC-GDGCR Figure 8.8.2
		Minimum of 1 m spacing between driveways	Satisfied	TAC-GDGCR Figure 8.9.2
Northern one-way access	>20m (to the north) >50m (to the south)[1]	15m corner clearance(from stop intersection	Satisfied	TAC-GDGCR Figure 8.8.2
		Minimum of 1 m spacing between driveways	Satisfied	TAC-GDGCR Figure 8.9.2
Street A	>80m (to the north and south)	15m corner clearance (from stop intersection	Satisfied	TAC-GDGCR Figure 8.8.2
Street B	>60m (to the north and south)	15m corner clearance (from stop intersection	Satisfied	TAC-GDGCR Figure 8.8.2

Note 1: Assumes the intersection of CEC Road "F" and CEC Road "G" is stop controlled on the minor approaches only (ie. CEC Road "G" and the southern two-way access).

As presented in **Table 22**, the minimum spacing and corner clearance requirements have been satisfied. No operational safety issues are forecasted.

7.3 Internal Site Circulation

Detailed vehicle turning diagrams using vehicle turning analysis have been provided to illustrate internal site circulation. The most constrained vehicle profile expected to navigate the site was analyzed, which is a Peel front load garbage truck.

The vehicle turning diagrams indicates that maneuverability for the design vehicle expected within the site is adequate. **Appendix P** contains the vehicle turning diagrams for each vehicle profile.

8.0 Parking Review

This section details the required and provided parking supply for the proposed development. This includes residential parking, visitor parking, accessible parking, bicycle parking, and loading spaces.

8.1 Zoning By-Law Parking Required

The required parking rates for the proposed development were determined using the City of Mississauga's Zoning By-law No. 0225-2007.

Table 23 outlines the required parking spaces at the subject site based on the By-Law. The existing required rates can be found in section 3.1.2.1 of the City of Mississauga Zoning By-law.

Table 23: Required Vehicle Parking

Buildings	Unit Type	Number of Units	Rate	Required Vehicle Parking Spaces		
				Resident	Visitor	Total
6-Storey Mid-Rise Development	One Bedroom	136	1.25 per unit (resident) 0.20 per unit (visitor)	170	27	197
	Two Bedroom	62	1.4 per unit (resident) 0.2 per unit (visitor)	87	13	100
	Total			**257**	**40**	**297**

As presented in **Table 23**, the proposed vehicle parking supply of 228 is short of required supply per the City of Mississauga's Zoning By-law No. 0225-2007. The succeeding sections assesses peak parking demands forecast for the site based on other criteria and consideration is further given to the future transportation commuter choices in the area.

8.2 City of Mississauga Parking Regulation Update - Requirements

The City of Mississauga recognizes that the current Zoning By-law requirements are on a higher side and are in the process of updating the By-Law based on the ongoing Parking Regulation Study; with new updates expected to be implemented in 2022. The new proposed parking rates uses a precinct system to assign minimum parking rates based upon five criteria themes as outlined below:

- Transit access
- Availability of public parking
- Location within an intensification area;
- Land use and density mix; and
- Active Transportation Characteristics

Although the subject site currently qualifies as being situated within Precinct 4, a classification of Precinct 3 is likely supportable at the time of full development buildout. **Table 24** outlines the guidelines necessary for a Precinct 3 classification. Of the guidelines needed for Precinct 3 classification, the proposed development upon buildout as well as the entire Ninth Line corridor is expected to qualify for the Precinct 3 designation.

Table 24: Precinct 3 Guidelines and proposed development evaluation

Criteria Theme	Guideline	Future proposed development context
Transit Access	Rapid Transit Terminal/Station – Lands in Precinct 3 could also be within approximately 800 metres (10-15 minute walk) of a planned or existing rapid transit corridor, terminal, or station (BRT, LRT, GO). However, this is not required where high-frequency bus transit service is planned or available.	As identified in **Section 3.4**, MiWay Transit Route 9 connects to City Centre Transit Terminal. Furthermore, Miway Transit Route 35 connects to Kipling Subway/GO Station. Therefore, this guideline is satisfied.
	High-frequency bus transit service – In Precincts 1, 2, and 3, bus service typically includes connectivity (one bus route) to rapid transit stations and connection with other bus routes.	
Availability of public parking	Public Parking – In Precincts 3 and 4, public parking availability is limited. Most parking is provided in the form of private surface lots and there may or may not be municipal on-street municipal parking available.	Satisfied.
Planning Area	Intensification Area, Mainstreet Commercial and Key Growth Areas – Lands in Precincts 1, 2, and 3 are mostly located in a defined intensification area in the Official Plan or are within a delineated Major Transit Station Area. Lands in Precinct 1 will be included in an Urban Growth Centre, Downtown, or Mobility Hub as stated above. Some lands in Precincts 2 and 3 are not explicitly within a defined intensification area or an MTSA, but the lands may be within a "Mainstreet" commercial area (as evidenced-based on the application of the C4 zone to the lands), or the lands are otherwise considered to be within a key growth area.	The subject site does not fall within a defined intensification area, and instead is described as falling within a designated Greenfield area. However, the proposed development includes significant density that could lead it to being considered as within a key growth area, intensification area, etc.
Land Use and Density	Mix of Uses - Precincts 3 and 4 may consist of a limited range of existing and planned uses within walking distance.	Satisfied.
	High Density uses - In Precinct 3, there may be existing or planned higher-density uses including multi-storey office buildings or multi-unit residential building typologies, but this is not required.	Satisfied.
Active Transportation	Walkability – Precincts 2 and 3 have good pedestrian accessibility, but pedestrian amenities and direct walking routes to adjacent neighbourhoods may be limited compared to Precinct 1.	As identified in the TDMP, the Ninth Line EA and the proposed development propose an expansive network of sidewalk that provides good pedestrian accessibility. Further, the future Churchill Meadows Community Centre will promote walking as an attractive option for pedestrians. Therefore, this guideline is satisfied.
	Cycling Facility – Precinct 3 has or is planned to have, some on- and off-road cycling facilities to facilitate connectivity with cyclists, but facilities may be limited.	The future bicycle tracks along Ninth Line as outlined in the Ninth Line EA satisfies this guideline.
	There is limited opportunity to provide viable bike share opportunities in Precincts 3 and 4.	Satisfied.

Outlined in **Table 25** are the parking requirements for the development based on the Precinct 3 rates presented by the Parking Regulations Study - Public Meeting dated December 6, 2021.

Table 25: Precinct 3 Proposed Vehicle Parking

Buildings	Units or GFA	Rate	Required Vehicle Parking Spaces		
			Resident	Visitor	Total
6-Storey Mid-Rise Development	198	1.00 per unit (resident) 0.20 per unit (visitor)	198	40	238
Total			**198**	**40**	**238**

As shown in **Table 25,** based on the Precinct 3 rates of the Parking Regulations Study, the proposed resident parking supply is in accordance with City requirements. However, the proposed visitor parking supply is deficient per the Precinct 3 requirements by 10 spaces. Relevant proposed parking rate report excerpts have been included for reference in **Appendix Q**. Therefore, a parking justification is provided in the subsequent sections to support the proposed visitor parking supply.

8.3 City of Mississauga Parking Regulation Update - Justification

As previously discussed in **Section 8.2**, the City is undertaking an update of their parking requirements. Although the current recommendation for visitor parking for either the Precinct 3 or Precinct 4 case is 0.20 (per the Parking Regulations Study – Public Meeting, December 6, 2021), this is a change from the initial recommendations within the original Corporate report presented in May 2021. The original study recommended a visitor rate of 0.15 for condominium apartment dwelling units in both Precinct 3 and Precinct 4. This recommendation was based upon benchmarking from various comparable municipalities within Canada. Therefore, the original findings from the WSP Parking Regulations Study support the visitor parking supply of the proposed development.

8.4 ITE Parking Generation

A parking generation forecast was undertaken to estimate the peak parking demand at the proposed development using the Institute of Transportation Engineers (ITE) Parking Generation Manual, 5th Edition. For the condominium dwelling unit forecast, Land Use Category 221 "Multifamily Housing (Mid Rise)" was applied to the residential development. Given the location of the site, a location setting of "General Urban/Suburban (1/2 mile to rail transit)" was applied. The parking demand was forecasted by both the average rate and fitted curve methodologies. As outlined in **Table 26**, the proposed parking supply is forecast to adequately accommodate the forecasted demand per the ITE data.

Table 26: ITE Parking Generation

Land Use	Methodology	Estimated Parking Demand	Provided Parking Spaces	Satisfied?
General Urban/Suburban (1/2 mile to rail transit)	Average Rate	222	228	**Yes**
	Fitted Curve	210		**Yes**

8.5 6719 Glen Erin Drive Surrogate Site Parking Survey

To further support the proposed development parking supply, a parking survey from a surrogate site at 6719 Glen Erin Drive in Mississauga was used. The site is an apartment building with 179 units and a total parking supply of 235 tenant parking spaces as well as 34 visitor parking spaces.

A parking utilization survey was undertaken by Ontario Traffic Inc. on Sunday May 24th, 2020, and Wednesday, May 27th, 2020, between 10:00 p.m. and 2:00 a.m. The dates and time were selected to

survey the peak parking demand at the subject site during the peak parking hours for a residential use.

Using the number of cars parked and the number of dwelling units of the surrogate site, the maximum peak parking demand rates were calculated. The maximum tenant spaces occupied during the survey was 148 spaces, thus a peak demand ratio of 0.83 spaces per unit. The maximum visitor spaces occupied was 26 spaces, thus a peak demand ratio of 0.15 spaces per unit. The parking survey results are provided in **Appendix R**.

Table 27 presents the peak parking demand for the proposed development at based on the surrogate site peak parking demand rates.

Table 27: Peak Demand Forecast Analysis per 6719 Glen Erin Drive Parking Survey Data

Land Use	Peak Parking Rates	Number of Units	Peak Parking Required	Proposed Parking
Proposed Development Resident Parking	0.83 spaces per unit	198 units	165 spaces	228 Spaces **(+33)**
Proposed Development Visitor Parking	0.15 spaces per unit	198 units	30 spaces	
Proposed Development Total Parking		198 units	195 spaces	

As outlined in **Table 27**, based on the surrogate site's parking survey data, the peak parking demand of the proposed development is 165 resident spaces and 30 visitor spaces, totalling 195 parking spaces. Therefore, the proposed total parking supply of 228 spaces results in a surplus of 33 spaces compared to the surrogate site forecasted peak parking demand. Further, both the resident and visitor components of the proposed development parking supply is consistent with the surrogate site parking survey.

8.6 Visitor Parking Zoning By-law Exceptions

Given the City of Mississauga Zoning By-Law requirement of 0.20 spaces per unit for visitor parking, the site requires 40 visitor parking spaces. However, the City has permitted a visitor parking supply of 0.15 visitor spaces per unit for similarly sized developments, thus a proposed development visitor parking supply of 30 spaces is supportable. **Table 28** highlights several similar developments approved by the City of Mississauga with Zoning By-law exceptions to allow for a visitor parking supply of 0.15 spaces per unit. These zoning by-law exceptions support the proposed development visitor parking rate of 0.15 spaces per unit.

Table 28: Visitor Parking Zoning By-law exceptions

By-Law Exception	Development Details	Minimum Visitor Parking Rate
RM8-11	Seven 4-storey townhouse buildings with a maximum total of 144 dwelling units .	0.15 parking spaces per unit
RA5-45	15-storey 69 unit apartment building	0.15 parking spaces per unit
RA4-43	Maximum 500 dwelling units across four buildings with heights up to 18-storeys	0.15 parking spaces per unit
RA1-37	Apartment / Townhouse development with approximately 250 dwelling units	0.15 parking spaces per unit[1]
RM8-4	Townhouse development with a maximum 194 dwelling unit,	0.15 parking spaces per unit[1]

Note 1: These developments include a minimum visitor parking rate of 0.15 and 0.20 for apartment and townhouse dwelling units, respectively.

8.7 Transportation Demand Management

There are a number of existing and proposed Transportation Demand Management (TDM) opportunities in the City of Mississauga that encourages non-auto transportation modes. Such opportunities are identified in the Transportation Demand Management Plan (TDMP) Study submitted under a separated cover. However, a summary of some of the TDM opportunities (i.e., existing and future), that would contribute to a reduced parking demand are summarized below in **Table 29**. These opportunities decrease the dependence on single occupancy vehicle trips at the proposed development, consequently encouraging a reduction in parking demand. Further, as outlined in the TDMP Study, the existing non-auto mode share near the subject site is approximately 38%, which indicates that, near the subject site, a strong willingness exists to use more sustainable transportation modes like transit/ active transportation. These findings further support the proposed parking supply of 228 spaces at the subject site.

Table 29: Summary of Transportation Demand Management Opportunities

Transportation Mode	Transportation Demand Management Opportunities
Walking	• Currently, nearly all roadways within the boundary road network possess sidewalks at least 1.5 meters in width. • Sidewalks of with 2.0 meters on both sides of Ninth Line are included within the Ninth Line EA design, planned to be implemented before the buildout of the proposed development. • The proposed development includes sidewalks on the north, west, and south sides of the apartment building. Further, connections are included between the proposed development and Ninth Line, improving the pedestrian experience within the site
Cycling	• There currently exists bike lanes along Erin Centre Boulevard • New bike routes are expected to be implemented before buildout of the proposed development include routes along Ninth Line and Eglinton Avenue, identified in the Ninth Line EA and the City of Mississauga's Cycling Master Plan, respectively. • A multi-use trail is being implemented on the western side of the nearby 5080 and 5150 Ninth Line developments. This trail will enhance access to nearby destinations such as the Churchill Meadows Community Centre and Sports Park
Transit	• There exists two local MiWay bus routes within walking distance of the subject site. The routes offer good transit access to local destinations such as Erin Mills Town Centre, Mississauga City Centre, along with Middle and High schools in proximity to the subject site • The Winston Churchill transitway station is located approximately 3.5km away from the subject site. The stop connects with three Miway and two GO transit bus routes. The routes provide express service to several major destinations within Mississauga, including a connection to the Lakeshore GO line. • The MTO is planning the construction of the Highway 407 transitway, an exclusive grade separated bus rapid transit corridor. The 407 transitway is planned to run parallel to Highway 407 and will span from Burlington to Pickering.

8.8 Parking Review Summary

The proposed Parking supply is deficient of the City's Zoning By-law No. 0225-2007; however, the parking supply is forecast to accommodate peak parking demands at the site based on ITE and surrogate site data. Given the location of the site and development proposal, the supply is largely consistent with the original WSP Parking Regulation Study along with zoning by-law exceptions from similar developments. The proposed parking supply aligns with the City's findings regarding decreasing vehicle ownership (per City's PMPIS) as well as the City's desire of influencing commuter transportation choices through parking policy and parking supply; with a shift towards more

sustainable modes of transportation.

The site provides the required barrier free accessible parking spaces and bicycle parking spaces for each building. Given the total residential visitor parking requirement is 40; the requirement is 4% of the total (i.e., 40) per Table 3.1.3.1 of the By-Law No. 0225-2007; resulting in 2 accessible parking spaces required. The site proposes 2 accessible parking spaces, satisfying the By-law.

A total bicycle parking supply of 0.6 per unit (long-term) and 0.05 per unit (short-term) for residential is recommended by the City as well as the ongoing Parking Regulations Study. Based on these rates, the site requires a total of 119 long-term spaces and 10 short-term spaces. The site provides 119 long-term and 10 short-term bicycle parking spaces, satisfying the applicable requirements.

9.0 Conclusions

The analysis contained within this report has resulted in the following key findings:

- Under the 2021 existing conditions scenario, the boundary road network is operating at a LOS "E" or better at the intersection of Ninth Line and Eglinton Avenue West / East Lower Base Line, and LOS "D" or better at all other study intersections during the weekday a.m. and p.m. peak hours.

- Under the 2026 future background conditions:

    - The signalized intersection of Ninth Line and Eglinton Avenue West / East Lower Base Line is projected to operate at a LOS "D" and "E" during the weekday a.m. and p.m. peak hours. The turn queues are forecast to occasionally exceed the turn storage lanes at the intersection during the peak hours as identified by the MMM Group and the Ninth Line EA studies. These queues may occasionally obstruct some movements at adjacent intersections during the peak hours. These operations are however typical for high traffic arterial intersections during the peak hours and operations are expected to return to acceptable levels during the off-peaks.

    - The remaining study intersections are expected to operate efficiently at a LOS "C" or better during the weekday peak hours.

- The proposed development is expected to generate a total of 76 and 78 total two-way trips during the weekday a.m. and p.m. peak hours, respectively.

- Under the 2026 future total conditions, the study intersections are forecast to operate at similar levels of services with minor changes.

    - The signalized intersection of Ninth Line and Eglinton Avenue West / East Lower Base Line is projected to operate at a LOS "D" and "E" during the weekday a.m. and p.m. peak hours, respectively. Compared to 2026 future background conditions, there is a control delay increase of 0.8 and 4.3 seconds in the a.m. and p.m. peak hours, respectively; therefore, operational issues are largely background related as highlighted in the future background section. Considering several other planned roadway improvements on adjacent roadways as well as future transit intensification on the Ninth Line corridor, forecasted operational issues may be overstated herein.

  - The remaining study intersections are expected to continue to operate efficiently at a LOS "D" or better. A maximum control delay increment of 6.4 seconds and volume-to-capacity ratio increase of 0.01 is forecast.

  - Signal Warrants were evaluated at the intersection of Ninth Line and Street A. Signalization was not found to be warranted. This finding is consistent with prior analysis undertaken in the Ninth Line EA.

  - Left-turn warrants were evaluated for the northbound left-turn movement at the intersection of Ninth Line and Street A. A left-turn storage lane of length 25m is warranted for the aforementioned movement. This finding is consistent with previous studies.

- A safety review regarding the proposed Street A and Street B was conducted as required by the City of Mississauga's guidelines. Based on the safety review:

  - The available sight distance at the site access connections exceeds the minimum sight distance requirements set out in the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (GDGCR), June 2017.

  - The site satisfies the minimum corner clearance and access spacing requirements per the TAC-GDGCR

  - There are no expected maneuverability constraints within the site for waste collection vehicles.

- The proposed Parking supply is deficient of the City's Zoning By-law No. 0225-2007; however, the parking supply is forecast to accommodate peak parking demands at the site based on ITE and surrogate site parking data. Given the location of the site and development proposal, the supply is largely consistent with the WSP Parking Regulation Study. Several City of Mississauga zoning by-law exceptions from similar developments further supports the proposed visitor parking supply. The proposed parking supply aligns with the City's findings regarding decreasing vehicle ownership (per City's PMPIS) as well as the City's desire of influencing commuter transportation choices through parking policy and parking supply; with a shift towards more sustainable modes of transportation. Furthermore, the site provides the required barrier free accessible parking spaces and bicycle parking spaces.

Additionally, the conclusions arising from the analysis has resulted in the following recommendations as outlined below:

- It is recommended that the signal timing plans at the intersection of Ninth Line and Eglinton Avenue West / East Lower Base Line be revised as needed to optimize future intersection performance.

- Should adequate right-of-way exist, it is recommended that the City investigate potential dual-left turn lanes for the southbound left-turn movement at the intersection of Ninth Line and Eglinton Avenue West / East Lower Base Line as part of the Ninth Line EA roadway improvements or in future. The movement has peak hour volumes in excess of 300, a threshold identified to warrant dual left turn lanes per the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (GDGCR).

- It is recommended that consideration be given to providing a continuous two-way left turn (TWLT) median lane between Street A and Street B to provide left turn opportunities for the

closely spaced connections on the segment. This is aligned with the Ninth Line EA, as a TWLT lane is expected along most of the Ninth Line corridor.

- It is recommended that the Street A connection to Ninth Line include a northbound left-turn lane with a minimum storage length of 25m.

The analysis contained within this report was prepared using the Site Plan prepared by ZO1 Architects (dated November 5, 2021). Minor revisions to the development concept are not expected to affect the conclusions contained with this report. In conclusion, the proposed development can be supported from a transportation operations and safety perspective.

Respectfully submitted by,

C.F. CROZIER & ASSOCIATES INC.



Peter Apasnore, MASc., P.Eng., PTOE
Project Engineer

rl/AH

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APPENDIX A

Site and Composite Plans

APPENDIX A.1

Site Plan

PROJECT STATISTICS
Ninth Line

Missisauga, ON
November 9, 2021 Project No.: 21014

1.0 SITE AREA

1.1 Site	Hectares	acres	sq.m.	sq.ft.
Original Site Area	0.727	1.797	**7,270.43**	**78,258**
Wood Lot Area (not part of site area nor landscaped area)			**712.05**	**7,664**
Road Widening Area			**76.22**	**820**
Developable Area (Not including wood lot nor road widening)			**6,482.16**	**69,773**
		Percentage		
1.2 Landscape Area (Not including wood lot nor road widening)		32.96	**2,136.71**	**22,999**

2.0 Proposed GFA*

City of Mississauga Zoning By-Law Revised: 2013 defines GFA as the sum of the areas of each storey of a building above or below established grade, measured from the exterior of outside walls of the building including floor area occupied by interior walls but excluding any part of the building used for mechanical floor area, stairwells, elevators, motor vehicle parking, bicycle parking, storage lockers, below-grade storage, any enclosed area used for the collection or storage of disposable or recyclable waste generated within the building, common facilities for the use of the residents of the building, a day care and amenity area.

2.1 Proposed Residential GFA		floors	sq.m.	sq.m.	sq.ft.
Level	P1	1 x	52	52	562
Level	1	1 x	1,548	1,548	16,659
Level	2	1 x	2,376	2,376	25,580
Level	3	1 x	2,347	2,347	25,262
Level	4	1 x	2,440	2,440	26,267
Level	5	1 x	2,170	2,170	23,355
Level	6	1 x	2,155	2,155	23,201
Level MPH		1 x	77	77	828
Total Proposed Residential GFA *				**13,114**	**141,152**

2.3 Total Proposed GFA	sq.m.	sq.ft.
Residential	**13,114**	**141,152**
Total Proposed GFA *	**13,114**	**141,152**

3.0 Proposed Density - FSI

	Max. Allowable	Provided
Total Proposed GFA / Gross Site Area (Item 2.3 / Item 1)	**N/A**	**2.0**

4.0 Amenity

4.1 Amenity Required Indoor + Outdoor (By-Law) — **Required**

"Amenity Area" means an indoor and/or outdoor recreational area provided for the communal use of the residents.

		sq.m.	sq.m.
Indoor Amenity + Outdoor Amenity	5.6 sm per unit	1,108.80	11,935
TOTAL		**1,109**	**11,935**

4.2 Amenity Provided Indoor + Outdoor — **Provided**

	L1	Rooftop	sq.m	sq.ft
Outdoor	468.86	643.90	**1,113**	**11,978**
Indoor	120.32	0.00	**120**	**1,295**
TOTAL			**1,233**	**13,273**

Outdoor Amenity Required. Mississauga City Standard

Unit Type	No. of Bedrooms in the Project	Total Units	No. of Bedrooms exceeding No. of Units	m² required per Exceeding Bedrooms
1 Bedroom (136 Units in the Project) 136 x 1	136.00			
2 Bedroom (62 Units in the Project) 62 x 2	124.00	198.00	62.00	2.50
Total Bedrooms in the Poject	**260.00**			
Total m² Outdoor Amenity Required (Exceeding Bedrooms x 2.5m²)				**155 m²**

5.0 Unit Count

5.1 Residential		floors	Unit	Total
Level	1	1 x	21	21
Level	2	1 x	35	35
Level	3	1 x	35	35
Level	4	1 x	37	37
Level	5	1 x	35	35
Level	6	1 x	35	35
TOTAL UNITS				**198**

5.2 Unit Type		floors		1B/1B+D	2B/2B+D	Total
Level	1	1 x		10	11	21
Level	2	1 x		21	14	35
Level	3	1 x		25	10	35
Level	4	1 x		28	9	37
Level	5	1 x		26	9	35
Level	6	1 x		26	9	35
Total				**136**	**62**	**198**
				69%	**31%**	
TOTAL UNITS						**198**

6.0 Parking

6.1 Parking Requirements Proposed

Residential Parking Required

Residential	No. of Units	Parking per unit (including visitor)	Visitor Parking (included in parking per unit)	Parking Required
Residential	198	1.15	0.15	**228**

Total Parking Required	
Residential	228
Total Parking Required	**228**

6.2 Parking Provided

Level	Regular parkings	Accessible parkings	
P1	203	0	203
L1	23	2	25
	226	0	
Total Parking Provided			**228**

6.3 Bicycle Parking

Bicycle Parking Required

	Ratio	
Long Term	0.6	119
Short Term	0.05	10
Total Bicycle Parking Required		**129**

Bicycle Parking Provided

Level	P1	L1	
Long Term	41	78	119
Short Term		10	10
Total Bicycle Parking Provided			**129**

7.0 Total Lockers provided

Level	L1		
	99	x 2	**198**

Project Statistics
NTS
1
A002

15.0	MINIMUM **LANDSCAPED AREA, LANDSCAPED BUFFER** AND **AMENITY AREA**	
15.1	Minimum **landscaped area**	40% of the **lot area**
15.2	Minimum depth of a **landscaped buffer** abutting a **lot line** that is a **street line** and/or abutting lands with an Open Space, Greenlands and/or a Residential Zone with the exception of an **Apartment** Zone *(0174-2017)*	4.5 m [6]
15.3	Minimum depth of a **landscaped buffer** along any other **lot line**	3.0 m [5][6]
15.4	Minimum **amenity area**	The greater of 5.6 m^2 per **dwelling unit** or 10% of the site area
15.5	Minimum percentage of total required **amenity area** to be provided in one contiguous area	50%
15.6	Minimum **amenity area** to be provided outside at grade	55.0 m^2

Landscape & Amenity Area
NTS
4
A002

DRAWING LIST

Sheet Number	Sheet Name	Issue #1 for Rezoning (Nov. 05, 2021)	Issue#2 (Add Date)	Issue#3 (Add Date)	Issue#4 (Add Date)	Issue#5 (Add Date)
10 CONCEPT DESIGN						
Rezoning						
A001	Cover Sheet	■				
A002	Statistics & Drawing List	■				
A100	Site Context	■				
A101	Site Plan	■				
A200	P1 Floor Plan	■				
A201	Level 1 Floor Plan	■				
A202	Level 2 and 3 Floor Plan	■				
A203	Level 4 and 5 Floor Plan	■				
A204	Level 6 and MPH Floor Plan	■				
A400	Elevations	■				
A401	Courtyard Elevations	■				
A500	Bldg Sections	■				
A700	Shadow Study - June	■				
A701	Shadow Study - June	■				
A702	Shadow Study - March / September	■				
A703	Shadow Study - March / September	■				
A704	Shadow Study - December					
A800	Perspective Views	■				
A900	Render Perspective Views	■				
A901	Render Elevations	■				
A902	Render Elevations	■				

Drawing List
NTS
3
A002

Ontario Building Code –Site Plan Approval

Name of Project: Residential Development , 5160 – 5170 Ninth Line, Mississauga, ON. L5M 0R5

Location: 5160 – 5170 Ninth Line, Mississauga.

Item	Ontario's 2012 Building Code in effect Jan 1, 2014			OBC Reference	
				References are to Division B unless noted [A] for Division A or [C] for Division C.	
1	Project Information:	☒ New ☐ Addition ☐ Alteration ☐ Change of Use	☐ Part 11 11.1 to 11.4	☒ Part 3 1.1.2. [A]	☐ Part 9 1.1.2. [A] & 9.10.1.3.
2	Major Occupancy(s) C, F3			3.1.2.1.(1)	9.10.2.
3	Building Area (m^2) Existing 3,209.87	New 2,870.49sm	Total 2,870.49sm	1.4.1.2. [A]	1.4.1.2. [A]
4	Gross Area Existing 13,114	New 13,114sm	Total 13,114sm	1.4.1.2. [A]	1.4.1.2. [A]
5	Number of Storeys Above grade 6 storeys	Below grade 1		1.4.1.2. [A]&3.2.1.1.	1.4.1.2[A] & 9.10.4
6	Number of Streets/Fire Fighter Access 1			3.2.2.10. & 3.2.5.	9.10.20.
7	Building Classification 3.2.2.42, 3.2.2.62, 3.2.2.77			3.2.2.20.-.83	9.10.2.
8	Construction Restrictions	☐ Combustible permitted ☒ Non-combustible required ☐ Both		3.2.2.20.-.83	9.10.6.
	Actual Construction	☐ Combustible ☒ Non-combustible ☐ Both			
9	Mezzanine(s) Area m^2 N/A			3.2.1.1.(3)-(8)	9.10.4.1.
10	Sprinkler System Proposed	☒ Entire Building ☐ Selected compartments ☐ Selected floor areas ☐ Basement ☐ In lieu of roof rating ☐ Not required		3.2.2.20.-.83 3.2.1.5. 3.2.2.17.	9.10.8.
11	Standpipe required	☒ Yes ☐ No		3.2.9.	N/A
12	Fire Alarm required	☒ Yes ☐ No		3.2.4.	9.10.18.
13	Water Service/Supply is Adequate	☒ Yes ☐ No		3.2.5.7.	N/A
14	High Building			☒ Yes ☐ No	3.2.6.
15	Barrier-free Design	☒ Yes ☐ No (Explain)		3.8.	9.5.2.
16	Hazardous Substances	☐ Yes ☒ No	3.3.1.2. & 3.3.1.19.	9.10.1.3.(4)	N/A

OBC Matrix
NTS
2
A002

No.:	Date:	Description:
01	2021-11-05	Rezoning Submission

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Seal:
ONTARIO ASSOCIATION OF ARCHITECTS
BONNIE A. CHAN
LICENCE
6291

Client:
BRANTHAVEN

Project:
Proposed Residential Development - 5160-5170 Ninth Line, Mississauga
Enter address

Drawing Title:
Statistics & Drawing List

Scale:	Drawn by: L.B.
Checked by: B.C. & D.L.	Project No.: 21014
Date: 2021-11-05	Drawing No.: A002

Plot Date: 2021-11-19 3:20:41 PM

GENERAL NOTES:

- FOR SURVEY INFORMATION, PLEASE REFER TO JD BARNES DRAWINGS

- FOR SITE SERVICING AND GRADING INFORMATION, PLEASE REFER TO URBANTECH DRAWINGS

- FOR TRAFFIC SIGNAGE PLAN, TRUCK TURNING PAT & OTHER TRAFFIC INFORMATION, PLEASE REFER TO CROZIER DRAWINGS

-FOR LANDSCAPE INFORMATION AND DETAILS, PLEASE REFER TO ADESSO DESIGN DRAWING

- SNOW WILL BE REMOVED FROM SITE

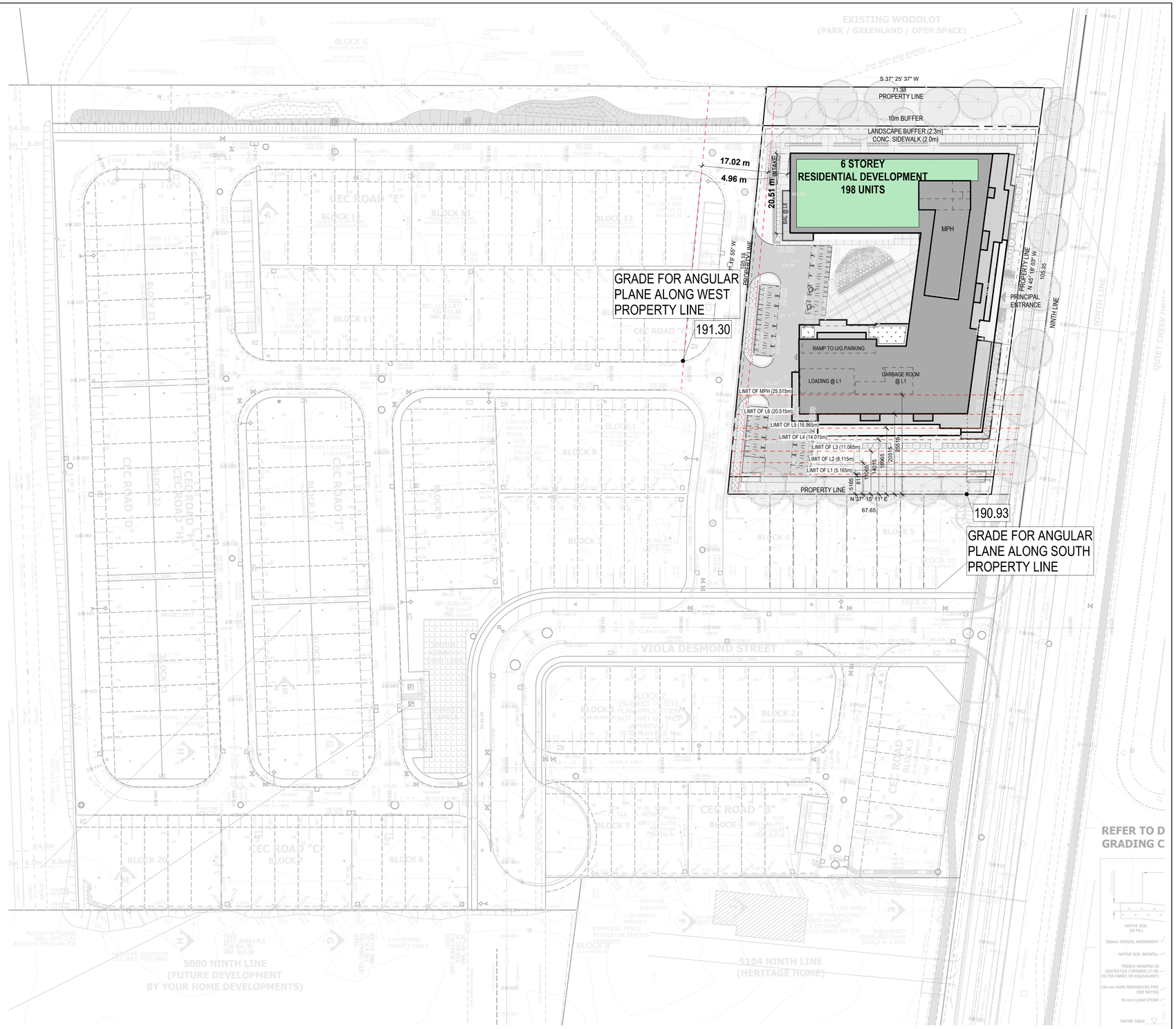
LOT INFORMATION:

PLAN OF SURVEY OF
LOTS 5160 AND 5170
BLOCK 211 REGISTERED PLAN 43M-1664 &
BLOCK 210 (ROAD WIDENING) REGISTERED PLAN 43M-1664

GRADING INFORMATION:

RESIDENTIAL F.F.E. @ L1 = 191.70

General Notes 2
NTS A100



Site Context Plan 1
1 : 500 A100

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Drawing Title:
Site Context

Scale: 1 : 500	Drawn by: L.B.
Checked by: B.C. & D.L.	Project No.: 21014
Date: 2021-11-05	Drawing No.: A100

Plot Date: 2021-11-12 8:28:59 AM

CONSULTANT TEAM

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PROJECT NUMBER 21014

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ADDRESS: 720 OVAL COURT. BURLINGTON, ON. L7L 6A9
TEL: 905-333-8364
www.branthaven.com

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TEL: 647-636-8771
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CONSULTANT:

NAME: FBDEV CONSULTING INC.
ADDRESS
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www.website.com

PLANNER:

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www.korsiak.com

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TEL: 905-477-3600
www.jdbarnes.com

SITE SERVICING:

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ADDRESS: 3760 14TH AVENUE, Ste. 301. MARKHAM, ON. L3R 3T7
TEL: 905-946-9461
www.urbantech.com

LANDSCAPE ARCHITECT:

NAME ADESSO DESIGN INC.
ADDRESS: 218 LOCKE ST. S, HAMILTON, ON. L8P 4B4
TEL: 905-526-8876
www.adessodesigninc.ca

WIND STUDY:

NAME: GRADIENT WIND ENGINEERING INC.
ADDRESS: 127 WALGREEN RD. CARP, ON. K0A 1L0
TEL: 613-836-0934
www.gradientwind.com

GEO-ENVIRONMENTAL ENGINEER:

NAME: DS CONSULTANTS LTD.
ADDRESS: 6221 HWY 7 UNIT 16, WOODBRIDGE, ON. L4H 0K8
TEL: 905-264-9393
www.dsconsultants.ca

ACOUSTICAL ENGINEERS:

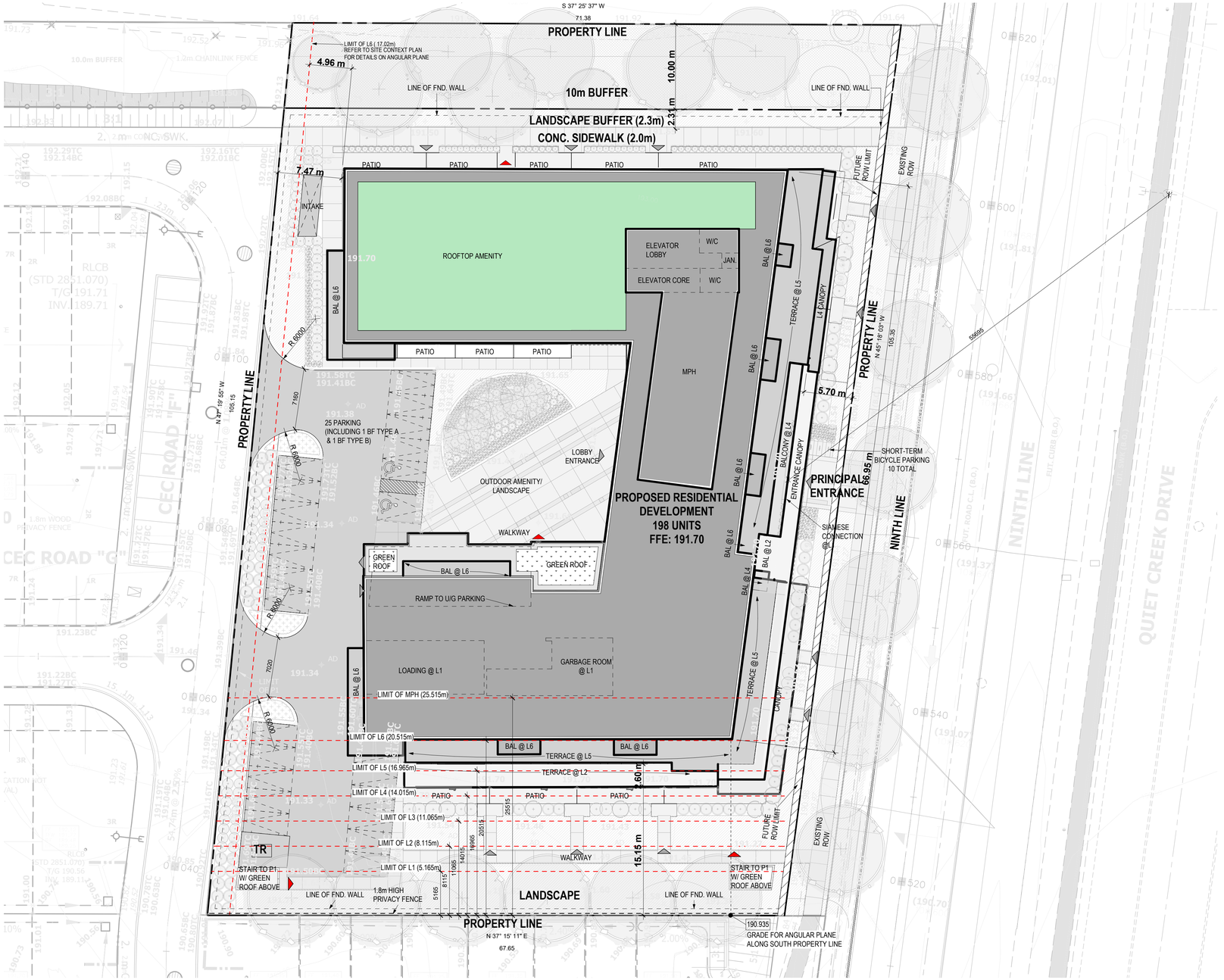
NAME: HGC ENGINEERING
ADDRESS: 2000 ARGENTIA RD 1, Ste. 203, MISSISSAUGA, ON. L5N 1P7
TEL: 905-826-4044
www.acoustical-consultants.com

LAND DEVELOPMENT ENGINEERING:

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TEL: 416-477-3392
www.cfcrozier.ca

ENVIRONMENTAL CONSULTANTS:

NAME: SAVANTA
ADDRESS: 75 TIVERTON COURT, UNIT 100. MARKHAM, ON. L3R 4M8
TEL: 1-800-810-3281
www.savanta.ca



Site Plan
1 : 250

1
A101

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Client:

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Site Plan

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1 : 250	L.B.
Checked by: B.C. & D.L.	Project No.: 21014
Date: 2021-11-05	Drawing No.: A101

Plot Date: 2021-11-12 8:29:05 AM



P1 Floor Plan
1 : 200

1
A200

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Client:

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Enter address

Drawing Title:

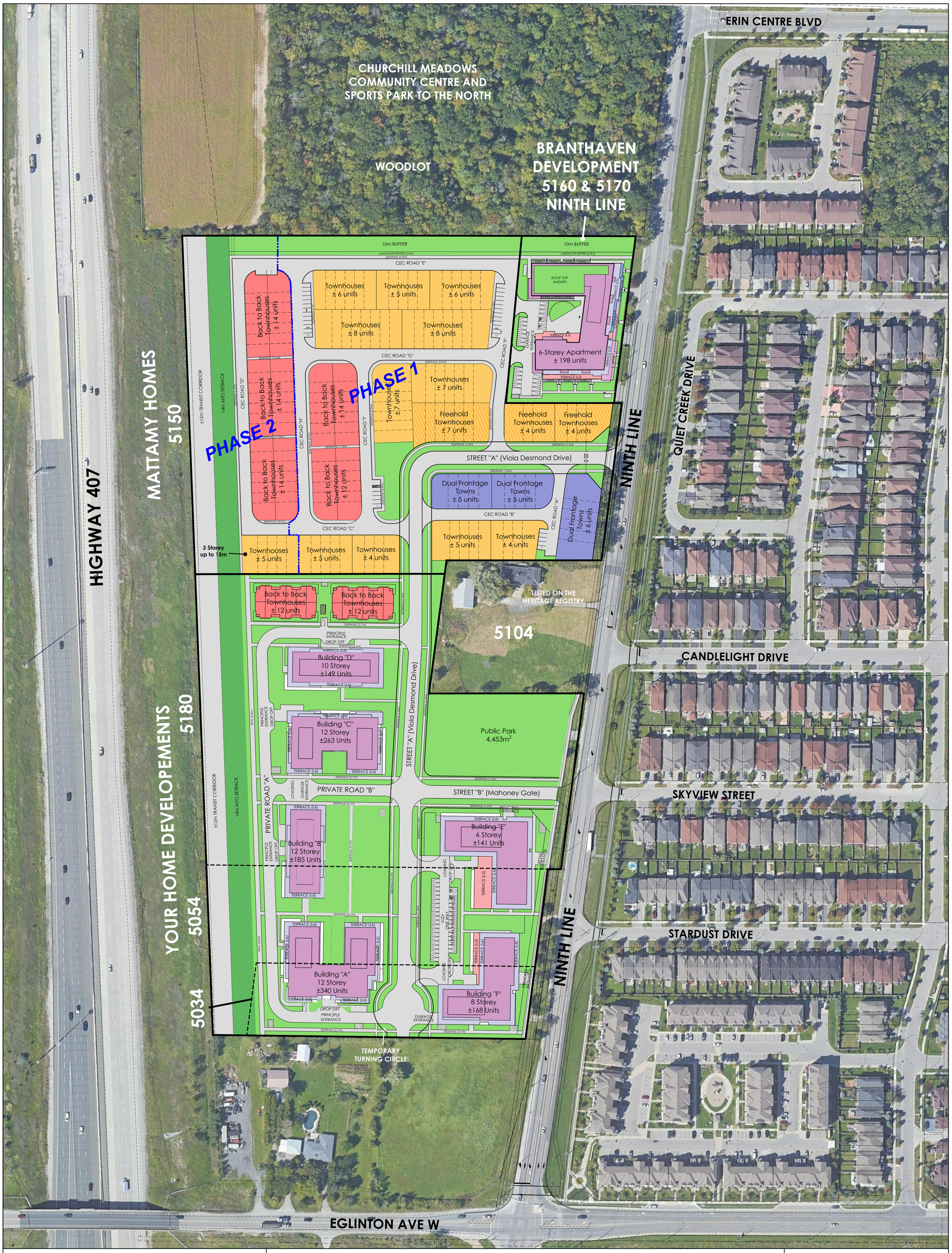
P1 Floor Plan

Scale:	Drawn by:
As indicated	L.B.
Checked by:	Project No.:
B.C. & D.L.	21014
Date:	Drawing No.:
2021-11-05	A200

Plot Date: 2021-11-12 8:29:06 AM

APPENDIX A.2

Composite Plan



COMPOSITE PLAN

MATTAMY HOMES/YOUR HOME DEVELOPMENTS/BRANTHAVEN DEVELOPMENT

mattamyHOMES

YOUR HOME DEVELOPMENTS

BRANTHAVEN

Scale 1:1000

November 19, 2021

KORSIAK Urban Planning
206-277 Lakeshore Road East
Oakville, Ontario L6J 1H9
T: 905-257-0227
info@korsiak.com

APPENDIX A.3

Property Reports

Zoning Information Report

City of Mississauga, 300 City Centre Drive, Mississauga, Ontario Canada L5B 3C1

Property Details

Address:	5160 NINTH LINE
Legal Description:	PART LT 1, CON 9, NS - PT 5 20R21132
Roll Number:	21-05-150-087-10906-0000
Common Name:	
Property Code:	RETAIL ONE STOREY < 10000 S.F.
Ward:	10
Councillor:	SUE MCFADDEN
Area:	2,960.13

Detail Map



Aerial Map



Property Zoning Information

The zone(s) for this property are listed below. To access the Mississauga Zoning By-law, please visit www.mississauga.ca/zoningbylaw. If you have any questions about the zoning information displayed below, please contact 311 (905-615-4311 outside City limits) or visit www.mississauga.ca/zoning.

Zone	Master Bylaw	Enacting Bylaw	OMB Case/File No.	Status
D	0225-2007	BL-0168/18	N/A	In Force

Heritage Status

Mississauga's heritage, which extends over 10,000 years, includes archaeological resources, numerous residential, commercial and industrial buildings, views, vistas, ridge lines, scenic routes and a variety of natural heritage properties. For more information, please visit www.mississauga.ca/heritage.

Status:	NOT LISTED ON THE HERITAGE REGISTER
Conservation District:	
Bylaw:	
Bylaw Date:	
Designation Statement:	
Inventory Item:	

Date Created: 2021-10-12

Zoning Information Report

City of Mississauga, 300 City Centre Drive, Mississauga, Ontario Canada L5B 3C1

Property Details

Address:	0 NINTH LINE
Legal Description:	PART LT 1, CON 9, NS - PTS 4, 8 20R21132
Roll Number:	21-05-150-087-10905-0000
Common Name:	
Property Code:	VACANT RESIDENTIAL LAND NOT ON WATER
Ward:	10
Councillor:	SUE MCFADDEN
Area:	1,370.28

Detail Map



Aerial Map



Property Zoning Information

The zone(s) for this property are listed below. To access the Mississauga Zoning By-law, please visit www.mississauga.ca/zoningbylaw. If you have any questions about the zoning information displayed below, please contact 311 (905-615-4311 outside City limits) or visit www.mississauga.ca/zoning.

Zone	Master Bylaw	Enacting Bylaw	OMB Case/File No.	Status
D	0225-2007	BL-0168/18	N/A	In Force

Heritage Status

Mississauga's heritage, which extends over 10,000 years, includes archaeological resources, numerous residential, commercial and industrial buildings, views, vistas, ridge lines, scenic routes and a variety of natural heritage properties. For more information, please visit www.mississauga.ca/heritage.

Status:	NOT LISTED ON THE HERITAGE REGISTER
Conservation District:	
Bylaw:	
Bylaw Date:	
Designation Statement:	
Inventory Item:	

Date Created: 2021-10-12

Zoning Information Report

City of Mississauga, 300 City Centre Drive, Mississauga, Ontario Canada L5B 3C1

Property Details

Address:	5170 NINTH LINE
Legal Description:	PART LT 1, CON 9, NS - PT 3 20R21132
Roll Number:	21-05-150-087-10904-0000
Common Name:	
Property Code:	SINGLE FAMILY DETACHED (NOT ON WATER)
Ward:	10
Councillor:	SUE MCFADDEN
Area:	2,947.58

Detail Map



Aerial Map



Property Zoning Information

The zone(s) for this property are listed below. To access the Mississauga Zoning By-law, please visit www.mississauga.ca/zoningbylaw. If you have any questions about the zoning information displayed below, please contact 311 (905-615-4311 outside City limits) or visit www.mississauga.ca/zoning.

Zone	Master Bylaw	Enacting Bylaw	OMB Case/File No.	Status
D	0225-2007	BL-0168/18	N/A	In Force

Heritage Status

Mississauga's heritage, which extends over 10,000 years, includes archaeological resources, numerous residential, commercial and industrial buildings, views, vistas, ridge lines, scenic routes and a variety of natural heritage properties. For more information, please visit www.mississauga.ca/heritage.

Status:	NOT LISTED ON THE HERITAGE REGISTER
Conservation District:	
Bylaw:	
Bylaw Date:	
Designation Statement:	
Inventory Item:	

Date Created: 2021-10-12

APPENDIX B

Correspondence

From: Michael Turco <Michael.Turco@mississauga.ca>
Sent: Wednesday, October 13, 2021 11:34 AM
To: Aidan Hallsworth <ahallsworth@cfcrozier.ca>
Cc: Peter Apasnore <papasnore@cfcrozier.ca>; kate.vassilyev@mississsauga.ca; Graham Routledge <graham.routledge@ontario.ca>
Subject: RE: Terms of Reference - 5160 Ninth Line

Hi Aidan,

Unfortunately, I wasn't able to track down the TIS for this site. However, I've attached a copy of the overall site plan.

Let me know if you have any further questions.

Thanks,

Michael Turco, C.E.T., MITE
Traffic Planning Technologist
T 905-615-3200 ext. 3597

From: Aidan Hallsworth <ahallsworth@cfcrozier.ca>
Sent: Wednesday, October 13, 2021 10:23 AM
To: Michael Turco <Michael.Turco@mississauga.ca>; Graham Routledge <graham.routledge@ontario.ca>
Cc: Peter Apasnore <papasnore@cfcrozier.ca>; kate.vassilyev@mississsauga.ca
Subject: RE: Terms of Reference - 5160 Ninth Line

Good Morning Michael and Graham,

Thank you for your feedback on our Terms of Reference Michael. @Graham Routledge, if you could provide feedback on this Terms of Reference at the earliest, that would be much appreciated.

@Michael Turco – We have looked online (including on the City's development application website) for materials related to the 4650 Ridgeway Drive background development but have yet to find any. Could you please provide supplementary materials (preferably the associated Traffic Impact Study) to support our TIS?

Many Thanks,

Aidan Hallsworth | Engineering Intern
211 Yonge Street, Suite 301 | Toronto, ON M5B 1M4
T: 416.477.3392

From: Michael Turco <Michael.Turco@mississauga.ca>
Sent: Monday, October 4, 2021 8:47 AM
To: Aidan Hallsworth <ahallsworth@cfcrozier.ca>
Cc: Graham Routledge <graham.routledge@ontario.ca>; Peter Apasnore <papasnore@cfcrozier.ca>; kate.vassilyev@mississsauga.ca; Trans Projects <Trans.Projects@mississauga.ca>
Subject: RE: Terms of Reference - 5160 Ninth Line

Hello Aidan,

Please find our TIS Terms of Reference comments below in green:

Should you have any questions, please feel free to contact me.

Thank you,

Michael Turco, C.E.T., MITE
Traffic Planning Technologist
T 905-615-3200 ext. 3597

From: Ryan Au <Ryan.Au@mississauga.ca>
Sent: Monday, September 27, 2021 8:05 PM
To: Aidan Hallsworth <ahallsworth@cfcrozier.ca>
Cc: Peter Apasnore <papasnore@cfcrozier.ca>; Graham Routledge <graham.routledge@ontario.ca>; Michael Turco <Michael.Turco@mississauga.ca>
Subject: RE: Terms of Reference - 5160 Ninth Line

Hi Aidan,

Thanks for the email. Michael Turco (copied) from our team will provide comments on the ToR on behalf of the City.

Thanks,
Ryan

From: Aidan Hallsworth [mailto:ahallsworth@cfcrozier.ca]
Sent: Monday, September 27, 2021 1:36 PM
To: kate.vassilyev@mississsauga.ca; Graham Routledge <graham.routledge@ontario.ca>
Cc: Peter Apasnore <papasnore@cfcrozier.ca>; Ryan Au <Ryan.Au@mississauga.ca>
Subject: Terms of Reference - 5160 Ninth Line

Good afternoon Kate and Graham,

We are reaching out to present a Terms of Reference for the Traffic Impact Study (TIS) for the proposed Residential Development at 5160 Ninth Line in the City of Mississauga. Below is an outline of our proposed workplan. We hope that you would provide some feedback and confirm our Terms of Reference at the earliest possible. Should you have any questions or concerns, please feel free to contact me or Peter Apasnore (cc'd), we would be happy to discuss.

@Graham - Given the low site generated trips (i.e., 69 a.m. and 85 p.m. two-way trips), and considering the nearest MTO highway ramps are over 2km away, no ramps have been included in the Study scope. Please confirm this is acceptable.

Thanks,

Aidan

Per the attached site plan, the development proposes:

- A 6-storey apartment building with a total of 198 dwelling units
- A total of 237 parking spaces, including
    - A single underground parking garage with 213 spaces

- An at-grade parking lot with 24 spaces
- Two site access connections to "CEC Road F" as indicated on the Composite Plan (attached).

The site forms part of a composite plan of developments adjacent to the Ninth Line corridor, which are all served by two main primary access points to Ninth Line at Street A and Street B.

Based on preliminary ITE Trip Generation estimates, approximately 69 and 85 new two-way a.m. and p.m. peak hour trips, respectively, are generated by the development.

On that basis, we propose the following scope.

Traffic Impact Study – Scope

- The TIS will analyze traffic impacts during the weekday a.m. and p.m. peak hours. The study will consider the existing 2021 and five years beyond the study date (2026) horizons, consistent with the City's TIS Guidelines.

- The following intersections will be analyzed.
    a. Ninth Line and Eglinton Avenue West
    b. Ninth Line and Skyview Street / Street B access
    c. Ninth Line and Candlelight Drive
    d. Ninth Line and Erin Centre Boulevard
    e. Ninth Line and Street A access

- Existing, future background and future total traffic operations will be analyzed using Synchro 11. Standard traffic operations metrics for signalized and unsignalized intersections including LOS, delays, volume-to-capacity ratios, and 95th percentile queue length will be analyzed and reported on.

- Given the impact of COVID-19, existing counts will not be undertaken; traffic counts from 2019 will be used for the analysis and grown to 2021 levels using the growth rates outlined in the following point.

- Background traffic growth for arterial roads (Ninth Line and Eglinton Avenue) previously obtained from Tyler Xuereb, Transportation Planning Analyst (tyler.xuereb@mississauga.ca, Ext. 4783) will be used. All other local roadways will be assigned growth rates of 0.5%, compounded annually – consistent with background Traffic Studies in the area. Please contact Tyler to confirm if these growth rates would still be applicable.

- The following background developments will be accounted for in the calculation of future background traffic volumes Ninth Line Corridor Study Transportation Assessment

    a. 5080 Ninth Line (as shown on the composite plan within the attachment)
    b. 5150 Ninth Line (as shown on the composite plan)
    c. Erin Mills Industrial Development (per the Ninth Line Corridor Study Transportation Assessment by MMM, dated July 2017)
    d. 407 Transitway (per the MMM report)

e. Emerging Ninth Line Corridor developments (per the MMM report)

f. 4650 Ridgeway Drive (SP 18-80) - 10 one storey and 1 two storey retail and office buildings

- The widening of Ninth Line as described in the Ninth Line Class Environmental Assessment (dated June 2021) will be accounted for under future background and total conditions.

- Trip generation will be forecasted using the ITE Trip Generation Manual, 10th Edition. The latest (11th) edition of the ITE Trip Generation Manual should be utilized.

- Trip distribution will be derived from a combination of 2016 Transportation Tomorrow Survey (TTS) data and existing (pre-pandemic) travel patterns.

- Future total traffic operations will be compared to future background traffic operations under the future study horizon(s) to determine what mitigation measures are required on the boundary road network to accommodate the development. These mitigation measures may include auxiliary turn lanes, signalization, etc. as warranted.

- Auxiliary left-turn lane requirements will be analyzed using the MTO's "Design Supplement for the Geometric Design Guide for Canadian Roads" and traffic signal requirements will be analyzed using the warrants set out in the Ontario Traffic Manual (OTM) Book 12 "Traffic Signals".

- The proposed site access will be reviewed from a safety perspective to identify issues pertaining to driver sight lines, access configuration, corner clearance, queuing and vehicle turning constraints. The safety assessment will be based on the standards set out by the Transportation Associates of Canada (TAC) Geometric Design Guide for Canadians Roads (GDGCR).

- Existing and future Transportation Demand Management (TDM) opportunities will be reviewed along with site specific measures that may be implemented to reduce auto share and promote non-auto transportation. This will include the impacts arising from the future 407 transitway running parallel to Highway 407. Please only include TDM measures that will (not may) be implemented as part of the development. Ensure these measures are included in the recommendations section of the report.

- Truck Access and Circulation (AutoTurn Swept-Path Analysis) - ensure that truck traffic (garbage/loading/fire) can enter and exit the site in a forward motion and access to the garbage, loading, and fire route areas are functional. On separate plans, illustrate truck turning movements with one continuous path with AutoTURN and insert the design vehicles on the plan. The site must be able to accommodate the largest design vehicles which will be accessing the property. An evaluation of the parking areas and ramps using a PTAC design vehicle should also be included.

- Detailed Recommendations regarding on-site/off-site roadway improvements, site access, site circulation, and TDM measures are to be made.

- Signal timing plans for signalized intersections can be obtained from Jim Kartsomanis (Jim.Kartsomanis@mississauga.ca, Ext. 3964).

Aidan Hallsworth | Engineering Intern
211 Yonge Street, Suite 301 | Toronto, ON M5B 1M4
T: 416.477.3392

CROZIER
CONSULTING ENGINEERS

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Aidan Hallsworth

From: Tyler Xuereb <Tyler.Xuereb@mississauga.ca>
Sent: Wednesday, October 13, 2021 10:36 AM
To: Aidan Hallsworth
Subject: RE: Traffic Impact Study Growth Rate Confirmation (5160 Ninth Line)

Hi Aidan,

Yes, you are ok to use these rates for 5160 Ninth Line.

Regards,

Tyler Xuereb
Transportation Planning Analyst
T 905-615-3200 ext.4783
Tyler.xuereb@mississauga.ca

City of Mississauga | Transportation and Works Department,
Infrastructure Planning and Engineering Services Division

Please consider the environment before printing.

From: Aidan Hallsworth <ahallsworth@cfcrozier.ca>
Sent: Wednesday, October 13, 2021 10:25 AM
To: Tyler Xuereb <Tyler.Xuereb@mississauga.ca>
Cc: Peter Apasnore <papasnore@cfcrozier.ca>
Subject: Traffic Impact Study Growth Rate Confirmation (5160 Ninth Line)

Good afternoon Tyler,

Hope you had a great long weekend.

I'm emailing to confirm growth rates for a Traffic Impact Study (the Terms of Reference correspondence is attached). Under a previous TIS, we used growth rates provided by your department outlined in the email below.

If you could please confirm if these growth rates are still acceptable, that would be greatly appreciated.

Best Regards,
Aidan

Aidan Hallsworth | Engineering Intern
211 Yonge Street, Suite 301 | Toronto, ON M5B 1M4
T: 416.477.3392

Crozier Connections:

Read our latest news and announcements here.

From: Tyler Xuereb <Tyler.Xuereb@mississauga.ca>
Sent: Wednesday, July 7, 2021 12:54 PM
To: Aidan Hallsworth <ahallsworth@cfcrozier.ca>
Subject: RE: Traffic Impact Study Growth Rate Confirmation

Hi Aidan,

Using the City's Travel Demand Model and supporting traffic count data, the City's Transportation Planning section has determined the projected growth along Ninth Line, Eglinton Avenue and Winston Churchill Boulevard to be used as part of your study. The recommended projected growth is shown below.

Ninth Line

	Compounded Annual Growth from existing to 2031	
	NB	SB
AM Peak Hour	3.5%	3.5%
PM Peak Hour	3.0%	3.5%

	Compounded Annual Growth from 2031 to 2035	
	NB	SB
AM Peak Hour	0.0%	0.5%
PM Peak Hour	0.5%	0.5%

Winston Churchill Boulevard

	Compounded Annual Growth from Existing to 2031	
	NB	SB
AM Peak Hour	1.0%	0.5%
PM Peak Hour	0.5%	0.5%

	Compounded Annual Growth from 2031 to 2035	
	NB	SB
AM Peak Hour	1.5%	1.0%
PM Peak Hour	1.5%	1.0%

Eglinton Avenue

	Compounded Annual Growth from Existing to 2031	
	EB	WB
AM Peak Hour	2.0%	1.5%
PM Peak Hour	1.5%	2.0%

	Compounded Annual Growth from 2031 to 2035	
	EB	WB
AM Peak Hour	0.5%	1.5%
PM Peak Hour	1.0%	1.0%

-The rates along Ninth Line assume the widening of Ninth Line from 1 through lane per direction to 2 through lanes per direction, as such you analysis should also assume this widening.

-The rates along Winston Churchill Boulevard assume the widening of WCB from 2 through lanes per direction to 3 through lanes per direction. Some sections of WCB have already been widened, the widening is expected to take place north of Erin Centre Boulevard and extend to Derry Road. This is set to take place between 2031 and 2041.

Regards,

Tyler Xuereb
Transportation Planning Analyst
T 905-615-3200 ext.4783
Tyler.xuereb@mississauga.ca

City of Mississauga | Transportation and Works Department,
Infrastructure Planning and Engineering Services Division

Please consider the environment before printing.

From: Aidan Hallsworth <ahallsworth@cfcrozier.ca>
Sent: Tuesday, July 6, 2021 8:32 AM
To: Tyler Xuereb <Tyler.Xuereb@mississauga.ca>
Cc: Peter Apasnore <papasnore@cfcrozier.ca>
Subject: RE: Traffic Impact Study Growth Rate Confirmation

Good Morning Tyler,

Our analysis years are 2025, 2030 and 2035.

Regards,

Aidan Hallsworth | Engineering Intern
211 Yonge Street, Suite 301 | Toronto, ON M5B 1M4
T: 416.477.3392

Crozier Connections:

Read our latest news and announcements here.

From: Tyler Xuereb <Tyler.Xuereb@mississauga.ca>
Sent: Tuesday, July 6, 2021 8:24 AM

To: Aidan Hallsworth <ahallsworth@cfcrozier.ca>
Subject: RE: Traffic Impact Study Growth Rate Confirmation

Good Morning Aidan,

Thank you for your email.

Could you please provide me with your horizon years?

Thanks,

Tyler Xuereb
Transportation Planning Analyst
T 905-615-3200 ext.4783
Tyler.xuereb@mississauga.ca

City of Mississauga | Transportation and Works Department,
Infrastructure Planning and Engineering Services Division

Please consider the environment before printing.

From: Aidan Hallsworth <ahallsworth@cfcrozier.ca>
Sent: Monday, July 5, 2021 3:04 PM
To: Tyler Xuereb <Tyler.Xuereb@mississauga.ca>
Cc: Peter Apasnore <papasnore@cfcrozier.ca>
Subject: Traffic Impact Study Growth Rate Confirmation

Hello Tyler,

Hope you had a great weekend.

I am emailing regarding our Terms of Reference a proposed development at 5080 Ninth Line. To confirm the Terms of Reference, we have been referred to you to confirm our growth rates. If you could kindly confirm our approach, or provide different growth rates for the following roads, that would be much appreciated.

- Ninth Line btwn. Eglinton Avenue and Britannia Road
- Winston Churchill Boulevard btwn. Burnhamthorpe Road and Eglinton Avenue
- Eglinton Avenue btwn. Ninth Line and Winston Churchill Boulevard

I have attached the excerpts of the Ninth Line Lands Study Transportation Assessment which we were planning to use as our growth rates as outlined in the Terms of Reference. The site plan is also attached.

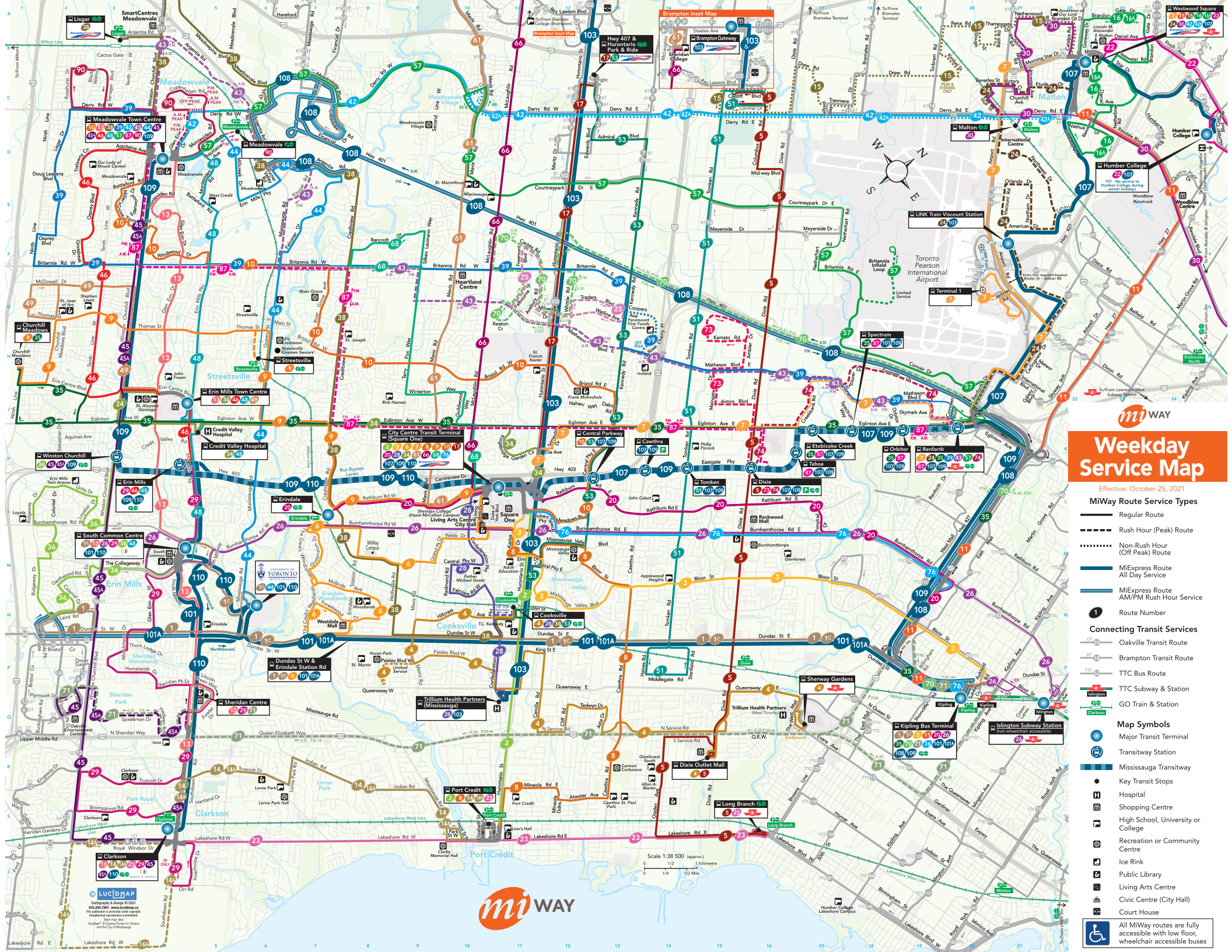
Please do not hesitate to contact me if you have any questions.

Best Regards,

Aidan

APPENDIX C

Transit Information



Weekday Service Map

Effective: October 25, 2021

MiWay Route Service Types

- Regular Route
- Rush Hour (Peak) Route
- Non-Rush Hour (Off Peak) Route
- MiExpress Route All Day Service
- MiExpress Route AM/PM Rush Hour Service
- Route Number

Connecting Transit Services

- Oakville Transit Route
- Brampton Transit Route
- TTC Bus Route
- TTC Subway & Station
- GO Train & Station

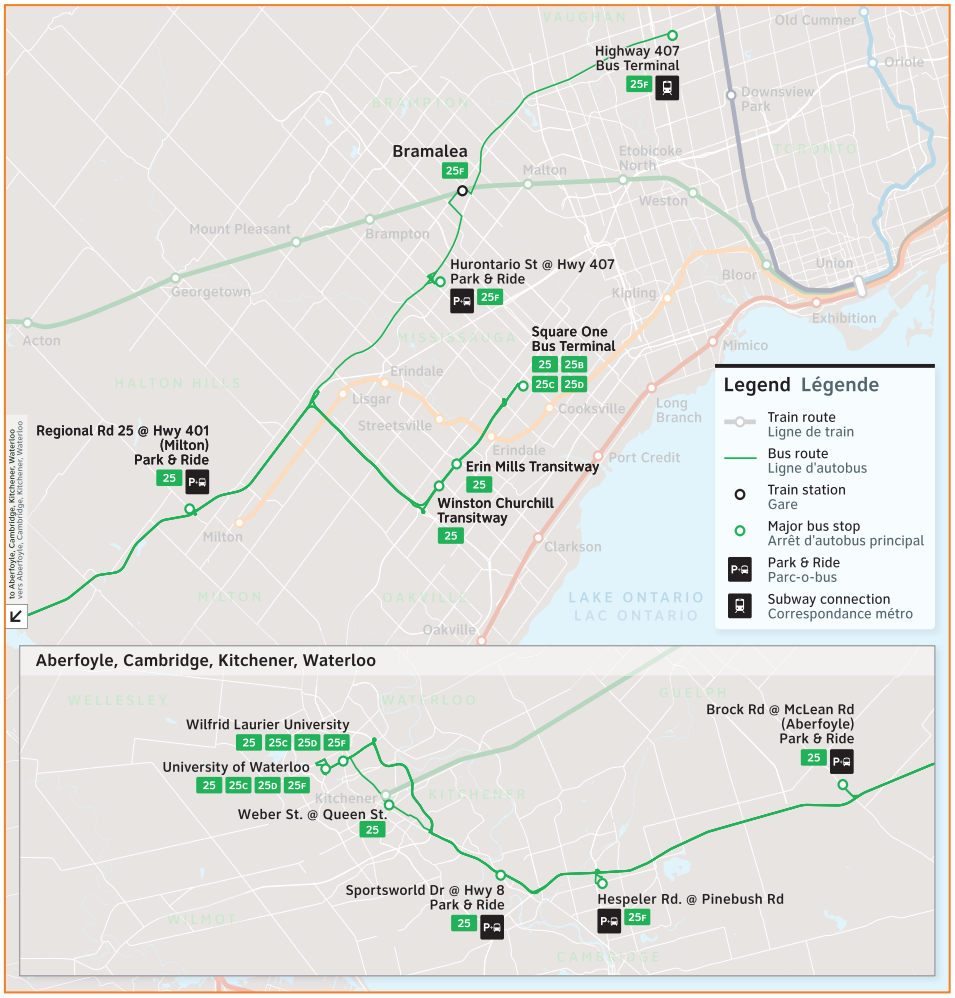
Map Symbols

- Major Transit Terminal
- Transitway Station
- Mississauga Transitway
- Key Transit Stops
- Hospital
- Shopping Centre
- High School, University or College
- Recreation or Community Centre
- Ice Rink
- Public Library
- Living Arts Centre
- Civic Centre (City Hall)
- Court House

All MiWay routes are fully accessible with low floor, wheelchair accessible buses

25 Route number / Numéro du trajet

Waterloo/Mississauga



CONTACT US

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416-869-3200
TTY/ATS:
1-800-387-3652

gotransit.com/schedules

@GOtransitBus

See Something?
Say Something.
24/7 Transit Safety Dispatch:
1-877-297-0642

prestocard.ca

Sign-up for email or text alerts/ Inscrivez-vous pour recevoir des alertes par courriel ou message texte.
gotransit.com/OnTheGO

Face coverings are mandatory on GO Transit. Let's keep each other safe.

Le port d'un masque est obligatoire lors de vos trajets sur GO Transit. Protégeons notre santé les uns les autres.

18-08-2021

Waterloo/ Mississauga

GO Bus Schedule/
Horaire des autobus GO

METROLINX

25

- Waterloo
- Kitchener
- Cambridge
- Aberfoyle
- Milton
- Mississauga
- Brampton
- Toronto

Daily / Quotidiennement
Includes GO Bus routes 25 / Inclut les trajets 25 d'autobus GO

Effective / À partir de:
4 SEPTEMBER SEPTEMBRE 2021

How to read our schedules

Step 1
Find the station or terminal you are departing from. Stops are listed across the top in the order they are served.

Step 2
The upper left corner tells you what day the schedule is for and the direction of travel.

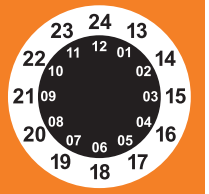
Step 3
Look across the rows for available departure times.

Step 4
Not all trains or buses stop at every station. If you see → the train or bus will not stop at that station.

Schedule times shown in 24-hour clock

Midnight to noon
00 01 - 12 00

Noon to midnight
12 01 - 24 00



Legend

Bus trips

→ Trip does not serve this location.

GO Bus service is accessible to passengers using mobility devices at this location.

Ⓟ Parking available.

Notes

D Stops to discharge passengers on request only.

Bicycles

1. Bicycles are not allowed in Union Station or on-board trains during morning rush hour (6:30-9:30) and evening rush hour (15:30-18:30), Monday to Friday.

2. Foldable bicycles are allowed on-board trains at all times.

For the latest schedule information and updates, please visit gotransit.com/schedules.

Comment lire nos horaires

Étape 1
Trouvez votre gare ou terminus de départ. La liste des arrêts est donnée en haut dans l'ordre dans lequel ils sont desservis.

Étape 2
Le coin supérieur gauche vous indique le jour pour lequel l'horaire est donné et la direction de circulation.

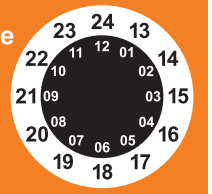
Étape 3
Regardez dans les rangées pour obtenir les heures de départ offertes.

Étape 4
Les trains ou les autobus ne s'arrêtent pas tous à chaque gare. Si vous voyez le symbole → le train ou l'autobus ne s'arrêtera pas à cette gare.

Indications selon un système horaire de 24 heures

De minuit à midi:
00 01 - 12 00

De midi à minuit:
12 01 - 24 00



Légende

Horaire des autobus

→ Trajet ne sert pas cette station.

Service d'autobus GO accessible aux personnes utilisant des aides à la mobilité à cet endroit.

Ⓟ Stationnement disponible.

Notes

D Arrêt sur demande seulement.

Vélos

1. Les vélos ne sont pas autorisés dans la gare Union ou à bord des trains du lundi au vendredi, pendant l'heure de pointe (6:30-9:30) et pendant l'heure de pointe du soir (15:30-18:30).

2. Les vélos pliables sont permis à bord des trains en tout temps.

Pour consulter les horaires les plus récents et les mises à jour, veuillez visiter gotransit.com/schedules.

Monday to Friday (except holidays)
Du lundi au vendredi (sauf les jours fériés)

EASTBOUND / EN DIRECTION EST

Route Number / Numéro du trajet	Trip Number / Numéro du parcours	Zone→	Waterloo 27 Dp	Waterloo 27 Dp	Kitchener 27	Kitchener 26	Cambridge 26	Puslinch 39	Milton 24	Mississauga 21	Mississauga 21	Mississauga 20 Ar
			University of Waterloo	Wilfrid Laurier University	Weber St. W. @ Queen St. N.	Sportsworld Dr. @ Hwy. 8	Hespeler Rd. @ Pinebush Rd.	Brock Rd. @ McLean Rd. (Aberfoyle)	Regional Rd. 25 @ Hwy. 401	Winston Churchill Transitway Station	Erin Mills Transitway Station	Square One
25	25140		05 30	05 33	05 41	05 55	06 04	06 20	06 36	06 57	07 00	07 15
25	25200		06 15	06 18	06 26	06 40	06 50	07 10	07 29	07 57	08 00	08 15
25	25250		07 10	07 13	07 23	07 38	07 48	08 10	08 29	08 57	09 00	09 15
25	25290		08 20	08 23	08 33	08 48	08 58	09 20	09 36	09 57	10 00	10 15
25	25330		09 25	09 28	09 38	09 53	10 03	10 25	10 41	10 57	11 00	11 15
25	25370		10 25	10 28	10 38	10 53	11 03	11 25	11 41	11 57	12 00	12 15
25	25390		10 55	11 03	11 13	11 28	11 38	12 00	12 16	12 32	12 35	12 50
25	25410		11 25	11 33	11 43	11 58	12 08	12 30	12 46	13 02	13 05	13 20
25	25430		11 55	12 03	12 13	12 28	12 38	13 00	13 16	13 32	13 35	13 50
25	25450		12 25	12 33	12 43	12 58	13 08	13 30	13 46	14 02	14 05	14 20
25	25470		12 55	13 03	13 13	13 28	13 38	14 00	14 16	14 32	14 35	14 50
25	25500		13 25	13 33	13 43	13 58	14 08	14 30	14 46	15 02	15 05	15 20
25	25530		13 55	14 03	14 13	14 28	14 38	15 00	15 16	15 32	15 35	15 50
25	25560		14 20	14 28	14 38	14 53	15 06	15 30	15 46	16 07	16 10	16 25
25	25590		14 50	14 58	15 08	15 23	15 36	16 00	16 16	16 37	16 40	16 55
25	25620		15 20	15 28	15 38	15 53	16 06	16 30	16 46	17 07	17 10	17 25
25	25650		15 50	15 58	16 08	16 23	16 36	17 00	17 21	17 42	17 45	18 00
25	25670		16 20	16 28	16 38	16 53	17 06	17 25	17 41	18 02	18 05	18 20
25	25690		16 50	16 58	17 08	17 23	17 36	17 55	18 11	18 32	18 35	18 50
25	25710		17 20	17 28	17 38	17 53	18 06	18 25	18 41	19 02	19 05	19 20
25	25730		17 55	18 03	18 13	18 28	18 41	19 00	19 16	19 37	19 40	19 55
25	25750		18 30	18 33	18 43	18 58	19 08	19 30	19 46	20 07	20 10	20 25
25	25770		19 00	19 03	19 13	19 28	19 38	20 00	20 16	20 37	20 40	20 55
25	25790		19 30	19 33	19 43	19 58	20 07	20 25	20 41	21 02	21 05	21 20
25	25810		20 00	20 03	20 13	20 28	20 37	20 55	21 11	21 32	21 35	21 50
25	25830		20 30	20 33	20 43	20 58	21 07	21 25	21 41	21 57	22 00	22 15
25	25860		21 30	21 33	21 43	21 58	22 07	22 25	22 41	22 57	23 00	23 15
25	25890		22 35	22 38	22 46	23 00	23 09	23 25	23 41	23 57	00 00	00 15

Monday to Friday (except holidays)
Du lundi au vendredi (sauf les jours fériés)

WESTBOUND / EN DIRECTION OUEST

Route Number / Numéro du trajet	Trip Number / Numéro du parcours	Zone→	Mississauga 20 Dp	Mississauga 21	Mississauga 21	Milton 24	Puslinch 39	Cambridge 26	Kitchener 26	Kitchener 27	Waterloo 27	Waterloo 27 Ar
			Square One	Erin Mills Transitway Station	Winston Churchill Transitway Station	Regional Rd. 25 @ Hwy. 401	Brock Rd. @ McLean Rd. (Aberfoyle)	Hespeler Rd. @ Pinebush Rd.	Sportsworld Dr. @ Hwy. 8	Weber St. @ Queen St.	Wilfrid Laurier University	University of Waterloo
									D	D	D	D
25	25051		05 45	05 53	05 56	06 18	06 35	06 52	07 01	07 14	07 27	07 40
25	25111		06 45	06 53	06 56	07 18	07 35	07 52	08 01	08 14	08 27	08 40
25	25151		07 15	07 23	07 26	07 48	08 05	08 22	08 31	08 44	08 57	09 10
25	25181		07 50	07 58	08 01	08 23	08 40	08 57	09 06	09 19	09 32	09 45
25	25211		08 20	08 28	08 31	08 53	09 10	09 27	09 36	09 49	10 02	10 15
25	25221		08 45	08 53	08 56	09 18	09 35	09 52	10 01	10 14	10 27	10 40
25	25251		09 15	09 23	09 26	09 48	10 05	10 22	10 31	10 44	10 57	11 10
25	25271		09 45	09 53	09 56	10 18	10 35	10 52	11 01	11 14	11 27	11 40
25	25291		10 15	10 23	10 26	10 48	11 05	11 22	11 31	11 44	11 57	12 10
25	25301		10 45	10 53	10 56	11 18	11 35	11 52	12 01	12 14	12 27	12 40
25	25331		11 15	11 23	11 26	11 48	12 05	12 22	12 31	12 44	12 57	13 10
25	25341		11 45	11 53	11 56	12 18	12 35	12 52	13 01	13 14	13 27	13 40
25	25371		12 15	12 23	12 26	12 48	13 05	13 22	13 31	13 44	13 57	14 10
25	25381		12 45	12 53	12 56	13 18	13 35	13 52	14 01	14 14	14 27	14 40
25	25411		13 15	13 23	13 26	13 48	14 05	14 22	14 31	14 44	14 57	15 10
25	25421		13 45	13 53	13 56	14 18	14 35	14 52	15 01	15 19	15 32	15 45
25	25451		14 15	14 23	14 26	14 48	15 05	15 22	15 31	15 49	16 02	16 15
25	25461		14 45	14 53	14 56	15 18	15 35	15 52	16 01	16 19	16 32	16 45
25	25491		15 15	15 23	15 26	15 50	16 10	16 29	16 38	16 56	17 09	17 25
25	25521		15 45	15 53	15 56	16 20	16 40	16 59	17 08	17 26	17 39	17 55
25	25551		16 15	16 23	16 26	16 50	17 10	17 29	17 38	17 56	18 09	18 25
25	25581		16 50	16 58	17 01	17 25	17 45	18 04	18 13	18 31	18 44	19 00
25	25611		17 15	17 23	17 26	17 50	18 10	18 29	18 38	18 56	19 09	19 25
25	25641		17 50	17 58	18 01	18 25	18 45	19 02	19 11	19 29	19 42	19 55
25	25671		18 15	18 23	18 26	18 50	19 10	19 27	19 36	19 54	20 07	20 20
25	25691		18 45	18 53	18 56	19 18	19 35	19 52	20 01	20 16	20 29	20 40
25	25711		19 15	19 23	19 26	19 48	20 05	20 22	20 31	20 46	20 59	21 10
25	25721		19 45	19 53	19 56	20 18	20 35	20 52	21 01	21 14	21 24	21 35
25	25771		20 45	20 53	20 56	21 18	21 35	21 52	21 59	22 11	22 19	22 30
25	25801		21 45	21 53	21 56	22 18	22 35	22 52	22 59	23 11	23 19	23 30
25	25841		22 45	22 53	22 56	23 18	23 35	23 51	23 57	00 09	00 17	00 25
25	25871		23 45	23 53	23 56	00 18	00 35	00 51	00 57	01 09	01 17	01 25

Saturday and Sunday
Samedi et Dimanche

EASTBOUND / EN DIRECTION EST

Route Number / Numéro du trajet	Trip Number / Numéro du parcours	Zone→	Waterloo 27 Dp	Waterloo 27	Kitchener 27	Kitchener 26	Cambridge 26	Puslinch 39	Milton 24	Mississauga 21	Mississauga 21	Mississauga 20 Ar
			♿ University of Waterloo	Wilfrid Laurier University	♿ Weber St. W. @ Queen St. N.	Ⓟ ♿ Sportsworld Dr. @ Hwy. 8	♿ Hespeler Rd. @ Pinebush Rd.	Ⓟ ♿ Brock Rd. @ McLean Rd. (Aberfoyle)	Ⓟ ♿ Regional Rd. 25 @ Hwy. 401	Ⓟ ♿ Winston Churchill Transitway Station	Ⓟ ♿ Erin Mills Transitway Station	Ⓟ ♿ Square One
25	25110		05 00	05 03	05 11	05 25	05 34	05 50	06 06	06 24	06 27	06 40
25	25170		05 55	05 58	06 08	06 23	06 32	06 50	07 06	07 24	07 27	07 40
25	25230		06 55	06 58	07 08	07 23	07 32	07 50	08 06	08 24	08 27	08 40
25	25270		07 50	07 53	08 03	08 18	08 27	08 45	09 01	09 22	09 25	09 40
25	25310		08 50	08 53	09 03	09 18	09 27	09 45	10 01	10 22	10 25	10 40
25	25350		09 45	09 48	09 58	10 13	10 23	10 45	11 01	11 22	11 25	11 40
25	25380		10 35	10 38	10 48	11 03	11 13	11 35	11 51	12 12	12 15	12 30
25	25400		11 05	11 08	11 18	11 33	11 43	12 05	12 21	12 42	12 45	13 00
25	25420		11 35	11 38	11 48	12 03	12 13	12 35	12 51	13 12	13 15	13 30
25	25440		12 05	12 08	12 18	12 33	12 43	13 05	13 21	13 42	13 45	14 00
25	25460		12 35	12 38	12 48	13 03	13 13	13 35	13 51	14 12	14 15	14 30
25	25480		13 05	13 08	13 18	13 33	13 43	14 05	14 21	14 42	14 45	15 00
25	25510		13 35	13 38	13 48	14 03	14 13	14 35	14 51	15 12	15 15	15 30
25	25540		14 05	14 08	14 18	14 33	14 43	15 05	15 21	15 42	15 45	16 00
25	25570		14 35	14 38	14 48	15 03	15 13	15 35	15 51	16 12	16 15	16 30
25	25600		15 05	15 08	15 18	15 33	15 43	16 05	16 21	16 42	16 45	17 00
25	25630		15 35	15 38	15 48	16 03	16 13	16 35	16 51	17 12	17 15	17 30
25	25660		16 05	16 08	16 18	16 33	16 43	17 05	17 21	17 42	17 45	18 00
25	25680		16 35	16 38	16 48	17 03	17 13	17 35	17 51	18 12	18 15	18 30
25	25700		17 05	17 08	17 18	17 33	17 43	18 05	18 21	18 42	18 45	19 00
25	25720		17 35	17 38	17 48	18 03	18 13	18 35	18 51	19 12	19 15	19 30
25	25740		18 05	18 08	18 18	18 33	18 43	19 05	19 21	19 42	19 45	20 00
25	25770		18 45	18 48	18 58	19 13	19 23	19 45	20 01	20 22	20 25	20 40
25	25810		19 50	19 53	20 03	20 18	20 28	20 50	21 06	21 24	21 27	21 40
25	25840		20 55	20 58	21 08	21 23	21 32	21 50	22 06	22 24	22 27	22 40
25	25870		21 55	21 58	22 08	22 23	22 32	22 50	23 06	23 24	23 27	23 40
25	25900		22 55	22 58	23 08	23 23	23 32	23 50	00 06	00 24	00 27	00 40

Saturday and Sunday
Samedi et Dimanche

WESTBOUND / EN DIRECTION OUEST

Route Number / Numéro du trajet	Trip Number / Numéro du parcours	Zone→	Mississauga 20 Dp	Mississauga 21	Mississauga 21	Milton 24	Puslinch 39	Cambridge 26	Kitchener 26	Kitchener 27	Waterloo 27	Waterloo 27 Ar
			Ⓟ ♿ Square One	Ⓟ ♿ Erin Mills Transitway Station	Ⓟ ♿ Winston Churchill Transitway Station	Ⓟ ♿ Regional Rd. 25 @ Hwy. 401	Ⓟ ♿ Brock Rd. @ McLean Rd. (Aberfoyle)	♿ Hespeler Rd. @ Pinebush Rd.	Ⓟ ♿ D Sportsworld Dr. @ Hwy. 8	♿ D Weber St. E. @ Queen St. N.	♿ D Wilfrid Laurier University	♿ D University of Waterloo
25	25081		06 10	06 18	06 21	06 43	07 00	07 17	07 24	07 36	07 44	07 55
25	25141		07 10	07 18	07 21	07 43	08 00	08 16	08 22	08 35	08 45	08 55
25	25201		08 10	08 18	08 21	08 43	09 00	09 17	09 24	09 37	09 49	10 00
25	25241		09 10	09 18	09 21	09 43	10 00	10 17	10 24	10 37	10 49	11 00
25	25281		10 10	10 18	10 21	10 43	11 00	11 17	11 24	11 37	11 49	12 00
25	25321		11 10	11 18	11 21	11 43	12 00	12 17	12 26	12 41	12 53	13 05
25	25361		12 10	12 18	12 21	12 43	13 00	13 17	13 26	13 41	13 53	14 05
25	25391		12 50	12 58	13 01	13 23	13 40	13 57	14 06	14 21	14 33	14 45
25	25411		13 20	13 28	13 31	13 53	14 10	14 27	14 36	14 51	15 03	15 15
25	25431		13 50	13 58	14 01	14 23	14 40	14 57	15 06	15 21	15 33	15 45
25	25451		14 20	14 28	14 31	14 53	15 10	15 27	15 36	15 51	16 03	16 15
25	25471		14 50	14 58	15 01	15 23	15 40	15 57	16 06	16 21	16 33	16 45
25	25501		15 20	15 28	15 31	15 53	16 10	16 27	16 36	16 51	17 03	17 15
25	25531		15 50	15 58	16 01	16 23	16 40	16 57	17 06	17 21	17 33	17 45
25	25561		16 20	16 28	16 31	16 53	17 10	17 27	17 36	17 51	18 03	18 15
25	25591		16 50	16 58	17 01	17 23	17 40	17 57	18 06	18 21	18 33	18 45
25	25621		17 20	17 28	17 31	17 53	18 10	18 27	18 36	18 51	19 03	19 15
25	25651		17 50	17 58	18 01	18 23	18 40	18 57	19 06	19 21	19 33	19 45
25	25671		18 20	18 28	18 31	18 53	19 10	19 27	19 36	19 51	20 03	20 15
25	25691		18 50	18 58	19 01	19 23	19 40	19 57	20 06	20 21	20 33	20 45
25	25711		19 20	19 28	19 31	19 53	20 10	20 27	20 36	20 49	20 59	21 10
25	25731		19 50	19 58	20 01	20 23	20 40	20 57	21 06	21 19	21 29	21 40
25	25751		20 20	20 28	20 31	20 53	21 10	21 27	21 36	21 49	21 59	22 10
25	25771		20 50	20 58	21 01	21 23	21 40	21 57	22 06	22 19	22 29	22 40
25	25781		21 10	21 18	21 21	21 43	22 00	22 17	22 26	22 39	22 49	23 00
25	25821		22 10	22 18	22 21	22 43	23 00	23 17	23 24	23 36	23 44	23 55
25	25851		23 10	23 18	23 21	23 43	00 00	00 16	00 22	00 34	00 42	00 50
25	25881		00 10	00 18	00 21	00 43	01 00	01 16	01 22	01 34	01 42	01 50

29 Route number
Numéro du trajet

Guelph/Mississauga



CONTACT US

1-888-438-6646
416-869-3200
TTY/ATS:
1-800-387-3652

gotransit.com/schedules

@GOtransitBus

See Something?
Say Something.

24/7 Transit Safety Dispatch:
1-877-297-0642

prestocard.ca

Sign-up for email or text alerts/ Inscrivez-vous pour recevoir des alertes par courriel ou message texte.
gotransit.com/OnTheGO

Face coverings are mandatory on GO Transit. Let's keep each other safe.

Le port d'un masque est obligatoire lors de vos trajets sur GO Transit. Protégeons notre santé les uns les autres.

18-09-2021

Guelph/ Mississauga

GO Bus Schedule/
Horaire des autobus GO

METROLINX

29

- Kipling Bus Terminal
- Renforth Transitway
- Dixie Transitway
- Square One GO
- Erin Mills Transitway Station
- Winston Churchill Transitway Station
- Regional Rd.25 @ Hwy.401 Park & Ride
- Aberfoyle Park & Ride
- University of Guelph
- Guelph Central

Daily / Quotidiennement
Includes GO Bus route 29 /
Inclut le trajet 29 d'autobus GO

Effective / À partir de:
4 SEPTEMBER SEPTEMBRE **2021**

How to read our schedules

Step 1
Find the station or terminal you are departing from. Stops are listed across the top in the order they are served.

Step 2
The upper left corner tells you what day the schedule is for and the direction of travel.

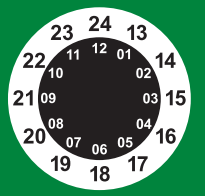
Step 3
Look across the rows for available departure times.

Step 4
Not all trains or buses stop at every station. If you see → the train or bus will not stop at that station.

Schedule times shown in 24-hour clock

Midnight to noon
00 01 - 12 00

Noon to midnight
12 01 - 24 00



Legend

Bus trips

GO Bus service is accessible to passengers using mobility devices at this location.

Parking available.

Notes

Fri Trip Operates on Fridays ONLY.

Sun Trip Operates on Sundays ONLY.

S Seasonal trip.

Bicycles

1. Bicycles are not allowed in Union Station or on-board trains during morning rush hour (6:30-9:30) and evening rush hour (15:30-18:30), Monday to Friday.

2. Foldable bicycles are allowed on-board trains at all times.

For the latest schedule information and updates, please visit gotransit.com/schedules.

Comment lire nos horaires

Étape 1
Trouvez votre gare ou terminus de départ. La liste des arrêts est donnée en haut dans l'ordre dans lequel ils sont desservis.

Étape 2
Le coin supérieur gauche vous indique le jour pour lequel l'horaire est donné et la direction de circulation.

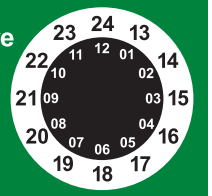
Étape 3
Regardez dans les rangées pour obtenir les heures de départ offertes.

Étape 4
Les trains ou les autobus ne s'arrêtent pas tous à chaque gare. Si vous voyez le symbole → le train ou l'autobus ne s'arrêtera pas à cette gare.

Indications selon un système horaire de 24 heures

De minuit à midi:
00 01 - 12 00

De midi à minuit:
12 01 - 24 00



Légende

Horaire des autobus

Service d'autobus GO accessible aux personnes utilisant des aides à la mobilité à cet endroit.

Stationnement disponible.

Notes

Fri Service offert les vendredi SEULEMENT.

Sun Service offert les dimanche SEULEMENT.

S Horaire saisonnier.

Vélos

1. Les vélos ne sont pas autorisés dans la gare Union ou à bord des trains du lundi au vendredi, pendant l'heure de pointe (6:30-9:30) et pendant l'heure de pointe du soir (15:30-18:30).

2. Les vélos pliables sont permis à bord des trains en tout temps.

Pour consulter les horaires les plus récents et les mises à jour, veuillez visiter gotransit.com/schedules.

Monday to Friday (except holidays)
Du lundi au vendredi (sauf les jours fériés)

EASTBOUND / EN DIRECTION EST

Route Number / Numéro du trajet	Trip Number / Numéro du parcours	Exception 1	Exception 2	Guelph 39 Dp	Guelph 39	Puslinch 39	Milton 24	Milton 24	Milton 24	Mississauga 21	Mississauga 21	Mississauga 20	Mississauga 25	Mississauga 25	Etobicoke 3	Ar
Zone→																
				Guelph Central GO	University of Guelph	Brock Rd. @ McLean Rd. (Aberfoyle)	Regional Rd. 25 @ Hwy. 401			Winston Churchill Transitway Station	Erin Mills Transitway Station	Square One	Dixie Transitway Station	Renforth Transitway Station	Kipling Bus Terminal	
29	29130			05 15	05 25	05 40	05 56	06 17	06 20	06 30	06 37	06 42	07 00			
29	29190			06 10	06 20	06 35	06 54	07 17	07 20	07 30	07 37	07 42	08 00			
29	29240			07 00	07 10	07 30	07 49	08 17	08 20	08 30	08 37	08 42	09 00			
29	29280			08 05	08 15	08 35	08 54	09 17	09 20	09 35	09 42	09 47	10 05			
29	29320			09 10	09 20	09 40	09 56	10 17	10 20	10 35	10 42	10 47	11 05			
29	29360			10 20	10 30	10 45	11 01	11 17	11 20	11 35	11 42	11 47	12 05			
29	29400			11 15	11 30	11 45	12 01	12 17	12 20	12 35	12 42	12 47	13 05			
29	29440			12 15	12 30	12 45	13 01	13 17	13 20	13 35	13 42	13 47	14 05			
29	29480			13 15	13 30	13 45	14 01	14 17	14 20	14 35	14 42	14 47	15 05			
29	29540			14 10	14 25	14 45	15 01	15 17	15 20	15 35	15 42	15 47	16 05			
29A	29602	Fri	S		15 10	→	→	→	→	16 10						
29	29600			15 00	15 15	15 35	15 51	16 12	16 15	16 30	16 37	16 42	17 00			
29	29660			16 00	16 15	16 35	16 51	17 12	17 15	17 30	17 37	17 42	18 00			
29	29680			16 35	16 50	17 10	17 26	17 47	17 50	18 05	18 12	18 17	18 35			
29A	29702	Fri	S		17 10	→	→	→	→	18 10						
29	29700			17 05	17 20	17 40	17 56	18 17	18 20	18 35	18 42	18 47	19 05			
29	29720			17 35	17 50	18 10	18 26	18 47	18 50	19 05	19 12	19 17	19 35			
29	29740			18 10	18 25	18 40	18 56	19 17	19 20	19 35	19 42	19 47	20 05			
29	29780			19 10	19 25	19 40	19 56	20 17	20 20	20 35	20 42	20 47	21 05			
29	29820			20 20	20 30	20 45	21 01	21 17	21 20	21 35	21 42	21 47	22 00			
29	29850			21 20	21 30	21 45	22 01	22 17	22 20	22 35	22 42	22 47	23 00			
29	29880			22 20	22 30	22 45	23 01	23 17	23 20	23 35	23 42	23 47	00 00			

WESTBOUND / EN DIRECTION OUEST

Route Number / Numéro du trajet	Trip Number / Numéro du parcours	Etobicoke 3	Mississauga 25	Mississauga 25	Mississauga 20 Dp	Mississauga 21	Mississauga 21	Milton 24	Puslinch 39	Guelph 39	Guelph 39	Ar
Zone→												
		Kipling Bus Terminal	Renforth Transitway Station	Dixie Transitway Station	Square One	Erin Mills Transitway Station	Winston Churchill Transitway Station	Regional Rd. 25 @ Hwy. 401	Brock Rd. @ McLean Rd. (Aberfoyle)	University of Guelph	Guelph Central GO	
29	29121	06 20	06 32	06 37	06 50	06 58	07 01	07 23	07 40	08 00	08 15	
29	29151	06 50	07 02	07 07	07 20	07 28	07 31	07 53	08 10	08 30	08 45	
29	29181	07 20	07 32	07 37	07 50	07 58	08 01	08 23	08 40	08 55	09 10	
29	29211	07 50	08 02	08 07	08 20	08 28	08 31	08 53	09 10	09 25	09 40	
29	29251	08 50	09 02	09 07	09 20	09 28	09 31	09 53	10 10	10 25	10 35	
29	29291	09 50	10 02	10 07	10 20	10 28	10 31	10 53	11 10	11 25	11 35	
29	29331	10 50	11 02	11 07	11 20	11 28	11 31	11 53	12 10	12 30	12 40	
29	29371	11 50	12 02	12 07	12 20	12 28	12 31	12 53	13 10	13 30	13 40	
29	29411	12 50	13 02	13 07	13 20	13 28	13 31	13 55	14 15	14 35	14 45	
29	29451	13 50	14 02	14 07	14 20	14 28	14 31	14 55	15 15	15 35	15 45	
29	29501	14 50	15 02	15 07	15 20	15 28	15 31	15 55	16 15	16 35	16 45	
29	29561	15 50	16 02	16 07	16 20	16 28	16 31	16 55	17 15	17 35	17 45	
29	29621	16 50	17 02	17 07	17 20	17 28	17 31	17 55	18 15	18 35	18 45	
29	29671	17 50	18 02	18 07	18 20	18 28	18 31	18 55	19 15	19 30	19 40	
29	29711	18 50	19 02	19 07	19 20	19 28	19 31	19 53	20 10	20 25	20 35	
29	29751	19 50	20 02	20 07	20 20	20 28	20 31	20 53	21 10	21 25	21 35	
29	29791	20 50	21 02	21 07	21 20	21 28	21 31	21 53	22 10	22 25	22 35	
29	29831	21 55	22 05	22 10	22 20	22 28	22 31	22 53	23 10	23 25	23 35	
29	29891	23 55	00 05	00 10	00 20	00 28	00 31	00 53	01 10	01 25	01 35	

Saturday and Sunday
Samedi et dimanche

EASTBOUND / EN DIRECTION EST

Route Number / Numéro du trajet	Trip Number / Numéro du parcours	Guelph 39 Dp	Guelph 39	Puslinch 39	Milton 24	Mississauga 21	Mississauga 21	Mississauga 20	Mississauga 25	Mississauga 25	Etobicoke 20	Ar
Zone→												
		Guelph Central GO	University of Guelph	Brock Rd. @ McLean Rd. (Aberfoyle)	Regional Rd. 25 @ Hwy. 401	Winston Churchill Transitway Station	Erin Mills Transitway Station	Square One	Dixie Transitway Station	Renforth Transitway Station	Kipling Bus Terminal	
29	29190	06 40	06 50	07 05	07 21	07 39	07 42	07 55	08 02	08 07	08 25	
29	29240	07 40	07 50	08 05	08 21	08 39	08 42	08 55	09 02	09 07	09 25	
29	29280	08 35	08 45	09 05	09 21	09 39	09 42	09 55	10 02	10 07	10 25	
29	29320	09 30	09 45	10 05	10 21	10 39	10 42	10 55	11 02	11 07	11 25	
29	29360	10 30	10 45	11 05	11 21	11 39	11 42	11 55	12 02	12 07	12 25	
29	29400	11 30	11 45	12 05	12 21	12 39	12 42	12 55	13 02	13 07	13 25	
29	29440	12 30	12 45	13 05	13 21	13 39	13 42	13 55	14 02	14 07	14 25	
29	29480	13 30	13 45	14 05	14 21	14 39	14 42	14 55	15 02	15 07	15 25	
29	29540	14 30	14 45	15 05	15 21	15 39	15 42	15 55	16 02	16 07	16 25	
29	29600	15 30	15 45	16 05	16 21	16 39	16 42	16 55	17 02	17 07	17 25	
29	29660	16 30	16 45	17 05	17 21	17 39	17 42	17 55	18 02	18 07	18 25	
29	29700	17 30	17 45	18 05	18 21	18 39	18 42	18 55	19 02	19 07	19 25	
29	29740	18 35	18 45	19 05	19 21	19 39	19 42	19 55	20 02	20 07	20 25	
29	29780	19 35	19 45	20 05	20 21	20 39	20 42	20 55	21 02	21 07	21 25	
29	29820	20 40	20 50	21 05	21 21	21 39	21 42	21 55	22 02	22 07	22 20	
29	29880	22 40	22 50	23 05	23 21	23 39	23 42	23 55	00 02	00 07	00 20	

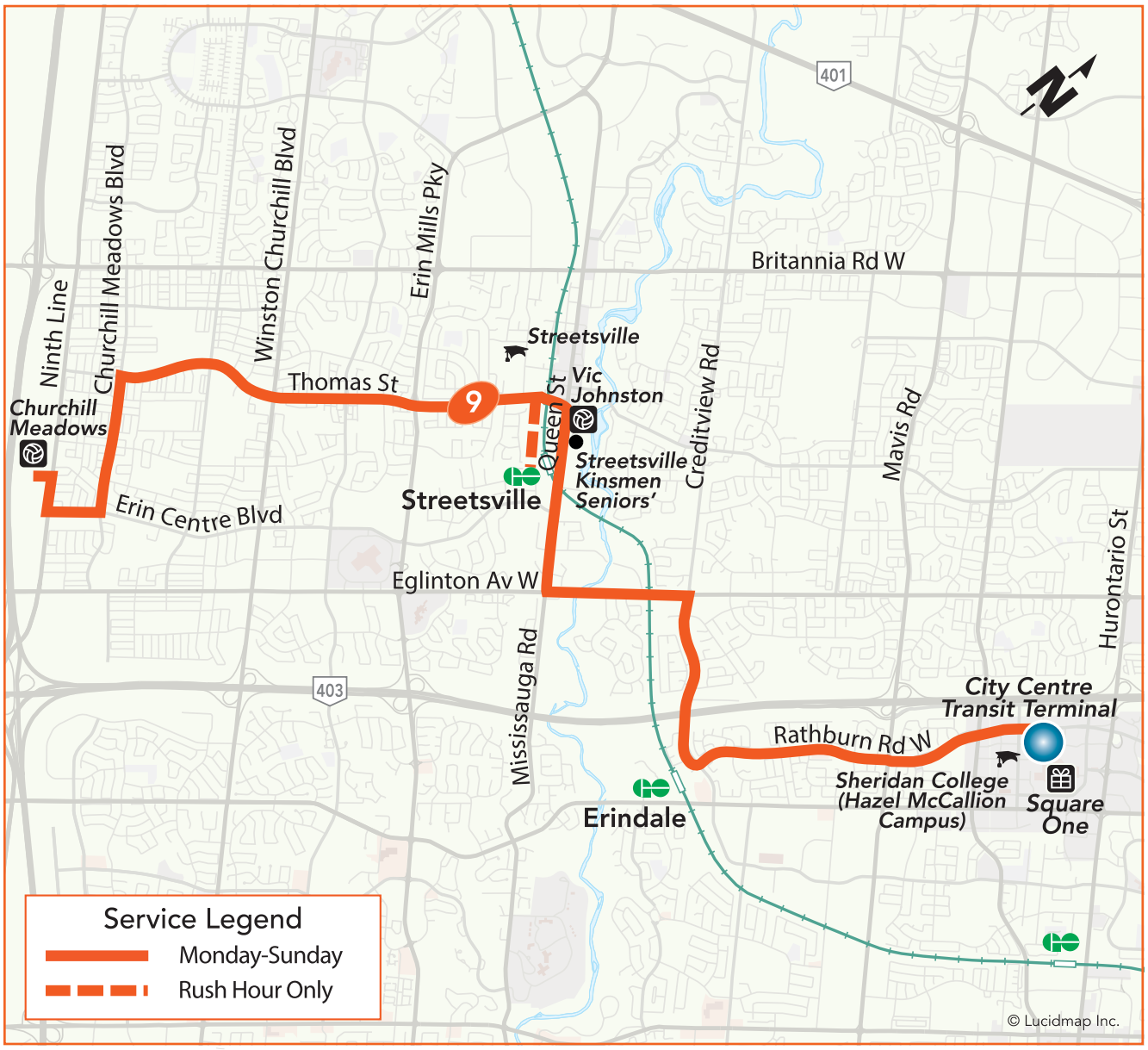
WESTBOUND / EN DIRECTION OUEST

Route Number / Numéro du trajet	Trip Number / Numéro du parcours	Exception 1	Exception 2	Mississauga 25 Dp	Mississauga 25	Mississauga 25	Mississauga 20	Mississauga 21	Mississauga 21	Milton 24	Puslinch 39	Guelph 39	Guelph 39	Ar
Zone→														
				Kipling Bus Terminal	Renforth Transitway Station	Dixie Transitway Station	Square One	Erin Mills Transitway Station	Winston Churchill Transitway Station	Regional Rd. 25 @ Hwy. 401	Brock Rd. @ McLean Rd. (Aberfoyle)	University of Guelph	Guelph Central GO	
29	29211			07 55	08 07	08 12	08 25	08 33	08 36	08 58	09 15	09 30	09 40	
29	29251			08 55	09 07	09 12	09 25	09 33	09 36	09 58	10 15	10 30	10 40	
29	29291			09 55	10 07	10 12	10 25	10 33	10 36	10 58	11 15	11 30	11 40	
29	29331			10 55	11 07	11 12	11 25	11 33	11 36	11 58	12 15	12 30	12 40	
29	29371			11 55	12 07	12 12	12 25	12 33	12 36	12 58	13 15	13 30	13 40	
29	29411			12 55	13 07	13 12	13 25	13 33	13 36	13 58	14 15	14 30	14 40	
29	29451			13 55	14 07	14 12	14 25	14 33	14 36	14 58	15 15	15 30	15 40	
29	29501			14 55	15 07	15 12	15 25	15 33	15 36	15 58	16 15	16 30	16 40	
29	29561			15 55	16 07	16 12	16 25	16 33	16 36	16 58	17 15	17 30	17 40	
29A	29623	Sun	S				17 10	→	→	→	→	18 00		
29	29621			16 55	17 07	17 12	17 25	17 33	17 36	17 58	18 15	18 30	18 40	
29	29671			17 55	18 07	18 12	18 25	18 33	18 36	18 58	19 15	19 30	19 40	
29A	29713	Sun	S				19 10	→	→	→	→	20 00		
29	29711			18 55	19 07	19 12	19 25	19 33	19 36	19 58	20 15	20 30	20 40	
29	29751			19 55	20 07	20 12	20 25	20 33	20 36	20 58	21 15	21 30	21 40	
29	29791			20 55	21 07	21 12	21 25	21 33	21 36	21 58	22 15	22 30	22 40	
29	29831			22 00	22 10	22 15	22 25	22 33	22 36	22 58	23 15	23 30	23 40	
29	29891			00 00	00 10	00 15	00 25	00 33	00 36	00 58	01 15	01 30	01 40	

9 Rathburn-Thomas

Local Route
Monday to Sunday

Eastbound to City Centre Transit Terminal
Westbound to Churchill Meadows Community Centre



Legend

- Terminal
- Transitway Station
- High School, University or College
- TTC Subway Station
- GO Train Station
- Hospital
- Library
- Community Centre
- Shopping Centre

Effective: October 25, 2021

MiWAY MISSISSAUGA

Triplinx

https://www.triplinx.ca/ Printing date: 10/24/2021

MiWAY

Erin Centre Blvd At Longford Dr, MISSISSAUGA

9 **Rathburn-Thomas**

Towards **City Centre Transit Terminal Drop Off**

Date: **Monday, 10/25/2021**

Schedule

Scheduled Departure Times from this Stop

Eastbound

Morning

4am	5am	6am	7am	8am	9am	10am	11am	12pm
	5:07 am	6:16 am	7:17 am	8:18 am	9:26 am	10:21 am	11:15 am	12:09 pm
	5:35 am	6:34 am	7:35 am	8:38 am	9:54 am	10:48 am	11:42 am	12:36 pm
	5:58 am	6:59 am	7:57 am	8:58 am				

Afternoon/Evening

1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	1
1:03 pm	2:24 pm	3:18 pm	4:12 pm	5:20 pm	6:01 pm	7:05 pm	8:09 pm	9:13 pm	10:02 pm	11:
1:30 pm	2:51 pm	3:45 pm	4:38 pm	5:41 pm	6:22 pm	7:27 pm	8:29 pm	9:37 pm	10:27 pm	11:
1:57 pm			4:59 pm		6:43 pm	7:49 pm	8:49 pm		10:52 pm	

Evening

12am
12:07 am
12:32 am

Schedules are given as a guideline, and depend on traffic conditions.

Bus

Triplinx

https://www.triplinx.ca/ Printing date: 10/24/2021

Erin Centre Blvd At Longford Dr, MISSISSAUGA

9 **Rathburn-Thomas**

MiWAY

Towards **Churchill Meadows Community Centre / Erin Centre Blvd At Longford Dr**

Date: **Monday, 10/25/2021**

Schedule

Scheduled Departure Times from this Stop

Westbound

Morning

4am	5am	6am	7am	8am	9am	10am	11am	12pm
		6:17 am	7:06 am	8:10 am	9:13 am	10:08 am	11:04 am	12:25 pm
		6:44 am	7:26 am	8:30 am	9:40 am	10:36 am	11:31 am	12:52 pm
			7:49 am	8:49 am			11:58 am	

Afternoon/Evening

1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	1
1:19 pm	2:13 pm	3:07 pm	4:02 pm	5:08 pm	6:13 pm	7:14 pm	8:16 pm	9:02 pm	10:18 pm	11:(
1:46 pm	2:40 pm	3:35 pm	4:29 pm	5:29 pm	6:34 pm	7:35 pm	8:37 pm	9:28 pm	10:44 pm	11:3
			4:47 pm	5:52 pm	6:56 pm	7:53 pm		9:53 pm		11:5

Evening

12am	1am
12:23 am	1:13 am
12:48 am	

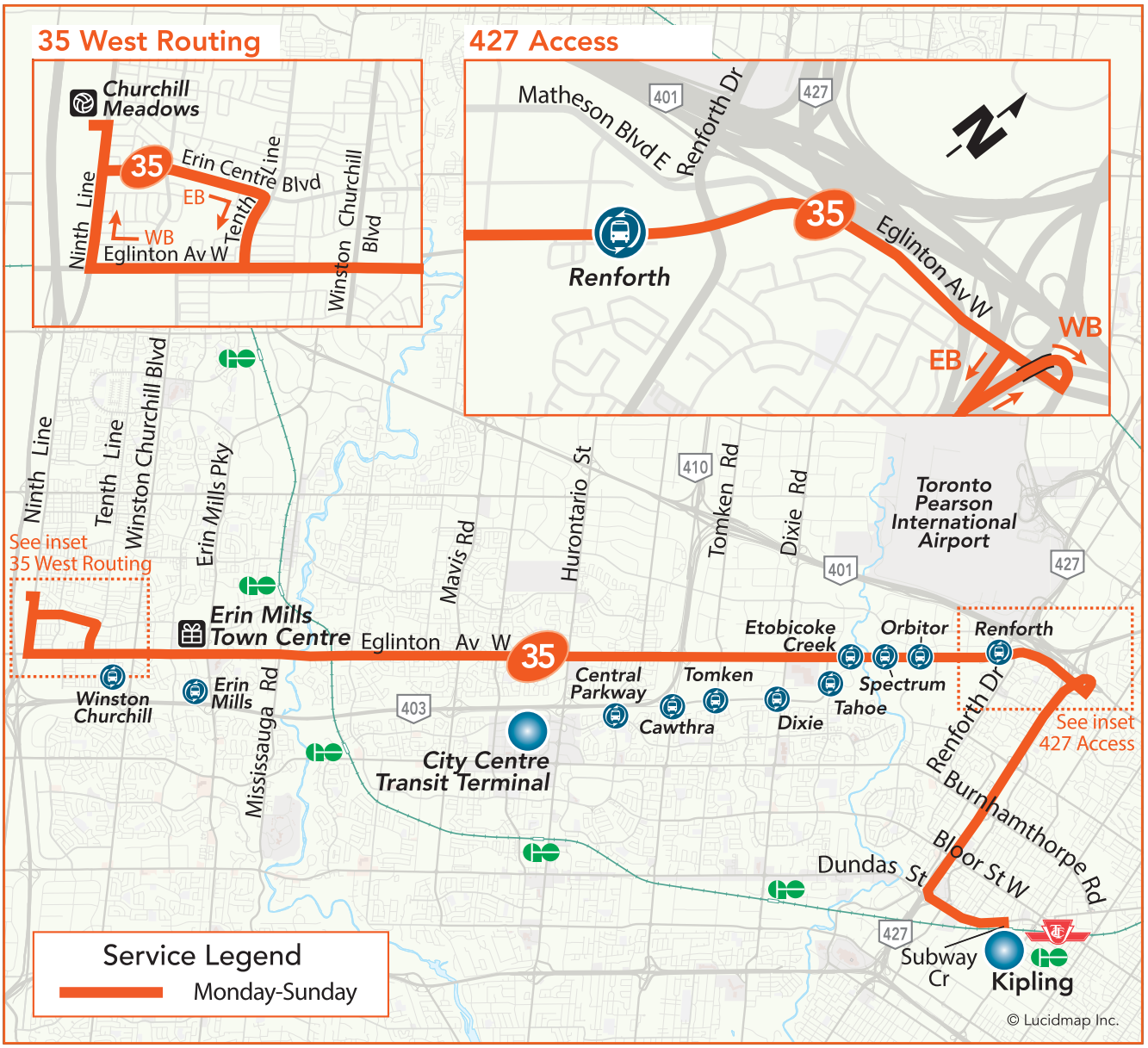
Schedules are given as a guideline, and depend on traffic conditions.

Bus

35 Eglinton

Local Route
Monday to Sunday

Eastbound to Kipling Bus Terminal
Westbound to Churchill Meadows Community Centre



Legend

- Terminal
- Transitway Station
- High School, University or College
- TTC Subway Station
- GO Train Station
- Hospital
- Library
- Community Centre
- Shopping Centre

Effective: October 25, 2021

MiWAY MISSISSAUGA

Triplinx

https://www.triplinx.ca/ Printing date: 10/24/2021

MiWAY

Ninth Line At Skyview St, MISSISSAUGA

35 **Eglinton**

Towards **Churchill Meadows Community Centre / Eglinton Ave At Creditview Rd / Erin Centre Blvd At Longford Dr / Erin Centre Blvd At Winston Churchill Blvd**

Date: **Monday, 10/25/2021**

Schedule

Scheduled Departure Times from this Stop

Westbound

Morning

4am	5am	6am	7am	8am	9am	10am	11am	12pm
	5:09 am	6:04 am	7:07 am	8:07 am	9:10 am	10:05 am	11:00 am	12:02 pm
	5:29 am	6:17 am	7:20 am	8:18 am	9:20 am	10:16 am	11:10 am	12:25 pm
	5:49 am	6:30 am	7:32 am	8:29 am	9:32 am	10:28 am	11:20 am	12:48 pm
		6:43 am	7:43 am	8:39 am	9:42 am	10:38 am	11:30 am	
		6:55 am	7:55 am	8:50 am	9:53 am	10:49 am	11:40 am	
				8:59 am			11:51 am	

Afternoon/Evening

1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	1
1:10 pm	2:15 pm	3:12 pm	4:04 pm	5:05 pm	6:03 pm	7:03 pm	8:06 pm	9:09 pm	10:06 pm	11:
1:32 pm	2:34 pm	3:24 pm	4:16 pm	5:19 pm	6:14 pm	7:07 pm	8:14 pm	9:19 pm	10:16 pm	11:
1:54 pm	2:37 pm	3:29 pm	4:27 pm	5:25 pm	6:21 pm	7:16 pm	8:24 pm	9:28 pm	10:34 pm	11:
	2:56 pm	3:41 pm	4:39 pm	5:31 pm	6:24 pm	7:22 pm	8:32 pm	9:37 pm	10:54 pm	
	2:59 pm	3:53 pm	4:52 pm	5:42 pm	6:29 pm	7:27 pm	8:42 pm	9:46 pm		
				5:53 pm	6:40 pm	7:36 pm	8:50 pm	9:56 pm		
				5:58 pm	6:49 pm	7:46 pm	8:59 pm			
					6:58 pm	7:56 pm				

Evening

12am	1am	2am
12:22 am	1:17 am	2:17 am
12:48 am	1:47 am	

Schedules are given as a guideline, and depend on traffic conditions.

Bus

36 Colonial-Ridgeway

Local Route
Monday to Sunday

Northbound to Winston Churchill Station
Southbound to South Common Centre



Legend

- Terminal
- Transitway Station
- High School, University or College
- TTC Subway Station
- GO Train Station
- Hospital
- Library
- Community Centre
- Shopping Centre

Effective: February 26, 2018

MiWAY MISSISSAUGA

Triplinx

https://www.triplinx.ca/ Printing date: 10/24/2021

MiWAY

Winston Churchill Station East Platform 5, MISSISSAUGA

36 **Colonial-Ridgeway**

Towards **South Common Centre Bus Terminal Platform F**

Date: **Monday, 10/25/2021**

Schedule

Boarding only at this stop.

Scheduled Departure Times from this Stop

Southbound

Morning

4am	5am	6am	7am	8am	9am	10am	11am	12pm
	5:41 am	6:11 am 6:41 am	7:11 am 7:41 am	8:11 am 8:41 am	9:11 am 9:41 am	10:11 am 10:41 am	11:11 am 11:41 am	12:11 pm 12:41 pm

Afternoon/Evening

1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	11pr
1:11 pm 1:41 pm	2:11 pm 2:18 pm 2:41 pm	3:11 pm 3:41 pm	4:11 pm 4:41 pm	5:11 pm 5:41 pm	6:11 pm 6:41 pm	7:11 pm 7:41 pm	8:11 pm 8:41 pm	9:11 pm 9:41 pm	10:11 pm 10:41 pm	11:11 p 11:41

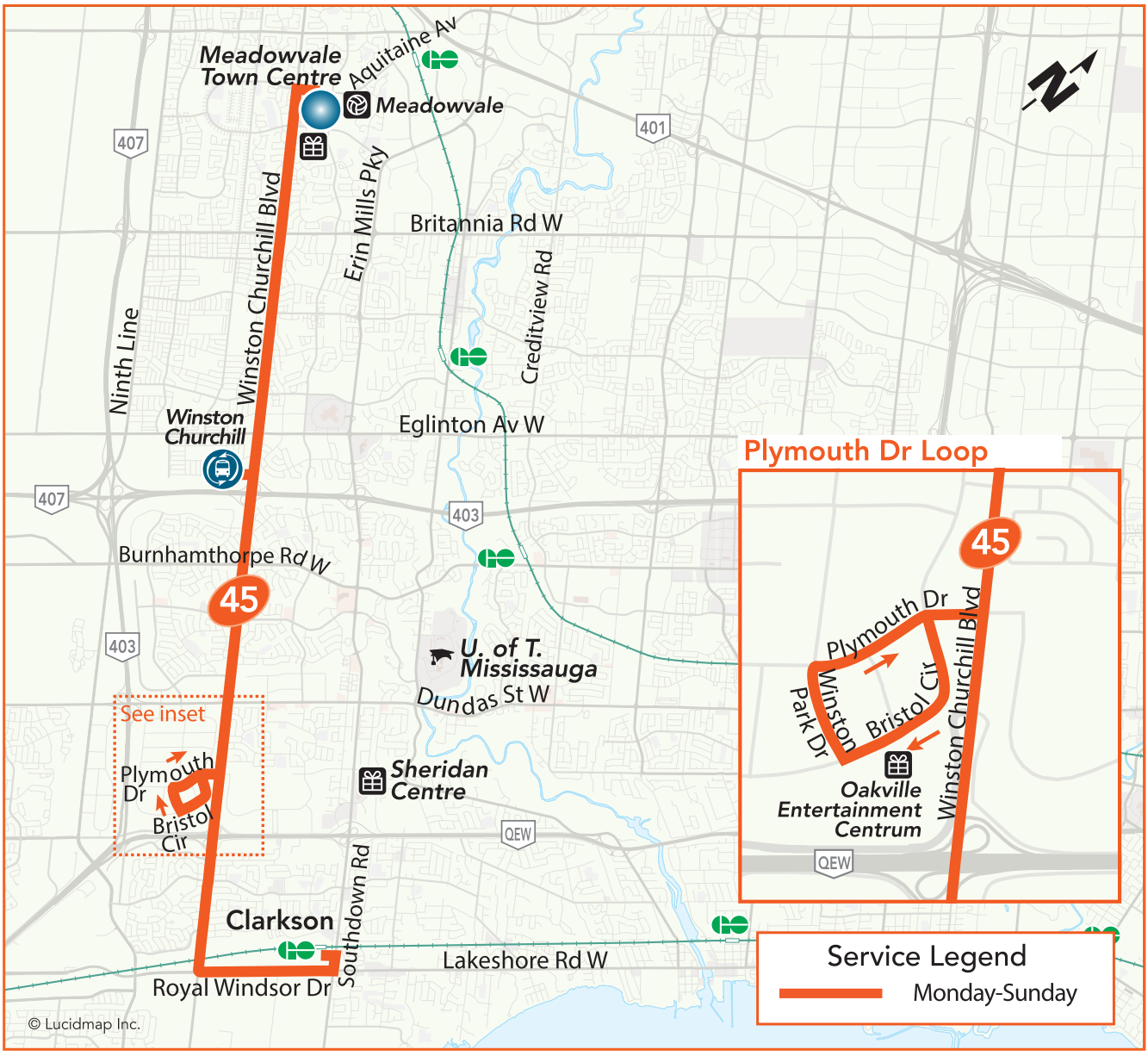
Evening

12am	1am
12:11 am 12:41 am	1:13 am

45 Winston Churchill

Local Route
Monday to Sunday

Northbound to Meadowvale Town Centre
Southbound to Clarkson GO Station



Legend

- Terminal
- Transitway Station
- High School, University or College
- TTC Subway Station
- GO Train Station
- Hospital
- Library
- Community Centre
- Shopping Centre

Effective: February 27, 2017

MiWAY MISSISSAUGA

Triplinx

https://www.triplinx.ca/ Printing date: 10/24/2021

MiWAY

Winston Churchill Station West Platform 3, MISSISSAUGA

45 **Winston Churchill**

Towards **Meadowvale Town Centre Drop Off**

Date: **Monday, 10/25/2021**

Schedule

Scheduled Departure Times from this Stop

Northbound

Morning

4am	5am	6am	7am	8am	9am	10am	11am	12pm
	5:53 am	6:25 am	7:00 am	8:08 am	9:00 am	10:01 am	11:01 am	12:01 pm
		6:41 am	7:14 am	8:26 am	9:14 am	10:21 am	11:21 am	12:22 pm
			7:33 am	8:42 am	9:33 am	10:41 am	11:41 am	12:42 pm
			7:52 am		9:47 am			

Afternoon

1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	1
1:02 pm	2:03 pm	3:13 pm	4:11 pm	5:02 pm	6:14 pm	7:04 pm	8:22 pm	9:22 pm	10:22 pm	11:2
1:23 pm	2:21 pm	3:37 pm	4:25 pm	5:23 pm	6:33 pm	7:20 pm	8:52 pm	9:52 pm	10:52 pm	11:5
1:44 pm	2:39 pm	3:48 pm	4:47 pm	5:38 pm	6:47 pm	7:48 pm				
	2:59 pm			5:59 pm						

Schedules are given as a guideline, and depend on traffic conditions.

Bus

Triplinx

https://www.triplinx.ca/ Printing date: 10/24/2021

MiWAY

Winston Churchill Station East Platform 5, MISSISSAUGA

45 **Winston Churchill**

Towards **Clarkson Go Station Platform 6**

Date: **Monday, 10/25/2021**

Schedule

Scheduled Departure Times from this Stop

Southbound

Morning

4am	5am	6am	7am	8am	9am	10am	11am	12pm
4:56 am	5:25 am	6:07 am	7:03 am	8:13 am	9:04 am	10:00 am	11:00 am	12:01 pm
	5:48 am	6:25 am	7:20 am	8:30 am	9:22 am	10:20 am	11:20 am	12:21 pm
		6:44 am	7:37 am	8:47 am	9:40 am	10:40 am	11:41 am	12:41 pm
			7:55 am					

Afternoon

1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	1
1:02 pm	2:05 pm	3:02 pm	4:14 pm	5:08 pm	6:02 pm	7:12 pm	8:25 pm	9:26 pm	10:26 pm	
1:23 pm	2:25 pm	3:20 pm	4:32 pm	5:26 pm	6:20 pm	7:24 pm	8:56 pm	9:56 pm	10:56 pm	
1:44 pm	2:44 pm	3:38 pm	4:50 pm	5:44 pm	6:38 pm	7:47 pm				
		3:56 pm			6:55 pm					

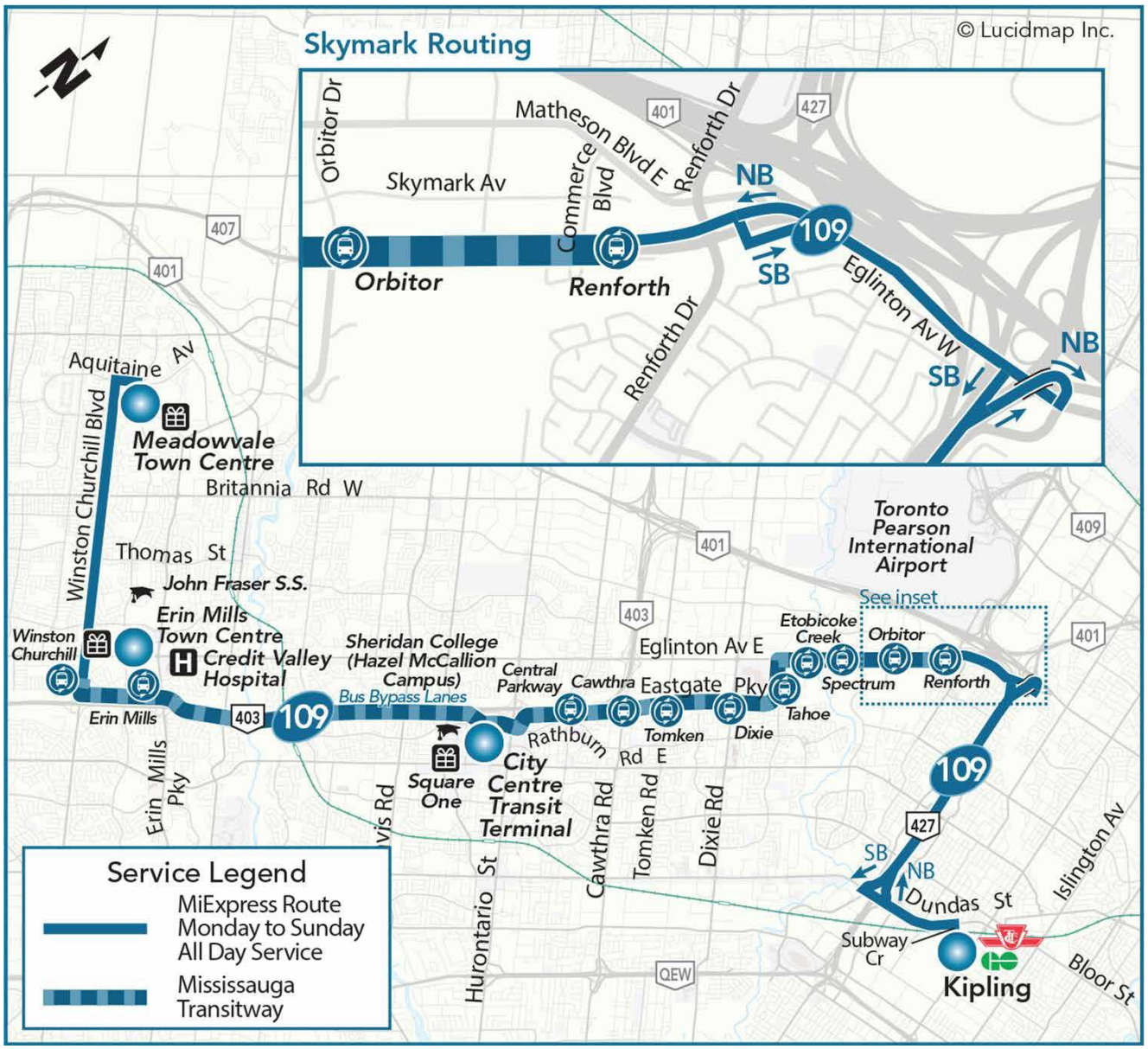
Schedules are given as a guideline, and depend on traffic conditions.

Bus

109 Meadowvale Express

Express Route
Monday to Sunday

Northbound to Meadowvale Town Centre
Southbound to Kipling Bus Terminal



Legend

- Terminal
- Transitway Station
- High School, University or College
- TTC Subway Station
- GO Train Station
- Hospital
- Library
- Community Centre
- Shopping Centre

Effective: January 4, 2021

MiWAY MISSISSAUGA

Triplinx

https://www.triplinx.ca/ Printing date: 10/24/2021

MiWAY

Winston Churchill Station West Platform 4, MISSISSAUGA

109 **Meadowvale Express**

Towards **City Centre Transit Terminal Platform N / Meadowvale Town Centre Drop Off**

Date: **Monday, 10/25/2021**

Schedule

Scheduled Departure Times from this Stop

Northbound

Morning

4am	5am	6am	7am	8am	9am	10am	11am	12pm
	5:55 am	6:09 am	7:09 am	8:07 am	9:03 am	10:05 am	11:08 am	12:08 pm
		6:24 am	7:23 am	8:22 am	9:17 am	10:25 am	11:28 am	12:28 pm
		6:39 am	7:37 am	8:36 am	9:30 am	10:46 am	11:48 am	12:48 pm
		6:54 am	7:52 am	8:49 am	9:47 am			

Afternoon

1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	1
1:09 pm	2:09 pm	3:04 pm	4:06 pm	5:07 pm	6:03 pm	7:13 pm	8:04 pm	9:10 pm	10:09 pm	11:(
1:29 pm	2:19 pm	3:19 pm	4:16 pm	5:17 pm	6:14 pm	7:18 pm	8:12 pm	9:25 pm	10:23 pm	11:2
1:49 pm	2:30 pm	3:34 pm	4:29 pm	5:27 pm	6:26 pm	7:26 pm	8:23 pm	9:34 pm	10:38 pm	11:3
	2:49 pm	3:50 pm	4:43 pm	5:35 pm	6:32 pm	7:34 pm	8:34 pm	9:41 pm	10:53 pm	11:5
		3:58 pm	4:55 pm	5:46 pm	6:45 pm	7:40 pm	8:40 pm	9:55 pm		
				5:57 pm	6:59 pm	7:53 pm	8:55 pm			

Schedules are given as a guideline, and depend on traffic conditions.

Bus

Triplinx

https://www.triplinx.ca/ Printing date: 10/24/2021

MiWAY

Winston Churchill Station East Platform 6, MISSISSAUGA

109 **Meadowvale Express**

Towards **Kipling Terminal Platform 14**

Date: **Monday, 10/25/2021**

Schedule

Scheduled Departure Times from this Stop

Southbound

Morning

4am	5am	6am	7am	8am	9am	10am	11am	12pm
4:32 am	5:11 am	6:05 am	7:00 am	8:07 am	9:01 am	10:01 am	11:01 am	12:01 pm
4:45 am	5:17 am	6:20 am	7:12 am	8:16 am	9:15 am	10:21 am	11:21 am	12:21 pm
4:59 am	5:24 am	6:28 am	7:20 am	8:29 am	9:24 am	10:41 am	11:41 am	12:41 pm
	5:37 am	6:36 am	7:32 am	8:41 am	9:41 am			
	5:45 am	6:48 am	7:45 am	8:49 am				
	5:52 am		7:58 am					

Afternoon

1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	1
1:01 pm	2:01 pm	3:05 pm	4:02 pm	5:13 pm	6:13 pm	7:11 pm	8:05 pm	9:04 pm	10:02 pm	
1:21 pm	2:21 pm	3:19 pm	4:17 pm	5:28 pm	6:28 pm	7:29 pm	8:19 pm	9:19 pm	10:14 pm	
1:41 pm	2:26 pm	3:32 pm	4:31 pm	5:43 pm	6:42 pm	7:47 pm	8:34 pm	9:34 pm	10:29 pm	
	2:31 pm	3:47 pm	4:45 pm	5:58 pm	6:57 pm		8:49 pm	9:48 pm		
	2:42 pm		4:59 pm							
	2:53 pm									

APPENDIX D

Traffic Data

Spectrum

Turning Movement Count
Location Name: NINTH LINE & EGLINTON AVE W
Date: Tue, Jul 16, 2019 Deployment Lead: David Chu

Turning Movement Count (1 . NINTH LINE & EGLINTON AVE W)

Start Time	N Approach NINTH LINE						E Approach EGLINTON AVE W						S Approach NINTH LINE						W Approach EGLINTON AVE W						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	U-Turn W:W	Peds W:	Approach Total		
06:00:00	2	51	24	0	0	77	8	22	6	0	2	36	2	8	2	0	0	12	9	59	3	0	0	71	196	
06:15:00	6	85	37	0	0	128	9	22	4	0	0	35	5	19	2	0	0	26	11	114	1	0	0	126	315	
06:30:00	9	105	56	0	0	170	14	39	5	0	0	58	2	28	8	0	0	38	13	113	1	0	0	127	393	
06:45:00	11	103	63	0	0	177	17	30	11	0	0	58	5	28	7	0	0	40	18	140	3	0	0	161	436	1340
07:00:00	8	130	56	0	0	194	13	36	4	0	1	53	4	45	5	0	0	54	11	122	4	0	0	137	438	1582
07:15:00	7	134	48	0	1	189	17	55	10	0	1	82	8	47	11	0	0	66	24	179	4	0	0	207	544	1811
07:30:00	19	193	65	0	0	277	20	64	13	0	1	97	16	81	5	0	0	102	18	144	6	0	0	168	644	2062
07:45:00	12	202	62	0	2	276	37	76	14	0	0	127	13	75	4	0	0	92	24	175	8	0	0	207	702	2328
08:00:00	25	181	67	0	0	273	28	73	17	0	0	118	27	94	4	0	0	125	25	152	12	0	0	189	705	2595
08:15:00	17	218	70	0	0	305	39	48	15	0	0	102	19	75	8	0	0	102	32	132	4	0	0	168	677	2728
08:30:00	11	193	77	0	0	281	23	67	19	0	2	109	22	86	5	0	0	113	36	153	4	0	0	193	696	2780
08:45:00	10	188	88	0	1	286	27	53	14	0	0	94	24	75	7	0	0	106	18	162	4	0	0	184	670	2748
09:00:00	14	142	66	0	0	222	23	49	13	0	0	85	27	74	5	0	0	106	32	159	6	0	0	197	610	2653
09:15:00	7	115	61	0	0	183	19	49	11	0	0	79	8	61	5	0	0	74	8	121	4	0	0	133	469	2445
09:30:00	10	109	51	0	0	170	30	51	6	0	0	87	15	65	9	0	0	89	12	125	2	0	0	139	485	2234
09:45:00	12	77	55	0	0	144	23	47	15	0	0	85	13	39	9	0	0	61	15	82	5	0	0	102	392	1956
BREAK																										
15:00:00	14	69	28	0	0	111	61	133	10	0	1	204	4	98	15	0	0	117	9	68	8	0	0	85	517	
15:15:00	13	79	37	0	0	129	45	132	13	0	1	190	12	119	34	0	0	165	6	77	9	0	0	92	576	
15:30:00	11	85	41	0	0	137	59	97	14	0	0	170	14	97	36	0	0	147	11	80	7	0	0	98	552	
15:45:00	10	95	41	0	0	146	61	123	23	0	0	207	10	164	48	0	0	222	11	78	6	0	0	95	670	2315
16:00:00	16	99	34	0	0	149	77	161	12	0	3	250	17	161	42	0	0	220	12	72	10	0	0	94	713	2511
16:15:00	24	90	42	0	0	156	100	193	10	0	0	303	11	159	42	0	0	212	18	101	13	0	0	132	803	2738
16:30:00	16	104	52	0	0	172	64	149	12	0	0	225	15	177	27	0	0	219	12	93	11	0	0	116	732	2918
16:45:00	20	99	58	0	0	177	89	168	14	0	0	271	11	152	25	0	0	188	11	112	13	0	0	136	772	3020
17:00:00	15	104	33	0	0	152	91	181	14	0	2	286	23	171	28	0	0	222	15	112	11	0	0	138	798	3105
17:15:00	9	104	46	0	0	159	87	176	13	0	0	276	21	184	19	0	0	224	10	139	11	0	0	160	819	3121
17:30:00	13	118	62	0	0	193	93	188	17	0	0	298	16	147	19	0	0	182	12	147	20	0	0	179	852	3241
17:45:00	11	113	49	0	0	173	93	149	18	0	0	260	23	178	19	0	0	220	8	123	12	0	0	143	796	3265
18:00:00	17	99	73	0	0	189	70	129	17	1	1	217	27	138	23	0	0	188	13	119	18	0	0	150	744	3211
18:15:00	8	96	61	0	0	165	76	135	18	0	0	229	17	143	7	0	0	167	8	122	9	0	0	139	700	3092
18:30:00	5	107	56	0	0	168	77	104	14	0	1	195	24	166	11	0	0	201	7	72	9	0	0	88	652	2892
18:45:00	14	77	41	0	0	132	60	106	11	0	0	177	8	109	8	0	0	125	6	68	13	0	0	87	521	2617
Grand Total	396	3764	1700	0	4	5860	1550	3105	407	1	16	5063	463	3263	499	0	0	4225	475	3715	251	0	0	4441	**19589**	-
Approach%	6.8%	64.2%	29%	0%		-	30.6%	61.3%	8%	0%		-	11%	77.2%	11.8%	0%		-	10.7%	83.7%	5.7%	0%		-	**-**	-
Totals %	2%	19.2%	8.7%	0%		29.9%	7.9%	15.9%	2.1%	0%		25.8%	2.4%	16.7%	2.5%	0%		21.6%	2.4%	19%	1.3%	0%		22.7%	**-**	-
Heavy	4	67	27	0		-	71	61	9	0		-	9	74	25	0		-	46	73	2	0		-	**-**	-
Heavy %	1%	1.8%	1.6%	0%		-	4.6%	2%	2.2%	0%		-	1.9%	2.3%	5%	0%		-	9.7%	2%	0.8%	0%		-	**-**	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

Spectrum

Turning Movement Count
Location Name: NINTH LINE & EGLINTON AVE W
Date: Tue, Jul 16, 2019 Deployment Lead: David Chu

Peak Hour: 07:45 AM - 08:45 AM Weather: Scattered Clouds (19.07 °C)

Start Time	N Approach NINTH LINE						E Approach EGLINTON AVE W						S Approach NINTH LINE						W Approach EGLINTON AVE W						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
07:45:00	12	202	62	0	2	276	37	76	14	0	0	127	13	75	4	0	0	92	24	175	8	0	0	207	702
08:00:00	25	181	67	0	0	273	28	73	17	0	0	118	27	94	4	0	0	125	25	152	12	0	0	189	705
08:15:00	17	218	70	0	0	305	39	48	15	0	0	102	19	75	8	0	0	102	32	132	4	0	0	168	677
08:30:00	11	193	77	0	0	281	23	67	19	0	2	109	22	86	5	0	0	113	36	153	4	0	0	193	696
Grand Total	65	794	276	0	2	1135	127	264	65	0	2	456	81	330	21	0	0	432	117	612	28	0	0	757	**2780**
Approach%	5.7%	70%	24.3%	0%		-	27.9%	57.9%	14.3%	0%		-	18.8%	76.4%	4.9%	0%		-	15.5%	80.8%	3.7%	0%		-	**-**
Totals %	2.3%	28.6%	9.9%	0%		40.8%	4.6%	9.5%	2.3%	0%		16.4%	2.9%	11.9%	0.8%	0%		15.5%	4.2%	22%	1%	0%		27.2%	**-**
PHF	0.65	0.91	0.9	0		0.93	0.81	0.87	0.86	0		0.9	0.75	0.88	0.66	0		0.86	0.81	0.87	0.58	0		0.91	**-**
Heavy	0	14	10	0		24	10	7	2	0		19	0	16	6	0		22	7	7	2	0		16	**-**
Heavy %	0%	1.8%	3.6%	0%		2.1%	7.9%	2.7%	3.1%	0%		4.2%	0%	4.8%	28.6%	0%		5.1%	6%	1.1%	7.1%	0%		2.1%	**-**
Lights	65	779	266	0		1110	117	255	63	0		435	81	314	14	0		409	110	605	26	0		741	**-**
Lights %	100%	98.1%	96.4%	0%		97.8%	92.1%	96.6%	96.9%	0%		95.4%	100%	95.2%	66.7%	0%		94.7%	94%	98.9%	92.9%	0%		97.9%	**-**
Single-Unit Trucks	0	9	6	0		15	3	5	2	0		10	0	14	1	0		15	1	3	0	0		4	**-**
Single-Unit Trucks %	0%	1.1%	2.2%	0%		1.3%	2.4%	1.9%	3.1%	0%		2.2%	0%	4.2%	4.8%	0%		3.5%	0.9%	0.5%	0%	0%		0.5%	**-**
Buses	0	2	0	0		2	6	0	0	0		6	0	0	0	0		0	0	0	1	0		1	**-**
Buses %	0%	0.3%	0%	0%		0.2%	4.7%	0%	0%	0%		1.3%	0%	0%	0%	0%		0%	0%	0%	3.6%	0%		0.1%	**-**
Articulated Trucks	0	3	4	0		7	1	2	0	0		3	0	2	5	0		7	6	4	1	0		11	**-**
Articulated Trucks %	0%	0.4%	1.4%	0%		0.6%	0.8%	0.8%	0%	0%		0.7%	0%	0.6%	23.8%	0%		1.6%	5.1%	0.7%	3.6%	0%		1.5%	**-**
Bicycles on Road	0	1	0	0		1	0	2	0	0		2	0	0	1	0		1	0	0	0	0		0	**-**
Bicycles on Road %	0%	0.1%	0%	0%		0.1%	0%	0.8%	0%	0%		0.4%	0%	0%	4.8%	0%		0.2%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	50%		-	-	-	-	0%		-	-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	50%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

Spectrum

Turning Movement Count
Location Name: NINTH LINE & EGLINTON AVE W
Date: Tue, Jul 16, 2019 Deployment Lead: David Chu

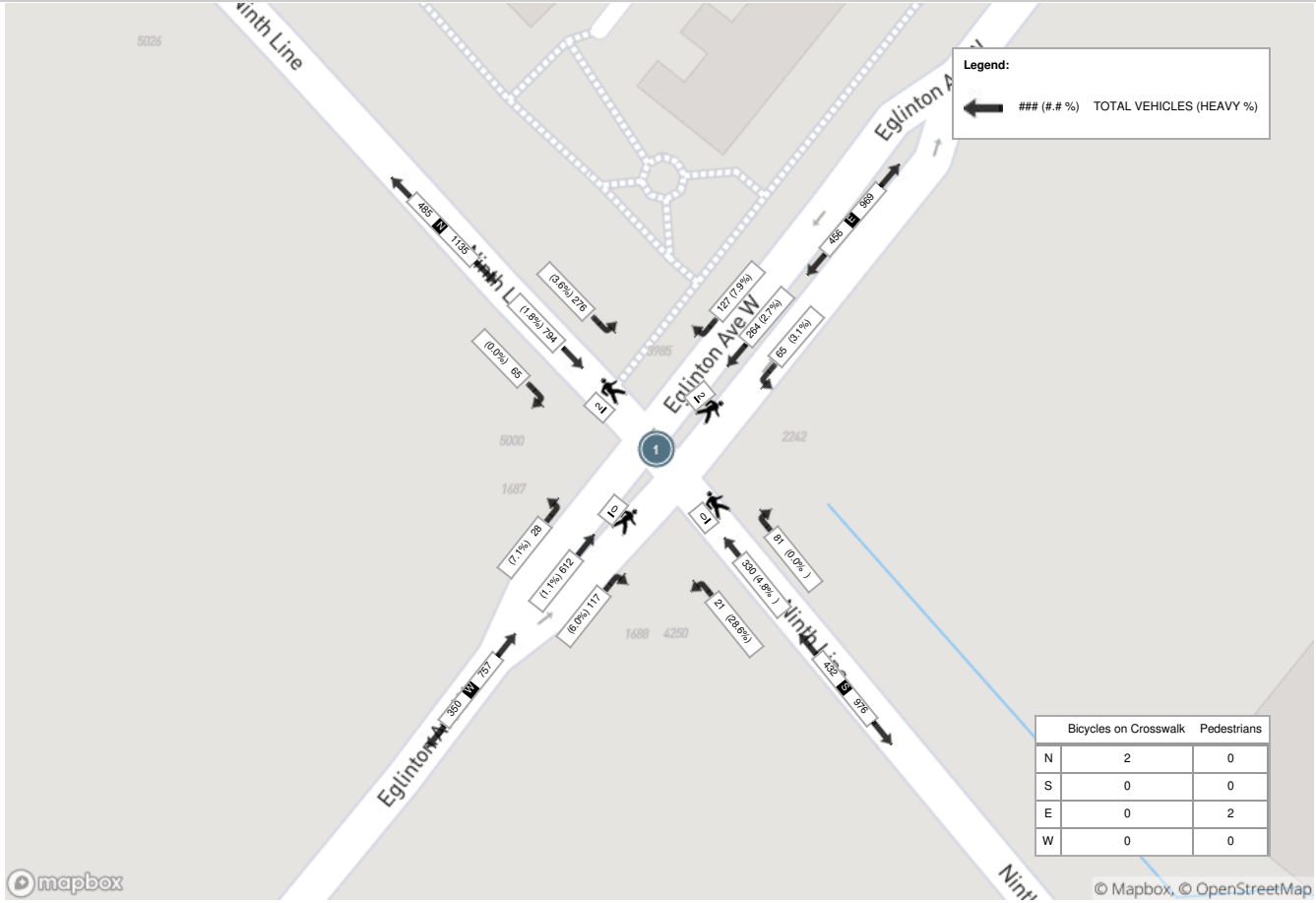
Peak Hour: 05:00 PM - 06:00 PM Weather: Light Rain (28.48 °C)

Start Time	N Approach NINTH LINE						E Approach EGLINTON AVE W						S Approach NINTH LINE						W Approach EGLINTON AVE W						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
17:00:00	15	104	33	0	0	152	91	181	14	0	2	286	23	171	28	0	0	222	15	112	11	0	0	138	798
17:15:00	9	104	46	0	0	159	87	176	13	0	0	276	21	184	19	0	0	224	10	139	11	0	0	160	819
17:30:00	13	118	62	0	0	193	93	188	17	0	0	298	16	147	19	0	0	182	12	147	20	0	0	179	852
17:45:00	11	113	49	0	0	173	93	149	18	0	0	260	23	178	19	0	0	220	8	123	12	0	0	143	796
Grand Total	48	439	190	0	0	677	364	694	62	0	2	1120	83	680	85	0	0	848	45	521	54	0	0	620	**3265**
Approach%	7.1%	64.8%	28.1%	0%		-	32.5%	62%	5.5%	0%		-	9.8%	80.2%	10%	0%		-	7.3%	84%	8.7%	0%		-	**-**
Totals %	1.5%	13.4%	5.8%	0%		20.7%	11.1%	21.3%	1.9%	0%		34.3%	2.5%	20.8%	2.6%	0%		26%	1.4%	16%	1.7%	0%		19%	**-**
PHF	0.8	0.93	0.77	0		0.88	0.98	0.92	0.86	0		0.94	0.9	0.92	0.76	0		0.95	0.75	0.89	0.68	0		0.87	**-**
Heavy	0	3	2	0		5	8	5	1	0		14	1	8	0	0		9	2	9	0	0		11	**-**
Heavy %	0%	0.7%	1.1%	0%		0.7%	2.2%	0.7%	1.6%	0%		1.3%	1.2%	1.2%	0%	0%		1.1%	4.4%	1.7%	0%	0%		1.8%	**-**
Lights	48	436	188	0		672	356	688	61	0		1105	82	672	85	0		839	43	512	54	0		609	**-**
Lights %	100%	99.3%	98.9%	0%		99.3%	97.8%	99.1%	98.4%	0%		98.7%	98.8%	98.8%	100%	0%		98.9%	95.6%	98.3%	100%	0%		98.2%	**-**
Single-Unit Trucks	0	2	1	0		3	1	2	1	0		4	1	5	0	0		6	1	7	0	0		8	**-**
Single-Unit Trucks %	0%	0.5%	0.5%	0%		0.4%	0.3%	0.3%	1.6%	0%		0.4%	1.2%	0.7%	0%	0%		0.7%	2.2%	1.3%	0%	0%		1.3%	**-**
Buses	0	0	1	0		1	7	0	0	0		7	0	0	0	0		0	1	1	0	0		2	**-**
Buses %	0%	0%	0.5%	0%		0.1%	1.9%	0%	0%	0%		0.6%	0%	0%	0%	0%		0%	2.2%	0.2%	0%	0%		0.3%	**-**
Articulated Trucks	0	1	0	0		1	0	3	0	0		3	0	3	0	0		3	0	1	0	0		1	**-**
Articulated Trucks %	0%	0.2%	0%	0%		0.1%	0%	0.4%	0%	0%		0.3%	0%	0.4%	0%	0%		0.4%	0%	0.2%	0%	0%		0.2%	**-**
Bicycles on Road	0	0	0	0		0	0	1	0	0		1	0	0	0	0		0	0	0	0	0		0	**-**
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0.1%	0%	0%		0.1%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	100%		-	-	-	-	0%		-	-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

Spectrum

Turning Movement Count
Location Name: NINTH LINE & EGLINTON AVE W
Date: Tue, Jul 16, 2019 Deployment Lead: David Chu

Peak Hour: 07:45 AM - 08:45 AM **Weather: Scattered Clouds (19.07 °C)**

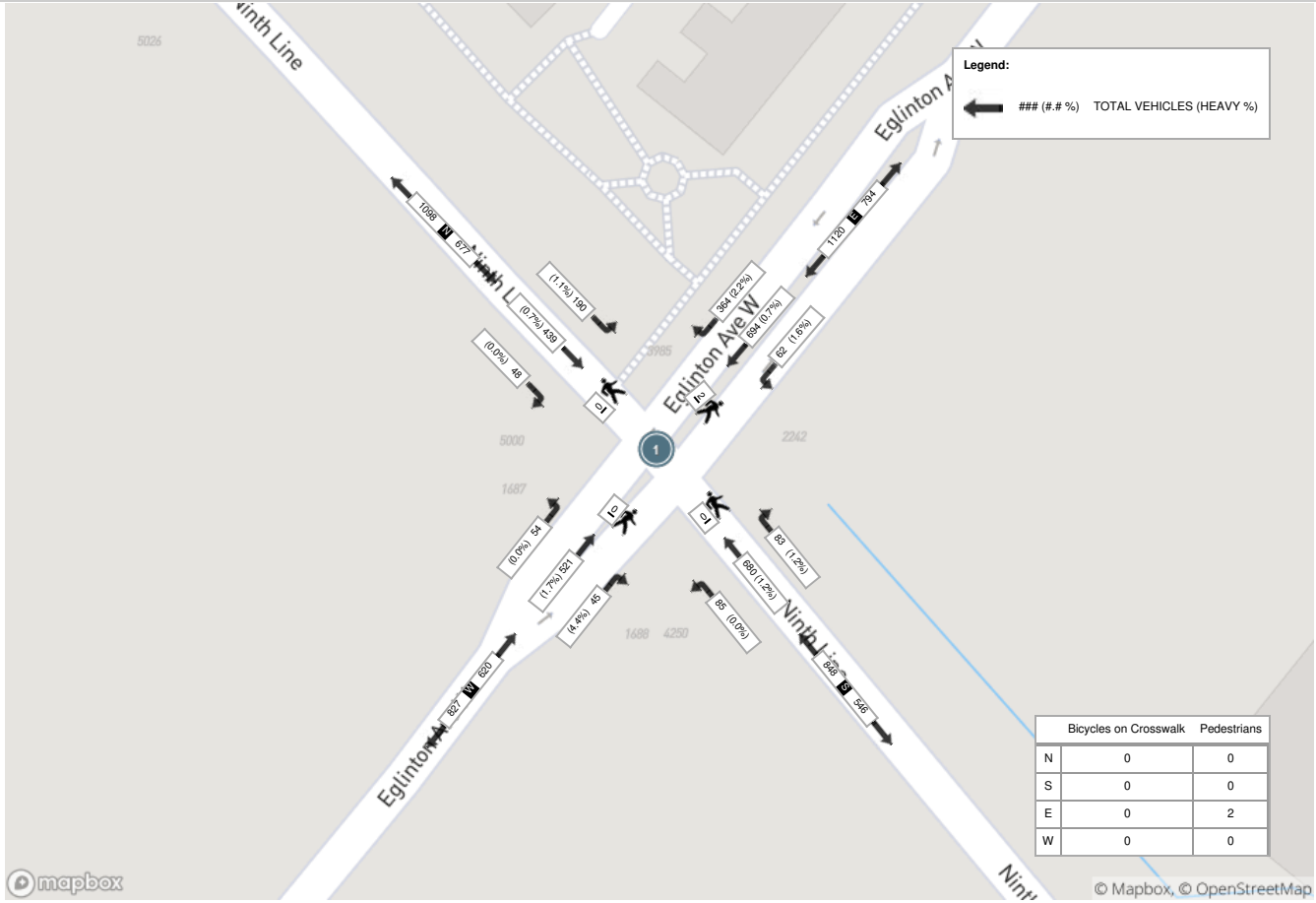


	Bicycles on Crosswalk	Pedestrians
N	2	0
S	0	0
E	0	2
W	0	0

Spectrum

Turning Movement Count
Location Name: NINTH LINE & EGLINTON AVE W
Date: Tue, Jul 16, 2019 Deployment Lead: David Chu

Peak Hour: 05:00 PM - 06:00 PM **Weather: Light Rain (28.48 °C)**



	Bicycles on Crosswalk	Pedestrians
N	0	0
S	0	0
E	0	2
W	0	0

Spectrum

Turning Movement Count
Location Name: NINTH LINE & ERIN CENTRE BLVD
Date: Tue, Jul 16, 2019 Deployment Lead: David Chu

Turning Movement Count (4 . NINTH LINE & ERIN CENTRE BLVD)

Start Time	N Approach NINTH LINE					E Approach ERIN CENTRE BLVD					S Approach NINTH LINE					Int. Total (15 min)	Int. Total (1 hr)
	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	U-Turn S:S	Peds S:	Approach Total		
06:00:00	76	3	0	0	79	3	1	0	0	4	2	19	0	0	21	104	
06:15:00	129	3	0	0	132	4	5	0	0	9	3	30	0	0	33	174	
06:30:00	162	1	0	0	163	2	8	0	0	10	4	48	0	0	52	225	
06:45:00	163	2	0	0	165	7	7	0	1	14	4	40	0	0	44	223	726
07:00:00	177	5	0	0	182	3	12	0	0	15	2	75	0	0	77	274	896
07:15:00	212	8	0	0	220	10	9	0	2	19	4	81	0	0	85	324	1046
07:30:00	243	8	0	0	251	4	19	0	0	23	8	100	0	0	108	382	1203
07:45:00	258	12	0	0	270	11	26	0	0	37	4	142	0	0	146	453	1433
08:00:00	254	10	0	0	264	9	35	0	0	44	4	138	0	0	142	450	1609
08:15:00	258	6	0	0	264	11	21	0	0	32	6	130	0	0	136	432	1717
08:30:00	275	6	0	1	281	19	15	0	1	34	6	121	0	0	127	442	1777
08:45:00	251	9	0	0	260	8	13	0	2	21	6	92	0	0	98	379	1703
09:00:00	192	12	0	0	204	4	20	0	0	24	10	101	0	0	111	339	1592
09:15:00	178	9	0	0	187	6	5	0	0	11	5	94	0	0	99	297	1457
09:30:00	163	5	0	0	168	9	11	0	0	20	9	83	0	0	92	280	1295
09:45:00	138	13	0	0	151	12	6	0	0	18	5	73	0	0	78	247	1163
BREAK																	
15:00:00	114	6	0	0	120	8	6	0	0	14	8	158	0	0	166	300	
15:15:00	121	8	0	0	129	15	8	0	0	23	7	169	0	0	176	328	
15:30:00	140	12	0	0	152	8	2	0	0	10	11	159	0	0	170	332	
15:45:00	143	13	0	0	156	20	11	0	1	31	14	190	0	0	204	391	1351
16:00:00	116	8	0	0	124	10	17	1	0	28	14	238	0	0	252	404	1455
16:15:00	169	15	0	0	184	10	10	0	0	20	11	252	0	0	263	467	1594
16:30:00	157	12	0	0	169	13	6	0	4	19	10	232	1	0	243	431	1693
16:45:00	174	13	0	0	187	11	12	0	1	23	15	252	0	0	267	477	1779
17:00:00	173	19	0	1	192	7	4	0	0	11	9	244	0	0	253	456	1831
17:15:00	146	16	0	0	162	14	6	0	0	20	16	274	0	0	290	472	1836
17:30:00	192	18	0	0	210	10	14	0	4	24	8	258	0	0	266	500	1905
17:45:00	172	20	0	0	192	19	8	0	0	27	24	252	0	0	276	495	1923
18:00:00	172	13	0	0	185	10	11	0	0	21	15	221	0	0	236	442	1909
18:15:00	174	15	0	0	189	10	9	0	2	19	11	220	0	0	231	439	1876
18:30:00	148	14	0	0	162	13	8	0	2	21	16	226	0	0	242	425	1801
18:45:00	127	18	0	0	145	8	5	0	1	13	13	176	0	0	189	347	1653

Grand Total	5567	332	0	2	5899	308	350	1	21	659	284	4888	1	0	5173	**11731**	-
Approach%	94.4%	5.6%	0%		-	46.7%	53.1%	0.2%		-	5.5%	94.5%	0%		-	**-**	-
Totals %	47.5%	2.8%	0%		50.3%	2.6%	3%	0%		5.6%	2.4%	41.7%	0%		44.1%	**-**	-
Heavy	90	3	0		-	0	4	0		-	52	91	0		-	**-**	-
Heavy %	1.6%	0.9%	0%		-	0%	1.1%	0%		-	18.3%	1.9%	0%		-	**-**	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-

Spectrum

Turning Movement Count
Location Name: NINTH LINE & ERIN CENTRE BLVD
Date: Tue, Jul 16, 2019 Deployment Lead: David Chu

Peak Hour: 07:45 AM - 08:45 AM Weather: Scattered Clouds (19.07 °C)

Start Time	N Approach NINTH LINE					E Approach ERIN CENTRE BLVD					S Approach NINTH LINE					Int. Total (15 min)
	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	
07:45:00	258	12	0	0	270	11	26	0	0	37	4	142	0	0	146	453
08:00:00	254	10	0	0	264	9	35	0	0	44	4	138	0	0	142	450
08:15:00	258	6	0	0	264	11	21	0	0	32	6	130	0	0	136	432
08:30:00	275	6	0	1	281	19	15	0	1	34	6	121	0	0	127	442
Grand Total	1045	34	0	1	1079	50	97	0	1	147	20	531	0	0	551	**1777**
Approach%	96.8%	3.2%	0%		-	34%	66%	0%		-	3.6%	96.4%	0%		-	**-**
Totals %	58.8%	1.9%	0%		60.7%	2.8%	5.5%	0%		8.3%	1.1%	29.9%	0%		31%	**-**
PHF	0.95	0.71	0		0.96	0.66	0.69	0		0.84	0.83	0.93	0		0.94	**-**
Heavy	19	0	0		19	0	1	0		1	6	22	0		28	**-**
Heavy %	1.8%	0%	0%		1.8%	0%	1%	0%		0.7%	30%	4.1%	0%		5.1%	**-**
Lights	1026	34	0		1060	50	96	0		146	14	509	0		523	**-**
Lights %	98.2%	100%	0%		98.2%	100%	99%	0%		99.3%	70%	95.9%	0%		94.9%	**-**
Single-Unit Trucks	13	0	0		13	0	0	0		0	1	16	0		17	**-**
Single-Unit Trucks %	1.2%	0%	0%		1.2%	0%	0%	0%		0%	5%	3%	0%		3.1%	**-**
Buses	1	0	0		1	0	1	0		1	5	2	0		7	**-**
Buses %	0.1%	0%	0%		0.1%	0%	1%	0%		0.7%	25%	0.4%	0%		1.3%	**-**
Articulated Trucks	5	0	0		5	0	0	0		0	0	4	0		4	**-**
Articulated Trucks %	0.5%	0%	0%		0.5%	0%	0%	0%		0%	0%	0.8%	0%		0.7%	**-**
Bicycles on Road	0	0	0		0	0	0	0		0	0	0	0		0	**-**
Bicycles on Road %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	1	-	-	-	-	1	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	50%		-	-	-	50%		-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

Spectrum

Turning Movement Count
Location Name: NINTH LINE & ERIN CENTRE BLVD
Date: Tue, Jul 16, 2019 Deployment Lead: David Chu

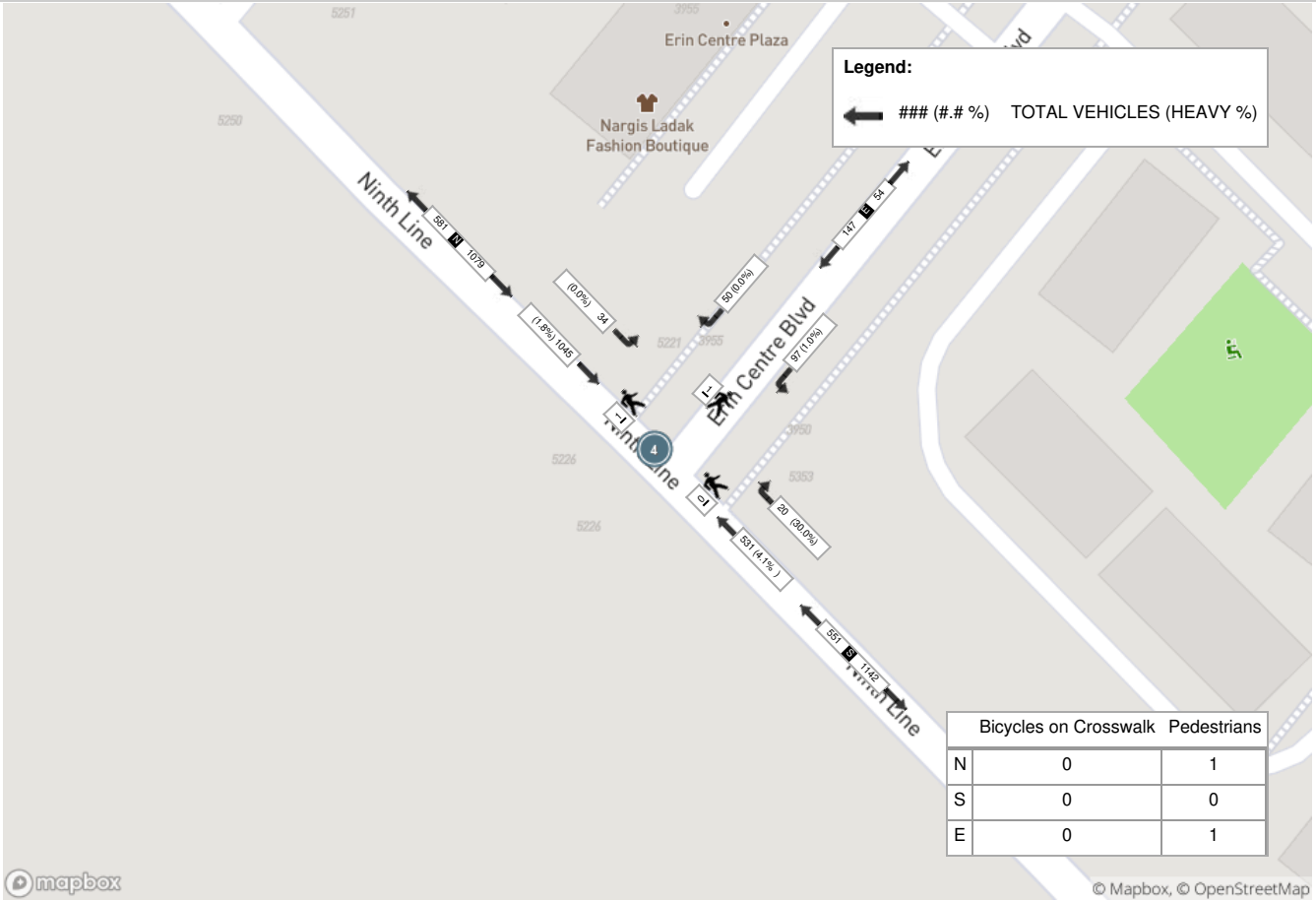
Peak Hour: 05:00 PM - 06:00 PM Weather: Light Rain (28.48 °C)

Start Time	N Approach NINTH LINE					E Approach ERIN CENTRE BLVD					S Approach NINTH LINE					Int. Total (15 min)
	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	
17:00:00	173	19	0	1	192	7	4	0	0	11	9	244	0	0	253	456
17:15:00	146	16	0	0	162	14	6	0	0	20	16	274	0	0	290	472
17:30:00	192	18	0	0	210	10	14	0	4	24	8	258	0	0	266	500
17:45:00	172	20	0	0	192	19	8	0	0	27	24	252	0	0	276	495
Grand Total	683	73	0	1	756	50	32	0	4	82	57	1028	0	0	1085	**1923**
Approach%	90.3%	9.7%	0%		-	61%	39%	0%		-	5.3%	94.7%	0%		-	**-**
Totals %	35.5%	3.8%	0%		39.3%	2.6%	1.7%	0%		4.3%	3%	53.5%	0%		56.4%	**-**
PHF	0.89	0.91	0		0.9	0.66	0.57	0		0.76	0.59	0.94	0		0.94	**-**
Heavy	5	1	0		6	0	0	0		0	6	10	0		16	**-**
Heavy %	0.7%	1.4%	0%		0.8%	0%	0%	0%		0%	10.5%	1%	0%		1.5%	**-**
Lights	678	71	0		749	50	32	0		82	51	1018	0		1069	**-**
Lights %	99.3%	97.3%	0%		99.1%	100%	100%	0%		100%	89.5%	99%	0%		98.5%	**-**
Single-Unit Trucks	3	1	0		4	0	0	0		0	0	6	0		6	**-**
Single-Unit Trucks %	0.4%	1.4%	0%		0.5%	0%	0%	0%		0%	0%	0.6%	0%		0.6%	**-**
Buses	1	0	0		1	0	0	0		0	6	1	0		7	**-**
Buses %	0.1%	0%	0%		0.1%	0%	0%	0%		0%	10.5%	0.1%	0%		0.6%	**-**
Articulated Trucks	1	0	0		1	0	0	0		0	0	3	0		3	**-**
Articulated Trucks %	0.1%	0%	0%		0.1%	0%	0%	0%		0%	0%	0.3%	0%		0.3%	**-**
Bicycles on Road	0	1	0		1	0	0	0		0	0	0	0		0	**-**
Bicycles on Road %	0%	1.4%	0%		0.1%	0%	0%	0%		0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	0	-	-	-	-	4	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	80%		-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	1	-	-	-	-	0	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	20%		-	-	-	0%		-	-	-	0%		**-**

Spectrum

Turning Movement Count
Location Name: NINTH LINE & ERIN CENTRE BLVD
Date: Tue, Jul 16, 2019 Deployment Lead: David Chu

Peak Hour: 07:45 AM - 08:45 AM Weather: Scattered Clouds (19.07 °C)

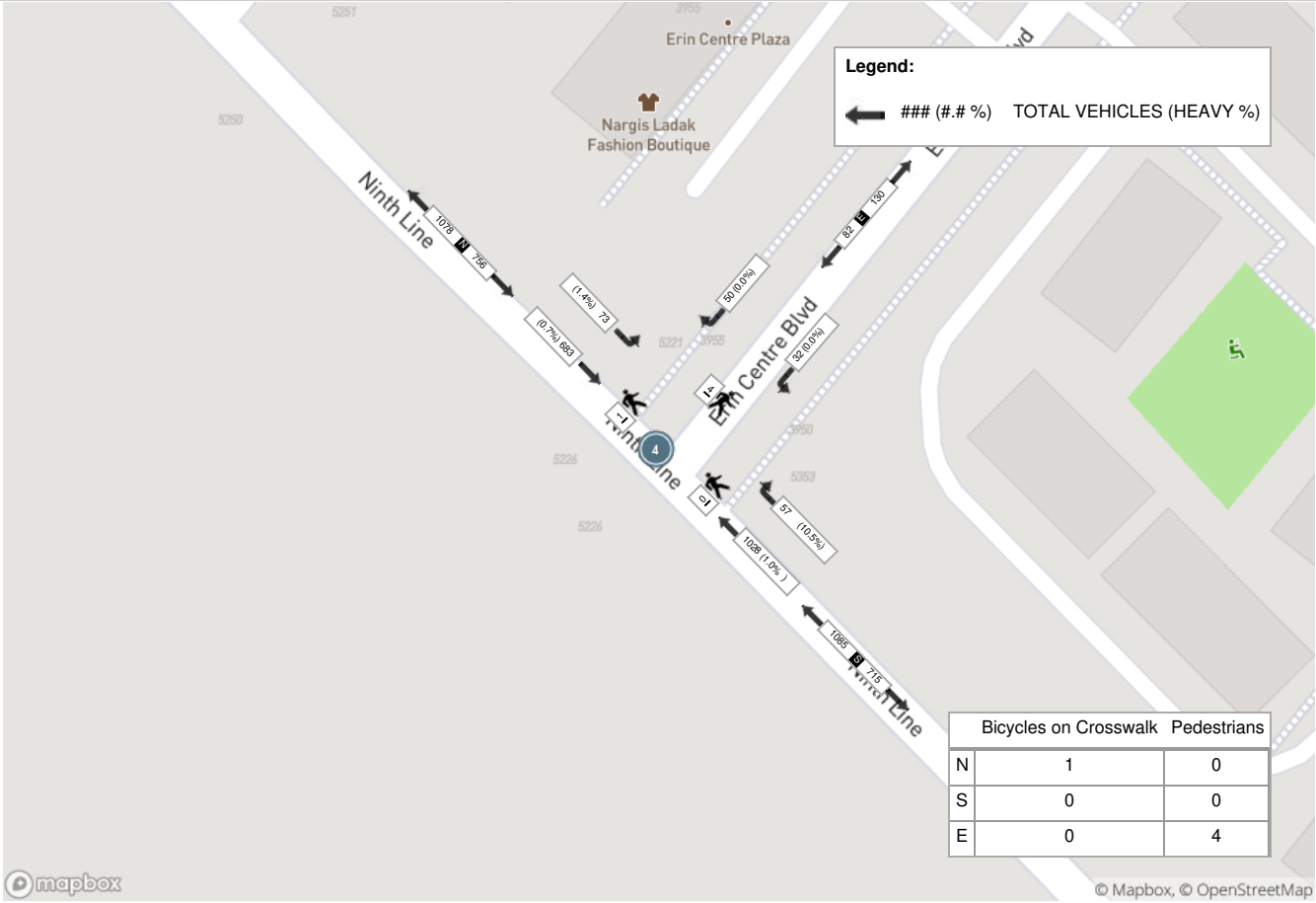


	Bicycles on Crosswalk	Pedestrians
N	0	1
S	0	0
E	0	1

Spectrum

Turning Movement Count
Location Name: NINTH LINE & ERIN CENTRE BLVD
Date: Tue, Jul 16, 2019 Deployment Lead: David Chu

Peak Hour: 05:00 PM - 06:00 PM Weather: Light Rain (28.48 °C)



	Bicycles on Crosswalk	Pedestrians
N	1	0
S	0	0
E	0	4

Spectrum

Turning Movement Count
Location Name: NINTH LINE & CANDLELIGHT DR
Date: Tue, Jul 16, 2019 Deployment Lead: David Chu

Turning Movement Count (3 . NINTH LINE & CANDLELIGHT DR)

Start Time	N Approach NINTH LINE					E Approach CANDLELIGHT DR					S Approach NINTH LINE					Int. Total (15 min)	Int. Total (1 hr)
	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	U-Turn S:S	Peds S:	Approach Total		
06:00:00	73	0	0	0	73	2	1	0	0	3	0	19	0	0	19	95	
06:15:00	123	0	0	0	123	1	1	0	0	2	0	33	0	0	33	158	
06:30:00	173	0	0	0	173	3	1	0	0	4	0	49	0	0	49	226	
06:45:00	176	1	0	0	177	4	0	0	0	4	1	47	0	0	48	229	708
07:00:00	178	0	0	0	178	5	0	0	0	5	0	63	0	0	63	246	859
07:15:00	219	1	0	0	220	6	3	0	0	9	2	77	0	0	79	308	1009
07:30:00	251	0	0	0	251	7	3	0	0	10	0	110	0	0	110	371	1154
07:45:00	290	3	0	0	293	10	2	0	0	12	1	131	0	0	132	437	1362
08:00:00	273	4	0	0	277	10	1	0	0	11	1	145	0	0	146	434	1550
08:15:00	287	0	0	0	287	9	5	0	0	14	2	112	0	0	114	415	1657
08:30:00	289	1	0	0	290	5	2	0	1	7	0	121	0	0	121	418	1704
08:45:00	272	0	0	0	272	4	4	0	0	8	2	107	0	0	109	389	1656
09:00:00	210	1	0	0	211	3	1	0	3	4	1	98	0	0	99	314	1536
09:15:00	183	0	0	0	183	4	1	0	1	5	1	94	0	0	95	283	1404
09:30:00	172	1	0	0	173	1	0	0	0	1	1	90	0	0	91	265	1251
09:45:00	145	1	0	0	146	3	3	0	0	6	1	77	0	0	78	230	1092
BREAK																	
15:00:00	120	3	0	0	123	2	2	0	0	4	0	174	0	0	174	301	
15:15:00	123	3	0	0	126	1	3	0	0	4	2	169	0	0	171	301	
15:30:00	145	2	0	0	147	1	2	0	0	3	0	167	0	0	167	317	
15:45:00	146	4	0	0	150	5	2	0	0	7	3	207	0	0	210	367	1286
16:00:00	132	1	0	0	133	4	0	0	0	4	3	241	0	0	244	381	1366
16:15:00	176	4	0	0	180	1	0	0	0	1	5	273	0	0	278	459	1524
16:30:00	152	4	0	0	156	1	1	0	0	2	3	235	0	0	238	396	1603
16:45:00	186	4	0	0	190	1	0	0	0	1	2	263	0	0	265	456	1692
17:00:00	170	5	0	0	175	4	0	0	0	4	3	265	0	0	268	447	1758
17:15:00	149	4	0	0	153	5	1	0	0	6	2	271	0	0	273	432	1731
17:30:00	194	8	0	0	202	6	3	0	0	9	5	271	0	0	276	487	1822
17:45:00	181	5	0	0	186	4	2	0	2	6	4	265	0	0	269	461	1827
18:00:00	179	8	0	0	187	6	2	0	0	8	1	223	0	0	224	419	1799
18:15:00	178	2	0	0	180	3	0	0	1	3	3	230	0	0	233	416	1783
18:30:00	154	0	0	0	154	3	2	0	1	5	2	238	0	0	240	399	1695
18:45:00	131	6	0	0	137	5	1	0	1	6	4	187	0	0	191	334	1568

Spectrum

Turning Movement Count
Location Name: NINTH LINE & CANDLELIGHT DR
Date: Tue, Jul 16, 2019 Deployment Lead: David Chu

Grand Total	5830	76	0	0	5906	129	49	0	10	178	55	5052	0	0	5107	**11191**	-
Approach%	98.7%	1.3%	0%		-	72.5%	27.5%	0%		-	1.1%	98.9%	0%		-	**-**	-
Totals %	52.1%	0.7%	0%		52.8%	1.2%	0.4%	0%		1.6%	0.5%	45.1%	0%		45.6%	**-**	-
Heavy	95	0	0		-	0	0	0		-	3	148	0		-	**-**	-
Heavy %	1.6%	0%	0%		-	0%	0%	0%		-	5.5%	2.9%	0%		-	**-**	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-

Spectrum

Turning Movement Count
Location Name: NINTH LINE & CANDLELIGHT DR
Date: Tue, Jul 16, 2019 Deployment Lead: David Chu

Peak Hour: 07:45 AM - 08:45 AM Weather: Scattered Clouds (19.07 °C)

Start Time	N Approach NINTH LINE					E Approach CANDLELIGHT DR					S Approach NINTH LINE					Int. Total (15 min)
	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	
07:45:00	290	3	0	0	293	10	2	0	0	12	1	131	0	0	132	437
08:00:00	273	4	0	0	277	10	1	0	0	11	1	145	0	0	146	434
08:15:00	287	0	0	0	287	9	5	0	0	14	2	112	0	0	114	415
08:30:00	289	1	0	0	290	5	2	0	1	7	0	121	0	0	121	418
Grand Total	1139	8	0	0	1147	34	10	0	1	44	4	509	0	0	513	**1704**
Approach%	99.3%	0.7%	0%		-	77.3%	22.7%	0%		-	0.8%	99.2%	0%		-	**-**
Totals %	66.8%	0.5%	0%		67.3%	2%	0.6%	0%		2.6%	0.2%	29.9%	0%		30.1%	**-**
PHF	0.98	0.5	0		0.98	0.85	0.5	0		0.79	0.5	0.88	0		0.88	**-**
Heavy	22	0	0		22	0	0	0		0	0	29	0		29	**-**
Heavy %	1.9%	0%	0%		1.9%	0%	0%	0%		0%	0%	5.7%	0%		5.7%	**-**
Lights	1117	8	0		1125	34	9	0		43	4	480	0		484	**-**
Lights %	98.1%	100%	0%		98.1%	100%	90%	0%		97.7%	100%	94.3%	0%		94.3%	**-**
Single-Unit Trucks	13	0	0		13	0	0	0		0	0	18	0		18	**-**
Single-Unit Trucks %	1.1%	0%	0%		1.1%	0%	0%	0%		0%	0%	3.5%	0%		3.5%	**-**
Buses	2	0	0		2	0	0	0		0	0	7	0		7	**-**
Buses %	0.2%	0%	0%		0.2%	0%	0%	0%		0%	0%	1.4%	0%		1.4%	**-**
Articulated Trucks	7	0	0		7	0	0	0		0	0	4	0		4	**-**
Articulated Trucks %	0.6%	0%	0%		0.6%	0%	0%	0%		0%	0%	0.8%	0%		0.8%	**-**
Bicycles on Road	0	0	0		0	0	1	0		1	0	0	0		0	**-**
Bicycles on Road %	0%	0%	0%		0%	0%	10%	0%		2.3%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	100%		-	-	-	0%		**-**

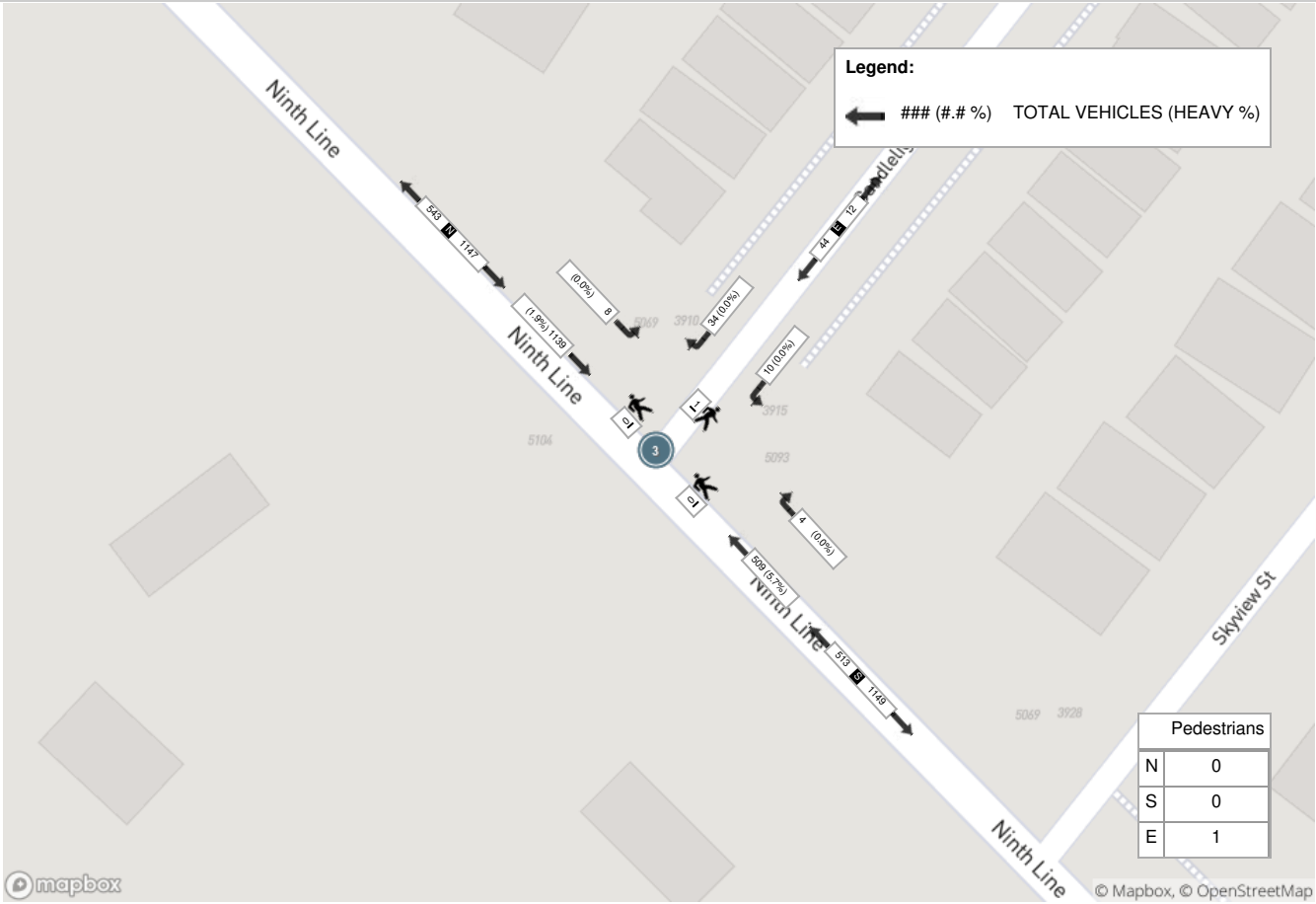
Spectrum

Turning Movement Count
Location Name: NINTH LINE & CANDLELIGHT DR
Date: Tue, Jul 16, 2019 Deployment Lead: David Chu

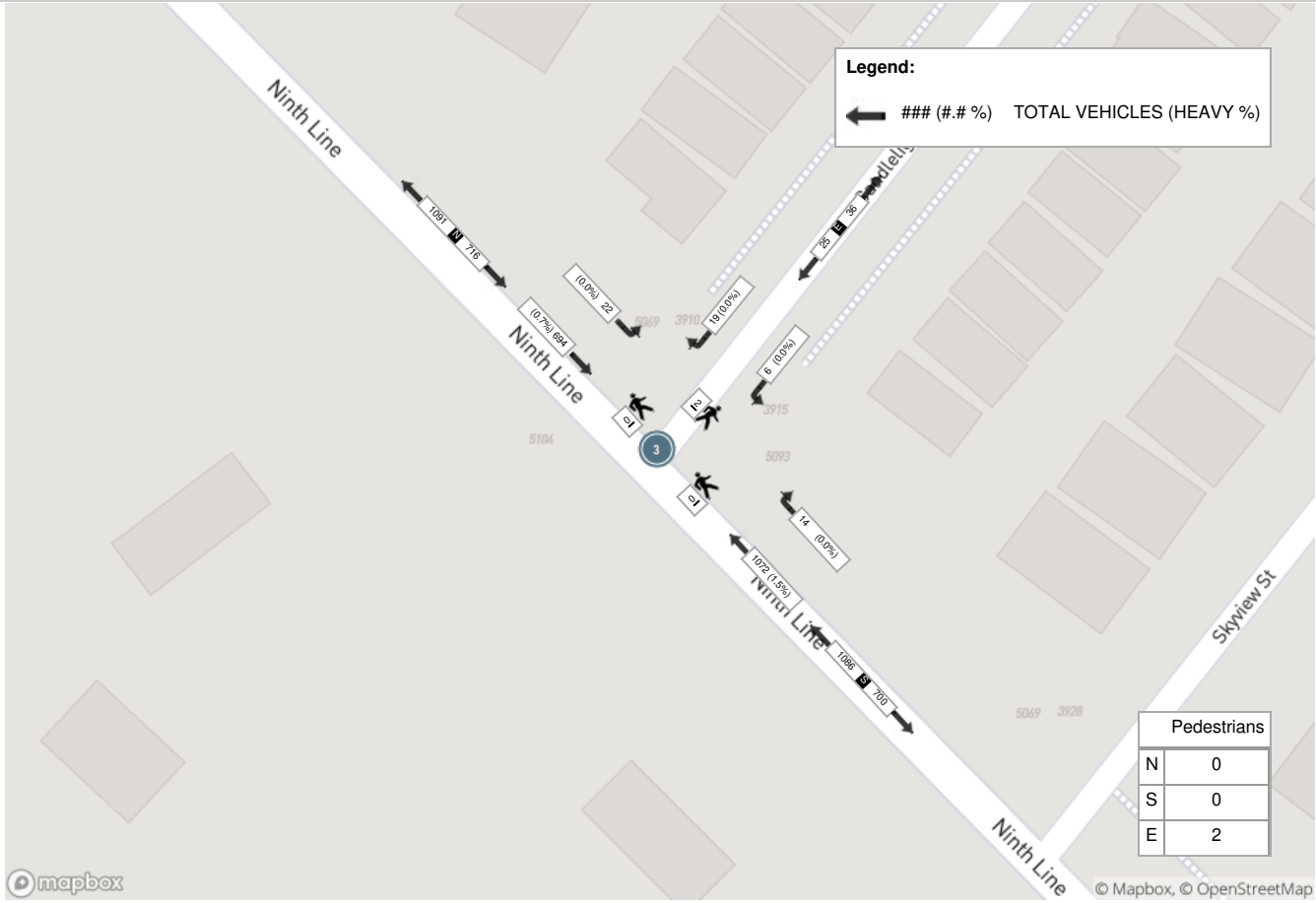
Peak Hour: 05:00 PM - 06:00 PM Weather: Light Rain (28.48 °C)

Start Time	N Approach NINTH LINE					E Approach CANDLELIGHT DR					S Approach NINTH LINE					Int. Total (15 min)
	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	
17:00:00	170	5	0	0	175	4	0	0	0	4	3	265	0	0	268	447
17:15:00	149	4	0	0	153	5	1	0	0	6	2	271	0	0	273	432
17:30:00	194	8	0	0	202	6	3	0	0	9	5	271	0	0	276	487
17:45:00	181	5	0	0	186	4	2	0	2	6	4	265	0	0	269	461
Grand Total	694	22	0	0	716	19	6	0	2	25	14	1072	0	0	1086	**1827**
Approach%	96.9%	3.1%	0%		-	76%	24%	0%		-	1.3%	98.7%	0%		-	**-**
Totals %	38%	1.2%	0%		39.2%	1%	0.3%	0%		1.4%	0.8%	58.7%	0%		59.4%	**-**
PHF	0.89	0.69	0		0.89	0.79	0.5	0		0.69	0.7	0.99	0		0.98	**-**
Heavy	5	0	0		5	0	0	0		0	0	16	0		16	**-**
Heavy %	0.7%	0%	0%		0.7%	0%	0%	0%		0%	0%	1.5%	0%		1.5%	**-**
Lights	689	22	0		711	19	6	0		25	14	1056	0		1070	**-**
Lights %	99.3%	100%	0%		99.3%	100%	100%	0%		100%	100%	98.5%	0%		98.5%	**-**
Single-Unit Trucks	3	0	0		3	0	0	0		0	0	6	0		6	**-**
Single-Unit Trucks %	0.4%	0%	0%		0.4%	0%	0%	0%		0%	0%	0.6%	0%		0.6%	**-**
Buses	1	0	0		1	0	0	0		0	0	7	0		7	**-**
Buses %	0.1%	0%	0%		0.1%	0%	0%	0%		0%	0%	0.7%	0%		0.6%	**-**
Articulated Trucks	1	0	0		1	0	0	0		0	0	3	0		3	**-**
Articulated Trucks %	0.1%	0%	0%		0.1%	0%	0%	0%		0%	0%	0.3%	0%		0.3%	**-**
Bicycles on Road	0	0	0		0	0	0	0		0	0	0	0		0	**-**
Bicycles on Road %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	0	-	-	-	-	2	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	100%		-	-	-	0%		**-**

Peak Hour: 07:45 AM - 08:45 AM Weather: Scattered Clouds (19.07 °C)



Peak Hour: 05:00 PM - 06:00 PM Weather: Light Rain (28.48 °C)



Spectrum

Turning Movement Count
Location Name: NINTH LINE & SKYVIEW ST
Date: Tue, Jul 16, 2019 Deployment Lead: David Chu

Turning Movement Count (2 . NINTH LINE & SKYVIEW ST)

Start Time	N Approach NINTH LINE					E Approach SKYVIEW ST					S Approach NINTH LINE					Int. Total (15 min)	Int. Total (1 hr)
	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	U-Turn S:S	Peds S:	Approach Total		
06:00:00	77	1	0	0	78	0	1	0	0	1	0	17	0	0	17	96	
06:15:00	125	0	0	0	125	2	1	0	2	3	0	33	0	0	33	161	
06:30:00	170	1	0	0	171	2	1	0	0	3	0	45	0	0	45	219	
06:45:00	179	1	0	0	180	2	1	0	0	3	0	48	0	0	48	231	707
07:00:00	173	0	0	0	173	3	1	0	0	4	0	60	0	0	60	237	848
07:15:00	216	1	0	0	217	2	0	0	0	2	0	76	0	0	76	295	982
07:30:00	241	1	0	0	242	1	2	0	0	3	0	113	0	0	113	358	1121
07:45:00	290	1	0	0	291	3	1	0	0	4	0	127	0	0	127	422	1312
08:00:00	274	0	0	0	274	6	3	0	0	9	1	139	0	0	140	423	1498
08:15:00	288	1	0	0	289	1	1	0	0	2	1	120	0	0	121	412	1615
08:30:00	300	0	0	0	300	2	0	0	1	2	0	115	0	0	115	417	1674
08:45:00	271	1	0	0	272	2	2	0	2	4	1	105	1	0	107	383	1635
09:00:00	213	0	0	0	213	2	1	0	2	3	1	97	0	0	98	314	1526
09:15:00	184	2	0	0	186	0	1	0	1	1	0	95	0	0	95	282	1396
09:30:00	172	0	0	0	172	2	1	0	0	3	1	95	0	0	96	271	1250
09:45:00	148	1	0	0	149	2	0	0	0	2	0	71	0	0	71	222	1089
BREAK																	
15:00:00	117	3	0	0	120	2	1	0	0	3	0	169	0	0	169	292	
15:15:00	127	2	0	0	129	0	1	0	0	1	0	167	0	0	167	297	
15:30:00	145	1	0	0	146	0	0	0	0	0	3	161	0	0	164	310	
15:45:00	141	1	0	0	142	3	0	0	0	3	3	213	0	0	216	361	1260
16:00:00	134	2	0	0	136	1	1	0	0	2	0	238	1	0	239	377	1345
16:15:00	169	4	0	0	173	0	1	0	0	1	3	285	0	0	288	462	1510
16:30:00	156	3	1	0	160	4	4	0	0	8	4	236	0	0	240	408	1608
16:45:00	180	5	0	0	185	1	0	0	0	1	0	256	0	0	256	442	1689
17:00:00	158	6	0	0	164	0	1	0	0	1	1	274	0	0	275	440	1752
17:15:00	150	3	0	0	153	1	1	0	0	2	4	267	0	0	271	426	1716
17:30:00	189	2	0	0	191	0	0	0	0	0	0	274	0	0	274	465	1773
17:45:00	184	3	0	0	187	3	2	0	2	5	0	269	0	0	269	461	1792
18:00:00	177	5	0	0	182	1	1	0	0	2	3	219	0	0	222	406	1758
18:15:00	175	4	0	0	179	1	0	0	0	1	0	235	0	0	235	415	1747
18:30:00	148	6	0	0	154	1	1	0	1	2	1	240	0	0	241	397	1679
18:45:00	132	2	0	0	134	2	2	0	1	4	2	183	0	0	185	323	1541

Spectrum

Turning Movement Count
Location Name: NINTH LINE & SKYVIEW ST
Date: Tue, Jul 16, 2019 Deployment Lead: David Chu

Grand Total	5803	63	1	0	5867	52	33	0	12	85	29	5042	2	0	5073	**11025**	-
Approach%	98.9%	1.1%	0%		-	61.2%	38.8%	0%		-	0.6%	99.4%	0%		-	**-**	-
Totals %	52.6%	0.6%	0%		53.2%	0.5%	0.3%	0%		0.8%	0.3%	45.7%	0%		46%	**-**	-
Heavy	95	0	0		-	3	2	0		-	0	143	0		-	**-**	-
Heavy %	1.6%	0%	0%		-	5.8%	6.1%	0%		-	0%	2.8%	0%		-	**-**	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-

Spectrum

Turning Movement Count
Location Name: NINTH LINE & SKYVIEW ST
Date: Tue, Jul 16, 2019 Deployment Lead: David Chu

Peak Hour: 07:45 AM - 08:45 AM Weather: Scattered Clouds (19.07 °C)

Start Time	N Approach NINTH LINE					E Approach SKYVIEW ST					S Approach NINTH LINE					Int. Total (15 min)
	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	
07:45:00	290	1	0	0	291	3	1	0	0	4	0	127	0	0	127	422
08:00:00	274	0	0	0	274	6	3	0	0	9	1	139	0	0	140	423
08:15:00	288	1	0	0	289	1	1	0	0	2	1	120	0	0	121	412
08:30:00	300	0	0	0	300	2	0	0	1	2	0	115	0	0	115	417
Grand Total	1152	2	0	0	1154	12	5	0	1	17	2	501	0	0	503	**1674**
Approach%	99.8%	0.2%	0%		-	70.6%	29.4%	0%		-	0.4%	99.6%	0%		-	**-**
Totals %	68.8%	0.1%	0%		68.9%	0.7%	0.3%	0%		1%	0.1%	29.9%	0%		30%	**-**
PHF	0.96	0.5	0		0.96	0.5	0.42	0		0.47	0.5	0.9	0		0.9	**-**
Heavy	21	0	0		21	0	0	0		0	0	27	0		27	**-**
Heavy %	1.8%	0%	0%		1.8%	0%	0%	0%		0%	0%	5.4%	0%		5.4%	**-**
Lights	1130	2	0		1132	12	5	0		17	2	474	0		476	**-**
Lights %	98.1%	100%	0%		98.1%	100%	100%	0%		100%	100%	94.6%	0%		94.6%	**-**
Single-Unit Trucks	12	0	0		12	0	0	0		0	0	16	0		16	**-**
Single-Unit Trucks %	1%	0%	0%		1%	0%	0%	0%		0%	0%	3.2%	0%		3.2%	**-**
Buses	2	0	0		2	0	0	0		0	0	7	0		7	**-**
Buses %	0.2%	0%	0%		0.2%	0%	0%	0%		0%	0%	1.4%	0%		1.4%	**-**
Articulated Trucks	7	0	0		7	0	0	0		0	0	4	0		4	**-**
Articulated Trucks %	0.6%	0%	0%		0.6%	0%	0%	0%		0%	0%	0.8%	0%		0.8%	**-**
Bicycles on Road	1	0	0		1	0	0	0		0	0	0	0		0	**-**
Bicycles on Road %	0.1%	0%	0%		0.1%	0%	0%	0%		0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	100%		-	-	-	0%		**-**

Spectrum

Turning Movement Count
Location Name: NINTH LINE & SKYVIEW ST
Date: Tue, Jul 16, 2019 Deployment Lead: David Chu

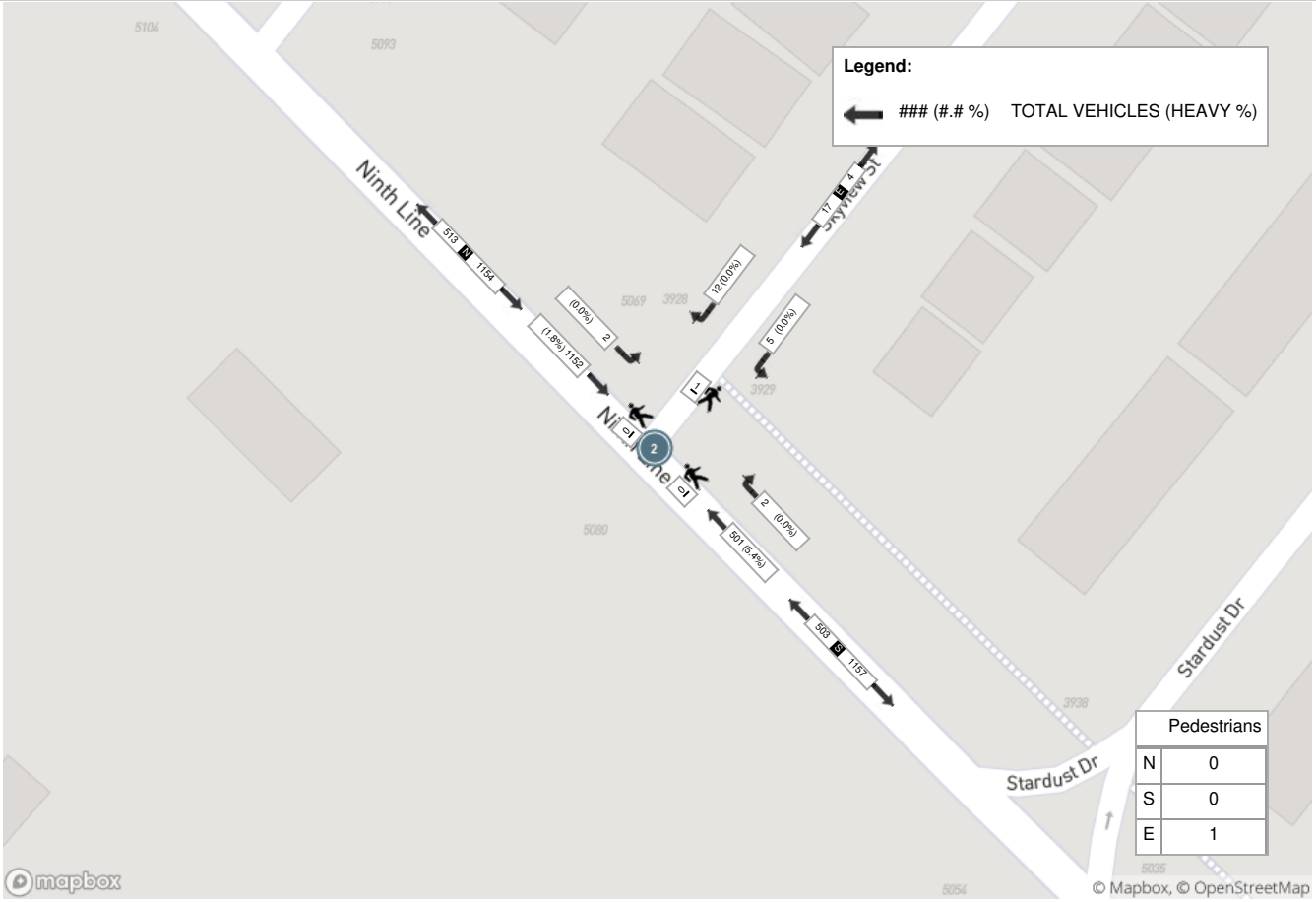
Peak Hour: 05:00 PM - 06:00 PM Weather: Light Rain (28.48 °C)

Start Time	N Approach NINTH LINE					E Approach SKYVIEW ST					S Approach NINTH LINE					Int. Total (15 min)
	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	
17:00:00	158	6	0	0	164	0	1	0	0	1	1	274	0	0	275	440
17:15:00	150	3	0	0	153	1	1	0	0	2	4	267	0	0	271	426
17:30:00	189	2	0	0	191	0	0	0	0	0	0	274	0	0	274	465
17:45:00	184	3	0	0	187	3	2	0	2	5	0	269	0	0	269	461
Grand Total	681	14	0	0	695	4	4	0	2	8	5	1084	0	0	1089	**1792**
Approach%	98%	2%	0%		-	50%	50%	0%		-	0.5%	99.5%	0%		-	**-**
Totals %	38%	0.8%	0%		38.8%	0.2%	0.2%	0%		0.4%	0.3%	60.5%	0%		60.8%	**-**
PHF	0.9	0.58	0		0.91	0.33	0.5	0		0.4	0.31	0.99	0		0.99	**-**
Heavy	5	0	0		5	0	1	0		1	0	16	0		16	**-**
Heavy %	0.7%	0%	0%		0.7%	0%	25%	0%		12.5%	0%	1.5%	0%		1.5%	**-**
Lights	676	14	0		690	4	3	0		7	5	1068	0		1073	**-**
Lights %	99.3%	100%	0%		99.3%	100%	75%	0%		87.5%	100%	98.5%	0%		98.5%	**-**
Single-Unit Trucks	3	0	0		3	0	1	0		1	0	6	0		6	**-**
Single-Unit Trucks %	0.4%	0%	0%		0.4%	0%	25%	0%		12.5%	0%	0.6%	0%		0.6%	**-**
Buses	1	0	0		1	0	0	0		0	0	7	0		7	**-**
Buses %	0.1%	0%	0%		0.1%	0%	0%	0%		0%	0%	0.6%	0%		0.6%	**-**
Articulated Trucks	1	0	0		1	0	0	0		0	0	3	0		3	**-**
Articulated Trucks %	0.1%	0%	0%		0.1%	0%	0%	0%		0%	0%	0.3%	0%		0.3%	**-**
Bicycles on Road	0	0	0		0	0	0	0		0	0	0	0		0	**-**
Bicycles on Road %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	0	-	-	-	-	2	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	100%		-	-	-	0%		**-**

Spectrum

Turning Movement Count
Location Name: NINTH LINE & SKYVIEW ST
Date: Tue, Jul 16, 2019 Deployment Lead: David Chu

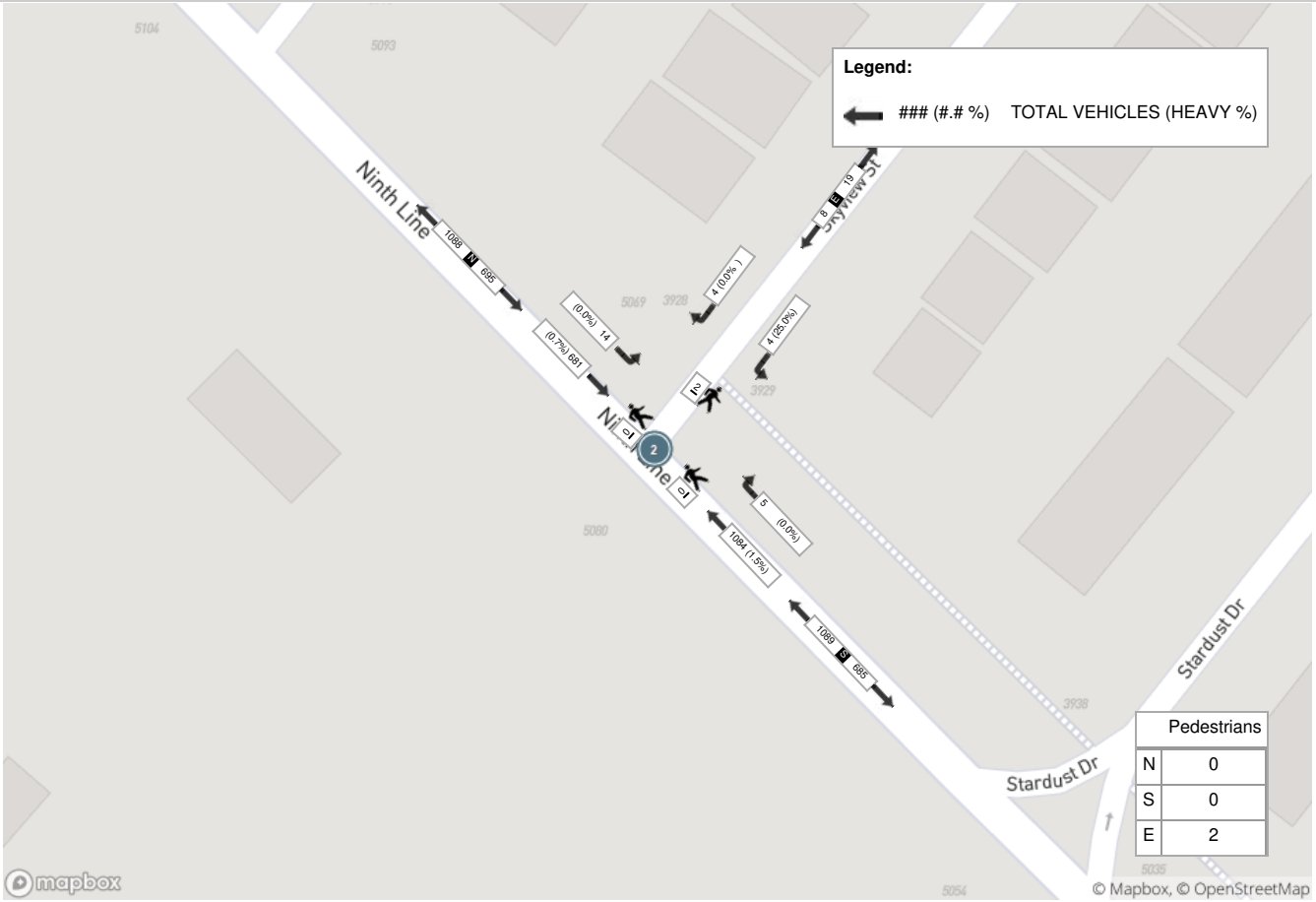
Peak Hour: 07:45 AM - 08:45 AM Weather: Scattered Clouds (19.07 °C)



Spectrum

Turning Movement Count
Location Name: NINTH LINE & SKYVIEW ST
Date: Tue, Jul 16, 2019 Deployment Lead: David Chu

Peak Hour: 05:00 PM - 06:00 PM Weather: Light Rain (28.48 °C)



File: CA.13.SIG
Signal Timing Request
RT.07.5716
RT.07.5701

August 6, 2019

C.F. Crozier & Associates Consulting Engineers
40 Huron Street, Suite 301
Collingwood, ON, L9Y 4R3

Dear Darren Loro:

Re: Traffic Signal Timing

Please find the attached traffic signal timing for the intersections of:

Ninth Line West at Erin Centre Boulevard
Eglinton Avenue W at Ninth Line West

The side street phases (4,8) are actuated; meaning a vehicle or pedestrian must be present on the side street before the side street is given a green indication. Vehicle presence on the side street would result in a possible green time of between the minimum and maximum time noted, depending on demand. Similarly, phase (1,3) are also actuated. Pedestrian "Walk" and flashing "Don't Walk" time on the side street, as noted, would be used in the event that the pedestrian push button is activated. During the side street pedestrian indications, the side street vehicle green is concurrently displayed. Should there be no demand on the actuated phases, the signals would result in a green indication on the major street (2,6).

Note: All times recorded in seconds, based on full demand.

The time of day plan is used for system control operation. In the event that the coordination pattern has a cycle length, offset and split value identified, the cycle length split and offset values, as noted, would be used. However, when the time of day plan is programed using

'Action' 8, the mode is 'Free', meaning no cycle length, split and offset values are given and the intersection operates using the phase timings provided in the report.

Should you require further information, please contact Ken Moore, at 905-615-3200 ext. 4054.

Sincerely,

Ken Moore
Coordinator, Traffic Systems and ITS
Traffic Signals and Street Lighting
Transportation and Works Department
City of Mississauga
905-615-3200 ext. 4054
Ken.moore@mississauga.ca

c: Javed Khan, Manager, Traffic Signals and Street Lighting
Jim Kartsomanis, Supervisor, Traffic Systems and ITS

Signal Timing Report

Runtime: 2019-08-01 14:28:54

Device: 5701

Region: Mississauga **Signal ID:** 5701 **Location:** EGLINTON AVENUE W W at Ninth Line W

Phase	Units	1	2	3	4	5	6	7	8
Walk	Sec	0	10	0	8	0	10	0	8
Ped Clear	Sec	0	15	0	10	0	15	0	10
Min Green	Sec	0	8	5	8	0	8	0	8
Passage	Sec	0.0	4.0	2.0	4.0	0.0	4.0	0.0	4.0
Maximum 1	Sec	0	65	10	71	0	65	0	71
Maximum 2	Sec	0	65	10	71	0	65	0	71
Yellow Change	Sec	3.0	5.0	3.0	5.0	3.0	5.0	3.0	5.0
Red Clearance	Sec	0.0	2.0	0.0	2.0	0.0	2.0	0.0	2.0
Red Revert	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Added Initial	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Initial	Sec	0	0	0	0	0	0	0	0
Time Before	Sec	0	0	0	0	0	0	0	0
Cars Before	Veh	0	0	0	0	0	0	0	0
Time To Reduce	Sec	0	0	0	0	0	0	0	0
Reduce By	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min Gap	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dynamic Max Limit	Sec	0	0	0	0	0	0	0	0
Dynamic Max Step	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
[P2] Start Up	Enum	other	redClear	phaseNotOn	phaseNotOn	other	redClear	other	phaseNotOn
[P2] Options	Bit	0	Enabled Non-Actuated 1 Non Lock Det Min Veh Recall Dual Entry	Enabled Non Lock Det	Enabled Non Lock Det Dual Entry	0	Enabled Non-Actuated 1 Non Lock Det Min Veh Recall Dual Entry	0	Enabled Non Lock Det Dual Entry
[P2] Ring	Ring	0	1	1	1	0	2	0	2
[P2] Concurrency	Phase (,)	()	(6)	(8)	(8)	()	(2)	()	(3,4)

Coord Pattern	Units	1	2	3	4	5	6	7	8
Cycle Time	Sec	160	0	160	0	0	0	0	0
Offset	Sec	101	0	22	0	0	0	0	0
Split	Split	1	2	3	4	5	6	7	8
Sequence	Sequence	1	1	1	1	1	1	1	1

Coord Split	Units	1	2	3	4	5	6	7	8
Split 1 - Mode	Enum	none	other	none	none	none	other	none	none
Split 1 - Time	Sec	0	70	30	60	0	70	0	90
Split 1 - Coord	Enum	false	true	false	false	false	true	false	false
Split 2 - Mode	Enum	none	other	none	none	none	other	none	none
Split 2 - Time	Sec	0	0	0	0	0	0	0	0
Split 2 - Coord	Enum	false	true	false	false	false	true	false	false
Split 3 - Mode	Enum	none	other	none	none	none	other	none	none
Split 3 - Time	Sec	0	70	21	69	0	70	0	90
Split 3 - Coord	Enum	false	true	false	false	false	true	false	false

TB Schedule	Units	1	2	3	4	5	6	7	8
Month	Bit	JFMAMJJASOND	JFMAMJJASOND	JFMAMJJASOND	J----------	-F---------	---A-------	----M------	------J-----
Day of Week	Bit	-MTWTF-	S------	------S	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS
Day of Month	Bit	12345678901234 56789012345678 901	12345678901234 56789012345678 901	12345678901234 56789012345678 901	1---------- --------	----------8----- --------	----------9-- ----------	----------0--- --------	1---------- --------
Day Plan	Number	1	3	2	3	3	3	3	3

TB Schedule	Units	9	10	11	12	13	14	15	16
Month	Bit	-------A----	-------S---	---------O--	----------D	----------D	----------D	0	0
Day of Week	Bit	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS
Day of Month	Bit	----5---------- --------	-2---------- --------	----------4-------- --------	---------- 5------	---------- -6-----	---------- -4-------	0	0
Day Plan	Number	3	3	3	3	3	3	0	0

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

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

Signal Timing Report

Runtime: 2019-08-01 14:25:36

Device: 5716

Region: Mississauga **Signal ID:** 5716 **Location:** NINTH LINE WEST N at Erin Centre Boulevard

Phase	Units	1	2	3	4	5	6	7	8
Walk	Sec	0	8	0	8	0	0	0	0
Ped Clear	Sec	0	8	0	8	0	0	0	0
Min Green	Sec	5	8	0	8	0	0	0	0
Passage	Sec	2.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0
Maximum 1	Sec	10	50	0	20	0	0	0	0
Maximum 2	Sec	10	50	0	20	0	0	0	0
Yellow Change	Sec	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
Red Clearance	Sec	0.0	2.0	0.0	2.5	0.0	0.0	0.0	0.0
Red Revert	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Added Initial	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Initial	Sec	0	0	0	0	0	0	0	0
Time Before	Sec	0	0	0	0	0	0	0	0
Cars Before	Veh	0	0	0	0	0	0	0	0
Time To Reduce	Sec	0	0	0	0	0	0	0	0
Reduce By	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min Gap	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dynamic Max Limit	Sec	0	0	0	0	0	0	0	0
Dynamic Max Step	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
[P2] Start Up	Enum	phaseNotOn	redClear	other	phaseNotOn	other	other	other	other
[P2] Options	Bit	Enabled Non Lock Det	Enabled Non-Actuated 1 Max Veh Recall Ped Recall Act Rest In Walk	0	Enabled Non Lock Det	0	0	0	0
[P2] Ring	Ring	1	1	0	1	0	0	0	0
[P2] Concurrency	Phase (,)	()	()	()	()	()	()	()	()

TB Schedule	Units	1	2	3	4	5	6	7	8
Month	Bit	JFMAMJJASOND	JFMAMJJASOND	JFMAMJJASOND	J----------	-F---------	---A-------	----M------	-----J-----
Day of Week	Bit	-MTWTF-	S------	------S	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS
Day of Month	Bit	123456789012345678901234567890 1	123456789012345678901234567890 1	123456789012345678901234567890 1	1---------- ------	----------8------ ------	----------9---- --------	----------0----- ------	1---------- ------
Day Plan	Number	1	3	2	3	3	3	3	3

TB Schedule	Units	9	10	11	12	13	14	15	16
Month	Bit	-------A----	--------S---	---------O--	----------D	----------D	----------D	0	0
Day of Week	Bit	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS
Day of Month	Bit	----5---------- ------	-2---------- ------	----------4---------- ------	---------- 5------	---------- 6-----	---------- 4-------	0	0
Day Plan	Number	3	3	3	3	3	3	0	0

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

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

APPENDIX E

Collision Data

Collision Details Report

NINTH LINE CANDLELIGHT DR

From: January 1, 2014 **To:** September 28, 2021

Location ..... CANDLELIGHT DR @ NINTH LINE **Municipality.....** Mississauga

Traffic Control.... Two-way Stop **Total Collisions....** 1

Collision ID	Date/Day/Time	Environment	Impact Type	Classification	Direction	Surface Cond'n	Vehicle Manoeuver	Vehicle type	First Event	Driver Action	No. Ped
150356994	2015-Sep-10, Thu,09:26	Clear	Turning movement	P.D. only	West	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Improper turn	
					East	Dry	Turning left	School bus	Other motor vehicle	Driving properly	

Comments: Statement #1: A full size school bus was southboung on Ninth Line and attempted to negotiate a left hand turn onto Candlelight Dr. Due to the vehicle's size it was forced to enter into the opposite lanes on travel on Candlelight Dr however, failed to avoid a stopped vehicle waiting to turn left from Candlelight onto southbound Ninth Line.

Collision Details Report

NINTH LINE SKYVIEW ST

From: January 1, 2014 **To:** September 28, 2021

Location ..... NINTH LINE @ SKYVIEW ST **Municipality.....** Mississauga

Traffic Control.... Two-way Stop **Total Collisions....** 1

Collision ID	Date/Day/Time	Environment	Impact Type	Classification	Direction	Surface Cond'n	Vehicle Manoeuver	Vehicle type	First Event	Driver Action	No. Ped
190025447	2019-Jan-21, Mon,08:30	Snow	SMV other	P.D. only	North	Packed snow	Going ahead	Automobile, station wagon	Pole (sign, parking meter)	Lost control	

Comments: Statement #1: V1 TRAVELLING NORTH BOUND ON NINTH LINE IN THE CITY OF MISSISSAUGA. V1 SLID OFF ROADWAY AND STRUCK YELLOW STREET SIGN CAUSING DAMAGE TO VEHICLE AND SIGN.

Collision Details Report

NINTH LINE STARDUST DR

From: January 1, 2014 **To:** September 28, 2021

Location ..... NINTH LINE @ STARDUST DR **Municipality.....** Mississauga

Traffic Control.... Two-way Stop **Total Collisions....** 1

Collision ID	Date/Day/Time	Environment	Impact Type	Classification	Direction	Surface Cond'n	Vehicle Manoeuver	Vehicle type	First Event	Driver Action	No. Ped
150412985	2015-Oct-22, Thu,08:17	Clear	Rear end	P.D. only	West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Following too close	
Comments:	Statement #1: D2 HEADING WESTBOUND ON STARDUST WAITING AT INTERSECTION OF NINTH LINE FOR TRAFFIC TO CLEAR. D1 BEHIND D2 THOUGHT TRAFFIC WAS CLEAR AND THAT D2 HAD MOVED WHEN THEY HAD NOT. D1 REAR ENDED D2.				West	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	

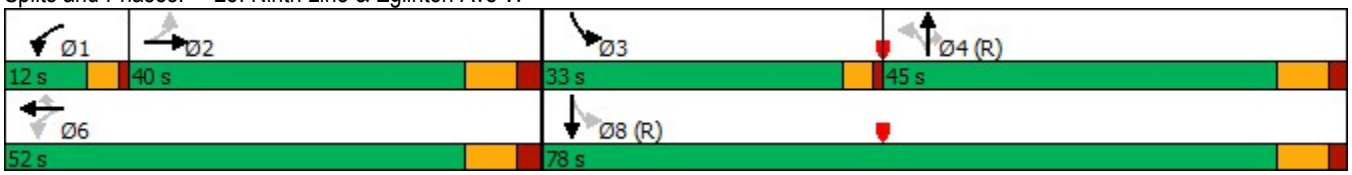
APPENDIX F

Ninth Line Environmental Study Report Excerpts

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	37	612	99	264	256	23	757	137	400	1280
Future Volume (vph)	37	612	99	264	256	23	757	137	400	1280
Turn Type	Perm	NA	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA
Protected Phases		2	1	6			4		3	8
Permitted Phases	2		6		6	4		4	8	
Detector Phase	2	2	1	6	6	4	4	4	3	8
Switch Phase										
Minimum Initial (s)	8.0	8.0	7.0	8.0	8.0	8.0	8.0	8.0	7.0	8.0
Minimum Split (s)	32.5	32.5	11.0	32.5	32.5	40.0	40.0	40.0	11.0	40.0
Total Split (s)	40.0	40.0	12.0	52.0	52.0	45.0	45.0	45.0	33.0	78.0
Total Split (%)	30.8%	30.8%	9.2%	40.0%	40.0%	34.6%	34.6%	34.6%	25.4%	60.0%
Yellow Time (s)	5.0	5.0	3.0	5.0	5.0	5.0	5.0	5.0	3.0	5.0
All-Red Time (s)	2.5	2.5	1.0	2.5	2.5	2.0	2.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.5	7.5	4.0	7.5	7.5	7.0	7.0	7.0	4.0	7.0
Lead/Lag	Lag	Lag	Lead			Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes			Yes	Yes	Yes	Yes	
Recall Mode	Max	Max	None	Max	Max	C-Max	C-Max	C-Max	None	C-Max
Act Effct Green (s)	32.7	32.7	48.0	44.5	44.5	42.0	42.0	42.0	74.0	71.0
Actuated g/C Ratio	0.25	0.25	0.37	0.34	0.34	0.32	0.32	0.32	0.57	0.55
v/c Ratio	0.14	0.82	0.54	0.41	0.38	0.33	0.67	0.24	0.87	0.69
Control Delay	39.8	53.7	38.9	35.2	5.2	52.2	42.6	11.4	38.4	28.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.8	53.7	38.9	35.2	5.2	52.2	42.6	11.4	38.4	28.4
LOS	D	D	D	D	A	D	D	B	D	C
Approach Delay		53.0		23.4			38.2			30.7
Approach LOS		D		C			D			C

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 100 (77%), Referenced to phase 4:NBTL and 8:SBTL, Start of Green	
Natural Cycle: 95	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay: 35.5	Intersection LOS: D
Intersection Capacity Utilization 95.1%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 25: Ninth Line & Eglinton Ave W

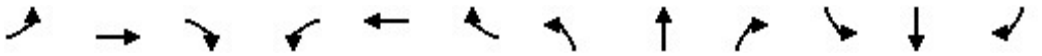




Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	37	730	99	264	256	23	757	137	400	1347
v/c Ratio	0.14	0.82	0.54	0.41	0.38	0.33	0.67	0.24	0.87	0.69
Control Delay	39.8	53.7	38.9	35.2	5.2	52.2	42.6	11.4	38.4	28.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.8	53.7	38.9	35.2	5.2	52.2	42.6	11.4	38.4	28.4
Queue Length 50th (m)	6.8	84.4	15.5	47.5	0.0	4.2	83.7	5.4	53.8	149.0
Queue Length 95th (m)	15.6	106.0	27.3	70.2	16.6	13.6	106.2	19.7	m#83.7	176.1
Internal Link Dist (m)		373.3		388.7			291.0			248.0
Turn Bay Length (m)	20.0		35.0			65.0		30.0	65.0	
Base Capacity (vph)	263	889	185	638	674	69	1122	579	501	1945
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	0.14	0.82	0.54	0.41	0.38	0.33	0.67	0.24	0.80	0.69

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)	37	612	118	99	264	256	23	757	137	400	1280	67
Future Volume (vph)	37	612	118	99	264	256	23	757	137	400	1280	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	7.5	7.5		4.0	7.5	7.5	7.0	7.0	7.0	4.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1668	3490		1733	1865	1479	1069	3476	1574	1716	3555	
Flt Permitted	0.60	1.00		0.14	1.00	1.00	0.19	1.00	1.00	0.19	1.00	
Satd. Flow (perm)	1047	3490		257	1865	1479	215	3476	1574	343	3555	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	37	612	118	99	264	256	23	757	137	400	1280	67
RTOR Reduction (vph)	0	12	0	0	0	168	0	0	71	0	3	0
Lane Group Flow (vph)	37	718	0	99	264	88	23	757	66	400	1344	0
Confl. Peds. (#/hr)			2	2					2	2		
Heavy Vehicles (%)	7%	1%	6%	3%	3%	8%	67%	5%	0%	4%	2%	0%
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases		2		1	6			4		3	8	
Permitted Phases	2			6		6	4		4	8		
Actuated Green, G (s)	32.7	32.7		44.5	44.5	44.5	42.0	42.0	42.0	71.0	71.0	
Effective Green, g (s)	32.7	32.7		44.5	44.5	44.5	42.0	42.0	42.0	71.0	71.0	
Actuated g/C Ratio	0.25	0.25		0.34	0.34	0.34	0.32	0.32	0.32	0.55	0.55	
Clearance Time (s)	7.5	7.5		4.0	7.5	7.5	7.0	7.0	7.0	4.0	7.0	
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)	263	877		176	638	506	69	1123	508	451	1941	
v/s Ratio Prot		c0.21		c0.03	0.14			0.22		c0.17	0.38	
v/s Ratio Perm	0.04			0.16		0.06	0.11		0.04	c0.31		
v/c Ratio	0.14	0.82		0.56	0.41	0.17	0.33	0.67	0.13	0.89	0.69	
Uniform Delay, d1	37.7	45.9		32.2	32.8	29.9	33.4	38.1	31.1	25.9	21.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.09	1.24	
Incremental Delay, d2	1.1	8.4		4.1	2.0	0.7	12.5	3.2	0.5	13.1	1.3	
Delay (s)	38.9	54.3		36.3	34.7	30.6	45.9	41.3	31.6	41.3	28.2	
Level of Service	D	D		D	C	C	D	D	C	D	C	
Approach Delay (s)		53.5			33.3			40.0			31.2	
Approach LOS		D			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	37.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	22.5
Intersection Capacity Utilization	95.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Configurations					
Traffic Volume (vph)	142	75	1039	108	1646
Future Volume (vph)	142	75	1039	108	1646
Turn Type	Perm	Perm	NA	pm+pt	NA
Protected Phases			2	1	6
Permitted Phases	4	4		6	
Detector Phase	4	4	2	1	6
Switch Phase					
Minimum Initial (s)	8.0	8.0	8.0	7.0	8.0
Minimum Split (s)	22.5	22.5	22.0	11.0	22.0
Total Split (s)	23.0	23.0	31.0	11.0	42.0
Total Split (%)	35.4%	35.4%	47.7%	16.9%	64.6%
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0
All-Red Time (s)	2.5	2.5	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.0	4.0	6.0
Lead/Lag			Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None	None	C-Max	None	C-Max
Act Effct Green (s)	10.8	10.8	36.6	46.6	45.8
Actuated g/C Ratio	0.17	0.17	0.56	0.72	0.70
v/c Ratio	0.48	0.23	0.58	0.28	0.65
Control Delay	29.7	8.1	18.6	7.5	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	29.7	8.1	18.6	7.5	11.0
LOS	C	A	B	A	B
Approach Delay	22.2		18.6		10.8
Approach LOS	C		B		B

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 12 (18%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.65	
Intersection Signal Delay: 14.4	Intersection LOS: B
Intersection Capacity Utilization 63.8%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 30: Ninth Line & Erin Centre Blvd





Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	142	75	1116	108	1646
v/c Ratio	0.48	0.23	0.58	0.28	0.65
Control Delay	29.7	8.1	18.6	7.5	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	29.7	8.1	18.6	7.5	11.0
Queue Length 50th (m)	14.6	0.0	63.6	7.5	87.8
Queue Length 95th (m)	26.3	8.1	124.2	13.2	81.3
Internal Link Dist (m)	358.4		271.6		650.7
Turn Bay Length (m)				35.0	
Base Capacity (vph)	448	461	1924	389	2521
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	0.32	0.16	0.58	0.28	0.65

Intersection Summary



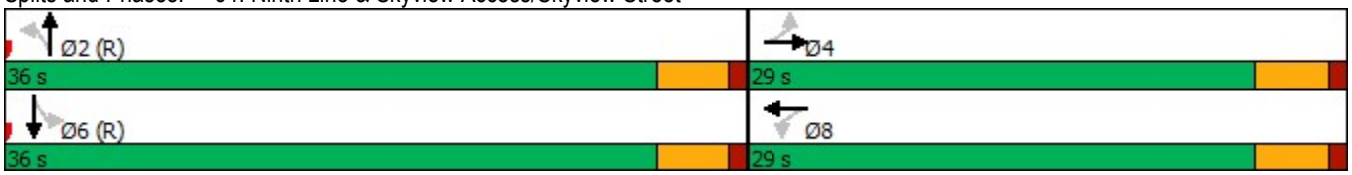
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	142	75	1039	77	108	1646
Future Volume (vph)	142	75	1039	77	108	1646
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.7	3.5	3.5	3.7
Total Lost time (s)	6.5	6.5	6.0		4.0	6.0
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1765	1597	3409		1785	3579
Flt Permitted	0.95	1.00	1.00		0.16	1.00
Satd. Flow (perm)	1765	1597	3409		308	3579
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	142	75	1039	77	108	1646
RTOR Reduction (vph)	0	64	7	0	0	0
Lane Group Flow (vph)	142	11	1109	0	108	1646
Confl. Peds. (#/hr)	1			1	1	
Heavy Vehicles (%)	1%	0%	4%	30%	0%	2%
Turn Type	Perm	Perm	NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	4	4			6	
Actuated Green, G (s)	9.2	9.2	33.3		43.3	43.3
Effective Green, g (s)	9.2	9.2	33.3		43.3	43.3
Actuated g/C Ratio	0.14	0.14	0.51		0.67	0.67
Clearance Time (s)	6.5	6.5	6.0		4.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	249	226	1746		341	2384
v/s Ratio Prot			0.33		0.03	c0.46
v/s Ratio Perm	c0.08	0.01			0.18	
v/c Ratio	0.57	0.05	0.64		0.32	0.69
Uniform Delay, d1	26.1	24.1	11.5		5.6	6.7
Progression Factor	1.00	1.00	1.37		1.50	1.33
Incremental Delay, d2	3.1	0.1	1.7		0.5	1.4
Delay (s)	29.2	24.2	17.3		8.9	10.3
Level of Service	C	C	B		A	B
Approach Delay (s)	27.5		17.3			10.2
Approach LOS	C		B			B

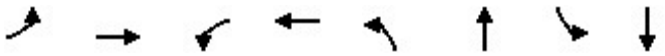
Intersection Summary			
HCM 2000 Control Delay	14.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	63.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	116	5	5	5	100	957	2	1617
Future Volume (vph)	116	5	5	5	100	957	2	1617
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.5	24.5	29.0	29.0	24.0	24.0	24.0	24.0
Total Split (s)	29.0	29.0	29.0	29.0	36.0	36.0	36.0	36.0
Total Split (%)	44.6%	44.6%	44.6%	44.6%	55.4%	55.4%	55.4%	55.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	16.8	16.8	16.8	16.8	39.2	39.2	39.2	39.2
Actuated g/C Ratio	0.26	0.26	0.26	0.26	0.60	0.60	0.60	0.60
v/c Ratio	0.33	0.70	0.03	0.04	0.88	0.45	0.01	0.79
Control Delay	20.4	29.6	15.2	9.8	84.2	10.8	13.0	19.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.4	29.6	15.2	9.8	84.2	10.8	13.0	19.6
LOS	C	C	B	A	F	B	B	B
Approach Delay		27.0		11.0		17.7		19.5
Approach LOS		C		B		B		B

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 19.8	Intersection LOS: B
Intersection Capacity Utilization 80.7%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 64: Ninth Line & Skyview Access/Skyview Street

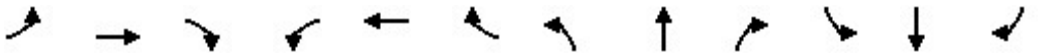




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	116	290	5	17	100	959	2	1659
v/c Ratio	0.33	0.70	0.03	0.04	0.88	0.45	0.01	0.79
Control Delay	20.4	29.6	15.2	9.8	84.2	10.8	13.0	19.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.4	29.6	15.2	9.8	84.2	10.8	13.0	19.6
Queue Length 50th (m)	10.4	27.9	0.4	0.4	16.4	94.6	0.2	110.2
Queue Length 95th (m)	18.5	42.5	2.1	3.5	m#53.3	116.8	m0.3	#121.0
Internal Link Dist (m)		132.8		149.0		248.0		170.5
Turn Bay Length (m)					15.0		15.0	
Base Capacity (vph)	517	599	289	628	113	2111	284	2104
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	0.22	0.48	0.02	0.03	0.88	0.45	0.01	0.79

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)	116	5	285	5	5	12	100	957	2	2	1617	42
Future Volume (vph)	116	5	285	5	5	12	100	957	2	2	1617	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.85		1.00	0.89		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	1571		1750	1647		1750	3499		1750	3487	
Flt Permitted	0.75	1.00		0.42	1.00		0.10	1.00		0.26	1.00	
Satd. Flow (perm)	1375	1571		769	1647		188	3499		472	3487	
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)	116	5	285	5	5	12	100	957	2	2	1617	42
RTOR Reduction (vph)	0	8	0	0	9	0	0	0	0	0	2	0
Lane Group Flow (vph)	116	282	0	5	8	0	100	959	0	2	1657	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	16.8	16.8		16.8	16.8		39.2	39.2		39.2	39.2	
Effective Green, g (s)	16.8	16.8		16.8	16.8		39.2	39.2		39.2	39.2	
Actuated g/C Ratio	0.26	0.26		0.26	0.26		0.60	0.60		0.60	0.60	
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	355	406		198	425		113	2110		284	2102	
v/s Ratio Prot		c0.18			0.00			0.27			0.48	
v/s Ratio Perm	0.08			0.01			c0.53			0.00		
v/c Ratio	0.33	0.69		0.03	0.02		0.88	0.45		0.01	0.79	
Uniform Delay, d1	19.5	21.8		18.0	18.0		11.0	7.1		5.1	9.8	
Progression Factor	1.00	1.00		1.00	1.00		2.35	1.30		1.75	1.55	
Incremental Delay, d2	0.5	5.1		0.1	0.0		50.8	0.6		0.0	2.5	
Delay (s)	20.1	26.9		18.0	18.0		76.6	9.8		9.0	17.6	
Level of Service	C	C		B	B		E	A		A	B	
Approach Delay (s)		24.9			18.0			16.1			17.6	
Approach LOS		C			B			B			B	

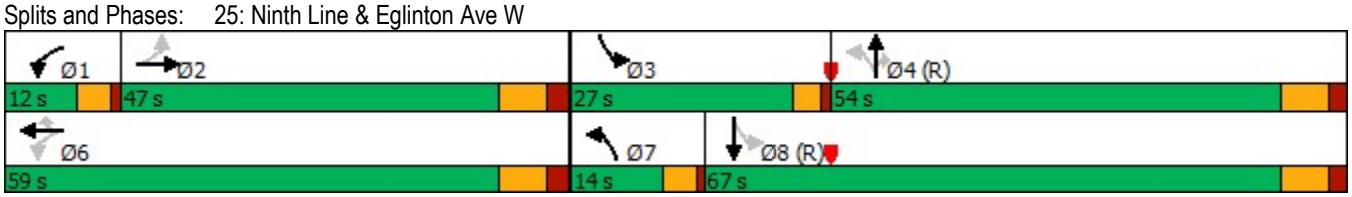
Intersection Summary			
HCM 2000 Control Delay	18.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	80.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	54	554	133	694	537	103	1218	192	374	975
Future Volume (vph)	54	554	133	694	537	103	1218	192	374	975
Turn Type	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases		2	1	6		7	4		3	8
Permitted Phases	2		6		6	4		4	8	
Detector Phase	2	2	1	6	6	7	4	4	3	8
Switch Phase										
Minimum Initial (s)	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0
Minimum Split (s)	32.5	32.5	11.5	32.5	32.5	11.5	40.0	40.0	11.0	40.0
Total Split (s)	47.0	47.0	12.0	59.0	59.0	14.0	54.0	54.0	27.0	67.0
Total Split (%)	33.6%	33.6%	8.6%	42.1%	42.1%	10.0%	38.6%	38.6%	19.3%	47.9%
Yellow Time (s)	5.0	5.0	3.5	5.0	5.0	3.5	5.0	5.0	3.0	5.0
All-Red Time (s)	2.5	2.5	1.0	2.5	2.5	1.0	2.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.5	7.5	4.5	7.5	7.5	4.5	7.0	7.0	4.0	7.0
Lead/Lag	Lag	Lag	Lead			Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes			Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	None	Max	Max	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	39.5	39.5	54.5	51.5	51.5	58.2	47.0	47.0	77.0	60.8
Actuated g/C Ratio	0.28	0.28	0.39	0.37	0.37	0.42	0.34	0.34	0.55	0.43
v/c Ratio	1.02	0.61	0.55	0.99	0.69	0.42	1.00	0.31	1.08	0.66
Control Delay	179.7	46.1	38.0	76.3	20.1	22.4	72.9	12.2	110.5	33.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	179.7	46.1	38.0	76.3	20.1	22.4	72.9	12.2	110.5	33.9
LOS	F	D	D	E	C	C	E	B	F	C
Approach Delay		57.0		50.4			61.8			54.4
Approach LOS		E		D			E			D

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 20 (14%), Referenced to phase 4:NBTL and 8:SBTL, Start of Green	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.08	
Intersection Signal Delay: 55.9	Intersection LOS: E
Intersection Capacity Utilization 119.2%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 25: Ninth Line & Eglinton Ave W





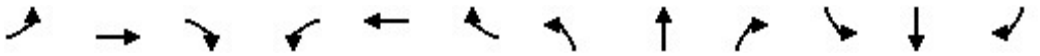
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	54	608	133	694	537	103	1218	192	374	1024
v/c Ratio	1.02	0.61	0.55	0.99	0.69	0.42	1.00	0.31	1.08	0.66
Control Delay	179.7	46.1	38.0	76.3	20.1	22.4	72.9	12.2	110.5	33.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	179.7	46.1	38.0	76.3	20.1	22.4	72.9	12.2	110.5	33.9
Queue Length 50th (m)	~14.0	70.2	22.3	175.4	49.2	12.2	~164.6	9.8	~87.8	131.3
Queue Length 95th (m)	#40.9	88.5	36.1	#250.4	88.8	20.9	#209.2	27.0	m#141.0	157.8
Internal Link Dist (m)		373.3		388.7			291.0			258.7
Turn Bay Length (m)	20.0		35.0			65.0		30.0	65.0	
Base Capacity (vph)	53	999	243	699	773	255	1213	621	346	1560
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	1.02	0.61	0.55	0.99	0.69	0.40	1.00	0.31	1.08	0.66

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)	54	554	54	133	694	537	103	1218	192	374	975	49
Future Volume (vph)	54	554	54	133	694	537	103	1218	192	374	975	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	7.5	7.5		4.5	7.5	7.5	4.5	7.0	7.0	4.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1785	3525		1750	1902	1566	1785	3614	1581	1767	3590	
Flt Permitted	0.10	1.00		0.24	1.00	1.00	0.20	1.00	1.00	0.08	1.00	
Satd. Flow (perm)	190	3525		446	1902	1566	380	3614	1581	146	3590	
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)	54	554	54	133	694	537	103	1218	192	374	975	49
RTOR Reduction (vph)	0	5	0	0	0	198	0	0	90	0	2	0
Lane Group Flow (vph)	54	603	0	133	694	339	103	1218	102	374	1022	0
Heavy Vehicles (%)	0%	2%	4%	2%	1%	2%	0%	1%	1%	1%	1%	0%
Turn Type	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		2		1	6		7	4		3	8	
Permitted Phases	2			6		6	4		4	8		
Actuated Green, G (s)	39.5	39.5		51.5	51.5	51.5	55.7	47.0	47.0	74.0	60.8	
Effective Green, g (s)	39.5	39.5		51.5	51.5	51.5	55.7	47.0	47.0	74.0	60.8	
Actuated g/C Ratio	0.28	0.28		0.37	0.37	0.37	0.40	0.34	0.34	0.53	0.43	
Clearance Time (s)	7.5	7.5		4.5	7.5	7.5	4.5	7.0	7.0	4.0	7.0	
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)	53	994		233	699	576	238	1213	530	343	1559	
v/s Ratio Prot		0.17		0.03	c0.36		0.03	0.34		c0.18	0.28	
v/s Ratio Perm	0.28			0.18		0.22	0.15		0.06	c0.40		
v/c Ratio	1.02	0.61		0.57	0.99	0.59	0.43	1.00	0.19	1.09	0.66	
Uniform Delay, d1	50.2	43.5		31.8	44.1	35.7	27.7	46.5	33.0	46.2	31.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.26	1.03	
Incremental Delay, d2	129.1	2.7		3.4	32.3	4.4	1.3	26.8	0.8	65.7	1.4	
Delay (s)	179.4	46.3		35.1	76.4	40.1	29.0	73.3	33.8	123.9	33.5	
Level of Service	F	D		D	E	D	C	E	C	F	C	
Approach Delay (s)		57.1			58.1			65.3			57.7	
Approach LOS		E			E			E			E	

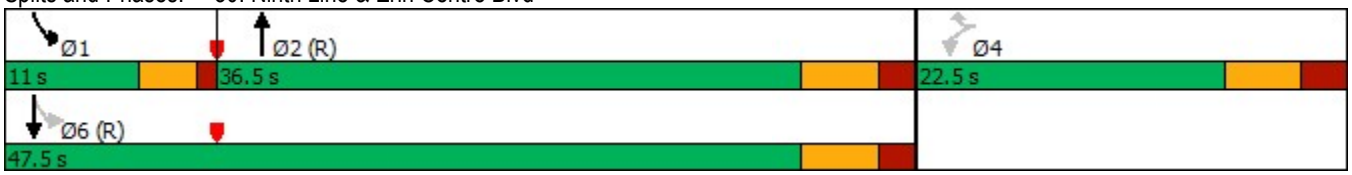
Intersection Summary			
HCM 2000 Control Delay	60.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.5
Intersection Capacity Utilization	119.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Configurations					
Traffic Volume (vph)	114	158	1680	143	1322
Future Volume (vph)	114	158	1680	143	1322
Turn Type	Perm	Perm	NA	pm+pt	NA
Protected Phases			2	1	6
Permitted Phases	4	4		6	
Detector Phase	4	4	2	1	6
Switch Phase					
Minimum Initial (s)	8.0	8.0	8.0	7.0	8.0
Minimum Split (s)	22.5	22.5	22.0	11.0	22.0
Total Split (s)	22.5	22.5	36.5	11.0	47.5
Total Split (%)	32.1%	32.1%	52.1%	15.7%	67.9%
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0
All-Red Time (s)	2.5	2.5	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.0	4.0	6.0
Lead/Lag			Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None	None	C-Max	None	C-Max
Act Effct Green (s)	10.2	10.2	37.8	49.3	47.3
Actuated g/C Ratio	0.15	0.15	0.54	0.70	0.68
v/c Ratio	0.44	0.43	0.93	0.47	0.54
Control Delay	32.3	8.8	30.8	17.7	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	32.3	8.8	30.8	17.7	5.0
LOS	C	A	C	B	A
Approach Delay	18.7		30.8		6.2
Approach LOS	B		C		A

Intersection Summary	
Cycle Length: 70	
Actuated Cycle Length: 70	
Offset: 65 (93%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.93	
Intersection Signal Delay: 19.6	Intersection LOS: B
Intersection Capacity Utilization 78.2%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 30: Ninth Line & Erin Centre Blvd





Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	114	158	1786	143	1322
v/c Ratio	0.44	0.43	0.93	0.47	0.54
Control Delay	32.3	8.8	30.8	17.7	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	32.3	8.8	30.8	17.7	5.0
Queue Length 50th (m)	12.9	0.0	155.5	8.4	16.6
Queue Length 95th (m)	24.2	12.4	#267.3	21.8	41.5
Internal Link Dist (m)	358.4		296.2		650.7
Turn Bay Length (m)				35.0	
Base Capacity (vph)	405	486	1924	303	2443
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	0.28	0.33	0.93	0.47	0.54

Intersection Summary

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



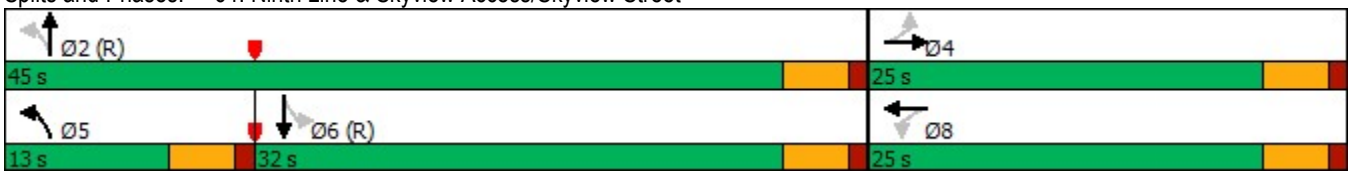
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	114	158	1680	106	143	1322
Future Volume (vph)	114	158	1680	106	143	1322
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.7	3.5	3.5	3.7
Total Lost time (s)	6.5	6.5	6.0		4.0	6.0
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	0.99	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1776	1597	3556		1767	3614
Flt Permitted	0.95	1.00	1.00		0.10	1.00
Satd. Flow (perm)	1776	1597	3556		181	3614
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	114	158	1680	106	143	1322
RTOR Reduction (vph)	0	135	6	0	0	0
Lane Group Flow (vph)	114	23	1780	0	143	1322
Confl. Peds. (#/hr)	4			1	1	
Heavy Vehicles (%)	0%	0%	1%	11%	1%	1%
Turn Type	Perm	Perm	NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	4	4			6	
Actuated Green, G (s)	10.2	10.2	37.0		47.3	47.3
Effective Green, g (s)	10.2	10.2	37.0		47.3	47.3
Actuated g/C Ratio	0.15	0.15	0.53		0.68	0.68
Clearance Time (s)	6.5	6.5	6.0		4.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	258	232	1879		265	2442
v/s Ratio Prot			c0.50		0.05	c0.37
v/s Ratio Perm	c0.06	0.01			0.32	
v/c Ratio	0.44	0.10	0.95		0.54	0.54
Uniform Delay, d1	27.3	25.9	15.6		13.6	5.8
Progression Factor	1.00	1.00	1.36		2.72	0.70
Incremental Delay, d2	1.2	0.2	10.1		1.7	0.7
Delay (s)	28.5	26.1	31.3		38.6	4.7
Level of Service	C	C	C		D	A
Approach Delay (s)	27.1		31.3			8.0
Approach LOS	C		C			A

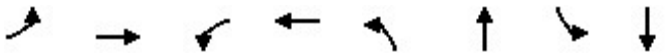
Intersection Summary			
HCM 2000 Control Delay	21.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	78.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	78	5	4	5	293	1630	14	1255
Future Volume (vph)	78	5	4	5	293	1630	14	1255
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	NA
Protected Phases		4		8	5	2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	5	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.5	24.5	24.5	24.5	9.5	24.0	24.0	24.0
Total Split (s)	25.0	25.0	25.0	25.0	13.0	45.0	32.0	32.0
Total Split (%)	35.7%	35.7%	35.7%	35.7%	18.6%	64.3%	45.7%	45.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag					Lead		Lag	Lag
Lead-Lag Optimize?					Yes		Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	9.3	9.3	9.3	9.3	51.7	51.7	34.0	34.0
Actuated g/C Ratio	0.13	0.13	0.13	0.13	0.74	0.74	0.49	0.49
v/c Ratio	0.42	0.52	0.04	0.04	0.67	0.63	0.10	0.82
Control Delay	34.0	10.3	25.0	20.1	18.3	11.6	20.3	26.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.0	10.3	25.0	20.1	18.3	11.6	20.3	26.1
LOS	C	B	C	C	B	B	C	C
Approach Delay		17.1		21.6		12.6		26.0
Approach LOS		B		C		B		C

Intersection Summary	
Cycle Length: 70	
Actuated Cycle Length: 70	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 18.1	Intersection LOS: B
Intersection Capacity Utilization 78.0%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 64: Ninth Line & Skyview Access/Skyview Street

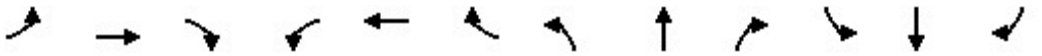




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	78	194	4	9	293	1635	14	1375
v/c Ratio	0.42	0.52	0.04	0.04	0.67	0.63	0.10	0.82
Control Delay	34.0	10.3	25.0	20.1	18.3	11.6	20.3	26.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.0	10.3	25.0	20.1	18.3	11.6	20.3	26.1
Queue Length 50th (m)	8.8	0.5	0.4	0.6	28.1	170.5	1.2	91.4
Queue Length 95th (m)	18.4	14.4	2.5	3.6	m27.9	m174.4	m2.6	#139.1
Internal Link Dist (m)		134.3		117.6		258.7		135.3
Turn Bay Length (m)					15.0		15.0	
Base Capacity (vph)	405	594	238	506	436	2584	134	1684
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	0.19	0.33	0.02	0.02	0.67	0.63	0.10	0.82

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)	78	5	189	4	5	4	293	1630	5	14	1255	120
Future Volume (vph)	78	5	189	4	5	4	293	1630	5	14	1255	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.85		1.00	0.93		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	1573		1750	1719		1750	3498		1750	3454	
Flt Permitted	0.75	1.00		0.44	1.00		0.10	1.00		0.15	1.00	
Satd. Flow (perm)	1385	1573		814	1719		191	3498		278	3454	
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)	78	5	189	4	5	4	293	1630	5	14	1255	120
RTOR Reduction (vph)	0	164	0	0	3	0	0	0	0	0	9	0
Lane Group Flow (vph)	78	30	0	4	6	0	293	1635	0	14	1366	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	9.3	9.3		9.3	9.3		51.7	51.7		34.0	34.0	
Effective Green, g (s)	9.3	9.3		9.3	9.3		51.7	51.7		34.0	34.0	
Actuated g/C Ratio	0.13	0.13		0.13	0.13		0.74	0.74		0.49	0.49	
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	184	208		108	228		435	2583		135	1677	
v/s Ratio Prot		0.02			0.00		0.13	c0.47			c0.40	
v/s Ratio Perm	c0.06			0.00			0.37			0.05		
v/c Ratio	0.42	0.14		0.04	0.02		0.67	0.63		0.10	0.81	
Uniform Delay, d1	27.9	26.8		26.4	26.4		15.3	4.5		9.7	15.3	
Progression Factor	1.00	1.00		1.00	1.00		1.29	2.21		1.46	1.33	
Incremental Delay, d2	1.6	0.3		0.1	0.0		2.0	0.6		1.3	3.9	
Delay (s)	29.5	27.2		26.6	26.4		21.8	10.5		15.6	24.2	
Level of Service	C	C		C	C		C	B		B	C	
Approach Delay (s)		27.8			26.5			12.2			24.2	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	18.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	78.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

4 Traffic Operations Analysis

The traffic operations analysis was conducted using Synchro 10. Synchro can analyze both signalized and unsignalized intersections for single road corridors or road networks, considering the spacing, interaction, queues and operations between intersections.

Synchro models were developed for both 2031 and 2041 horizon years. The City of Mississauga model accounts for potential future developments along Ninth Line that contributes to future trip generation. The future number of lanes for roads within the study area are consistent with the future EMME plots provided by the City.

4.1 Methodology of Scenarios Assessed

To identify the need and justification for potential corridor improvements, three future scenarios were assessed. Each scenario includes additional exclusive turn lanes that may improve traffic operations; however, pedestrian crossing distances will also increase and impact walking and cycling modes. The preferred solution should be chosen based on factors that include available property and road comfort for vulnerable modes (cyclists and pedestrians). The three scenarios and associated assumptions are described below:

- **Scenario 1 (Base Case):** Widening of Ninth Line with shared through/right-turn lanes along Ninth Line. Side street lane configurations remain unchanged.
- **Scenario 2 (Minimum Improvements):** Scenario 1 PLUS critical dedicated right turn lanes for all approaches, including side streets. Engineering judgement was used to determine critical right turn lanes, but generally looked at very high v/c ratios (greater than 1.15 for shared through/right-turn lanes) and/or high turning volumes. Improvements prioritized north-south travel along Ninth Line.
- **Scenario 3 (Ultimate Improvements):** Scenario 2 PLUS additional improvements for all approaches, including side streets. Engineering judgement was used to determine these additional exclusive right-turn lanes, but generally looked at high v/c ratios (greater than 1.0 for shared through/right-turn lanes) and/or high turning volumes.

The general methodology used to assess improvements include:

- Update of clearance times to follow OTM Book 12 as indicated by the City of Mississauga's traffic signal timing standards.
- Addition of protected/permissive turning phases.
- Addition of turning movement storage lanes.
- Change of control type at unsignalized intersections, where justified (as identified for McDowell Drive in **Section 3**).
- Adjustment of cycle lengths at major intersections.

- Adjustment of cycle lengths at minor intersections and at Highway 407 ramps to provide signal coordination opportunities.

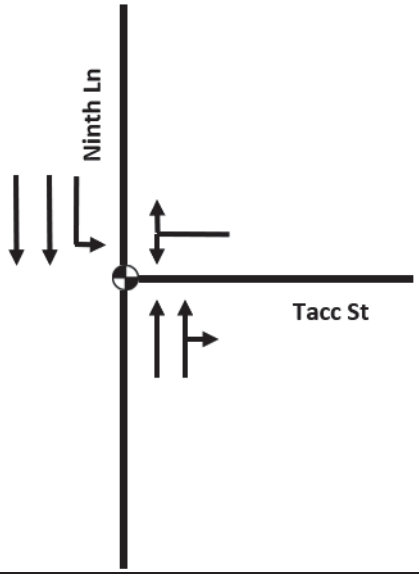
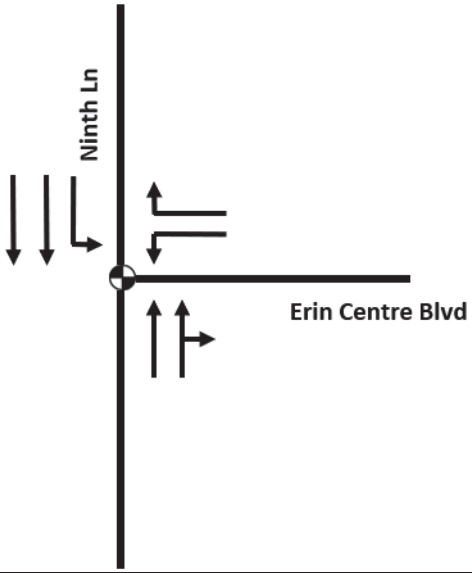
The future traffic operations for weekday AM and PM peak hours are summarized in **Sections 4.2** and **4.4** for all signalized and unsignalized intersections, respectively. The lane configuration and overall intersection level of service are presented. Through or shared through movements with v/c ratios of 0.85 or above and exclusive turning movements with v/c ratios of 1.0 or above are summarized. In addition, movements with LOS F and the corresponding delay are summarized. A summary of the methodology to assess intersection capacity and Level of Service can be found in **Appendix D**.

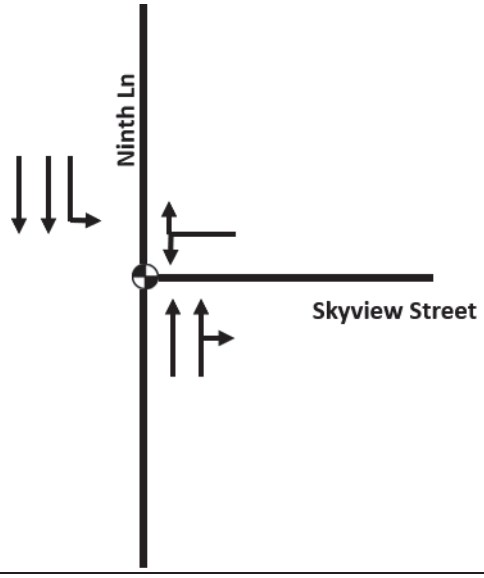
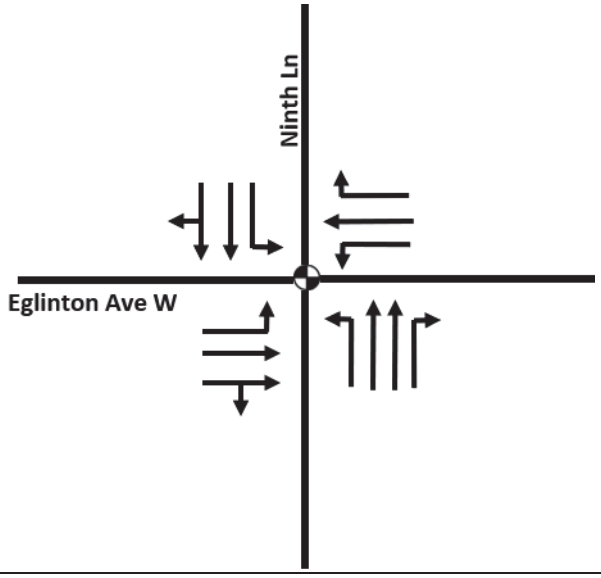
4.2 Mattamy Homes and Your Homes Development

Additional analysis for the segment of Ninth Line between Eglinton Avenue and Erin Centre Boulevard was conducted to address potential operational issues from the Mattamy Homes and Your Homes development within the area. The key concern was to investigate intersection spacing and any queuing impacts due to the closely spaced intersections. Based on a desktop review, analysis for the 2041 horizon was conducted to assess the best option for access to the Your Homes development through either Stardust Drive or Skyview Avenue. Volumes involving the developments access were provided by the City. The following options were assessed, with no changes to the other intersections between Eglinton Avenue and Erin Centre Boulevard:

- Case A: Signalized access at Your Homes development/Stardust Drive (assumed to be best case at Stardust Drive)
- Case B: Signalized access at Your Homes development/Skyview Street
- Case C: Two-way stop-control at Your Homes development/Skyview Street

Based on the analysis, Option B of a signalized access at Skyview Street is determined to be the best option to serve the Your Homes development and has been carried forward for the remainder of the traffic analysis. Option A requires northbound left storage lanes at Stardust Drive and southbound left storage lanes at Eglinton Avenue that exceed the link distance available. Option C results in high delays on the side streets at Skyview Street. Full results are provided in **Appendix E**.

Intersection	Lane Configuration Schematic
Tacc Drive	
Erin Centre Boulevard	

Intersection	Lane Configuration Schematic
Skyview Street / Skyview Access	
Eglinton Avenue	

6 Active Transportation Analysis

This section will document the analysis of the proposed active transportation facilities along Ninth Line in the future between Derry Road and Eglinton Avenue. The improvements include sidewalks of 2 metres wide on both sides of Ninth Line separated by approximately 3 to 5.5 metres of boulevard on the west side, and 3 to 18 metres of boulevards on the east side. Cycling tracks of 2 metres wide are also proposed on both sides, 1 metre away from the curb and gutter.

6.1 Pedestrian Level of Service (PLOS)

A PLOS analysis evaluates the pedestrian comfort, safety and convenience of pedestrian facilities at the user level. The PLOS methodology is based on the City of Ottawa's Multimodal Level of Service (MMLOS) Analysis Guidelines (2015). PLOS is calculated at the intersection and midblock locations to recognize the differences in experience a pedestrian may experience at both types of locations.

6.1.1 PLOS Methodology

Segment PLOS evaluation uses a look-up table approach based on considerations such as cross-section and roadway characteristics. Characteristics include sidewalk and boulevard widths, traffic volumes, presence of on-street parking, and posted speeds. Higher segment scores are characterized by locations where lower vehicle speeds, lower volumes, wider sidewalks, and larger boulevards with ample separation from moving traffic are present. Lower segment scores are observed in locations where high vehicle speeds, narrow sidewalks, and minimal separation from traffic are present.

Intersection PLOS uses the Pedestrian Exposure to Traffic at Signalized Intersections (PETSI) and assigns points based on a number of crossing characteristics (e.g., crossing distance, presence of a median, presence of a crossing refuge, turning restrictions, right hand turn characteristics, curb radii, etc.). The score of each intersection approach is averaged to determine the overall intersection PLOS. The City of Ottawa MMLOS guidelines only provides directions regarding the evaluation of signalized intersections, not unsignalized intersections.

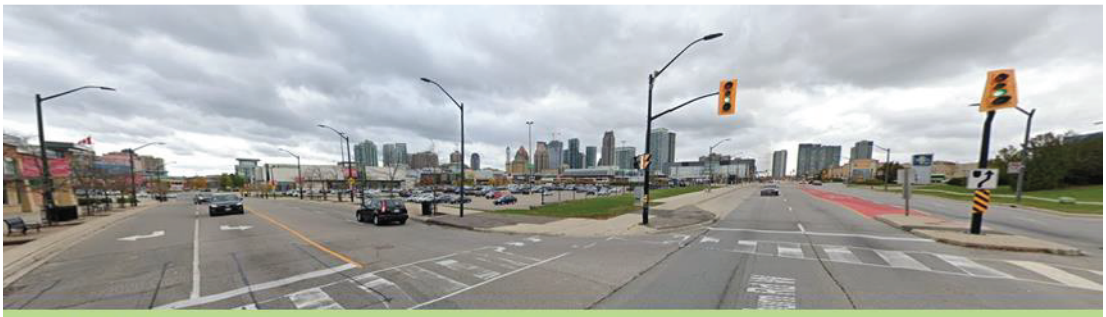
As the Ninth Line EA study area contains context-specific elements such as unsignalized intersections, certain modifications and assumptions have been made to adapt the Ottawa methodology to the study area. These revisions include:

- Understanding that stop / yield controlled intersections affect the pedestrian experience the same way a "permissive" signalized movement does, such as when a right-turn-on-red is allowed and a green is permissive. Because the turn is allowed based on driver judgment, pedestrians will feel less safe where a car is waiting to make the turn in their vicinity.

The inputs for the PLOS are summarized in **Exhibit 6-1**.



PLOS A: City Centre Dr at Duke of York Blvd, City of Mississauga



PLOS C: Rathburn Rd at Hammerson Dr, City of Mississauga



PLOS F: Hurontario St at Square One Dr, City of Mississauga

Exhibit 6-3: Intersection PLOS Examples

Source: Google Streetview

6.1.2 PLOS Results

Future intersection and segment PLOS based on the Preferred Alternative is summarized in **Table 6-1** and **Table 6-2**.

Table 6-1. Future Intersection PLOS

North-South Street	East-West Street	Future PLOS
Ninth Line	Derry Road	**E**
	Beacham Street	**C**
	Street B North	**D**

North-South Street	East-West Street	Future PLOS
	Doug Leavens Boulevard / Street F	C
	Street C	C
	Foxwood Avenue / Street B South	C
	Osprey Boulevard / Street A	C
	Britannia Road	E
	McDowell Drive	C
	Thomas Street	D
	Tacc Drive	C
	Erin Centre Boulevard	D
	Site Access	D
	Skyview Street	D
	Eglinton Avenue	E

Table 6-2. Future Segment PLOS

Segment	From	To	West Side	East Side
Segment 1	Derry Avenue	Lisgar Neighbourhood Square Access	B	B
Segment 2	Lisgar Neighbourhood Square Access	Doug Leavens Boulevard	B	B
Segment 3	Doug Leavens Boulevard	Osprey Boulevard	B	C
Segment 4	Osprey Boulevard	North end of Osprey Marsh (240m N of Parkgate Drive)	C	B
Segment 5	North end of Osprey Marsh (240m N of Parkgate Drive)	Parkgate Drive	B	B
Segment 6	Parkgate Drive	Brittania Road	C	B
Segment 7	Brittania Road	Thomas Street	B	B
Segment 8	Thomas Street	Deepwood Heights	B	B
Segment 9	Deepwood Heights	Tacc Drive	C	B
Segment 10	Tacc Drive	35m South of Tacc Drive	B	B
Segment 11	35m South of Tacc Drive	130m North of Janice Drive	B	B
Segment 12	130m North of Janice Drive	Janice Drive	B	B

Segment	From	To	West Side	East Side
Segment 13	Janice Drive	Henrietta Way	**B**	**B**
Segment 14	Henrietta Way	Mayla Drive	**B**	**B**
Segment 15	Mayla Drive	Erin Centre Boulevard	**B**	**B**
Segment 16	Erin Centre Boulevard	Quiet Creek Drive (North Portion)	**B**	**C**
Segment 17	Quiet Creek Drive (North Portion)	Skyview Street	**B**	**B**
Segment 18	Skyview Street	Stardust Drive	**B**	**B**
Segment 19	Stardust Drive	133m North of Eglinton Avenue	**B**	**B**
Segment 20	133m North of Eglinton Avenue	Eglinton Avenue	**B**	**B**

Intersection PLOS results indicate intersections along Ninth Line will operate at LOS C to E in the future preferred alternative, compared to LOS B to E under existing conditions. Results have not changed significantly, as the LOS B captured in existing conditions only reflects one intersection at Foxwood Avenue. Contributing factors to the scoring despite future proposed changes include additional through lanes from the Ninth Line widening, turning lanes to accommodate critical movements, and new approaches at existing intersections due to future developments west of Ninth Line. To further improve pedestrian conditions, it is recommended the detailed design considers measures such as reducing curb radii, providing high-visibility/tactile markings at crosswalks, and including items such as medians, curb extensions, and bollards.

Segment PLOS results operate at LOS B to C along both sides of Ninth Line for the future preferred alternative, compared to LOS F on the west side and LOS B to F on the east side under existing conditions. The provision of a dedicated pedestrian facility on the west side of Ninth Line to serve the new developments is a key contributor to the score improvement. Other proposed characteristics that improve the scoring on both sides of the corridor include consistent 2 meter sidewalks, wide boulevards (3 to 18 metres) separating the sidewalk from road traffic, and reduced posted speeds along the corridor.

6.2 Biking Level of Service (BLOS)

Similar to the PLOS analysis, the BLOS also used the City of MMLOS Analysis Guidelines (2015). The facilities are assessed using considerations such as user comfort, safety, and convenience. BLOS is calculated both at the intersection and mid-block in recognition that a cyclist's experience is determined by the conditions both between crossings and at the crossing itself.

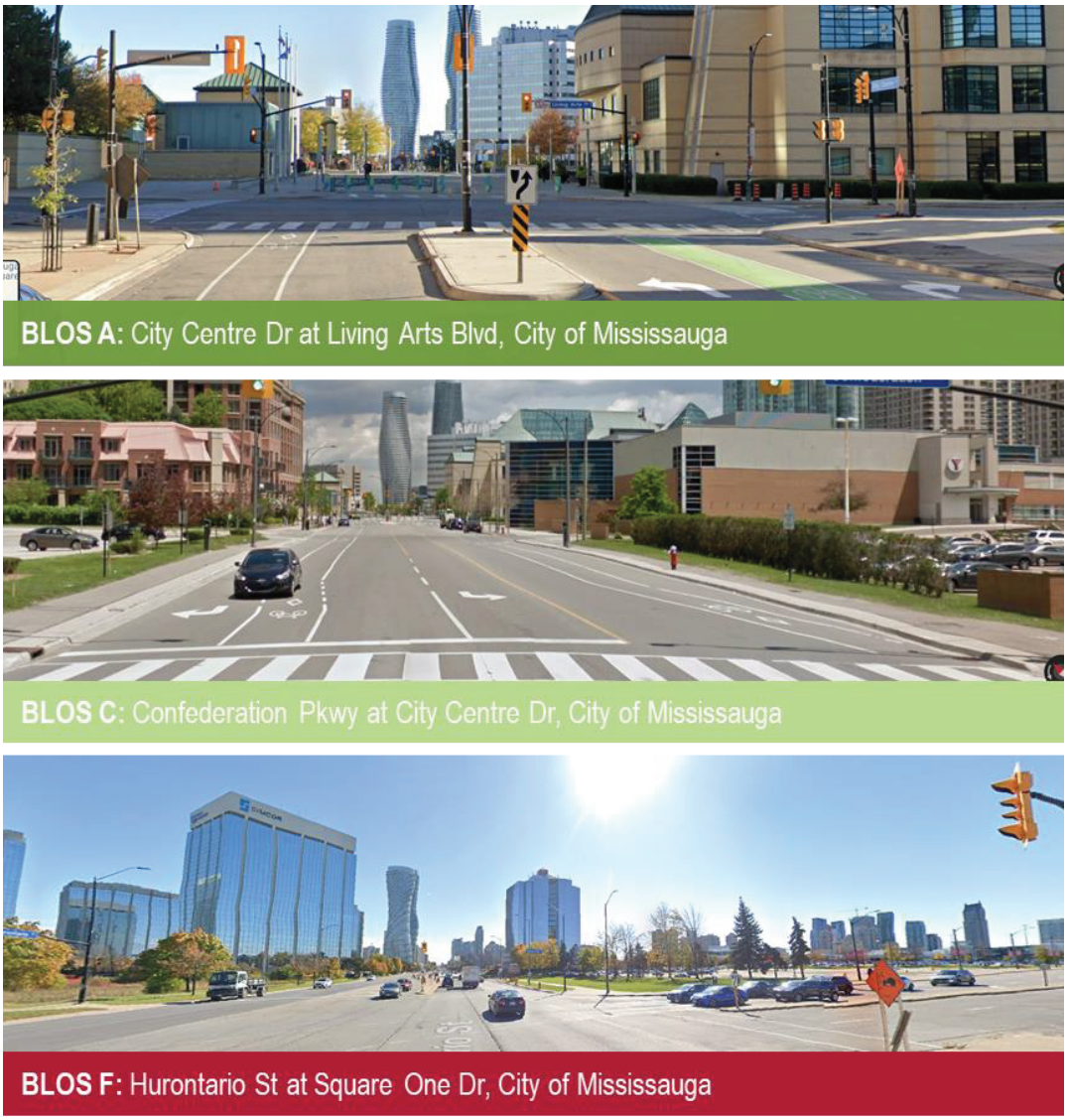


Exhibit 6-5: Intersection BLOS Examples
Source: Google Streetview

6.2.2 BLOS Results

Future intersection and segment BLOS based on the preferred design is summarized in **Table 6-3** and **Table 6-4**.

Table 6-3. Future Intersection BLOS

N-S street	E-W street	Future BLOS
Ninth Line	Derry Road	C
	Beacham Street	B
	Street B North	B
	Doug Leavens Boulevard / Street F	C
	Street C	B

N-S street	E-W street	Future BLOS
	Foxwood Avenue / Street B South	B
	Osprey Boulevard / Street A	C
	Britannia Road	C
	McDowell Drive	B
	Thomas Street	B
	Tacc Drive	B
	Erin Centre Boulevard	B
	Site Access	B
	Skyview Street	C
	Eglinton Avenue	D

Table 6-4. Future Segment BLOS

Segment	From	To	West side	East side
Segment 1	Derry Avenue	Lisgar Neighbourhood Square Access	A	A
Segment 2	Lisgar Neighbourhood Square Access	Doug Leavens Boulevard	A	A
Segment 3	Doug Leavens Boulevard	Osprey Boulevard	A	A
Segment 4	Osprey Boulevard	North end of Osprey Marsh (240m N of Parkgate Drive)	A	A
Segment 5	North end of Osprey Marsh (240m N of Parkgate Drive)	Parkgate Drive	A	A
Segment 6	Parkgate Drive	Brittania Road	A	A
Segment 7	Brittania Road	Thomas Street	A	A
Segment 8	Thomas Street	Deepwood Heights	A	A
Segment 9	Deepwood Heights	Tacc Drive	A	A
Segment 10	Tacc Drive	35m South of Tacc Drive	A	A
Segment 11	35m South of Tacc Drive	130m North of Janice Drive	A	A
Segment 12	130m North of Janice Drive	Janice Drive	A	A
Segment 13	Janice Drive	Henrietta Way	A	A
Segment 14	Henrietta Way	Mayla Drive	A	A

Segment	From	To	West side	East side
Segment 15	Mayla Drive	Erin Centre Boulevard	**A**	**A**
Segment 16	Erin Centre Boulevard	Quiet Creek Drive (North Portion)	**A**	**A**
Segment 17	Quiet Creek Drive (North Portion)	Skyview Street	**A**	**A**
Segment 18	Skyview Street	Stardust Drive	**A**	**A**
Segment 19	Stardust Drive	133m North of Eglinton Avenue	**A**	**A**
Segment 20	133m North of Eglinton Avenue	Eglinton Avenue	**A**	**A**

Intersection BLOS results indicate intersections along Ninth Line will operate at LOS B to D in the future preferred alternative, compared to LOS D to E in the existing conditions. Results have improved at all intersections along the corridor primarily due to the provision of shared protected pedestrian and cycling cross-rides to accommodate left turns.

Segment BLOS results indicate operations of LOS A along both sides of Ninth Line for the future preferred alternative, compared to primarily LOS F in the existing conditions. The 2-metre wide dedicated cycling facility and reduced posted speeds both contribute to the improved scoring.

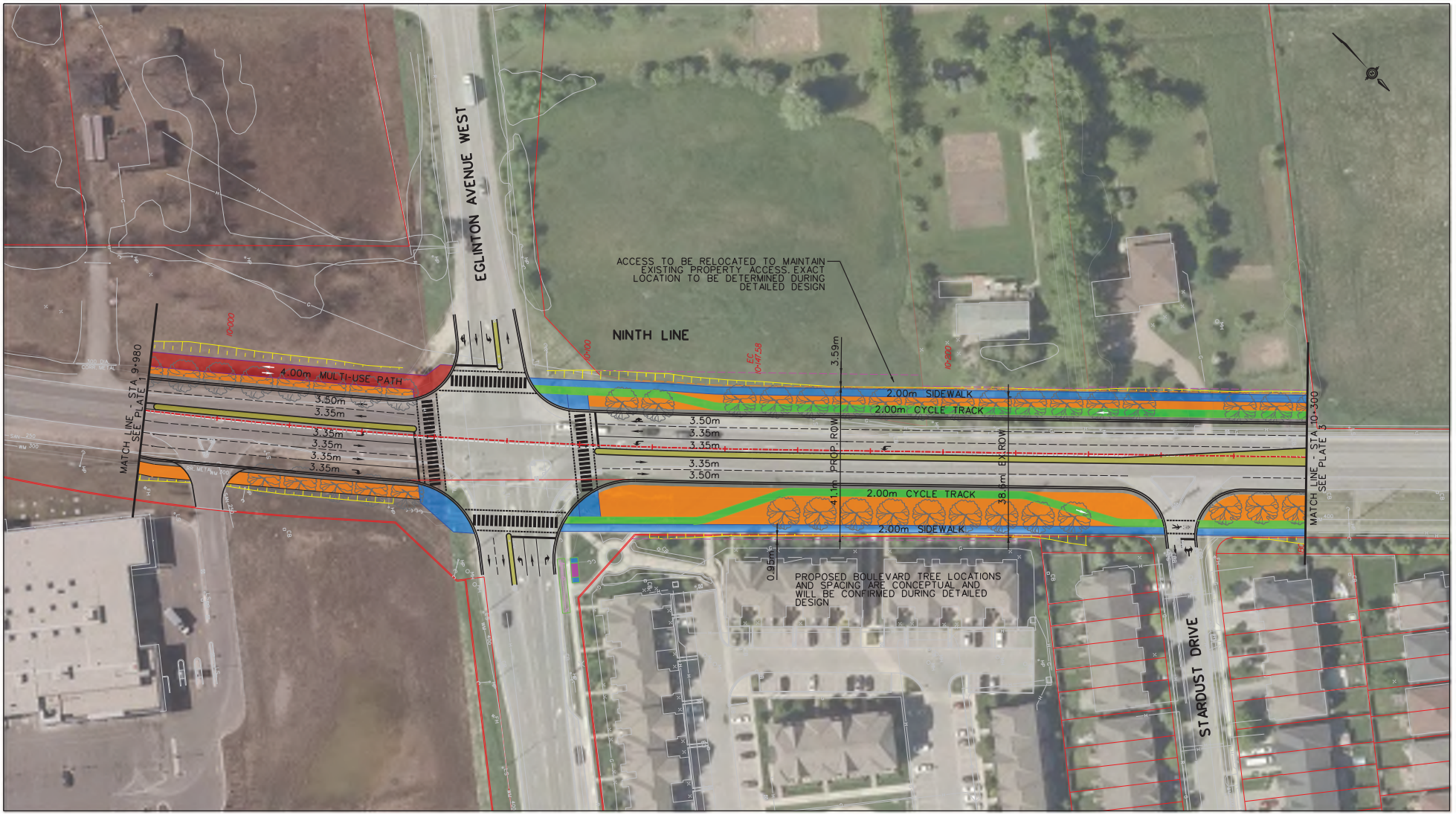
7 Conclusions

7.1 Signal Warrant Analysis

Signal warrant analyses were conducted for several locations along Ninth Line, including any unsignalized intersections of major collectors and access driveways for new developments. The warrant followed the criteria outlined in *Ontario Traffic Manual – Book 12 Traffic Signals, March 2012* (OTM Book 12). Ninth Line at Beacham Street and at Tacc Drive both warrant signalization based on 4-hour volumes. The McDowell Drive intersection did not warrant signalization based on OTM Book 12 methodology; however, signalization is recommended due to high volumes and delays experienced on side streets during the PM peak hour. It is noted the signal at Tacc Drive is required by 2031 whereas the signal at McDowell Drive is required by 2041.

7.2 Traffic Operations

Analysis for both 2031 and 2041 horizon years under all 3 future scenarios show traffic operations at the major intersections of Derry Road, Britannia Road, and Eglinton Avenue operate at or near capacity during the AM and PM peak hours, with LOS ‘E’ or ‘F’ and multiple critical movements, especially for exclusive turning movements. Other intersections (including minor intersections and Highway 407 ramps) have some critical movements but operate below capacity. Travel demand management (TDM) should be provided to support growth along Ninth Line and relieve the



NOTE: PROPOSED BOULEVARD TREE LOCATIONS AND SPACING ARE CONCEPTUAL AND WILL BE CONFIRMED DURING DETAILED DESIGN

LEGEND

- PROPOSED CENTRELINE
- PROPOSED RIGHT-OF-WAY (ROW)
- PROPOSED SIDEWALK
- PROPOSED CYCLE TRACK
- PROPOSED MULTI-USE PATH (MUP)
- PROPOSED GRADING LIMIT
- PROPOSED GRADING
- PROPOSED CURB
- PROPOSED DAYLIGHTING
- PROPOSED BOULEVARD
- PROPOSED BUS STOPS
- PROPSOED RAISED MEDIAN
- EXISTING CENTRELINE
- EXISTING PROPERTY LINE
- EXISTING WATERCOURSE
- EXISTING REGIONAL FLOODPLAIN SPILL

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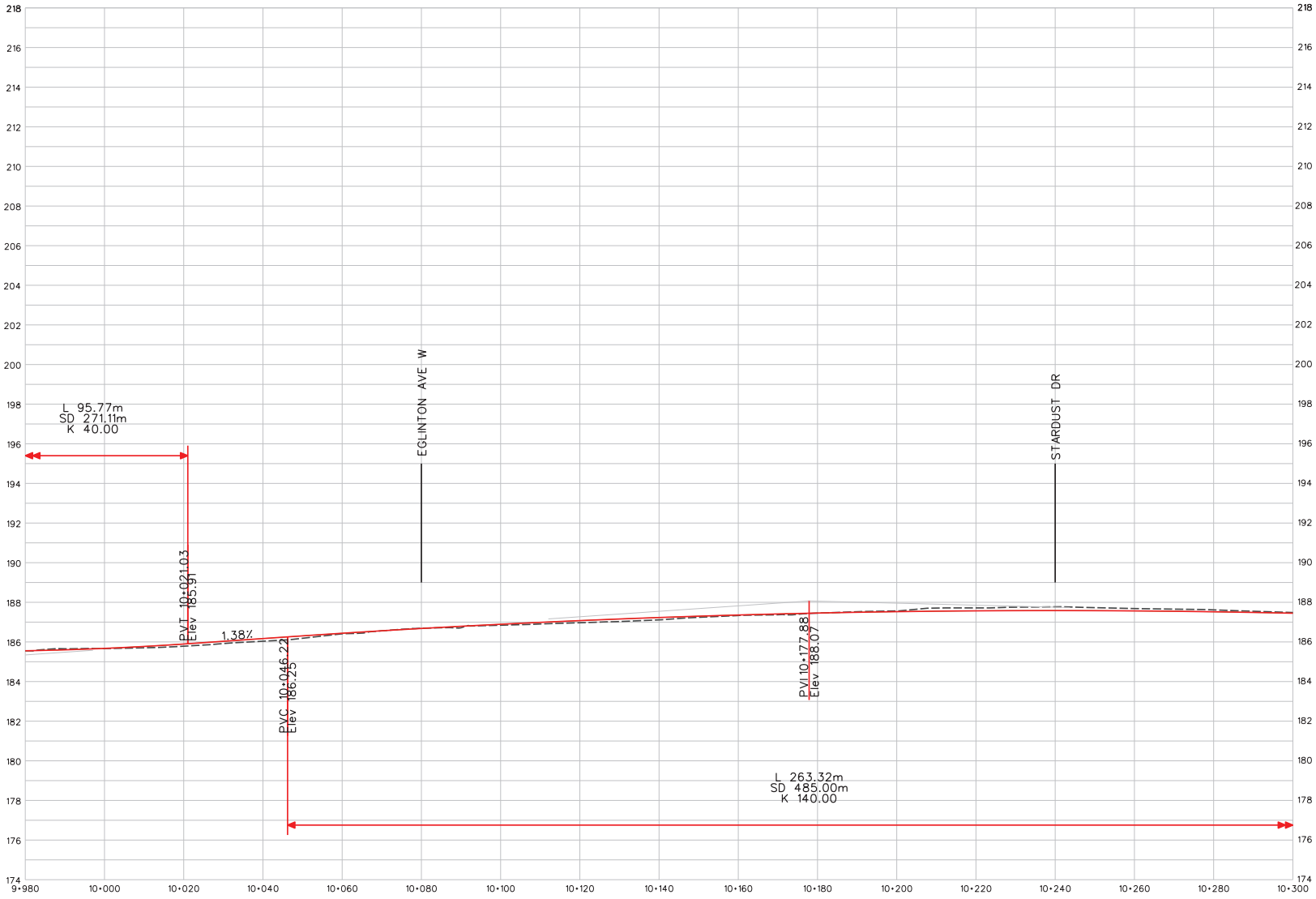
NINTH LINE IMPROVEMENTS
(EGLINTON AVE W TO DERRY RD W)
ENVIRONMENTAL ASSESSMENT
PLAN

9+980 TO 10+300

PLAN NO. P-02

SCALE H 1:1000

DATE JUNE 2021



LEGEND

PROPOSED PROFILE

EXISTING GROUND

HDR

MISSISSAUGA

NINTH LINE IMPROVEMENTS
(EGLINTON AVE W TO DERRY RD W)
ENVIRONMENTAL ASSESSMENT
PROFILE

9+980 TO 10+300

PLAN NO.
PF-02

SCALE
H 1:1000
V 1:100

DATE
JUNE 2021



NOTE: PROPOSED BOULEVARD TREE LOCATIONS AND SPACING ARE CONCEPTUAL AND WILL BE CONFIRMED DURING DETAILED DESIGN

LEGEND

- PROPOSED CENTRELINE
- PROPOSED RIGHT-OF-WAY (ROW)
- PROPOSED SIDEWALK
- PROPOSED CYCLE TRACK
- PROPOSED MULTI-USE PATH (MUP)
- PROPOSED GRADING LIMIT
- PROPOSED GRADING
- PROPOSED CURB
- PROPOSED DAYLIGHTING
- PROPOSED BOULEVARD
- PROPOSED BUS STOPS
- PROPSOED RAISED MEDIAN
- EXISTING CENTRELINE
- EXISTING PROPERTY LINE
- EXISTING WATERCOURSE
- EXISTING REGIONAL FLOODPLAIN SPILL

HDR

MISSISSAUGA

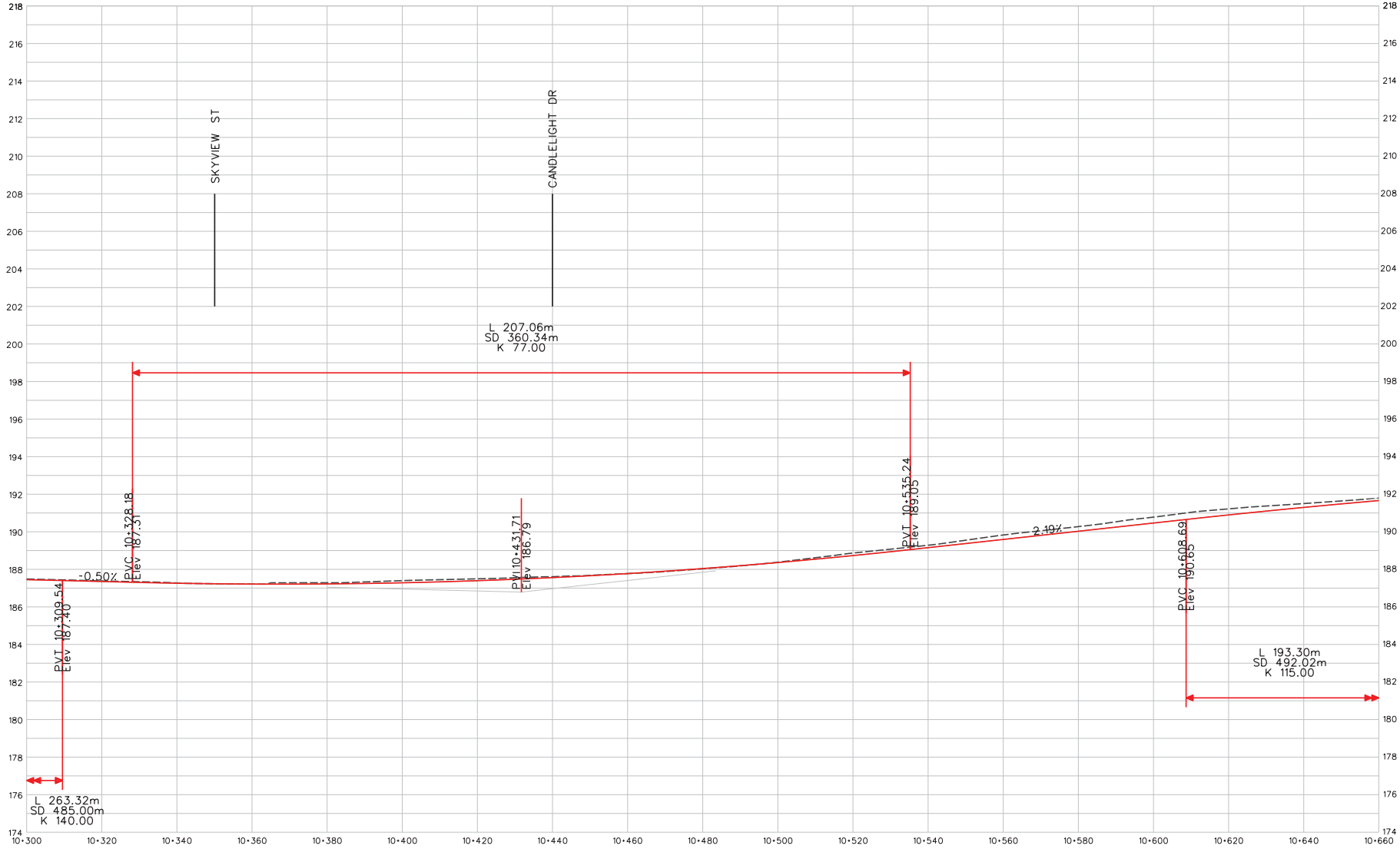
NINTH LINE IMPROVEMENTS (EGLINTON AVE W TO DERRY RD W) ENVIRONMENTAL ASSESSMENT PLAN

10+300 TO 10+660

PLAN NO. P-03

SCALE H 1:1000

DATE JUNE 2021



LEGEND

PROPOSED PROFILE

EXISTING GROUND

HDR

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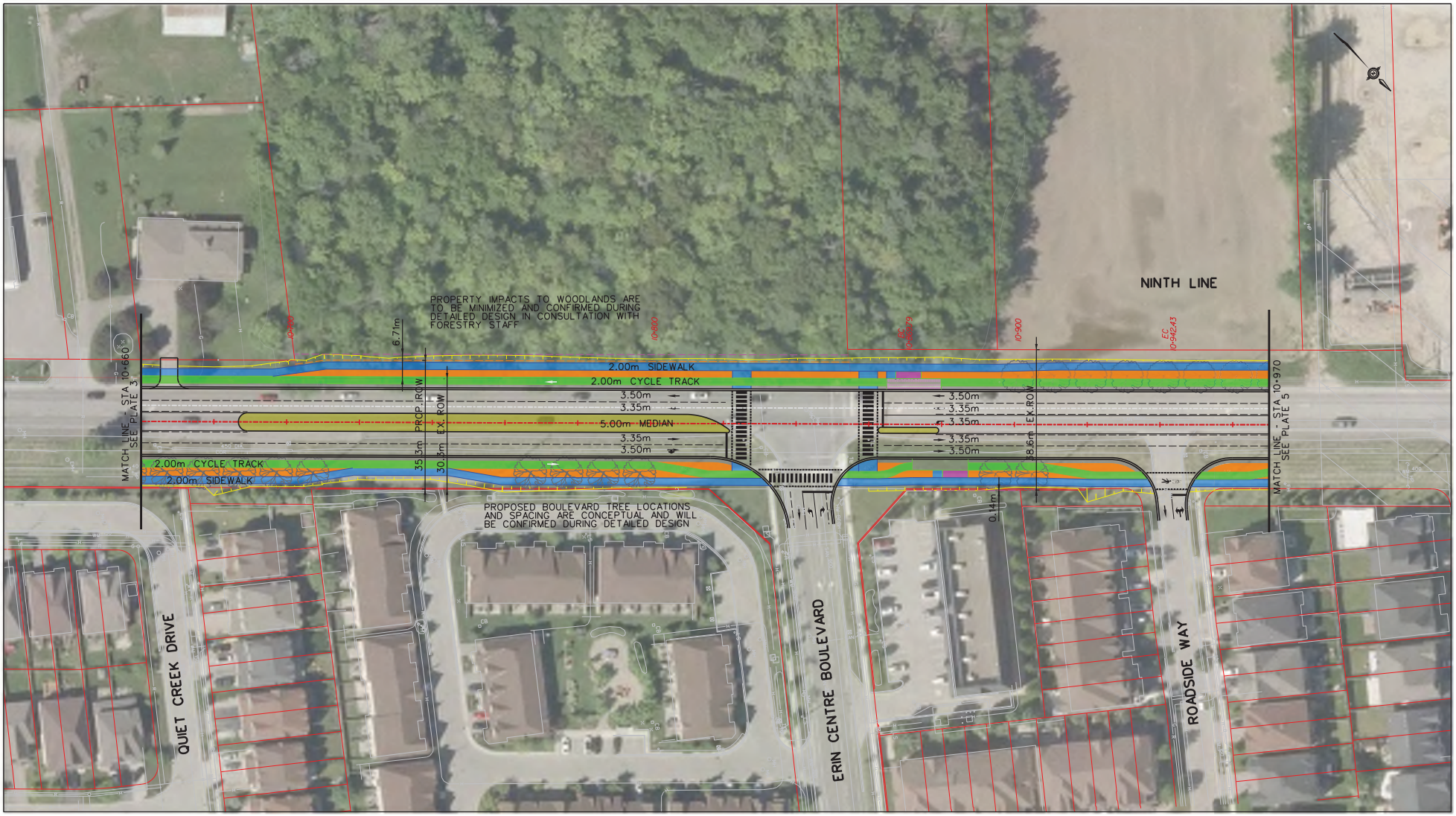
NINTH LINE IMPROVEMENTS
(EGLINTON AVE W TO DERRY RD W)
ENVIRONMENTAL ASSESSMENT
PROFILE

10+300 TO 10+660

PLAN NO.
PF-03

SCALE
H 1:1000
V 1:100

DATE
JUNE 2021



NOTE: PROPOSED BOULEVARD TREE LOCATIONS AND SPACING ARE CONCEPTUAL AND WILL BE CONFIRMED DURING DETAILED DESIGN

LEGEND

- PROPOSED CENTRELINE
- PROPOSED RIGHT-OF-WAY (ROW)
- PROPOSED SIDEWALK
- PROPOSED CYCLE TRACK
- PROPOSED MULTI-USE PATH (MUP)
- PROPOSED GRADING LIMIT
- PROPOSED GRADING
- PROPOSED CURB
- PROPOSED DAYLIGHTING
- PROPOSED BOULEVARD
- PROPOSED BUS STOPS
- PROPSOED RAISED MEDIAN
- EXISTING CENTRELINE
- EXISTING PROPERTY LINE
- EXISTING WATERCOURSE
- EXISTING REGIONAL FLOODPLAIN SPILL

HDR | MISSISSAUGA

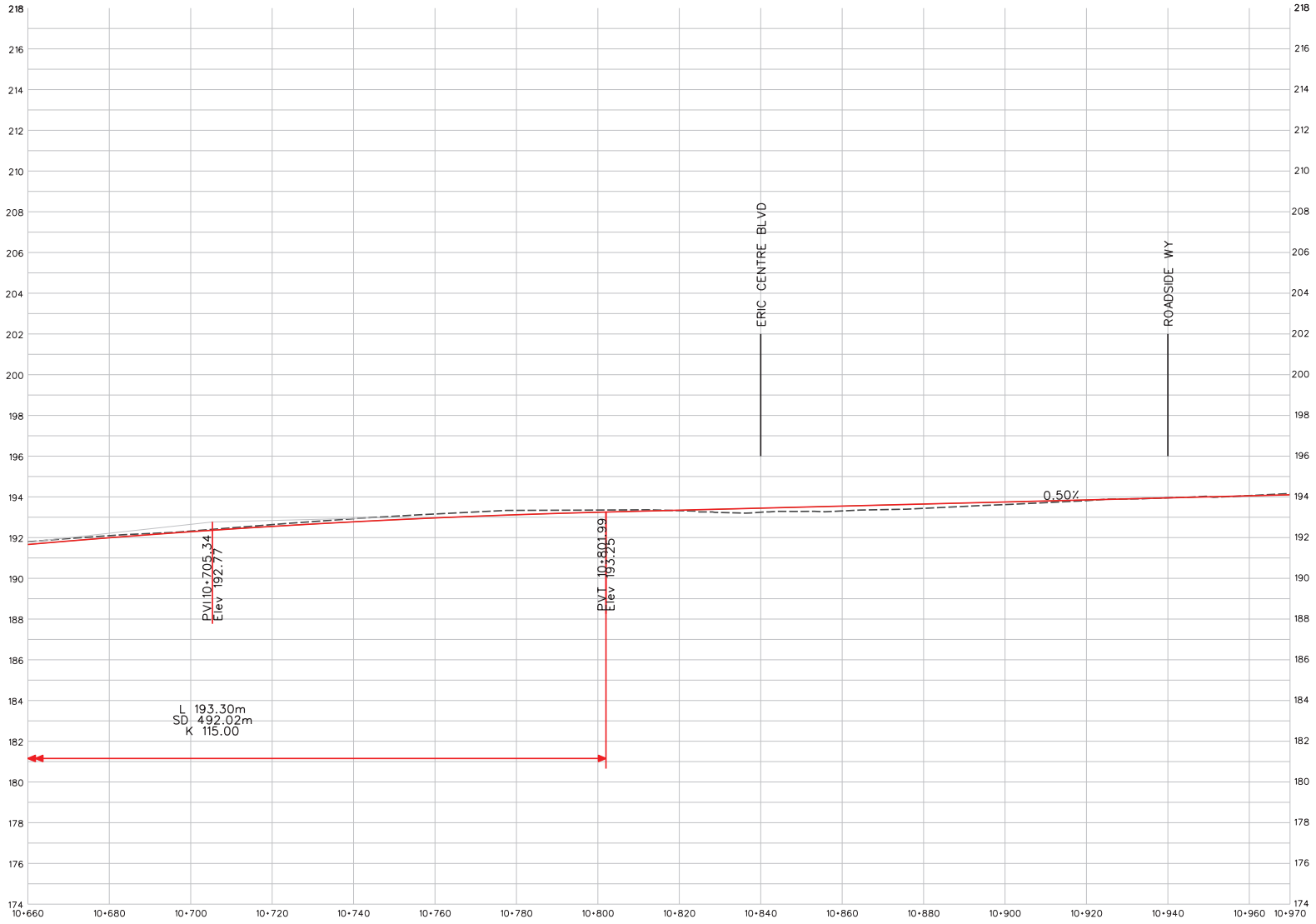
NINTH LINE IMPROVEMENTS
(EGLINTON AVE W TO DERRY RD W)
ENVIRONMENTAL ASSESSMENT
PLAN

10+660 TO 10+970

PLAN NO. P-04

SCALE H 1:1000

DATE JUNE 2021



LEGEND

PROPOSED PROFILE

EXISTING GROUND

HDR

MISSISSAUGA

NINTH LINE IMPROVEMENTS
(EGLINTON AVE W TO DERRY RD W)
ENVIRONMENTAL ASSESSMENT
PROFILE

10+660 TO 10+970

PLAN NO.
PF-04

SCALE
H 1:1000
V 1:100

DATE
JUNE 2021

Appendix E

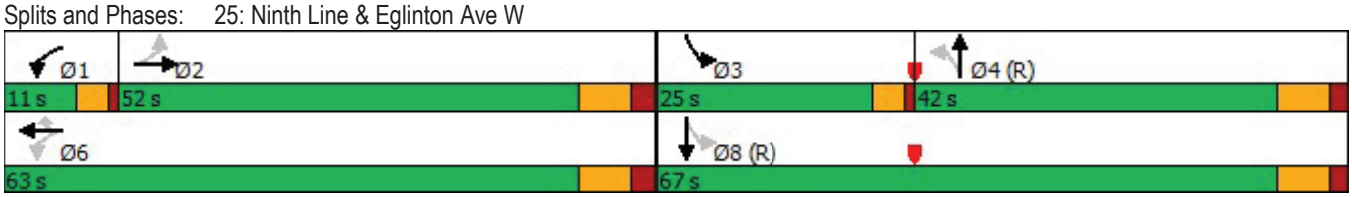
Your Homes Analysis – Updated Analysis (Case B Preferred)

Timings
25: Ninth Line & Eglinton Ave W

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	38	612	99	264	256	28	856	400	1316
Future Volume (vph)	38	612	99	264	256	28	856	400	1316
Turn Type	Perm	NA	pm+pt	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		2	1	6			4	3	8
Permitted Phases	2		6		6	4		8	
Detector Phase	2	2	1	6	6	4	4	3	8
Switch Phase									
Minimum Initial (s)	8.0	8.0	7.0	8.0	8.0	8.0	8.0	7.0	8.0
Minimum Split (s)	32.5	32.5	11.0	32.5	32.5	40.0	40.0	11.0	40.0
Total Split (s)	52.0	52.0	11.0	63.0	63.0	42.0	42.0	25.0	67.0
Total Split (%)	40.0%	40.0%	8.5%	48.5%	48.5%	32.3%	32.3%	19.2%	51.5%
Yellow Time (s)	5.0	5.0	3.0	5.0	5.0	5.0	5.0	3.0	5.0
All-Red Time (s)	2.5	2.5	1.0	2.5	2.5	2.0	2.0	1.0	2.0
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	7.0	7.0	4.0	7.0
Lead/Lag	Lag	Lag	Lead			Lag	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes			Yes	Yes	Yes	
Recall Mode	Max	Max	None	Max	Max	C-Max	C-Max	None	C-Max
Act Effct Green (s)	44.5	44.5	59.0	55.5	55.5	35.0	35.0	63.0	60.0
Actuated g/C Ratio	0.34	0.34	0.45	0.43	0.43	0.27	0.27	0.48	0.46
v/c Ratio	0.11	1.16	0.65	0.33	0.33	0.82	1.08	1.19	0.84
Control Delay	30.4	127.6	41.3	26.4	3.9	155.2	98.2	136.7	33.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.4	127.6	41.3	26.4	3.9	155.2	98.2	136.7	33.1
LOS	C	F	D	C	A	F	F	F	C
Approach Delay		122.8		19.4			99.8		56.3
Approach LOS		F		B			F		E

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 64 (49%), Referenced to phase 4:NBTL and 8:SBTL, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.19	
Intersection Signal Delay: 73.8	Intersection LOS: E
Intersection Capacity Utilization 114.9%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 25: Ninth Line & Eglinton Ave W





Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	38	735	99	264	256	28	1006	400	1386
v/c Ratio	0.11	1.16	0.65	0.33	0.33	0.82	1.08	1.19	0.84
Control Delay	30.4	127.6	41.3	26.4	3.9	155.2	98.2	136.7	33.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.4	127.6	41.3	26.4	3.9	155.2	98.2	136.7	33.1
Queue Length 50th (m)	6.1	~204.5	13.3	40.9	0.0	6.2	~138.3	~101.1	135.4
Queue Length 95th (m)	13.8	#273.2	#29.2	60.5	14.3	#24.4	#176.8 m	#150.6	163.1
Internal Link Dist (m)		373.3		388.7			291.0		251.0
Turn Bay Length (m)	20.0		35.0			65.0		65.0	
Base Capacity (vph)	358	633	153	796	778	34	930	337	1642
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	0.11	1.16	0.65	0.33	0.33	0.82	1.08	1.19	0.84

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)	38	612	123	99	264	256	28	856	150	400	1316	70
Future Volume (vph)	38	612	123	99	264	256	28	856	150	400	1316	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	7.5	7.5		4.0	7.5	7.5	7.0	7.0		4.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1668	1834		1733	1865	1479	1069	3416		1716	3555	
Flt Permitted	0.60	1.00		0.08	1.00	1.00	0.11	1.00		0.10	1.00	
Satd. Flow (perm)	1047	1834		150	1865	1479	129	3416		185	3555	
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)	38	612	123	99	264	256	28	856	150	400	1316	70
RTOR Reduction (vph)	0	5	0	0	0	147	0	11	0	0	3	0
Lane Group Flow (vph)	38	730	0	99	264	109	28	995	0	400	1383	0
Confl. Peds. (#/hr)			2	2					2	2		
Heavy Vehicles (%)	7%	1%	6%	3%	3%	8%	67%	5%	0%	4%	2%	0%
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		2		1	6			4		3	8	
Permitted Phases	2			6		6	4			8		
Actuated Green, G (s)	44.5	44.5		55.5	55.5	55.5	35.0	35.0		60.0	60.0	
Effective Green, g (s)	44.5	44.5		55.5	55.5	55.5	35.0	35.0		60.0	60.0	
Actuated g/C Ratio	0.34	0.34		0.43	0.43	0.43	0.27	0.27		0.46	0.46	
Clearance Time (s)	7.5	7.5		4.0	7.5	7.5	7.0	7.0		4.0	7.0	
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)	358	627		149	796	631	34	919		332	1640	
v/s Ratio Prot		c0.40		c0.04	0.14			0.29		c0.19	0.39	
v/s Ratio Perm	0.04			0.25		0.07	0.22			c0.36		
v/c Ratio	0.11	1.16		0.66	0.33	0.17	0.82	1.08		1.20	0.84	
Uniform Delay, d1	29.2	42.8		30.7	24.9	23.1	44.6	47.5		40.7	30.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.06	0.95	
Incremental Delay, d2	0.6	90.4		10.6	1.1	0.6	105.9	54.7		108.5	3.4	
Delay (s)	29.8	133.1		41.3	26.0	23.6	150.5	102.2		151.7	32.7	
Level of Service	C	F		D	C	C	F	F		F	C	
Approach Delay (s)		128.0			27.5			103.5			59.4	
Approach LOS		F			C			F			E	

Intersection Summary			
HCM 2000 Control Delay	78.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	22.5
Intersection Capacity Utilization	114.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Timings
61: Ninth Line & Street B/Skyview St

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	116	5	5	5	100	1081	2	1718
Future Volume (vph)	116	5	5	5	100	1081	2	1718
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	23.0	23.0	23.0	23.0	42.0	42.0	42.0	42.0
Total Split (%)	35.4%	35.4%	35.4%	35.4%	64.6%	64.6%	64.6%	64.6%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	15.4	15.4	15.4	15.4	40.6	40.6	40.6	40.6
Actuated g/C Ratio	0.24	0.24	0.24	0.24	0.62	0.62	0.62	0.62
v/c Ratio	0.36	0.75	0.03	0.04	0.88	0.50	0.01	0.81
Control Delay	22.8	33.7	17.6	11.4	65.8	9.2	1.5	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.8	33.7	17.6	11.4	65.8	9.2	1.5	7.3
LOS	C	C	B	B	E	A	A	A
Approach Delay		30.6		12.8		14.0		7.3
Approach LOS		C		B		B		A

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 12.5	Intersection LOS: B
Intersection Capacity Utilization 83.5%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 61: Ninth Line & Street B/Skyview St



61: Ninth Line & Street B/Skyview St



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	116	290	5	17	100	1083	2	1760
v/c Ratio	0.36	0.75	0.03	0.04	0.88	0.50	0.01	0.81
Control Delay	22.8	33.7	17.6	11.4	65.8	9.2	1.5	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.8	33.7	17.6	11.4	65.8	9.2	1.5	7.3
Queue Length 50th (m)	10.5	27.3	0.4	0.4	15.3	49.8	0.0	9.7
Queue Length 95th (m)	21.0	47.0	2.4	3.9	m#21.7	m54.1	m0.0	#13.8
Internal Link Dist (m)		103.3		105.5		251.0		172.9
Turn Bay Length (m)					15.0		15.0	
Base Capacity (vph)	391	460	205	477	113	2186	252	2179
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	0.30	0.63	0.02	0.04	0.88	0.50	0.01	0.81

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)	116	5	285	5	5	12	100	1081	2	2	1718	42
Future Volume (vph)	116	5	285	5	5	12	100	1081	2	2	1718	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.85		1.00	0.89		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	1571		1750	1647		1750	3499		1750	3487	
Flt Permitted	0.75	1.00		0.39	1.00		0.10	1.00		0.22	1.00	
Satd. Flow (perm)	1375	1571		723	1647		181	3499		405	3487	
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)	116	5	285	5	5	12	100	1081	2	2	1718	42
RTOR Reduction (vph)	0	14	0	0	9	0	0	0	0	0	2	0
Lane Group Flow (vph)	116	276	0	5	8	0	100	1083	0	2	1758	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	15.4	15.4		15.4	15.4		40.6	40.6		40.6	40.6	
Effective Green, g (s)	15.4	15.4		15.4	15.4		40.6	40.6		40.6	40.6	
Actuated g/C Ratio	0.24	0.24		0.24	0.24		0.62	0.62		0.62	0.62	
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	325	372		171	390		113	2185		252	2178	
v/s Ratio Prot		c0.18			0.00			0.31			0.50	
v/s Ratio Perm	0.08			0.01			c0.55			0.00		
v/c Ratio	0.36	0.74		0.03	0.02		0.88	0.50		0.01	0.81	
Uniform Delay, d1	20.7	23.0		19.1	19.0		10.2	6.6		4.6	9.2	
Progression Factor	1.00	1.00		1.00	1.00		2.27	1.24		0.26	0.37	
Incremental Delay, d2	0.7	7.7		0.1	0.0		35.4	0.4		0.0	2.6	
Delay (s)	21.3	30.7		19.1	19.0		58.7	8.6		1.2	6.0	
Level of Service	C	C		B	B		E	A		A	A	
Approach Delay (s)		28.0			19.1			12.8			6.0	
Approach LOS		C			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	11.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	83.5%	ICU Level of Service	E
Analysis Period (min)	15		

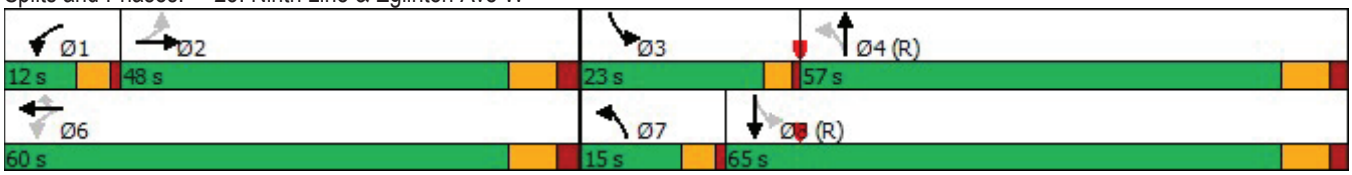
c Critical Lane Group

Timings
25: Ninth Line & Eglinton Ave W

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	54	562	154	728	538	110	1244	374	1042
Future Volume (vph)	54	562	154	728	538	110	1244	374	1042
Turn Type	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		2	1	6		7	4	3	8
Permitted Phases	2		6		6	4		8	
Detector Phase	2	2	1	6	6	7	4	3	8
Switch Phase									
Minimum Initial (s)	8.0	8.0	7.0	8.0	8.0	7.0	8.0	7.0	8.0
Minimum Split (s)	32.5	32.5	11.5	32.5	32.5	11.5	40.0	11.0	40.0
Total Split (s)	48.0	48.0	12.0	60.0	60.0	15.0	57.0	23.0	65.0
Total Split (%)	34.3%	34.3%	8.6%	42.9%	42.9%	10.7%	40.7%	16.4%	46.4%
Yellow Time (s)	5.0	5.0	3.5	5.0	5.0	3.5	5.0	3.0	5.0
All-Red Time (s)	2.5	2.5	1.0	2.5	2.5	1.0	2.0	1.0	2.0
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	4.5	7.5	7.5	4.5	7.0	4.0	7.0
Lead/Lag	Lag	Lag	Lead			Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes			Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	40.5	40.5	55.5	52.5	52.5	62.9	50.0	76.0	58.1
Actuated g/C Ratio	0.29	0.29	0.40	0.38	0.38	0.45	0.36	0.54	0.42
v/c Ratio	1.08	1.15	1.04	1.04	0.76	0.80	1.18	1.30	0.74
Control Delay	199.3	130.4	117.4	87.7	27.3	60.2	129.1	183.2	31.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	199.3	130.4	117.4	87.7	27.3	60.2	129.1	183.2	31.1
LOS	F	F	F	F	C	E	F	F	C
Approach Delay		135.9		68.0			124.3		69.9
Approach LOS		F		E			F		E

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 25 (18%), Referenced to phase 4:NBTL and 8:SBTL, Start of Green	
Natural Cycle: 140	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.30	
Intersection Signal Delay: 94.7	Intersection LOS: F
Intersection Capacity Utilization 128.4%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 25: Ninth Line & Eglinton Ave W





Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	54	622	154	728	538	110	1452	374	1091
v/c Ratio	1.08	1.15	1.04	1.04	0.76	0.80	1.18	1.30	0.74
Control Delay	199.3	130.4	117.4	87.7	27.3	60.2	129.1	183.2	31.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	199.3	130.4	117.4	87.7	27.3	60.2	129.1	183.2	31.1
Queue Length 50th (m)	~15.3	~185.5	~27.1	~200.2	66.6	13.9	~232.4	~110.3	104.9
Queue Length 95th (m)	#41.7	#252.6	#69.0	#268.9	110.6	#40.9	#272.2	m#136.0	m123.2
Internal Link Dist (m)		373.3		388.7			291.0		251.3
Turn Bay Length (m)	20.0		35.0			65.0		65.0	
Base Capacity (vph)	50	542	148	699	712	139	1231	287	1478
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	1.08	1.15	1.04	1.04	0.76	0.79	1.18	1.30	0.74

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)	54	562	60	154	728	538	110	1244	208	374	1042	49
Future Volume (vph)	54	562	60	154	728	538	110	1244	208	374	1042	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	7.5	7.5		4.5	7.5	7.5	4.5	7.0		4.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1668	1863		1733	1865	1479	1069	3418		1716	3558	
Flt Permitted	0.10	1.00		0.09	1.00	1.00	0.14	1.00		0.07	1.00	
Satd. Flow (perm)	173	1863		162	1865	1479	157	3418		134	3558	
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)	54	562	60	154	728	538	110	1244	208	374	1042	49
RTOR Reduction (vph)	0	3	0	0	0	158	0	10	0	0	2	0
Lane Group Flow (vph)	54	619	0	154	728	381	110	1442	0	374	1089	0
Confl. Peds. (#/hr)			2	2					2	2		
Heavy Vehicles (%)	7%	1%	6%	3%	3%	8%	67%	5%	0%	4%	2%	0%
Turn Type	Perm	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		2		1	6		7	4		3	8	
Permitted Phases	2			6		6	4			8		
Actuated Green, G (s)	40.5	40.5		52.5	52.5	52.5	60.4	50.0		73.0	58.1	
Effective Green, g (s)	40.5	40.5		52.5	52.5	52.5	60.4	50.0		73.0	58.1	
Actuated g/C Ratio	0.29	0.29		0.38	0.38	0.38	0.43	0.36		0.52	0.42	
Clearance Time (s)	7.5	7.5		4.5	7.5	7.5	4.5	7.0		4.0	7.0	
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)	50	538		144	699	554	135	1220		284	1476	
v/s Ratio Prot		c0.33		0.06	c0.39		0.06	0.42		c0.18	0.31	
v/s Ratio Perm	0.31			0.34		0.26	0.29			c0.51		
v/c Ratio	1.08	1.15		1.07	1.04	0.69	0.81	1.18		1.32	0.74	
Uniform Delay, d1	49.8	49.8		37.8	43.8	36.8	28.3	45.0		46.2	34.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.97	0.84	
Incremental Delay, d2	151.5	87.7		94.7	45.3	3.5	30.0	90.7		155.2	1.8	
Delay (s)	201.2	137.4		132.6	89.1	40.4	58.3	135.7		199.8	30.9	
Level of Service	F	F		F	F	D	E	F		F	C	
Approach Delay (s)		142.5			75.3			130.2			74.0	
Approach LOS		F			E			F			E	

Intersection Summary			
HCM 2000 Control Delay	100.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.29		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.5
Intersection Capacity Utilization	128.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Timings
17: Ninth Line & Street B/Skyview St

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	78	5	4	5	293	1724	14	1377
Future Volume (vph)	78	5	4	5	293	1724	14	1377
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	NA
Protected Phases		4		8	5	2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	5	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	7.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	11.0	22.5	22.5	22.5
Total Split (s)	23.0	23.0	23.0	23.0	11.0	47.0	36.0	36.0
Total Split (%)	32.9%	32.9%	32.9%	32.9%	15.7%	67.1%	51.4%	51.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.0	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.0	4.5	4.5	4.5
Lead/Lag					Lead		Lag	Lag
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	9.3	9.3	9.3	9.3	52.2	51.7	33.3	33.3
Actuated g/C Ratio	0.13	0.13	0.13	0.13	0.75	0.74	0.48	0.48
v/c Ratio	0.42	0.52	0.04	0.04	0.63	0.67	0.12	0.91
Control Delay	34.1	10.3	25.0	20.1	24.3	7.8	11.1	25.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.1	10.3	25.0	20.1	24.3	7.8	11.1	25.6
LOS	C	B	C	C	C	A	B	C
Approach Delay		17.1		21.6		10.2		25.4
Approach LOS		B		C		B		C

Intersection Summary	
Cycle Length: 70	
Actuated Cycle Length: 70	
Offset: 39 (56%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.91	
Intersection Signal Delay: 16.7	Intersection LOS: B
Intersection Capacity Utilization 80.9%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 17: Ninth Line & Street B/Skyview St



Queues
17: Ninth Line & Street B/Skyview St



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	78	194	4	9	293	1729	14	1497
v/c Ratio	0.42	0.52	0.04	0.04	0.63	0.67	0.12	0.91
Control Delay	34.1	10.3	25.0	20.1	24.3	7.8	11.1	25.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.1	10.3	25.0	20.1	24.3	7.8	11.1	25.6
Queue Length 50th (m)	8.8	0.5	0.4	0.6	44.2	87.0	0.7	108.2
Queue Length 95th (m)	18.4	14.4	2.6	3.6	m45.4	m79.5	m2.0	#134.7
Internal Link Dist (m)		126.1		123.3		251.3		178.3
Turn Bay Length (m)					15.0		15.0	
Base Capacity (vph)	366	554	215	457	466	2585	120	1653
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	0.21	0.35	0.02	0.02	0.63	0.67	0.12	0.91

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.



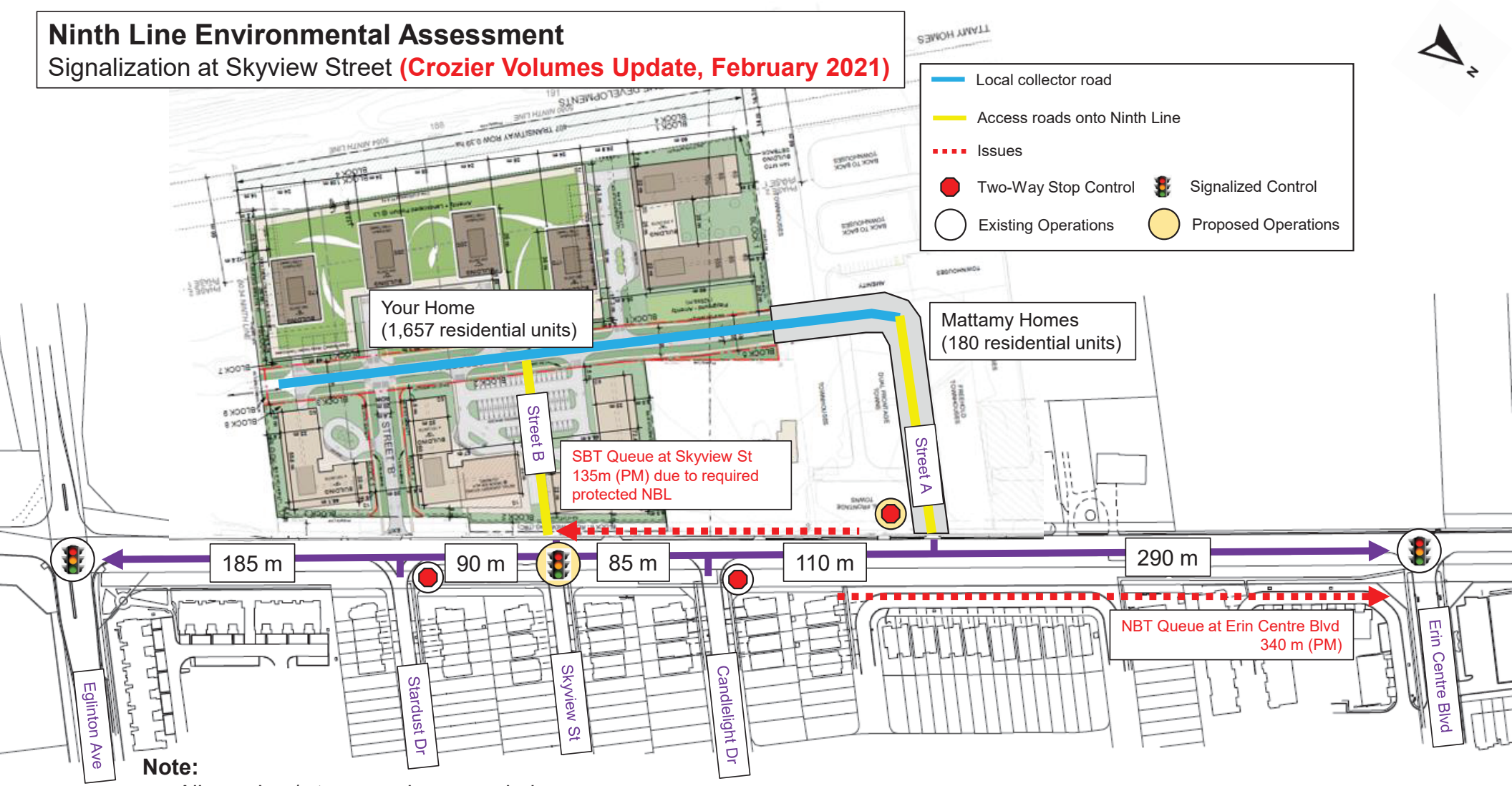
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	5	189	4	5	4	293	1724	5	14	1377	120
Future Volume (vph)	78	5	189	4	5	4	293	1724	5	14	1377	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.0	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.85		1.00	0.93		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	1573		1750	1719		1750	3498		1750	3458	
Flt Permitted	0.75	1.00		0.44	1.00		0.11	1.00		0.14	1.00	
Satd. Flow (perm)	1385	1573		814	1719		198	3498		253	3458	
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)	78	5	189	4	5	4	293	1724	5	14	1377	120
RTOR Reduction (vph)	0	164	0	0	3	0	0	0	0	0	9	0
Lane Group Flow (vph)	78	30	0	4	6	0	293	1729	0	14	1488	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	9.3	9.3		9.3	9.3		51.7	51.7		33.3	33.3	
Effective Green, g (s)	9.3	9.3		9.3	9.3		51.7	51.7		33.3	33.3	
Actuated g/C Ratio	0.13	0.13		0.13	0.13		0.74	0.74		0.48	0.48	
Clearance Time (s)	4.5	4.5		4.5	4.5		4.0	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	184	208		108	228		465	2583		120	1645	
v/s Ratio Prot		0.02			0.00		0.13	c0.49			c0.43	
v/s Ratio Perm	c0.06			0.00			0.34			0.06		
v/c Ratio	0.42	0.14		0.04	0.02		0.63	0.67		0.12	0.90	
Uniform Delay, d1	27.9	26.8		26.4	26.4		15.2	4.7		10.2	16.9	
Progression Factor	1.00	1.00		1.00	1.00		2.03	1.41		0.79	0.99	
Incremental Delay, d2	1.6	0.3		0.1	0.0		0.9	0.4		1.7	7.7	
Delay (s)	29.5	27.2		26.6	26.4		31.7	7.1		9.8	24.4	
Level of Service	C	C		C	C		C	A		A	C	
Approach Delay (s)		27.8			26.5			10.6			24.3	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	17.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	80.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Ninth Line Environmental Assessment

Signalization at Skyview Street **(Crozier Volumes Update, February 2021)**



Note:

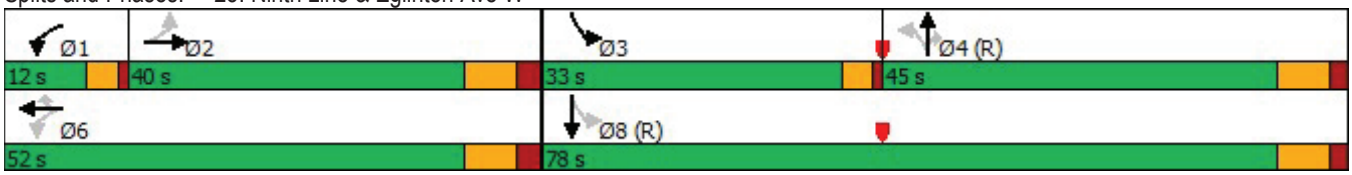
- All queuing / storage values rounded up.
- Intersection spacing is 'middle-of-intersection' to 'middle-of-intersection'

NOT TO SCALE

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	37	612	99	264	256	23	757	137	400	1280
Future Volume (vph)	37	612	99	264	256	23	757	137	400	1280
Turn Type	Perm	NA	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA
Protected Phases		2	1	6			4		3	8
Permitted Phases	2		6		6	4		4	8	
Detector Phase	2	2	1	6	6	4	4	4	3	8
Switch Phase										
Minimum Initial (s)	8.0	8.0	7.0	8.0	8.0	8.0	8.0	8.0	7.0	8.0
Minimum Split (s)	32.5	32.5	11.0	32.5	32.5	40.0	40.0	40.0	11.0	40.0
Total Split (s)	40.0	40.0	12.0	52.0	52.0	45.0	45.0	45.0	33.0	78.0
Total Split (%)	30.8%	30.8%	9.2%	40.0%	40.0%	34.6%	34.6%	34.6%	25.4%	60.0%
Yellow Time (s)	5.0	5.0	3.0	5.0	5.0	5.0	5.0	5.0	3.0	5.0
All-Red Time (s)	2.5	2.5	1.0	2.5	2.5	2.0	2.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.5	7.5	4.0	7.5	7.5	7.0	7.0	7.0	4.0	7.0
Lead/Lag	Lag	Lag	Lead			Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes			Yes	Yes	Yes	Yes	
Recall Mode	Max	Max	None	Max	Max	C-Max	C-Max	C-Max	None	C-Max
Act Effct Green (s)	32.7	32.7	48.0	44.5	44.5	42.0	42.0	42.0	74.0	71.0
Actuated g/C Ratio	0.25	0.25	0.37	0.34	0.34	0.32	0.32	0.32	0.57	0.55
v/c Ratio	0.14	0.82	0.54	0.41	0.38	0.33	0.67	0.24	0.87	0.69
Control Delay	39.8	53.7	38.9	35.2	5.2	52.2	42.6	11.4	38.4	28.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.8	53.7	38.9	35.2	5.2	52.2	42.6	11.4	38.4	28.4
LOS	D	D	D	D	A	D	D	B	D	C
Approach Delay		53.0		23.4			38.2			30.7
Approach LOS		D		C			D			C

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 100 (77%), Referenced to phase 4:NBTL and 8:SBTL, Start of Green	
Natural Cycle: 95	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay: 35.5	Intersection LOS: D
Intersection Capacity Utilization 95.1%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 25: Ninth Line & Eglinton Ave W





Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	37	730	99	264	256	23	757	137	400	1347
v/c Ratio	0.14	0.82	0.54	0.41	0.38	0.33	0.67	0.24	0.87	0.69
Control Delay	39.8	53.7	38.9	35.2	5.2	52.2	42.6	11.4	38.4	28.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.8	53.7	38.9	35.2	5.2	52.2	42.6	11.4	38.4	28.4
Queue Length 50th (m)	6.8	84.4	15.5	47.5	0.0	4.2	83.7	5.4	53.8	149.0
Queue Length 95th (m)	15.6	106.0	27.3	70.2	16.6	13.6	106.2	19.7	m#83.7	176.1
Internal Link Dist (m)		373.3		388.7			291.0			248.0
Turn Bay Length (m)	20.0		35.0			65.0		30.0	65.0	
Base Capacity (vph)	263	889	185	638	674	69	1122	579	501	1945
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	0.14	0.82	0.54	0.41	0.38	0.33	0.67	0.24	0.80	0.69

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)	37	612	118	99	264	256	23	757	137	400	1280	67
Future Volume (vph)	37	612	118	99	264	256	23	757	137	400	1280	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	7.5	7.5		4.0	7.5	7.5	7.0	7.0	7.0	4.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1668	3490		1733	1865	1479	1069	3476	1574	1716	3555	
Flt Permitted	0.60	1.00		0.14	1.00	1.00	0.19	1.00	1.00	0.19	1.00	
Satd. Flow (perm)	1047	3490		257	1865	1479	215	3476	1574	343	3555	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	37	612	118	99	264	256	23	757	137	400	1280	67
RTOR Reduction (vph)	0	12	0	0	0	168	0	0	71	0	3	0
Lane Group Flow (vph)	37	718	0	99	264	88	23	757	66	400	1344	0
Confl. Peds. (#/hr)			2	2					2	2		
Heavy Vehicles (%)	7%	1%	6%	3%	3%	8%	67%	5%	0%	4%	2%	0%
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases		2		1	6			4		3	8	
Permitted Phases	2			6		6	4		4	8		
Actuated Green, G (s)	32.7	32.7		44.5	44.5	44.5	42.0	42.0	42.0	71.0	71.0	
Effective Green, g (s)	32.7	32.7		44.5	44.5	44.5	42.0	42.0	42.0	71.0	71.0	
Actuated g/C Ratio	0.25	0.25		0.34	0.34	0.34	0.32	0.32	0.32	0.55	0.55	
Clearance Time (s)	7.5	7.5		4.0	7.5	7.5	7.0	7.0	7.0	4.0	7.0	
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)	263	877		176	638	506	69	1123	508	451	1941	
v/s Ratio Prot		c0.21		c0.03	0.14			0.22		c0.17	0.38	
v/s Ratio Perm	0.04			0.16		0.06	0.11		0.04	c0.31		
v/c Ratio	0.14	0.82		0.56	0.41	0.17	0.33	0.67	0.13	0.89	0.69	
Uniform Delay, d1	37.7	45.9		32.2	32.8	29.9	33.4	38.1	31.1	25.9	21.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.09	1.24	
Incremental Delay, d2	1.1	8.4		4.1	2.0	0.7	12.5	3.2	0.5	13.1	1.3	
Delay (s)	38.9	54.3		36.3	34.7	30.6	45.9	41.3	31.6	41.3	28.2	
Level of Service	D	D		D	C	C	D	D	C	D	C	
Approach Delay (s)		53.5			33.3			40.0			31.2	
Approach LOS		D			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	37.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	22.5
Intersection Capacity Utilization	95.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Configurations					
Traffic Volume (vph)	142	75	1039	108	1646
Future Volume (vph)	142	75	1039	108	1646
Turn Type	Perm	Perm	NA	pm+pt	NA
Protected Phases			2	1	6
Permitted Phases	4	4		6	
Detector Phase	4	4	2	1	6
Switch Phase					
Minimum Initial (s)	8.0	8.0	8.0	7.0	8.0
Minimum Split (s)	22.5	22.5	22.0	11.0	22.0
Total Split (s)	23.0	23.0	31.0	11.0	42.0
Total Split (%)	35.4%	35.4%	47.7%	16.9%	64.6%
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0
All-Red Time (s)	2.5	2.5	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.0	4.0	6.0
Lead/Lag			Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None	None	C-Max	None	C-Max
Act Effct Green (s)	10.8	10.8	36.6	46.6	45.8
Actuated g/C Ratio	0.17	0.17	0.56	0.72	0.70
v/c Ratio	0.48	0.23	0.58	0.28	0.65
Control Delay	29.7	8.1	18.6	7.5	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	29.7	8.1	18.6	7.5	11.0
LOS	C	A	B	A	B
Approach Delay	22.2		18.6		10.8
Approach LOS	C		B		B

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 12 (18%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.65	
Intersection Signal Delay: 14.4	Intersection LOS: B
Intersection Capacity Utilization 63.8%	ICU Level of Service B
Analysis Period (min) 15	

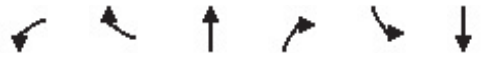
Splits and Phases: 30: Ninth Line & Erin Centre Blvd





Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	142	75	1116	108	1646
v/c Ratio	0.48	0.23	0.58	0.28	0.65
Control Delay	29.7	8.1	18.6	7.5	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	29.7	8.1	18.6	7.5	11.0
Queue Length 50th (m)	14.6	0.0	63.6	7.5	87.8
Queue Length 95th (m)	26.3	8.1	124.2	13.2	81.3
Internal Link Dist (m)	358.4		271.6		650.7
Turn Bay Length (m)				35.0	
Base Capacity (vph)	448	461	1924	389	2521
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	0.32	0.16	0.58	0.28	0.65

Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	142	75	1039	77	108	1646
Future Volume (vph)	142	75	1039	77	108	1646
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.7	3.5	3.5	3.7
Total Lost time (s)	6.5	6.5	6.0		4.0	6.0
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1765	1597	3409		1785	3579
Flt Permitted	0.95	1.00	1.00		0.16	1.00
Satd. Flow (perm)	1765	1597	3409		308	3579
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	142	75	1039	77	108	1646
RTOR Reduction (vph)	0	64	7	0	0	0
Lane Group Flow (vph)	142	11	1109	0	108	1646
Confl. Peds. (#/hr)	1			1	1	
Heavy Vehicles (%)	1%	0%	4%	30%	0%	2%
Turn Type	Perm	Perm	NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	4	4			6	
Actuated Green, G (s)	9.2	9.2	33.3		43.3	43.3
Effective Green, g (s)	9.2	9.2	33.3		43.3	43.3
Actuated g/C Ratio	0.14	0.14	0.51		0.67	0.67
Clearance Time (s)	6.5	6.5	6.0		4.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	249	226	1746		341	2384
v/s Ratio Prot			0.33		0.03	c0.46
v/s Ratio Perm	c0.08	0.01			0.18	
v/c Ratio	0.57	0.05	0.64		0.32	0.69
Uniform Delay, d1	26.1	24.1	11.5		5.6	6.7
Progression Factor	1.00	1.00	1.37		1.50	1.33
Incremental Delay, d2	3.1	0.1	1.7		0.5	1.4
Delay (s)	29.2	24.2	17.3		8.9	10.3
Level of Service	C	C	B		A	B
Approach Delay (s)	27.5		17.3			10.2
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay	14.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	63.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	116	5	5	5	100	957	2	1617
Future Volume (vph)	116	5	5	5	100	957	2	1617
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.5	24.5	29.0	29.0	24.0	24.0	24.0	24.0
Total Split (s)	29.0	29.0	29.0	29.0	36.0	36.0	36.0	36.0
Total Split (%)	44.6%	44.6%	44.6%	44.6%	55.4%	55.4%	55.4%	55.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	16.8	16.8	16.8	16.8	39.2	39.2	39.2	39.2
Actuated g/C Ratio	0.26	0.26	0.26	0.26	0.60	0.60	0.60	0.60
v/c Ratio	0.33	0.70	0.03	0.04	0.88	0.45	0.01	0.79
Control Delay	20.4	29.6	15.2	9.8	84.2	10.8	13.0	19.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.4	29.6	15.2	9.8	84.2	10.8	13.0	19.6
LOS	C	C	B	A	F	B	B	B
Approach Delay		27.0		11.0		17.7		19.5
Approach LOS		C		B		B		B

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 19.8	Intersection LOS: B
Intersection Capacity Utilization 80.7%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 64: Ninth Line & Skyview Access/Skyview Street





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	116	290	5	17	100	959	2	1659
v/c Ratio	0.33	0.70	0.03	0.04	0.88	0.45	0.01	0.79
Control Delay	20.4	29.6	15.2	9.8	84.2	10.8	13.0	19.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.4	29.6	15.2	9.8	84.2	10.8	13.0	19.6
Queue Length 50th (m)	10.4	27.9	0.4	0.4	16.4	94.6	0.2	110.2
Queue Length 95th (m)	18.5	42.5	2.1	3.5	m#53.3	116.8	m0.3	#121.0
Internal Link Dist (m)		132.8		149.0		248.0		170.5
Turn Bay Length (m)					15.0		15.0	
Base Capacity (vph)	517	599	289	628	113	2111	284	2104
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	0.22	0.48	0.02	0.03	0.88	0.45	0.01	0.79

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)	116	5	285	5	5	12	100	957	2	2	1617	42
Future Volume (vph)	116	5	285	5	5	12	100	957	2	2	1617	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.85		1.00	0.89		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	1571		1750	1647		1750	3499		1750	3487	
Flt Permitted	0.75	1.00		0.42	1.00		0.10	1.00		0.26	1.00	
Satd. Flow (perm)	1375	1571		769	1647		188	3499		472	3487	
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)	116	5	285	5	5	12	100	957	2	2	1617	42
RTOR Reduction (vph)	0	8	0	0	9	0	0	0	0	0	2	0
Lane Group Flow (vph)	116	282	0	5	8	0	100	959	0	2	1657	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	16.8	16.8		16.8	16.8		39.2	39.2		39.2	39.2	
Effective Green, g (s)	16.8	16.8		16.8	16.8		39.2	39.2		39.2	39.2	
Actuated g/C Ratio	0.26	0.26		0.26	0.26		0.60	0.60		0.60	0.60	
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	355	406		198	425		113	2110		284	2102	
v/s Ratio Prot		c0.18			0.00			0.27			0.48	
v/s Ratio Perm	0.08			0.01			c0.53			0.00		
v/c Ratio	0.33	0.69		0.03	0.02		0.88	0.45		0.01	0.79	
Uniform Delay, d1	19.5	21.8		18.0	18.0		11.0	7.1		5.1	9.8	
Progression Factor	1.00	1.00		1.00	1.00		2.35	1.30		1.75	1.55	
Incremental Delay, d2	0.5	5.1		0.1	0.0		50.8	0.6		0.0	2.5	
Delay (s)	20.1	26.9		18.0	18.0		76.6	9.8		9.0	17.6	
Level of Service	C	C		B	B		E	A		A	B	
Approach Delay (s)		24.9			18.0			16.1			17.6	
Approach LOS		C			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	18.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	80.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	21	38	11	1083	1784	6
Future Volume (Veh/h)	21	38	11	1083	1784	6
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	21	38	11	1083	1784	6
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	TWLTL	
Median storage veh)					2	
Upstream signal (m)				194	296	
pX, platoon unblocked	0.72	0.65	0.65			
vC, conflicting volume	2350	895	1790			
vC1, stage 1 conf vol	1787					
vC2, stage 2 conf vol	564					
vCu, unblocked vol	1199	0	1141			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	88	95	97			
cM capacity (veh/h)	170	706	396			

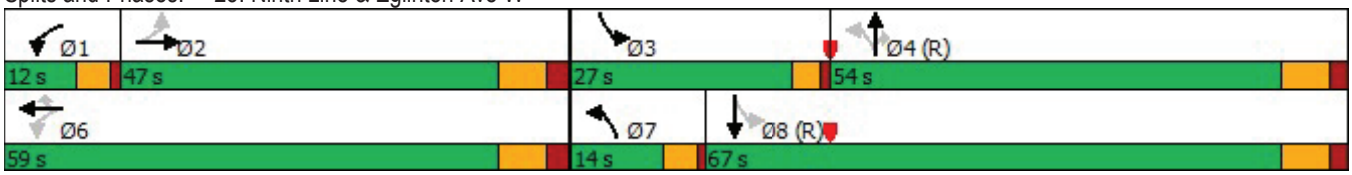
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	21	38	11	542	542	1189	601
Volume Left	21	0	11	0	0	0	0
Volume Right	0	38	0	0	0	0	6
cSH	170	706	396	1700	1700	1700	1700
Volume to Capacity	0.12	0.05	0.03	0.32	0.32	0.70	0.35
Queue Length 95th (m)	2.9	1.2	0.6	0.0	0.0	0.0	0.0
Control Delay (s)	29.1	10.4	14.4	0.0	0.0	0.0	0.0
Lane LOS	D	B	B				
Approach Delay (s)	17.1		0.1			0.0	
Approach LOS	C						

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	54	554	133	694	537	103	1218	192	374	975
Future Volume (vph)	54	554	133	694	537	103	1218	192	374	975
Turn Type	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases		2	1	6		7	4		3	8
Permitted Phases	2		6		6	4		4	8	
Detector Phase	2	2	1	6	6	7	4	4	3	8
Switch Phase										
Minimum Initial (s)	8.0	8.0	7.0	8.0	8.0	7.0	8.0	8.0	7.0	8.0
Minimum Split (s)	32.5	32.5	11.5	32.5	32.5	11.5	40.0	40.0	11.0	40.0
Total Split (s)	47.0	47.0	12.0	59.0	59.0	14.0	54.0	54.0	27.0	67.0
Total Split (%)	33.6%	33.6%	8.6%	42.1%	42.1%	10.0%	38.6%	38.6%	19.3%	47.9%
Yellow Time (s)	5.0	5.0	3.5	5.0	5.0	3.5	5.0	5.0	3.0	5.0
All-Red Time (s)	2.5	2.5	1.0	2.5	2.5	1.0	2.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.5	7.5	4.5	7.5	7.5	4.5	7.0	7.0	4.0	7.0
Lead/Lag	Lag	Lag	Lead			Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes			Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	None	Max	Max	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	39.5	39.5	54.5	51.5	51.5	58.2	47.0	47.0	77.0	60.8
Actuated g/C Ratio	0.28	0.28	0.39	0.37	0.37	0.42	0.34	0.34	0.55	0.43
v/c Ratio	1.02	0.61	0.55	0.99	0.69	0.42	1.00	0.31	1.08	0.66
Control Delay	179.7	46.1	38.0	76.3	20.1	22.4	72.9	12.2	110.5	33.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	179.7	46.1	38.0	76.3	20.1	22.4	72.9	12.2	110.5	33.9
LOS	F	D	D	E	C	C	E	B	F	C
Approach Delay		57.0		50.4			61.8			54.4
Approach LOS		E		D			E			D

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 20 (14%), Referenced to phase 4:NBTL and 8:SBTL, Start of Green	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.08	
Intersection Signal Delay: 55.9	Intersection LOS: E
Intersection Capacity Utilization 119.2%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 25: Ninth Line & Eglinton Ave W





Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	54	608	133	694	537	103	1218	192	374	1024
v/c Ratio	1.02	0.61	0.55	0.99	0.69	0.42	1.00	0.31	1.08	0.66
Control Delay	179.7	46.1	38.0	76.3	20.1	22.4	72.9	12.2	110.5	33.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	179.7	46.1	38.0	76.3	20.1	22.4	72.9	12.2	110.5	33.9
Queue Length 50th (m)	~14.0	70.2	22.3	175.4	49.2	12.2	~164.6	9.8	~87.8	131.3
Queue Length 95th (m)	#40.9	88.5	36.1	#250.4	88.8	20.9	#209.2	27.0 m	#141.0	157.8
Internal Link Dist (m)		373.3		388.7			291.0			258.7
Turn Bay Length (m)	20.0		35.0			65.0		30.0	65.0	
Base Capacity (vph)	53	999	243	699	773	255	1213	621	346	1560
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	1.02	0.61	0.55	0.99	0.69	0.40	1.00	0.31	1.08	0.66

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)	54	554	54	133	694	537	103	1218	192	374	975	49
Future Volume (vph)	54	554	54	133	694	537	103	1218	192	374	975	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	7.5	7.5		4.5	7.5	7.5	4.5	7.0	7.0	4.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1785	3525		1750	1902	1566	1785	3614	1581	1767	3590	
Flt Permitted	0.10	1.00		0.24	1.00	1.00	0.20	1.00	1.00	0.08	1.00	
Satd. Flow (perm)	190	3525		446	1902	1566	380	3614	1581	146	3590	
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)	54	554	54	133	694	537	103	1218	192	374	975	49
RTOR Reduction (vph)	0	5	0	0	0	198	0	0	90	0	2	0
Lane Group Flow (vph)	54	603	0	133	694	339	103	1218	102	374	1022	0
Heavy Vehicles (%)	0%	2%	4%	2%	1%	2%	0%	1%	1%	1%	1%	0%
Turn Type	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		2		1	6		7	4		3	8	
Permitted Phases	2			6		6	4		4	8		
Actuated Green, G (s)	39.5	39.5		51.5	51.5	51.5	55.7	47.0	47.0	74.0	60.8	
Effective Green, g (s)	39.5	39.5		51.5	51.5	51.5	55.7	47.0	47.0	74.0	60.8	
Actuated g/C Ratio	0.28	0.28		0.37	0.37	0.37	0.40	0.34	0.34	0.53	0.43	
Clearance Time (s)	7.5	7.5		4.5	7.5	7.5	4.5	7.0	7.0	4.0	7.0	
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)	53	994		233	699	576	238	1213	530	343	1559	
v/s Ratio Prot		0.17		0.03	c0.36		0.03	0.34		c0.18	0.28	
v/s Ratio Perm	0.28			0.18		0.22	0.15		0.06	c0.40		
v/c Ratio	1.02	0.61		0.57	0.99	0.59	0.43	1.00	0.19	1.09	0.66	
Uniform Delay, d1	50.2	43.5		31.8	44.1	35.7	27.7	46.5	33.0	46.2	31.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.26	1.03	
Incremental Delay, d2	129.1	2.7		3.4	32.3	4.4	1.3	26.8	0.8	65.7	1.4	
Delay (s)	179.4	46.3		35.1	76.4	40.1	29.0	73.3	33.8	123.9	33.5	
Level of Service	F	D		D	E	D	C	E	C	F	C	
Approach Delay (s)		57.1			58.1			65.3			57.7	
Approach LOS		E			E			E			E	

Intersection Summary			
HCM 2000 Control Delay	60.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.5
Intersection Capacity Utilization	119.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Configurations					
Traffic Volume (vph)	114	158	1680	143	1322
Future Volume (vph)	114	158	1680	143	1322
Turn Type	Perm	Perm	NA	pm+pt	NA
Protected Phases			2	1	6
Permitted Phases	4	4		6	
Detector Phase	4	4	2	1	6
Switch Phase					
Minimum Initial (s)	8.0	8.0	8.0	7.0	8.0
Minimum Split (s)	22.5	22.5	22.0	11.0	22.0
Total Split (s)	22.5	22.5	36.5	11.0	47.5
Total Split (%)	32.1%	32.1%	52.1%	15.7%	67.9%
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0
All-Red Time (s)	2.5	2.5	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.0	4.0	6.0
Lead/Lag			Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None	None	C-Max	None	C-Max
Act Effct Green (s)	10.2	10.2	37.8	49.3	47.3
Actuated g/C Ratio	0.15	0.15	0.54	0.70	0.68
v/c Ratio	0.44	0.43	0.93	0.47	0.54
Control Delay	32.3	8.8	30.8	17.7	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	32.3	8.8	30.8	17.7	5.0
LOS	C	A	C	B	A
Approach Delay	18.7		30.8		6.2
Approach LOS	B		C		A

Intersection Summary	
Cycle Length: 70	
Actuated Cycle Length: 70	
Offset: 65 (93%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.93	
Intersection Signal Delay: 19.6	Intersection LOS: B
Intersection Capacity Utilization 78.2%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 30: Ninth Line & Erin Centre Blvd





Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	114	158	1786	143	1322
v/c Ratio	0.44	0.43	0.93	0.47	0.54
Control Delay	32.3	8.8	30.8	17.7	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	32.3	8.8	30.8	17.7	5.0
Queue Length 50th (m)	12.9	0.0	155.5	8.4	16.6
Queue Length 95th (m)	24.2	12.4	#267.3	21.8	41.5
Internal Link Dist (m)	358.4		296.2		650.7
Turn Bay Length (m)				35.0	
Base Capacity (vph)	405	486	1924	303	2443
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	0.28	0.33	0.93	0.47	0.54

Intersection Summary

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



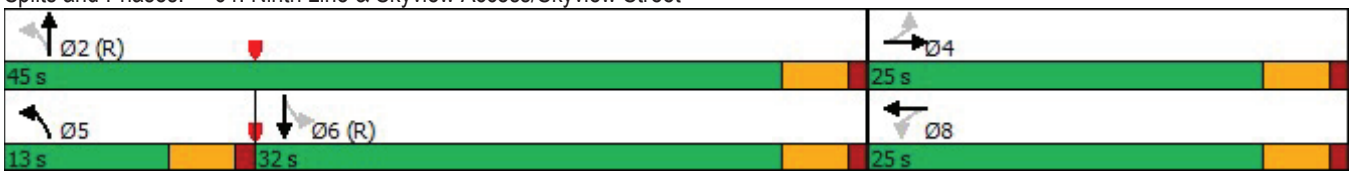
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	114	158	1680	106	143	1322
Future Volume (vph)	114	158	1680	106	143	1322
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.7	3.5	3.5	3.7
Total Lost time (s)	6.5	6.5	6.0		4.0	6.0
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	0.99	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1776	1597	3556		1767	3614
Flt Permitted	0.95	1.00	1.00		0.10	1.00
Satd. Flow (perm)	1776	1597	3556		181	3614
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	114	158	1680	106	143	1322
RTOR Reduction (vph)	0	135	6	0	0	0
Lane Group Flow (vph)	114	23	1780	0	143	1322
Confl. Peds. (#/hr)	4			1	1	
Heavy Vehicles (%)	0%	0%	1%	11%	1%	1%
Turn Type	Perm	Perm	NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	4	4			6	
Actuated Green, G (s)	10.2	10.2	37.0		47.3	47.3
Effective Green, g (s)	10.2	10.2	37.0		47.3	47.3
Actuated g/C Ratio	0.15	0.15	0.53		0.68	0.68
Clearance Time (s)	6.5	6.5	6.0		4.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	258	232	1879		265	2442
v/s Ratio Prot			c0.50		0.05	c0.37
v/s Ratio Perm	c0.06	0.01			0.32	
v/c Ratio	0.44	0.10	0.95		0.54	0.54
Uniform Delay, d1	27.3	25.9	15.6		13.6	5.8
Progression Factor	1.00	1.00	1.36		2.72	0.70
Incremental Delay, d2	1.2	0.2	10.1		1.7	0.7
Delay (s)	28.5	26.1	31.3		38.6	4.7
Level of Service	C	C	C		D	A
Approach Delay (s)	27.1		31.3			8.0
Approach LOS	C		C			A

Intersection Summary			
HCM 2000 Control Delay	21.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	78.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	78	5	4	5	293	1630	14	1255
Future Volume (vph)	78	5	4	5	293	1630	14	1255
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	NA
Protected Phases		4		8	5	2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	5	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.5	24.5	24.5	24.5	9.5	24.0	24.0	24.0
Total Split (s)	25.0	25.0	25.0	25.0	13.0	45.0	32.0	32.0
Total Split (%)	35.7%	35.7%	35.7%	35.7%	18.6%	64.3%	45.7%	45.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag					Lead		Lag	Lag
Lead-Lag Optimize?					Yes		Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	9.3	9.3	9.3	9.3	51.7	51.7	34.0	34.0
Actuated g/C Ratio	0.13	0.13	0.13	0.13	0.74	0.74	0.49	0.49
v/c Ratio	0.42	0.52	0.04	0.04	0.67	0.63	0.10	0.82
Control Delay	34.0	10.3	25.0	20.1	18.3	11.6	20.3	26.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.0	10.3	25.0	20.1	18.3	11.6	20.3	26.1
LOS	C	B	C	C	B	B	C	C
Approach Delay		17.1		21.6		12.6		26.0
Approach LOS		B		C		B		C

Intersection Summary	
Cycle Length: 70	
Actuated Cycle Length: 70	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 18.1	Intersection LOS: B
Intersection Capacity Utilization 78.0%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 64: Ninth Line & Skyview Access/Skyview Street





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	78	194	4	9	293	1635	14	1375
v/c Ratio	0.42	0.52	0.04	0.04	0.67	0.63	0.10	0.82
Control Delay	34.0	10.3	25.0	20.1	18.3	11.6	20.3	26.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.0	10.3	25.0	20.1	18.3	11.6	20.3	26.1
Queue Length 50th (m)	8.8	0.5	0.4	0.6	28.1	170.5	1.2	91.4
Queue Length 95th (m)	18.4	14.4	2.5	3.6	m27.9	m174.4	m2.6	#139.1
Internal Link Dist (m)		134.3		117.6		258.7		135.3
Turn Bay Length (m)					15.0		15.0	
Base Capacity (vph)	405	594	238	506	436	2584	134	1684
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	0.19	0.33	0.02	0.02	0.67	0.63	0.10	0.82

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)	78	5	189	4	5	4	293	1630	5	14	1255	120
Future Volume (vph)	78	5	189	4	5	4	293	1630	5	14	1255	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.85		1.00	0.93		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	1573		1750	1719		1750	3498		1750	3454	
Flt Permitted	0.75	1.00		0.44	1.00		0.10	1.00		0.15	1.00	
Satd. Flow (perm)	1385	1573		814	1719		191	3498		278	3454	
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)	78	5	189	4	5	4	293	1630	5	14	1255	120
RTOR Reduction (vph)	0	164	0	0	3	0	0	0	0	0	9	0
Lane Group Flow (vph)	78	30	0	4	6	0	293	1635	0	14	1366	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	9.3	9.3		9.3	9.3		51.7	51.7		34.0	34.0	
Effective Green, g (s)	9.3	9.3		9.3	9.3		51.7	51.7		34.0	34.0	
Actuated g/C Ratio	0.13	0.13		0.13	0.13		0.74	0.74		0.49	0.49	
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	184	208		108	228		435	2583		135	1677	
v/s Ratio Prot		0.02			0.00		0.13	c0.47			c0.40	
v/s Ratio Perm	c0.06			0.00			0.37			0.05		
v/c Ratio	0.42	0.14		0.04	0.02		0.67	0.63		0.10	0.81	
Uniform Delay, d1	27.9	26.8		26.4	26.4		15.3	4.5		9.7	15.3	
Progression Factor	1.00	1.00		1.00	1.00		1.29	2.21		1.46	1.33	
Incremental Delay, d2	1.6	0.3		0.1	0.0		2.0	0.6		1.3	3.9	
Delay (s)	29.5	27.2		26.6	26.4		21.8	10.5		15.6	24.2	
Level of Service	C	C		C	C		C	B		B	C	
Approach Delay (s)		27.8			26.5			12.2			24.2	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	18.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	78.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	12	22	38	1793	1417	20
Future Volume (Veh/h)	12	22	38	1793	1417	20
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	12	22	38	1793	1417	20
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)				159	320	
pX, platoon unblocked	0.85	0.79	0.79			
vC, conflicting volume	2400	718	1437			
vC1, stage 1 conf vol	1427					
vC2, stage 2 conf vol	972					
vCu, unblocked vol	1193	123	1029			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	97	93			
cM capacity (veh/h)	234	718	532			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	12	22	38	896	896	945	492
Volume Left	12	0	38	0	0	0	0
Volume Right	0	22	0	0	0	0	20
cSH	234	718	532	1700	1700	1700	1700
Volume to Capacity	0.05	0.03	0.07	0.53	0.53	0.56	0.29
Queue Length 95th (m)	1.1	0.7	1.6	0.0	0.0	0.0	0.0
Control Delay (s)	21.2	10.2	12.3	0.0	0.0	0.0	0.0
Lane LOS	C	B	B				
Approach Delay (s)	14.1		0.3			0.0	
Approach LOS	B						

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	59.6%	ICU Level of Service	B
Analysis Period (min)	15		

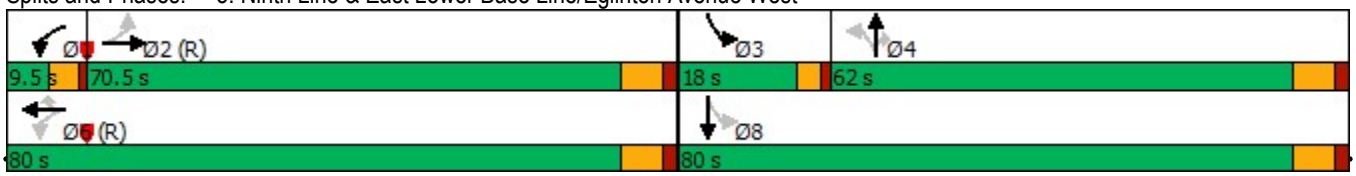
APPENDIX G

Detailed Capacity Analysis Worksheets

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases		2		1	6			4		3	8	
Permitted Phases	2			6		6	4		4	8		
Detector Phase	2	2		1	6	6	4	4	4	3	8	
Switch Phase												
Minimum Initial (s)	8.0	8.0		5.0	8.0	8.0	8.0	8.0	8.0	5.0	8.0	
Minimum Split (s)	32.5	32.5		9.5	32.5	32.5	25.0	25.0	25.0	11.0	25.0	
Total Split (s)	70.5	70.5		9.5	80.0	80.0	62.0	62.0	62.0	18.0	80.0	
Total Split (%)	44.1%	44.1%		5.9%	50.0%	50.0%	38.8%	38.8%	38.8%	11.3%	50.0%	
Maximum Green (s)	63.5	63.5		5.0	73.0	73.0	55.0	55.0	55.0	14.0	73.0	
Yellow Time (s)	5.0	5.0		3.5	5.0	5.0	5.0	5.0	5.0	3.0	5.0	
All-Red Time (s)	2.0	2.0		1.0	2.0	2.0	2.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-3.0	-2.0	
Total Lost Time (s)	5.0	5.0		2.5	5.0	5.0	5.0	5.0	5.0	1.0	5.0	
Lead/Lag	Lag	Lag		Lead			Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes			Yes	Yes	Yes	Yes		
Vehicle Extension (s)	4.0	4.0		3.0	4.0	4.0	4.0	4.0	4.0	2.0	4.0	
Recall Mode	C-Max	C-Max		None	C-Max	C-Max	None	None	None	None	None	
Walk Time (s)	10.0	10.0			10.0	10.0	8.0	8.0	8.0		8.0	
Flash Dont Walk (s)	15.0	15.0			15.0	15.0	10.0	10.0	10.0		10.0	
Pedestrian Calls (#/hr)	2	2			2	2	2	2	2		2	
Act Effct Green (s)	65.5	65.5		77.5	75.0	75.0	57.0	57.0	57.0	79.0	75.0	
Actuated g/C Ratio	0.41	0.41		0.48	0.47	0.47	0.36	0.36	0.36	0.49	0.47	
v/c Ratio	0.07	1.05		0.57	0.33	0.19	0.60	0.56	0.16	0.69	1.08	
Control Delay	29.6	92.2		43.5	28.1	4.2	106.8	45.6	6.8	35.5	95.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	29.6	92.2		43.5	28.1	4.2	106.8	45.6	6.8	35.5	95.8	
LOS	C	F		D	C	A	F	D	A	D	F	
Approach Delay		90.0			23.7			41.4			81.7	
Approach LOS		F			C			D			F	

Intersection Summary			
Area Type:	Other		
Cycle Length: 160			
Actuated Cycle Length: 160			
Offset: 101 (63%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 140			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.08			
Intersection Signal Delay: 68.3		Intersection LOS: E	
Intersection Capacity Utilization 116.1%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 5: Ninth Line & East Lower Base Line/Eglinton Avenue West





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	98	51	569	20	34	1119
Future Volume (vph)	98	51	569	20	34	1119
Ideal Flow (vphpl)	1900	1900	1900	1900	1860	1900
Lane Width (m)	3.1	3.1	3.5	3.5	3.3	3.5
Storage Length (m)	40.0	0.0		0.0	15.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	55.0				20.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.98	1.00			
Frt		0.850	0.996			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1688	1525	1783	0	1708	1842
Flt Permitted	0.950				0.368	
Satd. Flow (perm)	1688	1491	1783	0	662	1842
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		52	3			
Link Speed (k/h)	50		70			70
Link Distance (m)	113.5		401.3			174.6
Travel Time (s)	8.2		20.6			9.0
Confl. Peds. (#/hr)		1		1	1	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	0%	4%	30%	0%	2%
Adj. Flow (vph)	100	52	581	20	35	1142
Shared Lane Traffic (%)						
Lane Group Flow (vph)	100	52	601	0	35	1142
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.1		3.3			3.3
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.9		4.9			4.9
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.08	1.08	1.01	1.01	1.07	1.01
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2		1	2
Detector Template			Thru			Thru
Leading Detector (m)	17.0	17.0	30.5		25.0	30.5
Trailing Detector (m)	-3.0	-3.0	0.0		15.0	0.0
Detector 1 Position(m)	-3.0	-3.0	0.0		15.0	0.0
Detector 1 Size(m)	20.0	20.0	1.8		10.0	1.8
Detector 1 Type	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
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	4		2		1	6
Permitted Phases		4			6	
Detector Phase	4	4	2		1	6
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0		5.0	8.0
Minimum Split (s)	22.5	22.5	23.5		9.5	23.5
Total Split (s)	25.0	25.0	50.0		10.0	60.0
Total Split (%)	29.4%	29.4%	58.8%		11.8%	70.6%
Maximum Green (s)	18.5	18.5	44.0		7.0	54.0
Yellow Time (s)	4.0	4.0	4.0		3.0	4.0
All-Red Time (s)	2.5	2.5	2.0		0.0	2.0
Lost Time Adjust (s)	-1.5	-1.5	-1.0		-2.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0		1.0	5.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		2.0	3.0
Recall Mode	None	None	C-Max		None	C-Max
Walk Time (s)	8.0	8.0	8.0			8.0
Flash Dont Walk (s)	8.0	8.0	8.0			8.0
Pedestrian Calls (#/hr)	1	1	1			1
Act Effct Green (s)	12.6	12.6	61.5		69.3	66.3
Actuated g/C Ratio	0.15	0.15	0.72		0.82	0.78
v/c Ratio	0.40	0.20	0.47		0.06	0.80
Control Delay	36.7	10.7	9.2		2.9	14.3
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	36.7	10.7	9.2		2.9	14.3
LOS	D	B	A		A	B
Approach Delay	27.8		9.2			13.9
Approach LOS	C		A			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 10 (12%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 13.5		Intersection LOS: B	
Intersection Capacity Utilization 74.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: Ninth Line & Erin Centre Boulevard





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	10	34	545	4	8	1220
Future Volume (vph)	10	34	545	4	8	1220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.3	3.5	3.5	3.3	3.5
Storage Length (m)	0.0	0.0		0.0	30.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	7.6				20.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850	0.999			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1745	1561	1771	0	1745	1842
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1745	1561	1771	0	1745	1842
Link Speed (k/h)	50		70			70
Link Distance (m)	130.6		88.4			401.3
Travel Time (s)	9.4		4.5			20.6
Confl. Peds. (#/hr)				1	1	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	6%	0%	0%	2%
Adj. Flow (vph)	10	35	562	4	8	1258
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	35	566	0	8	1258
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.3		3.3			3.3
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.9		4.9			4.9
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.04	1.04	1.01	1.01	1.04	1.01
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 74.2%		ICU Level of Service D	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	10	34	545	4	8	1220
Future Volume (Veh/h)	10	34	545	4	8	1220
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	10	35	562	4	8	1258
Pedestrians	1					
Lane Width (m)	3.3					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (m)			360			401
pX, platoon unblocked	0.38	0.84			0.84	
vC, conflicting volume	1839	565			567	
vC1, stage 1 conf vol	565					
vC2, stage 2 conf vol	1274					
vCu, unblocked vol	1447	388			390	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	93	94			99	
cM capacity (veh/h)	135	558			991	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	10	35	566	8	1258
Volume Left	10	0	0	8	0
Volume Right	0	35	4	0	0
cSH	135	558	1700	991	1700
Volume to Capacity	0.07	0.06	0.33	0.01	0.74
Queue Length 95th (m)	1.8	1.5	0.0	0.2	0.0
Control Delay (s)	33.8	11.9	0.0	8.7	0.0
Lane LOS	D	B		A	
Approach Delay (s)	16.7		0.0	0.1	
Approach LOS	C				

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	74.2%	ICU Level of Service	D
Analysis Period (min)	15		



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	5	12	537	2	2	1234
Future Volume (vph)	5	12	537	2	2	1234
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.5	3.5	3.3	3.5
Storage Length (m)	0.0	0.0		0.0	15.0	
Storage Lanes	1	0		0	1	
Taper Length (m)	7.6				15.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.905					
Flt Protected	0.986				0.950	
Satd. Flow (prot)	1714	0	1790	0	1745	1842
Flt Permitted	0.986				0.950	
Satd. Flow (perm)	1714	0	1790	0	1745	1842
Link Speed (k/h)	50		70			70
Link Distance (m)	154.4		271.6			88.4
Travel Time (s)	11.1		14.0			4.5
Confl. Peds. (#/hr)				1	1	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	0%	0%	5%	0%	0%	2%
Adj. Flow (vph)	5	12	542	2	2	1246
Shared Lane Traffic (%)						
Lane Group Flow (vph)	17	0	544	0	2	1246
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		3.3			3.3
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.9		4.9			4.9
Two way Left Turn Lane			Yes			Yes
Headway Factor	0.99	0.99	1.01	1.01	1.04	1.01
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 74.9%		ICU Level of Service D	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	12	537	2	2	1234
Future Volume (Veh/h)	5	12	537	2	2	1234
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	5	12	542	2	2	1246
Pedestrians	1					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (m)			272			
pX, platoon unblocked	0.84	0.84			0.84	
vC, conflicting volume	1794	544			545	
vC1, stage 1 conf vol	544					
vC2, stage 2 conf vol	1250					
vCu, unblocked vol	1850	361			362	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	98			100	
cM capacity (veh/h)	246	577			1013	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	17	544	2	1246
Volume Left	5	0	2	0
Volume Right	12	2	0	0
cSH	414	1700	1013	1700
Volume to Capacity	0.04	0.32	0.00	0.73
Queue Length 95th (m)	1.0	0.0	0.0	0.0
Control Delay (s)	14.1	0.0	8.6	0.0
Lane LOS	B		A	
Approach Delay (s)	14.1	0.0	0.0	
Approach LOS	B			

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	74.9%	ICU Level of Service	D
Analysis Period (min)	15		

Intersection: 5: Ninth Line & East Lower Base Line/Eglinton Avenue West

Movement	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	T	R	L	TR
Maximum Queue (m)	44.8	91.2	65.4	88.0	12.2	67.8	139.1	50.0	80.0	253.0
Average Queue (m)	8.3	85.9	16.8	44.6	0.4	15.2	75.3	18.3	60.1	250.8
95th Queue (m)	33.2	88.7	37.1	73.8	6.2	42.3	129.6	49.3	99.5	252.9
Link Distance (m)		80.9		141.9	141.9		142.3			249.0
Upstream Blk Time (%)		63					1			29
Queuing Penalty (veh)		0					0			359
Storage Bay Dist (m)	15.0		30.0			65.0		30.0	65.0	
Storage Blk Time (%)	2	59	1	21		0	36		2	49
Queuing Penalty (veh)	16	16	3	14		0	37		18	138

Intersection: 6: Ninth Line & Erin Centre Boulevard

Movement	WB	WB	NB	SB	SB
Directions Served	L	R	TR	L	T
Maximum Queue (m)	49.2	26.9	87.7	34.9	180.8
Average Queue (m)	20.1	9.2	29.1	9.5	170.1
95th Queue (m)	38.0	19.2	70.3	32.6	184.7
Link Distance (m)		102.5	380.6		164.3
Upstream Blk Time (%)					68
Queuing Penalty (veh)					0
Storage Bay Dist (m)	40.0			15.0	
Storage Blk Time (%)	2	0		1	58
Queuing Penalty (veh)	1	0		11	20

Intersection: 7: Ninth Line & Candlelight Drive

Movement	WB	WB	NB	SB	SB
Directions Served	L	R	TR	L	T
Maximum Queue (m)	40.2	13.4	2.9	49.3	385.4
Average Queue (m)	16.7	5.9	0.1	4.2	378.5
95th Queue (m)	38.0	13.5	2.0	25.5	408.1
Link Distance (m)	119.2	119.2	70.7		380.6
Upstream Blk Time (%)					10
Queuing Penalty (veh)					127
Storage Bay Dist (m)				30.0	
Storage Blk Time (%)					47
Queuing Penalty (veh)					4

Intersection: 8: Ninth Line & Skyview Street

Movement	WB	NB	SB	SB
Directions Served	LR	TR	L	T
Maximum Queue (m)	31.7	154.7	6.0	74.2
Average Queue (m)	8.8	6.9	0.2	72.5
95th Queue (m)	25.0	75.5	4.2	74.3
Link Distance (m)	143.6	249.0		70.7
Upstream Blk Time (%)		0		27
Queuing Penalty (veh)		0		336
Storage Bay Dist (m)			15.0	
Storage Blk Time (%)				45
Queuing Penalty (veh)				1

Intersection: 12: Bend

Movement	NW
Directions Served	T
Maximum Queue (m)	3.0
Average Queue (m)	0.1
95th Queue (m)	2.1
Link Distance (m)	211.5
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

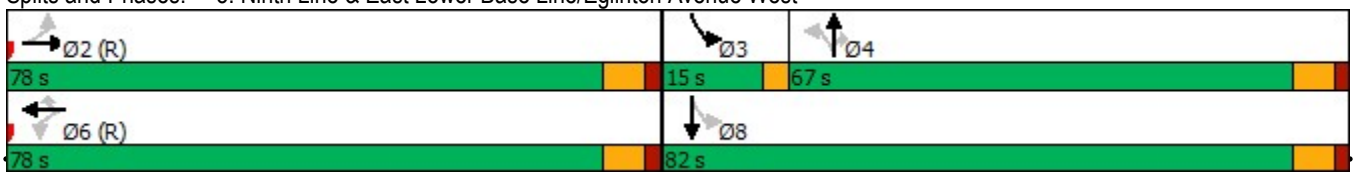
Network wide Queuing Penalty: 1344

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	537	45	63	722	368	82	721	84	192	470	48
Future Volume (vph)	55	537	45	63	722	368	82	721	84	192	470	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1640	1900	1900	1640	1860	1900	1900
Lane Width (m)	3.1	3.3	3.3	3.1	3.3	4.0	3.3	3.5	3.3	3.3	3.5	3.3
Storage Length (m)	15.0		0.0	30.0		0.0	65.0		30.0	65.0		0.0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (m)	30.0			45.0			15.0			15.0		
Lane Util. 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
Ped Bike Factor						0.97			0.98			
Frt		0.988				0.850			0.850		0.986	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1705	1776	0	1671	1818	1427	1745	1860	1334	1691	1836	0
Flt Permitted	0.081			0.202			0.347			0.063		
Satd. Flow (perm)	145	1776	0	355	1818	1390	637	1860	1311	112	1836	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3				232			48		4	
Link Speed (k/h)		60			60			70			70	
Link Distance (m)		93.8			153.4			154.5			271.6	
Travel Time (s)		5.6			9.2			7.9			14.0	
Confl. Peds. (#/hr)	2					2			2	2		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	2%	4%	2%	1%	2%	0%	1%	1%	1%	1%	0%
Adj. Flow (vph)	57	559	47	66	752	383	85	751	88	200	490	50
Shared Lane Traffic (%)												
Lane Group Flow (vph)	57	606	0	66	752	383	85	751	88	200	540	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)		3.1			3.1			3.3			3.3	
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											Yes	
Headway Factor	1.08	1.04	1.04	1.08	1.04	1.14	1.04	1.01	1.26	1.07	1.01	1.04
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template						Right						
Leading Detector (m)	10.0	30.5		10.0	30.5	6.1	7.0	30.5	7.0	10.0	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	-3.0	-3.0	-3.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	-3.0	-3.0	-3.0	0.0	0.0	
Detector 1 Size(m)	10.0	10.0		10.0	10.0	6.1	10.0	10.0	10.0	10.0	10.0	
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	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases		2			6			4		3	8	
Permitted Phases	2			6		6	4		4	8		
Detector Phase	2	2		6	6	6	4	4	4	3	8	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	8.0	8.0	8.0	5.0	8.0	
Minimum Split (s)	32.0	32.0		32.0	32.0	32.0	25.0	25.0	25.0	11.0	25.0	
Total Split (s)	78.0	78.0		78.0	78.0	78.0	67.0	67.0	67.0	15.0	82.0	
Total Split (%)	48.8%	48.8%		48.8%	48.8%	48.8%	41.9%	41.9%	41.9%	9.4%	51.3%	
Maximum Green (s)	71.0	71.0		71.0	71.0	71.0	60.0	60.0	60.0	12.0	75.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	3.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	1.0	5.0	
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Vehicle Extension (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	2.0	4.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max	C-Max	None	None	None	None	None	
Walk Time (s)	10.0	10.0		10.0	10.0	10.0	8.0	8.0	8.0		8.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0	15.0	10.0	10.0	10.0		10.0	
Pedestrian Calls (#/hr)	2	2		2	2	2	2	2	2		2	
Act Effct Green (s)	73.0	73.0		73.0	73.0	73.0	62.0	62.0	62.0	81.0	77.0	
Actuated g/C Ratio	0.46	0.46		0.46	0.46	0.46	0.39	0.39	0.39	0.51	0.48	
v/c Ratio	0.86	0.75		0.41	0.91	0.50	0.35	1.04	0.16	1.03	0.61	
Control Delay	119.8	42.7		38.7	56.3	13.6	39.7	92.1	16.3	114.4	33.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	119.8	42.7		38.7	56.3	13.6	39.7	92.1	16.3	114.4	33.9	
LOS	F	D		D	E	B	D	F	B	F	C	
Approach Delay		49.3			41.7			80.1			55.7	
Approach LOS		D			D			F			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 160			
Actuated Cycle Length: 160			
Offset: 101 (63%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.04			
Intersection Signal Delay: 56.1		Intersection LOS: E	
Intersection Capacity Utilization 109.3%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 5: Ninth Line & East Lower Base Line/Eglinton Avenue West





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	32	51	1091	58	74	732
Future Volume (vph)	32	51	1091	58	74	732
Ideal Flow (vphpl)	1900	1900	1900	1900	1860	1900
Lane Width (m)	3.1	3.1	3.5	3.5	3.3	3.5
Storage Length (m)	40.0	0.0		0.0	15.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	55.0				20.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.98	1.00			
Frt		0.850	0.993			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1705	1525	1836	0	1691	1860
Flt Permitted	0.950				0.066	
Satd. Flow (perm)	1705	1491	1836	0	117	1860
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		53	5			
Link Speed (k/h)	50		70			70
Link Distance (m)	113.5		401.3			174.6
Travel Time (s)	8.2		20.6			9.0
Confl. Peds. (#/hr)		1		1	1	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	1%	11%	1%	1%
Adj. Flow (vph)	33	53	1136	60	77	763
Shared Lane Traffic (%)						
Lane Group Flow (vph)	33	53	1196	0	77	763
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.1		3.3			3.3
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.9		4.9			4.9
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.08	1.08	1.01	1.01	1.07	1.01
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2		1	2
Detector Template			Thru			Thru
Leading Detector (m)	17.0	17.0	30.5		25.0	30.5
Trailing Detector (m)	-3.0	-3.0	0.0		15.0	0.0
Detector 1 Position(m)	-3.0	-3.0	0.0		15.0	0.0
Detector 1 Size(m)	20.0	20.0	1.8		10.0	1.8
Detector 1 Type	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
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	4		2		1	6
Permitted Phases		4			6	
Detector Phase	4	4	2		1	6
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0		5.0	8.0
Minimum Split (s)	22.5	22.5	23.5		9.5	23.5
Total Split (s)	25.0	25.0	50.0		10.0	60.0
Total Split (%)	29.4%	29.4%	58.8%		11.8%	70.6%
Maximum Green (s)	18.5	18.5	44.0		7.0	54.0
Yellow Time (s)	4.0	4.0	4.0		3.0	4.0
All-Red Time (s)	2.5	2.5	2.0		0.0	2.0
Lost Time Adjust (s)	-1.5	-1.5	-1.0		-2.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0		1.0	5.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		2.0	3.0
Recall Mode	None	None	C-Max		None	C-Max
Walk Time (s)	8.0	8.0	8.0			8.0
Flash Dont Walk (s)	8.0	8.0	8.0			8.0
Pedestrian Calls (#/hr)	1	1	1			1
Act Effct Green (s)	11.1	11.1	61.2		70.8	67.8
Actuated g/C Ratio	0.13	0.13	0.72		0.83	0.80
v/c Ratio	0.15	0.22	0.90		0.33	0.51
Control Delay	32.9	11.5	26.0		9.1	6.1
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	32.9	11.5	26.0		9.1	6.1
LOS	C	B	C		A	A
Approach Delay	19.7		26.0			6.4
Approach LOS	B		C			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 10 (12%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay: 18.0		Intersection LOS: B	
Intersection Capacity Utilization 78.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: Ninth Line & Erin Centre Boulevard





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	6	19	1137	14	22	743
Future Volume (vph)	6	19	1137	14	22	743
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.3	3.5	3.5	3.3	3.5
Storage Length (m)	0.0	0.0		0.0	30.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	7.6				20.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850	0.998			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1745	1561	1857	0	1745	1860
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1745	1561	1857	0	1745	1860
Link Speed (k/h)	50		70			70
Link Distance (m)	130.6		88.4			401.3
Travel Time (s)	9.4		4.5			20.6
Confl. Peds. (#/hr)				1	1	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%
Adj. Flow (vph)	6	20	1210	15	23	790
Shared Lane Traffic (%)						
Lane Group Flow (vph)	6	20	1225	0	23	790
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.3		3.3			3.3
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.9		4.9			4.9
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.04	1.04	1.01	1.01	1.04	1.01
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 70.7%		ICU Level of Service C	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	6	19	1137	14	22	743
Future Volume (Veh/h)	6	19	1137	14	22	743
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	6	20	1210	15	23	790
Pedestrians	1					
Lane Width (m)	3.3					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (m)			360			401
pX, platoon unblocked	0.71	0.62			0.62	
vC, conflicting volume	2054	1218			1226	
vC1, stage 1 conf vol	1218					
vC2, stage 2 conf vol	836					
vCu, unblocked vol	1683	1044			1057	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	88			94	
cM capacity (veh/h)	190	173			412	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	6	20	1225	23	790
Volume Left	6	0	0	23	0
Volume Right	0	20	15	0	0
cSH	190	173	1700	412	1700
Volume to Capacity	0.03	0.12	0.72	0.06	0.46
Queue Length 95th (m)	0.7	2.9	0.0	1.3	0.0
Control Delay (s)	24.6	28.5	0.0	14.3	0.0
Lane LOS	C	D		B	
Approach Delay (s)	27.6		0.0	0.4	
Approach LOS	D				

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	70.7%	ICU Level of Service	C
Analysis Period (min)	15		



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	4	4	1150	5	14	730
Future Volume (vph)	4	4	1150	5	14	730
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.5	3.5	3.3	3.5
Storage Length (m)	0.0	0.0		0.0	15.0	
Storage Lanes	1	0		0	1	
Taper Length (m)	7.6				15.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.932		0.999			
Flt Protected	0.976				0.950	
Satd. Flow (prot)	1553	0	1859	0	1745	1860
Flt Permitted	0.976				0.950	
Satd. Flow (perm)	1553	0	1859	0	1745	1860
Link Speed (k/h)	50		70			70
Link Distance (m)	154.4		271.6			88.4
Travel Time (s)	11.1		14.0			4.5
Confl. Peds. (#/hr)				1	1	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	25%	0%	1%	0%	0%	1%
Adj. Flow (vph)	4	4	1198	5	15	760
Shared Lane Traffic (%)						
Lane Group Flow (vph)	8	0	1203	0	15	760
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		3.3			3.3
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.9		4.9			4.9
Two way Left Turn Lane			Yes			Yes
Headway Factor	0.99	0.99	1.01	1.01	1.04	1.01
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 70.8%		ICU Level of Service C	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	4	4	1150	5	14	730
Future Volume (Veh/h)	4	4	1150	5	14	730
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	4	4	1198	5	15	760
Pedestrians	1					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (m)			272			
pX, platoon unblocked	0.62	0.62			0.62	
vC, conflicting volume	1992	1202			1204	
vC1, stage 1 conf vol	1202					
vC2, stage 2 conf vol	790					
vCu, unblocked vol	2297	1016			1020	
tC, single (s)	6.6	6.2			4.1	
tC, 2 stage (s)	5.6					
tF (s)	3.7	3.3			2.2	
p0 queue free %	98	98			96	
cM capacity (veh/h)	169	180			424	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	8	1203	15	760
Volume Left	4	0	15	0
Volume Right	4	5	0	0
cSH	174	1700	424	1700
Volume to Capacity	0.05	0.71	0.04	0.45
Queue Length 95th (m)	1.1	0.0	0.8	0.0
Control Delay (s)	26.7	0.0	13.8	0.0
Lane LOS	D		B	
Approach Delay (s)	26.7	0.0	0.3	
Approach LOS	D			

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	70.8%	ICU Level of Service	C
Analysis Period (min)	15		

Intersection: 5: Ninth Line & East Lower Base Line/Eglinton Avenue West

Movement	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	T	R	L	TR
Maximum Queue (m)	44.8	94.1	74.9	150.1	148.3	79.9	153.7	50.0	80.0	252.6
Average Queue (m)	27.6	83.8	28.5	141.1	83.4	36.3	147.1	17.9	75.6	194.3
95th Queue (m)	50.3	98.6	69.9	167.8	181.1	87.1	149.6	53.0	92.2	311.8
Link Distance (m)		80.9		141.9	141.9		142.3			249.0
Upstream Blk Time (%)		36		35	8		61			20
Queuing Penalty (veh)		0		0	0		0			150
Storage Bay Dist (m)	15.0		30.0			65.0		30.0	65.0	
Storage Blk Time (%)	70	49	7	50		1	61	0	64	17
Queuing Penalty (veh)	407	27	48	31		7	101	0	332	34

Intersection: 6: Ninth Line & Erin Centre Boulevard

Movement	WB	WB	NB	SB	SB
Directions Served	L	R	TR	L	T
Maximum Queue (m)	22.8	22.9	101.9	31.2	111.7
Average Queue (m)	7.9	9.4	39.6	12.4	31.6
95th Queue (m)	18.4	19.0	90.5	26.9	93.6
Link Distance (m)		102.5	380.6		164.3
Upstream Blk Time (%)					2
Queuing Penalty (veh)					0
Storage Bay Dist (m)	40.0			15.0	
Storage Blk Time (%)				9	13
Queuing Penalty (veh)				63	10

Intersection: 7: Ninth Line & Candlelight Drive

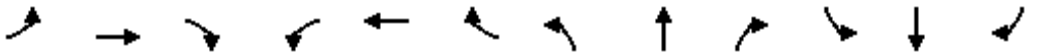
Movement	WB	WB	SB	SB
Directions Served	L	R	L	T
Maximum Queue (m)	12.2	14.0	29.1	209.8
Average Queue (m)	3.2	3.7	6.4	115.3
95th Queue (m)	11.0	11.4	25.9	368.0
Link Distance (m)	119.2	119.2		380.6
Upstream Blk Time (%)				3
Queuing Penalty (veh)				21
Storage Bay Dist (m)			30.0	
Storage Blk Time (%)				27
Queuing Penalty (veh)				6

Intersection: 8: Ninth Line & Skyview Street

Movement	WB	NB	SB	SB
Directions Served	LR	TR	L	T
Maximum Queue (m)	22.9	208.3	22.6	70.2
Average Queue (m)	6.1	10.4	3.5	36.2
95th Queue (m)	22.6	94.9	14.9	94.1
Link Distance (m)	143.6	249.0		70.7
Upstream Blk Time (%)		0		17
Queuing Penalty (veh)		4		126
Storage Bay Dist (m)			15.0	
Storage Blk Time (%)			0	33
Queuing Penalty (veh)			3	5

Network Summary

Network wide Queuing Penalty: 1939

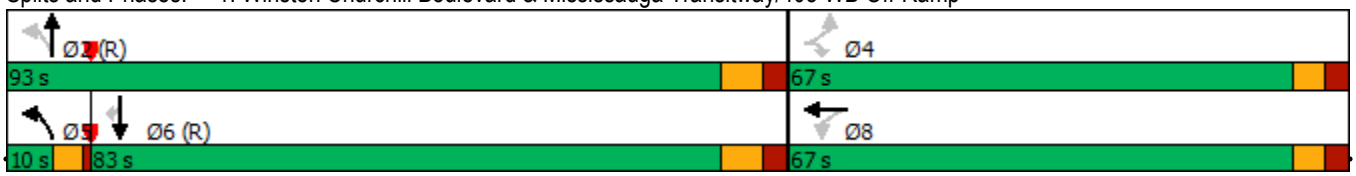


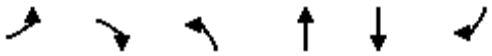
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	0	47	989	2	930	37	1217	0	0	2188	55
Future Volume (vph)	21	0	47	989	2	930	37	1217	0	0	2188	55
Ideal Flow (vphpl)	1900	1900	1900	2000	2000	2000	1860	1900	1900	1900	1900	1640
Lane Width (m)	3.1	3.1	3.1	3.5	3.5	4.4	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0		0.0	100.0		100.0	50.0		0.0	0.0		155.0
Storage Lanes	1		1	1		1	1		0	0		1
Taper Length (m)	2.5			85.0			50.0			2.5		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.86	1.00
Ped Bike Factor	1.00					0.99						
Frt			0.850			0.850						0.850
Flt Protected	0.950			0.950			0.950					
Satd. Flow (prot)	1114	0	1525	3505	1978	1746	1257	4980	0	0	6337	1103
Flt Permitted	0.757			0.950			0.047					
Satd. Flow (perm)	885	0	1525	3505	1978	1725	62	4980	0	0	6337	1103
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)						460						58
Link Speed (k/h)		50			60			60			60	
Link Distance (m)		144.4			204.5			204.4			239.0	
Travel Time (s)		10.4			12.3			12.3			14.3	
Confl. Peds. (#/hr)	1					1			3	3		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	53%	23%	0%	4%	0%	6%	39%	3%	0%	0%	2%	25%
Adj. Flow (vph)	22	0	49	1041	2	979	39	1281	0	0	2303	58
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	0	49	1041	2	979	39	1281	0	0	2303	58
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)		7.0			7.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.08	1.08	1.08	0.95	0.95	0.83	1.04	1.01	1.01	1.01	1.01	1.22
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1		1	1	2	1	1	2			2	1
Detector Template	Left		Right	Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (m)	6.1		6.1	6.1	30.5	6.1	6.1	30.5			30.5	6.1
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Size(m)	6.1		6.1	6.1	1.8	6.1	6.1	1.8			1.8	6.1
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
Detector 2 Position(m)					28.7			28.7			28.7	
Detector 2 Size(m)					1.8			1.8			1.8	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type	Perm		Perm	Perm	NA	Free	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8		Free	2					6
Detector Phase	4		4	8	8		5	2			6	6
Switch Phase												
Minimum Initial (s)	8.0		8.0	8.0	8.0		5.0	4.0			4.0	4.0
Minimum Split (s)	25.0		25.0	25.0	25.0		9.5	26.0			26.0	26.0
Total Split (s)	67.0		67.0	67.0	67.0		10.0	93.0			83.0	83.0
Total Split (%)	41.9%		41.9%	41.9%	41.9%		6.3%	58.1%			51.9%	51.9%
Maximum Green (s)	60.0		60.0	60.0	60.0		5.5	85.0			75.0	75.0
Yellow Time (s)	4.0		4.0	4.0	4.0		3.5	5.0			5.0	5.0
All-Red Time (s)	3.0		3.0	3.0	3.0		1.0	3.0			3.0	3.0
Lost Time Adjust (s)	-2.0		-2.0	-2.0	-2.0		-3.5	-3.0			-3.0	-3.0
Total Lost Time (s)	5.0		5.0	5.0	5.0		1.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0			3.0	3.0
Recall Mode	None		None	None	None		None	C-Max			C-Max	C-Max
Walk Time (s)	7.0		7.0	7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)	11.0		11.0	11.0	11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)	0		0	0	0			0			0	0
Act Effct Green (s)	56.7		56.7	56.7	56.7	160.0	97.3	93.3			84.5	84.5
Actuated g/C Ratio	0.35		0.35	0.35	0.35	1.00	0.61	0.58			0.53	0.53
v/c Ratio	0.07		0.09	0.84	0.00	0.57	0.35	0.44			0.69	0.10
Control Delay	32.8		33.3	54.1	30.5	1.4	26.1	13.4			30.4	5.2
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay	32.8		33.3	54.1	30.5	1.4	26.1	13.4			30.4	5.2
LOS	C		C	D	C	A	C	B			C	A
Approach Delay		33.1			28.5			13.7			29.8	
Approach LOS		C			C			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 160			
Actuated Cycle Length: 160			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 25.7		Intersection LOS: C	
Intersection Capacity Utilization 77.7%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Winston Churchill Boulevard & Mississauga Transitway/403 WB Off-Ramp



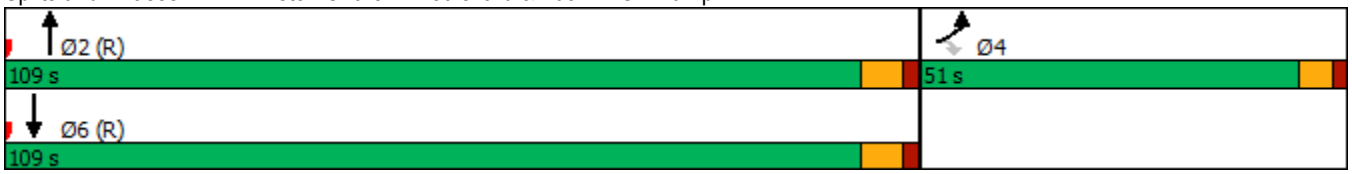


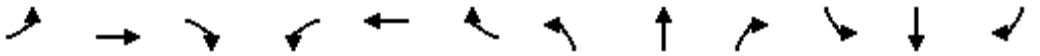
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	750	320	0	809	1733	0
Future Volume (vph)	750	320	0	809	1733	0
Ideal Flow (vphpl)	2000	2000	1900	1900	1900	1900
Lane Width (m)	3.5	3.3	3.5	3.5	3.5	3.5
Storage Length (m)	0.0	75.0	0.0			0.0
Storage Lanes	2	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	0.97	1.00	1.00	0.91	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	3505	1595	0	4839	3400	0
Flt Permitted	0.950					
Satd. Flow (perm)	3505	1595	0	4839	3400	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		23				
Link Speed (k/h)	60			60	60	
Link Distance (m)	208.7			255.6	171.3	
Travel Time (s)	12.5			15.3	10.3	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	4%	3%	0%	6%	5%	0%
Adj. Flow (vph)	798	340	0	861	1844	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	798	340	0	861	1844	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.0			0.0	0.0	
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	0.95	0.98	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
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	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	8.0	8.0		4.0	4.0	
Minimum Split (s)	24.0	24.0		26.0	26.0	
Total Split (s)	51.0	51.0		109.0	109.0	
Total Split (%)	31.9%	31.9%		68.1%	68.1%	
Maximum Green (s)	45.0	45.0		102.0	102.0	
Yellow Time (s)	4.0	4.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-2.0	-2.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	42.5	42.5		107.5	107.5	
Actuated g/C Ratio	0.27	0.27		0.67	0.67	
v/c Ratio	0.86	0.77		0.27	0.81	
Control Delay	65.7	62.8		11.0	20.2	
Queue Delay	0.0	0.0		0.0	0.2	
Total Delay	65.7	62.8		11.0	20.4	
LOS	E	E		B	C	
Approach Delay	64.8			11.0	20.4	
Approach LOS	E			B	C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 160			
Actuated Cycle Length: 160			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 31.5		Intersection LOS: C	
Intersection Capacity Utilization 76.6%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Winston Churchill Boulevard & 403 EB Off-Ramp



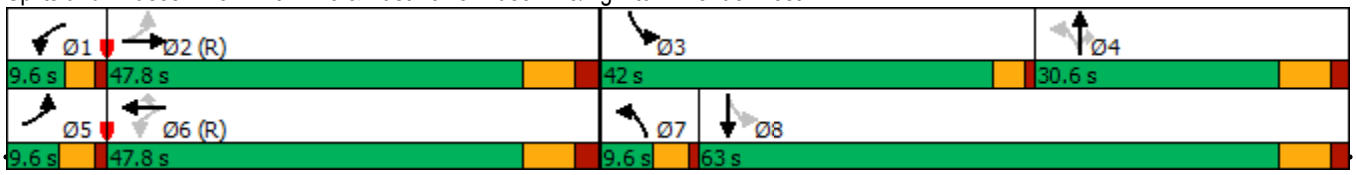


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	741	123	70	309	208	22	583	85	468	1315	89
Future Volume (vph)	37	741	123	70	309	208	22	583	85	468	1315	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1640	1900	1900	1900
Lane Width (m)	3.1	3.3	3.3	3.1	3.3	4.0	3.3	3.3	3.3	3.3	3.5	3.3
Storage Length (m)	15.0		0.0	30.0		0.0	65.0		30.0	125.0		0.0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (m)	30.0			45.0			15.0			70.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor	1.00					0.98			0.98	1.00		
Frt		0.979				0.850			0.850		0.990	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1593	3359	0	1655	1783	1562	1353	3323	1348	1678	3469	0
Flt Permitted	0.416			0.158			0.128			0.206		
Satd. Flow (perm)	697	3359	0	275	1783	1538	182	3323	1326	363	3469	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15				208			147		7	
Link Speed (k/h)		60			60			70			70	
Link Distance (m)		93.8			153.4			154.5			271.6	
Travel Time (s)		5.6			9.2			7.9			14.0	
Confl. Peds. (#/hr)	2					2			2	2		
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 (%)	7%	1%	6%	3%	3%	8%	29%	5%	0%	4%	2%	0%
Adj. Flow (vph)	37	741	123	70	309	208	22	583	85	468	1315	89
Shared Lane Traffic (%)												
Lane Group Flow (vph)	37	864	0	70	309	208	22	583	85	468	1404	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)		3.1			3.1			3.4			3.4	
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	1.08	1.04	1.04	1.08	1.04	0.94	1.04	1.04	1.26	1.04	1.01	1.04
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template						Right						
Leading Detector (m)	10.0	30.5		10.0	30.5	6.1	7.0	30.5	7.0	10.0	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	-3.0	-3.0	-3.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	-3.0	-3.0	-3.0	0.0	0.0	
Detector 1 Size(m)	10.0	10.0		10.0	10.0	6.1	10.0	10.0	10.0	10.0	10.0	
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	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6		6	4		4	8		
Detector Phase	5	2		1	6	6	7	4	4	3	8	
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0	8.0	5.0	8.0	8.0	5.0	8.0	
Minimum Split (s)	9.5	32.5		9.5	32.5	32.5	9.5	25.0	25.0	11.0	25.0	
Total Split (s)	9.6	47.8		9.6	47.8	47.8	9.6	30.6	30.6	42.0	63.0	
Total Split (%)	7.4%	36.8%		7.4%	36.8%	36.8%	7.4%	23.5%	23.5%	32.3%	48.5%	
Maximum Green (s)	5.1	40.3		5.6	40.3	40.3	5.1	23.6	23.6	38.0	56.0	
Yellow Time (s)	3.5	5.0		3.0	5.0	5.0	3.5	5.0	5.0	3.0	5.0	
All-Red Time (s)	1.0	2.5		1.0	2.5	2.5	1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	-3.5	-2.5		-3.0	-2.5	-2.5	-3.5	-2.0	-2.0	-3.0	-2.0	
Total Lost Time (s)	1.0	5.0		1.0	5.0	5.0	1.0	5.0	5.0	1.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0	2.0	4.0	
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None	None	None	None	
Walk Time (s)		10.0			10.0	10.0		8.0	8.0		8.0	
Flash Dont Walk (s)		15.0			15.0	15.0		10.0	10.0		10.0	
Pedestrian Calls (#/hr)		2			2	2		2	2		2	
Act Effct Green (s)	58.8	47.7		59.1	47.8	47.8	40.5	27.9	27.9	68.2	58.5	
Actuated g/C Ratio	0.45	0.37		0.45	0.37	0.37	0.31	0.21	0.21	0.52	0.45	
v/c Ratio	0.10	0.70		0.32	0.47	0.30	0.17	0.82	0.21	0.85	0.90	
Control Delay	21.8	39.3		25.1	36.2	5.2	21.5	59.3	1.2	42.0	41.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	21.8	39.3		25.1	36.2	5.2	21.5	59.3	1.2	42.0	41.8	
LOS	C	D		C	D	A	C	E	A	D	D	
Approach Delay		38.6			23.9			51.0			41.9	
Approach LOS		D			C			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay: 40.1		Intersection LOS: D	
Intersection Capacity Utilization 86.9%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 5: Ninth Line & East Lower Base Line/Eglinton Avenue West



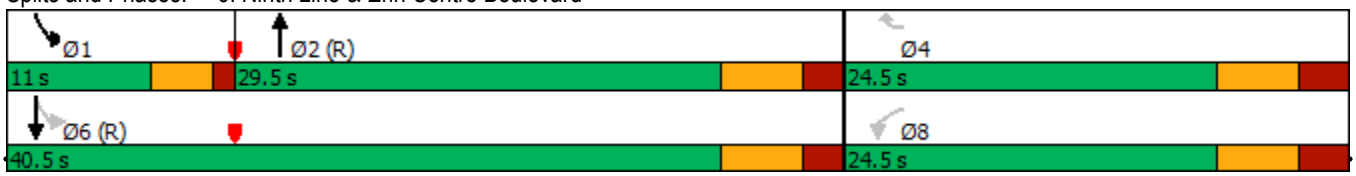


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	108	56	978	36	43	1639
Future Volume (vph)	108	56	978	36	43	1639
Ideal Flow (vphpl)	1900	1900	1900	1900	1860	1900
Lane Width (m)	3.1	3.1	3.4	3.4	3.3	3.5
Storage Length (m)	40.0	0.0		0.0	15.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	55.0				20.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Ped Bike Factor		0.99	1.00		1.00	
Frt		0.850	0.995			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1688	1525	3345	0	1708	3500
Flt Permitted	0.950				0.217	
Satd. Flow (perm)	1688	1505	3345	0	390	3500
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		57	6			
Link Speed (k/h)	50		70			70
Link Distance (m)	113.5		275.7			174.6
Travel Time (s)	8.2		14.2			9.0
Confl. Peds. (#/hr)		1		1	1	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	0%	4%	30%	0%	2%
Adj. Flow (vph)	110	57	998	37	44	1672
Shared Lane Traffic (%)						
Lane Group Flow (vph)	110	57	1035	0	44	1672
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.1		3.3			3.3
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	1.08	1.08	1.03	1.03	1.07	1.01
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2		1	2
Detector Template			Thru			Thru
Leading Detector (m)	17.0	17.0	30.5		25.0	30.5
Trailing Detector (m)	-3.0	-3.0	0.0		15.0	0.0
Detector 1 Position(m)	-3.0	-3.0	0.0		15.0	0.0
Detector 1 Size(m)	20.0	20.0	1.8		10.0	1.8
Detector 1 Type	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
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector 2 Extend (s)			0.0			0.0
Turn Type	Perm	Perm	NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8	4			6	
Detector Phase	8	4	2		1	6
Switch Phase						
Minimum Initial (s)	5.0	8.0	8.0		7.0	8.0
Minimum Split (s)	24.5	22.5	22.0		11.0	22.0
Total Split (s)	24.5	24.5	29.5		11.0	40.5
Total Split (%)	37.7%	37.7%	45.4%		16.9%	62.3%
Maximum Green (s)	18.0	18.0	23.5		7.0	34.5
Yellow Time (s)	4.0	4.0	4.0		3.0	4.0
All-Red Time (s)	2.5	2.5	2.0		1.0	2.0
Lost Time Adjust (s)	-1.5	-1.5	-1.0		-3.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0		1.0	5.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		2.0	3.0
Recall Mode	None	None	C-Max		None	C-Max
Walk Time (s)	7.0	8.0	8.0			8.0
Flash Dont Walk (s)	11.0	8.0	8.0			8.0
Pedestrian Calls (#/hr)	0	1	1			1
Act Effct Green (s)	11.7	12.1	40.2		49.8	46.8
Actuated g/C Ratio	0.18	0.19	0.62		0.77	0.72
v/c Ratio	0.36	0.17	0.50		0.09	0.66
Control Delay	25.5	7.6	11.8		3.8	9.1
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	25.5	7.6	11.8		3.8	9.1
LOS	C	A	B		A	A
Approach Delay	19.4		11.8			9.0
Approach LOS	B		B			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 65			
Actuated Cycle Length: 65			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 10.6		Intersection LOS: B	
Intersection Capacity Utilization 59.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 6: Ninth Line & Erin Centre Boulevard





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	10	35	951	4	8	1786
Future Volume (vph)	10	35	951	4	8	1786
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.3	3.5	3.5	3.3	3.5
Storage Length (m)	0.0	0.0		0.0	30.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	7.6				20.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Ped Bike Factor						
Frt		0.850	0.999			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1745	1561	3365	0	1745	3500
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1745	1561	3365	0	1745	3500
Link Speed (k/h)	50		70			70
Link Distance (m)	130.6		88.4			125.6
Travel Time (s)	9.4		4.5			6.5
Confl. Peds. (#/hr)				1	1	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	6%	0%	0%	2%
Adj. Flow (vph)	10	36	980	4	8	1841
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	36	984	0	8	1841
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.3		3.4			3.4
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	1.04	1.04	1.01	1.01	1.04	1.01
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

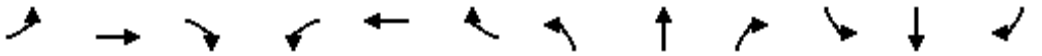
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 59.4%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	10	35	951	4	8	1786
Future Volume (Veh/h)	10	35	951	4	8	1786
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	10	36	980	4	8	1841
Pedestrians	1					
Lane Width (m)	3.3					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			88			401
pX, platoon unblocked	0.71	0.94			0.94	
vC, conflicting volume	1920	493			985	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1090	328			853	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	93	94			99	
cM capacity (veh/h)	150	631			745	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	10	36	653	331	8	920	920
Volume Left	10	0	0	0	8	0	0
Volume Right	0	36	0	4	0	0	0
cSH	150	631	1700	1700	745	1700	1700
Volume to Capacity	0.07	0.06	0.38	0.19	0.01	0.54	0.54
Queue Length 95th (m)	1.6	1.4	0.0	0.0	0.2	0.0	0.0
Control Delay (s)	30.8	11.0	0.0	0.0	9.9	0.0	0.0
Lane LOS	D	B			A		
Approach Delay (s)	15.3		0.0		0.0		
Approach LOS	C						

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	59.4%	ICU Level of Service	B
Analysis Period (min)	15		

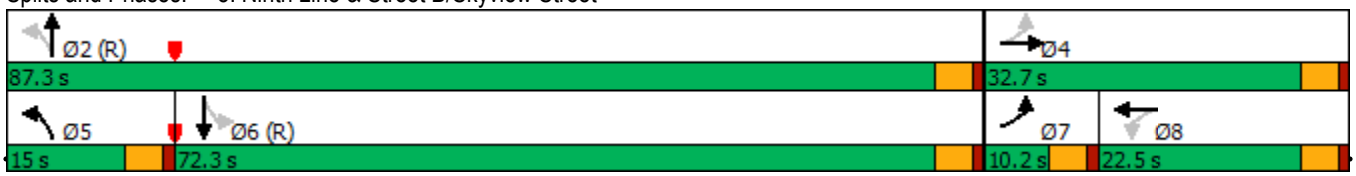


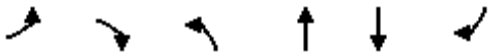
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	123	8	227	5	8	12	82	818	2	2	1773	31
Future Volume (vph)	123	8	227	5	8	12	82	818	2	2	1773	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.3	3.3	3.3	3.3	3.3	3.4	3.4	3.5	3.3	3.4	3.4
Storage Length (m)	15.0		0.0	0.0		0.0	50.0		0.0	60.0		0.0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (m)	2.5			7.6			7.6			30.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor								1.00		1.00		
Frt		0.855			0.938						0.997	
Flt Protected	0.950				0.990		0.950			0.950		
Satd. Flow (prot)	1711	1540	0	0	1694	0	1730	3362	0	1745	3450	0
Flt Permitted	0.656				0.689		0.066			0.340		
Satd. Flow (perm)	1181	1540	0	0	1179	0	120	3362	0	624	3450	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		160			12						3	
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		77.4			154.4			271.6			88.4	
Travel Time (s)		5.6			11.1			14.0			4.5	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.92	0.92	0.92	0.99	0.92	0.99	0.92	0.99	0.99	0.99	0.99	0.92
Heavy Vehicles (%)	2%	2%	2%	0%	2%	0%	2%	5%	0%	0%	2%	2%
Adj. Flow (vph)	134	9	247	5	9	12	89	826	2	2	1791	34
Shared Lane Traffic (%)												
Lane Group Flow (vph)	134	256	0	0	26	0	89	828	0	2	1825	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)		3.3			3.3			3.4			3.4	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.03	1.03	1.01	1.04	1.03	1.03
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			28.7			28.7	
Detector 2 Size(m)		0.6			0.6			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	22.5		22.5	22.5		9.5	22.5		22.5	22.5	
Total Split (s)	10.2	32.7		22.5	22.5		15.0	87.3		72.3	72.3	
Total Split (%)	8.5%	27.3%		18.8%	18.8%		12.5%	72.8%		60.3%	60.3%	
Maximum Green (s)	5.7	28.2		18.0	18.0		10.5	82.8		67.8	67.8	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	-2.0	-2.0			-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	2.5	2.5			2.5		2.5	2.5		2.5	2.5	
Lead/Lag	Lead			Lag	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	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	None	None		None	None		None	C-Max		C-Max	C-Max	
Walk Time (s)		7.0		7.0	7.0			7.0		7.0	7.0	
Flash Dont Walk (s)		11.0		11.0	11.0			11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0		0	0			0		0	0	
Act Effct Green (s)	16.6	16.6			9.6		98.4	98.4		86.3	86.3	
Actuated g/C Ratio	0.14	0.14			0.08		0.82	0.82		0.72	0.72	
v/c Ratio	0.67	0.73			0.25		0.39	0.30		0.00	0.74	
Control Delay	63.1	30.3			38.7		11.6	3.4		7.5	14.1	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	63.1	30.3			38.7		11.6	3.4		7.5	14.1	
LOS	E	C			D		B	A		A	B	
Approach Delay		41.6			38.7			4.2			14.1	
Approach LOS		D			D			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 14.8		Intersection LOS: B	
Intersection Capacity Utilization 79.0%		ICU Level of Service D	
Analysis Period (min) 15			

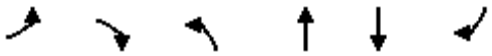
Splits and Phases: 8: Ninth Line & Street B/Skyview Street





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	5	25	2	1009	1772	12
Future Volume (vph)	5	25	2	1009	1772	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.3	3.4	3.4	3.4	3.0
Storage Length (m)	0.0	0.0	30.0			0.0
Storage Lanes	1	0	1			0
Taper Length (m)	2.5		20.0			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt	0.886				0.999	
Flt Protected	0.992		0.950			
Satd. Flow (prot)	1583	0	1730	3461	3457	0
Flt Permitted	0.992		0.950			
Satd. Flow (perm)	1583	0	1730	3461	3457	0
Link Speed (k/h)	48			70	70	
Link Distance (m)	110.9			125.6	275.7	
Travel Time (s)	8.3			6.5	14.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	27	2	1097	1926	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	32	0	2	1097	1939	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.3			3.4	3.4	
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	1.04	1.04	1.03	1.03	1.03	1.09
Turning Speed (k/h)	24	14	24			14
Sign Control	Stop			Free	Free	

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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	25	2	1009	1772	12
Future Volume (Veh/h)	5	25	2	1009	1772	12
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	27	2	1097	1926	13
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				214	276	
pX, platoon unblocked	0.68	0.66	0.66			
vC, conflicting volume	2485	970	1939			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1884	0	1385			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	88	96	99			
cM capacity (veh/h)	42	713	322			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	32	2	548	548	1284	655
Volume Left	5	2	0	0	0	0
Volume Right	27	0	0	0	0	13
cSH	206	322	1700	1700	1700	1700
Volume to Capacity	0.16	0.01	0.32	0.32	0.76	0.39
Queue Length 95th (m)	4.1	0.1	0.0	0.0	0.0	0.0
Control Delay (s)	25.7	16.2	0.0	0.0	0.0	0.0
Lane LOS	D	C				
Approach Delay (s)	25.7	0.0			0.0	
Approach LOS	D					

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	59.4%	ICU Level of Service	B
Analysis Period (min)	15		

Intersection: 5: Ninth Line & East Lower Base Line/Eglinton Avenue West

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	R	L	T	T	R	L	T
Maximum Queue (m)	44.8	86.7	86.5	56.0	108.6	20.7	78.3	150.2	143.4	50.0	168.2	200.9
Average Queue (m)	11.6	79.5	74.4	14.8	52.6	0.8	13.9	98.5	82.5	23.4	93.8	109.4
95th Queue (m)	36.5	87.2	92.2	33.8	92.6	9.4	52.9	148.1	133.5	59.2	151.5	176.1
Link Distance (m)		76.4	76.4		138.7	138.7		137.9	137.9			248.3
Upstream Blk Time (%)		25	16					5	2			0
Queuing Penalty (veh)		0	0					0	0			0
Storage Bay Dist (m)	15.0			30.0			65.0			30.0	125.0	
Storage Blk Time (%)	3	59		1	26		0	38	47	0	2	7
Queuing Penalty (veh)	12	22		2	18		0	8	40	0	15	32

Intersection: 5: Ninth Line & East Lower Base Line/Eglinton Avenue West

Movement	SB
Directions Served	TR
Maximum Queue (m)	202.6
Average Queue (m)	113.6
95th Queue (m)	178.9
Link Distance (m)	248.3
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Ninth Line & Erin Centre Boulevard

Movement	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	R	T	TR	L	T	T
Maximum Queue (m)	34.4	22.2	63.7	70.3	32.2	95.6	81.4
Average Queue (m)	18.7	8.3	24.4	29.0	8.5	45.7	31.2
95th Queue (m)	31.7	16.8	50.7	57.1	21.3	79.1	61.6
Link Distance (m)		98.7	260.5	260.5		164.0	164.0
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)	40.0				15.0		
Storage Blk Time (%)	0				3	20	
Queuing Penalty (veh)	0				27	9	

Intersection: 7: Ninth Line & Candlelight Drive

Movement	WB	WB	SB	SB	SB
Directions Served	L	R	L	T	T
Maximum Queue (m)	15.0	15.6	8.6	85.4	82.8
Average Queue (m)	3.7	7.1	1.0	23.8	23.4
95th Queue (m)	12.0	14.1	5.7	66.5	65.5
Link Distance (m)	115.8	115.8		109.4	109.4
Upstream Blk Time (%)				0	0
Queuing Penalty (veh)				0	0
Storage Bay Dist (m)			30.0		
Storage Blk Time (%)				4	
Queuing Penalty (veh)				0	

Intersection: 8: Ninth Line & Street B/Skyview Street

Movement	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	LTR	L	T	TR	L	T	TR
Maximum Queue (m)	17.4	76.8	17.8	49.6	106.2	150.0	5.2	74.5	75.9
Average Queue (m)	15.5	62.6	6.9	16.0	19.8	24.9	0.2	58.0	58.2
95th Queue (m)	21.6	87.8	15.6	33.3	66.5	84.1	2.4	89.7	89.3
Link Distance (m)		66.1	140.0		248.3	248.3		67.9	67.9
Upstream Blk Time (%)		42				0		7	6
Queuing Penalty (veh)		0				0		62	55
Storage Bay Dist (m)	15.0			50.0			60.0		
Storage Blk Time (%)	41	57		0	1			11	
Queuing Penalty (veh)	97	70		1	1			0	

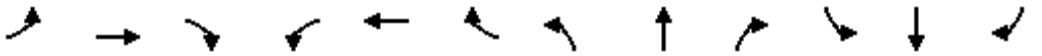
Intersection: 9: Ninth Line & Street A

Movement	EB	NB	SB	SB
Directions Served	LR	L	T	TR
Maximum Queue (m)	21.5	6.9	11.2	6.1
Average Queue (m)	7.1	0.6	0.4	0.2
95th Queue (m)	16.6	4.0	4.7	3.1
Link Distance (m)	99.8		260.5	260.5
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)		30.0		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 474

1: Winston Churchill Boulevard & Mississauga Transitway/403 WB Off-Ramp

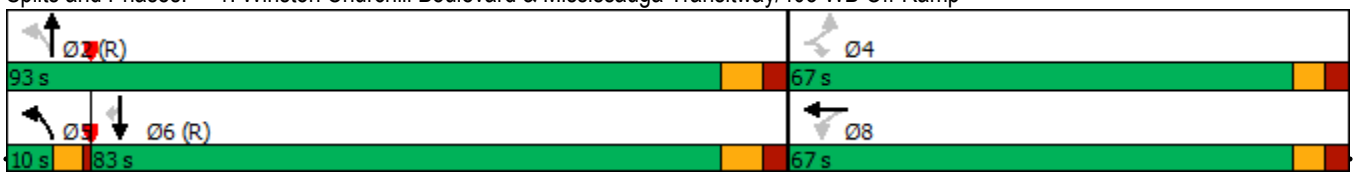


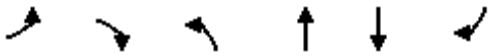
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	0	46	772	13	1671	40	1276	0	0	1960	46
Future Volume (vph)	53	0	46	772	13	1671	40	1276	0	0	1960	46
Ideal Flow (vphpl)	1900	1900	1900	2000	2000	2000	1860	1900	1900	1900	1900	1640
Lane Width (m)	3.1	3.1	3.1	3.5	3.5	4.4	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0		0.0	100.0		100.0	50.0		0.0	0.0		155.0
Storage Lanes	1		1	1		1	1		0	0		1
Taper Length (m)	2.5			85.0			50.0			2.5		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.86	1.00
Ped Bike Factor	1.00					0.99						
Frt			0.850			0.850						0.850
Flt Protected	0.950			0.950			0.950					
Satd. Flow (prot)	1386	0	1211	3574	1978	1851	1213	5079	0	0	6399	1112
Flt Permitted	0.748			0.950			0.053					
Satd. Flow (perm)	1088	0	1211	3574	1978	1828	68	5079	0	0	6399	1112
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)						411						58
Link Speed (k/h)		50			60			60			60	
Link Distance (m)		144.4			204.5			204.4			239.0	
Travel Time (s)		10.4			12.3			12.3			14.3	
Confl. Peds. (#/hr)	1					1			3	3		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	23%	0%	26%	2%	0%	0%	44%	1%	0%	0%	1%	24%
Adj. Flow (vph)	56	0	48	813	14	1759	42	1343	0	0	2063	48
Shared Lane Traffic (%)												
Lane Group Flow (vph)	56	0	48	813	14	1759	42	1343	0	0	2063	48
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)		7.0			7.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.08	1.08	1.08	0.95	0.95	0.83	1.04	1.01	1.01	1.01	1.01	1.22
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1		1	1	2	1	1	2			2	1
Detector Template	Left		Right	Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (m)	6.1		6.1	6.1	30.5	6.1	6.1	30.5			30.5	6.1
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Size(m)	6.1		6.1	6.1	1.8	6.1	6.1	1.8			1.8	6.1
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
Detector 2 Position(m)					28.7			28.7			28.7	
Detector 2 Size(m)					1.8			1.8			1.8	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type	Perm		Perm	Perm	NA	Free	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8		Free	2					6
Detector Phase	4		4	8	8		5	2			6	6
Switch Phase												
Minimum Initial (s)	8.0		8.0	8.0	8.0		5.0	4.0			4.0	4.0
Minimum Split (s)	25.0		25.0	25.0	25.0		9.5	26.0			26.0	26.0
Total Split (s)	67.0		67.0	67.0	67.0		10.0	93.0			83.0	83.0
Total Split (%)	41.9%		41.9%	41.9%	41.9%		6.3%	58.1%			51.9%	51.9%
Maximum Green (s)	60.0		60.0	60.0	60.0		5.5	85.0			75.0	75.0
Yellow Time (s)	4.0		4.0	4.0	4.0		3.5	5.0			5.0	5.0
All-Red Time (s)	3.0		3.0	3.0	3.0		1.0	3.0			3.0	3.0
Lost Time Adjust (s)	-2.0		-2.0	-2.0	-2.0		-3.5	-3.0			-3.0	-3.0
Total Lost Time (s)	5.0		5.0	5.0	5.0		1.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0			3.0	3.0
Recall Mode	None		None	None	None		None	C-Max			C-Max	C-Max
Walk Time (s)	7.0		7.0	7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)	11.0		11.0	11.0	11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)	0		0	0	0			0			0	0
Act Effct Green (s)	46.3		46.3	46.3	46.3	160.0	107.7	103.7			93.4	93.4
Actuated g/C Ratio	0.29		0.29	0.29	0.29	1.00	0.67	0.65			0.58	0.58
v/c Ratio	0.18		0.14	0.79	0.02	0.96	0.33	0.41			0.55	0.07
Control Delay	42.0		40.9	57.8	37.6	15.3	25.8	11.9			22.6	3.5
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay	42.0		40.9	57.8	37.6	15.3	25.8	11.9			22.6	3.5
LOS	D		D	E	D	B	C	B			C	A
Approach Delay		41.5			28.8			12.4			22.1	
Approach LOS		D			C			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 160			
Actuated Cycle Length: 160			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.96			
Intersection Signal Delay: 23.1		Intersection LOS: C	
Intersection Capacity Utilization 68.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Winston Churchill Boulevard & Mississauga Transitway/403 WB Off-Ramp



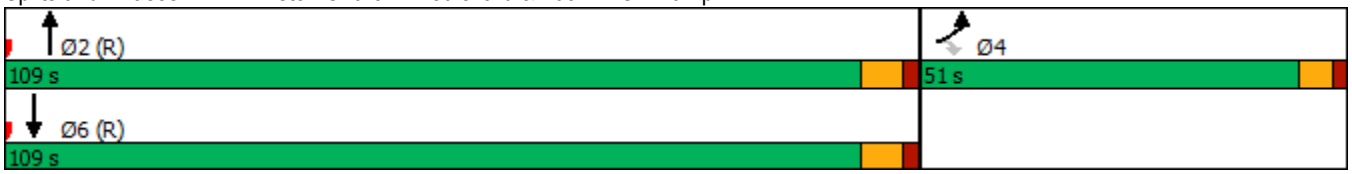


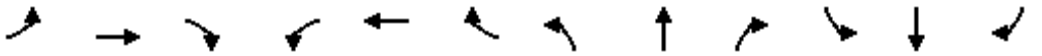
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	277	145	0	1155	1517	0
Future Volume (vph)	277	145	0	1155	1517	0
Ideal Flow (vphpl)	2000	2000	1900	1900	1900	1900
Lane Width (m)	3.5	3.3	3.5	3.5	3.5	3.5
Storage Length (m)	0.0	75.0	0.0			0.0
Storage Lanes	2	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	0.97	1.00	1.00	0.91	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	3505	1611	0	5029	3500	0
Flt Permitted	0.950					
Satd. Flow (perm)	3505	1611	0	5029	3500	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		41				
Link Speed (k/h)	60			60	60	
Link Distance (m)	208.7			255.6	171.3	
Travel Time (s)	12.5			15.3	10.3	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	2%	0%	2%	2%	0%
Adj. Flow (vph)	289	151	0	1203	1580	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	289	151	0	1203	1580	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.0			0.0	0.0	
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	0.95	0.98	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
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	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	8.0	8.0		4.0	4.0	
Minimum Split (s)	24.0	24.0		26.0	26.0	
Total Split (s)	51.0	51.0		109.0	109.0	
Total Split (%)	31.9%	31.9%		68.1%	68.1%	
Maximum Green (s)	45.0	45.0		102.0	102.0	
Yellow Time (s)	4.0	4.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-2.0	-2.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	19.8	19.8		130.2	130.2	
Actuated g/C Ratio	0.12	0.12		0.81	0.81	
v/c Ratio	0.67	0.64		0.29	0.55	
Control Delay	74.3	60.5		4.0	6.9	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	74.3	60.5		4.0	6.9	
LOS	E	E		A	A	
Approach Delay	69.6			4.0	6.9	
Approach LOS	E			A	A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 160			
Actuated Cycle Length: 160			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 14.4		Intersection LOS: B	
Intersection Capacity Utilization 58.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Winston Churchill Boulevard & 403 EB Off-Ramp



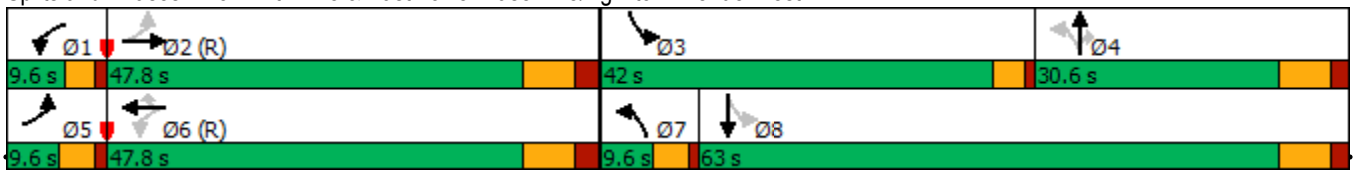


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	601	47	65	836	560	86	999	90	395	859	67
Future Volume (vph)	81	601	47	65	836	560	86	999	90	395	859	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1640	1900	1900	1900
Lane Width (m)	3.1	3.3	3.3	3.1	3.3	4.0	3.3	3.3	3.3	3.3	3.5	3.3
Storage Length (m)	15.0		0.0	30.0		0.0	65.0		30.0	125.0		0.0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (m)	30.0			45.0			15.0			70.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor						0.98			0.98			
Frt		0.989				0.850			0.850		0.989	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1705	3379	0	1671	1818	1654	1745	3455	1334	1728	3498	0
Flt Permitted	0.089			0.274			0.302			0.102		
Satd. Flow (perm)	160	3379	0	482	1818	1629	555	3455	1313	185	3498	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				304			147		8	
Link Speed (k/h)		60			60			70			70	
Link Distance (m)		93.8			153.4			154.5			271.6	
Travel Time (s)		5.6			9.2			7.9			14.0	
Confl. Peds. (#/hr)	2					2			2	2		
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%	2%	4%	2%	1%	2%	0%	1%	1%	1%	1%	0%
Adj. Flow (vph)	81	601	47	65	836	560	86	999	90	395	859	67
Shared Lane Traffic (%)												
Lane Group Flow (vph)	81	648	0	65	836	560	86	999	90	395	926	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)		3.1			3.1			3.4			3.4	
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	1.08	1.04	1.04	1.08	1.04	0.94	1.04	1.04	1.26	1.04	1.01	1.04
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template						Right						
Leading Detector (m)	10.0	30.5		10.0	30.5	6.1	7.0	30.5	7.0	10.0	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	-3.0	-3.0	-3.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	-3.0	-3.0	-3.0	0.0	0.0	
Detector 1 Size(m)	10.0	10.0		10.0	10.0	6.1	10.0	10.0	10.0	10.0	10.0	
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	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6		6	4		4	8		
Detector Phase	5	2		1	6	6	7	4	4	3	8	
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0	8.0	5.0	8.0	8.0	5.0	8.0	
Minimum Split (s)	9.5	32.5		9.5	32.5	32.5	9.5	25.0	25.0	11.0	25.0	
Total Split (s)	9.6	47.8		9.6	47.8	47.8	9.6	30.6	30.6	42.0	63.0	
Total Split (%)	7.4%	36.8%		7.4%	36.8%	36.8%	7.4%	23.5%	23.5%	32.3%	48.5%	
Maximum Green (s)	5.1	40.3		5.6	40.3	40.3	5.1	23.6	23.6	38.0	56.0	
Yellow Time (s)	3.5	5.0		3.0	5.0	5.0	3.5	5.0	5.0	3.0	5.0	
All-Red Time (s)	1.0	2.5		1.0	2.5	2.5	1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	-3.5	-2.5		-3.0	-2.5	-2.5	-3.5	-2.0	-2.0	-3.0	-2.0	
Total Lost Time (s)	1.0	5.0		1.0	5.0	5.0	1.0	5.0	5.0	1.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0	2.0	4.0	
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None	None	None	None	
Walk Time (s)		10.0			10.0	10.0		8.0	8.0		8.0	
Flash Dont Walk (s)		15.0			15.0	15.0		10.0	10.0		10.0	
Pedestrian Calls (#/hr)		2			2	2		2	2		2	
Act Effct Green (s)	55.6	44.7		55.4	42.8	42.8	49.7	37.1	37.1	71.6	58.0	
Actuated g/C Ratio	0.43	0.34		0.43	0.33	0.33	0.38	0.29	0.29	0.55	0.45	
v/c Ratio	0.48	0.56		0.23	1.40	0.76	0.30	1.01	0.19	0.87	0.59	
Control Delay	31.4	36.9		23.8	223.6	24.6	20.1	78.0	1.5	53.6	28.8	
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	36.9		23.8	223.6	24.6	20.1	78.0	1.5	53.6	28.8	
LOS	C	D		C	F	C	C	E	A	D	C	
Approach Delay		36.3			138.4			67.9			36.2	
Approach LOS		D			F			E			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.40			
Intersection Signal Delay: 76.1		Intersection LOS: E	
Intersection Capacity Utilization 113.0%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 5: Ninth Line & East Lower Base Line/Eglinton Avenue West



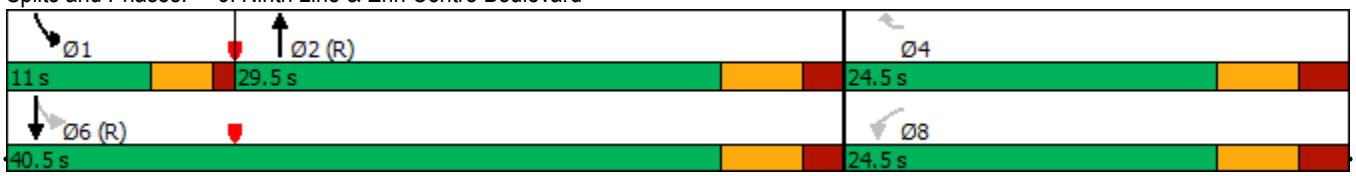


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	48	59	1476	71	81	1353
Future Volume (vph)	48	59	1476	71	81	1353
Ideal Flow (vphpl)	1900	1900	1900	1900	1860	1900
Lane Width (m)	3.1	3.1	3.4	3.4	3.3	3.5
Storage Length (m)	40.0	0.0		0.0	15.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	55.0				20.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Ped Bike Factor		0.99	1.00			
Frt		0.850	0.993			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1705	1525	3451	0	1691	3535
Flt Permitted	0.950				0.099	
Satd. Flow (perm)	1705	1505	3451	0	176	3535
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		61	8			
Link Speed (k/h)	50		70			70
Link Distance (m)	113.5		275.7			174.6
Travel Time (s)	8.2		14.2			9.0
Confl. Peds. (#/hr)		1		1	1	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	1%	11%	1%	1%
Adj. Flow (vph)	50	61	1538	74	84	1409
Shared Lane Traffic (%)						
Lane Group Flow (vph)	50	61	1612	0	84	1409
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.1		3.3			3.3
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	1.08	1.08	1.03	1.03	1.07	1.01
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2		1	2
Detector Template			Thru			Thru
Leading Detector (m)	17.0	17.0	30.5		25.0	30.5
Trailing Detector (m)	-3.0	-3.0	0.0		15.0	0.0
Detector 1 Position(m)	-3.0	-3.0	0.0		15.0	0.0
Detector 1 Size(m)	20.0	20.0	1.8		10.0	1.8
Detector 1 Type	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
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector 2 Extend (s)			0.0			0.0
Turn Type	Perm	Perm	NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8	4			6	
Detector Phase	8	4	2		1	6
Switch Phase						
Minimum Initial (s)	5.0	8.0	8.0		7.0	8.0
Minimum Split (s)	24.5	22.5	22.0		11.0	22.0
Total Split (s)	24.5	24.5	29.5		11.0	40.5
Total Split (%)	37.7%	37.7%	45.4%		16.9%	62.3%
Maximum Green (s)	18.0	18.0	23.5		7.0	34.5
Yellow Time (s)	4.0	4.0	4.0		3.0	4.0
All-Red Time (s)	2.5	2.5	2.0		1.0	2.0
Lost Time Adjust (s)	-1.5	-1.5	-1.0		-3.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0		1.0	5.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		2.0	3.0
Recall Mode	None	None	C-Max		None	C-Max
Walk Time (s)	7.0	8.0	8.0			8.0
Flash Dont Walk (s)	11.0	8.0	8.0			8.0
Pedestrian Calls (#/hr)	0	1	1			1
Act Effct Green (s)	10.4	11.2	41.8		53.6	51.6
Actuated g/C Ratio	0.16	0.17	0.64		0.82	0.79
v/c Ratio	0.18	0.20	0.73		0.22	0.50
Control Delay	23.4	8.0	16.4		4.2	5.7
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	23.4	8.0	16.4		4.2	5.7
LOS	C	A	B		A	A
Approach Delay	15.0		16.4			5.7
Approach LOS	B		B			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 65			
Actuated Cycle Length: 65			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 11.4		Intersection LOS: B	
Intersection Capacity Utilization 65.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 6: Ninth Line & Erin Centre Boulevard





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	6	20	1543	14	23	1352
Future Volume (vph)	6	20	1543	14	23	1352
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.3	3.5	3.5	3.3	3.5
Storage Length (m)	0.0	0.0		0.0	30.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	7.6				20.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Ped Bike Factor						
Frt		0.850	0.999			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1745	1561	3531	0	1745	3535
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1745	1561	3531	0	1745	3535
Link Speed (k/h)	50		70			70
Link Distance (m)	130.6		88.4			125.6
Travel Time (s)	9.4		4.5			6.5
Confl. Peds. (#/hr)				1	1	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%
Adj. Flow (vph)	6	21	1641	15	24	1438
Shared Lane Traffic (%)						
Lane Group Flow (vph)	6	21	1656	0	24	1438
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.3		3.4			3.4
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	1.04	1.04	1.01	1.01	1.04	1.01
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

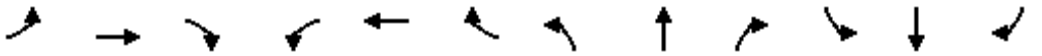
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.1%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	6	20	1543	14	23	1352
Future Volume (Veh/h)	6	20	1543	14	23	1352
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	6	21	1641	15	24	1438
Pedestrians	1					
Lane Width (m)	3.3					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			88			401
pX, platoon unblocked	0.90	0.87			0.87	
vC, conflicting volume	2416	829			1657	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1676	493			1449	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	92	95			94	
cM capacity (veh/h)	74	456			410	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	6	21	1094	562	24	719	719
Volume Left	6	0	0	0	24	0	0
Volume Right	0	21	0	15	0	0	0
cSH	74	456	1700	1700	410	1700	1700
Volume to Capacity	0.08	0.05	0.64	0.33	0.06	0.42	0.42
Queue Length 95th (m)	1.9	1.1	0.0	0.0	1.4	0.0	0.0
Control Delay (s)	57.8	13.3	0.0	0.0	14.3	0.0	0.0
Lane LOS	F	B			B		
Approach Delay (s)	23.2		0.0		0.2		
Approach LOS	C						

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	53.1%	ICU Level of Service	A
Analysis Period (min)	15		

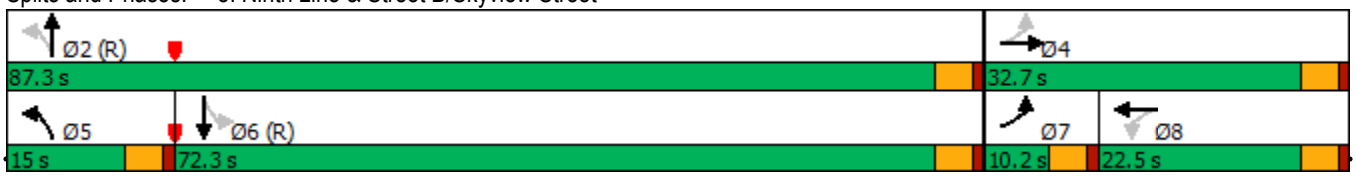


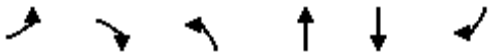
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	6	164	4	8	4	260	1471	5	14	1239	97
Future Volume (vph)	88	6	164	4	8	4	260	1471	5	14	1239	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.3	3.3	3.3	3.3	3.3	3.4	3.4	3.5	3.3	3.4	3.4
Storage Length (m)	15.0		0.0	0.0		0.0	50.0		0.0	60.0		0.0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (m)	2.5			7.6			7.6			30.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor								1.00		1.00		
Frt		0.856			0.968			0.999			0.988	
Flt Protected	0.950				0.988		0.950			0.950		
Satd. Flow (prot)	1711	1541	0	0	1643	0	1730	3491	0	1745	3450	0
Flt Permitted	0.728				0.864		0.133			0.175		
Satd. Flow (perm)	1311	1541	0	0	1436	0	242	3491	0	321	3450	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		178			4			1			12	
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		77.4			154.4			271.6			88.4	
Travel Time (s)		5.6			11.1			14.0			4.5	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.92	0.92	0.92	0.99	0.92	0.99	0.92	0.99	0.99	0.99	0.99	0.92
Heavy Vehicles (%)	2%	2%	2%	25%	2%	0%	2%	1%	0%	0%	1%	2%
Adj. Flow (vph)	96	7	178	4	9	4	283	1486	5	14	1252	105
Shared Lane Traffic (%)												
Lane Group Flow (vph)	96	185	0	0	17	0	283	1491	0	14	1357	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)		3.3			3.3			3.4			3.4	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.03	1.03	1.01	1.04	1.03	1.03
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			28.7			28.7	
Detector 2 Size(m)		0.6			0.6			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	22.5		22.5	22.5		9.5	22.5		22.5	22.5	
Total Split (s)	10.2	32.7		22.5	22.5		15.0	87.3		72.3	72.3	
Total Split (%)	8.5%	27.3%		18.8%	18.8%		12.5%	72.8%		60.3%	60.3%	
Maximum Green (s)	5.7	28.2		18.0	18.0		10.5	82.8		67.8	67.8	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	-2.0	-2.0			-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	2.5	2.5			2.5		2.5	2.5		2.5	2.5	
Lead/Lag	Lead			Lag	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	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	None	None		None	None		None	C-Max		C-Max	C-Max	
Walk Time (s)		7.0		7.0	7.0			7.0		7.0	7.0	
Flash Dont Walk (s)		11.0		11.0	11.0			11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0		0	0			0		0	0	
Act Effct Green (s)	12.8	12.8			8.7		102.2	102.2		81.2	81.2	
Actuated g/C Ratio	0.11	0.11			0.07		0.85	0.85		0.68	0.68	
v/c Ratio	0.58	0.57			0.16		0.65	0.50		0.06	0.58	
Control Delay	63.4	14.7			46.4		18.4	3.5		10.8	13.1	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	63.4	14.7			46.4		18.4	3.5		10.8	13.1	
LOS	E	B			D		B	A		B	B	
Approach Delay		31.4			46.4			5.9			13.1	
Approach LOS		C			D			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 11.0		Intersection LOS: B	
Intersection Capacity Utilization 73.3%		ICU Level of Service D	
Analysis Period (min) 15			

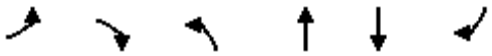
Splits and Phases: 8: Ninth Line & Street B/Skyview Street





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	3	14	6	1562	1375	37
Future Volume (vph)	3	14	6	1562	1375	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.3	3.4	3.4	3.4	3.0
Storage Length (m)	0.0	0.0	30.0			0.0
Storage Lanes	1	0	1			0
Taper Length (m)	2.5		20.0			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt	0.887				0.996	
Flt Protected	0.992		0.950			
Satd. Flow (prot)	1584	0	1730	3461	3447	0
Flt Permitted	0.992		0.950			
Satd. Flow (perm)	1584	0	1730	3461	3447	0
Link Speed (k/h)	48			70	70	
Link Distance (m)	110.9			125.6	275.7	
Travel Time (s)	8.3			6.5	14.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	15	7	1698	1495	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	18	0	7	1698	1535	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.3			3.4	3.4	
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	1.04	1.04	1.03	1.03	1.03	1.09
Turning Speed (k/h)	24	14	24			14
Sign Control	Stop			Free	Free	

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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	14	6	1562	1375	37
Future Volume (Veh/h)	3	14	6	1562	1375	37
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	15	7	1698	1495	40
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				214	276	
pX, platoon unblocked	0.86	0.79	0.79			
vC, conflicting volume	2378	768	1535			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1557	189	1156			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	98	99			
cM capacity (veh/h)	88	652	477			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	18	7	849	849	997	538
Volume Left	3	7	0	0	0	0
Volume Right	15	0	0	0	0	40
cSH	315	477	1700	1700	1700	1700
Volume to Capacity	0.06	0.01	0.50	0.50	0.59	0.32
Queue Length 95th (m)	1.4	0.3	0.0	0.0	0.0	0.0
Control Delay (s)	17.1	12.7	0.0	0.0	0.0	0.0
Lane LOS	C	B				
Approach Delay (s)	17.1	0.1			0.0	
Approach LOS	C					

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	53.2%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection: 5: Ninth Line & East Lower Base Line/Eglinton Avenue West

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	R	L	T	T	R	L	T
Maximum Queue (m)	44.8	82.6	79.7	74.9	147.2	147.4	79.9	149.8	146.7	50.0	124.7	104.4
Average Queue (m)	25.1	67.5	53.5	26.8	143.5	127.4	44.4	143.0	142.0	24.9	72.2	55.2
95th Queue (m)	51.2	90.3	81.0	77.0	146.4	195.4	101.6	147.1	148.0	61.6	111.8	92.7
Link Distance (m)		76.4	76.4		138.7	138.7		137.9	137.9			248.3
Upstream Blk Time (%)		7	1		70	27		75	61			
Queuing Penalty (veh)		0	0		0	0		0	0			
Storage Bay Dist (m)	15.0			30.0			65.0			30.0	125.0	
Storage Blk Time (%)	15	52		0	67			78	77	0	0	0
Queuing Penalty (veh)	46	42		3	43			67	69	1	1	0

Intersection: 5: Ninth Line & East Lower Base Line/Eglinton Avenue West

Movement	SB
Directions Served	TR
Maximum Queue (m)	118.6
Average Queue (m)	62.1
95th Queue (m)	98.4
Link Distance (m)	248.3
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Ninth Line & Erin Centre Boulevard

Movement	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	R	T	TR	L	T	T
Maximum Queue (m)	22.2	19.7	51.0	59.8	34.7	67.3	50.9
Average Queue (m)	9.2	8.3	21.2	24.8	12.1	29.0	17.1
95th Queue (m)	19.2	17.0	45.6	52.2	25.5	57.9	40.2
Link Distance (m)		98.7	260.5	260.5		164.0	164.0
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)	40.0				15.0		
Storage Blk Time (%)					6	10	
Queuing Penalty (veh)					42	8	

Intersection: 7: Ninth Line & Candlelight Drive

Movement	WB	WB	NB	SB	SB	SB
Directions Served	L	R	TR	L	T	T
Maximum Queue (m)	10.6	13.0	1.3	16.1	15.0	11.0
Average Queue (m)	1.2	4.5	0.0	4.8	1.1	0.7
95th Queue (m)	6.9	11.9	0.9	12.6	7.8	5.8
Link Distance (m)	115.8	115.8	67.9		109.4	109.4
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)				30.0		
Storage Blk Time (%)					0	
Queuing Penalty (veh)					0	

Intersection: 8: Ninth Line & Street B/Skyview Street

Movement	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	LTR	L	T	TR	L	T	TR
Maximum Queue (m)	17.4	72.8	15.4	54.9	79.3	149.1	21.3	68.9	67.4
Average Queue (m)	14.5	32.8	4.3	23.2	11.6	26.5	3.1	35.6	32.6
95th Queue (m)	21.7	65.2	13.0	42.5	43.5	119.5	13.9	69.5	64.8
Link Distance (m)		66.1	140.0		248.3	248.3		67.9	67.9
Upstream Blk Time (%)		7				1		0	0
Queuing Penalty (veh)		0				7		2	2
Storage Bay Dist (m)	15.0			50.0			60.0		
Storage Blk Time (%)	42	25		1	0			1	
Queuing Penalty (veh)	71	22		5	1			0	

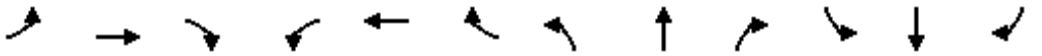
Intersection: 9: Ninth Line & Street A

Movement	EB	NB
Directions Served	LR	L
Maximum Queue (m)	11.7	8.3
Average Queue (m)	3.7	0.8
95th Queue (m)	10.8	4.7
Link Distance (m)	99.8	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		30.0
Storage Blk Time (%)		
Queuing Penalty (veh)		

Zone Summary

Zone wide Queuing Penalty: 432

1: Winston Churchill Boulevard & Mississauga Transitway/403 WB Off-Ramp

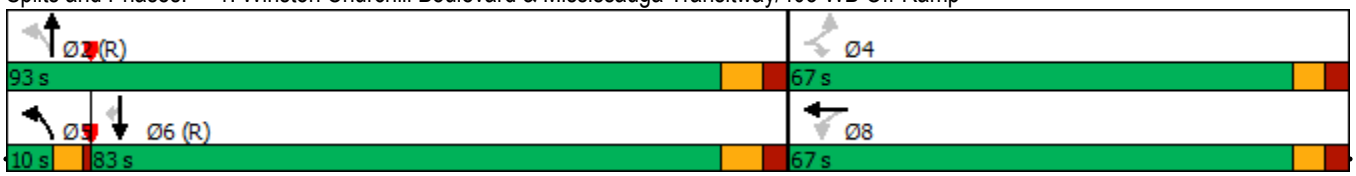


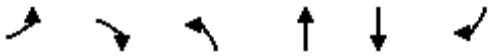
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	0	47	989	2	935	37	1218	0	0	2209	55
Future Volume (vph)	21	0	47	989	2	935	37	1218	0	0	2209	55
Ideal Flow (vphpl)	1900	1900	1900	2000	2000	2000	1860	1900	1900	1900	1900	1640
Lane Width (m)	3.1	3.1	3.1	3.5	3.5	4.4	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0		0.0	100.0		100.0	50.0		0.0	0.0		155.0
Storage Lanes	1		1	1		1	1		0	0		1
Taper Length (m)	2.5			85.0			50.0			2.5		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.86	1.00
Ped Bike Factor	1.00					0.99						
Frt			0.850			0.850						0.850
Flt Protected	0.950			0.950			0.950					
Satd. Flow (prot)	1114	0	1525	3505	1978	1746	1257	4980	0	0	6337	1103
Flt Permitted	0.757			0.950			0.047					
Satd. Flow (perm)	885	0	1525	3505	1978	1725	62	4980	0	0	6337	1103
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)						460						58
Link Speed (k/h)		50			60			60			60	
Link Distance (m)		144.4			204.5			204.4			239.0	
Travel Time (s)		10.4			12.3			12.3			14.3	
Confl. Peds. (#/hr)	1					1			3	3		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	53%	23%	0%	4%	0%	6%	39%	3%	0%	0%	2%	25%
Adj. Flow (vph)	22	0	49	1041	2	984	39	1282	0	0	2325	58
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	0	49	1041	2	984	39	1282	0	0	2325	58
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)		7.0			7.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.08	1.08	1.08	0.95	0.95	0.83	1.04	1.01	1.01	1.01	1.01	1.22
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1		1	1	2	1	1	2			2	1
Detector Template	Left		Right	Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (m)	6.1		6.1	6.1	30.5	6.1	6.1	30.5			30.5	6.1
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Size(m)	6.1		6.1	6.1	1.8	6.1	6.1	1.8			1.8	6.1
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
Detector 2 Position(m)					28.7			28.7			28.7	
Detector 2 Size(m)					1.8			1.8			1.8	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type	Perm		Perm	Perm	NA	Free	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8		Free	2					6
Detector Phase	4		4	8	8		5	2			6	6
Switch Phase												
Minimum Initial (s)	8.0		8.0	8.0	8.0		5.0	4.0			4.0	4.0
Minimum Split (s)	25.0		25.0	25.0	25.0		9.5	26.0			26.0	26.0
Total Split (s)	67.0		67.0	67.0	67.0		10.0	93.0			83.0	83.0
Total Split (%)	41.9%		41.9%	41.9%	41.9%		6.3%	58.1%			51.9%	51.9%
Maximum Green (s)	60.0		60.0	60.0	60.0		5.5	85.0			75.0	75.0
Yellow Time (s)	4.0		4.0	4.0	4.0		3.5	5.0			5.0	5.0
All-Red Time (s)	3.0		3.0	3.0	3.0		1.0	3.0			3.0	3.0
Lost Time Adjust (s)	-2.0		-2.0	-2.0	-2.0		-3.5	-3.0			-3.0	-3.0
Total Lost Time (s)	5.0		5.0	5.0	5.0		1.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0			3.0	3.0
Recall Mode	None		None	None	None		None	C-Max			C-Max	C-Max
Walk Time (s)	7.0		7.0	7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)	11.0		11.0	11.0	11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)	0		0	0	0			0			0	0
Act Effct Green (s)	56.7		56.7	56.7	56.7	160.0	97.3	93.3			84.5	84.5
Actuated g/C Ratio	0.35		0.35	0.35	0.35	1.00	0.61	0.58			0.53	0.53
v/c Ratio	0.07		0.09	0.84	0.00	0.57	0.35	0.44			0.69	0.10
Control Delay	32.8		33.3	54.1	30.5	1.4	26.1	13.4			30.6	5.2
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay	32.8		33.3	54.1	30.5	1.4	26.1	13.4			30.6	5.2
LOS	C		C	D	C	A	C	B			C	A
Approach Delay		33.1			28.5			13.7			30.0	
Approach LOS		C			C			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 160			
Actuated Cycle Length: 160			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 25.8		Intersection LOS: C	
Intersection Capacity Utilization 78.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Winston Churchill Boulevard & Mississauga Transitway/403 WB Off-Ramp



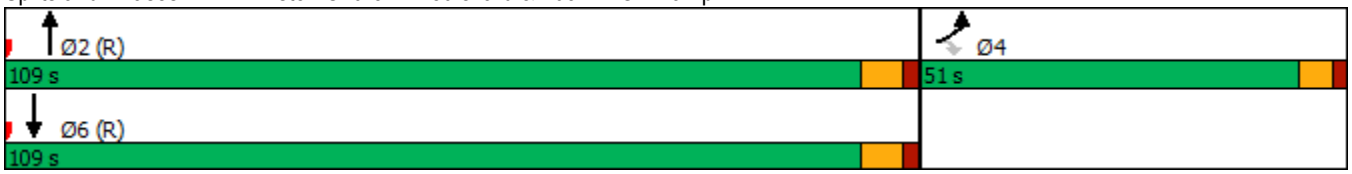


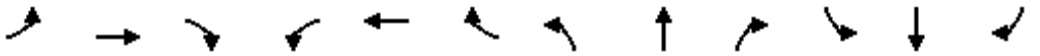
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	750	320	0	810	1736	0
Future Volume (vph)	750	320	0	810	1736	0
Ideal Flow (vphpl)	2000	2000	1900	1900	1900	1900
Lane Width (m)	3.5	3.3	3.5	3.5	3.5	3.5
Storage Length (m)	0.0	75.0	0.0			0.0
Storage Lanes	2	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	0.97	1.00	1.00	0.91	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	3505	1595	0	4839	3400	0
Flt Permitted	0.950					
Satd. Flow (perm)	3505	1595	0	4839	3400	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		23				
Link Speed (k/h)	60			60	60	
Link Distance (m)	208.7			255.6	171.3	
Travel Time (s)	12.5			15.3	10.3	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	4%	3%	0%	6%	5%	0%
Adj. Flow (vph)	798	340	0	862	1847	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	798	340	0	862	1847	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.0			0.0	0.0	
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	0.95	0.98	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
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	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	8.0	8.0		4.0	4.0	
Minimum Split (s)	24.0	24.0		26.0	26.0	
Total Split (s)	51.0	51.0		109.0	109.0	
Total Split (%)	31.9%	31.9%		68.1%	68.1%	
Maximum Green (s)	45.0	45.0		102.0	102.0	
Yellow Time (s)	4.0	4.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-2.0	-2.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	42.5	42.5		107.5	107.5	
Actuated g/C Ratio	0.27	0.27		0.67	0.67	
v/c Ratio	0.86	0.77		0.27	0.81	
Control Delay	65.7	62.8		11.0	20.0	
Queue Delay	0.0	0.0		0.0	0.2	
Total Delay	65.7	62.8		11.0	20.2	
LOS	E	E		B	C	
Approach Delay	64.8			11.0	20.2	
Approach LOS	E			B	C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 160			
Actuated Cycle Length: 160			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 31.3		Intersection LOS: C	
Intersection Capacity Utilization 76.6%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Winston Churchill Boulevard & 403 EB Off-Ramp



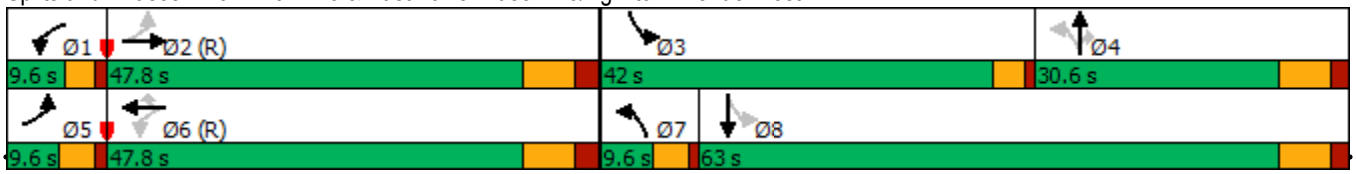


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	741	123	70	309	215	22	586	85	492	1327	92
Future Volume (vph)	38	741	123	70	309	215	22	586	85	492	1327	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1640	1900	1900	1900
Lane Width (m)	3.1	3.3	3.3	3.1	3.3	4.0	3.3	3.3	3.3	3.3	3.5	3.3
Storage Length (m)	15.0		0.0	30.0		0.0	65.0		30.0	125.0		0.0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (m)	30.0			45.0			15.0			70.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor	1.00					0.98			0.98	1.00		
Frt		0.979				0.850			0.850		0.990	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1593	3359	0	1655	1783	1562	1353	3323	1348	1678	3469	0
Flt Permitted	0.412			0.152			0.132			0.195		
Satd. Flow (perm)	690	3359	0	265	1783	1538	188	3323	1326	344	3469	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15				215			147		7	
Link Speed (k/h)		60			60			70			70	
Link Distance (m)		93.8			153.4			154.5			271.6	
Travel Time (s)		5.6			9.2			7.9			14.0	
Confl. Peds. (#/hr)	2					2			2	2		
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 (%)	7%	1%	6%	3%	3%	8%	29%	5%	0%	4%	2%	0%
Adj. Flow (vph)	38	741	123	70	309	215	22	586	85	492	1327	92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	864	0	70	309	215	22	586	85	492	1419	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)		3.1			3.1			3.4			3.4	
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	1.08	1.04	1.04	1.08	1.04	0.94	1.04	1.04	1.26	1.04	1.01	1.04
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template						Right						
Leading Detector (m)	10.0	30.5		10.0	30.5	6.1	7.0	30.5	7.0	10.0	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	-3.0	-3.0	-3.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	-3.0	-3.0	-3.0	0.0	0.0	
Detector 1 Size(m)	10.0	10.0		10.0	10.0	6.1	10.0	10.0	10.0	10.0	10.0	
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	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6		6	4		4	8		
Detector Phase	5	2		1	6	6	7	4	4	3	8	
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0	8.0	5.0	8.0	8.0	5.0	8.0	
Minimum Split (s)	9.5	32.5		9.5	32.5	32.5	9.5	25.0	25.0	11.0	25.0	
Total Split (s)	9.6	47.8		9.6	47.8	47.8	9.6	30.6	30.6	42.0	63.0	
Total Split (%)	7.4%	36.8%		7.4%	36.8%	36.8%	7.4%	23.5%	23.5%	32.3%	48.5%	
Maximum Green (s)	5.1	40.3		5.6	40.3	40.3	5.1	23.6	23.6	38.0	56.0	
Yellow Time (s)	3.5	5.0		3.0	5.0	5.0	3.5	5.0	5.0	3.0	5.0	
All-Red Time (s)	1.0	2.5		1.0	2.5	2.5	1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	-3.5	-2.5		-3.0	-2.5	-2.5	-3.5	-2.0	-2.0	-3.0	-2.0	
Total Lost Time (s)	1.0	5.0		1.0	5.0	5.0	1.0	5.0	5.0	1.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0	2.0	4.0	
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None	None	None	None	
Walk Time (s)		10.0			10.0	10.0		8.0	8.0		8.0	
Flash Dont Walk (s)		15.0			15.0	15.0		10.0	10.0		10.0	
Pedestrian Calls (#/hr)		2			2	2		2	2		2	
Act Effct Green (s)	58.1	46.9		58.3	47.0	47.0	39.6	27.0	27.0	69.0	59.3	
Actuated g/C Ratio	0.45	0.36		0.45	0.36	0.36	0.30	0.21	0.21	0.53	0.46	
v/c Ratio	0.10	0.71		0.33	0.48	0.31	0.16	0.85	0.22	0.88	0.90	
Control Delay	22.1	40.1		25.6	36.8	5.2	21.5	62.4	1.3	45.1	41.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	22.1	40.1		25.6	36.8	5.2	21.5	62.4	1.3	45.1	41.2	
LOS	C	D		C	D	A	C	E	A	D	D	
Approach Delay		39.4			24.0			53.6			42.2	
Approach LOS		D			C			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay: 40.9		Intersection LOS: D	
Intersection Capacity Utilization 87.3%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 5: Ninth Line & East Lower Base Line/Eglinton Avenue West





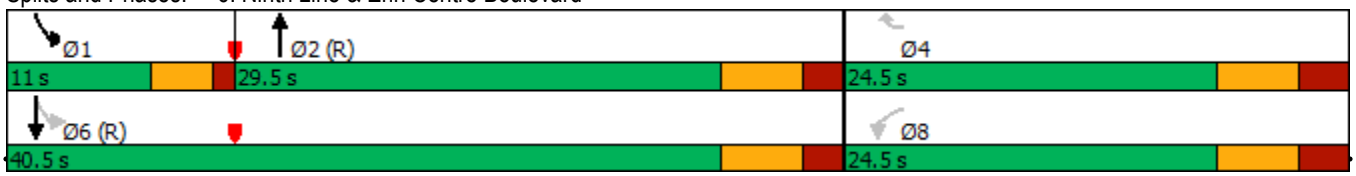
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	109	56	996	38	43	1644
Future Volume (vph)	109	56	996	38	43	1644
Ideal Flow (vphpl)	1900	1900	1900	1900	1860	1900
Lane Width (m)	3.1	3.1	3.4	3.4	3.3	3.5
Storage Length (m)	40.0	0.0		0.0	15.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	55.0				20.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Ped Bike Factor		0.99	1.00		1.00	
Frt		0.850	0.994			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1688	1525	3340	0	1708	3500
Flt Permitted	0.950				0.210	
Satd. Flow (perm)	1688	1505	3340	0	377	3500
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		57	7			
Link Speed (k/h)	50		70			70
Link Distance (m)	113.5		275.7			174.6
Travel Time (s)	8.2		14.2			9.0
Confl. Peds. (#/hr)		1		1	1	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	0%	4%	30%	0%	2%
Adj. Flow (vph)	111	57	1016	39	44	1678
Shared Lane Traffic (%)						
Lane Group Flow (vph)	111	57	1055	0	44	1678
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.1		3.3			3.3
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	1.08	1.08	1.03	1.03	1.07	1.01
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2		1	2
Detector Template			Thru			Thru
Leading Detector (m)	17.0	17.0	30.5		25.0	30.5
Trailing Detector (m)	-3.0	-3.0	0.0		15.0	0.0
Detector 1 Position(m)	-3.0	-3.0	0.0		15.0	0.0
Detector 1 Size(m)	20.0	20.0	1.8		10.0	1.8
Detector 1 Type	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
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector 2 Extend (s)			0.0			0.0
Turn Type	Perm	Perm	NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8	4			6	
Detector Phase	8	4	2		1	6
Switch Phase						
Minimum Initial (s)	5.0	8.0	8.0		7.0	8.0
Minimum Split (s)	24.5	22.5	22.0		11.0	22.0
Total Split (s)	24.5	24.5	29.5		11.0	40.5
Total Split (%)	37.7%	37.7%	45.4%		16.9%	62.3%
Maximum Green (s)	18.0	18.0	23.5		7.0	34.5
Yellow Time (s)	4.0	4.0	4.0		3.0	4.0
All-Red Time (s)	2.5	2.5	2.0		1.0	2.0
Lost Time Adjust (s)	-1.5	-1.5	-1.0		-3.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0		1.0	5.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		2.0	3.0
Recall Mode	None	None	C-Max		None	C-Max
Walk Time (s)	7.0	8.0	8.0			8.0
Flash Dont Walk (s)	11.0	8.0	8.0			8.0
Pedestrian Calls (#/hr)	0	1	1			1
Act Effct Green (s)	11.8	12.2	40.1		49.7	46.7
Actuated g/C Ratio	0.18	0.19	0.62		0.76	0.72
v/c Ratio	0.36	0.17	0.51		0.09	0.67
Control Delay	25.5	7.6	11.9		3.8	9.2
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	25.5	7.6	11.9		3.8	9.2
LOS	C	A	B		A	A
Approach Delay	19.4		11.9			9.1
Approach LOS	B		B			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 65			
Actuated Cycle Length: 65			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 10.7		Intersection LOS: B	
Intersection Capacity Utilization 60.1%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 6: Ninth Line & Erin Centre Boulevard





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	10	35	968	4	8	1810
Future Volume (vph)	10	35	968	4	8	1810
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.3	3.5	3.5	3.3	3.5
Storage Length (m)	0.0	0.0		0.0	30.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	7.6				20.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Ped Bike Factor						
Frt		0.850	0.999			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1745	1561	3365	0	1745	3500
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1745	1561	3365	0	1745	3500
Link Speed (k/h)	50		70			70
Link Distance (m)	130.6		88.4			125.6
Travel Time (s)	9.4		4.5			6.5
Confl. Peds. (#/hr)				1	1	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	6%	0%	0%	2%
Adj. Flow (vph)	10	36	998	4	8	1866
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	36	1002	0	8	1866
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.3		3.4			3.4
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	1.04	1.04	1.01	1.01	1.04	1.01
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

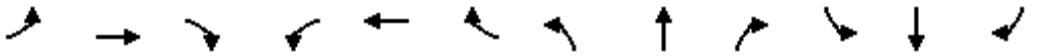
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 60.0%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	10	35	968	4	8	1810
Future Volume (Veh/h)	10	35	968	4	8	1810
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	10	36	998	4	8	1866
Pedestrians	1					
Lane Width (m)	3.3					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			88			401
pX, platoon unblocked	0.71	0.94			0.94	
vC, conflicting volume	1950	502			1003	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1111	329			865	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	93	94			99	
cM capacity (veh/h)	145	628			735	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	10	36	665	337	8	933	933
Volume Left	10	0	0	0	8	0	0
Volume Right	0	36	0	4	0	0	0
cSH	145	628	1700	1700	735	1700	1700
Volume to Capacity	0.07	0.06	0.39	0.20	0.01	0.55	0.55
Queue Length 95th (m)	1.7	1.4	0.0	0.0	0.3	0.0	0.0
Control Delay (s)	31.7	11.1	0.0	0.0	10.0	0.0	0.0
Lane LOS	D	B			A		
Approach Delay (s)	15.6		0.0		0.0		
Approach LOS	C						

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	60.0%	ICU Level of Service	B
Analysis Period (min)	15		

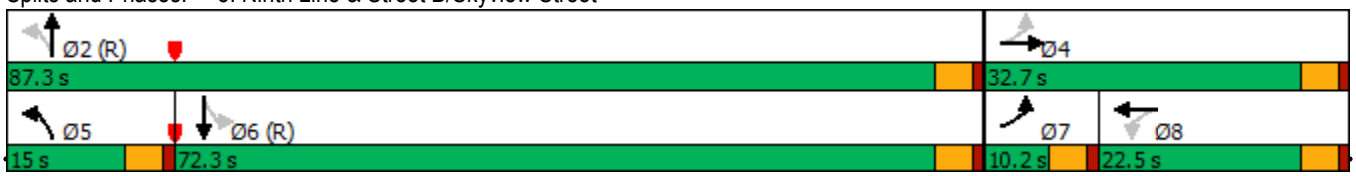


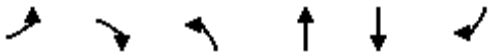
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	138	9	242	5	9	12	91	820	2	2	1797	31
Future Volume (vph)	138	9	242	5	9	12	91	820	2	2	1797	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.3	3.3	3.3	3.3	3.3	3.4	3.4	3.5	3.3	3.4	3.4
Storage Length (m)	15.0		0.0	0.0		0.0	50.0		0.0	60.0		0.0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (m)	2.5			7.6			7.6			30.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor								1.00		1.00		
Frt		0.855			0.940						0.997	
Flt Protected	0.950				0.991		0.950			0.950		
Satd. Flow (prot)	1711	1540	0	0	1698	0	1730	3362	0	1745	3450	0
Flt Permitted	0.654				0.680		0.060			0.339		
Satd. Flow (perm)	1178	1540	0	0	1165	0	109	3362	0	622	3450	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		160			12						3	
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		77.4			154.4			271.6			88.4	
Travel Time (s)		5.6			11.1			14.0			4.5	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.92	0.92	0.92	0.99	0.92	0.99	0.92	0.99	0.99	0.99	0.99	0.92
Heavy Vehicles (%)	2%	2%	2%	0%	2%	0%	2%	5%	0%	0%	2%	2%
Adj. Flow (vph)	150	10	263	5	10	12	99	828	2	2	1815	34
Shared Lane Traffic (%)												
Lane Group Flow (vph)	150	273	0	0	27	0	99	830	0	2	1849	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)		3.3			3.3			3.4			3.4	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.03	1.03	1.01	1.04	1.03	1.03
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			28.7			28.7	
Detector 2 Size(m)		0.6			0.6			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	22.5		22.5	22.5		9.5	22.5		22.5	22.5	
Total Split (s)	10.2	32.7		22.5	22.5		15.0	87.3		72.3	72.3	
Total Split (%)	8.5%	27.3%		18.8%	18.8%		12.5%	72.8%		60.3%	60.3%	
Maximum Green (s)	5.7	28.2		18.0	18.0		10.5	82.8		67.8	67.8	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	-2.0	-2.0			-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	2.5	2.5			2.5		2.5	2.5		2.5	2.5	
Lead/Lag	Lead			Lag	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	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	None	None		None	None		None	C-Max		C-Max	C-Max	
Walk Time (s)		7.0		7.0	7.0			7.0		7.0	7.0	
Flash Dont Walk (s)		11.0		11.0	11.0			11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0		0	0			0		0	0	
Act Effct Green (s)	17.5	17.5			10.3		97.5	97.5		84.9	84.9	
Actuated g/C Ratio	0.15	0.15			0.09		0.81	0.81		0.71	0.71	
v/c Ratio	0.71	0.76			0.25		0.44	0.30		0.00	0.76	
Control Delay	65.1	32.6			37.7		16.7	3.7		8.5	15.8	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	65.1	32.6			37.7		16.7	3.7		8.5	15.8	
LOS	E	C			D		B	A		A	B	
Approach Delay		44.1			37.7			5.1			15.8	
Approach LOS		D			D			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 16.6		Intersection LOS: B	
Intersection Capacity Utilization 81.1%		ICU Level of Service D	
Analysis Period (min) 15			

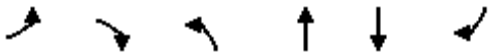
Splits and Phases: 8: Ninth Line & Street B/Skyview Street





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	10	49	4	1024	1772	18
Future Volume (vph)	10	49	4	1024	1772	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.3	3.4	3.4	3.4	3.0
Storage Length (m)	0.0	0.0	30.0			0.0
Storage Lanes	1	0	1			0
Taper Length (m)	2.5		20.0			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt	0.888				0.998	
Flt Protected	0.991		0.950			
Satd. Flow (prot)	1585	0	1730	3461	3454	0
Flt Permitted	0.991		0.950			
Satd. Flow (perm)	1585	0	1730	3461	3454	0
Link Speed (k/h)	48			70	70	
Link Distance (m)	110.9			125.6	275.7	
Travel Time (s)	8.3			6.5	14.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	53	4	1113	1926	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	64	0	4	1113	1946	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.3			3.4	3.4	
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	1.04	1.04	1.03	1.03	1.03	1.09
Turning Speed (k/h)	24	14	24			14
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 59.8%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	49	4	1024	1772	18
Future Volume (Veh/h)	10	49	4	1024	1772	18
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	53	4	1113	1926	20
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				214	276	
pX, platoon unblocked	0.68	0.65	0.65			
vC, conflicting volume	2500	973	1946			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1881	0	1385			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	74	93	99			
cM capacity (veh/h)	42	708	320			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	64	4	556	556	1284	662
Volume Left	11	4	0	0	0	0
Volume Right	53	0	0	0	0	20
cSH	191	320	1700	1700	1700	1700
Volume to Capacity	0.34	0.01	0.33	0.33	0.76	0.39
Queue Length 95th (m)	10.6	0.3	0.0	0.0	0.0	0.0
Control Delay (s)	33.1	16.4	0.0	0.0	0.0	0.0
Lane LOS	D	C				
Approach Delay (s)	33.1	0.1			0.0	
Approach LOS	D					

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		

Intersection: 5: Ninth Line & East Lower Base Line/Eglinton Avenue West

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	R	L	T	T	R	L	T
Maximum Queue (m)	44.8	87.7	83.3	59.4	94.9	13.7	79.8	149.2	142.3	50.0	156.1	178.8
Average Queue (m)	11.4	77.7	70.7	16.8	51.2	0.8	10.7	102.5	86.1	19.8	93.2	102.0
95th Queue (m)	37.4	91.3	93.6	38.5	84.8	9.4	45.7	151.8	137.7	53.6	149.0	165.1
Link Distance (m)		76.4	76.4		138.7	138.7		137.9	137.9			248.3
Upstream Blk Time (%)		20	13					6	1			
Queuing Penalty (veh)		0	0					0	0			
Storage Bay Dist (m)	15.0			30.0			65.0			30.0	125.0	
Storage Blk Time (%)	1	58		1	27			43	49	0	4	5
Queuing Penalty (veh)	4	22		4	19			9	42	0	28	23

Intersection: 5: Ninth Line & East Lower Base Line/Eglinton Avenue West

Movement	SB
Directions Served	TR
Maximum Queue (m)	176.6
Average Queue (m)	106.6
95th Queue (m)	166.7
Link Distance (m)	248.3
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Ninth Line & Erin Centre Boulevard

Movement	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	R	T	TR	L	T	T
Maximum Queue (m)	36.5	25.3	56.6	60.0	34.7	105.0	90.4
Average Queue (m)	17.1	8.9	22.6	26.9	9.1	46.0	32.2
95th Queue (m)	30.8	19.4	48.5	53.1	24.4	84.3	68.0
Link Distance (m)		98.7	260.5	260.5		164.0	164.0
Upstream Blk Time (%)						0	
Queuing Penalty (veh)						0	
Storage Bay Dist (m)	40.0				15.0		
Storage Blk Time (%)	0	0			2	19	
Queuing Penalty (veh)	0	0			18	8	

Intersection: 7: Ninth Line & Candlelight Drive

Movement	WB	WB	NB	SB	SB	SB
Directions Served	L	R	T	L	T	T
Maximum Queue (m)	13.7	16.8	1.7	25.4	84.8	93.0
Average Queue (m)	3.3	6.6	0.1	1.9	30.5	28.3
95th Queue (m)	10.3	14.1	1.2	12.3	78.8	77.5
Link Distance (m)	115.8	115.8	67.9		109.4	109.4
Upstream Blk Time (%)					0	0
Queuing Penalty (veh)					2	3
Storage Bay Dist (m)				30.0		
Storage Blk Time (%)					6	
Queuing Penalty (veh)					0	

Intersection: 8: Ninth Line & Street B/Skyview Street

Movement	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	LTR	L	T	TR	L	T	TR
Maximum Queue (m)	18.4	77.4	22.9	50.8	111.5	113.1	7.0	73.8	77.3
Average Queue (m)	15.7	66.0	7.3	17.1	21.0	25.9	0.7	60.4	60.0
95th Queue (m)	22.0	85.4	17.6	36.6	77.5	83.2	4.4	86.9	88.9
Link Distance (m)		66.1	140.0		248.3	248.3		67.9	67.9
Upstream Blk Time (%)		53			0	0		8	8
Queuing Penalty (veh)		0			0	0		75	73
Storage Bay Dist (m)	15.0			50.0			60.0		
Storage Blk Time (%)	46	59		0	1			13	
Queuing Penalty (veh)	116	81		0	1			0	

Intersection: 9: Ninth Line & Street A

Movement	EB	NB	SB	SB
Directions Served	LR	L	T	TR
Maximum Queue (m)	23.2	8.4	12.0	9.6
Average Queue (m)	10.3	0.9	0.6	0.9
95th Queue (m)	20.3	4.8	8.2	10.2
Link Distance (m)	99.8		260.5	260.5
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)		30.0		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 529

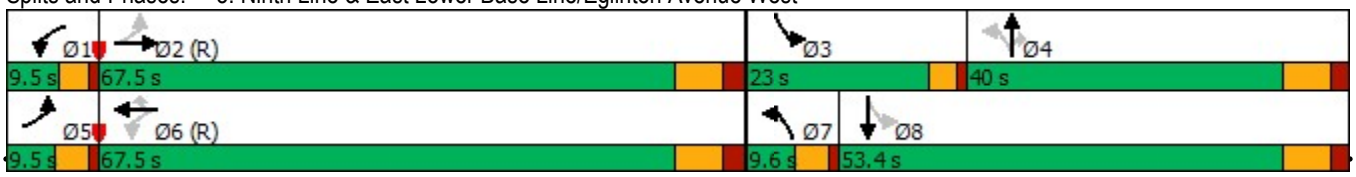
5: Ninth Line & East Lower Base Line/Eglinton Avenue West

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	601	47	65	836	579	86	1008	90	407	865	69
Future Volume (vph)	83	601	47	65	836	579	86	1008	90	407	865	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1640	1900	1900	1900
Lane Width (m)	3.1	3.3	3.3	3.1	3.3	4.0	3.3	3.3	3.3	3.3	3.5	3.3
Storage Length (m)	15.0		0.0	30.0		0.0	65.0		30.0	125.0		0.0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (m)	30.0			45.0			15.0			70.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor						0.98			0.98			
Frt		0.989				0.850			0.850		0.989	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1705	3379	0	1671	1818	1654	1745	3455	1334	1728	3498	0
Flt Permitted	0.062			0.330			0.172			0.108		
Satd. Flow (perm)	111	3379	0	581	1818	1628	316	3455	1312	196	3498	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				336			136		6	
Link Speed (k/h)		60			60			70			70	
Link Distance (m)		93.8			153.4			154.5			271.6	
Travel Time (s)		5.6			9.2			7.9			14.0	
Confl. Peds. (#/hr)	2					2			2	2		
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%	2%	4%	2%	1%	2%	0%	1%	1%	1%	1%	0%
Adj. Flow (vph)	83	601	47	65	836	579	86	1008	90	407	865	69
Shared Lane Traffic (%)												
Lane Group Flow (vph)	83	648	0	65	836	579	86	1008	90	407	934	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)		3.1			3.1			3.4			3.4	
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	1.08	1.04	1.04	1.08	1.04	0.94	1.04	1.04	1.26	1.04	1.01	1.04
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template						Right						
Leading Detector (m)	10.0	30.5		10.0	30.5	6.1	7.0	30.5	7.0	10.0	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	-3.0	-3.0	-3.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	-3.0	-3.0	-3.0	0.0	0.0	
Detector 1 Size(m)	10.0	10.0		10.0	10.0	6.1	10.0	10.0	10.0	10.0	10.0	
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	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6		6	4		4	8		
Detector Phase	5	2		1	6	6	7	4	4	3	8	
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0	8.0	5.0	8.0	8.0	5.0	8.0	
Minimum Split (s)	9.5	32.5		9.5	32.5	32.5	9.5	25.0	25.0	11.0	25.0	
Total Split (s)	9.5	67.5		9.5	67.5	67.5	9.6	40.0	40.0	23.0	53.4	
Total Split (%)	6.8%	48.2%		6.8%	48.2%	48.2%	6.9%	28.6%	28.6%	16.4%	38.1%	
Maximum Green (s)	5.0	60.0		5.5	60.0	60.0	5.1	33.0	33.0	19.0	46.4	
Yellow Time (s)	3.5	5.0		3.0	5.0	5.0	3.5	5.0	5.0	3.0	5.0	
All-Red Time (s)	1.0	2.5		1.0	2.5	2.5	1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	-3.5	-2.5		-3.0	-2.5	-2.5	-3.5	-2.0	-2.0	-3.0	-2.0	
Total Lost Time (s)	1.0	5.0		1.0	5.0	5.0	1.0	5.0	5.0	1.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0	2.0	4.0	
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None	None	None	None	
Walk Time (s)		10.0			10.0	10.0		8.0	8.0		8.0	
Flash Dont Walk (s)		15.0			15.0	15.0		10.0	10.0		10.0	
Pedestrian Calls (#/hr)		2			2	2		2	2		2	
Act Effct Green (s)	75.2	64.4		75.0	62.5	62.5	47.6	35.0	35.0	62.0	48.4	
Actuated g/C Ratio	0.54	0.46		0.54	0.45	0.45	0.34	0.25	0.25	0.44	0.35	
v/c Ratio	0.53	0.42		0.17	1.03	0.63	0.44	1.17	0.21	1.24	0.77	
Control Delay	32.0	26.4		16.4	77.9	15.1	31.3	133.8	2.5	163.8	57.1	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	32.0	26.4		16.4	77.9	15.1	31.3	133.8	2.5	163.8	57.1	
LOS	C	C		B	E	B	C	F	A	F	E	
Approach Delay		27.0			50.6			116.4			89.5	
Approach LOS		C			D			F			F	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 20 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.24			
Intersection Signal Delay: 74.4		Intersection LOS: E	
Intersection Capacity Utilization 114.0%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 5: Ninth Line & East Lower Base Line/Eglinton Avenue West





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	49	59	1485	72	81	1367
Future Volume (vph)	49	59	1485	72	81	1367
Ideal Flow (vphpl)	1900	1900	1900	1900	1860	1900
Lane Width (m)	3.1	3.1	3.4	3.4	3.3	3.5
Storage Length (m)	40.0	0.0		0.0	15.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	55.0				20.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Ped Bike Factor		0.99	1.00			
Frt		0.850	0.993			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1705	1525	3451	0	1691	3535
Flt Permitted	0.950				0.099	
Satd. Flow (perm)	1705	1505	3451	0	176	3535
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		61	9			
Link Speed (k/h)	50		70			70
Link Distance (m)	113.5		275.7			174.6
Travel Time (s)	8.2		14.2			9.0
Confl. Peds. (#/hr)		1		1	1	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	1%	11%	1%	1%
Adj. Flow (vph)	51	61	1547	75	84	1424
Shared Lane Traffic (%)						
Lane Group Flow (vph)	51	61	1622	0	84	1424
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.1		3.3			3.3
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	1.08	1.08	1.03	1.03	1.07	1.01
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2		1	2
Detector Template			Thru			Thru
Leading Detector (m)	17.0	17.0	30.5		25.0	30.5
Trailing Detector (m)	-3.0	-3.0	0.0		15.0	0.0
Detector 1 Position(m)	-3.0	-3.0	0.0		15.0	0.0
Detector 1 Size(m)	20.0	20.0	1.8		10.0	1.8
Detector 1 Type	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
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector 2 Extend (s)			0.0			0.0
Turn Type	Perm	Perm	NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8	4			6	
Detector Phase	8	4	2		1	6
Switch Phase						
Minimum Initial (s)	5.0	8.0	8.0		7.0	8.0
Minimum Split (s)	24.5	22.5	22.0		11.0	22.0
Total Split (s)	24.5	24.5	29.5		11.0	40.5
Total Split (%)	37.7%	37.7%	45.4%		16.9%	62.3%
Maximum Green (s)	18.0	18.0	23.5		7.0	34.5
Yellow Time (s)	4.0	4.0	4.0		3.0	4.0
All-Red Time (s)	2.5	2.5	2.0		1.0	2.0
Lost Time Adjust (s)	-1.5	-1.5	-1.0		-3.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0		1.0	5.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		2.0	3.0
Recall Mode	None	None	C-Max		None	C-Max
Walk Time (s)	7.0	8.0	8.0			8.0
Flash Dont Walk (s)	11.0	8.0	8.0			8.0
Pedestrian Calls (#/hr)	0	1	1			1
Act Effct Green (s)	10.4	11.2	41.8		53.6	51.6
Actuated g/C Ratio	0.16	0.17	0.64		0.82	0.79
v/c Ratio	0.19	0.20	0.73		0.22	0.51
Control Delay	23.4	8.0	16.5		4.2	5.8
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	23.4	8.0	16.5		4.2	5.8
LOS	C	A	B		A	A
Approach Delay	15.1		16.5			5.7
Approach LOS	B		B			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 65			
Actuated Cycle Length: 65			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 11.4		Intersection LOS: B	
Intersection Capacity Utilization 65.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 6: Ninth Line & Erin Centre Boulevard





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	6	20	1556	14	23	1364
Future Volume (vph)	6	20	1556	14	23	1364
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.3	3.5	3.5	3.3	3.5
Storage Length (m)	0.0	0.0		0.0	30.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	7.6				20.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Ped Bike Factor						
Frt		0.850	0.999			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1745	1561	3531	0	1745	3535
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1745	1561	3531	0	1745	3535
Link Speed (k/h)	50		70			70
Link Distance (m)	130.6		88.4			125.6
Travel Time (s)	9.4		4.5			6.5
Confl. Peds. (#/hr)				1	1	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%
Adj. Flow (vph)	6	21	1655	15	24	1451
Shared Lane Traffic (%)						
Lane Group Flow (vph)	6	21	1670	0	24	1451
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.3		3.4			3.4
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	1.04	1.04	1.01	1.01	1.04	1.01
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.5%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	6	20	1556	14	23	1364
Future Volume (Veh/h)	6	20	1556	14	23	1364
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	6	21	1655	15	24	1451
Pedestrians	1					
Lane Width (m)	3.3					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			88			401
pX, platoon unblocked	0.87	0.78			0.78	
vC, conflicting volume	2437	836			1671	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1465	239			1304	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	94	97			94	
cM capacity (veh/h)	99	602			421	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	6	21	1103	567	24	726	726
Volume Left	6	0	0	0	24	0	0
Volume Right	0	21	0	15	0	0	0
cSH	99	602	1700	1700	421	1700	1700
Volume to Capacity	0.06	0.03	0.65	0.33	0.06	0.43	0.43
Queue Length 95th (m)	1.4	0.8	0.0	0.0	1.4	0.0	0.0
Control Delay (s)	43.5	11.2	0.0	0.0	14.1	0.0	0.0
Lane LOS	E	B			B		
Approach Delay (s)	18.4		0.0		0.2		
Approach LOS	C						

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	53.5%	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)	96	7	172	4	9	4	286	1476	5	14	1251	97
Future Volume (vph)	96	7	172	4	9	4	286	1476	5	14	1251	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.3	3.3	3.3	3.3	3.3	3.4	3.4	3.5	3.3	3.4	3.4
Storage Length (m)	15.0		0.0	0.0		0.0	50.0		0.0	60.0		0.0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (m)	2.5			7.6			7.6			30.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor								1.00		1.00		
Frt		0.856			0.970			0.999			0.988	
Flt Protected	0.950				0.989		0.950			0.950		
Satd. Flow (prot)	1711	1541	0	0	1652	0	1730	3491	0	1745	3450	0
Flt Permitted	0.773				0.867		0.120			0.174		
Satd. Flow (perm)	1392	1541	0	0	1448	0	219	3491	0	320	3450	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		187			4			1			14	
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		77.4			154.4			271.6			88.4	
Travel Time (s)		5.6			11.1			14.0			4.5	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.92	0.92	0.92	0.99	0.92	0.99	0.92	0.99	0.99	0.99	0.99	0.92
Heavy Vehicles (%)	2%	2%	2%	25%	2%	0%	2%	1%	0%	0%	1%	2%
Adj. Flow (vph)	104	8	187	4	10	4	311	1491	5	14	1264	105
Shared Lane Traffic (%)												
Lane Group Flow (vph)	104	195	0	0	18	0	311	1496	0	14	1369	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)		3.3			3.3			3.4			3.4	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.03	1.03	1.01	1.04	1.03	1.03
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			28.7			28.7	
Detector 2 Size(m)		0.6			0.6			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	22.5		22.5	22.5		9.5	22.5		22.5	22.5	
Total Split (s)	9.5	32.0		22.5	22.5		10.0	38.0		28.0	28.0	
Total Split (%)	13.6%	45.7%		32.1%	32.1%		14.3%	54.3%		40.0%	40.0%	
Maximum Green (s)	5.0	27.5		18.0	18.0		5.5	33.5		23.5	23.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	-2.0	-2.0			-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	2.5	2.5			2.5		2.5	2.5		2.5	2.5	
Lead/Lag	Lead			Lag	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	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	None	None		None	None		None	C-Max		C-Max	C-Max	
Walk Time (s)		7.0		7.0	7.0			7.0		7.0	7.0	
Flash Dont Walk (s)		11.0		11.0	11.0			11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0		0	0			0		0	0	
Act Effct Green (s)	10.5	10.5			8.3		54.5	54.5		34.5	34.5	
Actuated g/C Ratio	0.15	0.15			0.12		0.78	0.78		0.49	0.49	
v/c Ratio	0.42	0.50			0.10		0.57	0.55		0.09	0.80	
Control Delay	30.9	9.3			24.9		20.6	3.2		14.2	21.6	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	30.9	9.3			24.9		20.6	3.2		14.2	21.6	
LOS	C	A			C		C	A		B	C	
Approach Delay		16.8			24.9			6.2			21.5	
Approach LOS		B			C			A			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 13.2		Intersection LOS: B	
Intersection Capacity Utilization 75.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 8: Ninth Line & Street B/Skyview Street





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	5	26	11	1570	1375	53
Future Volume (vph)	5	26	11	1570	1375	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.3	3.4	3.4	3.4	3.0
Storage Length (m)	0.0	0.0	30.0			0.0
Storage Lanes	1	0	1			0
Taper Length (m)	2.5		20.0			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt	0.885				0.994	
Flt Protected	0.992		0.950			
Satd. Flow (prot)	1581	0	1730	3461	3440	0
Flt Permitted	0.992		0.950			
Satd. Flow (perm)	1581	0	1730	3461	3440	0
Link Speed (k/h)	48			70	70	
Link Distance (m)	110.9			125.6	275.7	
Travel Time (s)	8.3			6.5	14.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	28	12	1707	1495	58
Shared Lane Traffic (%)						
Lane Group Flow (vph)	33	0	12	1707	1553	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.3			3.4	3.4	
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	1.04	1.04	1.03	1.03	1.03	1.09
Turning Speed (k/h)	24	14	24			14
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.4%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	26	11	1570	1375	53
Future Volume (Veh/h)	5	26	11	1570	1375	53
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	28	12	1707	1495	58
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				214	276	
pX, platoon unblocked	0.88	0.79	0.79			
vC, conflicting volume	2402	776	1553			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1247	184	1167			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	96	97			
cM capacity (veh/h)	142	653	469			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	33	12	854	854	997	556
Volume Left	5	12	0	0	0	0
Volume Right	28	0	0	0	0	58
cSH	423	469	1700	1700	1700	1700
Volume to Capacity	0.08	0.03	0.50	0.50	0.59	0.33
Queue Length 95th (m)	1.9	0.6	0.0	0.0	0.0	0.0
Control Delay (s)	14.2	12.9	0.0	0.0	0.0	0.0
Lane LOS	B	B				
Approach Delay (s)	14.2	0.1			0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection: 5: Ninth Line & East Lower Base Line/Eglinton Avenue West

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	R	L	T	T	R	L	T
Maximum Queue (m)	44.9	81.6	77.8	74.9	148.2	143.5	79.9	146.3	148.9	50.0	195.0	253.7
Average Queue (m)	26.8	62.5	45.7	23.3	143.2	114.2	44.5	142.8	142.4	21.3	194.6	247.6
95th Queue (m)	51.5	88.1	76.2	69.4	148.1	194.3	101.9	145.0	148.3	58.0	198.6	279.7
Link Distance (m)		76.4	76.4		138.7	138.7		137.9	137.9			248.3
Upstream Blk Time (%)		7	1		55	16		80	61			38
Queuing Penalty (veh)		0	0		0	0		0	0			272
Storage Bay Dist (m)	15.0			30.0			65.0			30.0	125.0	
Storage Blk Time (%)	33	41		0	55			80	78	0	92	0
Queuing Penalty (veh)	100	34		0	36			69	70	0	398	0

Intersection: 5: Ninth Line & East Lower Base Line/Eglinton Avenue West

Movement	SB
Directions Served	TR
Maximum Queue (m)	263.6
Average Queue (m)	123.2
95th Queue (m)	257.3
Link Distance (m)	248.3
Upstream Blk Time (%)	1
Queuing Penalty (veh)	7
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Ninth Line & Erin Centre Boulevard

Movement	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	R	T	TR	L	T	T
Maximum Queue (m)	27.4	19.1	63.2	67.5	34.9	176.9	174.6
Average Queue (m)	10.2	8.8	24.9	29.0	21.1	101.4	94.2
95th Queue (m)	21.9	16.7	53.0	60.4	42.5	212.5	214.6
Link Distance (m)		98.7	260.5	260.5		164.0	164.0
Upstream Blk Time (%)						40	32
Queuing Penalty (veh)						0	0
Storage Bay Dist (m)	40.0				15.0		
Storage Blk Time (%)	0				7	49	
Queuing Penalty (veh)	0				45	40	

Intersection: 7: Ninth Line & Candlelight Drive

Movement	WB	WB	NB	SB	SB	SB
Directions Served	L	R	TR	L	T	T
Maximum Queue (m)	26.0	11.6	1.3	49.9	118.2	125.4
Average Queue (m)	11.3	4.4	0.0	17.4	99.8	100.4
95th Queue (m)	37.3	11.5	0.9	54.3	151.4	154.6
Link Distance (m)	115.8	115.8	67.9		109.4	109.4
Upstream Blk Time (%)					48	29
Queuing Penalty (veh)					335	200
Storage Bay Dist (m)				30.0		
Storage Blk Time (%)				0	76	
Queuing Penalty (veh)				0	18	

Intersection: 8: Ninth Line & Street B/Skyview Street

Movement	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	LTR	L	T	TR	L	T	TR
Maximum Queue (m)	17.9	69.5	20.1	57.1	118.8	191.3	67.3	75.7	82.5
Average Queue (m)	14.3	34.3	3.5	33.4	34.4	43.6	5.3	70.0	71.6
95th Queue (m)	22.2	63.2	12.2	55.5	85.4	115.5	28.5	79.7	82.7
Link Distance (m)		66.1	140.0		248.3	248.3		67.9	67.9
Upstream Blk Time (%)		4			0	1	0	59	35
Queuing Penalty (veh)		0			0	5	0	401	238
Storage Bay Dist (m)	15.0			50.0			60.0		
Storage Blk Time (%)	19	30		3	0			73	
Queuing Penalty (veh)	35	29		24	1			10	

Intersection: 9: Ninth Line & Street A

Movement	EB	NB	SB	SB
Directions Served	LR	L	T	TR
Maximum Queue (m)	72.7	15.2	269.1	271.8
Average Queue (m)	35.1	2.4	185.1	184.3
95th Queue (m)	85.9	10.1	360.1	361.9
Link Distance (m)	99.8		260.5	260.5
Upstream Blk Time (%)	10		16	16
Queuing Penalty (veh)	0		115	110
Storage Bay Dist (m)		30.0		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 2593

APPENDIX H

Level of Service Definitions

Level of Service Definitions

Two-Way Stop Controlled Intersections

Level of Service	Control Delay per Vehicle (seconds)	Interpretation
A	≤ 10	EXCELLENT. Large and frequent gaps in traffic on the main roadway. Queuing on the minor street is rare.
B	> 10 and ≤ 15	VERY GOOD. Many gaps exist in traffic on the main roadway. Queuing on the minor street is minimal.
C	> 15 and ≤ 25	GOOD. Fewer gaps exist in traffic on the main roadway. Delay on minor approach becomes more noticeable.
D	> 25 and ≤ 35	FAIR. Infrequent and shorter gaps in traffic on the main roadway. Queue lengths develop on the minor street.
E	> 35 and ≤ 50	POOR. Very infrequent gaps in traffic on the main roadway. Queue lengths become noticeable.
F	> 50	UNSATISFACTORY. Very few gaps in traffic on the main roadway. Excessive delay with significant queue lengths on the minor street.

Adapted from Highway Capacity Manual 2000, Transportation Research Board

Level of Service Definitions

Signalized Intersections

Level of Service	Control Delay per Vehicle (seconds)	Interpretation
A	≤ 10	EXCELLENT. Extremely favourable progression with most vehicles arriving during the green phase. Most vehicles do not stop and short cycle lengths may contribute to low delay.
B	> 10 and ≤ 20	VERY GOOD. Very good progression and/or short cycle lengths with slightly more vehicles stopping than LOS "A" causing slightly higher levels of average delay.
C	> 20 and ≤ 35	GOOD. Fair progression and longer cycle lengths lead to a greater number of vehicles stopping than LOS "B".
D	> 35 and ≤ 55	FAIR. Congestion becomes noticeable with higher average delays resulting from a combination of long cycle lengths, high volume-to-capacity ratios and unfavourable progression.
E	> 55 and ≤ 80	POOR. Lengthy delays values are indicative of poor progression, long cycle lengths and high volume-to-capacity ratios. Individual cycle failures are common with individual movement failures also common.
F	> 80	UNSATISFACTORY. Indicative of oversaturated conditions with vehicular demand greater than the capacity of the intersection.

Adapted from Highway Capacity Manual 2000, Transportation Research Board

APPENDIX I

Ninth Line Corridor Study (MMM) Excerpts



Ninth Line Lands
Growing Mississauga

SHAPING NINTH LINE

Mississauga's Northwestern Gateway

Ninth Line Corridor Study
Transportation Assessment

City of Mississauga

16-13112-001-T01

COMMUNITIES
TRANSPORTATION
BUILDINGS
INFRASTRUCTURE

MMM GROUP

July 2017

In addition to the City's growth rates, a 2% per annum growth rate has also been applied to the freeway off-ramp approaches at the following MTO off-ramps, as per MTO's input in Appendix I.

- Highway 401 WB/ Winston Churchill Blvd.;
- Highway 401 EB/ Winston Churchill Blvd.;
- Highway 403 WB/ Winston Churchill Blvd.;
- Highway 403 EB/ Winston Churchill Blvd.;
- Highway 403 NB/ Dundas St.; and
- Highway 403 SB/ Dundas St.

The weekday a.m. and p.m. peak hour general traffic volume growths are presented in **Figures 7.1A** and **7.1B**.

7.1.2 Background Developments

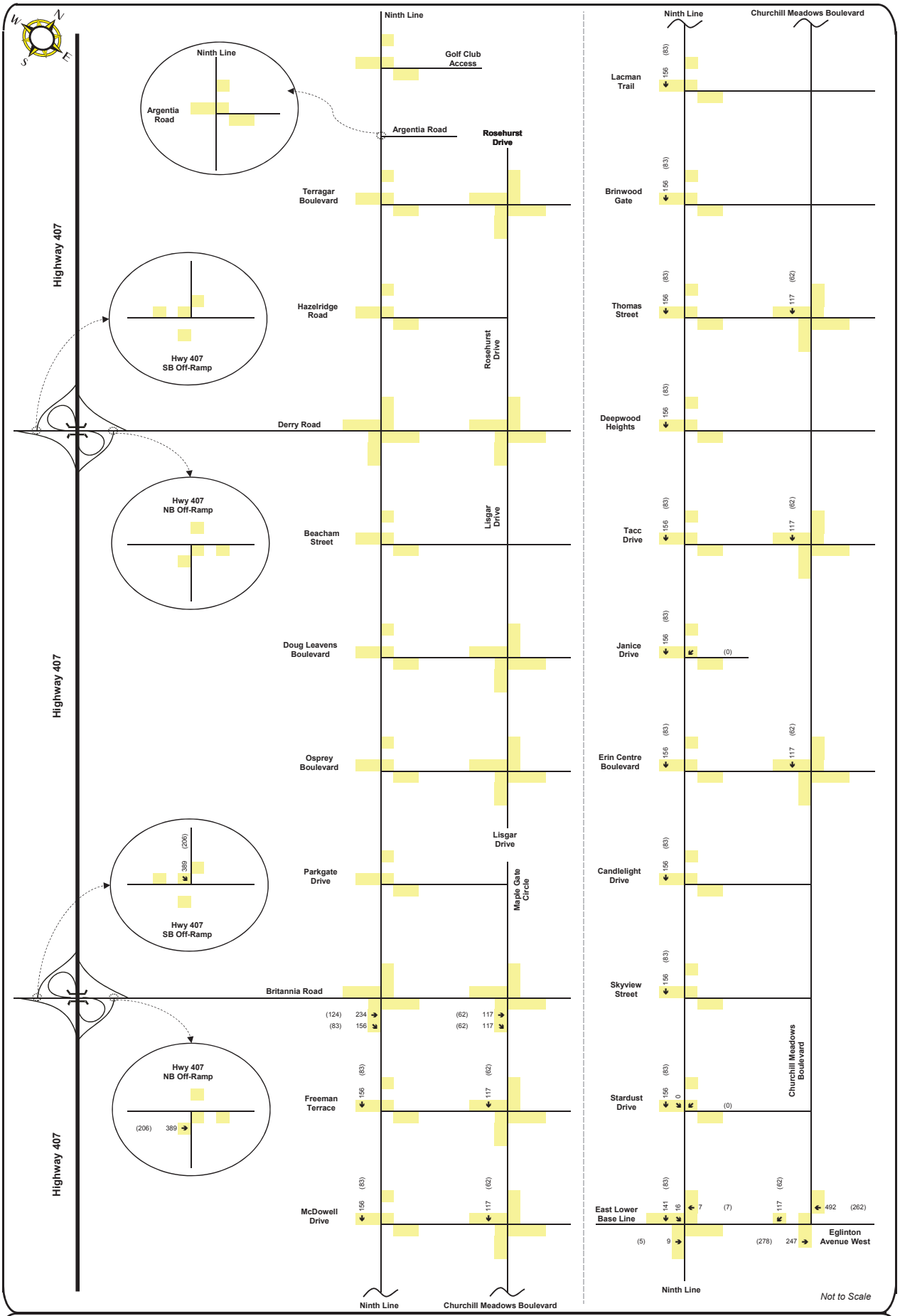
Based on discussion with City staff, the following background developments need to be considered in the future background conditions:

- Erin Mills Development – Northeast quadrant of Highway 403/407: This development comprises approximately 112,630 sq.m. of industrial park, 6,762 sq.m. of retail, and 8,074 sq.m. of office use. City staff provided a Traffic Impact Study, dated February 2014, completed by AECOM to provide context for this Ninth Line study. The site-generated traffic information was extracted and are provided in **Appendix H**. The traffic study only provides high-level site-traffic assignment information and MMM was instructed by City staff to interpret the results and incorporate the results into the future background conditions of this Ninth Line Study. The resulting site-generated traffic volumes for the Erin Mills development are shown in **Figures 7.2A** and **7.2B**.

- ProLogis Industrial Development – 10th Line at Argentia Road: This development comprises approximately 180,507 sq.m. of warehouse land use. City staff informed MMM that this background development has been incorporated in the City's EMME model and thus the growth volumes shown in Figures 7.1A and 7.1B already includes the site-generated volumes of the ProLogis development, therefore, no further forecasting was required.

7.1.3 407 Transitway Initiative

In 2008, Metrolinx's Board of Directors adopted the "Big Move", a plan that outlines a vision for a new regional transportation system, including the 407 Transitway. The Transitway is to be a separate right-of-way, located parallel to Highway 407 and includes running way, stations, platforms, parking, passenger pick-up and drop-off facilities. The Transitway will initially be implemented as bus rapid transit, with an opportunity to convert to light rail transit in the future.



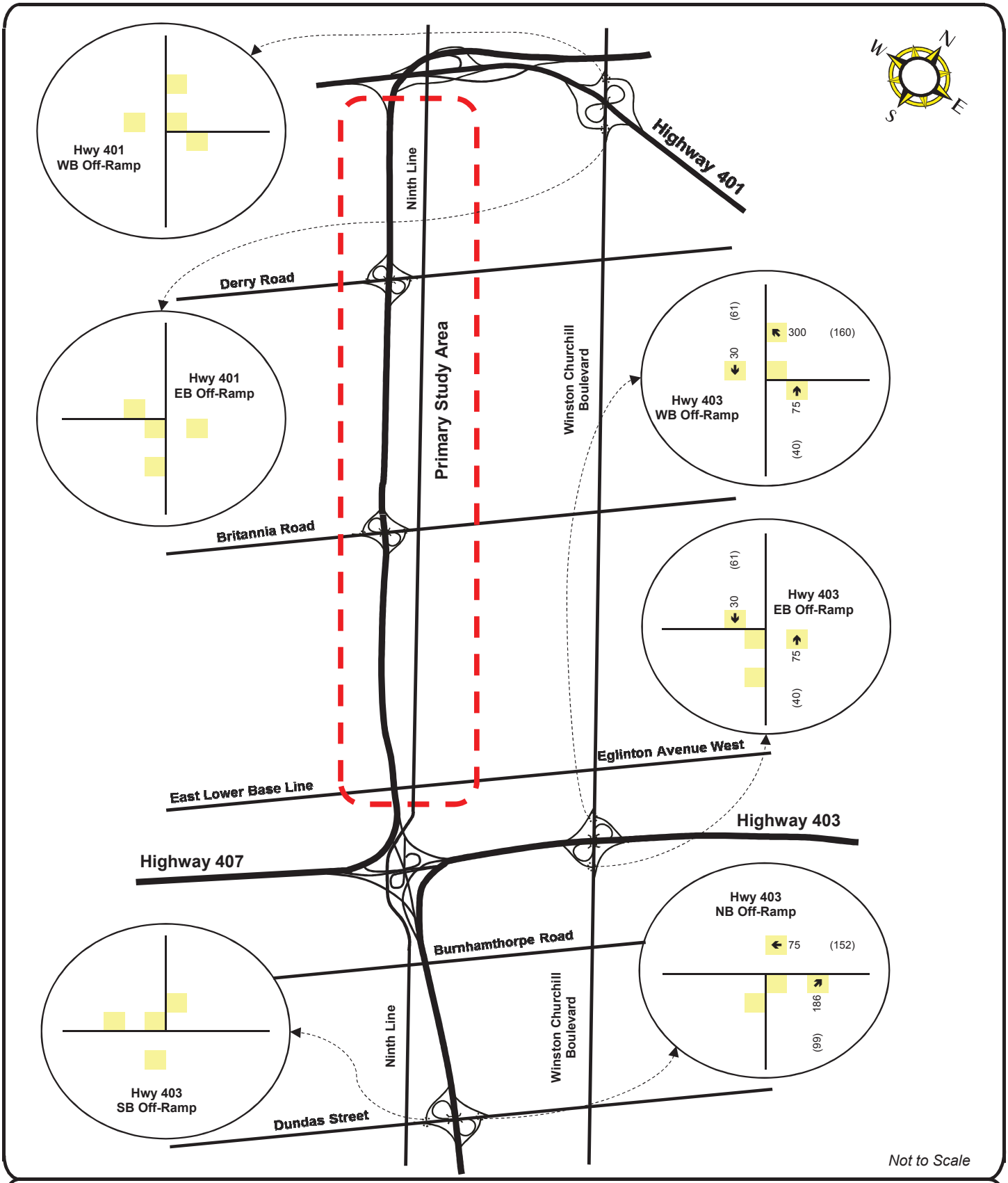
LEGEND

XX AM Peak Hour Volumes
(XX) PM Peak Hour Volumes

MMM GROUP

FIGURE 7.2A

Background Development Traffic Volumes-
Primary Study Area



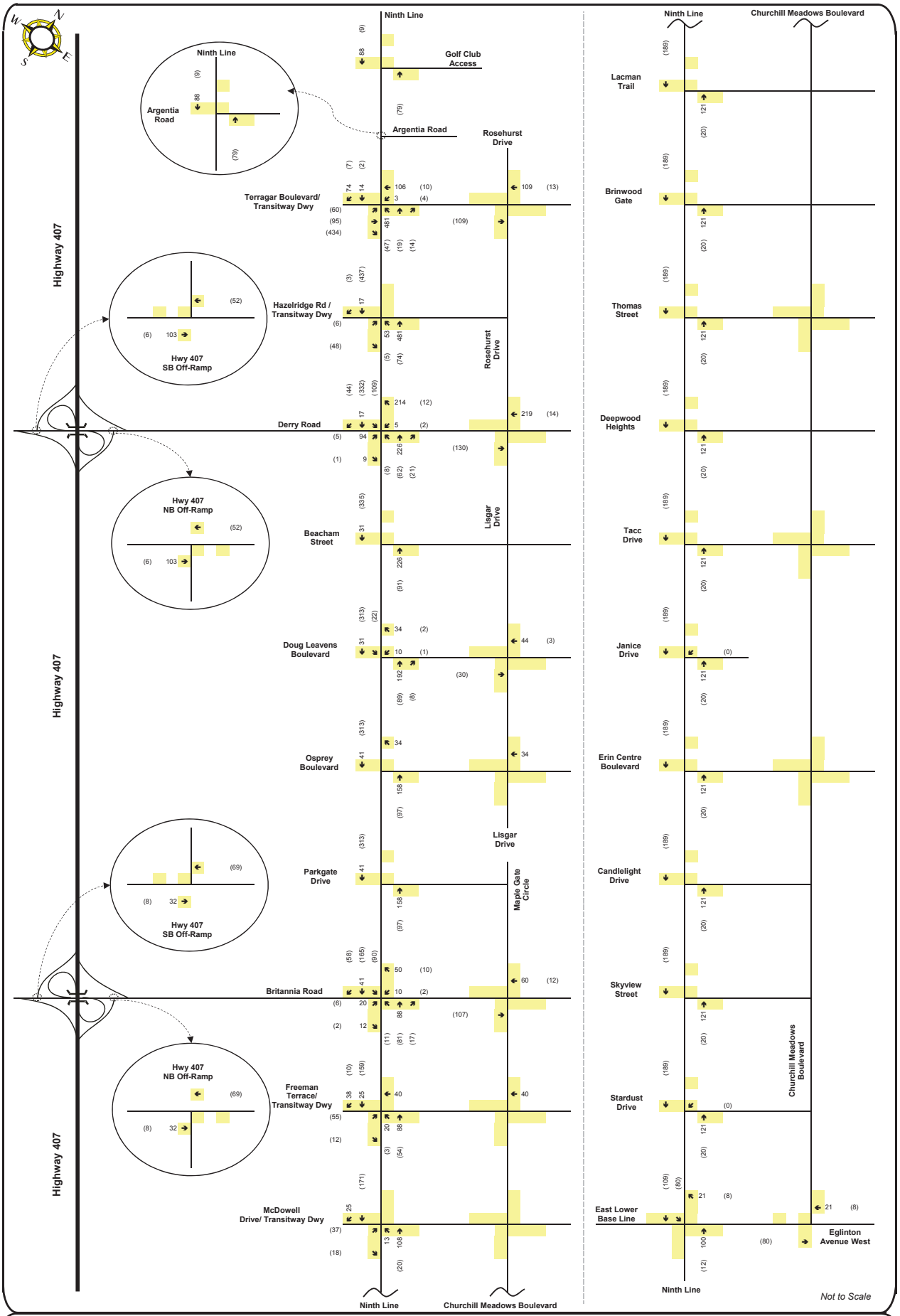
MMM GROUP

LEGEND

XX AM Peak Hour Volumes
(XX) PM Peak Hour Volumes

FIGURE 7.2B

Background Development Traffic Volumes - Secondary Study Area



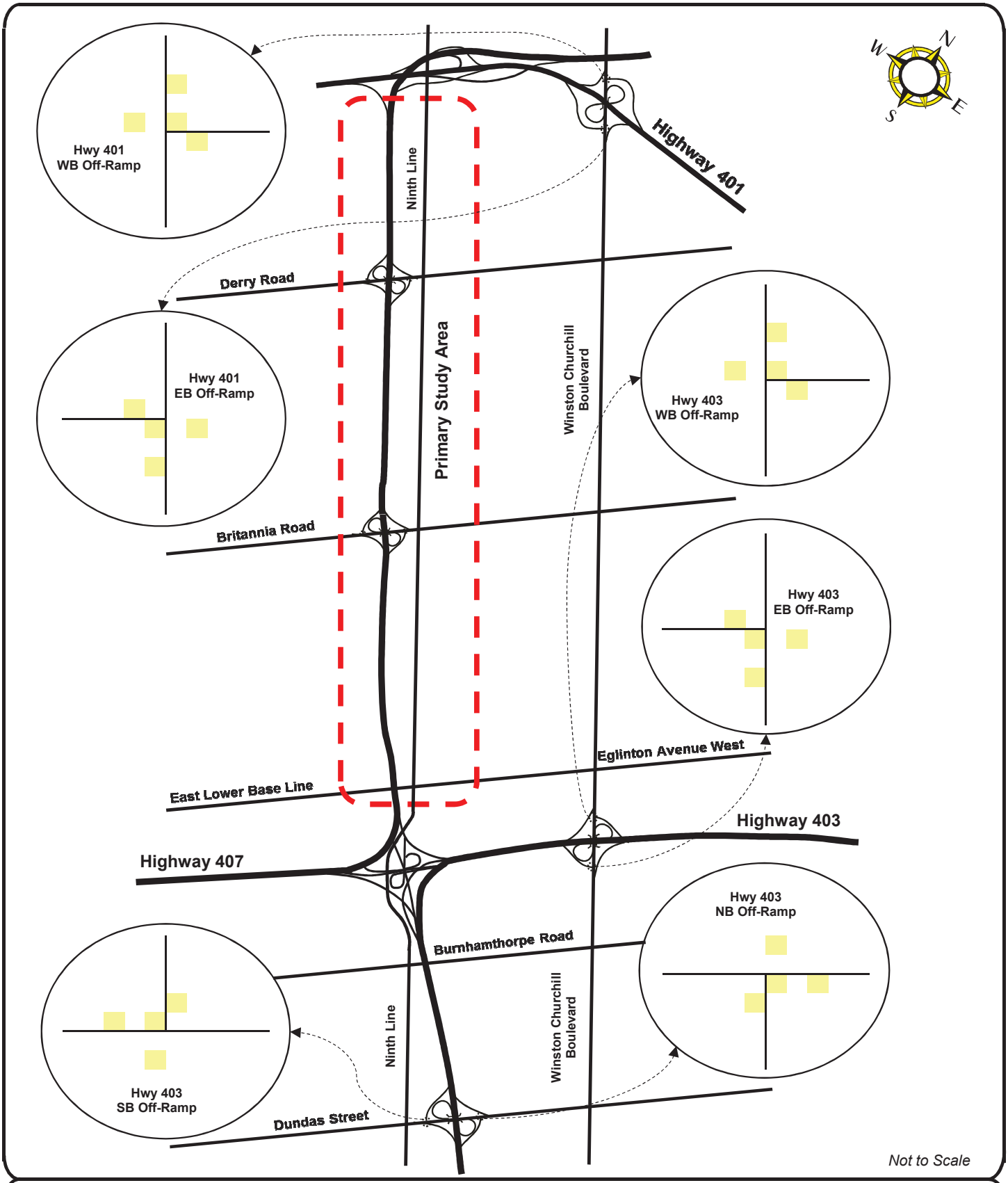
LEGEND

XX AM Peak Hour Volumes
(XX) PM Peak Hour Volumes

FIGURE 7.3A

407 Transitway Traffic Volumes- Primary Study Area

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Not to Scale

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LEGEND

XX AM Peak Hour Volumes
(XX) PM Peak Hour Volumes

FIGURE 7.3B

407 Transitway Traffic Volumes - Secondary Study Area

Use has at the intersection. Further discussion of the future evaluation of this off-ramp intersection are provided in Section 9.0; and

- MTO has indicated that the intersection of Highway 401 Westbound off-ramp at Winston Churchill Boulevard is proposed to be improved in the future. Specifically, the intersection is proposed to be converted from a 3-legged intersection to a 4-legged intersection, with the new leg connecting to a new carpool lot. Upon consultation with City staff, the approach this study takes is to continue evaluating the future forecast volumes based on the current configuration of the off-ramp intersection. Since this intersection is a secondary study intersection, the focus will be on the incremental impact the Emerging Land Use has at the intersection. Further discussion of the future evaluation of this off-ramp intersection are provided in Section 9.0.

7.3.2 Additional Required Improvements

The following additional improvements have been identified by MMM to be required in order to accommodate the future background traffic volumes.

Road Widening:

- Widening of Derry Road from 4 lanes to 6 lanes from the City's westmost limit east to Winston Churchill Boulevard. This improvement is critical because the EMME model has forecast high-levels of growth on Derry Road as a result of the widening of this road within Halton Region (from 2 lanes in each direction to 3 lanes). Without this widening, traffic volumes bottleneck in the vicinity of Ninth Line creating significantly over-capacity movements at the intersections of Derry Road/Ninth Line, and Derry Road/ Rosehurst Drive/Lisgar Drive. This is further detailed in Section 7.4.

- Widening of Britannia Road from 4 lanes to 6 lanes from the City's westmost limit east to Winston Churchill Boulevard. This improvement is critical because the EMME model has forecast high-levels of growth on Britannia Road as a result of the widening of this road within Halton Region (from 1 lane in each direction to 3 lanes). Without this widening, traffic volumes bottleneck in the vicinity of Ninth Line creating significantly over-capacity movements at the intersections of Britannia Road/Ninth Line, and Britannia Road/Maple Gate Circle/Churchill Meadows Boulevard. This is further detailed in Section 7.4.

The above recommendations to Regional roads were based on findings in Section 7.4 that showed the future forecasted traffic volumes would exceed the current capacity without these additional widenings. Regional staff noted that the Region of Peel takes a more strategic and holistic approach to addressing Regional road improvements such as road widening issues, and this is articulated in the Long Range Transportation Plan (LRTP). This approach includes exploring if the Ninth

Line Lands Study recommendations support particular overarching goals such as the movement of goods and sustainable modes of travel, transit strategies and using physical space effectively. These recommendations will be used as an input to the Region's 2017 Update of the LRTP, and subsequently to the upcoming Transportation ROPA. Until such analysis has been undertaken, Regional staff does not propose any amendments to the Regional Official Plan as it relates to transportation.

- Widening the west leg of Eglinton Avenue at Ninth Line from 1 eastbound through lane to 2. There are already two receiving lanes in the east leg of this intersection. This improvement is required to support the general background growth on Eglinton Avenue, as well as traffic generated by the Erin Mills background development in close proximity to the intersection. This is further detailed in Section 7.4.

Control and Signal timing modifications: The following improvements are needed. Signal timings at the critical intersections were also optimized.

- At the intersection of Derry Road and Ninth Line, implement a permissive/ protected phase for the westbound left-turn movement during the weekday a.m. peak hour.

- At the intersection of Derry Road and Rosehurst Drive/Lisgar Drive, implement a permissive/protected phase for the westbound left-turn movement during the weekday a.m. peak hour.

- At the intersection of Britannia Road and Maple Gate Circle/Churchill Meadows Boulevard, implement a permissive/protected phase for the westbound left-turn movement during the weekday a.m. peak hour.

- At the intersection of Ninth Line and Terragar Boulevard/Transitway Driveway, the future background volumes with the Transitway station in place meets the signal warrants as documented in **Appendix K**. The other Transitway Driveways and site driveways do not meet the signal warrant.

- The intersection of Ninth Line/Beacham Street operates at significantly over capacity as stop-controlled on Beacham Street during the weekday a.m. peak hour. As shown in Table 2.1, this intersection already operates with constrained capacity movements under existing traffic conditions. The growth along Ninth Line exacerbates the congestion resulting in long delays and queues for cars from Beacham Street to turn onto Ninth Line. This intersection is approximately 670 m and 600 m from the upstream (Derry Road) and downstream (Doug Leavens) signalized intersections on Ninth Line, respectively. Ontario Traffic Manual (OTM) signal warrant analysis was completed at this intersection based on the future background volumes.

8.0 EMERGING LAND USE CONCEPT TRIP GENERATION

8.1 Land Uses

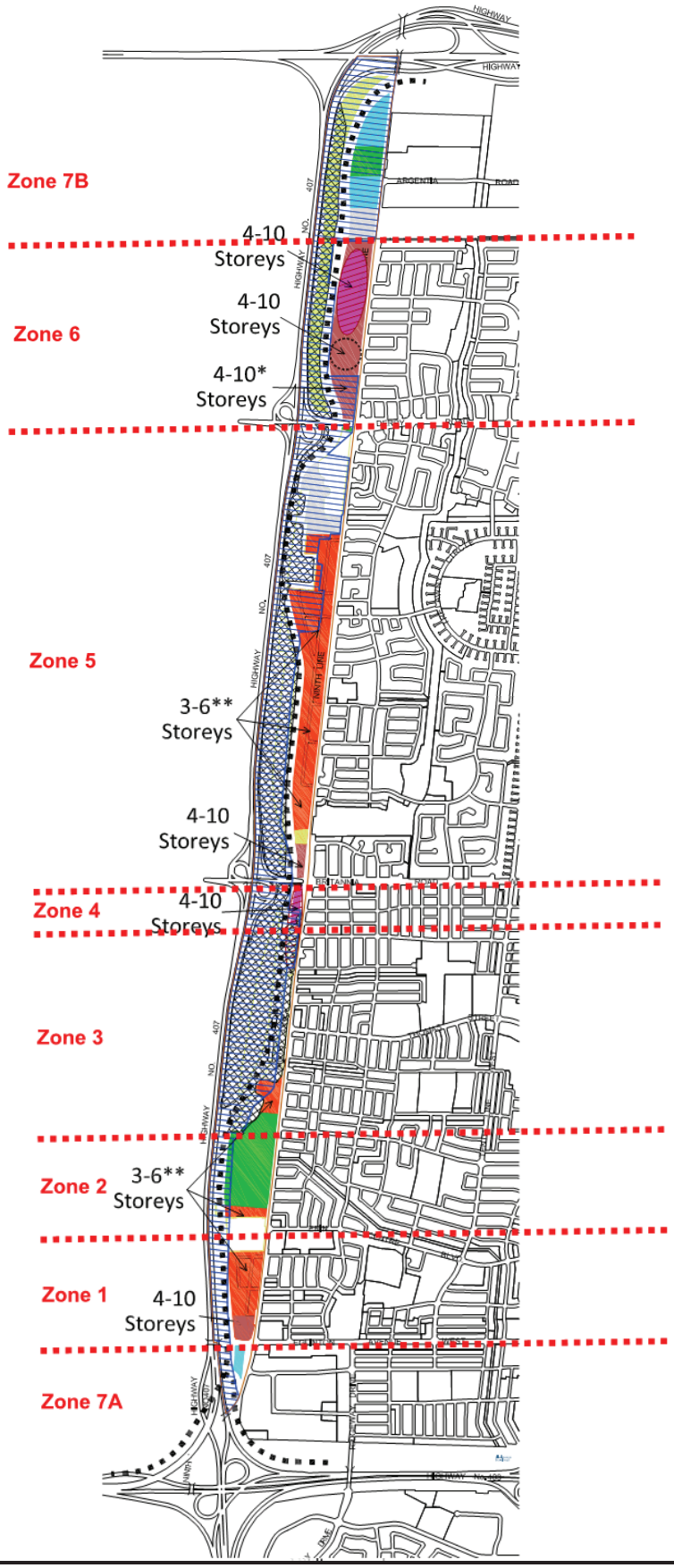
The site statistics associated with the Emerging Land Use Concept, dated September 18 2016, are provided in **Appendix N**. MMM was advised by the project team to use a population and employment forecast based on a density of a minimum 80 persons plus jobs/hectare for the purpose of this Transportation Assessment. This density is based on the most recent Provincial review of the Growth Plan and represents the planned direction for new Greenfield communities such as the Ninth Line lands. Therefore, the Ninth Line Lands have been subdivided into seven zones, as shown in **Figure 8.1**. **Table 8.1** summarizes the land uses within each zone.

Table 8.1
Emerging Land Use Concept Land Uses

Zone	Residential (units)	Commercial Retail (sq.ft. GFA)	General Office (sq.ft. GFA)	General Light Industrial (sq.ft. GFA)	Transitway Station (spaces)
1	470	--	--	--	--
2	92	--	--	--	--
3	103	--	--	--	--
4	43	1,625	--	--	640
5	1,739	26,673	--	--	--
6	1,096	7,169	--	--	3360
7A (southerly area)	--	--	3,638	26,921	--
7B (northerly area)	--	--	36,371	269,270	--
Total	**3,543**	**35,467**	**40,009**	**296,191**	**4,000**

8.2 Non-Auto Modal Splits

The existing non-auto modal splits for the study area (zones 3615-3617, 3809, 3637-3638, 3810-3811, 3634-3636, 3812, and 4024) for home-work trips were determined from the 2011 Transportation Tomorrow Survey (TTS). The non-auto modal split includes the percentages of public transit, cycling and walking during the weekday morning (7:00 to 9:00 a.m.) and afternoon (4:00 to 6:00 p.m.) peak periods. The existing modal split information is presented in **Table 8.2**.



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FIGURE 8.1

Ninth Line Land Use Concept
Study Zones

Table 8.2
Existing Non-Auto Modal Split

Trip Purpose	Direction	Non-Auto Percentages	
		Weekday A.M. Peak Period	Weekday P.M. Peak Period
Work-Home Based Trips	Inbound	4%	19%
	Outbound	24%	6%

As noted earlier in Section 7.1.3, the Britannia and Derry 407 Transitway Stations assumed to be in place in the future will have an impact on the trip generation pattern of land uses surrounding the Ninth Line study area. Based on discussion with City staff as documented in Appendix I, a sensitivity methodology has been applied to evaluate the potential degree of success of the 407 Transitway program. Specifically, the non-auto modal splits shown in Table 8.2 will be increased by 5%, 10% and 20% to represent low, moderate and high-levels of ridership within the study area. **Table 8.3** summarizes the three sensitivity modal split scenarios.

Table 8.3
407 Transitway Sensitivity Non-Auto Modal Split Scenarios

407 Scenarios	Direction	Non-Auto Percentages	
		Weekday A.M. Peak Period	Weekday P.M. Peak Period
Low (5% increase)	Inbound	9%	24%
	Outbound	29%	11%
Moderate (10% increase)	Inbound	14%	29%
	Outbound	34%	16%
High (20% increase)	Inbound	24%	39%
	Outbound	44%	26%

8.3 Transportation Demand Management (TDM)

For the conservative nature of this assessment, no additional non-auto modal split increase have been considered in the future horizon beyond what is shown in Table 8.3. Nevertheless, **Section 10.0** outlines some of the TDM strategies that can be implemented as part of the Emerging Land Use Concept within the study area.

8.4 Multi-use Internal Capture Trips

Chapter 7 of the "Trip Generation Handbook – An ITE Recommended Practice" (June 2004) indicates that "a multi-use development is typically a single real-estate project that consists of two or more land use classifications between which trips can be made without using the off-site road system. Due to the nature of these land uses, the trip-making characteristics are interrelated, and some trips are made among the on-site

uses while commuting within the internal road network. This capture of trips internal to the site has the net effect of reducing vehicle trip generation between the overall development site and the external street system compared to the total number of trips generated by comparable, stand-alone sites."

Based on the mixed-use nature of the Emerging Land Use Concept, a conservative multi-use internal site capture adjustment of 10% has been applied to the trip generation of Areas 5 and 6. These areas comprise a mixture of residential, commercial or office uses that are in proximity that would likely induce live-work trips and trips where a motorist can visit more than one use within each area using the internal road network.

8.5 Trip Generation

The trip generation of the Emerging Land Use Concept were based on the Institute of Transportation Engineers (ITE) Trip Generation Manual 9th Edition. **Table 8.4** summarizes the ITE land use codes, the associated trip generation rates and the percentage splits applied for each of the land uses

Table 8.4
ITE Land Use Codes and Trip Generation Rates

ITE LAND USE	WEEKDAY PEAK HOUR RATE (X IS THE # UNITS OR SQ.FT) (T IS THE # TRIPS)	PERCENTAGE SPLIT IN (OUT)
Residential – Condominiums (# 230)	Ln (T) = 0.8 Ln(X) + 0.26 (weekday a.m.)	17% (83%)
	Ln (T) = 0.82 Ln(X) + 0.32 (weekday p.m.)	67% (33%)
General Office (# 710)	Ln (T) = 0.8 Ln(X) + 1.57 (weekday a.m.)	88% (12%)
	T = 1.12(X) + 78.45 (weekday p.m.)	17% (83%)
Commercial Retail (# 820)	Ln (T) = 0.61 Ln(X) + 2.24 (weekday a.m.)	62% (38%)
	ln(T) = 0.67 ln(X) + 3.31 (weekday p.m.)	48% (52%)
General Light Industrial (# 110)	T = 1.18(X) – 89.28 (weekday a.m.)	88% (12%)
	T = 1.43(X) – 157.36 (weekday p.m.)	12% (88%)

Based on the trip generation rates in Table 8.4, the non-auto modal splits in Table 8.3, and the use of multi-use adjustments where appropriate, *trip generation has been completed for each of the zones* summarized in Table 8.1. This approach of forecasting trip generation zone by zone is more conservative and indicative because the alternative aggregate approach of trip generation would result in lower trip

generation rates due to the logarithmic nature of the equations and it would also be harder to know how much traffic is generated by each zone.

The overall trip generation summaries based on the three 407 Transitway sensitivity scenarios are provided in **Tables 8.5A**, **B** and **C**. Detailed trip generation of each zone for the 10% non-auto increase scenario are provided in **Appendix O**, the summation of which match the totals in Table 8.5B. The same methods are used to calculate the 5% and 20% trip generation scenarios.

Table 8.5A
Net New Site Auto Trip Generation (5% Non-Auto Increase)

Uses	Net Proposed Magnitude	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
		Inbound	Outbound	Inbound	Outbound
Residential	3,543	198	966	948	467
General Office	40,009 ft^2	55	8	10	49
Commercial Retail	35,467 ft^2	21	13	63	68
General Light Industrial	296,191 ft^2	240	33	34	253
Sub Total		514	1,020	1,055	837
Multi-Use Trips (NCHRP)		-17	-72	-77	-41
Non-auto Modal Split (Existing + 5%)		-45	-274	-235	-88
Net New Site Trips		452	674	743	708
Total Inbound/Outbound Trips		**1,126**		**1,451**	

Table 8.5B
Net New Site Auto Trip Generation (10% Non-Auto Increase)

Uses	Net Proposed Magnitude	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
		Inbound	Outbound	Inbound	Outbound
Residential	3,543	198	966	948	467
General Office	40,009 ft^2	55	8	10	49
Commercial Retail	35,467 ft^2	21	13	63	68
General Light Industrial	296,191 ft^2	240	33	34	253
Sub Total		514	1,020	1,055	837
Multi-Use Trips (NCHRP)		-17	-72	-77	-41
Non-auto Modal Split (Existing + 10%)		-70	-322	-284	-127
Net New Site Trips		427	626	694	669
Total Inbound/Outbound Trips		**1,053**		**1,363**	

Table 8.5C
Net New Site Auto Trip Generation (20% Non-Auto Increase)

Uses	Net Proposed Magnitude	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
		Inbound	Outbound	Inbound	Outbound
Residential	3,543	198	966	948	467
General Office	40,009 ft^2	55	8	10	49
Commercial Retail	35,467 ft^2	21	13	63	68
General Light Industrial	296,191 ft^2	240	33	34	253
Sub Total		514	1,020	1,055	837
Multi-Use Trips (NCHRP)		-17	-72	-77	-41
Non-auto Modal Split (Existing + 20%)		-119	-416	-382	-207
Net New Site Trips		378	532	596	589
Total Inbound/Outbound Trips		**910**		**1,185**	

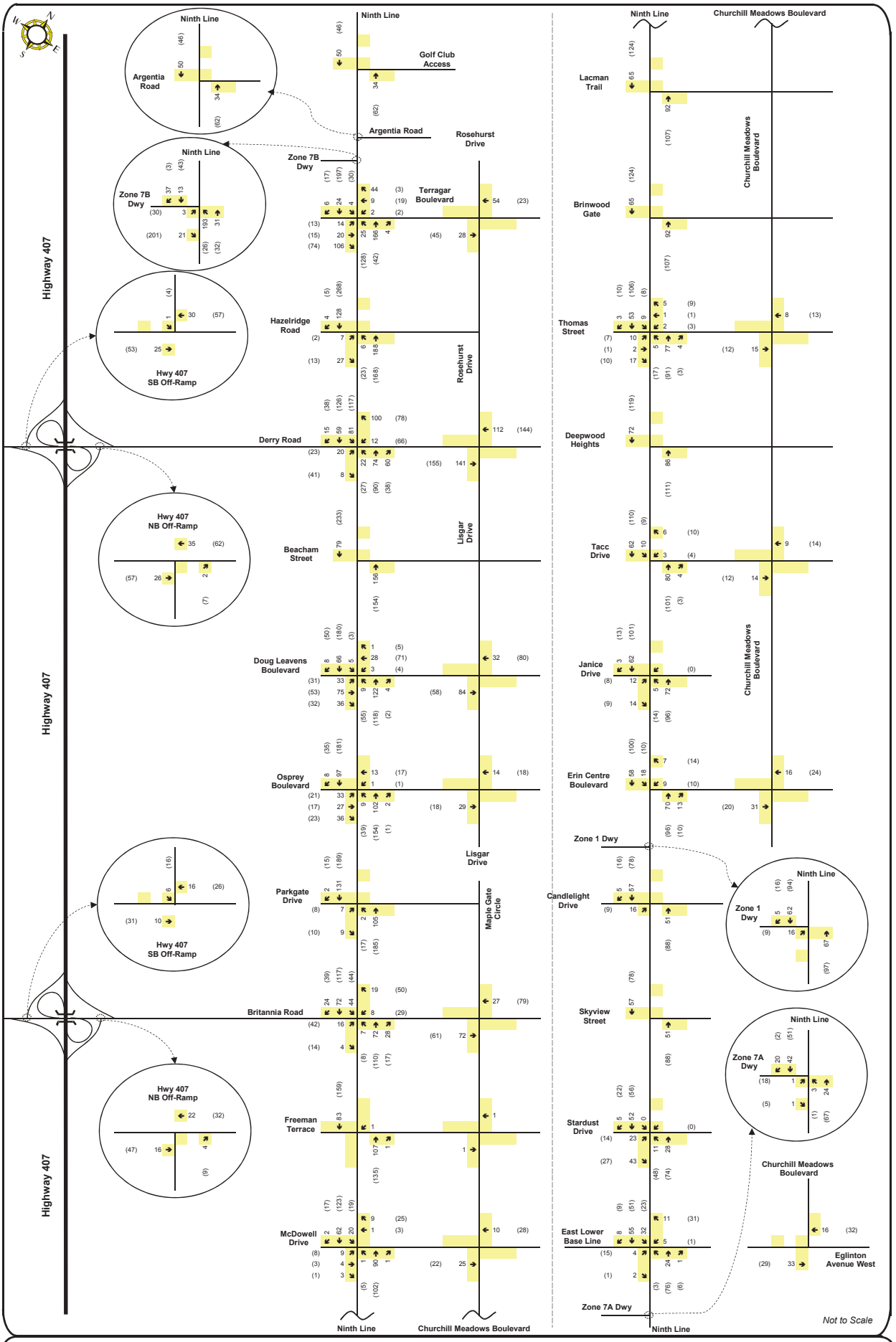
8.6 Trip Distribution and Assignment

The distribution and assignment of the site-generated traffic was developed based on the trip distribution information provided by City staff as shown in Appendix N, as well as existing traffic patterns in the vicinity of the study area and the route logic to minimize motorist travel distance and maximize connectivity. Route logic is based on the consideration of how the study intersections are operating under existing and future background conditions. For example, if a study intersection is already dealing with at, or near capacity turning constraints under BAU conditions, then drivers will likely gravitate to another route/movement that is less congested, while recognizing that drivers will not opt for an overly circuitous route.

MMM staff also confirmed with City staff that the site-generated traffic from each zone are assumed to primarily enter and exit from the driveways aligned with the study intersections, which is a conservative assessment. The locations of all of the access locations assumed to serve the Ninth Line subject land uses are illustrated in the site-generated traffic volume figures noted below.

At the driveway/study intersections evaluated, City staff instructed MMM to assume that the lane configurations on the west leg of the intersection should be matched with the existing east leg where possible. If improvements are required at the driveway/study intersections, they were determined in **Section 9.0** and documented accordingly.

The resulting assignment of the net site-generated traffic associated with the three trip generation scenarios summarized in Tables 8.5A, B and C are illustrated in **Figures 8.2 A-B**, **8.3 A-B** and **8.4 A-B**, respectively.



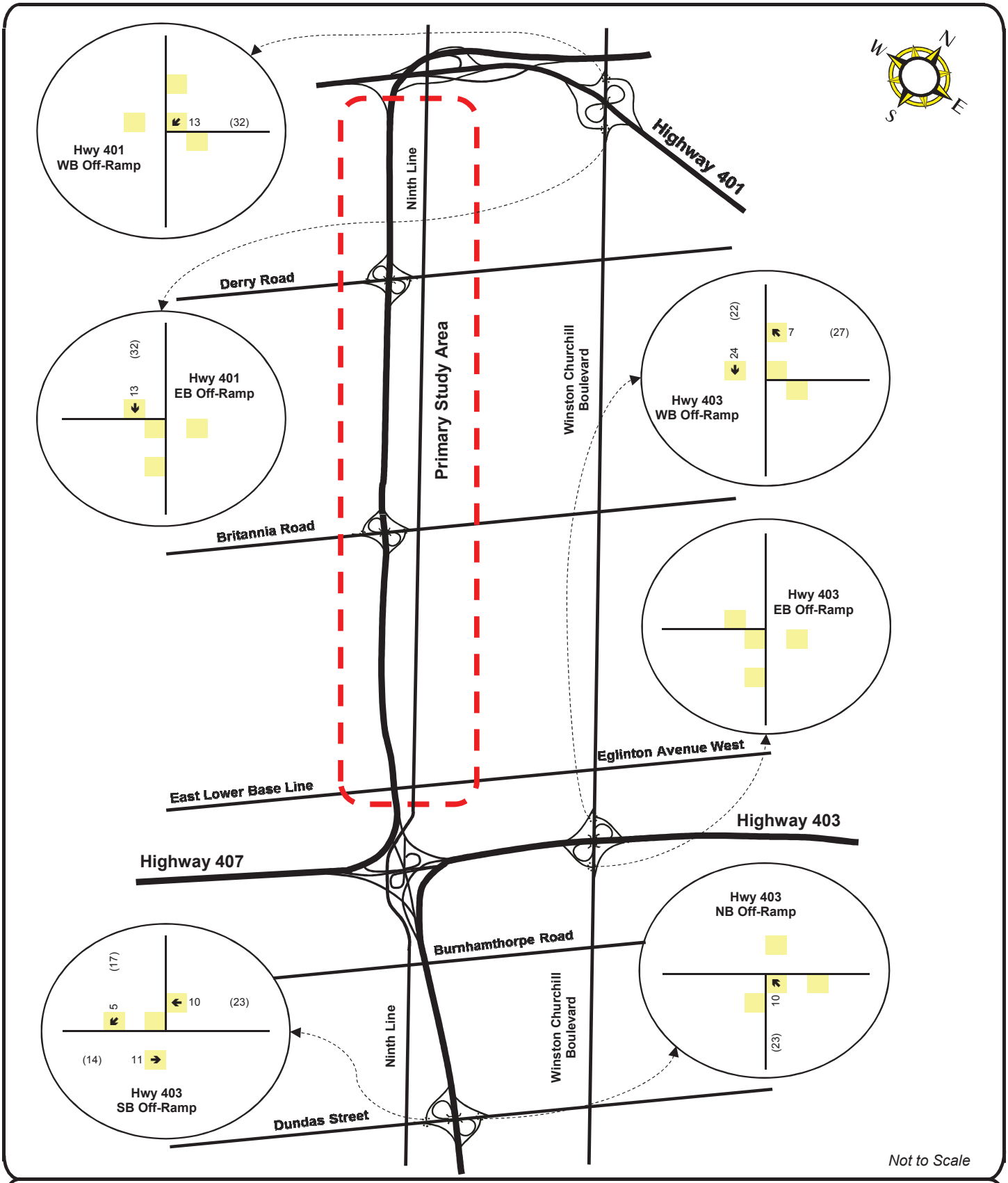
LEGEND

XX AM Peak Hour Volumes
(XX) PM Peak Hour Volumes

MMM GROUP

FIGURE 8.2A

Emerging Land Use-Generated Volumes
(5% Non-Auto Transitway Scenario)
Primary Study Area



MMM GROUP

LEGEND

XX AM Peak Hour Volumes
(XX) PM Peak Hour Volumes

FIGURE 8.2B

Emerging Land Use-Generated Volumes
(5% Non-Auto Transitway Scenario)
Secondary Study Area

1. Introduction

AECOM was retained to undertake a Traffic Impact Study (TIS) of the proposed draft plan of subdivisions located at the northeast corner of the Highway 403 and Highway 407 interchange as shown in **Figure** 1. This report provides a summary of the transportation assessment for the proposed mixed-use development. The subject development will include a total of approximately 112,630 m^2 of industrial park, 6,762 m^2 of retail (including 433 m^2 of highway commercial) and 8,074 m^2 of office building. The site plan of the proposed development is depicted in **Figure 2.**

This report provides an overview of the analysis that was undertaken to determine the potential traffic impact of the proposed development on the highway ramp terminals adjacent to the subject site. The study examined nine traffic scenarios: existing conditions, future background and future total traffic conditions at year 2018, 2023, 2028 and 2033 (2018 at interim, 2023 at opening day, 2028 at five years after the opening, and 2033 at 10 years after the opening). The analyses were completed for weekday morning and afternoon peak periods using the Synchro software version 7.0 which is developed based on Highway Capacity Manual (2000). The conclusions and recommendations are presented in **Section 5**.

Figure 1. Site Location Map



112 630 m^2
↳ 1212 339 ft^2
6762 m^2
↳ 72 785 ft^2
8074 m^2
↳ 86 907 ft^2

Figure 5. Site Traffic Volume in Ultimate Year (2023)



APPENDIX J

Highway 407 Transitway Environmental Assessment Excerpts

Chapter 1 – Introduction

407 TRANSITWAY – WEST OF BRANT STREET TO WEST OF HURONTARIO STREET

MINISTRY OF TRANSPORTATION - CENTRAL REGION

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1. INTRODUCTION

The 407 Transitway project from west of Brant Street to west of Hurontario Street encompasses the Design of an exclusive all grade-separated 43 km runningway and eight station facilities adjacent to the 407 ETR Corridor. The 407 Transitway will provide transit service across the GTA and will link a variety of major urban centres and transit intermodal hubs. The 407 Transitway will be implemented as a busway (BRT); however, the design and footprint of the BRT will allow opportunity to convert to light rail transit (LRT) in the future, if needed.

This Environmental Project Report (EPR) is a document whose main purpose is to provide a comprehensive summary of each step in the study, including;

- Transportation system assessment and derivation of the potential ridership forecast;
- Summary of the existing conditions along the corridor;
- Identification and assessment of alignment and station alternatives;
- Selection of the preferred alignment and station locations;
- Assessment of any environmental impacts of the preferred alternative and the identification of measures to mitigate or reduce any negative impacts;
- Commitments being made by MTO in regard to the future implementation phases;
- Summary of consultation activities with agencies, Indigenous and Métis communities and members of the public; and,
- Potential implementation plan.

The EPR also includes the environmental and technical specialized reports as appendices of the document.

1.1. 407 Transitway Background and Status

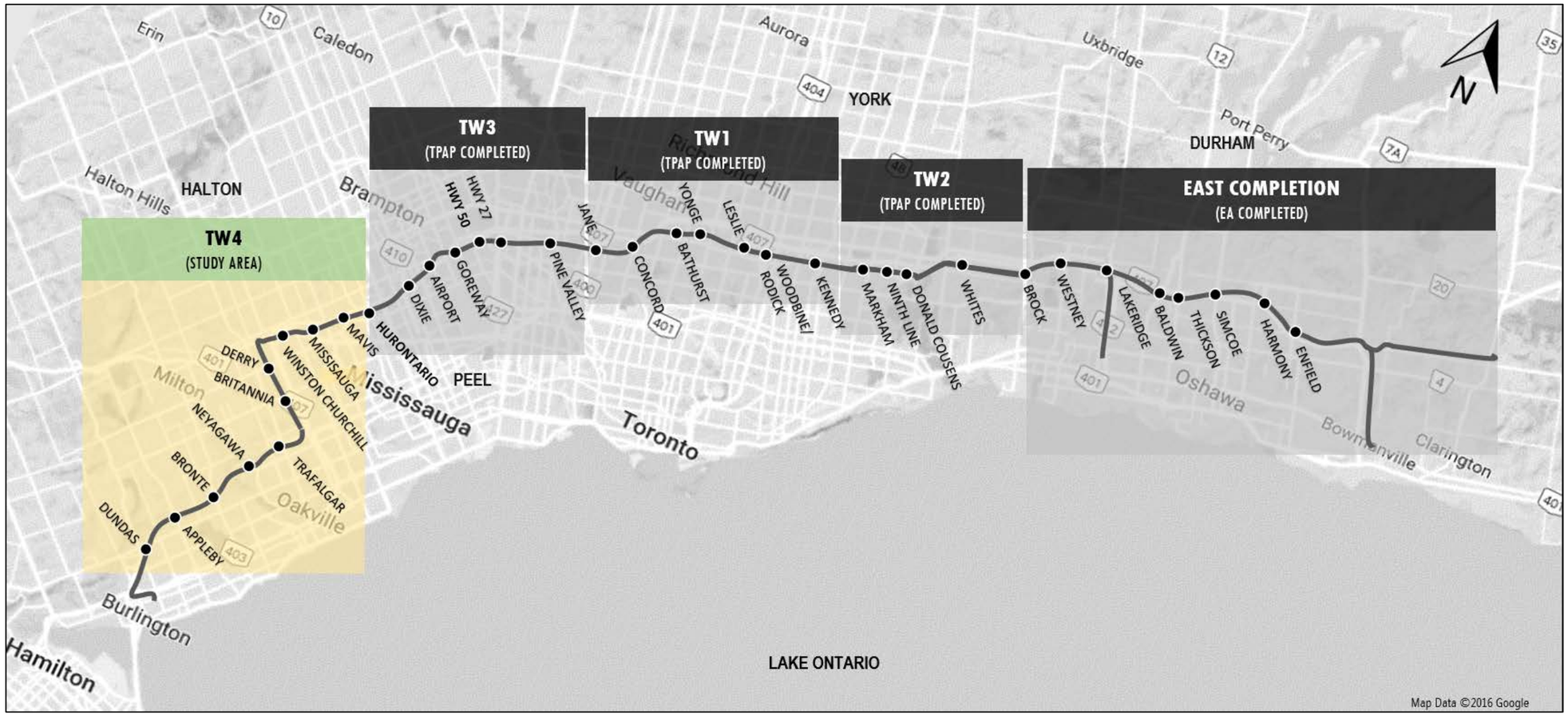
The complete planned 407 Transitway is a 150 km high-speed public transit facility on a separate right-of-way. It will parallel the existing 407 ETR from Burlington (Halton Region) to the Highway 35/115 interchange (Durham Region) (**Figure 1.1**). To meet rapidly growing transportation demands, a cross GTA (east-west) transit facility has been identified as a key element of the future. The 407 Transitway is intended to form a northern spine parallel to the Lakeshore GO corridor that will connect the municipalities in this corridor. The 407 Transitway will also integrate with north-south transit services by providing stations for quick and convenient transfers. The 407 Transitway is a component of the official plans of the stakeholder municipalities and is part of the Province's Move Ontario 2020 Project and the Metrolinx Rapid Transit Plan.

The Ministry of Transportation (MTO) has been actively planning and protecting the required land for the 407 Transitway for the past 30 years. For the section between the Burlington GO Station and Markham Road, the Ministry completed corridor protection studies to ensure that the land required for the 407 Transitway was protected from Provincial land disposal and private development activities.

MTO has received Ministry of the Environment, Conservation and Parks (MECP) approval under the Transit Project Assessment Process (TPAP) Regulation for the sections located between Hurontario Street in Brampton and Brock Road in Pickering and has finalized the TPAP study from Brant Street to Hurontario Street, which is presented in this EPR. For the section between Brock Road and the Highway 35/115 interchange, the Ministry has received Environmental Assessment (EA) approval for the 407 Transitway corridor as part of the Highway 407 East Completion/Transitway EA study.

This current study extends from west of Brant Street (City of Burlington) to west of Hurontario Street (City of Brampton). This section was covered by two MTO Transitway Corridor Protection Studies (CPS) completed in December 1998 and December 2005 and is also designated in the Provincial Parkway Belt West Plan. MTO is seeking TPAP approval for the 407 Transitway, stations, and associated facilities for this section. The study objectives are explained below.

FIGURE 1.1: FULL 407 TRANSITWAY STUDY LIMITS



1.2. Study Purpose & Objectives

The primary purpose and objectives of the undertaking include the following:

- Enhance east-west cross-regional mobility and increase transit capacity to meet forecast travel demand;
- Offer a viable, cost-effective alternative way of moving people in the 407 Corridor;
- Improve accessibility to existing/planned major urban centres/nodes, post-secondary educational institutions, and other nodes of high demand, such as: Burlington Centre, Oakville Centre, Sheridan College, University of Toronto – Erindale Campus and Brampton City Centre;
- Improve integration with the regional transportation network – connecting to the Spadina Subway, the future Yonge Subway Extension, GO Lakeshore, Kitchener, Barrie, Richmond Hill and Stouffville rail lines, the future Hurontario LRT, as well as Halton, Peel, York and Durham Transit systems;
- Reduce automobile dependence and greenhouse gas emissions, contributing to climate change effects; and,
- Identify land protection requirements to accommodate the 407 Transitway infrastructure.

To support these objectives, the scope required that the following activities be undertaken:

- Maintain and apply the comprehensive set of approved design standards for the 407 Transitway, created and approved during the design of the Central, Highway 400 to Kennedy Road section;
- Update and develop detailed ridership estimates based on a 2041 horizon year with projections to 2051;
- Gather existing conditions and future municipal plans, and identify and evaluate alignment and station alternatives, and select preferred design;
- Conduct detailed field investigations in support of the preferred option; assess the environmental effects and develop a mitigation plan for any negative impacts generated by the preferred design;
- Deliver a cost-effective, safe, and innovative design and staging plan for this 43 km section of the 407 Transitway for busway technology that allows for conversion to light rail transit (LRT) in the future, promotes transit ridership and optimizes transit operation and integration; and,
- Recommend and present a phased implementation strategy.

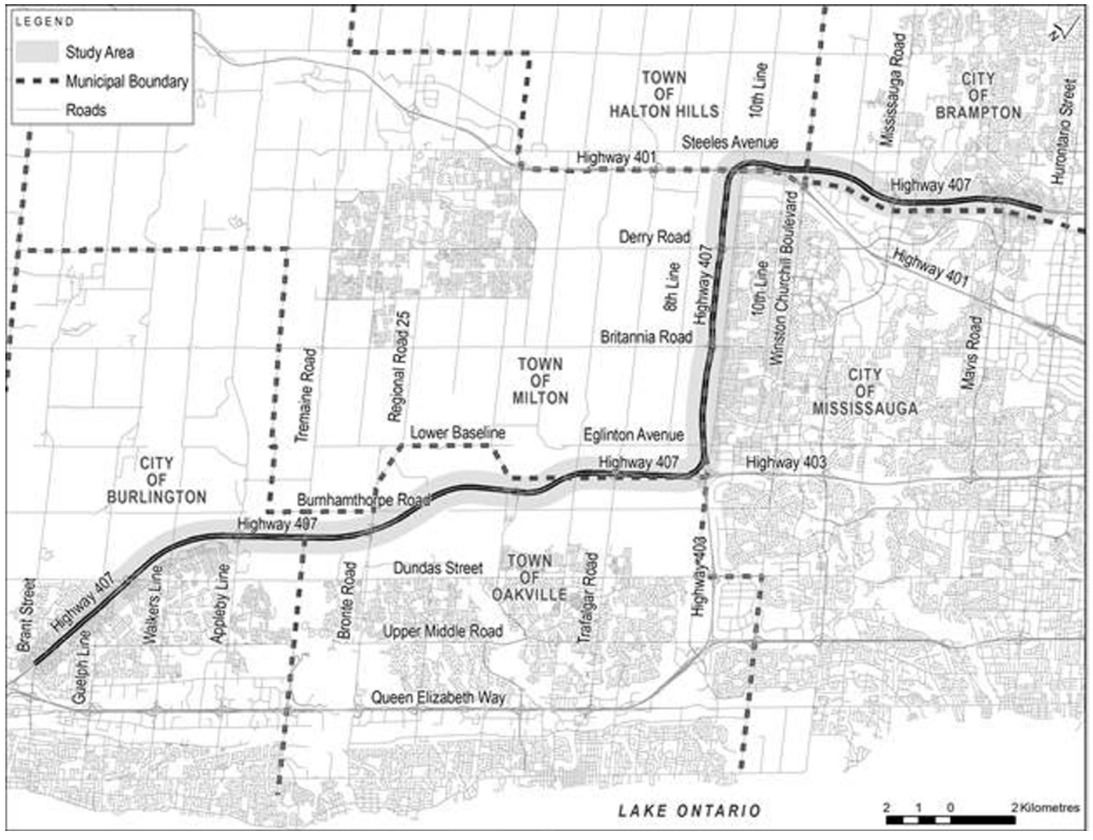
1.3. Study Area

The study area encompasses the proposed section of 407 Transitway corridor from west of Brant Street in the City of Burlington, Region of Halton, to west of Hurontario Street in the City of Mississauga, Region of Peel. **Figure 1.2** illustrates an area of 500 m on each side of the alignment that was covered by the study area; however, the boundaries in which the environmental effects were identified and assessed; and the reason(s) why these areas were considered to be sufficient, is explained below:

- **Terrestrial:** MTO Environmental Reference for Highway Design (2013) states that for all terrestrial ecosystems field investigations, the study area be defined as within the existing and proposed ROW and adjacent lands for 120 m unless a sensitive receptor located more than a distance of 120 m is likely to be adversely affected. As the majority of the anticipated impacts are footprint impacts the project team believes that the study area limits adequately address any terrestrial impacts.
- **Fish Habitat:** MTO Environmental Guide for Fish and Fish Habitat (latest version) presents minimum requirements for area of field investigation which consists of 50 m upstream and 200 m downstream of the limits of the proposed ROW. Further, the zone of detailed field investigation conducted for this study is greater than the area prescribed by the Guide. It consisted of 50 m upstream and downstream. The prescribed area for this zone by the Guide is 20 m upstream and 50 m downstream. Please note that the upstream and downstream distance is measured from the thalweg of the stream and not the straight linear distance from the proposed ROW.
- **Groundwater:** The purpose of the Secondary Source Groundwater Assessment was to identify hydrogeological constraints to the implementation of the 407 Transitway and to assess potential impacts on existing groundwater resources. The 1 km corridor study area is sufficient to identify any potential impacts and requirements for future study at a later phase.
- **Property Contamination and Waste, Archaeology, Cultural Heritage:** The potential impacts are footprint impacts in nature therefore the 1 km wide corridor was determined to be adequate to identify any impacts for the implementation of the transitway.
- **Noise:** Noise Sensitive Areas were identified regardless of size and location. The study area limits cover the noise sensitive areas that will be potentially affected.
- **Air:** The physical boundary does not have any meaning. Impacts were assessed at a much larger regional scale. A detailed description is presented in the Air Quality Report regarding the study area limits.

The assessed boundaries are within the 500 m set-back on either side of the runningway named the study area in the EPR.

FIGURE 1.2: STUDY AREA



1.4. Transit Project Assessment Process

This study was conducted following the Transit Project Assessment Process (TPAP) under Ontario Regulation 231/08: Transit Projects and Metrolinx Undertakings. This regulation allows proponents of all public transit projects to proceed with the TPAP process rather than as traditionally done through Part II of the *Environmental Assessment Act*. The TPAP is a fully-prescribed process in which the proponent must follow specified procedures and timeframes. The Minister of the Environment, Conservation and Parks (MECP) determines if the final transit project can proceed. This integrated TPAP approach is illustrated in **Figure 1.3**.

The study was comprised of three stages: The Planning Stage, the Pre-TPAP (Transit Project Assessment Process), and the TPAP stage. The Environmental Project Report (EPR) encompasses the background of the project, studies, analysis, functional and initial design, evaluation of alternatives, findings and recommendations of the completed stages. Consultation was carried out throughout the process.

As per the regulation, the six-month TPAP process is broken down into three distinct phases:

- The **120-day** consultation and Final EPR preparation period;
- The **30-day** Public, Stakeholder, Regulatory Agencies, and Indigenous and Métis Communities review period; and,
- The **35-day** period for the MECP to respond to all inquiries.

Figure 1.4 illustrates the comprehensive process as detailed by the MECP.

FIGURE 1.3: STUDY PROCESS

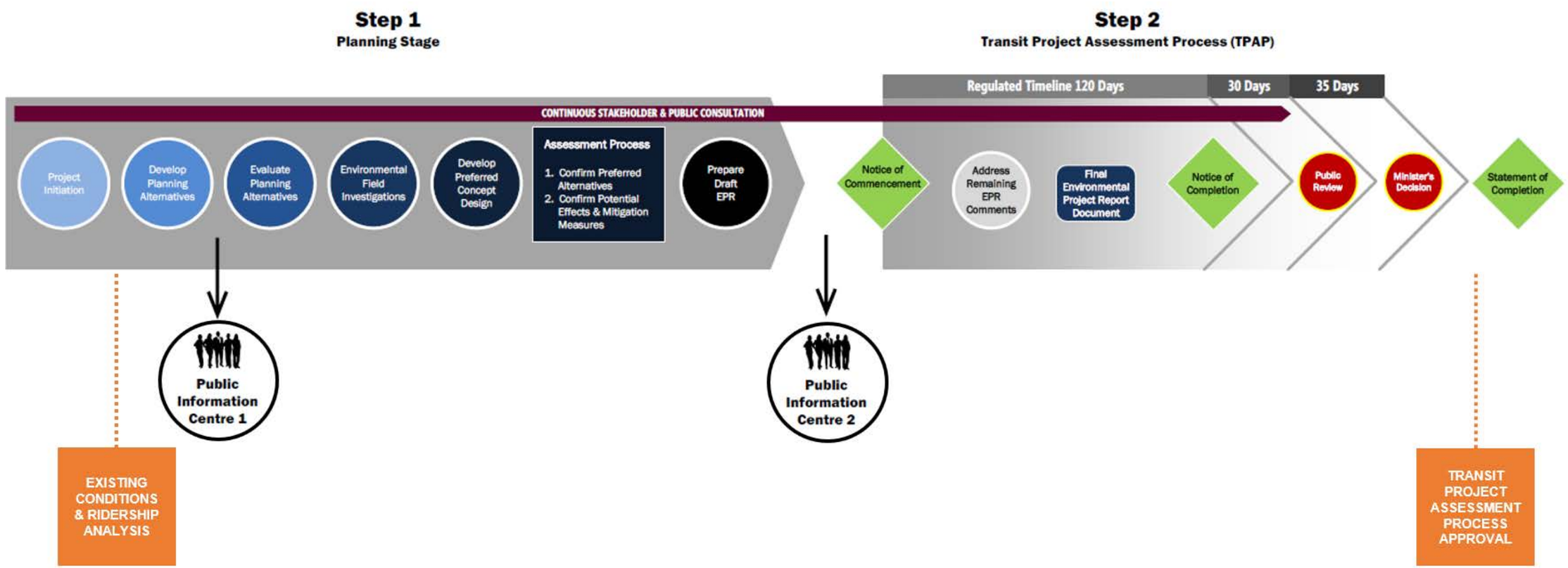
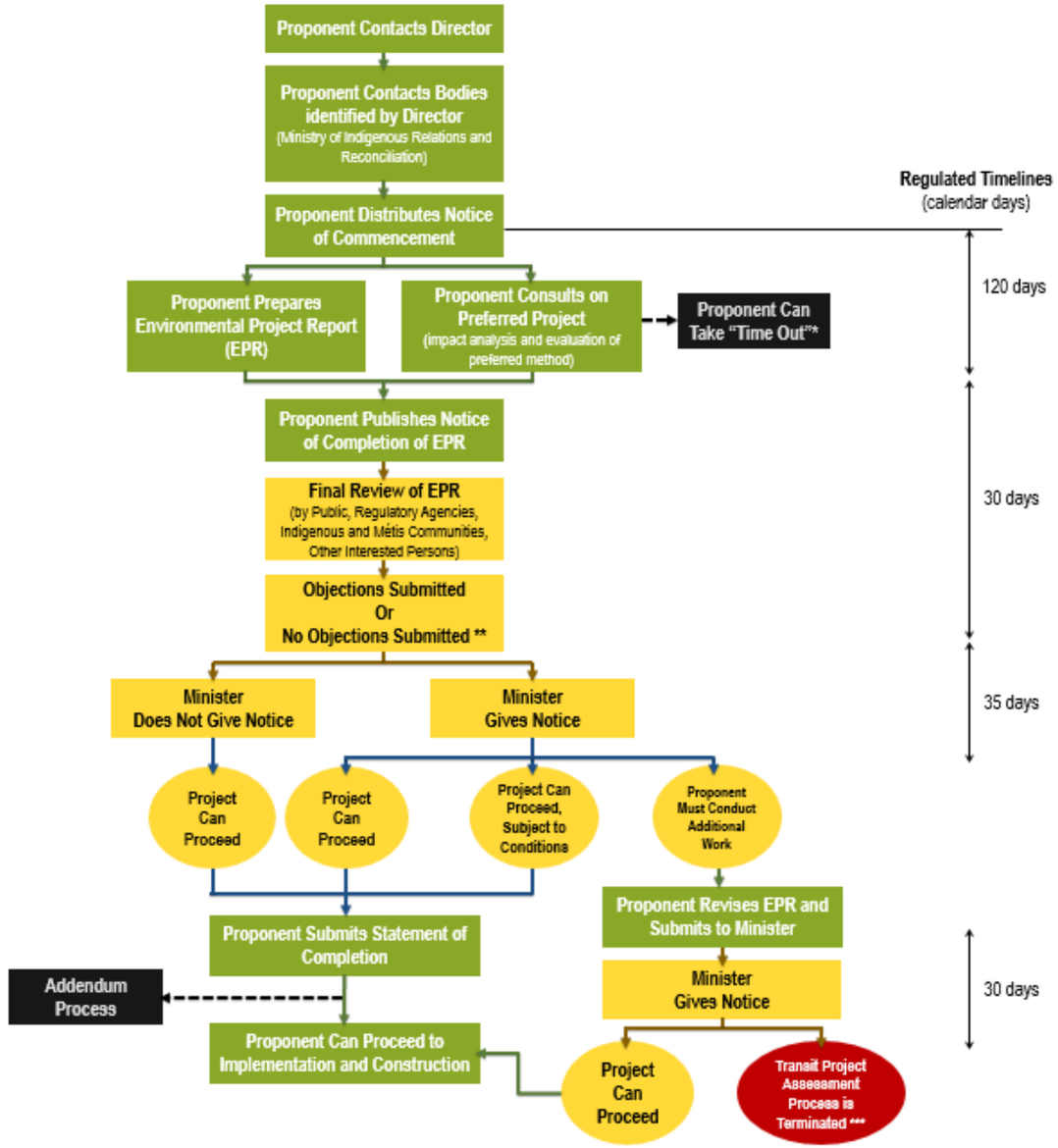


FIGURE 1.4: TPAP PROCESS



* Proponent can take a "time out" only when there is a potential negative impact on a matter of provincial importance that relates to the natural environment or has cultural heritage value or interest or on a constitutionally protected Aboriginal or treaty right.

** Given the Minister's authority to act, concerns or objections should be on the basis that a proposed transit project may have a potential negative impact on a matter of provincial importance that relates to the natural environment or has a cultrual heritage value or interest or on a consitutionally protected Aboriginal or treaty right.

*** Proponent must follow an approved class environmental assessment process (refer to Part (I.1) or the process under Part II of the *Environmental Assessment Act*.

1.5. Background and Context

1.5.1. Statutory Requirements

1.5.1.1. Provincial Legislation - Environmental Assessment Act of Ontario

As noted in **Section 1.4** above, this study followed the Transit Project Assessment Process as per the *Transit Projects and Metrolinx Undertakings, Ontario Regulation 231/*08. This 120-day consultation period started concurrently with the publication of the "Notice of Commencement of the TPAP".

1.5.1.2. Other Provincial Legislation

The 407 Transitway is subject to, and will be carried out in accordance with, all applicable Provincial legislation including the *Planning Act*, the *Public Transportation and Highway Improvement Act*, the *Freedom of Information Act and Protection of Privacy Act*, the *Ontario Heritage Act*, the *Endangered Species Act*, the *Clean Water Act,* and the *Environmental Protection Act,* among others.

1.5.1.3. Federal Legislation –Impact Assessment Act

Federal environmental assessment requirements for this project were investigated early in the study process to identify and address the federal *Impact Assessment Act* requirements. A review of the new legislation and its regulation, the "Physical Activities Regulations" (SOR/2019-285), determined that this project is not identified as a "designated project" that requires an environmental assessment by the Impact Assessment Agency of Canada. Therefore, a Federal environmental assessment process is not required. Nevertheless, Federal agencies and their interests including Fisheries and Oceans Canada, Environment Canada, Transport Canada and others were consulted throughout the study.

1.5.2. Policy Context

Outlined below are the most relevant transportation policies documented in plans and publications by the various levels of government with influence on the planning of the 407 Transitway.

1.5.2.1. Provincial Policy Statement 2020

The Provincial Policy Statement (PPS) (Ministry of Municipal Affairs and Housing, 2020) is issued under Section 3 of the *Planning Act* and provides policy direction on matters of provincial interest related to land use planning and development. The PPS (2020) replaces the previous PPS issued on April 30, 2014. The policy statement includes a range of policies related to three main themes: building strong communities; wise use and management of resources; and, protecting public health and safety.

One of the visions in the PPS, 2014 is the development of land use patterns that promote a mix of housing, employment, parks and open spaces, and transportation choices that facilitate pedestrian mobility and other modes of travel as well as connectivity among transportation modes. Land use

Appendix B – Traffic Reports

407 TRANSITWAY – WEST OF BRANT STREET TO WEST OF HURONTARIO STREET

MINISTRY OF TRANSPORTATION - CENTRAL REGION

Ontario

Final Report

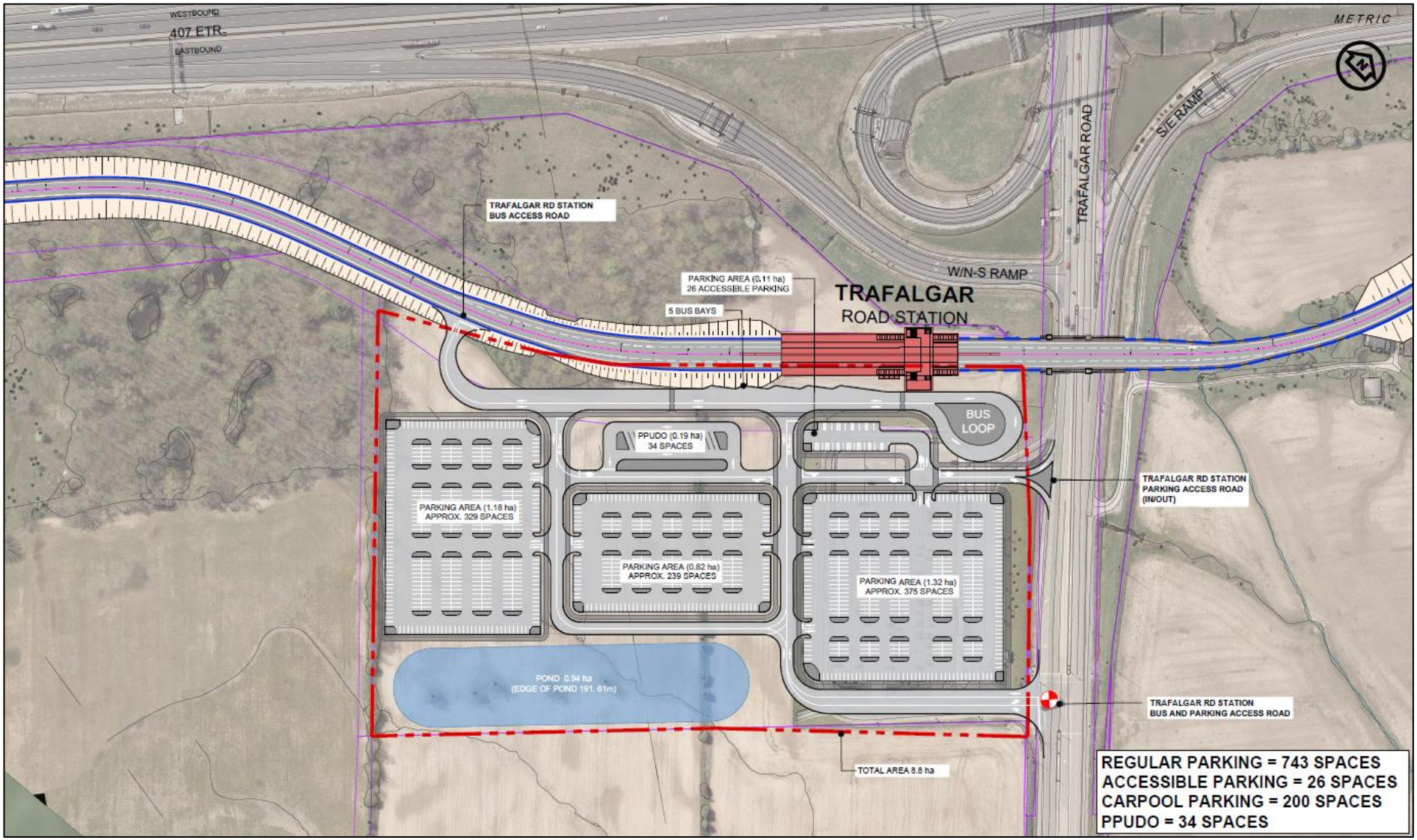
Trafalgar Station Traffic Impact Study

Highway 407 Transitway-4

IBI

Prepared for Ministry of Transportation, Ontario
by IBI Group
November 15, 2019

Exhibit 1-2: Proposed Station Layout



3.2 Transit

Trafalgar road has been identified in Halton Region's Transportation Master Plan as a 'Bus Rapid Transit' (BRT) corridor and it is expected that significant improvements will be conducted to accommodate the BRT.

3.3 Active Transportation

The City of Oakville Active Transportation Master Plan has identified Trafalgar Road as a future in boulevard multi-purpose trail. This would connect to the Transitway station to active transportation network in Oakville. There also is a proposed off road trail that would serve as an alternate connection between the Transitway station and William Halton Parkway west of Trafalgar Road.

3.4 Station Traffic

3.4.1 Station Trip Generation

Ridership forecasts were provided by MTO and sourced from MTO's Greater Golden Horseshoe Travel Demand Model V4. The model is an advanced state-of-practice multi-modal travel demand model that estimates future travel demands within the Greater Golden Horseshoe. The GGHM was developed to forecast peak period demand in support of the Growth Plan policies and has the capability of predicting mode shifts resulting from new public transit infrastructure. It can also be used to test network response to changes in link characteristics such as transit vehicle frequency, operating speed, station location, and parking availability.

The GGH model accounts for planned and committed road and transit projects sourced from Metrolinx Regional Transportation Plan and local transportation plans. While it is possible that additional projects will be funded over the upcoming years, this model represents a conservative approach.

With input from the MTO, a horizon year of 2031 was selected as the baseline for determining road and intersection requirements as part of this traffic impact study. As MTO's GGH model is to a 2041 horizon, ridership projections for 2031 were not available. Therefore the 2041 demands were carried forward on the basis that entry and exit volumes would be conservative (the resulting turning lanes and queue storage would accommodate 2031 demand) as provided in Exhibit 3-2.

Exhibit 3-2: 2041 AM Peak (2-hour) Boardings

STATION	TOTAL 2-HR BOARDINGS	2-HR PARK-AND-RIDE	2-HR WALK / TRANSIT	% PARK-AND-RIDE	% WALK / TRANSIT
Dundas	923	510	413	55%	45%
Appleby	227	207	20	91%	9%
Bronte	306	90	216	29%	71%
Trafalgar	**3,095**	**436**	**2,659**	**14%**	**86%**
Britannia	523	136	387	26%	74%
Derry	911	334	577	37%	63%
Mississauga	982	82	900	8%	92%
Total:	6,967	1,795	5,172	26%	74%

Ontario

Final Report

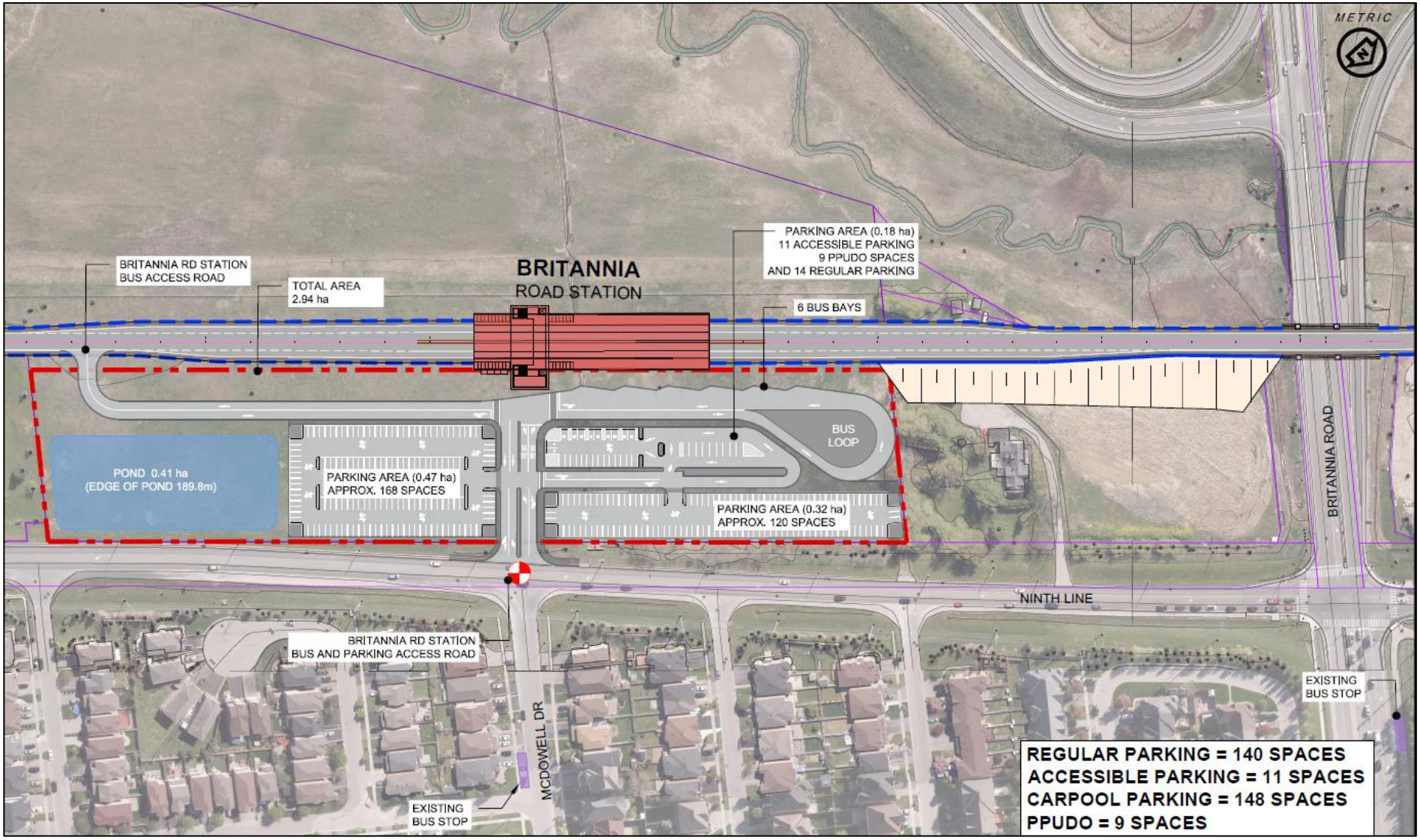
Britannia Station Traffic Impact Study

Highway 407 Transitway-4

IBI

Prepared for Ministry of Transportation, Ontario
by IBI Group
November 15, 2019

Exhibit 1-2: Proposed Station Layout



can also be used to test network response to changes in link characteristics such as transit vehicle frequency, operating speed, station location, and parking availability.

The GGH model accounts for planned and committed road and transit projects sourced from Metrolinx Regional Transportation Plan and local transportation plans. While it is possible that additional projects will be funded over the upcoming years, this model presents a conservative approach.

With input from the MTO, a horizon year of 2031 was selected as the baseline for determining road and intersection requirements as part of this traffic impact study. As MTO's GGH model is to a 2041 horizon, ridership projections for 2031 were not available. Therefore the 2041 demands were carried forward on the basis that entry and exit volumes would be conservative (the resulting turning lanes and queue storage would accommodate 2031 demand) as provided in Exhibit 3-1.

Exhibit 3-1: 2041 AM Peak (2-hour) Boardings

STATION	TOTAL 2-HR BOARDINGS	2-HR PARK-AND-RIDE	2-HR WALK / TRANSIT	% PARK-AND-RIDE	% WALK / TRANSIT
Dundas	923	510	413	55%	45%
Appleby	227	207	20	91%	9%
Bronte	306	90	216	29%	71%
Trafalgar	3,095	436	2,659	14%	86%
Britannia	**523**	**136**	**387**	**26%**	**74%**
Derry	911	334	577	37%	63%
Mississauga	982	82	900	8%	92%
Total:	6,967	1,795	5,172	26%	74%

From the above exhibit, two hour park-and-ride boardings were equated to two hour inbound vehicle trips at an assumed factor of 10:11, or 1.1 riders per park-and-ride vehicle. To convert to a.m. inbound peak hour volumes, a factor of 0.56 was applied. This factor was developed through a review of existing travel patterns using Transportation Tomorrow Survey (TTS 2016) data. The resulting a.m. peak hour inbound vehicle flow is 69 vph and rounded to 70 vph.

Further processing of forecasts was required to estimate a.m. outbound traffic, associated with kiss-n-ride drop off trips, and p.m. peak hour traffic. The ITE Trip Generation Manual (9th edition) provided ratios of inbound to outbound and a.m. to p.m. traffic for typical park-and-ride bus stations. Average trip generation rates for bus stations with park-and-ride lots are indicated in Exhibit 3-2. Using the ratios provided, Exhibit 3-3 lists the estimated station traffic generated give the above assumptions.

ENVIRONMENTAL PROJECT REPORT

407 TRANSITWAY – WEST OF BRANT STREET TO WEST OF HURONTARIO STREET

MINISTRY OF TRANSPORTATION - CENTRAL REGION

ASSIGNMENT # 2016-E-0038 G.W.P. 16-20003

AUGUST 13, 2020

APPENDIX K

5080 Ninth Line TIS Excerpts

TRAFFIC IMPACT STUDY

5080, 5054, 5034 NINTH LINE
RESIDENTIAL DEVELOPMENT
CITY OF MISSISSAUGA,
REGIONAL MUNICIPALITY OF PEEL

PREPARED FOR:
YOUR HOME DEVELOPMENTS

PREPARED BY:

C.F. CROZIER & ASSOCIATES INC.
211 YONGE STREET, SUITE 301
TORONTO, ON
M5B 1M4

OCTOBER 2021

CFCA FILE NO. 1740-5259

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CROZIER
CONSULTING ENGINEERS

2.0 Introduction

2.1 Background

C.F. Crozier & Associates Inc. (Crozier) was retained by Your Home Developments to prepare a Traffic Impact Study in support of the development application for the proposed residential development located at 5080, 5054 and 5034 Ninth Line in the City of Mississauga, Regional Municipality of Peel. The site is bound by an animal hospital to the north, an existing residential dwelling to the south, Ninth Line to the east and Highway 407 to the west.

The subject property is located within the Ministry of Transportation of Ontario (MTO)'s permit control area, which includes the area within 395 metres of the centre point of a controlled-access highway and within 45 metres of the right-of-way. The subject property is bound by Highway 407 to the west and is thus within the MTO's permit control area.

2.2 Development Proposal

Per the Site Plan prepared by Krikor Architects and Planners (dated September 20, 2021), the development scope consists of a total of 1270 residential dwelling units and 7000 square feet of retail. A total of 1605 parking spaces are proposed, including 35 surface parking spaces dedicated to retail and the remaining spaces being located in two underground parking garages. The site additionally proposes 872 long-term and 100 short-term (including retail) bicycle parking spaces. Further, the site is expected to be serviced by two site accesses. First, the Mahoney Gate, herein referred to as "Street B", is expected to serve as the main site access, connecting with Ninth Line at Skyview Street. Second, a separate site access is provided through Viola Desmond Drive, herein referred to as "Street A", which serves as the main throughfare of the future 5150 Ninth Line development. Street A connects to Ninth Line just north of Candlelight Drive. **Table 1** summarizes the proposed development statistics by building. The Site Plan is provided within **Appendix B.1**. The composite plan of the proposed development along with proposed developments at 5150, and 5160-70 Ninth Line are shown within **Appendix B.2.** The second site access connection to the proposed development via Street A is shown on the composite plan.

Table 1: Development Proposal

Building	Total Units	Total Retail GFA	Number of Stories
Building A	340	None	12
Building B	185		12
Building C	263		12
Building D	149		10
Building E	141	7000 (sq. ft)	6
Building F	168	None	8
Townhouse Building 1	12		3
Townhouse Building 2	12		3
Total	**1270**	7000 (sq. ft)	

The proposed development makes allowance for the future bus-rapid transit (BRT) 407 Transitway planned by the MTO which will span through the subject property running parallel to Highway 407. The 407 Transitway is discussed in more detail in **Section 4.4.2.**

The forecasted future background operations herein at the study intersections are consistent with the findings of the MMM Study and the Ninth Line EA Study. Further, the boundary road network is projected to operate effectively under the 2035 future background conditions with implementation of the roadway improvements outlined in this section, supported by the Ninth Line EA and the MMM study. As highlighted in the tables, the study intersections are forecast to operate similarly or better under the 2025 and 2030 horizons compared to the ultimate 2035 horizon.

5.0 Site Generated Traffic

The proposed development will result in additional vehicles on the boundary road network that would otherwise not exist. The proposed development will also result in additional turning movements at the study intersections.

5.1 Trip Generation

Trip generation for the proposed development was forecasted using published data from the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition. The ITE Trip Generation Manual is a compendium of industry collected trip generation data across North America for a variety of land uses and is used industry-wide as a source for trip generation forecasts.

Under a previous site plan, the proposed development included a total of 1300 residential units instead of the now proposed 1270. The trip generation forecast assumes a total of 1300 residential units, meaning the estimates for site trips can be said to be conservative. Multiple Land Use Categories were applied to the proposed development as outlined in **Table 25** below. The greater trip generation estimate of the fitted curve equation and the rate equation is used for all land use categories.

Table 25: Site Trip Generation

Buildings	Units or GFA[1]	Land Use	Peak Hour	Trips Generated		
				Inbound	Outbound	Total
Buildings A,B,C (High-Rise)	795 Units	LUC 222 "Multifamily Housing (High-Rise)"	A.M.	59	187	246
			P.M.	175	112	287
Buildings D,E,F Mid-Rise Residential	481 Units	LUC 221 "Multifamily Housing (Mid-Rise)"	A.M.	47	135	182
Back-to-back Townhouses	24 Units		P.M.	136	87	223
Building F Retail	7000 Sq. ft	LUC 820 "Shopping Centre"	A.M.	4	3	7
			P.M.	36	39	75
Total			**A.M.**	**110**	**325**	**435**
			P.M.	**347**	**238**	**585**

The full build-out of the proposed development is expected to generate a total of 435 and 585 total two-way trips during the weekday a.m. and p.m. peak hours, respectively.

5.2 Access Configuration

The development proposes one public roadway access connection on the west side of Ninth Line located at the current Ninth Line and Skyview Street intersection. Under earlier iterations of the site plan, the site access was proposed to connect at the Stardust Drive intersection with Ninth Line, as was identified in the MMM report. However, the Ninth Line and Skyview Street intersection was identified as the preferred access connection alternative for the proposed development within the Ninth Line EA Transportation report. The overall intersection operations were most preferrable under this scenario, with limited queuing issues and good intersection performance. Therefore, the analysis herein assumes a site access at Ninth Line and Skyview Street. Ninth Line EA Analysis excerpts are provided in **Appendix F**.

5.3 Boundary Road Network Trip Distribution

The trips generated by the proposed development were distributed to the boundary road network using a similar methodology employed in the 5150 Ninth Line TIS. Excerpts from the report have been provided in **Appendix K**.

The trip distribution was determined based on 2016 Transportation Tomorrow Survey (TTS) data. TTS is a comprehensive survey of transportation characteristics of households in the Greater Toronto Area (GTA) and surrounding areas.

For the proposed development, TTS results were filtered to auto trips exiting 2006 GTA Zones 3615, 3616, 3809, 3810 and 3811 during the weekday a.m. peak period. These zones consist of the residential zones along the Ninth Line corridor, and thus were considered to be appropriate for trip distribution analysis. The row variable was set to "Planning District of Destination" and the column variable was set to "Use of 407" to quantify the number of trips travelling to each destination that use Highway 407 ETR.

From this query, trip destinations were determined, and percentage of trips assigned to each destination was accounted for. Trips were assumed to travel to and from their destination points based on the most convenient route, considering trips using Highway 407 ETR and trips not using Highway 407 ETR.

It was determined that approximately 65% of the total outbound trips exiting the study area during the weekday a.m. peak period are internal to Mississauga. Accordingly, trip distribution internal to Mississauga was determined using a combination of existing travel patterns, expected destinations, and TTS results for trips travelling within Planning District "Mississauga."

The resultant boundary road network trip distribution is outlined in **Table 26.**

Table 26: Boundary Road Network Trip Distribution

Arriving From / Departing To	Greater Toronto Area (GTA) Trip Locations	Total Percentage
Ninth Line (north)		**30%**
Ninth Line (north)	Northern Mississauga, Brampton, Vaughan, Markham, Milton, etc.	*30%*
Ninth Line (south)		**20%**
QEW Niagara via Ford Drive	*N/A*	*0%*
QEW Toronto via Ford Drive	*Downtown Toronto, Etobicoke, etc.*	*10%*
Ninth Line (south) only Ie. No QEW	*Hamilton, Oakville, Burlington etc.*	*10%*
Eglinton Avenue West (east)		**40%**
Highway 403 (East) via Winston Churchill Boulevard	*Midtown Toronto, Eastern Mississauga*	*30%*
Winston Churchill Boulevard (south) via Eglinton Avenue West (east)	*Southern Mississauga*	*5%*
Eglinton Avenue West (east) only (no 403 or Winston Churchill Boulevard))	*Local Destinations*	*5%*
Local Trips (east)		**5%**
Erin Centre Boulevard	*Local Destinations*	*3%*
Skyview Street	*Local Destinations*	*2%*
East Lower Base Line (west)		**5%**
East Lower Base Line (west)	Brantford, Niagara, etc.	*5%*
Total		**100%**

Note 1: All other trip locations within the City of Mississauga not described for the other boundary road network entry/exit locations (ie. Ninth Line (north), Ninth Line (south), East Lower Base Line (west), and Highway 403 (East) via Winston Churchill Boulevard not used) use the Highway 403 (East) via Winston Churchill Boulevard entry/exit location.

Trips arriving from and departing to the north via Ninth Line include trips using Highway 407 ETR (east) and trips to and from areas internal to Mississauga (e.g., Meadowvale Town Centre). Trips arriving from and departing to the south via Ninth Line include trips using Highway 403 (west), the Queen Elizabeth Way (QEW), and trips to and from areas internal to Mississauga (e.g., Port Credit).

Trips arriving from and departing to the east via Eglinton Avenue West include trips using Highway 403 (east) via Winston Churchill Boulevard, and trips to and from areas internal to Mississauga along Eglinton Avenue West and Winston Churchill Boulevard. Trips arriving from and departing to the west via East Lower Base Line include trips using Highway 407 ETR (west) via Trafalgar Road. **Appendix M** contains the TTS data.

5.4 Access Trip Distribution

Due to the subject site sharing an internal private roadway with the adjacent 5150 Ninth Line residential development, it is expected that some trips will enter and exit the site via the Street A access connection in addition to the Street B access connection. Therefore, an access trip distribution was determined for the proposed development and is described in this section. A similar circumstance occurs for the 5150 and 5160/5170 Ninth Line background developments, where the

previous trip distribution will be altered due to the addition of the Street B site access. The trip distribution for these background developments is outlined within **Section 4.4.4** and **Section 4.4.5**, and provided as **Figure 11**.

The access trip distribution (for traffic both entering or exiting the site) allocates 33% and 65% of the total traffic onto Ninth Line to the locations just north of the Street A access and the location just south of the Street B site access, respectively (herein called the "north approach" and "south approach", respectively). This is consistent with the Boundary Road Network Trip Distribution outlined in **Section 5.3**. As an example, the boundary road network trip distribution entering or leaving the subject site at the north approach consists of trips via Erin Centre Boulevard (3%) and trips on Ninth Line north (30%). This adds to 33%, hence the choice for the 33% access trip distribution amount allocated to traffic entering or leaving to the north.

The access trip distribution for movements at the Street A and Street B access connections with Ninth Line were determined based on a review of the methodologies employed within the Ninth Line EA, MMM report, and 5150 Ninth Line TIS. Additionally, expected travel patterns based on shortest distance and expected travel time distances for turns at a signalized and non-signalized intersection were factored into the access trip distribution determination.

Furthermore, it should be noted that the outbound trip distribution at Street A for trip originated from the proposed development has been assigned a value of 0%. This was considered reasonable after preliminary traffic analysis suggested that capacity is very limited at the Street A access, primarily due to the unsignalized traffic control and a lack of sufficient gaps in traffic on Ninth Line for left-turning vehicles. The relatively short delays expected at the Street B access and signalized intersection control, make this access the preferred access for all outbound movements during the peak hours. The resultant access trip distribution is presented in **Table 27**.

Table 27: Access Trip Distribution

Ninth Line Access	Roadway Arriving from / Leaving to	Inbound Trip Distribution	Outbound Trip Distribution
Street A	Ninth Line (north)	**5%**	**0%**
Street A	Ninth Line (south)	**0%**	**0%**
Street B	Ninth Line (north)	**28%**	**33%**
Street B	Skyview Street (east)	**2%**	**2%**
Street B	Ninth Line (south)	**65%**	**65%**

Figure 17 outlines the trip distribution for the proposed development.

5.5 Trip Assignment

The trip distribution outlined in **Section 5.3** and **Section 5.4** was applied to the site trip generation to calculate the trip assignment for the proposed development. Trips were assumed to travel to and from their destination points based on the most convenient route. **Figure 18** outlines the trip assignment for the proposed development.

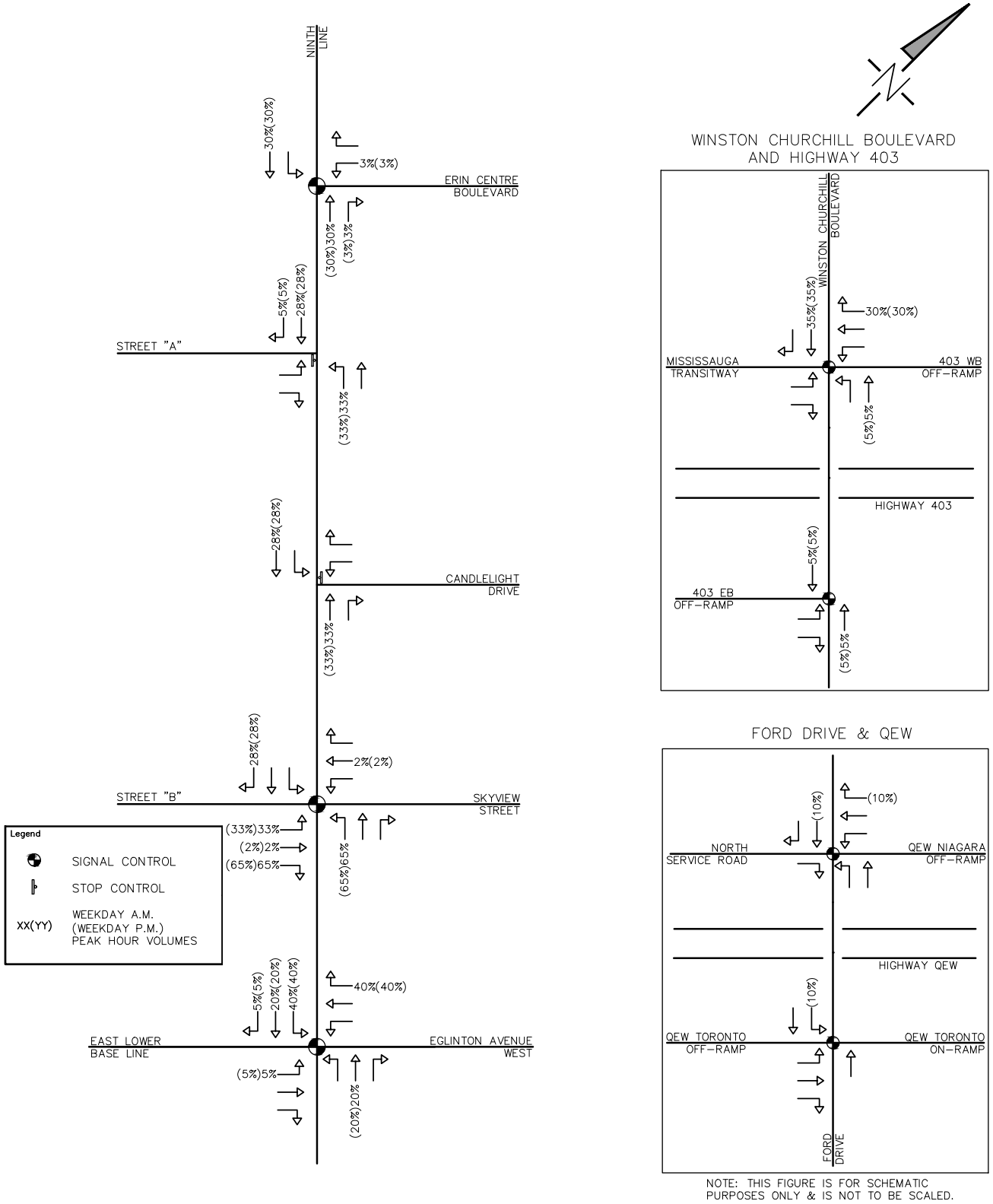


Figure 17: Site Trip Distribution

6.0 Future Total Conditions

6.1 Signal Warrant Analysis

A signal warrant analysis was conducted for the following cases:

- Ninth Line and Street B – 2025 Future Total; and
- Ninth Line and Street A – 2035 Future Total

The analysis followed the procedures specified in Chapter 4 of the "Ontario Traffic Manual – Book 12", March 2012. Justifications 1 (Minimum Vehicular Volume), 2 (Delay to Cross Traffic), 3 (Combination of Justifications 1 and 2), and 4 (4-Hour Volume) were selected as the most appropriate warrants with which to assess the site connections.

The average hour volume was determined using the following formula from OTM Book 12:

AHV = (amPHV + pmPHV) / 4

Where;
AHV = average hour volume
PHV = peak hour volume

Despite the existing speed limit of 70 km/h on Ninth Line being considered "free flow" in the signal warrant analysis, an "urban" operating environment was applied to the signal warrant analysis to reflect the urbanization of the Ninth Line corridor. **Table 28** outlines the results of the signal warrant analysis.

Table 28: Signal Warrant Analysis Results

Location	Operating Environment	Horizon Year	Number of lanes on major road	Traffic Signals Warranted?
Ninth Line and Street A	Urban	2035 Future Total	Two	No
Ninth line and Street B	Urban	2025 Future Total	Two	Yes

The results of the signal warrant analysis indicate that traffic signals are warranted, at the intersection of Ninth Line and Street B / Skyview Street. This conclusion reflects the assessment within Section 4.2 of the Traffic Analysis undertaken by HDR in support of the Ninth Line EA (excerpts provided in **Appendix F**), which recommends signalization of the Ninth Line and Street B / Skyview Street intersection.

It is noted that the conclusion of warranted signalization at the intersection of Ninth Line and Skyview Street / Street B in the 2025 Future Total scenario conveys that, during the subsequent horizon years in 2030 and 2035, signals are additionally warranted at the intersection. Similarly, for the intersection of Ninth Line and Street A, the conclusion that signalization is not warranted conveys that, during the previous horizon year in 2025 and 2030 for both Future Background and Future Total and the 2035 Future Background scenario, signals are not warranted. **Appendix N** contains the signal warrant sheets.

6.2 Left-Turn Lane Analysis

A left-turn warrant analysis was conducted for the northbound left movement at Ninth Line and Street A under 2035 Future Total conditions. This was performed in order to compare the results with the 5150 Ninth Line TIS and recommend improvements as needed.

The analysis was conducted using the Ministry of Transportation (MTO)'s "Design Supplement for TAC Geometric Design Guide for Canadian Roads – June 2017." (TAC-GDGCR). The analysis was conducted using the warrant for "Left Turn Storage Lanes for Four-Lane Undivided Highways Unsignalized." As Street A will be located on the west side Ninth Line, the northbound left-turn movement was analyzed for left-turn lane requirements. **Table 29** outlines the results of the left-turn lane warrant analysis.

Table 29: Left-Turn Lane Warrant Analysis Results

Location	Movement	Horizon Year	Number of lanes on major road	Left-Turn Lane Storage Requirement?
Ninth Line and Street A	NBL	2035 Future Total	Four	Yes – 25m storage length

The results of the left-turn lane analysis indicate that an auxiliary northbound left-turn lane is warranted at the intersection under 2035 future total conditions, with a storage length of 25m. This is the same conclusion to what was identified in the 5150 Ninth Line TIS under 2024 Future Total conditions. For Synchro modelling purposes, a 30m storage length for the northbound left movement was used to maintain consistency with the 5150 Ninth Line TIS. Given the proposed southbound left-turn lane storage lane for the Ninth Line and Candlelight Drive intersection per the Ninth Line EA design drawings (provided within **Appendix F**), it is recommended the approximately 100m distance between the two intersections be distributed at 25m per left turn and the remaining length be a shared two-way taper; alternatively, as is expected for most of the Ninth Line corridor, a two-way left turn lane median marking may be implemented along the segment from Street A to Street B to provide left turning storage opportunities in both directions at the intersections involved.

A northbound left turn is also recommended for the signalized intersection of Ninth Line and Skyview Street / Street B. Based on the traffic analysis as presented in **Section 6.5**, a 25m storage is forecast to be adequate**. Appendix O** contains the left-turn warrant analysis worksheets.

6.3 Right-Turn Lane Warrant Analysis

Auxiliary right-turn lane warrant analysis was conducted at the proposed Street A and Street B connections to Ninth Line under the 2035 future total conditions. As the proposed site accesses will be located on the west side Ninth Line, the southbound right-turn movement was analyzed for right-turn lane requirements.

Per the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (GFGCR), June 2017, a right-turn auxiliary lane on an urban or rural road should be implemented at unsignalized intersections when the volume of decelerating or accelerating vehicles compared with the through traffic volume causes undue hazard. Similarly, consideration for a right turn storage is typically expected for a signalized intersection when there are operational issues and where repurposing a shared lane is expected to greatly improve operations at the intersection.

It is a common convention in traffic engineering that an auxiliary right-turn lane should be provided where right-turn volumes exceed 60 vehicles per hour. The forecasted southbound right-turn volumes at Street A under 2035 future total conditions are below 60 vehicles per hour. The southbound right trips at Street B is expected to occasionally exceed 60 trips in the p.m. peak hour, however, no operational issues are forecast; therefore, similar to the EA recommendation for adjacent Ninth Line intersections such as Erin Centre Boulevard and Candlelight Drive. Therefore, a shared outer lane for both through and right turn into Street A and Street B is recommended.

6.4 Site Access Turning Lane Configurations

Based on the 2035 future total traffic operations outlined in **Section 6.5**, a cross-section at Street B connection to Ninth Line which includes one outbound left-turn lane, one outbound shared through and right-turn lane and one receiving inbound lane would be sufficient to accommodate site generated traffic. Accordingly, Street B was modelled in Synchro with a left-turn lane with a 15m storage length, a shared through and right-turn lane, and an inbound lane. The actual recommended left-turn lane storage length for the intersection approach is determined based on the queuing results of the traffic modelling.

The Street A approach to Ninth Line was modelled with a single lane for left and right-turn movements. This approach is consistent with the 5150 Ninth Line TIS under the sensitivity analysis, which included trips from the proposed development (excerpts provided in **Appendix K**). The proposed configuration is also consistent with the Transportation Report of the Ninth Line EA (excerpts provided in **Appendix F**).

As discussed in **Section 6.2**, the northbound left turn storage lanes are required at the intersection of Ninth Line with Street A and Street B. Based on the analysis presented in **Section 6.5**, northbound left turn storage lengths of approximately 25m and 50m are forecast to be adequate for the Street A and Street B, respectively. It is however, recognized that a two-way left turn median lane is planned along the Ninth Line corridor which will provide additional storage than required. **Figure 19** outlines the boundary road network lane configurations used for the future total scenarios.

6.5 Intersection Operations

The future total intersection operations at the study intersections were analyzed using the 2025, 2030 and 2035 future total traffic volumes illustrated in **Figures 20, 21 and 22,** respectively, and revised signal timings as outlined in **Section 3.8.2**. Detailed capacity analysis worksheets are included in **Appendix G**. **Tables 30, 31 and 32** outline the 2025, 2030, and 2035 future total traffic operations for MTO intersections. **Tables 33, 34 and 35** outline the 2025, 2030, and 2035 future total traffic operations for City of Mississauga intersections.

APPENDIX L

5150 Ninth Line TIS Excerpts

TRAFFIC IMPACT STUDY & OPERATIONS AND SAFETY ASSESSMENT

5150 NINTH LINE
RESIDENTIAL DEVELOPMENT
CITY OF MISSISSAUGA,
REGIONAL MUNICIPALITY OF PEEL

PREPARED FOR:
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ORIGINAL - OCTOBER 2019
UPDATE – FEBRUARY 2021

CFCA FILE NO. 780-5251

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CROZIER
CONSULTING ENGINEERS

queue lengths.

The intersection of Ninth Line and Erin Centre Boulevard is expected to change from LOS "B" to "C" during the weekday p.m. peak hour with a maximum increase in control delay of 4.2 seconds. The southbound through movement and northbound through movements are expected to operate near capacity during the weekday a.m. and p.m. peak hours, respectively, as a result of background traffic growth and development traffic added to the already heavy through volumes on Ninth Line.

Overall, the boundary road network is expected to operate at acceptable levels of service under 2024 future background conditions with the implementation of the improvements at Ninth Line and Eglinton Avenue West / East Lower Base Line as recommended in the MMM study.

5.0 Site Generated Traffic

The proposed development will result in additional vehicles on the boundary road network that would otherwise not exist. The proposed development will also result in additional turning movements at the study intersections.

5.1 Trip Generation

Trip generation for the proposed development was forecasted using published data from the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition. The ITE Trip Generation Manual is a compendium of industry collected trip generation data across North America for a variety of land uses and is used industry wide as a source for trip generation forecasts.

Land Use Category (LUC) 220 "Multifamily Housing (Low-Rise)" was applied to the proposed residential townhouse dwelling units for both Phase 1 and 2.

A fitted curve equation is provided for all land use categories outlined above, and the number of data plot points exceeds 20 data points. Therefore, the fitted curve equation was used to forecast trip generation for the proposed development.

Trip generation was forecasted using a previous version of the development proposal which included an additional seven townhouses for Phase 1. Therefore, the trip generation forecasts and future total traffic analysis are slightly overstated as they reflect an additional seven units for both Phase 1 and full build-out.

Table 14 outlines the trip generation for both Phase 1 and full build-out of the proposed development.

Table 14: Trip Generation

Phase 1 (2021)					
ITE Land Use Category	**Units**	**Peak Hour**	**Trips Generated**		
			Inbound	**Outbound**	**Total**
LUC 220 "Multifamily Housing (Low-Rise)"	128	A.M.	14	46	60
		P.M.	46	28	74
Full Build-Out (2024)					
ITE Land Use Category	**Units**	**Peak Hour**	**Trips Generated**		
			Inbound	**Outbound**	**Total**
LUC 220 "Multifamily Housing (Low-Rise)"	175	A.M.	18	63	81
		P.M.	61	36	97

The full build-out of the proposed development is expected to generate a total of 81 and 97 total two-way trips during the weekday a.m. and p.m. peak hours, respectively. Given the sole residential land use, no internal synergy trips or pass-by trips are expected for the proposed development.

5.2 Trip Distribution

The trips generated by the proposed development were distributed to the boundary road network based on 2016 Transportation Tomorrow Survey (TTS) data. TTS is a comprehensive survey of transportation characteristics of households in the Greater Toronto Area (GTA) and surrounding areas.

For the proposed development, TTS results were filtered to auto trips exiting 2006 GTA Zones 3615, 3616, 3809, 3810 and 3811 during the weekday a.m. peak period. These zones consist of the residential zones along the Ninth Line corridor, and thus were considered to be appropriate for trip distribution analysis. The row variable was set to "Planning District of Destination" and the column variable was set to "Use of 407" to quantify the number of trips travelling to each destination that use Highway 407 ETR.

From this query, trip destinations were determined, and percentage of trips assigned to each destination was accounted for. Trips were assumed to travel to and from their destination points based on the most convenient route, taking into account trips using Highway 407 ETR and trips not using Highway 407 ETR.

It was determined that approximately 65% of the total outbound trips exiting the study area during the weekday a.m. peak period are internal to Mississauga. Accordingly, trip distribution internal to Mississauga was determined using a combination of existing travel patterns, expected destinations, and TTS results for trips travelling within Planning District "Mississauga."

The resultant trip distribution is outlined in **Table 15.**

Table 15: Trip Distribution

Arriving From / Departing To	Percentage
Ninth Line (north)	30%
Ninth Line (south)	20%
Eglinton Avenue West (east)	40%
East Lower Base Line (west)	5%
Erin Centre Boulevard (east)	5%
Total	100%

Trips arriving from and departing to the north via Ninth Line include trips using Highway 407 ETR (east) and trips to and from areas internal to Mississauga (e.g. Meadowvale Town Centre).

Trips arriving from and departing to the south via Ninth Line include trips using Highway 403 (west), the Queen Elizabeth Way (QEW), and trips to and from areas internal to Mississauga (e.g. Port Credit).

Trips arriving from and departing to the east via Eglinton Avenue West include trips using Highway 403 (east) via Winston Churchill Boulevard, and trips to and from areas internal to Mississauga along Eglinton Avenue West.

Trips arriving from and departing to the west via East Lower Base Line include trips using Highway 407 ETR (west) via Trafalgar Road.

Figure 10 outlines the trip distribution for the proposed development. **Appendix I** contains the TTS data.

5.3 Trip Assignment

The trip distribution outlined in **Section 5.2** was applied to the site trip generation to calculate the trip assignment for both Phase 1 and full build-out. Trips were assumed to travel to and from their destination points based on the most convenient route.

As this analysis does not account for the adjacent property to the south, all forecasted trips entering and exiting the subject property were assigned to the proposed public road site access on Ninth Line.

Figures 11 and 12 outline the trip assignment for both Phase 1 and full build-out, respectively.

6.0 Future Total Conditions

6.1 Basis of Assessment

The site generated traffic volumes illustrated in **Figure 11** were added to the 2021 future background traffic volumes in **Figure 8** to determine 2021 future total traffic volumes. **Figure 13** illustrates the 2021 future total traffic volumes.

The site generated traffic volumes illustrated in **Figure 12** were added to the 2024 future background traffic volumes in **Figure 9** to determine 2024 future total traffic volumes. **Figure 14** illustrates the 2024 future total traffic volumes.

APPENDIX M

TTS Data

Fri Mar 29 2019 12:16:44 GMT-0400 (Eastern Daylight Time) - Run Time: 1731ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Planning district of destination - pd_dest
Column: Use of Hwy 407 - hwy407

Filters:
2006 GTA zone of origin - gta06_orig In 3615, 3616, 3809, 3810, 3811
and
Start time of trip - start_time In 600-900
and
Primary travel mode of trip - mode_prime In D

Trip 2016
Table:

	Unknown	No	Yes	Sum	% use of 407	% total of trips		Route w/407	Route w/o 407
PD 1 of Toronto	77	342	0	419	0.0%	1.7%		Ninth Line south	Ninth Line south
PD 2 of Toronto	18	76	0	94	0.0%	0.4%		Ninth Line south	Ninth Line south
PD 3 of Toronto	92	124	17	233	12.1%	1.0%		407 (east)	403 (east)
PD 4 of Toronto	169	53	11	233	17.2%	1.0%		407 (east)	403 (east)
PD 5 of Toronto	81	80	18	179	18.4%	0.7%		407 (east)	403 (east)
PD 6 of Toronto	0	25	0	25	0.0%	0.1%		Ninth Line south	Ninth Line south
PD 7 of Toronto	164	82	0	246	0.0%	1.0%		Ninth Line south	Ninth Line south
PD 8 of Toronto	222	225	50	497	18.2%	2.0%		407 (east)	403 (east)
PD 9 of Toronto	229	154	88	471	36.4%	1.9%		407 (east)	403 (east)
PD 10 of Toronto	52	218	0	270	0.0%	1.1%		407 (east)	403 (east)
PD 11 of Toronto	35	88	0	123	0.0%	0.5%		407 (east)	403 (east)
PD 12 of Toronto	21	22	0	43	0.0%	0.2%		407 (east)	403 (east)
PD 13 of Toronto	40	85	0	125	0.0%	0.5%		407 (east)	403 (east)
PD 16 of Toronto	55	75	0	130	0.0%	0.5%		407 (east)	403 (east)
Clarington	18	0	0	18	0.0%	0.1%		407 (east)	403 (east)
Aurora	14	0	0	14	0.0%	0.1%		407 (east)	403 (east)
Richmond Hill	32	10	0	42	0.0%	0.2%		407 (east)	403 (east)
Markham	76	122	10	208	7.6%	0.9%		407 (east)	403 (east)
Vaughan	146	188	181	515	49.1%	2.1%		407 (east)	403 (east)
Caledon	26	20	0	46	0.0%	0.2%		407 (east)	403 (east)
Brampton	425	874	133	1432	13.2%	5.9%		407 (east)	403 (east)
Mississauga	7942	7710	228	15880	2.9%	65.4%		See internal breakdown	
Halton Hills	56	140	0	196	0.0%	0.8%	AVERAGE	Ninth Line north	Ninth Line north
Milton	106	368	0	474	0.0%	2.0%	6.6%	Ninth Line north	Ninth Line north
Oakville	430	770	18	1218	2.3%	5.0%		Ninth Line south	Ninth Line south
Burlington	174	151	10	335	6.2%	1.4%		Eglinton (west)	Ninth Line south
Dundas	0	33	0	33	0.0%	0.1%		Eglinton (west)	Ninth Line south
Ancaster	53	0	0	53	0.0%	0.2%		Eglinton (west)	Ninth Line south
Hamilton	134	156	0	290	0.0%	1.2%		Eglinton (west)	Ninth Line south
St. Catharines	15	0	0	15	0.0%	0.1%		Eglinton (west)	Ninth Line south
Waterloo	60	12	0	72	0.0%	0.3%		Ninth Line north	Ninth Line north
Cambridge	14	111	0	125	0.0%	0.5%		Ninth Line north	Ninth Line north
City of Guelph	106	68	0	174	0.0%	0.7%		Ninth Line north	Ninth Line north
Haliburton	8	0	0	8	0.0%	0.0%			
Brantford	0	19	0	19	0.0%	0.1%	AVERAGE	Eglinton (west)	Ninth Line south
External	29	0	0	29	0.0%	0.1%	1.2%		
Sum	11119	12401	764	24284	5.8%	100.0%			

EXTERNAL TO MISSISSAUGA		
Route		
407 (east)	6.6%	
407 (west)	1.2%	
403 (east)	12.2%	
Ninth Line (south)	10.0%	
Ninth Line (north)	4.3%	
Total	34.4%	

INTERNAL TO MISSISSAUGA	
Route	
Eglinton East	30.0%
Ninth Line (south)	10.0%
Ninth Line (north)	20.0%
Erin Centre East	5.0%
Total	65.0%

TOTAL		
Route		
Ninth Line (north)	30.9%	**30%**
Ninth Line (south)	20.0%	**20%**
Eglinton (East)	42.2%	**40%**
Eglinton (West)	1.2%	**5%**
Erin Centre (East)	5.0%	**5%**
	99.4%	**100.0%**

APPENDIX N

Signal Warrants

Input Data Sheet

Analysis Sheet | Results Sheet | Proposed Collision

GO TO Justification:

What are the intersecting roadways? Ninth Line and Street A

What is the direction of the Main Road street? East-West

When was the data collected? 2026 Total Traffic

Justification 1 - 4: Volume Warrants

a.- Number of lanes on the Main Road? 2 or more

b.- Number of lanes on the Minor Road? 1

c.- How many approaches? 3

d.- What is the operating environment? Urban Population >= 10,000 AND Speed < 70 km/hr

e.- What is the eight hour vehicle volume at the intersection? (Please fill in table below)

Hour Ending	Main Eastbound Approach			Minor Northbound Approach			Main Westbound Approach			Minor Southbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
7:00	4	649	0	4	0	19	0	787	18	0	0	0	0
8:00	4	649	0	4	0	19	0	787	18	0	0	0	0
9:00	4	649	0	4	0	19	0	787	18	0	0	0	0
12:00	4	649	0	4	0	19	0	787	18	0	0	0	0
13:00	4	649	0	4	0	19	0	787	18	0	0	0	0
16:00	4	649	0	4	0	19	0	787	18	0	0	0	0
17:00	4	649	0	4	0	19	0	787	18	0	0	0	0
18:00	4	649	0	4	0	19	0	787	18	0	0	0	0
Total	**32**	**5,192**	**0**	**32**	**0**	**152**	**0**	**6,296**	**144**	**0**	**0**	**0**	**0**

Justification 5: Collision Experience

Preceding Months	Number of Collisions*
1-12	0
13-24	0
25-36	0

* Include only collisions that are susceptable to correction through the installation of traffic signal control

Justification 6: Pedestrian Volume

a.- Please fill in table below summarizing total pedestrians crossing major roadway at the intersection or in proximity to the intersection (zones). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume									
Factored 8 hour pedestrian volume	0		0		0		0		
% Assigned to crossing rate	23%		34%		30%		100%		
Net 8 Hour Pedestrian Volume at Crossing									0
Net 8 Hour Vehicular Volume on Street Being Crossed									2,000

b.- Please fill in table below summarizing delay to pedestrians crossing major roadway at the intersection or in proximity to the intersection (zones). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume	0	0	0	0	0	0	0	0	
Total 8 hour pedestrians delayed greater than 10 seconds	0	0	0	0	0	0	0	0	
Factored volume of total pedestrians	0		0		0		0		
Factored volume of delayed pedestrians	0		0		0		0		
% Assigned to Crossing Rate	23%		34%		30%		100%		
Net 8 Hour Volume of Total Pedestrians									0
Net 8 Hour Volume of Delayed Pedestrians									0

Analysis Sheet

Input Sheet | Results Sheet | Proposed Collision

GO TO Justification:

Intersection: Ninth Line and Street A

Count Date: 2026 Total Traffic

Justification 1: Minimum Vehicle Volumes

Restricted Flow Urban Conditions

Justification	Guidance Approach Lanes				Percentage Warrant								Total Across	Section Percent
	1 Lanes		2 or More Lanes		Hour Ending									
Flow Condition	FREE FLOW ☐	RESTR. FLOW ☐	FREE FLOW ☐	RESTR. FLOW ☑	7:00	8:00	9:00	12:00	13:00	16:00	17:00	18:00		
1A	480	720	600	900	1,481	1,481	1,481	1,481	1,481	1,481	1,481	1,481		
	COMPLIANCE %				100	100	100	100	100	100	100	100	800	100
1B	180	255	180	255	23	23	23	23	23	23	23	23		
	COMPLIANCE %				9	9	9	9	9	9	9	9	72	9
Restricted Flow Signal Justification 1:					Both 1A and 1B 100% Fullfilled each of 8 hours — Yes ☐ No ☑									
					Lesser of 1A or 1B at least 80% fulfilled each of 8 hours — Yes ☐ No ☑									

Justification 2: Delay to Cross Traffic

Restricted Flow Urban Conditions

Justification	Guidance Approach Lanes				Percentage Warrant								Total Across	Section Percent
	1 lanes		2 or More lanes		Hour Ending									
Flow Condition	FREE FLOW ☐	RESTR. FLOW ☐	FREE FLOW ☐	RESTR. FLOW ☑	7:00	8:00	9:00	12:00	13:00	16:00	17:00	18:00		
2A	480	720	600	900	1,458	1,458	1,458	1,458	1,458	1,458	1,458	1,458		
	COMPLIANCE %				100	100	100	100	100	100	100	100	800	100
2B	50	75	50	75	4	4	4	4	4	4	4	4		
	COMPLIANCE %				5	5	5	5	5	5	5	5	43	5
Restricted Flow Signal Justification 2:					Both 2A and 2B 100% Fullfilled each of 8 hours — Yes ☐ No ☑									
					Lesser of 2A or 2B at least 80% fulfilled each of 8 hours — Yes ☐ No ☑									

Justification 3: Combination

Combination Justification 1 and 2

	Justification Satisfied 80% or More			Two Justifications Satisfied 80% or More	
Justification 1	Minimun Vehicular Volume	YES ☐	NO ☑	YES ☐	NO ☑
Justification 2	Delay Cross Traffic	YES ☐	NO ☑		NOT JUSTIFIED

Justification 4: Four Hour Volume

Justification	Time Period	Total Volume of Both Approaches (Main) X	Heaviest Minor Approach Y (actual)	Required Value Y (warrant threshold)	Average % Compliance	Overall % Compliance
Justification 4	7:00	1,458	23	115	20 %	20 %
	8:00	1,458	23	115	20 %	
	9:00	1,458	23	115	20 %	
	12:00	1,458	23	115	20 %	

Results Sheet

Input Sheet | Analysis Sheet | Proposed Collision

Intersection: Ninth Line and Street A

Count Date: 2026 Total Traffic

Summary Results

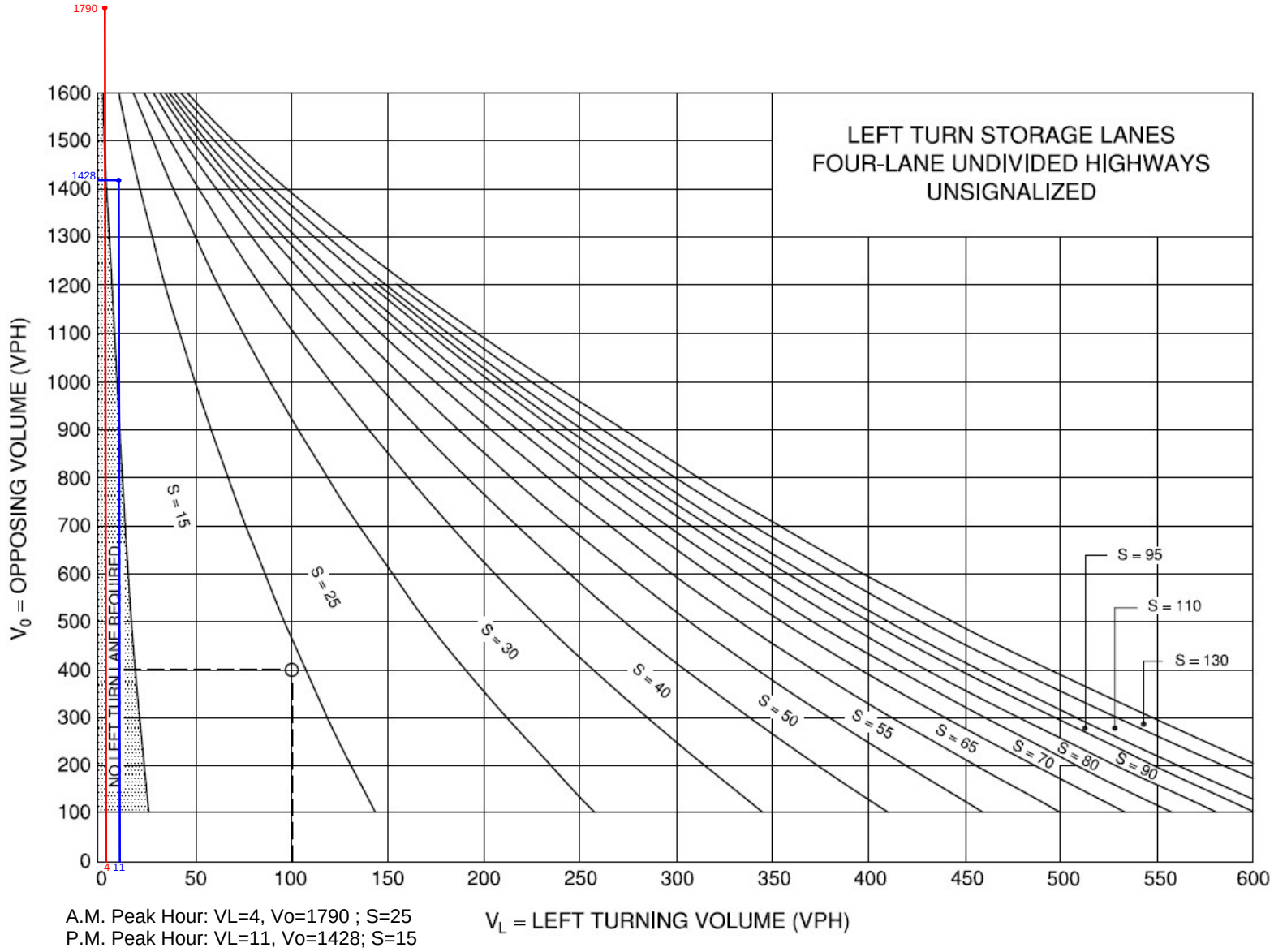
Justification			Compliance		Signal Justified? YES	Signal Justified? NO
1. Minimum Vehicular Volume	A	Total Volume	100	%	☐	☑
	B	Crossing Volume	9	%		
2. Delay to Cross Traffic	A	Main Road	100	%	☐	☑
	B	Crossing Road	5	%		
3. Combination	A	Justificaton 1	9	%	☐	☑
	B	Justification 2	5	%		
4. 4-Hr Volume			20	%	☐	☑
5. Collision Experience			0	%	☐	☑
6. Pedestrians	A	Volume	Justification not met		☐	☑
	B	Delay	Justification not met			

APPENDIX O

Left-Turn Warrants

Left Turn Warrants - 2026 Future Total Traffic - Intersection of Ninth Line and Street A (Northbound Left Movement)

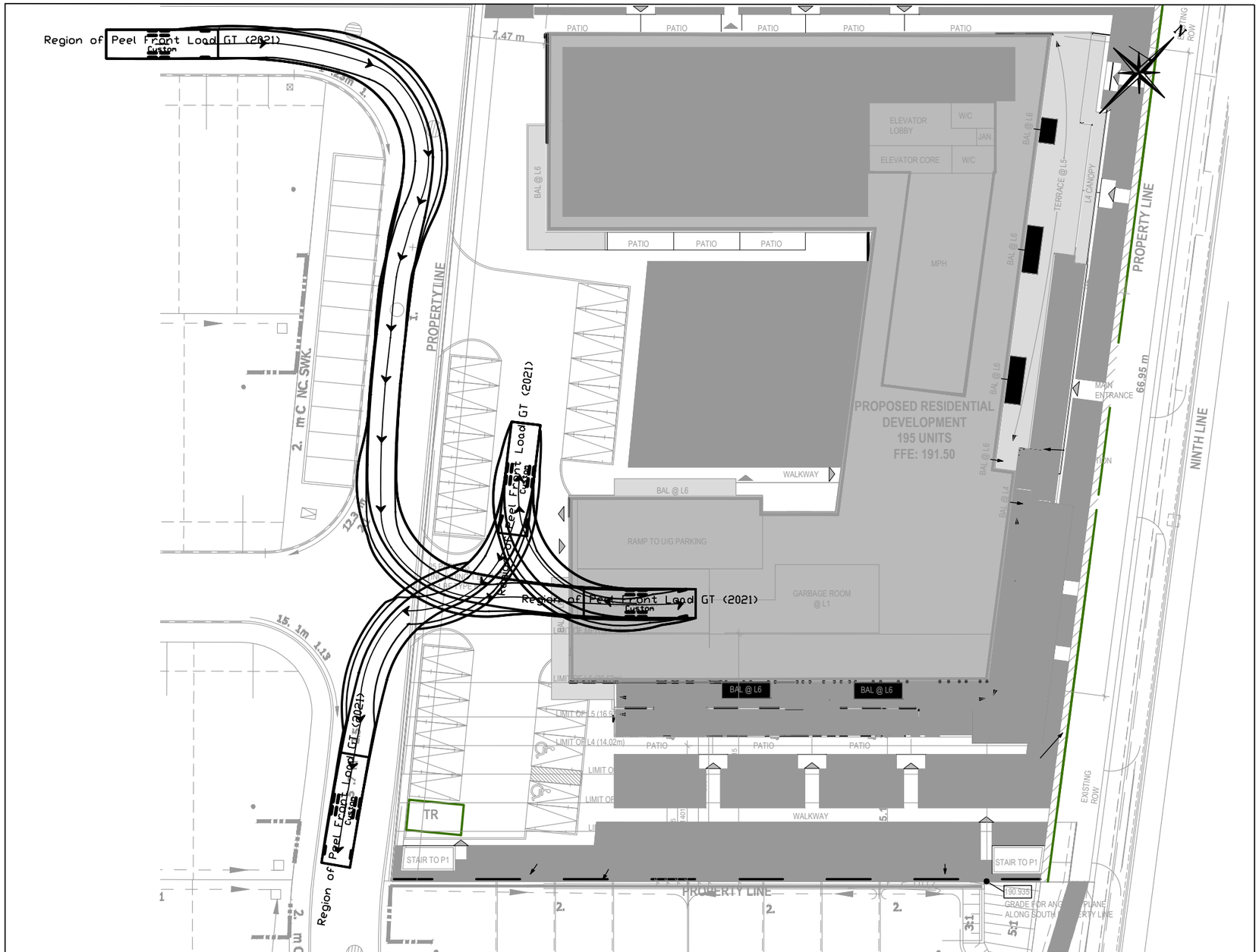
Exhibit 9A-31

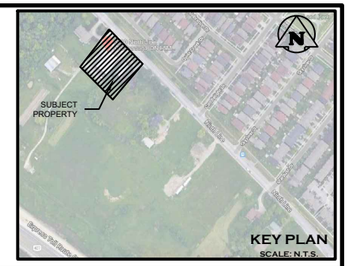


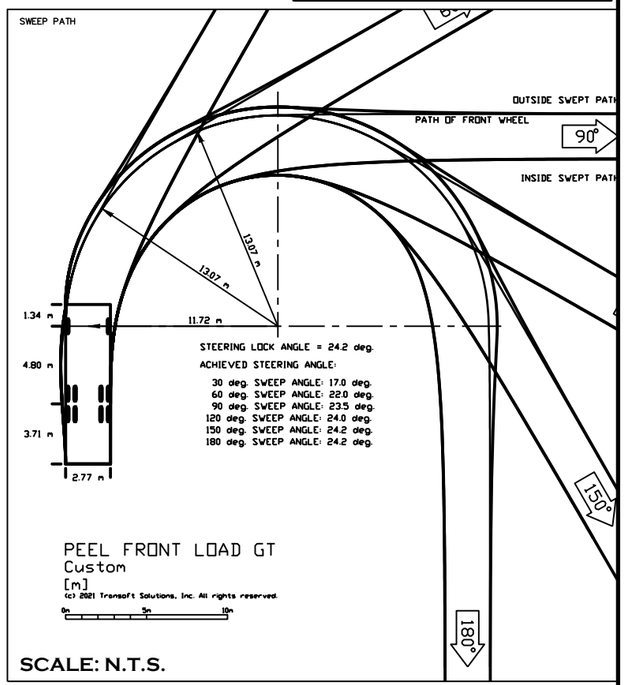
A.M. Peak Hour: VL=4, Vo=1790 ; S=25
P.M. Peak Hour: VL=11, Vo=1428; S=15

APPENDIX P

Vehicle Turning Diagrams

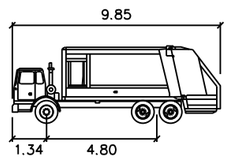






SCALE: N.T.S.

VEHICLE PROFILE



PEEL FRONT LOAD GT

meters

Width	: 2.77
Track	: 2.77
Lock to Lock Time	: 6.0
Steering Angle	: 24.2

SCALE: N.T.S.

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Town

No.	ISSUE	DATE: MM/DD/YYYY
0	ISSUED FOR 1st SUBMISSION	10/08/2021

Engineer

FOR REVIEW
NOT TO BE USED FOR CONSTRUCTION

Engineer

Project

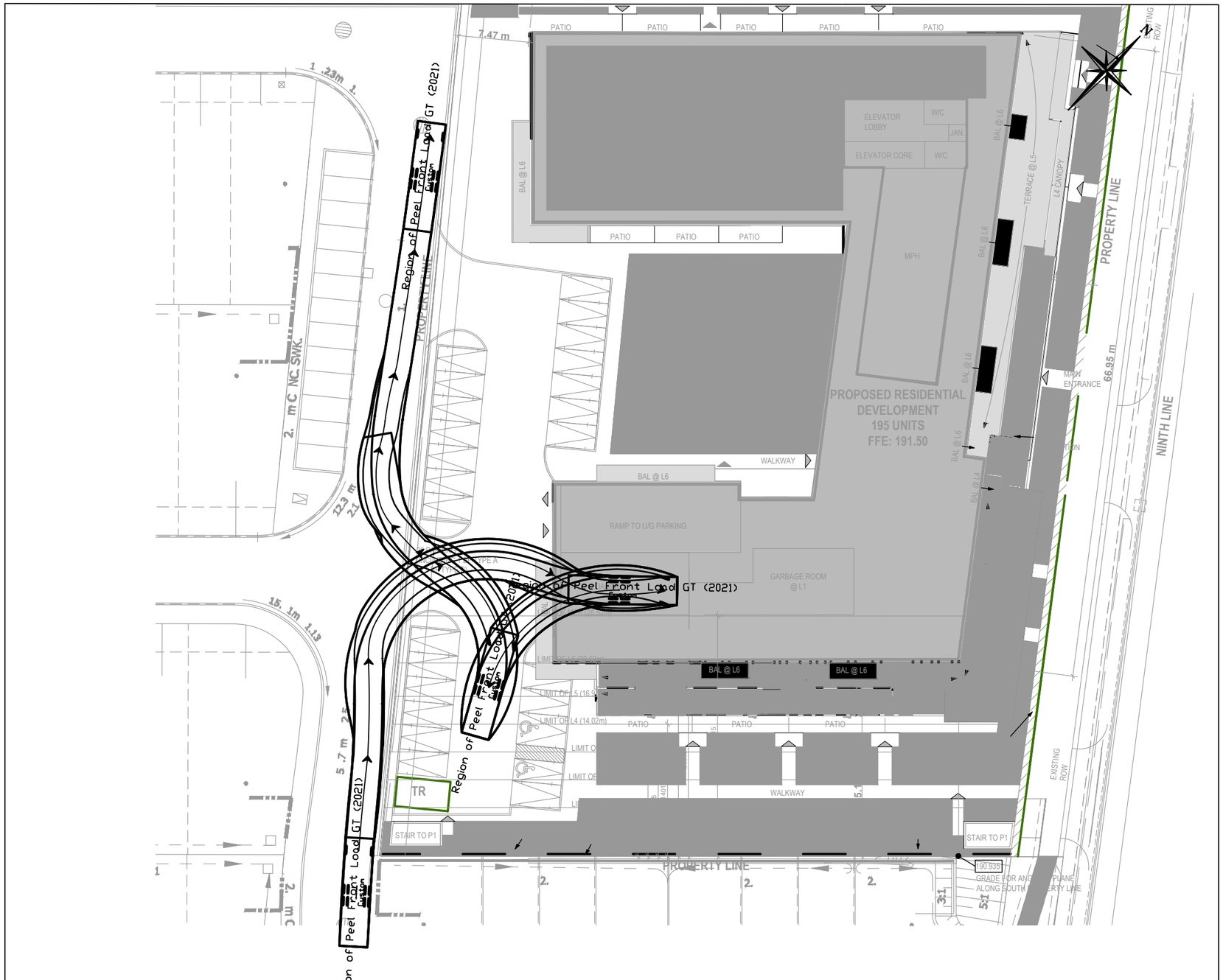
5160 NINTH LINE
CITY OF MISSISSAUGA

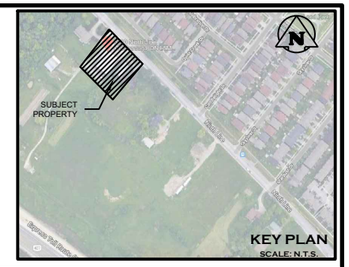
Drawing

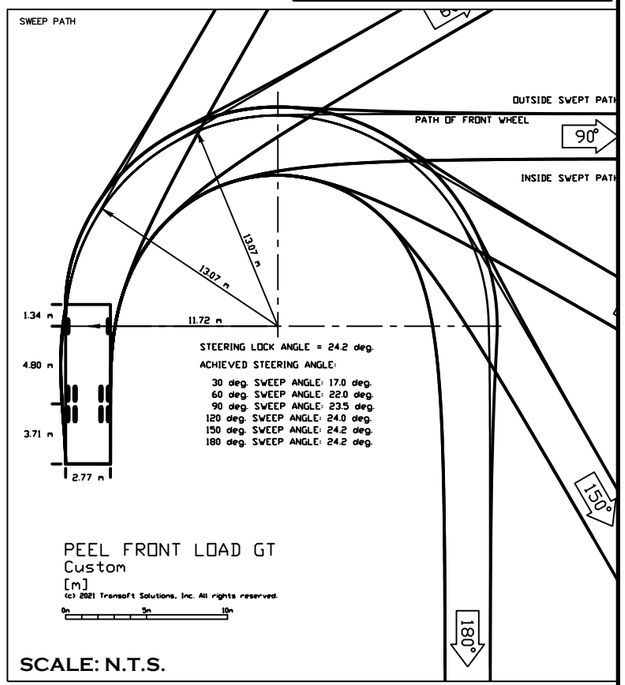
FRONT LOAD GARBAGE
TRUCK TURNING ANALYSIS

CROZIER CONSULTING ENGINEERS
2800 High Point Drive
Suite 100
Milton, ON L9T 6P4
905 875 0026 T
905 875 4915 F
www.cfcrozier.ca

Drawn By	Design By	Project	
P.B.			1871-6159
Check By	Check By	Scale	Drawing
P.A.		N.T.S.	T300

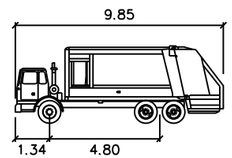






SCALE: N.T.S.

VEHICLE PROFILE



PEEL FRONT LOAD GT

meters

Width	: 2.77
Track	: 2.77
Lock to Lock Time	: 6.0
Steering Angle	: 24.2

SCALE: N.T.S.

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Town

No.	ISSUE	DATE: MM/DD/YYYY
0	ISSUED FOR 1st SUBMISSION	10/08/2021

Engineer

FOR REVIEW
NOT TO BE USED FOR CONSTRUCTION

Engineer

Project
5160 NINTH LINE
CITY OF MISSISSAUGA

Drawing
FRONT LOAD GARBAGE
TRUCK TURNING ANALYSIS

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P.A.		N.T.S.	T301

APPENDIX Q

City of Mississauga Zoning By-Law Excerpts

City of Mississauga

Corporate Report

MISSISSAUGA

Date: November 12, 2021

To: Chair and Members of Planning and Development Committee

From: Andrew Whittemore, M.U.R.P., Commissioner of Planning & Building

Originator's files: BL.01-PAR

Meeting date: December 6, 2021

Subject

PUBLIC MEETING INFORMATION REPORT (WARDS 1 TO 11) – Off-street Parking Regulations Update and Report on Engagement

Recommendation

1. That the report titled "Public Meeting Information Report (Wards 1 to 11) – Off-street Parking Regulations Update and Report on Engagement," including the two appended reports by consultants that contain policy directions on off-street parking and bicycle parking regulations, be received for information.

2. That the submissions made at the Public Meeting held on December 6, 2021, to consider the report titled "Public Meeting Information Report (Wards 1 to 11) – Off-street Parking Regulations Update and Report on Engagement", be received.

Executive Summary

- Off-street parking refers to the number of parking spaces required on a site as part of new development and/or land-use change.
- On May 31, 2021, the Planning and Development Committee received a Corporate Report with draft directions to update the City's off-street parking rates and regulations.
- The project team has since consulted on these draft directions with stakeholders, the public and Council. A virtual community meeting was held on September 14, 2021. See Appendix 1 for a summary of received feedback.
- This consultation process resulted in several changes to the earlier suite of proposed directions intended to strike a better balance between existing and future parking demands in Mississauga.
- Proposed changes for Council's considerations include adjustments to parking

precinct boundaries; scaling back parking rate reductions proposed for visitor, stacked back-to-back townhouse and purpose-built rental units; deferral of parking exemptions; and expedited implementation of parking rates to support affordable housing and electric vehicle (EV)-ready parking requirements.

- Revised consultants reports for off-street vehicular parking regulations (WSP Canada) and bicycle parking regulations (HDR, Inc.) are included in Appendix 1 and 2, respectively.
- To initiate the work to implement directions contained in both of these reports, the proposed changes to vehicular parking regulations in the Zoning By-law are included in Appendix 3 and a draft Zoning By-law Amendment (ZBA) with the introduction of bicycle parking requirements is included in Appendix 4.
- Staff will continue to consult and collect feedback on these directions and draft ZBAs in the coming months. Staff aim to bring a Recommendation Report with the final directions and two final draft ZBAs to Planning and Development Committee for consideration in early 2022.

Background

The Parking Master Plan and Implementation Strategy (PMPIS) (2019) directed the City to undertake its first comprehensive review of its off-street parking rates and establish four parking precincts to tailor rates across the city. The TDM Strategy (2018) recommended the City introduce mandatory bicycle-parking requirements as part of new developments. The Off-Street Parking Regulations Study and Bicycle Parking Study seek to implement these Council approved directions.

On May 31, 2021, the Planning and Development Committee (PDC) received a Corporate Report outlining draft policy directions coming from both of these draft reports. PDC accepted these reports, but raised several concerns in response to the preliminary directions, including the need to:

- **Develop rates tailored to Mississauga's context:** Concerns that some of the proposed reductions did not reflect the current realities in Mississauga, in that many residents heavily rely on a car to move around. Council asked for a more nuanced approach to setting parking rates that recognize existing travel patterns in the city.

- **Review visitor parking reductions:** For some years Mississauga did not have minimum visitor parking rates in its Downtown Core, which resulted in parking shortages. Council asked for a review of visitor rates to ensure that proposed rates are not too low and that similar challenges do not happen again.

- **Manage parking pressures on local streets:** Concerns were raised around the level of reduction proposed for residential uses, especially those on the edges of intensification areas or in neighbourhoods. There were concerns that parking needs spilling out onto local streets can create conflicts and frustrations for both existing and new residents.

The project team has worked to address each of these points, along with responding to other comments shared by Council, stakeholders and the public from May – October 2021. The project team is now bringing forward a refined set of directions intended to strike a better balance between existing and future parking demands in Mississauga, for Council's consideration.

Comments

Mississauga is an integral part of the Greater Toronto Area (GTA), one of the largest and fastest growing regions in North America. Being in the centre of the GTA, Mississauga is subject to significant growth pressures, with its lands becoming scarcer and more expensive. Despite this increasing pressure to urbanize, most people in Mississauga still drive to get to where they want to go. Even as Mississauga works hard to strengthen its walkable and transit oriented communities (e.g., Port Credit, Hurontario corridor, etc.), the future success of these places, at least in the near term, will rely on a large proportion of people being able to access them by car.

Balancing these competing forces is a challenge, and undoubtedly comes with trade-offs. However, through right-sizing parking in Mississauga, there is an opportunity for the City to more successfully urbanize and to make progress on many of Council's related goals and priorities.

The changes to the parking regulations proposed in this report, considered how right-sizing parking could support the following:

- **Reducing red tape and creating greater certainty:** Mississauga's current rates are out of date, evidenced by City receiving over 500 requests for parking reductions in the last 6 years. These reductions are mostly approved (at least in part), but the process adds red tape, frustration, time and cost to those trying to do business or build houses in the city. Moreover, these decisions are in large part made by the Committee of Adjustment, so decision-making becomes independent of the local Councillor. This Study seeks to establish clear rates that signal Council's expectations for parking supply and reduce the number of variances received to streamline and create more certainty in the development process.

- **Supporting affordability and more affordable housing:** A parking space, including aisles and access, requires about as much floor area as a small apartment unit (38 m^2 or 400ft^2). Every underground parking space costs about $80,000 to construct. This cost

(e.g. a year of a median-income earners salary) is then passed onto future unit owners. Maintaining parking garages is also a substantial burden for a condominium board or building owner. The Study seeks to right size parking in order to minimize these costs and broadly increase affordability. Additional reductions are proposed for more deeply affordable units.

- **Encouraging the creation of rental housing:** Much of Mississauga's rental stock is aging, and parking is commonly cited as a barrier to re-investment. It was reported that high parking rates can quickly make a rental apartment project unfeasible, or result in less units being built. With Mississauga's rental vacancy rates still below 3%, the Study proposes reductions in parking rates that will help support and incentivize the creation of much needed rental housing.

- **Supporting a shift towards sustainable modes of transportation:** Half of Mississauga's households own one car or less, and the proportion of households with no car is slowly growing. Moreover, over the last two Census periods (2011 to 2016) mode share shifted by 7% with an extra 50,000 people now taking transit to work. An oversupply can undermine this shift as it prioritizes the car over these other modes. This Study aims to create parking rates that give people choice on how to best move around. It also supports the City's transit investments, with lower parking rates proposed in areas where transit is in place, under construction or planned. Finally, the proposed bicycle parking requirements encourage cycling in the community.

- **Reducing GHG emissions:** High parking requirements not only encourage driving, but also require significant resources to be constructed (e.g. concrete and steel, plus the impacts of deep excavation on groundwater systems). Further, extensive impermeable surface parking lots contribute to storm water runoff and add to the urban heat island effect. This Study seeks to right size parking to minimize these impacts, as well as requiring Electric Vehicle (EV)-ready parking spaces to support EV adoption.

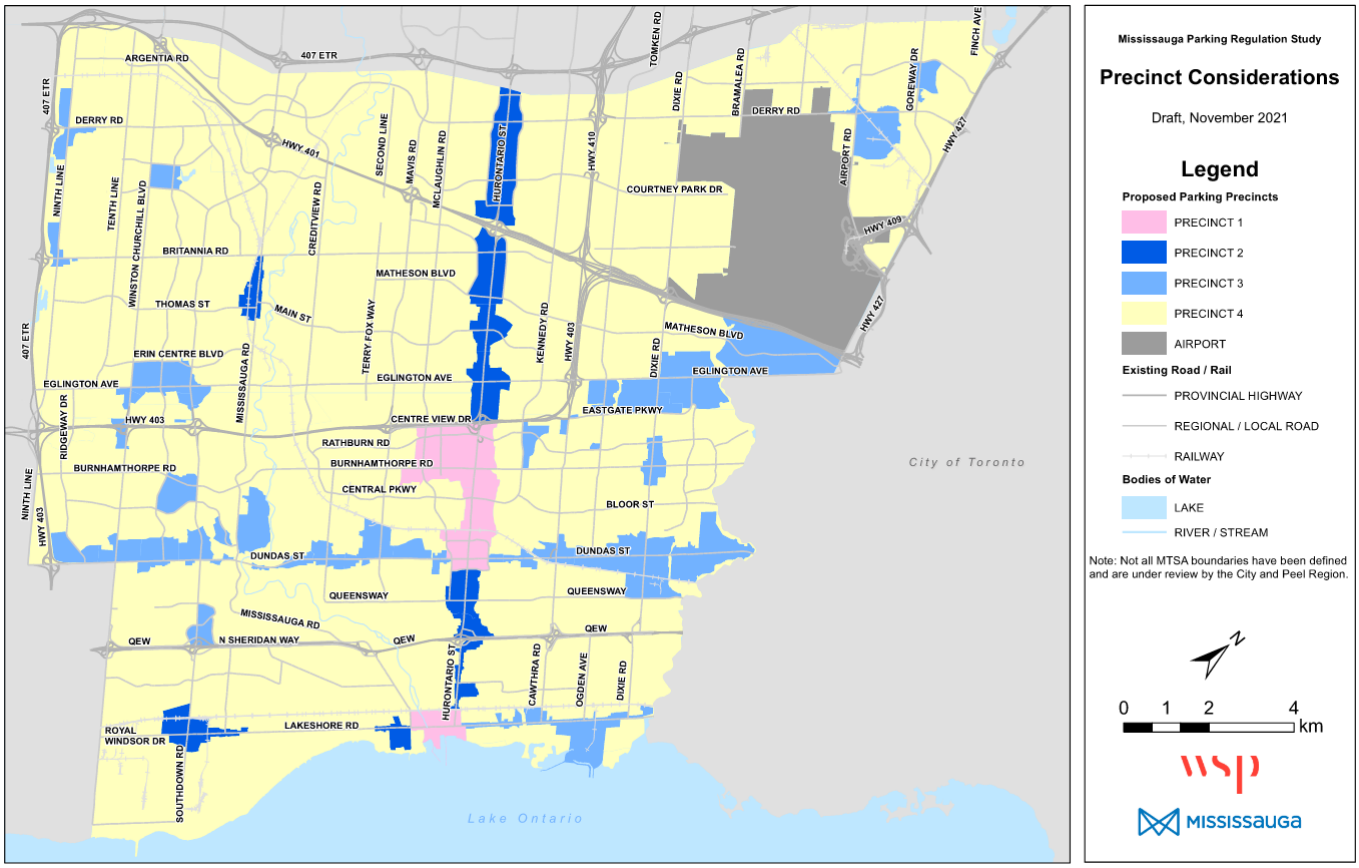
The following summarizes these proposed changes to the off-street parking regulations, with emphasis on refinements made since May 2021. For a more detailed description of the proposed policy directions please refer to Appendices 1 and 2.

1. PROPOSED PARKING PRECINCTS

Parking precincts refer to policy areas with similar characteristics for parking management. Generally, Precinct 1 (Downtown and Port Credit) will require the lowest parking requirement given access to sustainable modes of travel and mix of uses, while Precinct 4 (neighbourhoods and employment areas) will require the largest parking requirement. Building on the parking precincts framework first adopted in the PMPIS, the proposed Parking Precinct map, shown on the following page, was further refined based on input from engagement.

Overtime, the City can use this framework to adjust its precinct boundaries in response to growth, policy changes and infrastructure investments.

Figure 1: Map of Proposed Parking Precincts, November 2021



2. PROPOSED RESIDENTIAL PARKING RATES

Proposed changes to residential parking rates are included in Table 1 on next page. In response to concerns raised and on further review, some of the earlier reductions proposed were scaled back or eliminated, particularly for visitor parking and stacked back-to-back town homes. Purpose built-rental apartment rates were increased from the originally proposed in Precinct 3 and 4 to reflect demand for parking in these areas that may not benefit from high quality access to transit.

Table 1: Proposed Changes to Residential Parking Requirements

Residential Land Use	Existing Min. Parking Requirement (no. spaces/unit)		Proposed Min. Parking Requirement (no. spaces/unit)			
			Precinct 1	**Precinct 2**	**Precinct 3**	**Precinct 4**
Apartment Condominium	Studio: 1.00 1-Bed: 1.25 2-Bed: 1.40 3-Bed: 1.75 Visitor: 0.20	City Centre: Apartment Unit: 1.00 Visitor: 0.15	Unit: 0.8 Visitor: 0.15	0.9 0.15	1.0 ~~0.15~~ 0.2	1.1 ~~0.15~~ 0.2
Apartment Rental	Studio: 1.00 1-Bed: 1.18 2-Bed: 1.36 3-Bed: 1.50 Visitor: 0.2		Unit: 0.8 Visitor: 0.15	Unit: 0.8 Visitor: 0.15	Unit: ~~0.8~~ 0.9 Visitor: 0.15	Unit: ~~0.8~~ 1.0 Visitor: 0.15
Dwelling unit above commercial	1.25 (max 3 storeys)		1.0	1.0	1.0	1.0
Back-to-back and stacked townhouse	Condominium St/1-Bed: 1.1 2-Bed: 1.50 3-Bed: 1.75 4-Bed: 2.0	Rental St/1-Bed: 1.1 2-Bed: 1.25 3-Bed: 1.41 4-Bed: 1.95	1.0	1.1	~~1.2~~ 1.3	~~1.3~~ 1.5
Visitor	0.25		0.15	~~0.20~~ 0.25	~~0.20~~ 0.25	~~0.20~~ 0.25
~~*Strikeouts*~~ *show preliminary rates included in the May 31, 2021 Corporate Report*						

Additional key policy proposals include:

- **Simplify second unit requirements:** It is proposed to allow parking for one-second unit within the standard 2-space required for the principle dwelling. This measure would allow the homeowner to allocate one of their two-parking spaces to the tenant when adding one-second unit. It will be important to communicate with future homeowners with second units, that if they decide to share their existing parking spaces, the City is under no obligation to provide any additional parking on-street parking or support additional parking onsite.

- **Use minimal requirement for Emergency/Transitional Housing:** Proposed to introduce a lower parking requirement for emergency/transitional housing where generally most of the occupants do not have a car. The proposed lower requirement could be approved as a minor variance, when applicable. The minimal parking requirement would be provided to accommodate employee parking. In a future Zoning By-law review, the City could consider a new definition for Emergency/Transitional Housing and use.

- **Reduce parking requirements for affordable housing units:** Propose a 30-50% reduction in parking requirements from the conventional requirements to incentivize the provision of affordable housing. Affordable housing includes affordable dwelling units provided by Peel Housing Corporation, a housing agency and any units acquired through Inclusionary Zoning (IZ) in the future. The proposed updates to the ZBL would allow for immediate implementation of reduced rates to support Peel Housing Corporation and other housing agencies.

3. PROPOSED NON-RESIDENTIAL PARKING REQUIREMENTS

The proposed reductions to parking minimums for key commercial and restaurant uses were generally supported. Due to the positive response, no refinements are suggested to the rates presented in May 2021 (see table 2 below). However, the originally proposed exemption for small businesses and heritage buildings is proposed to be deferred until more analysis on on-street parking is completed.

Table 2: Non-Residential Parking Requirement Proposed Updates

(Parking Requirement: spaces per 100 m^2 (1,076 ft^2) non-residential GFA)

<table>
<tr><th>Land Use</th><th>Existing Requirement By-law 225-2007</th><th>Precinct 1</th><th>Precinct 2</th><th>Precinct 3</th><th>Precinct 4</th></tr>
<tr><td rowspan="3">Retail Store, Service Establishment, Take-out Restaurant, Convenience Restaurant and Restaurant <220 m^2, Financial Institution</td><td rowspan="3">Retail Store, Service Establishment: 5.4
In C4 zone: 4.0
In CC2-CC4 zones: 4.3
Take-out Restaurant: 6.0
Take-out Rest.: 6.0
Restaurant, Conv. Restaurant: 16.0*
Financial Institution: 5.5*</td><td>3.0*</td><td>3.*</td><td>4.0*</td><td>5.0*</td></tr>
<tr><td colspan="4">Precinct 1 parking requirement shall apply in a C4 Zone.</td></tr>
<tr><td colspan="4">In mixed-use developments, shared parking is permitted between residential visitors and non-residential.</td></tr>
<tr><td>Retail Centre < 2,000 m^2</td><td>4.3</td><td>3.0</td><td>3.0</td><td>3.5</td><td>4.3</td></tr>
<tr><td>Retail Centre > 2,000 m^2</td><td>5.4
In CC1: 4.57</td><td>3.8</td><td>3.8</td><td>4.5</td><td>5.4</td></tr>
<tr><td>Restaurant > 220 m^2</td><td>16.0*
C4,CC2-CC4,CCO: 9.0</td><td>6.0</td><td>6.0</td><td>9.0</td><td>9.0</td></tr>
<tr><td>Office</td><td>3.2</td><td>2.0</td><td>2.5</td><td>2.8</td><td>3.0</td></tr>
<tr><td>Medical Office</td><td>6.5</td><td>3.8</td><td>4.0</td><td>4.5</td><td>5.5</td></tr>
<tr><td colspan="6">* Plus the required stacking lane where a drive-through is provided.</td></tr>
</table>

Additional key policy proposals include:

- **Harmonizing commercial rates:** The parking regulation Table 3.1.2.2 in the Zoning By-law has 52 non-residential type of uses. It is proposed to apply parking rates reductions for similar uses, as appropriate (e.g., apply proposed parking rates per precinct to uses currently having the "retail store" rate of 5.4 spaces/100m^2 (1,076 ft^2) non-residential GFA).

- **Formalizing shared visitor and non-residential parking:** The City Centre zones allow shared arrangements between residential visitor parking and non-residential uses in apartment buildings. It is proposed that this measure be expanded citywide.

- **Updating rates based on previous approvals:** It is proposed to reduce the rate for self-storage facilities to reflect consistently approved rates.

- **Deferral of parking exemptions:** There were several concerns raised about the proposed parking exemptions for small businesses under 220m^2 (2,370 ft^2) GFA and for heritage buildings. The need to address municipal parking and on-street parking along many of the City's mainstreets was often mentioned. It is proposed that this direction be deferred until Transportation and Works have completed their on-street parking and curbside management studies, planned for 2022-23.

- **Revise on-site mixed-use development shared parking formula:** In a future Zoning By-Law update, the City could review the current list of land uses and utilization (percentage of peak parking) in Table 3.1.2.3 Mixed-Use Development Shared Parking Formula to add new land uses and update percentages to reflect current trends on parking needs for mixed-use commercial areas.

- **Formalize process to permit certain off-site sharing parking agreements:** Mississauga Official Plan encourages sharing of parking for community infrastructure (e.g., parks, libraries, schools) and other uses, and to allow off-site parking, where appropriate. The City could develop a process to formalize these off-site shared parking arrangements. It is proposed that these directions be further studied following the completion of the Parking Regulations Study.

- **Review Payment-in-lieu (PIL):** The project team heard many concerns about the PIL for parking from business owners. Although out of the scope of this study, it is proposed that staff review the PIL in 2022 in order to ensure charges are up to date and information is shared on how funds collected are being used.

4. BICYCLE PARKING RATES

The proposal to introduce bicycle parking rates was generally supported. Given staff have largely received positive feedback; only minor refinements have been suggested. Key policy proposal are below:

- **Adopt two precincts:** It is proposed the City establish two bicycle parking requirements, one for City Centre and one for the rest of the city. These precincts may be adjusted as the City expands the cycling infrastructure.

- **Establish bicycle parking rates:** The proposed rates for bicycle parking for residents apartments are 0.8 spaces/unit in the City Centre and 0.6 spaces/unit in the rest of the city. Refer to Appendix 3 for additional land uses.

- **Include end of trip facilities regulations:** The study also identifies proposed provision of end of trip facilities for bicycle users.

5. EV-READY PARKING

There was a general agreement that EV uptake would likely increase in the near future, and that those vehicles would need charging infrastructure, particularly at home.

Key proposals are below:

- **Zoning by-law:** Proposed that 20% of parking spaces for new medium and high density residential developments are EV-ready; 10% of structured parking spaces for new non-residential buildings; and, one EV-ready space for ground-related dwellings with dedicated garages. EV-ready parking means a space constructed to allow for the future installation of EV charging equipment.

- **Green development standards:** In anticipation to the review of the Green Development Standards update, this report recommends that the City encourage 100% of residential parking spaces be EV-ready.

Strategic Plan

The proposed updates to the City's vehicular and bicycle parking regulations in the Zoning By-law are consistent with the Move, Connect and Green pillars of the Strategic Plan. The proposed changes will provide residents and businesses with an updated approach for off-street parking in Mississauga while providing the opportunity to access active transportation infrastructure and reducing single occupancy trips in an environmentally friendly way.

Engagement and Consultation

The draft policy directions presented to the Planning and Development Committee in May 31, 2021, were underpinned by the following engagement:

- **Stakeholder survey:** A survey was distributed to parking providers (e.g., developers, property managers, business improvement areas and consultants) for their insights regarding the current managed parking practises current parking regulations.

- **Focused interviews:** To gather additional input, select follow-up telephone interviews were scheduled in October 2020.

The project team tested and gathered feedback on those draft policy directions between May – October, 2021, as follows:

- **Initial Public Meeting:** The May 31, 2021 Planning and Development Committee was also advertised as a Public Meeting. No deputations were received at the meeting.

- **Stakeholder workshop:** more than 30 parking providers and stakeholders attended a stakeholder workshop hosted on June 28, 2021.

- **One-on-one stakeholder meetings:** The project team met with Peel Region Housing; Mississauga Board of Trade; Mississauga Tourism Board; Mississauga Board of Trade; Mississauga Cycling Advisory Committee; Business Associations; and, individual developers.

- **One-on-one meetings with Councillors:** Council members were engaged via email communications and over a dozen individual meetings.

- **Virtual community meeting:** 74 people attended a virtual community meeting held on September 14, 2021. Information on this meeting was shared via Mississauga News, email blast to mailing lists, highway signs, City's screens, and social media.

- **Social media and website:** A dedicated website provided all project information and hosted a three-week on-demand virtual community meeting. Staff have continually promoted the project through the City's social media channels.

- **Written comments:** The project team invited written comments; approximately 25 submissions have been received.

FEEDBACK RECEIVED TO DATE

The project team engaged stakeholders and the public through the abovementioned engagement tactics. As indicated throughout the Comments section, this feedback has been

incorporated into the draft policy directions / Zoning By-law Amendments. A summary of the received comments is included in Appendix 1.

- **Support for parking precincts:** The concept of establishing parking precincts was widely supported by stakeholders and the public. The project team considered the following requests to adjust precinct boundaries:

    - **Port Credit West:** Support the elevation of Brightwater and surrounding lands to Precinct 2 (from Precinct 3). This proposed change better aligns parking requirements in the subject area with rates recently approved on the Brightwater site. The area meets Precinct 2 criteria.

    - **Airport Corporate Centre:** On further review, it is proposed Airport Corporate Centre be changed to Precinct 3 (from Precinct 2). This reflects the high demand for parking and limited municipal / on-street parking available. This change is unlikely to have any on-the ground impact as office tenants often request much higher parking rates than the City's minimum rates.

    - **Lakeview East:** Maintain Lakeview Village and surrounding MTSAs in Precinct 3. Recently approved parking rates align with the proposed Precinct 3 rates. Over the longer term, these could be considered for Precinct 2 once rapid transit and TDM measures are realized.

    - **Ninth Line:** The proposal to elevate all of Ninth Line Neighbourhood to Precinct 3 is not recommended at this time since the entirety of the lands do not meet Precinct 3 criteria. However, there are some compelling reasons to consider reduced rates in this area and/or elevate this neighbourhood to Precinct 3 over the longer term, when transit service is more widely available.

- **Developers concerned that proposed residential rates are too high:** Developers frequently expressed that the City's rates are not aligned to market demand and they are often unable to sell enough parking to meet the current minimums. Further, developers were concerned that even the proposed rates were too high, and pointed to examples of lower rates already approved for new developments in Mississauga.

- **Mixed feedback from residents on proposed residential rates:** There was mixed feedback provided from local residents. Some expressed that the proposed rates were too low, particularly in neighbourhoods without access to rapid or frequent transit, which could lead to parking shortfalls across the city. While others felt that the parking requirements should be lower to support personal choices around car ownership, increase housing affordability and encourage a shift to transit use and cycling.

- **Support for non-residential uses parking updates:** There was strong support for reducing parking requirements for commercial and office uses. The burden and barrier that parking requirements represent for small businesses was frequently cited. The need to reform the current PIL system and curbside management was also commonly referenced by business owners.

- **Support for reduced parking for affordable housing:** It was widely understood that the provision of parking is costly, and can contribute to housing unaffordability. There was general support for the proposed reductions for affordable housing and purpose-built rental properties.

- **Adopting a cautious approach to planning for Electric Vehicles (EVs):** There was a general agreement that ample EV charging infrastructure will be needed in the near future and that the cost to build EV-ready parking is much more cost efficient than retrofitting parking lots. The project team heard about the importance of building partnerships and working with the private sector to ensure Mississauga can be EV ready, as well as moving cautiously to avoid further pressures to housing affordability.

- **Support for bicycle parking requirements:** There was a positive reception for incorporating requirements for bicycle parking in the Zoning By-law to help incentivize the growth of cycling in the city.

In response to posting the draft Zoning By-law Amendments (e.g. one for vehicle parking and one for bicycle parking), staff anticipate additional detailed comments from the public and stakeholders.

Staff will consider all feedback received in finalizing the draft Zoning By-law Amendments and will present this feedback to Planning and Development Committee / Council for consideration as part of the final Recommendations Report.

Financial Impact

There are no financial impacts resulting from the Recommendations in this report.

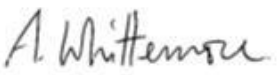
Conclusion

The Parking Regulations Study and Bicycle Parking Study represent a consultative process that has produced a draft policy framework and series of zoning by-law amendments that will aid Mississauga in modernizing its parking regulations. The proposed changes to the Zoning By-law intend to provide a balanced approach that can help the City's goals of shifting mode share; optimizing transit infrastructure; supporting housing affordability; supporting businesses growth; addressing climate change; and, creating connected and complete neighbourhoods.

The next step is to incorporate any further feedback received through the engagement process into final Zoning By-law Amendments that will be presented to Council for consideration in early 2022.

Attachments

Appendix 1: Parking Regulations Policy Directions Report, November 2021
Appendix 2: Bicycle Parking Zoning By-law Directions Report, October 2021
Appendix 3: Proposed changes to vehicular parking regulations in the Zoning By-law
Appendix 4: Draft bicycle parking Zoning By-law Amendment



Andrew Whittemore, M.U.R.P., Commissioner of Planning & Building

Prepared by: Eniber Cabrera, Planner and Katherine Morton, Manager, City Planning Strategies



PARKING REGULATIONS STUDY

MISSISSAUGA

PARKING REGULATIONS

DRAFT POLICY DIRECTIONS FOR CONSULTATION

May 14, 2021

MISSISSAUGA

WSP

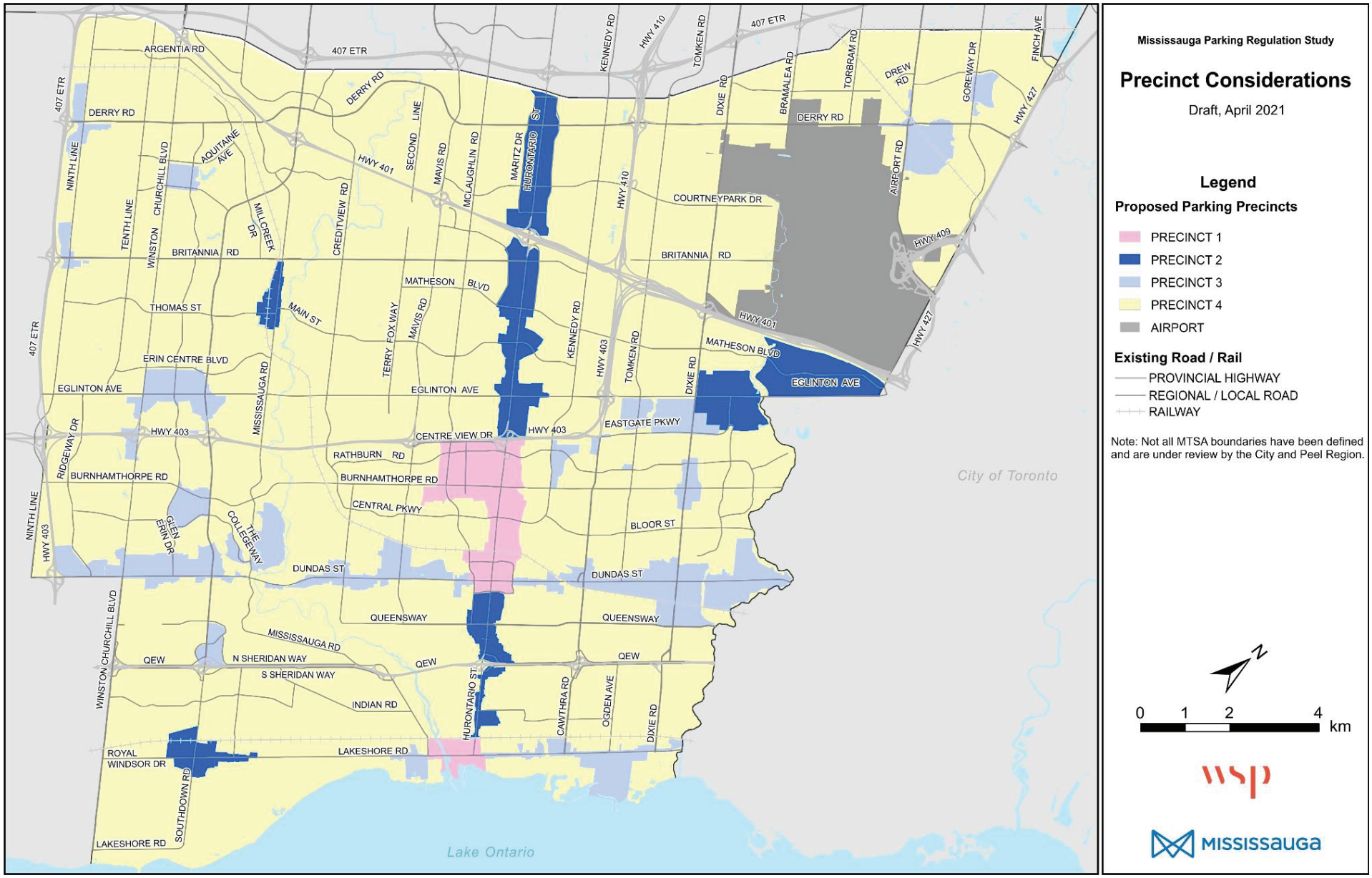
PARKING PRECINCT CRITERIA AND BOUNDARIES

Based on the PMPIS, and to further implement recent inputs and, the following are the proposed criteria that are used to establish the boundaries for the Parking Precincts. The Criteria are organized within five themes: transit access; availability of public parking; location within an intensification area; land use and density mix; and active transportation characteristics. Based on the above criteria themes, four Precinct boundaries were developed. **Table EX 1** identifies the proposed criteria that are used to establish the boundaries for the Parking Precincts. Generally, Precinct 1 will require the lowest parking requirement given access to modes of travel other than by automobile. While Precinct 4 will require the largest parking requirement. The proposed Parking Precinct map is shown on the following page **Map EX 1**.

Table EX 1: Parking Precincts and Criteria

Criteria	Precinct 1	Precinct 2	Precinct 3	Precinct 4
1. Transit				
Rapid Transit Terminal/Station	Yes	Yes (may be planned)	Yes (may be planned, or is not required with high-frequency bus transit)	Not required
Rapid Transit Interconnectivity	Yes	Not required	Not required	Not required
High-frequency bus transit service	Yes	Yes	Yes (Not required if other rapid transit is provided or planned)	Not required
2. Public Parking				
Public Parking	Yes	Yes	Not required	Not required
3. Planning Area				
Urban Growth Centre, Downtown or Mobility Hub	Yes	Not required	Not required	Not required
Intensification Area	Yes	Yes	Yes	Not required
4. Land Use and Density				
Mix of Uses	Yes	Yes	Not required	Not required
High-Density Uses	Yes	Yes	Not required	Not required
5. Active Transportation				
Walkability	Highly walkable (Walk score is 90 or higher)	Walkable (50 or higher)	Some walkability (25 or higher)	Limited walkability (0 or higher)
Cycling Facility	Highly accessible to cyclists	Moderately accessible to cyclists	Limited accessibility to cyclists	Limited or no accessibility to cyclists
Public Bike Share Potential	Yes	Yes	Not required	Not required

Map EX 1: Proposed Parking Precincts Map



law Amendment to implement new parking requirements upon completion of this study. Those new parking requirements are expected to be in force over the short to medium term and be subject to subsequent Zoning By-law reviews and amendments in the longer-term future.

The proposed residential and commercial parking requirements are summarized in **Table EX 3** and **EX 4**.

Table EX 3: Proposed Residential Parking Requirements

Residential Land Use	Existing Min. Parking Requirement (no. spaces/unit)	Proposed Min. Parking Requirement (no. spaces/unit)			
		Precinct 1	Precinct 2	Precinct 1	Precinct 4
Detached Dwelling, Linked Dwelling, Semi-detached Dwelling, Street Townhouse					
-Resident	2	2	2	2	2
-Visitor, Common Element Condominium (CEC) road (Private Road)	0.25		0.25	0.25	0.25
			In a mixed-use development, shared parking is permitted between residential visitors and non-residential visitors subject to (1).		
Dwelling unit located above commercial, with a max height of 3 storeys	1.25	1	1	1	1
Back-to-back and stacked townhouse					
-Resident	Condominium, without exclusive use garage and driveway: Studio/1-Bedroom: 1.10 2-Bedroom: 1.50 3-Bedroom: 1.75 4-Bedroom: 2.0 With exclusive garage and driveway: 2.0 Rental, without exclusive use garage and driveway: Studio/1-Bedroom: 1.10 2-Bedroom: 1.25 3-Bedroom: 1.41 4-Bedroom: 1.95 With exclusive garage and driveway: 2.0	1	1.1	1.2	1.3
-Visitor	0.25	0.15	0.20	0.20	0.20
		In a mixed-use development, shared parking is permitted between residential visitors and non-residential visitors subject to (1).			

Table EX 3 (Continued): Proposed Commercial Parking Requirements

Residential Land Use	Existing Min. Parking Requirement (no. spaces/unit)	Proposed Min. Parking Requirement (no. spaces/unit)			
		Precinct 1	Precinct 2	Precinct 3	Precinct 4
Apartment					
-Resident	Studio: 1.00 1-Bedroom: 1.25 2-Bedroom: 1.40 3-Bedroom: 1.75	0.8	0.9	1.0	1.1
-Resident, Purpose-Built Rental	Studio: 1.00 1-Bedroom: 1.18 2-Bedroom: 1.36 3-Bedroom: 1.50	0.8	0.8	0.8	0.8
-Visitor	0.20	0.15	0.15	0.15	0.15
		In a mixed-use development, shared parking is permitted between residential visitors and non-residential visitors subject to (1).			
Second Unit	1.0	A total of 2 spaces for the Principal and Second Unit (which may be provided in tandem), plus 1 additional space for each additional unit.			
Affordable Housing Unit	n/a	50% Reduction	30% Reduction from the base parking requirement		
Assisted/Alternative Housing Unit	n/a	0.1	0.1	0.1	0.1

Note 1:
Visitor Parking Regulation:
For the visitor component, a shared parking arrangement may be used for the calculation of required visitor/non-residential parking in accordance of the following: the greater of the indicated visitor parking by precinct or parking required for all non-residential uses, located in the same building or on the same lot as the residential use except banquet hall/conference centre/convention centre, entertainment establishment, overnight accommodation, place of religious assembly, recreational establishment, and restaurant over 220 m^2 GFA non-residential. Parking for these listed non-residential uses shall not be included in the above-shared parking arrangement and shall be provided in accordance with applicable regulations in the Zoning By-law.

Table EX 4: Proposed Commercial Parking Requirements

<table>
<tr><th rowspan="2">Commercial Land Use</th><th rowspan="2">Existing Min. Parking Requirement (no. spaces/100 sq.m. GFA)</th><th colspan="4">Proposed Minimum Parking Requirement (no. spaces/100 sq.m. GFA)</th></tr>
<tr><th>Precinct 1</th><th>Precinct 2</th><th>Precinct 3</th><th>Precinct 4</th></tr>
<tr><td rowspan="4">Retail Store,
Service Establishment,
Convenience Restaurant,
Take-out Restaurant,
Restaurant under 220 sq.m.,
Financial Institution</td><td rowspan="4">Retail Store: 5.4
In C4 zone: 4.0
In CC2 to CC4 zones: 4.3

Personal Service Establishment: 5.4
In C4 zone: 4.0
In CC2 to CC4 zones: 4.3

Convenience Restaurant: 16
Take-out Restaurant: 6.0

Financial Institution: 5.5</td><td>3</td><td>3</td><td>4</td><td rowspan="2">5</td></tr>
<tr><td colspan="3">No parking is required for GFA under 220 sq.m.</td></tr>
<tr><td colspan="4">The Precinct 1 parking requirement shall apply in a C4 Zone.</td></tr>
<tr><td colspan="4">In a mixed-use development, shared parking is permitted between residential visitors and non-residential visitors subject to (1).</td></tr>
<tr><td>Retail Centre under 2,000 sq.m.</td><td>4.3</td><td>3</td><td>3</td><td>3.5</td><td>4.3</td></tr>
<tr><td>Retail Centre over 2,000 sq.m.</td><td>5.4</td><td>3.8</td><td>3.8</td><td>4.5</td><td>5.4</td></tr>
<tr><td>Restaurant over 220 sq.m.</td><td>16
In C4 zone: 9.0</td><td>6</td><td>6</td><td>9</td><td>9</td></tr>
<tr><td>Office</td><td>3.2</td><td>2</td><td>2.5</td><td>2.8</td><td>3</td></tr>
<tr><td>Medical Office</td><td>6.5</td><td>3.8</td><td>4</td><td>4.5</td><td>5.5</td></tr>
<tr><td colspan="6">Note 1:
Visitor Parking Regulation:
For the visitor component, a shared parking arrangement may be used for the calculation of required visitor/non-residential parking in accordance of the following: the greater of the indicated visitor parking by precinct or parking required for all non-residential uses, located in the same building or on the same lot as the residential use except banquet hall/conference centre/convention centre, entertainment establishment, overnight accommodation, place of religious assembly, recreational establishment, and restaurant over 220 m^2 GFA non-residential. Parking for these listed non-residential uses shall not be included in the above-shared parking arrangement and shall be provided in accordance with applicable regulations in the Zoning By-law.</td></tr>
</table>

APPENDIX R

Surrogate Site Parking Survey Data

ONTARIO TRAFFIC INC - PARKING SURVEY

Location: 6719 Glen Erin Dr, Mississauga

Time			Sunday, May 24, 2020								Wednesday, May 27, 2020							
			Area 1						Area 2		Area 1						Area 2	
			Tenant		Visitor		Disabled		Tenant		Tenant		Visitor		Disabled		Tenant	
			10		32		2		225		10		32		2		225	
			Occupied	Available	Occupied	Available	Occupied	Available	Occupied	Available	Occupied	Available	Occupied	Available	Occupied	Available	Occupied	Available
22:00	to	22:15	8	2	26	6	1	1	120	105	8	2	24	8	1	1	125	100
22:15	to	22:30	8	2	25	7	1	1	123	102	8	2	23	9	1	1	127	98
22:30	to	22:45	9	1	24	8	1	1	125	100	8	2	20	12	1	1	130	95
22:45	to	23:00	9	1	23	9	1	1	127	98	8	2	19	13	1	1	132	93
23:00	to	23:15	9	1	22	10	1	1	128	97	8	2	21	11	1	1	133	92
23:15	to	23:30	10	0	25	7	1	1	127	98	8	2	20	12	1	1	135	90
23:30	to	23:45	10	0	24	8	1	1	129	96	8	2	20	12	1	1	136	89
23:45	to	00:00	10	0	23	9	1	1	130	95	8	2	19	13	1	1	137	88
00:00	to	00:15	10	0	22	10	1	1	131	94	8	2	20	12	1	1	137	88
00:15	to	00:30	10	0	23	9	1	1	133	92	8	2	19	13	1	1	139	86
00:30	to	00:45	10	0	23	9	1	1	135	90	8	2	20	12	1	1	139	86
00:45	to	01:00	10	0	22	10	1	1	136	89	8	2	21	11	1	1	138	87
01:00	to	01:15	10	0	22	10	1	1	137	88	8	2	21	11	1	1	138	87
01:15	to	01:30	10	0	22	10	1	1	135	90	8	2	21	11	1	1	138	87
01:30	to	01:45	10	0	22	10	1	1	136	89	8	2	20	12	1	1	139	86
01:45	to	02:00	10	0	22	10	1	1	136	89	8	2	20	12	1	1	139	86

	Maximum Demand	
Day	Tenant	Visitor
Sunday	148	26
Rate	0.83	0.15
Wednesda	148	24
Rate	0.83	0.13

Use	Units	Rate	Parking Req.
Tenant Townhouse	33	2	66
Tenant Apartment	363	0.85	309
Visitors	396	0.15	60
Total			435