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4150 Westminster Place

Traffic Impact Study, Parking Study and Transportation Demand Management Plan

Paradigm Transportation Solutions Limited

January 2024

230502

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Project Summary

Project Number
230502 (230007 / 220233 / 200254)

Date: January 2024

4150 Westminster Place
Transportation Impact Study, Parking Study, Transportation Demand Management Plan and Site Circulation Assessment

Client
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By submitting the attached report (and any associated documents) and signing this document, I acknowledge that:

Certification Form

- I have reviewed and have a sound understanding of the objectives, needs, and requirements of the City of Mississauga's Official Plan, Transportation Master Plan, and the Transportation Impact Study Guidelines as they apply to this submission;
- I have sound knowledge of industry standard practices pertaining to the preparation of development-related transportation study reports;
- I have substantial experience (more than five years) in completing development-related transportation studies and strong background knowledge of the transportation planning and engineering principles underpinning these studies; and
- I am registered as a Professional Engineer (P.Eng.), Licensed Engineering Technologist (LET), Certified Engineering Technologist (C.E.T.), or Registered Professional Planner (RPP) in good standing in the Province of Ontario with specific training in transportation planning and engineering.

Dated at Toronto (City) this 18th day of January, 2024.

Name: Joshua de Boer, M.Eng., P.Eng., PTOE

Professional Title: Senior Project Manager, Associate

Signature: 

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Executive Summary

Content

Westminster Court retained Paradigm Transportation Solutions Limited (Paradigm) to prepare this Transportation Impact Study, Parking Study and Transportation Demand Management Plan for a proposed expansion of Westminster Court, at 4150 Westminster Place in the City of Mississauga.

This study determines the impacts of the development traffic on the surrounding road network and identifies any necessary mitigation to accommodate the site generated traffic.

Development Concept

Westminster Court is currently a three-storey seniors residence containing 190 units, all of which are rentals. These units are planned for adults 60 years or older who live independently. A total of 95 parking spaces (0.50 spaces per dwelling unit) are provided, with five spaces for visitors, 82 rented by residents, and eight reserved for snow storage. Vehicle access to the site is provided by a single all-moves driveway connection to Westminster Place. The existing three-legged intersection will remain unchanged with the same lane configurations and two-way stop control type for the proposed development.

The property owner is proposing the construction of an eight-storey, 70-unit, retirement residence as an extension of the existing building, resulting in a total of 260 residential units on the site upon completion.

A total of 122 parking spaces (0.47 spaces per dwelling unit) are proposed, comprising 49 below grade, and 73 at grade, to be shared between residents and visitors.

Conclusions

Based on the investigations carried out, it is concluded that:

- **Existing Traffic Operations:** The study area intersections are operating with acceptable levels of service during the weekday AM and PM peak hours.
- **Site-Generated Traffic:** The subject site is estimated to generate approximately 8 new AM peak hour trips and approximately 11 new PM peak hour trips.
- **Background Operations:** The study area intersections are forecast to continue to operate with acceptable levels of service.

- **Total Operations:** Similar to background traffic operations, the study area intersections are forecast to continue to operate with acceptable levels of service.
  Since the additional site traffic does not significantly impact operations, no remedial measures related to the proposed addition are recommended at this time.
- The proposed **vehicle parking study** results do not meet the requirements of Zoning By-Law 0225-2007, given the units are classed as rental apartments operated by a non-profit housing provider. However, there is a surplus of 31 spaces relative to the requirements for units in a *retirement* building operated by a non-profit housing provider. Further, the existing vehicle parking demand of the site indicates that the proposed supply exceeds the parking required to meet resident and visitor demand.
- The proposed **bicycle parking** does not meet the requirements of Zoning By-Law 0225-2007. However, the existing bicycle parking demand of the site indicates that the proposed supply exceeds the parking required to meet resident demand.
- A **Transportation Demand Management (TDM) Plan** has been outlined for this development. The plan indicates the planned measures to reduce the dependence on the private automobile. These measures build on existing TDM measures at the site, including unbundled parking spaces, and the provision of bicycle parking spaces.
- **Site Circulation Assessment** indicates the design vehicles can navigate the site with no conflicts. Sight triangles and clear throat requirements satisfy TAC guidelines.

Based on the findings of this study, it is concluded that:

- There are no significant issues from a transportation perspective. The trips generated by the development were found to have a minimal impact on the studied transportation network.

Recommendations

Based on the findings of this study, it is recommended that:

- The project team consider the TDM Plan included herein, to reduce dependency on the single-occupancy vehicle mode of travel and improve accessibility to the site by other modes of travel.

Contents

Appendices

Figures

Tables

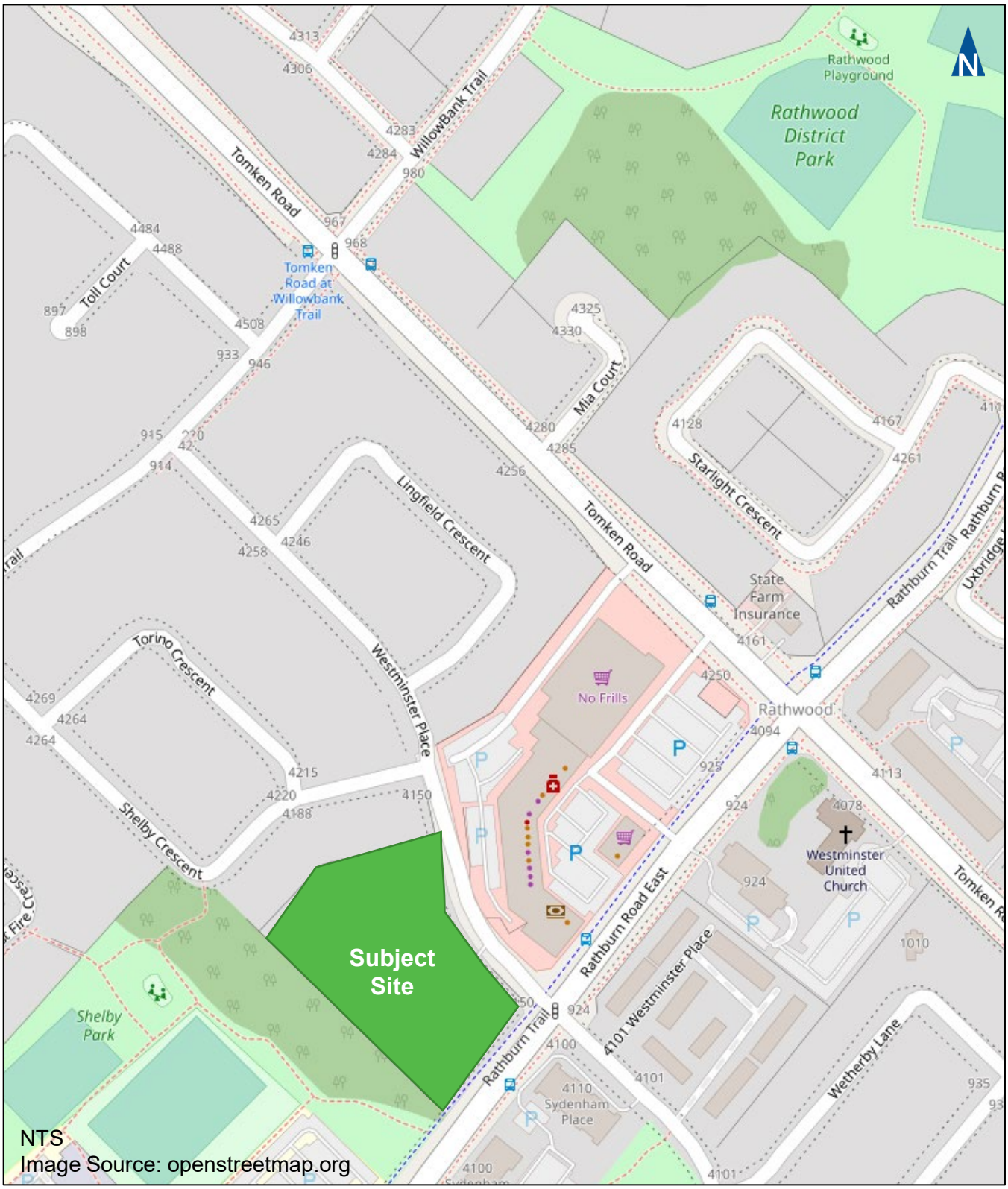
1 Introduction

Westminster Court retained Paradigm Transportation Solutions Limited (Paradigm) to prepare this Transportation Impact Study, Parking Study, and Transportation Demand Management (TDM) Plan for a proposed expansion of Westminster Court, at 4150 Westminster Place in the City of Mississauga. **Figure 1.1** illustrates the location of the subject site situated on the west side of Westminster Place, north of Rathburn Road East. **Appendix A** contains the pre-study consultation materials and responses from the City of Mississauga.

- An assessment of the current traffic and site conditions within the study area comprising of Rathburn Road East and Westminster Place;
- Estimates of background traffic growth for five years beyond the commencement date of study (2023);
- Estimates of additional traffic generated by the subject site;
- Analyses of the impact of the future traffic on the surrounding road network;
- Determine if measures are required to mitigate the site generated traffic in a satisfactory manner;
- Review of Zoning By-Law parking requirements;
- Vehicle ownership in the study area;
- Recommendations on preferred measures to support the proposed parking supply; and
- Assessment of site circulation including refuse collection vehicle circulation.

This study has been carried out in accordance with the terms of reference established with City of Mississauga staff and the Mississauga Transportation *Impact Study Guidelines.*[1]

[1]City of Mississauga, *Transportation Impact Studies Guidelines Version 5.1*, (December 2022).



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Location of Subject Site

2 Existing Conditions

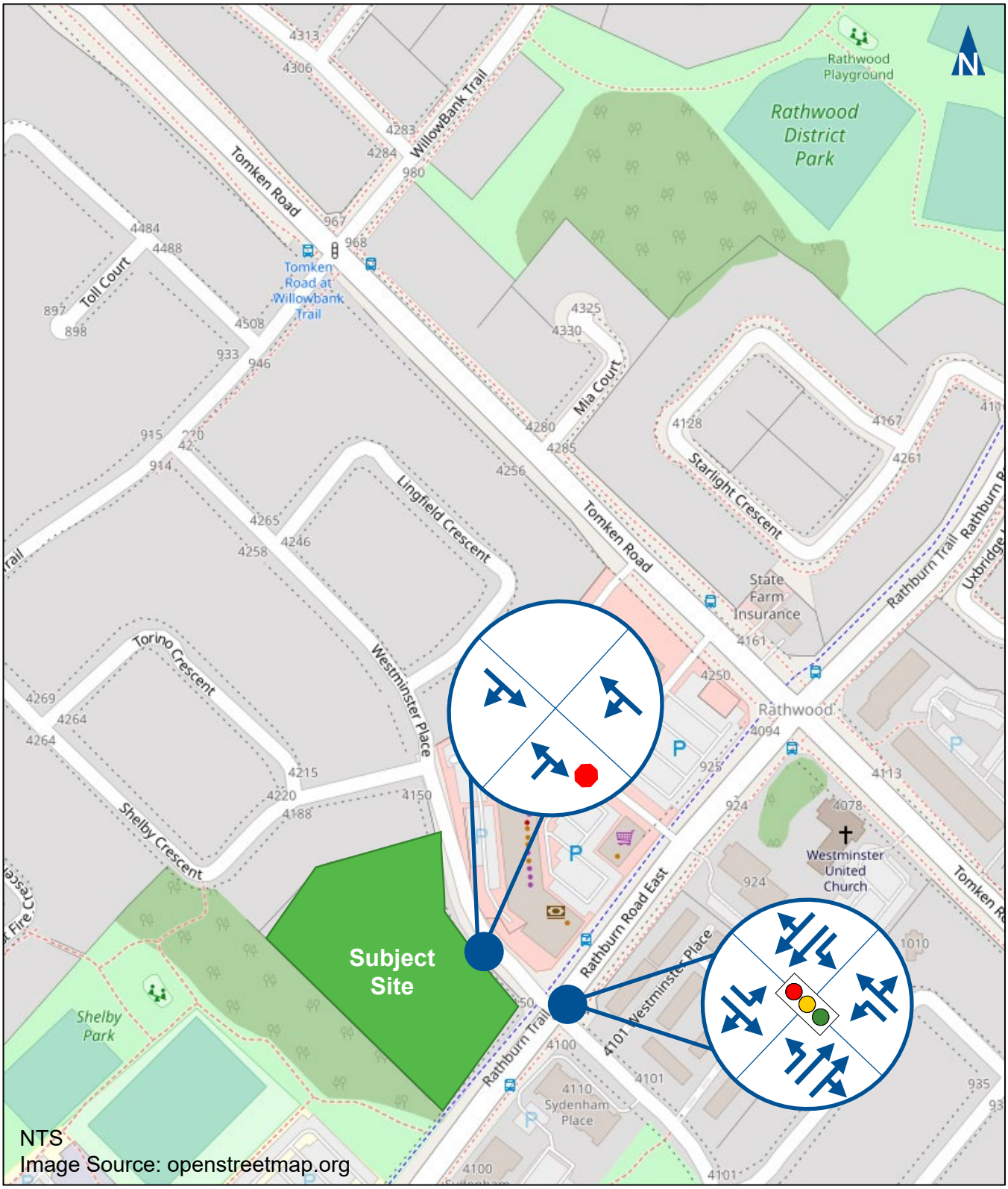
2.1 Existing Roads

The main study area roads include:

- **Rathburn Road East** is an east-west, four-lane road, classified as a major collector road in the City of Mississauga Official Plan[2]. Within the study area, Rathburn Road East has an urban cross-section and a posted speed limit of 50 kilometres per hour. Parking is not permitted on either side of the road.
- **Westminster Place** is a north-south, two-lane road, classified as a minor collector road in the City of Mississauga Official Plan. Within the study area, Westminster Place has an urban cross-section and an area speed limit of 40 kilometres per hour. Parking is permitted on both sides of the road, with a 15 hour maximum time limit available on the west side of the road in front of Westminster Court.

All roads are under the jurisdiction of the City of Mississauga. **Figure 2.1** illustrates the existing lane configurations and traffic control at the study intersections.

[2] City of Mississauga. *Transportation Master Plan.* May 2019.



Existing Lane Configurations and Traffic Control

2.2 Existing Transit Services

The nearest transit stops are located on Rathburn Road East, east and west of Westminster Place. These stops are approximately a two-minute walk from Westminster Court. Each stop includes a weather protected bus shelter, seating, curbside waiting area, and route/schedule information. The stops are served by MiWay's route 20 RATHBURN. This route operates between Erindale GO Station and Kipling subway station, via the City Centre Transit Terminal.

Route 20 RATHBURN operates seven days a week, with headways of 10 to 15 minutes during weekday peak hour service, and 30 minutes during weekend service. At Erindale GO Station, connections are provided to GO Train service on the Milton Line. GO Bus connections are provided at Erindale GO Station, and the Square One Bus Terminal. Kipling subway station provides access to Line 2 (Bloor-Danforth) of the Toronto subway operated by the Toronto Transit Commission (TTC). TTC Bus connections are also provided at Kipling subway station.

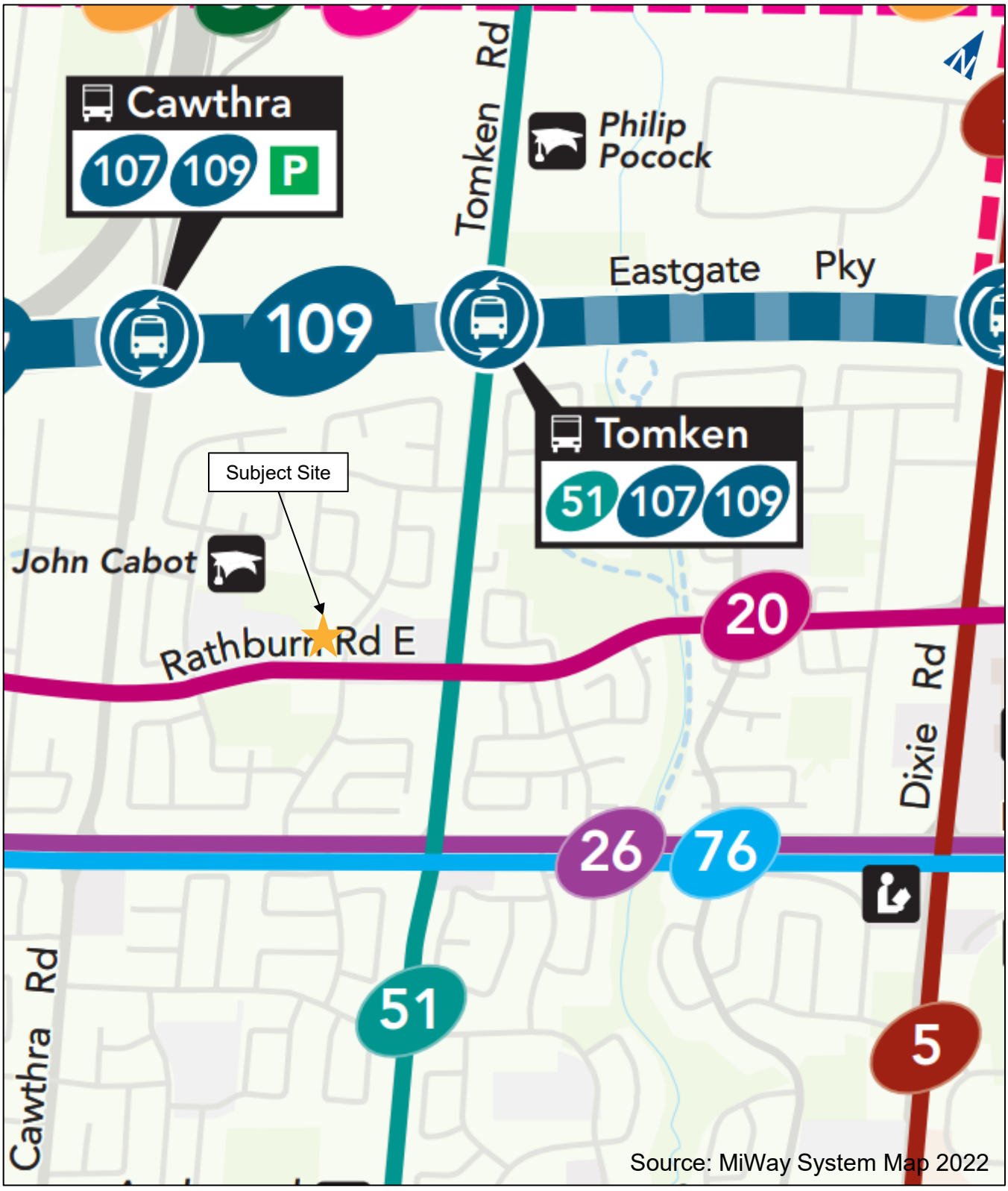
Table 2.1 summarizes the existing schedules for the eastbound and westbound transit stops at Rathburn Road East and Westminster Place.

TABLE 2.1: MIWAY ROUTE 20 SCHEDULE (RATHBURN ROAD EAST AT WESTMINSTER PLACE)

Day	Direction	First Bus	Last Bus	Headways
Weekday	Eastbound	5:29 AM	12:25 PM	30 minutes (10-15 minutes during peak hours)[1]
	Westbound	5:17 AM	1:19 AM	
Saturday	Eastbound	6:25 AM	10:50 PM	25 minutes
	Westbound	7:30 AM	11:50 PM	
Sunday	Eastbound	7:45 AM	8:10 PM	35 minutes
	Westbound	8:40 AM	9:10 PM	

Note 1: Peak hours are approximately 6:00 AM to 10:00 AM, and 4:00 PM to 9:00 PM

Additional transit services are provided at Tomken Road and Rathburn Road East (approximately a five-minute walk), notably Route 51 (Tomken) and Routes 302/307 (Phillip Pocock/Bloor). Route 51 primarily connects to industrial lands in north and south Mississauga. Routes 302/307 connect Square One to Phillip Pocock Catholic Secondary School, on a limited schedule generally reflective of school hours. **Figure 2.2** illustrates the existing transit services.



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Existing Transit Services

2.3 Existing Active Transportation Network

Sidewalks are provided on both sides of nearly all study roads. Along Willowbank Trail between Tomken Road and Shalby Crescent, a sidewalk is only provided along the south side.

A sidewalk adjacent to the site driveway connects the site to the municipal sidewalk network, and a curb cut is provided on the opposite side of the road to facilitate pedestrian crossings to the commercial/retail plaza at 925 Rathburn Road East. A secondary pedestrian connection to Westminster Place is provided near the north end of the site adjacent to the garbage collection and storage area. Curb cuts and sidewalk are also provided at this location to facilitate crossing Westminster Place; however, tactile plates are not provided on either curb cut.

All signalized study intersections include pedestrian pushbuttons, signal heads and delineated crosswalks.

Fencing and a change in elevation profile on the south frontage of the site restrict pedestrian travel between the existing building, and the sidewalk network on Rathburn Road East. This fencing discourages midblock pedestrian crossing activity and directs these crossings to the signalized intersection.

A multi-use path (MUP) is provided on the north side of Rathburn Road East. Otherwise, the existing study area network does not include any dedicated cycling facilities. However, City of Mississauga *Cycling Master Plan* recommends the following improvements in the study area[3]:

- Separated bike lanes along Rathburn Road East, west of Tomken Road;
- An MUP along Tomken Road; and
- Shared routes along Willowbank Trail.

In addition to the above permanent active transportation facilities, signage visible on Google Streetview suggests that Willowbank Trail is part of the City's Slow Street Program (formerly Quiet Streets). The Slow Streets program involves installing temporary traffic calming devices with the aim of reducing aggressive driving behaviours and providing more space for all road users. This traffic calming initiative allows for safer cycling conditions.

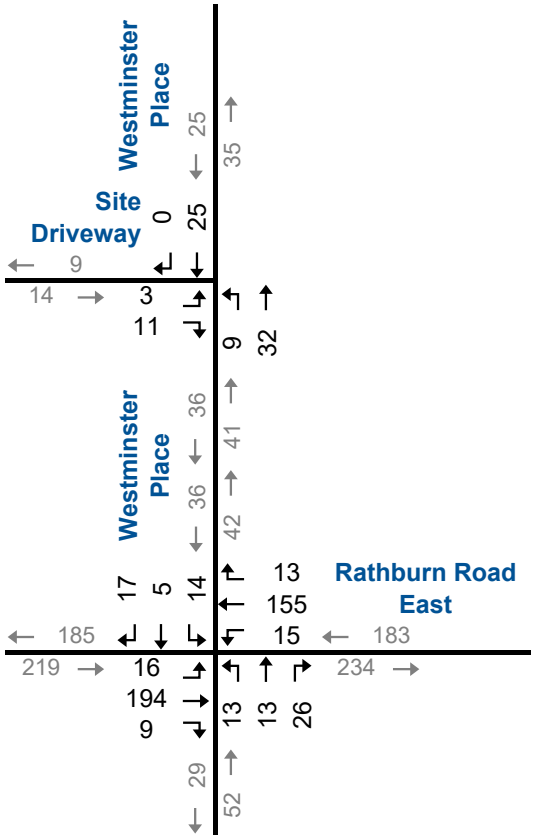
[3] City of Mississauga. *Cycling Master Plan Appendix I: Recommended Cycling Network.* 2018.

2.4 Traffic Volumes

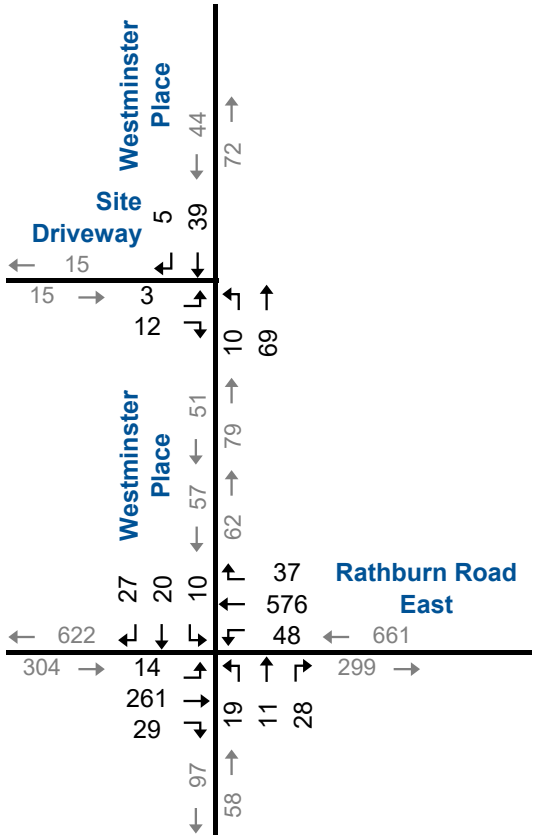
Turning Movement Count for the study area intersections were collected in August 2023. **Appendix B** contains the TMC data. **Figure 2.3** illustrates the base year traffic volumes for the AM and PM peak hours.

Turning Movement Counts

AM Peak Hour



PM Peak Hour



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Base Year Traffic Volumes

2.5 Existing Traffic Operations

Intersection level of service (LOS) is a recognized method of quantifying the delay experienced by drivers at intersections. The term "Level of Service" denotes how well a traffic movement operates under given traffic demands, lane arrangements, and traffic controls. Each level is determined by the average amount of control delay per vehicle. Control delay is the total delay associated with stopping for a signal or stop sign, and includes four components: deceleration delay, stopped delay, queue move up time and final acceleration delay. Capacity is evaluated in terms of the ratio of demand flow to capacity. An at-capacity condition represented by a volume-to-capacity (v/c) ratio of 1.00 (that is, volume demand equals capacity).

Table 2.2 contains the level of service criteria for traffic signal controlled and stop-controlled intersections. As shown, LOS A indicates small average control delays (less than 10 second per vehicle) whereas LOS F indicates intersection failure, which results in extensive vehicular queues and long delays (over 50 seconds per vehicle at an unsignalized intersection, and over 80 seconds per vehicle at a traffic signal-controlled intersection).

TABLE 2.2: VEHICLE LEVELS OF SERVICE

LOS	Signalized Intersections Average Total Delay (sec/veh)	Stop-Controlled Intersections Average Total Delay (sec/veh)
A	≤ 10	≤ 10
B	> 10 and ≤ 20	> 10 and ≤ 15
C	> 20 and ≤ 35	> 15 and ≤ 25
D	> 35 and ≤ 55	> 25 and ≤ 35
E	> 55 and ≤ 80	> 35 and ≤ 50
F	> 80	> 50

While the LOS and v/c for each movement are related, they are calculated independently. Therefore, it is possible to have a poor intersection level of service associated with a low v/c ratio or a good level of service associated with a high v/c ratio. The designation LOS F does not automatically imply that the volume demands at an intersection or on a specific movement exceeds the theoretical capacity, nor does a LOS better than E automatically imply that unused capacity is available.

The City of Mississauga *TIS Guidelines*[4] indicate the following conditions are considered critical:

- Signalized Intersections:
  - v/c ratios overall intersection operations reach or exceed 0.85;
  - v/c ratios for individual through or turning movements reach or exceed 1.0;
  - 95th percentile queues for an individual movement are to exceed available turning lane storage; and/or
  - 95th percentile queues for through lanes block vehicles from entering turning lanes.
- Unsignalized Intersections:
  - LOS for individual movements is E or worse; and/or
  - 95th percentile Queues for an individual movement exceed available turning lane storage.

The traffic operations in the study area have been evaluated using Synchro 11 using signal timings provided by the City of Mississauga. **Appendix C** contains the provided signal timings. **Table 2.3** summarizes the base year level of service conditions and highlights existing critical movements.

As shown in the table, all movements at all intersections within the study area are currently operating with acceptable delays and levels of service are within capacity.

Appendix D contains the detailed Synchro reports.

[4] City of Mississauga, *Transportation Impact Studies Guidelines Version 5.1*, (December 2022).

TABLE 2.3: BASE YEAR TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Rathburn Road East & Westminster Place	TCS	LOS	A	A	>	**A**	A	A	>	**A**	C	C	>	**C**	C	C	>	**C**	**A**
			Delay	3	3	>	**3**	3	3	>	**3**	24	24	>	**24**	24	23	>	**23**	**6**
			V/C	0.02	0.09	>		0.02	0.07	>		0.11	0.12	>		0.12	0.05	>		**0.12**
			Q	2	7	>		2	6	>		5	8	>		5	5	>		
			Stor.	15	-	>		35	-	>		15	-	>		15	-	>		
			Avail.	13	-	>		33	-	>		10	-	>		10	-	>		
	Westminster Place & Site Driveway	TWSC	LOS	A		>	**A**					<	A		**A**		A	>	**A**	
			Delay	9		>	**9**					<	2		**2**		0	>	**0**	
			V/C	8.6		>						<	1.7				0	>		
			Q	0.4		>						<	0.2				0.0	>		
PM Peak Hour	Rathburn Road East & Westminster Place	TCS	LOS	A	A	>	**A**	A	A	>	**A**	C	C	>	**C**	C	C	>	**C**	**A**
			Delay	3	3	>	**3**	3	4	>	**4**	23	23	>	**23**	23	23	>	**23**	**5**
			V/C	0.03	0.13	>		0.07	0.27	>		0.15	0.10	>		0.08	0.17	>		**0.27**
			Q	2	9	>		5	20	>		6	8	>		4	9	>		
			Stor.	15	-	>		35	-	>		15	-	>		15	-	>		
			Avail.	13	-	>		30	-	>		9	-	>		11	-	>		
	Westminster Place & Site Driveway	TWSC	LOS	A		>	**A**					<	A		**A**		A	>	**A**	
			Delay	9		>	**9**					<	1		**1**		0	>	**0**	
			V/C	8.7		>						<	1				0	>		
			Q	0.4		>						<	0.2				0.0	>		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
< / > - Shared with through movement

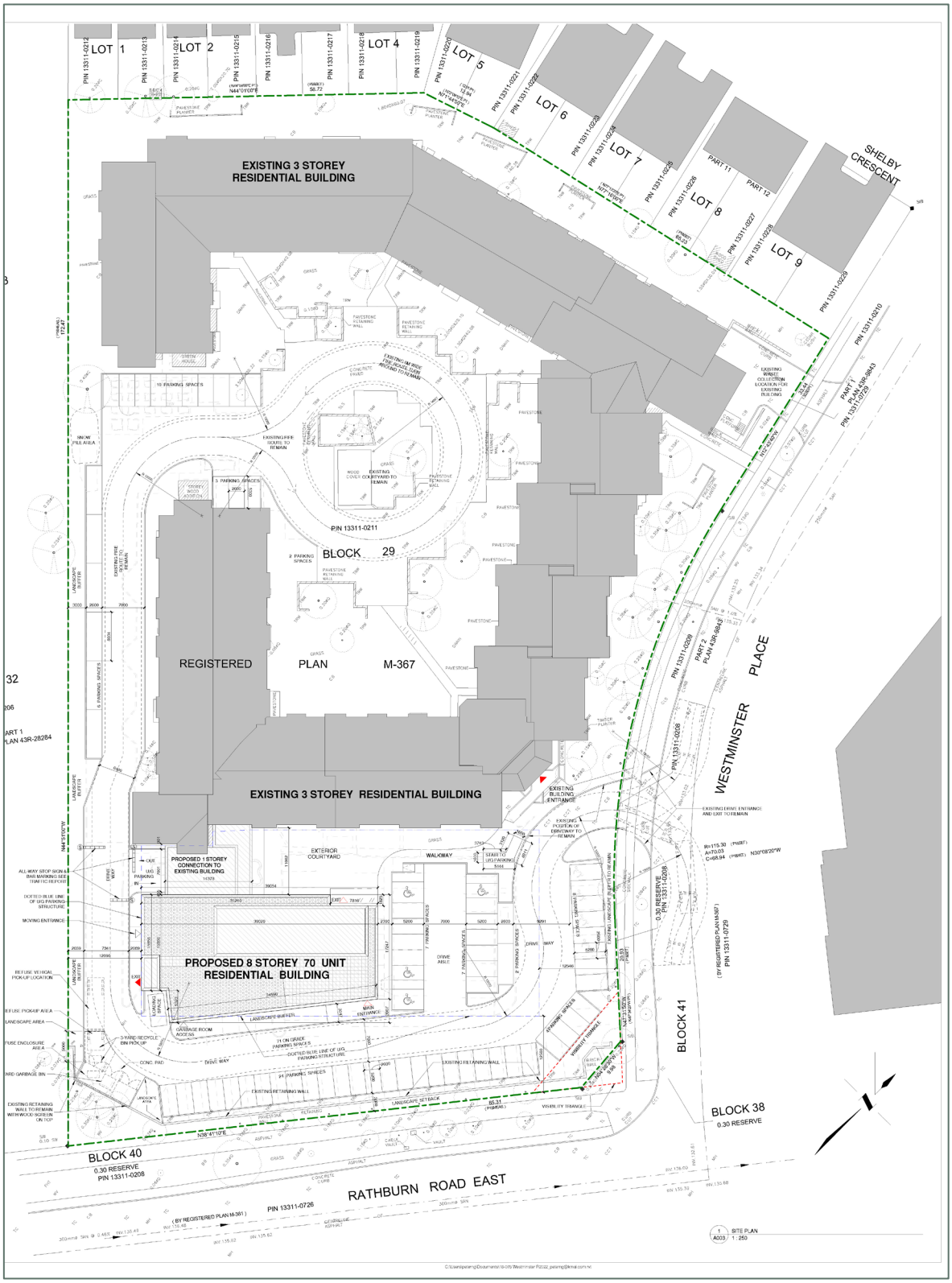
3 Development Concept

Westminster Court is currently a three-storey seniors residence containing 190 units, all of which are rented out. These units are planned for adults 60 years or older who live independently. The site currently provides a total of 95 parking spaces (0.50 spaces per dwelling unit), with five spaces for visitors, 82 rented by residents, and eight reserved for snow storage.

Vehicle access to the site is provided via the existing single all-moves driveway connection to Westminster Place. No changes are proposed to alter the driveway connection.

The property owner is proposing the construction of an eight-storey, 70-unit, retirement residence as an extension of the existing building, resulting in a total of 260 residential units. A total of 122 parking spaces (0.47 spaces per dwelling unit) are proposed (including existing parking), comprising 49 below grade, and 73 at grade, to be shared between residents and visitors.

Figure 3.1 illustrates the site plan.



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Site Plan

4150 Westminster Place TIS, PS & TDM
230502

Figure 3.1

4 Traffic Forecasts

City of Mississauga staff requested build-out year for the proposed development. To remain conservative since the build-out year has not been indicated, traffic forecasts and analyses have been completed for a five-year horizon from the study date, herein represented by 2028.

4.1 Background Traffic Forecasts

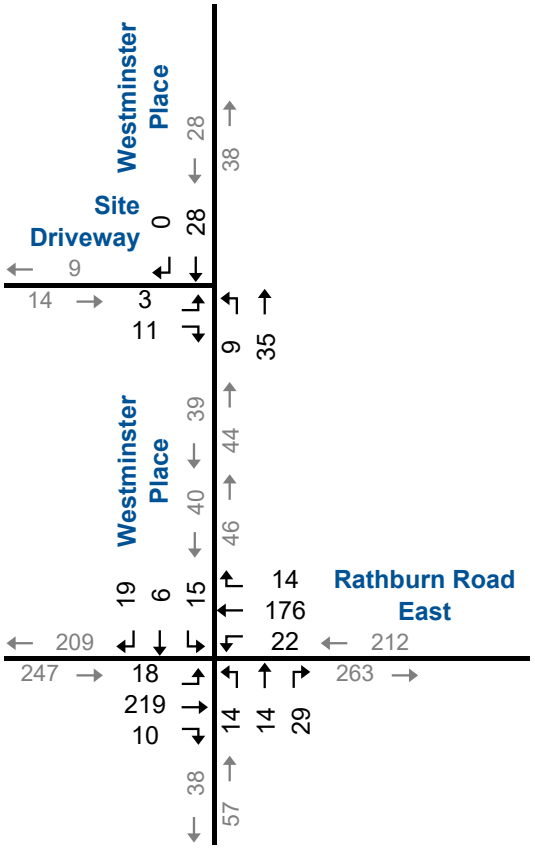
General background traffic on the study area roads has been estimated through the application of the City's forecast growth rates to the existing traffic volumes in **Section 2.4**.

For all movements and roads, a 2.0% per annum growth rate was used, following input from City of Mississauga staff. This growth rate is the maximum of all the forecast growth rates and is therefore expected to provide a conservative estimate for future volumes where growth rates were not available. Traffic volumes from the nearby development located at 4094 Tomken Road were also added to the grown background traffic volumes.

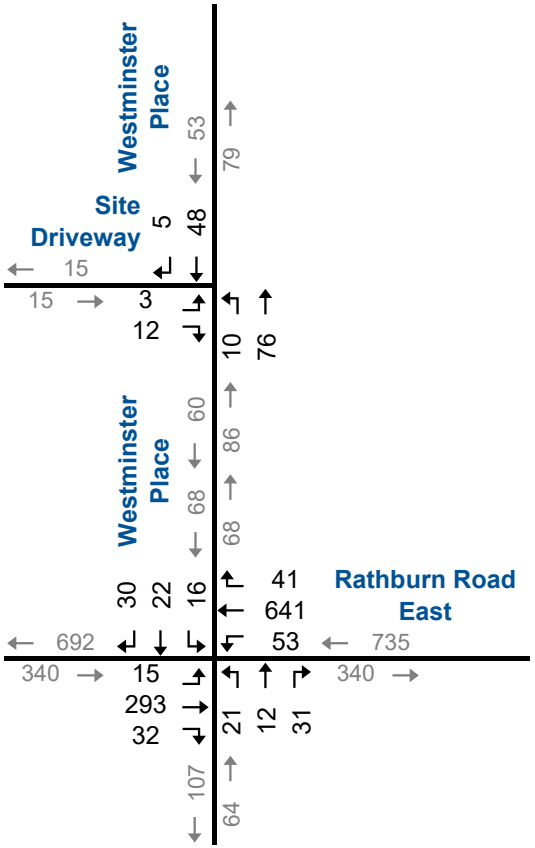
Figure 4.1 illustrates the forecast background traffic in the weekday AM and PM peak hours.

Background Turning Movement Counts

AM Peak Hour



PM Peak Hour



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Forecast Background Traffic

4.2 Site Generated Traffic

4.2.1 Estimated Trip Generation

Trip generation for the proposed development can be estimated using the proxy site data from the existing development. This is based on observed rates at the AM and PM peak hours for the entry and exit of the site. Based on the 190 existing units, it was observed that the trip per unit is 0.12 in the AM, while in the PM, the rate is 0.16 trip per unit. It was observed in the AM peak hour that 39% would enter the site while 61% would exit the site. In the PM peak hour, it was observed that 50% would enter the site while 50% would leave the site.

Table 4.1 summarizes the trip generation estimates for the AM and PM peak hours using existing rarest.

TABLE 4.1: ESTIMATED TRIP GENERATION

Methodology	Units	AM Peak Hour				PM Peak Hour			
		Rate	In	Out	Total	Rate	In	Out	Total
Proposed Senior Adult Housing	70	0.12	5	3	**8**	0.16	6	5	**11**

4.2.2 Trip Distribution and Assignment

Trip distribution is based on existing travel patterns, as demonstrated in the TMC data. Trips are assigned to existing roads based on the most direct and logical route to and from the subject site.

Table 4.2 summarizes the estimated trip distribution and **Figure 4.2** illustrates the forecast site generated traffic in the weekday AM and PM peak hours.

TABLE 4.2: ESTIMATED TRIP DISTRIBUTION

Origin/Destination	Inbound		Outbound	
	AM	PM	AM	PM
North via Westminster Place	5%	4%	7%	0%
South via Westminster Place	11%	6%	6%	10%
East via Rathburn Road East	38%	62%	49%	29%
West via Rathburn Road East	46%	28%	38%	61%
Total	**100%**	**100%**	**100%**	**100%**

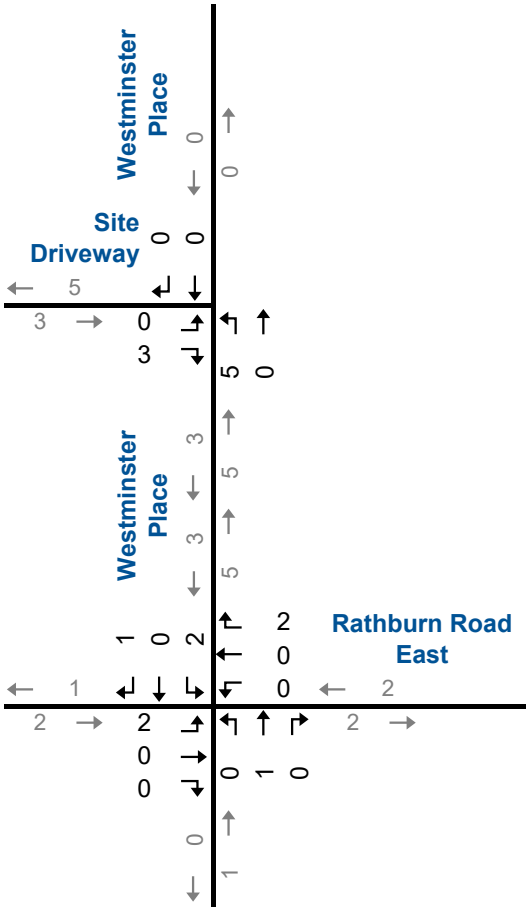
4.2.3 Total Traffic

The forecast total traffic has been estimated through the summation of the forecast site generated traffic with the forecast background traffic volumes.

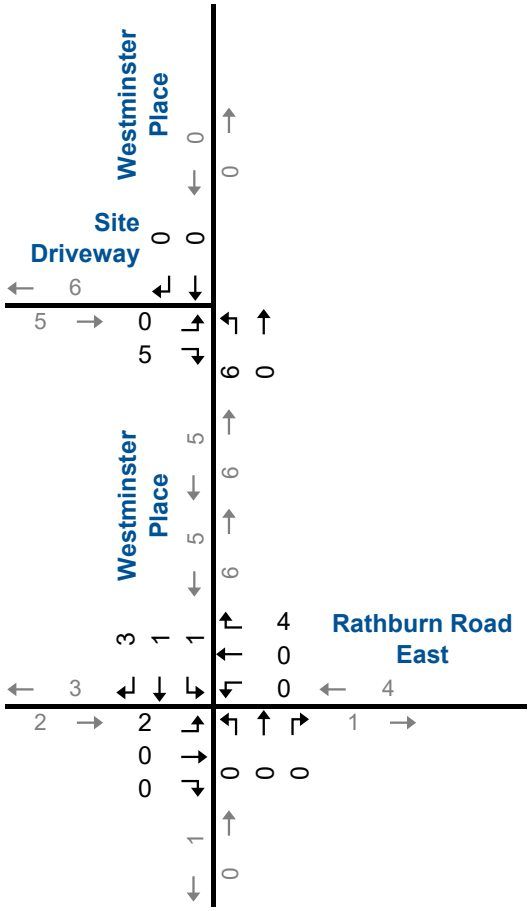
Figure 4.3 illustrates the forecast total traffic volumes in the weekday AM and PM peak hours.

Site Traffic Turning Movement Counts

AM Peak Hour



PM Peak Hour



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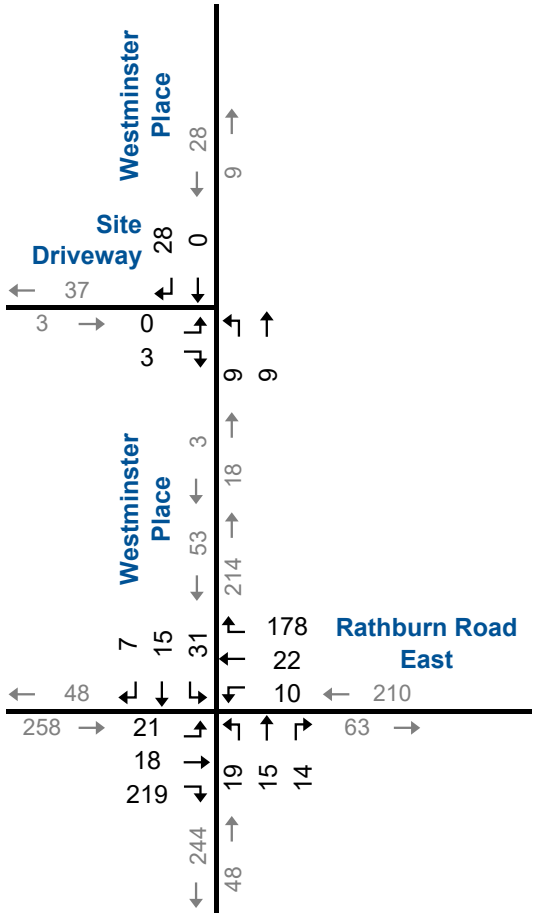
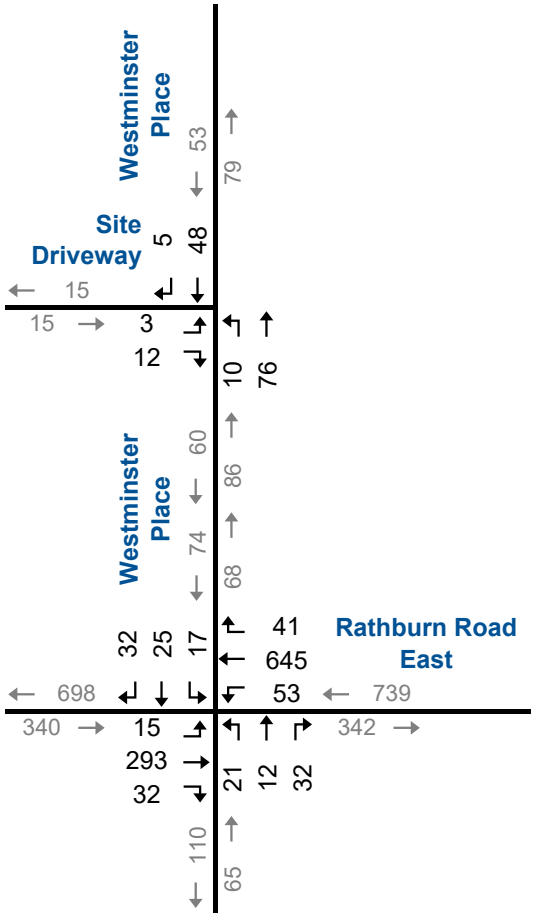
Forecast Site Generated Traffic

Total Turning Movement Counts

AM Peak Hour



PM Peak Hour



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Forecast Total Traffic

5 Transportation Impact Analysis

5.1 Background Traffic Operations

The analysis of background traffic conditions uses the same methodology and parameters as used under base year conditions. Signal timing splits and phasing have not been modified.

Like the background traffic operations, all movements at intersections within the study area are forecast to operate with acceptable delays, levels of service, and within capacity. When compared to background traffic operations, results indicate that the site traffic is not forecast to adversely affect traffic operations**.**

Table 5.1 summarizes the results of the operational analyses. **Appendix E** contains the detailed Synchro reports.

5.2 Total Traffic Operations

The analysis of total traffic conditions uses the same methodology and parameters as used under base year and background traffic conditions. Signal timing splits and phasing have not been modified.

Table 5.2 summarizes the results of the operations analyses. **Appendix F** contains the detailed Synchro reports.

Like the background traffic operations, all movements at intersections within the study area are forecast to operate with acceptable delays, levels of service, and within capacity. When compared to background traffic operations, results indicate that the site traffic is not forecast to adversely affect traffic operations however the V/C is anticipated to increase but will remain acceptable.

TABLE 5.1: BACKGROUND TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Rathburn Road East & Westminster Place	TCS	LOS	A	A	>	**A**	A	A	>	**A**	C	C	>	**C**	C	C	>	**C**	**A**
			Delay	3	3	>	**3**	3	3	>	**3**	23	23	>	**23**	23	23	>	**23**	**6**
			V/C	0.03	0.10	>		0.03	0.08	>		0.11	0.12	>		0.13	0.07	>		**0.13**
			Q	2	8	>		3	6	>		5	8	>		6	6	>		
			Stor.	15	-	>		35	-	>		15	-	>		15	-	>		
			Avail.	13	-	>		32	-	>		10	-	>		9	-	>		
	Westminster Place & Site Driveway	TWSC	LOS	A		>	**A**					<	A		**A**		A	>	**A**	
			Delay	9		>	**9**					<	2		**2**		0	>	**0**	
			V/C	8.6		>						<	1.6				0	>		
			Q	0.4		>						<	0.2				0.0	>		
PM Peak Hour	Rathburn Road East & Westminster Place	TCS	LOS	A	A	>	**A**	A	A	>	**A**	C	C	>	**C**	C	C	>	**C**	**A**
			Delay	3	3	>	**3**	3	4	>	**4**	23	22	>	**23**	23	23	>	**23**	**6**
			V/C	0.03	0.15	>		0.08	0.31	>		0.16	0.11	>		0.12	0.18	>		**0.31**
			Q	2	10	>		6	23	>		7	8	>		6	10	>		
			Stor.	15	-	>		35	-	>		15	-	>		15	-	>		
			Avail.	13	-	>		29	-	>		8	-	>		9	-	>		
	Westminster Place & Site Driveway	TWSC	LOS	A		>	**A**					<	A		**A**		A	>	**A**	
			Delay	9		>	**9**					<	1		**1**		0	>	**0**	
			V/C	8.8		>						<	0.9				0	>		
			Q	0.4		>						<	0.2				0.0	>		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
< / > - Shared with through movement

TABLE 5.2: TOTAL TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Rathburn Road East & Westminster Place	TCS	LOS	A	A	>	**A**	A	A	>	**A**	C	C	>	**C**	C	C	>	**C**	**A**
			Delay	3	3	>	**3**	3	3	>	**3**	23	23	>	**23**	24	23	>	**24**	**6**
			V/C	0.03	0.09	>		0.02	0.08	>		0.16	0.11	>		0.27	0.12	>		**0.27**
			Q	3	4	>		2	3	>		6	7	>		9	6	>		
			Stor.	15	-	>		35	-	>		15	-	>		15	-	>		
			Avail.	12	-	>		33	-	>		9	-	>		6	-	>		
	Westminster Place & Site Driveway	TWSC	LOS	A		>	**A**					<	A		**A**		A	>	**A**	
			Delay	8		>	**8**					<	4		**4**		0	>	**0**	
			V/C	8.4		>						<	3.7				0	>		
			Q	0.1		>						<	0.2				0.0	>		
PM Peak Hour	Rathburn Road East & Westminster Place	TCS	LOS	A	A	>	**A**	A	A	>	**A**	C	C	>	**C**	C	C	>	**C**	**A**
			Delay	3	4	>	**4**	4	4	>	**4**	22	22	>	**22**	22	22	>	**22**	**6**
			V/C	0.03	0.15	>		0.09	0.32	>		0.15	0.09	>		0.11	0.16	>		**0.32**
			Q	2	10	>		6	23	>		7	8	>		6	10	>		
			Stor.	15	-	>		35	-	>		15	-	>		15	-	>		
			Avail.	13	-	>		29	-	>		8	-	>		9	-	>		
	Westminster Place & Site Driveway	TWSC	LOS	A		>	**A**					<	A		**A**		A	>	**A**	
			Delay	9		>	**9**					<	1		**1**		0	>	**0**	
			V/C	8.8		>						<	0.9				0	>		
			Q	0.4		>						<	0.2				0.0	>		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
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Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
< / > - Shared with through movement

6 Parking Study

The existing vehicle parking supply on the site is planned to be jointly shared between the existing residents and residents of the new addition. Given the shared nature of the on-site vehicle parking facilities this parking review and justification includes both sites.

6.1 Existing Vehicle Parking Supply and Demand

A total of 95 parking spaces are currently provided on the site to serve 190 units. Eight of these spaces are used for snow storage during winter months, leaving 87 parking spaces available for residents and visitors year-round, or 0.46 per unit. Five spaces are reserved for visitors (0.026 per unit), which can be used overnight. This leaves 82 spaces for use by residents.

Westminster Place administration staff have confirmed that a total of 81 parking spaces out of 82 are rented out to residents, and the building is fully occupied. The existing resident parking demand is thus 0.426 spaces per dwelling unit.

Off-site parking is also available as on-street parking, on the west side of Westminster Place between Shelby Crescent and Rathburn Road East. Approximately 14 vehicles can be accommodated in these on-street parking spaces. Parking is permitted for a maximum of 15 hours where signs are present. The City of Mississauga has a general prohibition of on-street parking between 2:00 AM and 6:00 AM during winter months. Consequently, the on-street parking is usable by daytime visitors only.

6.2 Proposed Vehicle Parking Supply

A total of 122 parking spaces are proposed, comprising 49 below grade, and 73 at grade, to be shared between residents and visitors. These 122 spaces will serve all 260 residential units on site, for a parking ratio of 0.47 spaces per residential unit. This is a higher rate than the existing supply.

Unlike the existing site, no spaces are assigned for snow storage. Instead, dedicated snow storage areas are provided for the planned site.

6.3 City of Mississauga Zoning By-law Requirements

Off-street vehicle parking requirements are provided in the City of Mississauga Zoning By-law 0225-2007[5], which was most recently amended in 2022. Under the definitions in the By-law, the proposed development is considered a "dwelling unit provided by a non-profit housing provider in a rental apartment".

The By-Law divides Mississauga into four "Precincts", each with different parking requirements. The site is in Precinct 3. Under this by-law, the site requires 0.65 parking spaces per residential unit, plus 0.2 visitor spaces per residential unit, for a total of 0.85 spaces per residential unit. **Table 6.1** summarises the vehicle parking requirements.

TABLE 6.1: VEHICLE PARKING REQUIREMENTS (DWELLING UNIT PROVIDED BY A NON-PROFIT HOUSING PROVIDER IN A RENTAL APARTMENT)

Requirement Type	Rate	Units	Required Spaces
Dwelling unit provided by a non-profit housing provider in a rental apartment (resident)	0.65 per unit	260	169
Dwelling unit provided by a non-profit housing provider in a rental apartment (visitor)	0.2 per unit	260	52
Total Required vehicle Parking			**221**
Proposed On-Site vehicle Parking			**122**
Vehicle Parking Surplus (Deficit)			**(99)**

As shown in the Table, the proposed on-site vehicle parking supply of 122 spaces results in a deficit of 99 spaces compared to the requirements of the Zoning By-law.

[5] City of Mississauga. *Zoning By-law 0225-2007, Table 3.1.2.1 - Required Number of Off-Street Parking Spaces for Residential Uses.* January 2023 Consolidation. Accessed from: https://www.mississauga.ca/services-and-programs/building-and-renovating/zoning-information/zoning-by-law/

6.4 City of Mississauga Retirement Building Requirements

The City of Mississauga Zoning By-Law defines a "retirement building" as:

> *"A building or part thereof, containing retirement dwelling units where common facilities are provided for the preparation and consumption of food and where housekeeping services and on-site medical services are provided, as required."*[6]

The proposed development is a non-profit retirement home that satisfies this definition, except for the part about "common facilities are provided for the preparation and consumption of food". The lack of these facilities reduces the parking demand, as it means there no employees related to food preparation who would need to park on-site.

Consequently, it is illustrative to examine the parking requirements for a dwelling unit provided by a non-profit housing provider in a *retirement* building. The Zoning By-Law requires 0.5 spaces per unit for retirement buildings in all precincts. **Table 6.2** summarises the vehicle parking requirements for a retirement building.

TABLE 6.2: VEHICLE PARKING REQUIREMENTS (DWELLING UNIT PROVIDED BY A NON-PROFIT HOUSING PROVIDER IN A RETIREMENT BUILDING)

Requirement Type	Rate	Units	Required Spaces
Dwelling unit provided by a non-profit housing provider in a retirement building	0.35 per unit	260	91
Total Required vehicle Parking			**91**
Proposed On-Site vehicle Parking			**122**
vehicle Parking Surplus (Deficit)			**21**

As shown in **Table 6.2**, the proposed on-site vehicle parking supply of 122 spaces results in a surplus of 21 spaces compared to the requirements of the Zoning By-Law requirements for a retirement home with facilities for the preparation and consumption of food.

[6] ibid, *§1.2: Definitions.*

6.5 Forecast Vehicle Parking Demand

Per section 6.1, the observed demand rate for existing residents is 0.426 spaces per dwelling unit. This implies that the proposed development would need 111 spaces to serve resident demand.

Similarly, the site currently operates with 0.026 spaces per unit for (overnight) visitors. This implies that the proposed development would need 7 spaces for overnight visitors. **Table 6.3** summarises the forecast parking demand.

TABLE 6.3: FORECAST VEHICLE PARKING DEMAND

Demand Type	Observed Rate	Units	Required Spaces
Resident	0.426 per unit	260	111
Visitor	0.026 per unit	260	7
Total Forecast Vehicle Parking			**118**
Proposed On-Site Vehicle Parking			**122**
Vehicle Parking Surplus (Deficit)			**2**

As shown in **Table 6.3**, the proposed on-site vehicle parking supply of 128 spaces is sufficient to accommodate the forecast vehicle parking demand by residents and overnight visitors.

Any additional daytime visitor demand during daytime would be able to use on-street parking on the west side of Westminster Place, and the surplus of four on-site parking spaces.

6.6 Vehicle Parking Management Strategies

The expected future parking demand is based on existing demand levels. Applying suitable parking management strategies will help ensure that demand does not exceed the available capacity.

Based on discussions with Westminster Court administration, parking spaces are not included the rental price of a dwelling unit and must be rented separately. This unbundling of parking spaces from the rental price helps manage the on-site parking demands by attracting residents who may not own a vehicle. It ensures those residents who do not need a parking space can rent a unit without the excess cost.

Further, the unbundling of parking spaces helps ensure those who do need spaces purchase only the spaces they need. Unbundling parking also provides options to prospective residents, by giving them the

choice to continue owning a vehicle or forgo a vehicle for access to local amenities and public transit. When the cost of a parking space is already included in the price of a rental unit, renters who do not drive can feel as though they are paying for something they do not use. Further single occupant vehicle strategies are discussed in Section 7.

6.7 Bicycle Parking

Bicycle parking requirements are provided in the City's Zoning By-law 0225-2007[7]. The By-Law distinguishes between two types of bicycle parking spaces:

- "Class A": indoor bicycle parking space in an enclosed area with controlled access.
- "Class B": outdoor bicycle parking space in a publicly accessible location.

The proposed development is considered to fall under the requirements for "Apartment and stacked townhouse without exclusive garages". Per section 3.1.6.1.1 of the Zoning By-Law, the requirements apply to the new building only (70 units).

Table 6.4 summarises the bicycle parking requirements.

TABLE 6.4: BICYCLE PARKING REQUIREMENTS

Requirement Type	Rate	Units	Required Spaces	Proposed Spaces	Surplus (Deficit)
Class A (indoor / controlled access)	0.6 per unit	70	42	10	(32)
Class B (outdoor / public access)	Greater of 0.05 spaces per unit *or* 6 spaces	70	6	6	0
Total Required Bicycle Parking			**48**		
Total Proposed Bicycle Parking				**16**	
Total Bicycle Parking Surplus (Deficit)					**(32)**

As shown in **Table 6.4**, the proposed bicycle parking supply has a deficit of 32 spaces as per the Zoning By-Law requirements. Although it satisfies the requirements for outdoor supply, the indoor supply is less than the requirement of the by-law.

[7] ibid, *Table 3.1.6.5.1 - Required Number of Bicycle Parking Spaces for Residential Uses.*

The existing building has ten bicycle parking spaces to serve residents. One resident-owned bicycle was counted in November 2023, resulting in a demand of 0.0053 spaces per unit. The lower rate of bicycle ownership is consistent with expectations for building occupied by seniors, given the physical limitations that are experienced by many seniors.

The resulting forecast demand is shown **Table 6.5**.

TABLE 6.5: FORECAST BICYCLE PARKING DEMAND

Demand Type	Rate	Units	Required Spaces	Proposed Spaces	Surplus (Deficit)
Class A (indoor / controlled access)	0.0053 spaces per unit (*observed demand*)	70	1	10	9
Class B (outdoor / public access)	Greater of 0.05 spaces per unit *or* 6 spaces (*Zoning By-Law*)	70	6	6	0
Total Required Bicycle Parking			**7**		
Total Proposed Bicycle Parking				**16**	
Total Bicycle Parking Surplus (Deficit)					**9**

As shown in **Table 6.5**., the proposed on-site bicycle parking supply of 16 spaces is sufficient to accommodate the forecast bicycle parking.

6.8 Conclusions

Based on the foregoing, the proposed parking supply is 93 spaces less than the requirements of Zoning By-Law 0225-2007, given the building is considered to be a “Rental Apartment” operated by a non-profit housing provider. Considering the building as a ““Retirement Building” operated by a non-profit housing provider results in a vehicle parking *surplus* of 31 spaces.

Further, the existing parking demand of the site indicates that the proposed supply is sufficient to meet the resident and overnight visitor demand. Any additional daytime visitor demand would be able to use on-street parking on the west side of Westminster Place.

To continue to manage parking demand, it is recommended that the parking spaces continue to be unbundled from the rental price of units.

This encourages only those residents who need a parking space to rent parking spaces they need and do not feel committed to purchase a vehicle if the price of a parking space was included in the rental price. The use of the buildings by seniors would also tend to reduce parking demand, as seniors are less likely to own vehicles.

Based on the City of Mississauga Zoning By-Law the proposed bicycle parking has deficit of 32 spaces for Class A and satisfies the Zoning By-Law requirements for Class B with no surplus. The existing site has ten bicycle parking spaces, with an observed demand of 0.0053 spaces per unit, consistent with expectations for a building occupied by seniors. The forecast bicycle parking demand is indicating a surplus of nine spaces when considering both Class A and Class B requirements. As such, the proposed on-site bicycle parking supply of 16 spaces is deemed sufficient to accommodate the forecasted bicycle parking demand.

7 Transportation Demand Management

Transportation Demand Management (TDM) refers to policies and programs designed to manage the demands of the transportation network. In North America, TDM is primarily geared towards encouraging alternate transportation modes to single-occupant motor vehicle (SOV) to reduce the demand of road networks. TDM measures can include policy changes that support a balanced transportation network across all modes, as well as the development of infrastructure and systems that reduce single-occupant vehicle demand.

TDM policies and programs consider how travel mode choice is affected by factors such as land use patterns, parking availability, parking costs, development design, and the relative cost, convenience, and availability of alternate modes of transportation. Using policies and programs to reduce single-occupant vehicle demand, a TDM approach to transportation can deliver long-term planning goals, improve environmental sustainability efforts, improve public health, and build more human-scaled, liveable cities.

TDM programs are not strictly confined to development design, and in many cases rely on the broader municipal transportation network to be successful. This means that TDM initiatives at the development level complement the municipal transportation network, and together provide meaningful transportation options for the end users of a development.

7.1 City of Mississauga TDM Checklist

7.1.1 Transportation Demand Management and Pedestrian Circulation Checklist

The City of Mississauga TDM checklist[8] has been used to assess the incorporation of TDM measures, including pedestrian circulation, cyclist orientation, transit service, motor vehicle parking, and incentives into development proposals.

Table 7.1 has been used to assess the TDM measures that are currently implemented in the study area.

TABLE 7.1: TDM MEASURES SCORING SUMMARY

Category	Possible	Applicable to site	Points awarded
A – Pedestrian Circulation	9 (18÷2)	8.5	6
B – Cyclist Orientation	5	5	0
C – Transit Service	6 (3*2)	6	6
D – Motor Vehicle Parking	6	6	3
E – Incentives	7	6	2
Total	**33**	**31.5**	**20 (63%)**

Table 7.2 has been used to provide a rating for the TDM measures currently implemented to justify whether the TDM measures are sufficiently implemented.

TABLE 7.2: TDM RATING CRITERIA

Final Score	Rating	TDM Supportive
91% - 100%	***** (5 Star)	Yes
81% - 90%	**** (4 Star)	
71% - 80%	*** (3 Star)	
61% - 70%	** (2 Star)	No (Review and Enhance TDM Measures)
50% - 60%	* (1 Star)	
Less than 50%	(None)	

[8] City of Mississauga, *Transportation Impact Studies Guidelines Version 5.1*, (December 2022).

Based on **Table 4.1** it has been shown that the study area is currently at a 2 Star TDM rating and therefore requires enhanced TDM measures**.** Although the subject site is located within a generally automobile-oriented neighbourhood of the City of Mississauga, the study area includes existing infrastructure which can be utilized to support TDM for the subject site. The following subsections highlight existing infrastructure or programs in place to support TDM.

Appendix G contains the TDM checklist.

7.2 Existing TDM Opportunities

7.2.1 Signage

In addition to permanent active transportation infrastructure, signage visible on Google Streetview suggests that Willowbank Trail is part of the City's Slow Street Program (formerly Quiet Streets). The Slow Streets program involves installing temporary traffic calming devices with the aim of reducing aggressive driving behaviours and providing more space for all road users.

7.2.2 Cycling

A multi-use path (MUP) is provided on the north side of Rathburn Road East. Otherwise, the existing study area roads do not currently include any dedicated cycling facilities. Existing plans in the City of Mississauga *Cycling Master Plan*[9], include the following improvements are proposed in the study area:

- Separated cycling lanes along Rathburn Road East, west of Tomken Road;
- An MUP along Tomken Road; and
- A shared cycling route along Willowbank Trail.

7.2.3 Walking

Sidewalks are provided on both sides of nearly all study area roads. Along Willowbank Trail between Tomken Road and Shalby Crescent, a sidewalk is only provided along the south side. A sidewalk adjacent to the site driveway connects the site to the municipal sidewalk network, and a curb cut is provided on the opposite side of the road to facilitate pedestrian crossings to the commercial/retail plaza at 925 Rathburn Road East. A secondary pedestrian connection to Westminster Place is provided near the north end of the site adjacent to the garbage

[9] City of Mississauga. *Cycling Master Plan Appendix I: Recommended Cycling Network.* 2018.

collection and storage area. Curb cuts and sidewalk are also provided at this location to facilitate crossing Westminster Place; however, tactile plates are not provided at either curb cut.

All signalized study intersections include pedestrian pushbuttons, signal heads and delineated crosswalks.

Fencing and a change in elevation profile on the south frontage of the site restrict pedestrian travel between the existing building and the sidewalk network on Rathburn Road East. This fencing discourages midblock pedestrian crossing activity and directs these crossings to the signalized intersection.

7.2.4 Transit

The site's proximity to transit stops on Rathburn Road East provides connectivity to broader destinations on MiWay Route 20 Rathburn, and further destinations in the GTHA via inter-regional connections at Erindale GO Station, the Square One Bus Terminal, and Kipling subway station. These transit services provide access to services for needs not available locally near the subject site.

7.2.5 Vehicle Parking

Currently, Westminster Court separates the cost of a vehicle parking space from the rental cost of a unit. The unbundling of the parking supply provides financial flexibility to residents. Residents who do not need a parking space are able to rent a unit without the cost of parking. Alternatively, residents who need a parking space can rent only the number of spaces they require.

7.2.6 Site Characteristics and Local Context

The mix of land uses in the commercial plaza at 925 Rathburn Road East includes a grocery store, convenience store, bank, dentist, pharmacy, and various fast food restaurants. The proximity of these businesses enables more trips to be completed locally, and likely by foot. Strong connectivity via the existing sidewalk network, including connections that accommodate desire lines across Westminster Place, encourage walking for local trips and easy access to transit for non-local trips.

This local context likely influences the existing travel and parking demands of the site, by eliminating the need for all residents to own a car, drive, and/or rent a parking space.

7.3 Proposed TDM Measures

Three specific objectives define the policy framework as part of the TDM Plan:

- Encourage the use of transit, cycling and walking;
- Increase vehicle occupancy; and
- Reduce vehicle kilometres travelled.

These objectives will serve as the guidelines for the implementation of effective TDM measures during the site design phase (pre-occupancy) and under operations following expansion (post-occupancy). The goal is to maximize the travel demand sustainability of the site and allow the new building to fully leverage its location relative to the transportation options in the vicinity of the site.

The following categories are identified as potential strategies to reduce SOV trips generated by the expansion:

- Encourage and facilitate bicycle usage;
- Encourage lower car ownership/use;
- Encourage increased vehicle occupancy;
- Encourage transit use;
- Enhance pedestrian connectivity and walkability; and
- Enhance coordination, communication and promotion of TDM.

Strategies for accomplishing each goal can be grouped into several categories:

- **Infrastructure (external link and facilities):** measures to improve the active transportation realm along the boundaries of the site and to facilitate the integration of pedestrian and cycling infrastructure.
- **Facilities and Features of the Site Plan and Design:** Physical aspects of internal design of the development, including the building, and site circulation to promote alternative transportation modes.
- **Building Operations:** User-focused programs and policies enacted once the site is operational to encourage alternative transportation modes.
- **Monitoring:** Post-occupancy data collection programs to assess the travel patterns of the TDM strategies and the TDM Plan as a whole.

While strong opportunities exist surrounding the subject site to allow for sustainable transportation practices, further leveraging of these opportunities will ensure achievement of the end goal: reduction of SOV trips and automobile trips in general and an increase of other travel modes.

7.3.1 Encourage Bicycle Usage

The primary strategy to encourage bicycle usage by residents is to provide sufficient physical and operational infrastructure, while working with the City and other stakeholders to enhance the local cycling network. Enhancement of the cycling network could include dedicated bicycle facilities, and intersection improvements to accommodate cyclists. This could enable bicycle use as an attractive alternative to automobile use.

The following cycling infrastructure improvements are proposed in the study area[10]:

- Separated bike lanes along Rathburn Road East, west of Tomken Road;
- A multi-use path along Tomken Road; and
- Shared routes along Willowbank Trail.

In addition, a bike storage room will be provided on the ground floor of the building. The exact number of spaces has yet to be determined, however the provision of bicycle parking is an important step to encouraging cycling for residents and visitors.

The strategy to encourage lower car ownership and use relies on the provision of enhanced alternative transportation modes, and specific strategies to manage on-site parking demands. The following initiatives and strategies have been incorporated into the site design and future operational plan of the building:

- Unbundling parking space rental or sales from the rental or sale price of a unit. Given the site's proximity to complementary destinations such as the plaza at 925 Rathburn Road East this will benefit prospective residents who may not own a vehicle or opt to forego their vehicle for some trips.
- Providing building residents with information and communication items that outline the availability of alternative travel modes to and from the site.

[10] City of Mississauga. *Cycling Master Plan Appendix I: Recommended Cycling Network.* 2018.

7.3.2 Encourage Transit Use

As mentioned previously, the proximity of site to transit stops on Rathburn Road East provides connectivity to broader destinations on Route 20, and further destinations in the GTHA via inter-regional connections.

It is recommended Westminster Court continue to communicate information about local transit services to residents as part of a comprehensive Transportation Demand Management program. To further encourage residents/visitors to travel by transit, information packages containing route maps, schedules, and other applicable information could be provided and shared within a common area (such as a central lobby) or be distributed to all new residents. New residents could also be provided with PRESTO cards if they do not already have one.

7.3.3 Recommendations

It is recommended Westminster Court management to unbundle parking space rental or sales from the rental or sale price of a unit to reduce. It is also further recommended by the management to communicate information about local transit services. The existing bicycle racks should be replaced to accommodate more spaces to store bicycles. These programs highlight opportunities to complete trips without a personal vehicle, and can ultimately reduce vehicle ownership rates, and parking demands among residents.

8 Access and Circulation Review

8.1 Site Circulation Assessment

The circulation of passenger car, garbage trucks, fire trucks and heavy vehicles has been assessed for the subject site. The design vehicle used in this analysis to represent a typical larger sized truck is the Transportation Association of Canada (TAC) Heavy Single Unit (HSU) truck[11].

The results of the assessment indicate that the design vehicles can navigate the subject site with no conflicts.

Appendix H contains details of the on-site circulation of the garbage truck fire truck and heavy design vehicle, respectively.

8.2 Sight Triangles

In the *Geometric Design Guide for Canadian Roads* published by the Transportation Association of Canada (TAC), a sight triangle is defined as:

> "The triangle formed by the line of sight and the two sight distances of drivers, cyclists, or pedestrians approaching an intersection on two intersecting streets."[12]

TAC's road design guide states that drivers need 2.5 seconds to perceive and react to potential hazards[13]. The Ontario Traffic Manual states that a pedestrian walking speed of 1.0 m/s can be used to accommodate the general population.[14] Some segments of the population have lower walking speeds, which would provide *more* time for drivers to react. Consequently, the higher walking speed of the general population provides a conservative result. Combining the required time and the walking speed means that a sight triangle of 3m by 3m will be sufficient.

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[11] *2.4 – Design Vehicles*, Geometric Design Guide for Canadian Roads, Transportation Association of Canada, June 2017.

[12] Transportation Association of Canada, "Glossary", Chapter 1 in *Geometric Design Guide for Canadian Roads*, (Ottawa: TAC, 2017), page G-13.

[13] Transportation Association of Canada, "Perception-Reaction Time", section 2.2.5.5 in *Geometric Design Guide for Canadian Roads*, (Ottawa: TAC, 2017), pages 2-10 and 2-11.

[14] Ontario Ministry of Transportation, Ontario Traffic Manual Book 15: Pedestrian Crossing Treatments, (Toronto: Queen's Printer for Ontario, 2016), section 3.4.2.

Appendix I (drawing 05) shows the sight triangles at the site driveway. All are at least 3m by 3m, and therefore satisfy the needs given in TAC's *Geometric Design Guide for Canadian Roads*.

Westminster Place has a posted speed limit of 40kph, so a design speed of 50kph was used. Table 2.5.2 in the *Geometric Design Guide for Canadian Roads* provides a guideline on the stopping sight distance. TAC's road design guide states that a stopping sight distance of 65m should be used with a design speed of 50kph and a level road.[15] If the design speed to match the speed limit of 40kph, then stopping sight distance would be 46m instead. **Table 8.1** highlights the recommended values stopping sight distance.

TABLE 8.1: STOPPING SIGHT DISTANCE

Design Speed (Km/h)	Brake Reaction Distance (m)	Brake Distance on Level (m)	Stopping Sight Distance (m)		Requirement Satisfied
			Calculated (m)	Design (m)	
50	34.8	28.7	63.5	65	Yes

8.3 Throat Length

To increase operational efficiency for vehicle entering and exiting the driveway, a no conflict and storage zone is recommended within the driveway. The clear throat length or set-back distance is used to prevent frequent blocking of on-site circulation roads and the queueing of entering vehicles. The proposed site design retains the existing configuration around the site entrance.

TAC's *Geometric Design Guide for Canadian Roads* provides recommended throat lengths for various types of land uses, none of which directly apply to the proposed development. However, it also states: "For large developments, the appropriate throat length is best determined by a detailed traffic analysis based on the traffic control provided at the road and the anticipated volumes and types of traffic."[16] This means that the detailed analysis of future traffic conditions and queue lengths presented in Chapters 4 and 5 of this report can be used to determine the required throat length.

[15] Transportation Association of Canada, "Stopping Sight Distance on Level Roadways for Automobiles", Table 2.5.2 in *Geometric Design Guide for Canadian Roads*, (Ottawa: TAC, 2017), page 2-37.

[16] Transportation Association of Canada, *Geometric Design Guide for Canadian Roads*, (Ottawa: TAC, 2017), §8.9.10 "Clear Throat Lengths" page 8-56.

The analysis in Chapter 5 showed that the 95th percentile queue length on the site driveway is 0.4 metres. The throat length is approximately 11 metres, which satisfies this requirement.

TABLE 8.3: THROAT LENGTH REQUIREMENTS

Measurement	Required Distance (m)	Throat Length (m)	Requirement Satisfied
Driveway Throat Length	0.4	~11	Yes

9 Conclusions and Recommendations

9.1 Conclusions

Based on the investigations carried out, it is concluded that:

- **Existing Traffic Operations:** The study area intersections are operating with acceptable levels of service during the weekday AM and PM peak hours.
- **Site-Generated Traffic:** The subject site is estimated to generate approximately 8 new AM peak hour trips and approximately 11 new PM peak hour trips.
- **Background Operations:** The study area intersections are forecast to continue to operate with acceptable levels of service.
- **Total Operations:** Similar to background traffic operations, the study area intersections are forecast to continue to operate with acceptable levels of service.
  Since the additional site traffic does not significantly impact operations, no remedial measures related to the proposed addition are recommended at this time.
- The proposed **vehicle parking** supply results does not meet the requirements of Zoning By-Law 0225-2007, given the units are classed as rental apartments operated by a non-profit housing provider. However, there is a surplus of 37 spaces relative to the requirements for units in a *retirement* building operated by a non-profit housing provider. Further, the existing vehicle parking demand of the site indicates that the proposed supply exceeds the parking required to meet resident and visitor demand.
- The proposed **bicycle parking** does not meet the requirements of Zoning By-Law 0225-2007. However, the existing bicycle parking demand of the site indicates that the proposed supply exceeds the parking required to meet resident demand.
- A **Transportation Demand Management (TDM) Plan** has been outlined for this development. The plan indicates the planned measures to reduce the dependence on the private automobile. These measures build on existing TDM measures at the site, including unbundled parking spaces, and the provision of bicycle parking spaces.
- **The Site Circulation Assessment** indicates the design vehicles can navigate the site with no conflicts. Sight triangles and clear throat requirements satisfy TAC guidelines.

Based on the findings of this study, it is concluded that:

- There are no significant issues from a transportation perspective. The trips generated by the development were found to have a minimal impact on the studied transportation network.

9.2 Recommendations

Based on the findings of this study, it is recommended that:

- The project team consider the TDM Plan included herein, to enhance alternate modes of transportation and accessibility to destinations near the site.

Appendix A

Pre-Study Consultation Material and Responses

From:	Michael Turco
To:	Tom Willis
Cc:	Nicole Pal; Andrew Vrana; Trans Projects
Subject:	RE: (230502) 4150 Westminster Place - TIA terms of reference
Date:	August 4, 2023 10:10:57
Attachments:	image001.png image003.png image004.png image006.png 4150 Westminster - Pre-Study Consultation Checklist (Approved ToR).pdf CMississauga TIS Guidelines Appendix A Certification Form.pdf

Good morning Tom,

Please find attached stamped and approved ToR for the proposed development, which encompasses City comments. Other items to note:

- Certification Form - The Transportation Consultant must complete, sign, and seal (if appropriate) the attached Certification Form from the City's TIS Guidelines (2022) and submit the document with the application/report to ensure compliance with qualification requirements. The TIS Guidelines can be found at https://www.mississauga.ca/wp-content/uploads/2023/03/CMississauga-TIS-Guidelines-Version-5.1-Dec-2022.pdf . It must be ensured that the report conforms to the City's TIS Guidelines.
- Please contact Tyler Xuereb from the City's Transportation Planning Section (tyler.xuereb@mississauga.ca, Ext. 4783) to confirm growth rates and/or obtain traffic data for the study area roadways.
- Signal timing plans for signalized intersections under the City's jurisdiction can be obtained from Jim Kartsomanis (Jim.Kartsomanis@mississauga.ca, Ext. 3964).

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

Thank you,

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

From: Tom Willis <twillis@ptsl.com>
Sent: Thursday, August 3, 2023 12:19 PM
To: Michael Turco <Michael.Turco@mississauga.ca>
Cc: Nicole Pal <npal@shs-inc.ca>; Andrew Vrana <avrana@shs-inc.ca>; Trans Projects <Trans.Projects@mississauga.ca>
Subject: RE: (230502) 4150 Westminster Place - TIA terms of reference

Hi Michael,

No problem - please find attached the checklist and site plan. (Given a colleague helped create the Guidelines, I should have remembered to include it!).

Appendix B

Pre-Study Consultation Checklist

APPROVED
By Michael Turco at 10:06 am, Aug 04, 2023

Description	Information	Section Reference
Development Information		
Development Description (land use, size, and number of phases of development)	• Single phase: eight-storey, 70-unit, retirement residence as an extension of the existing building, resulting in a total of 260 residential units on the site upon completion.	2.3.6
Transportation Impact Assessment		
Step 1 – Screening		
Type of Application (attach a drawing)	☑ Official Plan Amendment ☑ Zoning Amendment ☐ Site Plan Control Application ☐ Plan of Subdivision ☐ Other_____	2.3.5
Screening Criteria	☐ Trip Generation Trigger Satisfied ☐ Location Trigger Satisfied ☑ Operational/Safety Trigger Satisfied	2.2.1
Type of Study	☐ Transportation Impact Study ☑ Access Review ☐ No Additional Study Required	2.2.1
Step 2 – Scoping		
Study Area (intersections to be analyzed) Note: The Transportation Consultant is responsible to identify any further intersections impacted as the study progresses.	• Westminster Place and Rathburn Road East (signalized); • ~~Rathburn Road East and Tomken Road (signalized);~~ • ~~Westminster Place and Willowbank Trail (unsignalized);~~ • ~~Willowbank Trail and Tomken Road (signalized)~~ • The site driveway to Westminster Place.	2.3.8
Horizon Years	☐ 5 years from date of TIS ☐ Interim years_____ ☑ Other: ~~2023~~ Buildout of site, assuming full occupancy	2.3.9
Analysis Periods	☑ AM weekday peak hour of adjacent roadway ☑ PM weekday peak hour of adjacent roadway ☐ Saturday peak hour of adjacent roadway ☐ AM weekday peak hour of development ☐ PM weekday peak hour of development	2.3.10

Description	Information	Section Reference
	☐ Saturday peak hour of development ☐ Other _____	
Input Parameters and Assumptions (potential deviations)	• No deviations from City's TIS Guidelines	2.3.13
Existing Transportation Conditions	☐ City data sources ☐ New data collection_____ ☑ Other: Turning movement counts conducted by Paradigm in June 2022 compared to pre-pandemic counts OR New data collection	2.3.14
Planned Network Improvements (with timing)	• None	2.3.16
Other Planned Developments (per City's Website)	• 4094 Tomken Rd (File: OZ/OPA 22-28 W3). Transportation Study dated October 2022 available.	2.3.17
Identification of Mitigation Improvement Measures	☐ Neighbourhood Traffic Management Plan ☑ Other: Roadway capacity changes as needed	2.3.23
Safety Analysis (any special issues)	• None	2.3.25
Site Access and Circulation (design vehicles)	☑ Passenger Car (P) ☐ Light Single Unit Truck (LSU) ☐ Medium Single Unit Truck (MSU) ☑ Heavy Single Unit Truck (HSU) ☑ Pumper Fire Truck ☐ WB-20 Tractor Semi-Trailer Truck ☑ Other: Region of Peel garbage truck	2.3.26
Impacts During Construction (any special issues)	• None	2.3.27
Step 3 – Forecasting		
Growth Rate	☑ Obtained from City ☐ Historical traffic counts ☐ Travel demand forecasts ☑ Proposed Growth Rate: 2% p.a., or as provided by the City	2.3.15
Site Trip Generation	☑ ITE Trip Generation Manual OR based on observed rates at existing access ☐ "First Principles" ☐ Observed rates for similar developments in area ☐ Other _____	2.3.19
Trip Reductions	☐ Internal capture reductions for mixed-use developments ☐ Pass-by reductions ☑ Other: None	2.3.19

Description	Information	Section Reference
Trip Distribution	X Local traffic patterns ☑ TTS ☐ Travel demand model ☐ Population and employment distribution ☐ Market analysis of catchment area ☐ Other _____	2.3.20
Trip Assignment	☐ Local traffic patterns ☐ Shortest distance ☑ Site layout, access design and logical routing X Existing turning movements ☐ Other _____	2.3.21
Transportation Demand Management Plan		
Format	☑ Within a TIA Report ☐ Standalone	3.2.1
Type of Transportation Demand Management Plan	☑ TDM Statement ☐ TDM Scheme	3.2.2
Pedestrian Circulation Plan		
Format	☐ Within a TIA Report ☐ Standalone (Not required, per correspondence with City staff.)	4.2.1
Additional Comments		
Please contact Tom Willis, the Project Manager for this assignment, at (416) 479 9684 x503 or by e-mail at twillis@ptsl.com if you have any questions related to this project. • **Community Impacts:** Any transportation related impacts on the existing community and comments from the public through the planning approvals process shall be addressed in the report. • **Access Review**: Ensure that the site access(es) provide sufficient veh/ped sightline visibility and clear throat lengths, per TAC. Evaluate and provide confirmation whether the proposed access(es) are safe for all road users and why. • **Detailed Recommendations:** regarding on-site/off-site roadway improvements, site access, site circulation, and TDM measures shall be made.		

If you have any questions or concerns, please don't hesitate to ask.

Regards,

Tom Willis, MMath
Senior Project Manager
(He/Him)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Road, Cambridge ON N1R 8J8
p: 416.479.9684 x503
c: 289.893.0250
w: www.ptsl.com

Paradigm operates on a four-day workweek. Our offices are closed on Fridays.

From: Michael Turco <Michael.Turco@mississauga.ca>
Sent: Thursday, August 3, 2023 7:28 AM
To: Tom Willis <twillis@ptsl.com>
Cc: Nicole Pal <npal@shs-inc.ca>; Andrew Vrana <avrana@shs-inc.ca>; Trans Projects <Trans.Projects@mississauga.ca>
Subject: RE: (230502) 4150 Westminster Place - TIA terms of reference

Hi Tom,

Based on the City's new TIS Guidelines, we also have a new process to follow for Terms of References. To expedite the process, Transportation Consultants must complete and submit the Pre-Study Consultation Checklist (attached) provided in Appendix B of the TIS Guidelines. The City will review and comment on the ToR assumptions once the document is submitted.

Please let me know if you have any questions.

Thank you,

Michael Turco, C.E.T., CPT, MITE

Traffic Planning Coordinator
T 905-615-3200 ext. 3597
michael.turco@mississauga.ca

City of Mississauga | Transportation & Works Department
300 City Centre Drive | Mississauga ON | L5B 3C1

From: Tom Willis <twillis@ptsl.com>
Sent: Wednesday, August 2, 2023 1:16 PM
To: Trans Projects <Trans.Projects@mississauga.ca>
Cc: Nicole Pal <npal@shs-inc.ca>; Andrew Vrana <avrana@shs-inc.ca>; Michael Turco <Michael.Turco@mississauga.ca>
Subject: (230502) 4150 Westminster Place - TIA terms of reference

Paradigm has been retained to provide a transportation impact assessment for a proposed development at 4150 Westminster Place. The property owner is proposing the construction of an eight-storey, 70-unit, retirement residence as an extension of the existing building, resulting in a total of 260 residential units on the site upon completion.

Our work will follow the City of Mississauga's *Traffic Impact Study Guidelines* (December 2022). Please could you review the attached Terms of Reference, and confirm whether they are acceptable to the City.

With thanks,

Tom Willis, MMath
Senior Project Manager
(He/Him)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Road, Cambridge ON N1R 8J8
p: 416.479.9684 x503
c: 289.893.0250
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Paradigm operates on a four-day workweek. Our offices are closed on Fridays.

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Appendix B

2023 Turning Movement Counts

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: 4150 Westminster Place Driveway
Site Code: 230502
Start Date: 08/15/2023

Turning Movement Data

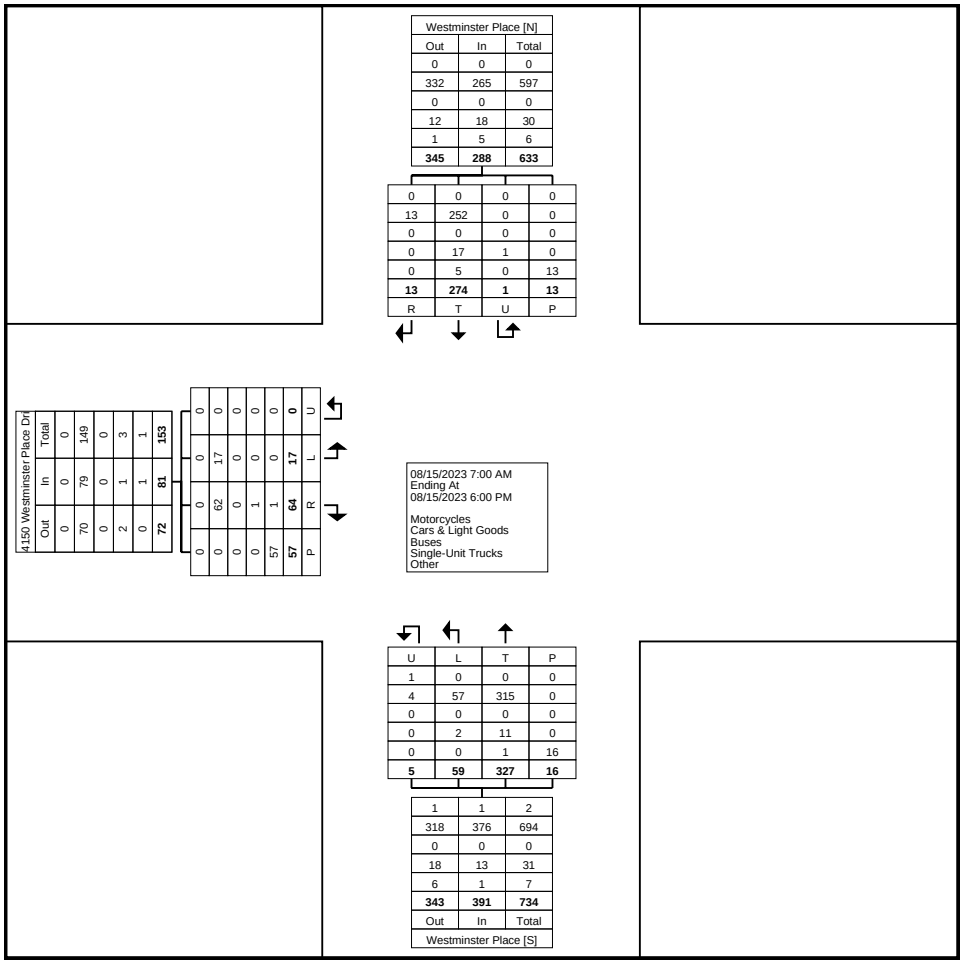
Start Time	4150 Westminster Place Driveway Eastbound					Westminster Place Northbound					Westminster Place Southbound					
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Int. Total
7:00 AM	1	0	0	1	1	0	5	0	1	5	5	0	0	0	5	11
7:15 AM	0	0	0	3	0	1	7	0	0	8	11	1	0	1	12	20
7:30 AM	0	2	0	2	2	1	4	0	0	5	5	0	0	0	5	12
7:45 AM	1	0	0	1	1	0	4	0	0	4	11	0	0	0	11	16
Hourly Total	2	2	0	7	4	2	20	0	1	22	32	1	0	1	33	59
8:00 AM	0	0	0	1	0	0	7	0	0	7	2	0	0	0	2	9
8:15 AM	0	3	0	2	3	0	6	0	0	6	10	0	0	0	10	19
8:30 AM	0	1	0	2	1	0	8	0	0	8	9	1	0	0	10	19
8:45 AM	0	1	0	1	1	0	6	0	1	6	9	0	0	0	9	16
Hourly Total	0	5	0	6	5	0	27	0	1	27	30	1	0	0	31	63
9:00 AM	0	1	0	3	1	2	8	0	0	10	9	0	0	0	9	20
9:15 AM	0	4	0	3	4	3	7	0	1	10	8	0	0	0	8	22
9:30 AM	2	4	0	0	6	1	4	0	0	5	4	0	0	0	4	15
9:45 AM	1	2	0	1	3	3	13	0	0	16	4	0	0	1	4	23
Hourly Total	3	11	0	7	14	9	32	0	1	41	25	0	0	1	25	80
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	0	0	0	0	0	2	10	2	1	14	6	0	0	0	6	20
11:15 AM	0	1	0	1	1	6	6	0	0	12	6	0	0	1	6	19
11:30 AM	0	6	0	3	6	2	8	0	1	10	14	2	0	0	16	32
11:45 AM	2	5	0	1	7	1	7	0	2	8	5	0	0	1	5	20
Hourly Total	2	12	0	5	14	11	31	2	4	44	31	2	0	2	33	91
12:00 PM	0	2	0	2	2	1	12	0	0	13	6	0	0	0	6	21
12:15 PM	1	0	0	1	1	2	10	0	0	12	10	0	1	0	11	24
12:30 PM	2	3	0	2	5	4	12	0	0	16	8	0	0	1	8	29
12:45 PM	2	1	0	0	3	3	15	0	0	18	6	0	0	1	6	27
Hourly Total	5	6	0	5	11	10	49	0	0	59	30	0	1	2	31	101
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	0	1	0	1	1	3	9	0	2	12	12	0	0	0	12	25
3:15 PM	0	1	0	2	1	3	10	2	0	15	11	0	0	0	11	27
3:30 PM	0	2	0	4	2	2	16	0	0	18	11	1	0	2	12	32
3:45 PM	0	4	0	2	4	2	16	0	1	18	9	0	0	0	9	31
Hourly Total	0	8	0	9	8	10	51	2	3	63	43	1	0	2	44	115
4:00 PM	0	4	0	1	4	2	10	0	3	12	8	0	0	0	8	24
4:15 PM	0	2	0	0	2	3	18	1	2	22	7	1	0	0	8	32
4:30 PM	1	5	0	3	6	4	19	0	1	23	8	0	0	0	8	37
4:45 PM	1	2	0	7	3	2	15	0	0	17	14	3	0	1	17	37

Hourly Total	2	13	0	11	15	11	62	1	6	74	37	4	0	1	41	130
5:00 PM	1	3	0	2	4	1	17	0	0	18	10	1	0	2	11	33
5:15 PM	0	2	0	3	2	1	11	0	0	12	11	1	0	0	12	26
5:30 PM	2	1	0	1	3	1	15	0	0	16	15	0	0	0	15	34
5:45 PM	0	1	0	1	1	3	12	0	0	15	10	2	0	2	12	28
Hourly Total	3	7	0	7	10	6	55	0	0	61	46	4	0	4	50	121
Grand Total	17	64	0	57	81	59	327	5	16	391	274	13	1	13	288	760
Approach %	21.0	79.0	0.0	-	-	15.1	83.6	1.3	-	-	95.1	4.5	0.3	-	-	-
Total %	2.2	8.4	0.0	-	10.7	7.8	43.0	0.7	-	51.4	36.1	1.7	0.1	-	37.9	-
Motorcycles	0	0	0	-	0	0	0	1	-	1	0	0	0	-	0	1
% Motorcycles	0.0	0.0	-	-	0.0	0.0	0.0	20.0	-	0.3	0.0	0.0	0.0	-	0.0	0.1
Cars & Light Goods	17	62	0	-	79	57	315	4	-	376	252	13	0	-	265	720
% Cars & Light Goods	100.0	96.9	-	-	97.5	96.6	96.3	80.0	-	96.2	92.0	100.0	0.0	-	92.0	94.7
Buses	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Buses	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Single-Unit Trucks	0	1	0	-	1	2	11	0	-	13	17	0	1	-	18	32
% Single-Unit Trucks	0.0	1.6	-	-	1.2	3.4	3.4	0.0	-	3.3	6.2	0.0	100.0	-	6.3	4.2
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	2	0	0	-	2	2
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.7	0.0	0.0	-	0.7	0.3
Bicycles on Road	0	1	0	-	1	0	1	0	-	1	3	0	0	-	3	5
% Bicycles on Road	0.0	1.6	-	-	1.2	0.0	0.3	0.0	-	0.3	1.1	0.0	0.0	-	1.0	0.7
Bicycles on Crosswalk	-	-	-	4	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	7.0	-	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	53	-	-	-	-	16	-	-	-	-	13	-	-
% Pedestrians	-	-	-	93.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: 4150 Westminster Place Driveway
Site Code: 230502
Start Date: 08/15/2023



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: 4150 Westminster Place Driveway
Site Code: 230502
Start Date: 08/15/2023

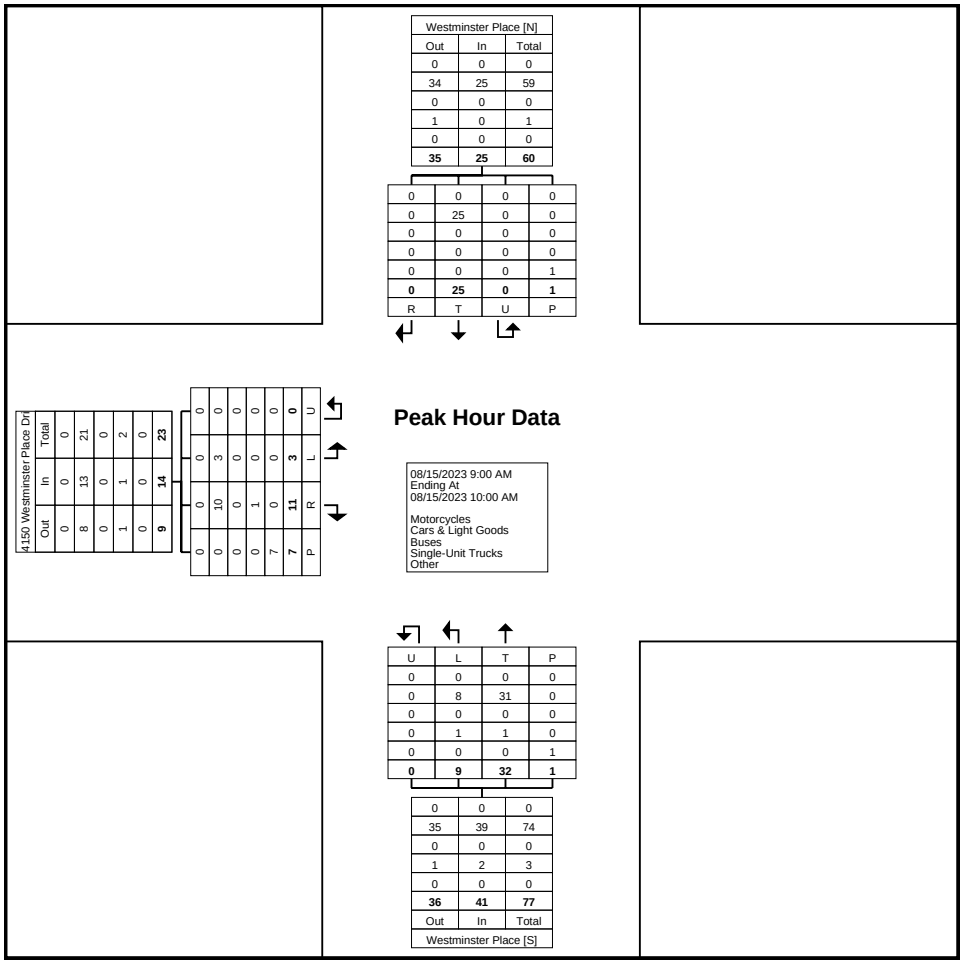
Turning Movement Peak Hour Data (9:00 AM)

Start Time	4150 Westminster Place Driveway Eastbound					Westminster Place Northbound					Westminster Place Southbound					
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Int. Total
9:00 AM	0	1	0	3	1	2	8	0	0	10	9	0	0	0	9	20
9:15 AM	0	4	0	3	4	3	7	0	1	10	8	0	0	0	8	22
9:30 AM	2	4	0	0	6	1	4	0	0	5	4	0	0	0	4	15
9:45 AM	1	2	0	1	3	3	13	0	0	16	4	0	0	1	4	23
Total	3	11	0	7	14	9	32	0	1	41	25	0	0	1	25	80
Approach %	21.4	78.6	0.0	-	-	22.0	78.0	0.0	-	-	100.0	0.0	0.0	-	-	-
Total %	3.8	13.8	0.0	-	17.5	11.3	40.0	0.0	-	51.3	31.3	0.0	0.0	-	31.3	-
PHF	0.375	0.688	0.000	-	0.583	0.750	0.615	0.000	-	0.641	0.694	0.000	0.000	-	0.694	0.870
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	-	-	-	0.0	0.0
Cars & Light Goods	3	10	0	-	13	8	31	0	-	39	25	0	0	-	25	77
% Cars & Light Goods	100.0	90.9	-	-	92.9	88.9	96.9	-	-	95.1	100.0	-	-	-	100.0	96.3
Buses	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Buses	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	-	-	-	0.0	0.0
Single-Unit Trucks	0	1	0	-	1	1	1	0	-	2	0	0	0	-	0	3
% Single-Unit Trucks	0.0	9.1	-	-	7.1	11.1	3.1	-	-	4.9	0.0	-	-	-	0.0	3.8
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	-	-	0.0	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	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	-	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	1	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	14.3	-	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	6	-	-	-	-	1	-	-	-	-	1	-	-
% Pedestrians	-	-	-	85.7	-	-	-	-	100.0	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: 4150 Westminster Place Driveway
Site Code: 230502
Start Date: 08/15/2023



Turning Movement Peak Hour Data Plot (9:00 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: 4150 Westminster Place Driveway
Site Code: 230502
Start Date: 08/15/2023

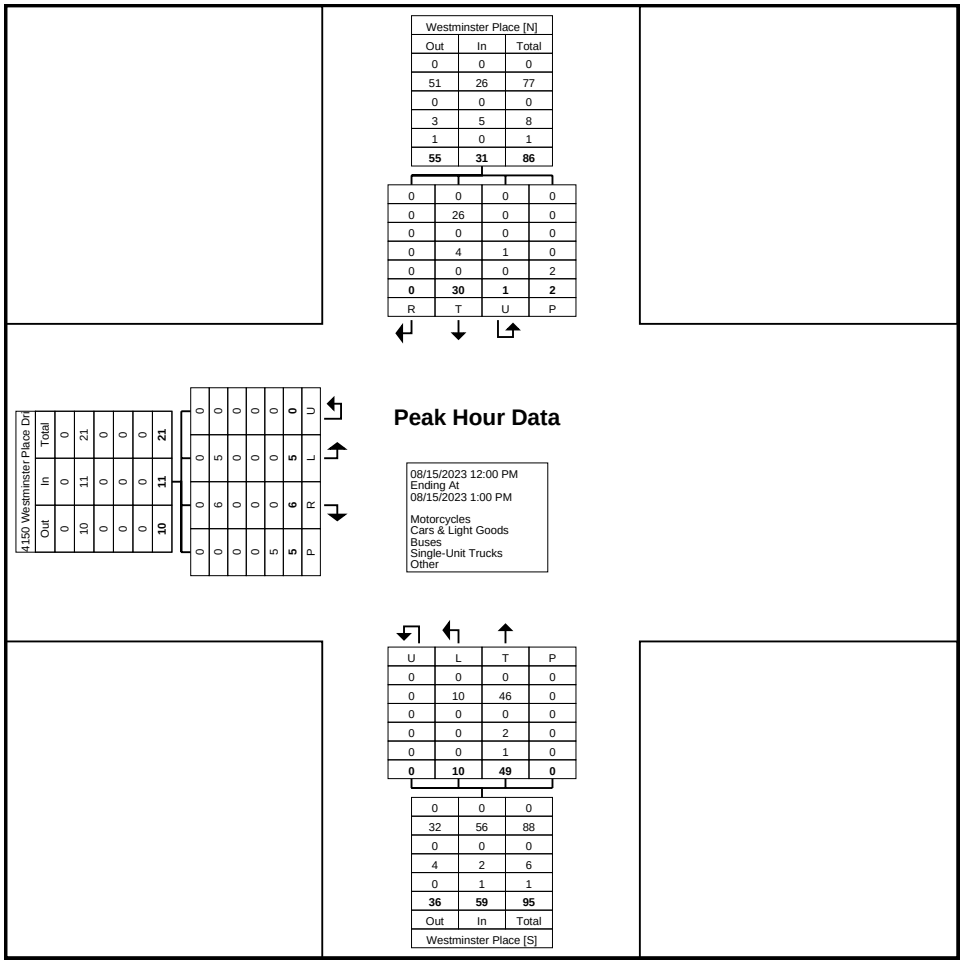
Turning Movement Peak Hour Data (12:00 PM)

Start Time	4150 Westminster Place Driveway Eastbound					Westminster Place Northbound					Westminster Place Southbound					
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Int. Total
12:00 PM	0	2	0	2	2	1	12	0	0	13	6	0	0	0	6	21
12:15 PM	1	0	0	1	1	2	10	0	0	12	10	0	1	0	11	24
12:30 PM	2	3	0	2	5	4	12	0	0	16	8	0	0	1	8	29
12:45 PM	2	1	0	0	3	3	15	0	0	18	6	0	0	1	6	27
Total	5	6	0	5	11	10	49	0	0	59	30	0	1	2	31	101
Approach %	45.5	54.5	0.0	-	-	16.9	83.1	0.0	-	-	96.8	0.0	3.2	-	-	-
Total %	5.0	5.9	0.0	-	10.9	9.9	48.5	0.0	-	58.4	29.7	0.0	1.0	-	30.7	-
PHF	0.625	0.500	0.000	-	0.550	0.625	0.817	0.000	-	0.819	0.750	0.000	0.250	-	0.705	0.871
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	0.0	0.0
Cars & Light Goods	5	6	0	-	11	10	46	0	-	56	26	0	0	-	26	93
% Cars & Light Goods	100.0	100.0	-	-	100.0	100.0	93.9	-	-	94.9	86.7	-	0.0	-	83.9	92.1
Buses	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Buses	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	0.0	0.0
Single-Unit Trucks	0	0	0	-	0	0	2	0	-	2	4	0	1	-	5	7
% Single-Unit Trucks	0.0	0.0	-	-	0.0	0.0	4.1	-	-	3.4	13.3	-	100.0	-	16.1	6.9
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	0.0	0.0
Bicycles on Road	0	0	0	-	0	0	1	0	-	1	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	2.0	-	-	1.7	0.0	-	0.0	-	0.0	1.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	5	-	-	-	-	0	-	-	-	-	2	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: 4150 Westminster Place Driveway
Site Code: 230502
Start Date: 08/15/2023



Turning Movement Peak Hour Data Plot (12:00 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: 4150 Westminster Place Driveway
Site Code: 230502
Start Date: 08/15/2023

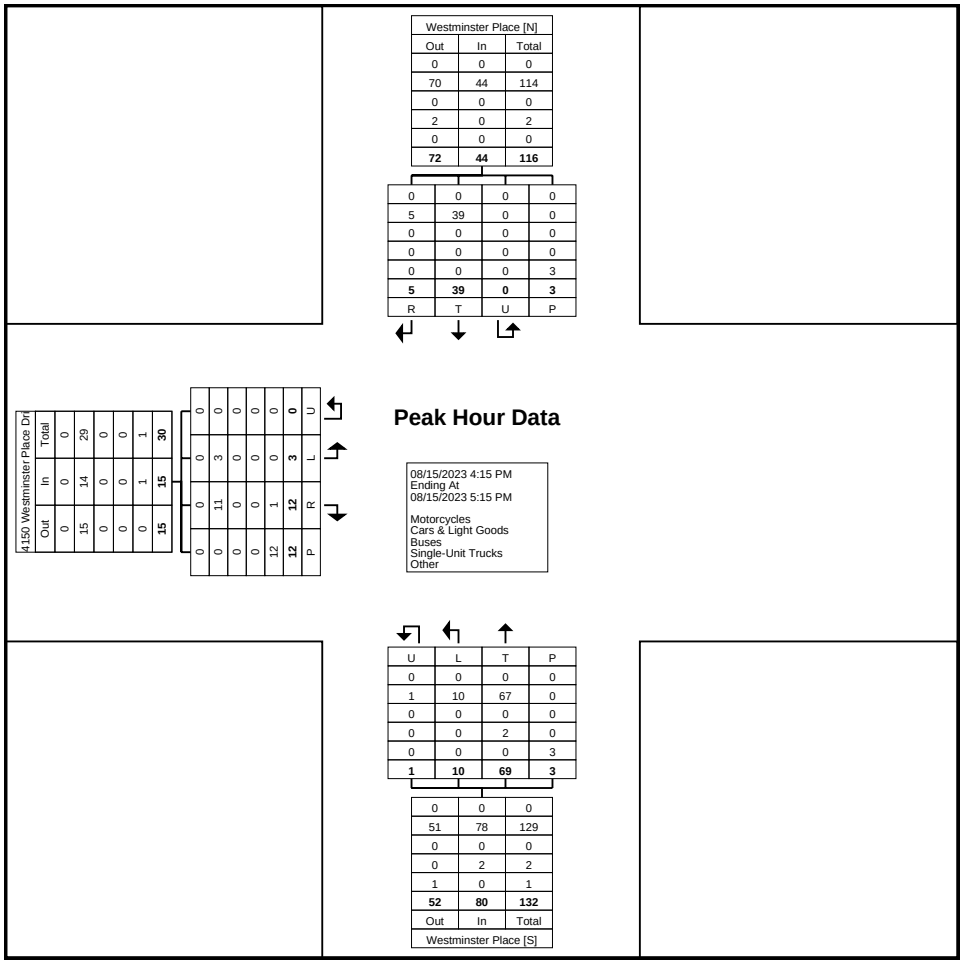
Turning Movement Peak Hour Data (4:15 PM)

Start Time	4150 Westminster Place Driveway Eastbound					Westminster Place Northbound					Westminster Place Southbound					
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Int. Total
4:15 PM	0	2	0	0	2	3	18	1	2	22	7	1	0	0	8	32
4:30 PM	1	5	0	3	6	4	19	0	1	23	8	0	0	0	8	37
4:45 PM	1	2	0	7	3	2	15	0	0	17	14	3	0	1	17	37
5:00 PM	1	3	0	2	4	1	17	0	0	18	10	1	0	2	11	33
Total	3	12	0	12	15	10	69	1	3	80	39	5	0	3	44	139
Approach %	20.0	80.0	0.0	-	-	12.5	86.3	1.3	-	-	88.6	11.4	0.0	-	-	-
Total %	2.2	8.6	0.0	-	10.8	7.2	49.6	0.7	-	57.6	28.1	3.6	0.0	-	31.7	-
PHF	0.750	0.600	0.000	-	0.625	0.625	0.908	0.250	-	0.870	0.696	0.417	0.000	-	0.647	0.939
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	3	11	0	-	14	10	67	1	-	78	39	5	0	-	44	136
% Cars & Light Goods	100.0	91.7	-	-	93.3	100.0	97.1	100.0	-	97.5	100.0	100.0	-	-	100.0	97.8
Buses	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Buses	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0
Single-Unit Trucks	0	0	0	-	0	0	2	0	-	2	0	0	0	-	0	2
% Single-Unit Trucks	0.0	0.0	-	-	0.0	0.0	2.9	0.0	-	2.5	0.0	0.0	-	-	0.0	1.4
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	1	0	-	1	0	0	0	-	0	0	0	0	-	0	1
% Bicycles on Road	0.0	8.3	-	-	6.7	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.7
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	12	-	-	-	-	3	-	-	-	-	3	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: 4150 Westminster Place Driveway
Site Code: 230502
Start Date: 08/15/2023



Turning Movement Peak Hour Data Plot (4:15 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Westminster Place & Rathburn Road E
Site Code: 230502
Start Date: 08/15/2023

Turning Movement Data

Start Time	Rathburn Road E Eastbound						Rathburn Road E Westbound						Westminster Place Northbound						Westminster Place Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	3	20	2	0	0	25	0	16	0	0	1	16	4	2	4	0	1	10	0	1	4	0	1	5	56
7:15 AM	2	22	0	0	1	24	3	24	1	0	0	28	5	5	6	0	5	16	2	3	6	0	2	11	79
7:30 AM	4	34	3	0	1	41	2	25	1	0	5	28	3	0	8	0	1	11	0	1	6	0	1	7	87
7:45 AM	2	40	2	0	0	44	0	28	1	0	0	29	1	1	7	0	3	9	2	4	3	0	1	9	91
Hourly Total	11	116	7	0	2	134	5	93	3	0	6	101	13	8	25	0	10	46	4	9	19	0	5	32	313
8:00 AM	1	39	1	0	0	41	2	22	1	0	2	25	2	5	6	0	1	13	1	2	1	0	3	4	83
8:15 AM	1	34	2	0	0	37	1	24	3	0	1	28	2	2	9	0	1	13	4	3	5	0	2	12	90
8:30 AM	4	49	4	0	0	57	3	24	3	0	0	30	5	2	5	0	2	12	5	1	5	0	2	11	110
8:45 AM	2	49	0	0	1	51	2	30	3	0	2	35	4	1	6	0	3	11	3	3	5	0	3	11	108
Hourly Total	8	171	7	0	1	186	8	100	10	0	5	118	13	10	26	0	7	49	13	9	16	0	10	38	391
9:00 AM	5	67	3	0	2	75	4	30	2	0	0	36	5	3	9	0	0	17	3	3	4	0	1	10	138
9:15 AM	2	36	1	0	1	39	2	49	6	0	0	57	1	2	6	0	2	9	3	2	7	0	2	12	117
9:30 AM	2	47	3	0	1	52	6	35	3	0	0	44	5	1	6	0	1	12	4	0	4	0	2	8	116
9:45 AM	7	44	2	0	1	53	3	41	2	0	6	46	2	7	5	0	7	14	4	0	2	0	4	6	119
Hourly Total	16	194	9	0	5	219	15	155	13	0	6	183	13	13	26	0	10	52	14	5	17	0	9	36	490
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	2	44	0	0	0	46	7	25	7	0	3	39	0	5	5	0	1	10	4	3	1	0	0	8	103
11:15 AM	4	39	4	0	1	47	5	43	5	0	4	53	3	3	9	0	1	15	1	4	2	0	2	7	122
11:30 AM	1	39	4	0	1	44	8	43	6	0	6	57	3	3	7	0	4	13	6	3	11	0	7	20	134
11:45 AM	7	39	6	0	1	52	6	49	0	0	2	55	5	2	8	0	2	15	2	2	4	0	3	8	130
Hourly Total	14	161	14	0	3	189	26	160	18	0	15	204	11	13	29	0	8	53	13	12	18	0	12	43	489
12:00 PM	2	46	3	0	4	51	14	63	5	0	1	82	5	3	15	0	1	23	3	1	3	0	4	7	163
12:15 PM	3	55	3	0	2	61	8	53	5	0	2	66	7	4	3	0	4	14	7	4	1	0	5	12	153
12:30 PM	4	35	1	0	0	40	6	65	9	0	0	80	1	3	7	0	2	11	4	0	6	0	6	10	141
12:45 PM	6	47	4	0	2	57	7	48	10	0	4	65	5	3	11	0	5	19	3	2	2	0	3	7	148
Hourly Total	15	183	11	0	8	209	35	229	29	0	7	293	18	13	36	0	12	67	17	7	12	0	18	36	605
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	7	58	1	0	2	66	6	65	2	0	1	73	7	3	7	0	1	17	2	2	10	0	5	14	170
3:15 PM	3	61	6	0	0	70	8	71	5	0	7	84	2	7	7	0	2	16	3	2	8	0	5	13	183
3:30 PM	3	59	5	0	3	67	5	79	11	0	4	95	1	5	5	0	4	11	4	3	6	0	8	13	186
3:45 PM	8	57	4	0	2	69	13	88	3	0	7	104	7	6	5	0	5	18	3	4	7	0	3	14	205
Hourly Total	21	235	16	0	7	272	32	303	21	0	19	356	17	21	24	0	12	62	12	11	31	0	21	54	744
4:00 PM	3	70	2	0	2	75	7	92	5	0	6	104	4	4	5	0	3	13	4	2	6	0	9	12	204
4:15 PM	6	47	4	0	3	57	11	116	9	0	4	136	5	6	5	0	4	16	2	2	5	0	3	9	218
4:30 PM	3	52	9	0	3	64	7	127	11	0	3	145	12	9	11	0	2	32	4	2	8	0	9	14	255

4:45 PM	4	65	4	0	5	73	16	140	7	0	4	163	2	4	7	0	3	13	2	7	4	0	6	13	262
Hourly Total	16	234	19	0	13	269	41	475	32	0	17	548	23	23	28	0	12	74	12	13	23	0	27	48	939
5:00 PM	5	57	7	0	2	69	11	138	11	0	1	160	4	2	5	0	3	11	3	6	7	0	1	16	256
5:15 PM	2	71	13	0	4	86	8	151	7	0	4	166	4	3	5	0	0	12	4	3	6	0	8	13	277
5:30 PM	3	68	5	1	1	77	13	147	12	0	2	172	9	2	11	0	4	22	1	4	10	0	5	15	286
5:45 PM	5	58	3	0	3	66	11	111	7	0	4	129	5	4	15	0	5	24	2	3	5	0	6	10	229
Hourly Total	15	254	28	1	10	298	43	547	37	0	11	627	22	11	36	0	12	69	10	16	28	0	20	54	1048
Grand Total	116	1548	111	1	49	1776	205	2062	163	0	86	2430	130	112	230	0	83	472	95	82	164	0	122	341	5019
Approach %	6.5	87.2	6.3	0.1	-	-	8.4	84.9	6.7	0.0	-	-	27.5	23.7	48.7	0.0	-	-	27.9	24.0	48.1	0.0	-	-	-
Total %	2.3	30.8	2.2	0.0	-	35.4	4.1	41.1	3.2	0.0	-	48.4	2.6	2.2	4.6	0.0	-	9.4	1.9	1.6	3.3	0.0	-	6.8	-
Motorcycles	1	2	0	0	-	3	0	2	1	0	-	3	0	0	0	0	-	0	0	0	2	0	-	2	8
% Motorcycles	0.9	0.1	0.0	0.0	-	0.2	0.0	0.1	0.6	-	-	0.1	0.0	0.0	0.0	-	-	0.0	0.0	0.0	1.2	-	-	0.6	0.2
Cars & Light Goods	106	1507	110	1	-	1724	203	2017	159	0	-	2379	128	110	224	0	-	462	92	75	149	0	-	316	4881
% Cars & Light Goods	91.4	97.4	99.1	100.0	-	97.1	99.0	97.8	97.5	-	-	97.9	98.5	98.2	97.4	-	-	97.9	96.8	91.5	90.9	-	-	92.7	97.3
Buses	0	28	1	0	-	29	0	28	0	0	-	28	0	0	0	0	-	0	0	0	0	0	-	0	57
% Buses	0.0	1.8	0.9	0.0	-	1.6	0.0	1.4	0.0	-	-	1.2	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	1.1
Single-Unit Trucks	9	9	0	0	-	18	2	12	3	0	-	17	2	1	4	0	-	7	3	5	10	0	-	18	60
% Single-Unit Trucks	7.8	0.6	0.0	0.0	-	1.0	1.0	0.6	1.8	-	-	0.7	1.5	0.9	1.7	-	-	1.5	3.2	6.1	6.1	-	-	5.3	1.2
Articulated Trucks	0	2	0	0	-	2	0	2	0	0	-	2	0	0	0	0	-	0	0	0	2	0	-	2	6
% Articulated Trucks	0.0	0.1	0.0	0.0	-	0.1	0.0	0.1	0.0	-	-	0.1	0.0	0.0	0.0	-	-	0.0	0.0	0.0	1.2	-	-	0.6	0.1
Bicycles on Road	0	0	0	0	-	0	0	1	0	0	-	1	0	1	2	0	-	3	0	2	1	0	-	3	7
% Bicycles on Road	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.9	0.9	-	-	0.6	0.0	2.4	0.6	-	-	0.9	0.1
Bicycles on Crosswalk	-	-	-	-	2	-	-	-	-	-	10	-	-	-	-	-	8	-	-	-	-	-	16	-	-
% Bicycles on Crosswalk	-	-	-	-	4.1	-	-	-	-	-	11.6	-	-	-	-	-	9.6	-	-	-	-	-	13.1	-	-
Pedestrians	-	-	-	-	47	-	-	-	-	-	76	-	-	-	-	-	75	-	-	-	-	-	106	-	-
% Pedestrians	-	-	-	-	95.9	-	-	-	-	-	88.4	-	-	-	-	-	90.4	-	-	-	-	-	86.9	-	-

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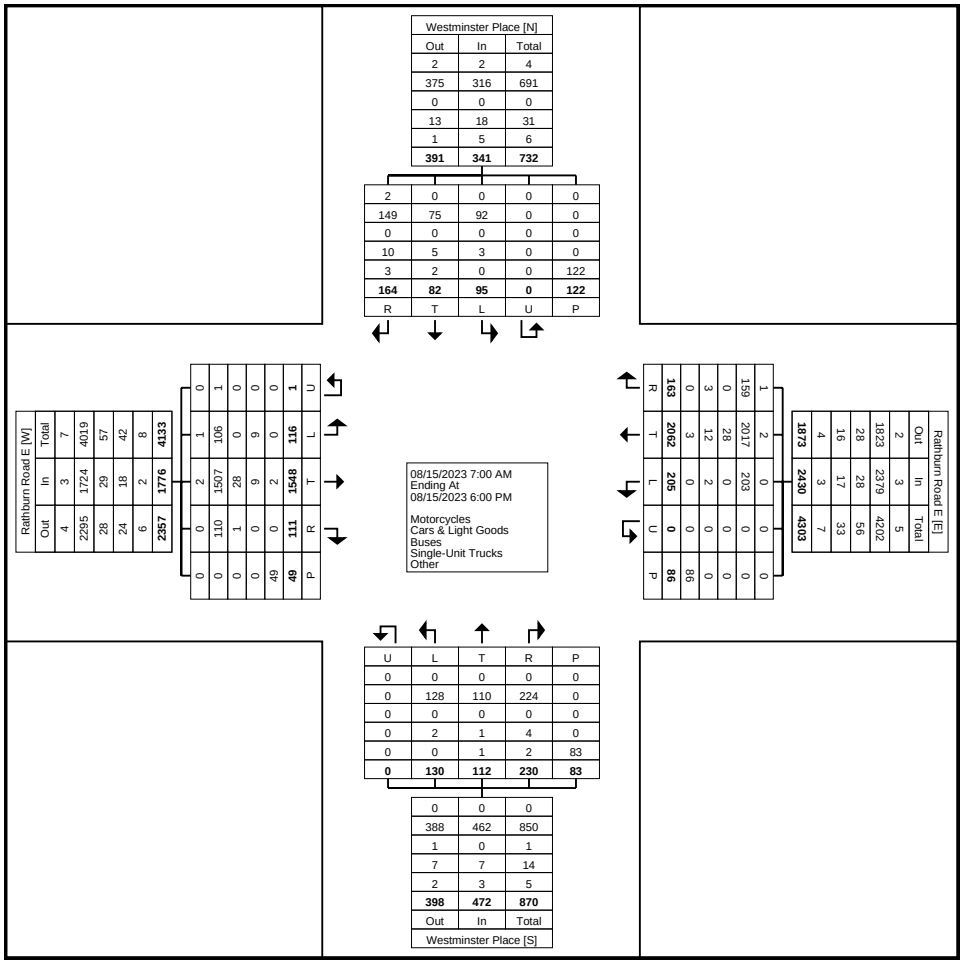
Start Date: 08/15/2023



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Westminster Place & Rathburn Road E
Site Code: 230502
Start Date: 08/15/2023

Turning Movement Peak Hour Data (9:00 AM)

Start Time	Rathburn Road E Eastbound						Rathburn Road E Westbound						Westminster Place Northbound						Westminster Place Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
9:00 AM	5	67	3	0	2	75	4	30	2	0	0	36	5	3	9	0	0	17	3	3	4	0	1	10	138
9:15 AM	2	36	1	0	1	39	2	49	6	0	0	57	1	2	6	0	2	9	3	2	7	0	2	12	117
9:30 AM	2	47	3	0	1	52	6	35	3	0	0	44	5	1	6	0	1	12	4	0	4	0	2	8	116
9:45 AM	7	44	2	0	1	53	3	41	2	0	6	46	2	7	5	0	7	14	4	0	2	0	4	6	119
Total	16	194	9	0	5	219	15	155	13	0	6	183	13	13	26	0	10	52	14	5	17	0	9	36	490
Approach %	7.3	88.6	4.1	0.0	-	-	8.2	84.7	7.1	0.0	-	-	25.0	25.0	50.0	0.0	-	-	38.9	13.9	47.2	0.0	-	-	-
Total %	3.3	39.6	1.8	0.0	-	44.7	3.1	31.6	2.7	0.0	-	37.3	2.7	2.7	5.3	0.0	-	10.6	2.9	1.0	3.5	0.0	-	7.3	-
PHF	0.571	0.724	0.750	0.000	-	0.730	0.625	0.791	0.542	0.000	-	0.803	0.650	0.464	0.722	0.000	-	0.765	0.875	0.417	0.607	0.000	-	0.750	0.888
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	14	189	9	0	-	212	14	150	13	0	-	177	13	13	25	0	-	51	14	5	16	0	-	35	475
% Cars & Light Goods	87.5	97.4	100.0	-	-	96.8	93.3	96.8	100.0	-	-	96.7	100.0	100.0	96.2	-	-	98.1	100.0	100.0	94.1	-	-	97.2	96.9
Buses	0	3	0	0	-	3	0	4	0	0	-	4	0	0	0	0	-	0	0	0	0	0	-	0	7
% Buses	0.0	1.5	0.0	-	-	1.4	0.0	2.6	0.0	-	-	2.2	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	1.4
Single-Unit Trucks	2	1	0	0	-	3	1	1	0	0	-	2	0	0	0	0	-	0	0	0	1	0	-	1	6
% Single-Unit Trucks	12.5	0.5	0.0	-	-	1.4	6.7	0.6	0.0	-	-	1.1	0.0	0.0	0.0	-	-	0.0	0.0	0.0	5.9	-	-	2.8	1.2
Articulated Trucks	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1
% Articulated Trucks	0.0	0.5	0.0	-	-	0.5	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.2
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	3.8	-	-	1.9	0.0	0.0	0.0	-	-	0.0	0.2
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	3	-	-
% Bicycles on Crosswalk	-	-	-	-	20.0	-	-	-	-	-	0.0	-	-	-	-	-	10.0	-	-	-	-	-	33.3	-	-
Pedestrians	-	-	-	-	4	-	-	-	-	-	6	-	-	-	-	-	9	-	-	-	-	-	6	-	-
% Pedestrians	-	-	-	-	80.0	-	-	-	-	-	100.0	-	-	-	-	-	90.0	-	-	-	-	-	66.7	-	-

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5A-150 Pinebush Rd

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519-896-3163 cbowness@ptsl.com

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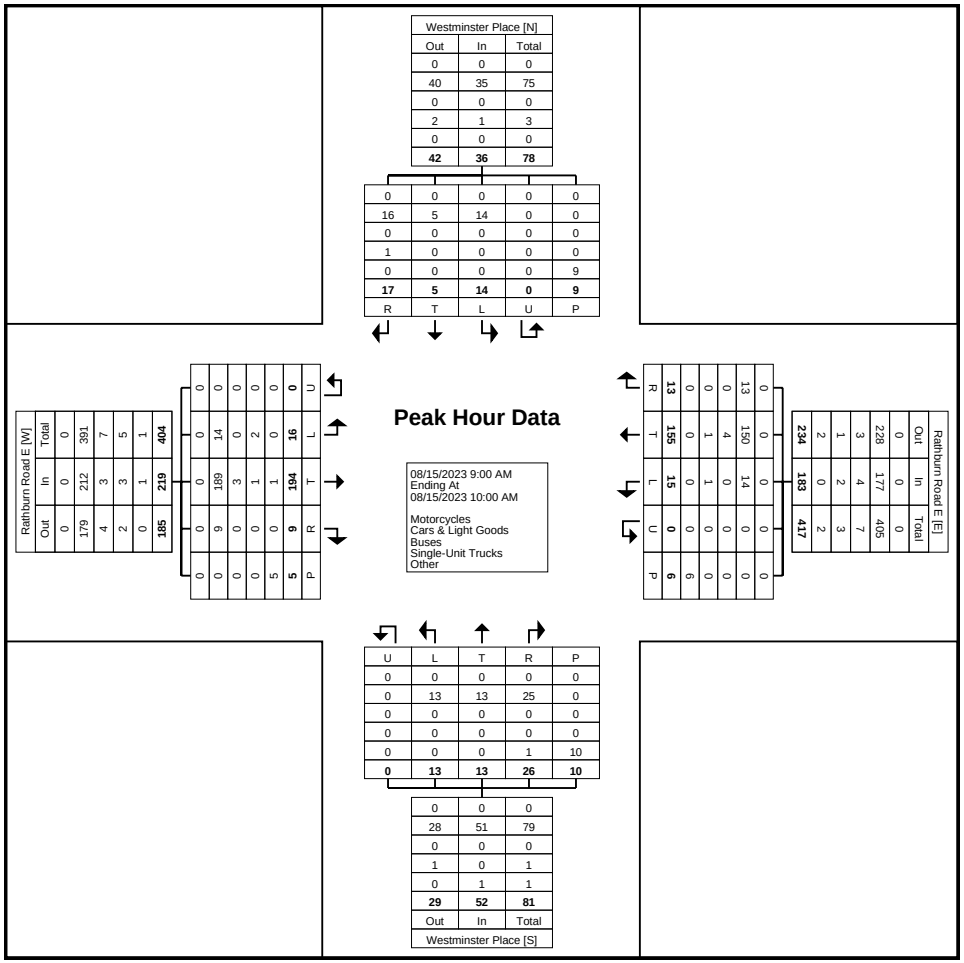
Site Code: 230502
Start Date: 08/15/2023



Turning Movement Peak Hour Data Plot (9:00 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Westminster Place & Rathburn Road E
Site Code: 230502
Start Date: 08/15/2023

Turning Movement Peak Hour Data (12:00 PM)

Start Time	Rathburn Road E Eastbound						Rathburn Road E Westbound						Westminster Place Northbound						Westminster Place Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
12:00 PM	2	46	3	0	4	51	14	63	5	0	1	82	5	3	15	0	1	23	3	1	3	0	4	7	163
12:15 PM	3	55	3	0	2	61	8	53	5	0	2	66	7	4	3	0	4	14	7	4	1	0	5	12	153
12:30 PM	4	35	1	0	0	40	6	65	9	0	0	80	1	3	7	0	2	11	4	0	6	0	6	10	141
12:45 PM	6	47	4	0	2	57	7	48	10	0	4	65	5	3	11	0	5	19	3	2	2	0	3	7	148
Total	15	183	11	0	8	209	35	229	29	0	7	293	18	13	36	0	12	67	17	7	12	0	18	36	605
Approach %	7.2	87.6	5.3	0.0	-	-	11.9	78.2	9.9	0.0	-	-	26.9	19.4	53.7	0.0	-	-	47.2	19.4	33.3	0.0	-	-	-
Total %	2.5	30.2	1.8	0.0	-	34.5	5.8	37.9	4.8	0.0	-	48.4	3.0	2.1	6.0	0.0	-	11.1	2.8	1.2	2.0	0.0	-	6.0	-
PHF	0.625	0.832	0.688	0.000	-	0.857	0.625	0.881	0.725	0.000	-	0.893	0.643	0.813	0.600	0.000	-	0.728	0.607	0.438	0.500	0.000	-	0.750	0.928
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	13	178	11	0	-	202	35	224	29	0	-	288	18	13	35	0	-	66	17	6	9	0	-	32	588
% Cars & Light Goods	86.7	97.3	100.0	-	-	96.7	100.0	97.8	100.0	-	-	98.3	100.0	100.0	97.2	-	-	98.5	100.0	85.7	75.0	-	-	88.9	97.2
Buses	0	3	0	0	-	3	0	4	0	0	-	4	0	0	0	0	-	0	0	0	0	0	-	0	7
% Buses	0.0	1.6	0.0	-	-	1.4	0.0	1.7	0.0	-	-	1.4	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	1.2
Single-Unit Trucks	2	2	0	0	-	4	0	1	0	0	-	1	0	0	1	0	-	1	0	1	3	0	-	4	10
% Single-Unit Trucks	13.3	1.1	0.0	-	-	1.9	0.0	0.4	0.0	-	-	0.3	0.0	0.0	2.8	-	-	1.5	0.0	14.3	25.0	-	-	11.1	1.7
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	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	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	8.3	-	-	-	-	-	11.1	-	-
Pedestrians	-	-	-	-	8	-	-	-	-	-	7	-	-	-	-	-	11	-	-	-	-	-	16	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	91.7	-	-	-	-	-	88.9	-	-

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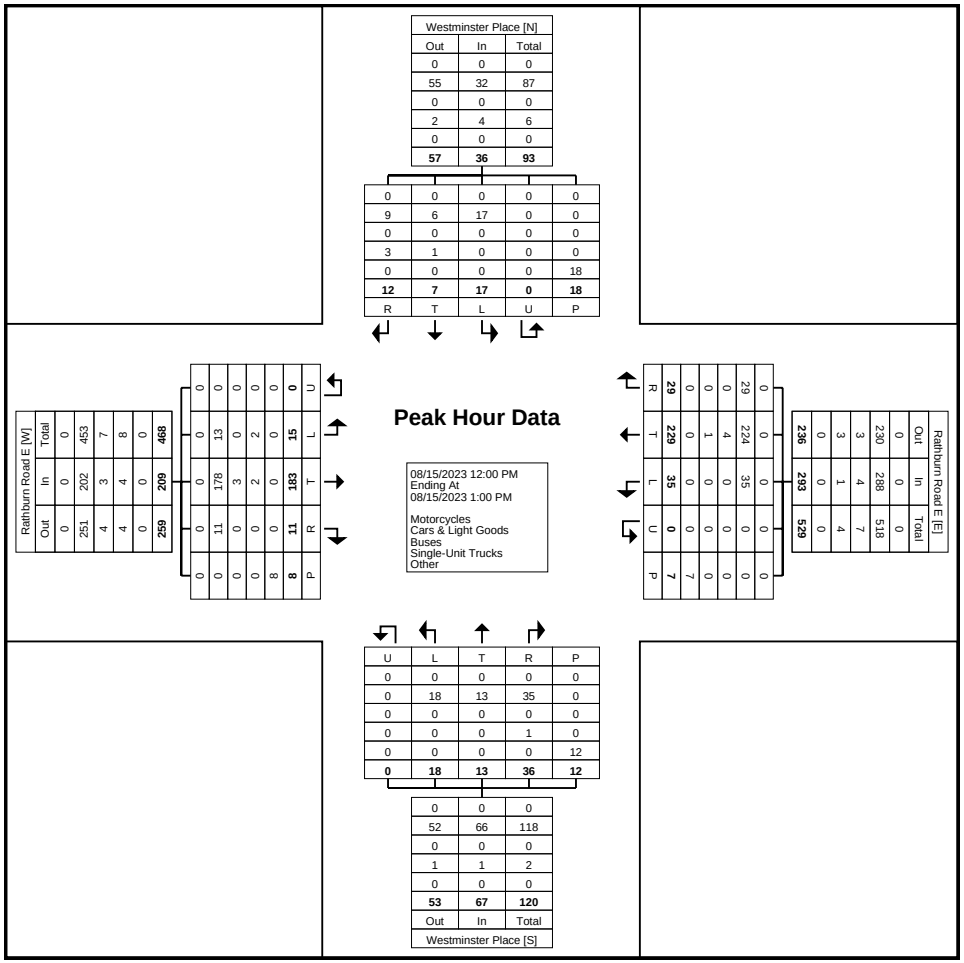

Turning Movement Peak Hour Data Plot (12:00 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
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Count Name: Westminster Place & Rathburn Road E
Site Code: 230502
Start Date: 08/15/2023

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Rathburn Road E Eastbound						Rathburn Road E Westbound						Westminster Place Northbound						Westminster Place Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
4:45 PM	4	65	4	0	5	73	16	140	7	0	4	163	2	4	7	0	3	13	2	7	4	0	6	13	262
5:00 PM	5	57	7	0	2	69	11	138	11	0	1	160	4	2	5	0	3	11	3	6	7	0	1	16	256
5:15 PM	2	71	13	0	4	86	8	151	7	0	4	166	4	3	5	0	0	12	4	3	6	0	8	13	277
5:30 PM	3	68	5	1	1	77	13	147	12	0	2	172	9	2	11	0	4	22	1	4	10	0	5	15	286
Total	14	261	29	1	12	305	48	576	37	0	11	661	19	11	28	0	10	58	10	20	27	0	20	57	1081
Approach %	4.6	85.6	9.5	0.3	-	-	7.3	87.1	5.6	0.0	-	-	32.8	19.0	48.3	0.0	-	-	17.5	35.1	47.4	0.0	-	-	-
Total %	1.3	24.1	2.7	0.1	-	28.2	4.4	53.3	3.4	0.0	-	61.1	1.8	1.0	2.6	0.0	-	5.4	0.9	1.9	2.5	0.0	-	5.3	-
PHF	0.700	0.919	0.558	0.250	-	0.887	0.750	0.954	0.771	0.000	-	0.961	0.528	0.688	0.636	0.000	-	0.659	0.625	0.714	0.675	0.000	-	0.891	0.945
Motorcycles	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	1
% Motorcycles	0.0	0.0	0.0	0.0	-	0.0	0.0	0.2	0.0	-	-	0.2	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.1
Cars & Light Goods	14	257	29	1	-	301	48	567	35	0	-	650	19	10	27	0	-	56	10	18	27	0	-	55	1062
% Cars & Light Goods	100.0	98.5	100.0	100.0	-	98.7	100.0	98.4	94.6	-	-	98.3	100.0	90.9	96.4	-	-	96.6	100.0	90.0	100.0	-	-	96.5	98.2
Buses	0	3	0	0	-	3	0	4	0	0	-	4	0	0	0	0	-	0	0	0	0	0	-	0	7
% Buses	0.0	1.1	0.0	0.0	-	1.0	0.0	0.7	0.0	-	-	0.6	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.6
Single-Unit Trucks	0	1	0	0	-	1	0	3	2	0	-	5	0	0	1	0	-	1	0	1	0	0	-	1	8
% Single-Unit Trucks	0.0	0.4	0.0	0.0	-	0.3	0.0	0.5	5.4	-	-	0.8	0.0	0.0	3.6	-	-	1.7	0.0	5.0	0.0	-	-	1.8	0.7
Articulated Trucks	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	1
% Articulated Trucks	0.0	0.0	0.0	0.0	-	0.0	0.0	0.2	0.0	-	-	0.2	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	1	0	0	-	1	2
% Bicycles on Road	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	9.1	0.0	-	-	1.7	0.0	5.0	0.0	-	-	1.8	0.2
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	4	-	-	-	-	-	0	-	-	-	-	-	3	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	36.4	-	-	-	-	-	0.0	-	-	-	-	-	15.0	-	-
Pedestrians	-	-	-	-	12	-	-	-	-	-	7	-	-	-	-	-	10	-	-	-	-	-	17	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	63.6	-	-	-	-	-	100.0	-	-	-	-	-	85.0	-	-

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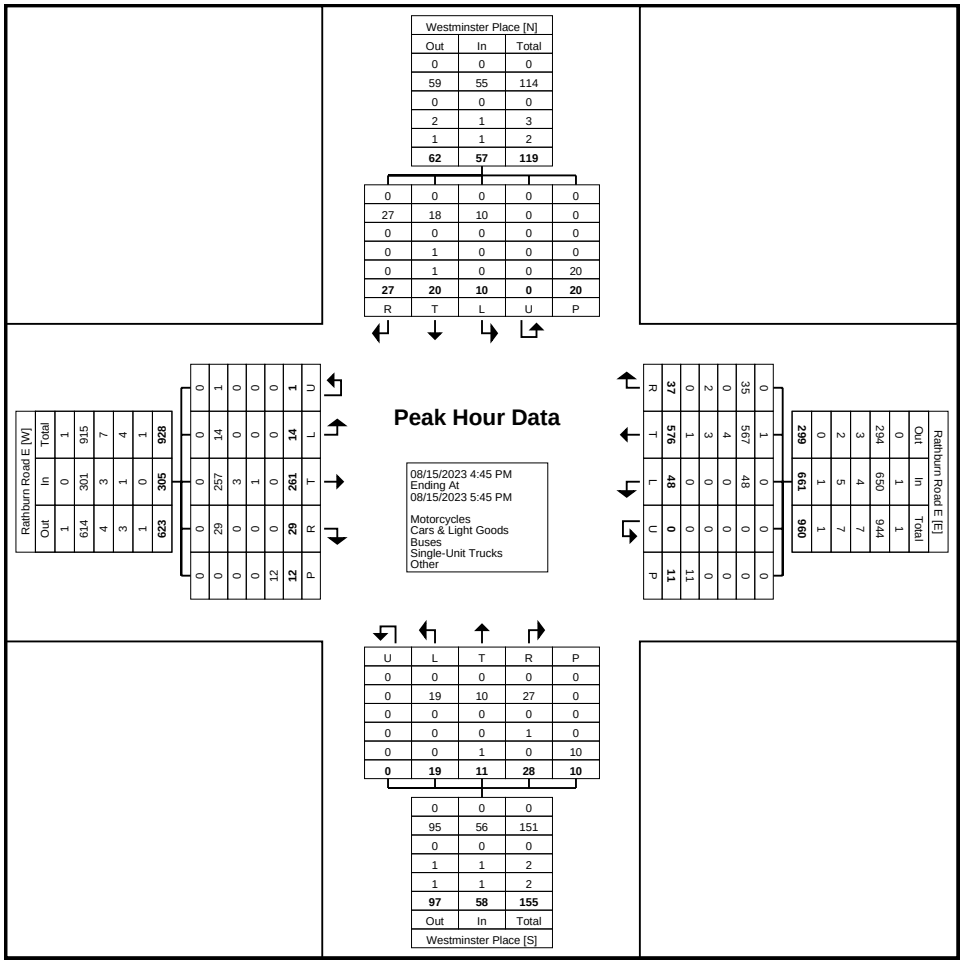


Turning Movement Peak Hour Data Plot (4:45 PM)

Appendix C

Signal Timings

District : Mississauga **ID:** 2711 **Location:** RATHBURN ROAD E @ Westminister Place

Phase	Units	1	2	3	4	5	6	7	8
Walk	Sec	0	9	0	10	0	0	0	0
Ped Clear	Sec	0	18	0	17	0	0	0	0
Min Green	Sec	0	8	0	8	0	0	0	0
Passage	Sec	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0
Maximum 1	Sec	0	30	0	20	0	0	0	0
Maximum 2	Sec	0	30	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	2.0	0.0	0.0	0.0	0.0
Red Revert	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Added Initial	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Initial	Sec	0	0	0	0	0	0	0	0
Time Before	Sec	0	0	0	0	0	0	0	0
Cars Before	Veh	0	0	0	0	0	0	0	0
Time To Reduce	Sec	0	0	0	0	0	0	0	0
Reduce By	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min Gap	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dynamic Max Limit	Sec	0	0	0	0	0	0	0	0
Dynamic Max Step	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
[P2] Start Up	Enum	other	redClear	other	phaseNotOn	other	other	other	other
[P2] Options	Bit	0	Enabled Non-Actuated 1 Max Veh Recall Ped Recall Act Rest In Walk	0	Enabled Non Lock Det	0	0	0	0
[P2] Ring	Ring	0	1	0	1	0	0	0	0
[P2] Concurrency	Phase (,)	()	()	()	()	()	()	()	()

Coord Pattern	Units	1	2	3	4	5	6	7	8
Cycle Time	Sec	70	0	70	0	0	0	0	0
Offset	Sec	55	0	42	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	none	none	none	none	none	none	none
Split 1 - Time	Sec	0	36	0	34	0	0	0	0
Split 1 - Coord	Enum	false	true	false	false	false	false	false	false
Split 2 - Mode	Enum	none	none	none	none	none	none	none	none
Split 2 - Time	Sec	0	0	0	0	0	0	0	0
Split 2 - Coord	Enum	false	true	false	false	false	false	false	false
Split 3 - Mode	Enum	none	none	none	pedRecall	none	none	none	none
Split 3 - Time	Sec	0	36	0	34	0	0	0	0
Split 3 - Coord	Enum	false	true	false	false	false	false	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	-M-----	-M-----	-----F-	-M-----	-----F-
Day of Month	Bit	12345678901234567890123456789011	12345678901234567890123456789012	12345678901234567890123456789011	--3----------	----------1----	----------5--------	----------3--	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	--------S---	0
Day of Week	Bit	-M-----	-M-----	-M-----	--T----	-M-----	---W---	-----F-	SMTWTFS
Day of Month	Bit	1----------	----5----------	--------0---------	----------	----------	----------	----------	0
Day Plan	Number	3	3	3	3	3	3	3	0

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

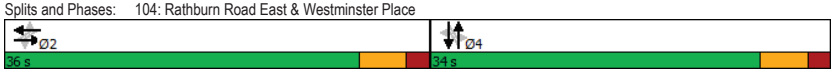
Base Year Traffic Operations Reports

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	194	9	15	155	13	13	13	26	14	5	17
Future Volume (vph)	16	194	9	15	155	13	13	13	26	14	5	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	35.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98	1.00		0.97	1.00		0.97	0.99		1.00	0.97	
Frt		0.993			0.988			0.900			0.883	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1641	3502	0	1719	3426	0	1787	1669	0	1641	1508	0
Flt Permitted	0.637			0.614			0.851			0.851		
Satd. Flow (perm)	1074	3502	0	1081	3426	0	1551	1669	0	1463	1508	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			14			28			18	
Link Speed (k/h)		50			50			40			40	
Link Distance (m)		90.2			125.3			163.1			67.7	
Travel Time (s)		6.5			9.0			14.7			6.1	
Confl. Peds. (#/hr)	24		28	28		24	41		6	6		41
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	10%	2%	4%	5%	4%	0%	1%	0%	2%	10%	13%	6%
Adj. Flow (vph)	17	211	10	16	168	14	14	14	28	15	5	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	221	0	16	182	0	14	42	0	15	23	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Detector Phase	2	2		2	2		4	4		4	4	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	33.0	33.0		33.0	33.0		33.0	33.0		33.0	33.0	
Total Split (s)	36.0	36.0		36.0	36.0		34.0	34.0		34.0	34.0	
Total Split (%)	51.4%	51.4%		51.4%	51.4%		48.6%	48.6%		48.6%	48.6%	
Maximum Green (s)	30.0	30.0		30.0	30.0		28.0	28.0		28.0	28.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	9.0	9.0		9.0	9.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	18.0	18.0		18.0	18.0		17.0	17.0		17.0	17.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	40.6	40.6		40.6	40.6		8.0	8.0		8.0	8.0	
Actuated g/C Ratio	0.77	0.77		0.77	0.77		0.15	0.15		0.15	0.15	
v/c Ratio	0.02	0.08		0.02	0.07		0.06	0.15		0.07	0.09	
Control Delay	4.1	3.3		4.1	3.3		19.3	12.3		19.5	12.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	4.1	3.3		4.1	3.3		19.3	12.3		19.5	12.0	
LOS	A	A		A	A		B	B		B	B	
Approach Delay		3.4			3.3			14.1			15.0	
Approach LOS		A			A			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 52.5			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.15			
Intersection Signal Delay: 5.3		Intersection LOS: A	
Intersection Capacity Utilization 51.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 104: Rathburn Road East & Westminster Place

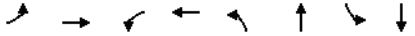


Phasings

(230502) 4150 Westminster

104: Rathburn Road East & Westminster Place

Existing AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases		2		2		4		4
Permitted Phases	2		2		4		4	
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
Total Split (s)	36.0	36.0	36.0	36.0	34.0	34.0	34.0	34.0
Total Split (%)	51.4%	51.4%	51.4%	51.4%	48.6%	48.6%	48.6%	48.6%
Maximum Green (s)	30.0	30.0	30.0	30.0	28.0	28.0	28.0	28.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	Max	Max	Max	Max	None	None	None	None
Walk Time (s)	9.0	9.0	9.0	9.0	10.0	10.0	10.0	10.0
Flash Dont Walk (s)	18.0	18.0	18.0	18.0	17.0	17.0	17.0	17.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0
90th %ile Green (s)	30.0	30.0	30.0	30.0	8.0	8.0	8.0	8.0
90th %ile Term Code	MaxR	MaxR	MaxR	MaxR	Min	Min	Min	Min
70th %ile Green (s)	30.0	30.0	30.0	30.0	8.0	8.0	8.0	8.0
70th %ile Term Code	MaxR	MaxR	MaxR	MaxR	Min	Min	Min	Min
50th %ile Green (s)	40.7	40.7	40.7	40.7	8.0	8.0	8.0	8.0
50th %ile Term Code	Dwell	Dwell	Dwell	Dwell	Min	Min	Min	Min
30th %ile Green (s)	45.0	45.0	45.0	45.0	0.0	0.0	0.0	0.0
30th %ile Term Code	Dwell	Dwell	Dwell	Dwell	Skip	Skip	Skip	Skip
10th %ile Green (s)	45.0	45.0	45.0	45.0	0.0	0.0	0.0	0.0
10th %ile Term Code	Dwell	Dwell	Dwell	Dwell	Skip	Skip	Skip	Skip

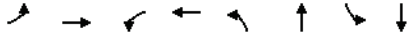
Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 52.5
Control Type: Semi Act-Uncoord
90th %ile Actuated Cycle: 50
70th %ile Actuated Cycle: 50
50th %ile Actuated Cycle: 60.7
30th %ile Actuated Cycle: 51
10th %ile Actuated Cycle: 51

Queues

(230502) 4150 Westminster

104: Rathburn Road East & Westminster Place

Existing AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	17	221	16	182	14	42	15	23
v/c Ratio	0.02	0.08	0.02	0.07	0.06	0.15	0.07	0.09
Control Delay	4.1	3.3	4.1	3.3	19.3	12.3	19.5	12.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.1	3.3	4.1	3.3	19.3	12.3	19.5	12.0
Queue Length 50th (m)	0.5	3.6	0.5	2.8	1.5	1.5	1.6	0.5
Queue Length 95th (m)	2.3	6.9	2.2	5.7	4.9	7.7	5.2	5.3
Internal Link Dist (m)		66.2		101.3		139.1		43.7
Turn Bay Length (m)	15.0		35.0		15.0		15.0	
Base Capacity (vph)	831	2712	836	2655	831	906	784	816
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	0.02	0.08	0.02	0.07	0.02	0.05	0.02	0.03

Intersection Summary

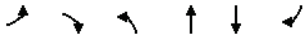
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	194	9	15	155	13	13	13	26	14	5	17
Future Volume (vph)	16	194	9	15	155	13	13	13	26	14	5	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.97	
Flpb, ped/bikes	0.98	1.00		0.98	1.00		0.98	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.90		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1610	3504		1683	3430		1744	1670		1635	1515	
Flt Permitted	0.64	1.00		0.61	1.00		0.85	1.00		0.85	1.00	
Satd. Flow (perm)	1080	3504		1087	3430		1562	1670		1465	1515	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	211	10	16	168	14	14	14	28	15	5	18
RTOR Reduction (vph)	0	2	0	0	4	0	0	26	0	0	16	0
Lane Group Flow (vph)	17	219	0	16	178	0	14	16	0	15	7	0
Confl. Peds. (#/hr)	24		28	28		24	41		6	6		41
Heavy Vehicles (%)	10%	2%	4%	5%	4%	0%	1%	0%	2%	10%	13%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)	38.2	38.2		38.2	38.2		4.7	4.7		4.7	4.7	
Effective Green, g (s)	38.2	38.2		38.2	38.2		4.7	4.7		4.7	4.7	
Actuated g/C Ratio	0.70	0.70		0.70	0.70		0.09	0.09		0.09	0.09	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	751	2438		756	2386		133	142		125	129	
v/s Ratio Prot		c0.06			0.05			0.01			0.00	
v/s Ratio Perm	0.02			0.01			0.01			c0.01		
v/c Ratio	0.02	0.09		0.02	0.07		0.11	0.12		0.12	0.05	
Uniform Delay, d1	2.6	2.7		2.6	2.7		23.2	23.2		23.2	23.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.1		0.1	0.1		0.3	0.4		0.4	0.2	
Delay (s)	2.6	2.8		2.6	2.7		23.5	23.5		23.6	23.2	
Level of Service	A	A		A	A		C	C		C	C	
Approach Delay (s)		2.8			2.7			23.5			23.4	
Approach LOS		A			A			C			C	

Intersection Summary				
HCM 2000 Control Delay	6.4	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.09			
Actuated Cycle Length (s)	54.9	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	51.2%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	3	11	9	32	25	0
Future Volume (vph)	3	11	9	32	25	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.892					
Flt Protected	0.990			0.989		
Satd. Flow (prot)	1678	0	0	1809	1827	0
Flt Permitted	0.990			0.989		
Satd. Flow (perm)	1678	0	0	1809	1827	0
Link Speed (k/h)	50			40	40	
Link Distance (m)	53.7			67.7	62.1	
Travel Time (s)	3.9			6.1	5.6	
Confl. Peds. (#/hr)	3		4			4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	5%	4%	0%
Adj. Flow (vph)	3	12	10	35	27	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	15	0	0	45	27	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	18.8%	ICU Level of Service A	
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	11	9	32	25	0
Future Volume (Veh/h)	3	11	9	32	25	0
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	12	10	35	27	0
Pedestrians	4				3	
Lane Width (m)	3.6				3.6	
Walking Speed (m/s)	1.2				1.2	
Percent Blockage	0				0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				68		
pX, platoon unblocked						
vC, conflicting volume	89	31	31			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	89	31	31			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	99			
cM capacity (veh/h)	906	1045	1589			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	15	45	27
Volume Left	3	10	0
Volume Right	12	0	0
cSH	1014	1589	1700
Volume to Capacity	0.01	0.01	0.02
Queue Length 95th (m)	0.4	0.2	0.0
Control Delay (s)	8.6	1.7	0.0
Lane LOS	A	A	
Approach Delay (s)	8.6	1.7	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	18.8%	ICU Level of Service	A
Analysis Period (min)	15		

Network Totals

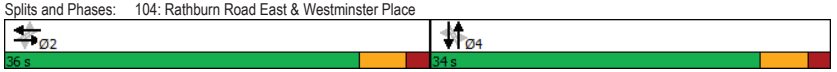
Number of Intersections	2
Total Delay (hr)	1
Stops (#)	208
Average Speed (km/hr	29
Total Travel Time (hr)	2
Distance Traveled (km)	58
Fuel Consumed (l)	12
Fuel Economy (km/l)	4.9
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	0
Performance Index	1.4

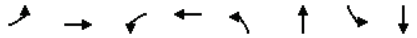
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	261	29	48	576	37	19	11	28	10	20	27
Future Volume (vph)	14	261	29	48	576	37	19	11	28	10	20	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	35.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		0.99	1.00		0.97	0.97		0.98	0.98	
Frt		0.985			0.991			0.893			0.915	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3478	0	1805	3529	0	1805	1652	0	1805	1672	0
Flt Permitted	0.399			0.560			0.833			0.833		
Satd. Flow (perm)	749	3478	0	1049	3529	0	1543	1652	0	1544	1672	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		21			12			30			29	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		90.2			125.3			163.1			67.7	
Travel Time (s)		6.5			9.0			11.7			4.9	
Confl. Peds. (#/hr)	25		17	17		25	35		33	33		35
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	0%	0%	1%	2%	0%	0%	0%	0%	0%	3%
Adj. Flow (vph)	15	284	32	52	626	40	21	12	30	11	22	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	15	316	0	52	666	0	21	42	0	11	51	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Detector Phase	2	2		2	2		4	4		4	4	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	33.0	33.0		33.0	33.0		33.0	33.0		33.0	33.0	
Total Split (s)	36.0	36.0		36.0	36.0		34.0	34.0		34.0	34.0	
Total Split (%)	51.4%	51.4%		51.4%	51.4%		48.6%	48.6%		48.6%	48.6%	
Maximum Green (s)	30.0	30.0		30.0	30.0		28.0	28.0		28.0	28.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	9.0	9.0		9.0	9.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	18.0	18.0		18.0	18.0		17.0	17.0		17.0	17.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	39.3	39.3		39.3	39.3		8.0	8.0		8.0	8.0	
Actuated g/C Ratio	0.77	0.77		0.77	0.77		0.16	0.16		0.16	0.16	
v/c Ratio	0.03	0.12		0.06	0.25		0.09	0.15		0.05	0.18	
Control Delay	4.3	3.3		4.2	3.8		19.3	11.6		18.7	13.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	4.3	3.3		4.2	3.8		19.3	11.6		18.7	13.0	
LOS	A	A		A	A		B	B		B	B	
Approach Delay		3.4			3.8			14.2			14.0	
Approach LOS		A			A			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 51.3			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.25			
Intersection Signal Delay: 4.8		Intersection LOS: A	
Intersection Capacity Utilization 61.9%		ICU Level of Service B	
Analysis Period (min) 15			

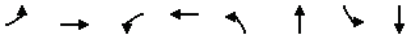
Splits and Phases: 104: Rathburn Road East & Westminster Place





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases		2		2		4		4
Permitted Phases	2		2		4		4	
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
Total Split (s)	36.0	36.0	36.0	36.0	34.0	34.0	34.0	34.0
Total Split (%)	51.4%	51.4%	51.4%	51.4%	48.6%	48.6%	48.6%	48.6%
Maximum Green (s)	30.0	30.0	30.0	30.0	28.0	28.0	28.0	28.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	Max	Max	Max	Max	None	None	None	None
Walk Time (s)	9.0	9.0	9.0	9.0	10.0	10.0	10.0	10.0
Flash Dont Walk (s)	18.0	18.0	18.0	18.0	17.0	17.0	17.0	17.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0
90th %ile Green (s)	30.0	30.0	30.0	30.0	8.0	8.0	8.0	8.0
90th %ile Term Code	MaxR	MaxR	MaxR	MaxR	Min	Min	Min	Min
70th %ile Green (s)	30.0	30.0	30.0	30.0	8.0	8.0	8.0	8.0
70th %ile Term Code	MaxR	MaxR	MaxR	MaxR	Min	Min	Min	Min
50th %ile Green (s)	34.3	34.3	34.3	34.3	8.0	8.0	8.0	8.0
50th %ile Term Code	Dwell	Dwell	Dwell	Dwell	Min	Min	Min	Min
30th %ile Green (s)	45.0	45.0	45.0	45.0	0.0	0.0	0.0	0.0
30th %ile Term Code	Dwell	Dwell	Dwell	Dwell	Skip	Skip	Skip	Skip
10th %ile Green (s)	45.0	45.0	45.0	45.0	0.0	0.0	0.0	0.0
10th %ile Term Code	Dwell	Dwell	Dwell	Dwell	Skip	Skip	Skip	Skip

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 51.3
Control Type: Semi Act-Uncoord
90th %ile Actuated Cycle: 50
70th %ile Actuated Cycle: 50
50th %ile Actuated Cycle: 54.3
30th %ile Actuated Cycle: 51
10th %ile Actuated Cycle: 51



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	15	316	52	666	21	42	11	51
v/c Ratio	0.03	0.12	0.06	0.25	0.09	0.15	0.05	0.18
Control Delay	4.3	3.3	4.2	3.8	19.3	11.6	18.7	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.3	3.3	4.2	3.8	19.3	11.6	18.7	13.0
Queue Length 50th (m)	0.5	5.3	1.7	13.2	1.9	1.1	1.0	2.0
Queue Length 95th (m)	2.1	9.2	5.0	20.1	6.5	7.5	4.2	9.2
Internal Link Dist (m)		66.2		101.3		139.1		43.7
Turn Bay Length (m)	15.0		35.0		15.0		15.0	
Base Capacity (vph)	574	2670	804	2707	843	916	844	927
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	0.03	0.12	0.06	0.25	0.02	0.05	0.01	0.06

Intersection Summary

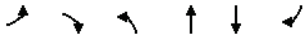
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	261	29	48	576	37	19	11	28	10	20	27
Future Volume (vph)	14	261	29	48	576	37	19	11	28	10	20	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		0.98	1.00		0.98	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.89		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	3479		1785	3531		1770	1659		1771	1677	
Flt Permitted	0.40	1.00		0.56	1.00		0.83	1.00		0.83	1.00	
Satd. Flow (perm)	750	3479		1053	3531		1553	1659		1554	1677	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	284	32	52	626	40	21	12	30	11	22	29
RTOR Reduction (vph)	0	7	0	0	4	0	0	27	0	0	26	0
Lane Group Flow (vph)	15	309	0	52	662	0	21	15	0	11	25	0
Confl. Peds. (#/hr)	25		17	17		25	35		33	33		35
Heavy Vehicles (%)	0%	2%	0%	0%	1%	2%	0%	0%	0%	0%	0%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)	36.9	36.9		36.9	36.9		4.8	4.8		4.8	4.8	
Effective Green, g (s)	36.9	36.9		36.9	36.9		4.8	4.8		4.8	4.8	
Actuated g/C Ratio	0.69	0.69		0.69	0.69		0.09	0.09		0.09	0.09	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	515	2390		723	2426		138	148		138	149	
v/s Ratio Prot		0.09			c0.19			0.01			c0.01	
v/s Ratio Perm	0.02			0.05			0.01			0.01		
v/c Ratio	0.03	0.13		0.07	0.27		0.15	0.10		0.08	0.17	
Uniform Delay, d1	2.7	2.9		2.8	3.2		22.6	22.5		22.4	22.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.1		0.2	0.3		0.5	0.3		0.2	0.5	
Delay (s)	2.8	3.0		3.0	3.5		23.1	22.8		22.7	23.1	
Level of Service	A	A		A	A		C	C		C	C	
Approach Delay (s)		3.0			3.5			22.9			23.0	
Approach LOS		A			A			C			C	

Intersection Summary				
HCM 2000 Control Delay	5.4	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.26			
Actuated Cycle Length (s)	53.7	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	61.9%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	3	12	10	69	39	5
Future Volume (vph)	3	12	10	69	39	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.890				0.986	
Flt Protected	0.991			0.994		
Satd. Flow (prot)	1676	0	0	1840	1763	0
Flt Permitted	0.991			0.994		
Satd. Flow (perm)	1676	0	0	1840	1763	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	53.7			67.7	62.1	
Travel Time (s)	3.9			4.9	4.5	
Confl. Peds. (#/hr)	3	2				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	3%	7%	0%
Adj. Flow (vph)	3	13	11	75	42	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	16	0	0	86	47	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	21.5%	ICU Level of Service A	
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	12	10	69	39	5
Future Volume (Veh/h)	3	12	10	69	39	5
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	13	11	75	42	5
Pedestrians				2	3	
Lane Width (m)				3.6	3.6	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				68		
pX, platoon unblocked						
vC, conflicting volume	144	46	47			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	144	46	47			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	99			
cM capacity (veh/h)	845	1027	1573			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	16	86	47
Volume Left	3	11	0
Volume Right	13	0	5
cSH	987	1573	1700
Volume to Capacity	0.02	0.01	0.03
Queue Length 95th (m)	0.4	0.2	0.0
Control Delay (s)	8.7	1.0	0.0
Lane LOS	A	A	
Approach Delay (s)	8.7	1.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	21.5%	ICU Level of Service	A
Analysis Period (min)	15		

Network Totals

Number of Intersections	2
Total Delay (hr)	1
Stops (#)	406
Average Speed (km/hr	32
Total Travel Time (hr)	4
Distance Traveled (km)	132
Fuel Consumed (l)	26
Fuel Economy (km/l)	5.1
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	0
Performance Index	2.6

Appendix E

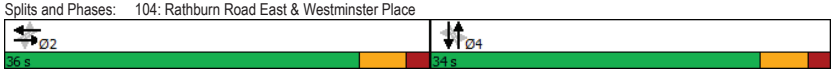
Background Traffic Operations Reports

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	219	10	22	176	14	14	14	29	15	6	19
Future Volume (vph)	18	219	10	22	176	14	14	14	29	15	6	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	35.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98	1.00		0.97	1.00		0.97	0.99		1.00	0.97	
Frt		0.993			0.989			0.898			0.887	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1641	3503	0	1719	3430	0	1787	1664	0	1641	1513	0
Flt Permitted	0.623			0.597			0.833			0.833		
Satd. Flow (perm)	1051	3503	0	1053	3430	0	1519	1664	0	1433	1513	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			15			32			21	
Link Speed (k/h)		50			50			40			40	
Link Distance (m)		90.2			125.3			163.1			67.7	
Travel Time (s)		6.5			9.0			14.7			6.1	
Confl. Peds. (#/hr)	24		28	28		24	41		6	6		41
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	10%	2%	4%	5%	4%	0%	1%	0%	2%	10%	13%	6%
Adj. Flow (vph)	20	238	11	24	191	15	15	15	32	16	7	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	20	249	0	24	206	0	15	47	0	16	28	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Detector Phase	2	2		2	2		4	4		4	4	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	33.0	33.0		33.0	33.0		33.0	33.0		33.0	33.0	
Total Split (s)	36.0	36.0		36.0	36.0		34.0	34.0		34.0	34.0	
Total Split (%)	51.4%	51.4%		51.4%	51.4%		48.6%	48.6%		48.6%	48.6%	
Maximum Green (s)	30.0	30.0		30.0	30.0		28.0	28.0		28.0	28.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	9.0	9.0		9.0	9.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	18.0	18.0		18.0	18.0		17.0	17.0		17.0	17.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	40.0	40.0		40.0	40.0		8.0	8.0		8.0	8.0	
Actuated g/C Ratio	0.77	0.77		0.77	0.77		0.15	0.15		0.15	0.15	
v/c Ratio	0.02	0.09		0.03	0.08		0.06	0.17		0.07	0.11	
Control Delay	4.2	3.4		4.1	3.3		19.2	12.0		19.4	12.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	4.2	3.4		4.1	3.3		19.2	12.0		19.4	12.0	
LOS	A	A		A	A		B	B		B	B	
Approach Delay		3.4			3.4			13.7			14.7	
Approach LOS		A			A			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 51.9			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.17			
Intersection Signal Delay: 5.3		Intersection LOS: A	
Intersection Capacity Utilization 51.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 104: Rathburn Road East & Westminster Place

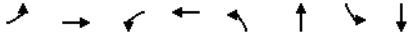


Phasings

(230502) 4150 Westminster

104: Rathburn Road East & Westminster Place

Background AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases		2		2		4		4
Permitted Phases	2		2		4		4	
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
Total Split (s)	36.0	36.0	36.0	36.0	34.0	34.0	34.0	34.0
Total Split (%)	51.4%	51.4%	51.4%	51.4%	48.6%	48.6%	48.6%	48.6%
Maximum Green (s)	30.0	30.0	30.0	30.0	28.0	28.0	28.0	28.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	Max	Max	Max	Max	None	None	None	None
Walk Time (s)	9.0	9.0	9.0	9.0	10.0	10.0	10.0	10.0
Flash Dont Walk (s)	18.0	18.0	18.0	18.0	17.0	17.0	17.0	17.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0
90th %ile Green (s)	30.0	30.0	30.0	30.0	8.0	8.0	8.0	8.0
90th %ile Term Code	MaxR	MaxR	MaxR	MaxR	Min	Min	Min	Min
70th %ile Green (s)	30.0	30.0	30.0	30.0	8.0	8.0	8.0	8.0
70th %ile Term Code	MaxR	MaxR	MaxR	MaxR	Min	Min	Min	Min
50th %ile Green (s)	37.7	37.7	37.7	37.7	8.0	8.0	8.0	8.0
50th %ile Term Code	Dwell	Dwell	Dwell	Dwell	Min	Min	Min	Min
30th %ile Green (s)	45.0	45.0	45.0	45.0	0.0	0.0	0.0	0.0
30th %ile Term Code	Dwell	Dwell	Dwell	Dwell	Skip	Skip	Skip	Skip
10th %ile Green (s)	45.0	45.0	45.0	45.0	0.0	0.0	0.0	0.0
10th %ile Term Code	Dwell	Dwell	Dwell	Dwell	Skip	Skip	Skip	Skip

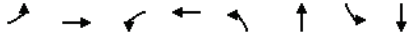
Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 51.9
Control Type: Semi Act-Uncoord
90th %ile Actuated Cycle: 50
70th %ile Actuated Cycle: 50
50th %ile Actuated Cycle: 57.7
30th %ile Actuated Cycle: 51
10th %ile Actuated Cycle: 51

Queues

(230502) 4150 Westminster

104: Rathburn Road East & Westminster Place

Background AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	20	249	24	206	15	47	16	28
v/c Ratio	0.02	0.09	0.03	0.08	0.06	0.17	0.07	0.11
Control Delay	4.2	3.4	4.1	3.3	19.2	12.0	19.4	12.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.2	3.4	4.1	3.3	19.2	12.0	19.4	12.0
Queue Length 50th (m)	0.6	4.2	0.8	3.3	1.5	1.5	1.6	0.7
Queue Length 95th (m)	2.5	7.6	2.8	6.3	5.2	8.3	5.5	6.0
Internal Link Dist (m)		66.2		101.3		139.1		43.7
Turn Bay Length (m)	15.0		35.0		15.0		15.0	
Base Capacity (vph)	810	2701	811	2647	821	914	774	827
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	0.02	0.09	0.03	0.08	0.02	0.05	0.02	0.03

Intersection Summary

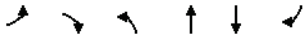
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	219	10	22	176	14	14	14	29	15	6	19
Future Volume (vph)	18	219	10	22	176	14	14	14	29	15	6	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.97	
Flpb, ped/bikes	0.98	1.00		0.98	1.00		0.98	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.90		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1611	3505		1685	3432		1745	1665		1635	1522	
Flt Permitted	0.62	1.00		0.60	1.00		0.83	1.00		0.83	1.00	
Satd. Flow (perm)	1056	3505		1059	3432		1530	1665		1435	1522	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	238	11	24	191	15	15	15	32	16	7	21
RTOR Reduction (vph)	0	2	0	0	5	0	0	29	0	0	19	0
Lane Group Flow (vph)	20	247	0	24	201	0	15	18	0	16	9	0
Confl. Peds. (#/hr)	24		28	28		24	41		6	6		41
Heavy Vehicles (%)	10%	2%	4%	5%	4%	0%	1%	0%	2%	10%	13%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)	37.6	37.6		37.6	37.6		4.8	4.8		4.8	4.8	
Effective Green, g (s)	37.6	37.6		37.6	37.6		4.8	4.8		4.8	4.8	
Actuated g/C Ratio	0.69	0.69		0.69	0.69		0.09	0.09		0.09	0.09	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	729	2422		731	2372		135	146		126	134	
v/s Ratio Prot		c0.07			0.06			0.01			0.01	
v/s Ratio Perm	0.02			0.02			0.01			c0.01		
v/c Ratio	0.03	0.10		0.03	0.08		0.11	0.12		0.13	0.07	
Uniform Delay, d1	2.6	2.8		2.7	2.8		22.8	22.9		22.9	22.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.1		0.1	0.1		0.4	0.4		0.5	0.2	
Delay (s)	2.7	2.9		2.7	2.8		23.2	23.2		23.3	23.0	
Level of Service	A	A		A	A		C	C		C	C	
Approach Delay (s)		2.9			2.8			23.2			23.1	
Approach LOS		A			A			C			C	

Intersection Summary				
HCM 2000 Control Delay	6.4	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.10			
Actuated Cycle Length (s)	54.4	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	51.2%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	3	11	9	35	28	0
Future Volume (vph)	3	11	9	35	28	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.892					
Flt Protected	0.990			0.990		
Satd. Flow (prot)	1678	0	0	1809	1827	0
Flt Permitted	0.990			0.990		
Satd. Flow (perm)	1678	0	0	1809	1827	0
Link Speed (k/h)	50			40	40	
Link Distance (m)	53.7			67.7	62.1	
Travel Time (s)	3.9			6.1	5.6	
Confl. Peds. (#/hr)	3		4			4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	5%	4%	0%
Adj. Flow (vph)	3	12	10	38	30	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	15	0	0	48	30	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	19.0%	ICU Level of Service A	
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	11	9	35	28	0
Future Volume (Veh/h)	3	11	9	35	28	0
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	12	10	38	30	0
Pedestrians	4				3	
Lane Width (m)	3.6				3.6	
Walking Speed (m/s)	1.2				1.2	
Percent Blockage	0				0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				68		
pX, platoon unblocked						
vC, conflicting volume	95	34	34			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	95	34	34			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	99			
cM capacity (veh/h)	898	1041	1585			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	15	48	30
Volume Left	3	10	0
Volume Right	12	0	0
cSH	1009	1585	1700
Volume to Capacity	0.01	0.01	0.02
Queue Length 95th (m)	0.4	0.2	0.0
Control Delay (s)	8.6	1.6	0.0
Lane LOS	A	A	
Approach Delay (s)	8.6	1.6	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	19.0%	ICU Level of Service	A
Analysis Period (min)	15		

Network Totals

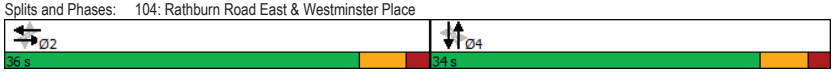
Number of Intersections	2
Total Delay (hr)	1
Stops (#)	229
Average Speed (km/hr	29
Total Travel Time (hr)	2
Distance Traveled (km)	66
Fuel Consumed (l)	13
Fuel Economy (km/l)	5.0
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	0
Performance Index	1.5

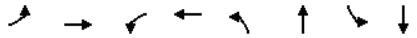
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	293	32	53	641	41	21	12	31	16	22	30
Future Volume (vph)	15	293	32	53	641	41	21	12	31	16	22	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	35.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		0.99	1.00		0.97	0.97		0.98	0.98	
Frt		0.985			0.991			0.891			0.913	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3479	0	1805	3529	0	1805	1647	0	1805	1667	0
Flt Permitted	0.370			0.540			0.833			0.833		
Satd. Flow (perm)	696	3479	0	1012	3529	0	1543	1647	0	1545	1667	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		21			12			34			33	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		90.2			125.3			163.1			67.7	
Travel Time (s)		6.5			9.0			11.7			4.9	
Confl. Peds. (#/hr)	25		17	17		25	35		33	33		35
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	0%	0%	1%	2%	0%	0%	0%	0%	0%	3%
Adj. Flow (vph)	16	318	35	58	697	45	23	13	34	17	24	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	16	353	0	58	742	0	23	47	0	17	57	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Detector Phase	2	2		2	2		4	4		4	4	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	33.0	33.0		33.0	33.0		33.0	33.0		33.0	33.0	
Total Split (s)	36.0	36.0		36.0	36.0		34.0	34.0		34.0	34.0	
Total Split (%)	51.4%	51.4%		51.4%	51.4%		48.6%	48.6%		48.6%	48.6%	
Maximum Green (s)	30.0	30.0		30.0	30.0		28.0	28.0		28.0	28.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	9.0	9.0		9.0	9.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	18.0	18.0		18.0	18.0		17.0	17.0		17.0	17.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	38.7	38.7		38.7	38.7		8.0	8.0		8.0	8.0	
Actuated g/C Ratio	0.76	0.76		0.76	0.76		0.16	0.16		0.16	0.16	
v/c Ratio	0.03	0.13		0.08	0.28		0.09	0.16		0.07	0.20	
Control Delay	4.4	3.4		4.3	4.0		19.2	11.3		18.8	12.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	4.4	3.4		4.3	4.0		19.2	11.3		18.8	12.8	
LOS	A	A		A	A		B	B		B	B	
Approach Delay		3.5			4.0			13.9			14.2	
Approach LOS		A			A			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 50.8			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.28			
Intersection Signal Delay: 5.0		Intersection LOS: A	
Intersection Capacity Utilization 62.0%		ICU Level of Service B	
Analysis Period (min) 15			

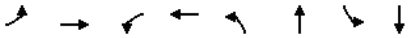
Splits and Phases: 104: Rathburn Road East & Westminster Place





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases		2		2		4		4
Permitted Phases	2		2		4		4	
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
Total Split (s)	36.0	36.0	36.0	36.0	34.0	34.0	34.0	34.0
Total Split (%)	51.4%	51.4%	51.4%	51.4%	48.6%	48.6%	48.6%	48.6%
Maximum Green (s)	30.0	30.0	30.0	30.0	28.0	28.0	28.0	28.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	Max	Max	Max	Max	None	None	None	None
Walk Time (s)	9.0	9.0	9.0	9.0	10.0	10.0	10.0	10.0
Flash Dont Walk (s)	18.0	18.0	18.0	18.0	17.0	17.0	17.0	17.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0
90th %ile Green (s)	30.0	30.0	30.0	30.0	8.1	8.1	8.1	8.1
90th %ile Term Code	MaxR	MaxR	MaxR	MaxR	Gap	Gap	Gap	Gap
70th %ile Green (s)	30.0	30.0	30.0	30.0	8.0	8.0	8.0	8.0
70th %ile Term Code	MaxR	MaxR	MaxR	MaxR	Min	Min	Min	Min
50th %ile Green (s)	31.7	31.7	31.7	31.7	8.0	8.0	8.0	8.0
50th %ile Term Code	Dwell	Dwell	Dwell	Dwell	Min	Min	Min	Min
30th %ile Green (s)	45.0	45.0	45.0	45.0	0.0	0.0	0.0	0.0
30th %ile Term Code	Dwell	Dwell	Dwell	Dwell	Skip	Skip	Skip	Skip
10th %ile Green (s)	45.0	45.0	45.0	45.0	0.0	0.0	0.0	0.0
10th %ile Term Code	Dwell	Dwell	Dwell	Dwell	Skip	Skip	Skip	Skip

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 50.8
Control Type: Semi Act-Uncoord
90th %ile Actuated Cycle: 50.1
70th %ile Actuated Cycle: 50
50th %ile Actuated Cycle: 51.7
30th %ile Actuated Cycle: 51
10th %ile Actuated Cycle: 51



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	16	353	58	742	23	47	17	57
v/c Ratio	0.03	0.13	0.08	0.28	0.09	0.16	0.07	0.20
Control Delay	4.4	3.4	4.3	4.0	19.2	11.3	18.8	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.4	3.4	4.3	4.0	19.2	11.3	18.8	12.8
Queue Length 50th (m)	0.5	6.0	1.9	15.0	2.0	1.1	1.4	2.0
Queue Length 95th (m)	2.3	10.3	5.5	22.9	6.9	8.1	5.6	9.7
Internal Link Dist (m)		66.2		101.3		139.1		43.7
Turn Bay Length (m)	15.0		35.0		15.0		15.0	
Base Capacity (vph)	530	2657	771	2693	851	923	852	934
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	0.03	0.13	0.08	0.28	0.03	0.05	0.02	0.06

Intersection Summary

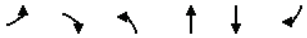
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	293	32	53	641	41	21	12	31	16	22	30
Future Volume (vph)	15	293	32	53	641	41	21	12	31	16	22	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		0.98	1.00		0.98	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.89		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1789	3481		1787	3530		1771	1656		1772	1674	
Flt Permitted	0.37	1.00		0.54	1.00		0.83	1.00		0.83	1.00	
Satd. Flow (perm)	697	3481		1016	3530		1553	1656		1554	1674	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	318	35	58	697	45	23	13	34	17	24	33
RTOR Reduction (vph)	0	7	0	0	4	0	0	31	0	0	30	0
Lane Group Flow (vph)	16	346	0	58	738	0	23	16	0	17	27	0
Confl. Peds. (#/hr)	25		17	17		25	35		33	33		35
Heavy Vehicles (%)	0%	2%	0%	0%	1%	2%	0%	0%	0%	0%	0%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)	36.3	36.3		36.3	36.3		4.8	4.8		4.8	4.8	
Effective Green, g (s)	36.3	36.3		36.3	36.3		4.8	4.8		4.8	4.8	
Actuated g/C Ratio	0.68	0.68		0.68	0.68		0.09	0.09		0.09	0.09	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	476	2379		694	2413		140	149		140	151	
v/s Ratio Prot		0.10			c0.21			0.01			c0.02	
v/s Ratio Perm	0.02			0.06			0.01			0.01		
v/c Ratio	0.03	0.15		0.08	0.31		0.16	0.11		0.12	0.18	
Uniform Delay, d1	2.7	3.0		2.8	3.4		22.3	22.2		22.2	22.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.1		0.2	0.3		0.6	0.3		0.4	0.6	
Delay (s)	2.9	3.1		3.1	3.7		22.9	22.5		22.6	22.9	
Level of Service	A	A		A	A		C	C		C	C	
Approach Delay (s)		3.1			3.6			22.6			22.8	
Approach LOS		A			A			C			C	

Intersection Summary				
HCM 2000 Control Delay	5.6	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.29			
Actuated Cycle Length (s)	53.1	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	62.0%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	3	12	10	76	48	5
Future Volume (vph)	3	12	10	76	48	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.890				0.988	
Flt Protected	0.991			0.994		
Satd. Flow (prot)	1676	0	0	1840	1765	0
Flt Permitted	0.991			0.994		
Satd. Flow (perm)	1676	0	0	1840	1765	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	53.7			67.7	62.1	
Travel Time (s)	3.9			4.9	4.5	
Confl. Peds. (#/hr)	3	2				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	3%	7%	0%
Adj. Flow (vph)	3	13	11	83	52	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	16	0	0	94	57	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	21.9%	ICU Level of Service A	
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	12	10	76	48	5
Future Volume (Veh/h)	3	12	10	76	48	5
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	13	11	83	52	5
Pedestrians				2	3	
Lane Width (m)				3.6	3.6	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				68		
pX, platoon unblocked						
vC, conflicting volume	162	56	57			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	162	56	57			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	99			
cM capacity (veh/h)	825	1014	1560			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	16	94	57
Volume Left	3	11	0
Volume Right	13	0	5
cSH	972	1560	1700
Volume to Capacity	0.02	0.01	0.03
Queue Length 95th (m)	0.4	0.2	0.0
Control Delay (s)	8.8	0.9	0.0
Lane LOS	A	A	
Approach Delay (s)	8.8	0.9	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	21.9%	ICU Level of Service	A
Analysis Period (min)	15		

Network Totals

Number of Intersections	2
Total Delay (hr)	2
Stops (#)	454
Average Speed (km/hr	32
Total Travel Time (hr)	5
Distance Traveled (km)	148
Fuel Consumed (l)	29
Fuel Economy (km/l)	5.1
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	0
Performance Index	3.0

Appendix F

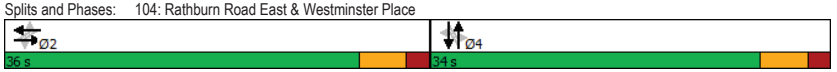
Total Traffic Operations Reports

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	18	219	10	22	178	19	15	14	31	15	7
Future Volume (vph)	21	18	219	10	22	178	19	15	14	31	15	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	35.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98	0.95		0.97	0.96		0.97	0.99		1.00	0.99	
Frt		0.862			0.867			0.927			0.950	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1641	2843	0	1719	2976	0	1787	1730	0	1641	1608	0
Flt Permitted	0.616			0.592			0.816			0.816		
Satd. Flow (perm)	1040	2843	0	1044	2976	0	1488	1730	0	1403	1608	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		238			193			15			8	
Link Speed (k/h)		50			50			40			40	
Link Distance (m)		90.2			125.3			163.1			67.7	
Travel Time (s)		6.5			9.0			14.7			6.1	
Confl. Peds. (#/hr)	24		28	28		24	41		6	6		41
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	10%	2%	4%	5%	4%	0%	1%	0%	2%	10%	13%	6%
Adj. Flow (vph)	23	20	238	11	24	193	21	16	15	34	16	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	23	258	0	11	217	0	21	31	0	34	24	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Detector Phase	2	2		2	2		4	4		4	4	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	33.0	33.0		33.0	33.0		33.0	33.0		33.0	33.0	
Total Split (s)	36.0	36.0		36.0	36.0		34.0	34.0		34.0	34.0	
Total Split (%)	51.4%	51.4%		51.4%	51.4%		48.6%	48.6%		48.6%	48.6%	
Maximum Green (s)	30.0	30.0		30.0	30.0		28.0	28.0		28.0	28.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	9.0	9.0		9.0	9.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	18.0	18.0		18.0	18.0		17.0	17.0		17.0	17.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	39.9	39.9		39.9	39.9		8.2	8.2		8.2	8.2	
Actuated g/C Ratio	0.77	0.77		0.77	0.77		0.16	0.16		0.16	0.16	
v/c Ratio	0.03	0.12		0.01	0.09		0.09	0.11		0.15	0.09	
Control Delay	4.3	1.1		4.3	1.3		19.4	14.1		20.5	16.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	4.3	1.1		4.3	1.3		19.4	14.1		20.5	16.0	
LOS	A	A		A	A		B	B		C	B	
Approach Delay		1.4			1.4			16.3			18.6	
Approach LOS		A			A			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 52			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.15			
Intersection Signal Delay: 4.3		Intersection LOS: A	
Intersection Capacity Utilization 51.4%		ICU Level of Service A	
Analysis Period (min) 15			

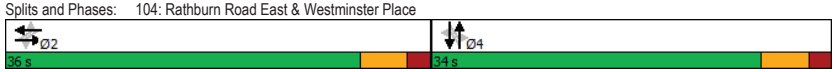
Splits and Phases: 104: Rathburn Road East & Westminster Place



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	21	18	10	22	19	15	31	15
Future Volume (vph)	21	18	10	22	19	15	31	15
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		2		4		4
Permitted Phases	2		2		4		4	
Detector Phase	2	2	2	2	4	4	4	4
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
Total Split (s)	36.0	36.0	36.0	36.0	34.0	34.0	34.0	34.0
Total Split (%)	51.4%	51.4%	51.4%	51.4%	48.6%	48.6%	48.6%	48.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	Max	Max	Max	Max	None	None	None	None
Act Effct Green (s)	39.9	39.9	39.9	39.9	8.2	8.2	8.2	8.2
Actuated g/C Ratio	0.77	0.77	0.77	0.77	0.16	0.16	0.16	0.16
v/c Ratio	0.03	0.12	0.01	0.09	0.09	0.11	0.15	0.09
Control Delay	4.3	1.1	4.3	1.3	19.4	14.1	20.5	16.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.3	1.1	4.3	1.3	19.4	14.1	20.5	16.0
LOS	A	A	A	A	B	B	C	B
Approach Delay		1.4		1.4		16.3		18.6
Approach LOS		A		A		B		B

Intersection Summary			
Cycle Length: 70			
Actuated Cycle Length: 52			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.15			
Intersection Signal Delay: 4.3		Intersection LOS: A	
Intersection Capacity Utilization 51.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 104: Rathburn Road East & Westminster Place



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases		2		2		4		4
Permitted Phases	2		2		4		4	
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
Total Split (s)	36.0	36.0	36.0	36.0	34.0	34.0	34.0	34.0
Total Split (%)	51.4%	51.4%	51.4%	51.4%	48.6%	48.6%	48.6%	48.6%
Maximum Green (s)	30.0	30.0	30.0	30.0	28.0	28.0	28.0	28.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	Max	Max	Max	Max	None	None	None	None
Walk Time (s)	9.0	9.0	9.0	9.0	10.0	10.0	10.0	10.0
Flash Dont Walk (s)	18.0	18.0	18.0	18.0	17.0	17.0	17.0	17.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0
90th %ile Green (s)	30.0	30.0	30.0	30.0	8.8	8.8	8.8	8.8
90th %ile Term Code	MaxR	MaxR	MaxR	MaxR	Gap	Gap	Gap	Gap
70th %ile Green (s)	30.0	30.0	30.0	30.0	8.0	8.0	8.0	8.0
70th %ile Term Code	MaxR	MaxR	MaxR	MaxR	Min	Min	Min	Min
50th %ile Green (s)	37.0	37.0	37.0	37.0	8.0	8.0	8.0	8.0
50th %ile Term Code	Dwell	Dwell	Dwell	Dwell	Min	Min	Min	Min
30th %ile Green (s)	45.0	45.0	45.0	45.0	0.0	0.0	0.0	0.0
30th %ile Term Code	Dwell	Dwell	Dwell	Dwell	Skip	Skip	Skip	Skip
10th %ile Green (s)	45.0	45.0	45.0	45.0	0.0	0.0	0.0	0.0
10th %ile Term Code	Dwell	Dwell	Dwell	Dwell	Skip	Skip	Skip	Skip

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 52
Control Type: Semi Act-Uncoord
90th %ile Actuated Cycle: 50.8
70th %ile Actuated Cycle: 50
50th %ile Actuated Cycle: 57
30th %ile Actuated Cycle: 51
10th %ile Actuated Cycle: 51

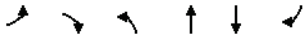
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	18	219	10	22	178	19	15	14	31	15	7
Future Volume (vph)	21	18	219	10	22	178	19	15	14	31	15	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.96		1.00	0.96		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	0.98	1.00		0.98	1.00		0.98	1.00		1.00	1.00	
Frt	1.00	0.86		1.00	0.87		1.00	0.93		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1612	2864		1685	2994		1744	1732		1635	1611	
Flt Permitted	0.62	1.00		0.59	1.00		0.82	1.00		0.82	1.00	
Satd. Flow (perm)	1045	2864		1051	2994		1499	1732		1405	1611	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	23	20	238	11	24	193	21	16	15	34	16	8
RTOR Reduction (vph)	0	74	0	0	60	0	0	14	0	0	7	0
Lane Group Flow (vph)	23	184	0	11	157	0	21	17	0	34	17	0
Confl. Peds. (#/hr)	24		28	28		24	41		6	6		41
Heavy Vehicles (%)	10%	2%	4%	5%	4%	0%	1%	0%	2%	10%	13%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)	37.5	37.5		37.5	37.5		4.9	4.9		4.9	4.9	
Effective Green, g (s)	37.5	37.5		37.5	37.5		4.9	4.9		4.9	4.9	
Actuated g/C Ratio	0.69	0.69		0.69	0.69		0.09	0.09		0.09	0.09	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	720	1974		724	2063		135	156		126	145	
v/s Ratio Prot		c0.06			0.05			0.01			0.01	
v/s Ratio Perm	0.02			0.01			0.01			c0.02		
v/c Ratio	0.03	0.09		0.02	0.08		0.16	0.11		0.27	0.12	
Uniform Delay, d1	2.7	2.8		2.7	2.8		22.8	22.7		23.1	22.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.1		0.0	0.1		0.5	0.3		1.2	0.4	
Delay (s)	2.8	2.9		2.7	2.8		23.4	23.1		24.2	23.1	
Level of Service	A	A		A	A		C	C		C	C	
Approach Delay (s)		2.9			2.8			23.2			23.8	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	6.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.11		
Actuated Cycle Length (s)	54.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	51.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	3	9	9	0	28
Future Volume (vph)	0	3	9	9	0	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.865				0.865	
Flt Protected				0.976		
Satd. Flow (prot)	1644	0	0	1809	1644	0
Flt Permitted				0.976		
Satd. Flow (perm)	1644	0	0	1809	1644	0
Link Speed (k/h)	50			40	40	
Link Distance (m)	53.7			67.7	62.1	
Travel Time (s)	3.9			6.1	5.6	
Confl. Peds. (#/hr)	3		4			4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	5%	4%	0%
Adj. Flow (vph)	0	3	10	10	0	30
Shared Lane Traffic (%)						
Lane Group Flow (vph)	3	0	0	20	30	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	17.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	3	9	9	0	28
Future Volume (Veh/h)	0	3	9	9	0	28
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)	0	3	10	10	0	30
Pedestrians	4				3	
Lane Width (m)	3.6				3.6	
Walking Speed (m/s)	1.2				1.2	
Percent Blockage	0				0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				68		
pX, platoon unblocked						
vC, conflicting volume	52	19	34			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	52	19	34			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	99			
cM capacity (veh/h)	950	1061	1585			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	3	20	30
Volume Left	0	10	0
Volume Right	3	0	30
cSH	1061	1585	1700
Volume to Capacity	0.00	0.01	0.02
Queue Length 95th (m)	0.1	0.2	0.0
Control Delay (s)	8.4	3.7	0.0
Lane LOS	A	A	
Approach Delay (s)	8.4	3.7	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	17.6%	ICU Level of Service	A
Analysis Period (min)	15		

Network Totals

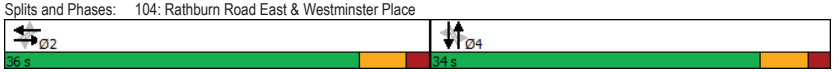
Number of Intersections	2
Total Delay (hr)	1
Stops (#)	152
Average Speed (km/hr	31
Total Travel Time (hr)	2
Distance Traveled (km)	64
Fuel Consumed (l)	11
Fuel Economy (km/l)	5.9
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	0
Performance Index	1.1

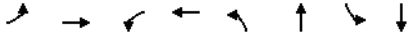
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	293	32	53	645	41	21	12	32	17	25	32
Future Volume (vph)	15	293	32	53	645	41	21	12	32	17	25	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	35.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		0.99	1.00		0.98	0.97		0.98	0.98	
Frt		0.985			0.991			0.891			0.915	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3479	0	1805	3529	0	1805	1647	0	1805	1672	0
Flt Permitted	0.368			0.540			0.717			0.726		
Satd. Flow (perm)	692	3479	0	1012	3529	0	1328	1647	0	1346	1672	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		21			12			35			35	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		90.2			125.3			163.1			67.7	
Travel Time (s)		6.5			9.0			11.7			4.9	
Confl. Peds. (#/hr)	25		17	17		25	35		33	33		35
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	0%	0%	1%	2%	0%	0%	0%	0%	0%	3%
Adj. Flow (vph)	16	318	35	58	701	45	23	13	35	18	27	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	16	353	0	58	746	0	23	48	0	18	62	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Detector Phase	2	2		2	2		4	4		4	4	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	33.0	33.0		33.0	33.0		33.0	33.0		33.0	33.0	
Total Split (s)	36.0	36.0		36.0	36.0		34.0	34.0		34.0	34.0	
Total Split (%)	51.4%	51.4%		51.4%	51.4%		48.6%	48.6%		48.6%	48.6%	
Maximum Green (s)	30.0	30.0		30.0	30.0		28.0	28.0		28.0	28.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	9.0	9.0		9.0	9.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	18.0	18.0		18.0	18.0		17.0	17.0		17.0	17.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	37.3	37.3		37.3	37.3		8.1	8.1		8.1	8.1	
Actuated g/C Ratio	0.70	0.70		0.70	0.70		0.15	0.15		0.15	0.15	
v/c Ratio	0.03	0.14		0.08	0.30		0.11	0.17		0.09	0.22	
Control Delay	4.5	3.9		4.6	4.7		19.8	11.2		19.2	12.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	4.5	3.9		4.6	4.7		19.8	11.2		19.2	12.8	
LOS	A	A		A	A		B	B		B	B	
Approach Delay		4.0			4.7			13.9			14.3	
Approach LOS		A			A			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 53.4			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.30			
Intersection Signal Delay: 5.6		Intersection LOS: A	
Intersection Capacity Utilization 62.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 104: Rathburn Road East & Westminster Place

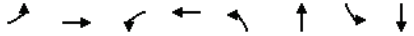




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases		2		2		4		4
Permitted Phases	2		2		4		4	
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
Total Split (s)	36.0	36.0	36.0	36.0	34.0	34.0	34.0	34.0
Total Split (%)	51.4%	51.4%	51.4%	51.4%	48.6%	48.6%	48.6%	48.6%
Maximum Green (s)	30.0	30.0	30.0	30.0	28.0	28.0	28.0	28.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	Max	Max	Max	Max	None	None	None	None
Walk Time (s)	9.0	9.0	9.0	9.0	10.0	10.0	10.0	10.0
Flash Dont Walk (s)	18.0	18.0	18.0	18.0	17.0	17.0	17.0	17.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0
90th %ile Green (s)	30.0	30.0	30.0	30.0	8.3	8.3	8.3	8.3
90th %ile Term Code	MaxR	MaxR	MaxR	MaxR	Gap	Gap	Gap	Gap
70th %ile Green (s)	30.0	30.0	30.0	30.0	8.0	8.0	8.0	8.0
70th %ile Term Code	MaxR	MaxR	MaxR	MaxR	Min	Min	Min	Min
50th %ile Green (s)	30.9	30.9	30.9	30.9	8.0	8.0	8.0	8.0
50th %ile Term Code	Dwell	Dwell	Dwell	Dwell	Min	Min	Min	Min
30th %ile Green (s)	45.0	45.0	45.0	45.0	8.0	8.0	8.0	8.0
30th %ile Term Code	Dwell	Dwell	Dwell	Dwell	Min	Min	Min	Min
10th %ile Green (s)	45.0	45.0	45.0	45.0	0.0	0.0	0.0	0.0
10th %ile Term Code	Dwell	Dwell	Dwell	Dwell	Skip	Skip	Skip	Skip

Intersection Summary

Cycle Length: 70
Actuated Cycle Length: 53.4
Control Type: Semi Act-Uncoord
90th %ile Actuated Cycle: 50.3
70th %ile Actuated Cycle: 50
50th %ile Actuated Cycle: 50.9
30th %ile Actuated Cycle: 65
10th %ile Actuated Cycle: 51



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	16	353	58	746	23	48	18	62
v/c Ratio	0.03	0.14	0.08	0.30	0.11	0.17	0.09	0.22
Control Delay	4.5	3.9	4.6	4.7	19.8	11.2	19.2	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.5	3.9	4.6	4.7	19.8	11.2	19.2	12.8
Queue Length 50th (m)	0.5	6.0	1.9	15.1	1.9	1.1	1.5	2.3
Queue Length 95th (m)	2.3	10.4	5.5	23.3	6.9	8.1	5.8	10.4
Internal Link Dist (m)		66.2		101.3		139.1		43.7
Turn Bay Length (m)	15.0		35.0		15.0		15.0	
Base Capacity (vph)	484	2438	707	2471	703	888	712	901
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	0.03	0.14	0.08	0.30	0.03	0.05	0.03	0.07

Intersection Summary

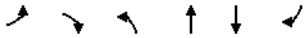
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	293	32	53	645	41	21	12	32	17	25	32
Future Volume (vph)	15	293	32	53	645	41	21	12	32	17	25	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		0.98	1.00		0.98	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.89		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1789	3481		1786	3530		1770	1653		1771	1678	
Flt Permitted	0.37	1.00		0.54	1.00		0.72	1.00		0.73	1.00	
Satd. Flow (perm)	694	3481		1016	3530		1335	1653		1353	1678	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	318	35	58	701	45	23	13	35	18	27	35
RTOR Reduction (vph)	0	7	0	0	4	0	0	31	0	0	31	0
Lane Group Flow (vph)	16	346	0	58	742	0	23	17	0	18	31	0
Confl. Peds. (#/hr)	25		17	17		25	35		33	33		35
Heavy Vehicles (%)	0%	2%	0%	0%	1%	2%	0%	0%	0%	0%	0%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)	36.1	36.1		36.1	36.1		6.5	6.5		6.5	6.5	
Effective Green, g (s)	36.1	36.1		36.1	36.1		6.5	6.5		6.5	6.5	
Actuated g/C Ratio	0.66	0.66		0.66	0.66		0.12	0.12		0.12	0.12	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	458	2301		671	2333		158	196		161	199	
v/s Ratio Prot		0.10			c0.21			0.01			c0.02	
v/s Ratio Perm	0.02			0.06			0.02			0.01		
v/c Ratio	0.03	0.15		0.09	0.32		0.15	0.09		0.11	0.16	
Uniform Delay, d1	3.2	3.5		3.3	4.0		21.6	21.4		21.5	21.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.1		0.3	0.4		0.4	0.2		0.3	0.4	
Delay (s)	3.4	3.6		3.6	4.3		22.0	21.6		21.8	22.0	
Level of Service	A	A		A	A		C	C		C	C	
Approach Delay (s)		3.6			4.3			21.7			21.9	
Approach LOS		A			A			C			C	

Intersection Summary				
HCM 2000 Control Delay	6.1	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.29			
Actuated Cycle Length (s)	54.6	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	62.0%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	3	12	10	76	48	5
Future Volume (vph)	3	12	10	76	48	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.890				0.988	
Flt Protected	0.991			0.994		
Satd. Flow (prot)	1676	0	0	1840	1765	0
Flt Permitted	0.991			0.994		
Satd. Flow (perm)	1676	0	0	1840	1765	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	53.7			67.7	62.1	
Travel Time (s)	3.9			4.9	4.5	
Confl. Peds. (#/hr)	3	2				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	3%	7%	0%
Adj. Flow (vph)	3	13	11	83	52	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	16	0	0	94	57	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	21.9%	ICU Level of Service A	
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	12	10	76	48	5
Future Volume (Veh/h)	3	12	10	76	48	5
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	13	11	83	52	5
Pedestrians				2	3	
Lane Width (m)				3.6	3.6	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				68		
pX, platoon unblocked						
vC, conflicting volume	162	56	57			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	162	56	57			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	99			
cM capacity (veh/h)	825	1014	1560			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	16	94	57
Volume Left	3	11	0
Volume Right	13	0	5
cSH	972	1560	1700
Volume to Capacity	0.02	0.01	0.03
Queue Length 95th (m)	0.4	0.2	0.0
Control Delay (s)	8.8	0.9	0.0
Lane LOS	A	A	
Approach Delay (s)	8.8	0.9	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	21.9%	ICU Level of Service	A
Analysis Period (min)	15		

Network Totals

Number of Intersections	2
Total Delay (hr)	2
Stops (#)	514
Average Speed (km/hr	30
Total Travel Time (hr)	5
Distance Traveled (km)	149
Fuel Consumed (l)	31
Fuel Economy (km/l)	4.8
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	0
Performance Index	3.4

Appendix G

TDM checklist

Appendix E

Transportation Demand Management and Pedestrian Circulation Checklist

This checklist is designed to evaluate the incorporation of Transportation Demand Management (TDM) measures, including pedestrian circulation techniques, into development proposals. The template is modelled on the prototype Class 2: Medium Density/Moderate Congestion (TDM Moderate) checklist contained in *TDM Supportive Guidelines for Development Approvals* (ACT Canada, 2008).

The applicant must complete and return this checklist with their **Transportation Demand Management Plan** (TDMP) and/or **Pedestrian Circulation Plan** (PCP).

Application Summary

Development Application No: _____

Date: _____

Applicant: _____

Staff: _____

SCORE AND RATING: (63%) 2 Star

TDM SUPPORTIVE? Yes _____ No X

Scorecard

Use the scorecard below to determine the TDM rating and supportiveness of the development proposal based on the final score calculated on page E-5. If the proposal does not satisfy the minimum threshold, review and enhance the TDM measures.

Final Score	Rating	TDM Supportive?
91% - 100%	***** (5 Star)	YES
81% - 90%	**** (4 Star)	
71% - 80%	*** (3 Star)	
61% - 70%	** (2 Star)	NO (Review and Enhance TDM Measures)
50% - 60%	* (1 Star)	
Less than 50%	(None)	

CATEGORY A – Pedestrian Circulation					
In creating an environment that facilitates and supports pedestrian activity, the public realm needs to be accessible, safe, and comfortable to encourage movement on the street and in the surrounding area(s).					
	Features	**Yes**	**No**	**N/A**	**Comments**
A1	Development located within 800 m walking distance of residential (if employment) or employment (if residential) uses			X	Senior homes residence
A2	Development located within 400 m walking distance of retail, restaurant, or other pedestrian-oriented uses or similar services provided on-site	X			
A3	At least one functional building entrance oriented towards public space (i.e., street, park, square)	X			
A4	At least one functional building entrance located close to on-site or adjacent street transit stop		X		
A5	Nearest functional building entrance located within 50 m of (and connected to) public street with sidewalk	X			
A6	Accessible on-site pedestrian routes provided and connected to surrounding network and transit	X			
A7	Continuous sidewalks (1.5 m min. width) provided along all on-site roads and both sides of adjacent public streets	X			
A8	No conflict points between pedestrians and other users (i.e., vehicles, cyclists)		X		
A9	Adequate and properly designed pedestrian crossings provided on-site	X			
A10	Off-site road works designed to maximize pedestrian safety and minimize pedestrian crossing distances (e.g., no right turn channelization)	X			
A11	Amenities provided along pedestrian routes (i.e., benches, street furniture)		X		
A11	Shelters and benches provided at transit stops	X			
A12	Wayfinding provided to guide pedestrians	X			
A13	Lighting provided along pedestrian routes	X			
A14	Weather protection provided along pedestrian routes		X		
A15	Vehicle parking areas located away from street and pedestrian routes	X			
A16	Protected pedestrian routes provided through vehicle parking lots and linked to building(s)	X			

CATEGORY A – Pedestrian Circulation					
In creating an environment that facilitates and supports pedestrian activity, the public realm needs to be accessible, safe, and comfortable to encourage movement on the street and in the surrounding area(s).					
	Features	**Yes**	**No**	**N/A**	**Comments**
A17	Passenger pick-up and drop-off areas located to side or rear of buildings, downstream from major building entrance points, but no more than 30 m away		X		
A18	Loading areas located away from street and pedestrian routes	X			
	Sub-Total	12	5	1	

CATEGORY B – Cycling Orientation					
In creating an environment that facilitates and supports cycling activity, the public realm needs to be accessible, safe, and comfortable to encourage movement on the street and in the surrounding area(s).					
	Features	**Yes**	**No**	**N/A**	**Comments**
B1	On-site cycling routes provided and connected to surrounding network		X		
B2	Class A (long-term) and Class B (short-term) bicycle parking spaces provided per City of Mississauga Zoning By-law (reproduced at end of this checklist for reference)		X		
B3	Bicycle repair station provided at-grade or within underground structure close to long-term bicycle parking		X		
B4	Wayfinding provided to guide cyclists		X		
B5	Other amenities provided for cyclists (e.g., showers, change rooms)		X		
	Sub-Total	0	5		

CATEGORY C – Transit Service					
The availability and proximity of convenient public transit service with direct pedestrian linkages to the building expands the range of viable travel options for employees, visitors, and residents.					
	Features	**Yes**	**No**	**N/A**	**Comments**
C1	Development located within 800 m walking distance of a rapid transit station (existing or planned) or within 400 m of two or more public bus routes with minimum 15-minute headway service during peak commuter periods and every 30 minutes throughout the remainder of the day	X			
C2	Information about public transit routes, schedules, and fares provided in accessible and visible location on-site and in adjacent bus stops	X			
C3	Sufficient capacity available to accommodate transit riders generated by development	X			
	Sub-Total	3	0		

CATEGORY D – Motor Vehicle Parking					
The location and design of motor vehicle parking facilities can affect the character and cost of a development. Avoiding the oversupply of parking can also help reduce single occupant vehicle travel.					
	Features	**Yes**	**No**	**N/A**	**Comments**
D1	No more than the minimum number of parking spaces required by the Zoning By-law provided	X			
D2	Priority parking equivalent to 10% of employee spaces provided for carpooling/vanpooling	X			Parking for Administrator and live-in Superintendent.
D3	Priority parking equivalent to 3% of full-time building occupants provided for auto share and hybrid/alternative fuel vehicles		X		Not at this time. Likely to provide dedicated parking spaces for EVs in future, at a time when EV chargers installed.
D4	Priority parking equivalent to 1% of the parking stalls provided for mopeds, motorcycles, and minicars		X		Not beneficial for intended development demographic (seniors) – do not typically own these types of vehicles.
D5	Parking shared for different uses on-site and/or adjoining properties		X		
D6	50% of parking located underground or in structured parking	X			Approximately 50% underground.
	Sub-Total	3	3		

CATEGORY E – Incentives

Building owners and tenants can offer occupants Transportation Demand Management incentives that help reduce single occupant vehicle travel.

	Features	Yes	No	N/A	Comments
E1	TDM Plan prepared that targets a 10% reduction in peak hour trips using forecast trip generation with status quo travel characteristics		X		
E2	Building owner/tenant will provide a ride matching service for car/vanpooling	X			
E3	Building owner/tenant will provide emergency ride home options		X		
E4	Building owner/tenant will provide subsidized transit passes for all occupants for a period of at least two years		X		MiWay Seniors Transit fare already reduced to $1/trip in pilot program.
E5	Building owner/tenant will charge for parking as an unbundled cost to occupants	X			
E6	Building owner/tenant will reduce cost for users of car/van pool, bicycle, moped/motorcycle/minicar spaces			X	Seniors have very little rates of ownership of moped/motorcycles. Typically seniors in affordable housing cannot afford to buy new cars.
E7	Building owner/tenant will become a member of a local TMA and appoint a TDM Coordinator to oversee and coordinate promotional opportunities and events on site		X		
	Sub-Total	2	4	1	

SCORING SUMMARY

Count the number of applicable features for each category (items not assigned "N/A") and enter under the column "Applicable" in the table below.

Assign 1 point to each "Yes" answer, except for Category A (Pedestrian Circulation) where each "Yes" answer is worth ½ a point and Category C (Transit Service) where each "Yes" answer is worth 2 points. Award 0 points for a "No" answer. Tally the points for each category under the column "Points" in the table below.

Calculate "Final Score" as a percentage by dividing total "Points" by the total "Applicable" and enter in the table below and in the "SCORE AND RATING" field on page E-1.

Category	Possible	Applicable	Points	Comments
A – Pedestrian Circulation	9 (18/2)	8.5	6	
B – Cyclist Orientation	5	5	0	
C – Transit Service	6 (3x2)	6	6	
D – Motor Vehicle Parking	6	6	3	
E – Incentives	7	6	2	
TOTAL	**33**	31.5	20	
Score% (Points/Applicable)			63%	

Appendix H

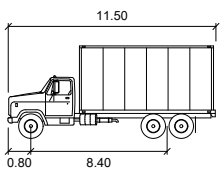
Site Circulation Assessment

THIS AUTOTURN SWEPT PATH ANALYSIS HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

paradigm TRANSPORTATION SOLUTIONS LIMITED

NO.	DATE	INITIAL	REVISION DETAIL
1	2024-01-08	LC	UPDATED SITE PLAN

DESIGN VEHICLE:

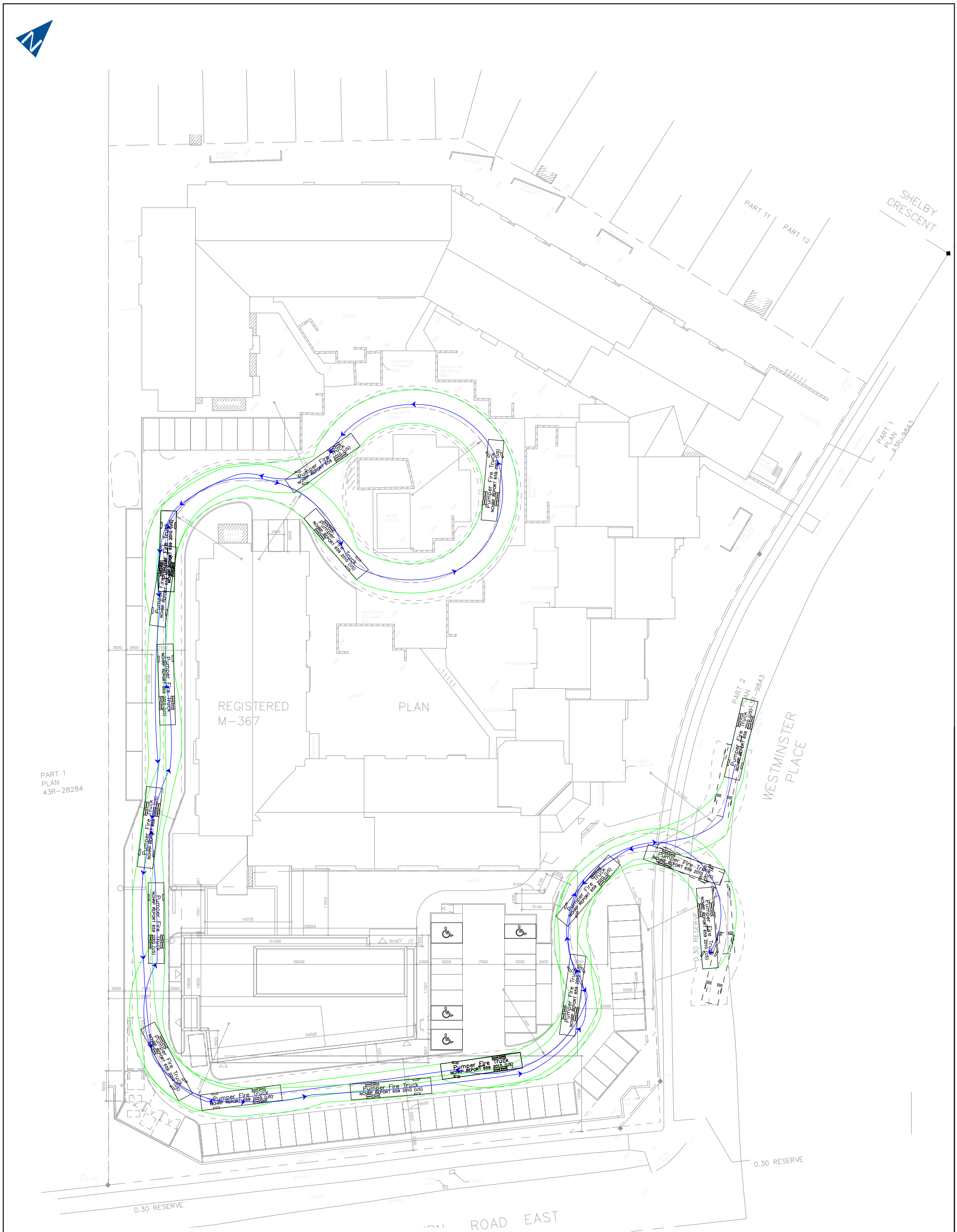


HSU

	meters
Width	: 2.60
Track	: 2.60
Lock to Lock Time	: 6.0
Steering Angle	: 40.0

AUTOTURN ASSESSMENT
4150 WESTMINSTER PLACE
MISSISSAUGA, ON

SCALE: 1:600	DRAWN: LC	DATE: NOVEMBER 2023	DWG 01
DESIGN: LC	CHECK: TW	PROJECT: 220233	



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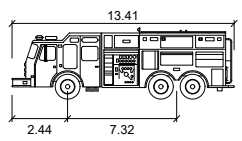
paradigm TRANSPORTATION SOLUTIONS LIMITED

NO.	DATE	INITIAL	REVISION DETAIL
1	2024-01-08	LC	UPDATED SITE PLAN

DESIGN VEHICLE:



Pumper Fire Truck

	meters
Width	: 2.59
Track	: 2.59
Lock to Lock Time	: 6.0
Steering Angle	: 37.8

AUTOTURN ASSESSMENT
4150 WESTMINSTER PLACE
MISSISSAUGA, ON

SCALE: 1:600	DRAWN: LC	DATE: NOVEMBER 2023	DWG 02
DESIGN: LC	CHECK: TW	PROJECT: 220233	

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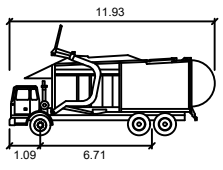
paradigm TRANSPORTATION SOLUTIONS LIMITED

NO.	DATE	INITIAL	REVISION DETAIL
1	2024-01-08	LC	UPDATED SITE PLAN

DESIGN VEHICLE:



RPeel Waste

	meters
Width	: 2.77
Track	: 2.77
Lock to Lock Time	: 6.0
Steering Angle	: 31.1

AUTOTURN ASSESSMENT
4150 WESTMINSTER PLACE
MISSISSAUGA, ON

SCALE: 1:600	DRAWN: LC	DATE: NOVEMBER 2023	DWG 03
DESIGN: LC	CHECK: TW	PROJECT: 220233	

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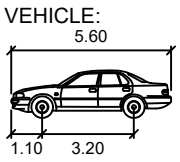
paradigm TRANSPORTATION SOLUTIONS LIMITED

NO.	DATE	INITIAL	REVISION DETAIL
1	2024-01-08	LC	UPDATED SITE PLAN

DESIGN VEHICLE:

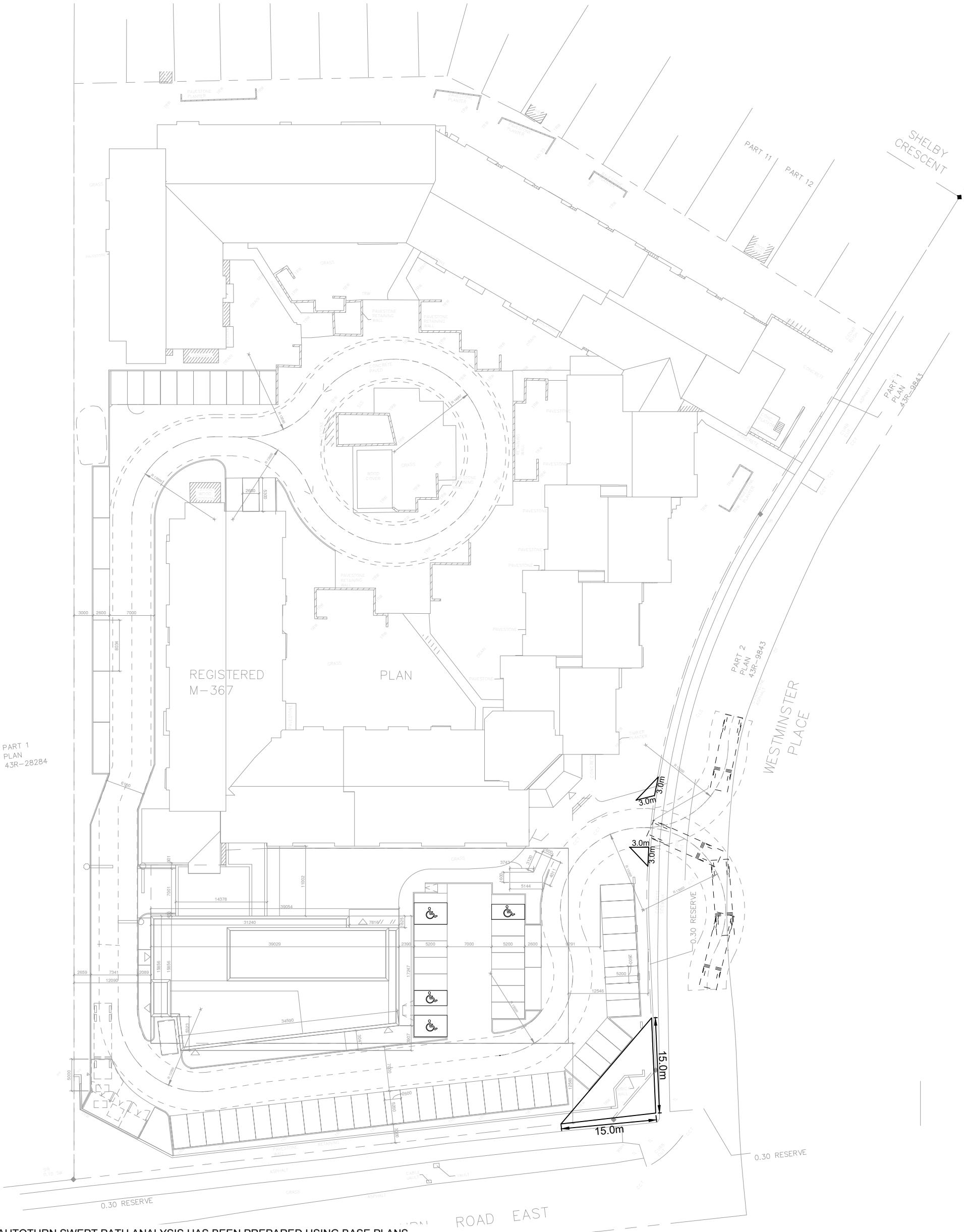


P

	meters
Width	: 2.00
Track	: 2.00
Lock to Lock Time	: 6.0
Steering Angle	: 35.9

AUTOTURN ASSESSMENT
4150 WESTMINSTER PLACE
MISSISSAUGA, ON

SCALE: 1:600	DRAWN: LC	DATE: NOVEMBER 2023	DWG 04
DESIGN: LC	CHECK: TW	PROJECT: 220233	



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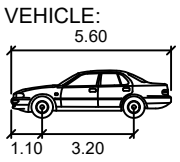
DESIGN VEHICLE:



P

	meters
Width	: 2.00
Track	: 2.00
Lock to Lock Time	: 6.0
Steering Angle	: 35.9

AUTOTURN ASSESSMENT
4150 WESTMINSTER PLACE
MISSISSAUGA, ON

SCALE: 1:600	DRAWN: LC	DATE: NOVEMBER 2023	DWG 05
DESIGN: LC	CHECK: TW	PROJECT: 220233	