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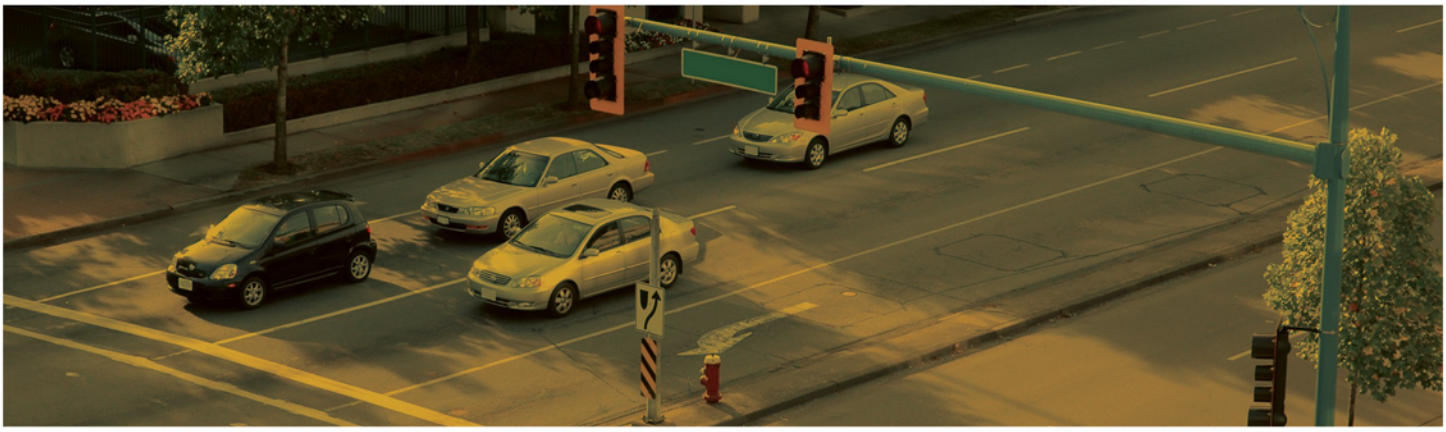


1583 Cormack Crescent

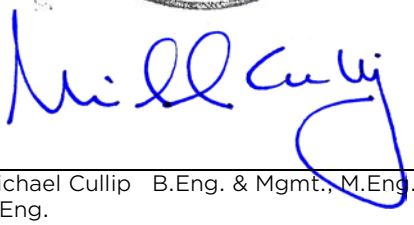
TRAFFIC IMPACT STUDY & TRANSPORTATION DEMAND MANAGEMENT STRATEGY

Elm Cormack (2017) Inc.

File 419352 | October 29, 2020

Document Control

File:	Prepared by:	Prepared for:
419352	**Tatham Engineering Limited** 41 King Street, Unit 4 Barrie, Ontario L4N 6B5 **T** 705-733-9037 **tathameng.com**	**Elm Cormack (2017) Inc.** 1931 Highway 7 Concord, Ontario L4K 1V5
Date: **October 29, 2020**		

Authored by:	Reviewed by:
	 
David Perks M.Sc., PTP Transportation Planner, Project Manager	Michael Cullip B.Eng. & Mgmt., M.Eng., P.Eng. Vice President Head Office Operations

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Issue	Date	Description
1	May 10, 2019	Final Report
2	October 29, 2020	Revisions to Address Region of Peel Comments

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1 Introduction

Tatham Engineering Limited was retained by Elm Cormack (2017) Inc. to address the traffic impacts associated with the proposed residential development located at 1583 Cormack Crescent in the City of Mississauga, Regional Municipality of Peel. The location of the development site is illustrated in Figure 1. The initial study was submitted in May 2019. This is the 2nd submission of the Traffic Impact Study and TDM Strategy report, revised to address comments provided by the Region of Peel following the 1st submission.

The purpose of this study is to address the requirements of the City and Region with respect to the potential transportation impacts of the development on the area road network. In particular, the following will be discussed:

- the operations of the road system through the study area prior to the proposed development;
- an estimation of the growth in the traffic volumes not otherwise attributed to the development (i.e. from overall growth in the area and/or other developments);
- an estimation of the number of new trips the proposed development is likely to generate;
- the operations of the study area road system upon completion of the development;
- the resulting impacts and need for mitigating measures (if required) to ensure acceptable overall road operations; and
- transportation demand management measures.

Chapter 2 of this report addresses the existing conditions, detailing the road system and corresponding traffic operations. Chapter 3 addresses future conditions, prior to the completion of the proposed development, and will address the expected growth in the traffic levels and the resulting operating conditions. Chapters 4 and 5 address the proposed development, the ensuing vehicle trips that it will generate, and the associated impacts on the road system. Chapter 6 addresses the Traffic Demand Management opportunities for the development and discusses the implementation of the TDM program. Lastly, Chapter 7 summarizes the report and the key findings.

2 Existing Conditions

This chapter will describe the road network, traffic volumes and operations for the existing conditions.

2.1 ROAD NETWORK

The road network to be addressed by this study consists of Dixie Road and Rometown Drive and their respective intersection.

An aerial photo of the study area and photographs of the road system are provided in Figure 2.

2.1.1 Road Sections

Dixie Road

Dixie Road is an arterial road under the jurisdiction of the Regional Municipality of Peel. The road is oriented north-south through the study area and has a 4-lane urban cross section, providing 2 lanes of travel per direction. The road has a posted speed limit of 60 km/h through the study area and as such a design speed of 80 km/h has been assumed (posted speed limit + 20 km/h). As an urban arterial road, Dixie Road has an assumed planning capacity in the order of 800 to 1,000 vehicles per hour per lane (vphpl).

Rometown Drive

Rometown Drive is a local road under the jurisdiction of the City of Mississauga. The road is oriented east-west through the study area and has a 2-lane urban cross section, providing one lane of travel per direction. The road has a posted speed limit of 50 km/h. As a local road, Rometown has an assumed planning capacity of 400 vphpl.

2.1.2 Key Intersection

Dixie Road & Rometown Drive

The intersection of Dixie Road with Rometown Drive is a 4-leg signalized intersection. The east approach (Rometown Drive) consists of a shared left/through/right turn lane, whereas the west approach (commercial access to Dixie Outlet Mall) consists of an exclusive left turn lane and a shared through/right turn lane. The north approach (Dixie Road) consists of an exclusive left turn lane, 2 through lanes and a channelized right turn lane. The south approach (Dixie Road) consists of an exclusive left turn lane, a through lane and a shared through/right turn lane.

2.2 EXISTING TRAFFIC VOLUMES

To determine existing traffic volumes at the study area intersection, traffic counts were obtained from the Region, conducted on November 7, 2017 from 7:00 to 9:00 and 15:00 to 18:00. To

reflect 2019 conditions, the traffic counts were increased by a growth rate of 2% (consistent with discussions in Section 3.2.1).

The traffic count details are provided in Appendix A, whereas the resulting 2019 AM and PM peak hour volumes are illustrated in Figure 3.

2.3 EXISTING TRAFFIC OPERATIONS

2.3.1 Intersection Operations

The assessment of existing conditions provides the baseline from which the future traffic volumes and operations (both with and without the subject development) can be assessed. The capacity, and hence operations, of a road system is effectively dictated by its intersections. The analysis is based on the 2019 traffic volumes, the existing intersection configuration and control (including signal timing obtained by the Region, provided in Appendix A) and procedures outlined in the *2000 Highway Capacity Manual*[1] (using Synchro v.10 software). It is noted that the Peak Hour Factors (PHF) applied in the assessment reflect those observed during the 2017 traffic counts. For a signalized intersection, the review considers the average delay (measured in seconds), level of service (LOS) and volume to capacity (v/c) for each approach and the overall intersection. Level of service A corresponds to the best operating condition with minimal delays whereas level of service F corresponds to poor operations resulting from high intersection delays. A v/c ratio of less than 1.0 indicates the intersection movement/approach is operating at less than capacity while v/c of 1.0 indicates capacity has been reached.

A summary of the analyses is provided in Table 1. Detailed operations worksheets for the existing traffic conditions are included in Appendix B.

Table 1: Intersection Operations – 2019 Conditions

INTERSECTION, MOVEMENT & CONTROL			WEEKDAY AM PEAK HOUR			WEEKEND PM PEAK HOUR		
			delay	LOS	v/c	delay	LOS	v/c
Dixie Road & Rometown Drive	EB	signal	62	E	0.71	61	E	0.79
	WB		48	D	0.18	43	D	0.10
	NB		4	A	0.23	7	A	0.25
	SB		4	A	0.18	7	A	0.22
	overall		12	B	0.30	15	B	0.37

Based on the existing volumes and intersection configuration and control, the study area intersection provides excellent overall operations (LOS B or better) with average delays during

[1] *Highway Capacity Manual.* Transportation Research Board, Washington DC, 2000.

both peak hours. While some approaches experience a LOS E, this is considered acceptable in that all movements will operate below capacity. As such, no improvements are required to support the existing conditions.

2.3.2 Road Section Operations

As previously noted, the following lane capacities have been considered for the adjacent road network (for Dixie Road, the lower capacity threshold of 800 vphpl has been assumed):

- Dixie Road – 800 vphpl; and
- Rometown Drive – 400 vphpl.

The existing road section operations are summarized in Table 2. The analysis considers the peak hour peak directional volumes and the noted assumed planning capacities.

Table 2: Road Section Operations – 2019 Conditions

ROAD & LANES PER DIRECTION		CAPACITY[1]		TRAFFIC VOLUMES		VOLUME TO CAPACITY	
		NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
Dixie Road	2	1,600	1,600	730	794	0.46	0.50
Rometown Drive	1	400	400	103	74	0.26	0.18

[1] Capacity is vehicles per hour per direction.

As indicated, the study area road network is operating at 50% of capacity or less (i.e. $v/c \leq 0.50$), thus indicating that the network has excess reserve capacity. No improvements are recommended to address capacity under existing conditions.

3 Future Background Conditions

This chapter will describe the road network and background traffic volumes expected for the 2024 horizon year, adopted to reflect full build-out and occupancy of the proposed development (5-year build-out). While additional horizon years are typically considered (e.g. 5 and 10 years beyond build-out), given the scope of the development and limited volumes, a single 5-year horizon is deemed appropriate.

3.1 FUTURE ROAD NETWORK

The Ontario Ministry of Transportation (MTO) is currently undertaking the detailed design for Contract 2 of the improvements to the Queen Elizabeth Way (QEW) from east of Cawthra Road to east of Dixie Road. The preferred design plan was developed and documented within the *Transportation Environmental Study Report (TESR)*[2], completed in January 2016 (excerpts have been attached for reference in Appendix C).

Specific to the study area, the Dixie Road interchange will be realigned and reconfigured to a full-moves interchange (i.e. adding ramps and a new access to the QEW westbound from Dixie Road) with 2 lanes of through traffic in each direction over the Dixie Road bridge. The south service road (to the west of Dixie Road) will be re-aligned and extended to the south, running parallel to Dixie Road before ultimately intersecting with Dixie Road opposite Rometown Drive, forming the new west leg of the intersection. As previously noted, the existing west leg of the Dixie Road and Rometown Drive intersection provides access to the Dixie Outlet Mall. The proposed realignment of the South Service Road will close access to the mall at this intersection (although mall access will still be available further north along the South Service Road). The existing mall access to the south will be improved and signalized to accommodate the re-assignment of mall traffic. Other changes to the intersection of Dixie Road with Rometown Drive include the removal of the channelized southbound right turn lane (converted to a dedicated right turn lane) and the addition of a dedicated bus lane on the west leg, providing public transit with an exclusive egress movement from the Dixie Outlet Mall.

At this time, the schedule of Contract 2 has not been specified. However, given that detailed design is underway, and construction of Contract 1 is expected to be completed by 2021, the Dixie Road interchange improvements have been assumed to be completed by the 2024 horizon year.

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[2] *Transportation Environmental Study Report – Queen Elizabeth (QEW) from Evans Avenue to Cawthra Road.* MMM Group Ltd. January 2016.

3.2 FUTURE BACKGROUND TRAFFIC VOLUMES

Background traffic volumes expected for the 2024 horizon year have been determined based on the existing traffic volumes, historical and projected growth, and projected volumes associated with the anticipated QEW improvements.

3.2.1 Background Growth

Historic Traffic Growth

Historic traffic volumes were obtained from the Region of Peel's open traffic database for the count station located on Dixie Road, 1.5 kilometres north of Lakeshore Road (approximately 125 metres south of the study area intersection). The Annual Average Daily Traffic (AADT) volumes on Dixie Road for the period of 2004 to 2014 shows an average annual decrease of 3.8%.

Population & Employment Growth

The *Mississauga Official Plan*[3] indicates that the population of the City increased slightly from 730,000 persons in 2009 to 738,000 in 2011, or 0.22% per annum. The 2016 census results indicate similar growth (0.23% per annum) between 2011 and 2016. The *Official Plan* further notes that employment increased at an annual growth of 0.22%, from 453,000 to 455,000, between 2009 and 2011.

The *Official Plan* also provides population and employment forecasts for the period of 2011 to 2021. From 2011 to 2021, the official plan forecasts that the population and employment are expected to increase at an annual growth of 0.42% and 0.83%, respectively.

Overall Background Growth

In consideration of the historic growth in the area and future growth projections for the City, a background growth rate of 2% per annum has been applied to the traffic volumes on subject road network. As nominal growth has been projected based on the documents referenced, consideration for a 2% annual growth will ensure a conservative approach

3.2.2 Background Traffic Volumes

Given the proximity of the subject site to the QEW/Dixie Road interchange and the improvements forthcoming, a significant change in traffic patterns and volumes is expected at the subject intersection, specifically along the Dixie Road corridor. Traffic volume projections developed during the preliminary design of the QEW project were obtained from the MTO for the 2021 horizon year (provided in Appendix A). In comparing the 2021 projections provided by MTO to 2021 projections established based on the existing intersection counts and a 2% annual

[3] *Mississauga Official Plan*. August 1, 2018.

growth rate, the MTO projections reflect overall increases of 50% and 31% during the AM and PM peak hours respectively. The northbound and southbound movements on Dixie Road reflect an increase of 49% and 21% during the AM peak hour, reversing to 34% and 47% during the PM peak hour. These increases are considered reasonable given that the interchange improvements will convert Dixie Road to a full moves interchange, attracting motorists who may have previously chosen alternate routes to access the highway. Additionally, the pronounced directional split between northbound/southbound movements during the peak hours is expected given commuter traffic patterns, with the majority of motorists moving north through the intersection to reach the interchange during the morning peak and vice versa during the afternoon peak.

While it is recognized that the projections may fluctuate, for the purpose of this traffic study and in considering the relatively nominal effect the development will have at the intersection, the traffic projections obtained from MTO have been adopted.

The resulting 2024 background traffic volumes are illustrated in Figure 4. The background volumes are based on the 2021 projected volumes obtained from MTO, adjusted to reflect a continued growth background growth rate of 2.0% per annum.

3.3 BACKGROUND TRAFFIC OPERATIONS

3.3.1 Intersection Operations

With MTO Improvements

The study area intersections were again analyzed for the 2024 horizon year given the projected background volumes, the results of which are summarized in Table 3 (detailed worksheets are provided in Appendix D). Intersection improvements as described in Section 3.1 have been incorporated in the analysis including optimized signal timing to ensure efficient operations at the study area intersection.

Table 3: Intersection Operations – 2024 Background Conditions

INTERSECTION, MOVEMENT & CONTROL			WEEKDAY AM PEAK HOUR			WEEKEND PM PEAK HOUR		
			delay	LOS	v/c	delay	LOS	v/c
Dixie Road & Rometown Drive	EB	signal	38	D	0.92	34	C	0.76
	WB		11	B	0.13	21	C	0.07
	NB		27	C	0.73	10	A	0.38
	SB		20	C	0.36	11	B	0.51
	overall		27	C	0.84	13	B	0.59

As indicated, the study area intersection will provide acceptable overall operations (LOS C or better) with average delays through the 2024 horizon given the assumed background traffic volumes and improved intersection configurations and control. As such, no intersection improvements are required to accommodate the future background conditions.

Without MTO Improvements

Recognizing that the timeline for Contact 2 of the QEW/Dixie Road interchange improvements has yet to be finalized, an alternate scenario has been established to consider operations at the study area intersection under the existing configuration (i.e. assuming the improvements are not implemented within the study horizon period). Understanding that the traffic volume projections provided by MTO were derived in consideration of the planned interchange improvements, such would not be applicable in a scenario without the planned improvements. As such, the intersection of Dixie Road with Rometown Drive was re-assessed based on background 2024 volumes established by applying the 2.0% growth rate to the 2019 existing volumes. The resulting 2024 background traffic volumes (without improvements) are illustrated in Figure 5. Results of the intersection operations are provided in Table 4 with detailed worksheets provided in Appendix D. It is noted that the signal timing has been optimized to endure optimal operations.

Table 4: Intersection Operations – 2024 Background Conditions (w/o improvements)

INTERSECTION, MOVEMENT & CONTROL			WEEKDAY AM PEAK HOUR			WEEKEND PM PEAK HOUR		
			delay	LOS	v/c	delay	LOS	v/c
Dixie Road & Rometown Drive	EB	signal	27	C	0.52	30	C	0.72
	WB		25	C	0.18	20	C	0.10
	NB		5	A	0.30	9	A	0.35
	SB		5	A	0.23	8	A	0.30
	overall		8	A	0.34	12	B	0.46

As indicated, the intersection will provide excellent overall operations under 2024 background conditions when considering the existing intersection configuration without the planned improvements.

Need for Improvements

The study area intersection is expected to provide acceptable operations regardless of whether or not the interchange improvements are implemented by 2024. No further improvements, other than those noted, are required.

3.3.2 Road Section Operations

With MTO Improvements

The road section capacity operations have been reviewed for the 2024 horizon period based on the projected background volumes and considering the noted MTO improvements. The results are summarized in Table 5.

As noted, the study area road network is expected to operate at 87% of capacity or less through the 2024 horizon period (i.e. v/c ≤ 0.87) under background conditions. Thus, no improvements are required to increase road section capacity given the projected background conditions.

Table 5: Road Section Operations – 2024 Background Conditions

ROAD & LANES PER DIRECTION		CAPACITY[1]		TRAFFIC VOLUMES		VOLUME TO CAPACITY	
		NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
Dixie Road	2	1,600	1,600	1,385	1,242	0.87	0.78
Rometown Drive	1	400	400	96	101	0.24	0.25

[1] Capacity is vehicles per hour per direction.

4 Proposed Development

This section will provide additional details with respect to the proposed residential development, including its location, the projected site generated traffic volumes and the assignment of such to the adjacent road network.

4.1 SITE LOCATION

As illustrated in Figure 1, the subject site is located on the east side of Dixie Road, north of Edencrest Drive within the City of Mississauga, Regional Municipality of Peel. The property is bound by Cormack Crescent to the west, undeveloped lands to the north and existing residential lands to the east and south.

4.2 PROPOSED LAND-USE & PHASING

The proposed 1583 Cormack Crescent development will consist of 19 single detached units. Full build-out is expected by 2024.

A site plan is provided in Figure 6.

4.3 SITE ACCESS

As illustrated in Figure 6, the development will be served via a connection to Edencrest Drive. The existing access onto Cormack Crescent will be decommissioned as part of the QEW/Dixie Road interchange improvements.

4.4 ON-SITE CIRCULATION

The internal road will provide two-way operations and maintain a minimum paved width of 7.0 metres throughout the site. The road as proposed is sufficient with respect to the circulation of site generated traffic and the manoeuvering requirements of the design vehicles accessing the parking areas (i.e. passenger cars, SUV's, vans, etc.).

4.5 WASTE MANAGEMENT PLAN

Waste removal for the development will be via curbside collection provided by the Region of Peel. The internal road and cul-de-sac has been designed to satisfy the design requirements detailed in the Region's *Waste Collection Design Standards Manual* - including a minimum road width of 6.0 metres (the road has a proposed width of 7.0 metres) and a minimum turning radius of 13.0 metres.

The waste collection vehicle will enter the site and complete the curbside collection in a counterclockwise manner. A drawing illustrating the waste collection vehicle route is provided in Appendix E.

4.6 SITE TRAFFIC

4.6.1 Trip Generation

The number of vehicle trips to be generated by the proposed development has been determined based on the type of use, development size, and consideration of the following ITE trip generation rates as per ITE Trip Generation Manual[4] 10th Edition. Based on the proposed residential use, the *single family detached* (ITE code 210) land use has been applied to the development. Trip estimates have been established using the fitted curve equations derived from the ITE survey data for the respective land-use and peak hour, considering 19 residential units. The resulting trip estimates are provided in Table 6.

Table 6: Trip Estimates

LAND-USE		WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
		IN	OUT	TOTAL	IN	OUT	TOTAL
single family detached (ITE 210)	equation[1]	(T) = 0.71(X) + 4.80			Ln(T) = 0.96Ln(X) + 0.20		
	distribution	25%	75%	100%	58%	42%	100%
	estimate	4	14	18	13	8	21

[1] ITE fitted curve equations - where T = the number of trips, and X = the number of residential units

Overall, the proposed development is expected to generate 18 trips during the weekday AM peak hour and 21 trips during the weekday PM peak hour (total of inbound and outbound trips).

In reviewing the travel mode data from the 2016 *Transportation Tomorrow Survey* for Mississauga, approximately 16% of trips were made by a non-auto mode of travel (i.e. transit, school bus, walking or cycling). In applying a modal split of 84% auto and 16% non-auto, the vehicle trips generated by the development decrease to 15 AM peak hour trips and 18 PM peak hour trips. While it is expected that a portion of the trips generated by the site will be non-auto related, the reduction has not been considered in the assessment to ensure a conservative assessment of the road operations. Regardless, the reduction related to mode share is very low (3 trips during each peak hour) due to the limited size of the development and will not have any material impact on the operational assessment.

4.6.2 Trip Distribution & Assignment

The distribution of the new trips generated by the site has been developed based on a review of trip distribution data provided in the *2016 Transportation Tomorrow Survey* data for Mississauga and the traffic zone in which the site is located. The following distribution has been assumed:

[4] *ITE Trip Generation Manual, 10th Edition*. Institute of Transportation Engineers, September 2017.

- to/from the east – 20%;
- to/from the west - 2%
- to/from the north – 3%;
- to/from the south - 5%; and
- within Mississauga – 70%.

As noted, 70% of the trips remain wholly within Mississauga. The distribution of those trips that remain within Mississauga has been determined in consideration of the location of the site within Mississauga (southeast limit of Mississauga). The resulting overall distribution for site traffic is as follows:

- to/from the north (via Dixie Road) – 75%;
- to/from the south (via Dixie Road) – 15%; and
- to/from the west (via South Service Road) – 10%.

It is noted that the trips distributed to/from the north on Dixie Road includes traffic that will access the QEW to reach destinations to the east and west.

The assignment of the trips generated by the development to the area road network is based on the trip distribution noted above with consideration given to the expected travel routes. The resulting site generated traffic volumes assigned to the road network is illustrated in Figure 7.

5 Transportation Impacts

This chapter will address the resulting impacts of the proposed development on the adjacent road system. The following areas are to be addressed:

- operations at the key intersection;
- road section operations; and
- potential improvements to the study area road network, if necessary.

5.1 FUTURE TRAFFIC VOLUMES

To assess the impacts of the increased traffic volumes resulting from the proposed development, the site generated traffic was combined with the 2024 background traffic volumes. The resulting future total traffic volumes are presented in Figure 8.

5.2 FUTURE TRAFFIC OPERATIONS

5.2.1 Intersection Operations

With MTO Improvements

The operations of the study area intersection were again investigated considering the total traffic volumes for the horizon year. The results of the operational review are provided in Table 7, whereas detailed worksheets are provided in Appendix F.

Table 7: Intersection Operations – 2024 Total Conditions

INTERSECTION, MOVEMENT & CONTROL			WEEKDAY AM PEAK HOUR			WEEKEND PM PEAK HOUR		
			delay	LOS	v/c	delay	LOS	v/c
Dixie Road & Rometown Drive	EB	signal	39	D	0.92	34	C	0.77
	WB		11	B	0.15	21	C	0.08
	NB		27	C	0.73	10	A	0.38
	SB		21	C	0.37	11	B	0.51
	overall		28	C	0.85	13	B	0.60

As indicated, the study area intersection will provide acceptable operating conditions (LOS C or better) with average delays through 2024 given the projected total traffic volumes and assumed intersection configuration and control. It is noted that the 2024 total operations are comparable to those experienced under background conditions (i.e. the proposed development has minimal impact on the intersection operations).

Without MTO Improvements

It is noted that the intersection operations were not assessed to consider the existing configuration under future total conditions (i.e. no interchange improvements). As noted under background conditions, the intersection will provide excellent operations in 2024 in the event that the planned interchange improvements are not implemented. Recognizing the limited impact that the site traffic will have on the intersection of Dixie Road with Rometown Drive (as indicated through comparison of the intersection operations under 2024 background and 2024 total conditions), it can be inferred that the intersection will provide acceptable operations under 2024 total conditions without implementation of the planned improvements.

Need for Improvements

No improvements are required to accommodate the additional traffic generated by the subject development.

5.2.2 Road Section Operations

With MTO Improvements

The road section operations were reviewed again with consideration of the projected total traffic volumes for the 2024 horizon period, the results of which are provided in Table 8. As noted, the study area road network is expected to operate at 87% capacity or less through the 2024 horizon period (i.e. v/c ≤ 0.87) under total conditions. Thus, no improvements are required to increase road section capacity given the projected total conditions.

Table 8: Road Section Operations – 2024 Total Conditions

ROAD & LANES PER DIRECTION		CAPACITY[1]		TRAFFIC VOLUMES		VOLUME TO CAPACITY	
		NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
Dixie Road	2	1,600	1,600	1,392	1,249	0.87	0.78
Rometown Drive	1	400	400	110	116	0.28	0.29

[1] Capacity is vehicles per hour per direction.

6 Transportation Demand Management

6.1 TRANSPORTATION DEMAND MANAGEMENT (TDM)

Transportation Demand Management (TDM) is the use of policies, infrastructure, services and marketing and education programs to influence or encourage a behavioural shift in people with respect to how they travel. More specifically, TDM aims to reduce single occupancy vehicle trips and ultimately, the reliance on the private automobile by promoting alternative travel options. It is noted that the City requires that a TDM program or plan be developed and implemented in support of the noted development. The transportation demand management requirements and recommendation are included below.

6.2 TDM OPPORTUNITIES

6.2.1 Public Transit

In terms of public transit, the study area is primarily served by MiWay and Go Transit (GO), with GO operating out of the Dixie and Long Branch Go stations. There are two local transit stops within 400 metres of the subject development site, located within the Dixie Outlet Mall Bus Terminal Platform A & B, west of the subject site. Additionally, two GO stations are located within 2.5 kilometres of the subject site. While MiWay Transit is the primary service provider for the local area, GO Transit services provide wider connections to regions east and west of the study area.

The following routes provide service to the immediate area (route map is provided in Figure 9):

- MiWay Local Route 4 (Sherway Gardens);
- MiWay Local Route 5 (Dixie);
- Go Train (Lakeshore West Line); and
- Go Train (Milton Line).

A brief description of each route is provided below.

MiWay Local Route 4 (Sherway Gardens)

MiWay Route 4 is an east-west route which offers service between Westdale Mall and Sherway Gardens. The route travels along several city roads, most prominently North Service Road, Paisley Boulevard West and South Service Road. Service operates on a 20-minute headway during peak periods, with frequency reduced during the off-peak periods and weekends. MiWay Route 4 operates 7 days a week.

MiWay Local Route 5 (Dixie)

MiWay Route 5 is a north-south route which offers service between Derry Road East and Lakeshore Drive East. The route travels along Dixie Road, South Service Road, Ogden Avenue and Lakeshore Road East. Service operates on a 10 to 15-minute headway during peak periods, with frequency reduced during the off peak periods and weekends. MiWay Route 5 operates 7 days a week.

Go Train (Lakeshore West Line)

The Lakeshore West Line provides east-west service between Union Station in the City of Toronto and Hamilton GO Centre. Service operates every 30 minutes or less between 05:00 and 02:30 during weekdays and 06:43 and 02:30 on weekends. Key stops include Mimico Station, Oakville Station and Burlington Station.

Go Train (Milton Line)

The Milton Line provides east-west service between Union Station in the City of Toronto and Milton GO Centre. Service operates every 30 minutes or less between 05:00 and 02:30 during weekdays and 06:43 and 02:30 on weekends. Key stops include Kipling station, Cooksville Stations and Streetsville Station.

6.2.2 Pedestrian & Multi-Use Infrastructure

The subject site will be served by proposed pedestrian infrastructure on the south side of the internal road connecting to Edencrest Drive. As per the Exhibit ES-2g of the Preferred Plan (Appendix C), the QEW improvements include a sidewalk and multi-use trail along the east and west sides of Dixie Road, respectively. The infrastructure will extend over the Dixie Road bridge and along the South Service Road, allowing pedestrians the ability to cross the highway or travel east-west adjacent to the QEW.

With respect to the proposed pedestrian and multi-use facilities, the site is considered to be well connected to the local infrastructure.

6.3 TDM PROGRAM

A TDM program has been developed which provides a framework for implementation of specific TDM measures. The details of such are described below.

6.3.1 TDM Coordinator

The TDM Coordinator will be required to implement and manage the TDM program on an ongoing basis. The responsibilities of the TDM Coordinator include the following:

- champion of the TDM program;

- liaise with the Region and City to tailor and deliver a TDM program that meets the needs of the site;
- liaise with local transit providers in order to gather and disseminate transit service information (i.e. fare structures, schedules and maps) to the future residents to ensure that commuters are educated regarding transit options; and
- act as the TDM point of contact for residents.

The TDM Coordinator is the promoter, educator and facilitator for the TDM program. It is expected that the developer or builder for the site will assume the responsibilities of the TDM Coordinator. A new position is not required and thus there is no additional staffing cost associated with the TDM Coordinator position.

6.3.2 Marketing & Education

A site specific TDM marketing and education package will be prepared and distributed to all new residents of the development. The TDM package should include the following information:

- introduction to TDM objectives, goals and benefits;
- a travel survey;
- maps of cycling routes in Peel Region and the City of Mississauga;
- bicycle safety information;
- school travel planning initiatives;
- transit schedules for local services (i.e. MiWay and GO); and
- information on Smart Commute programs serving the area.

The marketing and education package will be organized in conjunction with Region and City staff to ensure consistency with the TDM programs being delivered to other residential developments of similar size within the Region/City.

6.3.3 Transit Initiatives

Encouraging the use of the available transit services serving the site is crucial to the overall success of the TDM program. In order to increase the likelihood that a commuter will try transit, it is important to remove or lessen the barriers or hurdles that currently prevent commuters from making the switch. The TDM plan will include the distribution of prepaid PRESTO cards (minimum $25.00 value) to the purchaser of each dwelling unit for use on local transit services. The intent of the prepaid card is to provide a financial incentive to encourage commuters to try public transit, with the ultimate goal a more permanent shift to transit use by commuters.

6.3.4 Communication Strategy

It is the responsibility of the developer (or the TDM coordinator appointed by the developer) to liaise with the Region, City and transit providers to ensure the efficient and effective delivery of the TDM information packages and prepaid PRESTO cards to the residents of the development. Given the limited size of the development, extensive information sessions are not necessary; rather, TDM details can be provided at point of sale.

6.3.5 Outreach Programs

The TDM coordinator will remain a point of contact with the Region/City to support future outreach programs, whether site specific or as part of wider TDM initiatives spearheaded by the Region/City. It is understood that the initiation and cost of any future outreach programs is not the responsibility of the developer.

6.3.6 TDM Monitoring Program

Program monitoring is an essential component for all TDM plans. A TDM program must be periodically measured and evaluated to with respect to the overall effectiveness of the program and its individual components. The intent of program monitoring is to ensure that the TDM program remains relevant to the needs of the commuters and properly reflects any changes to the available transportation services and infrastructure in the area. In this respect, a TDM program must be dynamic. The monitoring of the program informs the process of change.

The most common method of monitoring a TDM program is through administration of a travel or commuter survey to residents of the site. A commuter survey is an electronic or paper-based tool used for gathering important information regarding travel habits and attitudes of the residents. As previously noted, an initial survey must be conducted in order to establish a benchmark with respect to existing travel behaviour. Going forward, the survey should be administered annually or biannually, and results compared to previous survey results in order to identify any successes or short comings of the TDM program and/or wider TDM initiatives spearheaded by the Region/City. The travel survey should be provided by, or developed in conjunction with, Region/City staff. The developer/TDM coordinator will support the ongoing monitoring efforts of the Region/City.

6.3.7 Summary

The TDM plan for the proposed development should include a marketing and education package that is distributed to new residents of the condominium development on an ongoing basis. The package should include a travel survey, preloaded PRESTO cards, cycling maps, transit maps and schedules, safety tips and other information regarding programs supporting alternative modes of transportation. The TDM Coordinator for the site will support ongoing outreach and monitoring programs initiated by the Region/City.Sd

7 Summary

Proposed Development

This study has addressed the transportation impacts associated with the proposed 1583 Cormack Crescent development within the City of Mississauga, Regional Municipality of Peel. The proposed development will consist of 19 single detached units with full build-out expected by 2024. Upon completion, the development is expected to generate 20 new trips during the weekday AM peak hour and 24 new trips during the weekday PM peak hour.

Traffic Operations

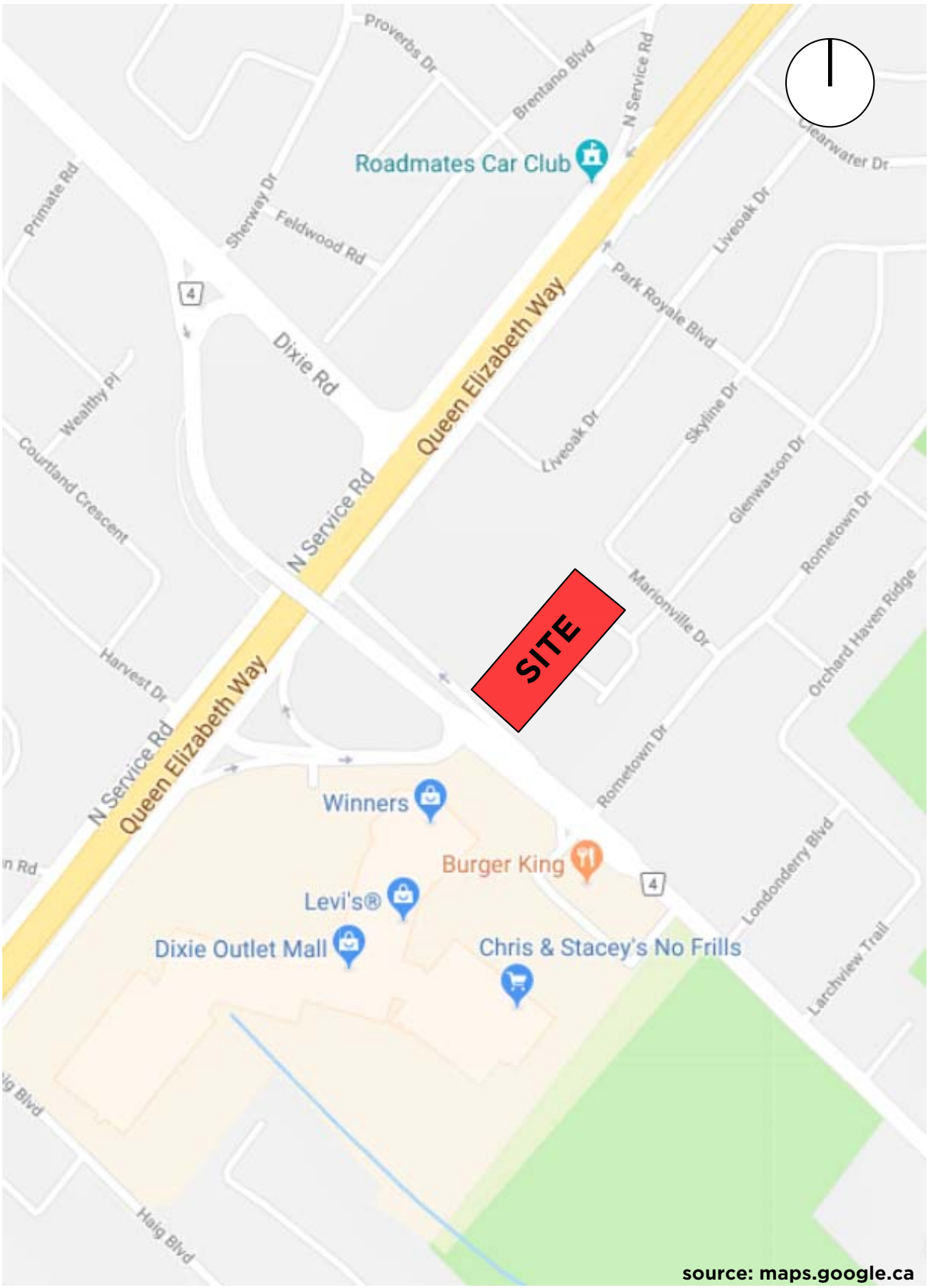
In addressing the study area traffic operations, the study area intersections were analysed under existing (2019) and future (2024) horizon periods.

The results of the operational analyses indicate that the study area intersection (with and without the planned interchange improvements) will provide acceptable (LOS C or better) overall conditions through the 2024 horizon under both background and future total conditions. As such, no intersection improvements are required to support the proposed 1583 Cormack Crescent residential development.

The capacity of the adjacent road network was reviewed under both background and future traffic conditions. In consideration of the assumed planning capacities and traffic volume projections, all road sections are expected to operate below capacity through the 2024 horizon. As such, no improvements to the road network are required to accommodate the future traffic volumes.

Travel Demand Management

Transportation demand management initiatives for the site were reviewed and an appropriate TDM plan recommended. The TDM plan should focus on marketing and educating the residents of the development as to the various travel options available to them when making travel plans.



1583 Cormack Crescent

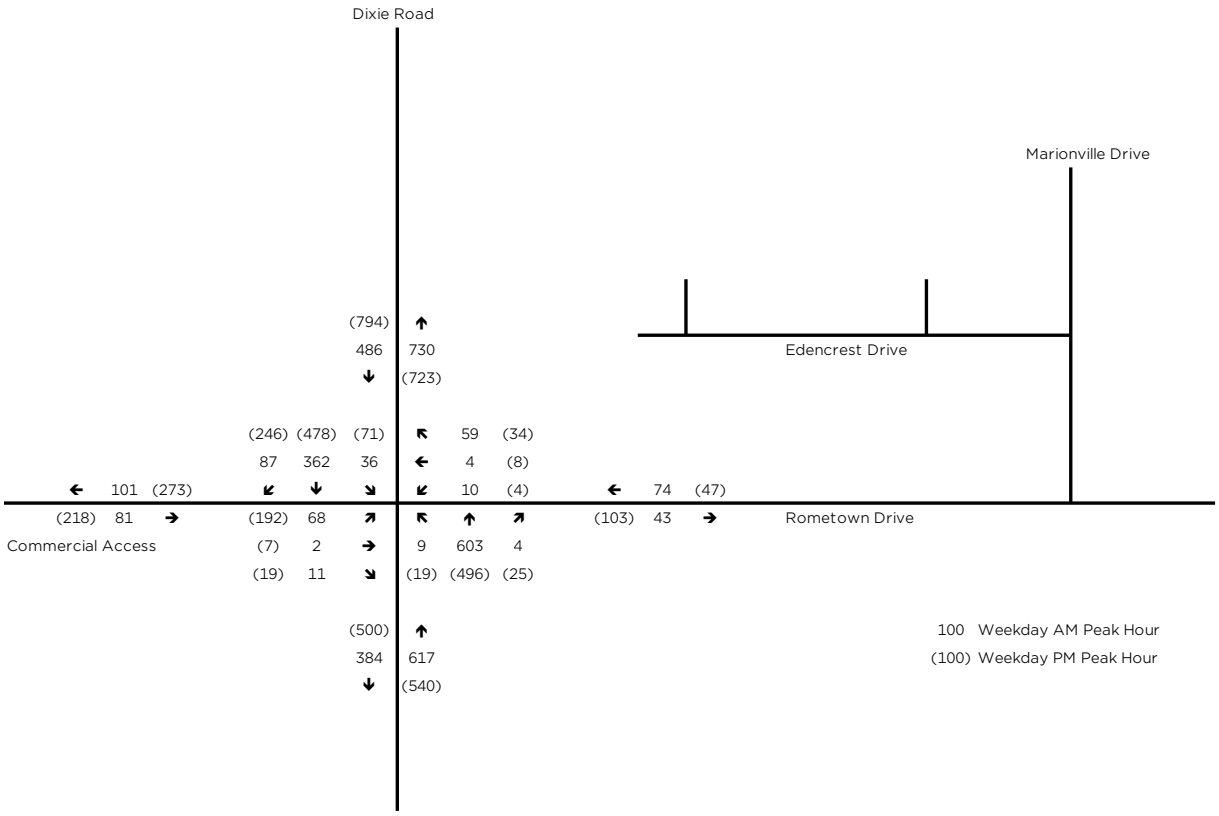
Figure 1: Site Location

1583 Cormack Crescent

Figure 2A: Area Road Network

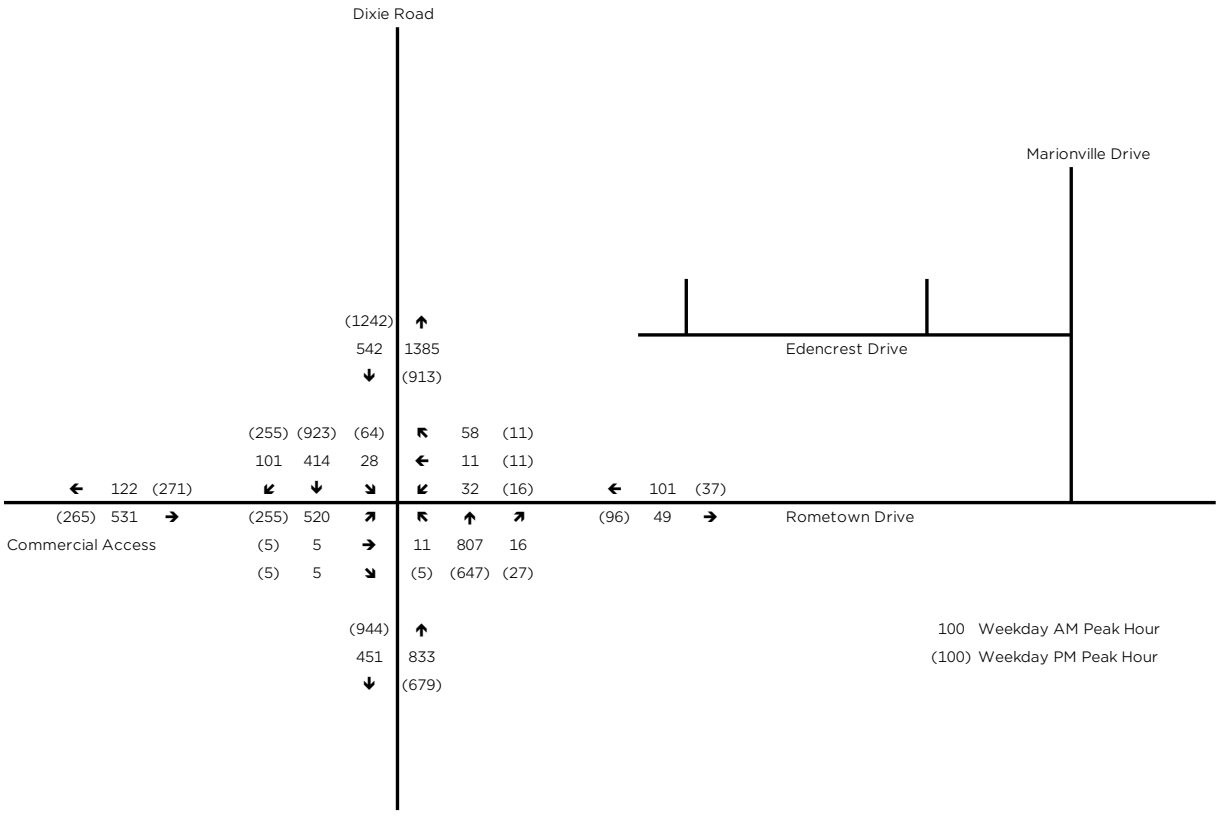
1583 Cormack Crescent

Figure 2B: Area Road Network



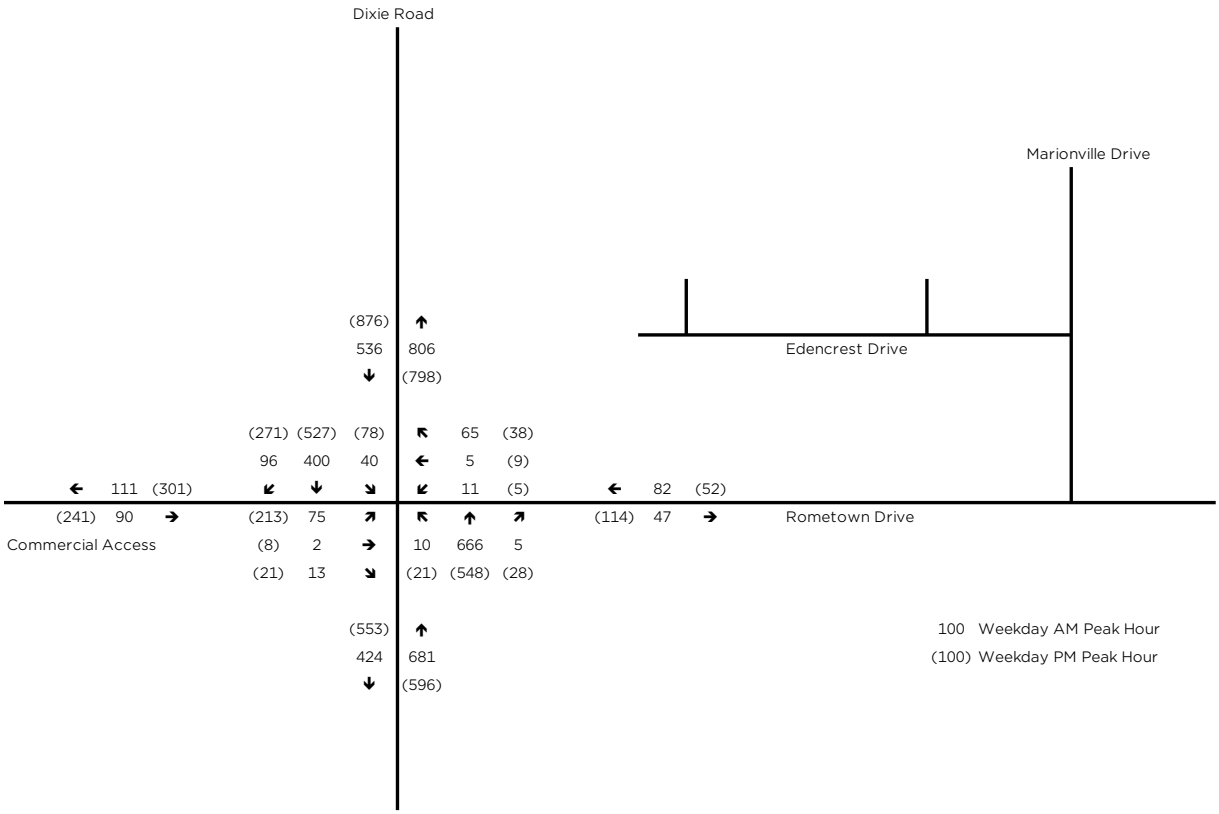
1583 Cormack Crescent

Figure 3: 2019 Traffic Volumes



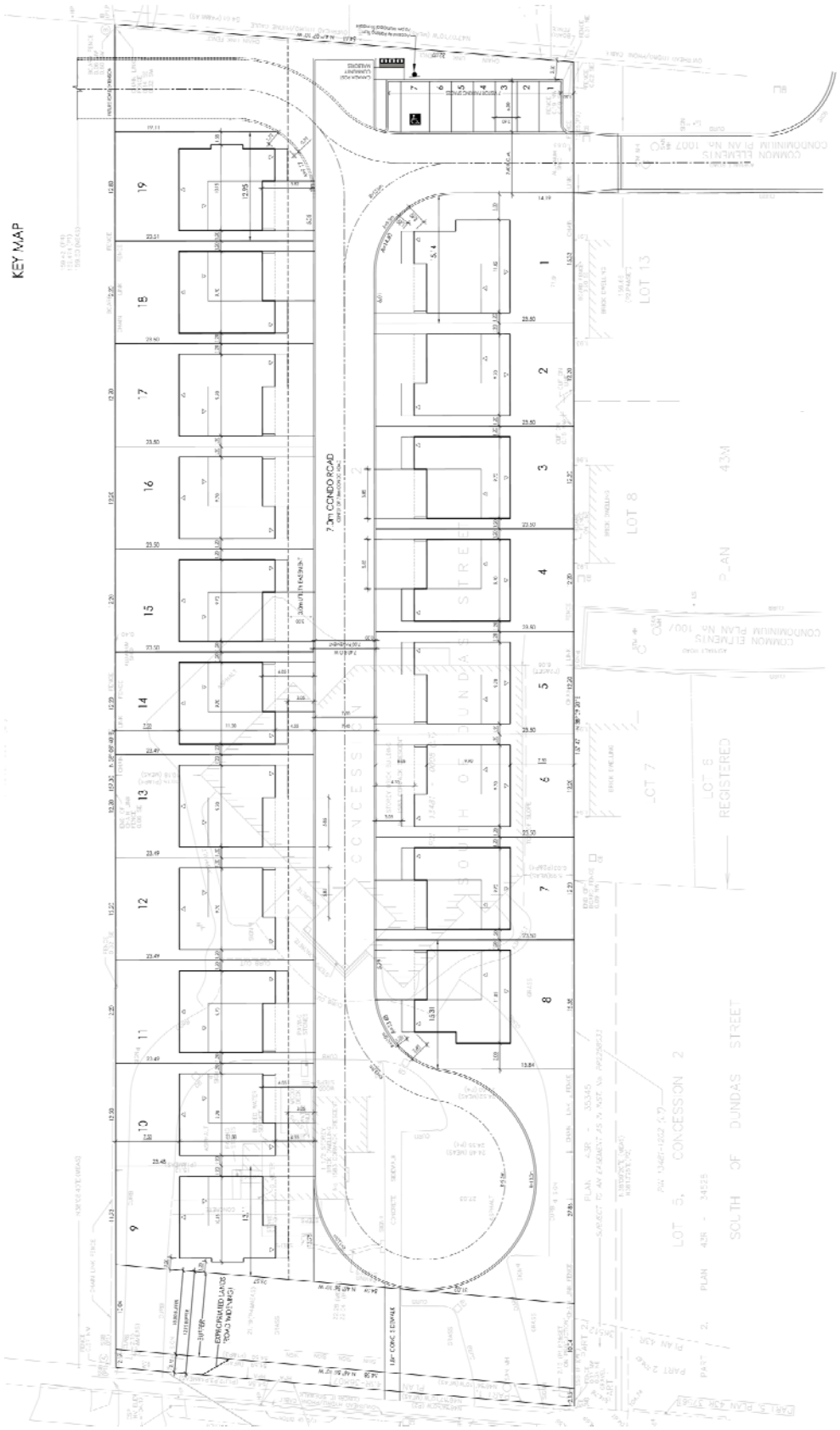
1583 Cormack Crescent

Figure 4: 2024 Background Traffic Volumes (with MTO Improvements)



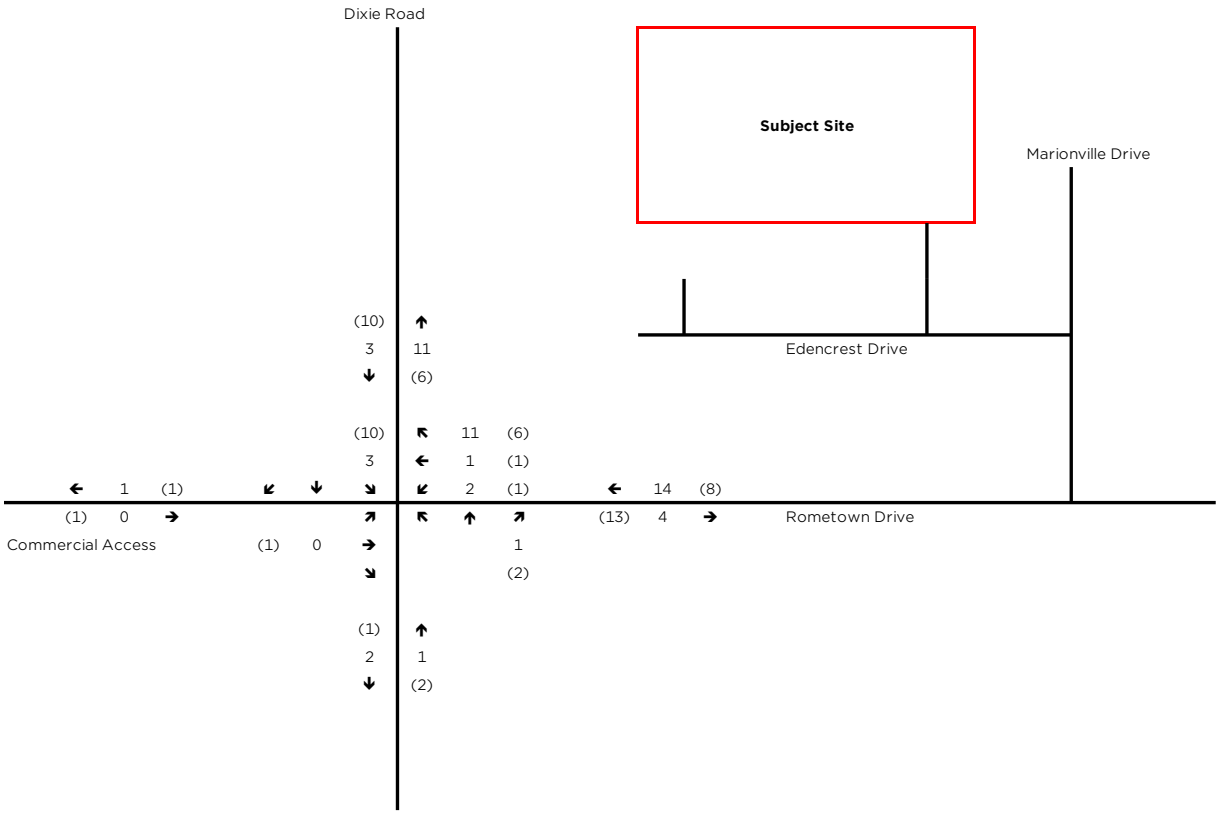
1583 Cormack Crescent

Figure 5: 2024 Background Traffic Volumes (without MTO Improvements)



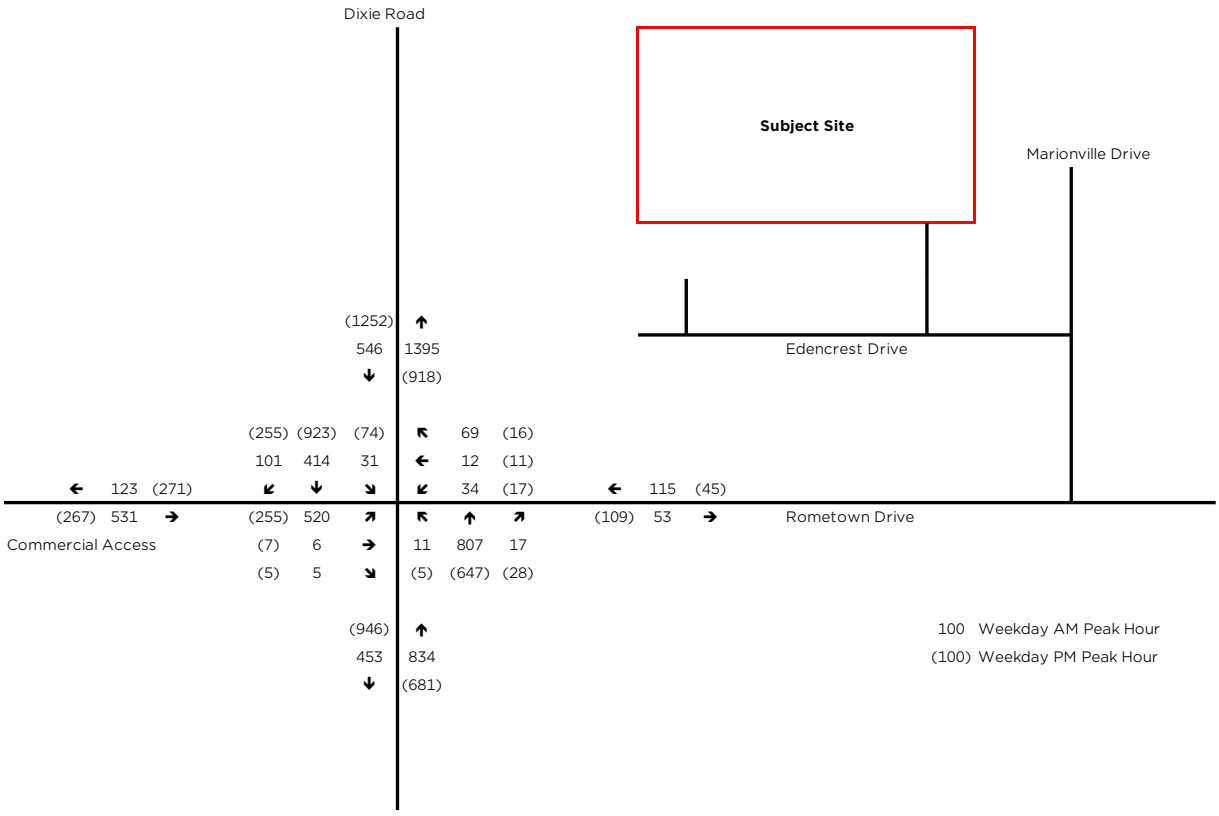
1583 Cormack Crescent

Figure 6: Site Plan



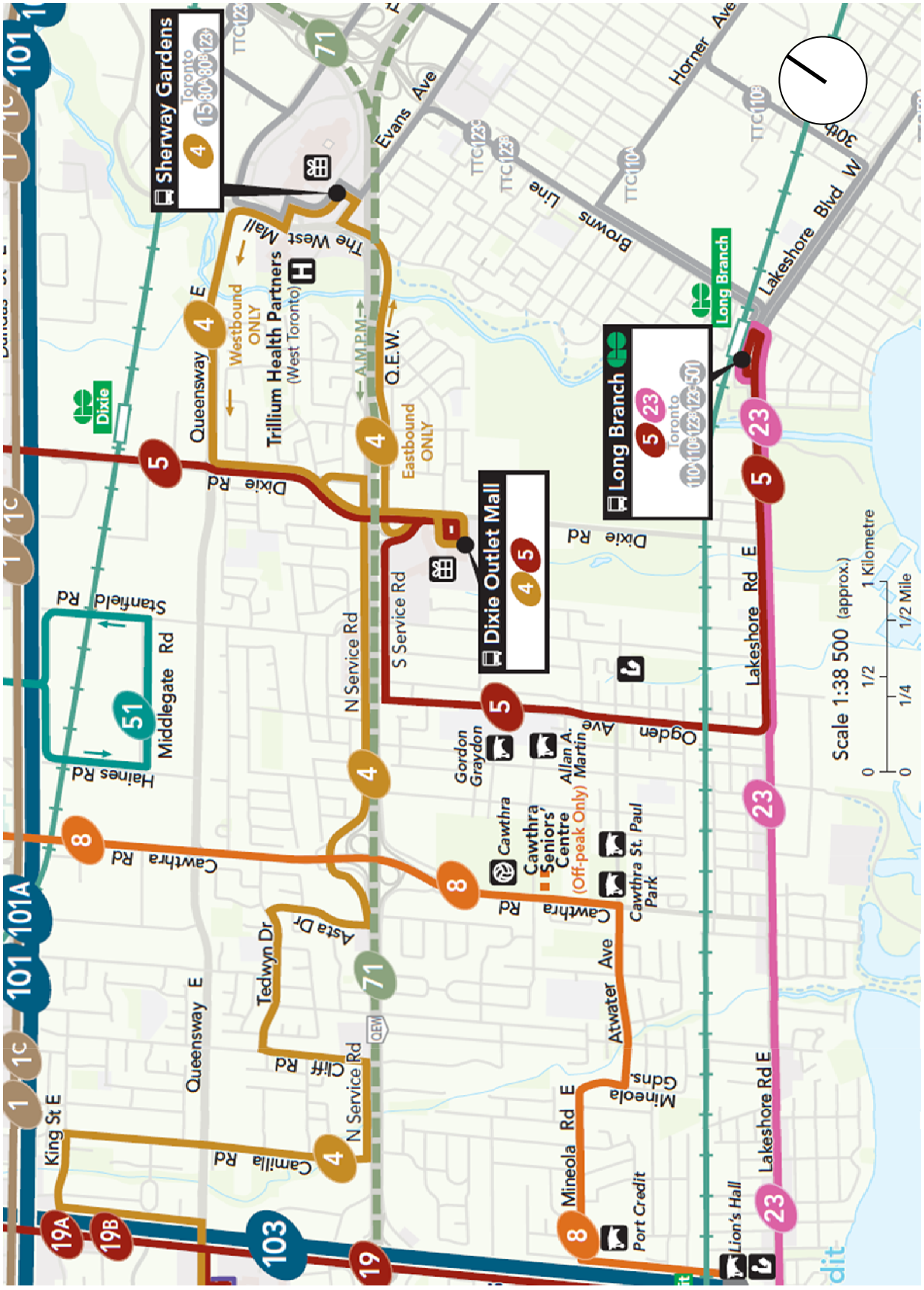
1583 Cormack Crescent

Figure 7: Site Traffic



1583 Cormack Crescent

Figure 8: 2024 Total Traffic Volumes (with MTO Improvements)



1583 Cormack Crescent

Figure 9: Public Transit (weekday service)

Appendix A:
Traffic Counts/Signal Timing Plan

Turning Movement Count (1 . DIXIE RD & ROMETOWN DR) CustID: 00401575 MioID: 470079

Start Time	Southbound DIXIE RD						Westbound ROMETOWN DR						Northbound DIXIE RD						Eastbound ROMETOWN DR						Int. Total (15 min)
	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	
07:00:00	8	58	14	2	0	82	1	2	9	0	0	12	1	93	0	0	0	94	9	0	3	0	1	12	200
07:15:00	7	87	17	1	0	112	0	0	9	0	0	9	5	141	2	0	0	148	17	0	2	0	0	19	288
07:30:00	7	86	9	2	1	104	6	3	23	0	0	32	1	153	0	0	0	154	20	2	0	0	0	22	312
07:45:00	9	78	11	0	0	98	5	2	14	0	0	21	1	169	3	0	2	173	23	0	0	0	0	23	315
Hourly	31	309	51	5	1	396	12	7	55	0	0	74	8	556	5	0	2	569	69	2	5	0	1	76	1115
08:00:00	6	99	15	0	1	120	2	2	14	0	0	18	2	150	1	0	1	153	13	0	0	0	1	13	304
08:15:00	6	74	22	0	0	102	4	0	17	0	3	21	0	131	1	0	2	132	21	1	3	0	1	25	280
08:30:00	9	103	22	0	0	134	4	0	17	0	0	21	4	151	1	0	1	156	12	0	7	0	0	19	330
08:45:00	14	72	25	1	0	112	0	2	9	0	1	11	3	148	1	0	0	152	19	1	1	0	0	21	296
Hourly	35	348	84	1	1	468	10	4	57	0	4	71	9	580	4	0	4	593	65	2	11	0	2	78	1210
BREAK																									
11:00:00	9	60	82	0	0	151	1	2	8	0	2	11	9	74	1	0	1	84	31	2	4	0	0	37	283
11:15:00	7	73	80	0	0	160	1	1	5	0	0	7	2	82	0	0	0	84	42	0	5	0	0	47	298
11:30:00	8	108	66	0	0	182	2	1	5	0	0	8	4	79	2	0	0	85	34	2	4	0	0	40	315
11:45:00	9	93	64	1	0	167	1	3	7	0	1	11	8	96	3	0	2	107	44	0	5	0	1	49	334
Hourly	33	334	292	1	0	660	5	7	25	0	3	37	23	331	6	0	3	360	151	4	18	0	1	173	1230
12:00:00	5	74	71	1	3	151	1	1	6	0	0	8	7	106	4	0	0	117	46	4	2	0	0	52	328
12:15:00	13	74	58	0	2	145	1	2	6	0	1	9	9	81	3	0	2	93	40	0	1	0	2	41	288
12:30:00	10	77	71	1	1	159	1	0	6	0	0	7	8	77	1	0	0	86	35	1	4	0	0	40	292
12:45:00	18	81	56	1	0	156	2	4	10	0	0	16	10	85	4	0	0	99	40	0	5	0	0	45	316
Hourly	46	306	256	3	6	611	5	7	28	0	1	40	34	349	12	0	2	395	161	5	12	0	2	178	1224
13:00:00	12	80	69	1	0	162	0	1	11	0	1	12	3	87	5	0	0	95	48	1	13	0	0	62	331
13:15:00	7	82	75	1	0	165	1	2	10	0	0	13	3	80	1	0	2	84	58	2	7	0	1	67	329
13:30:00	13	76	72	0	2	161	0	1	7	0	2	8	2	115	3	0	1	120	55	4	5	0	0	64	353
13:45:00	11	75	69	1	1	156	3	1	10	0	0	14	3	96	2	0	0	101	54	6	6	0	0	66	337
Hourly	43	313	285	3	3	644	4	5	38	0	3	47	11	378	11	0	3	400	215	13	31	0	1	259	1350
BREAK																									
15:00:00	10	94	64	1	1	169	1	2	10	0	3	13	4	100	1	0	0	105	46	2	6	0	1	54	341
15:15:00	19	80	70	1	0	170	0	1	10	0	0	11	3	112	1	0	2	116	42	5	3	0	0	50	347
15:30:00	20	105	49	0	1	174	6	1	9	0	1	16	5	115	2	0	0	122	45	3	2	0	1	50	362
15:45:00	14	108	51	1	0	174	2	2	6	0	0	10	4	120	1	0	0	125	36	1	6	0	1	43	352
Hourly	63	387	234	3	2	687	9	6	35	0	4	50	16	447	5	0	2	468	169	11	17	0	3	197	1402

16:00:00	18	102	58	2	0	180	0	1	7	0	0	8	3	138	9	0	4	150	50	2	3	0	0	55	393
16:15:00	15	100	66	1	0	182	2	1	10	0	1	13	5	114	3	0	2	122	49	1	6	0	0	56	373
16:30:00	16	128	60	1	1	205	1	4	10	0	1	15	5	110	8	0	0	123	38	0	4	0	0	42	385
16:45:00	19	129	52	0	0	200	1	2	6	0	0	9	5	115	4	0	1	124	48	4	5	0	0	57	390
Hourly	68	459	236	4	1	767	4	8	33	0	2	45	18	477	24	0	7	519	185	7	18	0	0	210	1541
17:00:00	19	103	60	0	1	182	3	3	11	0	1	17	4	113	4	0	1	121	44	3	8	0	3	55	375
17:15:00	16	131	52	1	2	200	2	1	2	0	1	5	3	123	0	0	0	126	34	1	3	0	1	38	369
17:30:00	23	125	47	1	0	196	3	3	4	0	0	10	6	103	6	0	0	115	47	1	2	0	0	50	371
17:45:00	18	135	65	0	0	218	0	0	6	0	1	6	7	107	2	0	1	116	26	4	4	0	0	34	374
Hourly	76	494	224	2	3	796	8	7	23	0	3	38	20	446	12	0	2	478	151	9	17	0	4	177	1489
Grand Total	395	2950	1662	22	17	5029	57	51	294	0	20	402	139	3564	79	0	25	3782	1166	53	129	0	14	1348	**10561**
Approach%	7.9%	58.7%	33%	0.4%		-	14.2%	12.7%	73.1%	0%		-	3.7%	94.2%	2.1%	0%		-	86.5%	3.9%	9.6%	0%		-	**-**
Totals %	3.7%	27.9%	15.7%	0.2%		47.6%	0.5%	0.5%	2.8%	0%		3.8%	1.3%	33.7%	0.7%	0%		35.8%	11%	0.5%	1.2%	0%		12.8%	**-**
Heavy	19	294	26	0		-	8	1	13	0		-	5	157	1	0		-	135	1	6	0		-	**-**
Heavy %	4.8%	10%	1.6%	0%		-	14%	2%	4.4%	0%		-	3.6%	4.4%	1.3%	0%		-	11.6%	1.9%	4.7%	0%		-	**-**
Bicycles	0	2	2	0		-	0	0	0	0		-	0	1	0	0		-	0	1	0	0		-	**-**
Bicycle %	0%	0.1%	0.1%	0%		-	0%	0%	0%	0%		-	0%	0%	0%	0%		-	0%	1.9%	0%	0%		-	**-**

Peak Hour: 08:00 AM - 09:00 AM Weather: Partly Cloudy (2.1 °C)

Start Time	Southbound DIXIE RD						Westbound ROMETOWN DR						Northbound DIXIE RD						Eastbound ROMETOWN DR						Int. Total (15 min)
	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	
08:00:00	6	99	15	0	1	120	2	2	14	0	0	18	2	150	1	0	1	153	13	0	0	0	1	13	304
08:15:00	6	74	22	0	0	102	4	0	17	0	3	21	0	131	1	0	2	132	21	1	3	0	1	25	280
08:30:00	9	103	22	0	0	134	4	0	17	0	0	21	4	151	1	0	1	156	12	0	7	0	0	19	330
08:45:00	14	72	25	1	0	112	0	2	9	0	1	11	3	148	1	0	0	152	19	1	1	0	0	21	296
Grand Total	35	348	84	1	1	468	10	4	57	0	4	71	9	580	4	0	4	593	65	2	11	0	2	78	**1210**
Approach%	7.5%	74.4%	17.9%	0.2%		-	14.1%	5.6%	80.3%	0%		-	1.5%	97.8%	0.7%	0%		-	83.3%	2.6%	14.1%	0%		-	**-**
Totals %	2.9%	28.8%	6.9%	0.1%		38.7%	0.8%	0.3%	4.7%	0%		5.9%	0.7%	47.9%	0.3%	0%		49%	5.4%	0.2%	0.9%	0%		6.4%	**-**
PHF	0.63	0.84	0.84	0.25		0.87	0.63	0.5	0.84	0		0.85	0.56	0.96	1	0		0.95	0.77	0.5	0.39	0		0.78	**-**
Heavy	4	48	9	0		61	4	0	3	0		7	2	17	0	0		19	19	0	2	0		21	**-**
Heavy %	11.4%	13.8%	10.7%	0%		13%	40%	0%	5.3%	0%		9.9%	22.2%	2.9%	0%	0%		3.2%	29.2%	0%	18.2%	0%		26.9%	**-**
Lights	31	300	75	1		407	6	4	54	0		64	7	563	4	0		574	46	2	9	0		57	**-**
Lights %	88.6%	86.2%	89.3%	100%		87%	60%	100%	94.7%	0%		90.1%	77.8%	97.1%	100%	0%		96.8%	70.8%	100%	81.8%	0%		73.1%	**-**
Single-Unit Trucks	4	24	7	0		35	1	0	1	0		2	1	13	0	0		14	2	0	0	0		2	**-**
Single-Unit Trucks %	11.4%	6.9%	8.3%	0%		7.5%	10%	0%	1.8%	0%		2.8%	11.1%	2.2%	0%	0%		2.4%	3.1%	0%	0%	0%		2.6%	**-**
Buses	0	24	0	0		24	3	0	2	0		5	1	4	0	0		5	17	0	2	0		19	**-**
Buses %	0%	6.9%	0%	0%		5.1%	30%	0%	3.5%	0%		7%	11.1%	0.7%	0%	0%		0.8%	26.2%	0%	18.2%	0%		24.4%	**-**
Articulated Trucks	0	0	2	0		2	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	**-**
Articulated Trucks %	0%	0%	2.4%	0%		0.4%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	1	-	-	-	-	-	3	-	-	-	-	-	3	-	-	-	-	-	2	-	**-**
Pedestrians%	-	-	-	-	9.1%		-	-	-	-	27.3%		-	-	-	-	27.3%		-	-	-	-	18.2%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	9.1%		-	-	-	-	9.1%		-	-	-	-	0%		**-**
Bicycles on Road	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%		**-**

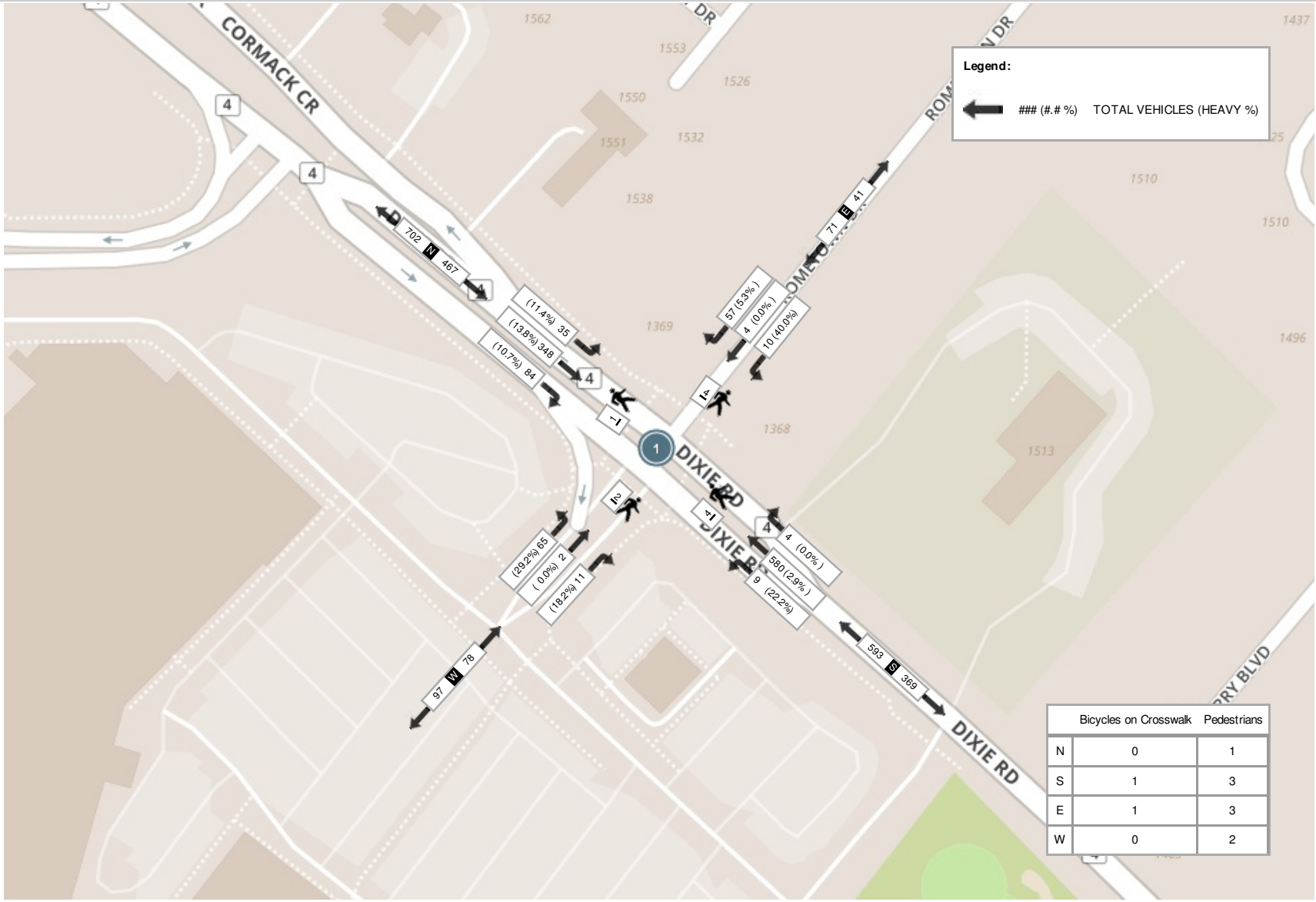
Peak Hour: 01:00 PM - 02:00 PM Weather: Mostly Cloudy (7 °C)

Start Time	Southbound DIXIE RD						Westbound ROMETOWN DR						Northbound DIXIE RD						Eastbound ROMETOWN DR						Int. Total (15 min)
	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	
13:00:00	12	80	69	1	0	162	0	1	11	0	1	12	3	87	5	0	0	95	48	1	13	0	0	62	331
13:15:00	7	82	75	1	0	165	1	2	10	0	0	13	3	80	1	0	2	84	58	2	7	0	1	67	329
13:30:00	13	76	72	0	2	161	0	1	7	0	2	8	2	115	3	0	1	120	55	4	5	0	0	64	353
13:45:00	11	75	69	1	1	156	3	1	10	0	0	14	3	96	2	0	0	101	54	6	6	0	0	66	337
Grand Total	43	313	285	3	3	644	4	5	38	0	3	47	11	378	11	0	3	400	215	13	31	0	1	259	**1350**
Approach%	6.7%	48.6%	44.3%	0.5%		-	8.5%	10.6%	80.9%	0%		-	2.8%	94.5%	2.8%	0%		-	83%	5%	12%	0%		-	**-**
Totals %	3.2%	23.2%	21.1%	0.2%		47.7%	0.3%	0.4%	2.8%	0%		3.5%	0.8%	28%	0.8%	0%		29.6%	15.9%	1%	2.3%	0%		19.2%	**-**
PHF	0.83	0.95	0.95	0.75		0.98	0.33	0.63	0.86	0		0.84	0.92	0.82	0.55	0		0.83	0.93	0.54	0.6	0		0.97	**-**
Heavy	2	35	1	0		38	0	0	1	0		1	0	23	0	0		23	14	0	0	0		14	**-**
Heavy %	4.7%	11.2%	0.4%	0%		5.9%	0%	0%	2.6%	0%		2.1%	0%	6.1%	0%	0%		5.8%	6.5%	0%	0%	0%		5.4%	**-**
Lights	41	278	284	3		606	4	5	37	0		46	11	355	11	0		377	201	13	31	0		245	**-**
Lights %	95.3%	88.8%	99.6%	100%		94.1%	100%	100%	97.4%	0%		97.9%	100%	93.9%	100%	0%		94.3%	93.5%	100%	100%	0%		94.6%	**-**
Single-Unit Trucks	1	21	0	0		22	0	0	1	0		1	0	22	0	0		22	3	0	0	0		3	**-**
Single-Unit Trucks %	2.3%	6.7%	0%	0%		3.4%	0%	0%	2.6%	0%		2.1%	0%	5.8%	0%	0%		5.5%	1.4%	0%	0%	0%		1.2%	**-**
Buses	0	14	1	0		15	0	0	0	0		0	0	0	0	0		0	11	0	0	0		11	**-**
Buses %	0%	4.5%	0.4%	0%		2.3%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	5.1%	0%	0%	0%		4.2%	**-**
Articulated Trucks	1	0	0	0		1	0	0	0	0		0	0	1	0	0		1	0	0	0	0		0	**-**
Articulated Trucks %	2.3%	0%	0%	0%		0.2%	0%	0%	0%	0%		0%	0%	0.3%	0%	0%		0.3%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	3	-	-	-	-	-	3	-	-	-	-	-	3	-	-	-	-	-	1	-	**-**
Pedestrians%	-	-	-	-	30%		-	-	-	-	30%		-	-	-	-	30%		-	-	-	-	10%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	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	-	**-**
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

Peak Hour: 04:00 PM - 05:00 PM Weather: Mostly Cloudy (6.1 °C)

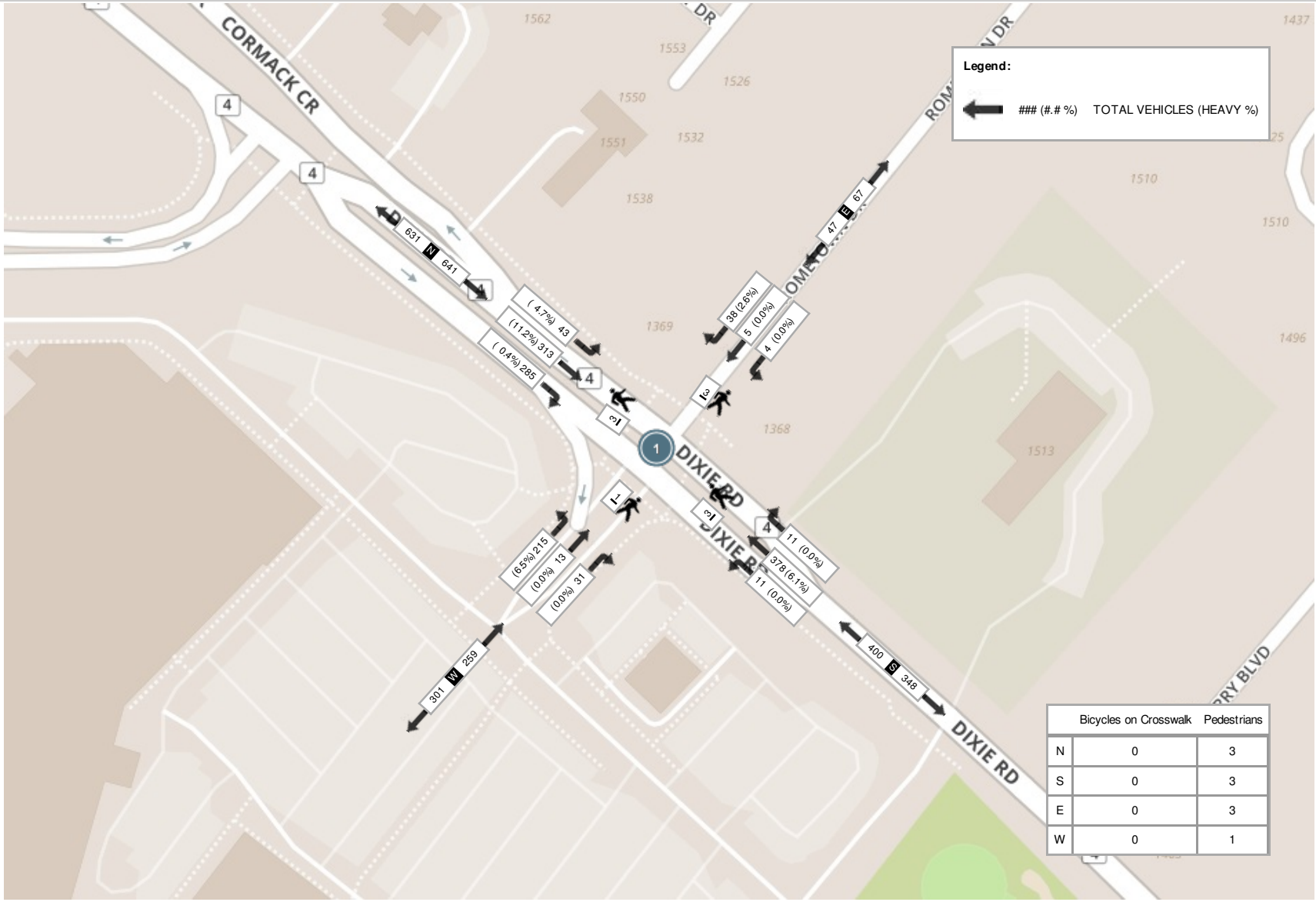
Start Time	Southbound DIXIE RD						Westbound ROMETOWN DR						Northbound DIXIE RD						Eastbound ROMETOWN DR						Int. Total (15 min)
	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	
16:00:00	18	102	58	2	0	180	0	1	7	0	0	8	3	138	9	0	4	150	50	2	3	0	0	55	393
16:15:00	15	100	66	1	0	182	2	1	10	0	1	13	5	114	3	0	2	122	49	1	6	0	0	56	373
16:30:00	16	128	60	1	1	205	1	4	10	0	1	15	5	110	8	0	0	123	38	0	4	0	0	42	385
16:45:00	19	129	52	0	0	200	1	2	6	0	0	9	5	115	4	0	1	124	48	4	5	0	0	57	390
Grand Total	68	459	236	4	1	767	4	8	33	0	2	45	18	477	24	0	7	519	185	7	18	0	0	210	**1541**
Approach%	8.9%	59.8%	30.8%	0.5%		-	8.9%	17.8%	73.3%	0%		-	3.5%	91.9%	4.6%	0%		-	88.1%	3.3%	8.6%	0%		-	**-**
Totals %	4.4%	29.8%	15.3%	0.3%		49.8%	0.3%	0.5%	2.1%	0%		2.9%	1.2%	31%	1.6%	0%		33.7%	12%	0.5%	1.2%	0%		13.6%	**-**
PHF	0.89	0.89	0.89	0.5		0.94	0.5	0.5	0.83	0		0.75	0.9	0.86	0.67	0		0.87	0.93	0.44	0.75	0		0.92	**-**
Heavy	1	26	0	0		27	0	1	1	0		2	0	23	1	0		24	17	0	0	0		17	**-**
Heavy %	1.5%	5.7%	0%	0%		3.5%	0%	12.5%	3%	0%		4.4%	0%	4.8%	4.2%	0%		4.6%	9.2%	0%	0%	0%		8.1%	**-**
Lights	67	433	236	4		740	4	7	32	0		43	18	454	23	0		495	168	7	18	0		193	**-**
Lights %	98.5%	94.3%	100%	100%		96.5%	100%	87.5%	97%	0%		95.6%	100%	95.2%	95.8%	0%		95.4%	90.8%	100%	100%	0%		91.9%	**-**
Single-Unit Trucks	0	7	0	0		7	0	1	0	0		1	0	14	0	0		14	1	0	0	0		1	**-**
Single-Unit Trucks %	0%	1.5%	0%	0%		0.9%	0%	12.5%	0%	0%		2.2%	0%	2.9%	0%	0%		2.7%	0.5%	0%	0%	0%		0.5%	**-**
Buses	1	18	0	0		19	0	0	1	0		1	0	3	1	0		4	16	0	0	0		16	**-**
Buses %	1.5%	3.9%	0%	0%		2.5%	0%	0%	3%	0%		2.2%	0%	0.6%	4.2%	0%		0.8%	8.6%	0%	0%	0%		7.6%	**-**
Articulated Trucks	0	1	0	0		1	0	0	0	0		0	0	6	0	0		6	0	0	0	0		0	**-**
Articulated Trucks %	0%	0.2%	0%	0%		0.1%	0%	0%	0%	0%		0%	0%	1.3%	0%	0%		1.2%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	1	-	-	-	-	-	2	-	-	-	-	-	6	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	10%		-	-	-	-	20%		-	-	-	-	60%		-	-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	10%		-	-	-	-	0%		**-**
Bicycles on Road	0	1	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%		**-**

Peak Hour: 08:00 AM - 09:00 AM Weather: Partly Cloudy (2.1 °C)



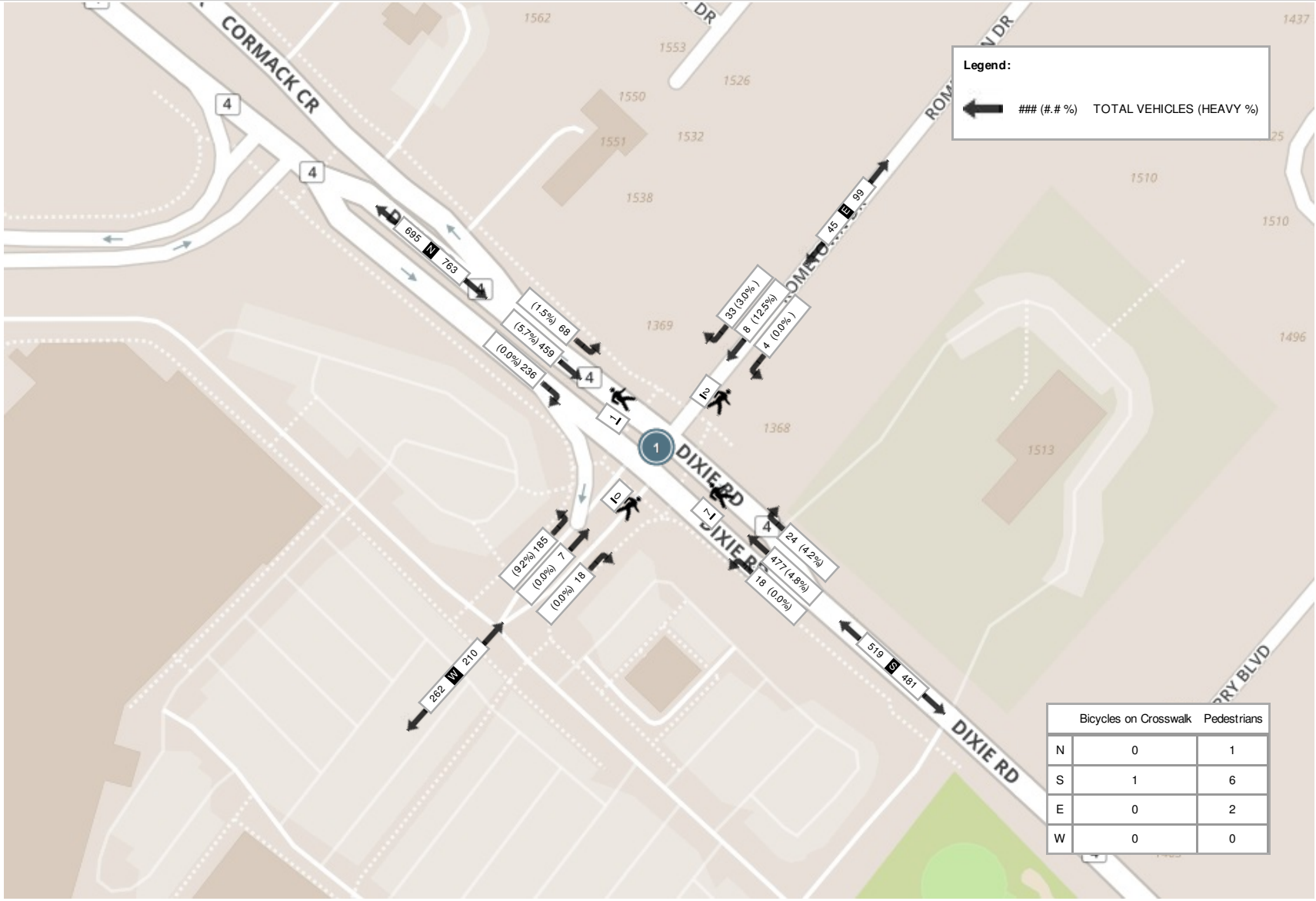
	Bicycles on Crosswalk	Pedestrians
N	0	1
S	1	3
E	1	3
W	0	2

Peak Hour: 01:00 PM - 02:00 PM Weather: Mostly Cloudy (7 °C)



	Bicycles on Crosswalk	Pedestrians
N	0	3
S	0	3
E	0	3
W	0	1

Peak Hour: 04:00 PM - 05:00 PM **Weather: Mostly Cloudy (6.1 °C)**



	Bicycles on Crosswalk	Pedestrians
N	0	1
S	1	6
E	0	2
W	0	0

REGIONAL MUNICIPALITY OF PEEL

Traffic Signal Timing Parameters

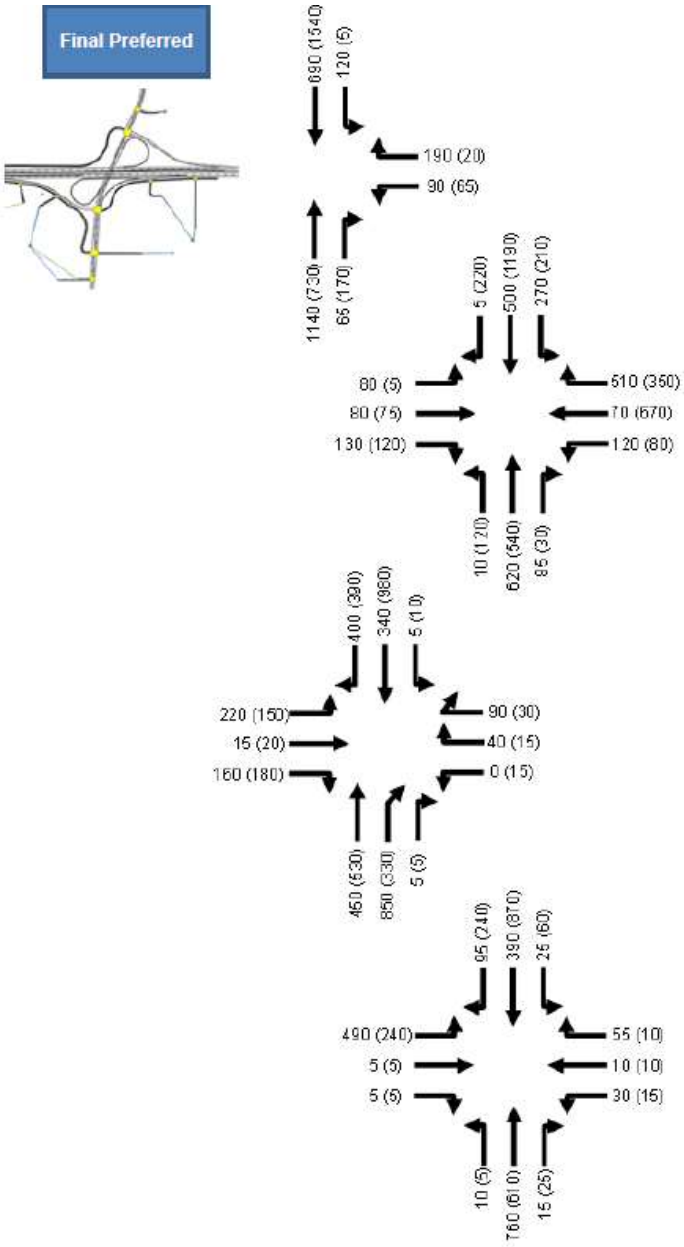
Database Date	**January 9, 2019**		**Prepared Date:**	**January 9, 2019**
Database Rev	**iNET**		**Completed By:**	**J A.P.**
Timing Card / Field rev	**iNET**		**Checked By:**	**M.M.**

Location: **Dixie Road at Rometown/Private Drive**

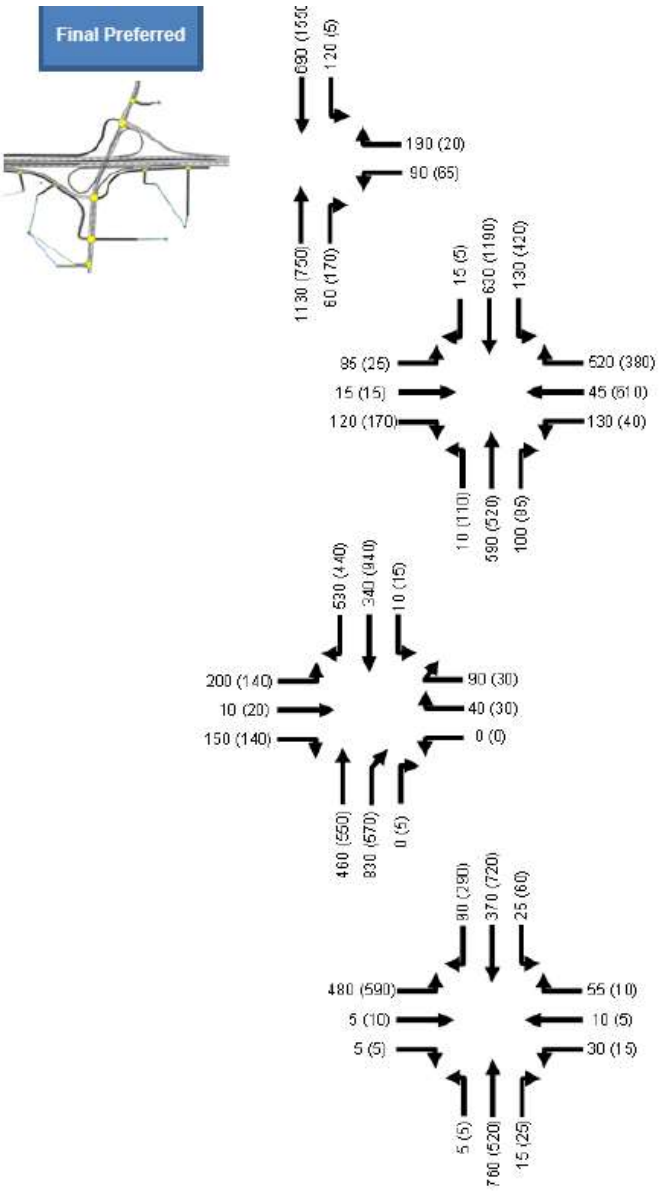
Phase #	Direction	Vehicle Minimum (sec.)	Pedestrian Minimum (sec.)		Amber (sec.)	All Red (sec.)	TIME PERIOD (sec.) (Green+Amber+All Red) MAX		
			WALK	FDWALK			AM	OFF	PM
1									
2	Dixie Road - SB Green	8.0	10.0	15.0	4.0	2.2	98.0	42.0	99.0
3									
4	Rometown/Private Drive - WB Green	8.0	11.0	18.0	4.0	2.3	62.0	38.0	61.0
5									
6	Dixie Road - NB Green	8.0	10.0	15.0	4.0	2.2	98.0	42.0	99.0
7									
8	Rometown/Private Drive - EB Green	8.0	11.0	18.0	4.0	2.3	62.0	38.0	61.0

System Control	Yes
Local Control	No
Semi-Actuated Mode	Yes

TIME (M-F)	PEAK	CYCLE LENGTH (sec.)	OFFSET (sec.)
06:00 - 09:30	**AM**	**160**	**45.0**
09:30 - 15:00 19:30 - 00:00	**OFF**	**80**	**49.0**
15:00 - 19:30	**PM**	**160**	**54.0**



2021 Turning Movement Diagrams AM (PM)



2031 Turning Movement Diagrams AM (PM)

Appendix B:
Existing Operations

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	2	11	10	4	59	9	603	4	36	362	87
Future Volume (vph)	68	2	11	10	4	59	9	603	4	36	362	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3			6.3		6.3	6.3		6.3	6.3	6.3
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99			0.99		1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.87			0.90		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00			0.99		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1409	1421			1529		1494	3540		1638	3202	1449
Flt Permitted	0.66	1.00			0.94		0.50	1.00		0.41	1.00	1.00
Satd. Flow (perm)	976	1421			1454		788	3540		710	3202	1449
Peak-hour factor, PHF	0.77	0.50	0.39	0.63	0.50	0.84	0.56	0.96	0.92	0.63	0.84	0.84
Adj. Flow (vph)	88	4	28	16	8	70	16	628	4	57	431	104
RTOR Reduction (vph)	0	24	0	0	61	0	0	0	0	0	0	24
Lane Group Flow (vph)	88	8	0	0	33	0	16	632	0	57	431	80
Confl. Peds. (#/hr)	4		4	4		4	2		4	4		2
Heavy Vehicles (%)	29%	0%	18%	40%	0%	5%	22%	3%	0%	11%	14%	11%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		8			4			6			2	
Permitted Phases	8	8		4	4		6			2		2
Actuated Green, G (s)	15.5	15.5			15.5		93.1	93.1		93.1	93.1	93.1
Effective Green, g (s)	15.5	15.5			15.5		93.1	93.1		93.1	93.1	93.1
Actuated g/C Ratio	0.13	0.13			0.13		0.77	0.77		0.77	0.77	0.77
Clearance Time (s)	6.3	6.3			6.3		6.3	6.3		6.3	6.3	6.3
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	124	181			185		605	2719		545	2459	1113
v/s Ratio Prot		0.01						c0.18			0.13	
v/s Ratio Perm	c0.09				0.02		0.02			0.08		0.06
v/c Ratio	0.71	0.04			0.18		0.03	0.23		0.10	0.18	0.07
Uniform Delay, d1	50.7	46.3			47.2		3.3	4.0		3.5	3.8	3.4
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	17.0	0.1			0.5		0.1	0.2		0.4	0.2	0.1
Delay (s)	67.7	46.4			47.6		3.4	4.2		3.9	3.9	3.6
Level of Service	E	D			D		A	A		A	A	A
Approach Delay (s)		62.0			47.6			4.1			3.9	
Approach LOS		E			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	11.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	121.2	Sum of lost time (s)	12.6
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		

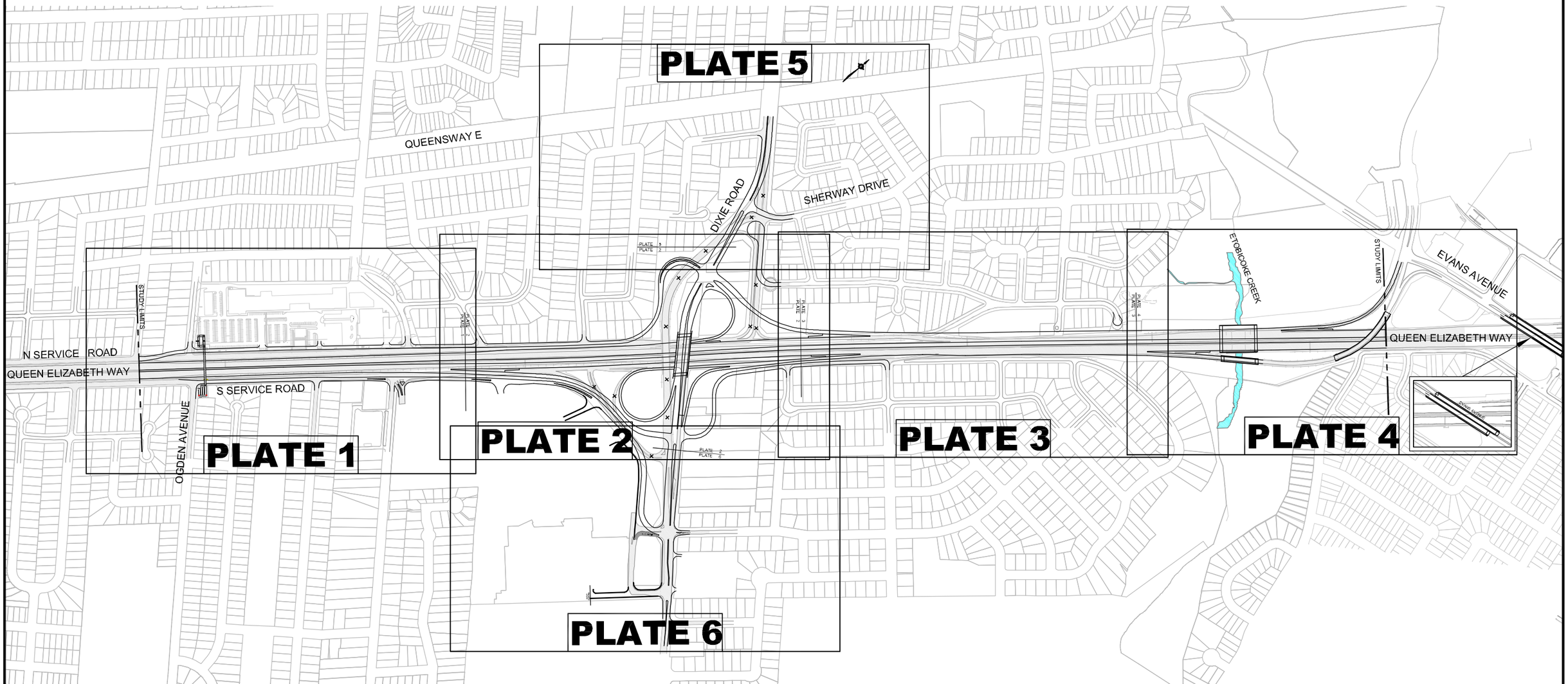
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	192	7	19	4	8	34	19	496	25	71	478	246
Future Volume (vph)	192	7	19	4	8	34	19	496	25	71	478	246
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3			6.3		6.3	6.3		6.3	6.3	6.3
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99			0.99		1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.91			0.91		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00			0.99		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1672	1723			1646		1825	3442		1785	3444	1633
Flt Permitted	0.76	1.00			0.97		0.45	1.00		0.41	1.00	1.00
Satd. Flow (perm)	1332	1723			1608		861	3442		770	3444	1633
Peak-hour factor, PHF	0.93	0.44	0.75	0.50	0.50	0.83	0.90	0.86	0.67	0.89	0.89	0.89
Adj. Flow (vph)	206	16	25	8	16	41	21	577	37	80	537	276
RTOR Reduction (vph)	0	20	0	0	33	0	0	2	0	0	0	65
Lane Group Flow (vph)	206	21	0	0	32	0	21	612	0	80	537	211
Confl. Peds. (#/hr)	1		7	7		1			2	2		
Heavy Vehicles (%)	9%	0%	0%	0%	13%	3%	0%	5%	4%	2%	6%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		8			4			6			2	
Permitted Phases	8	8		4	4		6			2		2
Actuated Green, G (s)	25.6	25.6			25.6		92.0	92.0		92.0	92.0	92.0
Effective Green, g (s)	25.6	25.6			25.6		92.0	92.0		92.0	92.0	92.0
Actuated g/C Ratio	0.20	0.20			0.20		0.71	0.71		0.71	0.71	0.71
Clearance Time (s)	6.3	6.3			6.3		6.3	6.3		6.3	6.3	6.3
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	261	338			316		608	2432		544	2433	1153
v/s Ratio Prot		0.01						c0.18			0.16	
v/s Ratio Perm	c0.15				0.02		0.02			0.10		0.13
v/c Ratio	0.79	0.06			0.10		0.03	0.25		0.15	0.22	0.18
Uniform Delay, d1	49.7	42.5			42.9		5.7	6.8		6.3	6.6	6.4
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	14.6	0.1			0.1		0.1	0.2		0.6	0.2	0.4
Delay (s)	64.3	42.6			43.0		5.8	7.1		6.8	6.8	6.8
Level of Service	E	D			D		A	A		A	A	A
Approach Delay (s)		60.7			43.0			7.0			6.8	
Approach LOS		E			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	130.2	Sum of lost time (s)	12.6
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Appendix C:
MTO Transportation Environmental Study Excerpts



Ontario

W.O. 09-20003: Queen Elizabeth Way Improvements
From Evans Avenue to Cawthra Road
Preliminary Design and Class Environmental Assessment Study

PREFERRED PLAN
KEY PLAN

EXHIBIT
ES-2a

STUDY LIMITS

APPLEWOOD PLAZA

STANFIELD ROAD

RUSSETT ROAD

WESTFIELD DRIVE

INSLEY ROAD

ACCESS TO BE CONFIRMED IN DETAIL DESIGN

NORTH SERVICE ROAD

QEW

PLATE 1

PLATE 2

1

S. SERVICE ROAD

MATCH EXISTING

OGDEN AVENUE

APPLEWOOD ROAD

SOUTH SERVICE ROAD

HAIG BOULEVARD

DIXIE OUTLET MALL

LEGEND

- PROPOSED ROADWAY
- PROPERTY REQUIREMENT
- EXISTING MTO ROW
- EXISTING PROPERTY
- EXISTING ROADWAY
- PROPOSED RETAINING WALL
- TRAFFIC SIGNALS
- ① PROPOSED CULVERT
- PROPOSED MULTI-USE TRAIL
- PROPOSED SIDEWALK
- PROPOSED NOISE WALL
- PROPOSED SWM POND
- PROPOSED CONVENTIONAL LIGHTING
- EXISTING LIGHTING
- PROPOSED HIGH MAST LIGHTING

Ontario

W.O. 09-20003: Queen Elizabeth Way Improvements
From Evans Avenue to Cawthra Road
Preliminary Design and Class Environmental Assessment Study

SCALE
20m 0 40m
HOR. 1:2000

PREFERRED PLAN
PLATE 1

EXHIBIT
ES-2b

PLATE 5
PLATE 2

FELDWOOD ROAD

BRENTANO

PLATE 3
PLATE 2

DIXIE ROAD

COURTLAND COURT

HARVEST DRIVE

TOLMAN ROAD

ROAD

PLATE 2
PLATE 1

NORTH SERVICE ROAD

E-N/S RAMP

N/S-W RAMP

QEW

W-N/S RAMP

SOUTH SERVICE ROAD

DIXIE OUTLET MALL

N-E RAMP

S-E RAMP

SOUTH SERVICE ROAD EXTENSION

SOUTH SE

CORMACK ANIMAL CLINIC

LIVEOAK DRIVE

ACCESS TO BE CONFIRMED IN DETAIL DESIGN

PLATE 2
PLATE 6

MATCH EXISTING

MATCH EXISTING

LEGEND

- PROPOSED ROADWAY
- PROPERTY REQUIREMENT
- EXISTING MTO ROW
- EXISTING PROPERTY
- EXISTING ROADWAY
- PROPOSED RETAINING WALL
- TRAFFIC SIGNALS
- ① PROPOSED CULVERT
- PROPOSED MULTI–USE TRAIL
- PROPOSED SIDEWALK
- PROPOSED NOISE WALL
- PROPOSED SWM POND
- PROPOSED CONVENTIONAL LIGHTING
- EXISTING LIGHTING
- PROPOSED HIGH MAST LIGHTING

Ontario

W.O. 09-20003: Queen Elizabeth Way Improvements
From Evans Avenue to Cawthra Road
Preliminary Design and Class Environmental Assessment Study

SCALE
20m 0 40m
HOR. 1:2000

PREFERRED PLAN
PLATE 2

EXHIBIT
ES-2c

FELDWOOD ROAD

PROVERBS DRIVE

FAMILY CRESCENT

LAUGHTON AVENUE

TARN ROAD

BRENTANO BOULEVARD

PLATE 2

PLATE 3

PLATE 3

PLATE 4

CLOSED

CLOSED

E-N/S RAMP

QEW

BOXWOOD WAY

SOUTH SERVICE ROAD EXTENSION

MATCH EXISTING

FUTURE CONFIGURATION TO BE CONFIRMED IN DETAIL DESIGN.

PARK ROYALE BOULEVARD

CLEARWATER DRIVE

LIVEOAK DRIVE

WINTERHAVEN ROAD

LINCOLNSHIRE BOULEVARD

LEGEND

- PROPOSED ROADWAY
- PROPERTY REQUIREMENT
- EXISTING MTO ROW
- EXISTING PROPERTY
- EXISTING ROADWAY
- PROPOSED RETAINING WALL
- TRAFFIC SIGNALS
- ① PROPOSED CULVERT
- PROPOSED MULTI–USE TRAIL
- PROPOSED SIDEWALK
- PROPOSED NOISE WALL
- PROPOSED SWM POND
- PROPOSED CONVENTIONAL LIGHTING
- EXISTING LIGHTING
- PROPOSED HIGH MAST LIGHTING

Ontario

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SCALE
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PREFERRED PLAN
PLATE 3

EXHIBIT
ES-2d

STUDY LIMITS

THE WEST MALL

MATCH EXISTING

EVANS AVENUE

N-W RAMP

CREEK

PLATE 3

PLATE 4

QEW

W-N RAMP

MATCH EXISTING

BISSET AVENUE

HELSB CRESCENT

WESTHEAD ROAD

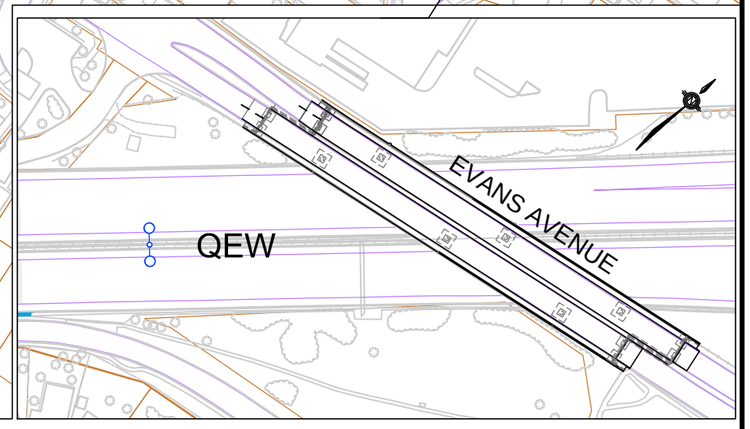
ETOBICOKE

RE BOULEVARD

LEGEND

PROPOSED ROADWAY
PROPERTY REQUIREMENT
EXISTING MTO ROW
EXISTING PROPERTY
EXISTING ROADWAY
PROPOSED RETAINING WALL
TRAFFIC SIGNALS

① PROPOSED CULVERT
PROPOSED MULTI–USE TRAIL
PROPOSED SIDEWALK
PROPOSED NOISE WALL
PROPOSED SWM POND
PROPOSED CONVENTIONAL LIGHTING
EXISTING LIGHTING
PROPOSED HIGH MAST LIGHTING



Ontario

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SCALE
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PREFERRED PLAN
PLATE 4

EXHIBIT
ES-2e

PRIMATE ROAD

MATCH EXISTING

DIXIE ROAD

SHERWAY DRIVE

MATCH EXISTING

BRENTANO BOULEVARD

FELDWOOD ROAD

PROVERBS DRIVE

PLATE 5

PLATE 2

LEGEND

- PROPOSED ROADWAY
- PROPERTY REQUIREMENT
- EXISTING MTO ROW
- EXISTING PROPERTY
- EXISTING ROADWAY
- PROPOSED RETAINING WALL
- TRAFFIC SIGNALS

①

- PROPOSED CULVERT
- PROPOSED MULTI–USE TRAIL
- PROPOSED SIDEWALK
- PROPOSED NOISE WALL
- PROPOSED SWM POND
- PROPOSED CONVENTIONAL LIGHTING
- EXISTING LIGHTING
- PROPOSED HIGH MAST LIGHTING

Ontario

W.O. 09-20003: Queen Elizabeth Way Improvements
From Evans Avenue to Cawthra Road
Preliminary Design and Class Environmental Assessment Study

SCALE
20m 0 40m
HOR. 1:2000

PREFERRED PLAN
PLATE 5

EXHIBIT
ES-2 f

IE OUTLET
MALL

MATCH EXISTING

SOUTH SERVICE ROAD

DIXIE ROAD

ACCESS TO BE CONFIRMED IN DETAIL DESIGN

PLATE 2

PLATE 6

STAR ACADEMY

ROMETOWN DRIVE

MATCH EXISTING

BUS ONLY

DEDICATED BUS EXIT TO BE CONFIRMED WITH FURTHER TRAFFIC ANALYSIS IN DETAIL DESIGN

BUS LAYBY

MATCH EXISTING

DIXIE OUTLET MALL / NO FRILLS ENTRANCE

LONDONDERRY BOULEVARD

MATCH

LEGEND

- PROPOSED ROADWAY
- PROPERTY REQUIREMENT
- EXISTING MTO ROW
- EXISTING PROPERTY
- EXISTING ROADWAY
- PROPOSED RETAINING WALL
- TRAFFIC SIGNALS
- ① PROPOSED CULVERT
- PROPOSED MULTI–USE TRAIL
- PROPOSED SIDEWALK
- PROPOSED NOISE WALL
- PROPOSED SWM POND
- PROPOSED CONVENTIONAL LIGHTING
- EXISTING LIGHTING
- PROPOSED HIGH MAST LIGHTING

Ontario

W.O. 09-20003: Queen Elizabeth Way Improvements
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Preliminary Design and Class Environmental Assessment Study

SCALE
20m 0 40m
HOR. 1:2000

PREFERRED PLAN
PLATE 6

EXHIBIT
ES-2g

Appendix D:
Future Background Operations

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	520	5	5	32	11	58	11	807	16	28	414	101
Future Volume (vph)	520	5	5	32	11	58	11	807	16	28	414	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3			6.3		6.3	6.3		6.3	6.3	6.3
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99			0.99		1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.93			0.92		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00			0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1733	1679			1645		1735	3465		1736	3476	1519
Flt Permitted	0.69	1.00			0.92		0.46	1.00		0.18	1.00	1.00
Satd. Flow (perm)	1252	1679			1546		846	3465		334	3476	1519
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)	565	5	5	35	12	63	12	877	17	30	450	110
RTOR Reduction (vph)	0	3	0	0	13	0	0	1	0	0	0	71
Lane Group Flow (vph)	565	7	0	0	97	0	12	893	0	30	450	39
Confl. Peds. (#/hr)	4		4	4		4	2		4	4		2
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		8			4			6			2	
Permitted Phases	8	8		4	4		6			2		2
Actuated Green, G (s)	40.2	40.2			40.2		29.1	29.1		29.1	29.1	29.1
Effective Green, g (s)	40.2	40.2			40.2		29.1	29.1		29.1	29.1	29.1
Actuated g/C Ratio	0.49	0.49			0.49		0.36	0.36		0.36	0.36	0.36
Clearance Time (s)	6.3	6.3			6.3		6.3	6.3		6.3	6.3	6.3
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	614	824			758		300	1231		118	1235	539
v/s Ratio Prot		0.00						c0.26			0.13	
v/s Ratio Perm	c0.45				0.06		0.01			0.09		0.03
v/c Ratio	0.92	0.01			0.13		0.04	0.73		0.25	0.36	0.07
Uniform Delay, d1	19.4	10.7			11.3		17.3	22.9		18.7	19.6	17.5
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	19.2	0.0			0.1		0.2	3.7		5.1	0.8	0.3
Delay (s)	38.6	10.7			11.4		17.5	26.7		23.8	20.4	17.7
Level of Service	D	B			B		B	C		C	C	B
Approach Delay (s)		38.1			11.4			26.6			20.1	
Approach LOS		D			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	27.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	81.9	Sum of lost time (s)	12.6
Intersection Capacity Utilization	69.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	255	5	5	16	11	11	5	647	27	64	923	255
Future Volume (vph)	255	5	5	16	11	11	5	647	27	64	923	255
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3			6.3		6.3	6.3		6.3	6.3	6.3
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99			1.00		1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.93			0.96		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00			0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1737	1678			1711		1738	3452		1736	3476	1555
Flt Permitted	0.73	1.00			0.91		0.24	1.00		0.35	1.00	1.00
Satd. Flow (perm)	1335	1678			1585		431	3452		638	3476	1555
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)	277	5	5	17	12	12	5	703	29	70	1003	277
RTOR Reduction (vph)	0	4	0	0	9	0	0	3	0	0	0	121
Lane Group Flow (vph)	277	6	0	0	32	0	5	729	0	70	1003	156
Confl. Peds. (#/hr)	1		7	7		1			2	2		
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		8			4			6			2	
Permitted Phases	8	8		4	4		6			2		2
Actuated Green, G (s)	20.8	20.8			20.8		43.0	43.0		43.0	43.0	43.0
Effective Green, g (s)	20.8	20.8			20.8		43.0	43.0		43.0	43.0	43.0
Actuated g/C Ratio	0.27	0.27			0.27		0.56	0.56		0.56	0.56	0.56
Clearance Time (s)	6.3	6.3			6.3		6.3	6.3		6.3	6.3	6.3
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	363	456			431		242	1942		359	1956	875
v/s Ratio Prot		0.00						0.21			c0.29	
v/s Ratio Perm	c0.21				0.02		0.01			0.11		0.10
v/c Ratio	0.76	0.01			0.07		0.02	0.38		0.19	0.51	0.18
Uniform Delay, d1	25.5	20.3			20.7		7.4	9.3		8.2	10.3	8.1
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	9.2	0.0			0.1		0.2	0.6		1.2	1.0	0.4
Delay (s)	34.7	20.3			20.7		7.5	9.8		9.4	11.2	8.6
Level of Service	C	C			C		A	A		A	B	A
Approach Delay (s)		34.2			20.7			9.8			10.6	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	13.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	76.4	Sum of lost time (s)	12.6
Intersection Capacity Utilization	66.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	2	13	11	5	65	10	666	5	40	400	96
Future Volume (vph)	75	2	13	11	5	65	10	666	5	40	400	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3			6.3		6.3	6.3		6.3	6.3	6.3
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99			0.99		1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.87			0.90		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00			0.99		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1411	1415			1538		1495	3540		1641	3202	1451
Flt Permitted	0.84	1.00			0.94		0.48	1.00		0.39	1.00	1.00
Satd. Flow (perm)	1248	1415			1452		755	3540		666	3202	1451
Peak-hour factor, PHF	0.77	0.50	0.39	0.63	0.50	0.84	0.56	0.96	0.92	0.63	0.84	0.84
Adj. Flow (vph)	97	4	33	17	10	77	18	694	5	63	476	114
RTOR Reduction (vph)	0	28	0	0	65	0	0	0	0	0	0	39
Lane Group Flow (vph)	97	9	0	0	39	0	18	699	0	63	476	75
Confl. Peds. (#/hr)	4		4	4		4	2		4	4		2
Heavy Vehicles (%)	29%	0%	18%	40%	0%	5%	22%	3%	0%	11%	14%	11%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		8			4			6			2	
Permitted Phases	8	8		4	4		6			2		2
Actuated Green, G (s)	10.0	10.0			10.0		43.9	43.9		43.9	43.9	43.9
Effective Green, g (s)	10.0	10.0			10.0		43.9	43.9		43.9	43.9	43.9
Actuated g/C Ratio	0.15	0.15			0.15		0.66	0.66		0.66	0.66	0.66
Clearance Time (s)	6.3	6.3			6.3		6.3	6.3		6.3	6.3	6.3
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	187	212			218		498	2336		439	2113	957
v/s Ratio Prot		0.01						c0.20			0.15	
v/s Ratio Perm	c0.08				0.03		0.02			0.09		0.05
v/c Ratio	0.52	0.04			0.18		0.04	0.30		0.14	0.23	0.08
Uniform Delay, d1	26.0	24.2			24.7		3.9	4.8		4.2	4.5	4.1
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.4	0.1			0.4		0.1	0.3		0.7	0.2	0.2
Delay (s)	28.5	24.2			25.0		4.1	5.1		4.9	4.8	4.2
Level of Service	C	C			C		A	A		A	A	A
Approach Delay (s)		27.3			25.0			5.1			4.7	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	66.5	Sum of lost time (s)	12.6
Intersection Capacity Utilization	56.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	213	8	21	5	9	38	21	548	28	78	527	271
Future Volume (vph)	213	8	21	5	9	38	21	548	28	78	527	271
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3			6.3		6.3	6.3		6.3	6.3	6.3
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99			0.99		1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.91			0.92		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00			0.99		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1673	1728			1650		1825	3441		1787	3444	1633
Flt Permitted	0.71	1.00			0.96		0.43	1.00		0.38	1.00	1.00
Satd. Flow (perm)	1249	1728			1603		822	3441		717	3444	1633
Peak-hour factor, PHF	0.93	0.44	0.75	0.50	0.50	0.83	0.90	0.86	0.67	0.89	0.89	0.89
Adj. Flow (vph)	229	18	28	10	18	46	23	637	42	88	592	304
RTOR Reduction (vph)	0	21	0	0	34	0	0	4	0	0	0	127
Lane Group Flow (vph)	229	25	0	0	40	0	23	675	0	88	592	177
Confl. Peds. (#/hr)	1		7	7		1			2	2		
Heavy Vehicles (%)	9%	0%	0%	0%	13%	3%	0%	5%	4%	2%	6%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		8			4			6			2	
Permitted Phases	8	8		4	4		6			2		2
Actuated Green, G (s)	17.8	17.8			17.8		39.9	39.9		39.9	39.9	39.9
Effective Green, g (s)	17.8	17.8			17.8		39.9	39.9		39.9	39.9	39.9
Actuated g/C Ratio	0.25	0.25			0.25		0.57	0.57		0.57	0.57	0.57
Clearance Time (s)	6.3	6.3			6.3		6.3	6.3		6.3	6.3	6.3
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	316	437			405		466	1953		406	1954	926
v/s Ratio Prot		0.01						c0.20			0.17	
v/s Ratio Perm	c0.18				0.02		0.03			0.12		0.11
v/c Ratio	0.72	0.06			0.10		0.05	0.35		0.22	0.30	0.19
Uniform Delay, d1	24.0	19.9			20.1		6.8	8.2		7.5	7.9	7.4
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	8.0	0.1			0.1		0.2	0.5		1.2	0.4	0.5
Delay (s)	32.0	19.9			20.2		7.0	8.7		8.7	8.3	7.8
Level of Service	C	B			C		A	A		A	A	A
Approach Delay (s)		30.0			20.2			8.6			8.2	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	11.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.3	Sum of lost time (s)	12.6
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Appendix E:
Waste Management Plan

CORMACK CRES.

FUTURE ROAD EXTENSION

1.8m CONC. SIDEWALK

CANADA POST COMMUNITY MAILBOXES

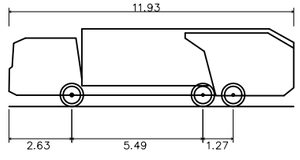
PEEL REGION GARBAGE TRUCK

EDENCREST DR.

SAN. MH

STM. MH

SAN. MH



PEEL REGION GARBAGE TRUCK	
Overall Length	11.930m
Overall Width	2.770m
Overall Body Height	3.253m
Min Body Ground Clearance	0.458m
Track Width	2.770m
Lock-to-lock time	6.00s
Wall to Wall Turning Radius	13.000m

TATHAM ENGINEERING

1583 CORMACK CRESCENT GARBAGE TRUCK TURNING

DWG. No. **FIG. 1**

SCALE: 1:500	DRAWN: TP	DATE: MAR/19	JOB NO. 419352

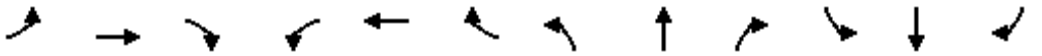
Drawing Name: 419352-Turning Templates.dwg, Plotted: Oct 23, 2020

Appendix F:
Future Total Operations

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	520	6	5	40	13	68	11	807	19	31	414	101
Future Volume (vph)	520	6	5	40	13	68	11	807	19	31	414	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3			6.3		6.3	6.3		6.3	6.3	6.3
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99			0.99		1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.94			0.92		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00			0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1733	1704			1647		1735	3462		1736	3476	1519
Flt Permitted	0.67	1.00			0.92		0.46	1.00		0.18	1.00	1.00
Satd. Flow (perm)	1228	1704			1535		842	3462		323	3476	1519
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)	565	7	5	43	14	74	12	877	21	34	450	110
RTOR Reduction (vph)	0	3	0	0	13	0	0	2	0	0	0	71
Lane Group Flow (vph)	565	9	0	0	118	0	12	896	0	34	450	39
Confl. Peds. (#/hr)	4		4	4		4	2		4	4		2
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		8			4			6			2	
Permitted Phases	8	8		4	4		6			2		2
Actuated Green, G (s)	41.0	41.0			41.0		28.9	28.9		28.9	28.9	28.9
Effective Green, g (s)	41.0	41.0			41.0		28.9	28.9		28.9	28.9	28.9
Actuated g/C Ratio	0.50	0.50			0.50		0.35	0.35		0.35	0.35	0.35
Clearance Time (s)	6.3	6.3			6.3		6.3	6.3		6.3	6.3	6.3
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	610	846			762		294	1212		113	1217	532
v/s Ratio Prot		0.01						c0.26			0.13	
v/s Ratio Perm	c0.46				0.08		0.01			0.11		0.03
v/c Ratio	0.93	0.01			0.16		0.04	0.74		0.30	0.37	0.07
Uniform Delay, d1	19.3	10.5			11.3		17.7	23.5		19.5	20.0	17.9
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	20.1	0.0			0.1		0.3	4.1		6.7	0.9	0.3
Delay (s)	39.5	10.5			11.4		17.9	27.6		26.2	20.9	18.1
Level of Service	D	B			B		B	C		C	C	B
Approach Delay (s)		38.9			11.4			27.4			20.7	
Approach LOS		D			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	27.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	82.5	Sum of lost time (s)	12.6
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	255	7	5	21	12	17	5	647	35	74	923	255
Future Volume (vph)	255	7	5	21	12	17	5	647	35	74	923	255
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3			6.3		6.3	6.3		6.3	6.3	6.3
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99			1.00		1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.94			0.95		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00			0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1737	1713			1700		1738	3445		1736	3476	1555
Flt Permitted	0.72	1.00			0.90		0.23	1.00		0.34	1.00	1.00
Satd. Flow (perm)	1320	1713			1556		430	3445		630	3476	1555
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)	277	8	5	23	13	18	5	703	38	80	1003	277
RTOR Reduction (vph)	0	4	0	0	13	0	0	4	0	0	0	122
Lane Group Flow (vph)	277	9	0	0	41	0	5	737	0	80	1003	155
Confl. Peds. (#/hr)	1		7	7		1			2	2		
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		8			4			6			2	
Permitted Phases	8	8		4	4		6			2		2
Actuated Green, G (s)	21.0	21.0			21.0		43.0	43.0		43.0	43.0	43.0
Effective Green, g (s)	21.0	21.0			21.0		43.0	43.0		43.0	43.0	43.0
Actuated g/C Ratio	0.27	0.27			0.27		0.56	0.56		0.56	0.56	0.56
Clearance Time (s)	6.3	6.3			6.3		6.3	6.3		6.3	6.3	6.3
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	361	469			426		241	1933		353	1951	872
v/s Ratio Prot		0.01						0.21			c0.29	
v/s Ratio Perm	c0.21				0.03		0.01			0.13		0.10
v/c Ratio	0.77	0.02			0.10		0.02	0.38		0.23	0.51	0.18
Uniform Delay, d1	25.6	20.3			20.7		7.5	9.4		8.4	10.4	8.2
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	9.4	0.0			0.1		0.2	0.6		1.5	1.0	0.4
Delay (s)	35.0	20.3			20.8		7.6	10.0		9.9	11.3	8.6
Level of Service	C	C			C		A	A		A	B	A
Approach Delay (s)		34.3			20.8			9.9			10.7	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	76.6	Sum of lost time (s)	12.6
Intersection Capacity Utilization	66.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group