

53 & 71 Plains Road East Transportation Impact Study, Parking Study & TDM Options Report

Paradigm Transportation Solutions Limited

December 2017

Project Summary

Project Number
170113

December 2017

Client
Vrancor Group
366 King Street West
Hamilton, ON L8P 1B3

Client Contact
Darko Vranich
CEO, President

Consultant Project Team
Stewart Elkins, BES, MITE
Scott Catton, CET, MITE
Jim Mallett, M.A.Sc., P.Eng., PTOE

Paradigm Transportation Solutions Limited
22 King Street South Suite 300
Waterloo ON N2J 1N8
p: 519.896.3163
www.ptsl.com

53 & 71 Plains Road East Transportation Impact Study, Parking Study & TDM Options Report

Signatures and Seals



Signature | Engineer's Seal

Disclaimer

This document has been prepared for the titled project or named part thereof (the "project") and except for approval and commenting municipalities and agencies in their review and approval of this project, should not be relied upon or used for any other project without an independent check being carried out as to its suitability and prior written authorization of Paradigm Transportation Solutions Limited being obtained. Paradigm Transportation Solutions Limited accepts no responsibility or liability for the consequence of this document being used for a purpose other than the project for which it was commissioned. Any person using or relying on the document for such other purpose agrees, and will by such use or reliance be taken to confirm their agreement to indemnify Paradigm Transportation Solutions Limited for all loss or damage resulting there from. Paradigm Transportation Solutions Limited accepts no responsibility or liability for this document to any party other than the person by whom it was commissioned and the approval and commenting municipalities and agencies for the project.

To the extent that this report is based on information supplied by other parties, Paradigm Transportation Solutions Limited accepts no liability for any loss or damage suffered by the client, whether through contract or tort, stemming from any conclusions based on data supplied by parties other than Paradigm Transportation Solutions Limited and used by Paradigm Transportation Solutions Limited in preparing this report.

Executive Summary

Content

Vrancor Group retained Paradigm Transportation Solutions Limited (Paradigm) to carry out this Transportation Impact Study and Parking Study for a proposed mixed-use development located at 53 & 71 Plains Road East in the City of Burlington.

The scope of the study was reviewed with City of Burlington Staff in August 2015. Since that time the site plan has evolved to reflect a number of design changes and considerations. An easement is provided along the property's north edge.

The purpose of this study is to determine the impacts of the development traffic on the surrounding road network and to identify any improvements necessary to accommodate this traffic. The study also assesses the site's parking needs and Transportation Demand Management measures to support the development application.

Development Concept

The mixed-use development proposes the following land uses:

- 450 high-rise condominium units,
  - The ground floor residential units (23 units) are marketed as "townhouse units" but for analysis purposes are considered high-rise units as they share the same underground parking and access locations as the upper storey units.
- 1,208 square metres of ground floor retail space within Building A and B.

Vehicular access is proposed by a full movement private driveway connection to Cooke Boulevard and to Clearview Avenue.

The site's parking supply is proposed to consist of 552 parking spaces of which 461 are contained in the structure parking. The remaining spaces are located at grade. Approximately 29 spaces are proposed in on-street parking bays on Plains Road East and along Cooke Boulevard.

Build-out of the site is anticipated to occur by the Year 2020.

Conclusions

The main findings and conclusions of this study are as follows:

- **Study Area**: The intersections that form the study area include the Plains Road East intersections with Waterdown Road, Cooke Boulevard, Clearview Avenue and St. Matthews Avenue and the Masonry Court intersection with Waterdown Road and Cooke Boulevard.
- **Existing Traffic Conditions**: The Plains Road East intersections with Waterdown Road is exhibiting some capacity issues. The remaining study area intersections are operating with acceptable levels of service.
- **Forecast Traffic**: The forecast traffic volumes near the subject site have been assessed for a five-year horizon (Year 2025) following the anticipated build-out date (Year 2020). The likely future traffic volumes near the subject site are estimated to consist of:
  - Generalized background traffic growth;
  - Build-out of six (6) adjacent development applications; and
  - traffic generated by the subject site.
- **Background Traffic Conditions**: The Plains Road East intersection with Waterdown Road is forecast to experience increased congestion as a result of background traffic. Overall, the intersection is forecast to operate with delay in the LOS D range with a v/c ratio of 1.00. Localized congestion is forecast to occur for some turning movements during peak hours.

  The northbound approach of Cooke Boulevard to Masonry Court is forecast to operate with high levels of delay during the PM peak hour.
- **Proposed Development**: The mixed-use development proposes the following land uses:
  - 450 high-rise condominium units. The ground floor residential units (23 units) are marketed as “townhouse units” but for analysis purposes are considered high-rise units as they share the same underground parking and access locations as the upper storey units.
  - 1,208 square metres of ground floor retail space within Building A and B.

  Vehicular access to the subject site will be provided by a private driveway connection to Cooke Boulevard and Clearview Avenue at the site’s northern limits.

  The site’s parking demand is proposed to be accommodated on-site by 552 parking spaces. Approximately 29 on-street parking spaces are proposed across the site’s frontage to Plains Road East and Cooke Boulevard.

- **Development Generated Traffic**: The subject site is estimated to generate approximately 128 new AM peak hour trips and approximately 160 new PM peak hour trips. The trip estimates account for active transportation trips, transit oriented trips and Transportation Demand Management (TDM) reductions.
- **Parking Supply**: The site's parking supply is proposed to consist of approximately 552 on-site parking spaces. The parking supply is anticipated to accommodate the forecast parking demand. The site's TDM measure can assist in mitigating the site's parking demand and transportation impacts.
- **Total Traffic Conditions**: The study area intersections are anticipated to continue to operate with levels of service similar to the background traffic operations for the horizon years assessed. The Plains Road East intersection with Waterdown Road is forecast to continue to operate with delay in the LOS D range with a v/c ratio of 1.00. Localized congestion is forecast to occur for select turning movements.

  The northbound approach of Cooke Boulevard to Masonry Court is forecast to operate with high levels of delay during PM peak hour.
- **Remedial Measures**: The City of Burlington should monitor the operations of the Cooke Boulevard approach to Masonry Court intersection to ensure an appropriate form of traffic control is in place.

  No geometric improvements are recommended at the site driveway connections to Cooke Boulevard and Clearview Avenue to accommodate the development of the subject site.
- **Transportation Demand Management**: The site concept plan should be updated to include the TDM measures outlined in **Section 3.3** to assist in mitigating the site's transportation and parking impacts.

Recommendations

Based on the findings of this study, it is recommended that the development be approved, with the following offsite transportation improvements.

- Sidewalk be provided along the west side of Clearview Avenue between Plains Road East and the site driveway.
- The City of Burlington monitor the operation of the Masonry Court intersection with Cooke Boulevard and the Plains Road East and Waterdown Road intersection to ensure an appropriate form of traffic control is provided to accommodate the future travel demands. In the longer term. The construction of the adjacent lands will provide an opportunity to construct the underground traffic control works.
- The City of Burlington review the on-street parking bays proposed along the site's frontage to Plains Road East and Cooke Boulevard.



To ensure turnover, the parking's spaces should be signed to prevent long-term parking.

It is further recommended that:

- The proposed driveway connection to Cooke Boulevard operate under two-way stop control.
- The site driveway approach be designed with 25 metres of clear throat length.
- A short 15-metre centre line pavement marking be painted on the driveway approaches.
- A daylight triangle of at least 3 metres by 3 metres be provided on the site driveway approaches.
- A traffic control, signage and pavement marking plan be developed for the parking structure and the at-grade parking areas.
- The design of the parking structure ramps be reviewed to:
  - Meet the intersecting drive aisle at right angles;
  - Confirm appropriate vertical clearance on all ramp sections and maximum gradient and the potential need for transitional ramps.
  - The proposed bike lane be physically separated from the regular travel lane or removed altogether.
- The Transportation Demand Measures in **Section 3.3** be integrated into the design of the final site plan.
- The following parking rates be provided to accommodate the estimated future parking demand associated with the subject site:
  - Residential parking supply – 1.00 spaces per unit; and
  - Visitor parking supply – 0.25 spaces per unit. 22 spaces within the parking structure should be assigned as visitor parking.
  - Residential visitor and non-residential visitor parking be shared.
  - The on-street parking across the site's frontage be considered visitor parking for the subject site.
  - Residential parking be unbundle from the cost of the unit.

No other roadway or traffic control improvements are required or recommended at this time to accommodate the future traffic within the study area.

Contents

Introduction 1

1.1 Overview 1
1.2 Study Area 1

2 Existing Conditions 3

2.1 Existing Roadways 3
2.2 Existing Transit Service 6
2.3 Existing Traffic Volumes 8
2.4 Existing Traffic Operations 11

3 Development Concept 14

3.1 Site Description 14
3.1.1 Site Access Provisions 14
3.1.2 Parking Supply 15
3.2 Site Traffic Estimates 19
3.3 Transportation Demand Management 23

4 Future Traffic Conditions 26

4.1 Background Traffic Forecast 26
4.2 Future Total Traffic 32
4.3 Future Total Traffic Operations 35

5 Assessment of Improvements 38

5.1 Traffic Control Improvements 38
5.2 Site Design 39
5.3 Site Circulation 39
5.3.1 Pedestrian Circulation 39
5.3.2 At-Grade Circulation 39
5.3.3 Parking Structure 40

6 Parking Requirements 41

6.1 Proposed Parking Supply 41
6.2 Parking Requirements 41
6.2.1 Current Zoning By-law 41
6.2.2 Draft Zoning By-law 42
6.3 Recommended Parking Supply 43
6.3.1 Parking Strategy/Management 43

7 Conclusions & Recommendations 44

7.1 Conclusions 44
7.2 Recommendations 45

Appendices

Appendix A **Pre-Study Consultation**
Appendix B **Existing Count Data**
Appendix C **Existing Traffic – Operational Conditions**
Appendix D **Trip Generation Data**
Appendix E **Background Traffic Forecasts**
Appendix F **Background Traffic – Operational Conditions**
Appendix G **Total Traffic – Operational Conditions**
Appendix H **Ontario Traffic Manual – Traffic Control Signal Warrants**

Figures

Figure 1.1: Location of Subject Site 2
Figure 2.1: Existing Lane Configuration & Traffic Control 5
Figure 2.2: Existing Transit Service 7
Figure 2.3A: Existing Traffic – AM Peak Hour 9
Figure 2.3B: Existing Traffic – PM Peak Hour 10
Figure 3.1: Site Concept Plan 16
Future 3.2A: Underground Parking – Level P1 17
Future 3.2B: Underground Parking – Level P2 18
Figure 3.3A: Estimated Site-Generated Traffic – AM Peak Hour 21
Figure 3.3B: Estimated Site-Generated Traffic – PM Peak Hour 22
Figure 4.1A: Forecast Background Traffic – AM Peak Hour 28
Figure 4.1B: Forecast Background Traffic – PM Peak Hour 29
Figure 4.2A: Forecast Total Traffic – AM Peak Hour 33
Figure 4.2B: Forecast Total Traffic – PM Peak Hour 34

Tables

Table 2.1: Existing Traffic Operations 13
Table 3.1: Estimated Trip Generation 19
Table 3.2: Estimated Trip Distribution 20
Table 4.1: Background Traffic Operations 31
Table 4.2: Total Traffic Operations 37
Table 5.1: OTM Warrant Summary 38
Table 6.1: Current Zoning By-law Parking Requirement 42
Table 6.2: Draft Zoning By-law Parking Requirement 42

Introduction

1.1 Overview

Vrancor Group retained Paradigm Transportation Solutions Limited (Paradigm) to carry out this Transportation Impact Study, Parking Study and TDM Options report for a proposed mixed-use development located at 53 & 71 Plains Road East in the City of Burlington. **Figure 1.1** details the location of the subject site.

This study determines the impacts of additional traffic on the surrounding road network, and the remedial measures necessary (if any) to accommodate future traffic in a satisfactory manner. The scope of the study includes:

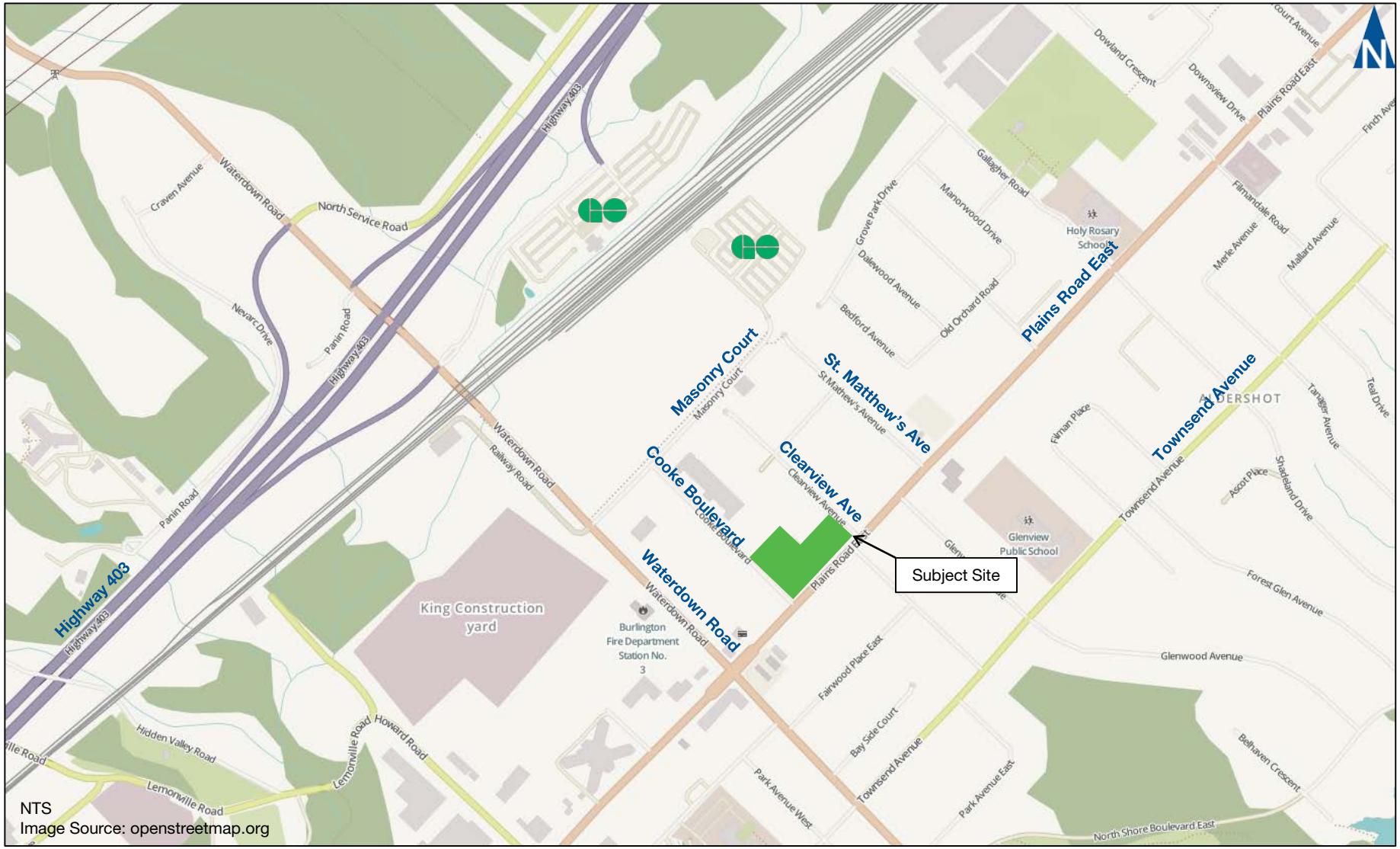
- Assessment of the current traffic and site conditions within the study area;
- Estimates of background traffic growth;
- Estimates of additional traffic generated by the subject site;
- Analyses of the impact of the future traffic on the surrounding road network;
- Identification and recommendation of Transportation Demand Management (TDM) measures specific to this site;
- Determining the site's parking needs and providing recommendations to mitigate parking demands; and
- Recommendations necessary to mitigate the site generated traffic in a satisfactory manner.

Appendix A contains the pre-study consultation material and the meeting minutes from September 2015 which reviewed the study's terms of reference. Since then, the site plan has evolved to reflect a number of design changes and considerations.

1.2 Study Area

The municipal roadway intersections assessed in this study include:

- Plains Road East and Waterdown Road;
- Plains Road East and Cooke Boulevard;
- Plains Road East and Clearview Avenue/Birchwood Avenue;
- Plains Road East and St. Matthews Avenue;
- Masonry Court and Waterdown Road;
- Masonry Court and Cooke Boulevard; and
- The proposed site driveway connections to Cooke Boulevard.



paradigm TRANSPORTATION SOLUTIONS LIMITED

Location of Subject Site

2 Existing Conditions

2.1 Existing Roadways

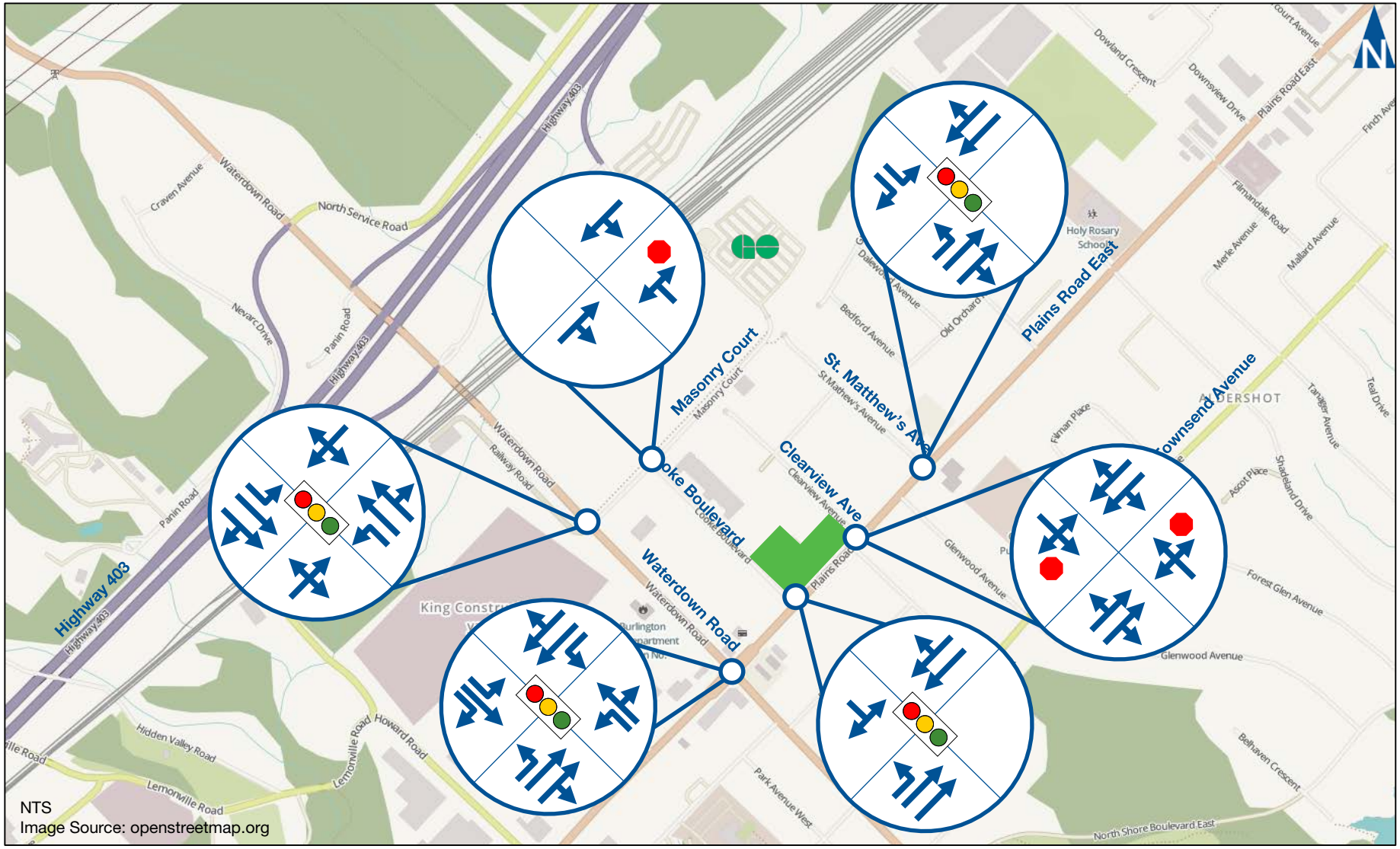
The main roadways near the subject site considered in assessing the traffic impacts of the development include:

- **Plains Road East** in the area of the subject site is an east-west four-lane arterial roadway with two travel lanes in each direction with a centre two-way left-turn lane (CTWLTL). This roadway has a posted speed limit of 60 kilometres per hour within the study area. Pedestrian sidewalk facilities are present on both sides of this roadway. Plains Road East is flat and straight with adequate sight lines in all directions. Parking is generally restricted at all times along this roadway. The intersections with Waterdown Road, Cooke Boulevard and St. Matthews Avenue are signalized.
- The City of Burlington has initiated a functional design and implementation study for The Plains Road corridor infrastructure and streetscape improvements within the section of Highway 403 and the QEW. The project team has developed a recommended roadway design that accommodates all users - pedestrians, cyclists, transit patrons, cars, and trucks - safely and efficiently[1-2]. This section of Plains Road East is also identified as an Urban Growth Centre and Urban Growth Corridor and will accommodate a significant portion of Burlington's future population growth to the Year 2031. The subject site also falls within the secondary zone of the future Aldershot Mobility Hub[3].
- **Waterdown Road** in the area of the subject site is a north-south minor arterial roadway with two travel lanes in each direction. This roadway has a posted speed limit of 50 kilometres per hour. Pedestrian sidewalk facilities are present on both sides of this roadway within the study area. On-street bicycle lanes are present on this roadway from the CNR bridge to Plains Road East. The intersection with Masonry Court is signalized.
- **Masonry Court** in the area of the subject site is an east-west two-lane local roadway with an unposted assumed speed limit of 50 kilometres per hour. Pedestrian sidewalk facilities are present along the north side of this roadway. The terminus of Masonry Court serves as a secondary point of access to the Aldershot GO station. Beyond the Cooke Boulevard intersection, no other roadway connections are provided to Masonry Court. Parking is generally permitted along this roadway.

[1] Plains Road Corridor Urban Design Guidelines – June 2006
[2] Plains Road Corridor Functional Design and Implementation Strategy MMM Group
[3] City of Burlington Official Plan Review: Mobility Hub Opportunities and Constrains | February 12 Public Workshop BrookMcIlory/ARUP

- **Cooke Boulevard** is a north-south two-lane local roadway with an unposted assumed speed limit of 50 kilometres per hour. Pedestrian sidewalk facilities are present along the east side of this roadway. Parking is generally restricted at all times along this roadway.
- **Clearview Avenue/Birchwood Avenue/St. Matthews Avenue** are north-south local roadways with basic two-lane rural cross-sections. Pedestrian facilities are not provided along these roadways.

Figure 2.1 details the existing lane configurations and traffic control at the study area intersections.



paradigm TRANSPORTATION SOLUTIONS LIMITED

Existing Lane Configuration and Traffic Control

2.2 Existing Transit Service

Transit service in the area is provided by Burlington Transit, Hamilton Street Railway, GO Transit and Via Rail. Transit service in the area is centralized around the Aldershot GO Station (GO Station). The GO Station offers both GO Transit Bus and GO Transit Train service and functions as a turnaround point for the Burlington Transit and Hamilton Street Railway (HSR) routes that service the area. The existing transit networks are illustrated in **Figure 2.2**.

The GO Rail station platforms are accessible from areas north and south of the tracks and are connected via underground walkways. There is a bus loop located in the GO Station's northwest area. The bus loop has seven bays. Bay one is used for unloading, Bays 2-4 are utilized by GO Transit, Bay 5 is utilized by Burlington Transit, and Bay 6 is utilized by Hamilton Street Railway with Bay 7 currently as a spare.

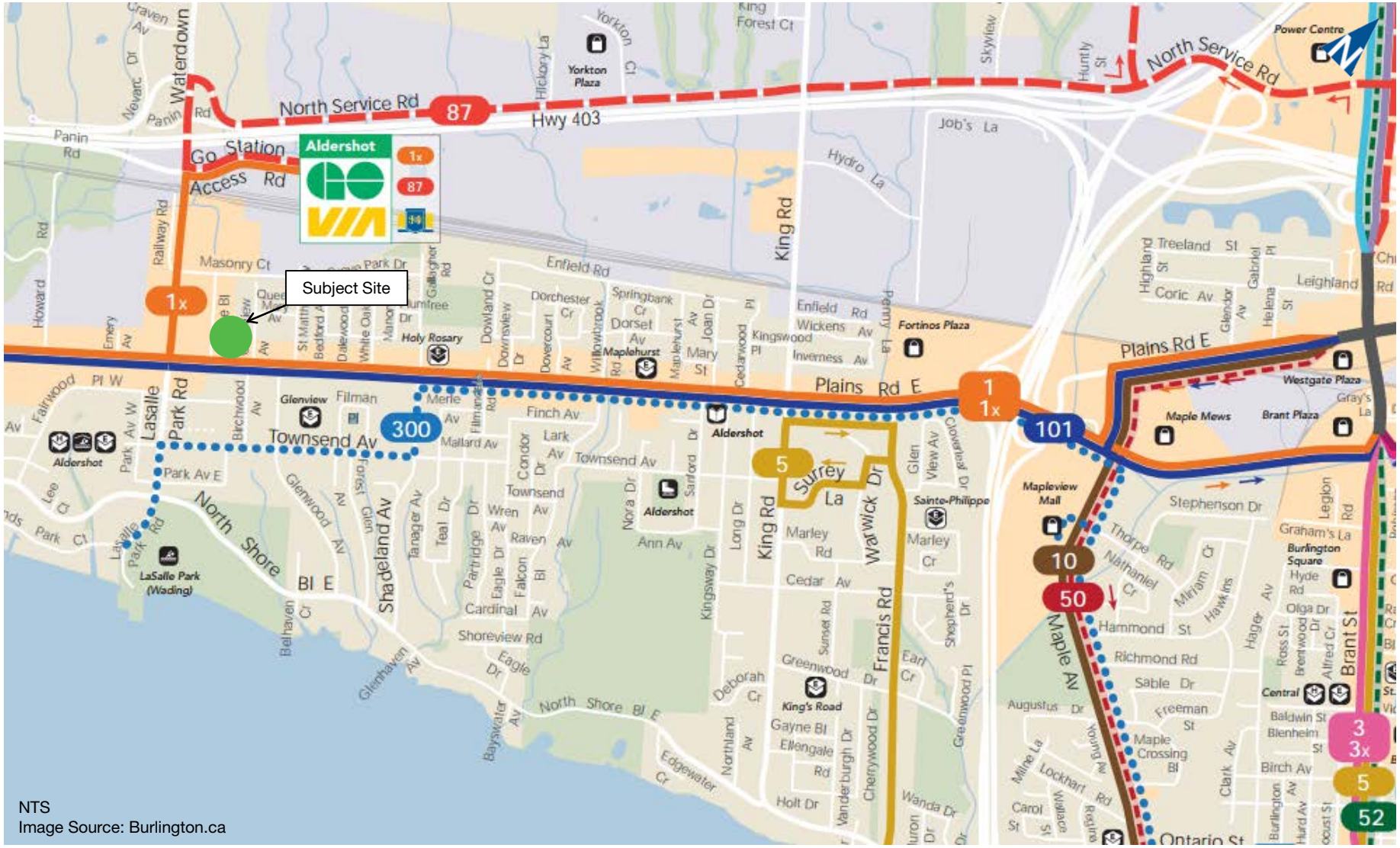
The GO Station's parking areas are located north and south of the CNR corridor and are designed with pick-up/drop-off areas as well as large surface parking areas. In the future the south parking area will be expanded to include approximately 1,585 additional parking spaces.

Interprovincial and international train service is provided by Via Rail's Quebec City-Windsor corridor, and the joint Via-Amtrak Maple Leaf train, connecting Toronto and New York through Niagara Falls.

Burlington Transit operates Route 1 and 1x (Plains) along Plains Road and Waterdown Road with a turnaround at the Aldershot GO Station. Service is provided 7 days a week with weekday headways in the order of 30 minutes. Transit stops are located at the Waterdown Road and Clearview Avenue/Birchwood Avenue intersections with Plains Road East.

The Plains Road Express bus also operates along the Plains Road East corridor within the study area. This route offers express transit service between the Burlington GO Station and downtown Hamilton with service provided Monday to Friday. Headways are in the order of 30 minutes.

HSR service in the area is limited to Route 18 – Waterdown. The Waterdown route serves the community of Waterdown and connects to the Aldershot GO Station. Service is provided Monday to Saturday with no Sunday or Holiday service. Transfer opportunities to Burlington Transit are available at the Aldershot GO Station.



NTS
Image Source: Burlington.ca

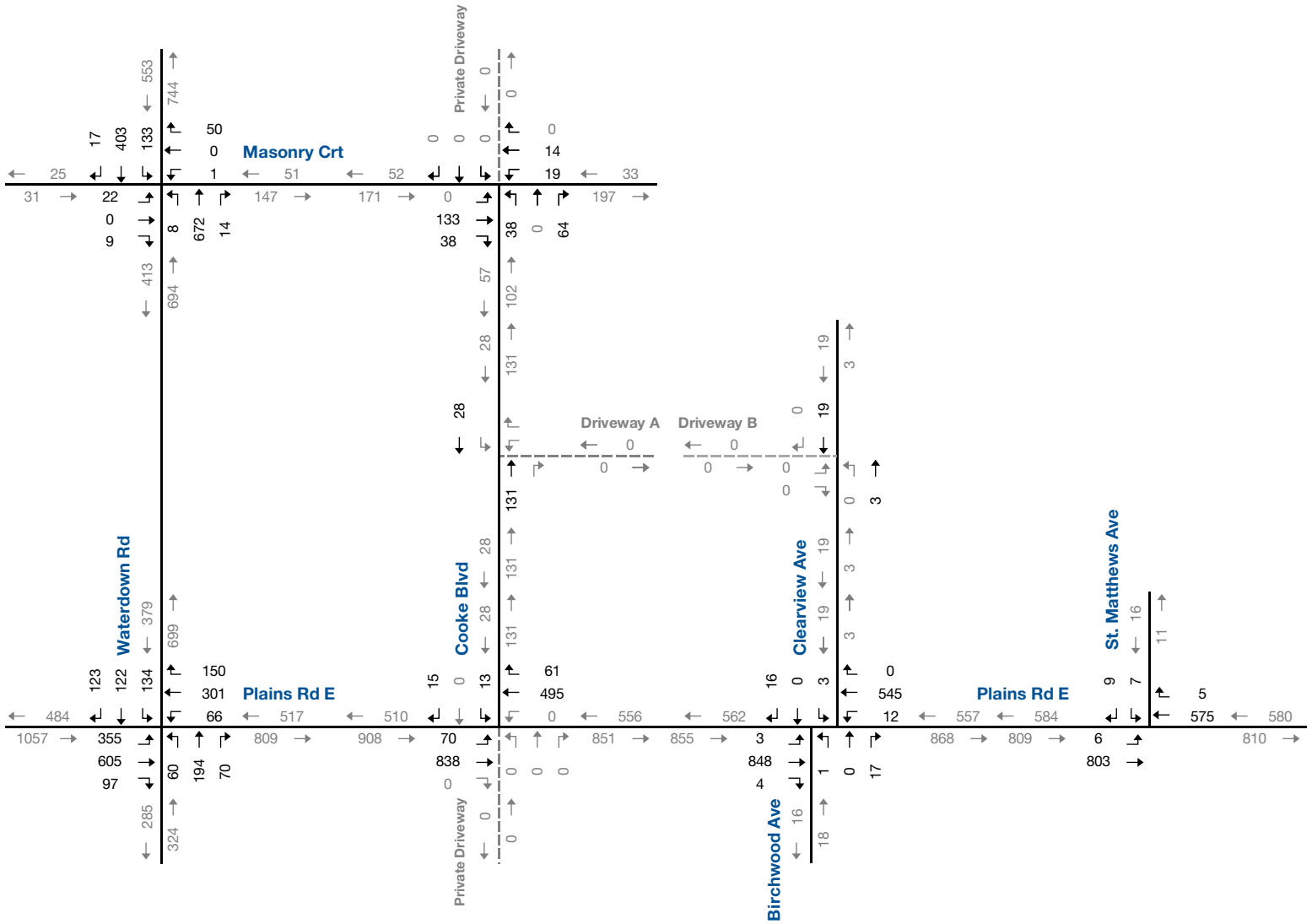
paradigm TRANSPORTATION SOLUTIONS LIMITED

Existing Transit Service

2.3 Existing Traffic Volumes

The traffic volumes used to establish the existing traffic conditions have been derived from turning movement counts conducted by Spectrum Traffic Data Incorporated (October 2015). The existing turning movement count data is considered to be up-to-date. **Appendix B** contains the existing count data. **Figure 2.3A-B** details the existing traffic volumes.



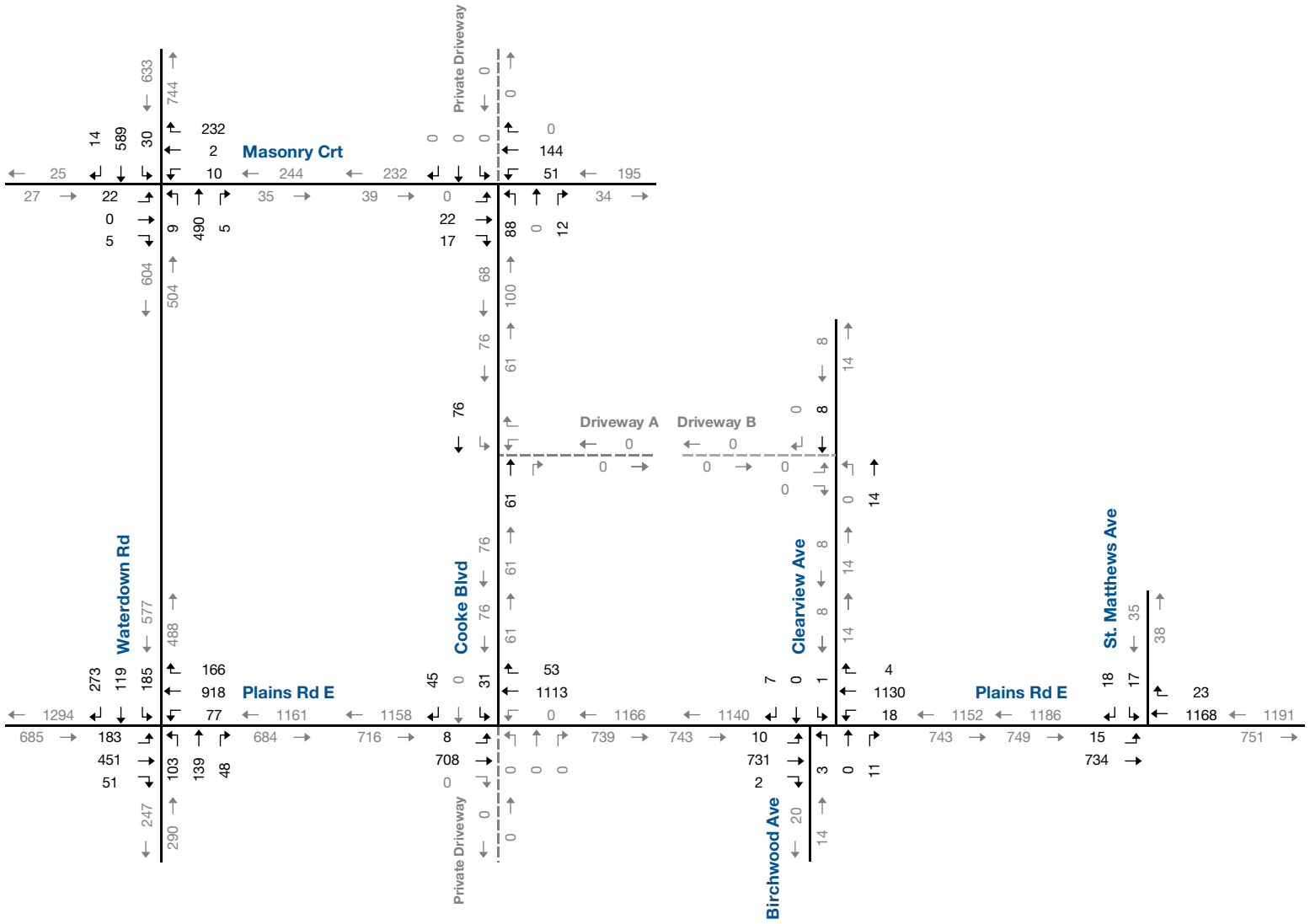


NTS

Existing Traffic – AM Peak Hour

53 & 71 Plains Road East TRIS, Parking Study & TDM
170113

Figure 2.3A



NTS

Existing Traffic – PM Peak Hour

53 & 71 Plains Road East TRIS, Parking Study & TDM
170113

Figure 2.3B

2.4 Existing Traffic Operations

Intersection level of service (LOS) is a recognized method of quantifying the efficiency of traffic flow at intersections. It is based on the delay experienced by individual vehicles executing the various movements. The delay is related to the number of vehicles desiring to make a particular movement, compared to the estimated capacity for that movement. The capacity is based on a number of criteria related to the opposing traffic flows. The highest possible rating is LOS A, under which the average total delay is equal or less than 10.0 seconds per vehicle. When the average delay exceeds 80 seconds at signalized intersections (50 seconds at unsignalized intersections), the movement is considered to have a LOS F and remedial measures are usually implemented, if they are feasible.

The operations of the intersections in the study area were evaluated using the existing lane configurations, traffic controls and the existing traffic peak volumes.

The level of service conditions on the existing road network have been assessed using Synchro 9 with HCM 2000 procedures. Movements are considered critical under the following conditions:

- Volume to capacity ratios for through movements or shared through/turning movements are greater than or equal to 0.85,
- Volume to capacity ratios for exclusive turning movements are greater than or equal to 0.95, and
- Queue lengths for individual movements that are projected to exceed the available turning lane storage. Queue lengths estimated using ten 60-minute simulations of SimTraffic.

Table 2.3 details the existing level of service conditions and notes:

AM Peak Hour

- Plains Road East and Waterdown Road
  - Eastbound left-turn – v/c ratio greater than 0.90 with queue length greater than current available storage.
  - Overall intersection – v/c ratio of 0.85.
- No other movements at the study area intersections are critical.

PM Peak Hour

- Plains Road East and Waterdown Road
  - Eastbound left-turn – queue length greater than current available storage.
  - Northbound left-turn – queue length greater than current available storage.

- No other movements at the study area intersections are critical.

Appendix C contains the detailed Synchro 9 output.

TABLE 2.1: EXISTING TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	OVERALL
AM Peak Hour	Plains Rd E & Waterdown Rd	TCS	LOS	D	C	>	**C**	C	C	>	**C**	C	D	>	**D**	C	B	B	**C**	**C**
			Delay	47	21	>	**30**	23	26	>	**26**	28	38	>	**36**	29	19	18	**22**	**28**
			V/C	0.94	0.54	>		0.46	0.44	>		0.28	0.73	>		0.66	0.24	0.13		**0.85**
			95th	119	86	>		14	53	>		19	73	>		31	27	5		
			Storage	45	-	>		45	-	>		30	-	>		-	-	30		
			Available	-74	-	>		31	-	>		11	-	>		-	-	25		
	Plains Rd E & Cooke Blvd	TCS	LOS	B	A		**A**		A	>	**A**					B		>	**B**	**A**
			Delay	16	3		**4**		9	>	**9**					17		>	**17**	**6**
			V/C	0.30	0.36				0.45	>						0.11		>		**0.43**
			95th	16	25				36	>						5		>		
			Storage	15	-				-	>						-		>		
			Available	-1	-				-	>						-		>		
	Plains Rd E & Clearview Ave/Birchwood Ave	TWSC	LOS	<	A	>	**A**	<	A	>	**A**	<	B	>	**B**	<	A	>	**A**	
			Delay	<	0	>	**0**	<	1	>	**0**	<	11	>	**11**	<	10	>	**10**	
			V/C	<	0.26	>		<	0.18	>		<	0.05	>		<	0.04	>		
			95th	<	0	>		<	1	>		<	1	>		<	1	>		
	Plains Rd E & St. Matthews Ave	TWSC	LOS	<	B		**B**		B	>	**B**					A		A	**A**	**B**
			Delay	<	16		**16**		14	>	**14**					8		8	**8**	**15**
			V/C	<	0.66				0.48	>						0.02		0.01		**0.31**
			95th	<	54				38	>						2		1		
			Storage	<	-				-	>						15		-		
			Available	<	-				-	>						13		-		
	Waterdown Rd & Masonry Crt	TWSC	LOS	<	C	>	**C**	C	C	>	**C**	A	A	>	**A**	A	A	>	**A**	**A**
			Delay	<	30	>	**30**	29	30	>	**30**	6	7	>	**7**	4	3	>	**3**	**8**
			V/C	<	0.05	>		0.02	0.05	>		0.03	0.37	>		0.31	0.19	>		**0.32**
			95th	<	0	>		1	0	>		2	40	>		9	12	>		
			Storage	<	-	>		-	40	>		40	-	>		65	-	>		
			Available	<	-	>		-	40	>		38	-	>		56	-	>		
	Masonry Crt & Cooke Blvd	TWSC	LOS		A	>	**A**	<	A		**A**	B		>	**B**					
			Delay		0	>	**0**	<	5		**5**	11		>	**11**					
			V/C		0.16	>		<	0.02			0.23		>						
			95th		0	>		<	0			7		>						
PM Peak Hour	Plains Rd E & Waterdown Rd	TCS	LOS	D	B	>	**C**	B	C	>	**C**	D	D	>	**D**	C	C	C	**C**	**C**
			Delay	40	16	>	**23**	17	29	>	**28**	38	37	>	**37**	28	21	23	**24**	**27**
			V/C	0.83	0.33	>		0.27	0.80	>		0.57	0.59	>		0.62	0.20	0.41		**0.74**
			95th	63	54	>		16	154	>		37	56	>		43	29	26		
			Storage	45	-	>		45	-	>		30	-	>		-	-	30		
			Available	-18	-	>		29	-	>		-7	-	>		-	-	4		
	Plains Rd E & Cooke Blvd	TCS	LOS	C	A		**A**		B	>	**B**					C		>	**C**	**A**
			Delay	25	3		**4**		11	>	**11**					22		>	**22**	**9**
			V/C	0.10	0.29				0.67	>						0.21		>		**0.57**
			95th	5	24				84	>						13		>		
			Storage	15	-				-	>						-		>		
			Available	10	-				-	>						-		>		
	Plains Rd E & Clearview Ave/Birchwood Ave	TWSC	LOS	<	A	>	**A**	<	A	>	**A**	<	B	>	**B**	<	B	>	**B**	
			Delay	<	1	>	**0**	<	1	>	**1**	<	11	>	**11**	<	12	>	**12**	
			V/C	<	0.22	>		<	0.37	>		<	0.04	>		<	0.03	>		
			95th	<	1	>		<	1	>		<	1	>		<	1	>		
	Plains Rd E & St. Matthews Ave	TWSC	LOS	<	B		**B**		B	>	**B**					B		B	**B**	**B**
			Delay	<	13		**13**		16	>	**16**					13		12	**13**	**15**
			V/C	<	0.54				0.74	>						0.05		0.02		**0.43**
			95th	<	51				87	>						5		2		
			Storage	<	-				-	>						15		-		
			Available	<	-				-	>						10		-		
	Waterdown Rd & Masonry Crt	TWSC	LOS	<	D	>	**D**	D	D	>	**D**	A	A	>	**A**	A	A	>	**A**	**B**
			Delay	<	38	>	**38**	37	38	>	**38**	5	5	>	**5**	3	3	>	**3**	**11**
			V/C	<	0.11	>		0.08	0.20	>		0.06	0.23	>		0.08	0.26	>		**0.27**
			95th	<	0	>		6	0	>		2	32	>		4	26	>		
			Storage	<	-	>		-	40	>		40	-	>		65	-	>		
			Available	<	-	>		-	40	>		38	-	>		62	-	>		
	Masonry Crt & Cooke Blvd	TWSC	LOS		A	>	**A**	<	A		**A**	B		>	**B**					
			Delay		0	>	**0**	<	3		**3**	14		>	**14**					
			V/C		0.04	>		<	0.06			0.31		>						
			95th		0	>		<	2			11		>						

3 Development Concept

3.1 Site Description

The mixed-use development proposes the following land uses:

- 450 high-rise condominium units,
  - The ground floor residential units (23 units) are marketed as "townhouse units" but for analysis purposes are considered high-rise units as they share the same underground parking and access locations as the upper storey units.
- 1,208 square metres of ground floor retail space within Building A and B.

Build-out of the site is anticipated to occur by the Year 2020. **Figure 3.1** details the concept plan. **Figure 3.2A-B** details the site's underground parking structure layout.

3.1.1 Site Access Provisions

Vehicular access is proposed by a full movement private driveway connection to Cooke Boulevard and to Clearview Avenue. The Cooke Boulevard driveway, Driveway A, is proposed approximately 95 metres (corner clearance) north of Plains Road East. The Clearview Avenue driveway, Driveway B, is proposed approximately 45 metres (corner clearance) north of Plains Road East.

Continuous existing sidewalks are provided along the Plains Road East and Cooke Boulevard frontages. Pedestrian connections between the sidewalks and the various at-grade access points are proposed.

Sidewalk connections are identified on the site plan to connect to Clearview Avenue. However, no sidewalk is identified along the Clearview Avenue frontage. It is recommended that a sidewalk connection along Clearview Avenue be provided between Plains Road East and the site driveway. Ultimately, the City may wish to extend the sidewalk along the entire length of Clearview Avenue.

3.1.2 Parking Supply

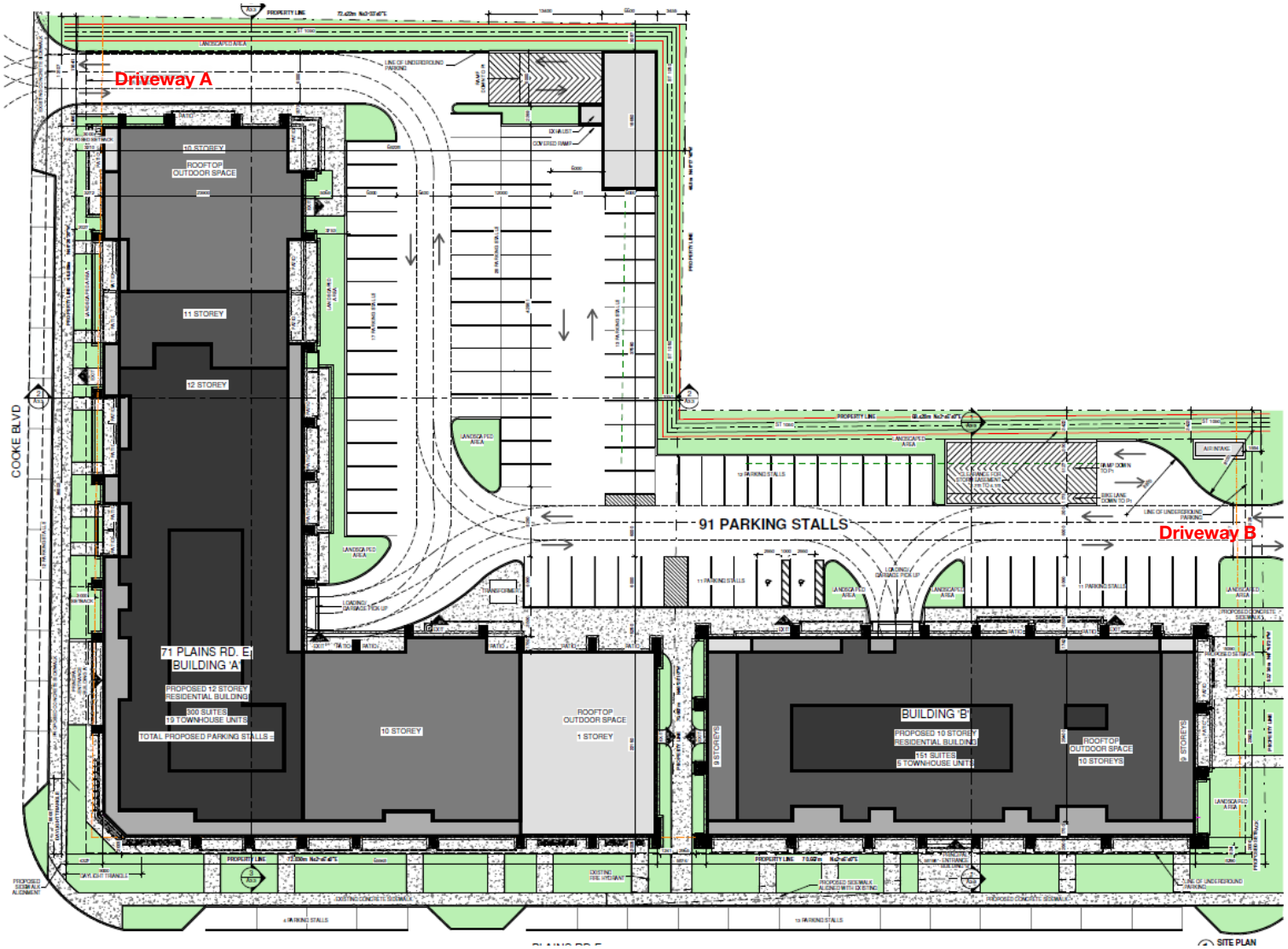
The site's parking supply is proposed to consist of 552 on-site parking spaces. **Section 6** provides additional detail on the site's parking supply. The parking spaces are proposed to be located as follows:

- Parking structure – 552 spaces;
  - Level P1 – 229 spaces.
  - Level P2 – 232 spaces.
- At-grade – 91 spaces.

Approximately 29 spaces are proposed in on-street parking bays on Plains Road East and Cooke Boulevard. It is expected that these spaces will be utilized by the ground floor commercial land uses and other short-term visitors to the site.

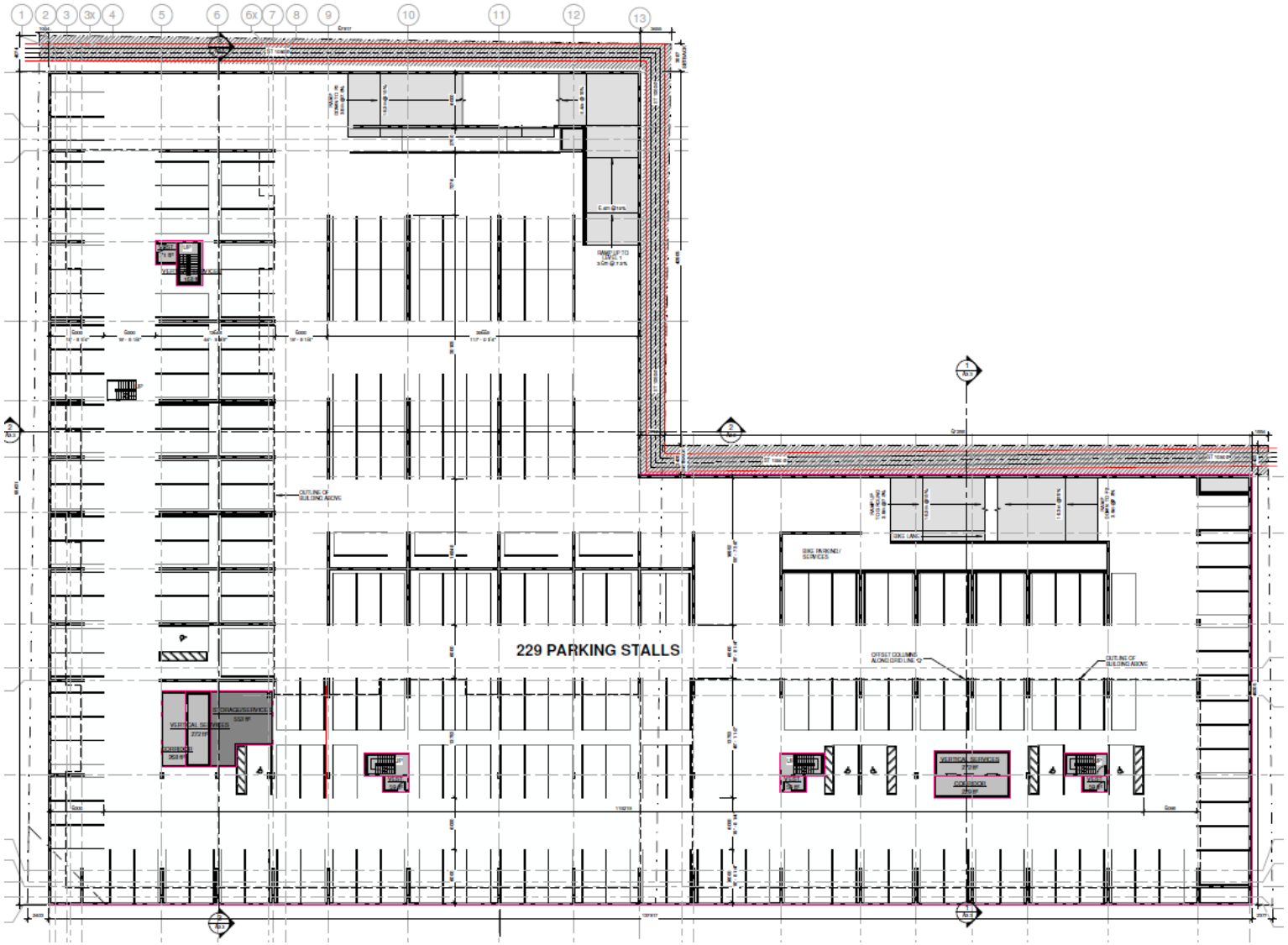
The site plan does not identify any on-site bicycle parking spaces.





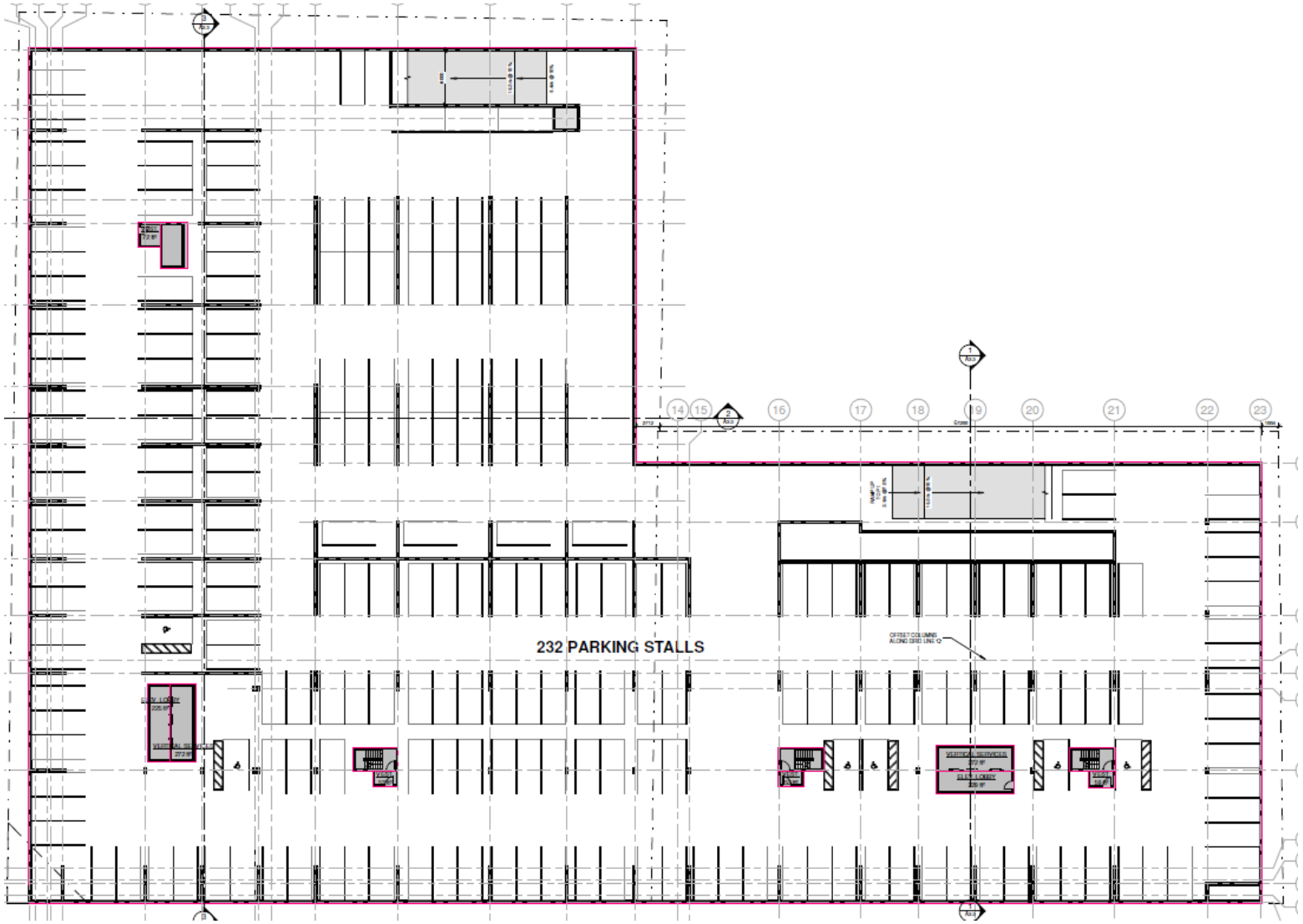
Site Concept Plans

Figure 3.1



Underground Parking – Level P1

Figure 3.2A



Underground Parking – Level P2

Figure 3.2B

3.2 Site Traffic Estimates

The Institute of Transportation Engineers (ITE) Trip Generation[4] and trip generation data collected by Paradigm for existing ground floor retail land uses predict the site trip generation. **Appendix D** contains the trip generation data.

The subject site is forecast to generate approximately 142 vehicle trips during the AM peak hour and approximately 178 vehicle trips during the PM peak hour. The trip generation is forecast to consists of two general trip types:

- Transit, Active Transportation and TDM based trips – 10 percent modal split[5]; and
- New vehicle trips.

Table 3.1 details the opening date trip generation estimate. The trip generation is forecast to be reduced to approximately 128 vehicle trips during the AM peak hour and approximately 160 vehicle trips during the PM peak hour.

The modal split for the subject site has the potential to be much greater as the site is located within the Aldershot mobility hub. Within mobility hubs, non-automotive transportation is the primary mode of travel. The TDM measures outlined in **Section 3.3** are required to achieve Halton Region's Modal Split Target.

TABLE 3.1: ESTIMATED TRIP GENERATION

Land Use Code	Number of Units	AM Peak Hour				PM Peak Hour			
		Rate	In	Out	Sum	Rate	In	Out	Sum
222 - Multi-family Housing (High-Rise)	450	*	33	106	**139**	*	99	63	**162**
PTSL - Ground Floor Retail **	13,005	0.25	1	2	**3**	1.24	8	8	**16**
Total Trip Generation			**34**	**108**	**142**		**107**	**71**	**178**
Modal Split***		10%	3	11	**14**	10%	11	7	**18**
Net Generation			**31**	**97**	**128**		**96**	**64**	**160**

* Fitted Curve Equation AM: T=0.28(X)+12.86 PM: T=0.34(X)+8.56
** PTSL Trip Generation Data
***Halton Region's Modal Split Target Year 2021

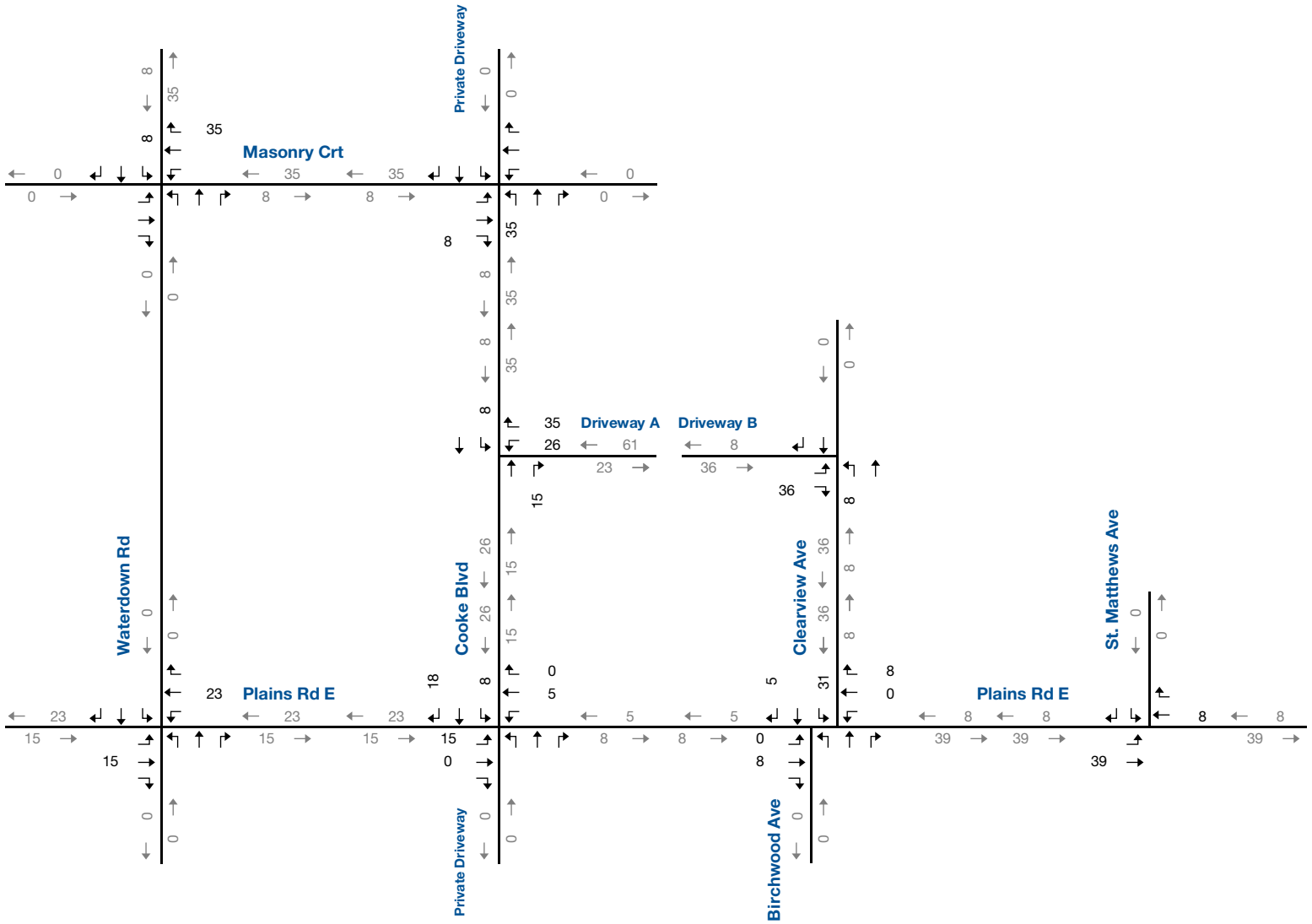
Table 3.2 summarizes the estimated trip distribution. The distribution is based on the local forecast future trip patterns documented in the study area. **Figure 3.2A-B** details the site-generated traffic.

[4] Trip Generation Manual 9th Edition Institute of Transportation Engineers Washington DC 2012 – LUC 231 - Low-Rise Residential Condominium/Townhouse, LUC 232 - High-Rise Residential Condominium/Townhouse

[5] Halton Region's Modal Split Target Year 2021

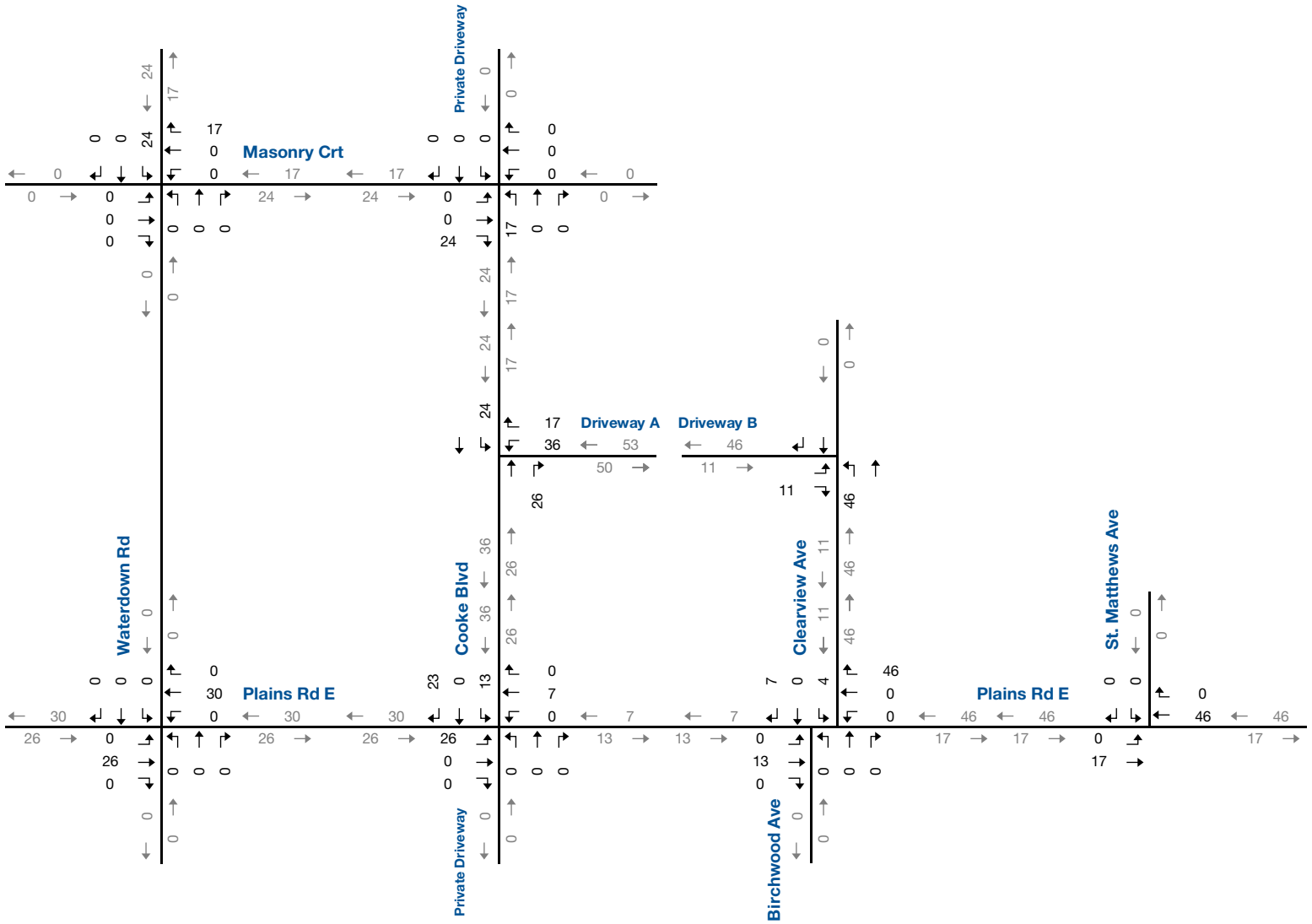
TABLE 3.2: ESTIMATED TRIP DISTRIBUTION

Origin/Destination	AM Peak Hour		PM Peak Hour	
	In	Out	In	Out
North via Waterdown Road	25%	37%	25%	27%
East via Plains Road East	26%	40%	47%	27%
West via Plains Road West	48%	24%	27%	46%
Total	**100%**	**100%**	**100%**	**100%**



NTS

Estimated Site Generated Traffic – AM Peak Hour



NTS

Estimated Site Generated Traffic – PM Peak Hour

3.3 Transportation Demand Management

Transportation Demand Management (TDM) refers to ways of making the capacity of our roads more efficient by reducing vehicle demand. TDM approaches consider how people's choices of travel mode are affected by land use patterns; development design; parking availability; parking cost; and the relative cost, convenience and availability of alternative modes of travel. Various TDM strategies are used to influence those factors so that the alternatives are more competitive with driving alone and potentially reduce reliance on motor vehicles.

TDM strategies at a development can be divided into two basic categories:

- Pre-occupancy: things that need to be done while a development is being designed and built; and
- Post-occupancy: things that can be done once people are using the development.

The pre-occupancy actions are critical as they are most likely to determine how attractive, convenient, and safe alternative travel will be once the site is occupied. Before a site is occupied, it can be designed to be convenient and safe for pedestrians and cyclists, and vehicle parking can be provided to meet but not exceed demand.

After the development is built, incentives can be offered, but those incentives will not work as well if the site and its surroundings are oriented to cars. The incentives generally include subsidies to use transit, access to rideshare programs, and information about where and how to use alternatives.

The following TDM measures should strongly be considered when developing a final site plan for approval.

Cycling Infrastructure

- A "bike room" should be provided on the ground floors of Building A and B. The long-term bicycle parking room should be placed at grade and assessible to residents. The bicycle room should include at least one bicycle repair station. The long-term bicycle parking supply is recommended to be 0.50 spaces per unit[6].
- Short-term bicycle parking be provided for visitors. Short-term bicycle parking should be located at grade and near the main lobby or other primary entrance points. The short- term bicycle parking supply is recommended to be 0.05 spaces per unit[6].

[6] Final Report Burlington City-Wide Parking Standards Review Consolidated Report, IBI Group, July 2017

Walking Infrastructure

- On-site sidewalks are provided for pedestrians linking building entrances directly with the existing public sidewalks along Plains Road East and Cooke Boulevard. Additional connections will be established to Clearview Avenue.
- Sidewalks along Clearview Avenue should be provided between Plains Road East and the site driveway. Ultimately, the City may wish to extend the sidewalk along the entire length of Clearview Avenue.
- All on-site sidewalks will conform to the City of Burlington's design standards and the Accessibility for Ontarians with Disabilities Act (AODA) design standards.
- The future landscaping plan will consider enhancing the common amenity areas to include pedestrian amenities such as benches, seating areas and/or pedestrian scale lighting.

Transit Infrastructure

- Enhance walking routes between main building entrance(s) and transit stops/stations;
- Provision of transit information on-site and adjacent to stops/stations.
- Provision of discounted transit passes for first time purchasers of units in the building during the first year of occupancy should be considered as a marketing item.
- Adaptive real-time transit arrival signage should be considered within the lobby area[7].
- Burlington Transit should explore pre-emptive transit technology to improve level of service for transit vehicles.

Parking Infrastructure

- Unbundle parking costs from the cost of purchasing the units.
- Reduced minimum parking requirements based on proximity to transit;
- Shared visitor parking supply for residential and non-residential uses;
- Shared parking with nearby developments or on-street spaces; and
- Reduced minimum parking requirements based on provision of dedicated carshare vehicle or spaces.

[7] https://transitscreen.com/about/



Carshare

- The site operator will explore the feasibility of providing a carshare vehicle(s) and at grade parking space(s) on-site as a future amenity for residents and the Aldershot Community.

Wayfinding, Travel Planning, Education/Promotion

- Travel planning resources for residents (individualized marketing, active transportation maps, community resources) be provided to residents.
- Wayfinding signage be considered in the Lobby or near main entrances.
- Contribute to building a strong TDM brand in marketing material; and
- Travel planning resources for residents marketing a car-free lifestyle be provided (transit information, active transportation maps, carshare information, etc) be provided with new unit purchases.

Integrating the above noted TDM measures into a comprehensive site plan can assist in mitigating the site's impact on the adjacent road network, promote a strong and vibrant economy, and create a livable community that has a balanced transportation network that accommodate all modes of transportation.

4 Future Traffic Conditions

The assessment of the future traffic conditions contained in this section includes the following components necessary to assess the traffic implications on the adjacent road network:

- Future background traffic estimates;
- Level of service analysis for background traffic (pre-development); and
- Level of service analysis for background traffic plus the additional traffic generated by the build-out of the subject site (post-development).

4.1 Background Traffic Forecast

For analysis purposes, a five-year horizon (Year 2025) following the anticipated build-out (Year 2020) of the subject site has been assessed in order to determine the impact of the subject site. The likely future background traffic volumes in the vicinity of the subject site are estimated to consist of the following:

- Increased non-site traffic (generalized background traffic growth). The background traffic estimates were derived by applying a growth rate of 1.0 percent per annum to the existing traffic volumes; and
- Traffic generated by the build-out of several adjacent development applications. The development sites of interest are noted as follows:
  - The Waterdown GO Station Parking Lot Expansion – Estimated to consist of 495 additional surface parking spaces. Ultimately the parking lot expansion could include an additional 1,090 spaces;
  - 40, 46, & 50 Plains Road East – estimated to consist of 51 condominium units. The development of the site will result in a new driveway connection to the intersection of Plains Road East and Cooke Boulevard;
  - 101 Masonry Court (Phase 1)[8] – estimated to consist of 428 residential units of various types. Phase 2 of the site is anticipated to occur beyond the horizon year assessed in this study;
  - 70 Plains Road West – mixed-use development containing 44 units and approximately 721 square metres of ground floor retail land uses;

[8] 101 Masonry Court – Phase 1 Traffic Impact Study, Parking Study & TDM Options Report, Paradigm Transportation Solutions Limited, April 2016, Project Number 142170

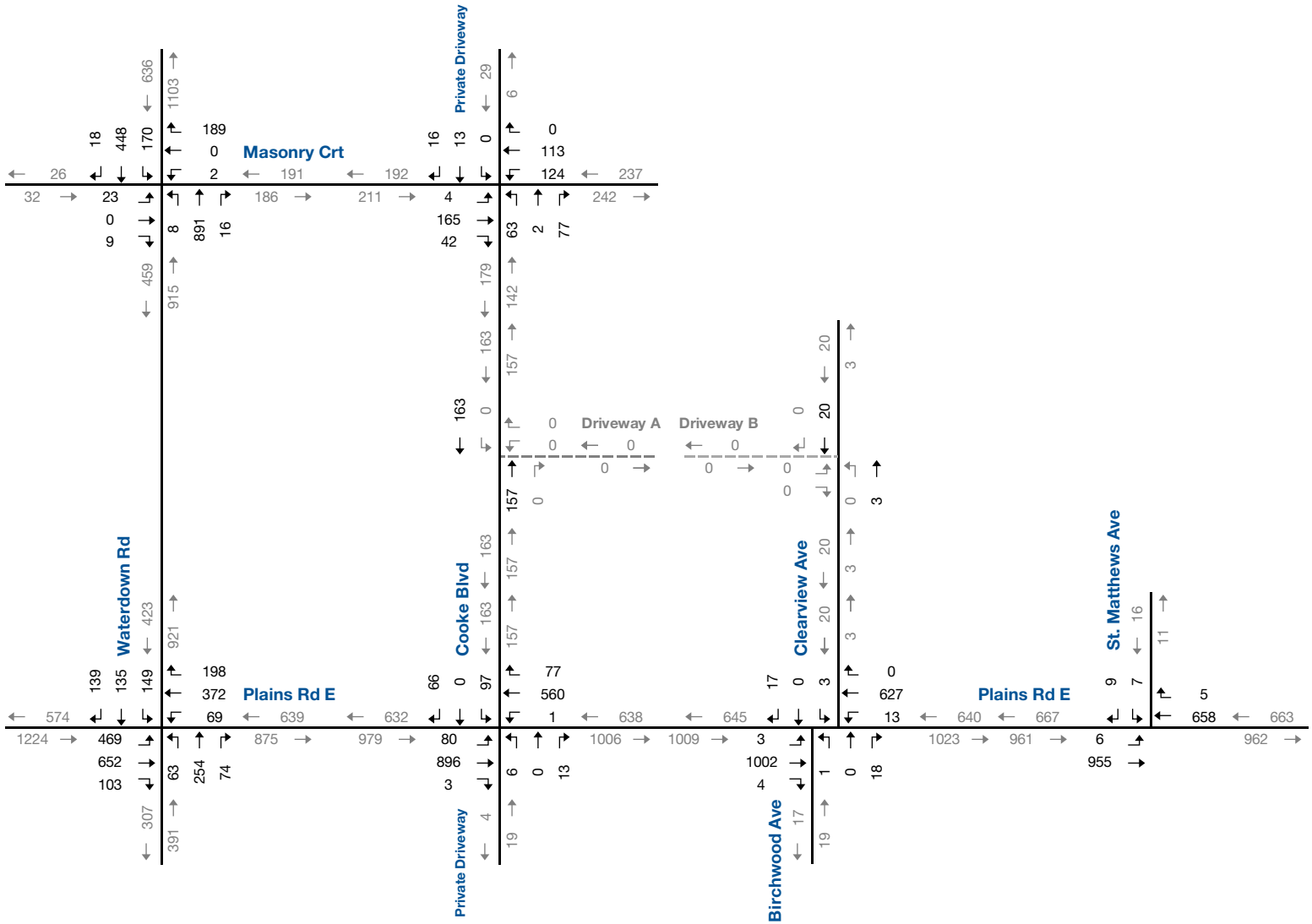


- 1200 King Road[9] – Phase 1 – estimated to consist of approximately 82,785 square metres of typical business park land uses. These lands are located north of the CNR corridor. The complete build-out of the 50-hectare site is anticipated to occur by Year 2030 in 5 Phases. Market conditions could hasten or delay build-out of these lands. Initial estimates suggest build-out will occur at roughly 5 percent per year.
- 35 Plains Road East[10] - 72 condominium apartment units with a small mix of ground floor retail/commercial space along the site's frontage to Plains Road East.

Appendix E contains the detailed traffic forecast for the adjacent development applications. **Figure 4.1A-B** details the background traffic volumes.

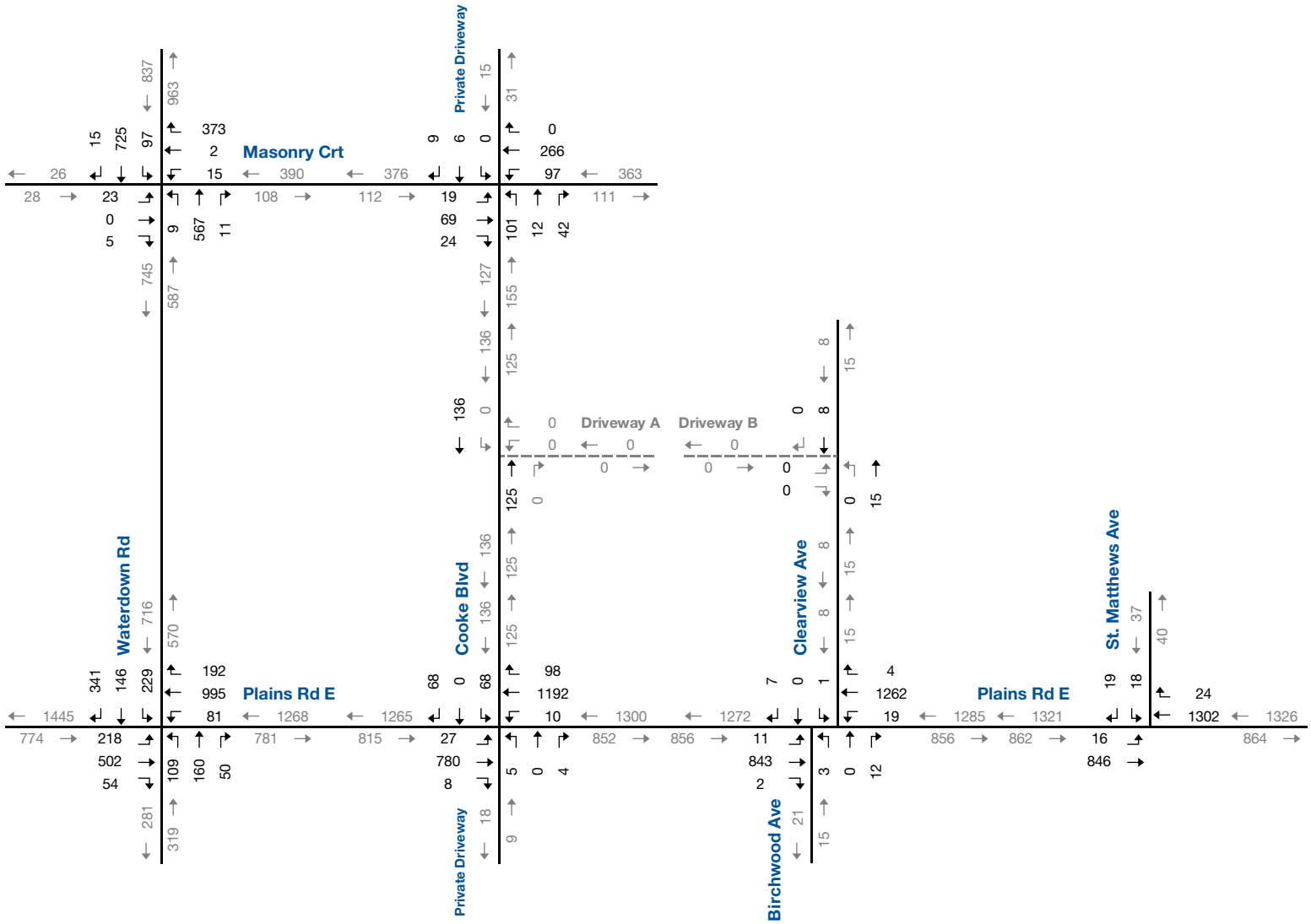
[9] Mixed Use Employment Development 1200 King Road, Traffic Impact Study, Paradigm Transportation Solutions Limited, April 2015, Project Number 131920
[10] 35 Plains Road East Transportation Impact Study, Parking Study & TDM Options Report, Paradigm Transportation Solutions Limited, April 2016, Project Number 152410





NTS

Forecast Background Traffic – AM Peak Hour



NTS

Forecast Background Traffic – PM Peak Hour

4.2 Background Traffic Operations

The study area intersection operations analyses followed the same methodology used for existing conditions. Signal timings have been optimized to help ensure reasonable levels of service can be maintained. **Table 4.1** details the level of service conditions and notes:

AM Peak Hour

- Plains Road East and Waterdown Road
  - Eastbound left-turn – high levels of delay, v/c ratio greater than 1.00 with queue length greater than current available storage;
  - Northbound through – v/c ratio greater than 0.85;
  - Southbound left-turn - high levels of delay and v/c ratio greater than 0.95; and
  - Overall intersection – v/c ratio of 1.00.
- No other movements at the study area intersections are critical.

PM Peak Hour

- Plains Road East and Waterdown Road
  - Eastbound left-turn – v/c ratio greater than 0.85 with queue length greater than current available storage;
  - Westbound through – v/c ratio of 0.90;
  - Southbound right-turn - queue length greater than current available storage; and
  - Overall intersection – v/c ratio greater than 0.85.
- Masonry Court & Cooke Boulevard
  - Northbound approach – high levels of delay and v/c ratio of 1.00.
- No other movements at the study area intersections are critical.

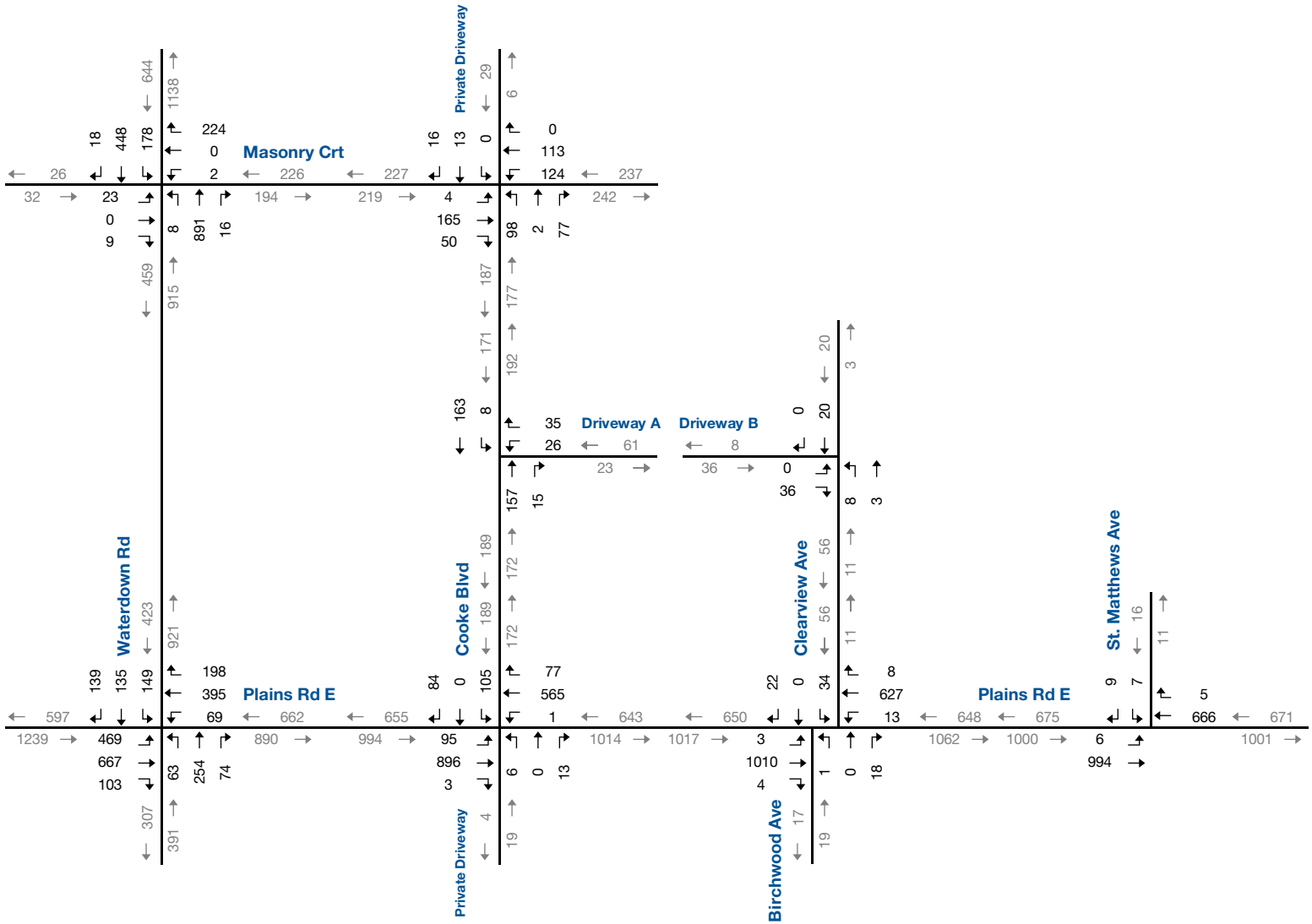
Appendix F contains the detailed Synchro 9 output.

TABLE 4.1: BACKGROUND TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	OVERALL
AM Peak Hour	Plains Rd E & Waterdown Rd	TCS	LOS	E	C	>	D	C	C	>	C	C	D	>	D	F	C	C	D	D
			Delay	78	24	>	45	24	33	>	32	29	49	>	46	87	21	20	42	41
			V/C	1.04	0.59	>		0.49	0.79	>		0.28	0.86	>		0.97	0.27	0.14		1.00
			95th	166	91	>		10	32	>		21	99	>		52	32	6		
			Storage	45	-	>		45	-	>		30	-	>		-	-	30		
			Available	-121	-	>		35	-	>		9	-	>		-	-	24		
	Plains Rd E & Cooke Blvd	TCS	LOS	A	A	>	A	A	A	>	A	<	C	>	C	<	D	>	D	A
			Delay	4	4	>	4	6	7	>	7	<	32	>	32	<	42	>	42	10
			V/C	0.23	0.37	>		0.00	0.35	>		<	0.01	>		<	0.65	>		0.45
			95th	6	24	>		0	23	>		<	0	>		<	52	>		
			Storage	15	-	>		15	-	>		<	-	>		<	-	>		
			Available	9	-	>		15	-	>		<	-	>		<	-	>		
	Plains Rd E & Clearview Ave/Birchwood Ave	TWSC	LOS	<	A	>	A	<	A	>	A	<	B	>	B	<	B	>	B	
			Delay	<	0	>	0	<	1	>	0	<	12	>	12	<	11	>	11	
			V/C	<	0.31	>		<	0.20	>		<	0.06	>		<	0.04	>		
			95th	<	0	>		<	1	>		<	2	>		<	1	>		
	Plains Rd E & St. Matthews Ave	TWSC	LOS	A	A		A		A	>	A					C		C	C	A
			Delay	3	5		5		7	>	7					29		28	28	6
			V/C	0.02	0.42				0.31	>						0.04		0.01		0.32
			95th	1	29				38	>						4		1		
			Storage	15	-				-	>						15		-		
			Available	14	-				-	>						11		-		
	Waterdown Rd & Masonry Crt	TWSC	LOS	<	C	>	C	<	C	>	C	A	B	>	B	A	A	>	A	B
			Delay	<	23	>	23	<	24	>	24	8	13	>	13	9	4	>	5	12
			V/C	<	0.10	>		<	0.23	>		0.04	0.58	>		0.55	0.24	>		0.50
			95th	<	0	>		<	0	>		3	76	>		17	20	>		
			Storage	<	-	>		<	-	>		40	-	>		20	-	>		
			Available	<	-	>		<	-	>		37	-	>		3	-	>		
	Masonry Crt & Cooke Blvd	TWSC	LOS	<	A	>	A	<	A	>	A	<	C	>	C	<	B	>	B	
			Delay	<	0	>	0	<	5	>	5	<	21	>	21	<	13	>	13	
			V/C	<	0.00	>		<	0.13	>		<	0.52	>		<	0.07	>		
			95th	<	0	>		<	4	>		<	23	>		<	2	>		
PM Peak Hour	Plains Rd E & Waterdown Rd	TCS	LOS	D	B	>	C	B	C	>	C	C	D	>	D	D	C	D	D	C
			Delay	51	18	>	28	10	26	>	25	34	42	>	39	43	32	37	38	30
			V/C	0.87	0.37	>		0.28	0.90	>		0.43	0.65	>		0.81	0.36	0.61		0.86
			95th	78	58	>		9	174	>		28	62	>		59	43	37		
			Storage	45	-	>		45	-	>		30	-	>		-	-	30		
			Available	-33	-	>		36	-	>		2	-	>		-	-	-7		
	Plains Rd E & Cooke Blvd	TCS	LOS	D	A	>	A	A	A	>	A	<	C	>	C	<	D	>	D	B
			Delay	46	3	>	6	5	8	>	8	<	35	>	35	<	42	>	42	11
			V/C	0.43	0.30	>		0.03	0.63	>		<	0.01	>		<	0.59	>		0.60
			95th	13	37	>		1	33	>		<	0	>		<	47	>		
			Storage	15	-	>		15	-	>		<	-	>		<	-	>		
			Available	2	-	>		14	-	>		<	-	>		<	-	>		
	Plains Rd E & Clearview Ave/Birchwood Ave	TWSC	LOS	<	A	>	A	<	A	>	A	<	B	>	B	<	B	>	B	
			Delay	<	1	>	1	<	1	>	1	<	11	>	11	<	14	>	14	
			V/C	<	0.26	>		<	0.41	>		<	0.04	>		<	0.04	>		
			95th	<	1	>		<	1	>		<	1	>		<	1	>		
	Plains Rd E & St. Matthews Ave	TWSC	LOS	A	A		A		A	>	A					C		C	C	A
			Delay	5	5		5		10	>	10					30		29	30	8
			V/C	0.14	0.37				0.59	>						0.09		0.02		0.46
			95th	2	22				89	>						8		3		
			Storage	15	-				-	>						15		-		
			Available	13	-				-	>						8		-		
	Waterdown Rd & Masonry Crt	TWSC	LOS	<	C	>	C	<	C	>	C	A	B	>	B	A	A	>	A	B
			Delay	<	23	>	23	<	27	>	27	9	10	>	10	6	6	>	6	12
			V/C	<	0.09	>		<	0.55	>		0.09	0.35	>		0.23	0.38	>		0.45
			95th	<	0	>		<	0	>		3	50	>		9	46	>		
			Storage	<	-	>		<	-	>		40	-	>		20	-	>		
			Available	<	-	>		<	-	>		37	-	>		11	-	>		
	Masonry Crt & Cooke Blvd	TWSC	LOS	<	A	>	A	<	A	>	A	<	F	>	F	<	C	>	C	
			Delay	<	1	>	1	<	3	>	3	<	93	>	93	<	15	>	15	
			V/C	<	0.02	>		<	0.12	>		<	1.00	>		<	0.05	>		
			95th	<	0	>		<	3	>		<	82	>		<	1	>		

4.2 Future Total Traffic

Figure 4.2A-B details the forecast total traffic volumes.

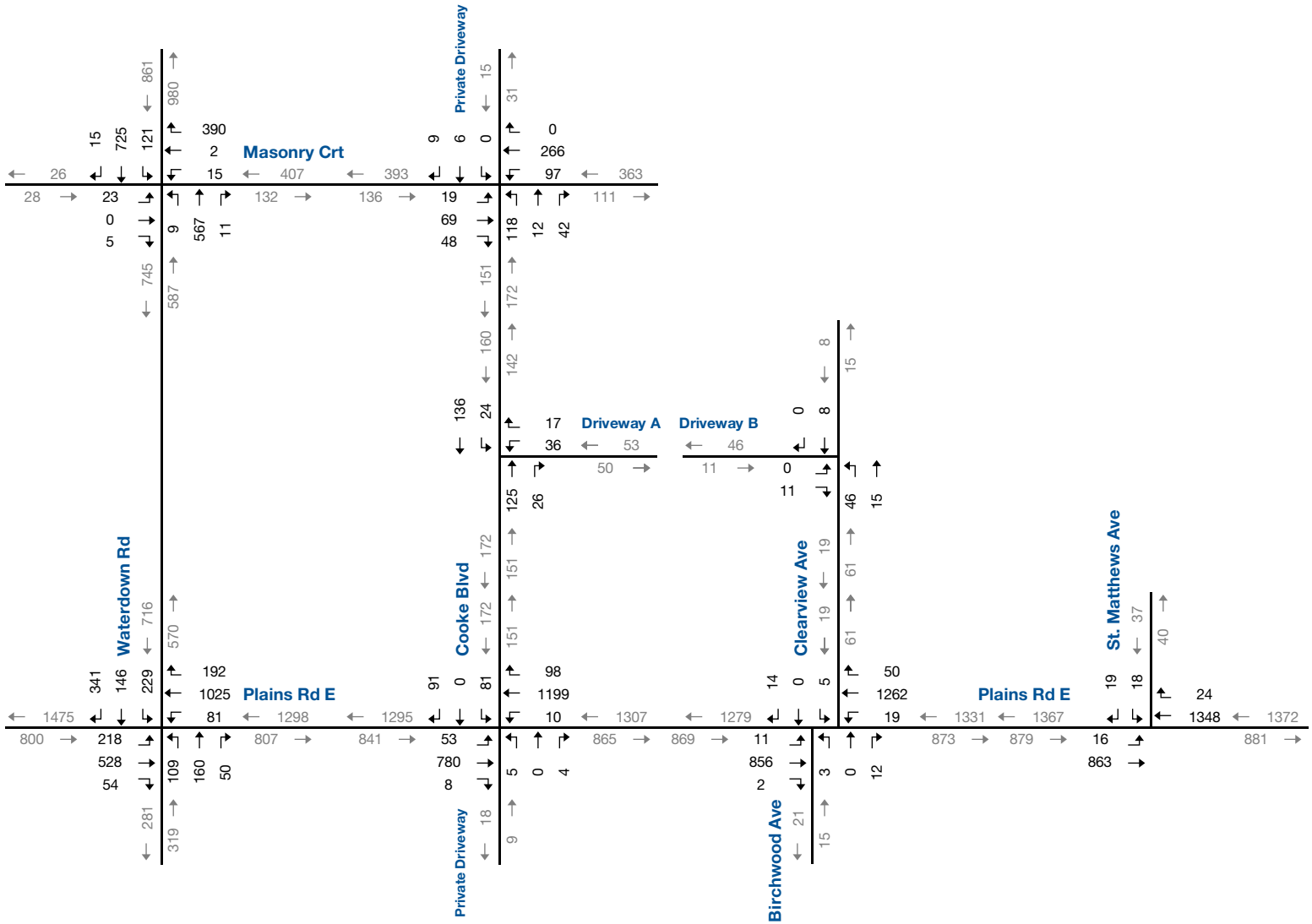


NTS

Forecast Total Traffic – AM Peak Hour

53 & 71 Plains Road East TRIS, Parking Study & TDM
170113

Figure 4.2A



NTS

Forecast Total Traffic – PM Peak Hour

4.3 Future Total Traffic Operations

The study area intersection operations analyses followed the same methodology used for the background traffic conditions. Signal timings have been optimized to help ensure reasonable levels of service can be maintained. **Table 4.2** details the level of service conditions and notes:

AM Peak Hour

- Plains Road East and Waterdown Road
  - Eastbound left-turn – high levels of delay, v/c ratio greater than 1.00 with queue length greater than current available storage;
  - Northbound through – v/c ratio greater than 0.85;
  - Southbound left-turn - high levels of delay and v/c ratio greater than 0.95; and
  - Overall intersection – v/c ratio of 1.00.
- Waterdown Road and Masonry Court
  - Southbound left-turn – queue length greater than current available storage.
- No other movements at the study area intersections are critical.
- No capacity issues are forecast to occur at the site driveway connections to Cooke Boulevard or Clearview Avenue. Queue lengths generated by the traffic control devises at the downstream Plains Road East intersections are not forecast to impact the operation of the site driveway connections.

PM Peak Hour

- Plains Road East and Waterdown Road
  - Eastbound left-turn – v/c ratio greater than 0.85 with queue length greater than current available storage;
  - Westbound through – v/c ratio greater than 0.90;
  - Southbound right-turn - queue length greater than current available storage; and
  - Overall intersection – v/c ratio greater than 0.85.
- Masonry Court & Cooke Boulevard
  - Northbound approach – high levels of delay and v/c ratio greater than 1.00.
- No other movements at the study area intersections are critical.
- No capacity issues are forecast to occur at the site driveway connections to Cooke Boulevard or Clearview Avenue. Queue lengths generated by the traffic control devises at the downstream

Plains Road East intersections are not forecast to impact the operation of the site driveway connections.

Appendix G contains the detailed Synchro 9 output.

From a capacity perspective, no geometric or traffic control improvements are required at the proposed site driveway connection to Cooke Boulevard or Clearview Avenue. The intersection of Masonry Court and Cooke Boulevard is forecast to experience high levels of side street delay on the northbound approach. The need for improvements to the existing form of traffic control is outlined in **Section 5**.

TABLE 4.2: TOTAL TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	OVERALL
AM Peak Hour	Plains Rd E & Waterdown Rd	TCS	LOS	E	C	>	D	C	D	>	C	C	D	>	D	F	C	C	D	D
			Delay	78	25	>	45	23	36	>	34	29	49	>	46	87	21	20	42	42
			V/C	1.04	0.60	>		0.50	0.83	>		0.28	0.86	>		0.97	0.27	0.14		1.00
			95th	166	93	>		9	47	>		21	99	>		52	32	6		
			Storage	45	-	>		45	-	>		30	-	>		-	-	30		
			Available	-121	-	>		36	-	>		9	-	>		-	-	24		
	Plains Rd E & Cooke Blvd	TCS	LOS	A	A	>	A	A	A	>	A	<	C	>	C	<	D	>	D	B
			Delay	6	4	>	4	8	9	>	9	<	30	>	30	<	42	>	42	11
			V/C	0.29	0.38	>		0.00	0.38	>		<	0.01	>		<	0.69	>		0.48
			95th	10	33	>		0	31	>		<	0	>		<	59	>		
			Storage	15	-	>		15	-	>		<	-	>		<	-	>		
			Available	5	-	>		15	-	>		<	-	>		<	-	>		
	Plains Rd E & Clearview Ave/Birchwood Ave	TWSC	LOS	<	A	>	A	<	A	>	A	<	B	>	B	<	C	>	C	
			Delay	<	0	>	0	<	1	>	0	<	11	>	11	<	15	>	15	
			V/C	<	0.31	>		<	0.22	>		<	0.06	>		<	0.26	>		
			95th	<	0	>		<	1	>		<	2	>		<	8	>		
	Plains Rd E & St. Matthews Ave	TWSC	LOS	A	A		A		A	>	A					C		C	C	A
			Delay	3	5		5		7	>	7					29		28	28	6
			V/C	0.02	0.44				0.32	>						0.04		0.01		0.33
			95th	1	26				38	>						4		1		
			Storage	15	-				-	>						15		-		
			Available	14	-				-	>						11		-		
	Waterdown Rd & Masonry Crt	TWSC	LOS	<	C	>	C	<	C	>	C	A	B	>	B	B	A	>	A	B
			Delay	<	23	>	23	<	25	>	25	9	14	>	14	10	5	>	6	13
			V/C	<	0.10	>		<	0.41	>		0.04	0.60	>		0.59	0.24	>		0.55
			95th	<	0	>		<	0	>		3	86	>		23	25	>		
			Storage	<	-	>		<	-	>		40	-	>		20	-	>		
			Available	<	-	>		<	-	>		37	-	>		-3	-	>		
	Masonry Crt & Cooke Blvd	TWSC	LOS	<	A	>	A	<	A	>	A	<	D	>	D	<	B	>	B	
			Delay	<	0	>	0	<	5	>	5	<	32	>	32	<	14	>	14	
			V/C	<	0.00	>		<	0.13	>		<	0.70	>		<	0.07	>		
			95th	<	0	>		<	4	>		<	41	>		<	2	>		
	Cooke Blvd & Driveway A	TWSC	LOS					B		>	B		A	>	A	<	A		A	
			Delay					10		>	10		0	>	0	<	0		0	
			V/C					0.09		>			0.11	>		<	0.01			
			95th					2		>			0	>		<	0			
	Clearview Ave & Driveway B	TWSC	LOS	A		>	A					<	A		A		A	>	A	
			Delay	9		>	9					<	6		6		0	>	0	
			V/C	0.04		>						<	0.01				0.01	>		
			95th	1		>						<	0				0	>		
PM Peak Hour	Plains Rd E & Waterdown Rd	TCS	LOS	D	B	>	C	A	C	>	C	C	D	>	D	D	C	D	D	C
			Delay	51	18	>	28	9	26	>	25	34	42	>	39	43	32	37	38	30
			V/C	0.87	0.38	>		0.29	0.92	>		0.43	0.65	>		0.81	0.36	0.61		0.87
			95th	78	61	>		6	182	>		28	62	>		59	43	37		
			Storage	45	-	>		45	-	>		30	-	>		-	-	30		
			Available	-33	-	>		39	-	>		2	-	>		-	-	-7		
	Plains Rd E & Cooke Blvd	TCS	LOS	D	A	>	A	A	B	>	B	<	C	>	C	<	D	>	D	B
			Delay	49	4	>	9	8	12	>	12	<	32	>	32	<	45	>	45	14
			V/C	0.62	0.31	>		0.03	0.69	>		<	0.01	>		<	0.71	>		0.69
			95th	21	35	>		1	55	>		<	0	>		<	64	>		
			Storage	15	-	>		15	-	>		<	-	>		<	-	>		
			Available	-6	-	>		14	-	>		<	-	>		<	-	>		
	Plains Rd E & Clearview Ave/Birchwood Ave	TWSC	LOS	<	A	>	A	<	A	>	A	<	B	>	B	<	C	>	C	
			Delay	<	1	>	1	<	1	>	1	<	11	>	11	<	19	>	19	
			V/C	<	0.26	>		<	0.46	>		<	0.04	>		<	0.15	>		
			95th	<	1	>		<	1	>		<	1	>		<	4	>		
	Plains Rd E & St. Matthews Ave	TWSC	LOS	A	A		A		A	>	A					C		C	C	A
			Delay	5	5		5		10	>	10					30		29	30	8
			V/C	0.16	0.38				0.60	>						0.09		0.02		0.47
			95th	2	21				93	>						8		3		
			Storage	15	-				-	>						15		-		
			Available	13	-				-	>						8		-		
	Waterdown Rd & Masonry Crt	TWSC	LOS	<	C	>	C	<	C	>	C	B	B	>	B	A	A	>	A	B
			Delay	<	21	>	21	<	26	>	26	12	13	>	13	8	6	>	7	13
			V/C	<	0.09	>		<	0.59	>		0.10	0.40	>		0.41	0.39	>		0.47
			95th	<	0	>		<	0	>		4	55	>		16	49	>		
			Storage	<	-	>		<	-	>		40	-	>		20	-	>		
			Available	<	-	>		<	-	>		36	-	>		4	-	>		
	Masonry Crt & Cooke Blvd	TWSC	LOS	<	A	>	A	<	A	>	A	<	F	>	F	<	C	>	C	
			Delay	<	1	>	1	<	3	>	3	<	152	>	152	<	16	>	16	
			V/C	<	0.02	>		<	0.13	>		<	1.18	>		<	0.05	>		
			95th	<	0	>		<	4	>		<	113	>		<	1	>		
	Cooke Blvd & Driveway A	TWSC	LOS					B		>	B		A	>	A	<	A		A	
			Delay					11		>	11		0	>	0	<	1		1	
			V/C					0.08		>			0.10	>		<	0.02			
			95th					2		>			0	>		<	0			
	Clearview Ave & Driveway B	TWSC	LOS	A		>	A					<	A		A		A	>	A	
			Delay	8		>	8					<	6		6		0	>	0	
			V/C	0.01		>						<	0.03				0.01	>		
			95th	0		>						<	1				0	>		

5 Assessment of Improvements

The following section discusses the site's layout and the need for traffic control improvements at the Cooke Boulevard intersection with Masonry Court.

5.1 Traffic Control Improvements

The operational analysis contained in **Section 4** (background traffic and total traffic conditions) suggests that the Masonry Court intersection with Cooke Boulevard will begin to experience higher than ideal levels of delay under the forecast background traffic volumes. This congestion is estimated to occur with or without the development of the subject site. With the introduction of site-generated traffic the condition is worsened.

To address the capacity related concerns the intersection has been assessed using the OTM Book 12 signal warrant guidelines to determine if the need for improvements to the existing form of two-way stop control is warranted.

Appendix H contains the signal warrant analysis and **Table 5.1** details the summary of the warrant analysis. The following is noted:

- The criteria necessary to warrant the installation of a traffic control signal is not satisfied. It is recommended that the City of Burlington monitor the operations of the intersection to ensure an appropriate form of traffic control is in place.

TABLE 5.1: OTM WARRANT SUMMARY

Horizon Year	OTM Warrant				Warranted
	1A	1B	2A	2B	
Existing Traffic	22%	20%	15%	42%	No
Background Traffic	44%	50%	32%	61%	No
Total Traffic	47%	58%	33%	78%	No

Justification 1 – Minimum Vehicle Volumes
Justification 2 – Delay to Cross Traffic

In the longer term when the Phase 2 lands of the 101 Masonry Court site and the remaining GO Station Parking Lot expansion occurs, daily traffic volumes will increase through this intersection and the warrant may ultimately be satisfied.



5.2 Site Design

The level of service conditions outlined in **Table 4.3** indicate that no intersection capacity-related improvements are necessary to accommodate the site generated traffic at the proposed site driveway connections. The driveway approaches are forecast to operate with fully satisfactory levels of service during both the AM and PM peak hours. The mainline delays at the driveway intersections are forecast to be minimal (zero to one second per vehicle).

In order for driveways to operate efficiently, both from the road side and internally, it is desirable to provide a no conflict and storage zone within the driveway. Failure to provide sufficient throat distance results in frequent blocking of on-site circulation which can in turn create queues of entering vehicles[1]. Apartment sites with over 200 units with a connection to a collector roadway, the TAC recommend clear throat distance is 25 metres[11]. It is therefore recommended that the Driveway B connection to Clearview Avenue be redesigned to include 25 metres of clear throat length. Within this area, no surface parking should be provided.

5.3 Site Circulation

5.3.1 Pedestrian Circulation

To complete the on-site pedestrian network, sidewalk facilities should be provided along Clearview Avenue between Plains Road East and the site driveway.

5.3.2 At-Grade Circulation

The Driveway A intersection with the north/south at-grade drive aisle and the parking structure ramp should operate as a stop controlled intersection. It is recommended that the north/south drive aisle operate under stop control with priority assigned to east/west travel.

The Driveway B intersection with the parking structure ramp should operate with stop control on the ramp approach. The angle of intersection with Driveway B is fairly shallow. The angle will make accessing the parking structure from the west a challenge. Moreover, the angle of intersection may reduce a driver's ability to see vehicles approaching from the west. It is recommended that the ramps layout be revised to intersect with the at-grade drive aisle at 90 degrees or that the ramp access be restricted to inbound movements only.

To help ensure the driveway connections to Cooke Boulevard and Clearview Avenue operate efficiently, it is recommended that the driveway approaches

[11] Canada, Transportation Association o. Geometric Design Guide for Canadian Roads (2017), Section 8.9.10 Clear Throat Length Table 8.9.3. Suggested Minimum Clear Throat Lengths for Major Driveways



to Cooke Boulevard and Clearview Avenue operate under two-way stop control with a centre line painted on the driveway approach.

The site plan does not illustrate daylight triangles at the site driveway connections to Cooke Boulevard or Clearview Avenue. A daylight triangle of at least 3 metres by 3 metres should be provided. This area should be kept clear of all obstructions.

5.3.3 Parking Structure

The site's parking structure is accessible by two ramps. The ramps are noted to have slopes in the order of 15 percent. Transitional ramps maybe required to support the movement of vehicles. Additional site plan information is required.

A traffic control, signage and pavement marking plan should be developed for the parking structure. Traffic control devices and convex mirrors should be included in the final site plan design.

The bicycle lane illustrated on the parking structure ramp should be physically separated from the regular travel lane or removed altogether.



6 Parking Requirements

6.1 Proposed Parking Supply

The site's parking supply is proposed to consist of 552 parking spaces. The parking spaces are proposed to be located as follows:

- Parking structure – 552 spaces;
  - Level P1 – 229 spaces.
  - Level P2 – 232 spaces.
- At-grade – 91 spaces.

The applicant intends to allow residential and non-residential visitor parking spaces to be shared between the land uses. Approximately 29 on-street parking spaces are illustrated across the site's frontage to both Plains Road East and Cooke Boulevard.

6.2 Parking Requirements

6.2.1 Current Zoning By-law

The City of Burlington's Zoning By-law 2020[12] prescribes parking rates for both residents and visitors for various residential unit types. **Table 6.1** details the zoning by-law parking requirement for the subject site. The by-law allows for the residential and non-residential visitor parking to be shared within Mixed-Use Corridor Zones.

The site's parking requirement is 874 spaces. With 552 spaces provided, the site is considered deficient by 322 spaces. The parking supply deficiency is reduced by 29 spaces when the on-street parking across the site's frontage is considered.

[12] http://cms.burlington.ca/zoning/Part1/part_1_2_general_provisions.htm#Part1section2.25



TABLE 6.1: CURRENT ZONING BY-LAW PARKING REQUIREMENT

Land Use	Units	Rate			Requirement		
		Resident	Visitor	Total	Resident	Visitor	Total
1 Bedroom Units	45	1.25	0.35	**1.60**	56	16	**72**
2 Bedroom Units	197	1.50	0.35	**1.85**	296	69	**365**
3 Bedroom Units	208	1.75	0.35	**2.10**	364	73	**437**
Retail Centre (GFA)	1,208	5.25/100m2				63	**63**
Total - Assigned Parking					**716**	**221**	**937**
Mixed-Use Corridor Zones Shared Parking						(63)	(63)
Total - Shard Parking					**716**	**158**	**874**
Parking Supply					461	91	552
Surplus/Deficit					(255)	(67)	(322)
Parking Supply + On-Street Parking					461	120	581
Surplus/Deficit					(255)	(38)	(293)

*Zoning By-Law 2020, Part 5 – Mixed-Use Corridor Zones - Section 4.6

6.2.2 Draft Zoning By-law

The Burlington City-Wide Parking Standards Review[13] has identified new preferred parking rates for the City. The identified rates consider intensification areas such as the Aldershot Mobility Hub. **Table 6.2** details the draft zoning by-law parking requirement for the subject site.

The site's parking requirement is 563 spaces. With 552 spaces provided, the site is considered deficient by 11 spaces. When the 29 on-street parking spaces are considered for visitor parking, the site is considered oversupplied.

TABLE 6.2: DRAFT ZONING BY-LAW PARKING REQUIREMENT

Apartment Building	Units	Rate			Requirement		
		Resident	Visitor	Total	Resident	Visitor	Total
Apartment Building	450	1.00	0.25	1.25	450	113	**563**
Retail Centre (GFA)	1,208	3.5/100m2				42	**42**
Total - Assigned Parking					**450**	**155**	**605**
Mixed-Use Corridor Zones Shared Parking						(42)	(42)
Total - Shard Parking					**450**	**113**	**563**
Parking Supply					461	91	552
Surplus/Deficit					11	(22)	(11)
Parking Supply + On-Street Parking					461	120	581
Surplus/Deficit					11	7	18

*Zoning By-Law 2020, Part 5 – Mixed-Use Corridor Zones - Section 4.6

[13] Final Report Burlington City-Wide Parking Standards Review Consolidated Report, IBI Group, July 2017

6.3 Recommended Parking Supply

The recommended parking supply for the subject site reflects the City's draft parking standards. The following parking rates are recommended:

- High-rise condominium units
  - Resident/tenant parking – 1.00 space per unit.
  - Visitor parking – 0.25 spaces per unit.
- Ground floor retail space.
  - Shared parking supply with residential visitor parking.
  - Additional on-street parking on Plains Road East and Cooke Boulevard be considered part of the site's visitor parking supply.

6.3.1 Parking Strategy/Management

The site's parking supply should be managed to reduce the site's parking demand and to further mitigate the site's transportation impacts.

The residential parking supply should be unbundled from the cost of the unit and the residential units be marketed with 1.00 parking space per unit. To ensure turnover of the proposed on-street parking bays across the site's frontage, the parking spaces should be signed to prevent long-term parking.

The site's visitor parking supply should be shared between the proposed residential and non-residential land uses. No commercial unit should have a direct parking supply assigned to that unit. All visitor spaces should be shared.



7 Conclusions & Recommendations

7.1 Conclusions

The main findings and conclusions of this study are as follows:

- **Study Area**: The intersections that form the study area include the Plains Road East intersections with Waterdown Road, Cooke Boulevard, Clearview Avenue and St. Matthews Avenue and the Masonry Court intersection with Waterdown Road and Cooke Boulevard.
- **Existing Traffic Conditions**: The Plains Road East intersections with Waterdown Road is exhibiting some capacity issues. The remaining study area intersections are operating with acceptable levels of service.
- **Forecast Traffic**: The forecast traffic volumes near the subject site have been assessed for a five-year horizon (Year 2025) following the anticipated build-out date (Year 2020). The likely future traffic volumes near the subject site are estimated to consist of:
  - Generalized background traffic growth;
  - Build-out of six (6) adjacent development applications; and
  - traffic generated by the subject site.
- **Background Traffic Conditions**: The Plains Road East intersection with Waterdown Road is forecast to experience increased congestion as a result of background traffic. Overall, the intersection is forecast to operate with delay in the LOS D range with a v/c ratio of 1.00. Localized congestion is forecast to occur for some turning movements during peak hours.

  The northbound approach of Cooke Boulevard to Masonry Court is forecast to operate with high levels of delay during the PM peak hour.
- **Proposed Development**: The mixed-use development proposes the following land uses:
  - 450 high-rise condominium units. The ground floor residential units (23 units) are marketed as “townhouse units” but for analysis purposes are considered high-rise units as they share the same underground parking and access locations as the upper storey units.
  - 1,208 square metres of ground floor retail space within Building A and B.

  Vehicular access to the subject site will be provided by a private driveway connection to Cooke Boulevard and Clearview Avenue at the site’s northern limits.



The site's parking demand is proposed to be accommodated on-site by 552 parking spaces. Approximately 29 on-street parking spaces are proposed across the site's frontage to Plains Road East and Cooke Boulevard.

- **Development Generated Traffic**: The subject site is estimated to generate approximately 128 new AM peak hour trips and approximately 160 new PM peak hour trips. The trip estimates account for active transportation trips, transit oriented trips and Transportation Demand Management (TDM) reductions.
- **Parking Supply**: The site's parking supply is proposed to consist of approximately 552 on-site parking spaces. The parking supply is anticipated to accommodate the forecast parking demand. The site's TDM measure can assist in mitigating the site's parking demand and transportation impacts.
- **Total Traffic Conditions**: The study area intersections are anticipated to continue to operate with levels of service similar to the background traffic operations for the horizon years assessed. The Plains Road East intersection with Waterdown Road is forecast to continue to operate with delay in the LOS D range with a v/c ratio of 1.00. Localized congestion is forecast to occur for select turning movements.

  The northbound approach of Cooke Boulevard to Masonry Court is forecast to operate with high levels of delay during PM peak hour.
- **Remedial Measures**: The City of Burlington should monitor the operations of the Cooke Boulevard approach to Masonry Court intersection to ensure an appropriate form of traffic control is in place.

  No geometric improvements are recommended at the site driveway connections to Cooke Boulevard and Clearview Avenue to accommodate the development of the subject site.
- **Transportation Demand Management**: The site concept plan should be updated to include the TDM measures outlined in **Section 3.3** to assist in mitigating the site's transportation and parking impacts.

7.2 Recommendations

Based on the findings of this study, it is recommended that the development be approved, with the following offsite transportation improvements.

- Sidewalk be provided along the west side of Clearview Avenue between Plains Road East and the site driveway.
- The City of Burlington monitor the operation of the Masonry Court intersection with Cooke Boulevard and the Plains Road East and Waterdown Road intersection to ensure an appropriate form of traffic control is provided to accommodate the future travel demands. In the



longer term. The construction of the adjacent lands will provide an opportunity to construct the underground traffic control works.

- The City of Burlington review the on-street parking bays proposed along the site's frontage to Plains Road East and Cooke Boulevard. To ensure turnover, the parking's spaces should be signed to prevent long-term parking.

It is further recommended that:

- The proposed driveway connection to Cooke Boulevard operate under two-way stop control.
- The site driveway approach be designed with 25 metres of clear throat length.
- A short 15-metre centre line pavement marking be painted on the driveway approaches.
- A daylight triangle of at least 3 metres by 3 metres be provided on the site driveway approaches.
- A traffic control, signage and pavement marking plan be developed for the parking structure and the at-grade parking areas.
- The design of the parking structure ramps be reviewed to:
  - Meet the intersecting drive aisle at right angles;
  - Confirm appropriate vertical clearance on all ramp sections and maximum gradient and the potential need for transitional ramps.
  - The proposed bike lane be physically separated from the regular travel lane or removed altogether.
- The Transportation Demand Measures in **Section 3.3** be integrated into the design of the final site plan.
- The following parking rates be provided to accommodate the estimated future parking demand associated with the subject site:
  - Residential parking supply – 1.00 spaces per unit; and
  - Visitor parking supply – 0.25 spaces per unit. 22 spaces within the parking structure should be assigned as visitor parking.
  - Residential visitor and non-residential visitor parking be shared.
  - The on-street parking across the site's frontage be considered visitor parking for the subject site.
  - Residential parking be unbundle from the cost of the unit.

No other roadway or traffic control improvements are required or recommended at this time to accommodate the future traffic within the study area.



Appendix A

Pre-Study Consultation

22 King Street South, Suite 300
Waterloo, ON N2J 1N8
p: 519.896.3163
905.381.2229
f: 1.855.764.7349

www.ptsl.com

13 August 2015
Project: 151750S

Linda Wu
Transportation Planning Technologist
Transportation Services | Development and Infrastructure Division
City of Burlington | 426 Brant Street | Burlington ON L7R 3Z6
(905) 335-7671 ext. 7497 | linda.wu@burlington.ca

Dear Ms. Wu:

RE: 53 AND 71 PLAINS ROAD EAST TRANSPORTATION IMPACT STUDY, PARKING STUDY AND TDM OPTIONS REPORT – CITY OF BURLINGTON

We are pleased to provide you with our scope of work to undertake a Transportation Impact Study (TIS), Parking Study and TDM Options Report for the residential/commercial mixed use development located at 53 and 71 Plains Road East in the City of Burlington.

The subject lands have frontage to Cooke Boulevard and Clearview Avenue. The site concept plan indicates a total of 355 rental apartment units and approximately 884 square metres (± 9515 square feet) of ground floor retail space. Vehicular access to the site is proposed to Cooke Boulevard and onto Clearview Avenue. The Cooke Boulevard driveway is located approximately 95 metres north of Plains Road. The Clearview Avenue driveway is located approximately 50 metres north of Plains Road.

Parking is being provided on-site within an integrated underground structure. A total of 266 spaces are being supplied along with the layby parking being proposed within the Plains Road East road allowance. The proposed parking supply for these rental units and ground floor retail results in approximately 0.75 parking spaces per residential unit. This rate is inclusive of both resident and visitor parking.

We propose to carry out the following scope of work:

Task 1 - Pre-Study Consultation: PTSL will solicit the scope of work to the City of Burlington to obtain their comments and approval on the approach and methodology proposed in this work plan to undertake the Transportation Impact Study, Parking Study and TDM Options Report

Task 2 - Data Assembly: We will obtain the most current traffic counts and signal timing plans (where applicable) at the following study area intersections:

- Plains Road East and Waterdown Road;

- Plains Road East and Cooke Boulevard;
- Plains Road East and Clearview Avenue/Birchwood Avenue;
- Masonry Court and Cooke Boulevard; and
- Masonry Court and Waterdown Road.

Waterdown Road along with parts of Cooke Boulevard and Plains Road are currently under construction. Furthermore, school is out and the traffic volumes on the study area roadways are not reflective of typical conditions. We will discuss with the City if we can utilize any recent and historical counts given the current situation, and what approach we should take if we need to collect turning movements at certain intersections if there are not counts available. If the City of Burlington does not have recent counts at the above noted intersections then Paradigm will arrange to obtain the turning movement count data.

Task 3 - Traffic Forecasting: Paradigm will confirm the phasing for the site before estimating the trip generation for the site. We will rely trip generation data we have collected for an existing mixed use development in the City of Burlington.

We will forecast AM and PM peak hour background and site-related traffic volumes at the intersections noted above and at the proposed two driveways to the development. Future background traffic forecasts will be based on historical growth rates, previous studies and/or land use assumptions provided by the City, and will account for nearby approved development to the extent possible. The forecasts will assume a build-out of Year 2017 and then a period of 5 years post full build-out (Year 2022).

Task 4 - Operational Analyses: Using the existing traffic counts and the traffic forecasts developed in Tasks 2 and 3, we will evaluate the operation of the above noted intersections during the AM and PM peak hours for existing conditions, future background conditions and with full development of the site. We will also evaluate the proposed site driveways under future conditions. The operational analysis will assess Level of Service (LOS) and queuing conditions for the intersections and driveways using Synchro V9.

Parking Study

The purpose of the parking study will be to assess the adequacy of the proposed parking supply on the site, document available parking in the immediate area, review the proposed parking plan to confirm the overall design, and provide a number of feasible TDM measures specific to this site as a means to further mitigate parking demands. To address the needs of this parking study, we propose to conduct the following work program.

Task 5 - Area Parking Inventory: Paradigm staff will undertake a site visit to inventory the current available on-street and public parking within convenient walking distance of the building and other related features such as pedestrian and cycling amenity, and bus service (City and Metrolinx).

Task 6 - Parking Generation Assessment: We will review previous parking studies that we have completed and also review the Institute of Transportation Engineers – Parking Generation – 4th Edition. Furthermore, we will look at the TTS data for the area and consider rental versus ownership units, automobile ownership and the percentage of trips made by alternative modes of travel.

Task 7 - Parking Utilization Surveys: Based on our experience undertaking several parking studies in Burlington we will need to conduct additional parking utilization surveys at representative sites. Each survey will be conducted during peak period parking demand times and will consist of a count of the actual parked vehicles by block face and parking lot. This data will be tabulated for inclusion in the study.

We have some survey data that was previously collected by the City of Burlington from other apartment sites in Burlington. We will need to confirm with the City if these apartment sites where comprised of primarily ownership units or if they were rental apartments. It should be noted that undertaking parking surveys at apartment sites is not practical unless the parking is located at-grade or we have some ability to get into the underground parking structures.

Task 8 - Parking Assessment: Based on the planned on-site parking supply we will assess the extent of parking demand that can be accommodated on the site and the potential for spill-over parking that may need to be accommodated within the surrounding area. If appropriate, we will also identify possible Travel Demand Management (TDM) measures including parking management measures (e.g., parking stackers, tandem parking, shared car parking, etc.) that could be considered to alleviate possible parking deficits.

Task 9 - TDM Options: Paradigm will prepare a TDM Options section within this parking study report to identify a number of potential TDM measures that can be implemented during both the pre-occupancy and post-occupancy periods of the development. The City of Hamilton, Region of Waterloo, and City of Kitchener are currently working on developing and refining their respective TDM Policy's which take into account specific reductions for parking requirements at developments with TDM measures incorporated. Paradigm will review with the City of Burlington if they are comfortable accepting a similar approach including utilizing a TDM worksheet which highlights each of the TDM measures being proposed by the development proposal and also identifies the potential reduction in parking that may result from the TDM measures being implemented. The TDM worksheet will be used to provide further justification for a parking variance. Paradigm will review a number of TDM measures with Vrancor Group to make sure that they can be incorporated in the overall plan for the development.



Task 10 - Report and Recommendations: We will prepare and submit a report documenting the study complete with recommendations regarding the proposed development.

If you have any questions related to this proposal, please contact me at (905) 381-2229 x103 or (519) 896-3163 x103 or by email at selkins@ptsl.com. Thank you very much for this opportunity to provide our services.

Yours very truly,

PARADIGM TRANSPORTATION SOLUTIONS LIMITED



Stew Elkins
B.Sc., MITE
Vice-President

List of Attachments

1. Transportation Impact Study Summary Table;
2. 50150603 – 53 Plains Rd.pdf (Site Plan & Site Statistics)
3. Time Square Trip Generation – Burlington
4. Historical TMC Data.

Transportation Impact Study		
Item	**Description**	**Details**
INTRODUCTION		
1	Nature of application	Site Plan Application
CONTEXT		
2	Study intersections (Intersections to be analyzed)	Plains Road East and Waterdown Road; Plains Road East and Cooke Boulevard; Plains Road East and Clearview Avenue/Birchwood Avenue; Masonry Court and Cooke Boulevard; and Masonry Court and Waterdown Road. The proposed driveway connections.
3	Size and number of phases of development	355 Rental Apartment Units 266 parking spaces 884 square metres of ground floor retail space (9515 square feet) Site plan attached.
4	Approved and pending approval development applications	101 Masonry Court Aldershot Station GO Station Parking Lot Expansion 40, 46, & 50 Plains Road East **Additional sites to be identified by City**
5	Planned transportation system improvements	Waterdown Road Reconstruction Removal of temporary traffic control at Plains Road East/Cooke Boulevard. **Additional sites to be identified by City**
TRAVEL DEMAND		
6	Horizon years	Five-Years post build-out (Year 2017) and occupancy – Year 2022.
7	Peak hour determination	Weekday AM peak hour of adjacent roadway Weekday PM peak hour of adjacent roadway
8	Background Traffic Forecast	Generalized growth rate of 1.0 percent per annum. **Unless otherwise identified by Region/City** Traffic associated with Item #4 above

9	Trip generation	Times Square Trip Generation – Burlington See attached Memorandum discussing the trip generation. See Table A below.
10	Trip reductions (TDM, internal, pass-by)	Nil – All trip reductions are included in the observed trip generation data.
11	Trip distribution	Times Square distribution in/out split Existing/anticipated travel patterns Regional travel demand Population & employment distribution
12	Trip assignment	Local traffic patterns Site layout and access design
EVALUATION OF IMPACTS		
13	Traffic impact analysis	Intersections Capacity - LOS, v/c, delay, queuing

TABLE A: ESTIMATED TRIP GENERATION

Land Use Code	Number of Units	AM Peak Hour				PM Peak Hour			
		Rate	In	Out	Sum	Rate	In	Out	Sum
Residential - Resident	355	0.24	12	73	85	0.08	16	12	28
Residential - Visitor	355	0.03	7	4	11	0.14	23	27	50
Commercial - Visitor	9,515	0.50	4	1	5	1.73	8	8	16
Total Trip Generation			**23**	**78**	**101**		**47**	**47**	**94**

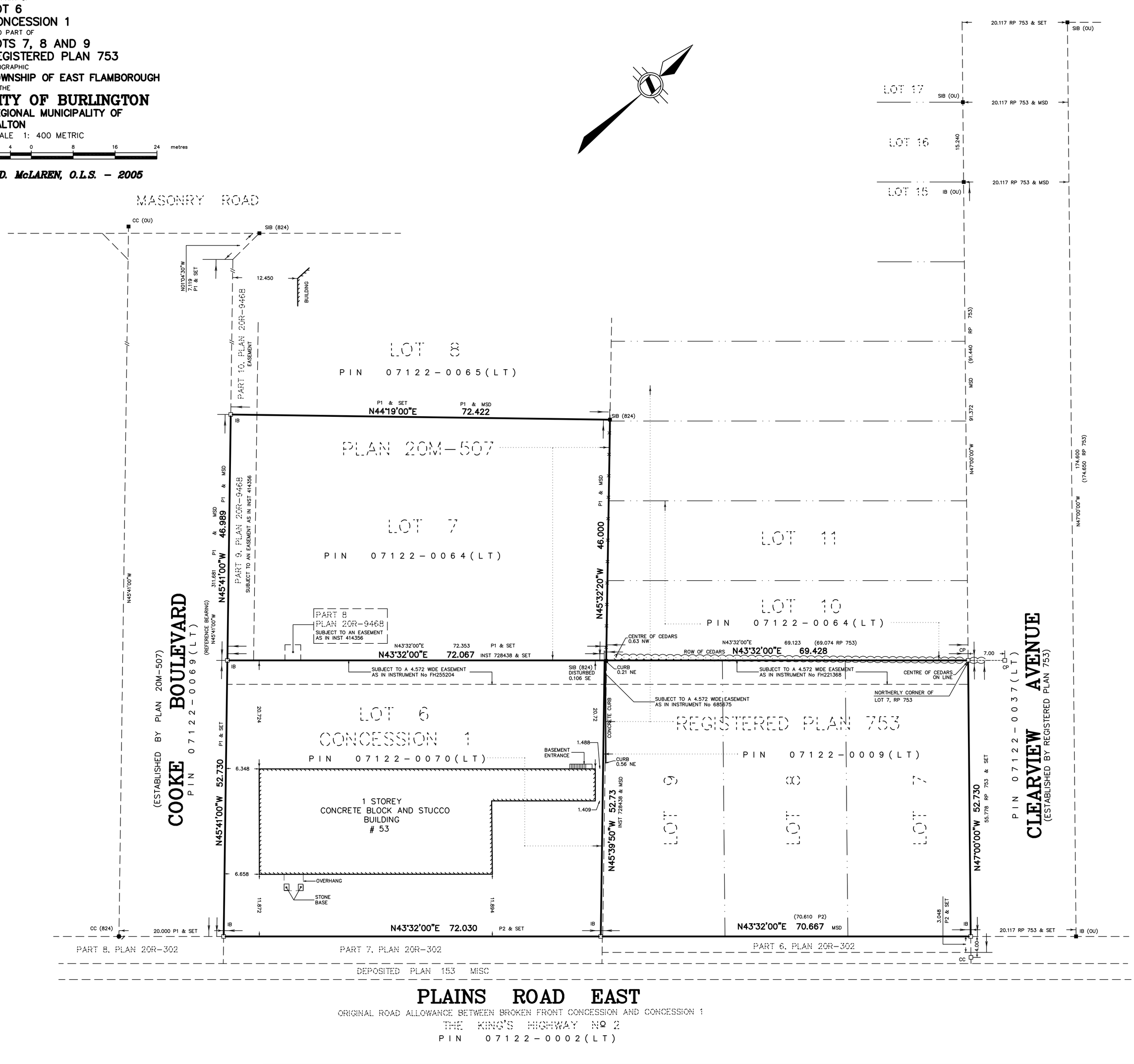


PLAN OF SURVEY
OF PART OF
LOT 6
CONCESSION 1
AND PART OF
LOTS 7, 8 AND 9
REGISTERED PLAN 753
GEOGRAPHIC
TOWNSHIP OF EAST FLAMBOROUGH
IN THE
CITY OF BURLINGTON
REGIONAL MUNICIPALITY OF HALTON

SCALE 1: 400 METRIC

8 4 0 8 16 24 metres

S.D. McLAREN, O.L.S. – 2005



PLAINS ROAD EAST
ORIGINAL ROAD ALLOWANCE BETWEEN BROKEN FRONT CONCESSION AND CONCESSION 1
THE KING'S HIGHWAY NO 2
PIN 07122-0002(LT)

LEGEND:

□	DENOTES	MONUMENT SET
■	"	MONUMENT FOUND
IB	"	IRON BAR
SIB	"	STANDARD IRON BAR
Msd	"	MEASURED
824	"	A.T.McLAREN, O.L.S.
P1	"	PLAN 20M-507
RP	"	REGISTERED PLAN
CC	"	CUT CROSS
P2	"	PLAN 20R-302
CP	"	CONCRETE PIN

METRIC NOTE
DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

BEARING NOTE:
BEARINGS ARE ASTRONOMIC AND ARE REFERRED TO THE NORTHEAST LIMIT OF COOKE BOULEVARD AS SHOWN ON PLAN 20M-507 AS BEING N45°41'00"W.

SURVEYOR'S CERTIFICATE:
I CERTIFY THAT:
1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT AND THE REGULATIONS MADE UNDER THEM
2. THE SURVEY WAS COMPLETED ON THE 3RD DAY OF NOV., 2005

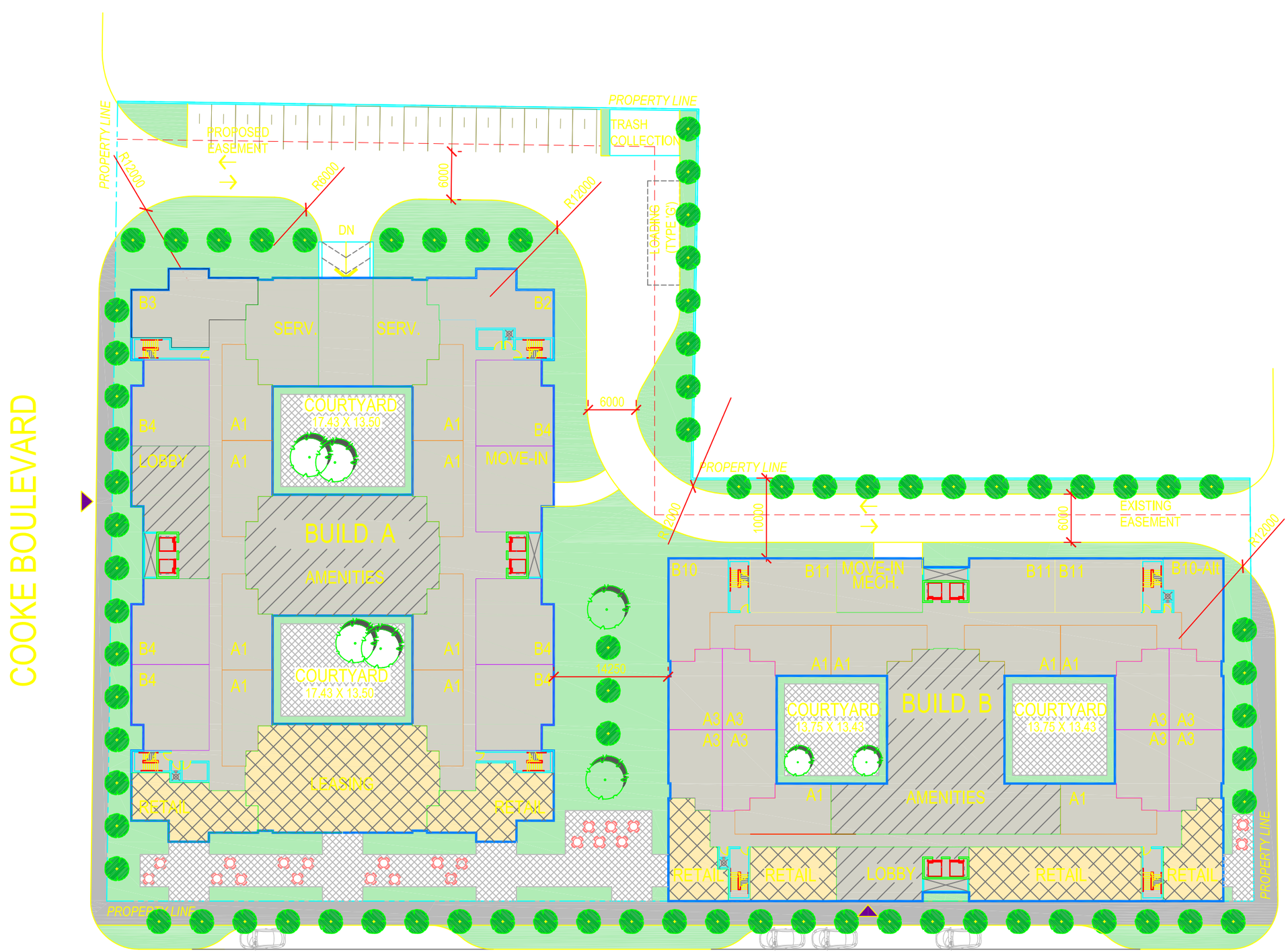
NOVEMBER 3, 2005 — DATE

S.D.McLAREN, O.L.S.

© S.D. McLAREN, O.L.S. – 2005. NO PERSON MAY COPY REPRODUCE, DISTRIBUTE OR ALTER THIS PLAN IN WHOLE OR IN PART WITHOUT THE WRITTEN PERMISSION OF S.D. McLAREN, O.L.S.

A.T. McLaren Limited
LEGAL AND ENGINEERING SURVEYS
69 JOHN STREET SOUTH, SUITE 230
HAMILTON, ONTARIO, L8N 2B9
PHONE (905) 527-8559 FAX (905) 527-0032

Drawn RBM | Checked DG | Scale 1:400 | Dwg.No. 31471



SCALE 1:500

53 PLAINS ROAD EAST

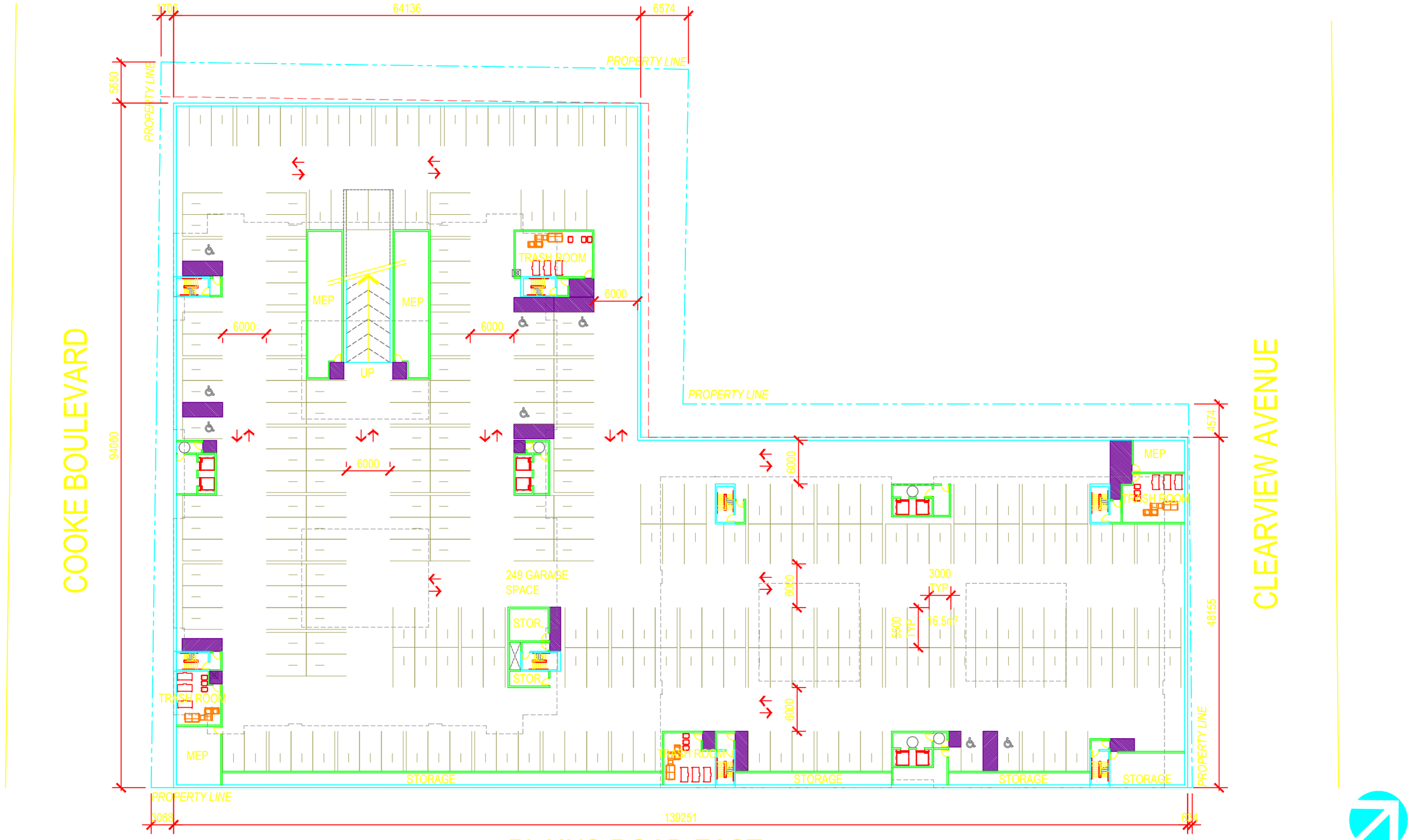
LEVEL 1

AUGUST 12 2015 BURLINGTON, ON. HPA # XXXX

© 2013 by HUMPHREYS & PARTNERS ARCHITECTS, LP
The arrangements depicted herein are the sole property of Humphreys & Partners Architects, LP and may not be reproduced in any form without its written permission

Architectural conceptual site plans are for feasibility purpose only. Revisions may occur due to further investigation from regulatory authorities and building code analysis. Dimensions shown are of a strategic intent only. Refer to surveys and civil drawings for technical information and measurements.

HUMPHREYS & PARTNERS ARCHITECTS / CANADA INC.
174 Spadina Ave., Suite 103 Toronto, ON M5T 2C2
T:(647) 931-5202 www.humphreys.ca
TORONTO·EDMONTON·DALLAS·ORLANDO·NEWPORT BEACH·NEW ORLEANS
NEW YORK·CHICAGO·SAN RAMON·SCOTTSDALE·MONTEVIDEO·DUBAI·HANOI



SCALE 1:500

© 2013 by **HUMPHREYS & PARTNERS** ARCHITECTS, LP
The arrangements depicted herein are the sole property of Humphreys & Partners Architects, LP and may not be reproduced in any form without its written permission

Architectural conceptual site plans are for feasibility purpose only. Revisions may occur due to further investigation from regulatory authorities and building code analysis. Dimensions shown are of a strategic intent only. Refer to surveys and civil drawings for technical information and measurements.

TBLK BXR — 1 1 1 7 2 0

53 PLAINS ROAD EAST
PARKING

AUGUST 12 2015 BURLINGTON, ON. HPA # XXXX

HUMPHREYS & PARTNERS ARCHITECTS / CANADA INC.
174 Spadina Ave., Suite 103 Toronto, ON M5T 2C2
T:(647) 931-5202 www.humphreys.ca
TORONTO·EDMONTON·DALLAS·ORLANDO·NEWPORT BEACH·NEW ORLEANS
NEW YORK·CHICAGO·SAN RAMON·SCOTTSDALE·MONTEVIDEO·DUBAI·HANOI

BUILDING A					
	BUILDING AREA (GCA) m²	RESIDENTIAL LEASEABLE AREA m²	NO. OF RESIDENTIAL UNITS	LOBBY + AMENITY SPACE m²	LEASING SPACE + RETAIL m²
LEVEL 1	**3106.54**	1,306.00	16	342	504
LEVEL 2	**3106.54**	2,652.00	32		
LEVEL 3	**3106.54**	2,652.00	32		
LEVEL 4	**3106.54**	2,652.00	32		
LEVEL 5	**3106.54**	2,652.00	32		
LEVEL 6	**3106.54**	2,652.00	32		
SUBTOTAL	**18,639.24**	**14,566.00**	**176**	**342**	**504**

BUILDING B					
	BUILDING AREA (GCA) m²	RESIDENTIAL LEASEABLE AREA m²	NO. OF RESIDENTIAL UNITS	LOBBY + AMENITY SPACE m²	RETAIL SPACE m²
LEVEL 1	**2573.00**	1,251.00	19	492	380
LEVEL 2	**2573.00**	2,170.00	32		
LEVEL 3	**2573.00**	2,170.00	32		
LEVEL 4	**2573.00**	2,170.00	32		
LEVEL 5	**2573.00**	2,170.00	32		
LEVEL 6	**2573.00**	2,170.00	32		
SUBTOTAL	**15,438.00**	**12,101.00**	**179**	**492**	**380**

PARKING AREA m²	**9,649.70**

TOTAL	**43,726.94**	**26,667.00**	**355**	**834**	**884.00**

AVERAGE UNIT SIZE (m²)	**75.12**
REQUIRED PARKING ***0.75 RATIO (space)***	**266**
PROVIDED PARKING (space)	**266**

© 2013 by **HUMPHREYS & PARTNERS** ARCHITECTS, LP
The arrangements depicted herein are the sole property of Humphreys & Partners Architects, LP and may not be reproduced in any form without its written permission

Architectural conceptual site plans are for feasibility purpose only. Revisions may occur due to further investigation from regulatory authorities and building code analysis. Dimensions shown are of a strategic intent only. Refer to surveys and civil drawings for technical information and measurements.

BLK BLK 1 1 1

53 PLAINS ROAD EAST

STATISTICS

AUGUST 12 2015 BURLINGTON, ON. HPA # XXXX

HUMPHREYS & PARTNERS ARCHITECTS / CANADA INC.
174 Spadina Ave., Suite 103 Toronto, ON M5T 2C2
T:(647) 931-5202 www.humphreys.ca
TORONTO·EDMONTON·DALLAS·ORLANDO·NEWPORT BEACH·NEW ORLEANS
NEW YORK·CHICAGO·SAN RAMON·SCOTTSDALE·MONTEVIDEO·DUBAI·HANOI

Memorandum

22 June 2015

File
141980S

Times Square Trip Generation - Burlington

Times Square is a relatively new, but well established mixed-use development located in the City of Burlington on a 1.09 acre property on the east side of Sutton Drive and north of Upper Middle Road.

The development consists of 90 residential condominium units in a five (5) story building as well as hosting 9,690 square feet of commercial space on the main floor of the building. The commercial component has all but two (2) units occupied with the following uses:

- Bakery,
- Convenience Store,
- Floral Shop,
- Financial Advisor,
- Personal Service Shops,
- Tailor and Alters,
- Driving School,
- Mortgage Office, and
- Design Centre

Trip Generation Survey Methodology

The travel characteristics of most land uses vary by time of day and often by day of week. Periods of peak street traffic are most frequently analyzed because at this period the site experiences the largest overall amount of traffic. As a result, the times of the day that surveys are conducted are important.

Ideally, the times for conducting surveys are during the morning and afternoon peak periods, typically from 7:00 AM to 10:00 AM and from 3:00 PM to 6:00 PM as these times overlap the peak hours of street traffic.

For a mixed-use development it is important to account for the total number of vehicles that enter and exit the development within a fifteen (15) minute period as well as correlating the primary land use associated with each trip. Classifying all of the trips is valuable for

Paradigm Transportation Solutions Limited
22 King Street South Suite 300
Waterloo ON N2J 1N8
p: 519.896.3163
f: 1.855.764.7349
www.ptsl.com

determining trip characteristics for each component of the mixed use development.

A trip generation study was conducted in April 2014 at the Time Square Development. The surveys were conducted on two separate weekdays from 7:00 AM to 10:00 AM and from 3:00 PM to 6:00 PM The trips were classified into three separate categories:

- **Residents** - identified as trips made to/from the site that originated from the underground parking garage.
- **Visitor** - identified as trips made to/from the site where the motorists used the surface parking area and entered through the lobby portion of the development.
- **Commercial** - identified as trips made to/from the site where the motorists used the surface parking area and entered through a commercial building.

In addition to documenting all trips that entered/exited through the two driveway connections to Sutton Drive, the lay-by area was also included. The trip generation results for the Times Square mixed-use development is provided in **Appendix A** (Attached).

Trip Generation Results

The trip generation study revealed that the Times Square mixed-use developments peak hour of morning travel was 8:30 AM to 9:30 AM with thirty-five (35) trips. For the evening travel the peak hour was 5:00 PM to 6:00 PM with forty (40) trips.

It should be noted that the peak hours of the adjacent roadways of Dundas Street and Sutton Drive is from 7:30 AM to 8:30 AM and from 3:15 PM to 4:15 PM.

The trip rates associated with each use of the surveyed site based on the three classifications noted above (Residents, Visitors and Commercial) were developed. As this site included all trips entering and exiting the development, the internal capture rates have been assumed to be included in these estimates.

It is also noted that pass-by rates were not included in the field surveys collected. Given that there is a retail component, some pass-by reductions should be included, however given the size of this development and limited data, no additional assumptions with regard to pass-by rates have been incorporated.

We trust that the foregoing information will meet your requirements. Please do not hesitate to contact us if we can be of further assistance.

Yours very truly,

PARADIGM TRANSPORTATION SOLUTIONS LIMITED



Adam J. Makarewicz
Dipl.T., C.E.T., MITE
Transportation Engineering Technologist

Appendix A

Survey Results

Paradigm Transportation Solutions Limited

Trip Generation Data Form

Development: Times Square (Upper Middle Road & Sutton Drive)

Surveyor: AG & CD

Date: Monday April 14 2014

A.M. Period	Residential Component			Visitor Component			Commercial Component			Overall Total
	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total	
7:00 - 7:15	0	4	4	0	0	0	0	0	0	4
7:15 - 7:30	1	7	8	0	0	0	0	0	0	8
7:30 - 7:45	0	7	7	1	1	2	1	0	1	10
7:45 - 8:00	2	3	5	0	0	0	1	0	1	6
8:00 - 8:15	1	2	3	0	0	0	0	1	1	4
8:15 - 8:30	2	6	8	0	0	0	0	0	0	8
8:30 - 8:45	0	2	2	3	2	5	0	1	1	8
8:45 - 9:00	0	4	4	0	1	1	0	0	0	5
9:00 - 9:15	0	3	3	4	1	5	2	0	2	10
9:15 - 9:30	0	1	1	1	1	2	3	3	6	9
9:30 - 9:45	0	1	1	1	1	2	1	1	2	5
9:45 - 10:00	0	3	3	1	1	2	0	0	0	5

P.M. Period	Residential Component			Visitor Component			Commercial Component			Overall Total
	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total	
3:00 - 3:15	1	2	3	0	4	4	2	1	3	10
3:15 - 3:30	0	0	0	3	5	8	2	1	3	11
3:30 - 3:45	1	0	1	3	3	6	3	1	4	11
3:45 - 4:00	0	0	0	3	1	4	0	2	2	6
4:00 - 4:15	1	0	1	1	1	2	4	0	4	7
4:15 - 4:30	2	0	2	2	0	2	3	1	4	8
4:30 - 4:45	1	1	2	0	2	2	0	2	2	6
4:45 - 5:00	1	0	1	0	0	0	2	1	3	4
5:00 - 5:15	2	1	3	3	1	4	1	2	3	10
5:15 - 5:30	4	3	7	0	2	2	2	3	5	14
5:30 - 5:45	2	3	5	2	0	2	0	2	2	9
5:45 - 6:00	0	1	1	0	1	1	1	3	4	6

Paradigm Transportation Solutions Limited

Trip Generation Data Form

Development: Times Square (Upper Middle Road & Sutton Drive)

Surveyor: AG & CD

Date: Wednesday April 17 2014

A.M. Period	Residential Component			Visitor Component			Commercial Component			Overall Total
	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total	
7:00 - 7:15	0	6	6	1	1	2	0	0	0	8
7:15 - 7:30	0	5	5	0	0	0	0	0	0	5
7:30 - 7:45	0	9	9	2	0	2	0	0	0	11
7:45 - 8:00	0	5	5	0	0	0	0	0	0	5
8:00 - 8:15	0	2	2	0	1	1	1	1	2	5
8:15 - 8:30	1	4	5	0	0	0	2	0	2	7
8:30 - 8:45	0	6	6	3	3	6	1	1	2	14
8:45 - 9:00	1	5	6	3	0	3	0	0	0	9
9:00 - 9:15	1	3	4	1	0	1	1	0	1	6
9:15 - 9:30	4	1	5	0	0	0	3	1	4	9
9:30 - 9:45	0	5	5	1	4	5	0	3	3	13
9:45 - 10:00	1	2	3	0	2	2	0	0	0	5

P.M. Period	Residential Component			Visitor Component			Commercial Component			Overall Total
	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total	
3:00 - 3:15	1	1	2	3	2	5	5	2	7	14
3:15 - 3:30	1	1	2	0	1	1	1	2	3	6
3:30 - 3:45	3	1	4	1	0	1	0	2	2	7
3:45 - 4:00	1	2	3	0	2	2	3	4	7	12
4:00 - 4:15	1	2	3	1	1	2	1	2	3	8
4:15 - 4:30	0	0	0	1	0	1	4	4	8	9
4:30 - 4:45	1	0	1	0	0	0	2	2	4	5
4:45 - 5:00	3	1	4	1	0	1	2	0	2	7
5:00 - 5:15	1	2	3	1	2	3	3	5	8	14
5:15 - 5:30	0	2	2	1	0	1	1	0	1	4
5:30 - 5:45	5	1	6	1	0	1	2	4	6	13
5:45 - 6:00	2	1	3	2	2	4	2	1	3	10

Paradigm Transportation Solutions Limited

Trip Generation Data Form

Development: Times Square (Upper Middle Road & Sutton Drive)

Surveyor: AG & CD

Date: Monday April 14 & Wednesday April 17 2014 (Average)

A.M. Period	Residential Component			Visitor Component			Commercial Component			Overall Total
	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total	
7:00 - 7:15	0	5	5	1	1	1	0	0	0	6
7:15 - 7:30	1	6	7	0	0	0	0	0	0	7
7:30 - 7:45	0	8	8	2	1	2	1	0	1	11
7:45 - 8:00	1	4	5	0	0	0	1	0	1	6
8:00 - 8:15	1	2	3	0	1	1	1	1	2	5
8:15 - 8:30	2	5	7	0	0	0	1	0	1	8
8:30 - 8:45	0	4	4	3	3	6	1	1	2	11
8:45 - 9:00	1	5	5	2	1	2	0	0	0	7
9:00 - 9:15	1	3	4	3	1	3	2	0	2	8
9:15 - 9:30	2	1	3	1	1	1	3	2	5	9
9:30 - 9:45	0	3	3	1	3	4	1	2	3	9
9:45 - 10:00	1	3	3	1	2	2	0	0	0	5

P.M. Period	Residential Component			Visitor Component			Commercial Component			Overall Total
	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total	
3:00 - 3:15	1	2	3	2	3	5	4	2	5	12
3:15 - 3:30	1	1	1	2	3	5	2	2	3	9
3:30 - 3:45	2	1	3	2	2	4	2	2	3	9
3:45 - 4:00	1	1	2	2	2	3	2	3	5	9
4:00 - 4:15	1	1	2	1	1	2	3	1	4	8
4:15 - 4:30	1	0	1	2	0	2	4	3	6	9
4:30 - 4:45	1	1	2	0	1	1	1	2	3	6
4:45 - 5:00	2	1	3	1	0	1	2	1	3	6
5:00 - 5:15	2	2	3	2	2	4	2	4	6	12
5:15 - 5:30	2	3	5	1	1	2	2	2	3	9
5:30 - 5:45	4	2	6	2	0	2	1	3	4	11
5:45 - 6:00	1	1	2	1	2	3	2	2	4	8

Trip Generation Summary Sheet

Times Square (Upper Middle Road & Sutton Drive)

Total Site	Average Weekday (M-F)			Saturday			Sunday		
	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
Total Volumes (6 Hours)	81	115	195						
A.M. Peak Hour of Adjacent Street Traffic (7:30 - 8:30)	7	21	28						
P.M. Peak Hour of Adjacent Street Traffic (3:15 - 4:15)	17	17	34						
A.M. Peak Hour of Generator (8:30 - 9:30)	16	20	35						
P.M. Peak Hour of Generator (5:00 - 6:00)	19	21	40						
Weekend Peak Hour of Generator (TIME)									

Residential Land Use	Average Weekday (M-F)			Saturday			Sunday		
	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
Total Volumes (6 Hours)	24	61	85						
A.M. Peak Hour of Adjacent Street Traffic (7:30 - 8:30)	3	19	22						
P.M. Peak Hour of Adjacent Street Traffic (3:15 - 4:15)	4	3	7						
A.M. Peak Hour of Generator (7:00 - 8:00)	2	23	25						
P.M. Peak Hour of Generator (4:45 - 5:45)	9	7	16						
Weekend Peak Hour of Generator (TIME)									

Visitor Land Use	Average Weekday (M-F)			Saturday			Sunday		
	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
Total Volumes (6 Hours)	26	25	50						
A.M. Peak Hour of Adjacent Street Traffic (7:30 - 8:30)	2	1	3						
P.M. Peak Hour of Adjacent Street Traffic (3:15 - 4:15)	6	7	13						
A.M. Peak Hour of Generator (8:30 - 9:30)	8	4	12						
P.M. Peak Hour of Generator (3:00 - 4:00)	7	9	16						
Weekend Peak Hour of Generator (TIME)									

Commercial Land Use	Average Weekday (M-F)			Saturday			Sunday		
	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
Total Volumes (6 Hours)	31	30	61						
A.M. Peak Hour of Adjacent Street Traffic (7:30 - 8:30)	3	1	4						
P.M. Peak Hour of Adjacent Street Traffic (3:15 - 4:15)	7	7	14						
A.M. Peak Hour of Generator (8:45 - 9:45)	5	4	9						
P.M. Peak Hour of Generator (3:30 - 4:30)	9	8	17						
Weekend Peak Hour of Generator (TIME)									

Trip Generation Estimated Rates

Times Square (Upper Middle Road & Sutton Drive)

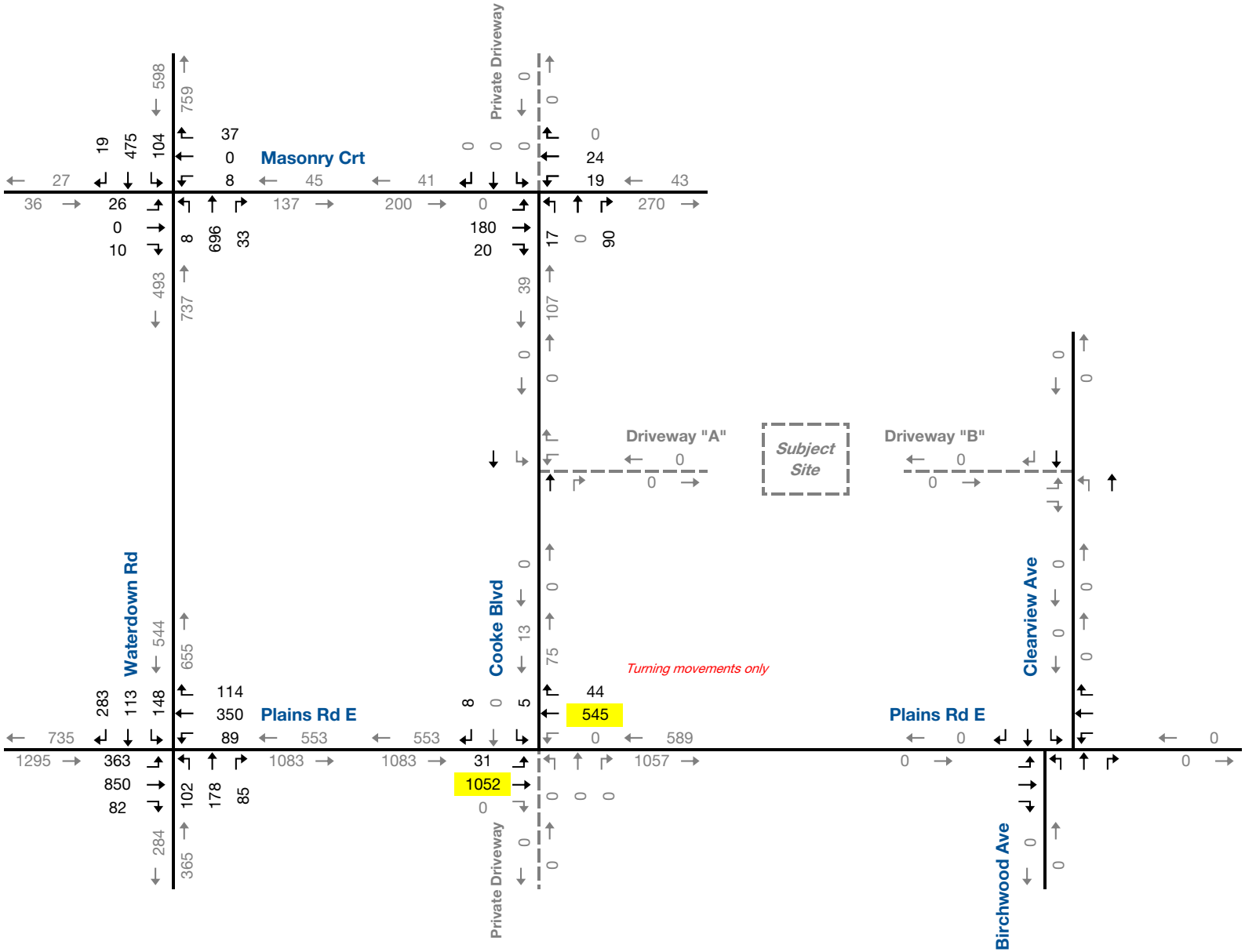
A.M. Peak Hour of Adjacent Street (7:30 - 8:30)										
Land Use	**Units**	**Developed**	**Occupied**	**% Occupied**	**Trips Entering**	**Trips Exiting**	**Total Trips**	**% Entering**	**% Exiting**	**Average Rate**
Residents	Dwellings	90	90	100%	3	19	22	14%	86%	0.24
Visitors	Dwellings	90	90	100%	2	1	3	67%	33%	0.03
Commercial	Square Footage	9,690	8,075	83%	3	1	4	75%	25%	0.50

P.M. Peak Hour of Adjacent Street (3:15 - 4:15)										
Land Use	**Units**	**Developed**	**Occupied**	**% Occupied**	**Trips Entering**	**Trips Exiting**	**Total Trips**	**% Entering**	**% Exiting**	**Average Rate**
Residents	Dwellings	90	90	100%	4	3	7	57%	43%	0.08
Visitors	Dwellings	90	90	100%	6	7	13	46%	54%	0.14
Commercial	Square footage	9,690	8,075	83%	7	7	14	50%	50%	1.73

A.M. Peak Hour of Generator										
Land Use	**Units**	**Developed**	**Occupied**	**% Occupied**	**Trips Entering**	**Trips Exiting**	**Total Trips**	**% Entering**	**% Exiting**	**Average Rate**
Residents	Dwellings	90	90	100%	2	23	25	8%	92%	0.28
Visitors	Dwellings	90	90	100%	8	4	12	67%	33%	0.13
Commercial	Square footage	9,690	8,075	83%	5	4	9	56%	44%	1.11

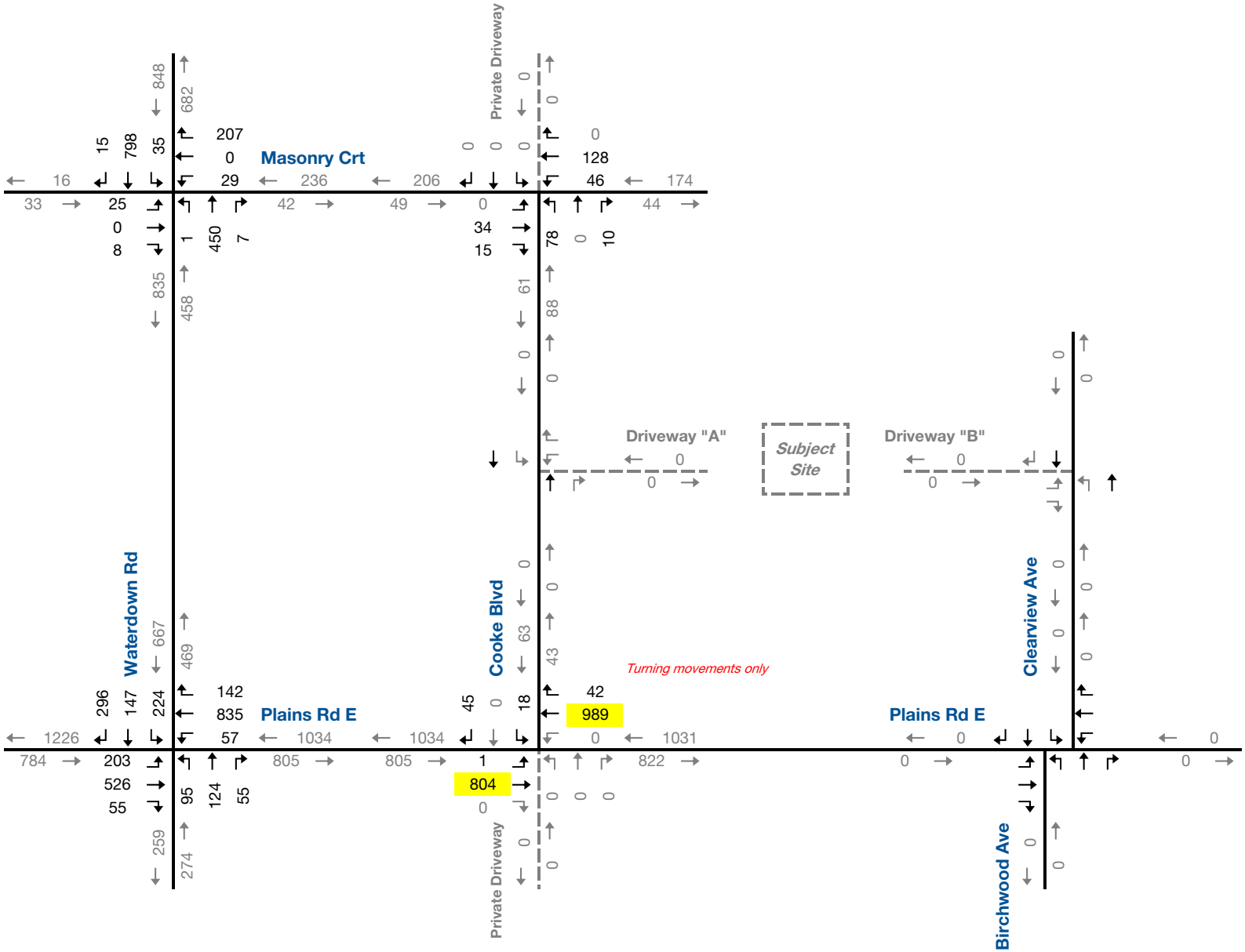
P.M. Peak Hour of Generator										
Land Use	**Units**	**Developed**	**Occupied**	**% Occupied**	**Trips Entering**	**Trips Exiting**	**Total Trips**	**% Entering**	**% Exiting**	**Average Rate**
Residents	Dwellings	90	90	100%	9	7	16	56%	44%	0.18
Visitors	Dwellings	90	90	100%	7	9	16	44%	56%	0.18
Commercial	Square footage	9,690	8,075	83%	9	8	17	53%	47%	2.11

TMC Data - AM Peak Hour



NTS

TMC Data - PM Peak Hour



NTS

Intersection	Date of Data
1 - Plains Road East and Waterdown Road	20 September 2011
2 - Plains Road East and Cooke Boulevard	16 January 2012
3 - Plains Road East and Clearview Avenue/Birchwood Avenue	
4 - Waterdown Road and Masonry Court	29 October 2014
5 - Masonry Court and Cooke Boulevard	18 November 2014

Meeting Notes

14 September 2015

File
151750S

Attendees
Scott Catton
PTSL

Stewart Elkins
PTSL

Kaylan Edgcumbe
City of Burlington

Regrets
None

Location
City of Burlington
City Hall
Transportation Board Room

53 & 71 Plains Road East Transportation Impact Study, Parking Study and TDM Options Report

- Discussion on existing traffic conditions. Waterdown Road is currently under construction and scheduled to be fully open by 6 November 2015. The roadway has rolling lane restrictions for on-going work.
- There will be a closure of Cooke/Masonry towards the end of October for servicing.
- Traffic counts for the area should be updated one week following Thanksgiving.
- The new traffic signal at Plains Road East and Cooke Boulevard is permanent.
- The Cooke Boulevard intersection with Masonry Court will be converted back to its original layout and traffic control.
- Other nearby developments at Plains Road East and Cooke Boulevard will come on line in the very near future.
- The intersection of St. Matthews Avenue and Plains Road East should be added to the study area. The revised study area is:
  - Plains Road East and Waterdown Road;
  - Plains Road East and Cooke Boulevard;
  - Plains Road East and Clearview Avenue/Birchwood Avenue;
  - Plains Road East and St. Matthews Avenue;
  - Masonry Court and Cooke Boulevard; and
  - Masonry Court and Waterdown Road.
- Horizon year to be investigated is five-years following build-out.
- Build-out to be confirmed later by Paradigm
- Plains Road is scheduled for resurfacing in the near future with additional signals east of study area. No infrastructure improvements are anticipated for the area that will add additional capacity.

- The generally area is NOT currently defined as a Mobility Hub. The City would like to define the area as a mobility hub. The City has developed a Mobility Hub Boundaries/Draft Vision & directions for the Aldershot GO Station.
- The area includes the subject site with the secondary zone.
- Opportunities and Constraints include multiple new connections of the existing CN rail corridor.
- Employment land uses
- New cycling infrastructure
- New roadway connections
- City generally not in support of ITE trip generation data.
- City would like to see the additional trip generation data collected by Paradigm for the existing mixed use site at Upper Middle and Sutton. (Circulated on 14 September 2015).
- City will ask planning to identify potential sister sites for future survey opportunities.
- Parking supply for site regarded as too low. Strong justification will be required to support the 0.75 space per unit provision.
- Modal split estimates will area will be critical.
- GO Station parking cannot be utilized or suggested as a possible parking area.

Appendix B

Existing Count Data



Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Turning Movement Count (1 . WATERDOWN ROAD & NORTH SERVICE ROAD/HIGHWAY 403 WB ON-RAMP) MioID: 269680

Start Time	N Approach WATERDOWN RD						E Approach NORTH SERVICE RD						S Approach WATERDOWN RD						W Approach NORTH SERVICE RD						Int. Total (15 min)	Int. Total (1 hr)
	Right N: W	Thru N: S	Left N: E	U-Turn N: N	Peds N:	Approach Total	Right E: N	Thru E: W	Left E: S	U-Turn E: E	Peds E:	Approach Total	Right S: E	Thru S: N	Left S: W	U-Turn S: S	Peds S:	Approach Total	Right W: S	Thru W: E	Left W: N	U-Turn W: W	Peds W:	Approach Total		
07:30:00	21	122	41	0	0	184	9	20	9	0	0	38	70	59	40	0	0	169	0	0	0	0	0	0	391	
07:45:00	21	121	38	0	0	180	6	22	16	0	0	44	79	62	43	0	0	184	0	0	0	0	1	0	408	
08:00:00	23	122	51	0	0	196	6	41	17	0	0	64	88	62	58	1	0	209	0	0	0	0	0	0	469	
08:15:00	24	109	47	0	0	180	14	31	20	0	0	65	104	69	49	0	0	222	0	0	0	0	0	0	467	1735
08:30:00	14	98	35	0	0	147	16	24	19	0	0	59	101	56	41	0	0	198	0	0	0	0	0	0	404	1748
08:45:00	18	106	26	0	0	150	8	21	22	0	0	51	104	68	33	0	0	205	0	0	0	0	0	0	406	1746
09:00:00	24	60	23	0	0	107	7	20	15	0	0	42	78	66	38	1	0	183	0	0	0	0	0	0	332	1609
09:15:00	15	80	21	0	0	116	9	18	14	0	0	41	55	71	44	0	0	170	0	0	0	0	0	0	327	1469
BREAK																										
11:00:00	4	53	20	0	0	77	16	15	14	0	0	45	31	73	34	0	0	138	0	0	0	0	0	0	260	
11:15:00	6	60	5	0	0	71	18	17	20	0	0	55	28	63	26	0	0	117	0	0	0	0	1	0	243	
11:30:00	6	64	16	0	0	86	16	15	21	0	0	52	42	67	39	0	0	148	0	0	0	0	0	0	286	
11:45:00	11	67	20	0	0	98	30	26	25	0	0	81	34	79	27	0	0	140	0	0	0	0	0	0	319	1108
12:00:00	10	62	14	0	0	86	18	22	21	0	0	61	36	72	34	0	0	142	0	0	0	0	1	0	289	1137
12:15:00	10	37	17	0	0	64	15	17	26	0	0	58	42	80	39	0	0	161	0	0	0	0	0	0	283	1177
12:30:00	5	59	15	0	0	79	20	13	17	0	0	50	42	52	37	0	0	131	0	0	0	0	0	0	260	1151
12:45:00	12	50	18	0	0	80	14	24	27	0	0	65	40	67	39	1	0	147	0	0	0	0	0	0	292	1124
13:00:00	11	60	17	0	0	88	17	31	17	0	0	65	33	82	52	0	0	167	0	0	0	0	0	0	320	1155
13:15:00	9	55	10	0	2	74	20	18	25	0	0	63	47	89	42	0	0	178	0	0	0	0	2	0	315	1187
13:30:00	4	39	16	0	0	59	21	21	26	0	0	68	31	64	52	0	0	147	0	0	0	0	0	0	274	1201
13:45:00	3	64	20	0	0	87	16	21	18	0	0	55	41	87	45	0	0	173	0	0	0	0	0	0	315	1224
BREAK																										
15:00:00	23	68	15	0	0	106	21	62	28	0	0	111	45	95	54	0	0	194	0	0	1	0	0	1	412	
15:15:00	19	68	20	0	0	107	34	47	25	0	0	106	51	104	54	0	0	209	0	0	0	0	0	0	422	
15:30:00	11	82	28	0	0	121	45	62	39	0	0	146	50	85	58	0	0	193	0	0	0	0	0	0	460	
15:45:00	17	82	16	0	0	115	45	69	35	0	0	149	42	87	65	0	0	194	0	0	0	0	0	0	458	1752
16:00:00	24	76	19	0	1	119	46	87	35	0	0	168	40	107	60	0	0	207	0	0	0	0	1	0	494	1834
16:15:00	28	64	23	0	0	115	33	76	28	0	0	137	25	110	76	0	0	211	0	0	0	0	0	0	463	1875
16:30:00	30	73	17	0	0	120	33	116	46	0	0	195	34	99	54	0	0	187	0	0	0	0	0	0	502	1917
16:45:00	22	79	22	0	0	123	51	129	46	0	0	226	40	128	78	0	0	246	0	0	0	0	0	0	595	2054
17:00:00	25	79	22	0	0	126	57	144	49	0	0	250	33	113	100	0	0	246	0	0	0	0	0	0	622	2182

Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

17:15:00	23	80	23	0	0	126	48	156	46	0	0	250	29	123	97	0	0	249	0	0	0	0	0	0	625	2344
17:30:00	12	66	22	0	0	100	46	122	41	0	0	209	29	165	178	0	0	372	0	0	0	0	0	0	681	2523
17:45:00	10	76	17	0	0	103	42	98	36	0	0	176	21	138	138	0	0	297	0	0	0	0	0	0	576	2504
Grand Total	495	2381	714	0	3	3590	797	1605	843	0	0	3245	1565	2742	1824	3	0	6134	0	0	1	0	6	1	**12970**	-
Approach%	13.8%	66.3%	19.9%	0%		-	24.6%	49.5%	26%	0%		-	25.5%	44.7%	29.7%	0%		-	0%	0%	100%	0%		-	-	-
Totals %	3.8%	18.4%	5.5%	0%		27.7%	6.1%	12.4%	6.5%	0%		25%	12.1%	21.1%	14.1%	0%		47.3%	0%	0%	0%	0%		0%	-	-
Heavy	11	76	9	0		-	12	37	56	0		-	115	96	126	0		-	0	0	0	0		-	-	-
Heavy %	2.2%	3.2%	1.3%	0%		-	1.5%	2.3%	6.6%	0%		-	7.3%	3.5%	6.9%	0%		-	0%	0%	0%	0%		-	-	-

Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 07:45 AM - 08:45 AM

Start Time	N Approach WATERDOWN RD						E Approach NORTH SERVICE RD						S Approach WATERDOWN RD						W Approach NORTH SERVICE RD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
07:45:00	21	121	38	0	0	180	6	22	16	0	0	44	79	62	43	0	0	184	0	0	0	0	1	0	408
08:00:00	23	122	51	0	0	196	6	41	17	0	0	64	88	62	58	1	0	209	0	0	0	0	0	0	469
08:15:00	24	109	47	0	0	180	14	31	20	0	0	65	104	69	49	0	0	222	0	0	0	0	0	0	467
08:30:00	14	98	35	0	0	147	16	24	19	0	0	59	101	56	41	0	0	198	0	0	0	0	0	0	404
Grand Total	82	450	171	0	0	703	42	118	72	0	0	232	372	249	191	1	0	813	0	0	0	0	1	0	**1748**
Approach%	11.7%	64%	24.3%	0%		-	18.1%	50.9%	31%	0%		-	45.8%	30.6%	23.5%	0.1%		-	0%	0%	0%	0%		-	-
Totals %	4.7%	25.7%	9.8%	0%		40.2%	2.4%	6.8%	4.1%	0%		13.3%	21.3%	14.2%	10.9%	0.1%		46.5%	0%	0%	0%	0%		0%	-
PHF	0.85	0.92	0.84	0		0.9	0.66	0.72	0.9	0		0.89	0.89	0.9	0.82	0.25		0.92	0	0	0	0		0	-
Heavy	1	13	2	0		16	0	7	10	0		17	15	10	15	0		40	0	0	0	0		0	-
Heavy %	1.2%	2.9%	1.2%	0%		2.3%	0%	5.9%	13.9%	0%		7.3%	4%	4%	7.9%	0%		4.9%	0%	0%	0%	0%		0%	-
Lights	81	437	169	0		687	42	111	62	0		215	357	239	176	1		773	0	0	0	0		0	-
Lights %	98.8%	97.1%	98.8%	0%		97.7%	100%	94.1%	86.1%	0%		92.7%	96%	96%	92.1%	100%		95.1%	0%	0%	0%	0%		0%	-
Single-Unit Trucks	0	4	0	0		4	0	3	3	0		6	4	2	5	0		11	0	0	0	0		0	-
Single-Unit Trucks %	0%	0.9%	0%	0%		0.6%	0%	2.5%	4.2%	0%		2.6%	1.1%	0.8%	2.6%	0%		1.4%	0%	0%	0%	0%		0%	-
Buses	1	9	1	0		11	0	2	3	0		5	8	8	4	0		20	0	0	0	0		0	-
Buses %	1.2%	2%	0.6%	0%		1.6%	0%	1.7%	4.2%	0%		2.2%	2.2%	3.2%	2.1%	0%		2.5%	0%	0%	0%	0%		0%	-
Articulated Trucks	0	0	1	0		1	0	2	4	0		6	3	0	6	0		9	0	0	0	0		0	-
Articulated Trucks %	0%	0%	0.6%	0%		0.1%	0%	1.7%	5.6%	0%		2.6%	0.8%	0%	3.1%	0%		1.1%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	100%		-

Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 01:00 PM - 02:00 PM

Start Time	N Approach WATERDOWN RD						E Approach NORTH SERVICE RD						S Approach WATERDOWN RD						W Approach NORTH SERVICE RD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
13:00:00	11	60	17	0	0	88	17	31	17	0	0	65	33	82	52	0	0	167	0	0	0	0	0	0	320
13:15:00	9	55	10	0	2	74	20	18	25	0	0	63	47	89	42	0	0	178	0	0	0	0	2	0	315
13:30:00	4	39	16	0	0	59	21	21	26	0	0	68	31	64	52	0	0	147	0	0	0	0	0	0	274
13:45:00	3	64	20	0	0	87	16	21	18	0	0	55	41	87	45	0	0	173	0	0	0	0	0	0	315
Grand Total	27	218	63	0	2	308	74	91	86	0	0	251	152	322	191	0	0	665	0	0	0	0	2	0	**1224**
Approach%	8.8%	70.8%	20.5%	0%		-	29.5%	36.3%	34.3%	0%		-	22.9%	48.4%	28.7%	0%		-	0%	0%	0%	0%		-	-
Totals %	2.2%	17.8%	5.1%	0%		25.2%	6%	7.4%	7%	0%		20.5%	12.4%	26.3%	15.6%	0%		54.3%	0%	0%	0%	0%		0%	-
PHF	0.61	0.85	0.79	0		0.88	0.88	0.73	0.83	0		0.92	0.81	0.9	0.92	0		0.93	0	0	0	0		0	-
Heavy	1	9	0	0		10	2	3	5	0		10	22	11	21	0		54	0	0	0	0		0	-
Heavy %	3.7%	4.1%	0%	0%		3.2%	2.7%	3.3%	5.8%	0%		4%	14.5%	3.4%	11%	0%		8.1%	0%	0%	0%	0%		0%	-
Lights	26	209	63	0		298	72	88	81	0		241	130	311	170	0		611	0	0	0	0		0	-
Lights %	96.3%	95.9%	100%	0%		96.8%	97.3%	96.7%	94.2%	0%		96%	85.5%	96.6%	89%	0%		91.9%	0%	0%	0%	0%		0%	-
Single-Unit Trucks	1	4	0	0		5	1	0	5	0		6	10	4	8	0		22	0	0	0	0		0	-
Single-Unit Trucks %	3.7%	1.8%	0%	0%		1.6%	1.4%	0%	5.8%	0%		2.4%	6.6%	1.2%	4.2%	0%		3.3%	0%	0%	0%	0%		0%	-
Buses	0	5	0	0		5	1	1	0	0		2	1	6	5	0		12	0	0	0	0		0	-
Buses %	0%	2.3%	0%	0%		1.6%	1.4%	1.1%	0%	0%		0.8%	0.7%	1.9%	2.6%	0%		1.8%	0%	0%	0%	0%		0%	-
Articulated Trucks	0	0	0	0		0	0	2	0	0		2	11	1	8	0		20	0	0	0	0		0	-
Articulated Trucks %	0%	0%	0%	0%		0%	0%	2.2%	0%	0%		0.8%	7.2%	0.3%	4.2%	0%		3%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	2	-	-
Pedestrians%	-	-	-	-	50%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	50%		-

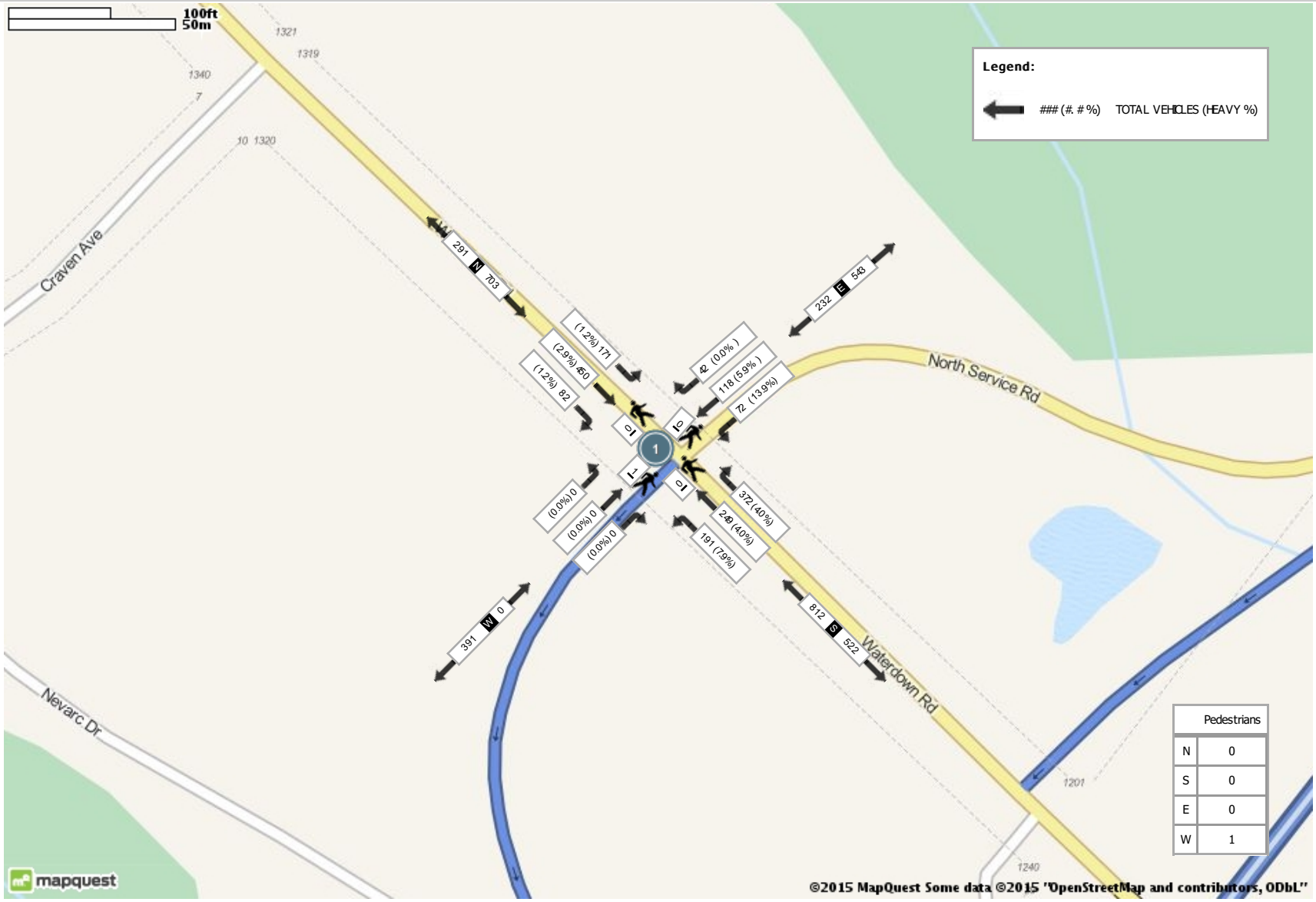
Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 04:45 PM - 05:45 PM

Start Time	N Approach WATERDOWN RD						E Approach NORTH SERVICE RD						S Approach WATERDOWN RD						W Approach NORTH SERVICE RD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:45:00	22	79	22	0	0	123	51	129	46	0	0	226	40	128	78	0	0	246	0	0	0	0	0	0	595
17:00:00	25	79	22	0	0	126	57	144	49	0	0	250	33	113	100	0	0	246	0	0	0	0	0	0	622
17:15:00	23	80	23	0	0	126	48	156	46	0	0	250	29	123	97	0	0	249	0	0	0	0	0	0	625
17:30:00	12	66	22	0	0	100	46	122	41	0	0	209	29	165	178	0	0	372	0	0	0	0	0	0	681
Grand Total	82	304	89	0	0	475	202	551	182	0	0	935	131	529	453	0	0	1113	0	0	0	0	0	0	**2523**
Approach%	17.3%	64%	18.7%	0%		-	21.6%	58.9%	19.5%	0%		-	11.8%	47.5%	40.7%	0%		-	0%	0%	0%	0%		-	-
Totals %	3.3%	12%	3.5%	0%		18.8%	8%	21.8%	7.2%	0%		37.1%	5.2%	21%	18%	0%		44.1%	0%	0%	0%	0%		0%	-
PHF	0.82	0.95	0.97	0		0.94	0.89	0.88	0.93	0		0.94	0.82	0.8	0.64	0		0.75	0	0	0	0		0	-
Heavy	1	5	0	0		6	1	1	3	0		5	11	12	7	0		30	0	0	0	0		0	-
Heavy %	1.2%	1.6%	0%	0%		1.3%	0.5%	0.2%	1.6%	0%		0.5%	8.4%	2.3%	1.5%	0%		2.7%	0%	0%	0%	0%		0%	-
Lights	81	299	89	0		469	201	550	179	0		930	120	517	446	0		1083	0	0	0	0		0	-
Lights %	98.8%	98.4%	100%	0%		98.7%	99.5%	99.8%	98.4%	0%		99.5%	91.6%	97.7%	98.5%	0%		97.3%	0%	0%	0%	0%		0%	-
Single-Unit Trucks	1	0	0	0		1	1	1	1	0		3	5	7	2	0		14	0	0	0	0		0	-
Single-Unit Trucks %	1.2%	0%	0%	0%		0.2%	0.5%	0.2%	0.5%	0%		0.3%	3.8%	1.3%	0.4%	0%		1.3%	0%	0%	0%	0%		0%	-
Buses	0	5	0	0		5	0	0	2	0		2	2	4	4	0		10	0	0	0	0		0	-
Buses %	0%	1.6%	0%	0%		1.1%	0%	0%	1.1%	0%		0.2%	1.5%	0.8%	0.9%	0%		0.9%	0%	0%	0%	0%		0%	-
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	4	1	1	0		6	0	0	0	0		0	-
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	3.1%	0.2%	0.2%	0%		0.5%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-

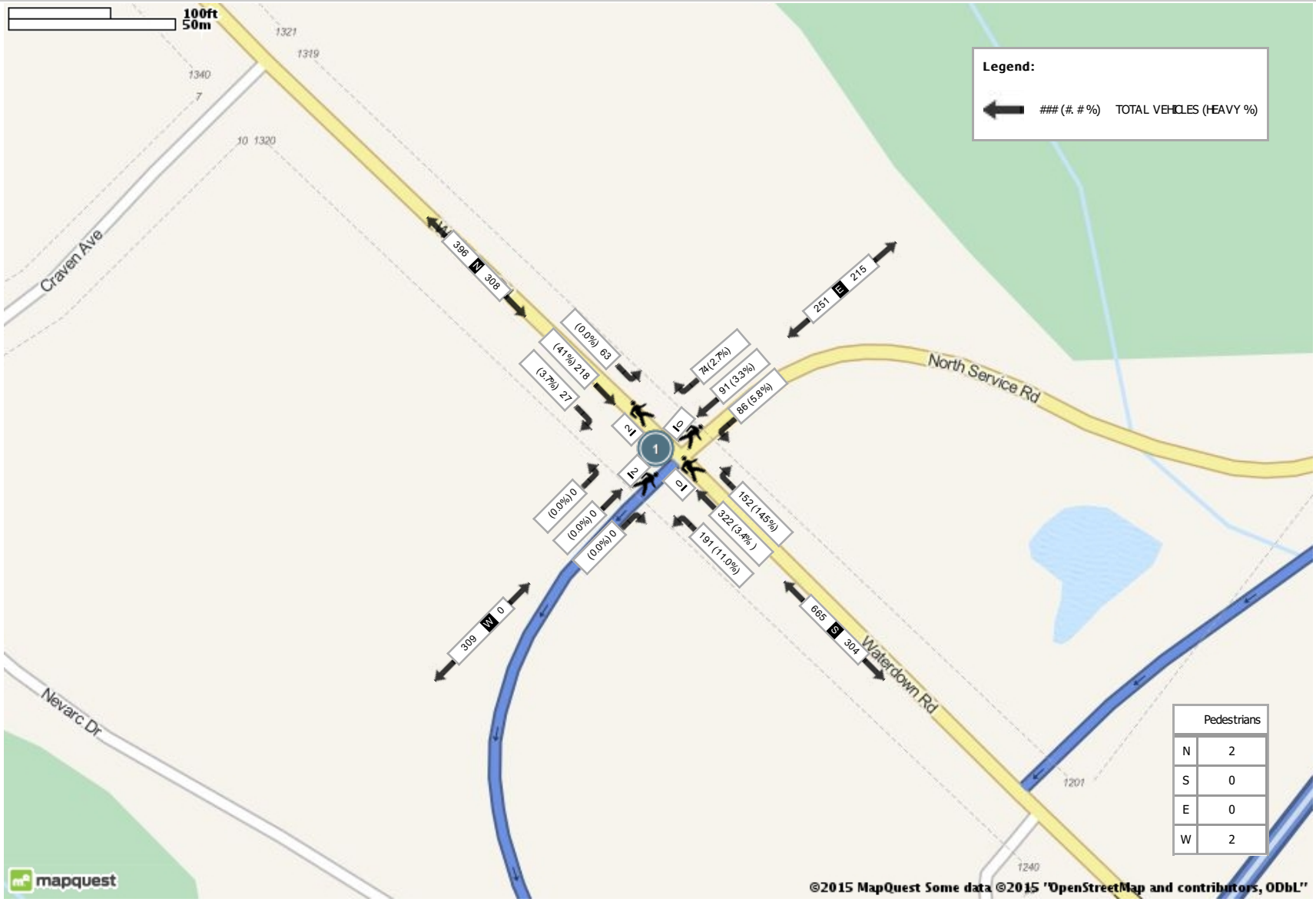
Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 07:45 AM - 08:45 AM



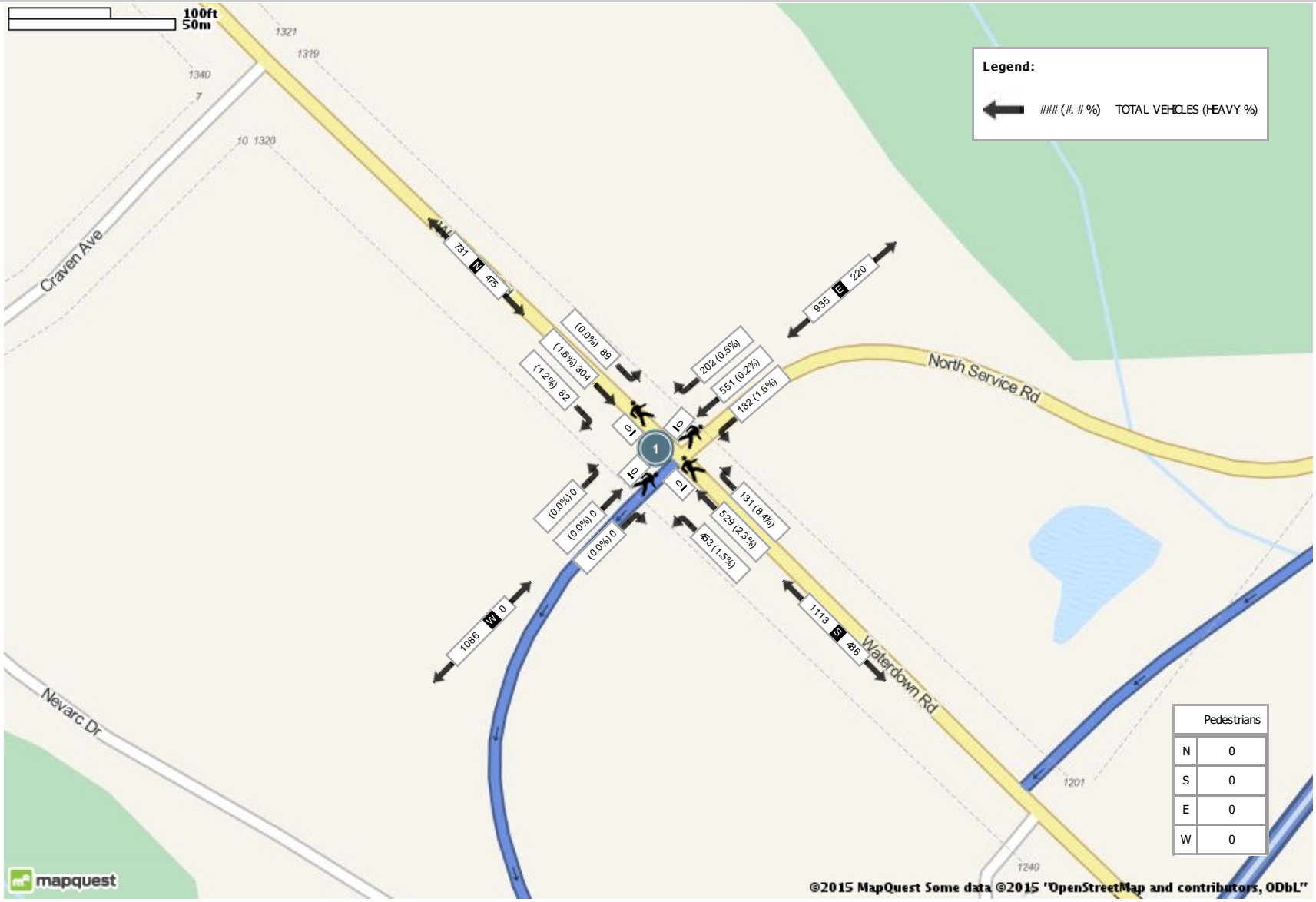
Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 01:00 PM - 02:00 PM



Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 04:45 PM - 05:45 PM



Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Turning Movement Count (2 . WATERDOWN ROAD & HIGHWAY 403 WB OFF-RAMP/PRIVATE DRIVEWAY) MioID: 269687

Start Time	N Approach WATERDOWN ROAD						E Approach HIGHWAY 403 WB OFF-RAMP						S Approach WATERDOWN ROAD						W Approach PLAIN RD/PRIVATE DRIVEWAY						Int. Total (15 min)	Int. Total (1 hr)
	Right N: W	Thru N: S	Left N: E	U-Turn N: N	Peds N:	Approach Total	Right E: N	Thru E: W	Left E: S	U-Turn E: E	Peds E:	Approach Total	Right S: E	Thru S: N	Left S: W	U-Turn S: S	Peds S:	Approach Total	Right W: S	Thru W: E	Left W: N	U-Turn W: W	Peds W:	Approach Total		
07:30:00	1	131	0	0	0	132	30	0	27	0	0	57	0	138	0	0	0	138	1	0	1	0	0	2	329	
07:45:00	0	137	0	0	0	137	43	0	32	0	0	75	0	145	2	0	0	147	1	0	1	0	1	2	361	
08:00:00	0	140	0	0	0	140	37	0	66	0	0	103	0	170	0	0	0	170	1	0	1	0	0	2	415	
08:15:00	1	132	0	0	0	133	47	0	46	0	0	93	0	179	0	0	0	179	1	0	0	0	0	1	406	1511
08:30:00	0	117	0	0	0	117	38	0	53	0	0	91	0	164	0	0	0	164	0	0	0	0	0	0	372	1554
08:45:00	1	129	0	0	0	130	56	0	54	0	0	110	0	152	0	0	0	152	0	0	1	0	0	1	393	1586
09:00:00	0	77	0	0	0	77	45	0	34	0	0	79	0	142	0	0	0	142	0	0	0	0	0	0	298	1469
09:15:00	0	91	0	0	0	91	46	0	47	0	0	93	0	122	0	0	0	122	0	0	0	0	0	0	306	1369
BREAK																										
11:00:00	0	67	0	0	0	67	43	0	36	0	0	79	0	94	0	0	0	94	0	0	1	0	0	1	241	
11:15:00	0	77	0	0	0	77	31	0	42	0	0	73	0	87	0	0	0	87	0	0	0	0	1	0	237	
11:30:00	0	84	0	0	0	84	37	0	30	0	0	67	0	112	0	0	0	112	0	0	0	0	0	0	263	
11:45:00	0	93	0	0	0	93	42	0	50	0	0	92	0	100	0	0	0	100	0	0	1	0	0	1	286	1027
12:00:00	0	81	0	0	0	81	44	0	51	0	0	95	0	100	0	0	0	100	0	0	0	0	1	0	276	1062
12:15:00	1	64	0	0	0	65	55	0	49	0	0	104	0	110	0	0	0	110	0	0	1	0	0	1	280	1105
12:30:00	0	79	0	0	0	79	35	0	41	0	0	76	0	98	0	0	0	98	0	0	0	0	0	0	253	1095
12:45:00	2	77	0	0	0	79	46	0	41	0	0	87	0	101	0	2	0	103	1	0	0	0	0	1	270	1079
13:00:00	0	78	0	0	0	78	53	0	56	0	0	109	0	112	0	1	0	113	0	0	1	0	0	1	301	1104
13:15:00	1	79	0	0	0	80	56	0	51	0	0	107	0	121	1	0	0	122	0	0	2	0	1	2	311	1135
13:30:00	0	65	0	0	0	65	35	0	51	0	0	86	0	113	0	0	0	113	1	0	0	0	0	1	265	1147
13:45:00	0	81	0	0	0	81	56	0	49	0	0	105	0	123	0	0	0	123	0	0	0	0	0	0	309	1186
BREAK																										
15:00:00	0	98	0	0	0	98	67	0	48	0	0	115	0	129	0	0	0	129	3	0	0	0	0	3	345	
15:15:00	0	92	0	0	0	92	63	0	54	0	0	117	0	150	1	0	0	151	0	0	0	0	0	0	360	
15:30:00	1	115	0	0	0	116	54	0	45	0	0	99	0	148	0	1	0	149	0	0	0	0	0	0	364	
15:45:00	1	109	0	0	0	110	46	0	47	0	0	93	0	151	1	0	0	152	1	0	2	0	0	3	358	1427
16:00:00	0	111	0	0	1	111	67	0	42	0	0	109	0	141	0	0	0	141	0	0	1	0	2	1	362	1444
16:15:00	1	90	0	0	1	91	44	0	47	0	0	91	0	160	0	0	0	160	0	0	0	0	1	0	342	1426
16:30:00	0	124	0	0	0	124	46	0	46	0	0	92	0	140	0	0	0	140	0	0	0	0	0	0	356	1418
16:45:00	0	123	0	0	0	123	52	0	26	0	0	78	0	200	2	0	0	202	1	0	1	0	0	2	405	1465
17:00:00	0	125	0	0	0	125	55	0	42	0	0	97	0	190	0	0	0	190	1	0	0	0	0	1	413	1516

Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

17:15:00	0	130	0	0	0	130	59	0	27	0	0	86	0	210	0	0	0	210	0	0	0	0	0	0	426	1600
17:30:00	0	109	0	0	0	109	55	0	42	0	0	97	0	314	1	2	0	317	0	0	0	0	0	0	523	1767
17:45:00	1	112	0	0	0	113	51	0	36	0	0	87	0	248	0	0	0	248	3	0	0	0	0	3	451	1813
Grand Total	11	3217	0	0	2	3228	1534	0	1408	0	0	2942	0	4664	8	6	0	4678	15	0	14	0	7	29	**10877**	-
Approach%	0.3%	99.7%	0%	0%		-	52.1%	0%	47.9%	0%		-	0%	99.7%	0.2%	0.1%		-	51.7%	0%	48.3%	0%		-	-	-
Totals %	0.1%	29.6%	0%	0%		29.7%	14.1%	0%	12.9%	0%		27%	0%	42.9%	0.1%	0.1%		43%	0.1%	0%	0.1%	0%		0.3%	-	-
Heavy	2	133	0	0		-	72	0	122	0		-	0	276	2	0		-	4	0	4	0		-	-	-
Heavy %	18.2%	4.1%	0%	0%		-	4.7%	0%	8.7%	0%		-	0%	5.9%	25%	0%		-	26.7%	0%	28.6%	0%		-	-	-

Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 08:00 AM - 09:00 AM

Start Time	N Approach WATERDOWN ROAD						E Approach HIGHWAY 403 WB OFF-RAMP						S Approach WATERDOWN ROAD						W Approach PLAIN RD/PRIVATE DRIVEWAY						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
08:00:00	0	140	0	0	0	140	37	0	66	0	0	103	0	170	0	0	0	170	1	0	1	0	0	2	415
08:15:00	1	132	0	0	0	133	47	0	46	0	0	93	0	179	0	0	0	179	1	0	0	0	0	1	406
08:30:00	0	117	0	0	0	117	38	0	53	0	0	91	0	164	0	0	0	164	0	0	0	0	0	0	372
08:45:00	1	129	0	0	0	130	56	0	54	0	0	110	0	152	0	0	0	152	0	0	1	0	0	1	393
Grand Total	2	518	0	0	0	520	178	0	219	0	0	397	0	665	0	0	0	665	2	0	2	0	0	4	**1586**
Approach%	0.4%	99.6%	0%	0%		-	44.8%	0%	55.2%	0%		-	0%	100%	0%	0%		-	50%	0%	50%	0%		-	-
Totals %	0.1%	32.7%	0%	0%		32.8%	11.2%	0%	13.8%	0%		25%	0%	41.9%	0%	0%		41.9%	0.1%	0%	0.1%	0%		0.3%	-
PHF	0.5	0.93	0	0		0.93	0.79	0	0.83	0		0.9	0	0.93	0	0		0.93	0.5	0	0.5	0		0.5	-
Heavy	1	24	0	0		25	7	0	21	0		28	0	41	0	0		41	1	0	2	0		3	-
Heavy %	50%	4.6%	0%	0%		4.8%	3.9%	0%	9.6%	0%		7.1%	0%	6.2%	0%	0%		6.2%	50%	0%	100%	0%		75%	-
Lights	1	494	0	0		495	171	0	198	0		369	0	624	0	0		624	1	0	0	0		1	-
Lights %	50%	95.4%	0%	0%		95.2%	96.1%	0%	90.4%	0%		92.9%	0%	93.8%	0%	0%		93.8%	50%	0%	0%	0%		25%	-
Single-Unit Trucks	1	10	0	0		11	3	0	15	0		18	0	14	0	0		14	1	0	2	0		3	-
Single-Unit Trucks %	50%	1.9%	0%	0%		2.1%	1.7%	0%	6.8%	0%		4.5%	0%	2.1%	0%	0%		2.1%	50%	0%	100%	0%		75%	-
Buses	0	11	0	0		11	0	0	3	0		3	0	22	0	0		22	0	0	0	0		0	-
Buses %	0%	2.1%	0%	0%		2.1%	0%	0%	1.4%	0%		0.8%	0%	3.3%	0%	0%		3.3%	0%	0%	0%	0%		0%	-
Articulated Trucks	0	3	0	0		3	4	0	3	0		7	0	5	0	0		5	0	0	0	0		0	-
Articulated Trucks %	0%	0.6%	0%	0%		0.6%	2.2%	0%	1.4%	0%		1.8%	0%	0.8%	0%	0%		0.8%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-

Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 01:00 PM - 02:00 PM

Start Time	N Approach WATERDOWN ROAD						E Approach HIGHWAY 403 WB OFF-RAMP						S Approach WATERDOWN ROAD						W Approach PLAIN RD/PRIVATE DRIVEWAY						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
13:00:00	0	78	0	0	0	78	53	0	56	0	0	109	0	112	0	1	0	113	0	0	1	0	0	1	301
13:15:00	1	79	0	0	0	80	56	0	51	0	0	107	0	121	1	0	0	122	0	0	2	0	1	2	311
13:30:00	0	65	0	0	0	65	35	0	51	0	0	86	0	113	0	0	0	113	1	0	0	0	0	1	265
13:45:00	0	81	0	0	0	81	56	0	49	0	0	105	0	123	0	0	0	123	0	0	0	0	0	0	309
Grand Total	1	303	0	0	0	304	200	0	207	0	0	407	0	469	1	1	0	471	1	0	3	0	1	4	**1186**
Approach%	0.3%	99.7%	0%	0%		-	49.1%	0%	50.9%	0%		-	0%	99.6%	0.2%	0.2%		-	25%	0%	75%	0%		-	-
Totals %	0.1%	25.5%	0%	0%		25.6%	16.9%	0%	17.5%	0%		34.3%	0%	39.5%	0.1%	0.1%		39.7%	0.1%	0%	0.3%	0%		0.3%	-
PHF	0.25	0.94	0	0		0.94	0.89	0	0.92	0		0.93	0	0.95	0.25	0.25		0.96	0.25	0	0.38	0		0.5	-
Heavy	0	14	0	0		14	16	0	17	0		33	0	38	0	0		38	0	0	0	0		0	-
Heavy %	0%	4.6%	0%	0%		4.6%	8%	0%	8.2%	0%		8.1%	0%	8.1%	0%	0%		8.1%	0%	0%	0%	0%		0%	-
Lights	1	289	0	0		290	184	0	190	0		374	0	431	1	1		433	1	0	3	0		4	-
Lights %	100%	95.4%	0%	0%		95.4%	92%	0%	91.8%	0%		91.9%	0%	91.9%	100%	100%		91.9%	100%	0%	100%	0%		100%	-
Single-Unit Trucks	0	9	0	0		9	7	0	12	0		19	0	15	0	0		15	0	0	0	0		0	-
Single-Unit Trucks %	0%	3%	0%	0%		3%	3.5%	0%	5.8%	0%		4.7%	0%	3.2%	0%	0%		3.2%	0%	0%	0%	0%		0%	-
Buses	0	5	0	0		5	1	0	4	0		5	0	11	0	0		11	0	0	0	0		0	-
Buses %	0%	1.7%	0%	0%		1.6%	0.5%	0%	1.9%	0%		1.2%	0%	2.3%	0%	0%		2.3%	0%	0%	0%	0%		0%	-
Articulated Trucks	0	0	0	0		0	8	0	1	0		9	0	12	0	0		12	0	0	0	0		0	-
Articulated Trucks %	0%	0%	0%	0%		0%	4%	0%	0.5%	0%		2.2%	0%	2.6%	0%	0%		2.5%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	100%		-

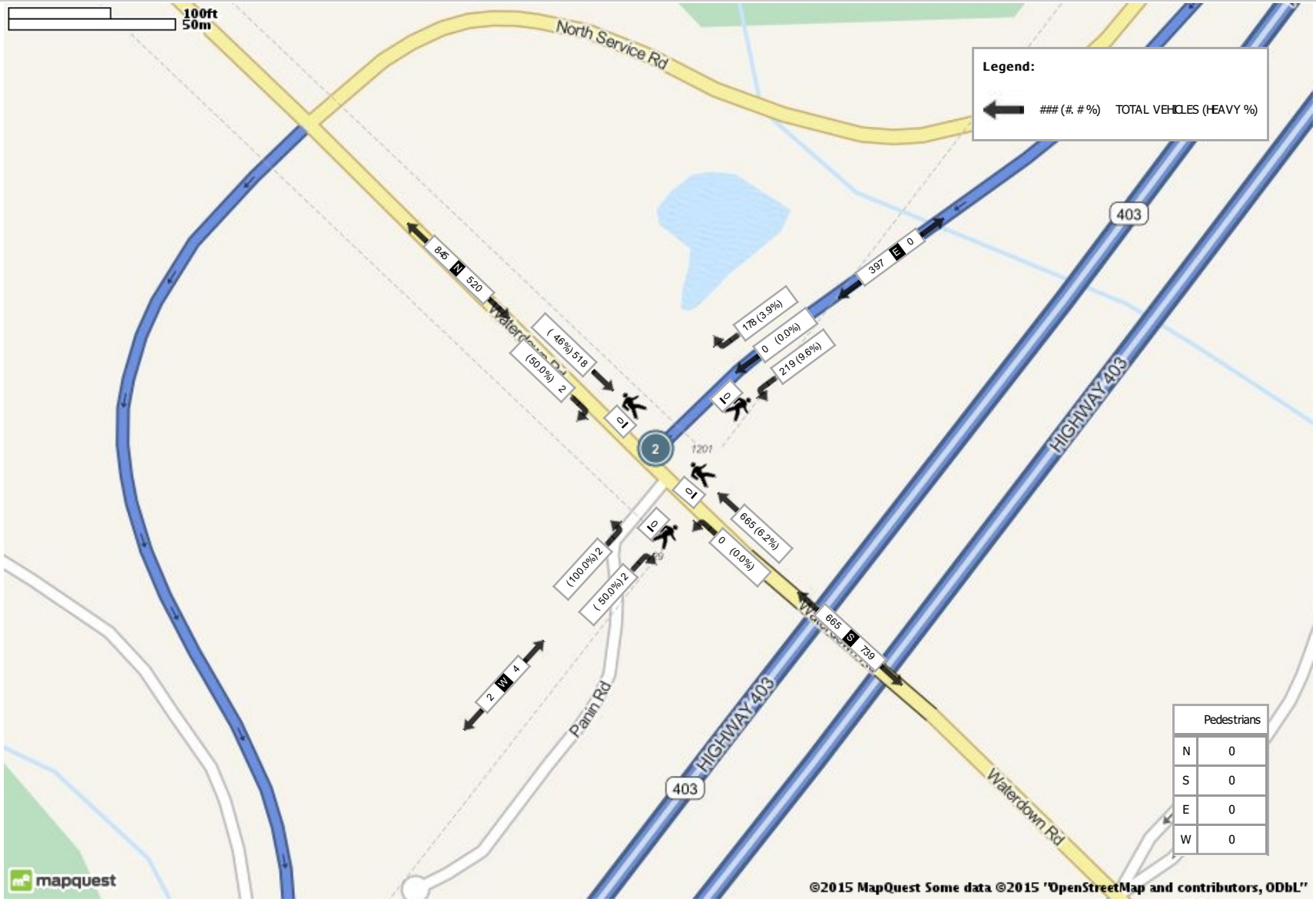
Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 05:00 PM - 06:00 PM

Start Time	N Approach WATERDOWN ROAD						E Approach HIGHWAY 403 WB OFF-RAMP						S Approach WATERDOWN ROAD						W Approach PLAIN RD/PRIVATE DRIVEWAY						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
17:00:00	0	125	0	0	0	125	55	0	42	0	0	97	0	190	0	0	0	190	1	0	0	0	0	1	413
17:15:00	0	130	0	0	0	130	59	0	27	0	0	86	0	210	0	0	0	210	0	0	0	0	0	0	426
17:30:00	0	109	0	0	0	109	55	0	42	0	0	97	0	314	1	2	0	317	0	0	0	0	0	0	523
17:45:00	1	112	0	0	0	113	51	0	36	0	0	87	0	248	0	0	0	248	3	0	0	0	0	3	451
Grand Total	1	476	0	0	0	477	220	0	147	0	0	367	0	962	1	2	0	965	4	0	0	0	0	4	**1813**
Approach%	0.2%	99.8%	0%	0%		-	59.9%	0%	40.1%	0%		-	0%	99.7%	0.1%	0.2%		-	100%	0%	0%	0%		-	-
Totals %	0.1%	26.3%	0%	0%		26.3%	12.1%	0%	8.1%	0%		20.2%	0%	53.1%	0.1%	0.1%		53.2%	0.2%	0%	0%	0%		0.2%	-
PHF	0.25	0.92	0	0		0.92	0.93	0	0.88	0		0.95	0	0.77	0.25	0.25		0.76	0.33	0	0	0		0.33	-
Heavy	0	5	0	0		5	6	0	6	0		12	0	21	0	0		21	1	0	0	0		1	-
Heavy %	0%	1.1%	0%	0%		1%	2.7%	0%	4.1%	0%		3.3%	0%	2.2%	0%	0%		2.2%	25%	0%	0%	0%		25%	-
Lights	1	471	0	0		472	214	0	141	0		355	0	941	1	2		944	3	0	0	0		3	-
Lights %	100%	98.9%	0%	0%		99%	97.3%	0%	95.9%	0%		96.7%	0%	97.8%	100%	100%		97.8%	75%	0%	0%	0%		75%	-
Single-Unit Trucks	0	0	0	0		0	3	0	6	0		9	0	9	0	0		9	0	0	0	0		0	-
Single-Unit Trucks %	0%	0%	0%	0%		0%	1.4%	0%	4.1%	0%		2.5%	0%	0.9%	0%	0%		0.9%	0%	0%	0%	0%		0%	-
Buses	0	5	0	0		5	1	0	0	0		1	0	10	0	0		10	1	0	0	0		1	-
Buses %	0%	1.1%	0%	0%		1%	0.5%	0%	0%	0%		0.3%	0%	1%	0%	0%		1%	25%	0%	0%	0%		25%	-
Articulated Trucks	0	0	0	0		0	2	0	0	0		2	0	2	0	0		2	0	0	0	0		0	-
Articulated Trucks %	0%	0%	0%	0%		0%	0.9%	0%	0%	0%		0.5%	0%	0.2%	0%	0%		0.2%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-

Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

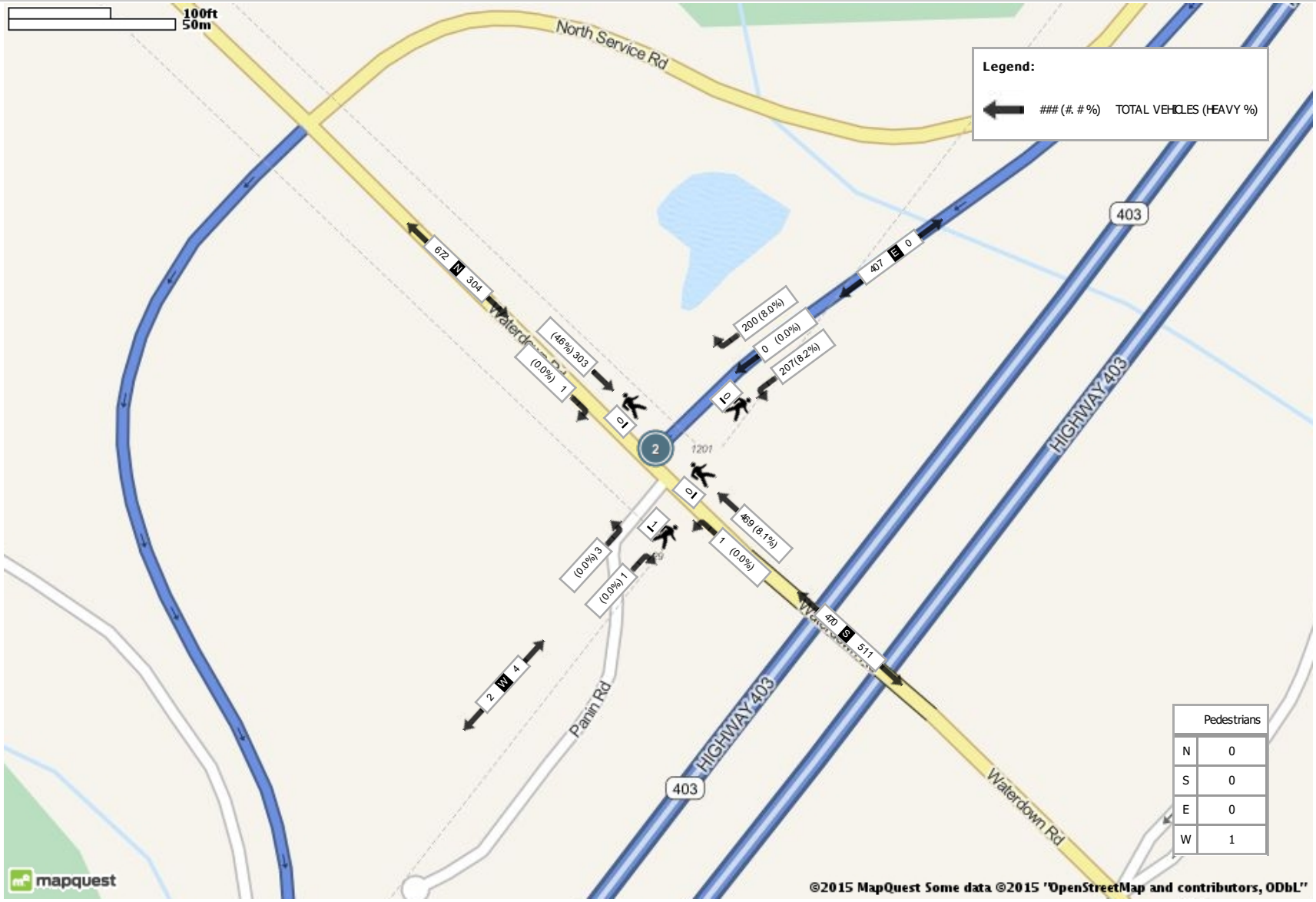
Peak Hour: 08:00 AM - 09:00 AM



	Pedestrians
N	0
S	0
E	0
W	0

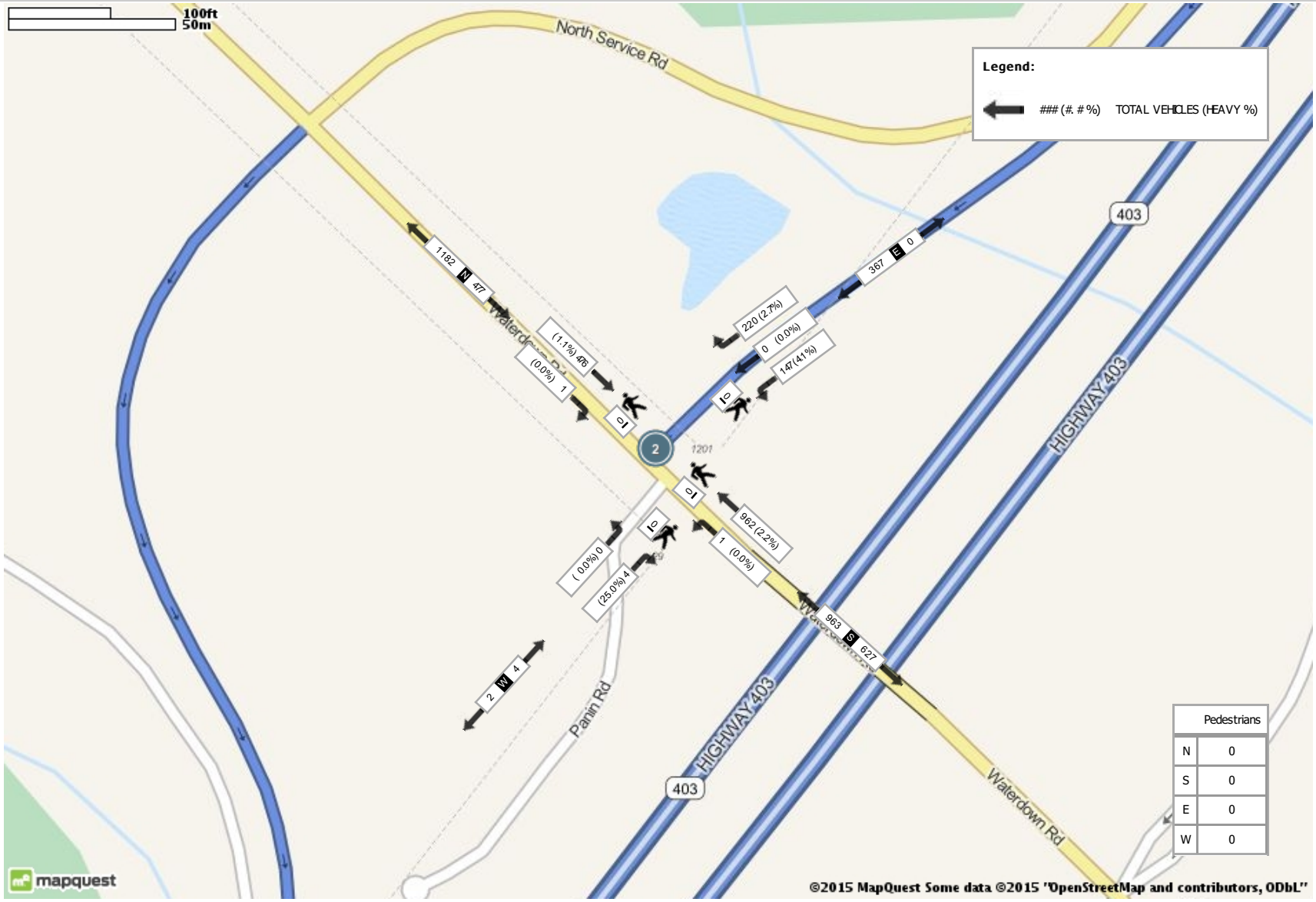
Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 01:00 PM - 02:00 PM



Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 05:00 PM - 06:00 PM



Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Turning Movement Count (3 . WATERDOWN ROAD & SOUTH SERVICE ROAD/HIGHWAY 403 EB OFF-RAMP) MioID: 269721

Start Time	N Approach WATERDOWN ROAD						E Approach SOUTH SERVICE ROAD						S Approach WATERDOWN ROAD						W Approach HIGHWAY 403 EB OFF-RAMP						Int. Total (15 min)	Int. Total (1 hr)
	Right N: W	Thru N: S	Left N: E	U-Turn N: N	Peds N:	Approach Total	Right E: N	Thru E: W	Left E: S	U-Turn E: E	Peds E:	Approach Total	Right S: E	Thru S: N	Left S: W	U-Turn S: S	Peds S:	Approach Total	Right W: S	Thru W: E	Left W: N	U-Turn W: W	Peds W:	Approach Total		
07:30:00	0	64	89	0	0	153	15	0	3	0	0	18	75	74	0	0	0	149	54	51	42	0	0	147	467	
07:45:00	0	79	95	0	0	174	7	0	4	0	0	11	110	96	0	0	0	206	41	34	45	0	1	120	511	
08:00:00	0	99	94	0	0	193	11	0	4	0	0	15	88	118	0	0	0	206	48	18	37	0	0	103	517	
08:15:00	0	97	96	0	0	193	12	0	3	0	0	15	72	105	0	0	0	177	38	19	70	0	0	127	512	2007
08:30:00	0	88	81	0	0	169	4	0	3	0	0	7	70	91	0	0	0	161	48	10	61	0	0	119	456	1996
08:45:00	0	105	74	0	0	179	7	0	2	0	0	9	75	88	0	0	0	163	60	18	60	0	0	138	489	1974
09:00:00	0	67	42	0	0	109	7	0	6	0	0	13	65	77	0	0	0	142	58	10	54	0	0	122	386	1843
09:15:00	0	81	55	1	0	137	7	0	5	0	0	12	69	69	0	0	0	138	57	13	39	0	0	109	396	1727
BREAK																										
11:00:00	0	54	42	0	0	96	3	0	6	0	0	9	39	68	0	0	0	107	32	2	22	0	0	56	268	
11:15:00	0	78	38	1	0	117	9	0	5	0	0	14	50	59	0	0	0	109	40	6	23	0	1	69	309	
11:30:00	0	73	48	0	0	121	3	0	3	0	0	6	52	75	0	0	0	127	43	0	29	0	0	72	326	
11:45:00	0	87	50	0	0	137	13	0	4	0	0	17	39	73	0	0	0	112	43	6	19	0	0	68	334	1237
12:00:00	0	80	53	0	0	133	8	0	4	0	0	12	51	86	0	0	0	137	37	8	14	0	1	59	341	1310
12:15:00	0	79	37	0	0	116	8	0	7	0	0	15	53	75	0	0	0	128	38	11	21	0	1	70	329	1330
12:30:00	0	75	42	0	0	117	1	0	3	0	0	4	59	79	0	0	0	138	38	3	18	0	0	59	318	1322
12:45:00	0	69	44	0	0	113	12	0	6	0	0	18	44	63	0	0	0	107	46	12	31	0	0	89	327	1315
13:00:00	0	83	54	0	0	137	8	0	1	0	0	9	51	88	0	0	0	139	26	4	16	0	0	46	331	1305
13:15:00	0	84	47	0	0	131	16	0	3	0	0	19	44	77	0	0	0	121	32	9	30	0	0	71	342	1318
13:30:00	0	84	33	0	0	117	7	0	3	0	0	10	55	93	0	0	0	148	34	10	16	0	2	60	335	1335
13:45:00	0	87	41	0	0	128	19	0	6	0	0	25	39	82	0	0	0	121	31	3	13	0	0	47	321	1329
BREAK																										
15:00:00	0	107	57	0	0	164	11	0	2	0	0	13	43	95	0	0	0	138	45	9	27	0	0	81	396	
15:15:00	0	107	45	0	0	152	25	0	7	0	0	32	66	94	0	0	0	160	41	8	39	0	0	88	432	
15:30:00	0	108	67	0	0	175	14	0	5	0	0	19	54	82	0	0	0	136	41	7	41	0	1	89	419	
15:45:00	0	106	53	0	0	159	29	0	5	0	0	34	54	96	0	0	0	150	55	8	33	0	0	96	439	1686
16:00:00	0	88	69	0	0	157	15	0	5	0	0	20	57	103	0	0	0	160	42	3	21	0	0	66	403	1693
16:15:00	0	73	60	0	0	133	37	0	6	0	0	43	50	108	0	0	1	158	39	13	28	0	1	80	414	1675
16:30:00	0	106	69	0	0	175	11	0	7	0	0	18	65	98	0	0	0	163	41	5	31	0	0	77	433	1689
16:45:00	0	85	59	0	0	144	48	0	4	0	0	52	50	117	0	0	1	167	49	6	41	0	0	96	459	1709
17:00:00	0	96	79	0	0	175	21	0	7	0	0	28	57	118	0	0	0	175	33	9	31	0	0	73	451	1757

Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

17:15:00	0	93	60	0	0	153	83	0	4	0	0	87	44	123	0	0	0	167	49	8	24	0	0	81	488	1831
17:30:00	0	107	54	0	0	161	114	0	20	0	0	134	47	147	0	0	0	194	42	5	42	0	0	89	578	1976
17:45:00	0	102	42	0	0	144	81	0	16	0	0	97	50	143	0	0	0	193	42	15	17	0	0	74	508	2025
Grand Total	0	2791	1869	2	0	4662	666	0	169	0	0	835	1837	2960	0	0	2	4797	1363	343	1035	0	8	2741	**13035**	-
Approach%	0%	59.9%	40.1%	0%		-	79.8%	0%	20.2%	0%		-	38.3%	61.7%	0%	0%		-	49.7%	12.5%	37.8%	0%		-	-	-
Totals %	0%	21.4%	14.3%	0%		35.8%	5.1%	0%	1.3%	0%		6.4%	14.1%	22.7%	0%	0%		36.8%	10.5%	2.6%	7.9%	0%		21%	-	-
Heavy	0	179	94	0		-	71	0	43	0		-	178	178	0	0		-	108	34	42	0		-	-	-
Heavy %	0%	6.4%	5%	0%		-	10.7%	0%	25.4%	0%		-	9.7%	6%	0%	0%		-	7.9%	9.9%	4.1%	0%		-	-	-

Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 07:30 AM - 08:30 AM

Start Time	N Approach WATERDOWN ROAD						E Approach SOUTH SERVICE ROAD						S Approach WATERDOWN ROAD						W Approach HIGHWAY 403 EB OFF-RAMP						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
07:30:00	0	64	89	0	0	153	15	0	3	0	0	18	75	74	0	0	0	149	54	51	42	0	0	147	467
07:45:00	0	79	95	0	0	174	7	0	4	0	0	11	110	96	0	0	0	206	41	34	45	0	1	120	511
08:00:00	0	99	94	0	0	193	11	0	4	0	0	15	88	118	0	0	0	206	48	18	37	0	0	103	517
08:15:00	0	97	96	0	0	193	12	0	3	0	0	15	72	105	0	0	0	177	38	19	70	0	0	127	512
Grand Total	0	339	374	0	0	713	45	0	14	0	0	59	345	393	0	0	0	738	181	122	194	0	1	497	**2007**
Approach%	0%	47.5%	52.5%	0%		-	76.3%	0%	23.7%	0%		-	46.7%	53.3%	0%	0%		-	36.4%	24.5%	39%	0%		-	-
Totals %	0%	16.9%	18.6%	0%		35.5%	2.2%	0%	0.7%	0%		2.9%	17.2%	19.6%	0%	0%		36.8%	9%	6.1%	9.7%	0%		24.8%	-
PHF	0	0.86	0.97	0		0.92	0.75	0	0.88	0		0.82	0.78	0.83	0	0		0.9	0.84	0.6	0.69	0		0.85	-
Heavy	0	28	17	0		45	12	0	6	0		18	27	26	0	0		53	11	4	1	0		16	-
Heavy %	0%	8.3%	4.5%	0%		6.3%	26.7%	0%	42.9%	0%		30.5%	7.8%	6.6%	0%	0%		7.2%	6.1%	3.3%	0.5%	0%		3.2%	-
Lights	0	311	357	0		668	33	0	8	0		41	318	367	0	0		685	170	118	193	0		481	-
Lights %	0%	91.7%	95.5%	0%		93.7%	73.3%	0%	57.1%	0%		69.5%	92.2%	93.4%	0%	0%		92.8%	93.9%	96.7%	99.5%	0%		96.8%	-
Single-Unit Trucks	0	16	6	0		22	0	0	0	0		0	17	11	0	0		28	7	0	1	0		8	-
Single-Unit Trucks %	0%	4.7%	1.6%	0%		3.1%	0%	0%	0%	0%		0%	4.9%	2.8%	0%	0%		3.8%	3.9%	0%	0.5%	0%		1.6%	-
Buses	0	10	9	0		19	12	0	6	0		18	6	12	0	0		18	0	4	0	0		4	-
Buses %	0%	2.9%	2.4%	0%		2.7%	26.7%	0%	42.9%	0%		30.5%	1.7%	3.1%	0%	0%		2.4%	0%	3.3%	0%	0%		0.8%	-
Articulated Trucks	0	2	2	0		4	0	0	0	0		0	4	3	0	0		7	4	0	0	0		4	-
Articulated Trucks %	0%	0.6%	0.5%	0%		0.6%	0%	0%	0%	0%		0%	1.2%	0.8%	0%	0%		0.9%	2.2%	0%	0%	0%		0.8%	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	100%		-

Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 12:45 PM - 01:45 PM

Start Time	N Approach WATERDOWN ROAD						E Approach SOUTH SERVICE ROAD						S Approach WATERDOWN ROAD						W Approach HIGHWAY 403 EB OFF-RAMP						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
12:45:00	0	69	44	0	0	113	12	0	6	0	0	18	44	63	0	0	0	107	46	12	31	0	0	89	327
13:00:00	0	83	54	0	0	137	8	0	1	0	0	9	51	88	0	0	0	139	26	4	16	0	0	46	331
13:15:00	0	84	47	0	0	131	16	0	3	0	0	19	44	77	0	0	0	121	32	9	30	0	0	71	342
13:30:00	0	84	33	0	0	117	7	0	3	0	0	10	55	93	0	0	0	148	34	10	16	0	2	60	335
Grand Total	0	320	178	0	0	498	43	0	13	0	0	56	194	321	0	0	0	515	138	35	93	0	2	266	**1335**
Approach%	0%	64.3%	35.7%	0%		-	76.8%	0%	23.2%	0%		-	37.7%	62.3%	0%	0%		-	51.9%	13.2%	35%	0%		-	-
Totals %	0%	24%	13.3%	0%		37.3%	3.2%	0%	1%	0%		4.2%	14.5%	24%	0%	0%		38.6%	10.3%	2.6%	7%	0%		19.9%	-
PHF	0	0.95	0.82	0		0.91	0.67	0	0.54	0		0.74	0.88	0.86	0	0		0.87	0.75	0.73	0.75	0		0.75	-
Heavy	0	16	12	0		28	8	0	4	0		12	19	25	0	0		44	18	4	6	0		28	-
Heavy %	0%	5%	6.7%	0%		5.6%	18.6%	0%	30.8%	0%		21.4%	9.8%	7.8%	0%	0%		8.5%	13%	11.4%	6.5%	0%		10.5%	-
Lights	0	304	166	0		470	35	0	9	0		44	175	296	0	0		471	120	31	87	0		238	-
Lights %	0%	95%	93.3%	0%		94.4%	81.4%	0%	69.2%	0%		78.6%	90.2%	92.2%	0%	0%		91.5%	87%	88.6%	93.5%	0%		89.5%	-
Single-Unit Trucks	0	13	6	0		19	0	0	0	0		0	8	13	0	0		21	10	0	3	0		13	-
Single-Unit Trucks %	0%	4.1%	3.4%	0%		3.8%	0%	0%	0%	0%		0%	4.1%	4%	0%	0%		4.1%	7.2%	0%	3.2%	0%		4.9%	-
Buses	0	2	6	0		8	8	0	4	0		12	8	2	0	0		10	0	4	0	0		4	-
Buses %	0%	0.6%	3.4%	0%		1.6%	18.6%	0%	30.8%	0%		21.4%	4.1%	0.6%	0%	0%		1.9%	0%	11.4%	0%	0%		1.5%	-
Articulated Trucks	0	1	0	0		1	0	0	0	0		0	3	10	0	0		13	8	0	3	0		11	-
Articulated Trucks %	0%	0.3%	0%	0%		0.2%	0%	0%	0%	0%		0%	1.5%	3.1%	0%	0%		2.5%	5.8%	0%	3.2%	0%		4.1%	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	2	-	-
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	100%		-

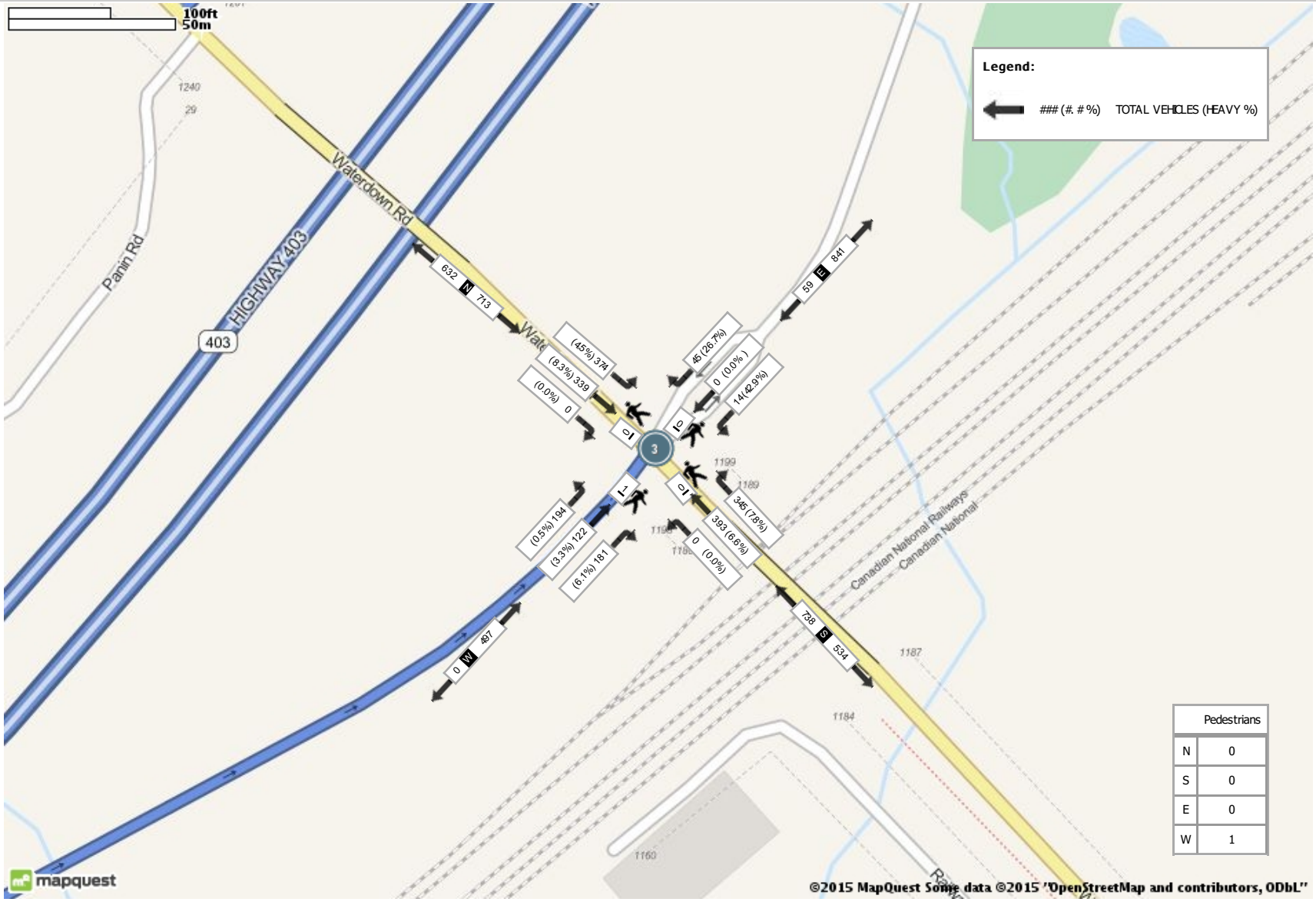
Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 05:00 PM - 06:00 PM

Start Time	N Approach WATERDOWN ROAD						E Approach SOUTH SERVICE ROAD						S Approach WATERDOWN ROAD						W Approach HIGHWAY 403 EB OFF-RAMP						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
17:00:00	0	96	79	0	0	175	21	0	7	0	0	28	57	118	0	0	0	175	33	9	31	0	0	73	451
17:15:00	0	93	60	0	0	153	83	0	4	0	0	87	44	123	0	0	0	167	49	8	24	0	0	81	488
17:30:00	0	107	54	0	0	161	114	0	20	0	0	134	47	147	0	0	0	194	42	5	42	0	0	89	578
17:45:00	0	102	42	0	0	144	81	0	16	0	0	97	50	143	0	0	0	193	42	15	17	0	0	74	508
Grand Total	0	398	235	0	0	633	299	0	47	0	0	346	198	531	0	0	0	729	166	37	114	0	0	317	**2025**
Approach%	0%	62.9%	37.1%	0%		-	86.4%	0%	13.6%	0%		-	27.2%	72.8%	0%	0%		-	52.4%	11.7%	36%	0%		-	-
Totals %	0%	19.7%	11.6%	0%		31.3%	14.8%	0%	2.3%	0%		17.1%	9.8%	26.2%	0%	0%		36%	8.2%	1.8%	5.6%	0%		15.7%	-
PHF	0	0.93	0.74	0		0.9	0.66	0	0.59	0		0.65	0.87	0.9	0	0		0.94	0.85	0.62	0.68	0		0.89	-
Heavy	0	8	6	0		14	7	0	6	0		13	14	13	0	0		27	3	4	4	0		11	-
Heavy %	0%	2%	2.6%	0%		2.2%	2.3%	0%	12.8%	0%		3.8%	7.1%	2.4%	0%	0%		3.7%	1.8%	10.8%	3.5%	0%		3.5%	-
Lights	0	390	229	0		619	292	0	41	0		333	184	518	0	0		702	163	33	110	0		306	-
Lights %	0%	98%	97.4%	0%		97.8%	97.7%	0%	87.2%	0%		96.2%	92.9%	97.6%	0%	0%		96.3%	98.2%	89.2%	96.5%	0%		96.5%	-
Single-Unit Trucks	0	8	0	0		8	1	0	0	0		1	5	9	0	0		14	2	0	3	0		5	-
Single-Unit Trucks %	0%	2%	0%	0%		1.3%	0.3%	0%	0%	0%		0.3%	2.5%	1.7%	0%	0%		1.9%	1.2%	0%	2.6%	0%		1.6%	-
Buses	0	0	6	0		6	6	0	6	0		12	7	0	0	0		7	0	4	0	0		4	-
Buses %	0%	0%	2.6%	0%		0.9%	2%	0%	12.8%	0%		3.5%	3.5%	0%	0%	0%		1%	0%	10.8%	0%	0%		1.3%	-
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	2	4	0	0		6	1	0	1	0		2	-
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	1%	0.8%	0%	0%		0.8%	0.6%	0%	0.9%	0%		0.6%	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-

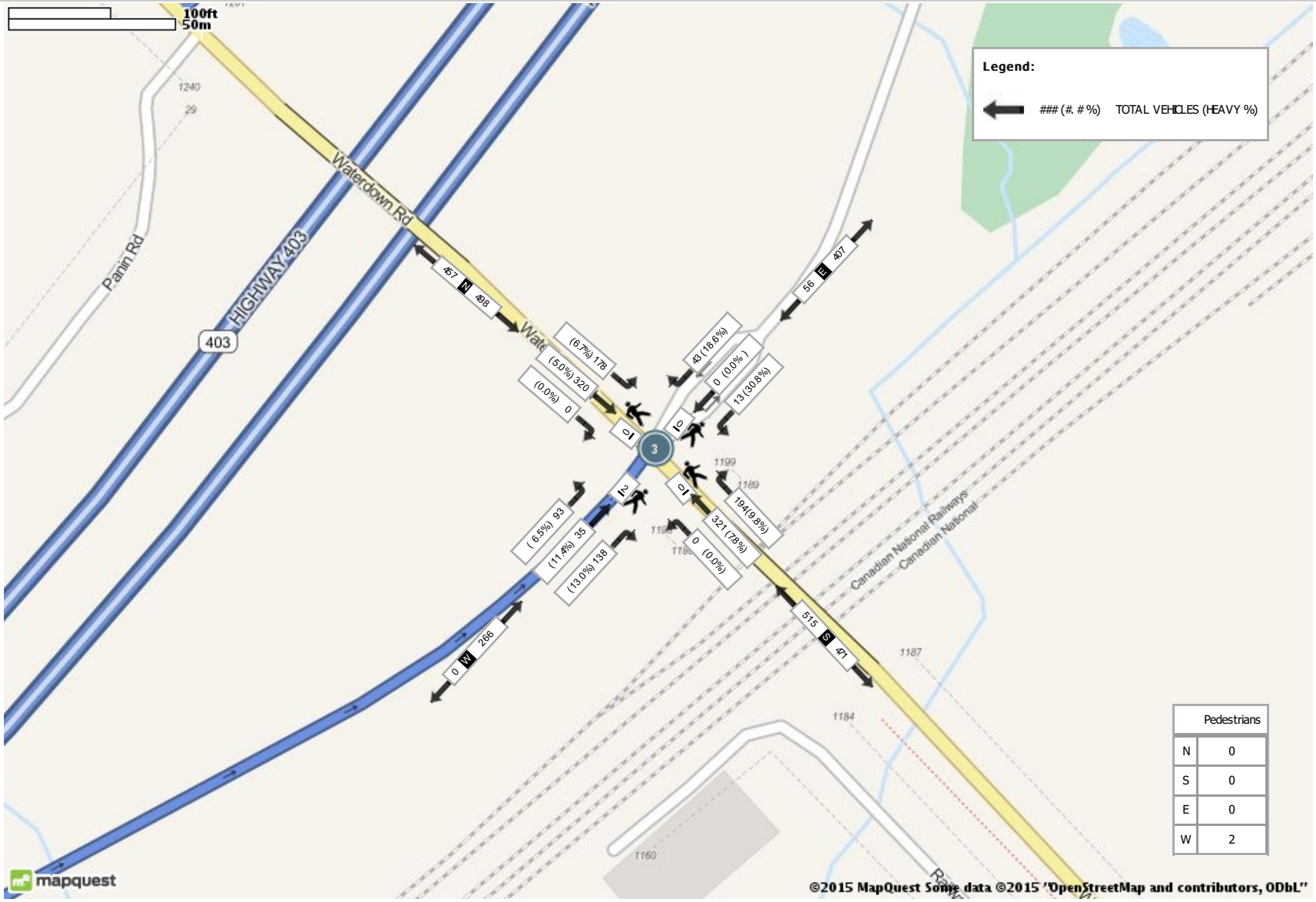
Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 07:30 AM - 08:30 AM



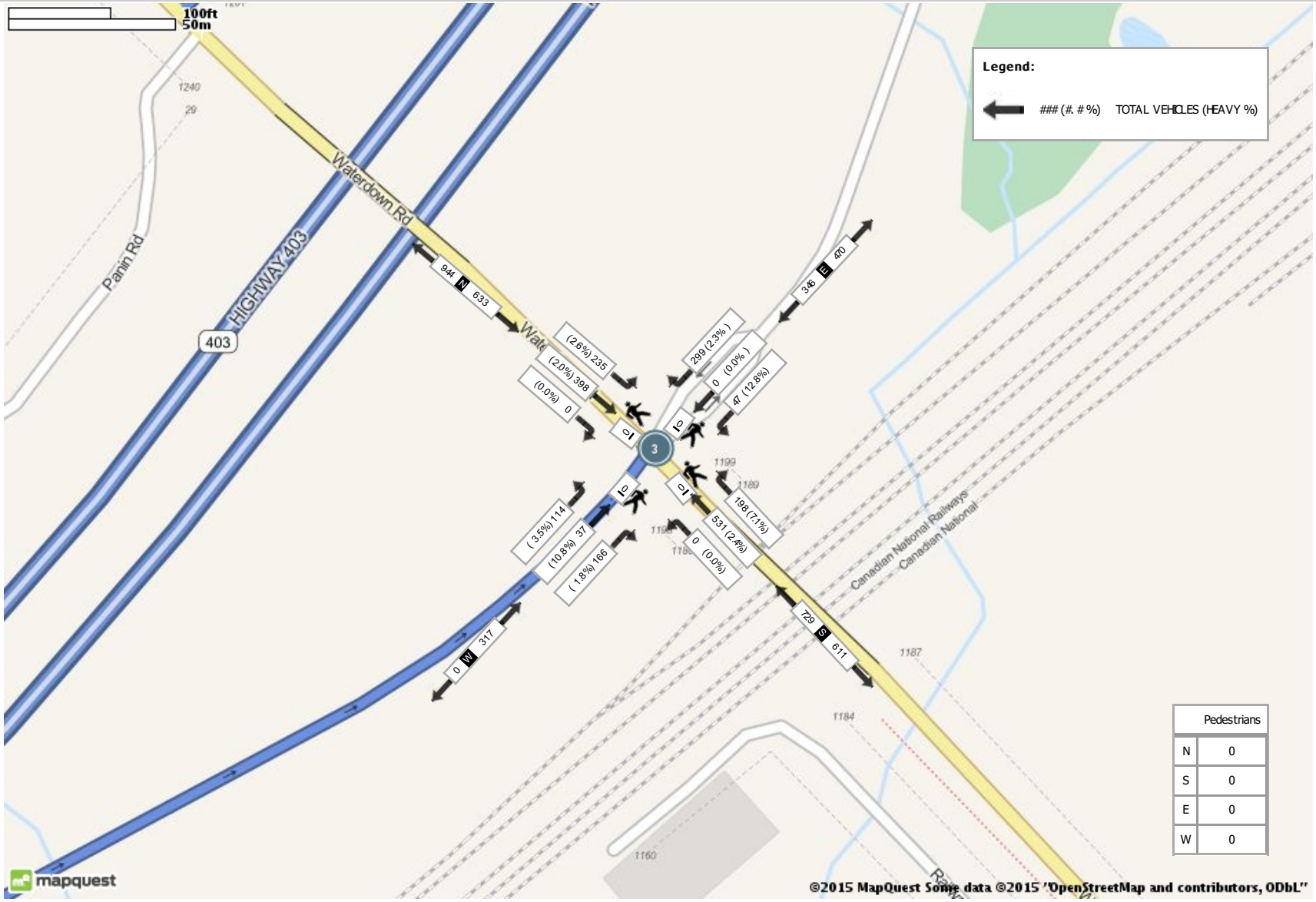
Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 12:45 PM - 01:45 PM



Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 05:00 PM - 06:00 PM



Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Turning Movement Count (4 . SOUTH SERVICE ROAD & HIGHWAY 403 EB ON-RAMP) MioID: 269724

Start Time	N Approach HIGHWAY 403 EB ON-RAMP					S Approach PRIVATE DRIVEWAY					W Approach SOUTH SERVICE ROAD					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	U-Turn N:N	Peds N:	Approach Total	Thru S:N	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Left W:N	U-Turn W:W	Peds W:	Approach Total		
07:30:00	0	0	0	0	0	3	1	0	0	4	47	145	0	0	192	196	
07:45:00	0	0	0	0	0	4	1	0	0	5	33	181	0	0	214	219	
08:00:00	0	0	0	0	0	1	2	0	0	3	12	170	0	0	182	185	
08:15:00	0	0	0	0	0	5	2	0	0	7	17	153	0	0	170	177	777
08:30:00	0	0	0	0	0	3	1	0	0	4	8	140	0	0	148	152	733
08:45:00	0	0	0	0	0	2	0	0	1	2	11	147	0	0	158	160	674
09:00:00	0	0	0	0	0	1	3	0	0	4	2	109	0	0	111	115	604
09:15:00	0	0	0	0	0	1	3	0	0	4	4	118	0	0	122	126	553
BREAK																	
11:00:00	0	0	0	0	0	1	1	0	0	2	1	85	0	0	86	88	
11:15:00	0	0	0	0	0	1	2	0	0	3	0	73	0	0	73	76	
11:30:00	0	0	0	0	0	1	3	0	0	4	1	95	0	0	96	100	
11:45:00	0	0	0	0	0	1	3	0	0	4	2	86	0	0	88	92	356
12:00:00	0	0	0	0	0	5	2	0	0	7	1	96	0	0	97	104	372
12:15:00	0	0	0	0	0	3	6	0	0	9	0	84	0	0	84	93	389
12:30:00	0	0	0	0	0	3	0	0	0	3	1	95	0	0	96	99	388
12:45:00	0	0	0	0	0	7	6	0	0	13	4	82	0	0	86	99	395
13:00:00	0	0	0	0	0	2	3	0	0	5	1	99	0	0	100	105	396
13:15:00	0	0	0	0	0	2	5	0	0	7	3	83	0	0	86	93	396
13:30:00	0	0	0	0	0	2	2	0	0	4	1	82	0	0	83	87	384
13:45:00	0	0	0	0	0	2	8	0	0	10	0	78	0	0	78	88	373
BREAK																	
15:00:00	0	0	0	0	0	6	3	0	0	9	1	85	0	0	86	95	
15:15:00	0	0	0	0	0	3	17	0	0	20	1	102	0	1	103	123	
15:30:00	0	0	0	0	0	4	9	0	0	13	1	119	0	0	120	133	

15:45:00	0	0	0	0	0	1	11	0	0	12	1	97	0	0	98	110	461
16:00:00	0	0	0	0	0	0	4	0	0	4	0	111	0	0	111	115	481
16:15:00	0	0	0	0	0	6	25	0	0	31	3	105	0	0	108	139	497
16:30:00	0	0	0	0	0	3	7	0	0	10	3	120	0	0	123	133	497
16:45:00	0	0	0	0	0	3	19	0	0	22	4	103	0	0	107	129	516
17:00:00	0	0	0	0	0	3	19	0	0	22	5	113	0	0	118	140	541
17:15:00	0	0	0	0	0	13	45	0	0	58	1	99	0	0	100	158	560
17:30:00	0	0	0	0	0	5	81	0	0	86	2	93	0	0	95	181	608
17:45:00	0	0	0	0	0	11	69	0	0	80	1	80	0	0	81	161	640
Grand Total	0	0	0	0	0	108	363	0	1	471	172	3428	0	1	3600	**4071**	-
Approach %	0%	0%	0%		-	22.9%	77.1%	0%		-	4.8%	95.2%	0%		-	-	-
Totals %	0%	0%	0%		0%	2.7%	8.9%	0%		11.6%	4.2%	84.2%	0%		88.4%	-	-
Heavy	0	0	0		-	0	0	0		-	0	178	0		-	-	-
Heavy %	0%	0%	0%		-	0%	0%	0%		-	0%	5.2%	0%		-	-	-

Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 07:30 AM - 08:30 AM

Start Time	N Approach HIGHWAY 403 EB ON-RAMP					S Approach PRIVATE DRIVEWAY					W Approach SOUTH SERVICE ROAD					Int. Total (15 min)
	Right	Thru	U-Turn	Peds	Approach Total	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	
07:30:00	0	0	0	0	0	3	1	0	0	4	47	145	0	0	192	196
07:45:00	0	0	0	0	0	4	1	0	0	5	33	181	0	0	214	219
08:00:00	0	0	0	0	0	1	2	0	0	3	12	170	0	0	182	185
08:15:00	0	0	0	0	0	5	2	0	0	7	17	153	0	0	170	177
Grand Total	0	0	0	0	0	13	6	0	0	19	109	649	0	0	758	**777**
Approach%	0%	0%	0%		-	68.4%	31.6%	0%		-	14.4%	85.6%	0%		-	-
Totals %	0%	0%	0%		0%	1.7%	0.8%	0%		2.4%	14%	83.5%	0%		97.6%	-
PHF	0	0	0		0	0.65	0.75	0		0.68	0.58	0.9	0		0.89	-
Heavy	0	0	0		0	0	0	0		0	0	29	0		29	-
Heavy %	0%	0%	0%		0%	0%	0%	0%		0%	0%	4.5%	0%		3.8%	-
Lights	0	0	0		0	13	6	0		19	109	620	0		729	-
Lights %	0%	0%	0%		0%	100%	100%	0%		100%	100%	95.5%	0%		96.2%	-
Single-Unit Trucks	0	0	0		0	0	0	0		0	0	23	0		23	-
Single-Unit Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0%	3.5%	0%		3%	-
Buses	0	0	0		0	0	0	0		0	0	2	0		2	-
Buses %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0.3%	0%		0.3%	-
Articulated Trucks	0	0	0		0	0	0	0		0	0	4	0		4	-
Articulated Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0.6%	0%		0.5%	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-

Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 12:30 PM - 01:30 PM

Start Time	N Approach HIGHWAY 403 EB ON-RAMP					S Approach PRIVATE DRIVEWAY					W Approach SOUTH SERVICE ROAD					Int. Total (15 min)
	Right	Thru	U-Turn	Peds	Approach Total	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	
12:30:00	0	0	0	0	0	3	0	0	0	3	1	95	0	0	96	99
12:45:00	0	0	0	0	0	7	6	0	0	13	4	82	0	0	86	99
13:00:00	0	0	0	0	0	2	3	0	0	5	1	99	0	0	100	105
13:15:00	0	0	0	0	0	2	5	0	0	7	3	83	0	0	86	93
Grand Total	0	0	0	0	0	14	14	0	0	28	9	359	0	0	368	**396**
Approach%	0%	0%	0%		-	50%	50%	0%		-	2.4%	97.6%	0%		-	-
Totals %	0%	0%	0%		0%	3.5%	3.5%	0%		7.1%	2.3%	90.7%	0%		92.9%	-
PHF	0	0	0		0	0.5	0.58	0		0.54	0.56	0.91	0		0.92	-
Heavy	0	0	0		0	0	0	0		0	0	21	0		21	-
Heavy %	0%	0%	0%		0%	0%	0%	0%		0%	0%	5.8%	0%		5.7%	-
Lights	0	0	0		0	14	14	0		28	9	338	0		347	-
Lights %	0%	0%	0%		0%	100%	100%	0%		100%	100%	94.2%	0%		94.3%	-
Single-Unit Trucks	0	0	0		0	0	0	0		0	0	14	0		14	-
Single-Unit Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0%	3.9%	0%		3.8%	-
Buses	0	0	0		0	0	0	0		0	0	2	0		2	-
Buses %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0.6%	0%		0.5%	-
Articulated Trucks	0	0	0		0	0	0	0		0	0	5	0		5	-
Articulated Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0%	1.4%	0%		1.4%	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-

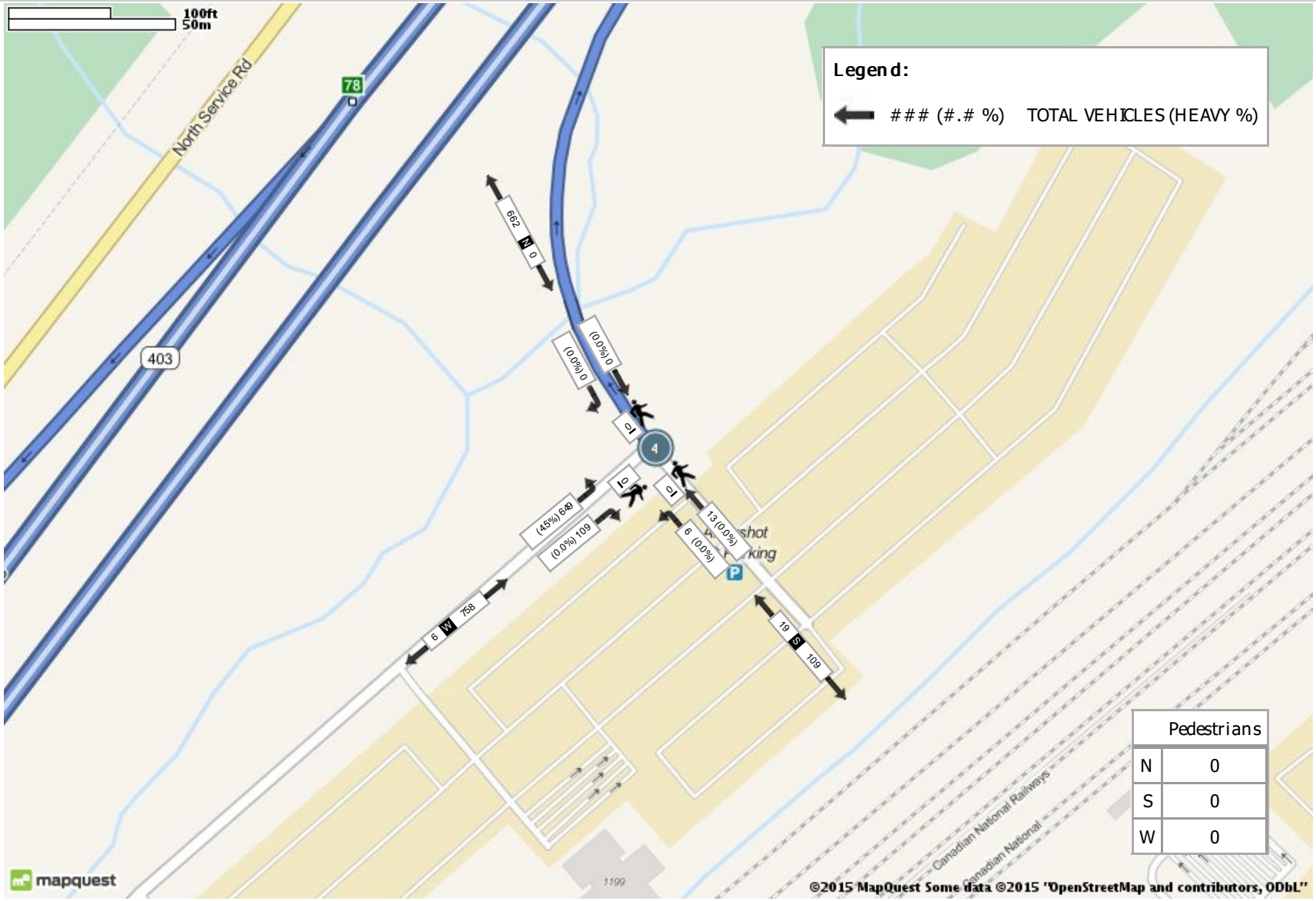
Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 05:00 PM - 06:00 PM

Start Time	N Approach HIGHWAY 403 EB ON-RAMP					S Approach PRIVATE DRIVEWAY					W Approach SOUTH SERVICE ROAD					Int. Total (15 min)
	Right	Thru	U-Turn	Peds	Approach Total	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	
17:00:00	0	0	0	0	0	3	19	0	0	22	5	113	0	0	118	140
17:15:00	0	0	0	0	0	13	45	0	0	58	1	99	0	0	100	158
17:30:00	0	0	0	0	0	5	81	0	0	86	2	93	0	0	95	181
17:45:00	0	0	0	0	0	11	69	0	0	80	1	80	0	0	81	161
Grand Total	0	0	0	0	0	32	214	0	0	246	9	385	0	0	394	**640**
Approach%	0%	0%	0%		-	13%	87%	0%		-	2.3%	97.7%	0%		-	-
Totals %	0%	0%	0%		0%	5%	33.4%	0%		38.4%	1.4%	60.2%	0%		61.6%	-
PHF	0	0	0		0	0.62	0.66	0		0.72	0.45	0.85	0		0.83	-
Heavy	0	0	0		0	0	0	0		0	0	7	0		7	-
Heavy %	0%	0%	0%		0%	0%	0%	0%		0%	0%	1.8%	0%		1.8%	-
Lights	0	0	0		0	32	214	0		246	9	378	0		387	-
Lights %	0%	0%	0%		0%	100%	100%	0%		100%	100%	98.2%	0%		98.2%	-
Single-Unit Trucks	0	0	0		0	0	0	0		0	0	4	0		4	-
Single-Unit Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0%	1%	0%		1%	-
Buses	0	0	0		0	0	0	0		0	0	2	0		2	-
Buses %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0.5%	0%		0.5%	-
Articulated Trucks	0	0	0		0	0	0	0		0	0	1	0		1	-
Articulated Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0.3%	0%		0.3%	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-

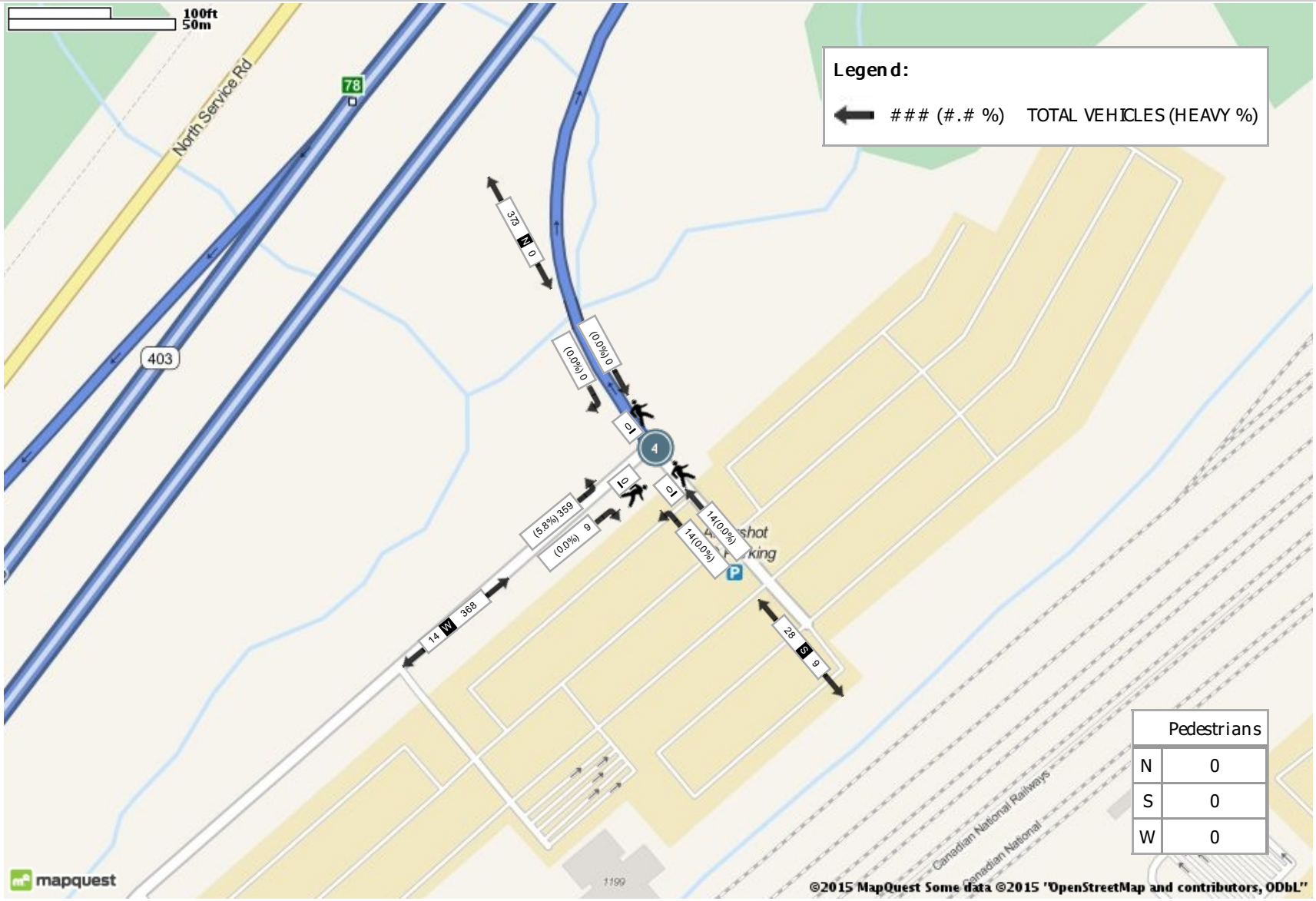
Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 07:30 AM - 08:30 AM



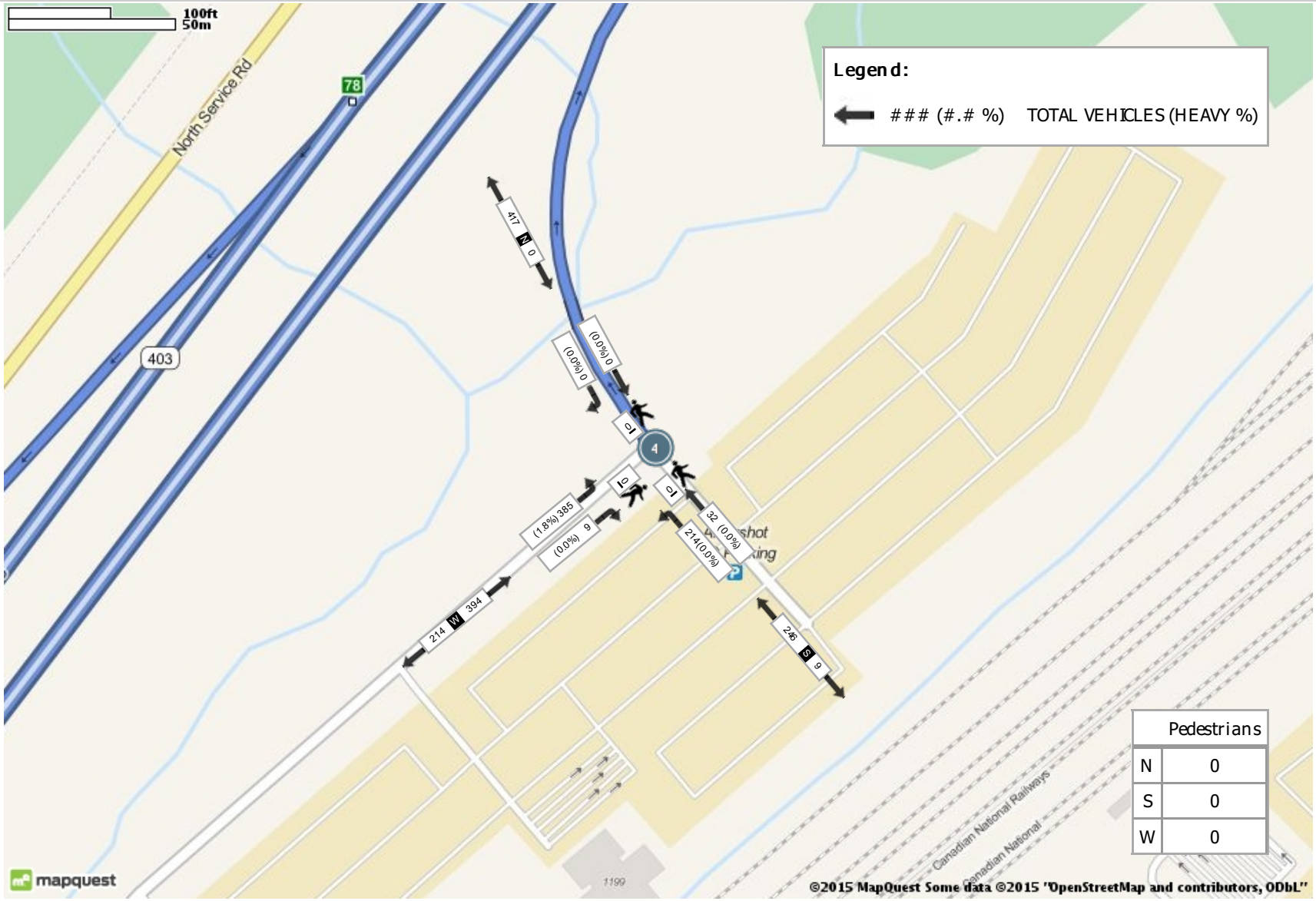
Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 12:30 PM - 01:30 PM



Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 05:00 PM - 06:00 PM



	Pedestrians
N	0
S	0
W	0

Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Turning Movement Count (5 . PLAINS ROAD EAST & WATERDOWN ROAD) MioID: 269740

Start Time	N Approach WATERDOWN ROAD						E Approach PLAINS ROAD EAST						S Approach WATERDOWN ROAD						W Approach PLAINS ROAD WEST						Int. Total (15 min)	Int. Total (1 hr)
	Right N: W	Thru N: S	Left N: E	U-Turn N: N	Peds N:	Approach Total	Right E: N	Thru E: W	Left E: S	U-Turn E: E	Peds E:	Approach Total	Right S: E	Thru S: N	Left S: W	U-Turn S: S	Peds S:	Approach Total	Right W: S	Thru W: E	Left W: N	U-Turn W: W	Peds W:	Approach Total		
07:30:00	22	29	31	0	0	82	30	73	11	0	0	114	16	46	11	0	1	73	20	164	98	0	2	282	551	
07:45:00	26	23	29	0	1	78	40	67	28	0	2	135	18	43	13	0	0	74	28	160	100	0	0	288	575	
08:00:00	32	42	34	1	0	109	42	75	17	0	5	134	25	60	15	0	0	100	31	138	81	0	2	250	593	
08:15:00	43	28	40	0	1	111	38	86	10	0	0	134	11	45	21	0	0	77	18	143	76	0	0	237	559	2278
08:30:00	36	31	37	0	1	104	28	91	8	0	2	127	8	38	13	0	0	59	30	135	72	0	0	237	527	2254
08:45:00	32	26	57	0	0	115	32	82	17	0	0	131	6	28	19	0	1	53	27	138	79	0	1	244	543	2222
09:00:00	39	25	44	0	4	108	33	81	11	0	3	125	4	43	21	0	1	68	33	123	52	0	1	208	509	2138
09:15:00	44	20	54	0	0	118	29	98	14	0	0	141	16	26	13	0	2	55	9	114	67	0	1	190	504	2083
BREAK																										
11:00:00	33	20	35	0	7	88	25	108	13	0	3	146	8	20	20	0	3	48	10	95	33	0	5	138	420	
11:15:00	53	25	41	0	1	119	26	96	16	0	2	138	20	29	16	0	8	65	6	97	48	0	9	151	473	
11:30:00	37	34	45	0	3	116	40	94	28	0	2	162	22	24	8	0	4	54	19	120	49	0	8	188	520	
11:45:00	40	31	53	0	3	124	35	125	22	0	2	182	19	36	10	0	1	65	16	129	40	0	2	185	556	1969
12:00:00	58	19	40	0	1	117	38	113	23	0	2	174	21	35	12	0	0	68	12	112	42	0	1	166	525	2074
12:15:00	37	22	38	0	2	97	28	112	14	0	3	154	16	30	10	0	3	56	15	120	46	0	0	181	488	2089
12:30:00	38	18	53	0	2	109	40	97	13	0	3	150	18	33	15	0	2	66	13	103	46	0	2	162	487	2056
12:45:00	42	29	34	0	3	105	37	117	22	0	3	176	18	16	13	0	1	47	10	111	32	0	1	153	481	1981
13:00:00	47	26	34	0	1	107	40	133	20	0	0	193	10	29	12	0	1	51	11	103	57	0	0	171	522	1978
13:15:00	44	25	38	0	2	107	30	119	14	0	2	163	16	32	11	0	1	59	15	88	48	0	0	151	480	1970
13:30:00	64	19	36	0	2	119	36	99	14	0	1	149	18	44	14	0	0	76	8	120	52	0	2	180	524	2007
13:45:00	48	25	41	0	2	114	32	109	12	0	3	153	20	26	16	0	4	62	11	99	41	0	6	151	480	2006
BREAK																										
15:00:00	50	26	44	0	5	120	36	133	17	0	0	186	13	30	11	0	0	54	16	111	45	0	0	172	532	
15:15:00	61	34	37	0	1	132	51	160	23	0	0	234	14	36	14	0	2	64	15	116	53	0	1	184	614	
15:30:00	53	35	46	0	2	134	33	158	16	0	1	207	7	33	19	0	2	59	16	107	45	0	0	168	568	
15:45:00	80	34	47	0	1	161	44	174	15	0	0	233	9	38	26	0	1	73	16	100	43	0	6	159	626	2340
16:00:00	47	35	45	0	4	127	52	168	22	1	0	243	13	44	23	0	1	80	14	106	41	0	2	161	611	2419
16:15:00	46	30	31	0	2	107	39	205	23	0	0	267	9	31	20	0	1	60	17	108	49	0	2	174	608	2413
16:30:00	65	32	44	0	2	141	42	207	21	0	0	270	12	38	17	0	1	67	18	135	53	0	1	206	684	2529
16:45:00	57	30	46	0	2	133	40	239	26	0	0	305	11	36	22	0	1	69	8	103	38	0	2	149	656	2559
17:00:00	54	34	44	0	4	132	45	218	13	0	1	276	10	36	24	0	0	70	13	117	53	0	1	183	661	2609

Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

17:15:00	74	27	45	0	1	146	43	228	21	0	0	292	15	33	31	0	1	79	10	116	38	0	2	164	681	2682
17:30:00	91	28	50	0	3	169	38	233	17	0	2	288	12	34	26	0	0	72	20	115	54	0	2	189	718	2716
17:45:00	66	35	55	0	2	156	45	193	16	0	1	254	13	42	18	0	0	73	17	101	43	0	0	161	644	2704
Grand Total	1559	897	1348	1	65	3805	1187	4291	557	1	43	6036	448	1114	534	0	43	2096	522	3747	1714	0	62	5983	**17920**	-
Approach%	41%	23.6%	35.4%	0%		-	19.7%	71.1%	9.2%	0%		-	21.4%	53.1%	25.5%	0%		-	8.7%	62.6%	28.6%	0%		-	-	-
Totals %	8.7%	5%	7.5%	0%		21.2%	6.6%	23.9%	3.1%	0%		33.7%	2.5%	6.2%	3%	0%		11.7%	2.9%	20.9%	9.6%	0%		33.4%	-	-
Heavy	139	45	60	0		-	76	133	20	0		-	12	53	15	0		-	14	124	148	0		-	-	-
Heavy %	8.9%	5%	4.5%	0%		-	6.4%	3.1%	3.6%	0%		-	2.7%	4.8%	2.8%	0%		-	2.7%	3.3%	8.6%	0%		-	-	-

Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 07:30 AM - 08:30 AM

Start Time	N Approach WATERDOWN ROAD						E Approach PLAINS ROAD EAST						S Approach WATERDOWN ROAD						W Approach PLAINS ROAD WEST						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
07:30:00	22	29	31	0	0	82	30	73	11	0	0	114	16	46	11	0	1	73	20	164	98	0	2	282	551
07:45:00	26	23	29	0	1	78	40	67	28	0	2	135	18	43	13	0	0	74	28	160	100	0	0	288	575
08:00:00	32	42	34	1	0	109	42	75	17	0	5	134	25	60	15	0	0	100	31	138	81	0	2	250	593
08:15:00	43	28	40	0	1	111	38	86	10	0	0	134	11	45	21	0	0	77	18	143	76	0	0	237	559
Grand Total	123	122	134	1	2	380	150	301	66	0	7	517	70	194	60	0	1	324	97	605	355	0	4	1057	**2278**
Approach%	32.4%	32.1%	35.3%	0.3%		-	29%	58.2%	12.8%	0%		-	21.6%	59.9%	18.5%	0%		-	9.2%	57.2%	33.6%	0%		-	-
Totals %	5.4%	5.4%	5.9%	0%		16.7%	6.6%	13.2%	2.9%	0%		22.7%	3.1%	8.5%	2.6%	0%		14.2%	4.3%	26.6%	15.6%	0%		46.4%	-
PHF	0.72	0.73	0.84	0.25		0.86	0.89	0.88	0.59	0		0.96	0.7	0.81	0.71	0		0.81	0.78	0.92	0.89	0		0.92	-
Heavy	18	10	9	0		37	12	20	5	0		37	4	9	1	0		14	4	28	22	0		54	-
Heavy %	14.6%	8.2%	6.7%	0%		9.7%	8%	6.6%	7.6%	0%		7.2%	5.7%	4.6%	1.7%	0%		4.3%	4.1%	4.6%	6.2%	0%		5.1%	-
Lights	105	112	125	1		343	138	281	61	0		480	66	185	59	0		310	93	577	333	0		1003	-
Lights %	85.4%	91.8%	93.3%	100%		90.3%	92%	93.4%	92.4%	0%		92.8%	94.3%	95.4%	98.3%	0%		95.7%	95.9%	95.4%	93.8%	0%		94.9%	-
Single-Unit Trucks	9	6	2	0		17	7	12	1	0		20	1	4	1	0		6	2	16	13	0		31	-
Single-Unit Trucks %	7.3%	4.9%	1.5%	0%		4.5%	4.7%	4%	1.5%	0%		3.9%	1.4%	2.1%	1.7%	0%		1.9%	2.1%	2.6%	3.7%	0%		2.9%	-
Buses	6	4	6	0		16	4	8	4	0		16	3	5	0	0		8	2	8	8	0		18	-
Buses %	4.9%	3.3%	4.5%	0%		4.2%	2.7%	2.7%	6.1%	0%		3.1%	4.3%	2.6%	0%	0%		2.5%	2.1%	1.3%	2.3%	0%		1.7%	-
Articulated Trucks	3	0	1	0		4	1	0	0	0		1	0	0	0	0		0	0	4	1	0		5	-
Articulated Trucks %	2.4%	0%	0.7%	0%		1.1%	0.7%	0%	0%	0%		0.2%	0%	0%	0%	0%		0%	0%	0.7%	0.3%	0%		0.5%	-
Pedestrians	-	-	-	-	2	-	-	-	-	-	7	-	-	-	-	-	1	-	-	-	-	-	4	-	-
Pedestrians%	-	-	-	-	14.3%		-	-	-	-	50%		-	-	-	-	7.1%		-	-	-	-	28.6%		-

Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 11:30 AM - 12:30 PM

Start Time	N Approach WATERDOWN ROAD						E Approach PLAINS ROAD EAST						S Approach WATERDOWN ROAD						W Approach PLAINS ROAD WEST						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
11:30:00	37	34	45	0	3	116	40	94	28	0	2	162	22	24	8	0	4	54	19	120	49	0	8	188	520
11:45:00	40	31	53	0	3	124	35	125	22	0	2	182	19	36	10	0	1	65	16	129	40	0	2	185	556
12:00:00	58	19	40	0	1	117	38	113	23	0	2	174	21	35	12	0	0	68	12	112	42	0	1	166	525
12:15:00	37	22	38	0	2	97	28	112	14	0	3	154	16	30	10	0	3	56	15	120	46	0	0	181	488
Grand Total	172	106	176	0	9	454	141	444	87	0	9	672	78	125	40	0	8	243	62	481	177	0	11	720	**2089**
Approach%	37.9%	23.3%	38.8%	0%		-	21%	66.1%	12.9%	0%		-	32.1%	51.4%	16.5%	0%		-	8.6%	66.8%	24.6%	0%		-	-
Totals %	8.2%	5.1%	8.4%	0%		21.7%	6.7%	21.3%	4.2%	0%		32.2%	3.7%	6%	1.9%	0%		11.6%	3%	23%	8.5%	0%		34.5%	-
PHF	0.74	0.78	0.83	0		0.92	0.88	0.89	0.78	0		0.92	0.89	0.87	0.83	0		0.89	0.82	0.93	0.9	0		0.96	-
Heavy	24	5	9	0		38	6	19	1	0		26	2	7	2	0		11	1	16	24	0		41	-
Heavy %	14%	4.7%	5.1%	0%		8.4%	4.3%	4.3%	1.1%	0%		3.9%	2.6%	5.6%	5%	0%		4.5%	1.6%	3.3%	13.6%	0%		5.7%	-
Lights	148	101	167	0		416	135	425	86	0		646	76	118	38	0		232	61	465	153	0		679	-
Lights %	86%	95.3%	94.9%	0%		91.6%	95.7%	95.7%	98.9%	0%		96.1%	97.4%	94.4%	95%	0%		95.5%	98.4%	96.7%	86.4%	0%		94.3%	-
Single-Unit Trucks	14	4	5	0		23	3	14	1	0		18	2	4	2	0		8	1	13	14	0		28	-
Single-Unit Trucks %	8.1%	3.8%	2.8%	0%		5.1%	2.1%	3.2%	1.1%	0%		2.7%	2.6%	3.2%	5%	0%		3.3%	1.6%	2.7%	7.9%	0%		3.9%	-
Buses	2	0	3	0		5	2	4	0	0		6	0	1	0	0		1	0	1	3	0		4	-
Buses %	1.2%	0%	1.7%	0%		1.1%	1.4%	0.9%	0%	0%		0.9%	0%	0.8%	0%	0%		0.4%	0%	0.2%	1.7%	0%		0.6%	-
Articulated Trucks	8	1	1	0		10	1	1	0	0		2	0	2	0	0		2	0	2	7	0		9	-
Articulated Trucks %	4.7%	0.9%	0.6%	0%		2.2%	0.7%	0.2%	0%	0%		0.3%	0%	1.6%	0%	0%		0.8%	0%	0.4%	4%	0%		1.3%	-
Pedestrians	-	-	-	-	9	-	-	-	-	-	9	-	-	-	-	-	8	-	-	-	-	-	11	-	-
Pedestrians%	-	-	-	-	24.3%		-	-	-	-	24.3%		-	-	-	-	21.6%		-	-	-	-	29.7%		-

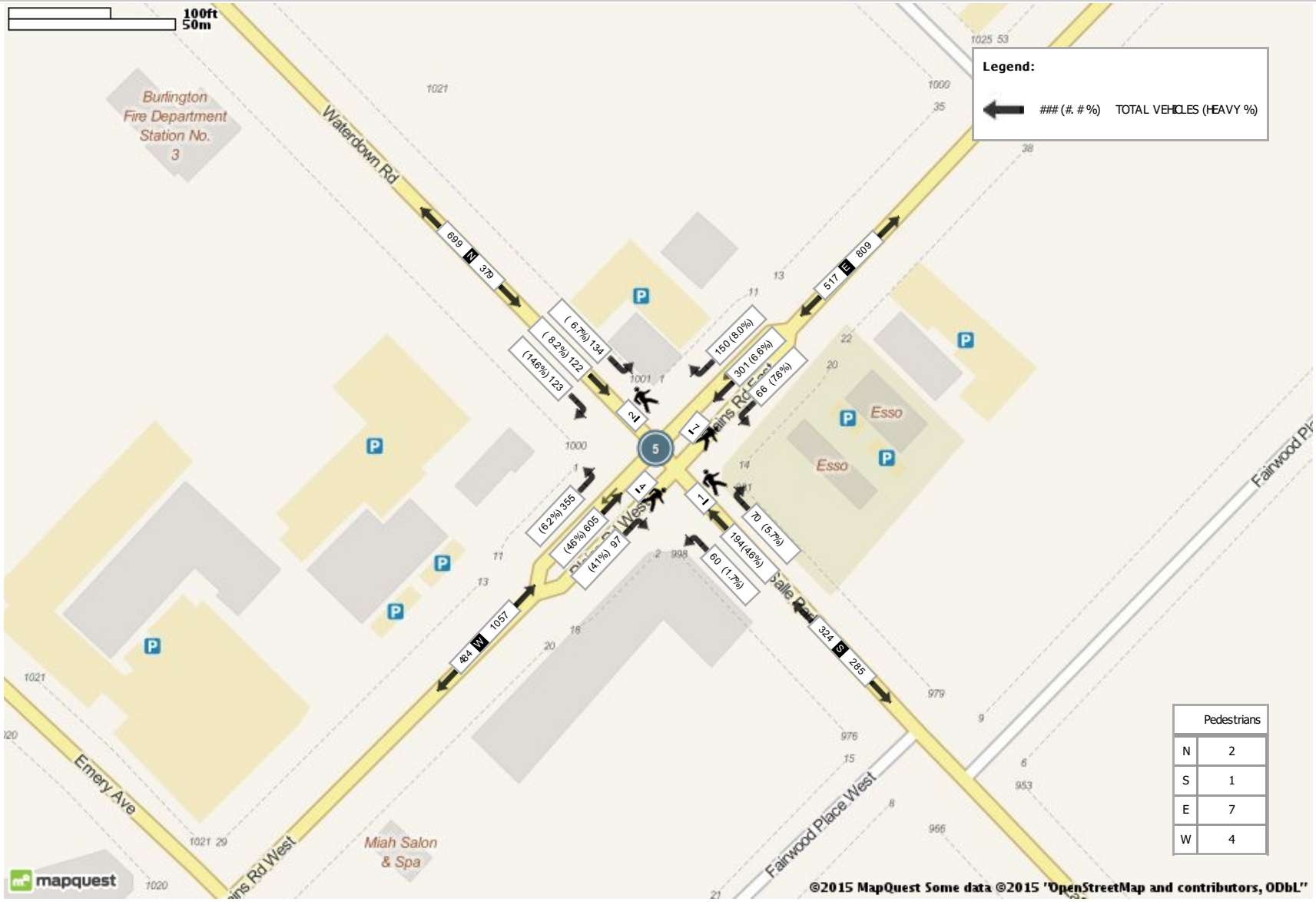
Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 04:45 PM - 05:45 PM

Start Time	N Approach WATERDOWN ROAD						E Approach PLAINS ROAD EAST						S Approach WATERDOWN ROAD						W Approach PLAINS ROAD WEST						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
16:45:00	57	30	46	0	2	133	40	239	26	0	0	305	11	36	22	0	1	69	8	103	38	0	2	149	656
17:00:00	54	34	44	0	4	132	45	218	13	0	1	276	10	36	24	0	0	70	13	117	53	0	1	183	661
17:15:00	74	27	45	0	1	146	43	228	21	0	0	292	15	33	31	0	1	79	10	116	38	0	2	164	681
17:30:00	91	28	50	0	3	169	38	233	17	0	2	288	12	34	26	0	0	72	20	115	54	0	2	189	718
Grand Total	276	119	185	0	10	580	166	918	77	0	3	1161	48	139	103	0	2	290	51	451	183	0	7	685	**2716**
Approach%	47.6%	20.5%	31.9%	0%		-	14.3%	79.1%	6.6%	0%		-	16.6%	47.9%	35.5%	0%		-	7.4%	65.8%	26.7%	0%		-	-
Totals %	10.2%	4.4%	6.8%	0%		21.4%	6.1%	33.8%	2.8%	0%		42.7%	1.8%	5.1%	3.8%	0%		10.7%	1.9%	16.6%	6.7%	0%		25.2%	-
PHF	0.76	0.88	0.93	0		0.86	0.92	0.96	0.74	0		0.95	0.8	0.97	0.83	0		0.92	0.64	0.96	0.85	0		0.91	-
Heavy	13	0	2	0		15	8	10	0	0		18	0	4	1	0		5	0	6	7	0		13	-
Heavy %	4.7%	0%	1.1%	0%		2.6%	4.8%	1.1%	0%	0%		1.6%	0%	2.9%	1%	0%		1.7%	0%	1.3%	3.8%	0%		1.9%	-
Lights	263	119	183	0		565	158	908	77	0		1143	48	135	102	0		285	51	445	176	0		672	-
Lights %	95.3%	100%	98.9%	0%		97.4%	95.2%	98.9%	100%	0%		98.4%	100%	97.1%	99%	0%		98.3%	100%	98.7%	96.2%	0%		98.1%	-
Single-Unit Trucks	9	0	0	0		9	4	6	0	0		10	0	3	1	0		4	0	3	4	0		7	-
Single-Unit Trucks %	3.3%	0%	0%	0%		1.6%	2.4%	0.7%	0%	0%		0.9%	0%	2.2%	1%	0%		1.4%	0%	0.7%	2.2%	0%		1%	-
Buses	4	0	2	0		6	3	4	0	0		7	0	0	0	0		0	0	3	3	0		6	-
Buses %	1.4%	0%	1.1%	0%		1%	1.8%	0.4%	0%	0%		0.6%	0%	0%	0%	0%		0%	0%	0.7%	1.6%	0%		0.9%	-
Articulated Trucks	0	0	0	0		0	1	0	0	0		1	0	1	0	0		1	0	0	0	0		0	-
Articulated Trucks %	0%	0%	0%	0%		0%	0.6%	0%	0%	0%		0.1%	0%	0.7%	0%	0%		0.3%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	10	-	-	-	-	-	3	-	-	-	-	-	2	-	-	-	-	-	7	-	-
Pedestrians%	-	-	-	-	45.5%		-	-	-	-	13.6%		-	-	-	-	9.1%		-	-	-	-	31.8%		-

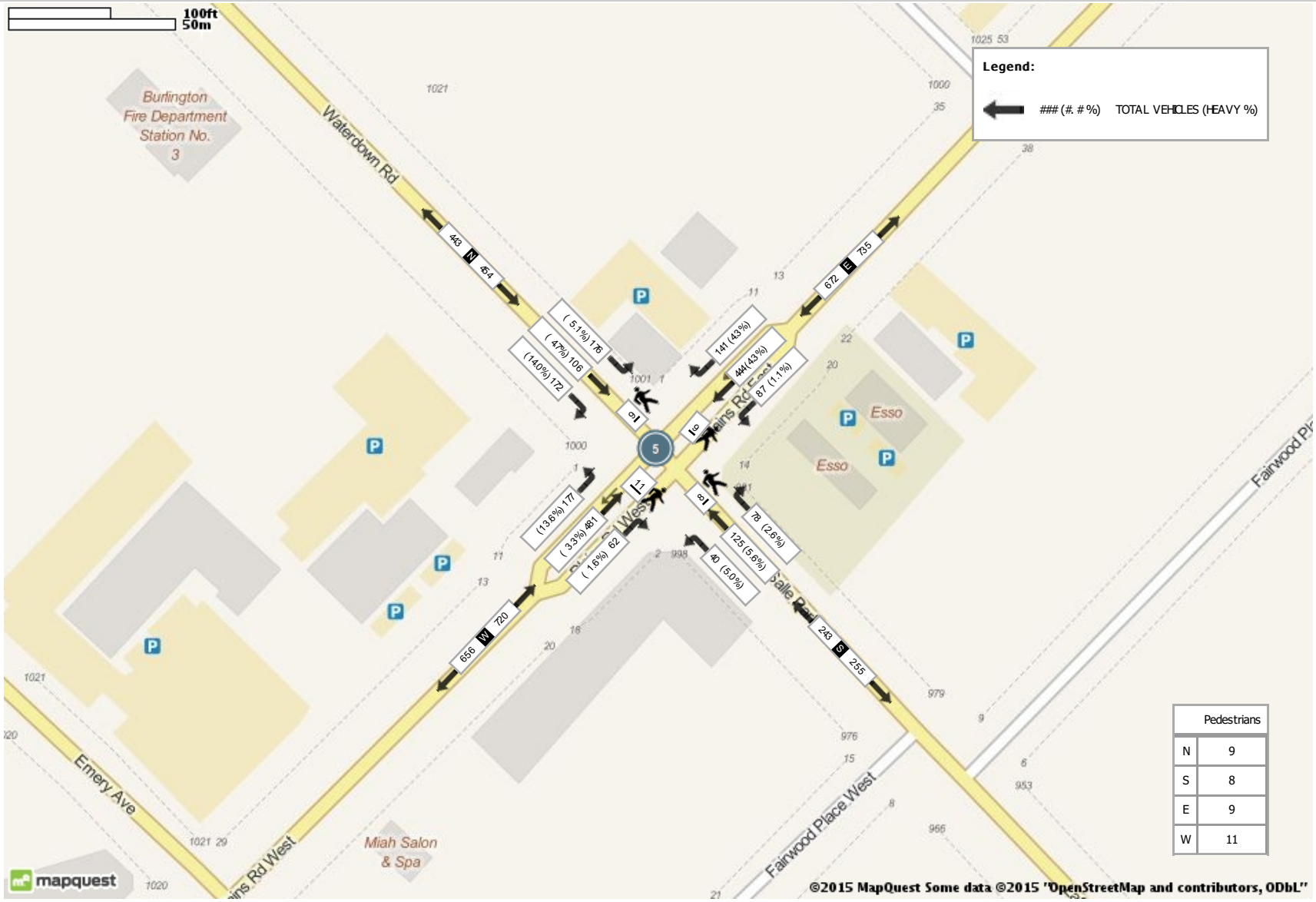
Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 07:30 AM - 08:30 AM



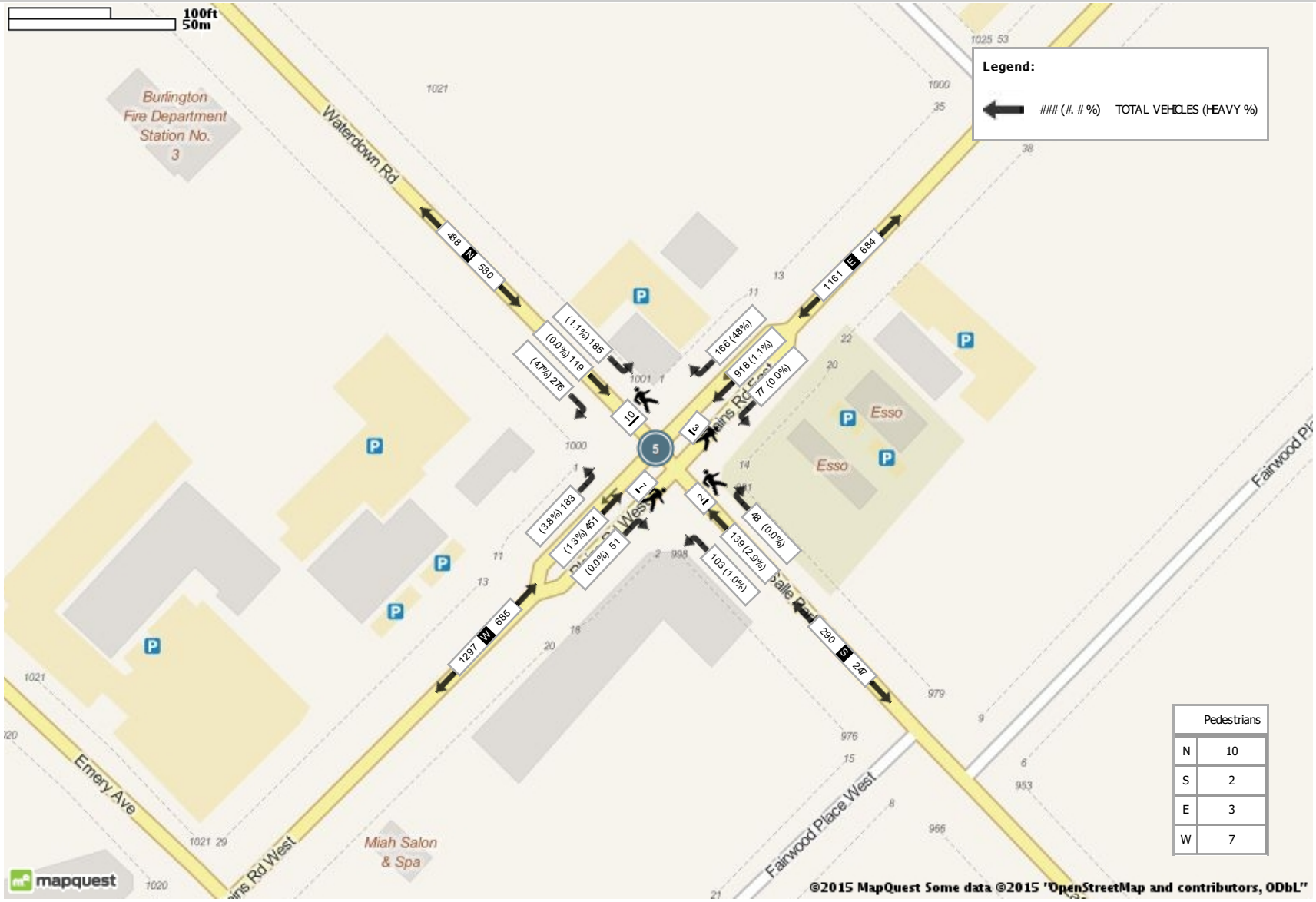
Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 11:30 AM - 12:30 PM



Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 04:45 PM - 05:45 PM



Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Turning Movement Count (6 . PLAINS ROAD EAST & COOKE BOULEVARD) MioID: 269753

Start Time	N Approach COOKE BOULEVARD					E Approach PLAINS ROAD EAST					W Approach PLAINS ROAD EAST					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	U-Turn E:E	Peds E:	Approach Total	Thru W:E	Left W:N	U-Turn W:W	Peds W:	Approach Total		
07:30:00	1	5	0	0	6	15	111	0	0	126	214	23	0	1	237	369	
07:45:00	5	3	0	1	8	25	129	0	0	154	208	16	0	0	224	386	
08:00:00	5	4	0	1	9	11	120	0	0	131	211	17	0	2	228	368	
08:15:00	4	1	0	2	5	10	135	0	0	145	205	14	0	0	219	369	1492
08:30:00	0	2	0	3	2	9	145	0	0	154	185	9	0	0	194	350	1473
08:45:00	4	2	0	0	6	12	132	0	0	144	219	6	0	0	225	375	1462
09:00:00	1	2	0	2	3	7	122	0	2	129	201	10	0	0	211	343	1437
09:15:00	1	6	0	1	7	15	136	0	0	151	181	4	0	0	185	343	1411
BREAK																	
11:00:00	2	2	0	11	4	3	155	0	0	158	147	0	0	6	147	309	
11:15:00	1	2	0	4	3	2	138	0	2	140	172	1	0	3	173	316	
11:30:00	3	2	0	4	5	10	173	0	5	183	195	4	0	0	199	387	
11:45:00	3	4	0	2	7	8	168	0	0	176	192	3	0	3	195	378	1390
12:00:00	3	8	0	5	11	13	178	0	0	191	186	3	0	2	189	391	1472
12:15:00	5	9	0	4	14	11	153	0	0	164	166	6	0	5	172	350	1506
12:30:00	8	5	0	2	13	11	157	0	4	168	175	5	0	2	180	361	1480
12:45:00	4	9	0	3	13	10	172	0	0	182	167	6	0	9	173	368	1470
13:00:00	3	2	0	1	5	6	184	0	1	190	148	7	0	4	155	350	1429
13:15:00	1	4	0	0	5	14	162	0	0	176	149	4	0	3	153	334	1413
13:30:00	0	6	0	5	6	9	159	0	1	168	172	5	0	0	177	351	1403
13:45:00	2	3	0	0	5	8	151	0	0	159	171	3	0	1	174	338	1373
BREAK																	
15:00:00	8	11	0	6	19	9	174	0	0	183	176	3	0	2	179	381	
15:15:00	5	6	0	2	11	9	219	0	1	228	168	4	0	8	172	411	
15:30:00	5	7	0	0	12	9	203	0	0	212	177	2	0	8	179	403	

Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

15:45:00	4	6	0	4	10	7	228	0	0	235	144	1	0	1	145	390	1585
16:00:00	1	3	0	0	4	13	250	0	0	263	179	2	0	0	181	448	1652
16:15:00	7	6	0	1	13	9	264	0	0	273	168	2	0	1	170	456	1697
16:30:00	8	6	0	2	14	12	262	0	0	274	195	3	0	5	198	486	1780
16:45:00	10	5	0	1	15	12	302	0	0	314	173	4	0	0	177	506	1896
17:00:00	10	8	0	5	18	18	258	0	1	276	177	0	0	1	177	471	1919
17:15:00	6	7	0	1	13	9	294	0	0	303	180	3	0	0	183	499	1962
17:30:00	19	11	0	3	30	14	279	0	1	293	178	1	0	0	179	502	1978
17:45:00	9	7	0	2	16	19	249	0	0	268	163	3	0	0	166	450	1922
Grand Total	148	164	0	78	312	349	5962	0	18	6311	5742	174	0	67	5916	**12539**	-
Approach %	47.4%	52.6%	0%		-	5.5%	94.5%	0%		-	97.1%	2.9%	0%		-	-	-
Totals %	1.2%	1.3%	0%		2.5%	2.8%	47.5%	0%		50.3%	45.8%	1.4%	0%		47.2%	-	-
Heavy	5	6	0		-	16	202	0		-	189	4	0		-	-	-
Heavy %	3.4%	3.7%	0%		-	4.6%	3.4%	0%		-	3.3%	2.3%	0%		-	-	-

Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 07:30 AM - 08:30 AM

Start Time	N Approach COOKE BOULEVARD					E Approach PLAINS ROAD EAST					W Approach PLAINS ROAD EAST					Int. Total (15 min)
	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	Thru	Left	U-Turn	Peds	Approach Total	
07:30:00	1	5	0	0	6	15	111	0	0	126	214	23	0	1	237	369
07:45:00	5	3	0	1	8	25	129	0	0	154	208	16	0	0	224	386
08:00:00	5	4	0	1	9	11	120	0	0	131	211	17	0	2	228	368
08:15:00	4	1	0	2	5	10	135	0	0	145	205	14	0	0	219	369
Grand Total	15	13	0	4	28	61	495	0	0	556	838	70	0	3	908	**1492**
Approach%	53.6%	46.4%	0%		-	11%	89%	0%		-	92.3%	7.7%	0%		-	-
Totals %	1%	0.9%	0%		1.9%	4.1%	33.2%	0%		37.3%	56.2%	4.7%	0%		60.9%	-
PHF	0.75	0.65	0		0.78	0.61	0.92	0		0.9	0.98	0.76	0		0.96	-
Heavy	0	1	0		1	0	28	0		28	36	1	0		37	-
Heavy %	0%	7.7%	0%		3.6%	0%	5.7%	0%		5%	4.3%	1.4%	0%		4.1%	-
Lights	15	12	0		27	61	467	0		528	802	69	0		871	-
Lights %	100%	92.3%	0%		96.4%	100%	94.3%	0%		95%	95.7%	98.6%	0%		95.9%	-
Single-Unit Trucks	0	1	0		1	0	11	0		11	17	1	0		18	-
Single-Unit Trucks %	0%	7.7%	0%		3.6%	0%	2.2%	0%		2%	2%	1.4%	0%		2%	-
Buses	0	0	0		0	0	16	0		16	17	0	0		17	-
Buses %	0%	0%	0%		0%	0%	3.2%	0%		2.9%	2%	0%	0%		1.9%	-
Articulated Trucks	0	0	0		0	0	1	0		1	2	0	0		2	-
Articulated Trucks %	0%	0%	0%		0%	0%	0.2%	0%		0.2%	0.2%	0%	0%		0.2%	-
Pedestrians	-	-	-	4	-	-	-	-	0	-	-	-	-	3	-	-
Pedestrians%	-	-	-	57.1%		-	-	-	0%		-	-	-	42.9%		-

Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 11:30 AM - 12:30 PM

Start Time	N Approach COOKE BOULEVARD					E Approach PLAINS ROAD EAST					W Approach PLAINS ROAD EAST					Int. Total (15 min)
	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	Thru	Left	U-Turn	Peds	Approach Total	
11:30:00	3	2	0	4	5	10	173	0	5	183	195	4	0	0	199	387
11:45:00	3	4	0	2	7	8	168	0	0	176	192	3	0	3	195	378
12:00:00	3	8	0	5	11	13	178	0	0	191	186	3	0	2	189	391
12:15:00	5	9	0	4	14	11	153	0	0	164	166	6	0	5	172	350
Grand Total	14	23	0	15	37	42	672	0	5	714	739	16	0	10	755	**1506**
Approach%	37.8%	62.2%	0%		-	5.9%	94.1%	0%		-	97.9%	2.1%	0%		-	-
Totals %	0.9%	1.5%	0%		2.5%	2.8%	44.6%	0%		47.4%	49.1%	1.1%	0%		50.1%	-
PHF	0.7	0.64	0		0.66	0.81	0.94	0		0.93	0.95	0.67	0		0.95	-
Heavy	1	1	0		2	5	28	0		33	26	0	0		26	-
Heavy %	7.1%	4.3%	0%		5.4%	11.9%	4.2%	0%		4.6%	3.5%	0%	0%		3.4%	-
Lights	13	22	0		35	37	644	0		681	713	16	0		729	-
Lights %	92.9%	95.7%	0%		94.6%	88.1%	95.8%	0%		95.4%	96.5%	100%	0%		96.6%	-
Single-Unit Trucks	1	0	0		1	4	19	0		23	20	0	0		20	-
Single-Unit Trucks %	7.1%	0%	0%		2.7%	9.5%	2.8%	0%		3.2%	2.7%	0%	0%		2.6%	-
Buses	0	0	0		0	0	6	0		6	4	0	0		4	-
Buses %	0%	0%	0%		0%	0%	0.9%	0%		0.8%	0.5%	0%	0%		0.5%	-
Articulated Trucks	0	1	0		1	1	3	0		4	2	0	0		2	-
Articulated Trucks %	0%	4.3%	0%		2.7%	2.4%	0.4%	0%		0.6%	0.3%	0%	0%		0.3%	-
Pedestrians	-	-	-	15	-	-	-	-	5	-	-	-	-	10	-	-
Pedestrians%	-	-	-	50%		-	-	-	16.7%		-	-	-	33.3%		-

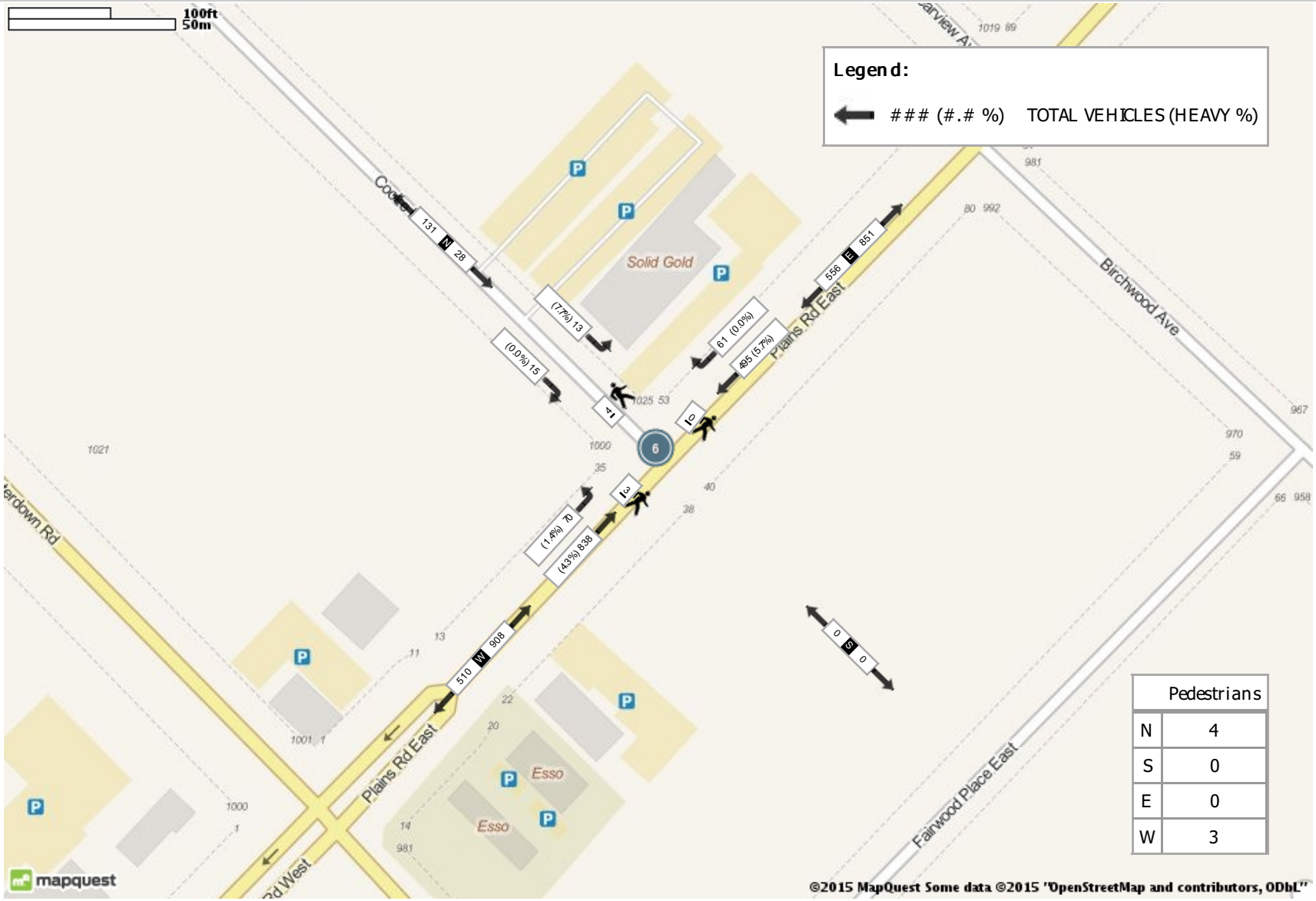
Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 04:45 PM - 05:45 PM

Start Time	N Approach COOKE BOULEVARD					E Approach PLAINS ROAD EAST					W Approach PLAINS ROAD EAST					Int. Total (15 min)
	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	Thru	Left	U-Turn	Peds	Approach Total	
16:45:00	10	5	0	1	15	12	302	0	0	314	173	4	0	0	177	506
17:00:00	10	8	0	5	18	18	258	0	1	276	177	0	0	1	177	471
17:15:00	6	7	0	1	13	9	294	0	0	303	180	3	0	0	183	499
17:30:00	19	11	0	3	30	14	279	0	1	293	178	1	0	0	179	502
Grand Total	45	31	0	10	76	53	1133	0	2	1186	708	8	0	1	716	**1978**
Approach%	59.2%	40.8%	0%		-	4.5%	95.5%	0%		-	98.9%	1.1%	0%		-	-
Totals %	2.3%	1.6%	0%		3.8%	2.7%	57.3%	0%		60%	35.8%	0.4%	0%		36.2%	-
PHF	0.59	0.7	0		0.63	0.74	0.94	0		0.94	0.98	0.5	0		0.98	-
Heavy	0	0	0		0	5	16	0		21	10	0	0		10	-
Heavy %	0%	0%	0%		0%	9.4%	1.4%	0%		1.8%	1.4%	0%	0%		1.4%	-
Lights	45	31	0		76	48	1117	0		1165	698	8	0		706	-
Lights %	100%	100%	0%		100%	90.6%	98.6%	0%		98.2%	98.6%	100%	0%		98.6%	-
Single-Unit Trucks	0	0	0		0	3	7	0		10	4	0	0		4	-
Single-Unit Trucks %	0%	0%	0%		0%	5.7%	0.6%	0%		0.8%	0.6%	0%	0%		0.6%	-
Buses	0	0	0		0	2	8	0		10	6	0	0		6	-
Buses %	0%	0%	0%		0%	3.8%	0.7%	0%		0.8%	0.8%	0%	0%		0.8%	-
Articulated Trucks	0	0	0		0	0	1	0		1	0	0	0		0	-
Articulated Trucks %	0%	0%	0%		0%	0%	0.1%	0%		0.1%	0%	0%	0%		0%	-
Pedestrians	-	-	-	10	-	-	-	-	2	-	-	-	-	1	-	-
Pedestrians%	-	-	-	76.9%		-	-	-	15.4%		-	-	-	7.7%		-

Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

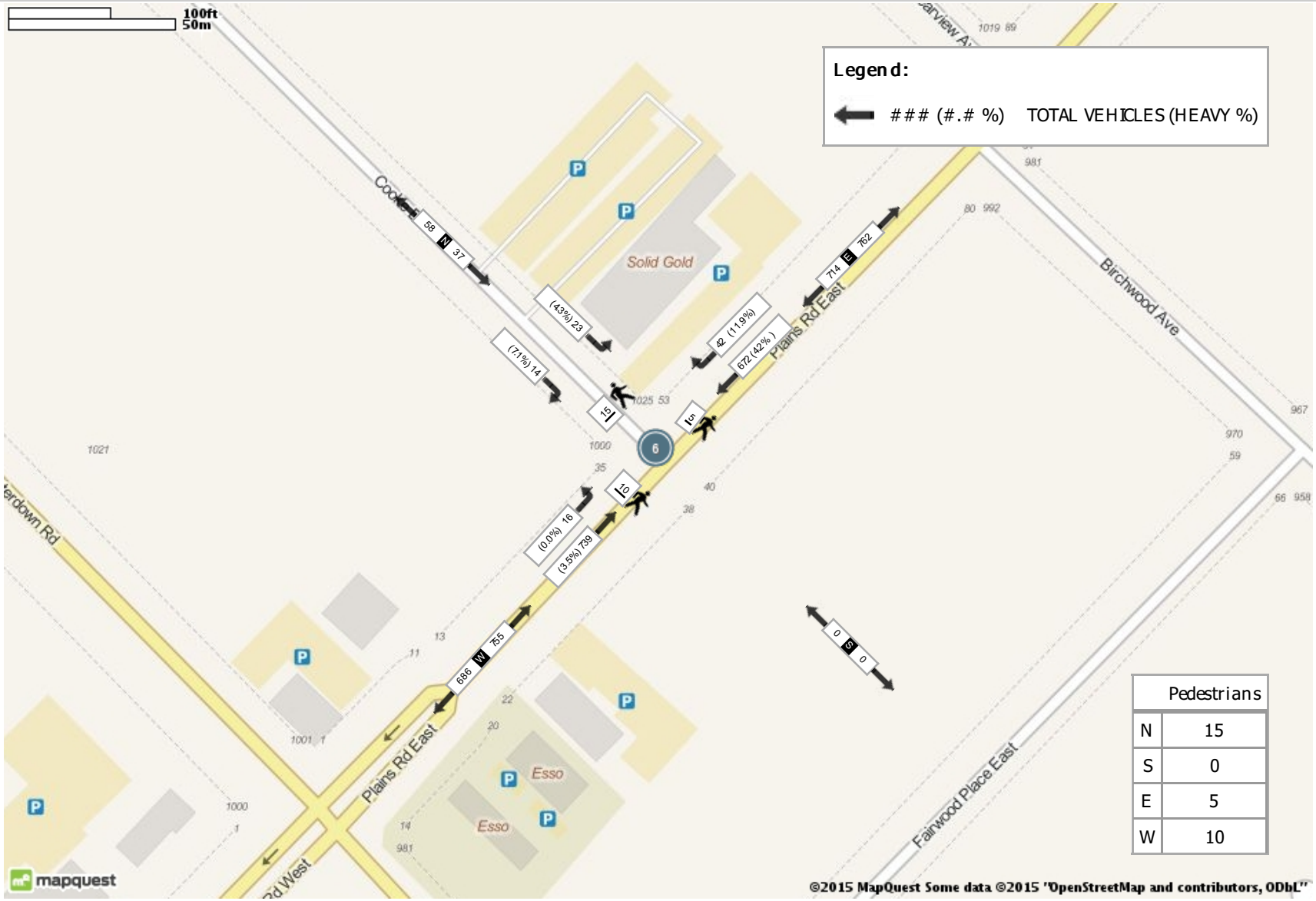
Peak Hour: 07:30 AM - 08:30 AM



	Pedestrians
N	4
S	0
E	0
W	3

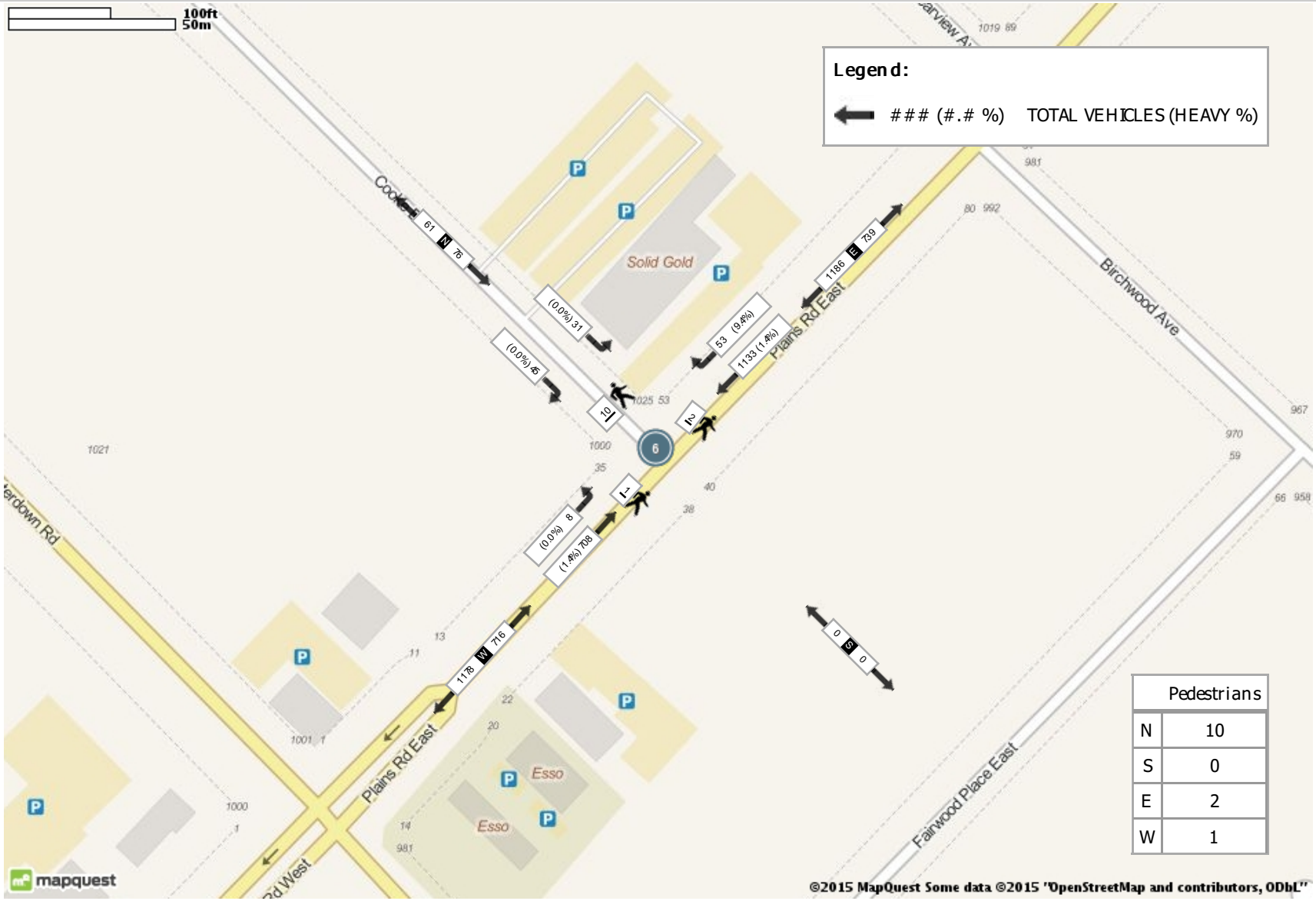
Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 11:30 AM - 12:30 PM



Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 04:45 PM - 05:45 PM



Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Turning Movement Count (7 . PLAINS ROAD EAST & CLEARVIEW AVENUE/BIRCHWOOD AVENUE) MioID: 269769

Start Time	N Approach CLEARVIEW AVENUE						E Approach PLAINS ROAD EAST						S Approach BIRCHWOOD AVENUE						W Approach PLAINS ROAD EAST						Int. Total (15 min)	Int. Total (1 hr)
	Right N: W	Thru N: S	Left N: E	U-Turn N: N	Peds N:	Approach Total	Right E: N	Thru E: W	Left E: S	U-Turn E: E	Peds E:	Approach Total	Right S: E	Thru S: N	Left S: W	U-Turn S: S	Peds S:	Approach Total	Right W: S	Thru W: E	Left W: N	U-Turn W: W	Peds W:	Approach Total		
07:30:00	3	0	0	0	0	3	0	125	4	0	0	129	7	0	1	0	0	8	1	219	0	0	1	220	360	
07:45:00	4	0	1	0	1	5	0	150	3	0	0	153	4	0	0	0	1	4	0	212	1	0	0	213	375	
08:00:00	5	0	2	0	1	7	0	128	2	0	0	130	2	0	0	0	1	2	2	210	1	0	0	213	352	
08:15:00	4	0	0	0	0	4	0	142	3	0	0	145	4	0	0	0	0	4	1	207	1	0	0	209	362	1449
08:30:00	1	0	0	0	2	1	0	153	3	0	0	156	4	0	0	0	3	4	4	182	2	0	0	188	349	1438
08:45:00	0	0	0	0	0	0	0	146	2	0	0	148	6	0	0	0	2	6	3	219	0	0	0	222	376	1439
09:00:00	1	0	1	0	0	2	0	137	1	0	0	138	3	0	1	0	0	4	1	200	0	0	0	201	345	1432
09:15:00	3	0	1	0	0	4	0	140	1	0	0	141	2	1	0	0	3	3	1	187	0	0	0	188	336	1406
BREAK																										
11:00:00	5	0	1	0	13	6	2	152	1	0	0	155	4	0	1	0	2	5	0	143	2	0	0	145	311	
11:15:00	1	0	1	0	3	2	0	141	2	0	0	143	5	0	0	0	5	5	2	176	0	0	0	178	328	
11:30:00	1	0	0	0	6	1	1	187	2	0	0	190	2	0	0	0	2	2	1	190	0	0	0	191	384	
11:45:00	2	0	0	0	4	2	0	170	2	0	0	172	0	0	0	0	6	0	0	198	1	0	0	199	373	1396
12:00:00	1	0	0	0	2	1	0	185	3	0	0	188	6	0	0	0	1	6	2	190	0	0	0	192	387	1472
12:15:00	0	0	2	0	4	2	3	164	4	0	0	171	4	0	0	0	4	4	1	175	1	0	0	177	354	1498
12:30:00	2	0	1	0	0	3	1	160	3	0	0	164	3	0	0	0	3	3	2	180	0	0	0	182	352	1466
12:45:00	0	0	1	0	1	1	0	184	4	0	0	188	5	0	1	0	1	6	1	174	2	0	0	177	372	1465
13:00:00	4	0	0	0	1	4	1	186	1	0	0	188	3	0	1	0	1	4	0	147	1	0	0	148	344	1422
13:15:00	4	0	1	0	0	5	1	172	3	0	0	176	4	0	0	0	1	4	0	153	2	0	0	155	340	1408
13:30:00	1	0	0	0	3	1	0	160	4	0	1	164	3	0	0	0	0	3	0	179	0	0	0	179	347	1403
13:45:00	0	0	0	0	0	0	1	163	1	0	0	165	2	0	1	0	0	3	2	170	1	0	0	173	341	1372
BREAK																										
15:00:00	0	0	1	0	5	1	2	183	3	0	0	188	2	0	0	0	0	2	0	183	2	0	0	185	376	
15:15:00	3	0	2	0	2	5	2	222	4	0	0	228	1	0	0	0	0	1	0	170	2	0	0	172	406	
15:30:00	0	0	1	0	0	1	1	211	8	0	0	220	1	0	0	0	0	1	0	179	1	0	0	180	402	
15:45:00	3	0	1	0	4	4	2	235	6	0	0	243	0	0	1	0	0	1	0	152	0	0	0	152	400	1584
16:00:00	0	0	0	0	0	0	3	260	6	0	0	269	0	0	0	0	1	0	0	190	0	0	0	190	459	1667
16:15:00	2	0	0	0	1	2	0	264	3	0	0	267	3	0	2	0	2	5	3	179	0	0	0	182	456	1717
16:30:00	3	0	0	0	0	3	1	269	4	0	0	274	4	0	0	0	4	4	0	198	1	0	0	199	480	1795
16:45:00	1	0	1	0	1	2	0	266	4	0	0	270	2	0	0	0	0	2	0	179	5	0	0	184	458	1853
17:00:00	3	0	0	0	0	3	0	273	9	0	0	282	5	0	1	0	0	6	1	181	1	0	0	183	474	1868

17:15:00	1	0	0	0	2	1	2	306	3	0	0	311	2	0	1	0	0	3	1	182	3	0	0	186	501	1913
17:30:00	2	0	0	0	1	2	2	285	2	0	0	289	2	0	1	0	1	3	0	189	1	0	0	190	484	1917
17:45:00	4	0	0	0	0	4	0	263	4	0	0	267	0	0	0	0	0	0	2	168	1	0	0	171	442	1901
Grand Total	64	0	18	0	57	82	25	6182	105	0	1	6312	95	1	12	0	44	108	31	5861	32	0	1	5924	**12426**	-
Approach%	78%	0%	22%	0%		-	0.4%	97.9%	1.7%	0%		-	88%	0.9%	11.1%	0%		-	0.5%	98.9%	0.5%	0%		-	-	-
Totals %	0.5%	0%	0.1%	0%		0.7%	0.2%	49.8%	0.8%	0%		50.8%	0.8%	0%	0.1%	0%		0.9%	0.2%	47.2%	0.3%	0%		47.7%	-	-
Heavy	2	0	1	0		-	1	222	1	0		-	1	0	0	0		-	3	202	0	0		-	-	-
Heavy %	3.1%	0%	5.6%	0%		-	4%	3.6%	1%	0%		-	1.1%	0%	0%	0%		-	9.7%	3.4%	0%	0%		-	-	-

Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 07:30 AM - 08:30 AM

Start Time	N Approach CLEARVIEW AVENUE						E Approach PLAINS ROAD EAST						S Approach BIRCHWOOD AVENUE						W Approach PLAINS ROAD EAST						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
07:30:00	3	0	0	0	0	3	0	125	4	0	0	129	7	0	1	0	0	8	1	219	0	0	1	220	360
07:45:00	4	0	1	0	1	5	0	150	3	0	0	153	4	0	0	0	1	4	0	212	1	0	0	213	375
08:00:00	5	0	2	0	1	7	0	128	2	0	0	130	2	0	0	0	1	2	2	210	1	0	0	213	352
08:15:00	4	0	0	0	0	4	0	142	3	0	0	145	4	0	0	0	0	4	1	207	1	0	0	209	362
Grand Total	16	0	3	0	2	19	0	545	12	0	0	557	17	0	1	0	2	18	4	848	3	0	1	855	**1449**
Approach%	84.2%	0%	15.8%	0%		-	0%	97.8%	2.2%	0%		-	94.4%	0%	5.6%	0%		-	0.5%	99.2%	0.4%	0%		-	-
Totals %	1.1%	0%	0.2%	0%		1.3%	0%	37.6%	0.8%	0%		38.4%	1.2%	0%	0.1%	0%		1.2%	0.3%	58.5%	0.2%	0%		59%	-
PHF	0.8	0	0.38	0		0.68	0	0.91	0.75	0		0.91	0.61	0	0.25	0		0.56	0.5	0.97	0.75	0		0.97	-
Heavy	0	0	0	0		0	0	33	0	0		33	0	0	0	0		0	1	38	0	0		39	-
Heavy %	0%	0%	0%	0%		0%	0%	6.1%	0%	0%		5.9%	0%	0%	0%	0%		0%	25%	4.5%	0%	0%		4.6%	-
Lights	16	0	3	0		19	0	512	12	0		524	17	0	1	0		18	3	810	3	0		816	-
Lights %	100%	0%	100%	0%		100%	0%	93.9%	100%	0%		94.1%	100%	0%	100%	0%		100%	75%	95.5%	100%	0%		95.4%	-
Single-Unit Trucks	0	0	0	0		0	0	15	0	0		15	0	0	0	0		0	1	18	0	0		19	-
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	2.8%	0%	0%		2.7%	0%	0%	0%	0%		0%	25%	2.1%	0%	0%		2.2%	-
Buses	0	0	0	0		0	0	17	0	0		17	0	0	0	0		0	0	17	0	0		17	-
Buses %	0%	0%	0%	0%		0%	0%	3.1%	0%	0%		3.1%	0%	0%	0%	0%		0%	0%	2%	0%	0%		2%	-
Articulated Trucks	0	0	0	0		0	0	1	0	0		1	0	0	0	0		0	0	3	0	0		3	-
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0.2%	0%	0%		0.2%	0%	0%	0%	0%		0%	0%	0.4%	0%	0%		0.4%	-
Pedestrians	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	1	-	-
Pedestrians%	-	-	-	-	40%		-	-	-	-	0%		-	-	-	-	40%		-	-	-	-	20%		-

Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 11:30 AM - 12:30 PM

Start Time	N Approach CLEARVIEW AVENUE						E Approach PLAINS ROAD EAST						S Approach BIRCHWOOD AVENUE						W Approach PLAINS ROAD EAST						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
11:30:00	1	0	0	0	6	1	1	187	2	0	0	190	2	0	0	0	2	2	1	190	0	0	0	191	384
11:45:00	2	0	0	0	4	2	0	170	2	0	0	172	0	0	0	0	6	0	0	198	1	0	0	199	373
12:00:00	1	0	0	0	2	1	0	185	3	0	0	188	6	0	0	0	1	6	2	190	0	0	0	192	387
12:15:00	0	0	2	0	4	2	3	164	4	0	0	171	4	0	0	0	4	4	1	175	1	0	0	177	354
Grand Total	4	0	2	0	16	6	4	706	11	0	0	721	12	0	0	0	13	12	4	753	2	0	0	759	**1498**
Approach%	66.7%	0%	33.3%	0%		-	0.6%	97.9%	1.5%	0%		-	100%	0%	0%	0%		-	0.5%	99.2%	0.3%	0%		-	-
Totals %	0.3%	0%	0.1%	0%		0.4%	0.3%	47.1%	0.7%	0%		48.1%	0.8%	0%	0%	0%		0.8%	0.3%	50.3%	0.1%	0%		50.7%	-
PHF	0.5	0	0.25	0		0.75	0.33	0.94	0.69	0		0.95	0.5	0	0	0		0.5	0.5	0.95	0.5	0		0.95	-
Heavy	1	0	0	0		1	0	33	0	0		33	1	0	0	0		1	0	28	0	0		28	-
Heavy %	25%	0%	0%	0%		16.7%	0%	4.7%	0%	0%		4.6%	8.3%	0%	0%	0%		8.3%	0%	3.7%	0%	0%		3.7%	-
Lights	3	0	2	0		5	4	673	11	0		688	11	0	0	0		11	4	725	2	0		731	-
Lights %	75%	0%	100%	0%		83.3%	100%	95.3%	100%	0%		95.4%	91.7%	0%	0%	0%		91.7%	100%	96.3%	100%	0%		96.3%	-
Single-Unit Trucks	1	0	0	0		1	0	21	0	0		21	1	0	0	0		1	0	19	0	0		19	-
Single-Unit Trucks %	25%	0%	0%	0%		16.7%	0%	3%	0%	0%		2.9%	8.3%	0%	0%	0%		8.3%	0%	2.5%	0%	0%		2.5%	-
Buses	0	0	0	0		0	0	7	0	0		7	0	0	0	0		0	0	5	0	0		5	-
Buses %	0%	0%	0%	0%		0%	0%	1%	0%	0%		1%	0%	0%	0%	0%		0%	0%	0.7%	0%	0%		0.7%	-
Articulated Trucks	0	0	0	0		0	0	5	0	0		5	0	0	0	0		0	0	4	0	0		4	-
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0.7%	0%	0%		0.7%	0%	0%	0%	0%		0%	0%	0.5%	0%	0%		0.5%	-
Pedestrians	-	-	-	-	16	-	-	-	-	-	0	-	-	-	-	-	13	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	55.2%		-	-	-	-	0%		-	-	-	-	44.8%		-	-	-	-	0%		-

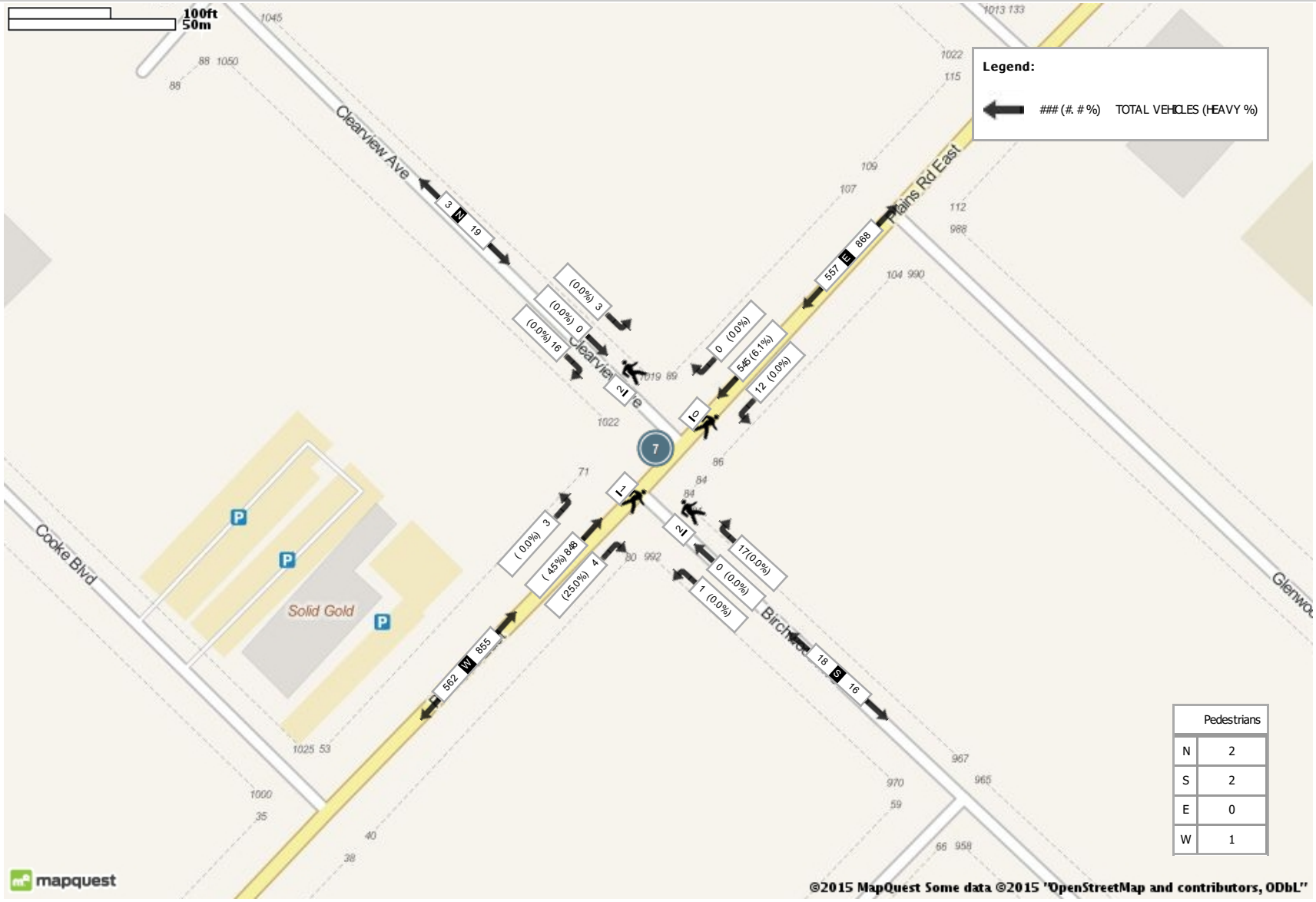
Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 04:45 PM - 05:45 PM

Start Time	N Approach CLEARVIEW AVENUE						E Approach PLAINS ROAD EAST						S Approach BIRCHWOOD AVENUE						W Approach PLAINS ROAD EAST						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:45:00	1	0	1	0	1	2	0	266	4	0	0	270	2	0	0	0	0	2	0	179	5	0	0	184	458
17:00:00	3	0	0	0	0	3	0	273	9	0	0	282	5	0	1	0	0	6	1	181	1	0	0	183	474
17:15:00	1	0	0	0	2	1	2	306	3	0	0	311	2	0	1	0	0	3	1	182	3	0	0	186	501
17:30:00	2	0	0	0	1	2	2	285	2	0	0	289	2	0	1	0	1	3	0	189	1	0	0	190	484
Grand Total	7	0	1	0	4	8	4	1130	18	0	0	1152	11	0	3	0	1	14	2	731	10	0	0	743	**1917**
Approach%	87.5%	0%	12.5%	0%		-	0.3%	98.1%	1.6%	0%		-	78.6%	0%	21.4%	0%		-	0.3%	98.4%	1.3%	0%		-	-
Totals %	0.4%	0%	0.1%	0%		0.4%	0.2%	58.9%	0.9%	0%		60.1%	0.6%	0%	0.2%	0%		0.7%	0.1%	38.1%	0.5%	0%		38.8%	-
PHF	0.58	0	0.25	0		0.67	0.5	0.92	0.5	0		0.93	0.55	0	0.75	0		0.58	0.5	0.97	0.5	0		0.98	-
Heavy	0	0	0	0		0	0	21	0	0		21	0	0	0	0		0	0	10	0	0		10	-
Heavy %	0%	0%	0%	0%		0%	0%	1.9%	0%	0%		1.8%	0%	0%	0%	0%		0%	0%	1.4%	0%	0%		1.3%	-
Lights	7	0	1	0		8	4	1109	18	0		1131	11	0	3	0		14	2	721	10	0		733	-
Lights %	100%	0%	100%	0%		100%	100%	98.1%	100%	0%		98.2%	100%	0%	100%	0%		100%	100%	98.6%	100%	0%		98.7%	-
Single-Unit Trucks	0	0	0	0		0	0	11	0	0		11	0	0	0	0		0	0	3	0	0		3	-
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	1%	0%	0%		1%	0%	0%	0%	0%		0%	0%	0.4%	0%	0%		0.4%	-
Buses	0	0	0	0		0	0	8	0	0		8	0	0	0	0		0	0	7	0	0		7	-
Buses %	0%	0%	0%	0%		0%	0%	0.7%	0%	0%		0.7%	0%	0%	0%	0%		0%	0%	1%	0%	0%		0.9%	-
Articulated Trucks	0	0	0	0		0	0	2	0	0		2	0	0	0	0		0	0	0	0	0		0	-
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0.2%	0%	0%		0.2%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	4	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	80%		-	-	-	-	0%		-	-	-	-	20%		-	-	-	-	0%		-

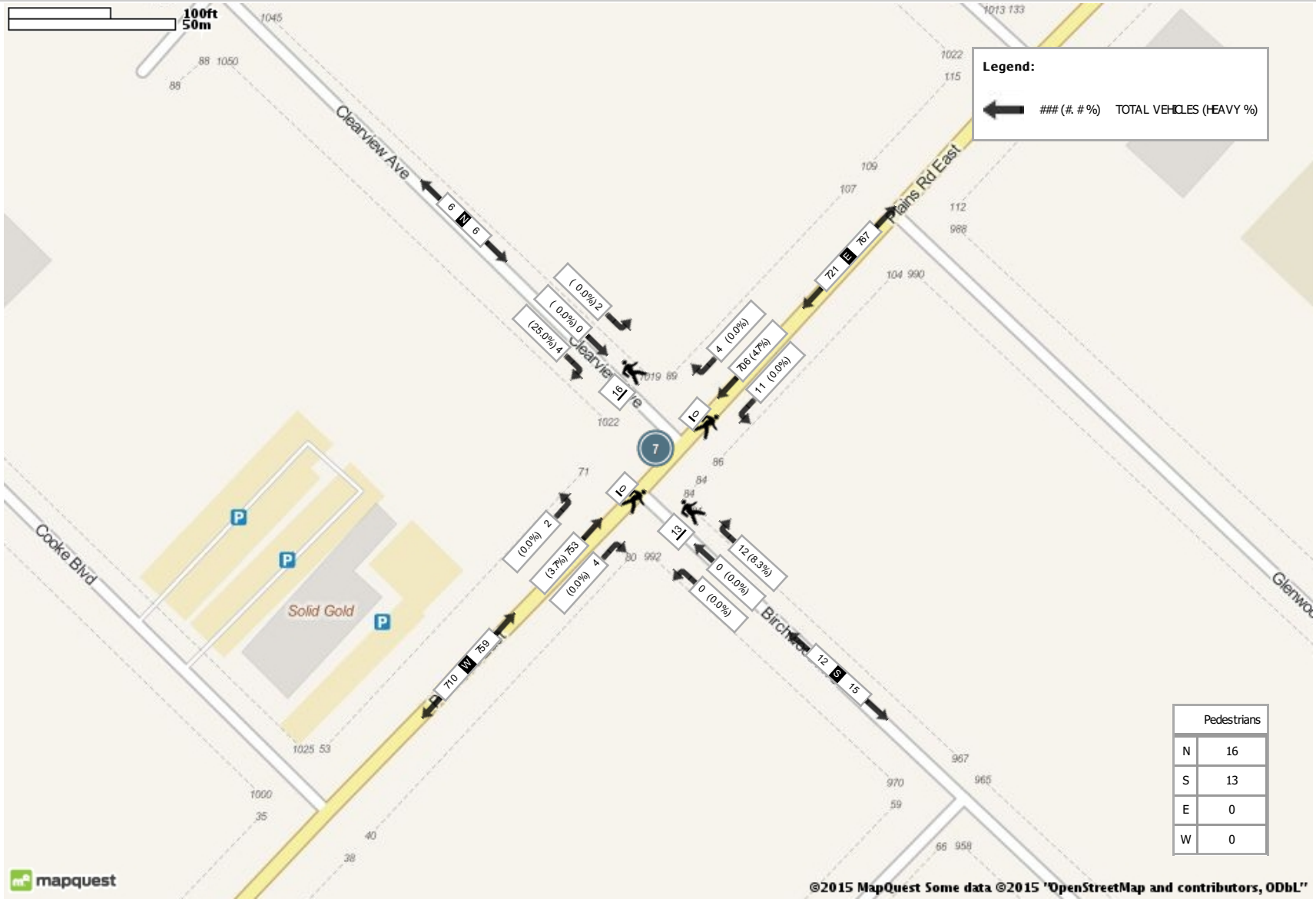
Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 07:30 AM - 08:30 AM



Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

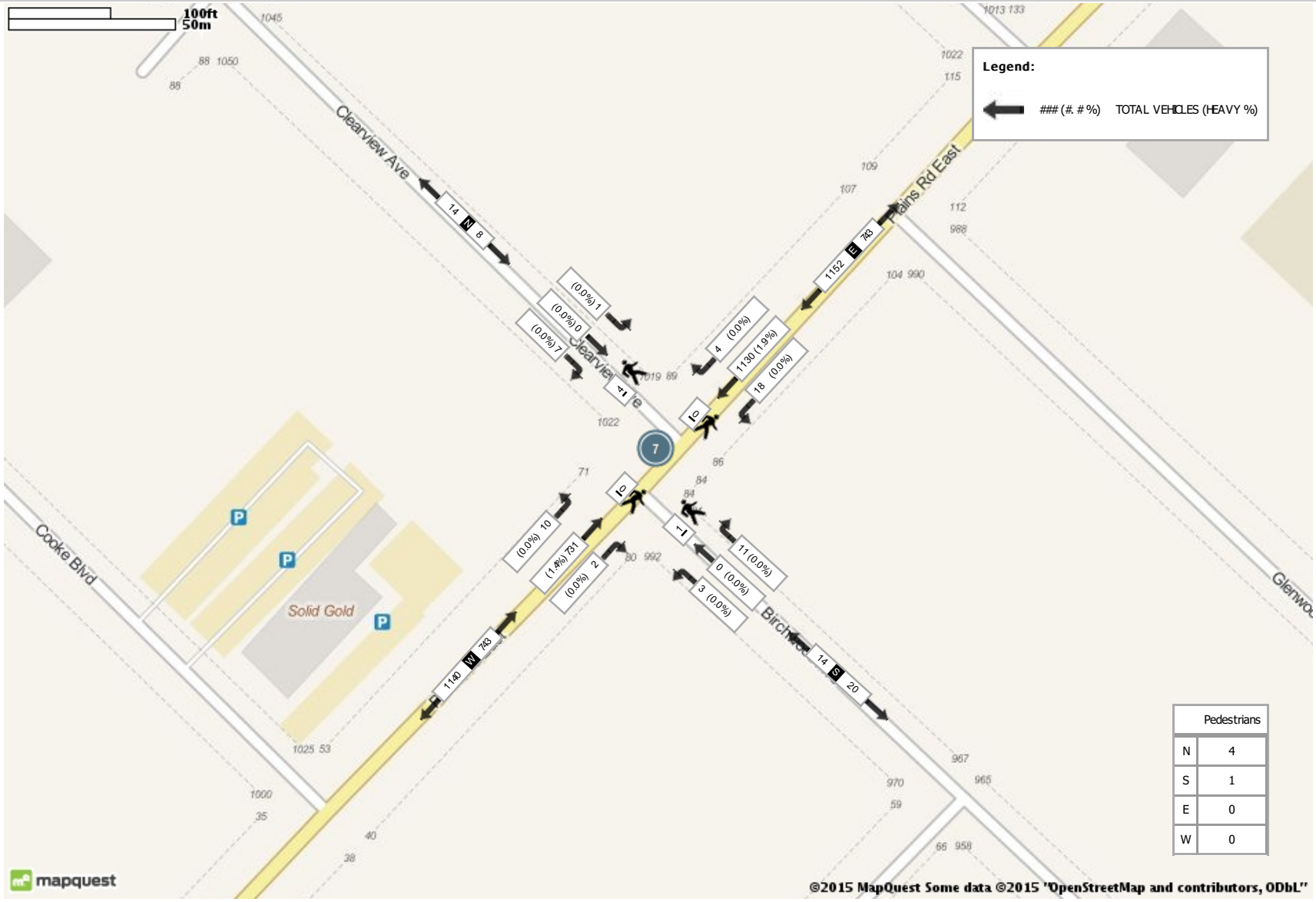
Peak Hour: 11:30 AM - 12:30 PM



	Pedestrians
N	16
S	13
E	0
W	0

Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 04:45 PM - 05:45 PM



Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Turning Movement Count (8 . PLAINS ROAD EAST & ST. MATTHEWS DRIVE) MioID: 269777

Start Time	N Approach ST. MATTHEWS AVE					E Approach PLAINS ROAD EAST					W Approach PLAINS ROAD EAST					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	U-Turn E:E	Peds E:	Approach Total	Thru W:E	Left W:N	U-Turn W:W	Peds W:	Approach Total		
07:30:00	3	0	0	3	3	1	120	0	0	121	218	0	0	2	218	342	
07:45:00	5	1	0	3	6	1	150	0	0	151	208	2	0	2	210	367	
08:00:00	0	1	0	0	1	1	126	0	1	127	205	2	0	0	207	335	
08:15:00	0	1	0	0	1	2	143	0	0	145	202	2	0	0	204	350	1394
08:30:00	4	4	0	2	8	1	157	0	0	158	188	0	0	1	188	354	1406
08:45:00	0	0	0	0	0	1	144	0	0	145	216	1	0	1	217	362	1401
09:00:00	1	0	0	0	1	2	127	0	10	129	202	1	0	0	203	333	1399
09:15:00	2	0	0	0	2	0	147	0	3	147	182	1	0	1	183	332	1381
BREAK																	
11:00:00	4	0	0	11	4	2	151	0	3	153	155	1	0	0	156	313	
11:15:00	2	1	0	1	3	2	135	0	3	137	191	2	0	0	193	333	
11:30:00	3	2	0	8	5	1	184	0	1	185	195	5	0	3	200	390	
11:45:00	4	1	0	5	5	5	173	0	4	178	191	2	0	1	193	376	1412
12:00:00	7	2	0	2	9	2	183	0	0	185	194	4	0	0	198	392	1491
12:15:00	5	11	0	2	16	6	165	0	0	171	183	7	0	2	190	377	1535
12:30:00	5	3	0	3	8	3	162	0	0	165	181	1	0	0	182	355	1500
12:45:00	12	5	0	3	17	5	171	0	1	176	186	2	0	0	188	381	1505
13:00:00	2	4	0	1	6	1	187	0	1	188	151	2	0	1	153	347	1460
13:15:00	0	1	0	1	1	1	176	0	0	177	158	1	0	0	159	337	1420
13:30:00	2	6	0	2	8	7	166	0	1	173	182	0	0	0	182	363	1428
13:45:00	5	2	0	0	7	3	161	0	1	164	167	2	0	1	169	340	1387
BREAK																	
15:00:00	5	4	0	8	9	4	193	0	0	197	189	2	0	2	191	397	
15:15:00	3	4	0	1	7	2	233	0	1	235	165	1	0	1	166	408	
15:30:00	1	3	0	5	4	3	231	0	0	234	191	3	0	1	194	432	

Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

15:45:00	2	4	0	2	6	7	245	0	8	252	157	2	0	2	159	417	1654
16:00:00	3	6	0	1	9	5	277	0	4	282	195	1	0	0	196	487	1744
16:15:00	1	2	0	2	3	4	278	0	0	282	171	1	0	2	172	457	1793
16:30:00	3	9	0	0	12	7	278	0	5	285	198	6	0	0	204	501	1862
16:45:00	5	3	0	0	8	8	307	0	0	315	168	5	0	1	173	496	1941
17:00:00	8	2	0	2	10	5	277	0	1	282	178	3	0	0	181	473	1927
17:15:00	2	3	0	1	5	3	306	0	0	309	190	1	0	0	191	505	1975
17:30:00	1	3	0	1	4	5	291	0	1	296	183	4	0	0	187	487	1961
17:45:00	3	5	0	0	8	2	270	0	0	272	169	4	0	0	173	453	1918
Grand Total	103	93	0	70	196	102	6314	0	49	6416	5909	71	0	24	5980	**12592**	-
Approach %	52.6%	47.4%	0%		-	1.6%	98.4%	0%		-	98.8%	1.2%	0%		-	-	-
Totals %	0.8%	0.7%	0%		1.6%	0.8%	50.1%	0%		51%	46.9%	0.6%	0%		47.5%	-	-
Heavy	6	1	0		-	2	222	0		-	196	1	0		-	-	-
Heavy %	5.8%	1.1%	0%		-	2%	3.5%	0%		-	3.3%	1.4%	0%		-	-	-

Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 07:45 AM - 08:45 AM

Start Time	N Approach ST. MATTHEWS AVE					E Approach PLAINS ROAD EAST					W Approach PLAINS ROAD EAST					Int. Total (15 min)
	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	Thru	Left	U-Turn	Peds	Approach Total	
07:45:00	5	1	0	3	6	1	150	0	0	151	208	2	0	2	210	367
08:00:00	0	1	0	0	1	1	126	0	1	127	205	2	0	0	207	335
08:15:00	0	1	0	0	1	2	143	0	0	145	202	2	0	0	204	350
08:30:00	4	4	0	2	8	1	157	0	0	158	188	0	0	1	188	354
Grand Total	9	7	0	5	16	5	576	0	1	581	803	6	0	3	809	**1406**
Approach%	56.3%	43.8%	0%		-	0.9%	99.1%	0%		-	99.3%	0.7%	0%		-	-
Totals %	0.6%	0.5%	0%		1.1%	0.4%	41%	0%		41.3%	57.1%	0.4%	0%		57.5%	-
PHF	0.45	0.44	0		0.5	0.63	0.92	0		0.92	0.97	0.75	0		0.96	-
Heavy	0	0	0		0	0	31	0		31	32	0	0		32	-
Heavy %	0%	0%	0%		0%	0%	5.4%	0%		5.3%	4%	0%	0%		4%	-
Lights	9	7	0		16	5	545	0		550	771	6	0		777	-
Lights %	100%	100%	0%		100%	100%	94.6%	0%		94.7%	96%	100%	0%		96%	-
Single-Unit Trucks	0	0	0		0	0	15	0		15	16	0	0		16	-
Single-Unit Trucks %	0%	0%	0%		0%	0%	2.6%	0%		2.6%	2%	0%	0%		2%	-
Buses	0	0	0		0	0	15	0		15	14	0	0		14	-
Buses %	0%	0%	0%		0%	0%	2.6%	0%		2.6%	1.7%	0%	0%		1.7%	-
Articulated Trucks	0	0	0		0	0	1	0		1	2	0	0		2	-
Articulated Trucks %	0%	0%	0%		0%	0%	0.2%	0%		0.2%	0.2%	0%	0%		0.2%	-
Pedestrians	-	-	-	5	-	-	-	-	1	-	-	-	-	3	-	-
Pedestrians%	-	-	-	55.6%		-	-	-	11.1%		-	-	-	33.3%		-

Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 11:30 AM - 12:30 PM

Start Time	N Approach ST. MATTHEWS AVE					E Approach PLAINS ROAD EAST					W Approach PLAINS ROAD EAST					Int. Total (15 min)
	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	Thru	Left	U-Turn	Peds	Approach Total	
11:30:00	3	2	0	8	5	1	184	0	1	185	195	5	0	3	200	390
11:45:00	4	1	0	5	5	5	173	0	4	178	191	2	0	1	193	376
12:00:00	7	2	0	2	9	2	183	0	0	185	194	4	0	0	198	392
12:15:00	5	11	0	2	16	6	165	0	0	171	183	7	0	2	190	377
Grand Total	19	16	0	17	35	14	705	0	5	719	763	18	0	6	781	**1535**
Approach%	54.3%	45.7%	0%		-	1.9%	98.1%	0%		-	97.7%	2.3%	0%		-	-
Totals %	1.2%	1%	0%		2.3%	0.9%	45.9%	0%		46.8%	49.7%	1.2%	0%		50.9%	-
PHF	0.68	0.36	0		0.55	0.58	0.96	0		0.97	0.98	0.64	0		0.98	-
Heavy	1	0	0		1	1	31	0		32	24	0	0		24	-
Heavy %	5.3%	0%	0%		2.9%	7.1%	4.4%	0%		4.5%	3.1%	0%	0%		3.1%	-
Lights	18	16	0		34	13	674	0		687	739	18	0		757	-
Lights %	94.7%	100%	0%		97.1%	92.9%	95.6%	0%		95.5%	96.9%	100%	0%		96.9%	-
Single-Unit Trucks	1	0	0		1	1	18	0		19	15	0	0		15	-
Single-Unit Trucks %	5.3%	0%	0%		2.9%	7.1%	2.6%	0%		2.6%	2%	0%	0%		1.9%	-
Buses	0	0	0		0	0	7	0		7	5	0	0		5	-
Buses %	0%	0%	0%		0%	0%	1%	0%		1%	0.7%	0%	0%		0.6%	-
Articulated Trucks	0	0	0		0	0	6	0		6	4	0	0		4	-
Articulated Trucks %	0%	0%	0%		0%	0%	0.9%	0%		0.8%	0.5%	0%	0%		0.5%	-
Pedestrians	-	-	-	17	-	-	-	-	5	-	-	-	-	6	-	-
Pedestrians%	-	-	-	60.7%		-	-	-	17.9%		-	-	-	21.4%		-

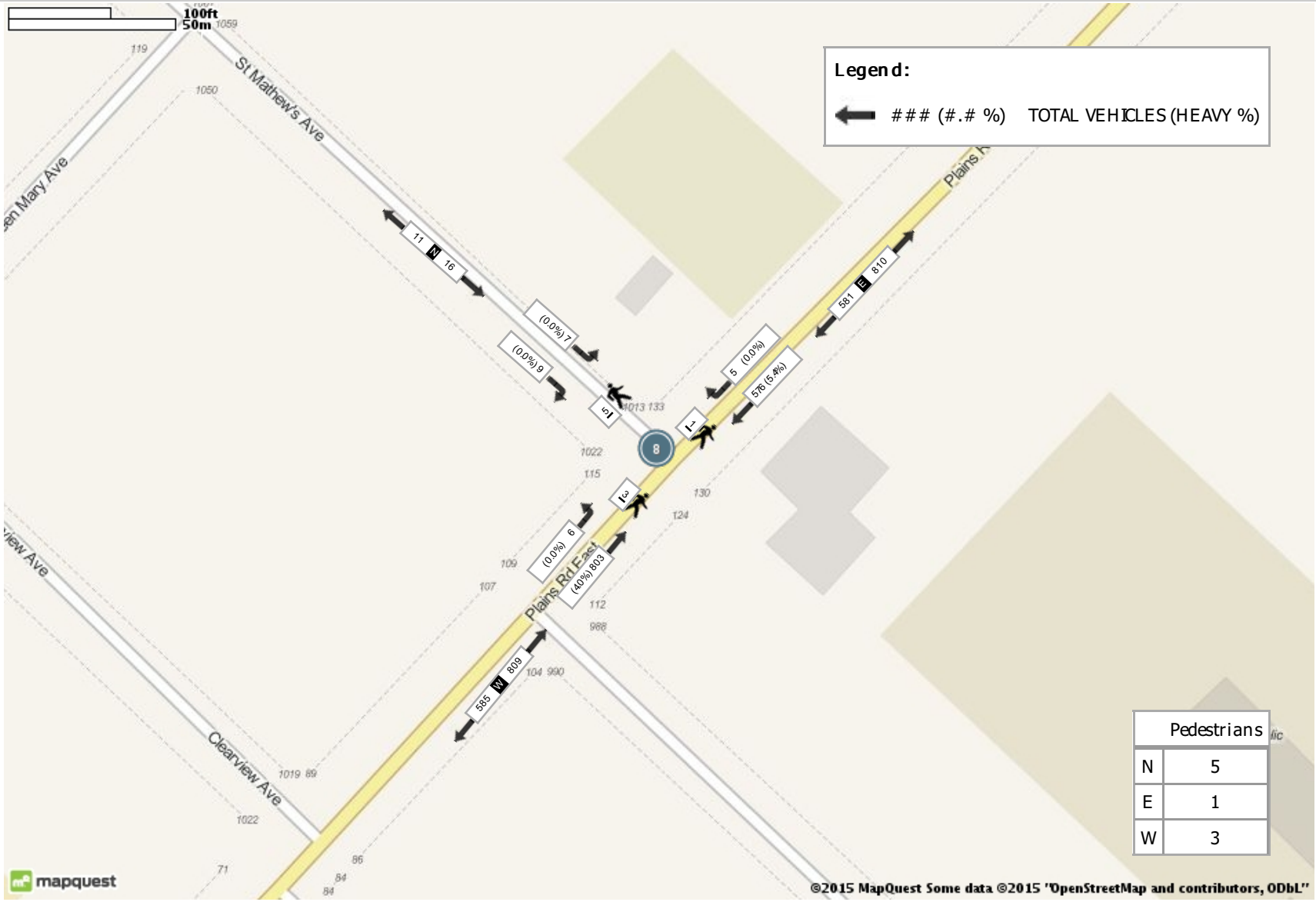
Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 04:30 PM - 05:30 PM

Start Time	N Approach ST. MATTHEWS AVE					E Approach PLAINS ROAD EAST					W Approach PLAINS ROAD EAST					Int. Total (15 min)
	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	Thru	Left	U-Turn	Peds	Approach Total	
16:30:00	3	9	0	0	12	7	278	0	5	285	198	6	0	0	204	501
16:45:00	5	3	0	0	8	8	307	0	0	315	168	5	0	1	173	496
17:00:00	8	2	0	2	10	5	277	0	1	282	178	3	0	0	181	473
17:15:00	2	3	0	1	5	3	306	0	0	309	190	1	0	0	191	505
Grand Total	18	17	0	3	35	23	1168	0	6	1191	734	15	0	1	749	**1975**
Approach%	51.4%	48.6%	0%		-	1.9%	98.1%	0%		-	98%	2%	0%		-	-
Totals %	0.9%	0.9%	0%		1.8%	1.2%	59.1%	0%		60.3%	37.2%	0.8%	0%		37.9%	-
PHF	0.56	0.47	0		0.73	0.72	0.95	0		0.95	0.93	0.63	0		0.92	-
Heavy	0	0	0		0	0	23	0		23	11	0	0		11	-
Heavy %	0%	0%	0%		0%	0%	2%	0%		1.9%	1.5%	0%	0%		1.5%	-
Lights	18	17	0		35	23	1145	0		1168	723	15	0		738	-
Lights %	100%	100%	0%		100%	100%	98%	0%		98.1%	98.5%	100%	0%		98.5%	-
Single-Unit Trucks	0	0	0		0	0	11	0		11	5	0	0		5	-
Single-Unit Trucks %	0%	0%	0%		0%	0%	0.9%	0%		0.9%	0.7%	0%	0%		0.7%	-
Buses	0	0	0		0	0	11	0		11	6	0	0		6	-
Buses %	0%	0%	0%		0%	0%	0.9%	0%		0.9%	0.8%	0%	0%		0.8%	-
Articulated Trucks	0	0	0		0	0	1	0		1	0	0	0		0	-
Articulated Trucks %	0%	0%	0%		0%	0%	0.1%	0%		0.1%	0%	0%	0%		0%	-
Pedestrians	-	-	-	3	-	-	-	-	6	-	-	-	-	1	-	-
Pedestrians%	-	-	-	30%		-	-	-	60%		-	-	-	10%		-

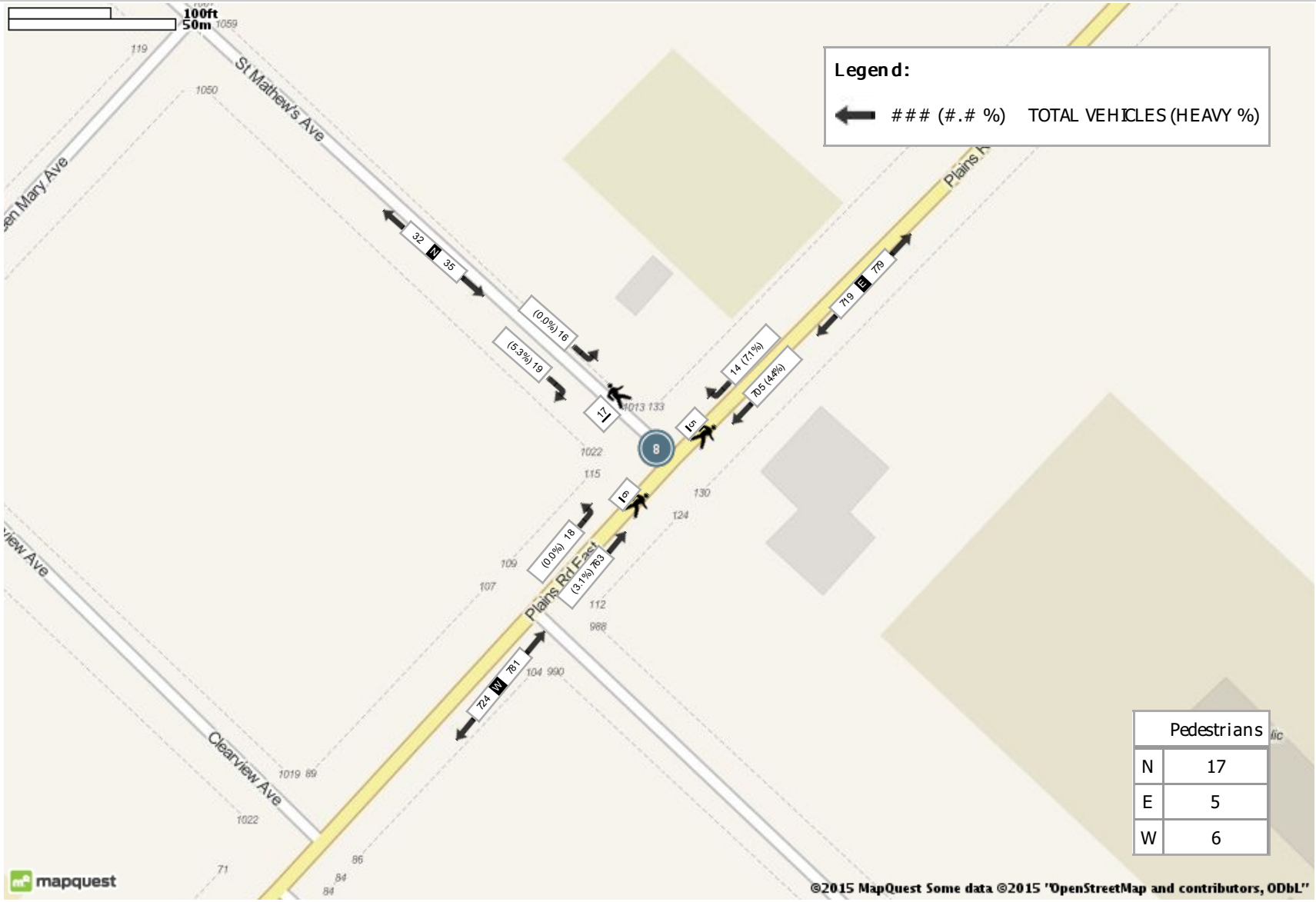
Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 07:45 AM - 08:45 AM



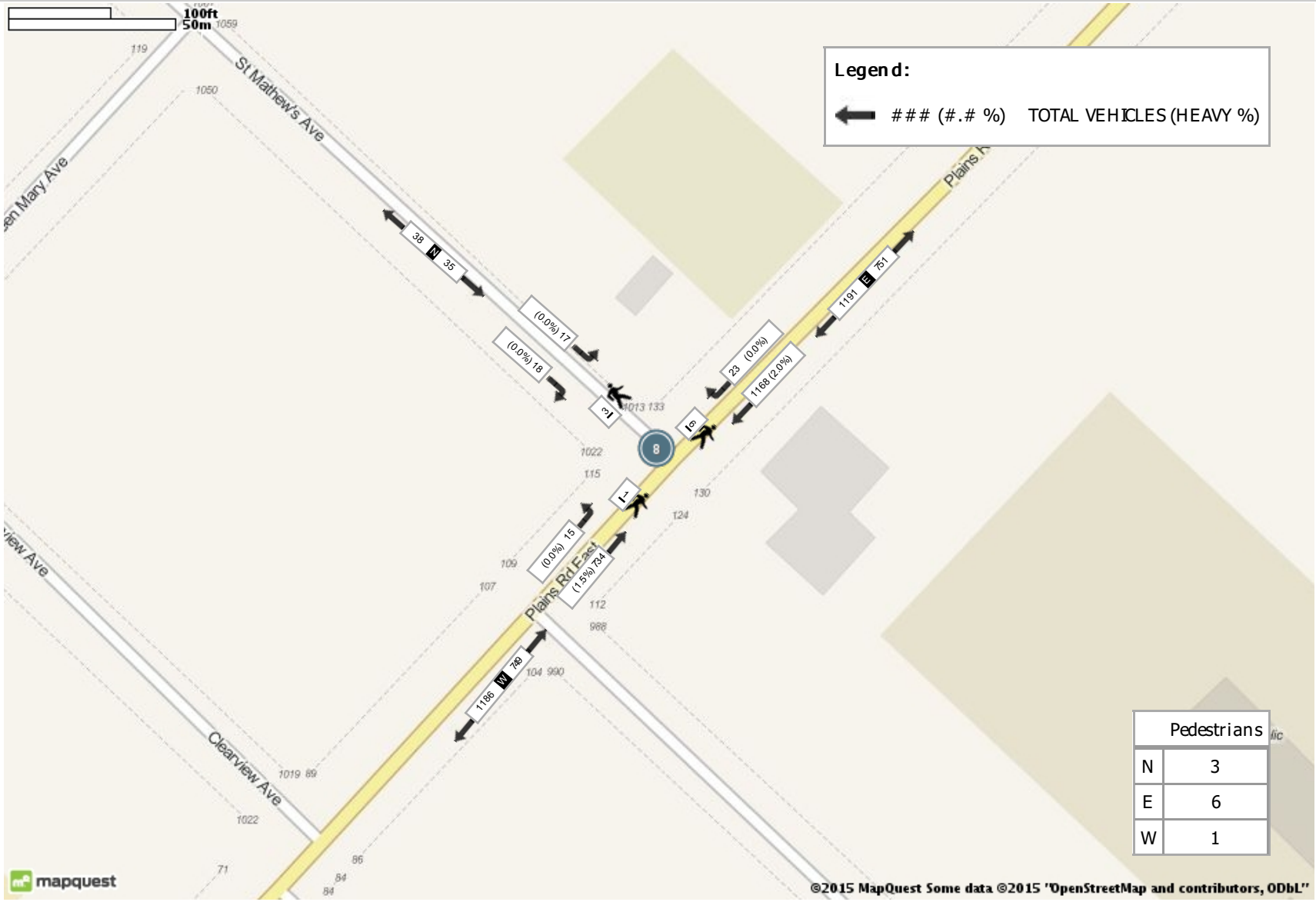
Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 11:30 AM - 12:30 PM



Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 04:30 PM - 05:30 PM



Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Turning Movement Count (9 . MASONRY COURT & WATERDOWN ROAD) MioID: 269779

Start Time	N Approach WATERDOWN ROAD						E Approach MASONRY COURT						S Approach WATERDOWN ROAD						W Approach RAILWAY ROAD						Int. Total (15 min)	Int. Total (1 hr)
	Right N: W	Thru N: S	Left N: E	UTurn N: N	Peds N:	Approach Total	Right E: N	Thru E: W	Left E: S	UTurn E: E	Peds E:	Approach Total	Right S: E	Thru S: N	Left S: W	UTurn S: S	Peds S:	Approach Total	Right W: S	Thru W: E	Left W: N	UTurn W: W	Peds W:	Approach Total		
07:30:00	3	77	46	0	0	126	5	0	1	0	0	6	15	149	1	0	0	165	2	0	6	0	0	8	305	
07:45:00	6	82	35	0	0	123	9	0	0	0	0	9	5	190	2	0	0	197	0	0	6	0	1	6	335	
08:00:00	4	105	39	0	0	148	21	0	0	0	0	21	3	179	1	0	0	183	2	0	6	0	0	8	360	
08:15:00	2	102	34	0	0	138	13	0	1	0	0	14	5	150	3	0	0	158	1	0	6	0	0	7	317	1317
08:30:00	5	114	25	0	0	144	7	0	0	0	0	7	1	153	2	0	0	156	6	0	4	0	3	10	317	1329
08:45:00	13	126	30	0	0	169	9	0	0	0	0	9	3	142	2	0	0	147	3	0	4	0	0	7	332	1326
09:00:00	4	106	22	0	0	132	10	0	0	0	0	10	2	122	5	0	0	129	1	1	11	0	0	13	284	1250
09:15:00	8	118	17	0	0	143	16	0	0	0	0	16	2	124	3	0	0	129	2	0	3	0	0	5	293	1226
BREAK																										
11:00:00	7	84	7	0	0	98	8	0	1	0	0	9	1	92	2	0	0	95	3	0	7	0	2	10	212	
11:15:00	3	107	10	1	0	121	11	0	0	0	0	11	1	94	3	0	1	98	6	0	3	0	0	9	239	
11:30:00	9	108	6	0	0	123	10	0	3	0	0	13	0	112	1	0	0	113	3	0	4	0	1	7	256	
11:45:00	6	122	12	0	0	140	8	0	0	0	0	8	0	103	3	0	0	106	1	0	3	0	1	4	258	965
12:00:00	5	104	9	0	0	118	16	0	0	0	0	16	1	107	2	0	0	110	7	0	5	0	1	12	256	1009
12:15:00	10	102	15	0	0	127	17	0	3	0	0	20	3	104	0	0	0	107	1	0	7	0	0	8	262	1032
12:30:00	6	101	9	0	0	116	15	0	0	0	0	15	0	120	0	0	0	120	3	0	6	0	0	9	260	1036
12:45:00	8	100	10	0	0	118	17	0	2	0	0	19	1	78	4	0	0	83	0	0	5	0	0	5	225	1003
13:00:00	6	95	9	0	0	110	14	0	2	0	0	16	0	123	0	0	0	123	0	0	5	0	0	5	254	1001
13:15:00	3	106	9	0	0	118	15	0	0	0	0	15	6	101	3	0	0	110	0	0	6	0	2	6	249	988
13:30:00	5	114	3	0	0	122	17	1	1	0	0	19	4	123	2	0	0	129	1	0	8	0	1	9	279	1007
13:45:00	3	111	13	1	0	128	11	0	0	0	0	11	1	103	4	0	1	108	1	1	3	0	0	5	252	1034
BREAK																										
15:00:00	4	115	15	0	0	134	31	0	1	0	0	32	0	102	1	0	0	103	2	0	5	0	0	7	276	
15:15:00	8	134	8	0	0	150	13	0	0	0	0	13	0	144	2	0	0	146	2	0	2	0	0	4	313	
15:30:00	6	129	9	0	0	144	22	0	1	0	0	23	3	111	2	0	0	116	2	0	4	0	1	6	289	
15:45:00	2	155	6	0	0	163	24	1	3	0	0	28	2	116	4	0	0	122	1	0	7	0	1	8	321	1199
16:00:00	6	124	8	0	0	138	28	0	0	0	0	28	2	126	5	0	0	133	4	0	6	0	0	10	309	1232
16:15:00	10	106	8	0	0	124	45	0	5	0	0	50	1	109	3	0	0	113	0	0	5	0	2	5	292	1211
16:30:00	2	136	10	0	0	148	34	1	2	0	0	37	1	132	3	0	0	136	3	0	5	0	0	8	329	1251
16:45:00	4	127	8	0	0	139	52	0	3	0	0	55	0	114	2	0	0	116	2	0	2	0	1	4	314	1244
17:00:00	4	130	6	0	0	140	43	1	0	0	0	44	2	130	2	0	0	134	2	0	6	0	0	8	326	1261

17:15:00	1	140	9	0	0	150	53	0	4	0	0	57	0	110	4	0	0	114	2	0	8	0	4	10	331	1300
17:30:00	6	173	3	0	0	182	73	1	2	0	0	76	1	111	2	0	0	114	0	0	7	0	0	7	379	1350
17:45:00	3	146	12	0	0	161	63	0	4	0	0	67	2	139	1	0	0	142	1	0	1	0	0	2	372	1408
Grand Total	172	3699	462	2	0	4335	730	5	39	0	0	774	68	3913	74	0	2	4055	64	2	166	0	21	232	**9396**	-
Approach%	4%	85.3%	10.7%	0%		-	94.3%	0.6%	5%	0%		-	1.7%	96.5%	1.8%	0%		-	27.6%	0.9%	71.6%	0%		-	-	-
Totals %	1.8%	39.4%	4.9%	0%		46.1%	7.8%	0.1%	0.4%	0%		8.2%	0.7%	41.6%	0.8%	0%		43.2%	0.7%	0%	1.8%	0%		2.5%	-	-
Heavy	111	198	15	0		-	21	1	2	0		-	0	225	43	0		-	34	0	99	0		-	-	-
Heavy %	64.5%	5.4%	3.2%	0%		-	2.9%	20%	5.1%	0%		-	0%	5.8%	58.1%	0%		-	53.1%	0%	59.6%	0%		-	-	-

Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 07:45 AM - 08:45 AM

Start Time	N Approach WATERDOWN ROAD						E Approach MASONRY COURT						S Approach WATERDOWN ROAD						W Approach RAILWAY ROAD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
07:45:00	6	82	35	0	0	123	9	0	0	0	0	9	5	190	2	0	0	197	0	0	6	0	1	6	335
08:00:00	4	105	39	0	0	148	21	0	0	0	0	21	3	179	1	0	0	183	2	0	6	0	0	8	360
08:15:00	2	102	34	0	0	138	13	0	1	0	0	14	5	150	3	0	0	158	1	0	6	0	0	7	317
08:30:00	5	114	25	0	0	144	7	0	0	0	0	7	1	153	2	0	0	156	6	0	4	0	3	10	317
Grand Total	17	403	133	0	0	553	50	0	1	0	0	51	14	672	8	0	0	694	9	0	22	0	4	31	**1329**
Approach%	3.1%	72.9%	24.1%	0%		-	98%	0%	2%	0%		-	2%	96.8%	1.2%	0%		-	29%	0%	71%	0%		-	-
Totals %	1.3%	30.3%	10%	0%		41.6%	3.8%	0%	0.1%	0%		3.8%	1.1%	50.6%	0.6%	0%		52.2%	0.7%	0%	1.7%	0%		2.3%	-
PHF	0.71	0.88	0.85	0		0.93	0.6	0	0.25	0		0.61	0.7	0.88	0.67	0		0.88	0.38	0	0.92	0		0.78	-
Heavy	10	36	3	0		49	2	0	0	0		2	0	32	4	0		36	4	0	14	0		18	-
Heavy %	58.8%	8.9%	2.3%	0%		8.9%	4%	0%	0%	0%		3.9%	0%	4.8%	50%	0%		5.2%	44.4%	0%	63.6%	0%		58.1%	-
Lights	7	367	130	0		504	48	0	1	0		49	14	640	4	0		658	5	0	8	0		13	-
Lights %	41.2%	91.1%	97.7%	0%		91.1%	96%	0%	100%	0%		96.1%	100%	95.2%	50%	0%		94.8%	55.6%	0%	36.4%	0%		41.9%	-
Single-Unit Trucks	8	15	3	0		26	2	0	0	0		2	0	16	4	0		20	3	0	10	0		13	-
Single-Unit Trucks %	47.1%	3.7%	2.3%	0%		4.7%	4%	0%	0%	0%		3.9%	0%	2.4%	50%	0%		2.9%	33.3%	0%	45.5%	0%		41.9%	-
Buses	0	13	0	0		13	0	0	0	0		0	0	14	0	0		14	0	0	0	0		0	-
Buses %	0%	3.2%	0%	0%		2.4%	0%	0%	0%	0%		0%	0%	2.1%	0%	0%		2%	0%	0%	0%	0%		0%	-
Articulated Trucks	2	8	0	0		10	0	0	0	0		0	0	2	0	0		2	1	0	4	0		5	-
Articulated Trucks %	11.8%	2%	0%	0%		1.8%	0%	0%	0%	0%		0%	0%	0.3%	0%	0%		0.3%	11.1%	0%	18.2%	0%		16.1%	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	4	-	-
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	100%		-

Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 11:45 AM - 12:45 PM

Start Time	N Approach WATERDOWN ROAD						E Approach MASONRY COURT						S Approach WATERDOWN ROAD						W Approach RAILWAY ROAD						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
11:45:00	6	122	12	0	0	140	8	0	0	0	0	8	0	103	3	0	0	106	1	0	3	0	1	4	258
12:00:00	5	104	9	0	0	118	16	0	0	0	0	16	1	107	2	0	0	110	7	0	5	0	1	12	256
12:15:00	10	102	15	0	0	127	17	0	3	0	0	20	3	104	0	0	0	107	1	0	7	0	0	8	262
12:30:00	6	101	9	0	0	116	15	0	0	0	0	15	0	120	0	0	0	120	3	0	6	0	0	9	260
Grand Total	27	429	45	0	0	501	56	0	3	0	0	59	4	434	5	0	0	443	12	0	21	0	2	33	**1036**
Approach%	5.4%	85.6%	9%	0%		-	94.9%	0%	5.1%	0%		-	0.9%	98%	1.1%	0%		-	36.4%	0%	63.6%	0%		-	-
Totals %	2.6%	41.4%	4.3%	0%		48.4%	5.4%	0%	0.3%	0%		5.7%	0.4%	41.9%	0.5%	0%		42.8%	1.2%	0%	2%	0%		3.2%	-
PHF	0.68	0.88	0.75	0		0.89	0.82	0	0.25	0		0.74	0.33	0.9	0.42	0		0.92	0.43	0	0.75	0		0.69	-
Heavy	20	30	1	0		51	5	0	0	0		5	0	30	4	0		34	5	0	15	0		20	-
Heavy %	74.1%	7%	2.2%	0%		10.2%	8.9%	0%	0%	0%		8.5%	0%	6.9%	80%	0%		7.7%	41.7%	0%	71.4%	0%		60.6%	-
Lights	7	399	44	0		450	51	0	3	0		54	4	404	1	0		409	7	0	6	0		13	-
Lights %	25.9%	93%	97.8%	0%		89.8%	91.1%	0%	100%	0%		91.5%	100%	93.1%	20%	0%		92.3%	58.3%	0%	28.6%	0%		39.4%	-
Single-Unit Trucks	14	16	1	0		31	5	0	0	0		5	0	17	3	0		20	4	0	12	0		16	-
Single-Unit Trucks %	51.9%	3.7%	2.2%	0%		6.2%	8.9%	0%	0%	0%		8.5%	0%	3.9%	60%	0%		4.5%	33.3%	0%	57.1%	0%		48.5%	-
Buses	0	6	0	0		6	0	0	0	0		0	0	3	0	0		3	0	0	0	0		0	-
Buses %	0%	1.4%	0%	0%		1.2%	0%	0%	0%	0%		0%	0%	0.7%	0%	0%		0.7%	0%	0%	0%	0%		0%	-
Articulated Trucks	6	8	0	0		14	0	0	0	0		0	0	10	1	0		11	1	0	3	0		4	-
Articulated Trucks %	22.2%	1.9%	0%	0%		2.8%	0%	0%	0%	0%		0%	0%	2.3%	20%	0%		2.5%	8.3%	0%	14.3%	0%		12.1%	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	2	-	-
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	100%		-

Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 05:00 PM - 06:00 PM

Start Time	N Approach WATERDOWN ROAD						E Approach MASONRY COURT						S Approach WATERDOWN ROAD						W Approach RAILWAY ROAD						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
17:00:00	4	130	6	0	0	140	43	1	0	0	0	44	2	130	2	0	0	134	2	0	6	0	0	8	326
17:15:00	1	140	9	0	0	150	53	0	4	0	0	57	0	110	4	0	0	114	2	0	8	0	4	10	331
17:30:00	6	173	3	0	0	182	73	1	2	0	0	76	1	111	2	0	0	114	0	0	7	0	0	7	379
17:45:00	3	146	12	0	0	161	63	0	4	0	0	67	2	139	1	0	0	142	1	0	1	0	0	2	372
Grand Total	14	589	30	0	0	633	232	2	10	0	0	244	5	490	9	0	0	504	5	0	22	0	4	27	**1408**
Approach%	2.2%	93%	4.7%	0%		-	95.1%	0.8%	4.1%	0%		-	1%	97.2%	1.8%	0%		-	18.5%	0%	81.5%	0%		-	-
Totals %	1%	41.8%	2.1%	0%		45%	16.5%	0.1%	0.7%	0%		17.3%	0.4%	34.8%	0.6%	0%		35.8%	0.4%	0%	1.6%	0%		1.9%	-
PHF	0.58	0.85	0.63	0		0.87	0.79	0.5	0.63	0		0.8	0.63	0.88	0.56	0		0.89	0.63	0	0.69	0		0.68	-
Heavy	5	12	0	0		17	2	1	0	0		3	0	14	7	0		21	3	0	7	0		10	-
Heavy %	35.7%	2%	0%	0%		2.7%	0.9%	50%	0%	0%		1.2%	0%	2.9%	77.8%	0%		4.2%	60%	0%	31.8%	0%		37%	-
Lights	9	577	30	0		616	230	1	10	0		241	5	476	2	0		483	2	0	15	0		17	-
Lights %	64.3%	98%	100%	0%		97.3%	99.1%	50%	100%	0%		98.8%	100%	97.1%	22.2%	0%		95.8%	40%	0%	68.2%	0%		63%	-
Single-Unit Trucks	3	6	0	0		9	2	1	0	0		3	0	7	5	0		12	3	0	5	0		8	-
Single-Unit Trucks %	21.4%	1%	0%	0%		1.4%	0.9%	50%	0%	0%		1.2%	0%	1.4%	55.6%	0%		2.4%	60%	0%	22.7%	0%		29.6%	-
Buses	0	5	0	0		5	0	0	0	0		0	0	7	0	0		7	0	0	0	0		0	-
Buses %	0%	0.8%	0%	0%		0.8%	0%	0%	0%	0%		0%	0%	1.4%	0%	0%		1.4%	0%	0%	0%	0%		0%	-
Articulated Trucks	2	1	0	0		3	0	0	0	0		0	0	0	2	0		2	0	0	2	0		2	-
Articulated Trucks %	14.3%	0.2%	0%	0%		0.5%	0%	0%	0%	0%		0%	0%	0%	22.2%	0%		0.4%	0%	0%	9.1%	0%		7.4%	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	4	-	-
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	100%		-

Peak Hour: 07:45 AM - 08:45 AM



Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 11:45 AM - 12:45 PM



Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 05:00 PM - 06:00 PM



	Pedestrians
N	0
S	0
E	0
W	4

Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Turning Movement Count (10 . MASONRY COURT & COOKE BOULEVARD) MioID: 269781

Start Time	E Approach MASONRY COURT					S Approach COOKE BOULEVARD					W Approach MASONRY COURT					Int. Total (15 min)	Int. Total (1 hr)
	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	U-Turn W:W	Peds W:	Approach Total		
07:30:00	4	6	0	0	10	31	5	0	0	36	4	51	0	0	55	101	
07:45:00	3	5	0	0	8	17	11	0	0	28	9	30	0	0	39	75	
08:00:00	3	6	0	0	9	10	13	0	0	23	16	27	0	0	43	75	
08:15:00	4	2	0	1	6	6	9	0	1	15	9	25	0	0	34	55	306
08:30:00	2	0	0	0	2	1	11	0	0	12	10	11	0	0	21	35	240
08:45:00	1	0	0	0	1	4	12	0	0	16	19	8	0	0	27	44	209
09:00:00	2	1	0	0	3	2	11	0	0	13	11	11	0	0	22	38	172
09:15:00	6	2	0	0	8	2	12	0	0	14	10	4	0	0	14	36	153
BREAK																	
11:00:00	2	0	0	1	2	0	5	0	0	5	2	4	1	0	7	14	
11:15:00	2	0	0	0	2	0	8	0	0	8	6	4	0	0	10	20	
11:30:00	2	0	0	0	2	1	11	0	0	12	3	4	0	0	7	21	
11:45:00	0	1	0	0	1	1	9	0	0	10	7	5	0	0	12	23	78
12:00:00	0	0	0	0	0	2	10	0	0	12	3	7	0	0	10	22	86
12:15:00	4	1	0	0	5	0	18	0	0	18	7	7	0	0	14	37	103
12:30:00	1	0	0	0	1	1	10	0	0	11	6	4	0	0	10	22	104
12:45:00	6	0	0	0	6	0	12	0	1	12	5	5	0	0	10	28	109
13:00:00	3	0	0	0	3	0	8	0	0	8	5	2	0	0	7	18	105
13:15:00	7	0	0	0	7	0	11	0	0	11	8	6	0	0	14	32	100
13:30:00	4	0	0	0	4	1	12	0	0	13	3	2	0	0	5	22	100
13:45:00	2	2	0	0	4	1	10	0	0	11	4	7	0	0	11	26	98
BREAK																	
15:00:00	6	1	0	2	7	1	21	0	1	22	8	7	0	0	15	44	
15:15:00	5	4	0	0	9	3	10	0	0	13	6	3	0	0	9	31	
15:30:00	1	2	0	1	3	1	21	0	1	22	6	6	0	0	12	37	

Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

15:45:00	13	2	0	0	15	0	15	0	0	15	6	3	0	0	9	39	151
16:00:00	4	0	0	0	4	0	23	0	0	23	5	3	0	0	8	35	142
16:15:00	28	6	0	0	34	2	22	0	1	24	5	5	0	0	10	68	179
16:30:00	0	0	0	0	0	0	29	0	0	29	6	6	1	0	13	42	184
16:45:00	32	12	0	0	44	2	20	0	0	22	4	2	0	0	6	72	217
17:00:00	2	0	0	0	2	1	37	0	0	38	4	4	0	0	8	48	230
17:15:00	42	12	0	0	54	3	15	0	0	18	6	5	0	0	11	83	245
17:30:00	54	23	0	0	77	1	21	0	0	22	1	3	0	0	4	103	306
17:45:00	46	16	0	0	62	7	15	0	0	22	6	10	0	0	16	100	334
Grand Total	291	104	0	5	395	101	457	0	5	558	210	281	2	0	493	**1446**	-
Approach %	73.7%	26.3%	0%		-	18.1%	81.9%	0%		-	42.6%	57%	0.4%		-	-	-
Totals %	20.1%	7.2%	0%		27.3%	7%	31.6%	0%		38.6%	14.5%	19.4%	0.1%		34.1%	-	-
Heavy	5	0	0		-	3	18	0		-	8	6	0		-	-	-
Heavy %	1.7%	0%	0%		-	3%	3.9%	0%		-	3.8%	2.1%	0%		-	-	-

Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 07:30 AM - 08:30 AM

Start Time	E Approach MASONRY COURT					S Approach COOKE BOULEVARD					W Approach MASONRY COURT					Int. Total (15 min)
	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	
07:30:00	4	6	0	0	10	31	5	0	0	36	4	51	0	0	55	101
07:45:00	3	5	0	0	8	17	11	0	0	28	9	30	0	0	39	75
08:00:00	3	6	0	0	9	10	13	0	0	23	16	27	0	0	43	75
08:15:00	4	2	0	1	6	6	9	0	1	15	9	25	0	0	34	55
Grand Total	14	19	0	1	33	64	38	0	1	102	38	133	0	0	171	**306**
Approach%	42.4%	57.6%	0%		-	62.7%	37.3%	0%		-	22.2%	77.8%	0%		-	-
Totals %	4.6%	6.2%	0%		10.8%	20.9%	12.4%	0%		33.3%	12.4%	43.5%	0%		55.9%	-
PHF	0.88	0.79	0		0.83	0.52	0.73	0		0.71	0.59	0.65	0		0.78	-
Heavy	0	0	0		0	0	0	0		0	0	1	0		1	-
Heavy %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0.8%	0%		0.6%	-
Lights	14	19	0		33	64	38	0		102	38	132	0		170	-
Lights %	100%	100%	0%		100%	100%	100%	0%		100%	100%	99.2%	0%		99.4%	-
Single-Unit Trucks	0	0	0		0	0	0	0		0	0	1	0		1	-
Single-Unit Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0.8%	0%		0.6%	-
Buses	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%	-
Articulated Trucks	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%	-
Pedestrians	-	-	-	1	-	-	-	-	1	-	-	-	-	0	-	-
Pedestrians%	-	-	-	50%		-	-	-	50%		-	-	-	0%		-

Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 12:00 PM - 01:00 PM

Start Time	E Approach MASONRY COURT					S Approach COOKE BOULEVARD					W Approach MASONRY COURT					Int. Total (15 min)
	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	
12:00:00	0	0	0	0	0	2	10	0	0	12	3	7	0	0	10	22
12:15:00	4	1	0	0	5	0	18	0	0	18	7	7	0	0	14	37
12:30:00	1	0	0	0	1	1	10	0	0	11	6	4	0	0	10	22
12:45:00	6	0	0	0	6	0	12	0	1	12	5	5	0	0	10	28
Grand Total	11	1	0	0	12	3	50	0	1	53	21	23	0	0	44	**109**
Approach%	91.7%	8.3%	0%		-	5.7%	94.3%	0%		-	47.7%	52.3%	0%		-	-
Totals %	10.1%	0.9%	0%		11%	2.8%	45.9%	0%		48.6%	19.3%	21.1%	0%		40.4%	-
PHF	0.46	0.25	0		0.5	0.38	0.69	0		0.74	0.75	0.82	0		0.79	-
Heavy	1	0	0		1	2	4	0		6	1	0	0		1	-
Heavy %	9.1%	0%	0%		8.3%	66.7%	8%	0%		11.3%	4.8%	0%	0%		2.3%	-
Lights	10	1	0		11	1	46	0		47	20	23	0		43	-
Lights %	90.9%	100%	0%		91.7%	33.3%	92%	0%		88.7%	95.2%	100%	0%		97.7%	-
Single-Unit Trucks	1	0	0		1	1	4	0		5	1	0	0		1	-
Single-Unit Trucks %	9.1%	0%	0%		8.3%	33.3%	8%	0%		9.4%	4.8%	0%	0%		2.3%	-
Buses	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%	-
Articulated Trucks	0	0	0		0	1	0	0		1	0	0	0		0	-
Articulated Trucks %	0%	0%	0%		0%	33.3%	0%	0%		1.9%	0%	0%	0%		0%	-
Pedestrians	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	-
Pedestrians%	-	-	-	0%		-	-	-	100%		-	-	-	0%		-

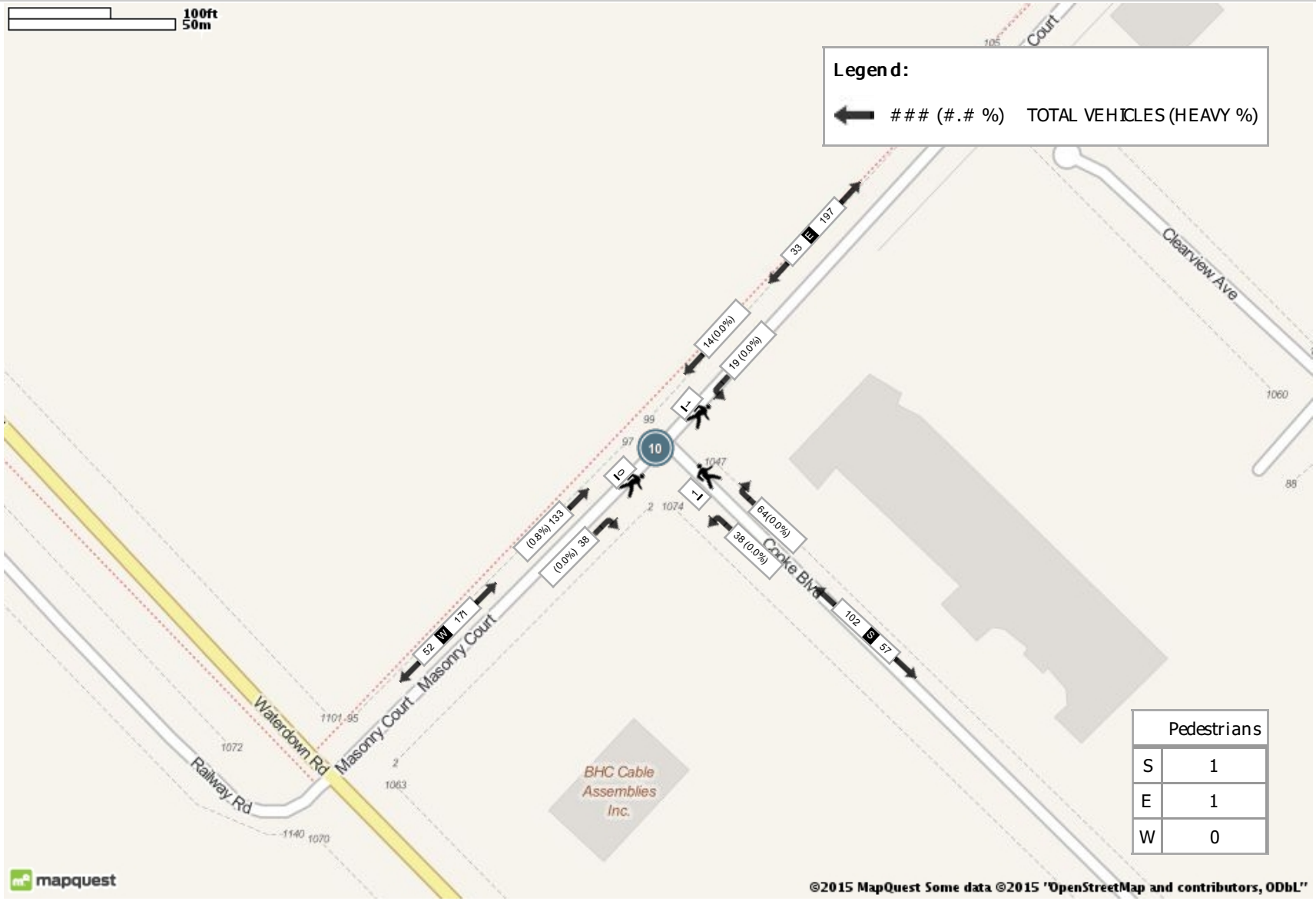
Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 05:00 PM - 06:00 PM

Start Time	E Approach MASONRY COURT					S Approach COOKE BOULEVARD					W Approach MASONRY COURT					Int. Total (15 min)
	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	
17:00:00	2	0	0	0	2	1	37	0	0	38	4	4	0	0	8	48
17:15:00	42	12	0	0	54	3	15	0	0	18	6	5	0	0	11	83
17:30:00	54	23	0	0	77	1	21	0	0	22	1	3	0	0	4	103
17:45:00	46	16	0	0	62	7	15	0	0	22	6	10	0	0	16	100
Grand Total	144	51	0	0	195	12	88	0	0	100	17	22	0	0	39	**334**
Approach%	73.8%	26.2%	0%		-	12%	88%	0%		-	43.6%	56.4%	0%		-	-
Totals %	43.1%	15.3%	0%		58.4%	3.6%	26.3%	0%		29.9%	5.1%	6.6%	0%		11.7%	-
PHF	0.67	0.55	0		0.63	0.43	0.59	0		0.66	0.71	0.55	0		0.61	-
Heavy	0	0	0		0	0	4	0		4	1	0	0		1	-
Heavy %	0%	0%	0%		0%	0%	4.5%	0%		4%	5.9%	0%	0%		2.6%	-
Lights	144	51	0		195	12	84	0		96	16	22	0		38	-
Lights %	100%	100%	0%		100%	100%	95.5%	0%		96%	94.1%	100%	0%		97.4%	-
Single-Unit Trucks	0	0	0		0	0	4	0		4	1	0	0		1	-
Single-Unit Trucks %	0%	0%	0%		0%	0%	4.5%	0%		4%	5.9%	0%	0%		2.6%	-
Buses	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%	-
Articulated Trucks	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%	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-

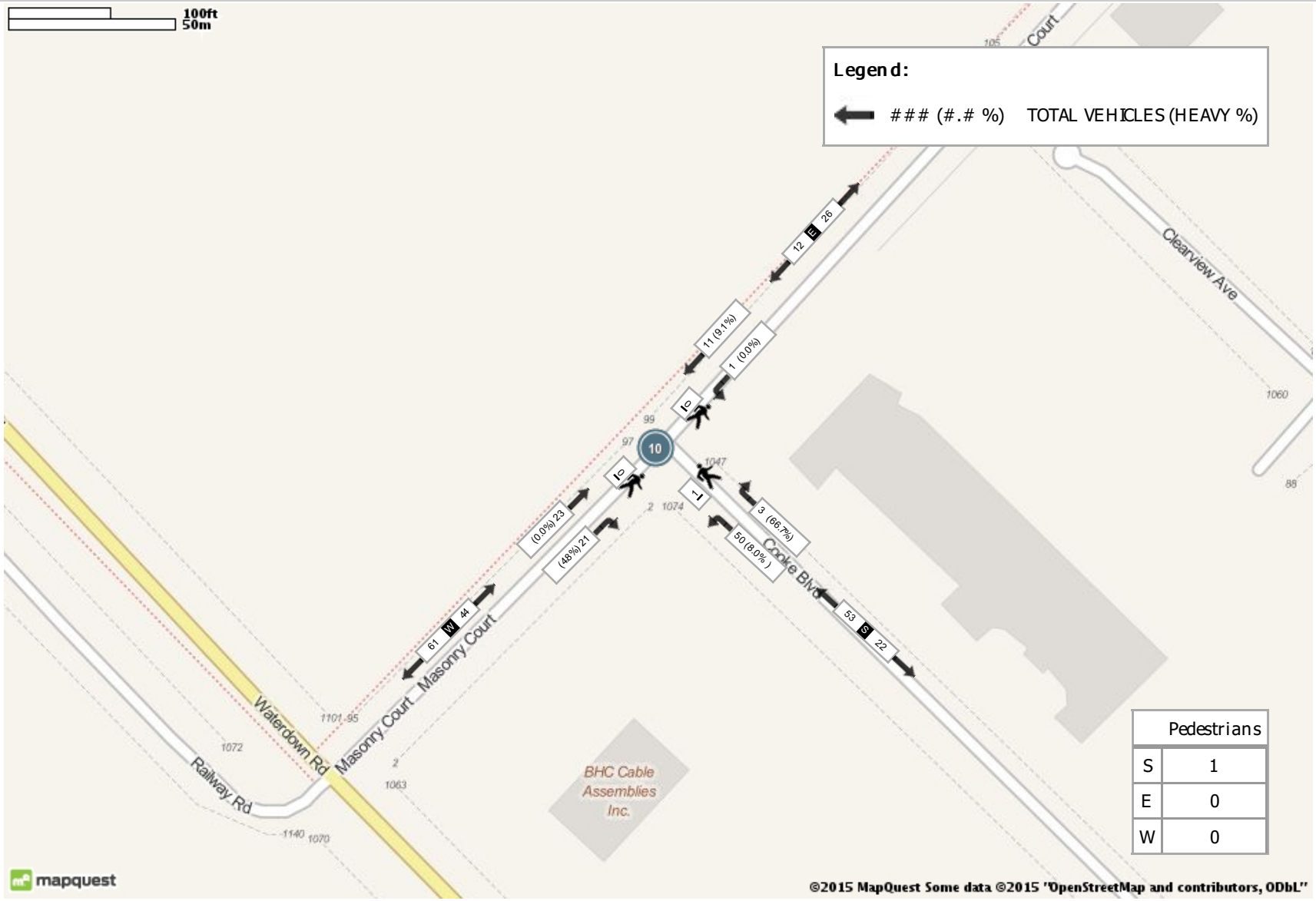
Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 07:30 AM - 08:30 AM



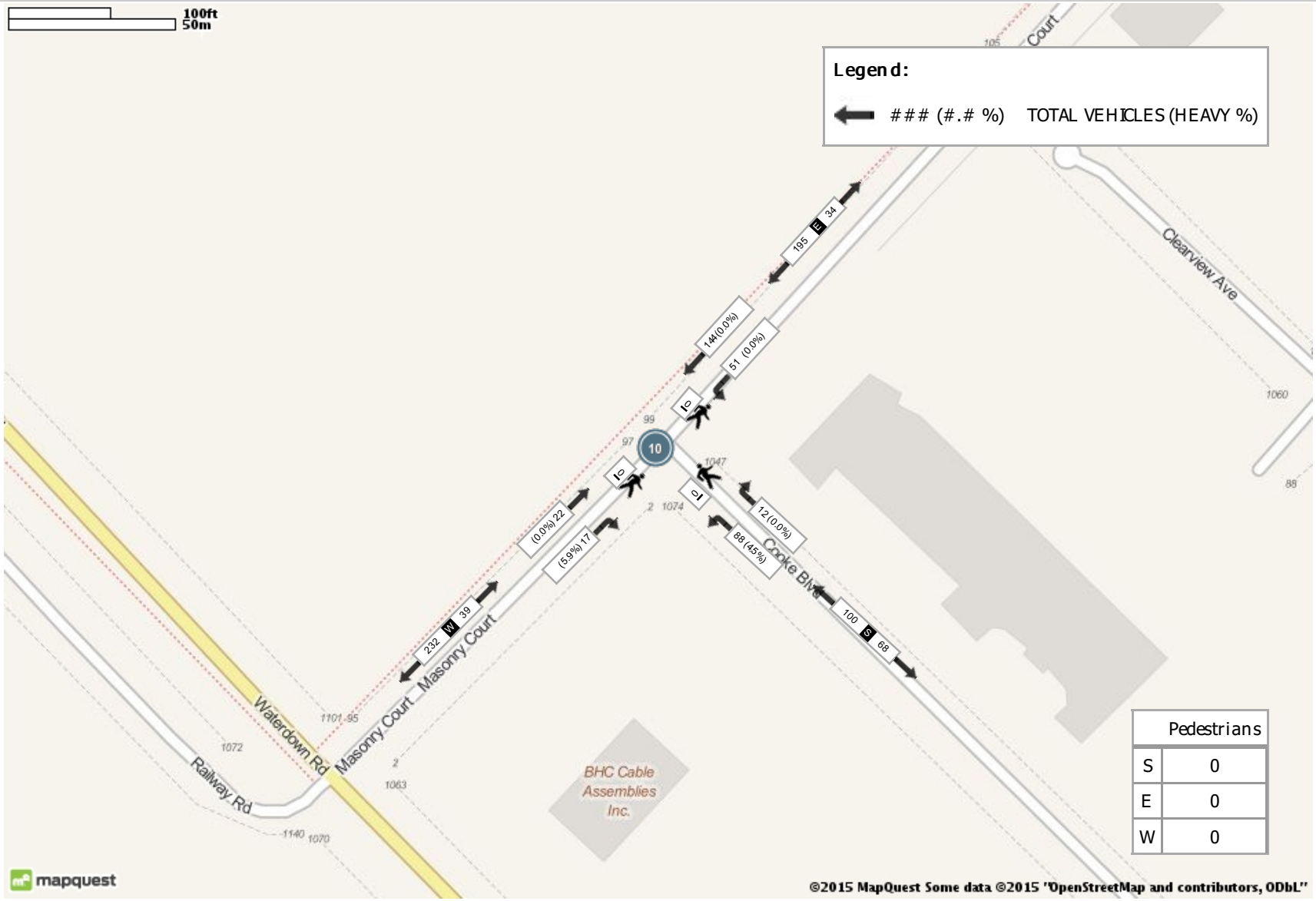
Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 12:00 PM - 01:00 PM



Paradigm Transportation Solutions Ltd
43 Forest Road
Cambridge ON, CANADA, N1S 3B4

Peak Hour: 05:00 PM - 06:00 PM



Intersection Name:	TS ID:	Group No:	IP address:
Waterdown Rd @ NSr	106		172.22.13.2

Controller Make:	Model:
Econolite	ACS/3

Type of Operation: 8 Phase Semi-Actuated

No	Date Y	Date M	Date D	Description	Prepared by MA
1	2015	1		Implement timings in Centracs	

*- Start from Main Manu

PHASE DESCRIPTION

Ph1	SBLT - Waterdown Rd	Ph5	NBLT - Waterdown Rd
Ph2	NB -Waterdown Rd	Ph6	SB -Waterdown Rd
Ph3		Ph7	
Ph4		Ph8	WB - NSR

CONFIGURATION (PHASE SEQ): PHASE IN USE/EXCLUSIVE PED (MM) *- 1 - 2

Phase:	1	2	3	4	5	6	7	8
Phase in Use :	X	X			X	X		X
Exclusive PED :								

CONTROLLER TIMING DATA - VEHICLE TIMING * - 2 - 1

Timing Plan: 1

Phase:	1	2	3	4	5	6	7	8
Minimum Green :	7	8			7	8		8
Walk :		15				15		10
Ped. Clearance :		8				8		14
Vehicle Extension :	3	3			3	3		3
MAX 1 :	15	40			20	40		30
MAX 2 :	15	40			20	40		30
Yellow Change :	3	4			3	4		4
Red Clearance :	0	2			0	2		3

PHASE DATA - VEHICLE AND PEDESTRAN RECALLS * - 2 - 8

Phase:	1	2	3	4	5	6	7	8
Lock Detector :								
Vehicle Recall :		X				X		
Pedestrian Recall :		X				X		
MAX Recall :								
Soft Recall :								

COORDINATION: COORDINATOR PATTERN, SPLIT PATTERN * - 3 - 2, - 3 - 3

Coordinator Pattern (CP)	Cycle Length	Offset (sec)	Timing Plan	Split Pattern	Phases (sec) 1	2	3	4	5	6	7	8
1	100	48	1	1	25	55			22	58		20
2	90	55	1	2	17	39			22	34		34
3	110	97	1	3	11	62			21	52		37
10			1	10								

Intersection Name:	TS ID:	Group No:	IP address:
Waterdown Rd @ NSr	106		172.22.13.2
Controller Make:	**Model:**		
Econolite	ACS/3		

CP # 1, 2, 10	Phase:	1	2	3	4	5	6	7	8
Coord Phase	:		X				X		
Vehicle Recall	:								
Pedestrian Recall *(3-3, 5-2)	:		X				X		
Recall to MAX Time	:								
Phase Omit	:								
Special Function Outputs	:								

Coordinator Pattern #	Prefer.	Phase							
		1	2	3	4	5	6	7	8
	1								
	2								

X - select "." deselect

TIME BASE: ACTION PLAN, DAY PLAN *** - 5 - 2, - 5 - 3, -5 - 4**

Day Plan	Sched. #	Action Plan	Time Period	Pattern	Timing Plan
1	1	1	06:00	1	1
1	1	2	09:00	2	1
1	1	3	15:30	3	1
1	1	10	19:00	10	1
2	2	2	08:00	2	1
2	2	10	19:00	10	1
3	3	2	09:00	2	1
3	3	10	19:00	3	1

Schedule 1 = Day Plan 1
Schedule 2 = Day Plan 2
Schedule 3 = Day Plan 3

Day Plan 1 (Weekday)
Day Plan 2 (Saturday)
Day Plan 3 (Sunday, Holidays)

Action Plan 10 = free (254)

TIME BASE DATA - TIME OF YEAR EVENTS *** - 5 - 5**

Events	Exception Day		MON/ MON	DOW/ DOW	WOM/ Year	Day Plan
New Year's Day	1	Fixed	1	1	0	3
Family Day	2	Float	2	2	3	3
Good Friday	3	Float	4	6	1	3
Victoria Day	4	Float	5	2	3	3
Canada Day	5	Fixed	7	1	0	3
Civic Day	6	Float	8	2	1	3
Labour Day	7	Float	9	2	1	3
Thanksgiving	8	Float	10	2	2	3
Christmas Day	9	Fixed	12	25	0	3

Intersection Name:	TS ID:	Group No:	IP address:
Waterdown Rd @ 403 North Ramp	31		172.22.12.2

Controller Make:	Model:
Econolite	ACS/3

Type of Operation: 8 Phase Semi-Actuated

No	Date Y	Date M	Date D	Description	Prepared by
1	2015	1		Implement timings in Centracs	MA

*- Start from Main Manu

PHASE DESCRIPTION

Ph1		Ph5	
Ph2	NB -Waterdown Rd	Ph6	SB -Waterdown Rd
Ph3		Ph7	WB - North Ramp
Ph4		Ph8	EB - Private Entrance

CONFIGURATION (PHASE SEQ): PHASE IN USE/EXCLUSIVE PED (MM) *- 1 - 2

Phase:	1	2	3	4	5	6	7	8
Phase in Use :		X				X	X	X
Exclusive PED :								

CONTROLLER TIMING DATA - VEHICLE TIMING * - 2 - 1

Timing Plan: 1 / Phase:	1	2	3	4	5	6	7	8
Minimum Green :		8				8	8	8
Walk :		8				8		
Ped. Clearance :		16				16		
Vehicle Extension :		3				3	3	3
MAX 1 :		40				40	30	15
MAX 2 :		40				40	30	15
Yellow Change :		4				4	4	4
Red Clearance :		2				2	3	3

PHASE DATA - VEHICLE AND PEDESTRAN RECALLS * - 2 - 8

Phase:	1	2	3	4	5	6	7	8
Lock Detector :								
Vehicle Recall :		X				X		
Pedestrian Recall :		X				X		
MAX Recall :								
Soft Recall :								

COORDINATION: COORDINATOR PATTERN, SPLIT PATTERN * - 3 - 2, - 3 - 3

Coordinator Pattern (CP)	Cycle Length	Offset (sec)	Timing Plan	Split Pattern	Phases (sec) 1	2	3	4	5	6	7	8
1	100	55	1	1		55				55	27	18
2	90	65	1	2		45				45	27	18
3	110	94	1	3		65				65	26	19
10			1	10								

Intersection Name:	TS ID:	Group No:	IP address:
Waterdown Rd @ 403 North Ramp	31		172.22.12.2
Controller Make:	**Model:**		
Econolite	ACS/3		

CP # 1, 2, 10	Phase:	1	2	3	4	5	6	7	8
Coord Phase	:		X				X		
Vehicle Recall	:								
Pedestrian Recall *(3-3, 5-2)	:		X				X		
Recall to MAX Time	:								
Phase Omit	:								
Special Function Outputs	:								

Coordinator Pattern #	Prefer.	Phase							
		1	2	3	4	5	6	7	8
	1								
	2								

X - select "." deselect

TIME BASE: ACTION PLAN, DAY PLAN *** - 5 - 2, - 5 - 3, -5 - 4**

Day Plan	Sched. #	Action Plan	Time Period	Pattern	Timing Plan
1	1	1	06:00	1	1
1	1	2	09:00	2	1
1	1	3	15:30	3	1
1	1	10	19:00	10	1
2	2	2	08:00	2	1
2	2	10	19:00	10	1
3	3	2	09:00	2	1
3	3	10	19:00	3	1

Schedule 1 = Day Plan 1
Schedule 2 = Day Plan 2
Schedule 3 = Day Plan 3

Day Plan 1 (Weekday)
Day Plan 2 (Saturday)
Day Plan 3 (Sunday, Holidays)

Action Plan 10 = free (254)

TIME BASE DATA - TIME OF YEAR EVENTS *** - 5 - 5**

Events	Exception Day		MON/ MON	DOW/ DOW	WOM/ Year	Day Plan
New Year's Day	1	Fixed	1	1	0	3
Family Day	2	Float	2	2	3	3
Good Friday	3	Float	4	6	1	3
Victoria Day	4	Float	5	2	3	3
Canada Day	5	Fixed	7	1	0	3
Civic Day	6	Float	8	2	1	3
Labour Day	7	Float	9	2	1	3
Thanksgiving	8	Float	10	2	2	3
Christmas Day	9	Fixed	12	25	0	3

Intersection Name:	TS ID:	Group No:	IP address:
Waterdown Rd @ 403 South Ramp	105		172.22.9.2

Controller Make:	Model:
Econolite	ACS/3

Type of Operation: 8 Phase Semi-Actuated

No	Date Y	Date M	Date D	Description	Prepared by
2	2015	2	27	Change Split 1	MA

*- Start from Main Manu

PHASE DESCRIPTION

Ph1	SBLT - Waterdown Rd	Ph5	
Ph2	NB -Waterdown Rd	Ph6	SB -Waterdown Rd
Ph3	WB -403 EB on Ramp	Ph7	
Ph4	EB - 403 EB off Ramp	Ph8	

CONFIGURATION (PHASE SEQ): PHASE IN USE/EXCLUSIVE PED (MM) *- 1 - 2

Phase:	1	2	3	4	5	6	7	8
Phase in Use :	X	X	X	X		X		
Exclusive PED :								

CONTROLLER TIMING DATA - VEHICLE TIMING * - 2 - 1

Timing Plan: 1

Phase:	1	2	3	4	5	6	7	8
Minimum Green :	6	8	8	8		8		
Walk :		8		8		8		
Ped. Clearance :		14		14		14		
Vehicle Extension :	3	3	3	3		3		
MAX 1 :	15	40	20	30		40		
MAX 2 :	15	40	20	30		40		
Yellow Change :	3	4	4	4		4		
Red Clearance :	0	2	3	3		2		

PHASE DATA - VEHICLE AND PEDESTRAN RECALLS * - 2 - 8

Phase:	1	2	3	4	5	6	7	8
Lock Detector :								
Vehicle Recall :		X				X		
Pedestrian Recall :		X				X		
MAX Recall :								
Soft Recall :								

COORDINATION: COORDINATOR PATTERN, SPLIT PATTERN * - 3 - 2, - 3 - 3

Coordinator Pattern (CP)	Cycle Length	Offset (sec)	Timing Plan	Split Pattern	Phases (sec) 1	2	3	4	5	6	7	8
1	100	54	1	1	15	35	20	30		50		
2	90	6	1	2	12	32	16	30		44		
3	110	99	1	3	17	44	22	27		61		
10			1	10								

Intersection Name:	TS ID:	Group No:	IP address:
Waterdown Rd @ 403 South Ramp	105		172.22.9.2

Controller Make:	Model:
Econolite	ACS/3

CP # 1, 2, 10	Phase:	1	2	3	4	5	6	7	8
Coord Phase	:		X				X		
Vehicle Recall	:								
Pedestrian Recall *(3-3, 5-2)	:		X				X		
Recall to MAX Time	:								
Phase Omit	:								
Special Function Outputs	:								

Coordinator Pattern #	Prefer.	Phase							
		1	2	3	4	5	6	7	8
	1								
	2								

X - select "." deselect

TIME BASE: ACTION PLAN, DAY PLAN *** - 5 - 2, - 5 - 3, -5 - 4**

Day Plan	Sched. #	Action Plan	Time Period	Pattern	Timing Plan
1	1	1	06:00	1	1
1	1	2	09:00	2	1
1	1	3	15:30	3	1
1	1	10	19:00	10	1
2	2	2	08:00	2	1
2	2	10	19:00	10	1
3	3	2	09:00	2	1
3	3	10	19:00	3	1

Schedule 1 = Day Plan 1
Schedule 2 = Day Plan 2
Schedule 3 = Day Plan 3

Day Plan 1 (Weekday)
Day Plan 2 (Saturday)
Day Plan 3 (Sunday, Holidays)

Action Plan 10 = free (254)

TIME BASE DATA - TIME OF YEAR EVENTS *** - 5 - 5**

Events	Exception Day		MON/ MON	DOW/ DOW	WOM/ Year	Day Plan
New Year's Day	1	Fixed	1	1	0	3
Family Day	2	Float	2	2	3	3
Good Friday	3	Float	4	6	1	3
Victoria Day	4	Float	5	2	3	3
Canada Day	5	Fixed	7	1	0	3
Civic Day	6	Float	8	2	1	3
Labour Day	7	Float	9	2	1	3
Thanksgiving	8	Float	10	2	2	3
Christmas Day	9	Fixed	12	25	0	3

Intersection Name:	TS ID:	Line No:	IP address:
Aldershot Go Stn @ Bus Entrance	33	4	172.22.11.2

Controller Make:	Model:
Econolite	ACS/3

Type of Operation: 8 Phase Semi-Actuated

No	Date Y	M	D	Description	Prepared by
1	2015	2	4	Implement timings in Centracs	MA

*- Start from Main Manu

PHASE DESCRIPTION

Ph1		Ph5	
Ph2	EB -403 On Ramp	Ph6	EB -403 On Ramp
Ph3		Ph7	
Ph4	NB - Go Access	Ph8	

CONFIGURATION (PHASE SEQ): PHASE IN USE/EXCLUSIVE PED (MM) *- 1 - 2

Phase:	1	2	3	4	5	6	7	8
Phase in Use :		X		X		X		
Exclusive PED :								

CONTROLLER TIMING DATA - VEHICLE TIMING * - 2 - 1

Timing Plan: 1 Phase:	1	2	3	4	5	6	7	8
Minimum Green :		8		8		8		
Walk :		15				15		
Ped. Clearance :		8				8		
Vehicle Extension :		3		3		3		
MAX 1 :		30		35		30		
MAX 2 :		30		35		30		
Yellow Change :		4		4		4		
Red Clearance :		2		3		2		

PHASE DATA - VEHICLE AND PEDESTRIAN RECALLS * - 2 - 8

Phase:	1	2	3	4	5	6	7	8
Lock Detector :								
Vehicle Recall :		X				X		
Pedestrian Recall :		X				X		
MAX Recall :								
Soft Recall :								

COORDINATION: COORDINATOR PATTERN, SPLIT PATTERN * - 3 - 2, - 3 - 3

Coordinator Pattern (CP)	Cycle Length	Offset (sec)	Timing Plan	Split Pattern	Phases (sec) 1	2	3	4	5	6	7	8
10				10								

Intersection Name:	TS ID:	Line No:	IP address:
Aldershot Go Stn @ Bus Entrance	33	4	172.22.11.2

Controller Make:	Model:
Econolite	ACS/3

CP # 1, 2, 10	Phase:	1	2	3	4	5	6	7	8
Coord Phase	:		X				X		
Vehicle Recall	:								
Pedestrian Recall *(3-3, 5-2)	:		X				X		
Recall to MAX Time	:								
Phase Omit	:								
Special Function Outputs	:								

Coordinator Pattern #	Prefer.	Phase							
		1	2	3	4	5	6	7	8
	1								
	2								

X - select "." deselect

TIME BASE: ACTION PLAN, DAY PLAN *** - 5 - 2, - 5 - 3, -5 - 4**

Day Plan	Sched. #	Action Plan	Time Period	Pattern	Timing Plan
1	1	10	00:00	10	1

Schedule 1 = Day Plan 1
Schedule 2 = Day Plan 2
Schedule 3 = Day Plan 3

Day Plan 1 (Weekday)
Day Plan 2 (Saturday)
Day Plan 3 (Sunday, Holidays)

Action Plan 10 = free (254)

TIME BASE DATA - TIME OF YEAR EVENTS *** - 5 - 5**

Events	Exception Day		MON/ MON	DOW/ DOW	WOM/ Year	Day Plan
New Year's Day	1	Fixed	1	1	0	3
Family Day	2	Float	2	2	3	3
Good Friday	3	Float	4	6	1	3
Victoria Day	4	Float	5	2	3	3
Canada Day	5	Fixed	7	1	0	3
Civic Day	6	Float	8	2	1	3
Labour Day	7	Float	9	2	1	3
Thanksgiving	8	Float	10	2	2	3
Christmas Day	9	Fixed	12	25	0	3

Intersection Name:	TS ID:	Line No:	IP address:
Plains Rd @ Waterdown Rd	100	4	172.22.7.2

Controller Make:	Model:
Econolite	ACS/3

Type of Operation: 8 Phase Semi-Actuated

No	Date Y	Date M	Date D	Description	Prepared by
2	2015	9	8	Implement timings in Centracs (post construction)	BP

*- Start from Main Manu

PHASE DESCRIPTION

Ph1	WBL - Plains Rd	Ph5	EBL - Plains Rd
Ph2	EB - Plains Rd	Ph6	WB - Plains Rd
Ph3	SBL - Waterdown Rd	Ph7	
Ph4	NB - Lasalle Park Rd	Ph8	SB - Waterdown Rd

CONFIGURATION (PHASE SEQ): PHASE IN USE/EXCLUSIVE PED (MM) *- 1 - 2

Phase:	1	2	3	4	5	6	7	8
Phase in Use :	X	X	X	X	X	X		X
Exclusive PED :								

CONTROLLER TIMING DATA - VEHICLE TIMING * - 2 - 1

Timing Plan: 1

Phase:	1	2	3	4	5	6	7	8
Minimum Green :	6	8	6	8	6	8		8
Conditional Service Min. Green :								
Walk :		8		10		8		10
Ped. Clearance :		13		17		13		17
Pedestrian Carry Over :								
Vehicle Extension :	3	3	3	3	3	3		3
MAX 1 :	12	35	12	25	12	35		25
MAX 2 :	12	35	12	25	12	35		25
Yellow Change :	3	4	3	4	3	4		4
Red Clearance :		2		2		2		2

PHASE DATA - VEHICLE AND PEDESTRIAN RECALLS * - 2 - 8

Phase:	1	2	3	4	5	6	7	8
Lock Detector :								
Vehicle Recall :								
Pedestrian Recall :		X				X		
MAX Recall :		X				X		
Soft Recall :								

COORDINATION: COORDINATOR PATTERN, SPLIT PATTERN * - 3 - 2, - 3 - 3

Coordinator Pattern (CP)	Cycle Length	Offset (sec)	Timing Plan	Split Pattern	Phases (sec) 1	2	3	4	5	6	7	8
1	100	0	1	1	10	41	13	36	18	33		49
2	90	84	1	2	10	34	10	36	10	34		46
3	100	42	1	3	10	44	20	26	14	40		46
4	85	52	1	4	10	30	10	35	12	28		45
10	0	0	1	10	0	0	0	0	0	0		0

CP # 1, 2, 10	Phase:	1	2	3	4	5	6	7	8

Coord Phase	:		X				X		
Vehicle Recall	:								
Pedestrian Recall *(3-3, 5-2)	:		X				X		
Recall to MAX Time	:								
Phase Omit	:								
Special Function Outputs	:								

Coordinator Pattern #	Prefer.	Phase							
		1	2	3	4	5	6	7	8
	1								
	2								

X - select "." deselect

TIME BASE: ACTION PLAN, DAY PLAN *** - 5 - 2, - 5 - 3, -5 - 4**

Day Plan	Sched. #	Action Plan	Time Period	Pattern	Timing Plan
1	1	4	06:00	4	1
1	1	1	07:00	1	1
1	1	2	09:00	2	1
1	1	3	15:30	3	1
1	1	4	19:00	4	1
1	1	10	22:00	254	1
2	2	4	08:00	4	1
2	2	3	10:30	3	1
2	2	4	17:00	4	1
2	2	10	21:00	254	1
3	3	4	09:30	4	1
3	3	2	12:00	2	1
3	3	4	17:00	4	1
3	3	10	21:00	254	1

Schedule 1 = Day Plan 1
Schedule 2 = Day Plan 2
Schedule 3 = Day Plan 3

Day Plan 1 (Weekday)
Day Plan 2 (Saturday)
Day Plan 3 (Sunday, Holidays)

Action Plan 10 = free (254)

TIME BASE DATA - TIME OF YEAR EVENTS *** - 5 - 5**

Events	Exception Day		MON/ MON	DOW/ DOW	WOM/ Year	Day Plan
New Year's Day	1	Fixed	1	1	0	3
Family Day	2	Float	2	2	3	3
Good Friday	3	Float	4	6	1	3
Victoria Day	4	Float	5	2	3	3
Canada Day	5	Fixed	7	1	0	3
Civic Day	6	Float	8	2	1	3
Labour Day	7	Float	9	2	1	3
Thanksgiving	8	Float	10	2	2	3
Christmas Day	9	Fixed	12	25	0	3

Intersection Name:	TS ID:	Line No:	IP address:
Plains Rd @ Cooke Blvd	117	4	172.22.15.2

Controller Make:	Model:
Econolite	ACS/3

Type of Operation: 8 Phase Semi-Actuated

No	Date Y	Date M	Date D	Description	Prepared by
2	2015	9	9	Signal timing adjustment (post construction)	BP

*- Start from Main Manu

PHASE DESCRIPTION

Ph1		Ph5	EB LT - Plains Rd
Ph2	EB - Plains Rd	Ph6	WB - Plains Rd
Ph3		Ph7	
Ph4	NB - Driveway	Ph8	SB - Cooke Blvd

CONFIGURATION (PHASE SEQ): PHASE IN USE/EXCLUSIVE PED (MM) *- 1 - 2

Phase:	1	2	3	4	5	6	7	8
Phase in Use :		X		X	X	X		X
Exclusive PED :								

CONTROLLER TIMING DATA - VEHICLE TIMING * - 2 - 1

Timing Plan: 1 / Phase:	1	2	3	4	5	6	7	8
Minimum Green :		8		8	6	8		8
Conditional Service Min. Green :								
Walk :		8		8		8		8
Ped. Clearance :		11		14		11		14
Pedestrian Carry Over :								
Vehicle Extension :		3		3	3	3		3
MAX 1 :		40		30	10	40		30
MAX 2 :		40		30	10	40		30
Yellow Change :		4		4	3	4		4
Red Clearance :		3		3		3		3

PHASE DATA - VEHICLE AND PEDESTRIAN RECALLS * - 2 - 8

Phase:	1	2	3	4	5	6	7	8
Lock Detector :								
Vehicle Recall :								
Pedestrian Recall :		X				X		
MAX Recall :		X				X		
Soft Recall :								

COORDINATION: COORDINATOR PATTERN, SPLIT PATTERN * - 3 - 2, - 3 - 3

Coordinator Pattern (CP)	Cycle Length	Offset (sec)	Timing Plan	Split Pattern	Phases (sec) 1	2	3	4	5	6	7	8
1	100	0	1	1		68		32	15	53		32
2	90	84	1	2		52		38	12	40		38
3	100	42	1	3		68		32	16	52		32
4	85	52	1	4		55		30	12	43		30
10	0	0	1	10		0		0	0	0		0

CP # 1, 2, 10 Phase: 1 2 3 4 5 6 7 8

Coord Phase	:		X				X		
Vehicle Recall	:								
Pedestrian Recall *(3-3, 5-2)	:		X				X		
Recall to MAX Time	:								
Phase Omit	:								
Special Function Outputs	:								

Coordinator Pattern #	Prefer.	Phase							
		1	2	3	4	5	6	7	8
	1								
	2								

X - select "." deselect

TIME BASE: ACTION PLAN, DAY PLAN *** - 5 - 2, - 5 - 3, -5 - 4**

Day Plan	Sched. #	Action Plan	Time Period	Pattern	Timing Plan
1	1	4	06:00	4	1
1	1	1	07:00	1	1
1	1	2	09:00	2	1
1	1	3	15:30	3	1
1	1	4	19:00	4	1
1	1	10	22:00	254	1
2	2	4	08:00	4	1
2	2	3	10:30	3	1
2	2	4	17:00	4	1
2	2	10	21:00	254	1
3	3	4	09:30	4	1
3	3	2	12:00	2	1
3	3	4	17:00	4	1
3	3	10	21:00	254	1

Schedule 1 = Day Plan 1
Schedule 2 = Day Plan 2
Schedule 3 = Day Plan 3

Day Plan 1 (Weekday)
Day Plan 2 (Saturday)
Day Plan 3 (Sunday, Holidays)

Action Plan 10 = free (254)

TIME BASE DATA - TIME OF YEAR EVENTS *** - 5 - 5**

Events	Exception Day		MON/ MON	DOW/ DOW	WOM/ Year	Day Plan
New Year's Day	1	Fixed	1	1	0	3
Family Day	2	Float	2	2	3	3
Good Friday	3	Float	4	6	1	3
Victoria Day	4	Float	5	2	3	3
Canada Day	5	Fixed	7	1	0	3
Civic Day	6	Float	8	2	1	3
Labour Day	7	Float	9	2	1	3
Thanksgiving	8	Float	10	2	2	3
Christmas Day	9	Fixed	12	25	0	3

Intersection Name:	TS ID:	Group No:	IP address:
Plains Rd @ St. Matthews Ave	116		172.22.16.2

Controller Make:	Model:
Econolite	ACS/3

Type of Operation: 8 Phase Semi - Actuated

No	Date Y	M	D	Description	Prepared by
1	2015	1	22	Implement timings in Centracs	YK

*- Start from Main Manu

PHASE DESCRIPTION

Ph1		Ph5	
Ph2	EB - Plains Rd	Ph6	WB - Plains Rd
Ph3		Ph7	
Ph4		Ph8	SB - St. Matthews Ave

CONFIGURATION (PHASE SEQ): PHASE IN USE/EXCLUSIVE PED (MM) *- 1 - 2

Phase:	1	2	3	4	5	6	7	8
Phase in Use :		X				X		X
Exclusive PED :								

CONTROLLER TIMING DATA - VEHICLE TIMING * - 2 - 1

Timing Plan: 1

Phase:	1	2	3	4	5	6	7	8
Minimum Green :		8				8		8
Walk :		30				30		8
Ped. Clearance :		8				8		13
Vehicle Extension :		3				3		3
MAX 1 :		40				40		30
MAX 2 :		40				40		30
Yellow Change :		4				4		4
Red Clearance :		2				2		3

PHASE DATA - VEHICLE AND PEDESTRIAN RECALLS * - 2 - 8

Phase:	1	2	3	4	5	6	7	8
Lock Detector :								
Vehicle Recall :								
Pedestrian Recall :		X				X		
MAX Recall :		X				X		
Soft Recall :								

COORDINATION: COORDINATOR PATTERN, SPLIT PATTERN * - 3 - 2, - 3 - 3

Coordinator Pattern (CP)	Cycle Length	Offset (sec)	Timing Plan	Split Pattern	Phases (sec) 1	2	3	4	5	6	7	8
1	100	10	1	1		69		31				
2	90	4	1	2		59		31				
3	100	32	1	3		69		31				
4	85	61	1	4		54		31				
10	0	0	1	10		0		0				

Intersection Name:	TS ID:	Group No:	IP address:
Plains Rd @ St. Matthews Ave	116		172.22.16.2
Controller Make:	**Model:**		
Econolite	ACS/3		

CP # 1, 2, 10	Phase:	1	2	3	4	5	6	7	8
Coord Phase	:		X				X		
Vehicle Recall	:								
Pedestrian Recall *(3-3, 5-2)	:		X				X		
Recall to MAX Time	:								
Phase Omit	:								
Special Function Outputs	:								

Coordinator Pattern #	Prefer.	Phase							
		1	2	3	4	5	6	7	8
	1								
	2								

X - select "." deselect

TIME BASE: ACTION PLAN, DAY PLAN *** - 5 - 2, - 5 - 3, -5 - 4**

Day Plan	Sched. #	Action Plan	Time Period	Pattern	Timing Plan
1	1	4	06:00	4	1
1	1	1	07:00	1	1
1	1	2	09:00	2	1
1	1	3	15:30	3	1
1	1	4	19:00	4	1
1	1	10	22:00	254	1
2	2	4	08:00	4	1
2	2	3	10:30	3	1
2	2	4	17:00	4	1
2	2	10	21:00	254	1
3	3	4	09:30	4	1
3	3	2	12:00	2	1
3	3	4	17:00	4	1
3	3	10	21:00	254	1

Schedule 1 = Day Plan 1
Schedule 2 = Day Plan 2
Schedule 3 = Day Plan 3

Day Plan 1 (Weekday)
Day Plan 2 (Saturday)
Day Plan 3 (Sunday, Holidays)

Action Plan 10 = free (254)

TIME BASE DATA - TIME OF YEAR EVENTS *** - 5 - 5**

Events	Exception Day		MON/ MON	DOW/ DOW	WOM/ Year	Day Plan
New Year's Day	1	Fixed	1	1	0	3
Family Day	2	Float	2	2	3	3
Good Friday	3	Float	4	6	1	3
Victoria Day	4	Float	5	2	3	3
Canada Day	5	Fixed	7	1	0	3
Civic Day	6	Float	8	2	1	3
Labour Day	7	Float	9	2	1	3
Thanksgiving	8	Float	10	2	2	3
Christmas Day	9	Fixed	12	25	0	3

Intersection Name:	TS ID:	Group No:	IP address:
Waterdown Rd @ Masonry Crt	104		172.22.8.2

Controller Make:	Model:
Econolite	ACS/3

Type of Operation: 8 Phase Semi-Actuated

No	Date Y	Date M	Date D	Description	Prepared by
5	2015	10	9	Increased Side Street Flashing Don't Walk	B.P.

*- Start from Main Manu

PHASE DESCRIPTION

Ph1	SBLT - Waterdown Rd	Ph5	
Ph2	NB -Waterdown Rd	Ph6	SB -Waterdown Rd
Ph3		Ph7	
Ph4	EB -Railway Rd	Ph8	WB -Masonry Crt

CONFIGURATION (PHASE SEQ): PHASE IN USE/EXCLUSIVE PED (MM) *- 1 - 2

Phase:	1	2	3	4	5	6	7	8
Phase in Use :	X	X		X		X		X
Exclusive PED :								

CONTROLLER TIMING DATA - VEHICLE TIMING * - 2 - 1

Basic Timings Phase:	1	2	3	4	5	6	7	8
Minimum Green :	8	8		8		8		8
Conditional Service Min. Green :								
Walk :		15		8		15		8
Ped. Clearance :		14		14		14		14
Pedestrian Carry Over :								
Vehicle Extension :	3	3		3		3		3
MAX 1 :	15	40		30		40		30
MAX 2 :	15	40		30		40		30
Yellow Change :	3	4		4		4		4
Red Clearance :	0	2		3		2		3

PHASE DATA - VEHICLE AND PEDESTRAN RECALLS * - 2 - 8

Phase:	1	2	3	4	5	6	7	8
Lock Detector :								
Vehicle Recall :		X				X		
Pedestrian Recall :		X				X		
MAX Recall :								
Soft Recall :								

COORDINATION: COORDINATOR PATTERN, SPLIT PATTERN * - 3 - 2, - 3 - 3

Coordinator Pattern (CP)	Cycle Length	Offset (sec)	Timing Plan	Split Pattern	Phases (sec) 1	2	3	4	5	6	7	8
1	100	22	1	1	18	42		40		60		40
10			1	10								
3	110	72	1	3	18	60		32		78		32
10			1	10								

CP # 1, 2, 10 Phase: 1 2 3 4 5 6 7 8

Coord Phase	:		X				X		
Vehicle Recall	:								
Pedestrian Recall *(3-3, 5-2)	:		X				X		
Recall to MAX Time	:								
Phase Omit	:								
Special Function Outputs	:								

Coordinator Pattern #	Prefer.	Phase							
		1	2	3	4	5	6	7	8
	1								
	2								

X - select "." deselect

TIME BASE: ACTION PLAN, DAY PLAN *** - 5 - 2, - 5 - 3, -5 - 4**

Day Plan	Sched. #	Action Plan	Time Period	Pattern	Timing Plan
1	1	1	06:00	1	1
1	1	10	09:00	254	1
1	1	3	15:30	3	1
1	1	10	19:00	254	1
2	2	1	09:00	1	1
2	2	10	18:00	254	1
3	3	1	9:00	1	1
3	3	10	18:00	254	1

Schedule 1 = Day Plan 1
Schedule 2 = Day Plan 2
Schedule 3 = Day Plan 3

Day Plan 1 (Weekday)
Day Plan 2 (Saturday)
Day Plan 3 (Sunday, Holidays)

Action Plan 10 = free (254)

TIME BASE DATA - TIME OF YEAR EVENTS *** - 5 - 5**

Events	Exception Day		MON/ MON	DOW/ DOW	WOM/ Year	Day Plan
New Year's Day	1	Fixed	1	1	0	3
Family Day	2	Float	2	2	3	3
Good Friday	3	Float	4	6	1	3
Victoria Day	4	Float	5	2	3	3
Canada Day	5	Fixed	7	1	0	3
Civic Day	6	Float	8	2	1	3
Labour Day	7	Float	9	2	1	3
Thanksgiving	8	Float	10	2	2	3
Christmas Day	9	Fixed	12	25	0	3

Appendix C

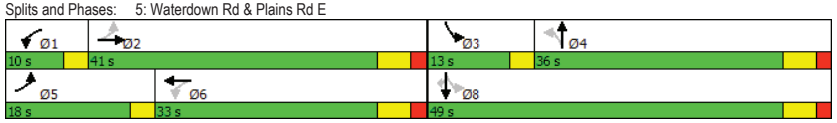
Existing Traffic – Operational Conditions

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	355	605	66	301	60	194	134	122	123
Future Volume (vph)	355	605	66	301	60	194	134	122	123
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	pm+pt	NA	Perm
Protected Phases	5	2	1	6		4	3	8	
Permitted Phases	2		6		4		8		8
Detector Phase	5	2	1	6	4	4	3	8	8
Switch Phase									
Minimum Initial (s)	6.0	8.0	6.0	8.0	8.0	8.0	6.0	8.0	8.0
Minimum Split (s)	9.0	27.0	9.0	27.0	33.0	33.0	9.0	33.0	33.0
Total Split (s)	18.0	41.0	10.0	33.0	36.0	36.0	13.0	49.0	49.0
Total Split (%)	18.0%	41.0%	10.0%	33.0%	36.0%	36.0%	13.0%	49.0%	49.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	2.0
Lost Time Adjust (s)	1.0	-2.0	1.0	-2.0	-2.0	-2.0	1.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lag	Lead		
Lead-Lag Optimize?									
Recall Mode	None	Max	None	Max	None	None	None	None	None
Act Effct Green (s)	47.2	39.4	35.0	29.1	23.8	23.8	36.3	36.3	36.3
Actuated g/C Ratio	0.52	0.43	0.38	0.32	0.26	0.26	0.40	0.40	0.40
v/c Ratio	0.91	0.54	0.40	0.48	0.28	0.74	0.63	0.24	0.27
Control Delay	44.8	22.3	19.3	23.4	29.1	39.0	29.7	18.9	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.8	22.3	19.3	23.4	29.1	39.0	29.7	18.9	3.8
LOS	D	C	B	C	C	D	C	B	A
Approach Delay		29.9		22.6		37.0		17.2	
Approach LOS		C		C		D		B	

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 91.6
Natural Cycle: 90
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.91
Intersection Signal Delay: 27.0 — Intersection LOS: C
Intersection Capacity Utilization 74.2% — ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 5: Waterdown Rd & Plains Rd E



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	399	782	112	511	85	340	160	167	171
v/c Ratio	0.91	0.54	0.40	0.48	0.28	0.74	0.63	0.24	0.27
Control Delay	44.8	22.3	19.3	23.4	29.1	39.0	29.7	18.9	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.8	22.3	19.3	23.4	29.1	39.0	29.7	18.9	3.8
Queue Length 50th (m)	46.0	56.5	10.5	33.1	12.6	54.3	19.3	20.1	0.0
Queue Length 95th (m)	#119.1	86.0	14.4	52.6	19.3	73.0	30.5	26.7	5.1
Internal Link Dist (m)		175.5		130.1		98.3		328.0	
Turn Bay Length (m)	45.0		45.0		30.0				30.0
Base Capacity (vph)	440	1456	283	1070	409	616	262	868	761
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.91	0.54	0.40	0.48	0.21	0.55	0.61	0.19	0.22

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	355	605	97	66	301	150	60	194	70	134	122	123
Future Volume (vph)	355	605	97	66	301	150	60	194	70	134	122	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.95		1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1646	3350		1615	3181		1705	1715		1630	1759	1367
Flt Permitted	0.30	1.00		0.33	1.00		0.65	1.00		0.20	1.00	1.00
Satd. Flow (perm)	517	3350		558	3181		1169	1715		341	1759	1367
Peak-hour factor, PHF	0.89	0.92	0.78	0.59	0.88	0.89	0.71	0.81	0.70	0.84	0.73	0.72
Adj. Flow (vph)	399	658	124	112	342	169	85	240	100	160	167	171
RTOR Reduction (vph)	0	14	0	0	58	0	0	16	0	0	0	104
Lane Group Flow (vph)	399	768	0	112	453	0	85	324	0	160	167	67
Confl. Peds. (#/hr)	2		1	1		2	4		7	7		4
Heavy Vehicles (%)	6%	5%	4%	8%	7%	8%	2%	5%	6%	7%	8%	15%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6			4		3	8	
Permitted Phases	2			6			4			8		8
Actuated Green, G (s)	45.9	37.4		33.3	27.8		21.8	21.8		34.3	34.3	34.3
Effective Green, g (s)	44.9	39.4		31.3	29.8		23.8	23.8		33.3	36.3	36.3
Actuated g/C Ratio	0.49	0.43		0.34	0.32		0.26	0.26		0.36	0.39	0.39
Clearance Time (s)	3.0	6.0		3.0	6.0		6.0	6.0		3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	424	1431		241	1028		301	442		241	692	538
v/s Ratio Prot	c0.14	0.23		0.02	0.14			c0.19		c0.06	0.09	
v/s Ratio Perm	c0.31			0.13			0.07			0.18		0.05
v/c Ratio	0.94	0.54		0.46	0.44		0.28	0.73		0.66	0.24	0.13
Uniform Delay, d1	18.1	19.6		21.7	24.6		27.4	31.3		22.5	18.7	17.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	29.2	1.4		1.4	1.4		0.5	6.2		6.7	0.2	0.1
Delay (s)	47.3	21.1		23.1	26.0		27.9	37.5		29.2	18.9	17.9
Level of Service	D	C		C	C		C	D		C	B	B
Approach Delay (s)		29.9			25.5			35.5			21.9	
Approach LOS		C			C			D			C	

Intersection Summary				
HCM 2000 Control Delay	28.3	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.85			
Actuated Cycle Length (s)	92.2	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	74.2%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	WBT	SBL
Lane Configurations				
Traffic Volume (vph)	70	838	495	13
Future Volume (vph)	70	838	495	13
Turn Type	custom	NA	NA	Perm
Protected Phases	5	2	6	
Permitted Phases	5			8
Detector Phase	5	2	6	8
Switch Phase				
Minimum Initial (s)	6.0	8.0	8.0	8.0
Minimum Split (s)	9.0	26.0	26.0	29.0
Total Split (s)	15.0	68.0	53.0	32.0
Total Split (%)	15.0%	68.0%	53.0%	32.0%
Yellow Time (s)	3.0	4.0	4.0	4.0
All-Red Time (s)	0.0	3.0	3.0	3.0
Lost Time Adjust (s)	1.0	-3.0	-3.0	-3.0
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag	Lead		Lag	
Lead-Lag Optimize?				
Recall Mode	Min	Min	Min	None
Act Effct Green (s)	7.4	32.3	17.1	12.3
Actuated g/C Ratio	0.20	0.86	0.45	0.33
v/c Ratio	0.27	0.29	0.42	0.07
Control Delay	19.1	2.7	9.2	11.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	19.1	2.7	9.2	11.6
LOS	B	A	A	B
Approach Delay		4.3	9.2	11.6
Approach LOS		A	A	B

Intersection Summary		
Cycle Length: 100		
Actuated Cycle Length: 37.7		
Natural Cycle: 65		
Control Type: Semi Act-Uncoord		
Maximum v/c Ratio: 0.42		
Intersection Signal Delay: 6.4	Intersection LOS: A	
Intersection Capacity Utilization 38.5%	ICU Level of Service A	
Analysis Period (min) 15		

Splits and Phases: 6: Plains Rd E & Cooke Blvd





Lane Group	EBL	EBT	WBT	SBL
Lane Group Flow (vph)	92	855	638	40
v/c Ratio	0.27	0.29	0.42	0.07
Control Delay	19.1	2.7	9.2	11.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	19.1	2.7	9.2	11.6
Queue Length 50th (m)	4.1	0.0	7.8	0.7
Queue Length 95th (m)	16.1	25.1	36.1	5.4
Internal Link Dist (m)		130.1	143.9	88.9
Turn Bay Length (m)	15.0			
Base Capacity (vph)	565	3471	3234	1296
Starvation Cap Reductn	0	46	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.16	0.25	0.20	0.03

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	70	838	495	61	13	15
Future Volume (vph)	70	838	495	61	13	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.5	3.3	3.5
Total Lost time (s)	4.0	4.0	4.0		4.0	
Lane Util. Factor	1.00	0.95	0.95		1.00	
Frpb, ped/bikes	1.00	1.00	1.00		0.99	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.98		0.93	
Flt Protected	0.95	1.00	1.00		0.98	
Satd. Flow (prot)	1728	3471	3343		1596	
Flt Permitted	0.95	1.00	1.00		0.98	
Satd. Flow (perm)	1728	3471	3343		1596	
Peak-hour factor, PHF	0.76	0.98	0.92	0.61	0.65	0.75
Adj. Flow (vph)	92	855	538	100	20	20
RTOR Reduction (vph)	0	0	18	0	17	0
Lane Group Flow (vph)	92	855	620	0	23	0
Confl. Peds. (#/hr)	4			4		3
Heavy Vehicles (%)	1%	4%	6%	0%	8%	0%
Turn Type	custom	NA	NA		Perm	
Protected Phases	5	2	6			
Permitted Phases	5				8	
Actuated Green, G (s)	8.5	25.6	14.1		2.3	
Effective Green, g (s)	7.5	28.6	17.1		5.3	
Actuated g/C Ratio	0.18	0.68	0.41		0.13	
Clearance Time (s)	3.0	7.0	7.0		7.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	309	2369	1364		201	
v/s Ratio Prot	0.05	c0.25	c0.19			
v/s Ratio Perm					c0.01	
v/c Ratio	0.30	0.36	0.45		0.11	
Uniform Delay, d1	14.9	2.8	9.0		16.2	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.5	0.1	0.2		0.2	
Delay (s)	15.5	2.9	9.3		16.5	
Level of Service	B	A	A		B	
Approach Delay (s)		4.1	9.3		16.5	
Approach LOS		A	A		B	

Intersection Summary				
HCM 2000 Control Delay	6.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	41.9	Sum of lost time (s)	15.0
Intersection Capacity Utilization	38.5%	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 (veh/h)	3	848	4	12	545	0	1	0	17	3	0	16
Future Volume (Veh/h)	3	848	4	12	545	0	1	0	17	3	0	16
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.97	0.50	0.75	0.91	0.25	0.25	0.25	0.61	0.38	0.25	0.80
Hourly flow rate (vph)	4	874	8	16	599	0	4	0	28	8	0	20
Pedestrians		1						2			2	
Lane Width (m)		3.6						3.6			3.6	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						0			0	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		168			155							
pX, platoon unblocked	0.88			0.93			0.92	0.92	0.93	0.92	0.92	0.88
vC, conflicting volume	601			884			1240	1521	443	1106	1525	302
vC1, stage 1 conf vol							888	888		633	633	
vC2, stage 2 conf vol							352	633		473	892	
vCu, unblocked vol	279			719			729	1034	244	582	1038	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			99	100	96	98	100	98
cM capacity (veh/h)	1140			826			348	361	707	502	350	959

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	441	445	316	300	32	28
Volume Left	4	0	16	0	4	8
Volume Right	0	8	0	0	28	20
cSH	1140	1700	826	1700	626	761
Volume to Capacity	0.00	0.26	0.02	0.18	0.05	0.04
Queue Length 95th (m)	0.1	0.0	0.5	0.0	1.3	0.9
Control Delay (s)	0.1	0.0	0.7	0.0	11.1	9.9
Lane LOS	A		A		B	A
Approach Delay (s)	0.1		0.4		11.1	9.9
Approach LOS					B	A

Intersection Summary					
Average Delay	0.6				
Intersection Capacity Utilization	36.0%	ICU Level of Service	A		
Analysis Period (min)	15				

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	6	803	576	7	9
Future Volume (vph)	6	803	576	7	9
Turn Type	Perm	NA	NA	Prot	Perm
Protected Phases		2	6	8	
Permitted Phases	2				8
Detector Phase	2	2	6	8	8
Switch Phase					
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	44.0	44.0	44.0	28.0	28.0
Total Split (s)	69.0	69.0	69.0	31.0	31.0
Total Split (%)	69.0%	69.0%	69.0%	31.0%	31.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	3.0	3.0
Lost Time Adjust (s)		-2.0	-2.0	-3.0	-3.0
Total Lost Time (s)		4.0	4.0	4.0	4.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	None	None	None	Max	Max
Act Effct Green (s)		21.9	21.9	27.1	27.1
Actuated g/C Ratio		0.38	0.38	0.47	0.47
v/c Ratio		0.66	0.48	0.02	0.03
Control Delay		17.2	14.3	9.7	5.1
Queue Delay		0.0	0.0	0.0	0.0
Total Delay		17.2	14.3	9.7	5.1
LOS		B	B	A	A
Approach Delay		17.2	14.3	7.2	
Approach LOS		B	B	A	

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 57.1			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 15.8		Intersection LOS: B	
Intersection Capacity Utilization 50.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 8: Plains Rd E & St. Matthews Ave





Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	836	634	16	20
v/c Ratio	0.66	0.48	0.02	0.03
Control Delay	17.2	14.3	9.7	5.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	17.2	14.3	9.7	5.1
Queue Length 50th (m)	38.1	26.2	0.9	0.0
Queue Length 95th (m)	54.1	38.4	2.0	0.9
Internal Link Dist (m)	131.0	266.9	36.0	
Turn Bay Length (m)			15.0	
Base Capacity (vph)	3292	3432	829	756
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.25	0.18	0.02	0.03

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	6	803	576	5	7	9
Future Volume (vph)	6	803	576	5	7	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.5	3.3	3.5
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.99
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3471	3433		1745	1574
Flt Permitted		0.95	1.00		0.95	1.00
Satd. Flow (perm)		3291	3433		1745	1574
Peak-hour factor, PHF	0.75	0.97	0.92	0.63	0.44	0.45
Adj. Flow (vph)	8	828	626	8	16	20
RTOR Reduction (vph)	0	0	2	0	0	10
Lane Group Flow (vph)	0	836	632	0	16	10
Confl. Peds. (#/hr)	5			5	1	3
Heavy Vehicles (%)	0%	4%	5%	0%	0%	0%
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		8	
Permitted Phases	2					8
Actuated Green, G (s)		19.9	19.9		24.1	24.1
Effective Green, g (s)		21.9	21.9		27.1	27.1
Actuated g/C Ratio		0.38	0.38		0.48	0.48
Clearance Time (s)		6.0	6.0		7.0	7.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1264	1318		829	748
v/s Ratio Prot			0.18		c0.01	
v/s Ratio Perm		c0.25				0.01
v/c Ratio		0.66	0.48		0.02	0.01
Uniform Delay, d1		14.5	13.2		7.9	7.9
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		1.3	0.3		0.0	0.0
Delay (s)		15.8	13.5		8.0	7.9
Level of Service		B	B		A	A
Approach Delay (s)		15.8	13.5		7.9	
Approach LOS		B	B		A	

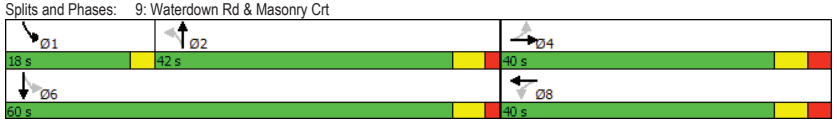
Intersection Summary				
HCM 2000 Control Delay	14.7	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.31			
Actuated Cycle Length (s)	57.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	50.6%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	22	0	1	0	8	672	133	403
Future Volume (vph)	22	0	1	0	8	672	133	403
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases		4		8		2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	1	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	29.0	29.0	29.0	29.0	35.0	35.0	14.0	35.0
Total Split (s)	40.0	40.0	40.0	40.0	42.0	42.0	18.0	60.0
Total Split (%)	40.0%	40.0%	40.0%	40.0%	42.0%	42.0%	18.0%	60.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	2.0	2.0	0.0	2.0
Lost Time Adjust (s)		-3.0	-3.0	-3.0	-2.0	-2.0	1.0	-2.0
Total Lost Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag					Lag	Lag	Lead	
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	None	Max
Act Effct Green (s)		11.0	11.0	11.0	47.7	47.7	58.9	59.7
Actuated g/C Ratio		0.15	0.15	0.15	0.64	0.64	0.79	0.80
v/c Ratio		0.25	0.02	0.15	0.03	0.36	0.30	0.19
Control Delay		9.0	28.0	0.6	6.8	7.8	4.0	2.7
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		9.0	28.0	0.6	6.8	7.8	4.0	2.7
LOS		A	C	A	A	A	A	A
Approach Delay		9.0		1.8		7.8		3.0
Approach LOS		A		A		A		A

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 74.9
Natural Cycle: 80
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.36
Intersection Signal Delay: 5.5 — Intersection LOS: A
Intersection Capacity Utilization 49.3% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 9: Waterdown Rd & Masonry Crt



Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	48	4	83	12	784	156	482
v/c Ratio	0.25	0.02	0.15	0.03	0.36	0.30	0.19
Control Delay	9.0	28.0	0.6	6.8	7.8	4.0	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.0	28.0	0.6	6.8	7.8	4.0	2.7
Queue Length 50th (m)	0.0	0.5	0.0	0.7	28.4	5.0	8.4
Queue Length 95th (m)	0.0	0.9	0.0	2.0	39.5	8.8	12.2
Internal Link Dist (m)	183.2		121.8		328.0		348.5
Turn Bay Length (m)				40.0		65.0	
Base Capacity (vph)	475	759	940	371	2185	636	2560
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.01	0.09	0.03	0.36	0.25	0.19

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	0	9	1	0	50	8	672	14	133	403	17
Future Volume (vph)	22	0	9	1	0	50	8	672	14	133	403	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.93		1.00	0.85		1.00	1.00		1.00	0.99	
Flt Protected		0.98		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1122		1745	1553		1160	3429		1711	3210	
Flt Permitted		0.80		0.86	1.00		0.48	1.00		0.29	1.00	
Satd. Flow (perm)		919		1582	1553		582	3429		527	3210	
Peak-hour factor, PHF	0.92	0.25	0.38	0.25	0.25	0.60	0.67	0.88	0.70	0.85	0.88	0.71
Adj. Flow (vph)	24	0	24	4	0	83	12	764	20	156	458	24
RTOR Reduction (vph)	0	42	0	0	73	0	0	1	0	0	2	0
Lane Group Flow (vph)	0	6	0	4	10	0	12	783	0	156	480	0
Confl. Peds. (#/hr)							4					4
Heavy Vehicles (%)	64%	0%	44%	0%	0%	4%	50%	5%	0%	2%	9%	59%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		6.4		6.4	6.4		45.7	45.7		56.9	56.9	
Effective Green, g (s)		9.4		9.4	9.4		47.7	47.7		55.9	58.9	
Actuated g/C Ratio		0.12		0.12	0.12		0.63	0.63		0.73	0.77	
Clearance Time (s)		7.0		7.0	7.0		6.0	6.0		3.0	6.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		113		194	191		363	2143		497	2477	
v/s Ratio Prot					c0.01			c0.23		c0.03	0.15	
v/s Ratio Perm		0.01		0.00			0.02			0.20		
v/c Ratio		0.05		0.02	0.05		0.03	0.37		0.31	0.19	
Uniform Delay, d1		29.5		29.4	29.5		5.5	6.9		3.6	2.3	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2		0.0	0.1		0.2	0.5		0.4	0.2	
Delay (s)		29.7		29.4	29.6		5.6	7.4		4.0	2.5	
Level of Service		C		C	C		A	A		A	A	
Approach Delay (s)		29.7			29.6			7.4			2.9	
Approach LOS		C			C			A			A	

Intersection Summary				
HCM 2000 Control Delay	7.5	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.32			
Actuated Cycle Length (s)	76.3	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	49.3%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	133	38	19	14	38	64
Future Volume (Veh/h)	133	38	19	14	38	64
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.65	0.59	0.79	0.88	0.73	0.52
Hourly flow rate (vph)	205	64	24	16	52	123
Pedestrians				1	1	
Lane Width (m)				3.6	3.3	
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)	146					
pX, platoon unblocked						
vC, conflicting volume			270		302	239
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			270		302	239
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		92	85
cM capacity (veh/h)			1304		681	804

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	269	40	175
Volume Left	0	24	52
Volume Right	64	0	123
cSH	1700	1304	763
Volume to Capacity	0.16	0.02	0.23
Queue Length 95th (m)	0.0	0.4	7.1
Control Delay (s)	0.0	4.7	11.1
Lane LOS		A	B
Approach Delay (s)	0.0	4.7	11.1
Approach LOS			B

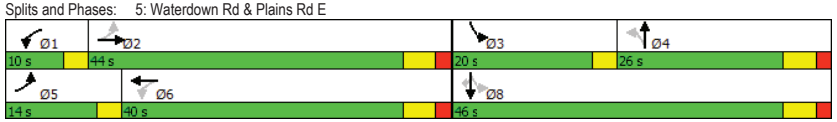
Intersection Summary			
Average Delay	4.4		
Intersection Capacity Utilization	29.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	183	451	77	918	103	139	185	119	276
Future Volume (vph)	183	451	77	918	103	139	185	119	276
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	pm+pt	NA	Perm
Protected Phases	5	2	1	6		4	3	8	
Permitted Phases	2		6		4		8		8
Detector Phase	5	2	1	6	4	4	3	8	8
Switch Phase									
Minimum Initial (s)	6.0	8.0	6.0	8.0	8.0	8.0	6.0	8.0	8.0
Minimum Split (s)	9.0	27.0	9.0	27.0	26.0	26.0	9.0	33.0	33.0
Total Split (s)	14.0	44.0	10.0	40.0	26.0	26.0	20.0	46.0	46.0
Total Split (%)	14.0%	44.0%	10.0%	40.0%	26.0%	26.0%	20.0%	46.0%	46.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	2.0
Lost Time Adjust (s)	1.0	-2.0	1.0	-2.0	-2.0	-2.0	1.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lag	Lead		
Lead-Lag Optimize?									
Recall Mode	None	Max	None	Max	None	None	None	None	None
Act Effct Green (s)	50.2	42.4	42.0	36.2	16.4	16.4	32.2	32.2	32.2
Actuated g/C Ratio	0.56	0.47	0.46	0.40	0.18	0.18	0.36	0.36	0.36
v/c Ratio	0.81	0.33	0.24	0.81	0.57	0.60	0.58	0.20	0.53
Control Delay	42.9	17.0	13.1	30.7	44.8	39.1	27.8	20.3	10.9
Queue Delay	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0
Total Delay	42.9	17.0	13.1	31.3	44.8	39.1	27.8	20.3	10.9
LOS	D	B	B	C	D	D	C	C	B
Approach Delay		24.3		29.8		41.3		17.6	
Approach LOS		C		C		D		B	

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 90.4
Natural Cycle: 75
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 26.8 — Intersection LOS: C
Intersection Capacity Utilization 75.5% — ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 5: Waterdown Rd & Plains Rd E



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	215	550	104	1136	124	203	199	135	363
v/c Ratio	0.81	0.33	0.24	0.81	0.57	0.60	0.58	0.20	0.53
Control Delay	42.9	17.0	13.1	30.7	44.8	39.1	27.8	20.3	10.9
Queue Delay	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0
Total Delay	42.9	17.0	13.1	31.3	44.8	39.1	27.8	20.3	10.9
Queue Length 50th (m)	22.1	32.5	8.5	94.2	20.9	31.1	26.0	16.8	16.9
Queue Length 95th (m)	#63.2	53.6	16.3	#154.2	37.0	56.1	42.6	28.7	26.2
Internal Link Dist (m)		175.5		130.1		98.3		328.0	
Turn Bay Length (m)	45.0		45.0		30.0				30.0
Base Capacity (vph)	268	1647	443	1397	296	447	400	887	819
Starvation Cap Reductn	0	0	0	62	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.33	0.23	0.85	0.42	0.45	0.50	0.15	0.44

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	183	451	51	77	918	166	103	139	48	185	119	276
Future Volume (vph)	183	451	51	77	918	166	103	139	48	185	119	276
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.98		1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1678	3489		1743	3454		1717	1770		1727	1900	1492
Flt Permitted	0.11	1.00		0.45	1.00		0.67	1.00		0.29	1.00	1.00
Satd. Flow (perm)	186	3489		819	3454		1212	1770		521	1900	1492
Peak-hour factor, PHF	0.85	0.96	0.64	0.74	0.96	0.92	0.83	0.97	0.80	0.93	0.88	0.76
Adj. Flow (vph)	215	470	80	104	956	180	124	143	60	199	135	363
RTOR Reduction (vph)	0	12	0	0	14	0	0	16	0	0	0	149
Lane Group Flow (vph)	215	538	0	104	1122	0	124	187	0	199	135	214
Confl. Peds. (#/hr)	10		2	2		10	7		3	3		7
Heavy Vehicles (%)	4%	1%	0%	0%	1%	5%	1%	3%	0%	1%	0%	5%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6			4		3	8	
Permitted Phases	2			6			4			8		8
Actuated Green, G (s)	48.9	40.4		40.5	35.0		14.4	14.4		30.2	30.2	30.2
Effective Green, g (s)	47.9	42.4		38.5	37.0		16.4	16.4		29.2	32.2	32.2
Actuated g/C Ratio	0.53	0.47		0.42	0.41		0.18	0.18		0.32	0.35	0.35
Clearance Time (s)	3.0	6.0		3.0	6.0		6.0	6.0		3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	259	1623		391	1402		218	318		323	671	527
v/s Ratio Prot	c0.09	0.15		0.01	0.32			0.11		c0.08	0.07	
v/s Ratio Perm	c0.35			0.10			0.10			c0.12		0.14
v/c Ratio	0.83	0.33		0.27	0.80		0.57	0.59		0.62	0.20	0.41
Uniform Delay, d1	20.5	15.4		16.1	23.8		34.1	34.3		24.4	20.5	22.2
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	19.7	0.5		0.4	4.9		3.4	2.8		3.5	0.1	0.5
Delay (s)	40.2	15.9		16.5	28.7		37.5	37.0		27.8	20.6	22.8
Level of Service	D	B		B	C		D	D		C	C	C
Approach Delay (s)		22.7			27.7			37.2			23.8	
Approach LOS		C			C			D			C	

Intersection Summary				
HCM 2000 Control Delay	26.6	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.74			
Actuated Cycle Length (s)	91.1	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	75.5%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	WBT	SBL
Lane Configurations				
Traffic Volume (vph)	8	708	1133	31
Future Volume (vph)	8	708	1133	31
Turn Type	custom	NA	NA	Perm
Protected Phases	5	2	6	
Permitted Phases	5			8
Detector Phase	5	2	6	8
Switch Phase				
Minimum Initial (s)	6.0	8.0	8.0	8.0
Minimum Split (s)	9.0	26.0	26.0	29.0
Total Split (s)	16.0	68.0	52.0	32.0
Total Split (%)	16.0%	68.0%	52.0%	32.0%
Yellow Time (s)	3.0	4.0	4.0	4.0
All-Red Time (s)	0.0	3.0	3.0	3.0
Lost Time Adjust (s)	1.0	-3.0	-3.0	-3.0
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag	Lead		Lag	
Lead-Lag Optimize?				
Recall Mode	Min	Min	Min	None
Act Effct Green (s)	5.7	43.9	32.7	12.5
Actuated g/C Ratio	0.10	0.75	0.56	0.21
v/c Ratio	0.09	0.27	0.65	0.29
Control Delay	31.5	3.9	12.0	13.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	31.5	3.9	12.0	13.7
LOS	C	A	B	B
Approach Delay		4.5	12.0	13.7
Approach LOS		A	B	B

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 58.9			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 9.5		Intersection LOS: A	
Intersection Capacity Utilization 46.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: Plains Rd E & Cooke Blvd





Lane Group	EBL	EBT	WBT	SBL
Lane Group Flow (vph)	16	722	1277	120
v/c Ratio	0.09	0.27	0.65	0.29
Control Delay	31.5	3.9	12.0	13.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	31.5	3.9	12.0	13.7
Queue Length 50th (m)	1.7	13.8	51.3	4.2
Queue Length 95th (m)	4.6	24.4	84.4	12.6
Internal Link Dist (m)		130.1	143.9	88.9
Turn Bay Length (m)	15.0			
Base Capacity (vph)	378	3423	2842	864
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.04	0.21	0.45	0.14

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	8	708	1133	53	31	45
Future Volume (vph)	8	708	1133	53	31	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.5	3.3	3.5
Total Lost time (s)	4.0	4.0	4.0		4.0	
Lane Util. Factor	1.00	0.95	0.95		1.00	
Frpb, ped/bikes	1.00	1.00	1.00		0.99	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.91	
Flt Protected	0.95	1.00	1.00		0.98	
Satd. Flow (prot)	1745	3574	3521		1635	
Flt Permitted	0.95	1.00	1.00		0.98	
Satd. Flow (perm)	1745	3574	3521		1635	
Peak-hour factor, PHF	0.50	0.98	0.94	0.74	0.70	0.59
Adj. Flow (vph)	16	722	1205	72	44	76
RTOR Reduction (vph)	0	0	4	0	64	0
Lane Group Flow (vph)	16	722	1273	0	56	0
Confl. Peds. (#/hr)	10			10	2	1
Heavy Vehicles (%)	0%	1%	1%	9%	0%	0%
Turn Type	custom	NA	NA		Perm	
Protected Phases	5	2	6			
Permitted Phases	5				8	
Actuated Green, G (s)	6.8	39.4	29.6		6.8	
Effective Green, g (s)	5.8	42.4	32.6		9.8	
Actuated g/C Ratio	0.10	0.70	0.54		0.16	
Clearance Time (s)	3.0	7.0	7.0		7.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	168	2517	1906		266	
v/s Ratio Prot	0.01	c0.20	c0.36			
v/s Ratio Perm					c0.03	
v/c Ratio	0.10	0.29	0.67		0.21	
Uniform Delay, d1	24.8	3.3	9.9		21.9	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.2	0.1	0.9		0.4	
Delay (s)	25.1	3.4	10.8		22.3	
Level of Service	C	A	B		C	
Approach Delay (s)		3.8	10.8		22.3	
Approach LOS		A	B		C	

Intersection Summary					
HCM 2000 Control Delay	9.0	HCM 2000 Level of Service	A		
HCM 2000 Volume to Capacity ratio	0.57				
Actuated Cycle Length (s)	60.2	Sum of lost time (s)	15.0		
Intersection Capacity Utilization	46.8%	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 (veh/h)	10	731	2	18	1130	4	3	0	11	1	0	7
Future Volume (Veh/h)	10	731	2	18	1130	4	3	0	11	1	0	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.97	0.50	0.50	0.92	0.50	0.75	0.25	0.55	0.25	0.25	0.58
Hourly flow rate (vph)	20	754	4	36	1228	8	4	0	20	4	0	12
Pedestrians								1			4	
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		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		168			155							
pX, platoon unblocked	0.70			0.94			0.73	0.73	0.94	0.73	0.73	0.70
vC, conflicting volume	1240			759			1495	2109	380	1745	2107	622
vC1, stage 1 conf vol							797	797		1308	1308	
vC2, stage 2 conf vol							698	1312		437	799	
vCu, unblocked vol	499			625			598	1437	224	939	1434	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			96			99	100	97	99	100	98
cM capacity (veh/h)	754			911			369	259	741	290	262	765

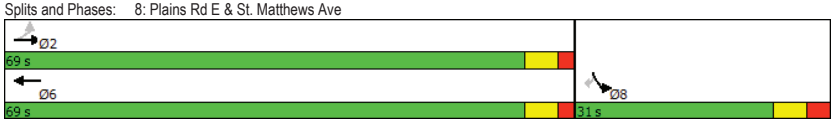
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	397	381	650	622	24	16
Volume Left	20	0	36	0	4	4
Volume Right	0	4	0	8	20	12
cSH	754	1700	911	1700	634	543
Volume to Capacity	0.03	0.22	0.04	0.37	0.04	0.03
Queue Length 95th (m)	0.7	0.0	1.0	0.0	0.9	0.7
Control Delay (s)	0.8	0.0	1.0	0.0	10.9	11.8
Lane LOS	A		A		B	B
Approach Delay (s)	0.4		0.5		10.9	11.8
Approach LOS					B	B

Intersection Summary					
Average Delay	0.7				
Intersection Capacity Utilization	54.1%	ICU Level of Service		A	
Analysis Period (min)	15				

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	15	734	1168	17	18
Future Volume (vph)	15	734	1168	17	18
Turn Type	Perm	NA	NA	Prot	Perm
Protected Phases		2	6	8	
Permitted Phases	2				8
Detector Phase	2	2	6	8	8
Switch Phase					
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	44.0	44.0	44.0	28.0	28.0
Total Split (s)	69.0	69.0	69.0	31.0	31.0
Total Split (%)	69.0%	69.0%	69.0%	31.0%	31.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	3.0	3.0
Lost Time Adjust (s)		-2.0	-2.0	-3.0	-3.0
Total Lost Time (s)		4.0	4.0	4.0	4.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	None	None	None	Max	Max
Act Effct Green (s)		32.7	32.7	27.2	27.2
Actuated g/C Ratio		0.48	0.48	0.40	0.40
v/c Ratio		0.54	0.74	0.05	0.05
Control Delay		13.6	17.0	15.3	6.6
Queue Delay		0.0	0.0	0.0	0.0
Total Delay		13.6	17.0	15.3	6.6
LOS		B	B	B	A
Approach Delay		13.6	17.0	11.2	
Approach LOS		B	B	B	

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 68			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 15.5		Intersection LOS: B	
Intersection Capacity Utilization 57.2%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 8: Plains Rd E & St. Matthews Ave





Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	813	1261	36	32
v/c Ratio	0.54	0.74	0.05	0.05
Control Delay	13.6	17.0	15.3	6.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	13.6	17.0	15.3	6.6
Queue Length 50th (m)	37.4	66.3	2.8	0.0
Queue Length 95th (m)	51.4	87.4	4.9	2.1
Internal Link Dist (m)	131.0	266.9	36.0	
Turn Bay Length (m)			15.0	
Base Capacity (vph)	2925	3319	698	650
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.28	0.38	0.05	0.05

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	15	734	1168	23	17	18
Future Volume (vph)	15	734	1168	23	17	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.5	3.3	3.5
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.99
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3570	3525		1745	1576
Flt Permitted		0.87	1.00		0.95	1.00
Satd. Flow (perm)		3105	3525		1745	1576
Peak-hour factor, PHF	0.63	0.93	0.95	0.72	0.47	0.56
Adj. Flow (vph)	24	789	1229	32	36	32
RTOR Reduction (vph)	0	0	3	0	0	19
Lane Group Flow (vph)	0	813	1258	0	36	13
Confl. Peds. (#/hr)	3			3	6	1
Heavy Vehicles (%)	0%	1%	2%	0%	0%	0%
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		8	
Permitted Phases	2					8
Actuated Green, G (s)		30.7	30.7		24.2	24.2
Effective Green, g (s)		32.7	32.7		27.2	27.2
Actuated g/C Ratio		0.48	0.48		0.40	0.40
Clearance Time (s)		6.0	6.0		7.0	7.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1495	1697		699	631
v/s Ratio Prot			c0.36		c0.02	
v/s Ratio Perm		0.26				0.01
v/c Ratio		0.54	0.74		0.05	0.02
Uniform Delay, d1		12.4	14.2		12.5	12.3
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.4	1.8		0.1	0.1
Delay (s)		12.8	16.0		12.6	12.4
Level of Service		B	B		B	B
Approach Delay (s)		12.8	16.0		12.5	
Approach LOS		B	B		B	

Intersection Summary				
HCM 2000 Control Delay	14.6	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.43			
Actuated Cycle Length (s)	67.9	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	57.2%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	22	0	10	2	9	490	30	589
Future Volume (vph)	22	0	10	2	9	490	30	589
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases		4		8		2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	1	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	29.0	29.0	29.0	29.0	35.0	35.0	14.0	35.0
Total Split (s)	32.0	32.0	32.0	32.0	60.0	60.0	18.0	78.0
Total Split (%)	29.1%	29.1%	29.1%	29.1%	54.5%	54.5%	16.4%	70.9%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	2.0	2.0	0.0	2.0
Lost Time Adjust (s)		-3.0	-3.0	-3.0	-2.0	-2.0	1.0	-2.0
Total Lost Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag					Lag	Lag	Lead	
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	None	Max
Act Effct Green (s)		12.7	12.7	12.7	67.5	67.5	74.0	74.0
Actuated g/C Ratio		0.13	0.13	0.13	0.71	0.71	0.78	0.78
v/c Ratio		0.39	0.08	0.64	0.06	0.23	0.07	0.26
Control Delay		16.2	36.3	11.6	6.9	5.8	3.0	3.3
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		16.2	36.3	11.6	6.9	5.8	3.0	3.3
LOS		B	D	B	A	A	A	A
Approach Delay		16.2		12.9		5.8		3.3
Approach LOS		B		B		A		A

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 94.7
Natural Cycle: 80
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.64
Intersection Signal Delay: 6.2 — Intersection LOS: A
Intersection Capacity Utilization 51.4% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 9: Waterdown Rd & Masonry Crt



Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	40	16	298	16	565	48	717
v/c Ratio	0.39	0.08	0.64	0.06	0.23	0.07	0.26
Control Delay	16.2	36.3	11.6	6.9	5.8	3.0	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.2	36.3	11.6	6.9	5.8	3.0	3.3
Queue Length 50th (m)	0.0	2.7	0.7	0.9	18.8	1.4	13.5
Queue Length 95th (m)	0.0	6.1	0.0	2.4	32.1	3.5	25.7
Internal Link Dist (m)	183.2		121.8		328.0		348.5
Turn Bay Length (m)				40.0		65.0	
Base Capacity (vph)	154	433	677	278	2494	728	2721
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.04	0.44	0.06	0.23	0.07	0.26

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	0	5	10	2	232	9	490	5	30	589	14
Future Volume (vph)	22	0	5	10	2	232	9	490	5	30	589	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.97		1.00	0.85		1.00	1.00		1.00	0.99	
Flt Protected		0.96		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1292		1745	1592		978	3499		1745	3480	
Flt Permitted		0.28		0.80	1.00		0.38	1.00		0.40	1.00	
Satd. Flow (perm)		381		1466	1592		390	3499		742	3480	
Peak-hour factor, PHF	0.69	0.25	0.63	0.63	0.50	0.79	0.56	0.88	0.63	0.63	0.85	0.58
Adj. Flow (vph)	32	0	8	16	4	294	16	557	8	48	693	24
RTOR Reduction (vph)	0	35	0	0	255	0	0	1	0	0	2	0
Lane Group Flow (vph)	0	5	0	16	43	0	16	564	0	48	715	0
Confl. Peds. (#/hr)							4					4
Heavy Vehicles (%)	32%	0%	60%	0%	50%	1%	78%	3%	0%	0%	2%	36%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		9.7		9.7	9.7		65.5	65.5		73.2	73.2	
Effective Green, g (s)		12.7		12.7	12.7		67.5	67.5		72.2	75.2	
Actuated g/C Ratio		0.13		0.13	0.13		0.70	0.70		0.75	0.78	
Clearance Time (s)		7.0		7.0	7.0		6.0	6.0		3.0	6.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		50		194	210		274	2462		597	2728	
v/s Ratio Prot					c0.03			0.16		0.00	c0.21	
v/s Ratio Perm		0.01		0.01			0.04			0.06		
v/c Ratio		0.11		0.08	0.20		0.06	0.23		0.08	0.26	
Uniform Delay, d1		36.6		36.5	37.1		4.4	5.0		3.2	2.8	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.9		0.2	0.5		0.4	0.2		0.1	0.2	
Delay (s)		37.5		36.7	37.6		4.8	5.2		3.2	3.0	
Level of Service		D		D	D		A	A		A	A	
Approach Delay (s)		37.5			37.5			5.2			3.1	
Approach LOS		D			D			A			A	

Intersection Summary				
HCM 2000 Control Delay	11.0	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.27			
Actuated Cycle Length (s)	95.9	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				

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	22	17	51	144	88	12
Future Volume (Veh/h)	22	17	51	144	88	12
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.55	0.71	0.55	0.67	0.59	0.43
Hourly flow rate (vph)	40	24	93	215	149	28
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	146					
pX, platoon unblocked						
vC, conflicting volume			64		453	52
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			64		453	52
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		72	97
cM capacity (veh/h)			1551		526	1021

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	64	308	177
Volume Left	0	93	149
Volume Right	24	0	28
cSH	1700	1551	569
Volume to Capacity	0.04	0.06	0.31
Queue Length 95th (m)	0.0	1.5	10.5
Control Delay (s)	0.0	2.6	14.2
Lane LOS		A	B
Approach Delay (s)	0.0	2.6	14.2
Approach LOS			B

Intersection Summary			
Average Delay	6.0		
Intersection Capacity Utilization	29.3%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix D

Trip Generation Data

WEEKDAY

Date: 21-April-2015
Location: Time Square
Development Type: Mixed Use
Address: 5327 Upper Middle Road
Burlington, ON
Survey Times: 07:00 - 18:00

AM Peak Hour of Adjacent Street (7:30 to 8:30)

Land Use	Units	Developed	Occupied	% Occupied	In	Out	Total	% In	% Out	Rate
Residents	Dwellings	90	90	100%	3	7	10	30%	70%	0.11
Visitors	Dwellings	90	90	100%	2	2	4	50%	50%	0.04
Commercial	Square Footage	9,690	9,690	100%	0	0	0	0%	0%	0.00

PM Peak Hour of Adjacent Street (15:15 to 16:15)

Land Use	Units	Developed	Occupied	% Occupied	In	Out	Total	% In	% Out	Rate
Residents	Dwellings	90	90	100%	5	7	12	42%	58%	0.13
Visitors	Dwellings	90	90	100%	4	3	7	57%	43%	0.08
Commercial	Square Footage	9,690	9,690	100%	5	5	10	50%	50%	1.03

AM Peak Hour of Generator (8:00 to 9:00)

Land Use	Units	Developed	Occupied	% Occupied	In	Out	Total	% In	% Out	Rate
Residents	Dwellings	90	90	100%	4	6	10	40%	60%	0.11
Visitors	Dwellings	90	90	100%	3	2	5	60%	40%	0.06
Commercial	Square Footage	9,690	9,690	100%	2	2	4	50%	50%	0.41

PM Peak Hour of Generator (16:30 to 17:30)

Land Use	Units	Developed	Occupied	% Occupied	In	Out	Total	% In	% Out	Rate
Residents	Dwellings	90	90	100%	9	3	12	75%	25%	0.13
Visitors	Dwellings	90	90	100%	2	2	4	50%	50%	0.04
Commercial	Square Footage	9,690	9,690	100%	9	12	21	43%	57%	2.17

SATURDAY

Date: 18-April-2015
Location: Time Square
Development Type: Mixed Use
Address: 5327 Upper Middle Road
Burlington, ON
Survey Times: 10:00-18:00

Peak Hour of Generator (12:00 to 13:00)

Land Use	Units	Developed	Occupied	% Occupied	In	Out	Total	% In	% Out	Rate
Residents	Dwellings	90	90	100%	11	9	20	55%	45%	0.22
Visitors	Dwellings	90	90	100%	8	6	14	57%	43%	0.16
Commercial	Square Footage	9,690	9,690	100%	5	7	12	42%	58%	1.24

WEEKDAY

Date:	17-April-2014
Location:	Time Square
Development Type:	Mixed Use
Address:	5327 Upper Middle Road Burlington, ON
Survey Times:	07:00 - 10:00 15:00-18:00

AM Peak Hour of Adjacent Street (7:30 to 8:30)

Land Use	Units	Developed	Occupied	% Occupied	In	Out	Total	% In	% Out	Rate
Residents	Dwellings	90	90	100%	3	19	22	14%	86%	0.24
Visitors	Dwellings	90	90	100%	2	1	3	67%	33%	0.03
Commercial	Square Footage	9,690	8,075	83%	3	1	4	75%	25%	0.50

PM Peak Hour of Adjacent Street (15:15 to 16:15)

Land Use	Units	Developed	Occupied	% Occupied	In	Out	Total	% In	% Out	Rate
Residents	Dwellings	90	90	100%	4	3	7	57%	43%	0.08
Visitors	Dwellings	90	90	100%	6	7	13	46%	54%	0.14
Commercial	Square Footage	9,690	9,690	100%	7	7	14	50%	50%	1.44

AM Peak Hour of Generator

Land Use	Units	Developed	Occupied	% Occupied	In	Out	Total	% In	% Out	Rate
Residents	Dwellings	90	90	100%	2	23	25	8%	92%	0.28
Visitors	Dwellings	90	90	100%	8	4	12	67%	33%	0.13
Commercial	Square Footage	9,690	9,690	100%	5	4	9	56%	44%	0.93

PM Peak Hour of Generator

Land Use	Units	Developed	Occupied	% Occupied	In	Out	Total	% In	% Out	Rate
Residents	Dwellings	90	90	100%	9	7	16	56%	44%	0.18
Visitors	Dwellings	90	90	100%	7	9	16	44%	56%	0.18
Commercial	Square Footage	9,690	9,690	100%	9	8	17	53%	47%	1.75

Peak Hour	Land Use	Sample 1	Sample 2	Average	% In	% Out
AM Peak Hour Adjacent Street	Residents	0.24	0.11	0.18	22%	78%
	Visitors	0.03	0.04	0.04	58%	42%
	Commercial	**0.50**	**0.00**	**0.25**	**38%**	**63%**
PM Peak Hour Adjacent Street	Residents	0.08	0.13	0.11	49%	51%
	Visitors	0.14	0.08	0.11	52%	48%
	Commercial	**1.44**	**1.03**	**1.24**	**50%**	**50%**
AM Peak Hour of Generator	Residents	0.28	0.11	0.19	24%	76%
	Visitors	0.13	0.06	0.09	63%	37%
	Commercial	0.93	0.41	0.67	53%	47%
PM Peak Hour Adjacent Street	Residents	0.18	0.13	0.16	66%	34%
	Visitors	0.18	0.04	0.11	47%	53%
	Commercial	1.75	2.17	1.96	48%	52%
Saturday Peak Hour of Generator	Residents		0.22	0.22	55%	45%
	Visitors		0.16	0.16	57%	43%
	Commercial		1.24	1.24	42%	58%

Appendix E

Background Traffic Forecasts



TRIP GENERATION ESTIMATES - BACKGROUND SITES

GO Station South Parking Lot Expansion

Land Use	Units	AM Peak Hour				PM Peak Hour			
		Rate	In	Out	Sum	Rate	In	Out	Sum
GO Station Expansion (Spaces)	1,585	0.30	22	127	**149**	0.30	128	21	**149**
Total Generation			**22**	**127**	**149**		**128**	**21**	**149**

40, 46, & 50 Plains Road East

Land Use	Units	AM Peak Hour				PM Peak Hour			
		Rate	In	Out	Sum	Rate	In	Out	Sum
LUC 230 Residential Condominium (Units)	51	0.44	4	19	**23**	0.52	18	9	**27**
Total Generation			**4**	**19**	**23**		**18**	**9**	**27**

101 Masonry Court - Phase 1

Land Use	Units	AM Peak Hour				PM Peak Hour			
		Rate	In	Out	Sum	Rate	In	Out	Sum
230 - Residential Condominium/Townhouse (Units)*	109	0.89	6	29	**35**	0.90	31	15	**46**
232 - High-Rise Residential Condominium (Units)*	179	0.98	15	66	**81**	0.99	47	29	**76**
PTSL - Stacked Townhouse Data (Units)**	140	0.34	4	44	**48**	0.37	36	16	**52**
Total Generation			**25**	**139**	**164**		**114**	**60**	**174**
Modal Split***		22%	6	35	**41**	22%	29	15	**44**
Net Generation			**19**	**104**	**123**		**85**	**45**	**130**

* ITE Regression Equation
** Trip Generation Data - 2557 Sixth Line Oakville ON
*** TTS Modal Split for Zones Containing a GO Station on the Lakeshore West Line

35 Plains Road

Land Use	Units	AM Peak Hour				PM Peak Hour			
		Rate	In	Out	Sum	Rate	In	Out	Sum
232 - High-Rise Residential Condominium (Units)*	80	*	10	42	**52**	*	27	16	**43**
PTSL - Ground Floor Retail	3000	0.25	0	1	**1**	1.24	2	2	**4**
Total Generation			**10**	**43**	**53**		**29**	**18**	**47**
Modal Split***		10%	1	4	**5**	10%	3	2	**5**
Net Generation			**9**	**39**	**48**		**26**	**16**	**42**

*Fitted Curve Equation AM: T=0.29 (X) + 28.86 PM: T= 0.34 (x) + 15.47

** PTSL Trip Generation Data

***Halton Region's Modal Split Target Year 2021

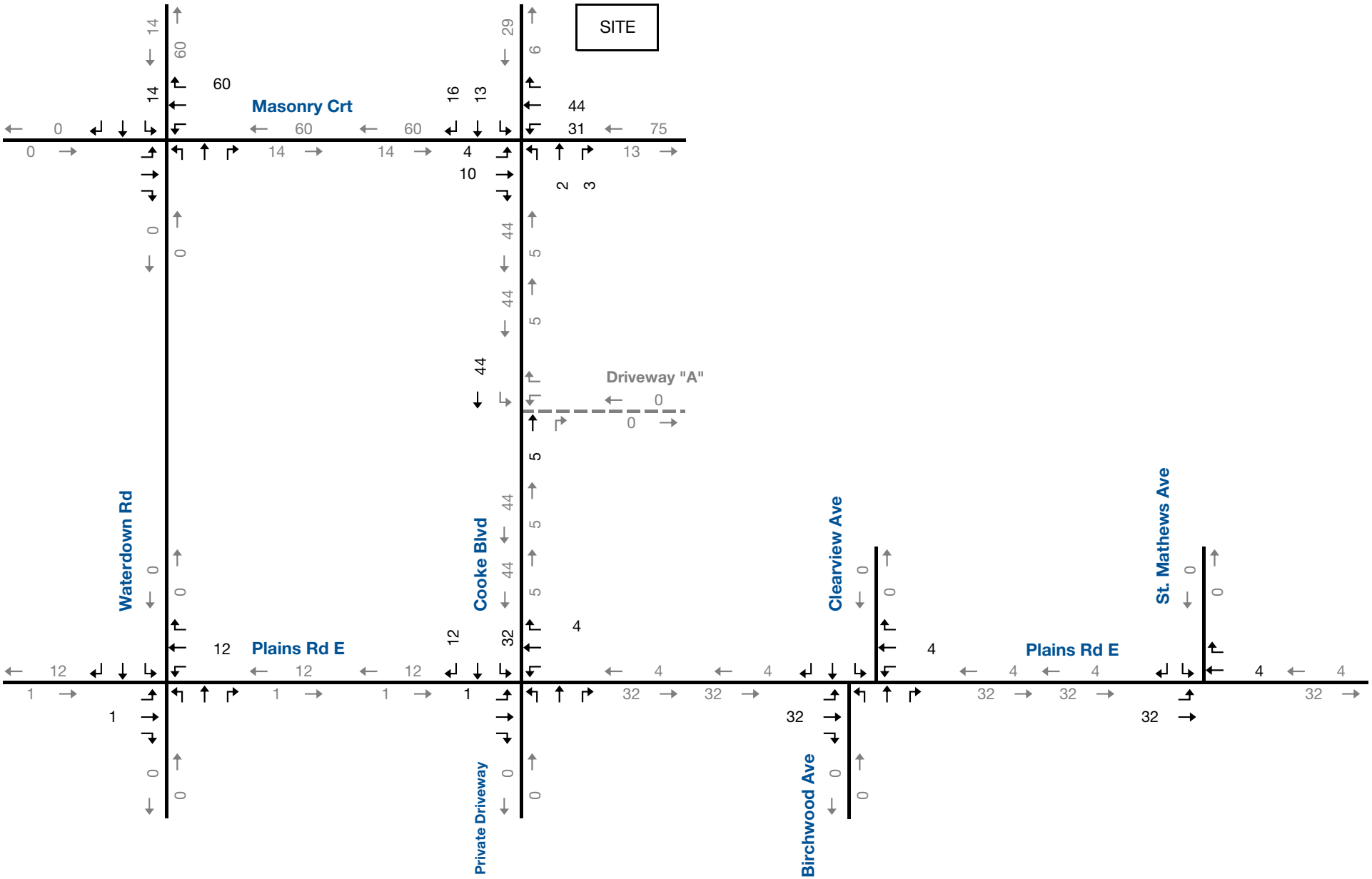
70 Plains Road West

Land Use	Units	AM Peak Hour				PM Peak Hour			
		Rate	In	Out	Sum	Rate	In	Out	Sum
LUC 230 Residential Townhouse (Units)	44	0.44	3	16	**19**	0.52	15	8	**23**
PTSL - Ground Floor Retail	7,762	0.25	1	1	**2**	1.24	5	5	**10**
Total Generation			**4**	**17**	**21**		**20**	**13**	**33**

1200 King Road - Phase 1

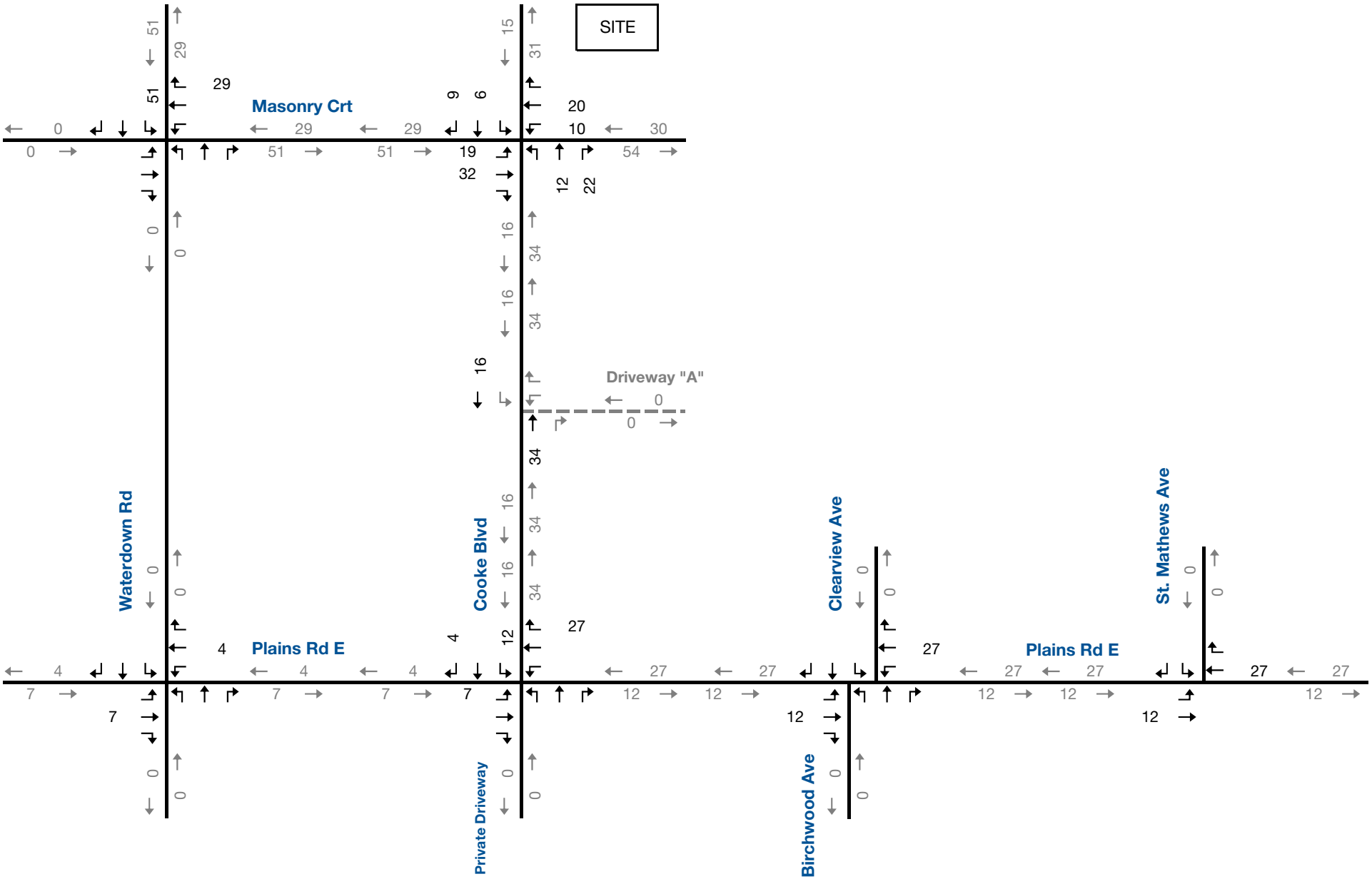
Land Use	Units	AM Peak Hour				PM Peak Hour			
		Rate	In	Out	Sum	Rate	In	Out	Sum
770 - Business Park (GFA)	891090	1.40	1061	187	**1248**	1.29	299	851	**1150**
Total Generation			**1061**	**187**	**1248**	**1**	**299**	**851**	**1150**
Modal Split		22%	233	41	**274**	22%	66	187	**253**
Net Generation			**828**	**146**	**974**	**1**	**233**	**664**	**897**

101 Masonry Crt Phase 1 Site Traffic - AM Peak Hour



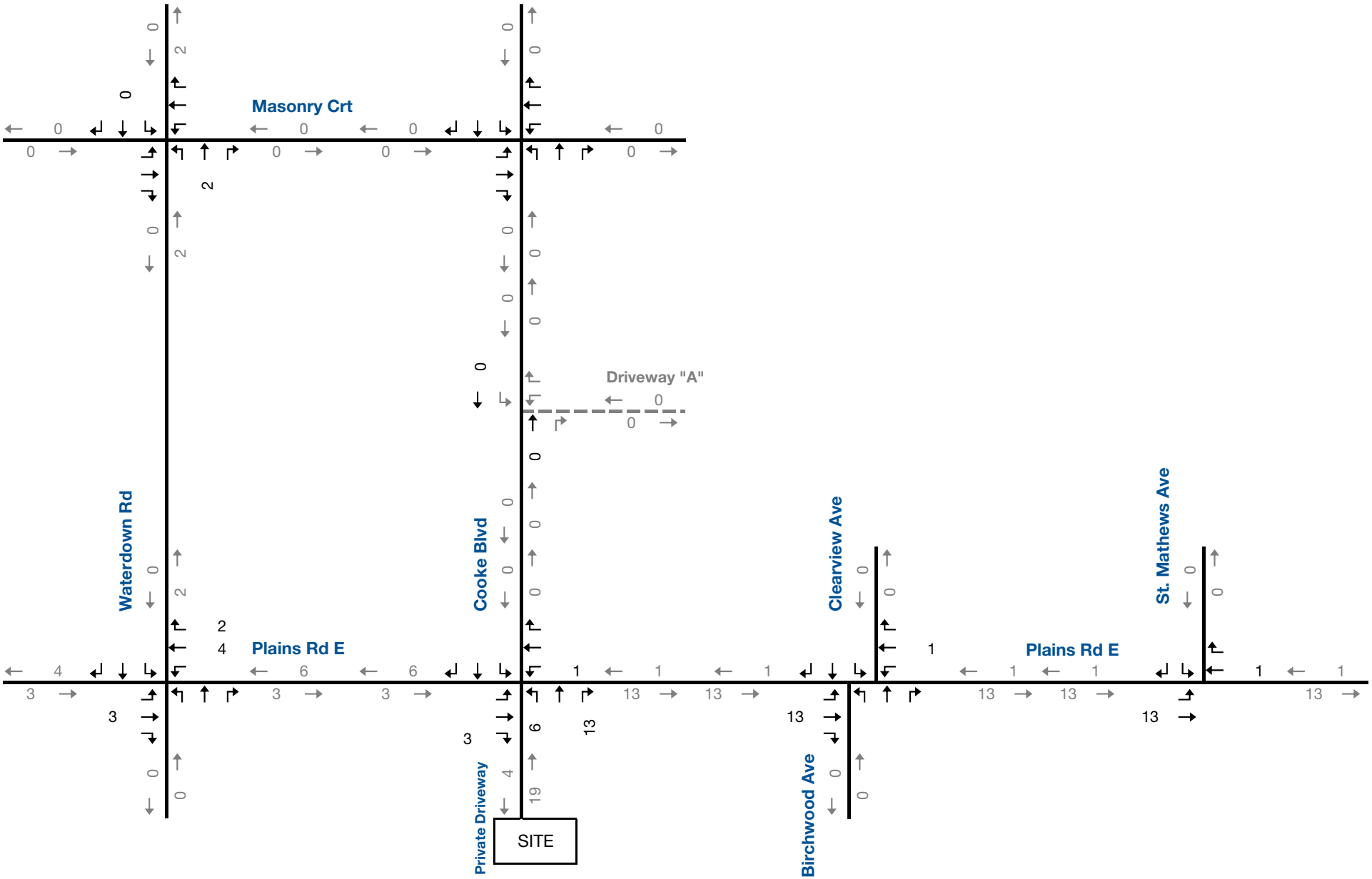
NTS

101 Masonry Crt Phase 1 Site Traffic - PM Peak Hour



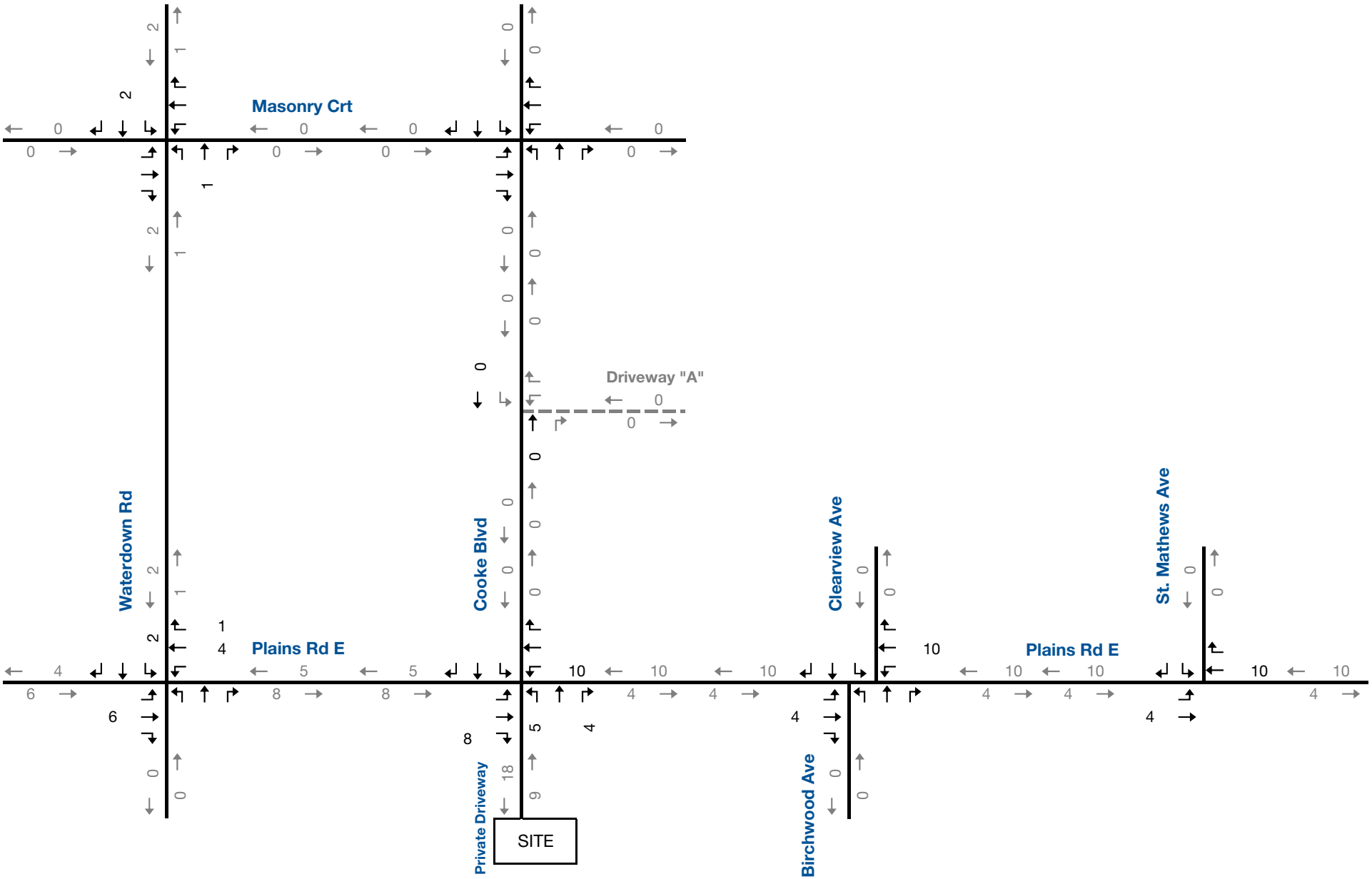
NTS

40, 46, & 50 Plains Road East Site Traffic - AM Peak Hour



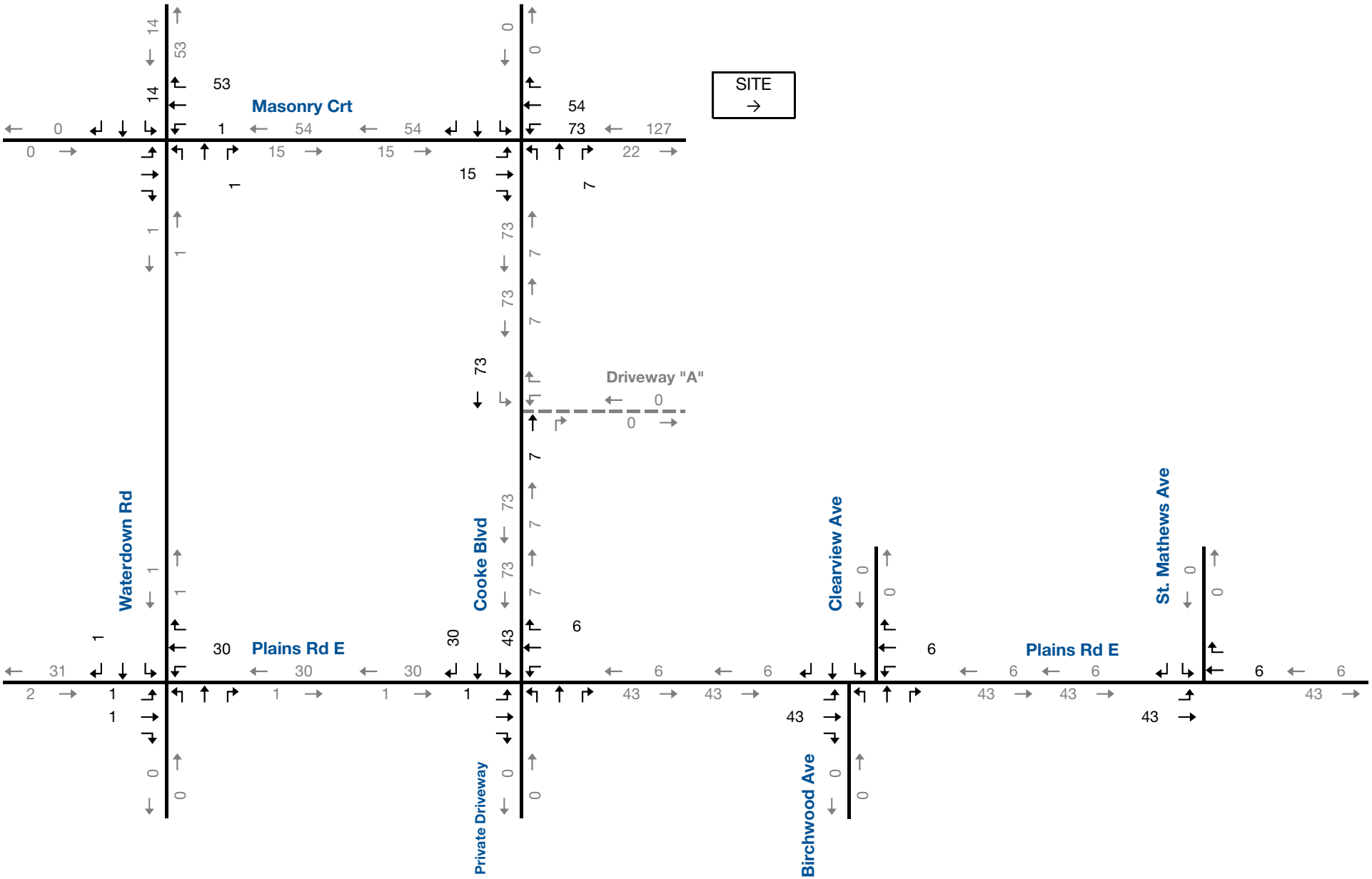
NTS

40, 46, & 50 Plains Road East Site Traffic - PM Peak Hour



NTS

Estimated GO Station Parking Lot Expansion (Short Term 495 Spaces) - AM Peak Hour



NTS

GO Station Expansion		
Area 1 (north Half)	1,090	
Area 2 (South half)	495	495
Spaces	**1,585**	**495**

Existing South Lot	
Spaces	**771**

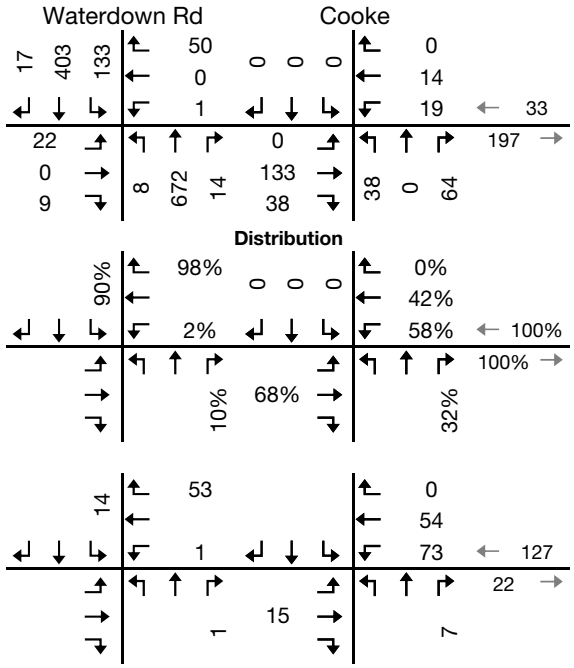
Weekday AM Trip Gen	VPH	%
Inbound	34	15%
Outbound	195	85%
Total	**229**	**100%**

Rate/Space	**0.30**

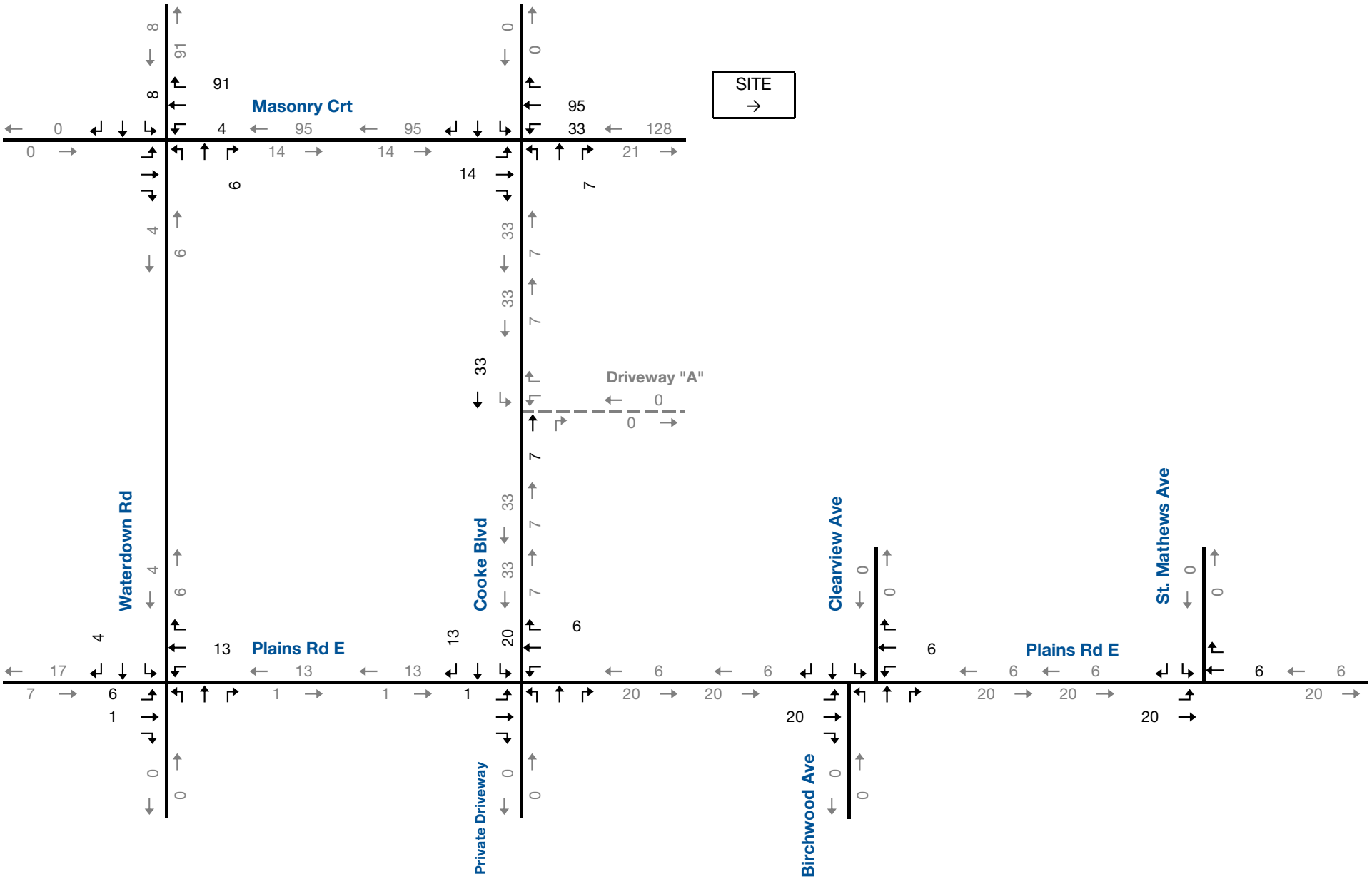
New Trips	VPH
Inbound	22
Outbound	127
Total	**149**

AM PEAK HOUR

Existing Masonry Crt Volumes



Estimated GO Station Parking Lot Expansion (Short Term 495 Spaces) - PM Peak Hour



NTS

GO Station Expansion		
Area 1 (north Half)	1,090	
Area 2 (South half)	495	495
Spaces	**1,585**	**495**

Existing South Lot	
Spaces	771

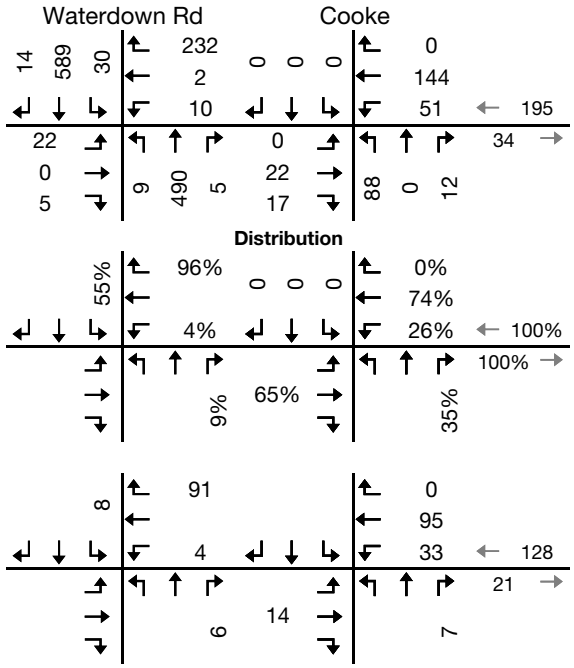
Weekday PM Trip Gen	VPH	%
Inbound	197	86%
Outbound	33	14%
Total	230	100%

Rate/Space	**0.30**

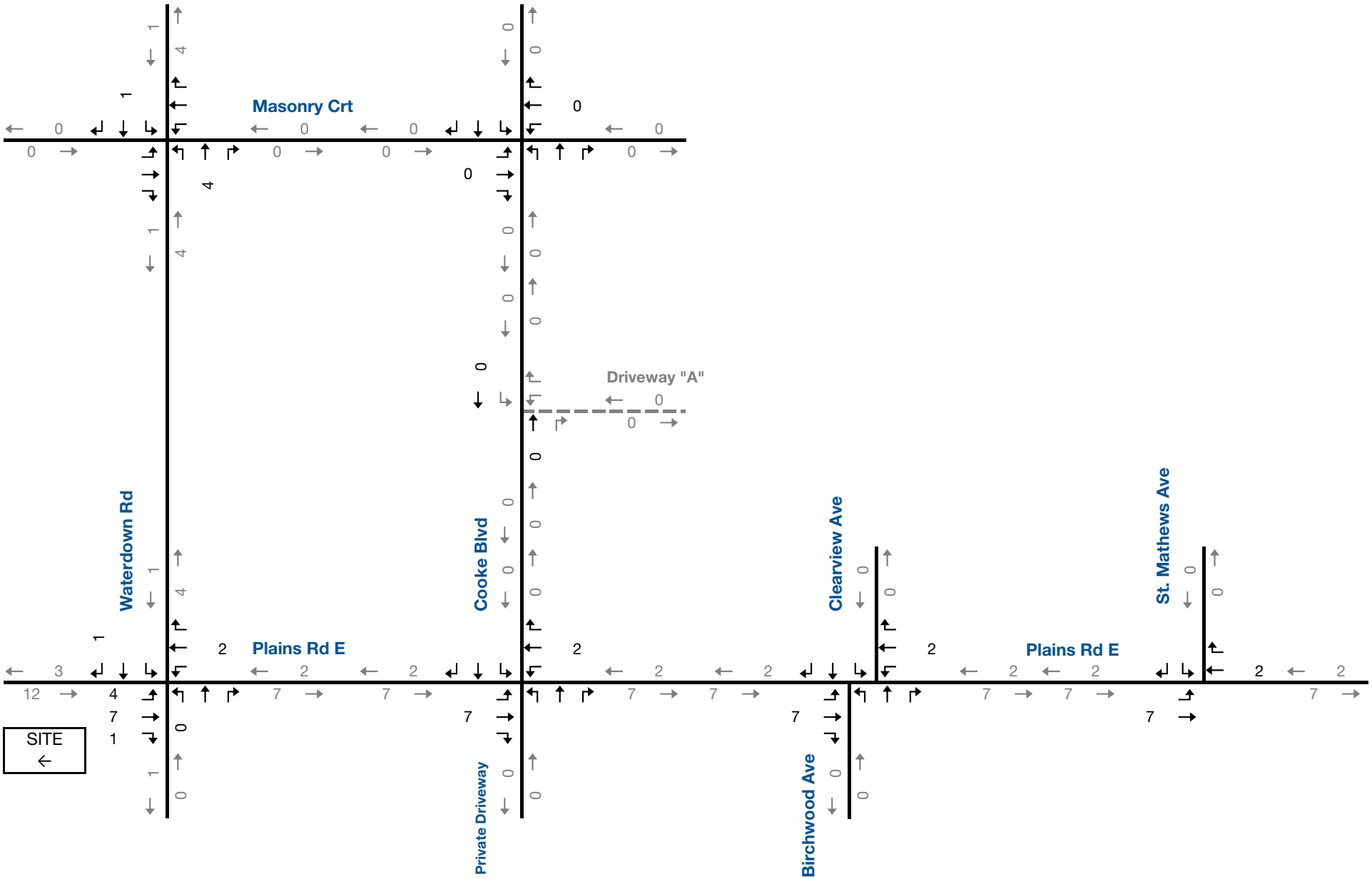
New Trips	VPH
Inbound	128
Outbound	21
Total	**149**

PM Peak Hour

Existing Masonry Crt Volumes

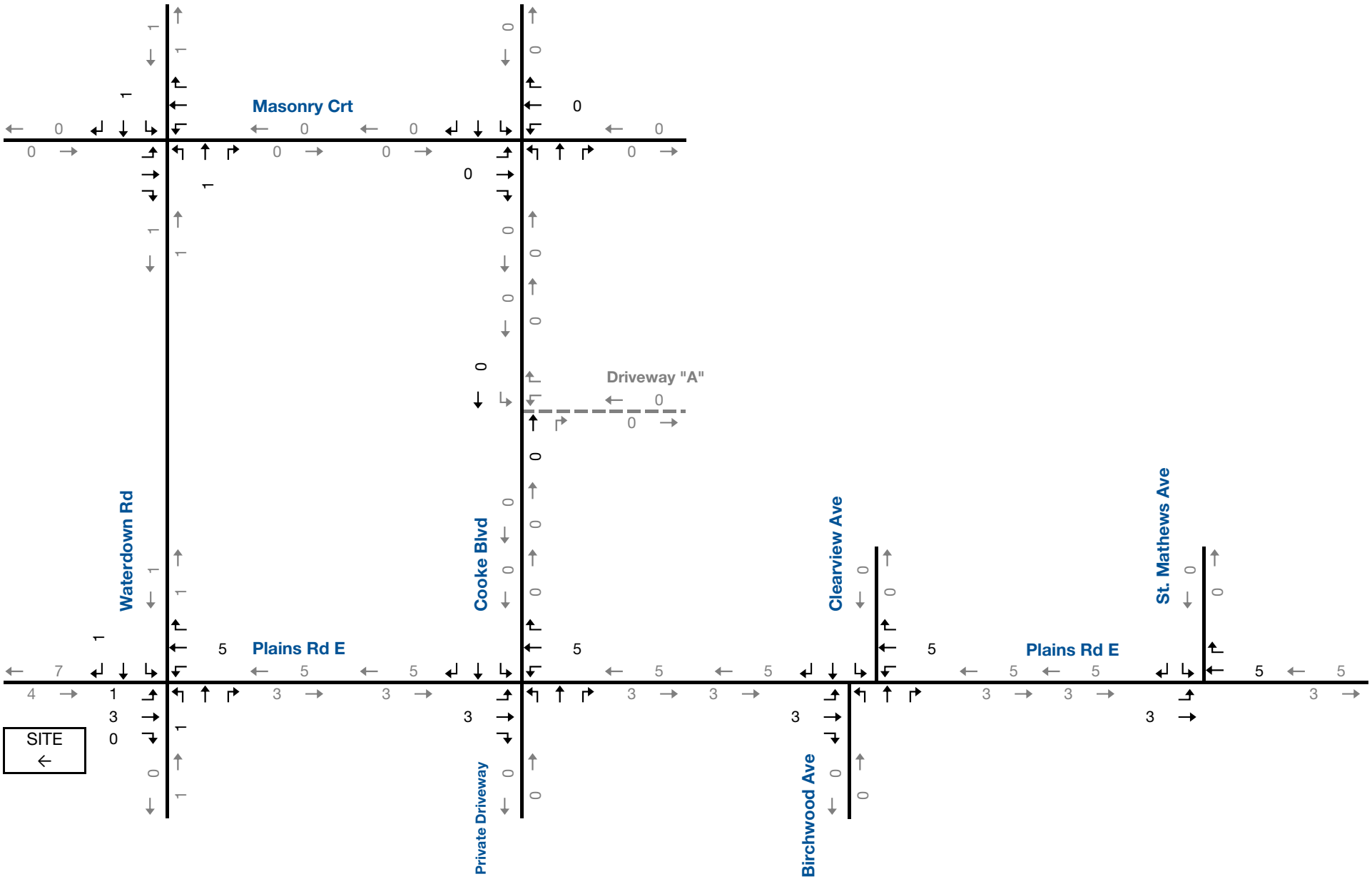


70 Plains Road West - AM Peak Hour



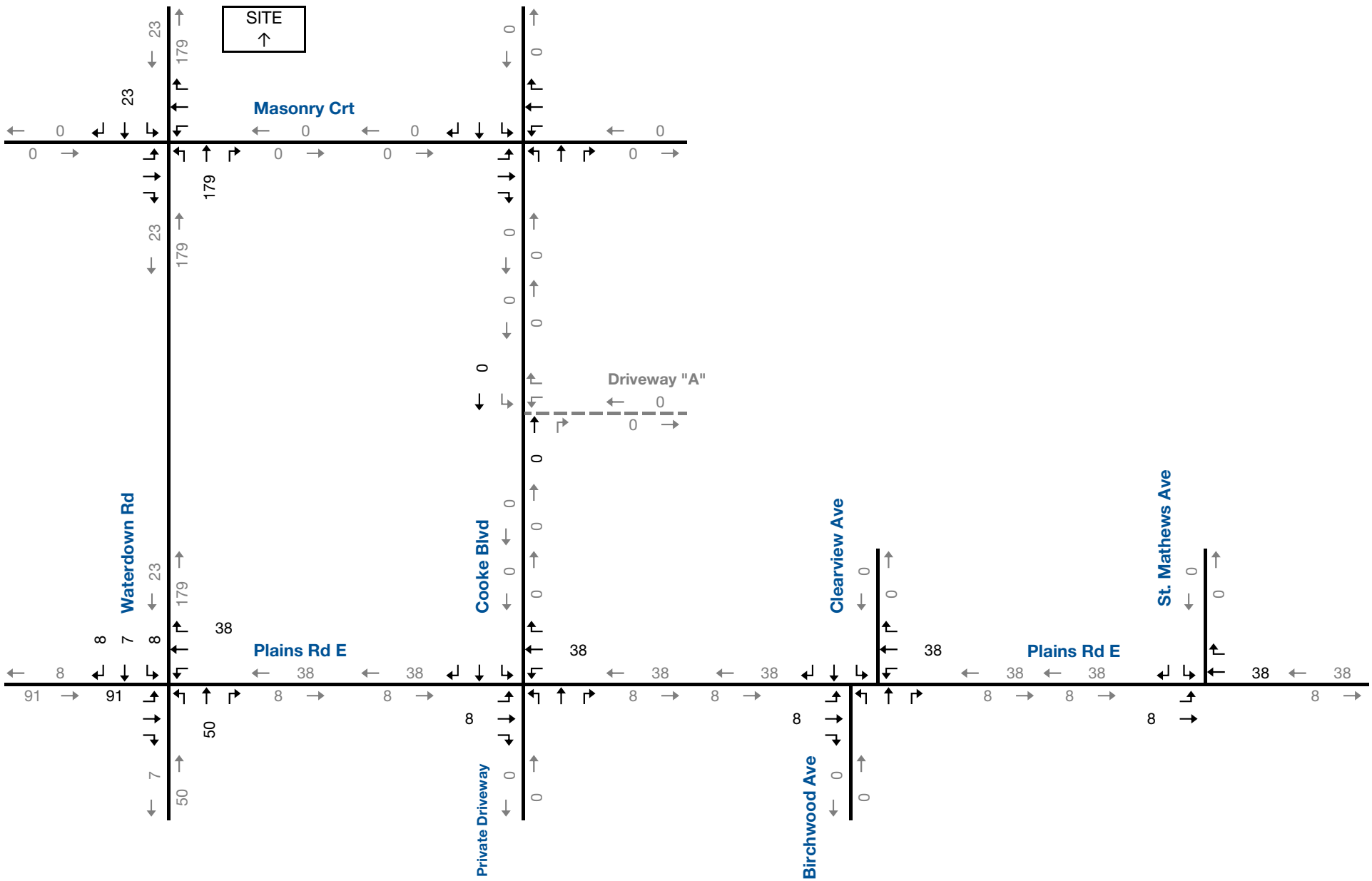
NTS

70 Plains Road West - Peak Hour



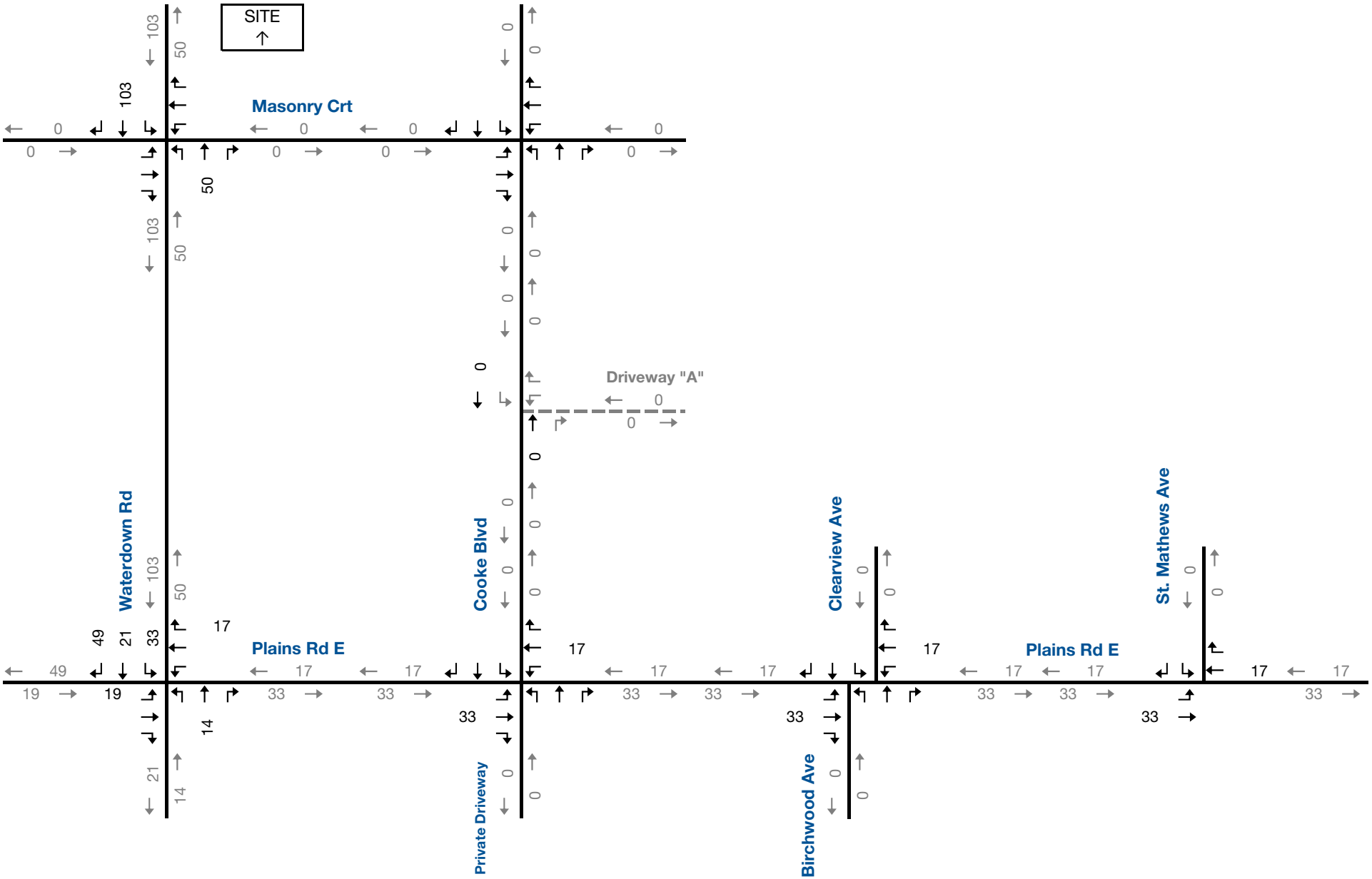
NTS

1200 King Road Phase 1 - AM Peak Hour



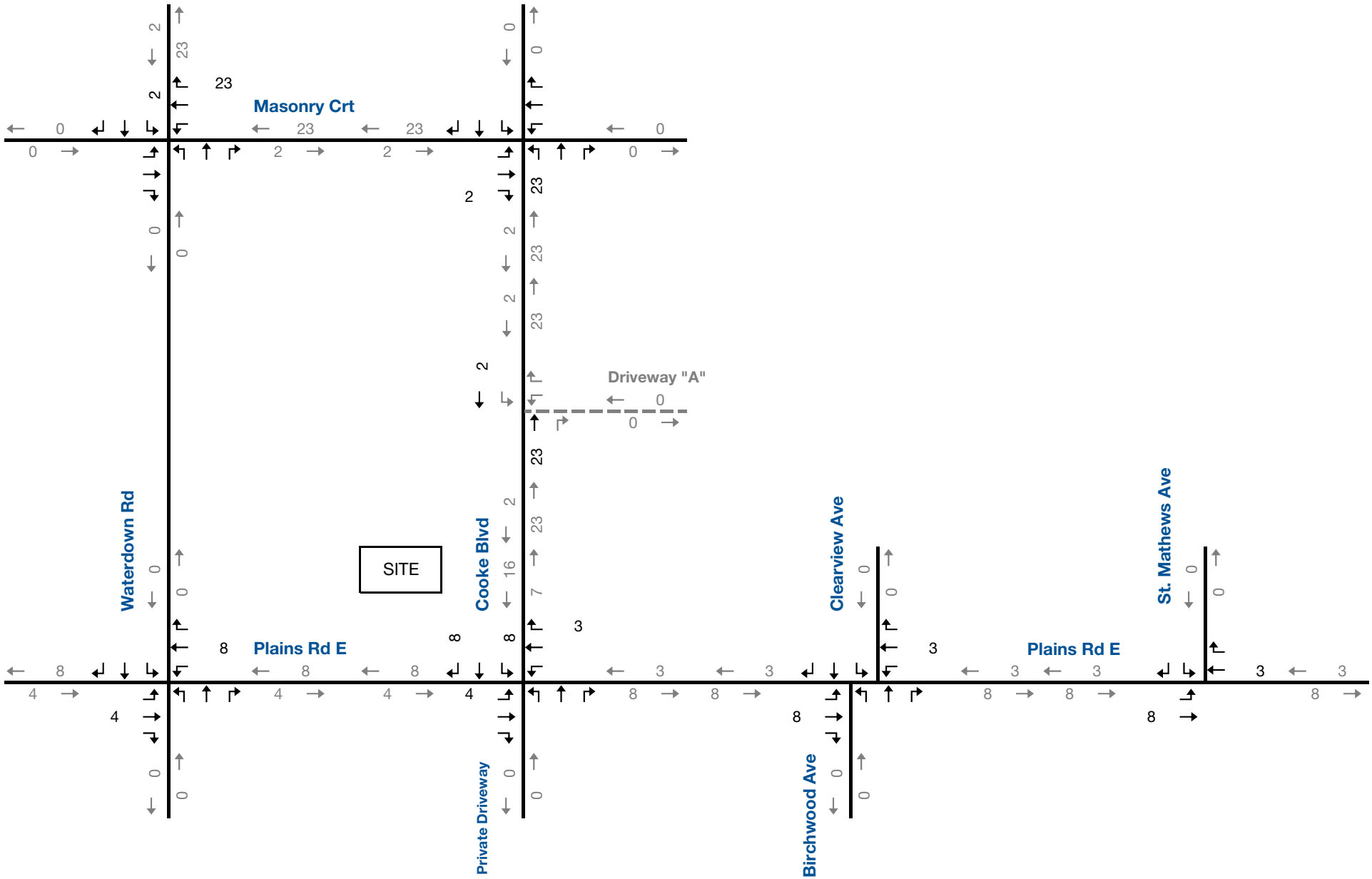
NTS

1200 King Road Phase 1 - PM Peak Hour



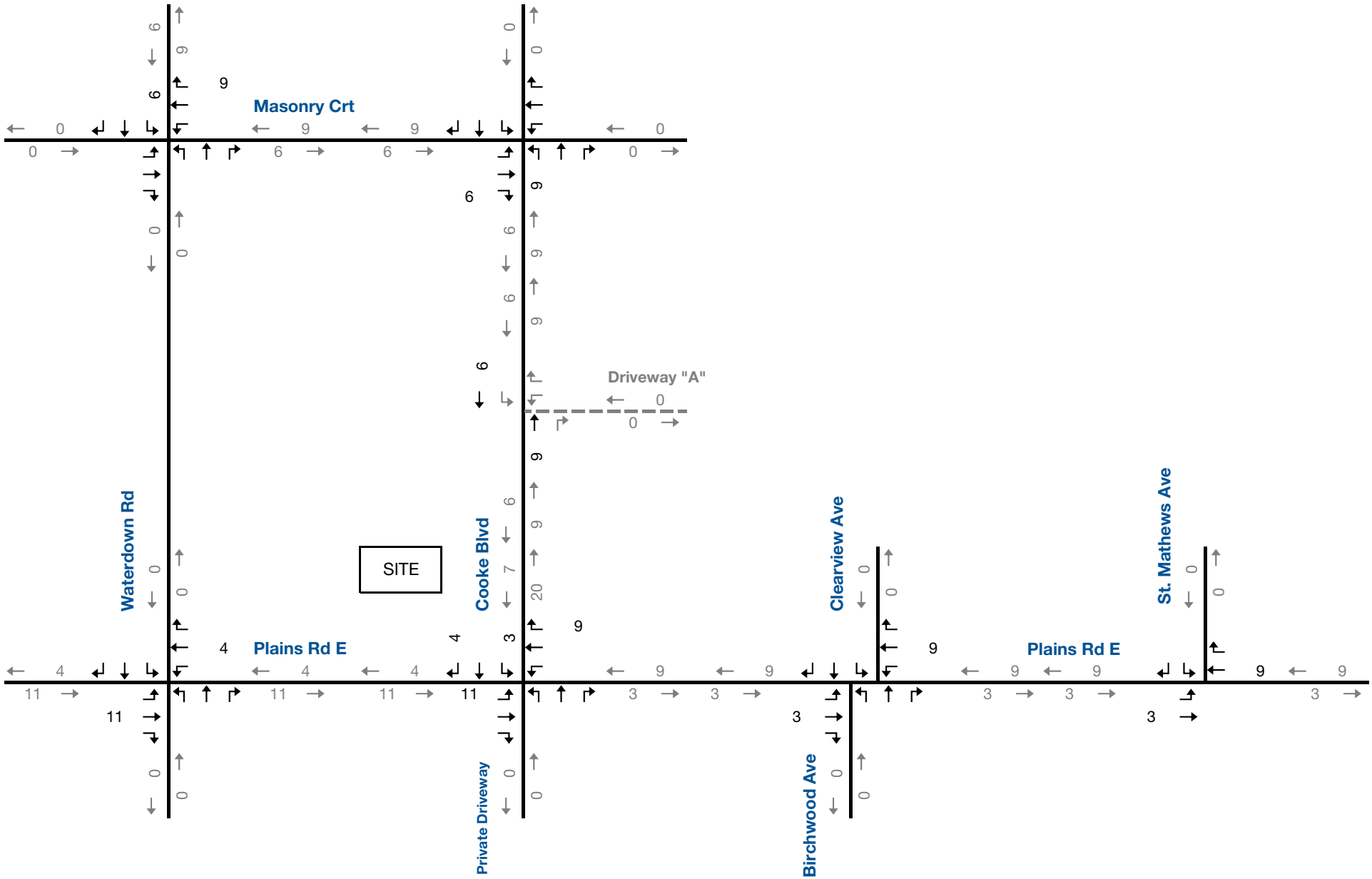
NTS

35 Plains Road TIS AM Peak Hour



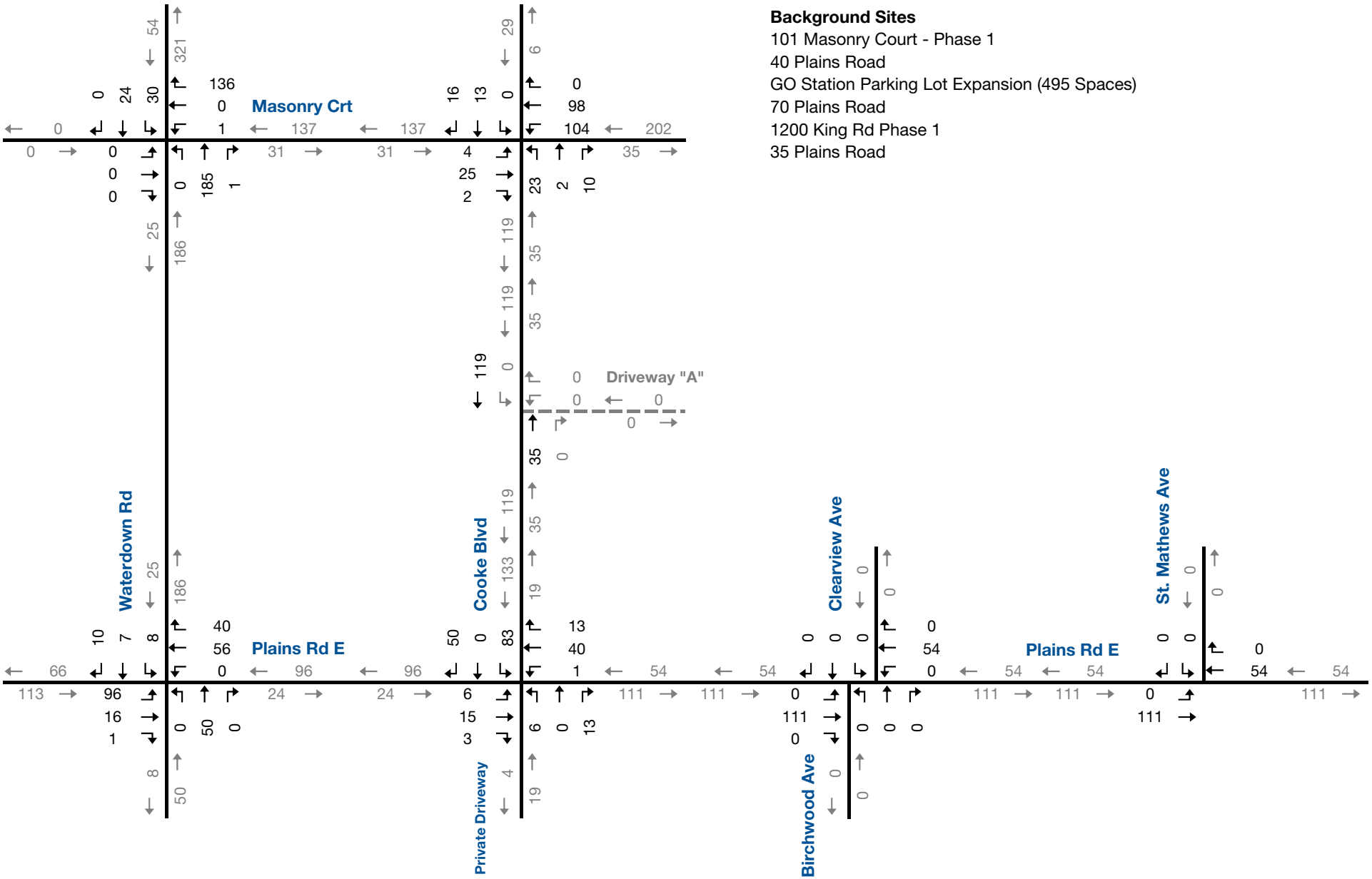
NTS

35 Plains Road TIS PM Peak Hour



NTS

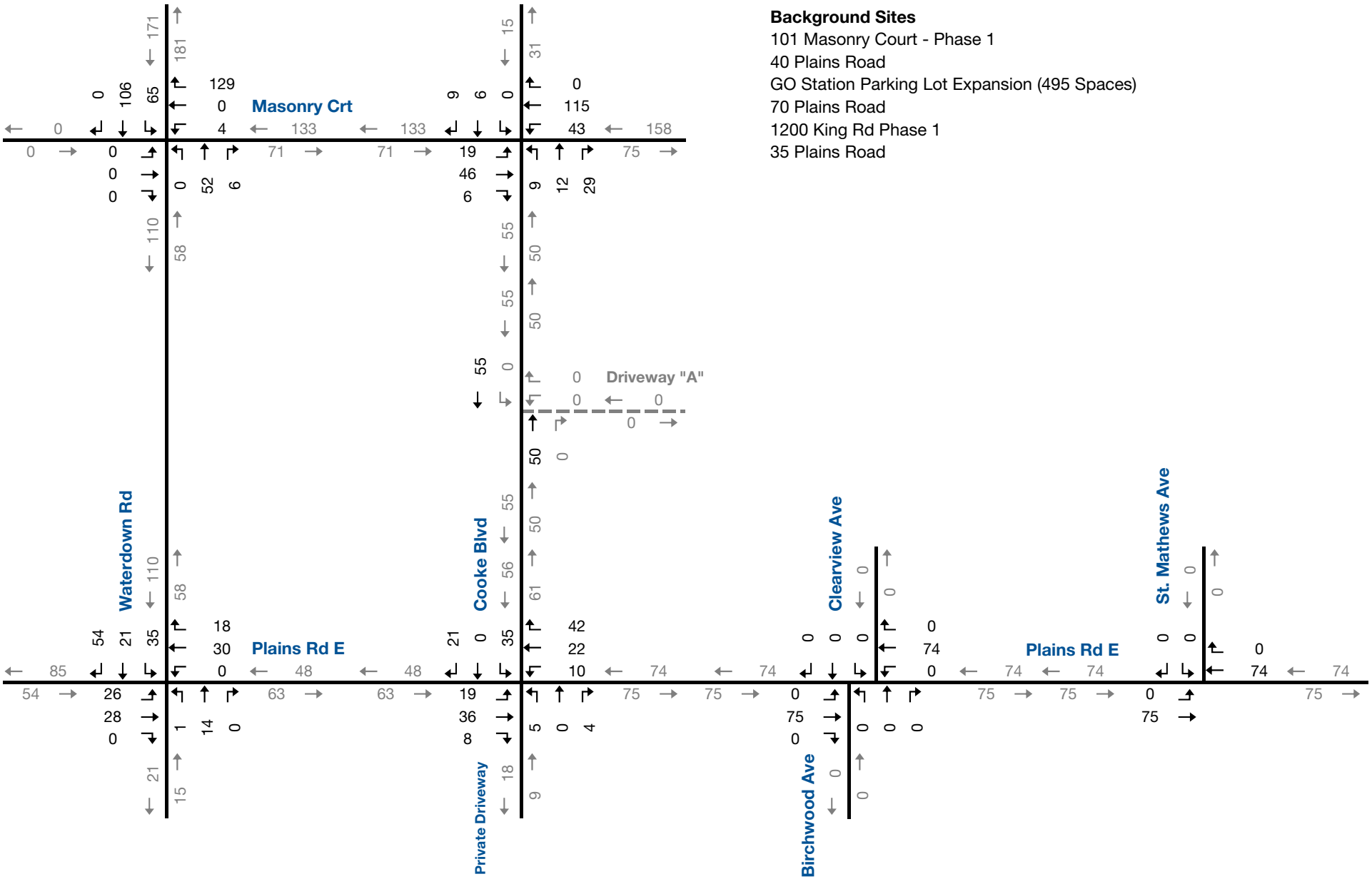
Background Site Traffic Total - AM Peak Hour



Background Sites
101 Masonry Court - Phase 1
40 Plains Road
GO Station Parking Lot Expansion (495 Spaces)
70 Plains Road
1200 King Rd Phase 1
35 Plains Road

NTS

Background Site Traffic Total - PM Peak Hour



Background Sites
101 Masonry Court - Phase 1
40 Plains Road
GO Station Parking Lot Expansion (495 Spaces)
70 Plains Road
1200 King Rd Phase 1
35 Plains Road

NTS

Appendix F

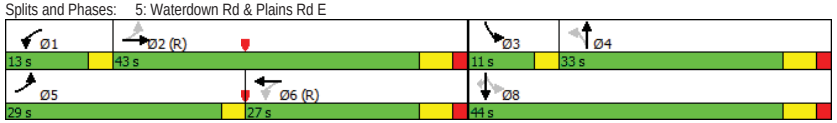
Background Traffic – Operational Conditions

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	469	652	69	372	63	254	149	135	139
Future Volume (vph)	469	652	69	372	63	254	149	135	139
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	pm+pt	NA	Perm
Protected Phases	5	2	1	6		4	3	8	
Permitted Phases	2		6		4		8		8
Detector Phase	5	2	1	6	4	4	3	8	8
Switch Phase									
Minimum Initial (s)	6.0	8.0	6.0	8.0	8.0	8.0	6.0	8.0	8.0
Minimum Split (s)	9.0	27.0	9.0	27.0	33.0	33.0	9.0	33.0	33.0
Total Split (s)	29.0	43.0	13.0	27.0	33.0	33.0	11.0	44.0	44.0
Total Split (%)	29.0%	43.0%	13.0%	27.0%	33.0%	33.0%	11.0%	44.0%	44.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	2.0
Lost Time Adjust (s)	1.0	-2.0	1.0	-2.0	-2.0	-2.0	1.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lag	Lead		
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None
Act Effct Green (s)	53.6	41.9	30.7	23.0	27.4	27.4	38.4	38.4	38.4
Actuated g/C Ratio	0.54	0.42	0.31	0.23	0.27	0.27	0.38	0.38	0.38
v/c Ratio	1.02	0.59	0.46	0.81	0.28	0.86	0.94	0.27	0.30
Control Delay	73.7	24.6	18.0	30.4	30.6	51.8	76.3	22.0	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.7	24.6	18.0	30.4	30.6	51.8	76.3	22.0	4.2
LOS	E	C	B	C	C	D	E	C	A
Approach Delay		43.5		28.5		48.1		33.2	
Approach LOS		D		C		D		C	

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 70 (70%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.02
Intersection Signal Delay: 38.8 — Intersection LOS: D
Intersection Capacity Utilization 84.0% — ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 5: Waterdown Rd & Plains Rd E



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	527	841	117	645	89	420	177	185	193
v/c Ratio	1.02	0.59	0.46	0.81	0.28	0.86	0.94	0.27	0.30
Control Delay	73.7	24.6	18.0	30.4	30.6	51.8	76.3	22.0	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.7	24.6	18.0	30.4	30.6	51.8	76.3	22.0	4.2
Queue Length 50th (m)	~103.5	68.8	8.1	37.6	13.9	76.6	23.9	24.8	0.0
Queue Length 95th (m)	#166.2	91.0	9.7	31.8	21.0	99.0	#52.1	32.2	5.6
Internal Link Dist (m)		175.5		130.1		98.3		328.0	
Turn Bay Length (m)	45.0		45.0		30.0				30.0
Base Capacity (vph)	515	1416	276	798	333	513	189	703	662
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.02	0.59	0.42	0.81	0.27	0.82	0.94	0.26	0.29

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	469	652	103	69	372	198	63	254	74	149	135	139
Future Volume (vph)	469	652	103	69	372	198	63	254	74	149	135	139
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	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	1.00
Frt	1.00	0.98		1.00	0.95		1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1646	3350		1615	3173		1705	1728		1630	1759	1366
Flt Permitted	0.17	1.00		0.34	1.00		0.64	1.00		0.14	1.00	1.00
Satd. Flow (perm)	289	3350		570	3173		1150	1728		242	1759	1366
Peak-hour factor, PHF	0.89	0.92	0.78	0.59	0.88	0.89	0.71	0.81	0.70	0.84	0.73	0.72
Adj. Flow (vph)	527	709	132	117	423	222	89	314	106	177	185	193
RTOR Reduction (vph)	0	15	0	0	69	0	0	12	0	0	0	119
Lane Group Flow (vph)	527	826	0	117	576	0	89	408	0	177	185	74
Confl. Peds. (#/hr)	2		1	1		2	4		7	7		4
Heavy Vehicles (%)	6%	5%	4%	8%	7%	8%	2%	5%	6%	7%	8%	15%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6			4		3	8	
Permitted Phases	2			6			4			8		8
Actuated Green, G (s)	51.6	39.9		29.7	21.0		25.4	25.4		36.4	36.4	36.4
Effective Green, g (s)	50.6	41.9		27.7	23.0		27.4	27.4		35.4	38.4	38.4
Actuated g/C Ratio	0.51	0.42		0.28	0.23		0.27	0.27		0.35	0.38	0.38
Clearance Time (s)	3.0	6.0		3.0	6.0		6.0	6.0		3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	507	1403		238	729		315	473		182	675	524
v/s Ratio Prot	c0.28	0.25		0.04	0.18			0.24		c0.07	0.11	
v/s Ratio Perm	c0.25			0.10			0.08			c0.28		0.05
v/c Ratio	1.04	0.59		0.49	0.79		0.28	0.86		0.97	0.27	0.14
Uniform Delay, d1	27.7	22.4		28.2	36.2		28.6	34.5		28.2	21.2	20.1
Progression Factor	1.00	1.00		0.80	0.69		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	50.6	1.8		1.5	8.2		0.5	14.9		58.3	0.2	0.1
Delay (s)	78.3	24.2		24.1	33.1		29.1	49.4		86.5	21.4	20.2
Level of Service	E	C		C	C		C	D		F	C	C
Approach Delay (s)		45.1			31.8			45.8			41.8	
Approach LOS		D			C			D			D	

Intersection Summary				
HCM 2000 Control Delay	41.4	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	1.00			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	84.0%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	80	896	1	560	6	0	97	0
Future Volume (vph)	80	896	1	560	6	0	97	0
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	5	2		6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	5	2	6	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	5.0	8.0	8.0	8.0	8.0	8.0	5.0	5.0
Minimum Split (s)	11.0	26.0	26.0	26.0	29.0	29.0	24.0	24.0
Total Split (s)	16.0	62.0	46.0	46.0	38.0	38.0	38.0	38.0
Total Split (%)	16.0%	62.0%	46.0%	46.0%	38.0%	38.0%	38.0%	38.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	0.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	1.0	-3.0	-3.0	-3.0		-2.0		-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0		4.0
Lead/Lag	Lead		Lag	Lag				
Lead-Lag Optimize?								
Recall Mode	None	Min	C-Min	C-Min	None	None	None	None
Act Effct Green (s)	72.1	72.1	63.3	63.3		19.9		19.9
Actuated g/C Ratio	0.72	0.72	0.63	0.63		0.20		0.20
v/c Ratio	0.22	0.37	0.00	0.35		0.06		0.72
Control Delay	4.5	4.3	10.0	7.8		0.3		36.3
Queue Delay	0.0	0.1	0.0	0.0		0.0		0.0
Total Delay	4.5	4.4	10.0	7.8		0.3		36.3
LOS	A	A	A	A		A		D
Approach Delay		4.4		7.9		0.3		36.3
Approach LOS		A		A		A		D

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 85 (85%), Referenced to phase 6:WBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 9.4		Intersection LOS: A	
Intersection Capacity Utilization 57.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 6: Plains Rd E & Cooke Blvd





Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	105	917	1	735	21	237
v/c Ratio	0.22	0.37	0.00	0.35	0.06	0.72
Control Delay	4.5	4.3	10.0	7.8	0.3	36.3
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	4.5	4.4	10.0	7.8	0.3	36.3
Queue Length 50th (m)	4.8	25.3	0.1	24.4	0.0	30.9
Queue Length 95th (m)	m6.0	m23.5	m0.2	23.1	0.0	51.9
Internal Link Dist (m)		130.1		143.9	37.4	88.9
Turn Bay Length (m)	15.0		15.0			
Base Capacity (vph)	547	2503	374	2120	584	512
Starvation Cap Reductn	0	454	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.45	0.00	0.35	0.04	0.46

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	896	3	1	560	77	6	0	13	97	0	66
Future Volume (vph)	80	896	3	1	560	77	6	0	13	97	0	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.6	3.6	3.5	3.6	3.6	3.6	3.3	3.6	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99			1.00			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.97			0.91			0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97	
Satd. Flow (prot)	1726	3470		1805	3333			1701			1656	
Flt Permitted	0.31	1.00		0.31	1.00			0.91			0.80	
Satd. Flow (perm)	567	3470		591	3333			1573			1360	
Peak-hour factor, PHF	0.76	0.98	0.92	0.92	0.92	0.61	0.92	0.92	0.92	0.65	0.92	0.75
Adj. Flow (vph)	105	914	3	1	609	126	7	0	14	149	0	88
RTOR Reduction (vph)	0	0	0	0	11	0	0	17	0	0	61	0
Lane Group Flow (vph)	105	917	0	1	724	0	0	4	0	0	176	0
Confl. Peds. (#/hr)	4					4						3
Heavy Vehicles (%)	1%	4%	0%	0%	6%	0%	0%	0%	0%	8%	0%	0%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	69.1	69.1		59.7	59.7			17.9			17.9	
Effective Green, g (s)	68.1	72.1		62.7	62.7			19.9			19.9	
Actuated g/C Ratio	0.68	0.72		0.63	0.63			0.20			0.20	
Clearance Time (s)	3.0	7.0		7.0	7.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	448	2501		370	2089			313			270	
v/s Ratio Prot	0.01	c0.26			0.22							
v/s Ratio Perm	0.15			0.00				0.00			c0.13	
v/c Ratio	0.23	0.37		0.00	0.35			0.01			0.65	
Uniform Delay, d1	6.0	5.3		7.0	8.9			32.2			36.9	
Progression Factor	0.69	0.64		0.86	0.73			1.00			1.00	
Incremental Delay, d2	0.2	0.1		0.0	0.4			0.0			5.6	
Delay (s)	4.4	3.5		6.0	7.0			32.2			42.4	
Level of Service	A	A		A	A			C			D	
Approach Delay (s)		3.6			7.0			32.2			42.4	
Approach LOS		A			A			C			D	

Intersection Summary

HCM 2000 Control Delay	9.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	57.7%	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 (veh/h)	3	1002	4	13	627	0	1	0	18	3	0	17
Future Volume (Veh/h)	3	1002	4	13	627	0	1	0	18	3	0	17
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.97	0.50	0.75	0.91	0.25	0.25	0.25	0.61	0.38	0.25	0.80
Hourly flow rate (vph)	4	1033	8	17	689	0	4	0	30	8	0	21
Pedestrians		1						2			2	
Lane Width (m)		3.6						3.6			3.6	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						0			0	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		168			155							
pX, platoon unblocked	0.92			0.90			0.94	0.94	0.90	0.94	0.94	0.92
vC, conflicting volume	691			1043			1448	1772	522	1280	1776	348
vC1, stage 1 conf vol							1047	1047		725	725	
vC2, stage 2 conf vol							400	725		554	1051	
vCu, unblocked vol	495			837			982	1326	262	804	1330	122
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			99	100	96	98	100	97
cM capacity (veh/h)	993			728			285	299	671	403	289	839

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	520	524	362	344	34	29
Volume Left	4	0	17	0	4	8
Volume Right	0	8	0	0	30	21
cSH	993	1700	728	1700	579	646
Volume to Capacity	0.00	0.31	0.02	0.20	0.06	0.04
Queue Length 95th (m)	0.1	0.0	0.6	0.0	1.5	1.1
Control Delay (s)	0.1	0.0	0.8	0.0	11.6	10.8
Lane LOS	A		A		B	B
Approach Delay (s)	0.1		0.4		11.6	10.8
Approach LOS					B	B

Intersection Summary				
Average Delay		0.6		
Intersection Capacity Utilization		40.2%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	6	955	658	7	9
Future Volume (vph)	6	955	658	7	9
Turn Type	Perm	NA	NA	Prot	Perm
Protected Phases		2	6	8	
Permitted Phases	2				8
Detector Phase	2	2	6	8	8
Switch Phase					
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	44.0	44.0	44.0	28.0	28.0
Total Split (s)	71.0	71.0	71.0	29.0	29.0
Total Split (%)	71.0%	71.0%	71.0%	29.0%	29.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	3.0	3.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-3.0	-3.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	C-Max	Max	Max
Act Effct Green (s)	67.0	67.0	67.0	25.0	25.0
Actuated g/C Ratio	0.67	0.67	0.67	0.25	0.25
v/c Ratio	0.02	0.42	0.31	0.04	0.05
Control Delay	3.5	4.8	7.3	28.9	12.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	3.5	4.8	7.3	28.9	12.3
LOS	A	A	A	C	B
Approach Delay		4.8	7.3	19.7	
Approach LOS		A	A	B	

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 48 (48%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.42			
Intersection Signal Delay: 6.1		Intersection LOS: A	
Intersection Capacity Utilization 55.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 8: Plains Rd E & St. Matthews Ave





Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	8	985	723	16	20
v/c Ratio	0.02	0.42	0.31	0.04	0.05
Control Delay	3.5	4.8	7.3	28.9	12.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	3.5	4.8	7.3	28.9	12.3
Queue Length 50th (m)	0.2	18.2	28.7	2.5	0.0
Queue Length 95th (m)	m0.8	28.7	37.8	3.7	1.4
Internal Link Dist (m)		131.0	266.9	36.0	
Turn Bay Length (m)	15.0			15.0	
Base Capacity (vph)	429	2325	2300	436	407
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.02	0.42	0.31	0.04	0.05

Intersection Summary

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



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	6	955	658	5	7	9
Future Volume (vph)	6	955	658	5	7	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.5	3.3	3.5
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1741	3471	3433		1745	1571
Flt Permitted	0.35	1.00	1.00		0.95	1.00
Satd. Flow (perm)	641	3471	3433		1745	1571
Peak-hour factor, PHF	0.75	0.97	0.92	0.63	0.44	0.45
Adj. Flow (vph)	8	985	715	8	16	20
RTOR Reduction (vph)	0	0	1	0	0	15
Lane Group Flow (vph)	8	985	722	0	16	5
Confl. Peds. (#/hr)	5			5	1	3
Heavy Vehicles (%)	0%	4%	5%	0%	0%	0%
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		8	
Permitted Phases	2					8
Actuated Green, G (s)	65.0	65.0	65.0		22.0	22.0
Effective Green, g (s)	67.0	67.0	67.0		25.0	25.0
Actuated g/C Ratio	0.67	0.67	0.67		0.25	0.25
Clearance Time (s)	6.0	6.0	6.0		7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	429	2325	2300		436	392
v/s Ratio Prot		c0.28	0.21		c0.01	
v/s Ratio Perm	0.01					0.00
v/c Ratio	0.02	0.42	0.31		0.04	0.01
Uniform Delay, d1	5.5	7.6	6.9		28.4	28.2
Progression Factor	0.61	0.55	1.00		1.00	1.00
Incremental Delay, d2	0.1	0.5	0.4		0.2	0.1
Delay (s)	3.4	4.8	7.3		28.5	28.3
Level of Service	A	A	A		C	C
Approach Delay (s)		4.7	7.3		28.4	
Approach LOS		A	A		C	

Intersection Summary

HCM 2000 Control Delay	6.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	23	0	2	0	8	891	170	448
Future Volume (vph)	23	0	2	0	8	891	170	448
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases		4		8		2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	1	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	29.0	29.0	29.0	29.0	35.0	35.0	14.0	35.0
Total Split (s)	29.0	29.0	29.0	29.0	37.0	37.0	14.0	51.0
Total Split (%)	36.3%	36.3%	36.3%	36.3%	46.3%	46.3%	17.5%	63.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	2.0	2.0	0.0	2.0
Lost Time Adjust (s)		-3.0		-3.0	-2.0	-2.0	1.0	-2.0
Total Lost Time (s)		4.0		4.0	4.0	4.0	4.0	4.0
Lead/Lag					Lag	Lag	Lead	
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	None	Max
Act Effct Green (s)		12.4		12.4	35.1	35.1	47.1	47.1
Actuated g/C Ratio		0.18		0.18	0.52	0.52	0.70	0.70
v/c Ratio		0.31		0.59	0.04	0.58	0.53	0.24
Control Delay		7.6		8.5	10.2	13.4	9.8	4.2
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		7.6		8.5	10.2	13.4	9.8	4.2
LOS		A		A	B	B	A	A
Approach Delay		7.6		8.5		13.4		5.7
Approach LOS		A		A		B		A

Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 67.5			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 9.9		Intersection LOS: A	
Intersection Capacity Utilization 62.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 9: Waterdown Rd & Masonry Crt



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	49	323	12	1036	200	534
v/c Ratio	0.31	0.59	0.04	0.58	0.53	0.24
Control Delay	7.6	8.5	10.2	13.4	9.8	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.6	8.5	10.2	13.4	9.8	4.2
Queue Length 50th (m)	0.0	0.9	0.7	41.6	6.6	9.5
Queue Length 95th (m)	0.0	0.0	2.8	75.7	16.8	20.1
Internal Link Dist (m)	183.2	121.8		328.0		348.5
Turn Bay Length (m)			40.0		20.0	
Base Capacity (vph)	238	782	287	1783	420	2245
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.41	0.04	0.58	0.48	0.24

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	0	9	2	0	189	8	891	16	170	448	18
Future Volume (vph)	23	0	9	2	0	189	8	891	16	170	448	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.93			0.87		1.00	1.00		1.00	0.99	
Flt Protected		0.98			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1122			1586		1161	3430		1711	3216	
Flt Permitted		0.44			0.99		0.45	1.00		0.17	1.00	
Satd. Flow (perm)		502			1575		554	3430		304	3216	
Peak-hour factor, PHF	0.92	0.25	0.38	0.25	0.25	0.60	0.67	0.88	0.70	0.85	0.88	0.71
Adj. Flow (vph)	25	0	24	8	0	315	12	1012	23	200	509	25
RTOR Reduction (vph)	0	40	0	0	257	0	0	1	0	0	3	0
Lane Group Flow (vph)	0	9	0	0	66	0	12	1035	0	200	531	0
Confl. Peds. (#/hr)							4					4
Heavy Vehicles (%)	64%	0%	44%	0%	0%	4%	50%	5%	0%	2%	9%	59%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		9.4			9.4		33.1	33.1		45.1	45.1	
Effective Green, g (s)		12.4			12.4		35.1	35.1		44.1	47.1	
Actuated g/C Ratio		0.18			0.18		0.52	0.52		0.65	0.70	
Clearance Time (s)		7.0			7.0		6.0	6.0		3.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		92			289		288	1783		365	2244	
v/s Ratio Prot								c0.30		c0.06	0.17	
v/s Ratio Perm		0.02			c0.04		0.02			0.29		
v/c Ratio		0.10			0.23		0.04	0.58		0.55	0.24	
Uniform Delay, d1		22.9			23.5		7.9	11.1		7.0	3.7	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.5			0.4		0.3	1.4		1.7	0.2	
Delay (s)		23.4			23.9		8.2	12.5		8.7	3.9	
Level of Service		C			C		A	B		A	A	
Approach Delay (s)		23.4			23.9			12.5			5.2	
Approach LOS		C			C			B			A	

Intersection Summary				
HCM 2000 Control Delay	12.0	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.50			
Actuated Cycle Length (s)	67.5	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	62.9%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	165	42	124	113	0	63	2	77	0	13	16
Future Volume (Veh/h)	4	165	42	124	113	0	63	2	77	0	13	16
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.65	0.59	0.79	0.88	0.92	0.73	0.92	0.52	0.92	0.92	0.92
Hourly flow rate (vph)	4	254	71	157	128	0	86	2	148	0	14	17
Pedestrians					1			1				
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)		146										
pX, platoon unblocked				1.00			1.00	1.00	1.00	1.00	1.00	
vC, conflicting volume	128			326			764	740	292	890	776	128
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	128			325			764	740	290	889	775	128
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			87			69	99	80	100	95	98
cM capacity (veh/h)	1470			1244			275	302	752	191	288	927

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	329	285	236	31
Volume Left	4	157	86	0
Volume Right	71	0	148	17
cSH	1470	1244	457	463
Volume to Capacity	0.00	0.13	0.52	0.07
Queue Length 95th (m)	0.1	3.5	23.2	1.7
Control Delay (s)	0.1	5.1	21.0	13.3
Lane LOS	A	A	C	B
Approach Delay (s)	0.1	5.1	21.0	13.3
Approach LOS			C	B

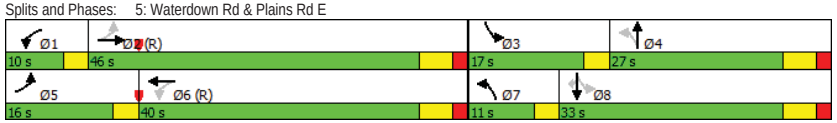
Intersection Summary				
Average Delay	7.8			
Intersection Capacity Utilization	49.4%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	218	502	81	995	109	160	229	146	341
Future Volume (vph)	218	502	81	995	109	160	229	146	341
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	5	2	1	6	7	4	3	8	
Permitted Phases	2		6		4		8		8
Detector Phase	5	2	1	6	7	4	3	8	8
Switch Phase									
Minimum Initial (s)	6.0	8.0	6.0	8.0	5.0	8.0	6.0	8.0	8.0
Minimum Split (s)	9.0	27.0	9.0	27.0	11.0	26.0	9.0	33.0	33.0
Total Split (s)	16.0	46.0	10.0	40.0	11.0	27.0	17.0	33.0	33.0
Total Split (%)	16.0%	46.0%	10.0%	40.0%	11.0%	27.0%	17.0%	33.0%	33.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.0	0.0	2.0	0.0	2.0	0.0	2.0	2.0
Lost Time Adjust (s)	1.0	-2.0	1.0	-2.0	1.0	-2.0	1.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None
Act Effct Green (s)	56.9	46.5	46.0	39.6	25.5	18.6	35.1	24.2	24.2
Actuated g/C Ratio	0.57	0.46	0.46	0.40	0.26	0.19	0.35	0.24	0.24
v/c Ratio	0.86	0.37	0.26	0.90	0.39	0.66	0.78	0.36	0.76
Control Delay	49.5	18.3	8.0	28.1	26.2	43.8	42.1	32.7	19.9
Queue Delay	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0
Total Delay	49.5	18.3	8.0	28.5	26.2	43.8	42.1	32.7	19.9
LOS	D	B	A	C	C	D	D	C	B
Approach Delay		27.6		26.9		37.4		28.7	
Approach LOS		C		C		D		C	

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 12 (12%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 28.6 — Intersection LOS: C
Intersection Capacity Utilization 83.9% — ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 5: Waterdown Rd & Plains Rd E



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	256	607	109	1245	131	228	246	166	449
v/c Ratio	0.86	0.37	0.26	0.90	0.39	0.66	0.78	0.36	0.76
Control Delay	49.5	18.3	8.0	28.1	26.2	43.8	42.1	32.7	19.9
Queue Delay	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0
Total Delay	49.5	18.3	8.0	28.5	26.2	43.8	42.1	32.7	19.9
Queue Length 50th (m)	34.1	40.7	2.8	130.3	18.2	39.8	36.9	27.8	26.3
Queue Length 95th (m)	#77.5	57.6	8.9	#173.7	27.7	62.3	#58.9	43.2	36.8
Internal Link Dist (m)		175.5		130.1		98.3		328.0	
Turn Bay Length (m)	45.0		45.0		30.0				30.0
Base Capacity (vph)	302	1637	416	1381	339	422	322	551	647
Starvation Cap Reductn	0	0	0	15	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.37	0.26	0.91	0.39	0.54	0.76	0.30	0.69

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	218	502	54	81	995	192	109	160	50	229	146	341
Future Volume (vph)	218	502	54	81	995	192	109	160	50	229	146	341
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.97		1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1678	3493		1743	3446		1721	1774		1727	1900	1491
Flt Permitted	0.10	1.00		0.41	1.00		0.65	1.00		0.25	1.00	1.00
Satd. Flow (perm)	174	3493		761	3446		1181	1774		445	1900	1491
Peak-hour factor, PHF	0.85	0.96	0.64	0.74	0.96	0.92	0.83	0.97	0.80	0.93	0.88	0.76
Adj. Flow (vph)	256	523	84	109	1036	209	131	165	62	246	166	449
RTOR Reduction (vph)	0	12	0	0	16	0	0	15	0	0	0	230
Lane Group Flow (vph)	256	595	0	109	1229	0	131	213	0	246	166	219
Confl. Peds. (#/hr)	10		2	2		10	7		3	3		7
Heavy Vehicles (%)	4%	1%	0%	0%	1%	5%	1%	3%	0%	1%	0%	5%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6			4			8		8
Actuated Green, G (s)	54.9	44.5		45.0	37.6		24.5	16.6		33.1	22.2	22.2
Effective Green, g (s)	53.9	46.5		43.0	39.6		22.5	18.6		32.1	24.2	24.2
Actuated g/C Ratio	0.54	0.46		0.43	0.40		0.22	0.19		0.32	0.24	0.24
Clearance Time (s)	3.0	6.0		3.0	6.0		3.0	6.0		3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	293	1624		390	1364		302	329		303	459	360
v/s Ratio Prot	c0.12	0.17		0.02	c0.36		0.03	0.12		c0.10	0.09	
v/s Ratio Perm	0.35			0.10			0.07			c0.16		0.15
v/c Ratio	0.87	0.37		0.28	0.90		0.43	0.65		0.81	0.36	0.61
Uniform Delay, d1	27.2	17.3		17.3	28.4		32.5	37.7		27.8	31.5	33.7
Progression Factor	1.00	1.00		0.57	0.64		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	23.7	0.6		0.3	8.0		1.0	4.4		15.1	0.5	2.9
Delay (s)	50.9	17.9		10.1	26.1		33.5	42.0		42.9	32.0	36.6
Level of Service	D	B		B	C		C	D		D	C	D
Approach Delay (s)		27.7			24.8			38.9			37.5	
Approach LOS		C			C			D			D	

Intersection Summary				
HCM 2000 Control Delay	30.2	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.86			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	83.9%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	27	780	10	1192	5	0	68	0
Future Volume (vph)	27	780	10	1192	5	0	68	0
Turn Type	custom	NA	Perm	NA	Perm	NA	D.Pm	NA
Protected Phases	5	2		6		8		4
Permitted Phases	5		6		8		8	
Detector Phase	5	2	6	6	8	8	8	4
Switch Phase								
Minimum Initial (s)	6.0	8.0	8.0	8.0	8.0	8.0	8.0	5.0
Minimum Split (s)	9.0	26.0	26.0	26.0	29.0	29.0	29.0	24.0
Total Split (s)	12.0	71.0	59.0	59.0	29.0	29.0	29.0	29.0
Total Split (%)	12.0%	71.0%	59.0%	59.0%	29.0%	29.0%	29.0%	29.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	0.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	1.0	-3.0	-3.0	-3.0		-2.0		-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0		4.0
Lead/Lag	Lead		Lag	Lag				
Lead-Lag Optimize?								
Recall Mode	Min	Min	C-Min	C-Min	None	None	None	None
Act Effct Green (s)	7.2	75.0	63.8	63.8		17.0		17.0
Actuated g/C Ratio	0.07	0.75	0.64	0.64		0.17		0.17
v/c Ratio	0.43	0.30	0.03	0.63		0.03		0.67
Control Delay	53.4	3.9	6.6	9.3		0.1		34.5
Queue Delay	0.0	0.0	0.0	0.2		0.0		0.0
Total Delay	53.4	3.9	6.6	9.4		0.1		34.6
LOS	D	A	A	A		A		C
Approach Delay		7.1		9.4		0.1		34.6
Approach LOS		A		A		A		C

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 6:WBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 10.7		Intersection LOS: B	
Intersection Capacity Utilization 52.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: Plains Rd E & Cooke Blvd



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	54	805	11	1400	9	212
v/c Ratio	0.43	0.30	0.03	0.63	0.03	0.67
Control Delay	53.4	3.9	6.6	9.3	0.1	34.5
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0
Total Delay	53.4	3.9	6.6	9.4	0.1	34.6
Queue Length 50th (m)	9.4	11.0	0.7	51.1	0.0	26.0
Queue Length 95th (m)	12.9	37.1	m0.8	32.7	0.0	46.8
Internal Link Dist (m)		130.1		143.9	37.4	88.9
Turn Bay Length (m)	15.0		15.0			
Base Capacity (vph)	143	2675	421	2227	439	427
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	199	0	3
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.30	0.03	0.69	0.02	0.50

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	780	8	10	1192	98	5	0	4	68	0	68
Future Volume (vph)	27	780	8	10	1192	98	5	0	4	68	0	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.6	3.6	3.5	3.6	3.6	3.6	3.3	3.6	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.99			0.94			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.98	
Satd. Flow (prot)	1745	3569		1805	3482			1738			1707	
Flt Permitted	0.95	1.00		0.35	1.00			0.86			0.85	
Satd. Flow (perm)	1745	3569		661	3482			1530			1482	
Peak-hour factor, PHF	0.50	0.98	0.92	0.92	0.94	0.74	0.92	0.92	0.92	0.70	0.92	0.59
Adj. Flow (vph)	54	796	9	11	1268	132	5	0	4	97	0	115
RTOR Reduction (vph)	0	1	0	0	6	0	0	7	0	0	63	0
Lane Group Flow (vph)	54	805	0	11	1394	0	0	2	0	0	149	0
Confl. Peds. (#/hr)	10					10				2		1
Heavy Vehicles (%)	0%	1%	0%	0%	1%	9%	0%	0%	0%	0%	0%	0%
Turn Type	custom	NA		Perm	NA		Perm	NA		D.Pm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	5			6			8			8		
Actuated Green, G (s)	8.2	72.0		60.8	60.8			15.0			15.0	
Effective Green, g (s)	7.2	75.0		63.8	63.8			17.0			17.0	
Actuated g/C Ratio	0.07	0.75		0.64	0.64			0.17			0.17	
Clearance Time (s)	3.0	7.0		7.0	7.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	125	2676		421	2221			260			251	
v/s Ratio Prot	c0.03	0.23			c0.40							
v/s Ratio Perm				0.02				0.00			c0.10	
v/c Ratio	0.43	0.30		0.03	0.63			0.01			0.59	
Uniform Delay, d1	44.4	4.0		6.7	10.9			34.5			38.3	
Progression Factor	0.99	0.80		0.69	0.66			1.00			1.00	
Incremental Delay, d2	2.1	0.1		0.1	1.1			0.0			3.7	
Delay (s)	46.3	3.3		4.7	8.4			34.5			42.0	
Level of Service	D	A		A	A			C			D	
Approach Delay (s)		6.0			8.3			34.5			42.0	
Approach LOS		A			A			C			D	

Intersection Summary

HCM 2000 Control Delay	10.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.4%	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 (veh/h)	11	843	2	19	1262	4	3	0	12	1	0	7
Future Volume (Veh/h)	11	843	2	19	1262	4	3	0	12	1	0	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.97	0.50	0.50	0.92	0.50	0.75	0.25	0.55	0.25	0.25	0.58
Hourly flow rate (vph)	22	869	4	38	1372	8	4	0	22	4	0	12
Pedestrians								1			4	
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		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		168			155							
pX, platoon unblocked	0.78			0.93			0.81	0.81	0.93	0.81	0.81	0.78
vC, conflicting volume	1384			874			1690	2376	438	1956	2374	694
vC1, stage 1 conf vol							916	916		1456	1456	
vC2, stage 2 conf vol							774	1460		500	918	
vCu, unblocked vol	925			719			1012	1856	250	1340	1853	40
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			95			99	100	97	98	100	98
cM capacity (veh/h)	580			830			303	185	704	182	194	799

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	456	438	724	694	26	16
Volume Left	22	0	38	0	4	4
Volume Right	0	4	0	8	22	12
cSH	580	1700	830	1700	584	433
Volume to Capacity	0.04	0.26	0.05	0.41	0.04	0.04
Queue Length 95th (m)	0.9	0.0	1.1	0.0	1.1	0.9
Control Delay (s)	1.1	0.0	1.2	0.0	11.4	13.6
Lane LOS	A		A		B	B
Approach Delay (s)	0.6		0.6		11.4	13.6
Approach LOS					B	B

Intersection Summary				
Average Delay	0.8			
Intersection Capacity Utilization	58.5%	ICU Level of Service	B	
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	16	846	1302	18	19
Future Volume (vph)	16	846	1302	18	19
Turn Type	Perm	NA	NA	Prot	Perm
Protected Phases		2	6	8	
Permitted Phases	2				8
Detector Phase	2	2	6	8	8
Switch Phase					
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	44.0	44.0	44.0	28.0	28.0
Total Split (s)	72.0	72.0	72.0	28.0	28.0
Total Split (%)	72.0%	72.0%	72.0%	28.0%	28.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	3.0	3.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-3.0	-3.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	C-Max	Max	Max
Act Effct Green (s)	68.0	68.0	68.0	24.0	24.0
Actuated g/C Ratio	0.68	0.68	0.68	0.24	0.24
v/c Ratio	0.14	0.37	0.59	0.09	0.08
Control Delay	5.1	4.6	9.7	30.3	10.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	5.1	4.6	9.7	30.3	10.7
LOS	A	A	A	C	B
Approach Delay		4.6	9.7	21.1	
Approach LOS		A	A	C	

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 83 (83%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 8.1		Intersection LOS: A	
Intersection Capacity Utilization 60.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 8: Plains Rd E & St. Matthews Ave





Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	25	910	1404	38	34
v/c Ratio	0.14	0.37	0.59	0.09	0.08
Control Delay	5.1	4.6	9.7	30.3	10.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	5.1	4.6	9.7	30.3	10.7
Queue Length 50th (m)	0.8	14.8	70.8	6.1	0.0
Queue Length 95th (m)	1.8	22.4	88.6	7.5	2.8
Internal Link Dist (m)		131.0	266.9	36.0	
Turn Bay Length (m)	15.0			15.0	
Base Capacity (vph)	174	2430	2398	418	404
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.14	0.37	0.59	0.09	0.08

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	16	846	1302	24	18	19
Future Volume (vph)	16	846	1302	24	18	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.5	3.3	3.5
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1744	3574	3526		1745	1576
Flt Permitted	0.14	1.00	1.00		0.95	1.00
Satd. Flow (perm)	257	3574	3526		1745	1576
Peak-hour factor, PHF	0.63	0.93	0.95	0.72	0.47	0.56
Adj. Flow (vph)	25	910	1371	33	38	34
RTOR Reduction (vph)	0	0	2	0	0	26
Lane Group Flow (vph)	25	910	1402	0	38	8
Confl. Peds. (#/hr)	3			3	6	1
Heavy Vehicles (%)	0%	1%	2%	0%	0%	0%
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		8	
Permitted Phases	2					8
Actuated Green, G (s)	66.0	66.0	66.0		21.0	21.0
Effective Green, g (s)	68.0	68.0	68.0		24.0	24.0
Actuated g/C Ratio	0.68	0.68	0.68		0.24	0.24
Clearance Time (s)	6.0	6.0	6.0		7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	174	2430	2397		418	378
v/s Ratio Prot		0.25	c0.40		c0.02	
v/s Ratio Perm	0.10					0.01
v/c Ratio	0.14	0.37	0.59		0.09	0.02
Uniform Delay, d1	5.7	6.9	8.5		29.5	29.0
Progression Factor	0.55	0.59	1.00		1.00	1.00
Incremental Delay, d2	1.7	0.4	1.1		0.4	0.1
Delay (s)	4.8	4.5	9.6		30.0	29.1
Level of Service	A	A	A		C	C
Approach Delay (s)		4.5	9.6		29.6	
Approach LOS		A	A		C	

Intersection Summary

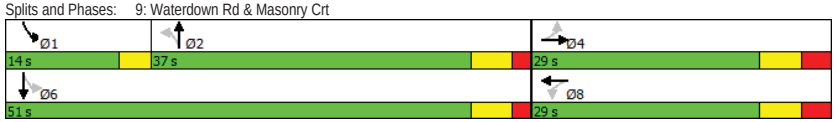
HCM 2000 Control Delay	8.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	23	0	15	2	9	567	67	725
Future Volume (vph)	23	0	15	2	9	567	67	725
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases		4		8		2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	1	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	29.0	29.0	29.0	29.0	35.0	35.0	14.0	35.0
Total Split (s)	29.0	29.0	29.0	29.0	37.0	37.0	14.0	51.0
Total Split (%)	36.3%	36.3%	36.3%	36.3%	46.3%	46.3%	17.5%	63.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	2.0	2.0	0.0	2.0
Lost Time Adjust (s)		-3.0		-3.0	-2.0	-2.0	1.0	-2.0
Total Lost Time (s)		4.0		4.0	4.0	4.0	4.0	4.0
Lead/Lag					Lag	Lag	Lead	
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	None	Max
Act Effct Green (s)		15.9		15.9	38.3	38.3	47.2	47.2
Actuated g/C Ratio		0.22		0.22	0.54	0.54	0.66	0.66
v/c Ratio		0.25		0.76	0.09	0.35	0.21	0.38
Control Delay		4.8		14.1	13.8	11.8	6.5	6.7
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		4.8		14.1	13.8	11.8	6.5	6.7
LOS		A		B	B	B	A	A
Approach Delay		4.8		14.1		11.9		6.7
Approach LOS		A		B		B		A

Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 71.2			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 9.9		Intersection LOS: A	
Intersection Capacity Utilization 64.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 9: Waterdown Rd & Masonry Crt



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	41	500	16	661	106	879
v/c Ratio	0.25	0.76	0.09	0.35	0.21	0.38
Control Delay	4.8	14.1	13.8	11.8	6.5	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.8	14.1	13.8	11.8	6.5	6.7
Queue Length 50th (m)	0.0	13.0	1.0	26.0	4.1	22.5
Queue Length 95th (m)	0.0	0.0	3.3	50.3	9.1	45.5
Internal Link Dist (m)	183.2	121.8		328.0		348.5
Turn Bay Length (m)			40.0		20.0	
Base Capacity (vph)	213	820	179	1879	552	2316
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.61	0.09	0.35	0.19	0.38

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	0	5	15	2	373	9	567	11	67	725	15
Future Volume (vph)	23	0	5	15	2	373	9	567	11	67	725	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.97			0.87		1.00	1.00		1.00	1.00	
Flt Protected		0.96			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1294			1632		979	3494		1745	3487	
Flt Permitted		0.34			0.98		0.32	1.00		0.32	1.00	
Satd. Flow (perm)		456			1610		333	3494		585	3487	
Peak-hour factor, PHF	0.69	0.25	0.63	0.63	0.50	0.79	0.56	0.88	0.63	0.63	0.85	0.58
Adj. Flow (vph)	33	0	8	24	4	472	16	644	17	106	853	26
RTOR Reduction (vph)	0	32	0	0	303	0	0	2	0	0	2	0
Lane Group Flow (vph)	0	9	0	0	197	0	16	659	0	106	877	0
Confl. Peds. (#/hr)							4					4
Heavy Vehicles (%)	32%	0%	60%	0%	50%	1%	78%	3%	0%	0%	2%	36%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		12.9			12.9		36.3	36.3		45.9	45.9	
Effective Green, g (s)		15.9			15.9		38.3	38.3		44.9	47.9	
Actuated g/C Ratio		0.22			0.22		0.53	0.53		0.63	0.67	
Clearance Time (s)		7.0			7.0		6.0	6.0		3.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		100			356		177	1863		456	2326	
v/s Ratio Prot								0.19		0.02	c0.25	
v/s Ratio Perm		0.02			c0.12		0.05			0.13		
v/c Ratio		0.09			0.55		0.09	0.35		0.23	0.38	
Uniform Delay, d1		22.2			24.8		8.2	9.6		5.9	5.3	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.4			1.9		1.0	0.5		0.3	0.5	
Delay (s)		22.6			26.7		9.2	10.2		6.2	5.8	
Level of Service		C			C		A	B		A	A	
Approach Delay (s)		22.6			26.7			10.1			5.8	
Approach LOS		C			C			B			A	

Intersection Summary				
HCM 2000 Control Delay	12.2	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.45			
Actuated Cycle Length (s)	71.8	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	64.5%	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 (veh/h)	19	69	24	97	266	0	101	12	42	0	6	9
Future Volume (Veh/h)	19	69	24	97	266	0	101	12	42	0	6	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.55	0.71	0.55	0.67	0.92	0.59	0.92	0.43	0.92	0.92	0.92
Hourly flow rate (vph)	21	125	34	176	397	0	171	13	98	0	7	10
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		146										
pX, platoon unblocked												
vC, conflicting volume	397			159			946	933	142	1038	950	397
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	397			159			946	933	142	1038	950	397
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			88			17	94	89	100	97	98
cM capacity (veh/h)	1173			1433			205	231	911	161	226	657

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	180	573	282	17
Volume Left	21	176	171	0
Volume Right	34	0	98	10
cSH	1173	1433	282	368
Volume to Capacity	0.02	0.12	1.00	0.05
Queue Length 95th (m)	0.4	3.4	82.1	1.2
Control Delay (s)	1.1	3.3	93.1	15.3
Lane LOS	A	A	F	C
Approach Delay (s)	1.1	3.3	93.1	15.3
Approach LOS			F	C

Intersection Summary				
Average Delay	27.2			
Intersection Capacity Utilization	48.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Appendix G

Total Traffic – Operational Conditions

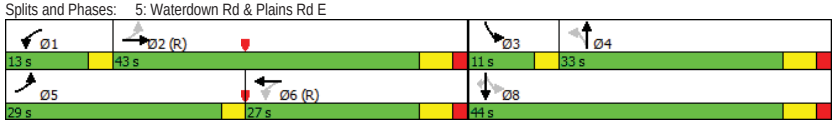


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	469	667	69	395	63	254	149	135	139
Future Volume (vph)	469	667	69	395	63	254	149	135	139
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	pm+pt	NA	Perm
Protected Phases	5	2	1	6		4	3	8	
Permitted Phases	2		6		4		8		8
Detector Phase	5	2	1	6	4	4	3	8	8
Switch Phase									
Minimum Initial (s)	6.0	8.0	6.0	8.0	8.0	8.0	6.0	8.0	8.0
Minimum Split (s)	9.0	27.0	9.0	27.0	33.0	33.0	9.0	33.0	33.0
Total Split (s)	29.0	43.0	13.0	27.0	33.0	33.0	11.0	44.0	44.0
Total Split (%)	29.0%	43.0%	13.0%	27.0%	33.0%	33.0%	11.0%	44.0%	44.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	2.0
Lost Time Adjust (s)	1.0	-2.0	1.0	-2.0	-2.0	-2.0	1.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lag	Lead		
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None
Act Effct Green (s)	53.6	41.9	30.7	23.0	27.4	27.4	38.4	38.4	38.4
Actuated g/C Ratio	0.54	0.42	0.31	0.23	0.27	0.27	0.38	0.38	0.38
v/c Ratio	1.02	0.61	0.46	0.85	0.28	0.86	0.94	0.27	0.30
Control Delay	73.7	24.8	17.3	33.4	30.6	51.8	76.3	22.0	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.7	24.8	17.3	33.4	30.6	51.8	76.3	22.0	4.2
LOS	E	C	B	C	C	D	E	C	A
Approach Delay		43.4		31.0		48.1		33.2	
Approach LOS		D		C		D		C	

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 24 (24%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.02
Intersection Signal Delay: 39.4 — Intersection LOS: D
Intersection Capacity Utilization 84.0% — ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 5: Waterdown Rd & Plains Rd E



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	527	857	117	671	89	420	177	185	193
v/c Ratio	1.02	0.61	0.46	0.85	0.28	0.86	0.94	0.27	0.30
Control Delay	73.7	24.8	17.3	33.4	30.6	51.8	76.3	22.0	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.7	24.8	17.3	33.4	30.6	51.8	76.3	22.0	4.2
Queue Length 50th (m)	~103.5	70.7	7.1	59.1	13.9	76.6	23.9	24.8	0.0
Queue Length 95th (m)	#166.2	93.3	9.3	#46.7	21.0	99.0	#52.1	32.2	5.6
Internal Link Dist (m)		175.5		130.1		98.3		328.0	
Turn Bay Length (m)	45.0		45.0		30.0				30.0
Base Capacity (vph)	515	1416	274	792	333	513	189	703	662
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.02	0.61	0.43	0.85	0.27	0.82	0.94	0.26	0.29

Intersection Summary

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

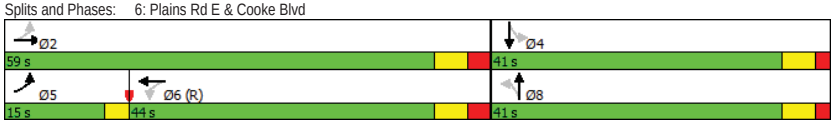
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	469	667	103	69	395	198	63	254	74	149	135	139
Future Volume (vph)	469	667	103	69	395	198	63	254	74	149	135	139
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.95		1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1646	3352		1615	3181		1705	1728		1630	1759	1366
Flt Permitted	0.17	1.00		0.33	1.00		0.64	1.00		0.14	1.00	1.00
Satd. Flow (perm)	289	3352		562	3181		1150	1728		242	1759	1366
Peak-hour factor, PHF	0.89	0.92	0.78	0.59	0.88	0.89	0.71	0.81	0.70	0.84	0.73	0.72
Adj. Flow (vph)	527	725	132	117	449	222	89	314	106	177	185	193
RTOR Reduction (vph)	0	14	0	0	61	0	0	12	0	0	0	119
Lane Group Flow (vph)	527	843	0	117	610	0	89	408	0	177	185	74
Confl. Peds. (#/hr)	2		1	1		2	4		7	7		4
Heavy Vehicles (%)	6%	5%	4%	8%	7%	8%	2%	5%	6%	7%	8%	15%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6			4		3	8	
Permitted Phases	2			6			4			8		8
Actuated Green, G (s)	51.6	39.9		29.7	21.0		25.4	25.4		36.4	36.4	36.4
Effective Green, g (s)	50.6	41.9		27.7	23.0		27.4	27.4		35.4	38.4	38.4
Actuated g/C Ratio	0.51	0.42		0.28	0.23		0.27	0.27		0.35	0.38	0.38
Clearance Time (s)	3.0	6.0		3.0	6.0		6.0	6.0		3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	507	1404		236	731		315	473		182	675	524
v/s Ratio Prot	c0.28	0.25		0.04	0.19			0.24		c0.07	0.11	
v/s Ratio Perm	c0.25			0.10			0.08			c0.28		0.05
v/c Ratio	1.04	0.60		0.50	0.83		0.28	0.86		0.97	0.27	0.14
Uniform Delay, d1	27.8	22.6		28.2	36.7		28.6	34.5		28.2	21.2	20.1
Progression Factor	1.00	1.00		0.75	0.69		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	50.6	1.9		1.6	10.3		0.5	14.9		58.3	0.2	0.1
Delay (s)	78.4	24.5		22.7	35.5		29.1	49.4		86.5	21.4	20.2
Level of Service	E	C		C	D		C	D		F	C	C
Approach Delay (s)		45.0			33.6			45.8			41.8	
Approach LOS		D			C			D			D	

Intersection Summary				
HCM 2000 Control Delay	41.8	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	1.00			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	84.0%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	95	896	1	565	6	0	105	0
Future Volume (vph)	95	896	1	565	6	0	105	0
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	5	2		6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	5	2	6	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	5.0	8.0	8.0	8.0	8.0	8.0	5.0	5.0
Minimum Split (s)	11.0	26.0	26.0	26.0	29.0	29.0	24.0	24.0
Total Split (s)	15.0	59.0	44.0	44.0	41.0	41.0	41.0	41.0
Total Split (%)	15.0%	59.0%	44.0%	44.0%	41.0%	41.0%	41.0%	41.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	0.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	1.0	-3.0	-3.0	-3.0		-2.0		-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0		4.0
Lead/Lag	Lead		Lag	Lag				
Lead-Lag Optimize?								
Recall Mode	None	Min	C-Min	C-Min	None	None	None	None
Act Effct Green (s)	69.3	69.3	58.1	58.1		22.7		22.7
Actuated g/C Ratio	0.69	0.69	0.58	0.58		0.23		0.23
v/c Ratio	0.27	0.38	0.00	0.38		0.05		0.74
Control Delay	5.8	5.2	12.0	10.2		0.2		37.0
Queue Delay	0.0	0.1	0.0	0.0		0.0		0.0
Total Delay	5.8	5.3	12.0	10.2		0.2		37.0
LOS	A	A	B	B		A		D
Approach Delay		5.4		10.2		0.2		37.0
Approach LOS		A		B		A		D

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 30 (30%), Referenced to phase 6:WBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 11.2		Intersection LOS: B	
Intersection Capacity Utilization 59.3%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 6: Plains Rd E & Cooke Blvd





Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	125	917	1	740	21	274
v/c Ratio	0.27	0.38	0.00	0.38	0.05	0.74
Control Delay	5.8	5.2	12.0	10.2	0.2	37.0
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	5.8	5.3	12.0	10.2	0.2	37.0
Queue Length 50th (m)	5.7	25.5	0.1	28.2	0.0	37.9
Queue Length 95th (m)	m9.6	m32.8	m0.2	30.7	0.0	59.4
Internal Link Dist (m)		130.1		143.9	37.4	88.9
Turn Bay Length (m)	15.0		15.0			
Base Capacity (vph)	504	2405	343	1949	629	555
Starvation Cap Reductn	0	371	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.45	0.00	0.38	0.03	0.49

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	896	3	1	565	77	6	0	13	105	0	84
Future Volume (vph)	95	896	3	1	565	77	6	0	13	105	0	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.6	3.6	3.5	3.6	3.6	3.6	3.3	3.6	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99			1.00			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.97			0.91			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97	
Satd. Flow (prot)	1726	3470		1805	3334			1701			1653	
Flt Permitted	0.30	1.00		0.31	1.00			0.91			0.81	
Satd. Flow (perm)	539	3470		591	3334			1572			1372	
Peak-hour factor, PHF	0.76	0.98	0.92	0.92	0.92	0.61	0.92	0.92	0.92	0.65	0.92	0.75
Adj. Flow (vph)	125	914	3	1	614	126	7	0	14	162	0	112
RTOR Reduction (vph)	0	0	0	0	12	0	0	16	0	0	59	0
Lane Group Flow (vph)	125	917	0	1	728	0	0	5	0	0	215	0
Confl. Peds. (#/hr)	4					4						3
Heavy Vehicles (%)	1%	4%	0%	0%	6%	0%	0%	0%	0%	8%	0%	0%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	66.3	66.3		55.1	55.1			20.7			20.7	
Effective Green, g (s)	65.3	69.3		58.1	58.1			22.7			22.7	
Actuated g/C Ratio	0.65	0.69		0.58	0.58			0.23			0.23	
Clearance Time (s)	3.0	7.0		7.0	7.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	437	2404		343	1937			356			311	
v/s Ratio Prot	0.02	c0.26			0.22							
v/s Ratio Perm	0.17			0.00				0.00			c0.16	
v/c Ratio	0.29	0.38		0.00	0.38			0.01			0.69	
Uniform Delay, d1	7.3	6.4		8.8	11.2			30.0			35.4	
Progression Factor	0.73	0.66		0.87	0.78			1.00			1.00	
Incremental Delay, d2	0.3	0.1		0.0	0.5			0.0			6.5	
Delay (s)	5.6	4.3		7.7	9.3			30.0			42.0	
Level of Service	A	A		A	A			C			D	
Approach Delay (s)		4.4			9.3			30.0			42.0	
Approach LOS		A			A			C			D	

Intersection Summary

HCM 2000 Control Delay	11.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	59.3%	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 (veh/h)	3	1010	4	13	627	8	1	0	18	34	0	24
Future Volume (Veh/h)	3	1010	4	13	627	8	1	0	18	34	0	24
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.97	0.50	0.75	0.91	0.25	0.25	0.25	0.61	0.38	0.25	0.80
Hourly flow rate (vph)	4	1041	8	17	689	32	4	0	30	89	0	30
Pedestrians		1						2			2	
Lane Width (m)		3.6						3.6			3.6	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						0			0	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		168			155							
pX, platoon unblocked	0.92			0.89			0.94	0.94	0.89	0.94	0.94	0.92
vC, conflicting volume	723			1051			1464	1812	526	1300	1800	364
vC1, stage 1 conf vol							1055	1055		741	741	
vC2, stage 2 conf vol							410	757		558	1059	
vCu, unblocked vol	518			822			962	1333	236	786	1321	126
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			99	100	96	78	100	96
cM capacity (veh/h)	969			729			288	297	690	404	290	830

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	524	528	362	376	34	119
Volume Left	4	0	17	0	4	89
Volume Right	0	8	0	32	30	30
cSH	969	1700	729	1700	593	464
Volume to Capacity	0.00	0.31	0.02	0.22	0.06	0.26
Queue Length 95th (m)	0.1	0.0	0.6	0.0	1.5	8.1
Control Delay (s)	0.1	0.0	0.8	0.0	11.4	15.4
Lane LOS	A		A		B	C
Approach Delay (s)	0.1		0.4		11.4	15.4
Approach LOS					B	C

Intersection Summary				
Average Delay	1.3			
Intersection Capacity Utilization	47.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	6	994	666	7	9
Future Volume (vph)	6	994	666	7	9
Turn Type	Perm	NA	NA	Prot	Perm
Protected Phases		2	6	8	
Permitted Phases	2				8
Detector Phase	2	2	6	8	8
Switch Phase					
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	44.0	44.0	44.0	28.0	28.0
Total Split (s)	71.0	71.0	71.0	29.0	29.0
Total Split (%)	71.0%	71.0%	71.0%	29.0%	29.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	3.0	3.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-3.0	-3.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	C-Max	Max	Max
Act Effct Green (s)	67.0	67.0	67.0	25.0	25.0
Actuated g/C Ratio	0.67	0.67	0.67	0.25	0.25
v/c Ratio	0.02	0.44	0.32	0.04	0.05
Control Delay	3.5	5.2	7.3	28.9	12.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	3.5	5.2	7.3	28.9	12.3
LOS	A	A	A	C	B
Approach Delay		5.1	7.3	19.7	
Approach LOS		A	A	B	

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 98 (98%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.44			
Intersection Signal Delay: 6.3		Intersection LOS: A	
Intersection Capacity Utilization 55.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 8: Plains Rd E & St. Matthews Ave





Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	8	1025	732	16	20
v/c Ratio	0.02	0.44	0.32	0.04	0.05
Control Delay	3.5	5.2	7.3	28.9	12.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	3.5	5.2	7.3	28.9	12.3
Queue Length 50th (m)	0.3	21.1	29.3	2.5	0.0
Queue Length 95th (m)	m0.7	26.1	38.3	3.7	1.4
Internal Link Dist (m)		131.0	266.9	36.0	
Turn Bay Length (m)	15.0			15.0	
Base Capacity (vph)	424	2325	2300	436	407
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.02	0.44	0.32	0.04	0.05

Intersection Summary

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



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	6	994	666	5	7	9
Future Volume (vph)	6	994	666	5	7	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.5	3.3	3.5
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1741	3471	3433		1745	1571
Flt Permitted	0.35	1.00	1.00		0.95	1.00
Satd. Flow (perm)	634	3471	3433		1745	1571
Peak-hour factor, PHF	0.75	0.97	0.92	0.63	0.44	0.45
Adj. Flow (vph)	8	1025	724	8	16	20
RTOR Reduction (vph)	0	0	1	0	0	15
Lane Group Flow (vph)	8	1025	731	0	16	5
Confl. Peds. (#/hr)	5			5	1	3
Heavy Vehicles (%)	0%	4%	5%	0%	0%	0%
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		8	
Permitted Phases	2					8
Actuated Green, G (s)	65.0	65.0	65.0		22.0	22.0
Effective Green, g (s)	67.0	67.0	67.0		25.0	25.0
Actuated g/C Ratio	0.67	0.67	0.67		0.25	0.25
Clearance Time (s)	6.0	6.0	6.0		7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	424	2325	2300		436	392
v/s Ratio Prot		c0.30	0.21		c0.01	
v/s Ratio Perm	0.01					0.00
v/c Ratio	0.02	0.44	0.32		0.04	0.01
Uniform Delay, d1	5.5	7.7	6.9		28.4	28.2
Progression Factor	0.60	0.58	1.00		1.00	1.00
Incremental Delay, d2	0.1	0.6	0.4		0.2	0.1
Delay (s)	3.4	5.1	7.3		28.5	28.3
Level of Service	A	A	A		C	C
Approach Delay (s)		5.1	7.3		28.4	
Approach LOS		A	A		C	

Intersection Summary

HCM 2000 Control Delay	6.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.8%	ICU Level of Service	B
Analysis Period (min)	15		

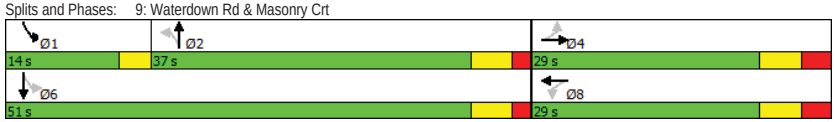
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	23	0	2	0	8	891	178	448
Future Volume (vph)	23	0	2	0	8	891	178	448
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases		4		8		2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	1	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	29.0	29.0	29.0	29.0	35.0	35.0	14.0	35.0
Total Split (s)	29.0	29.0	29.0	29.0	37.0	37.0	14.0	51.0
Total Split (%)	36.3%	36.3%	36.3%	36.3%	46.3%	46.3%	17.5%	63.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	2.0	2.0	0.0	2.0
Lost Time Adjust (s)		-3.0		-3.0	-2.0	-2.0	1.0	-2.0
Total Lost Time (s)		4.0		4.0	4.0	4.0	4.0	4.0
Lead/Lag					Lag	Lag	Lead	
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	None	Max
Act Effct Green (s)		14.1		14.1	34.9	34.9	47.1	47.1
Actuated g/C Ratio		0.20		0.20	0.50	0.50	0.68	0.68
v/c Ratio		0.29		0.67	0.04	0.60	0.57	0.24
Control Delay		6.7		11.7	12.0	15.1	12.4	5.0
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		6.7		11.7	12.0	15.1	12.4	5.0
LOS		A		B	B	B	B	A
Approach Delay		6.7		11.7		15.1		7.1
Approach LOS		A		B		B		A

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 69.3
Natural Cycle: 80
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.67
Intersection Signal Delay: 11.7 — Intersection LOS: B
Intersection Capacity Utilization 63.7% — ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 9: Waterdown Rd & Masonry Crt



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	49	381	12	1036	209	534
v/c Ratio	0.29	0.67	0.04	0.60	0.57	0.24
Control Delay	6.7	11.7	12.0	15.1	12.4	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.7	11.7	12.0	15.1	12.4	5.0
Queue Length 50th (m)	0.0	7.5	0.7	43.6	7.3	10.0
Queue Length 95th (m)	0.0	0.0	3.1	85.5	23.3	24.8
Internal Link Dist (m)	183.2	121.8		328.0		348.5
Turn Bay Length (m)			40.0		20.0	
Base Capacity (vph)	235	772	278	1728	402	2191
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.49	0.04	0.60	0.52	0.24

Intersection Summary

HCM Signalized Intersection Capacity Analysis — Total AM
9: Waterdown Rd & Masonry Crt — 151750S

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	0	9	2	0	224	8	891	16	178	448	18
Future Volume (vph)	23	0	9	2	0	224	8	891	16	178	448	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.93			0.87		1.00	1.00		1.00	0.99	
Flt Protected		0.98			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1122			1585		1161	3430		1711	3216	
Flt Permitted		0.44			0.99		0.45	1.00		0.16	1.00	
Satd. Flow (perm)		505			1577		554	3430		291	3216	
Peak-hour factor, PHF	0.92	0.25	0.38	0.25	0.25	0.60	0.67	0.88	0.70	0.85	0.88	0.71
Adj. Flow (vph)	25	0	24	8	0	373	12	1012	23	209	509	25
RTOR Reduction (vph)	0	39	0	0	251	0	0	1	0	0	4	0
Lane Group Flow (vph)	0	10	0	0	130	0	12	1035	0	209	530	0
Confl. Peds. (#/hr)							4					4
Heavy Vehicles (%)	64%	0%	44%	0%	0%	4%	50%	5%	0%	2%	9%	59%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		11.1			11.1		32.9	32.9		45.2	45.2	
Effective Green, g (s)		14.1			14.1		34.9	34.9		44.2	47.2	
Actuated g/C Ratio		0.20			0.20		0.50	0.50		0.64	0.68	
Clearance Time (s)		7.0			7.0		6.0	6.0		3.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		102			320		278	1727		355	2190	
v/s Ratio Prot								c0.30		c0.07	0.16	
v/s Ratio Perm		0.02			c0.08		0.02			0.30		
v/c Ratio		0.10			0.41		0.04	0.60		0.59	0.24	
Uniform Delay, d1		22.4			24.0		8.7	12.2		8.0	4.2	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.4			0.8		0.3	1.5		2.5	0.3	
Delay (s)		22.9			24.8		9.0	13.8		10.4	4.5	
Level of Service		C			C		A	B		B	A	
Approach Delay (s)		22.9			24.8			13.7			6.2	
Approach LOS		C			C			B			A	

Intersection Summary				
HCM 2000 Control Delay	13.3	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.55			
Actuated Cycle Length (s)	69.3	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	63.7%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

HCM Unsignalized Intersection Capacity Analysis — Total AM
10: Cooke Blvd & Masonry Crt — 151750S

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	165	50	124	113	0	98	2	77	0	13	16
Future Volume (Veh/h)	4	165	50	124	113	0	98	2	77	0	13	16
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.65	0.59	0.79	0.88	0.92	0.73	0.92	0.52	0.92	0.92	0.92
Hourly flow rate (vph)	4	254	85	157	128	0	134	2	148	0	14	17
Pedestrians					1			1				
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)		146										
pX, platoon unblocked				0.99			0.99	0.99	0.99	0.99	0.99	
vC, conflicting volume	128			340			772	748	298	896	790	128
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	128			327			763	739	285	890	782	128
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			87			51	99	80	100	95	98
cM capacity (veh/h)	1470			1229			272	299	749	189	282	927

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	343	285	284	31
Volume Left	4	157	134	0
Volume Right	85	0	148	17
cSH	1470	1229	407	456
Volume to Capacity	0.00	0.13	0.70	0.07
Queue Length 95th (m)	0.1	3.5	41.4	1.7
Control Delay (s)	0.1	5.1	31.8	13.5
Lane LOS	A	A	D	B
Approach Delay (s)	0.1	5.1	31.8	13.5
Approach LOS			D	B

Intersection Summary				
Average Delay	11.6			
Intersection Capacity Utilization	51.8%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	26	35	157	15	8	163
Future Volume (Veh/h)	26	35	157	15	8	163
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)	28	38	171	16	9	177
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			113			
pX, platoon unblocked						
vC, conflicting volume	374	179			187	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	374	179			187	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	96			99	
cM capacity (veh/h)	627	869			1399	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	66	187	186
Volume Left	28	0	9
Volume Right	38	16	0
cSH	747	1700	1399
Volume to Capacity	0.09	0.11	0.01
Queue Length 95th (m)	2.3	0.0	0.2
Control Delay (s)	10.3	0.0	0.4
Lane LOS	B		A
Approach Delay (s)	10.3	0.0	0.4
Approach LOS	B		

Intersection Summary				
Average Delay		1.7		
Intersection Capacity Utilization		25.3%	ICU Level of Service	A
Analysis Period (min)		15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	36	8	3	20	0
Future Volume (Veh/h)	0	36	8	3	20	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)	0	39	9	3	22	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	43	22	22			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	43	22	22			
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	96	99			
cM capacity (veh/h)	967	1061	1607			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	39	12	22
Volume Left	0	9	0
Volume Right	39	0	0
cSH	1061	1607	1700
Volume to Capacity	0.04	0.01	0.01
Queue Length 95th (m)	0.9	0.1	0.0
Control Delay (s)	8.5	5.5	0.0
Lane LOS	A	A	
Approach Delay (s)	8.5	5.5	0.0
Approach LOS	A		

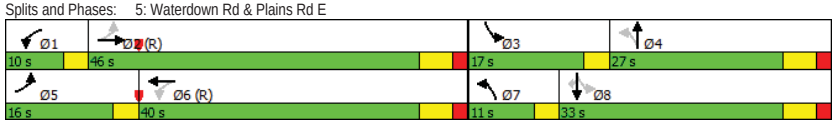
Intersection Summary				
Average Delay		5.4		
Intersection Capacity Utilization		17.2%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	218	528	81	1025	109	160	229	146	341
Future Volume (vph)	218	528	81	1025	109	160	229	146	341
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	5	2	1	6	7	4	3	8	
Permitted Phases	2		6		4		8		8
Detector Phase	5	2	1	6	7	4	3	8	8
Switch Phase									
Minimum Initial (s)	6.0	8.0	6.0	8.0	5.0	8.0	6.0	8.0	8.0
Minimum Split (s)	9.0	27.0	9.0	27.0	11.0	26.0	9.0	33.0	33.0
Total Split (s)	16.0	46.0	10.0	40.0	11.0	27.0	17.0	33.0	33.0
Total Split (%)	16.0%	46.0%	10.0%	40.0%	11.0%	27.0%	17.0%	33.0%	33.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.0	0.0	2.0	0.0	2.0	0.0	2.0	2.0
Lost Time Adjust (s)	1.0	-2.0	1.0	-2.0	1.0	-2.0	1.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None
Act Effct Green (s)	56.9	46.5	46.0	39.6	25.5	18.6	35.1	24.2	24.2
Actuated g/C Ratio	0.57	0.46	0.46	0.40	0.26	0.19	0.35	0.24	0.24
v/c Ratio	0.86	0.39	0.27	0.92	0.39	0.66	0.78	0.36	0.76
Control Delay	49.5	18.6	7.3	28.8	26.2	43.8	42.1	32.7	20.1
Queue Delay	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0
Total Delay	49.5	18.6	7.3	29.7	26.2	43.8	42.1	32.7	20.1
LOS	D	B	A	C	C	D	D	C	C
Approach Delay		27.5		27.9		37.4		28.8	
Approach LOS		C		C		D		C	

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 6 (6%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.92
Intersection Signal Delay: 29.0 — Intersection LOS: C
Intersection Capacity Utilization 84.7% — ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 5: Waterdown Rd & Plains Rd E



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	256	634	109	1277	131	228	246	166	449
v/c Ratio	0.86	0.39	0.27	0.92	0.39	0.66	0.78	0.36	0.76
Control Delay	49.5	18.6	7.3	28.8	26.2	43.8	42.1	32.7	20.1
Queue Delay	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0
Total Delay	49.5	18.6	7.3	29.7	26.2	43.8	42.1	32.7	20.1
Queue Length 50th (m)	34.1	43.1	3.0	~140.4	18.2	39.8	36.9	27.8	26.8
Queue Length 95th (m)	#77.5	60.8	5.9	#181.5	27.7	62.3	#58.9	43.2	37.2
Internal Link Dist (m)		175.5		130.1		98.3		328.0	
Turn Bay Length (m)	45.0		45.0		30.0				30.0
Base Capacity (vph)	302	1638	403	1381	339	422	322	551	646
Starvation Cap Reductn	0	0	0	21	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.39	0.27	0.94	0.39	0.54	0.76	0.30	0.70

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	218	528	54	81	1025	192	109	160	50	229	146	341
Future Volume (vph)	218	528	54	81	1025	192	109	160	50	229	146	341
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.98		1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1678	3496		1744	3449		1721	1774		1727	1900	1491
Flt Permitted	0.10	1.00		0.40	1.00		0.65	1.00		0.25	1.00	1.00
Satd. Flow (perm)	174	3496		728	3449		1181	1774		445	1900	1491
Peak-hour factor, PHF	0.85	0.96	0.64	0.74	0.96	0.92	0.83	0.97	0.80	0.93	0.88	0.76
Adj. Flow (vph)	256	550	84	109	1068	209	131	165	62	246	166	449
RTOR Reduction (vph)	0	11	0	0	15	0	0	15	0	0	0	228
Lane Group Flow (vph)	256	623	0	109	1262	0	131	213	0	246	166	221
Confl. Peds. (#/hr)	10		2	2		10	7		3	3		7
Heavy Vehicles (%)	4%	1%	0%	0%	1%	5%	1%	3%	0%	1%	0%	5%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6			4			8		8
Actuated Green, G (s)	54.9	44.5		45.0	37.6		24.5	16.6		33.1	22.2	22.2
Effective Green, g (s)	53.9	46.5		43.0	39.6		22.5	18.6		32.1	24.2	24.2
Actuated g/C Ratio	0.54	0.46		0.43	0.40		0.22	0.19		0.32	0.24	0.24
Clearance Time (s)	3.0	6.0		3.0	6.0		3.0	6.0		3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	293	1625		378	1365		302	329		303	459	360
v/s Ratio Prot	c0.12	0.18		0.02	c0.37		0.03	0.12		c0.10	0.09	
v/s Ratio Perm	0.35			0.11			0.07			c0.16		0.15
v/c Ratio	0.87	0.38		0.29	0.92		0.43	0.65		0.81	0.36	0.61
Uniform Delay, d1	27.4	17.4		17.3	28.8		32.5	37.7		27.8	31.5	33.7
Progression Factor	1.00	1.00		0.51	0.60		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	23.7	0.7		0.3	9.2		1.0	4.4		15.1	0.5	3.1
Delay (s)	51.1	18.1		9.2	26.3		33.5	42.0		42.9	32.0	36.8
Level of Service	D	B		A	C		C	D		D	C	D
Approach Delay (s)		27.6			25.0			38.9			37.6	
Approach LOS		C			C			D			D	

Intersection Summary				
HCM 2000 Control Delay	30.2	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.87			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	84.7%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	53	780	10	1199	5	0	81	0
Future Volume (vph)	53	780	10	1199	5	0	81	0
Turn Type	custom	NA	Perm	NA	Perm	NA	D.Pm	NA
Protected Phases	5	2		6		8		4
Permitted Phases	5		6		8		8	
Detector Phase	5	2	6	6	8	8	8	4
Switch Phase								
Minimum Initial (s)	6.0	8.0	8.0	8.0	8.0	8.0	8.0	5.0
Minimum Split (s)	9.0	26.0	26.0	26.0	29.0	29.0	29.0	24.0
Total Split (s)	16.0	71.0	55.0	55.0	29.0	29.0	29.0	29.0
Total Split (%)	16.0%	71.0%	55.0%	55.0%	29.0%	29.0%	29.0%	29.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	0.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	1.0	-3.0	-3.0	-3.0		-2.0		-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0		4.0
Lead/Lag	Lead		Lag	Lag				
Lead-Lag Optimize?								
Recall Mode	Min	Min	C-Min	C-Min	None	None	None	None
Act Effct Green (s)	9.8	72.1	58.2	58.2		19.9		19.9
Actuated g/C Ratio	0.10	0.72	0.58	0.58		0.20		0.20
v/c Ratio	0.62	0.31	0.03	0.69		0.02		0.75
Control Delay	57.0	4.4	10.2	12.9		0.1		40.0
Queue Delay	0.0	0.0	0.0	0.7		0.0		0.1
Total Delay	57.0	4.4	10.2	13.5		0.1		40.1
LOS	E	A	B	B		A		D
Approach Delay		10.6		13.5		0.1		40.1
Approach LOS		B		B		A		D

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 88 (88%), Referenced to phase 6:WBTL, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 15.2		Intersection LOS: B	
Intersection Capacity Utilization 62.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 6: Plains Rd E & Cooke Blvd





Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	106	805	11	1408	9	270
v/c Ratio	0.62	0.31	0.03	0.69	0.02	0.75
Control Delay	57.0	4.4	10.2	12.9	0.1	40.0
Queue Delay	0.0	0.0	0.0	0.7	0.0	0.1
Total Delay	57.0	4.4	10.2	13.5	0.1	40.1
Queue Length 50th (m)	20.8	22.6	0.8	56.2	0.0	37.3
Queue Length 95th (m)	20.9	34.8	m1.3	54.7	0.0	63.6
Internal Link Dist (m)		130.1		143.9	37.4	88.9
Turn Bay Length (m)	15.0		15.0			
Base Capacity (vph)	209	2571	385	2035	439	429
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	287	0	6
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.31	0.03	0.81	0.02	0.64

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	780	8	10	1199	98	5	0	4	81	0	91
Future Volume (vph)	53	780	8	10	1199	98	5	0	4	81	0	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.6	3.6	3.5	3.6	3.6	3.6	3.3	3.6	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.99			0.94			0.92	
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.98	
Satd. Flow (prot)	1745	3569		1805	3483			1738			1701	
Flt Permitted	0.95	1.00		0.35	1.00			0.86			0.86	
Satd. Flow (perm)	1745	3569		661	3483			1529			1489	
Peak-hour factor, PHF	0.50	0.98	0.92	0.92	0.94	0.74	0.92	0.92	0.92	0.70	0.92	0.59
Adj. Flow (vph)	106	796	9	11	1276	132	5	0	4	116	0	154
RTOR Reduction (vph)	0	1	0	0	7	0	0	7	0	0	61	0
Lane Group Flow (vph)	106	804	0	11	1401	0	0	2	0	0	209	0
Confl. Peds. (#/hr)	10					10				2		1
Heavy Vehicles (%)	0%	1%	0%	0%	1%	9%	0%	0%	0%	0%	0%	0%
Turn Type	custom	NA		Perm	NA		Perm	NA		D.Pm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	5			6			8			8		
Actuated Green, G (s)	10.8	69.1		55.3	55.3			17.9			17.9	
Effective Green, g (s)	9.8	72.1		58.3	58.3			19.9			19.9	
Actuated g/C Ratio	0.10	0.72		0.58	0.58			0.20			0.20	
Clearance Time (s)	3.0	7.0		7.0	7.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	171	2573		385	2030			304			296	
v/s Ratio Prot	c0.06	0.23			c0.40							
v/s Ratio Perm				0.02				0.00			c0.14	
v/c Ratio	0.62	0.31		0.03	0.69			0.01			0.71	
Uniform Delay, d1	43.3	5.0		8.8	14.6			32.1			37.3	
Progression Factor	1.00	0.74		0.84	0.69			1.00			1.00	
Incremental Delay, d2	5.9	0.1		0.1	1.6			0.0			7.5	
Delay (s)	49.1	3.8		7.5	11.7			32.1			44.8	
Level of Service	D	A		A	B			C			D	
Approach Delay (s)		9.1			11.7			32.1			44.8	
Approach LOS		A			B			C			D	

Intersection Summary

HCM 2000 Control Delay	14.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	856	2	19	1262	49	3	0	12	5	0	14
Future Volume (Veh/h)	11	856	2	19	1262	49	3	0	12	5	0	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.97	0.50	0.50	0.92	0.50	0.75	0.25	0.55	0.25	0.25	0.58
Hourly flow rate (vph)	22	882	4	38	1372	98	4	0	22	20	0	24
Pedestrians								1			4	
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		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		168			155							
pX, platoon unblocked	0.77			0.92			0.80	0.80	0.92	0.80	0.80	0.77
vC, conflicting volume	1474			887			1715	2479	444	2008	2432	739
vC1, stage 1 conf vol							929	929		1501	1501	
vC2, stage 2 conf vol							786	1550		507	931	
vCu, unblocked vol	1006			711			970	1921	231	1335	1862	45
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			95			99	100	97	89	100	97
cM capacity (veh/h)	531			828			304	168	717	174	188	779

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	463	445	724	784	26	44
Volume Left	22	0	38	0	4	20
Volume Right	0	4	0	98	22	24
cSH	531	1700	828	1700	593	302
Volume to Capacity	0.04	0.26	0.05	0.46	0.04	0.15
Queue Length 95th (m)	1.0	0.0	1.2	0.0	1.1	4.0
Control Delay (s)	1.2	0.0	1.2	0.0	11.4	19.0
Lane LOS	A		A		B	C
Approach Delay (s)	0.6		0.6		11.4	19.0
Approach LOS					B	C

Intersection Summary					
Average Delay	1.0				
Intersection Capacity Utilization	60.0%	ICU Level of Service	B		
Analysis Period (min)	15				

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	16	863	1348	18	19
Future Volume (vph)	16	863	1348	18	19
Turn Type	Perm	NA	NA	Prot	Perm
Protected Phases		2	6	8	
Permitted Phases	2				8
Detector Phase	2	2	6	8	8
Switch Phase					
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	44.0	44.0	44.0	28.0	28.0
Total Split (s)	72.0	72.0	72.0	28.0	28.0
Total Split (%)	72.0%	72.0%	72.0%	28.0%	28.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	3.0	3.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-3.0	-3.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	C-Max	Max	Max
Act Effct Green (s)	68.0	68.0	68.0	24.0	24.0
Actuated g/C Ratio	0.68	0.68	0.68	0.24	0.24
v/c Ratio	0.15	0.38	0.60	0.09	0.08
Control Delay	5.1	4.7	10.0	30.3	10.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	5.1	4.7	10.0	30.3	10.7
LOS	A	A	A	C	B
Approach Delay		4.7	10.0	21.1	
Approach LOS		A	A	C	

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 78 (78%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 8.3		Intersection LOS: A	
Intersection Capacity Utilization 62.2%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 8: Plains Rd E & St. Matthews Ave



Queues
8: Plains Rd E & St. Matthews Ave

Total PM
151750S



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	25	928	1452	38	34
v/c Ratio	0.15	0.38	0.60	0.09	0.08
Control Delay	5.1	4.7	10.0	30.3	10.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	5.1	4.7	10.0	30.3	10.7
Queue Length 50th (m)	0.8	16.1	74.9	6.1	0.0
Queue Length 95th (m)	m1.6	20.8	93.4	7.5	2.8
Internal Link Dist (m)		131.0	266.9	36.0	
Turn Bay Length (m)	15.0			15.0	
Base Capacity (vph)	162	2430	2400	418	404
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.15	0.38	0.60	0.09	0.08

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
8: Plains Rd E & St. Matthews Ave

Total PM
151750S



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	16	863	1348	24	18	19
Future Volume (vph)	16	863	1348	24	18	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.5	3.3	3.5
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1744	3574	3527		1745	1576
Flt Permitted	0.13	1.00	1.00		0.95	1.00
Satd. Flow (perm)	238	3574	3527		1745	1576
Peak-hour factor, PHF	0.63	0.93	0.95	0.72	0.47	0.56
Adj. Flow (vph)	25	928	1419	33	38	34
RTOR Reduction (vph)	0	0	2	0	0	26
Lane Group Flow (vph)	25	928	1450	0	38	8
Confl. Peds. (#/hr)	3			3	6	1
Heavy Vehicles (%)	0%	1%	2%	0%	0%	0%
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		8	
Permitted Phases	2					8
Actuated Green, G (s)	66.0	66.0	66.0		21.0	21.0
Effective Green, g (s)	68.0	68.0	68.0		24.0	24.0
Actuated g/C Ratio	0.68	0.68	0.68		0.24	0.24
Clearance Time (s)	6.0	6.0	6.0		7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	161	2430	2398		418	378
v/s Ratio Prot		0.26	c0.41		c0.02	
v/s Ratio Perm	0.11					0.01
v/c Ratio	0.16	0.38	0.60		0.09	0.02
Uniform Delay, d1	5.7	6.9	8.7		29.5	29.0
Progression Factor	0.50	0.61	1.00		1.00	1.00
Incremental Delay, d2	2.0	0.4	1.1		0.4	0.1
Delay (s)	4.8	4.6	9.8		30.0	29.1
Level of Service	A	A	A		C	C
Approach Delay (s)		4.6	9.8		29.6	
Approach LOS		A	A		C	

Intersection Summary

HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.2%	ICU Level of Service	B
Analysis Period (min)	15		

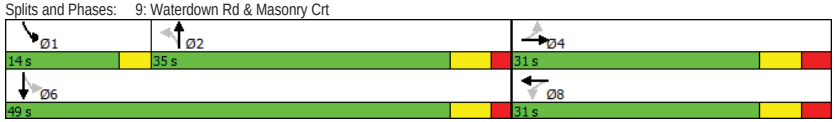
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	23	0	15	2	9	567	121	725
Future Volume (vph)	23	0	15	2	9	567	121	725
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases		4		8		2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	1	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	29.0	29.0	29.0	29.0	35.0	35.0	14.0	35.0
Total Split (s)	31.0	31.0	31.0	31.0	35.0	35.0	14.0	49.0
Total Split (%)	38.8%	38.8%	38.8%	38.8%	43.8%	43.8%	17.5%	61.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	2.0	2.0	0.0	2.0
Lost Time Adjust (s)		-3.0		-3.0	-2.0	-2.0	1.0	-2.0
Total Lost Time (s)		4.0		4.0	4.0	4.0	4.0	4.0
Lead/Lag					Lag	Lag	Lead	
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	None	Max
Act Effct Green (s)		16.7		16.7	33.2	33.2	45.3	45.3
Actuated g/C Ratio		0.24		0.24	0.47	0.47	0.65	0.65
v/c Ratio		0.23		0.77	0.10	0.40	0.39	0.39
Control Delay		4.3		14.8	16.1	14.2	8.7	7.4
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		4.3		14.8	16.1	14.2	8.7	7.4
LOS		A		B	B	B	A	A
Approach Delay		4.3		14.8		14.2		7.6
Approach LOS		A		B		B		A

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 70.1
Natural Cycle: 80
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 11.1 — Intersection LOS: B
Intersection Capacity Utilization 65.5% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 9: Waterdown Rd & Masonry Crt



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	41	522	16	661	192	879
v/c Ratio	0.23	0.77	0.10	0.40	0.39	0.39
Control Delay	4.3	14.8	16.1	14.2	8.7	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.3	14.8	16.1	14.2	8.7	7.4
Queue Length 50th (m)	0.0	15.3	1.1	27.4	8.5	23.9
Queue Length 95th (m)	0.0	0.0	3.6	54.7	16.0	48.8
Internal Link Dist (m)	183.2	121.8		328.0		348.5
Turn Bay Length (m)			40.0		20.0	
Base Capacity (vph)	234	862	157	1658	524	2257
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.61	0.10	0.40	0.37	0.39

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	0	5	15	2	390	9	567	11	121	725	15
Future Volume (vph)	23	0	5	15	2	390	9	567	11	121	725	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.97			0.87		1.00	1.00		1.00	1.00	
Flt Protected		0.96			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1294			1632		979	3494		1745	3487	
Flt Permitted		0.35			0.99		0.32	1.00		0.30	1.00	
Satd. Flow (perm)		473			1611		333	3494		546	3487	
Peak-hour factor, PHF	0.69	0.25	0.63	0.63	0.50	0.79	0.56	0.88	0.63	0.63	0.85	0.58
Adj. Flow (vph)	33	0	8	24	4	494	16	644	17	192	853	26
RTOR Reduction (vph)	0	31	0	0	295	0	0	2	0	0	2	0
Lane Group Flow (vph)	0	10	0	0	227	0	16	659	0	192	877	0
Confl. Peds. (#/hr)							4					4
Heavy Vehicles (%)	32%	0%	60%	0%	50%	1%	78%	3%	0%	0%	2%	36%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		13.7			13.7		31.2	31.2		43.3	43.3	
Effective Green, g (s)		16.7			16.7		33.2	33.2		42.3	45.3	
Actuated g/C Ratio		0.24			0.24		0.47	0.47		0.60	0.65	
Clearance Time (s)		7.0			7.0		6.0	6.0		3.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		112			384		157	1657		468	2256	
v/s Ratio Prot								0.19		0.05	c0.25	
v/s Ratio Perm		0.02			c0.14		0.05			0.20		
v/c Ratio		0.09			0.59		0.10	0.40		0.41	0.39	
Uniform Delay, d1		20.7			23.6		10.2	11.9		6.9	5.8	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.3			2.4		1.3	0.7		0.6	0.5	
Delay (s)		21.1			26.0		11.5	12.6		7.5	6.3	
Level of Service		C			C		B	B		A	A	
Approach Delay (s)		21.1			26.0			12.6			6.5	
Approach LOS		C			C			B			A	

Intersection Summary				
HCM 2000 Control Delay	13.0	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.47			
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	65.5%	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 (veh/h)	19	69	48	97	266	0	118	12	42	0	6	9
Future Volume (Veh/h)	19	69	48	97	266	0	118	12	42	0	6	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.55	0.71	0.55	0.67	0.92	0.59	0.92	0.43	0.92	0.92	0.92
Hourly flow rate (vph)	21	125	68	176	397	0	200	13	98	0	7	10
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		146										
pX, platoon unblocked				0.99			0.99	0.99	0.99	0.99	0.99	
vC, conflicting volume	397			193			964	950	159	1054	984	397
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	397			177			957	943	143	1049	978	397
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			87			0	94	89	100	97	98
cM capacity (veh/h)	1173			1394			198	224	899	156	214	657

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	214	573	311	17
Volume Left	21	176	200	0
Volume Right	68	0	98	10
cSH	1173	1394	265	355
Volume to Capacity	0.02	0.13	1.18	0.05
Queue Length 95th (m)	0.4	3.5	112.7	1.2
Control Delay (s)	0.9	3.4	151.7	15.7
Lane LOS	A	A	F	C
Approach Delay (s)	0.9	3.4	151.7	15.7
Approach LOS			F	C

Intersection Summary				
Average Delay	44.5			
Intersection Capacity Utilization	49.1%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	36	17	125	26	24	136
Future Volume (Veh/h)	36	17	125	26	24	136
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)	39	18	136	28	26	148
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			113			
pX, platoon unblocked						
vC, conflicting volume	350	150			164	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	350	150			164	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	94	98			98	
cM capacity (veh/h)	639	902			1427	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	57	164	174
Volume Left	39	0	26
Volume Right	18	28	0
cSH	704	1700	1427
Volume to Capacity	0.08	0.10	0.02
Queue Length 95th (m)	2.1	0.0	0.4
Control Delay (s)	10.6	0.0	1.3
Lane LOS	B		A
Approach Delay (s)	10.6	0.0	1.3
Approach LOS	B		

Intersection Summary				
Average Delay		2.1		
Intersection Capacity Utilization		30.0%	ICU Level of Service	A
Analysis Period (min)		15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	11	46	15	8	0
Future Volume (Veh/h)	0	11	46	15	8	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)	0	12	50	16	9	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	125	9	9			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	125	9	9			
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	97			
cM capacity (veh/h)	848	1079	1624			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	12	66	9
Volume Left	0	50	0
Volume Right	12	0	0
cSH	1079	1624	1700
Volume to Capacity	0.01	0.03	0.01
Queue Length 95th (m)	0.3	0.8	0.0
Control Delay (s)	8.4	5.6	0.0
Lane LOS	A	A	
Approach Delay (s)	8.4	5.6	0.0
Approach LOS	A		

Intersection Summary				
Average Delay		5.4		
Intersection Capacity Utilization		20.0%	ICU Level of Service	A
Analysis Period (min)		15		

Appendix H

Ontario Traffic Manual – Traffic Control Signal Warrants

Signal Justification Calculation for Forecasted Volumes (OTM Book 12 - Justification 7)

Horizon Year: Existing Traffic
Region/City/Township: City of Burlington

Major Street: Masonry Court
Minor Street: Cooke Boulevard
North/South: N

Number of Approach Lanes: 1
Tee Intersection? Y
Flow Conditions: Restricted

PM Forecast Only? N

Warrant Results		
150% Satisfied	**No**	Justification for new intersections with forecast traffic
120% Satisfied	**No**	Justification for existing intersections with forecast traffic

Time Period	Major Street						Minor Street						Peds Crossing Main Road
	Masonry Court						Cooke Boulevard						
	Eastbound			Westbound			Northbound			Southbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
AM Peak Hour	0	133	38	19	14	0	38	0	64	0	0	0	0
PM Peak Hour	0	22	17	51	144	0	88	0	12	0	0	0	0
Average Hourly Volume	**0**	**39**	**14**	**18**	**40**	**0**	**32**	**0**	**19**	**0**	**0**	**0**	**0**

Warrant 1 - Minimum Vehicular Volume

Warrant	AHV
1A - All	160
1B - Minor	51
2A - Major	110
2B - Cross	32

	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
1A	All Approaches	480	720	600	900	160
					% Fulfilled	**22.2%**

	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
1B	Minor Street Approaches	180	255	180	255	51
					% Fulfilled	**19.8%**

Warrant 2 - Delay To Cross Traffic

	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
2A	Major Street Approaches	480	720	600	900	110
					% Fulfilled	**15.2%**

	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
2B	Traffic Crossing Major Street	50	75	50	75	32
					% Fulfilled	**42.0%**

Signal Justification Calculation for Forecasted Volumes (OTM Book 12 - Justification 7)

Horizon Year: Background Traffic
Region/City/Township: City of Burlington

Major Street: Masonry Court
Minor Street: Cooke Boulevard
North/South: N

Number of Approach Lanes: 1
Tee Intersection? N
Flow Conditions: Restricted

PM Forecast Only? N

Warrant Results		
150% Satisfied	**No**	Justification for new intersections with forecast traffic
120% Satisfied	**No**	Justification for existing intersections with forecast traffic

Time Period	Major Street						Minor Street						Peds Crossing Main Road
	Masonry Court						Cooke Boulevard						
	Eastbound			Westbound			Northbound			Southbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
AM Peak Hour	4	165	42	124	113	0	63	2	77	0	13	16	0
PM Peak Hour	19	69	24	97	266	0	101	12	42	0	6	9	0
Average Hourly Volume	**6**	**59**	**17**	**55**	**95**	**0**	**41**	**4**	**30**	**0**	**5**	**6**	**0**

Warrant 1 - Minimum Vehicular Volume

Warrant	AHV
1A - All	316
1B - Minor	85
2A - Major	231
2B - Cross	46

	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
1A	All Approaches	480	720	600	900	316
					% Fulfilled	**43.9%**

	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
1B	Minor Street Approaches	120	170	120	170	85
					% Fulfilled	**50.1%**

Warrant 2 - Delay To Cross Traffic

	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
2A	Major Street Approaches	480	720	600	900	231
					% Fulfilled	**32.0%**

	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
2B	Traffic Crossing Major Street	50	75	50	75	46
					% Fulfilled	**61.0%**

Signal Justification Calculation for Forecasted Volumes (OTM Book 12 - Justification 7)

Horizon Year: Total Traffic
Region/City/Township: City of Burlington

Major Street: Masonry Court
Minor Street: Cooke Boulevard
North/South: N

Number of Approach Lanes: 1
Tee Intersection? N
Flow Conditions: Restricted

PM Forecast Only? N

Warrant Results		
150% Satisfied	**No**	Justification for new intersections with forecast traffic
120% Satisfied	**No**	Justification for existing intersections with forecast traffic

Time Period	Major Street: Masonry Court						Minor Street: Cooke Boulevard						Peds Crossing Main Road
	Eastbound			Westbound			Northbound			Southbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
AM Peak Hour	4	165	50	124	113	0	98	2	77	0	13	16	0
PM Peak Hour	19	69	48	97	266	0	118	12	42	0	6	9	0
Average Hourly Volume	**6**	**59**	**25**	**55**	**95**	**0**	**54**	**4**	**30**	**0**	**5**	**6**	**0**

Warrant 1 - Minimum Vehicular Volume

Warrant	AHV
1A - All	337
1B - Minor	98
2A - Major	239
2B - Cross	59

	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
1A	All Approaches	480	720	600	900	337
					% Fulfilled	**46.8%**

	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
1B	Minor Street Approaches	120	170	120	170	98
					% Fulfilled	**57.8%**

Warrant 2 - Delay To Cross Traffic

	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
2A	Major Street Approaches	480	720	600	900	239
					% Fulfilled	**33.2%**

	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
2B	Traffic Crossing Major Street	50	75	50	75	59
					% Fulfilled	**78.3%**