3195 East Bayshore Road, Owen Sound, ON Transportation Impact and Parking Study

Paradigm Transportation Solutions Limited

June 2022
220220

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Project Summary

Project Number
220220

June 2022

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3195 East Bayshore Road, Owen Sound, ON Transportation Impact and Parking Study

<< Original Signed By >>

Erica Bayley, P.Eng.

Disclaimer

Executive Summary

Content

Paradigm Transportation Solutions Limited (Paradigm) was retained to carry out this Transportation Impact Study (TIS) and Parking Study (PS) for a proposed apartment development at 3195 East Bayshore Road in the City of Owen Sound, Ontario.

This TIS includes an analysis of existing traffic conditions, a description of the proposed development traffic, traffic forecasts for a five-year horizon from assumed full build-out (Year 2030), estimates of the parking demand generated by the subject site and establish the number of on-site parking spaces, and any recommended required to mitigate future traffic conditions.

Development Concept

The subject site is located in the southeast corner of East Bayshore Road and 32nd Street East. The property owner is proposing to redevelop the existing site into eight, six-story apartment buildings with a total of 712 residential units.

Vehicle access is proposed via one full-moves access connection to East Bayshore Road and one full-moves access connections to 32nd Street East. The emergency access on 9th Avenue East is oriented to reduce the opportunity for cut-through traffic to the adjacent soccer field and will be gated.

Conclusions

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

Transportation Impact Assessment

- Existing Traffic Conditions: The study area intersections are forecast to operate within acceptable levels of service during the AM and PM peak hour with the following critical movements noted:
  - The westbound left-turn/right-turn movement at 3rd Avenue East and 15th Street East is forecast to operate at LOS E during the PM peak hour; and
  - The northbound left-movement at 3rd Avenue East and 10th Street East has a 95% queue length that exceeds the storage length by 6 metres during the PM peak hour.

- **Development Trip Generation:** The development is forecast to generate approximately 224 and 280 trips during the AM and PM peak hours, respectively.
- **2030 Background Traffic Conditions:** The study area intersections are forecast to operate within acceptable levels of service during the AM and PM peak hour with similar critical movements as under existing conditions.
- **2030 Total Traffic Conditions:** The study area intersections are forecast to operate within acceptable levels of service during the AM and PM peak hour with similar critical movements as under existing and background conditions.

  Remedial Measures: Southbound left-turn lanes for the intersections of East Bayshore Road at Site Driveway 1 and East Bayshore Road at 32nd Street East are not warranted.

  Northbound right turn-lanes at East Bayshore Road at Site Driveway 1 and East Bayshore Road at 32nd Street East are warranted.

  Several remedial measures were considered for the intersection of 3rd Avenue East and 15th Street East given the poor operations for all horizons. The separation of the westbound left-turn/right-turn at the intersection of 3rd Avenue East and 15th Street East improves the operations for the westbound right-turn which is forecast to operate at LOS A and LOS B during the AM and PM peaks hours respectively. However, the westbound-left-turn remains critical. Traffic signals are not warranted but an all-way stop is warranted for the AM and PM peak hours for background and total traffic conditions.

Parking Study

- The Municipality's Zoning By-law requires 1.25 parking spaces per unit for apartment buildings for a total parking requirement of 890 parking spaces. The plan proposes 1,078 spaces which exceeds the by-law requirement.
- Parking demand can be managed through a Transportation Demand Management (TDM) program that includes the following key measures:
  - On-site connectivity to existing alternative mode routes;
  - Provision of short-term and long-term bicycle parking; and
  - Consider parking to be unbundled from the cost of a unit.

Recommendations

Based on the findings of this study, it is recommended that the development be approved with the addition of northbound right-turn lanes at the driveway connection to East Bayshore Road and at the intersection of East Bayshore Road and 32nd Street East.

It is further recommended that the City monitor the operations at the intersection of 3rd Street East and 15th Avenue East and consider converting to an all-way stop to balance the delay across all approaches. This recommendation is triggered by background traffic volumes and is not a result of the addition of site-generated traffic volumes.

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Tables

1 Introduction

1.1 Overview

Paradigm Transportation Solutions Limited (Paradigm) was retained to conduct this Transportation Impact and Parking Study for a proposed residential development located at 3195 East Bayshore Road in the City of Owen Sound, Ontario. **Figure 1.1** illustrates the subject development location.

1.2 Purpose and Scope

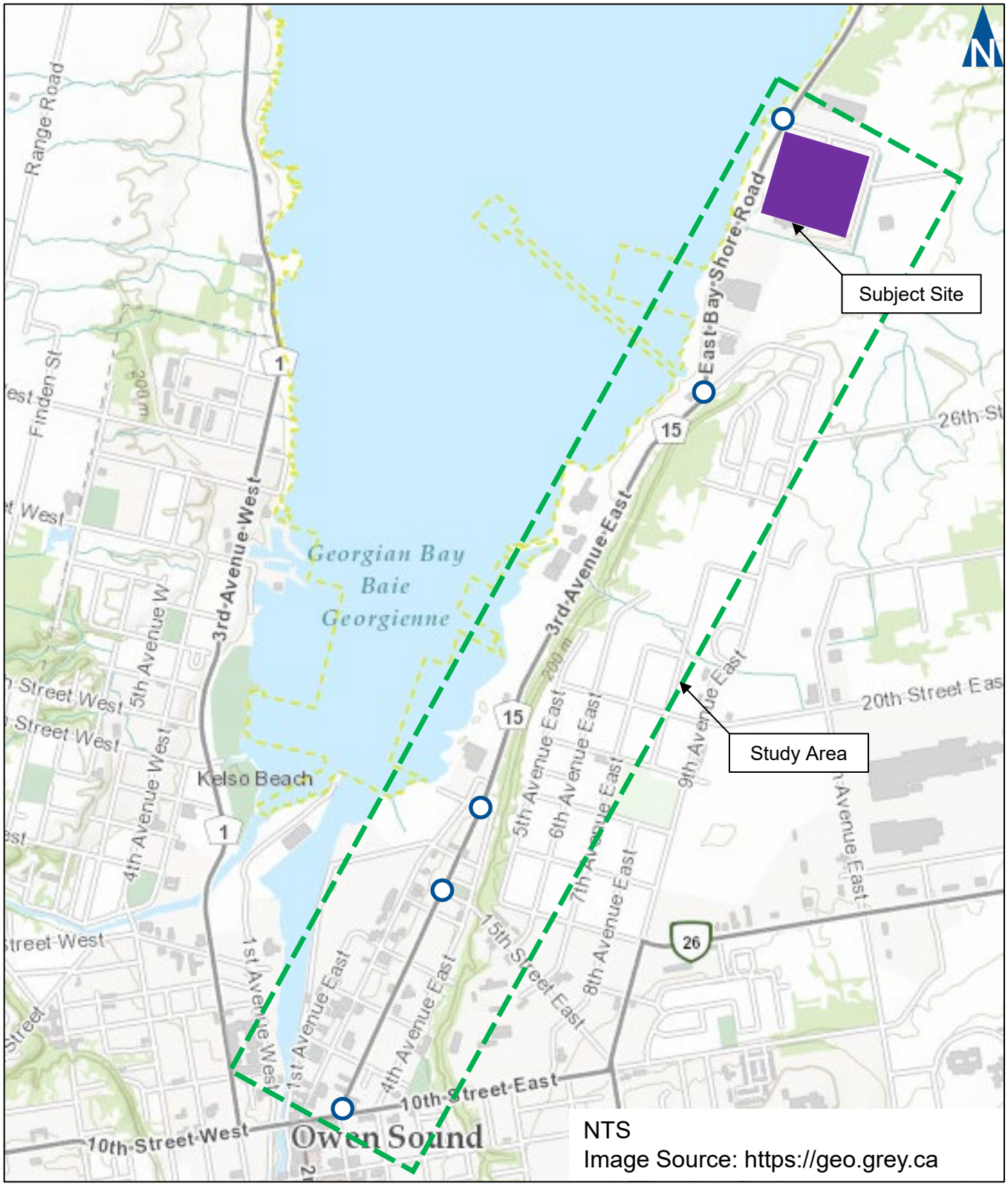
The purpose of this report is to identify and assess the potential traffic impact resulting from the proposed development. The scope of the study, developed in consultation with the City of Owen Sound and Grey County in May 2022 includes:

- Assessment of the current traffic and site conditions within the study area;
- Estimates of background traffic growth for five years beyond the expected year of completion (2030);
- Estimates of additional traffic generated by the subject site;
- Analyses of the impact of the future traffic on the surrounding road network;
- Recommendations necessary to mitigate the site generated traffic in a satisfactory manner; and
- Estimate the parking demand generated by the subject site and establish the number of required on-site parking spaces.

The pre-study consultation identified the following study area intersections:

- 32nd Street East and East Bayshore Road (unsignalized);
- East Bayshore Road and 3rd Avenue East (unsignalized);
- 3rd Avenue East and 10th Street East (signalized);
- 3rd Avenue East and 15th Street East (unsignalized);
- 3rd Avenue East and 18th Street East (unsignalized); and
- Three new driveway connections.

Appendix A contains the pre-study consultation material and responses from the City of Owen Sound and Grey County.



NTS
Image Source: https://geo.grey.ca

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Development Location

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Figure 1.1

2 Existing Conditions

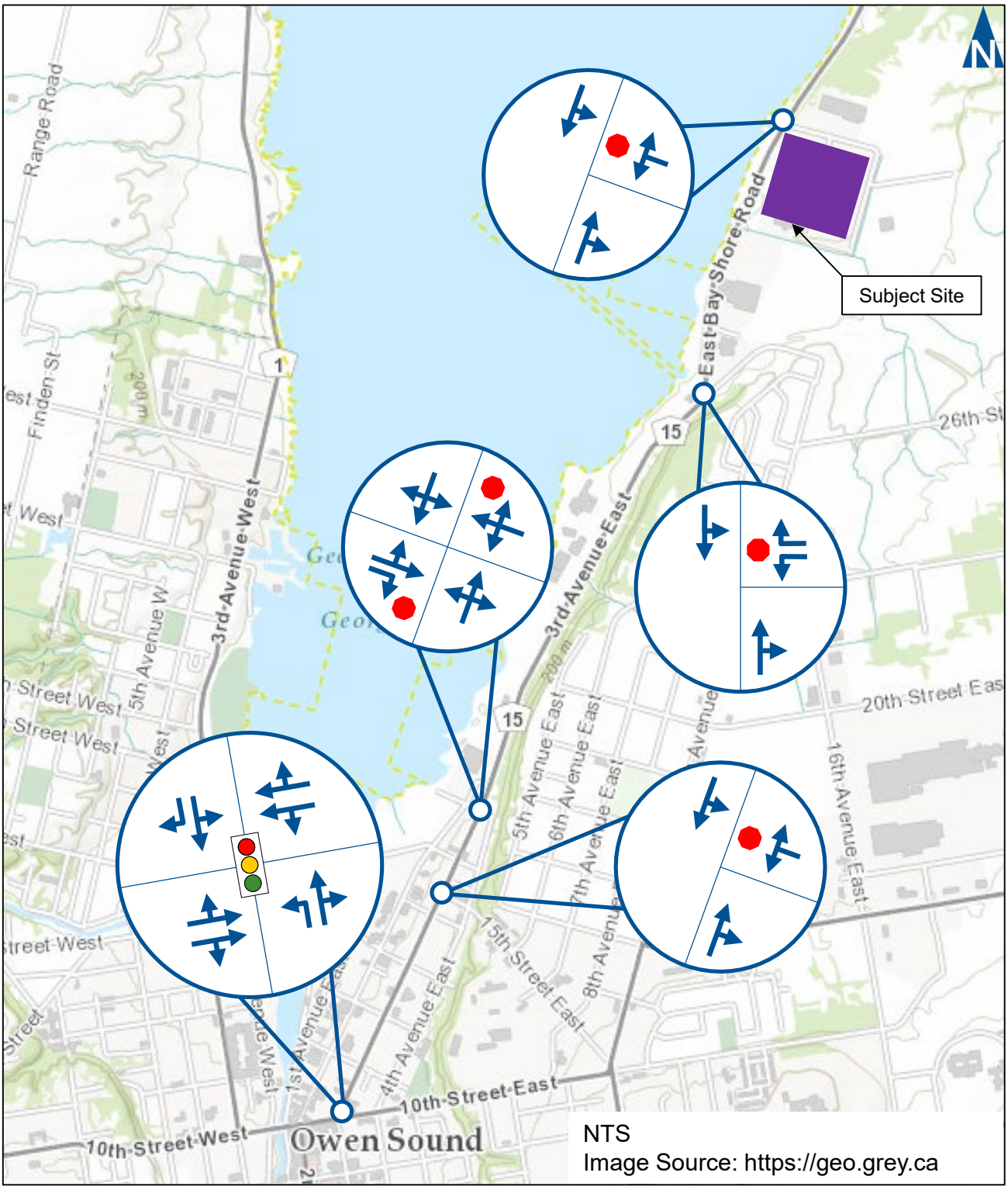
2.1 Existing Roadways

The main roadways under the jurisdiction of the City of Owen Sound and Grey County[1] near the subject site include:

- **10th Street East (Highway 6)** is part of the Provincial highway network, however, through Owen Sound the highway is part of the of Connecting Links program which falls under the jurisdiction of the Municipality. In the study area the road runs east-west with a speed limit of 50 km/h. 10th Street East has a four-lane urban cross-section with sidewalks provided on both sides of the roadway.
- **3rd Avenue East (Grey Road 15)** is a north-south county road and between East Bayshore Road and 28th Street East, the roadway is a city arterial and runs east-west. It has a speed limit of 50 km/h and two-lane cross-section with sidewalks provided on both sides of the roadway south of 18th Street East. Between East Bayshore Road and 18th Street East, the sidewalk is located on the east side of the roadway. To the east of the intersection with East Bayshore Road, there are no sidewalks.
- **East Bayshore Road (Grey Road 15)** is a north-south county road with a speed limit of 50 km/h. It has a two-lane cross-section with no sidewalks.
- **15th Street East** is an east-west city arterial road with a speed limit of 50 km/h. It has a two-lane cross section with sidewalks on both sides of the roadway east of 6th Avenue East. West of 6th Avenue East, there is a sidewalk only on the south side of the roadway.
- **18th Street East** is an east-west local road with a speed limit of 50 km/h. However, between 2nd Avenue East and 3rd Avenue East, the roadway is a city arterial. It has a two-lane cross section with sidewalks on the south side of the roadway.
- **32nd Street East** is an east-west local road with a speed limit of 50 km/h. It has a two-lane cross-section with no sidewalks.
- **9th Avenue East** is a north-south local road with a speed limit of 50 km/h. It has a two-lane cross-section with no sidewalks.

[1] City of Owen Sound Official Plan Schedule C - Transportation

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



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Existing Lane Configuration & Traffic Control

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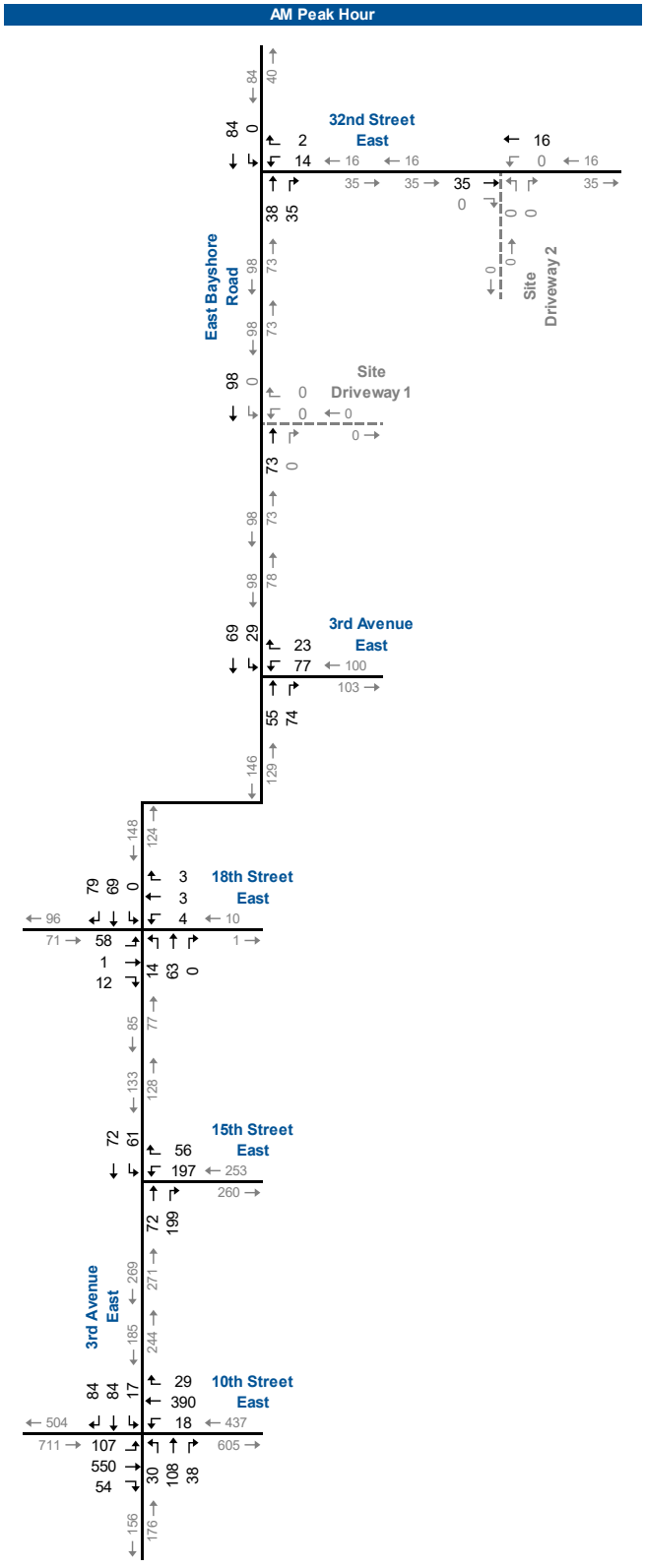
Figure 2.1

2.2 Traffic Volumes

Paradigm undertook weekday AM and PM peak hour turning movement counts at the study area intersections in February 2020 for the intersection of 3rd Avenue East and 15th Street East, in June 2022 for the intersection of 3rd Avenue East and 18th Street East and in May 2022 for the remaining intersections. Data collected in February 2020 was factored to a base year (2022) using a growth rate of 0.4% per annum.

Figure 2.2a and **Figure 2.2b** display the base year AM and PM weekday peak hour turning movement traffic volumes.

Appendix B contains the detailed traffic counts for the study area intersections.



Base Year Traffic Volumes (AM Peak Hour)

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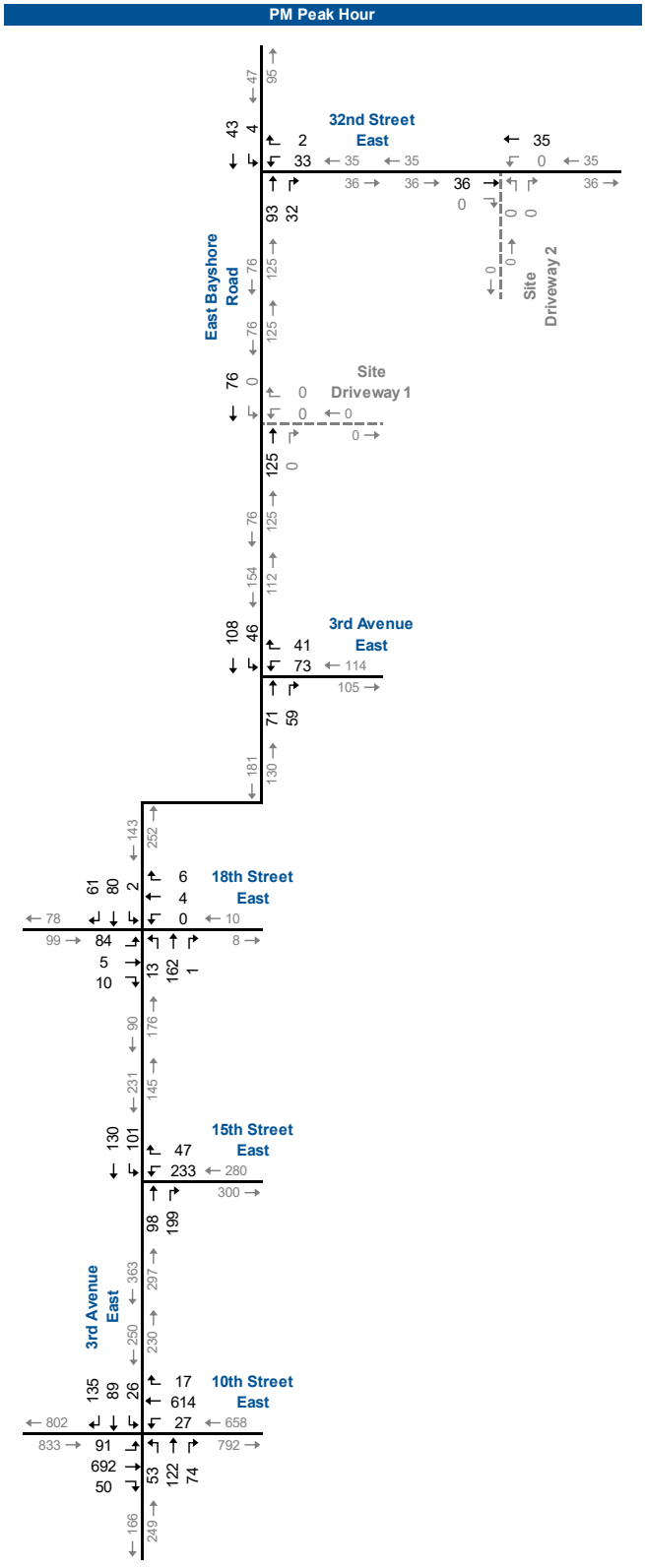
Figure 2.2a



Base Year Traffic Volumes (PM Peak Hour)

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Figure 2.2b

2.3 Transit Network

Figure 2.3 illustrates the existing Owen Sound Transit System[2]:

- All Owen Sound Transit routes pass by the 10th Street East and 3rd Avenue East intersection which is near the Owen Sound Transit Terminal.
- The East Bayshore Route, is the transit route in Owen Sound that provides the closest service to the subject site.

The bus stop is located near the East Bayshore Road and 3rd Avenue East intersection which is approximately 1.1 kilometer (a 14-minute walk) to the East Bayshore Road and 32nd Street East intersection.

[2] https://www.owensound.ca/en/living/conventional-transit-service.aspx

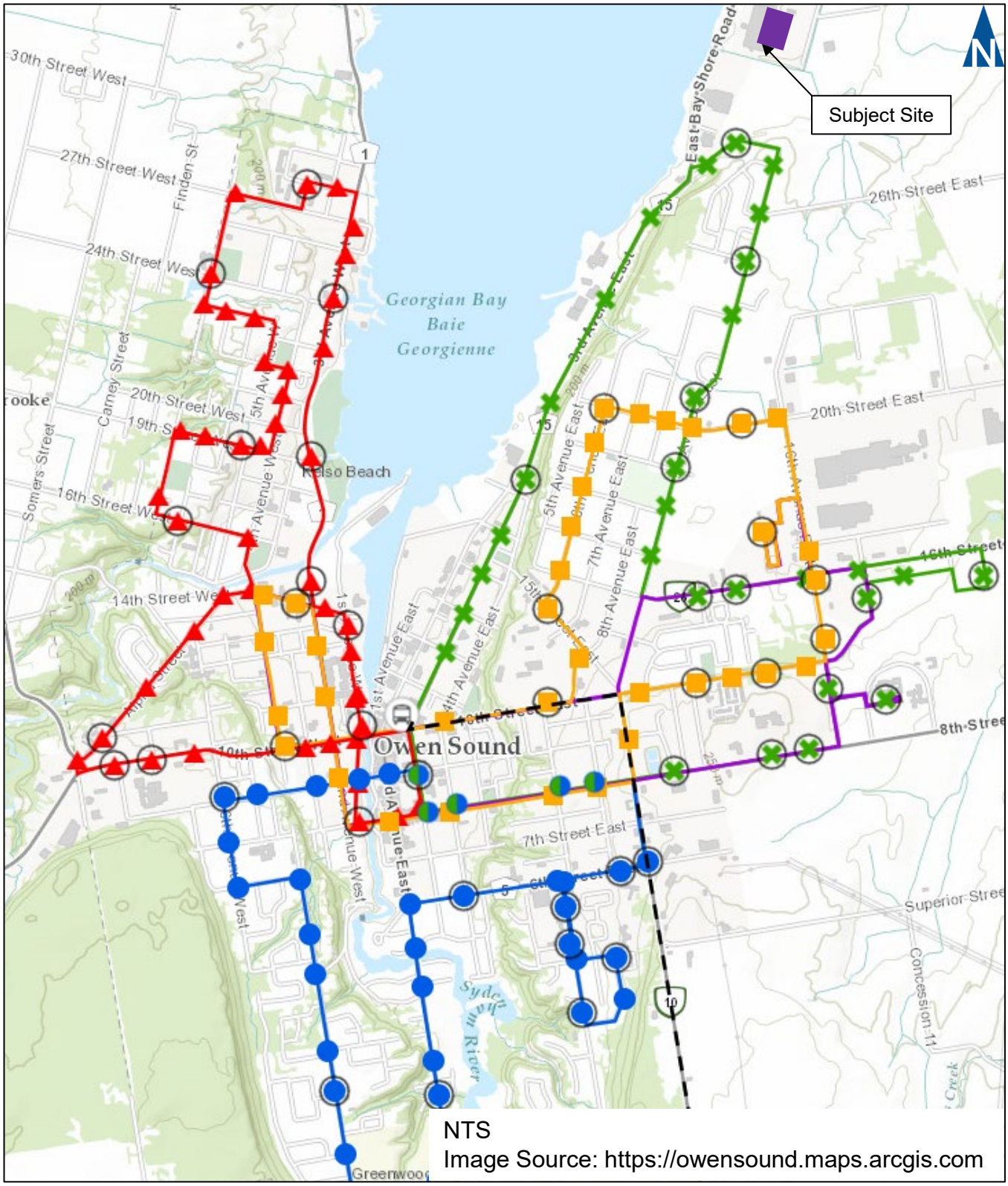

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Image Source: https://owensound.maps.arcgis.com

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Existing Transit Network

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Figure 2.3

2.4 Active Transportation

2.4.1 Trails

Figure 2.4 illustrates the existing trail network near the subject site. There is a trail connection located at the East Bayshore Road and 3rd Avenue East intersection and the trail generally runs along 3rd Avenue East. An additional trail connection exists at the south end of 9th Avenue East and connects to the trail on 3rd Avenue East.

2.3.2 Cycling

Figure 2.5 illustrates the proposed cycle network near the subject site. There are plans to add a cycle route along East Bayshore Road and 32nd Street East.

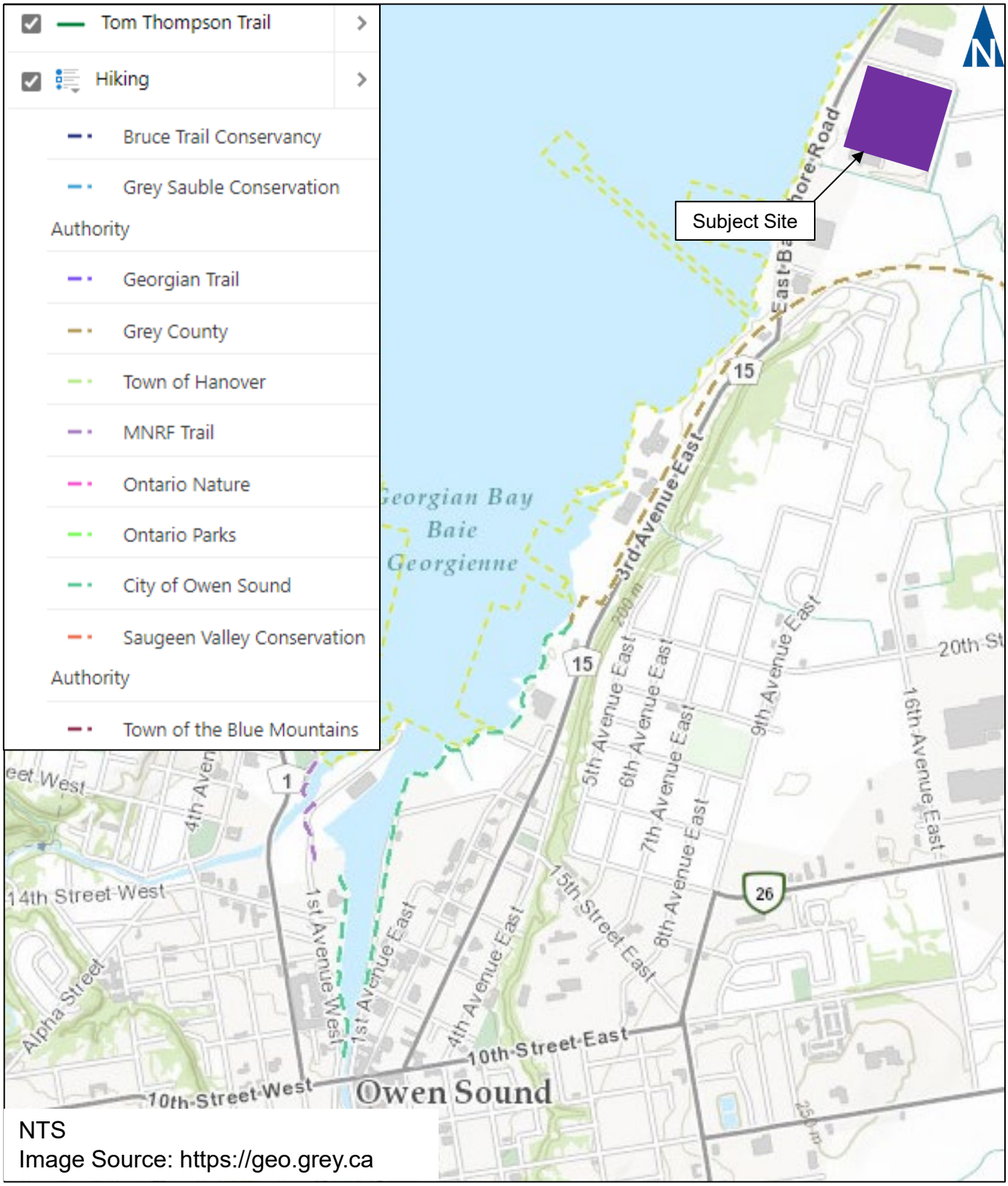

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Image Source: https://geo.grey.ca

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Existing Trail Network

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Proposed Cycle Network

2.5 Traffic Operations

Intersection level of service (LOS) is a recognized method of quantifying the average delay experienced by drivers 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 intending 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 and intersection geometry.

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 for signalized intersections, 50 seconds for unsignalized intersections or when the volume to capacity ratio is greater than 1.0, the movement is classed as LOS F and remedial measures are usually implemented if they are feasible. LOS E is usually used as a guideline for the determination of road improvement needs on through lanes, while LOS F may be acceptable for left-turn movements at peak times, depending on delays.

The operations of the study intersections 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 10. Movements are typically considered critical under the following conditions:

- Volume/capacity (V/C) ratios for overall intersection operations, through movements or shared through/turning movements increased to 0.85 or above;
- V/C ratios for dedicated turning movements that will exceed 0.90;
- LOS E for dedicated turning movements at unsignalized intersections; and
- 95th percentile queue lengths for individual movements exceeds available lane storage.

The intersection of 10th Street East and 3rd Avenue East was assessed using Highway Capacity Manual (HCM) 2000 and the remaining intersections were assessed using HCM 6 (the latest version). The intersection of 10th Street East and 3rd Avenue East has shared though/left-turn lanes paired with left-turn phases which is a limitation of HCM 6.

Table 2.1 summarizes the existing intersection operations. The entries in the table indicating the AM and PM peak hour level of service (LOS), volume to capacity ratios (V/C), and 95th percentile queues experienced.

All study area intersections are forecast to operate within acceptable levels of service during the AM and PM peak hour with the following critical movements noted:

- The westbound left-turn/right-turn movement at 3rd Avenue East and 15th Street East is forecast to operate at LOS E during the PM peak hour; and
- The northbound left-movement at 3rd Avenue East and 10th Street East has a 95% queue length that exceeds the storage length by 6 metres during the PM peak hour.

Appendix C contains the detailed Synchro 10 reports.

TABLE 2.1: 2022 EXISTING OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	3rd Avenue East & 10th Street East	TCS	LOS	<	C	>	**C**	<	B	>	**B**	B	B	>	**B**	<	B	B	**B**	**B**
			Delay	<	21	>	**21**	<	16	>	**16**	17	18	>	**18**	<	17	17	**17**	**19**
			V/C	<	0.70	>		<	0.36	>		0.07	0.23	>		<	0.17	0.07		**0.54**
			Q	<	74	>		<	38	>		9	29	>		<	23	8		
			Stor.	<	-	>		<	-	>		15	-	>		<	-	25		
			Avail.	<	-	>		<	-	>		6	-	>		<	-	17		
	3rd Avenue East & 15th Street East	TWSC	LOS					C		>	**C**		A	A	**A**	A	A		**A**	
			Delay					17		>	**17**		0	0	**0**	8	0		**4**	
			V/C					0.48		>			0.00	0.00		0.06	0.00			
			Q					20		>			0	0		2	0			
	3rd Avenue East & 18th Street East	TWSC	LOS	<	B	A	**B**	<	B	>	**B**	A	A	A	**A**	A	A	A	**A**	
			Delay	<	11	9	**11**	<	10	>	**10**	8	0	0	**1**	0	0	0	**0**	
			V/C	<	0.11	0.02		<	0.02	>		0.01	0.00	0.00		0.00	0.00	0.00		
			Q	<	3	0		<	1	>		0	0	0		0	0	0		
			Stor.	<	-	35		<	-	>		-	-	-		-	-	-		
			Avail.	<	-	35		<	-	>		-	-	-		-	-	-		
	3rd Avenue East & East Bayshore Road	TWSC	LOS					B		A	**B**		A	A	**A**	A	A		**A**	
			Delay					11		9	**10**		0	0	**0**	8	0		**2**	
			V/C					0.12		0.03			0.00	0.00		0.02	0.00			
			Q					3		1			0	0		1	0			
	East Bayshore Road & 32nd Street East	TWSC	LOS					A		>	**A**		A	A	**A**	A	A		**A**	
			Delay					10		>	**10**		0	0	**0**	0	0		**0**	
			V/C					0.03		>			0.00	0.00		0.00	0.00			
			Q					1		>			0	0		0	0			
PM Peak Hour	3rd Avenue East & 10th Street East	TCS	LOS	<	B	>	**B**	<	A	>	**A**	D	D	>	**D**	<	D	C	**D**	**B**
			Delay	<	11	>	**11**	<	10	>	**10**	37	41	>	**40**	<	38	35	**36**	**17**
			V/C	<	0.49	>		<	0.33	>		0.18	0.42	>		<	0.29	0.09		**0.49**
			Q	<	64	>		<	44	>		21	57	>		<	39	15		
			Stor.	<	-	>		<	-	>		15	-	>		<	-	25		
			Avail.	<	-	>		<	-	>		-6	-	>		<	-	10		
	3rd Avenue East & 15th Street East	TWSC	LOS					E		>	**E**		A	A	**A**	A	A		**A**	
			Delay					37		>	**37**		0	0	**0**	8	0		**4**	
			V/C					0.78		>			0.00	0.00		0.10	0.00			
			Q					50		>			0	0		2	0			
	3rd Avenue East & 18th Street East	TWSC	LOS	<	B	A	**B**	<	B	>	**B**	A	A	A	**A**	A	A	A	**A**	
			Delay	<	13	9	**12**	<	10	>	**10**	8	0	0	**1**	8	0	0	**0**	
			V/C	<	0.19	0.01		<	0.02	>		0.01	0.00	0.00		0.00	0.00	0.00		
			Q	<	5	0		<	1	>		0	0	0		0	0	0		
			Stor.	<	-	35		<	-	>		-	-	-		-	-	-		
			Avail.	<	-	35		<	-	>		-	-	-		-	-	-		
	3rd Avenue East & East Bayshore Road	TWSC	LOS					B		A	**B**		A	A	**A**	A	A		**A**	
			Delay					13		9	**12**		0	0	**0**	8	0		**2**	
			V/C					0.19		0.06			0.00	0.00		0.05	0.00			
			Q					5		2			0	0		1	0			
	East Bayshore Road & 32nd Street East	TWSC	LOS					A		>	**A**		A	A	**A**	A	A		**A**	
			Delay					10		>	**10**		0	0	**0**	8	0		**1**	
			V/C					0.05		>			0.00	0.00		0.00	0.00			
			Q					2		>			0	0		0	0			

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

3 Development Concept

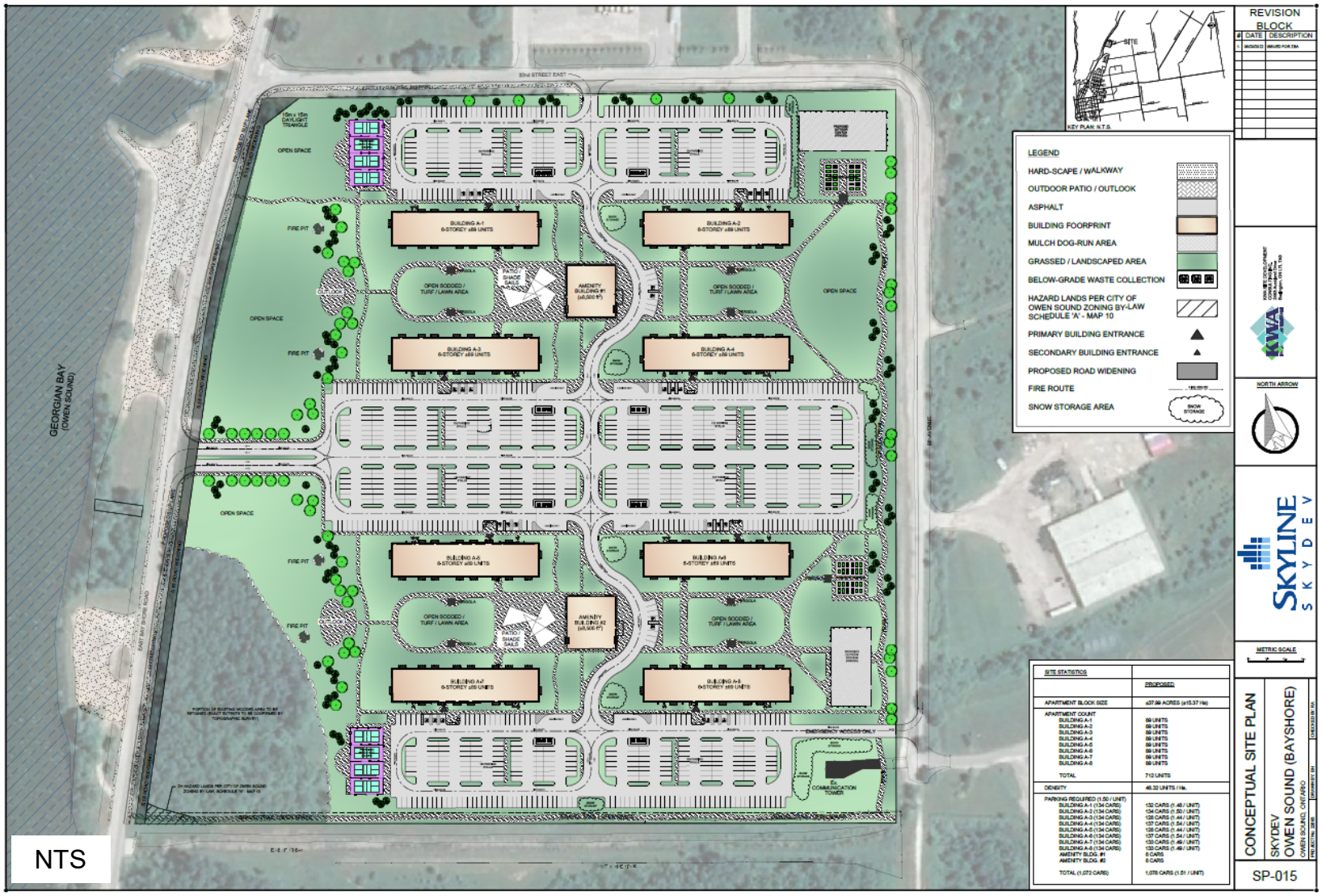
3.1 Development Description

The subject site is located in the southeast corner of East Bayshore Road and 32nd Street East. The property owner is proposing to redevelop the existing site into eight, six-story apartment buildings with a total of 712 units.

Vehicle access is proposed via one full-moves access connection to East Bayshore Road and one full-moves access connections to 32nd Street East. The emergency access on 9th Avenue East is oriented to reduce the opportunity for cut-through traffic to the adjacent soccer field and will be gated.

A total parking supply of 1,078 spaces (1.53 spaces per unit) is proposed. This supply exceeds the City of Owen Sound zoning requirements as currently planned but is subject to change through the siter plan process. Further details regarding parking are discussed in **Chapter 5**

Figure 3.1 illustrates the proposed concept plan.



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Site Plan

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Figure 3.1

3.2 Site Trip Generation

The Institute of Transportation Engineers (ITE) Trip Generation manual[3] equation rates for Land Use Code (LUC) 221 (Multi-Family Housing, Mid-Rise) have been used to estimate the site trip generation.

Table 3.1 summarizes the estimated trip generation. The site's trip generation is estimated to be approximately 224 AM peak hour trips and 280 PM peak hour trips. No reductions of alternative modes of transportation were utilized. Note that the total of 712 units does not fit within the data boundaries for ITE Trip Generation. However, it was assumed that all eight apartment buildings will have the same number of units. Therefore, the number of units for each apartment building was used as the input for ITE Trip Generation and then the output was multiplied by eight.

TABLE 3.1: TRIP GENERATION

Land Use	No. of Units	AM Peak Hour				PM Peak Hour			
		Rate	In	Out	Total	Rate	In	Out	Total
LUC 221 - Multi-Family Housing (Mid-Rise)	712	Eq	48	176	224	Eq	168	112	280
Total Trip Generation			**48**	**176**	**224**		**168**	**112**	**280**

LUC 221 - AM: T = 0.44(X) - 11.61 | PM: T = 0.39(X) + 0.34

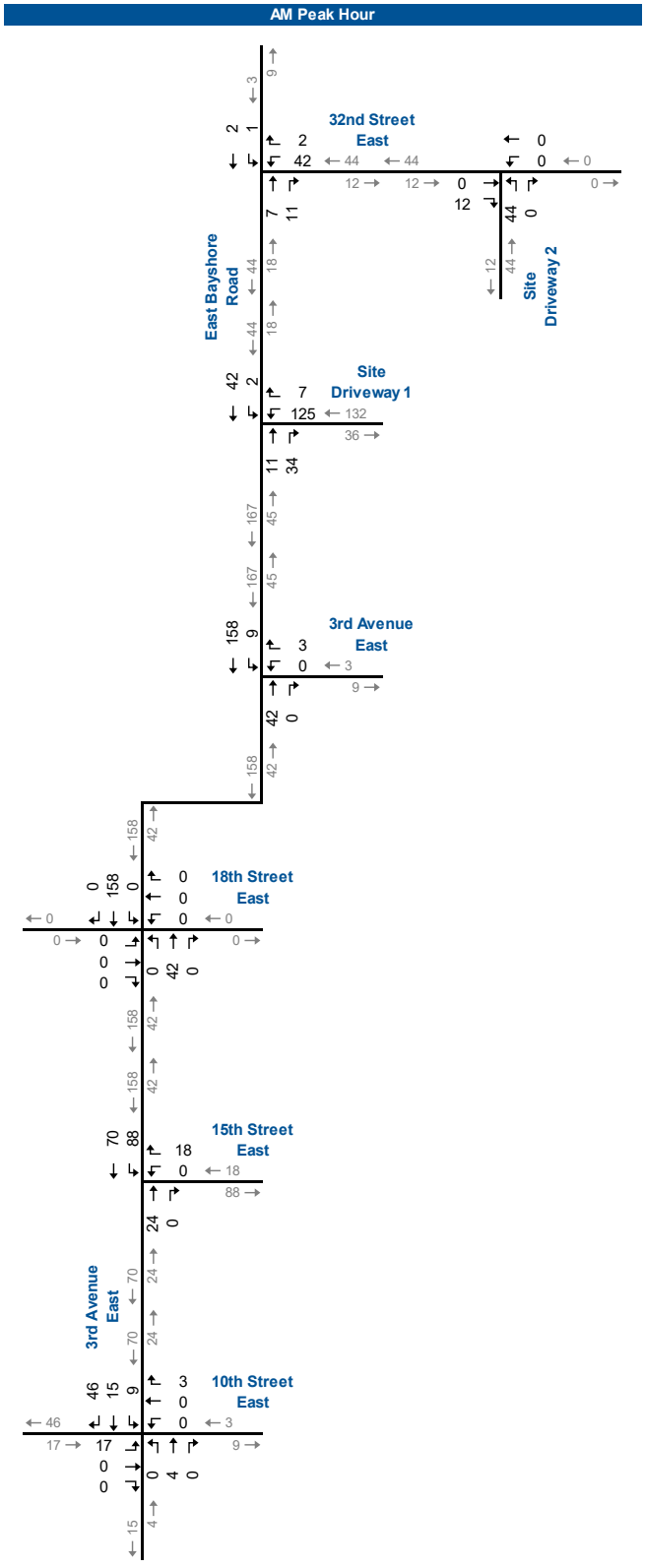
The trip distribution used for this study was based on the existing distribution. However, it was modified so that only 5% of trips travel on East Bayshore Road north of the subject site. North of the subject site, there is no direct connection to any nearby urbanized centre. The trip distribution was also adjusted so that the majority of trips travelling east of the subject site use 15th Street East which provides the most direct route. The trip distribution is shown in **Table 3.2**.

TABLE 3.2: TRIP DISTRIBUTION

Origin/Destination	AM Peak Hour		PM Peak Hour	
	In	Out	In	Out
North via East Bayshore Road	5%	5%	5%	5%
East via 3rd Avenue East	5%	5%	5%	5%
East via 15th Street East	40%	50%	42%	47%
South via 3rd Avenue East	9%	8%	10%	7%
East via 10th Street East	5%	5%	5%	5%
West via 10th Street East	36%	26%	33%	32%
Total	**100%**	**100%**	**100%**	**100%**

[3] *Trip Generation Eleventh Edition*, Institute of Transportation Engineers, Washington D.C., 2021

Figure 3.2a and **Figure 3.2b** contain the AM and PM peak hour trip assignment to the adjacent road network.



Site Generated Traffic Volumes (AM Peak Hour)

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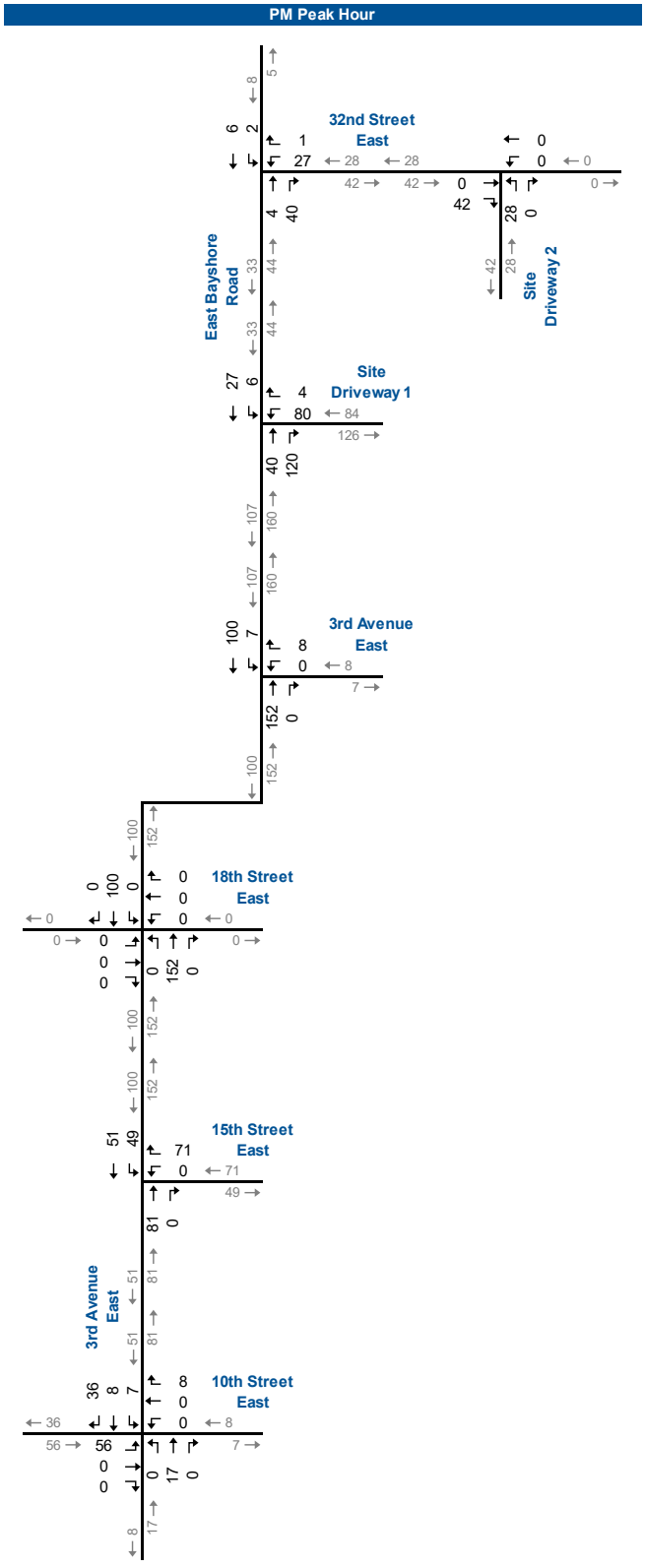
Figure 3.2a



Site Generated Traffic Volumes (PM Peak Hour)

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Figure 3.2b

4 Evaluation of Future Traffic Conditions

The assessment of future conditions 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);
- Future total traffic estimates; and
- Level of service analysis for total traffic (post-development).

4.1 Forecast Traffic Volumes

The likely future traffic volumes five years from the date of study (2030) are estimated to consist of:

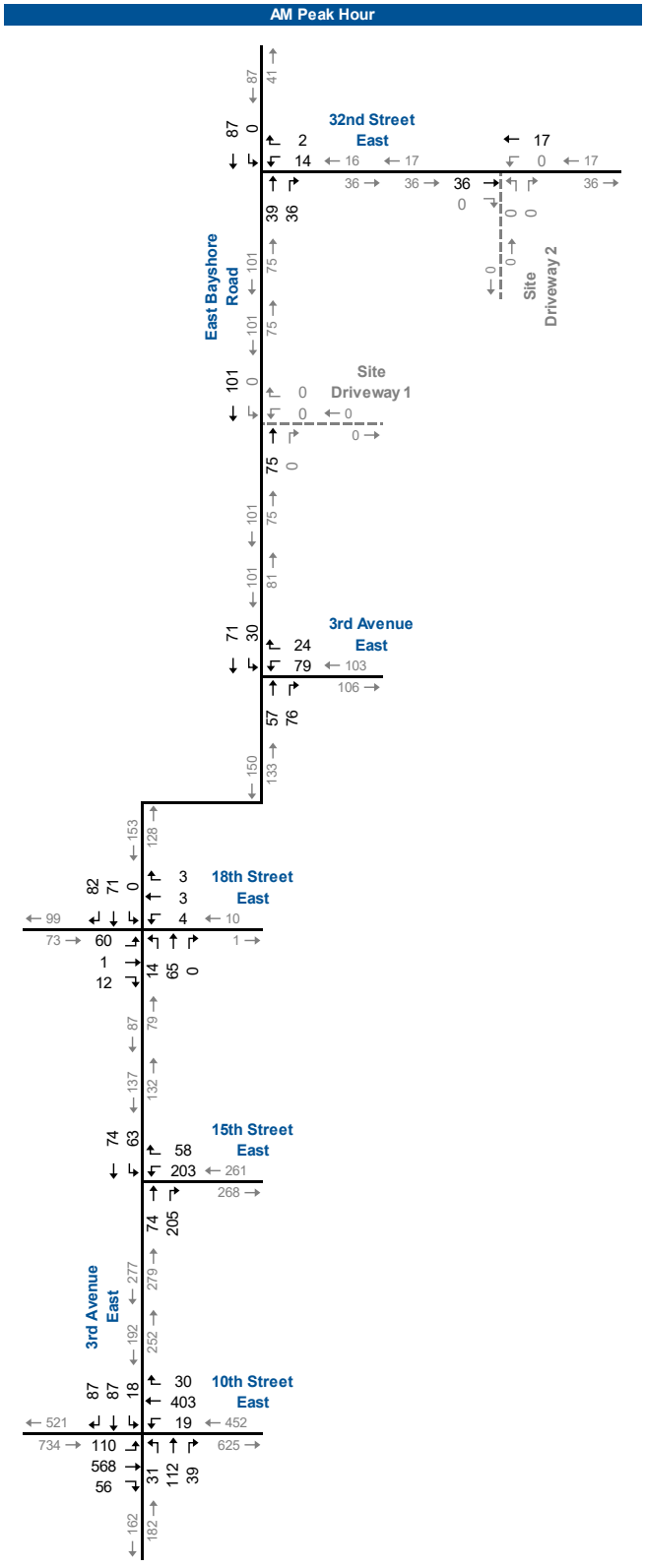
- Increased non-site traffic (generalized background traffic growth) estimated to be 0.04 percent per annum (population growth for Owen Sound)[4] as directed by the City; and
- Traffic generated by the subject site.

There are no background developments considered within the forecast traffic volumes, as advised by staff.

Figure 4.1a and **Figure 4.1b** detail the forecast 2030 background traffic volumes.

Figure 4.2a and **Figure 4.2b** detail the forecast 2030 total traffic volumes.

[4] Grey County Official Plan, June 2013



2030 Background Traffic Volumes (AM Peak Hour)

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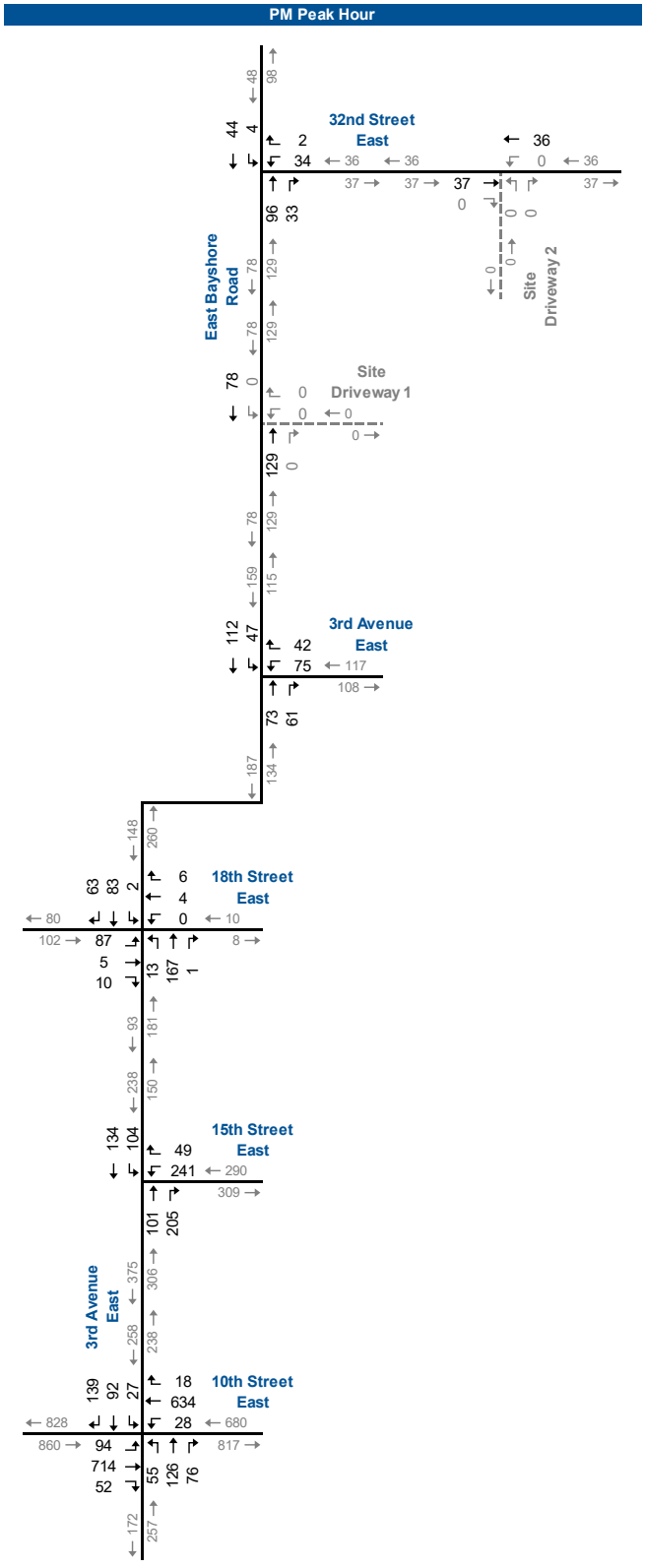
220220

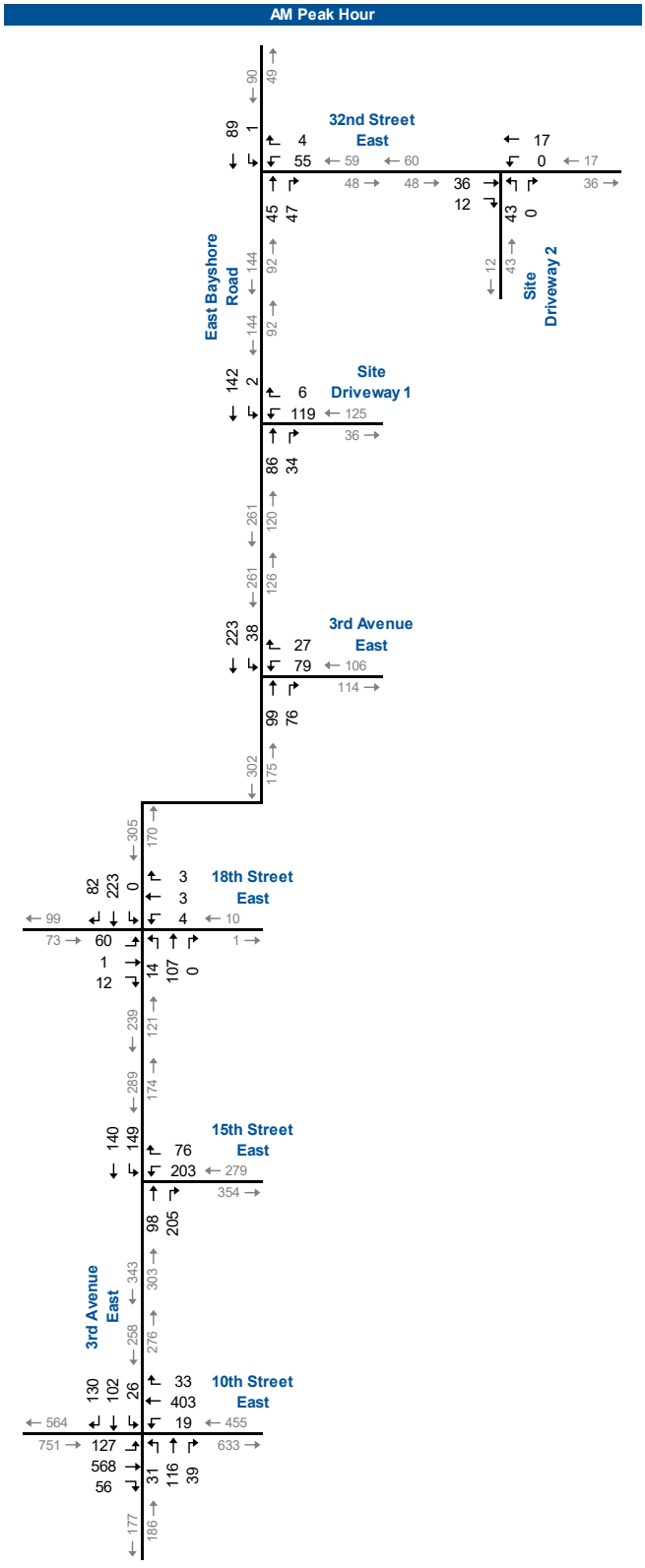
Figure 4.1a



2030 Background Traffic Volumes (PM Peak Hour)

3195 East Bayshore Road, Owen Sound TIS & PS
220220

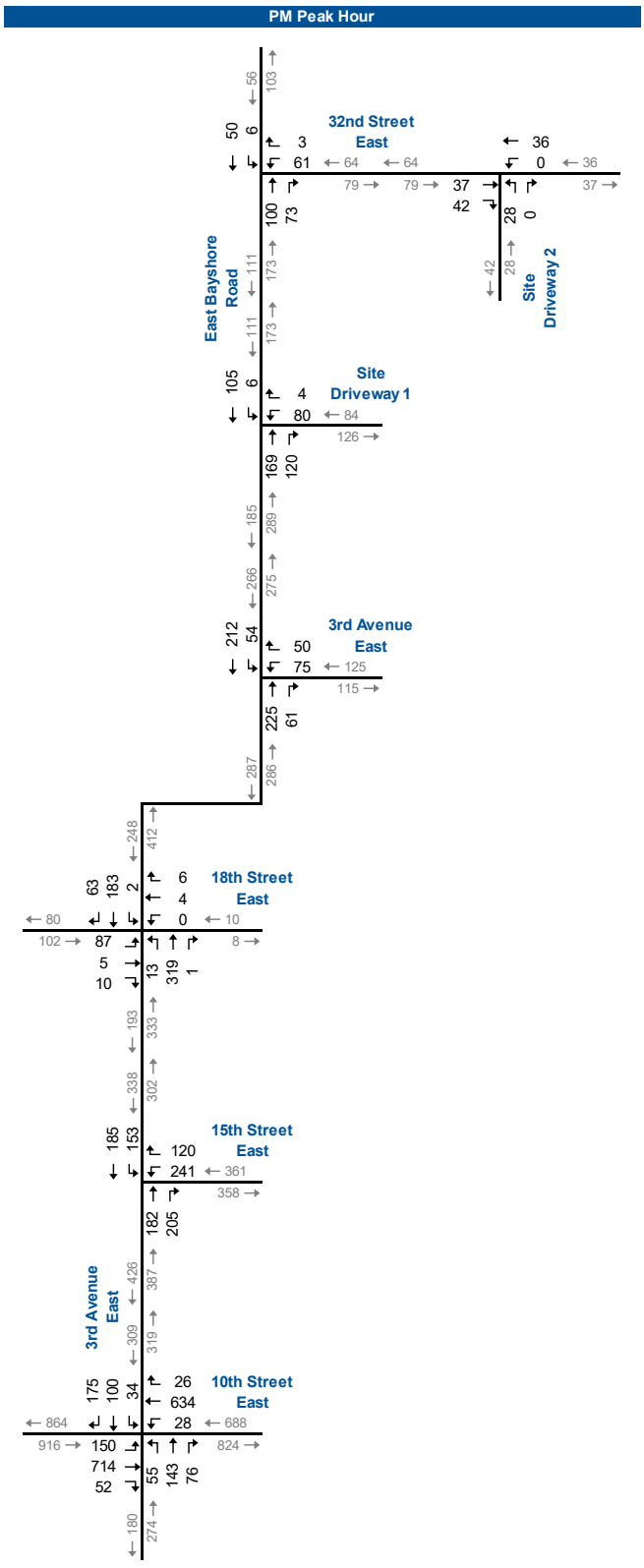
Figure 4.1b



2030 Total Traffic Volumes (AM Peak Hour)

3195 East Bayshore Road, Owen Sound TIS & PS
220220

Figure 4.2a



2030 Total Traffic Volumes (PM Peak Hour)

3195 East Bayshore Road, Owen Sound TIS & PS
220220

Figure 4.2b

4.2 Forecast 2030 Background Traffic Operations

The study area intersection operations analysis for the background traffic scenario followed the same methodology used for the existing traffic conditions. However, the splits were optimized at the intersection of 10th Street East and 3rd Avenue East. **Table 4.1** details the level of service conditions for the weekday AM and PM peak hours.

All study area intersections are forecast to operate within acceptable levels of service during the AM and PM peak hour. This is similar to the operations under existing conditions. The following critical movements are noted:

- The westbound left-turn/right-turn movement at 3rd Avenue East and 15th Street East is forecast to operate at LOS E during the PM peak hour.
- The northbound left-movement at 3rd Avenue East and 10th Street East has a 95% queue that exceeds the storage length by 6 metres during the PM peak hour.

Appendix D contains the detailed Synchro 10 reports.

TABLE 4.1: 2030 BACKGROUND OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	3rd Avenue East & 10th Street East	TCS	LOS	<	C	>	**C**	<	B	>	**B**	B	B	>	**B**	<	B	B	**B**	**B**
			Delay	<	21	>	**21**	<	15	>	**15**	17	19	>	**19**	<	18	17	**18**	**19**
			V/C	<	0.71	>		<	0.37	>		0.08	0.25	>		<	0.19	0.07		**0.57**
			Q	<	76	>		<	39	>		9	30	>		<	24	9		
			Stor.	<	-	>		<	-	>		15	-	>		<	-	25		
			Avail.	<	-	>		<	-	>		6	-	>		<	-	16		
	3rd Avenue East & 15th Street East	TWSC	LOS					C		>	**C**		A	A	**A**	A	A		**A**	
			Delay					18		>	**18**		0	0	**0**	8	0		**4**	
			V/C					0.51		>			0.00	0.00		0.06	0.00			
			Q					22		>			0	0		2	0			
	3rd Avenue East & 18th Street East	TWSC	LOS	<	B	A	**B**	<	B	>	**B**	A	A	A	**A**	A	A	A	**A**	
			Delay	<	11	9	**11**	<	10	>	**10**	8	0	0	**1**	0	0	0	**0**	
			V/C	<	0.11	0.02		<	0.02	>		0.01	0.00	0.00		0.00	0.00	0.00		
			Q	<	3	1		<	1	>		0	0	0		0	0	0		
			Stor.	<	-	35		<	-	>		-	-	-		-	-	-		
			Avail.	<	-	34		<	-	>		-	-	-		-	-	-		
	3rd Avenue East & East Bayshore Road	TWSC	LOS					B		A	**B**		A	A	**A**	A	A		**A**	
			Delay					11		9	**10**		0	0	**0**	8	0		**2**	
			V/C					0.13		0.03			0.00	0.00		0.03	0.00			
			Q					3		1			0	0		1	0			
	East Bayshore Road & 32nd Street East	TWSC	LOS					A		>	**A**		A	A	**A**	A	A		**A**	
			Delay					10		>	**10**		0	0	**0**	0	0		**0**	
			V/C					0.03		>			0.00	0.00		0.00	0.00			
			Q					1		>			0	0		0	0			
PM Peak Hour	3rd Avenue East & 10th Street East	TCS	LOS	<	B	>	**B**	<	B	>	**B**	C	D	>	**D**	<	D	C	**C**	**B**
			Delay	<	12	>	**12**	<	10	>	**10**	35	39	>	**38**	<	37	34	**35**	**18**
			V/C	<	0.53	>		<	0.35	>		0.17	0.41	>		<	0.28	0.10		**0.51**
			Q	<	71	>		<	48	>		21	58	>		<	40	15		
			Stor.	<	-	>		<	-	>		15	-	>		<	-	25		
			Avail.	<	-	>		<	-	>		-6	-	>		<	-	10		
	3rd Avenue East & 15th Street East	TWSC	LOS					E		>	**E**		A	A	**A**	A	A		**A**	
			Delay					44		>	**44**		0	0	**0**	8	0		**4**	
			V/C					0.83		>			0.00	0.00		0.10	0.00			
			Q					58		>			0	0		2	0			
	3rd Avenue East & 18th Street East	TWSC	LOS	<	B	A	**B**	<	B	>	**B**	A	A	A	**A**	A	A	A	**A**	
			Delay	<	13	9	**13**	<	10	>	**10**	8	0	0	**0**	8	0	0	**0**	
			V/C	<	0.20	0.01		<	0.02	>		0.01	0.00	0.00		0.00	0.00	0.00		
			Q	<	5	0		<	1	>		0	0	0		0	0	0		
			Stor.	<	-	35		<	-	>		-	-	-		-	-	-		
			Avail.	<	-	35		<	-	>		-	-	-		-	-	-		
	3rd Avenue East & East Bayshore Road	TWSC	LOS					B		A	**B**		A	A	**A**	A	A		**A**	
			Delay					13		9	**12**		0	0	**0**	8	0		**2**	
			V/C					0.20		0.07			0.00	0.00		0.05	0.00			
			Q					5		2			0	0		2	0			
	East Bayshore Road & 32nd Street East	TWSC	LOS					A		>	**A**		A	A	**A**	A	A		**A**	
			Delay					10		>	**10**		0	0	**0**	8	0		**1**	
			V/C					0.05		>			0.00	0.00		0.00	0.00			
			Q					2		>			0	0		0	0			

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

4.3 Forecast 2030 Total Traffic Operations

The study area intersection operations analysis for the future total traffic scenario followed the same methodology used for the background traffic conditions. However, the splits were again optimized at the intersection of 10th Street East and 3rd Avenue East. **Table 4.2A** and **Table 4.2B** detail the level of service conditions for the weekday AM and PM peak hours.

All study area intersections are forecast to operate within acceptable levels of service during the AM and PM peak hour with the following critical movements noted:

- The westbound left-turn/right-turn movement at 3rd Avenue East and 15th Street East is forecast to operate at LOS E during the AM peak hour.
- The westbound left-turn/right-turn movement at 3rd Avenue East and 15th Street East is forecast to operate at LOS F with a v/c ratio of 1.40 during the PM peak hour.
- The northbound left-movement at 3rd Avenue East and 10th Street East has 95% queue length than exceeds the storage length by 7 metres during the PM peak hour.

Appendix E contains the detailed Synchro 10 reports.

TABLE 4.2A: 2030 TOTAL OPERATIONS (AM PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																	
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	3rd Avenue East & 10th Street East	TCS	LOS	<	C	>	**C**	<	B	>	**B**	B	B	>	**B**	<	B	B	**B**	**B**
			Delay	<	22	>	**22**	<	15	>	**15**	17	19	>	**19**	<	18	18	**18**	**19**
			V/C	<	0.74	>		<	0.37	>		0.08	0.26	>		<	0.23	0.11		**0.59**
			Q	<	80	>		<	39	>		9	31	>		<	29	10		
			Stor.	<	-	>		<	-	>		15	-	>		<	-	25		
			Avail.	<	-	>		<	-	>		6	-	>		<	-	15		
	3rd Avenue East & 15th Street East	TWSC	LOS					E		>	**E**		A	A	**A**	A	A		**A**	
			Delay					45		>	**45**		0	0	**0**	8	0		**4**	
			V/C					0.82		>			0.00	0.00		0.14	0.00			
			Q					56		>			0	0		4	0			
	3rd Avenue East & 18th Street East	TWSC	LOS	<	B	B	**B**	<	B	>	**B**	A	A	A	**A**	A	A	A	**A**	
			Delay	<	14	10	**14**	<	12	>	**12**	8	0	0	**1**	0	0	0	**0**	
			V/C	<	0.16	0.02		<	0.02	>		0.02	0.00	0.00		0.00	0.00	0.00		
			Q	<	4	1		<	1	>		1	0	0		0	0	0		
			Stor.	<	-	35		<	-	>		-	-	-		-	-	-		
			Avail.	<	-	34		<	-	>		-	-	-		-	-	-		
	3rd Avenue East & East Bayshore Road	TWSC	LOS					B		A	**B**		A	A	**A**	A	A		**A**	
			Delay					14		9	**12**		0	0	**0**	8	0		**1**	
			V/C					0.17		0.04			0.00	0.00		0.03	0.00			
			Q					4		1			0	0		1	0			
	East Bayshore Road & 32nd Street East	TWSC	LOS					B		>	**B**		A	A	**A**	A	A		**A**	
			Delay					10		>	**10**		0	0	**0**	7	0		**0**	
			V/C					0.10		>			0.00	0.00		0.00	0.00			
			Q					2		>			0	0		0	0			
	East Bayshore Road & Site Driveway 1	TWSC	LOS					B		A	**B**		A	A	**A**	A	A		**A**	
			Delay					11		9	**11**		0	0	**0**	8	0		**0**	
			V/C					0.18		0.01			0.00	0.00		0.00	0.00			
			Q					5		0			0	0		0	0			
	Site Driveway 2 & 32nd Street East	TWSC	LOS		A	A	**A**	A	A		**A**	A		>	**A**					
			Delay		0	0	**0**	0	0		**0**	9		>	**9**					
			V/C		0.00	0.00		0.00	0.00			0.05		>						
			Q		0	0		0	0			2		>						

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

TABLE 4.2B: 2030 TOTAL OPERATIONS (PM PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	3rd Avenue East & 10th Street East	TCS	LOS	<	B	>	**B**	<	A	>	**A**	D	D	>	**D**	<	D	D	**D**	**B**
			Delay	<	12	>	**12**	<	9	>	**9**	39	45	>	**44**	<	43	37	**39**	**19**
			V/C	<	0.60	>		<	0.34	>		0.21	0.52	>		<	0.41	0.12		**0.60**
			Q	<	76	>		<	44	>		22	67	>		<	47	18		
			Stor.	<	-	>		<	-	>		15	-	>		<	-	25		
			Avail.	<	-	>		<	-	>		-7	-	>		<	-	7		
	3rd Avenue East & 15th Street East	TWSC	LOS					F		>	**F**		A	A	**A**	A	A		**A**	
			Delay					229		>	**229**		0	0	**0**	9	0		**4**	
			V/C					1.40		>			0.00	0.00		0.17	0.00			
			Q					168		>			0	0		4	0			
	3rd Avenue East & 18th Street East	TWSC	LOS	<	C	A	**C**	<	B	>	**B**	A	A	A	**A**	A	A	A	**A**	
			Delay	<	20	10	**19**	<	12	>	**12**	8	0	0	**0**	8	0	0	**0**	
			V/C	<	0.32	0.01		<	0.03	>		0.01	0.00	0.00		0.00	0.00	0.00		
			Q	<	10	0		<	1	>		0	0	0		0	0	0		
			Stor.	<	-	35		<	-	>		-	-	-		-	-	-		
			Avail.	<	-	35		<	-	>		-	-	-		-	-	-		
	3rd Avenue East & East Bayshore Road	TWSC	LOS					C		B	**C**		A	A	**A**	A	A		**A**	
			Delay					22		11	**18**		0	0	**0**	8	0		**2**	
			V/C					0.34		0.10			0.00	0.00		0.07	0.00			
			Q					10		2			0	0		2	0			
	East Bayshore Road & 32nd Street East	TWSC	LOS					B		>	**B**		A	A	**A**	A	A		**A**	
			Delay					10		>	**10**		0	0	**0**	8	0		**1**	
			V/C					0.09		>			0.00	0.00		0.01	0.00			
			Q					2		>			0	0		0	0			
	East Bayshore Road & Site Driveway 1	TWSC	LOS					B		A	**B**		A	A	**A**	A	A		**A**	
			Delay					12		10	**12**		0	0	**0**	8	0		**0**	
			V/C					0.14		0.01			0.00	0.00		0.01	0.00			
			Q					4		0			0	0		0	0			
	Site Driveway 2 & 32nd Street East	TWSC	LOS		A	A	**A**	A	A		**A**	A		>	**A**					
			Delay		0	0	**0**	0	0		**0**	9		>	**9**					
			V/C		0.00	0.00		0.00	0.00			0.03		>						
			Q		0	0		0	0			1		>						

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

4.4 Remedial Measures

4.4.1 3rd Avenue East & 15th Street East

Section 4.3 outlines the total traffic operations for the study area and identifies that there are capacity issues at this intersection. Several improvements were evaluated including signal warrant, revised lane configuration, and all-way stop warrant.

The intersection of 3rd Avenue East and 15th Street East was assessed using the Ontario Traffic Manual (OTM Book 12 – Justification 7) signal warrant[5] procedures. **Appendix F** contains the warrant analysis. It indicates that traffic control signals are not warranted at the intersection of 3rd Avenue East and 15th Street East under 2030 total traffic conditions.

The lane configuration at 3rd Avenue East and 15th Street East was adjusted so that the westbound left-turn and right-turn are no longer shared. The westbound left-turn lane was modelled with a storage length of 100 metres. The segment of 15th Street East between 3rd Avenue East and 4th Avenue East is approximately 100 metres. Although, the maximum queue the length reported for the westbound left-turn/right turn movement at 3rd Avenue East and 15th Street East is 168 metres.

Table 4.3 details the level of service conditions. The separation of the westbound left-turn/right-turn at the intersection of 3rd Avenue East and 15th Street East improves the operations for the westbound right-turn which is forecast to operate at LOS A and LOS B during the AM and PM peaks hours respectively. However, the westbound-left-turn remains critical. **Appendix G** contains the detailed Synchro 10 reports.

The intersection was assessed for an all-way stop warrant for both background and total 2030 forecast conditions. The warrants were assessed using the OTM (Book 5) all-way stop minimum volume warrants to determine if an all-way stop control is warranted. Eight hours of data was not available and therefore the warrant analysis was completed based on the highest volumes between the AM and PM peak hours. As the warrants were not completed using 8-hour counts, the analysis is only an estimation. Based on the warrant calculation an all-way stop control is warranted at this intersection for both background and total traffic conditions. **Table 4.4** details the level of service conditions for the all-way stop for the 2030 total forecast conditions. It is noted that there is improvement in operations for the westbound left movements (LOS D) but the north and southbound

[5] *Ontario Traffic Manual Book 12, Ministry of Transportation of Ontario, July 2001.*

deteriorate to LOS D and C, respectively. **Appendix H** contains the warrant calculations and **Appendix I** contains the detailed Synchro 10 reports.

As the warrant is based on the AM and PM peak hours only, and not full eight-hour data, it is recommended that the need for implementation of an all-way stop at this intersection be monitored by the City.

TABLE 4.3: 2030 TOTAL OPERATIONS (15TH STREET EAST IMPROVEMENTS)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	3rd Avenue East & 15th Street East	TWSC	LOS					E		A	D		A	A	A	A	A		A	
			Delay					39		10	31		0	0	0	8	0		4	
			V/C					0.71		0.11			0.00	0.00		0.14	0.00			
			Q					38		3			0	0		4	0			
			Stor.					100		-			-	-		-	-			
			Avail.					62		-			-	-		-	-			
PM Peak Hour	3rd Avenue East & 15th Street East	TWSC	LOS					F		B	F		A	A	A	A	A		A	
			Delay					162		12	112		0	0	0	9	0		4	
			V/C					1.19		0.21			0.00	0.00		0.17	0.00			
			Q					102		6			0	0		4	0			
			Stor.					100		-			-	-		-	-			
			Avail.					-2		-			-	-		-	-			

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

TABLE 4.4: 2030 TOTAL OPERATIONS (AWSC)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	3rd Avenue East & 15th Street East	AWSC	LOS					B		>	B		B	>	B	<	B		B	
			Delay					14		>	14		13	>	13	<	14		14	
			V/C					0.50		>			0.48	>		<	0.51			
			Q					21		>			20	>		<	22			
PM Peak Hour	3rd Avenue East & 15th Street East	AWSC	LOS					D		>	D		D	>	D	<	C		C	
			Delay					27		>	27		25	>	25	<	24		24	
			V/C					0.75		>			0.75	>		<	0.71			
			Q					51		>			51	>		<	43			

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
AWSC - All-Way Stop Control
< / > - Shared with through movement

4.4.2 Left-Turn Lanes

The intersection of East Bayshore Road at Site Driveway 1 was assessed to determine if the projected traffic volumes warrant installation of left-turn lanes. The intersection of East Bayshore Road at 32nd Street East was also assessed for the need of a left-turn lane. To access Site Driveway 2, it is required to turn left or right from East Bayshore Road onto 32nd Street East. However, the intersection of 32nd Street East at Site Driveway 2 has no traffic turning left into the site therefore, no left turn is warranted. The warrants for left-turn lanes follow the requirements in the Ministry of Transportation's (MTO) Geometric Design Standards[6]. A design speed of 60 km/h (10 km/h over the posted speed limit) was used for East Bayshore Road.

The percentages of left-turning vehicles in the approaching volume were rounded to the nearest 5%, as nomographs are only provided for 5% increments. This apparent requirement is due to the nature of the warrant procedure that assumes a minimum of 5% of left turning vehicles in the advancing volume. Therefore, left-turn lanes are automatically not warranted for any left turning volume less than 5%.

Table 4.5 summarizes the left-turn lane warrant for the intersections of East Bayshore Road at Site Driveway 1 and East Bayshore Road at 32nd Street East. The warrant analysis suggests that left-turn lanes are not warranted at both intersections.

TABLE 4.5: LEFT-TURN LANE WARRANT SUMMARY

Roadway	East Bayshore Road			
Intersection	Site Driveway 1		32nd Street East	
Approach Direction	Southbound		Southbound	
Design Speed	60 km/h		60 km/h	
Horizon	Total 2030		Total 2030	
Peak Hour	AM	PM	AM	PM
Advancing Volume	144	111	90	56
Opposing Volume	120	289	92	173
Left Turning Traffic	2	6	1	6
% of Left Turning Traffic	1%	5%	1%	11%
Figure Used*	NA	9A-6	NA	9A-6
Warranted	No	No	No	No
Storage Length Required	NA	NA	NA	NA

*Based on MTO Design Supplement for TAC Geometric Design Guide for Canadian Roads - June 2017

Appendix J contains the left-turn lane warrant nomographs

[6] Design Supplement for TAC Geometric Design Guide for Canadian Roads, Ministry of Transportation Ontario, June 2017

4.4.3 Right-Turn Lanes

The intersections of East Bayshore Road at Site Driveway 1, East Bayshore Road at 32nd Street East, and Site Driveway 2 at 32nd Street East were assessed to determine if the projected traffic volumes warrant installation of a right turn lane. Although right turns are generally made more efficiently than left turn movements, exclusive right turn lanes are often provided, for many of the same reasons that left turn lanes are provided (reduce the risk of rear-end collisions and delay to through vehicles).

MTO guidelines (Geometric Design Standards for Ontario Highways) note that right turn lanes or tapers may be considered where right turn volumes exceed 60 vehicles per hour (vph) and where right turning vehicles create a hazard or reduce capacity at the intersection.

As the forecast total traffic operations show no significant impacts, the need for right turn lanes is not warranted for the intersections of Site Driveway 2 at 32nd Street East and Site Driveway 3 and 9th Avenue East. Although, the intersections of East Bayshore Road at Site Driveway 1 and East Bayshore Road at 32nd Street East both require a northbound right-turn lane since the northbound right volume surpasses 60 vph under total operations during the PM peak hour.

Table 4.6 summarizes the right-turn volumes under total traffic conditions on East Bayshore Road.

TABLE 4.6: RIGHT-TURN VOLUMES (TOTAL TRAFFIC CONDITIONS – EAST BAYSHORE ROAD)

Roadway	East Bayshore Road			
Intersection	Site Driveway 1		32nd Street East	
Approach Direction	Northbound		Northbound	
Horizon	Total 2030		Total 2030	
Peak Hour	AM	PM	AM	PM
Right-Turn Volume	34	120	47	73
Warranted	No	Yes	No	Yes

5 Parking Justification

As with any equilibrium system, there are a minimum of two components that are required to be in balance to reach the equilibrium point. With parking systems, this requires the balance of parking supply and demand. Reaching an appropriate supply level is equally as important as demand. The ubiquitous oversupply of cheap and accessible free parking has long been identified as a major contributing factor to the growth in single-occupant (SOV) travel.

5.1 Proposed Parking Supply

The on-site parking supply proposes 1,078 parking spaces for the 712 apartments (1.51 spaces per unit) as illustrated in **Table 5.1**.

TABLE 5.1: PROPOSED PARKING SUPPLY

Land Use	Units	Parking Provided	Rate per Unit
Apartments	712	1,078	1.51
Total	**712**	**1,078**	**1.51**

5.2 City of Owen Sound Zoning By-law Requirements

Off-street parking requirements in the City of Owen Sound are outlined in the Comprehensive Zoning By-law 2019-078[7] which identifies that Apartment parking requirements of 1.25 spaces per dwelling unit.

Table 5.2 outlines the zoning requirement for the site using the above noted rates. It indicates in a parking requirement of 890 spaces for the development. With 1,078 spaces proposed, there will be a surplus of 188 parking spaces.

TABLE 5.2: ZONING BY-LAW PARKING REQUIREMENTS

Land Use	Units	Rate	Required	Provided	Surplus / Deficit
Apartments	712	1.25 spaces per dwelling unit	890	1,078	188

5.2.1 Applicability of Zoning By-Law

Between the 1940s and 1970s, many municipalities adopted minimum off-street parking requirements with the intent of preventing the parking demand generated by one land use or property from congesting on-

[7] City of Owen Sound Comprehensive Zoning By-law 2019-078, as amended (Current as of December 2019), Section 5: General Provisions, Sub-Section 5.18.2

street parking and/or reducing accessibility to adjacent properties and land uses.

However, minimum off-street parking requirements are an expensive and inefficient way to manage on and off-street parking demand and produce unwanted side effects that are in direct conflict with the established vision for more sustainable oriented urban centres. There are fundamental issues that are related to the application of the parking policies, particularly:

- **Reduce streetscape quality**. A great street is defined by activity, street-facing windows, and interesting facades. Excessive off-street parking located between buildings can disrupt the quality of such streetscapes.
- **Promote auto traffic**. Minimum parking requirements are generally set at a level that assumes everyone drives. This effectively creates unlimited supply which leads to a self-fulfilling prophecy where everyone will drive.
- **Reduce development feasibility**. For small infill projects and historic building retrofits, parking requirements often make these projects unattractive or infeasible. In some cases, the required parking may not physically fit on to a site; in other cases, it may be too expensive to provide.
- **Discourage innovation**. Car-sharing, cash incentives, subsidized transit passes, secure bike parking, and carpool/vanpool matching services are proven to reduce driving alone. But if the same amount of parking is still required, there is no incentive to use these programs.
- **Reduce density**. Even structured parking takes up physical space that is not available for other uses. Minimum parking requirements reduce the number of units or floor area by 20% or more. Parking often prevents a downtown from achieving the density needed for economic health.
- **Diminish economic vitality**. Downtowns depend on pedestrians and a ‘park once’ system where people park once and walk to various stores for impulse buys. With on-site parking people drive, park, visit their destination, and go home – eliminating street activity and potential customers.
- **Discourage mixed use development**. With mixed uses, peak parking times often do not coincide. Minimum parking requirements assume that each use has its own supply of parking, which does not allow mixed-use projects to reduce parking in order to offset higher development costs.

5.3 Parking Demand Forecasts

A review of actual parking demands that are likely to be generated by the proposed development has been considered to assess, independent and separate from a review of Zoning By-Law requirements.

5.3.1 Travel Characteristics

Parking rates defined by municipalities associated with multiple family land uses tend to be conservative in nature to account for automobile trips as the primary trip modes.

A review of the commuting characteristics provided by Statistics Canada[8] for residents of Owen Sound confirms that 15% of the travel undertaken during the morning and afternoon peak periods is by non-autos means. Information provided by Statistics Canada suggests that the proportion of people who choose to drive in the area is on average 85%.

Table 5.3 outlines the 2016 main mode of commuting for Owen Sound.

TABLE 5.3: TRIP MODE

Mode	Trips	Percentage
Car; Truck; Van - as a driver	6,920	75%
Car; Truck; Van - as a passenger	920	10%
Public Transit	145	2%
Walked	1,035	11%
Bicycle	110	1%
Other Method	110	1%
Total	**9,240**	**100%**

Using the 15% mode share with the Zoning By-law requirements for apartments results in a requirement of 755 parking spaces. With 1,078 spaces provided there will be a surplus of 323 parking spaces as shown in **Table 5.**4.

TABLE 5.4: MODESHARE PARKING DEMAND

Land Use	Zoning By-law	Non-Auto Modeshare	Required	Provided	Surplus / Deficit
Apartments	890	15%	755	1,078	323

[8] Statistics Canada. 2017. Census Profile. 2016 Census.

5.3.2 Area Specific Auto-Ownership

The need for parking is based, in part, on auto ownership rates. The Transportation Tomorrow Survey (TTS)[9] provides data with respect to the number of vehicles owned by private households within the Greater Golden Horseshoe (Greater Toronto and surrounding area). Data is collected every five years and trends can be identified by comparing subsequent data sets.

Data was extracted from the 2016 TTS survey for several smaller communities with no or limited public transit for auto-ownership rates for those residing in apartment and townhouse units. **Table 5.5** outlines the survey data for apartments for the municipalities and indicates a range of 0.63 to 0.95 vehicles per apartment. The average of the 11 communities is 0.82 vehicle per apartment which is less than the zoning requirement of 1.25 spaces per apartment.

Using the average apartment rate (0.82 vehicles/apartment), this would result in a parking demand of 584 resident spaces. With a proposed residential parking supply of 1,078 spaces, there would be a surplus of 494 spaces as shown in **Table 5.6.**

TABLE 5.5: 2016 TTS AUTO-OWNERSHIP – APARTMENTS

Town	Population	Vehicles / Apartments	Demand for 712 Apartments
Elora	7,756	0.89	634
Shelburne	8,126	0.64	456
Penetanguishene	8,962	0.92	656
Port Perry	9,453	0.90	641
Stayner	14,151	0.63	449
Midland	16,864	0.65	463
Port Colborne	18,306	0.81	577
Lindsay	20,713	0.77	549
Fergus	20,767	0.92	656
Uxbrdge	21,179	0.95	677
Fort Erie	30,710	0.94	670
Average		**0.82**	**584**

[9] The Transportation Tomorrow Survey (TTS) is a comprehensive travel survey conducted in the Greater Toronto and Hamilton Area (GTHA) once every five years (2016)

TABLE 5.6: AUTO-OWNERSHIP PARKING DEMAND

Land Use	Units	Rate	Required	Provided	Surplus / Deficit
Apartments	712	0.82 spaces per unit	584	1,078	494

5.3.3 ITE Parking Generation

The Institute of Transportation Engineers (ITE) is a well recognized parking data resource. The ITE publishes Parking Generation (5th Edition), an informational report of parking data for various land use types in the United States of America and Canada. These rates are considered inclusive of visitor parking.

ITE specifically notes that Parking Generation is not to be considered a standard, rather it is simply a compilation of available parking data, some more accurate that others, to be used as one resource in evaluation parking requirements. These are maximum parking ratios that are to be adjusted downward for local mode splits and for complementary parking utilization patterns.

Average rates from the ITE land use 221 (Multifamily Housing – Mid Rise) was used for the purpose of estimating the parking demand for the subject site.

Table 5.7 summarizes the estimated ITE parking demand base rates. The number of parking spaces recommended by ITE is 945 spaces, which is 133 less than the proposed parking supply of 1,078 spaces. The ITE parking rates do not reflect local impacts such as active mode usage, thus are conservative.

TABLE 5.7: ITE PARKING GENERATION

Land Use	Multifamily Housing, Mid-Rise (221)
Independent Variable:	Dwelling Units
Time Period:	Weekday (Monday - Friday)
Setting/Location:	General Urban/Suburban (no nearby rail transit)
Peak Period of Parking Demand:	10:00 p.m. - 5:00 a.m.
Number of Studies:	73
Avg. Num. of Dwelling Units:	261
Average Rate:	1.31
Range of Rates:	0.75 - 2.03
33rd / 85th Percentile:	1.13 / 1.47
95% Confidence Interval:	1.26 - 1.36
Standard Deviation:	0.22
Coefficient of Variation:	17%
Fitted Curve Equation:	P = 1.34(X) - 8.73
R2:	0.97
Calculated Parking Demand:	**Average Rate: 933**
	Fitted Curve: 945

5.4 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.

5.4.1 Parking

Sufficient automobile parking is necessary for the development to be successful. As the proposed parking supply exceeds the local zoning by-law minimum requirement, too much parking can encourage traffic congestion, limit the ability to meet trip reduction goals, increase project costs, and impact site design and aesthetics. Finding the right balance needed to support the municipalities goals is critical, particularly, given that parking is an expensive resource.

The role of parking management is also a key element to helping the local municipality meet its trip reduction goals. If free and unregulated parking is provided, there is little incentive for many residents and visitors to use alternative modes of transportation. Free and abundant parking encourages people to drive alone rather than car or van pool, be dropped off or picked up, walk, cycle, or take transit. When too much parking is provided, and is provided free of cost to the user, the use of alternative sustainable modes is put at a substantial disadvantage.

Implementing a paid-parking operation is one of the most effective TDM strategies for encouraging alternative travel habits. To further encourage residents of the apartment building to utilize sustainable travel modes, the development is proposing to lease parking spaces separately from the cost to rent a unit. This is more equitable and efficient since occupants are not forced to pay for parking they do not need and allows consumers to adjust their parking supply to reflect their needs.

This is an important factor as residents are notified at the onset of the project that parking is proposed to be provided as an additional cost in lieu of the price to rent a unit. If residents are significantly considering changing their travel behaviour, the cost of renting a parking space could be a contributing factor to this change.

5.4.2 Walking

To encourage walking, the proposed apartment buildings will be connected to municipal sidewalks and existing trails with several paved sidewalks that cross and link the subject site. The landscaping plan should consider additional amenities such as soft landscaping to enhance the pedestrian realm and to prioritize pedestrians.

All on-site sidewalks should be well-lit and should conform to the local design standards as well as the Accessibility for Ontarians with Disabilities Act (AODA) design standards.

5.4.3 Cycling

Section 2.4 of this report identifies the proposed cycling network in Owen Sound in relation the subject site. East Bayshore Road has been identified as a main route with either wider lanes or separate bicycle lanes which will provide direct cycling connections to Downtown Owen Sound. Cyclist from the subject site can access Downtown in approximately 10-12 minutes. There will also be potential connections to the Grey County CP Rail Trail which provides off-road cycling connections across the City and local area. Cyclists from the subject site can access the commercial area on 16th Street East in approximately 15 minutes.

Long-term bicycle parking spaces should be located internal to the building on the first level within a secure area for convenient use by residents. Short-term spaces will be in visible, well-lit areas near the main entrances of the building.

Through the provision of bicycle parking spaces, residents and visitors will be more likely to choose to travel to/from the site by bicycle. This increase in sustainable transportation helps stimulate a reduction of automobile trips resulting in a reduction in the overall vehicle parking demand for the site.

5.4.4 Car Share/Ride Share Programs

Carsharing programs are services that provide members with access to a fleet of vehicles, usually on an hourly basis. It is an increasingly effective way of encouraging people to reconsider purchasing a car, or in some cases acquiring a second car. Success of car sharing programs relies upon having cars conveniently located with parking spaces designated specifically to the service.

On site carshare spaces have the benefit of further supporting alternative modes of transportation available to/from the site; If tenants can accomplish most of their travel via without a vehicle, a carshare can support the remaining trips that cannot be accomplished by walking, cycling, or taking transit. The availability of a shared vehicle allows residents who normally would not need a vehicle for their daily activities to be comfortable with the decision to not own a vehicle.

Ride-share involves two or more people sharing a vehicle for a trip. The cost of the journey (fuel, tolls, parking, etc.) can be split between the driver and passengers, resulting in savings for all concerned. This also reduces the number of overall site vehicle trips and parking demands.

There are several tools available, such as Carpool World[10], that provide an online ride sharing database. These tools enable individuals to enter their journeys so that the database can automatically search out residents whose journeys match.

5.4.5 Travel Planning / Education / Promotion

Research has indicated that educating the occupants by going directly to them increases the likelihood that a shift to more sustainable modes of transportation will occur. The Organisation for Economic Co-operation and Development (OECD) and the Global Environmental Change Program of the UK Economic and Social Research council hosted a workshop[11] that recognized the importance of understanding the forces that motivate and shape individuals' travel behaviour. It identified several key messages of benefit to TDM policy development:

- Hierarchy of Choice: An employer can make decisions that influence how their employees travel to work. Similarly, an individual's decision to buy their house may affect how all the members of the household travel. A greater understanding of this hierarchy can assist in identifying those high-order organizations and individual choices. TDM strategies and policies should target those key decision makers.
- The Perception of Individuals: Individuals' perceptions of time, environment, and alternative modes of travel and travel behaviour determine whether they feel they have a choice in how they travel. For example, people who have not taken public transport or do not cycle may see these modes as not suited to their lifestyle because of perceived disadvantages which they associate with these modes. In many cases, individuals over-estimate the benefits of their current choice and under-estimate the capacity of alternative modes to satisfy their needs. Altering these perceptions can open the range of options available to travelers.
- Culture: Culture plays an important role in determining the status, image, and acceptability of different types of travel behaviour. For example, the car has social and cultural attributes that go well beyond its role as a mode of transportation. TDM strategies must consider these cultural factors.

[10] https://www.carpoolworld.com/

[11] Organisation for Economic Co-operation and Development (OECD). 1997. Second OECD Workshop on Individual Travel Behaviour: "Culture, Choice and Technology" Final Report. University of Sussex, Brighton, UK 17-19 July 1996. Paris: OECD.

- Education (Information and Learning): Individuals need targeted, relevant, effective, and positive information to better understand the consequences of different travel choices on their own, and their community's quality of life. This information would be most effective if available before individuals engage prior to car and home purchases.

Individual travel planning has demonstrated that working directly with residents/employees and providing appropriate infrastructure increases the use of sustainable modes and reduces the site's dependency on vehicles. It is an important component to the encouragement of sustainable modes of transportation at the subject site.

A designated person/committee should be available to help with individualized travel plans for interested residents and ensure all options available are communicated

5.5 Estimated Parking Demand

The Zoning By-law requirement identifies a surplus of 188 spaces. Mode share and auto ownership rates for the area suggest a surplus of between 323 and 494 spaces. Providing parking beyond what is proposed is not recommended, but rather supporting the reduction through a Transportation Demand Management (TDM) program.

Parking management (a TDM tool) allows contingency-based planning, which means that various solutions are identified which can be deployed if needed.

To further encourage residents to use sustainable travel modes, the development can lease parking spaces separately from the cost to lease or purchase a unit (unbundle parking). This is more equitable and efficient since occupants are not forced to pay for parking they do not need and allows consumers to adjust their parking supply to reflect their needs.

6 Conclusions and Recommendations

6.1 Conclusions

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

Transportation Impact Assessment

- Existing Traffic Conditions: The study area intersections are forecast to operate within acceptable levels of service during the AM and PM peak hour with the following critical movements noted:
  - The westbound left-turn/right-turn movement at 3rd Avenue East and 15th Street East is forecast to operate at LOS E during the PM peak hour; and
  - The northbound left-movement at 3rd Avenue East and 10th Street East has a 95% queue length that exceeds the storage length by 6 metres during the PM peak hour.
- **Development Trip Generation:** the development is forecast to generate approximately 224 and 280 trips during the AM and PM peak hours, respectively.
- **2030 Background Traffic Conditions:** The study area intersections are forecast to operate within acceptable levels of service during the AM and PM peak hour with similar critical movements as under existing conditions.
- **2030 Total Traffic Conditions:** The study area intersections are forecast to operate within acceptable levels of service during the AM and PM peak hour with similar critical movements as under existing and background conditions.

  Remedial Measures: Southbound left-turn lanes for the intersections of East Bayshore Road at Site Driveway 1 and East Bayshore Road at 32nd Street East are not warranted.

  Northbound right turn-lanes at East Bayshore Road at Site Driveway 1 and East Bayshore Road at 32nd Street East are warranted.

  Several remedial measures were considered for the intersection of 3rd Avenue East and 15th Street East given the poor operations for all horizons. The separation of the westbound left-turn/right-turn at the intersection of 3rd Avenue East and 15th Street East improves the operations for the westbound right-turn which is forecast to operate at LOS A and LOS B during the AM and PM peaks hours respectively.

However, the westbound-left-turn remains critical. Traffic signals are not warranted but an all-way stop is warranted for the AM and PM peak hours for background and total traffic conditions.

Parking Study

- The Municipality's Zoning By-law requires 1.25 parking spaces per unit for apartment buildings for a total parking requirement of 890 parking spaces. The plan proposes 1,078 spaces which exceeds the by-law requirement.
- Parking demand can be managed through a Transportation Demand Management (TDM) program that includes the following key measures:
  - On-site connectivity to existing alternative mode routes;
  - Provision of short-term and long-term bicycle parking; and
  - Consider parking to be unbundled from the cost of a unit.

6.2 Recommendations

Based on the findings of this study, it is recommended that the development be approved with the addition of northbound right-turn lanes at the driveway connection to East Bayshore Road and at the intersection of East Bayshore Road and 32nd Street East.

It is further recommended that the City monitor the operations at the intersection of 3rd Street East and 15th Avenue East and consider converting to an all-way stop to balance the delay across all approaches. This recommendation is triggered by background traffic volumes and is not a result of the addition of site-generated traffic volumes.

Appendix A

Pre-Study Consultation

From: Dana Goetz <dgoetz@owensound.ca>
Sent: June 3, 2022 12:25 PM
To: Erica Bayley <ebayley@ptsl.com>
Cc: Sabine Robart <srobart@owensound.ca>
Subject: RE: (220220) 3105 East Bayshore Road TIS and Parking Study - Scope of Work

Good afternoon, Erica. See reply to your questions below

Have a good weekend 😊

Dana M. Goetz, C.E.T.
Engineering Technologist III
ENGINEERING SERVICES DIVISION
PUBLIC WORKS & ENGINEERING DEPARTMENT
CITY OF OWEN SOUND
808 2nd Avenue East, Owen Sound, ON N4K 2H4
Telephone: [519] 376-4440 ext. 3308 | Fax: [519] 372-1209

From: Erica Bayley <ebayley@ptsl.com>
Sent: May 31, 2022 4:05 PM
To: Dana Goetz <dgoetz@owensound.ca>; Mike Crone <mcrone@owensound.ca>; Andrew Evans <aevans@ptsl.com>
Cc: Andrew Orr <aorr@ptsl.com>; Pam Coulter <pcoulter@owensound.ca>; Chris Webb <cwebb@owensound.ca>; Sabine Robart <srobart@owensound.ca>; Amy Cann <acann@owensound.ca>; Matt Marck <Matt.Marck@grey.ca>; Brandon Almeida <balmeida@SkyDev.ca>; Brandon Flewwelling <brandonf@gspgroup.ca>; Evan Wittmann <evanw@gspgroup.ca>
Subject: RE: (220220) 3105 East Bayshore Road TIS and Parking Study - Scope of Work

Hi Dana,
Thanks for the comments and scope approval. We will add those 3 intersections to our study.
Can you confirm the location of: *3rd Avenue and 28th Street East (unsignalized)* Intersection name incorrect. See attached scan.

Are you able to confirm the following items:
Background Traffic

- *Generalized growth rate:* ***to be provided by City/County*** **See attached excerpt from County OP.**
- *Active Development Applications:* ***to be provided by City/County*** **None in the vicinity of this development.**

Future Road Improvements: ***to be provided by City/County*** **None in the vicinity of this development other than the reconstruction of East Bayshore Road. Improvements to East Bayshore Road , 9th Avenue East & 32nd Street East to be as required by TIS and City/County for development of this site.**

Further to the above, preparation of a Transportation Plan was outlined in the Pre-Con review notes (Schedule A, comment A.9 & A.11). To satisfy this comment, details regarding existing transit and AT infrastructure will be outlined in the TIS and PJR and further details related to connectivity and the AT & Trails Master Plan will be included in the PJR

Erica Bayley, P.Eng.
Senior Project Manager, Associate
(She/Her)

Paradigm Transportation Solutions Limited
p: 519.896.3163 x202
m: 519.635.5349

From: Dana Goetz <dgoetz@owensound.ca>
Sent: May 30, 2022 10:24 AM
To: Erica Bayley <ebayley@ptsl.com>; Mike Crone <mcrone@owensound.ca>; Andrew Evans <aevans@ptsl.com>
Cc: Andrew Orr <aorr@ptsl.com>; Pam Coulter <pcoulter@owensound.ca>; Chris Webb <cwebb@owensound.ca>; Sabine Robart <srobart@owensound.ca>; Amy Cann <acann@owensound.ca>; Matt Marck <Matt.Marck@grey.ca>
Subject: RE: (220220) 3105 East Bayshore Road TIS and Parking Study - Scope of Work

Good morning Erica

Engineering services and the County have reviewed the scope of work for this project.

The scope of work is acceptable with the addition of some additional intersections for study (in red below) as they offer alternative routes to the development.

Also please be advised that the correct address for the property is **3195** East Bayshore Road.

Thank you for your patience in this matter.

Sincerely;

Dana M. Goetz, C.E.T.
Engineering Technologist III
ENGINEERING SERVICES DIVISION
PUBLIC WORKS & ENGINEERING DEPARTMENT
CITY OF OWEN SOUND
808 2nd Avenue East, Owen Sound, ON N4K 2H4
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Please visit the City's website (www.owensound.ca) for information on how to access City services.

Please consider the environment before printing this e-mail

From: Erica Bayley <ebayley@ptsl.com>
Sent: May 16, 2022 1:29 PM
To: Mike Crone <mcrone@owensound.ca>; Andrew Evans <aevans@ptsl.com>
Cc: Andrew Orr <aorr@ptsl.com>; Pam Coulter <pcoulter@owensound.ca>; Chris Webb <cwebb@owensound.ca>; Dana Goetz <dgoetz@owensound.ca>; Sabine Robart <srobart@owensound.ca>; Amy Cann <acann@owensound.ca>
Subject: RE: (220220) 3105 East Bayshore Road TIS and Parking Study - Scope of Work

Hi Mike – following up to see if you have comments on our scope of work outlined below.
Thanks,

Erica Bayley, P.Eng.
Senior Project Manager, Associate
(She/Her)

Paradigm Transportation Solutions Limited
p: 519.896.3163 x202
m: 519.635.5349

From: Andrew Evans
Sent: April 12, 2022 1:28 PM
To: pat.hoy@grey.ca; Kefalas, Dennis <dkefalas@owensound.ca>
Cc: Erica Bayley <ebayley@ptsl.com>; Andrew Orr <aorr@ptsl.com>
Subject: (220220) 3105 East Bayshore Road TIS and Parking Study - Scope of Work

Greetings,

Paradigm Transportation Solutions Limited is preparing the Transportation Impact Assessment and Parking Study for a proposed residential development of the lands 3105 East Bayshore Road, Owen Sound, ON.

Below is a brief description of the concept and our proposed terms of reference for the TIS and Parking study. Please review and provide comment at your earliest convenience.

SITE DESCRIPTION

The property owner is proposing to redevelop the existing site into eight apartment buildings with a total of approximately 704 units. **The concept plan is attached**.

Vehicle access is proposed via one full-moves access connection to East Bayshore Road, one full-moves access connection to 9th Avenue East, and two full-moves access connections to 32nd Street East.

A total parking supply of 1,276 spaces is proposed. It is our understanding that the this supply meets the City of Owen Sound zoning requirements as currently planned, but is subject to change through the site plan process

PROPOSED TERMS OF REFERENCE

Study Area Intersections:

- 32nd Street East & East Bayshore Road (Grey Road 15) (unsignalized)
- East Bayshore Road & 3rd Avenue East (unsignalized)
- 3rd Avenue East & 10th Street East (signalized)
- *3rd Avenue and 28th Street East (unsignalized)*
- *3rd Avenue and 18th Street East (unsignalized)*
- *3rd Avenue and 15th Street East (unsignalized),* and
- Four new driveway connections.

Analysis Periods:

- Weekday AM peak hour
- Weekday PM peak hour

Horizon Year

- Five-years from the assumed full build-out (Year 2030).

Existing Data:

- Eight Hour TMC at the study area intersections

Analysis

- Synchro 10, HCM 6th Edition analysis

Background Traffic

- Generalized growth rate: **to be provided by City/County**
- Active Development Applications: **to be provided by City/County**

Future Road Improvements: **to be provided by City/County**

Trip Generation

- ITE Trip Generation Data 11th Edition with no modal split reductions.

Site Traffic Distribution

- Existing Traffic Patterns.

Parking Study:

- To estimate the parking demand generated by the proposed development and establish the number of on-site parking spaces that should be provided, recognizing site constraints and local conditions. If needed, a strategy would be developed to satisfy the parking demands of the proposed development.

Report

- We will document the study methodologies, findings, and conclusions in a report with appendices containing the detailed analysis results and any data collected.

Please let us know your comments on the study.

Thank you and regards.

Andrew Evans, M.Sc.
Transportation Planner

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Appendix B

Traffic Data

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: 3rd Avenue East & 18th Street East
Site Code: 220220
Start Date: 06-08-2022

Turning Movement Data

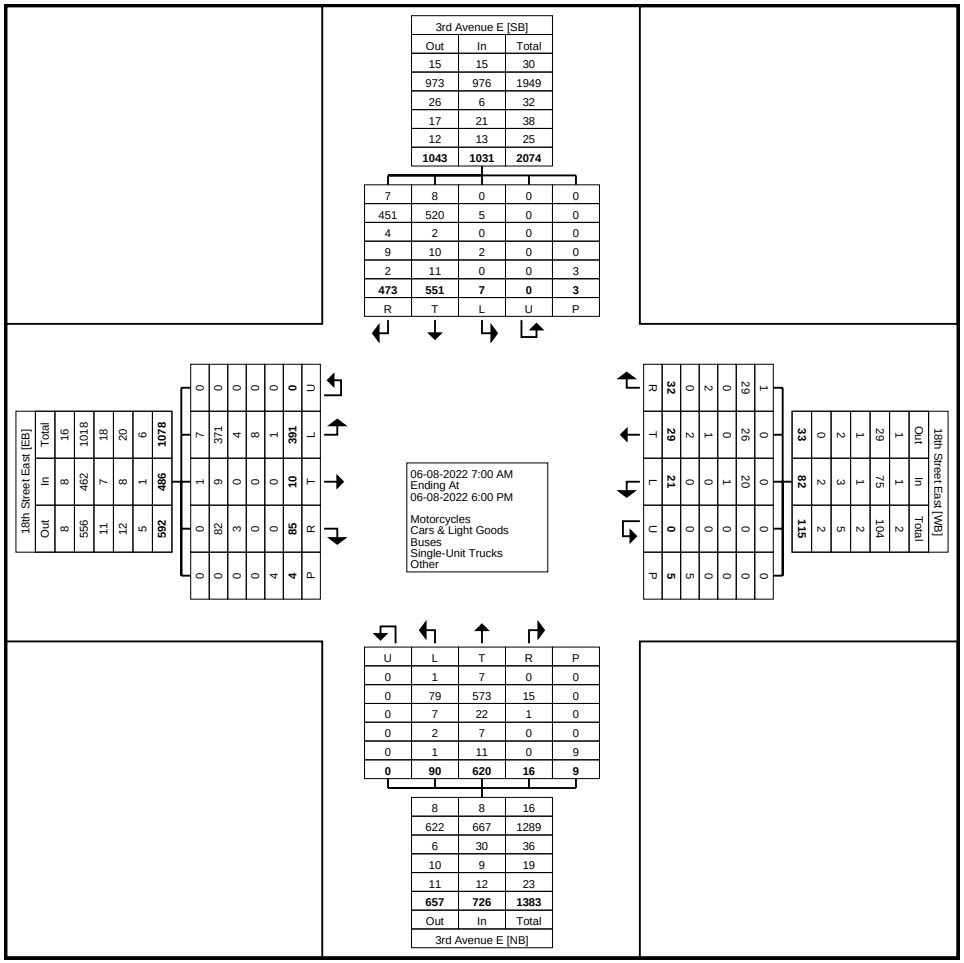
Start Time	18th Street East Eastbound						18th Street East Westbound						3rd Avenue E Northbound						3rd Avenue E Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	5	0	1	0	0	6	0	0	1	0	0	1	0	18	0	0	0	18	0	4	8	0	0	12	37
7:15 AM	11	0	1	0	0	12	0	0	2	0	0	2	2	21	0	0	0	23	0	11	9	0	0	20	57
7:30 AM	7	1	2	0	1	10	0	0	1	0	0	1	1	13	0	0	1	14	0	12	14	0	0	26	51
7:45 AM	12	0	2	0	0	14	1	1	0	0	0	2	0	8	1	0	0	9	0	13	14	0	0	27	52
Hourly Total	35	1	6	0	1	42	1	1	4	0	0	6	3	60	1	0	1	64	0	40	45	0	0	85	197
8:00 AM	8	0	2	0	0	10	0	3	0	0	0	3	2	10	3	0	0	15	1	5	13	0	0	19	47
8:15 AM	16	0	3	0	0	19	0	0	0	0	0	0	3	15	0	0	1	18	0	13	23	0	0	36	73
8:30 AM	18	0	3	0	0	21	1	1	1	0	0	3	2	19	0	0	1	21	0	15	20	0	0	35	80
8:45 AM	13	0	2	0	0	15	2	2	2	0	0	6	8	16	0	0	1	24	0	27	22	0	0	49	94
Hourly Total	55	0	10	0	0	65	3	6	3	0	0	12	15	60	3	0	3	78	1	60	78	0	0	139	294
9:00 AM	11	1	4	0	0	16	1	0	0	0	0	1	1	13	0	0	0	14	0	14	14	0	0	28	59
9:15 AM	9	0	1	0	0	10	1	0	1	0	1	2	3	10	0	0	0	13	0	13	6	0	0	19	44
9:30 AM	5	1	1	0	0	7	0	1	0	0	1	1	2	10	0	0	0	12	0	16	8	0	1	24	44
9:45 AM	7	0	2	0	0	9	0	0	0	0	0	0	4	10	0	0	0	14	1	18	14	0	0	33	56
Hourly Total	32	2	8	0	0	42	2	1	1	0	2	4	10	43	0	0	0	53	1	61	42	0	1	104	203
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:30 AM	6	0	4	0	0	10	1	0	1	0	0	2	2	15	0	0	0	17	0	13	10	0	0	23	52
11:45 AM	16	0	6	0	0	22	0	1	1	0	0	2	5	17	1	0	0	23	0	17	16	0	0	33	80
Hourly Total	22	0	10	0	0	32	1	1	2	0	0	4	7	32	1	0	0	40	0	30	26	0	0	56	132
12:00 PM	5	0	3	0	0	8	0	2	2	0	0	4	1	21	0	0	0	22	0	28	9	0	0	37	71
12:15 PM	9	0	5	0	1	14	1	2	2	0	0	5	4	27	0	0	0	31	0	24	12	0	0	36	86
12:30 PM	7	0	4	0	0	11	2	2	1	0	0	5	3	10	2	0	0	15	0	18	11	0	0	29	60
12:45 PM	8	0	3	0	1	11	2	0	1	0	0	3	3	18	1	0	1	22	0	10	16	0	0	26	62
Hourly Total	29	0	15	0	2	44	5	6	6	0	0	17	11	76	3	0	1	90	0	80	48	0	0	128	279
1:00 PM	7	0	2	0	0	9	1	0	1	0	0	2	4	22	2	0	1	28	0	17	12	0	0	29	68
1:15 PM	12	0	6	0	0	18	0	3	1	0	0	4	6	15	0	0	0	21	0	10	14	0	0	24	67
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	19	0	8	0	0	27	1	3	2	0	0	6	10	37	2	0	1	49	0	27	26	0	0	53	135
3:00 PM	15	0	4	0	1	19	0	0	0	0	1	0	1	22	0	0	2	23	0	23	10	0	1	33	75
3:15 PM	17	0	2	0	0	19	2	2	3	0	2	7	1	14	0	0	0	15	0	21	31	0	1	52	93
3:30 PM	16	0	0	0	0	16	0	1	2	0	0	3	3	23	1	0	0	27	0	21	11	0	0	32	78
3:45 PM	15	0	3	0	0	18	2	0	2	0	0	4	5	20	1	0	0	26	0	17	14	0	0	31	79
Hourly Total	63	0	9	0	1	72	4	3	7	0	3	14	10	79	2	0	2	91	0	82	66	0	2	148	325
4:00 PM	10	0	2	0	0	12	1	2	1	0	0	4	1	21	1	0	0	23	1	46	36	0	0	83	122
4:15 PM	11	1	2	0	0	14	2	0	0	0	0	2	3	21	0	0	0	24	0	16	14	0	0	30	70

4:30 PM	22	0	4	0	0	26	0	1	0	0	0	1	5	13	1	0	1	19	1	14	15	0	0	30	76
4:45 PM	9	1	1	0	0	11	1	1	0	0	0	2	2	16	1	0	0	19	1	15	16	0	0	32	64
Hourly Total	52	2	9	0	0	63	4	4	1	0	0	9	11	71	3	0	1	85	3	91	81	0	0	175	332
5:00 PM	21	1	3	0	0	25	0	1	0	0	0	1	6	19	1	0	0	26	1	22	16	0	0	39	91
5:15 PM	14	3	2	0	0	19	0	2	3	0	0	5	3	27	0	0	0	30	1	24	15	0	0	40	94
5:30 PM	22	1	3	0	0	26	0	0	0	0	0	0	2	47	0	0	0	49	0	21	18	0	0	39	114
5:45 PM	27	0	2	0	0	29	0	1	3	0	0	4	2	69	0	0	0	71	0	13	12	0	0	25	129
Hourly Total	84	5	10	0	0	99	0	4	6	0	0	10	13	162	1	0	0	176	2	80	61	0	0	143	428
Grand Total	391	10	85	0	4	486	21	29	32	0	5	82	90	620	16	0	9	726	7	551	473	0	3	1031	2325
Approach %	80.5	2.1	17.5	0.0	-	-	25.6	35.4	39.0	0.0	-	-	12.4	85.4	2.2	0.0	-	-	0.7	53.4	45.9	0.0	-	-	-
Total %	16.8	0.4	3.7	0.0	-	20.9	0.9	1.2	1.4	0.0	-	3.5	3.9	26.7	0.7	0.0	-	31.2	0.3	23.7	20.3	0.0	-	44.3	-
Motorcycles	7	1	0	0	-	8	0	0	1	0	-	1	1	7	0	0	-	8	0	8	7	0	-	15	32
% Motorcycles	1.8	10.0	0.0	-	-	1.6	0.0	0.0	3.1	-	-	1.2	1.1	1.1	0.0	-	-	1.1	0.0	1.5	1.5	-	-	1.5	1.4
Cars & Light Goods	371	9	82	0	-	462	20	26	29	0	-	75	79	573	15	0	-	667	5	520	451	0	-	976	2180
% Cars & Light Goods	94.9	90.0	96.5	-	-	95.1	95.2	89.7	90.6	-	-	91.5	87.8	92.4	93.8	-	-	91.9	71.4	94.4	95.3	-	-	94.7	93.8
Buses	4	0	3	0	-	7	1	0	0	0	-	1	7	22	1	0	-	30	0	2	4	0	-	6	44
% Buses	1.0	0.0	3.5	-	-	1.4	4.8	0.0	0.0	-	-	1.2	7.8	3.5	6.3	-	-	4.1	0.0	0.4	0.8	-	-	0.6	1.9
Single-Unit Trucks	8	0	0	0	-	8	0	1	2	0	-	3	2	7	0	0	-	9	2	10	9	0	-	21	41
% Single-Unit Trucks	2.0	0.0	0.0	-	-	1.6	0.0	3.4	6.3	-	-	3.7	2.2	1.1	0.0	-	-	1.2	28.6	1.8	1.9	-	-	2.0	1.8
Articulated Trucks	1	0	0	0	-	1	0	0	0	0	-	0	0	6	0	0	-	6	0	4	2	0	-	6	13
% Articulated Trucks	0.3	0.0	0.0	-	-	0.2	0.0	0.0	0.0	-	-	0.0	0.0	1.0	0.0	-	-	0.8	0.0	0.7	0.4	-	-	0.6	0.6
Bicycles on Road	0	0	0	0	-	0	0	2	0	0	-	2	1	5	0	0	-	6	0	7	0	0	-	7	15
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	6.9	0.0	-	-	2.4	1.1	0.8	0.0	-	-	0.8	0.0	1.3	0.0	-	-	0.7	0.6
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	11.1	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	4	-	-	-	-	-	5	-	-	-	-	-	8	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	88.9	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: 3rd Avenue East & 18th Street East
Site Code: 220220
Start Date: 06-08-2022



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: 3rd Avenue East & 18th Street East
Site Code: 220220
Start Date: 06-08-2022

Turning Movement Peak Hour Data (8:15 AM)

Start Time	18th Street East Eastbound						18th Street East Westbound						3rd Avenue E Northbound						3rd Avenue E Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
8:15 AM	16	0	3	0	0	19	0	0	0	0	0	0	3	15	0	0	1	18	0	13	23	0	0	36	73
8:30 AM	18	0	3	0	0	21	1	1	1	0	0	3	2	19	0	0	1	21	0	15	20	0	0	35	80
8:45 AM	13	0	2	0	0	15	2	2	2	0	0	6	8	16	0	0	1	24	0	27	22	0	0	49	94
9:00 AM	11	1	4	0	0	16	1	0	0	0	0	1	1	13	0	0	0	14	0	14	14	0	0	28	59
Total	58	1	12	0	0	71	4	3	3	0	0	10	14	63	0	0	3	77	0	69	79	0	0	148	306
Approach %	81.7	1.4	16.9	0.0	-	-	40.0	30.0	30.0	0.0	-	-	18.2	81.8	0.0	0.0	-	-	0.0	46.6	53.4	0.0	-	-	-
Total %	19.0	0.3	3.9	0.0	-	23.2	1.3	1.0	1.0	0.0	-	3.3	4.6	20.6	0.0	0.0	-	25.2	0.0	22.5	25.8	0.0	-	48.4	-
PHF	0.806	0.250	0.750	0.000	-	0.845	0.500	0.375	0.375	0.000	-	0.417	0.438	0.829	0.000	0.000	-	0.802	0.000	0.639	0.859	0.000	-	0.755	0.814
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	2	0	-	2	2
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	-	0.0	2.5	-	-	1.4	0.7
Cars & Light Goods	52	1	12	0	-	65	4	3	3	0	-	10	10	53	0	0	-	63	0	67	74	0	-	141	279
% Cars & Light Goods	89.7	100.0	100.0	-	-	91.5	100.0	100.0	100.0	-	-	100.0	71.4	84.1	-	-	-	81.8	-	97.1	93.7	-	-	95.3	91.2
Buses	4	0	0	0	-	4	0	0	0	0	-	0	3	6	0	0	-	9	0	1	2	0	-	3	16
% Buses	6.9	0.0	0.0	-	-	5.6	0.0	0.0	0.0	-	-	0.0	21.4	9.5	-	-	-	11.7	-	1.4	2.5	-	-	2.0	5.2
Single-Unit Trucks	1	0	0	0	-	1	0	0	0	0	-	0	1	0	0	0	-	1	0	0	0	0	-	0	2
% Single-Unit Trucks	1.7	0.0	0.0	-	-	1.4	0.0	0.0	0.0	-	-	0.0	7.1	0.0	-	-	-	1.3	-	0.0	0.0	-	-	0.0	0.7
Articulated Trucks	1	0	0	0	-	1	0	0	0	0	-	0	0	3	0	0	-	3	0	1	1	0	-	2	6
% Articulated Trucks	1.7	0.0	0.0	-	-	1.4	0.0	0.0	0.0	-	-	0.0	0.0	4.8	-	-	-	3.9	-	1.4	1.3	-	-	1.4	2.0
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	1.6	-	-	-	1.3	-	0.0	0.0	-	-	0.0	0.3
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	33.3	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	66.7	-	-	-	-	-	-	-	-

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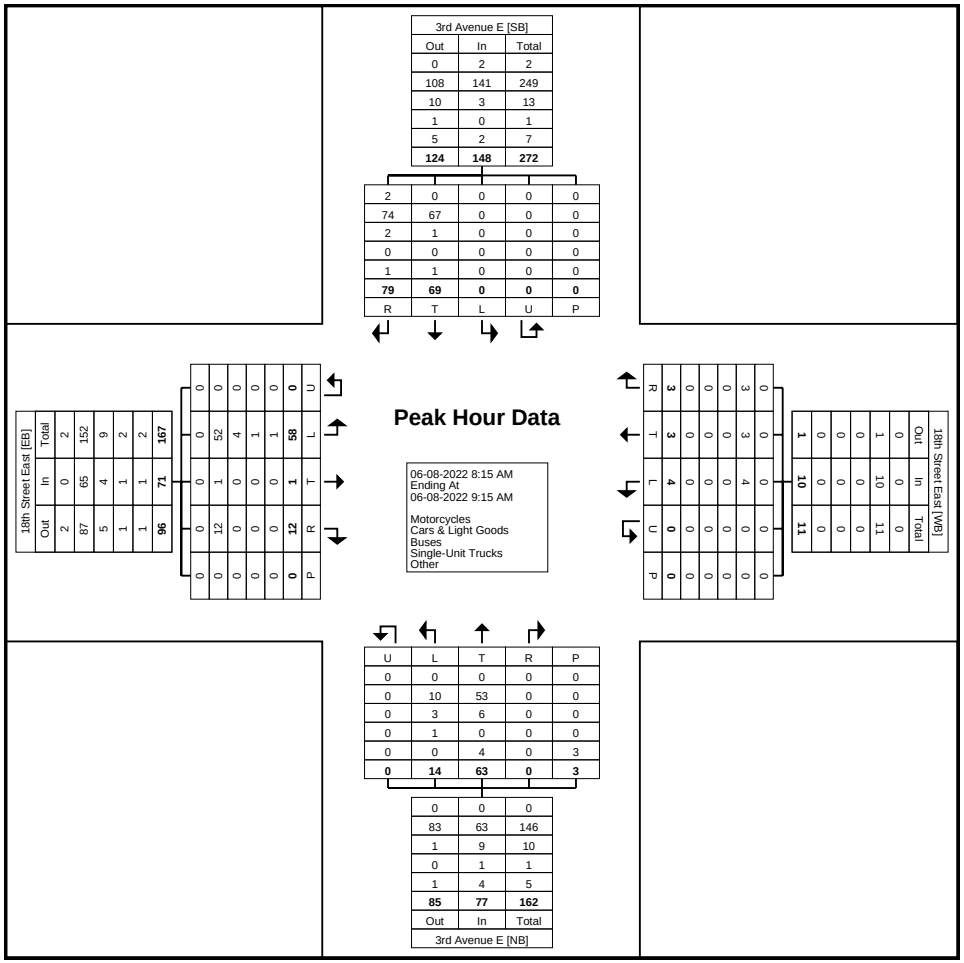
Start Date: 06-08-2022



Turning Movement Peak Hour Data Plot (8:15 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: 3rd Avenue East & 18th Street East
Site Code: 220220
Start Date: 06-08-2022

Turning Movement Peak Hour Data (11:45 AM)

Start Time	18th Street East Eastbound						18th Street East Westbound						3rd Avenue E Northbound						3rd Avenue E Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
11:45 AM	16	0	6	0	0	22	0	1	1	0	0	2	5	17	1	0	0	23	0	17	16	0	0	33	80
12:00 PM	5	0	3	0	0	8	0	2	2	0	0	4	1	21	0	0	0	22	0	28	9	0	0	37	71
12:15 PM	9	0	5	0	1	14	1	2	2	0	0	5	4	27	0	0	0	31	0	24	12	0	0	36	86
12:30 PM	7	0	4	0	0	11	2	2	1	0	0	5	3	10	2	0	0	15	0	18	11	0	0	29	60
Total	37	0	18	0	1	55	3	7	6	0	0	16	13	75	3	0	0	91	0	87	48	0	0	135	297
Approach %	67.3	0.0	32.7	0.0	-	-	18.8	43.8	37.5	0.0	-	-	14.3	82.4	3.3	0.0	-	-	0.0	64.4	35.6	0.0	-	-	-
Total %	12.5	0.0	6.1	0.0	-	18.5	1.0	2.4	2.0	0.0	-	5.4	4.4	25.3	1.0	0.0	-	30.6	0.0	29.3	16.2	0.0	-	45.5	-
PHF	0.578	0.000	0.750	0.000	-	0.625	0.375	0.875	0.750	0.000	-	0.800	0.650	0.694	0.375	0.000	-	0.734	0.000	0.777	0.750	0.000	-	0.912	0.863
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	-	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	37	0	15	0	-	52	3	4	6	0	-	13	13	73	3	0	-	89	0	86	47	0	-	133	287
% Cars & Light Goods	100.0	-	83.3	-	-	94.5	100.0	57.1	100.0	-	-	81.3	100.0	97.3	100.0	-	-	97.8	-	98.9	97.9	-	-	98.5	96.6
Buses	0	0	3	0	-	3	0	0	0	0	-	0	0	2	0	0	-	2	0	0	0	0	-	0	5
% Buses	0.0	-	16.7	-	-	5.5	0.0	0.0	0.0	-	-	0.0	0.0	2.7	0.0	-	-	2.2	-	0.0	0.0	-	-	0.0	1.7
Single-Unit Trucks	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	0	1	1	0	-	2	3
% Single-Unit Trucks	0.0	-	0.0	-	-	0.0	0.0	14.3	0.0	-	-	6.3	0.0	0.0	0.0	-	-	0.0	-	1.1	2.1	-	-	1.5	1.0
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	-	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	0	-	0	0	2	0	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	2
% Bicycles on Road	0.0	-	0.0	-	-	0.0	0.0	28.6	0.0	-	-	12.5	0.0	0.0	0.0	-	-	0.0	-	0.0	0.0	-	-	0.0	0.7
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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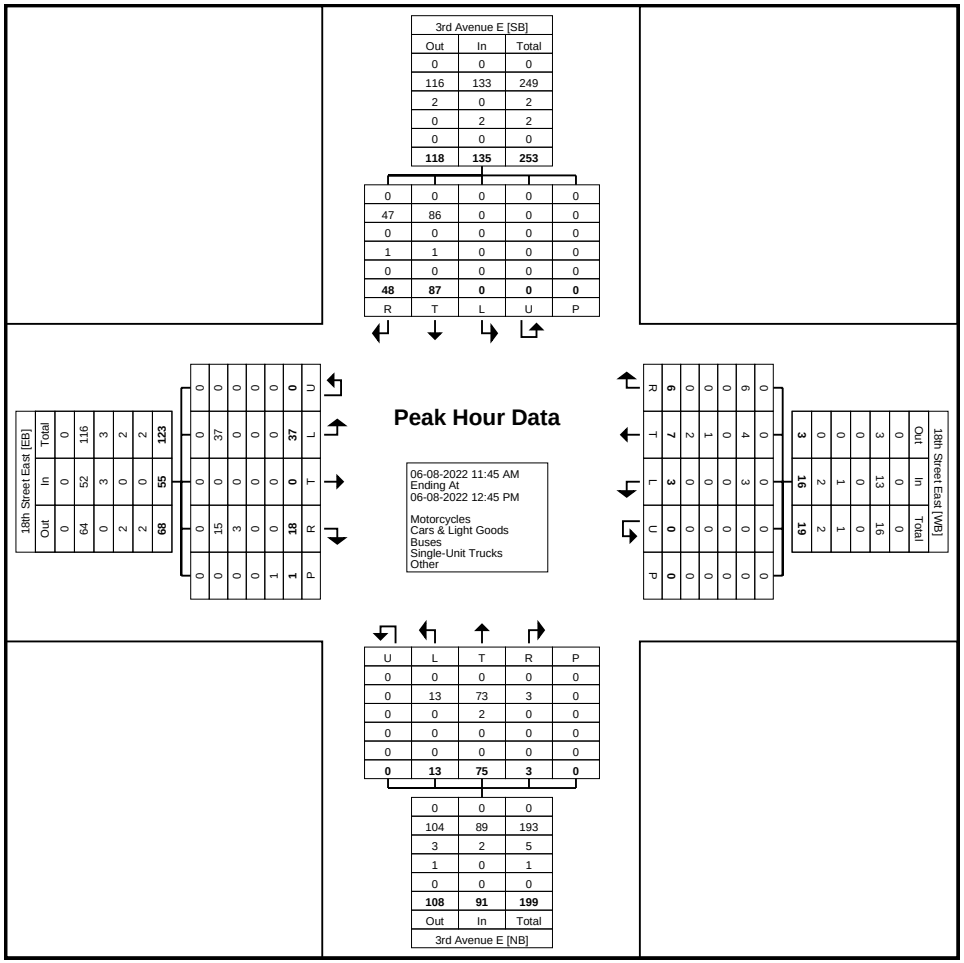
Site Code: 220220
Start Date: 06-08-2022



Turning Movement Peak Hour Data Plot (11:45 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: 3rd Avenue East & 18th Street East
Site Code: 220220
Start Date: 06-08-2022

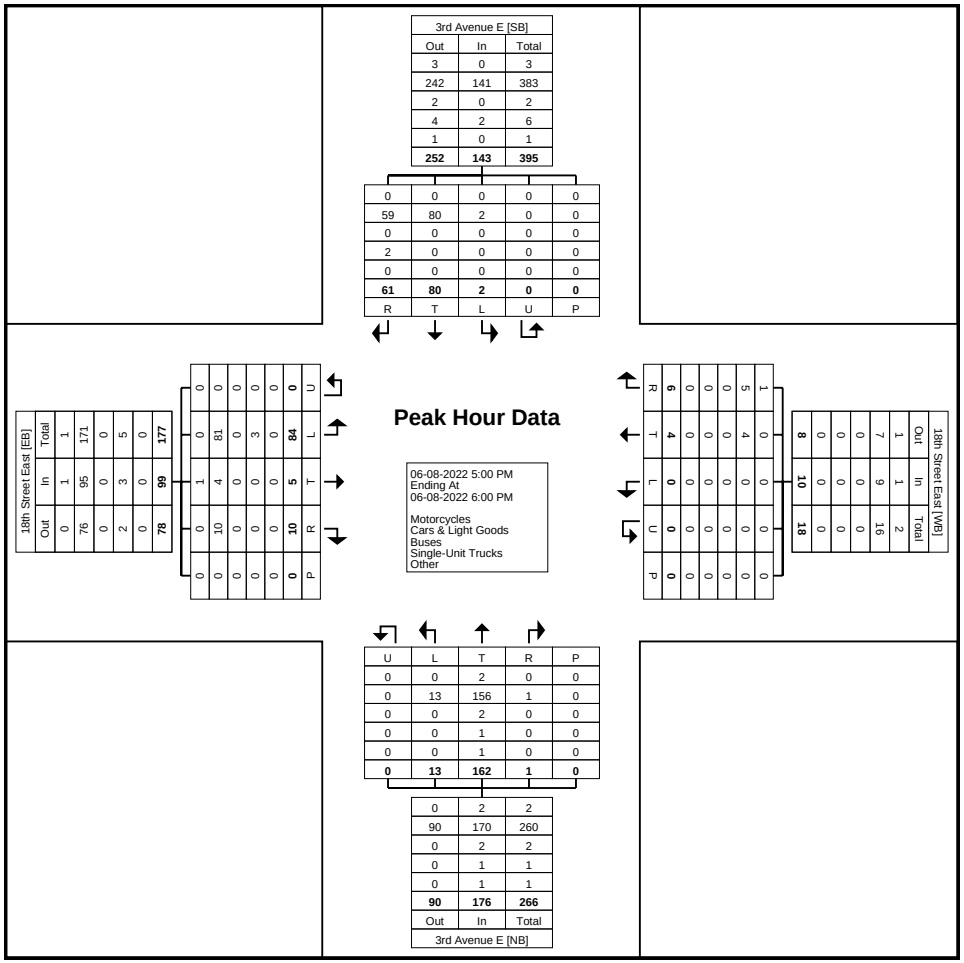
Turning Movement Peak Hour Data (5:00 PM)

Start Time	18th Street East Eastbound						18th Street East Westbound						3rd Avenue E Northbound						3rd Avenue E Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
5:00 PM	21	1	3	0	0	25	0	1	0	0	0	1	6	19	1	0	0	26	1	22	16	0	0	39	91
5:15 PM	14	3	2	0	0	19	0	2	3	0	0	5	3	27	0	0	0	30	1	24	15	0	0	40	94
5:30 PM	22	1	3	0	0	26	0	0	0	0	0	0	2	47	0	0	0	49	0	21	18	0	0	39	114
5:45 PM	27	0	2	0	0	29	0	1	3	0	0	4	2	69	0	0	0	71	0	13	12	0	0	25	129
Total	84	5	10	0	0	99	0	4	6	0	0	10	13	162	1	0	0	176	2	80	61	0	0	143	428
Approach %	84.8	5.1	10.1	0.0	-	-	0.0	40.0	60.0	0.0	-	-	7.4	92.0	0.6	0.0	-	-	1.4	55.9	42.7	0.0	-	-	-
Total %	19.6	1.2	2.3	0.0	-	23.1	0.0	0.9	1.4	0.0	-	2.3	3.0	37.9	0.2	0.0	-	41.1	0.5	18.7	14.3	0.0	-	33.4	-
PHF	0.778	0.417	0.833	0.000	-	0.853	0.000	0.500	0.500	0.000	-	0.500	0.542	0.587	0.250	0.000	-	0.620	0.500	0.833	0.847	0.000	-	0.894	0.829
Motorcycles	0	1	0	0	-	1	0	0	1	0	-	1	0	2	0	0	-	2	0	0	0	0	-	0	4
% Motorcycles	0.0	20.0	0.0	-	-	1.0	-	0.0	16.7	-	-	10.0	0.0	1.2	0.0	-	-	1.1	0.0	0.0	0.0	-	-	0.0	0.9
Cars & Light Goods	81	4	10	0	-	95	0	4	5	0	-	9	13	156	1	0	-	170	2	80	59	0	-	141	415
% Cars & Light Goods	96.4	80.0	100.0	-	-	96.0	-	100.0	83.3	-	-	90.0	100.0	96.3	100.0	-	-	96.6	100.0	100.0	96.7	-	-	98.6	97.0
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	2	0	0	-	2	0	0	0	0	-	0	2
% Buses	0.0	0.0	0.0	-	-	0.0	-	0.0	0.0	-	-	0.0	0.0	1.2	0.0	-	-	1.1	0.0	0.0	0.0	-	-	0.0	0.5
Single-Unit Trucks	3	0	0	0	-	3	0	0	0	0	-	0	0	1	0	0	-	1	0	0	2	0	-	2	6
% Single-Unit Trucks	3.6	0.0	0.0	-	-	3.0	-	0.0	0.0	-	-	0.0	0.0	0.6	0.0	-	-	0.6	0.0	0.0	3.3	-	-	1.4	1.4
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	-	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	-	0.0	0.0	-	-	0.0	0.0	0.6	0.0	-	-	0.6	0.0	0.0	0.0	-	-	0.0	0.2
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: 3rd Avenue East & 18th Street East
Site Code: 220220
Start Date: 06-08-2022



Turning Movement Peak Hour Data Plot (5:00 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: 3rd Avenue East & 10th Street East
Site Code: 220220
Start Date: 05/04/2022

Turning Movement Data

Start Time	10th Street East Eastbound						10th Street East Westbound						3rd Avenue East Northbound						3rd Avenue East Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	16	79	9	0	0	104	4	69	5	0	0	78	4	12	6	0	0	22	4	11	14	0	1	29	233
7:15 AM	18	82	6	0	3	106	4	68	5	0	1	77	4	13	3	0	0	20	6	10	13	0	1	29	232
7:30 AM	7	154	9	0	0	170	1	93	1	0	1	95	8	11	3	0	1	22	5	6	11	0	2	22	309
7:45 AM	15	151	11	0	6	177	3	86	8	0	1	97	6	12	8	0	1	26	2	12	16	0	1	30	330
Hourly Total	56	466	35	0	9	557	12	316	19	0	3	347	22	48	20	0	2	90	17	39	54	0	5	110	1104
8:00 AM	15	110	8	0	6	133	4	92	8	0	0	104	3	19	6	0	0	28	0	14	9	0	1	23	288
8:15 AM	23	116	16	0	8	155	7	99	8	0	2	114	13	28	3	0	1	44	3	14	17	0	1	34	347
8:30 AM	31	144	13	0	3	188	4	112	4	0	2	120	5	26	10	0	1	41	4	22	24	0	1	50	399
8:45 AM	33	165	15	0	10	213	3	93	13	0	3	109	9	30	16	0	3	55	6	24	20	0	2	50	427
Hourly Total	102	535	52	0	27	689	18	396	33	0	7	447	30	103	35	0	5	168	13	74	70	0	5	157	1461
9:00 AM	20	125	10	0	4	155	4	86	4	0	3	94	3	24	9	0	0	36	4	24	23	0	4	51	336
9:15 AM	14	89	15	0	3	118	1	79	6	0	0	86	12	23	11	0	1	46	6	15	15	0	2	36	286
9:30 AM	6	151	12	0	3	169	7	85	6	0	1	98	6	14	9	0	0	29	3	14	22	0	1	39	335
9:45 AM	9	135	18	0	2	162	6	82	6	0	3	94	6	13	13	0	0	32	7	26	22	0	2	55	343
Hourly Total	49	500	55	0	12	604	18	332	22	0	7	372	27	74	42	0	1	143	20	79	82	0	9	181	1300
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:30 AM	12	124	19	0	10	155	9	98	2	0	3	109	6	43	15	0	0	64	3	35	19	0	0	57	385
11:45 AM	10	140	23	1	7	174	14	124	13	0	2	151	16	27	13	0	1	56	7	27	23	0	1	57	438
Hourly Total	22	264	42	1	17	329	23	222	15	0	5	260	22	70	28	0	1	120	10	62	42	0	1	114	823
12:00 PM	8	134	15	0	16	157	9	108	8	0	0	125	13	30	11	0	2	54	13	31	20	0	9	64	400
12:15 PM	12	123	21	0	7	156	17	101	7	0	1	125	14	31	27	0	1	72	5	27	28	0	5	60	413
12:30 PM	16	136	26	0	5	178	5	121	8	0	1	134	8	23	20	0	1	51	3	30	21	0	6	54	417
12:45 PM	16	132	25	0	10	173	17	127	8	0	5	152	11	33	23	0	2	67	3	28	25	0	1	56	448
Hourly Total	52	525	87	0	38	664	48	457	31	0	7	536	46	117	81	0	6	244	24	116	94	0	21	234	1678
1:00 PM	10	139	16	0	9	165	10	109	9	0	5	128	12	19	19	0	0	50	10	22	23	0	1	55	398
1:15 PM	18	130	23	0	8	171	11	127	5	0	3	143	12	29	23	0	0	64	8	30	24	0	4	62	440
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	28	269	39	0	17	336	21	236	14	0	8	271	24	48	42	0	0	114	18	52	47	0	5	117	838
3:00 PM	22	132	12	0	8	166	10	144	7	0	1	161	17	29	9	0	2	55	5	27	31	0	2	63	445
3:15 PM	11	154	20	0	8	185	10	171	11	0	3	192	21	33	11	0	4	65	5	31	31	0	6	67	509
3:30 PM	22	153	14	0	13	189	12	146	3	0	2	161	16	35	14	0	3	65	13	26	34	0	12	73	488
3:45 PM	28	143	7	0	8	178	13	146	8	0	4	167	14	41	27	0	3	82	2	24	19	0	4	45	472
Hourly Total	83	582	53	0	37	718	45	607	29	0	10	681	68	138	61	0	12	267	25	108	115	0	24	248	1914
4:00 PM	22	146	19	0	11	187	11	135	4	0	8	150	17	35	20	0	3	72	10	34	35	0	2	79	488
4:15 PM	19	148	14	0	2	181	9	148	6	0	6	163	11	23	9	0	0	43	6	35	27	0	1	68	455

4:30 PM	17	159	11	0	6	187	7	149	3	0	5	159	19	36	27	0	0	82	5	30	34	0	1	69	497
4:45 PM	23	192	11	0	6	226	5	149	6	0	3	160	10	29	15	0	1	54	1	22	24	0	1	47	487
Hourly Total	81	645	55	0	25	781	32	581	19	0	22	632	57	123	71	0	4	251	22	121	120	0	5	263	1927
5:00 PM	25	159	16	0	7	200	8	156	3	0	9	167	15	35	17	0	2	67	13	19	42	0	3	74	508
5:15 PM	26	182	12	0	5	220	7	160	5	0	5	172	9	22	15	0	0	46	7	18	35	0	3	60	498
5:30 PM	20	135	12	0	13	167	13	114	3	0	2	130	19	17	11	0	3	47	5	19	36	0	3	60	404
5:45 PM	22	138	6	0	5	166	5	126	6	0	1	137	10	21	15	0	3	46	4	9	31	0	2	44	393
Hourly Total	93	614	46	0	30	753	33	556	17	0	17	606	53	95	58	0	8	206	29	65	144	0	11	238	1803
Grand Total	566	4400	464	1	212	5431	250	3703	199	0	86	4152	349	816	438	0	39	1603	178	716	768	0	86	1662	12848
Approach %	10.4	81.0	8.5	0.0	-	-	6.0	89.2	4.8	0.0	-	-	21.8	50.9	27.3	0.0	-	-	10.7	43.1	46.2	0.0	-	-	-
Total %	4.4	34.2	3.6	0.0	-	42.3	1.9	28.8	1.5	0.0	-	32.3	2.7	6.4	3.4	0.0	-	12.5	1.4	5.6	6.0	0.0	-	12.9	-
Motorcycles	1	6	0	0	-	7	0	10	0	0	-	10	0	3	0	0	-	3	0	3	4	0	-	7	27
% Motorcycles	0.2	0.1	0.0	0.0	-	0.1	0.0	0.3	0.0	-	-	0.2	0.0	0.4	0.0	-	-	0.2	0.0	0.4	0.5	-	-	0.4	0.2
Cars & Light Goods	512	4232	456	1	-	5201	242	3509	168	0	-	3919	345	750	431	0	-	1526	162	659	711	0	-	1532	12178
% Cars & Light Goods	90.5	96.2	98.3	100.0	-	95.8	96.8	94.8	84.4	-	-	94.4	98.9	91.9	98.4	-	-	95.2	91.0	92.0	92.6	-	-	92.2	94.8
Buses	43	31	1	0	-	75	3	49	16	0	-	68	2	45	1	0	-	48	2	40	34	0	-	76	267
% Buses	7.6	0.7	0.2	0.0	-	1.4	1.2	1.3	8.0	-	-	1.6	0.6	5.5	0.2	-	-	3.0	1.1	5.6	4.4	-	-	4.6	2.1
Single-Unit Trucks	6	104	7	0	-	117	5	98	12	0	-	115	2	13	6	0	-	21	6	9	15	0	-	30	283
% Single-Unit Trucks	1.1	2.4	1.5	0.0	-	2.2	2.0	2.6	6.0	-	-	2.8	0.6	1.6	1.4	-	-	1.3	3.4	1.3	2.0	-	-	1.8	2.2
Articulated Trucks	3	26	0	0	-	29	0	37	3	0	-	40	0	3	0	0	-	3	8	1	4	0	-	13	85
% Articulated Trucks	0.5	0.6	0.0	0.0	-	0.5	0.0	1.0	1.5	-	-	1.0	0.0	0.4	0.0	-	-	0.2	4.5	0.1	0.5	-	-	0.8	0.7
Bicycles on Road	1	1	0	0	-	2	0	0	0	0	-	0	0	2	0	0	-	2	0	4	0	0	-	4	8
% Bicycles on Road	0.2	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.2	0.0	-	-	0.1	0.0	0.6	0.0	-	-	0.2	0.1
Bicycles on Crosswalk	-	-	-	-	5	-	-	-	-	-	4	-	-	-	-	-	1	-	-	-	-	-	4	-	-
% Bicycles on Crosswalk	-	-	-	-	2.4	-	-	-	-	-	4.7	-	-	-	-	-	2.6	-	-	-	-	-	4.7	-	-
Pedestrians	-	-	-	-	207	-	-	-	-	-	82	-	-	-	-	-	38	-	-	-	-	-	82	-	-
% Pedestrians	-	-	-	-	97.6	-	-	-	-	-	95.3	-	-	-	-	-	97.4	-	-	-	-	-	95.3	-	-

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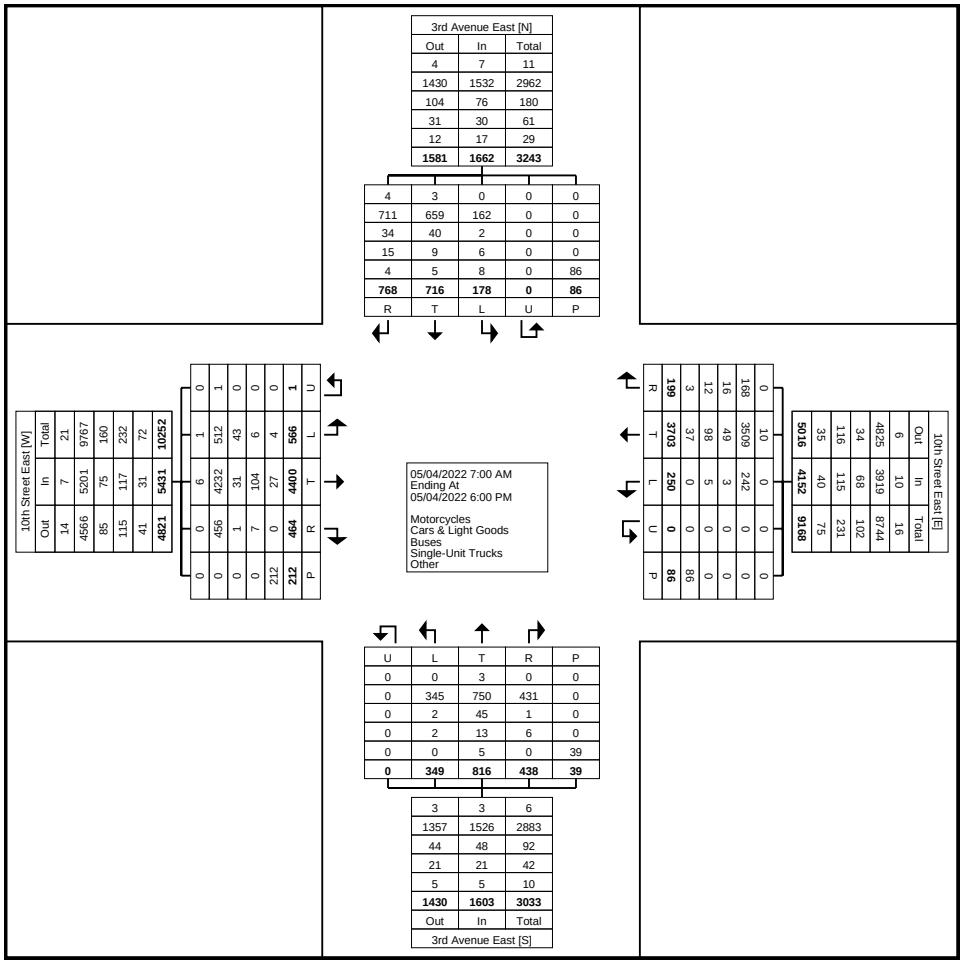
Start Date: 05/04/2022



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: 3rd Avenue East & 10th Street East
Site Code: 220220
Start Date: 05/04/2022

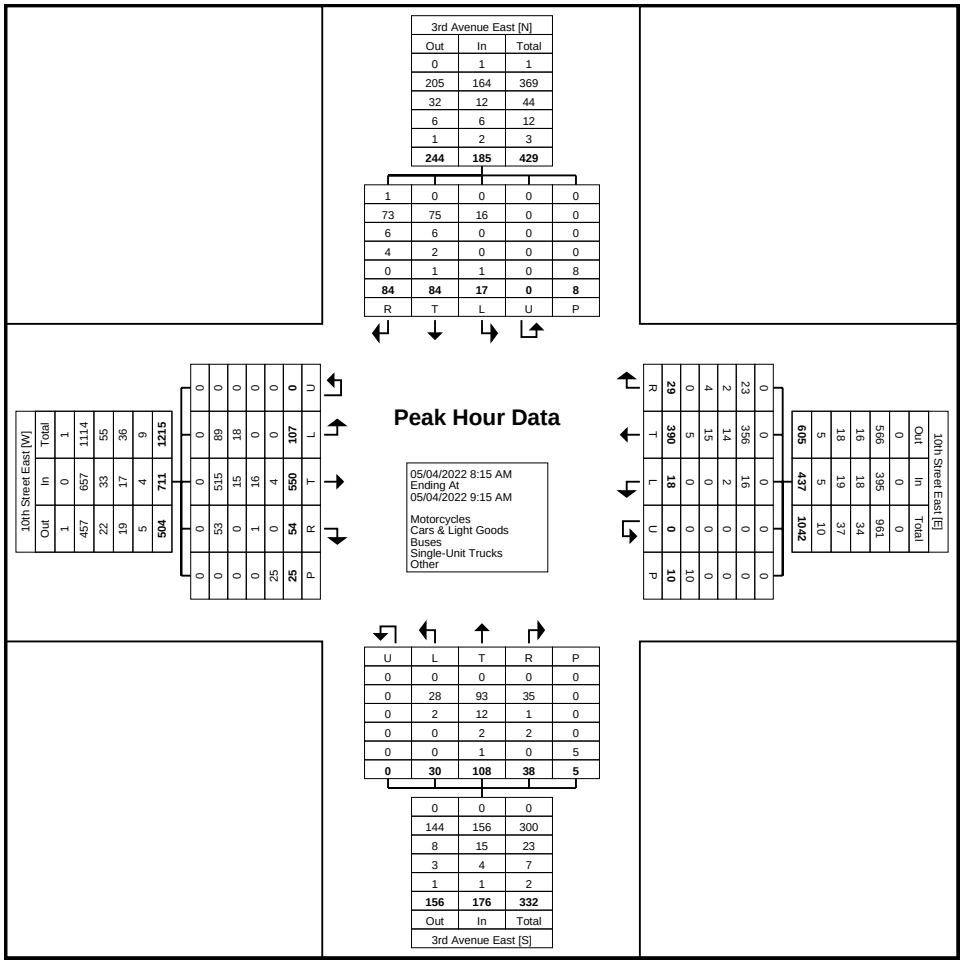
Turning Movement Peak Hour Data (8:15 AM)

Start Time	10th Street East Eastbound						10th Street East Westbound						3rd Avenue East Northbound						3rd Avenue East Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
8:15 AM	23	116	16	0	8	155	7	99	8	0	2	114	13	28	3	0	1	44	3	14	17	0	1	34	347
8:30 AM	31	144	13	0	3	188	4	112	4	0	2	120	5	26	10	0	1	41	4	22	24	0	1	50	399
8:45 AM	33	165	15	0	10	213	3	93	13	0	3	109	9	30	16	0	3	55	6	24	20	0	2	50	427
9:00 AM	20	125	10	0	4	155	4	86	4	0	3	94	3	24	9	0	0	36	4	24	23	0	4	51	336
Total	107	550	54	0	25	711	18	390	29	0	10	437	30	108	38	0	5	176	17	84	84	0	8	185	1509
Approach %	15.0	77.4	7.6	0.0	-	-	4.1	89.2	6.6	0.0	-	-	17.0	61.4	21.6	0.0	-	-	9.2	45.4	45.4	0.0	-	-	-
Total %	7.1	36.4	3.6	0.0	-	47.1	1.2	25.8	1.9	0.0	-	29.0	2.0	7.2	2.5	0.0	-	11.7	1.1	5.6	5.6	0.0	-	12.3	-
PHF	0.811	0.833	0.844	0.000	-	0.835	0.643	0.871	0.558	0.000	-	0.910	0.577	0.900	0.594	0.000	-	0.800	0.708	0.875	0.875	0.000	-	0.907	0.883
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	1
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	1.2	-	-	0.5	0.1
Cars & Light Goods	89	515	53	0	-	657	16	356	23	0	-	395	28	93	35	0	-	156	16	75	73	0	-	164	1372
% Cars & Light Goods	83.2	93.6	98.1	-	-	92.4	88.9	91.3	79.3	-	-	90.4	93.3	86.1	92.1	-	-	88.6	94.1	89.3	86.9	-	-	88.6	90.9
Buses	18	15	0	0	-	33	2	14	2	0	-	18	2	12	1	0	-	15	0	6	6	0	-	12	78
% Buses	16.8	2.7	0.0	-	-	4.6	11.1	3.6	6.9	-	-	4.1	6.7	11.1	2.6	-	-	8.5	0.0	7.1	7.1	-	-	6.5	5.2
Single-Unit Trucks	0	16	1	0	-	17	0	15	4	0	-	19	0	2	2	0	-	4	0	2	4	0	-	6	46
% Single-Unit Trucks	0.0	2.9	1.9	-	-	2.4	0.0	3.8	13.8	-	-	4.3	0.0	1.9	5.3	-	-	2.3	0.0	2.4	4.8	-	-	3.2	3.0
Articulated Trucks	0	4	0	0	-	4	0	5	0	0	-	5	0	0	0	0	-	0	1	1	0	0	-	2	11
% Articulated Trucks	0.0	0.7	0.0	-	-	0.6	0.0	1.3	0.0	-	-	1.1	0.0	0.0	0.0	-	-	0.0	5.9	1.2	0.0	-	-	1.1	0.7
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.9	0.0	-	-	0.6	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	10.0	-	-	-	-	-	0.0	-	-	-	-	-	12.5	-	-
Pedestrians	-	-	-	-	25	-	-	-	-	-	9	-	-	-	-	-	5	-	-	-	-	-	7	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	90.0	-	-	-	-	-	100.0	-	-	-	-	-	87.5	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: 3rd Avenue East & 10th Street East
Site Code: 220220
Start Date: 05/04/2022



Turning Movement Peak Hour Data Plot (8:15 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: 3rd Avenue East & 10th Street East
Site Code: 220220
Start Date: 05/04/2022

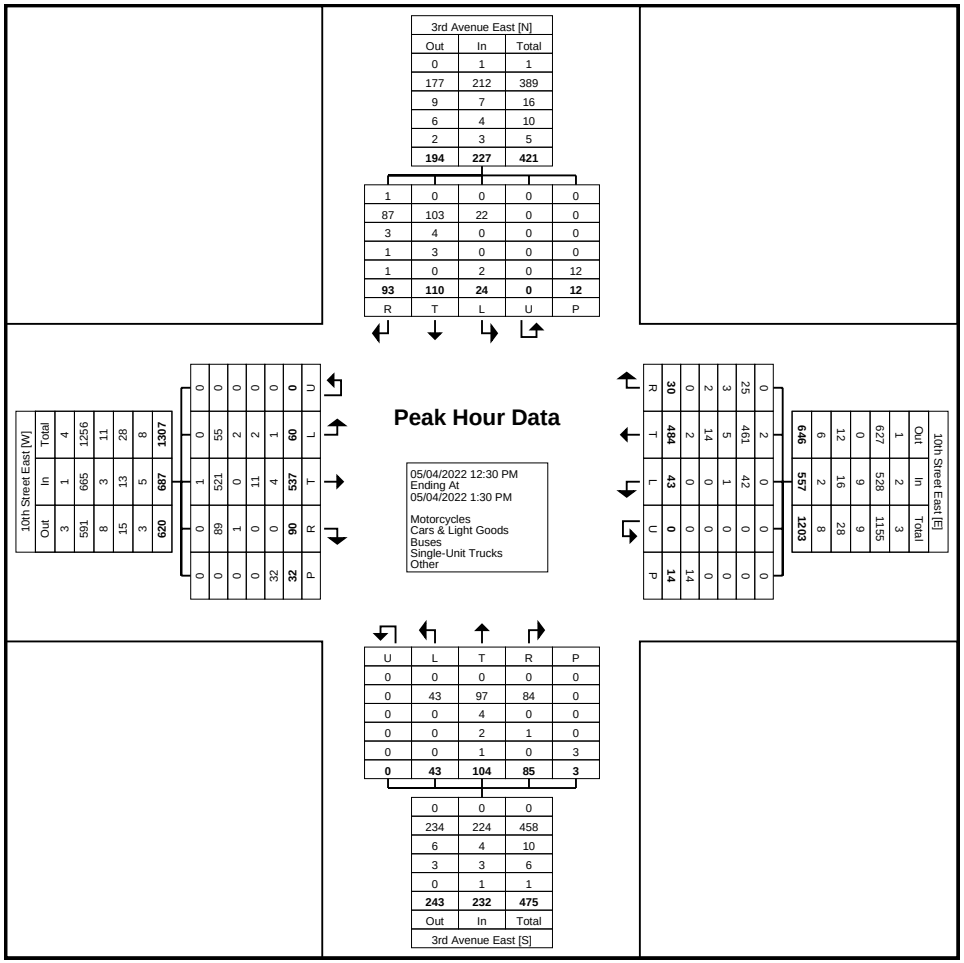
Turning Movement Peak Hour Data (12:30 PM)

Start Time	10th Street East Eastbound						10th Street East Westbound						3rd Avenue East Northbound						3rd Avenue East Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
12:30 PM	16	136	26	0	5	178	5	121	8	0	1	134	8	23	20	0	1	51	3	30	21	0	6	54	417
12:45 PM	16	132	25	0	10	173	17	127	8	0	5	152	11	33	23	0	2	67	3	28	25	0	1	56	448
1:00 PM	10	139	16	0	9	165	10	109	9	0	5	128	12	19	19	0	0	50	10	22	23	0	1	55	398
1:15 PM	18	130	23	0	8	171	11	127	5	0	3	143	12	29	23	0	0	64	8	30	24	0	4	62	440
Total	60	537	90	0	32	687	43	484	30	0	14	557	43	104	85	0	3	232	24	110	93	0	12	227	1703
Approach %	8.7	78.2	13.1	0.0	-	-	7.7	86.9	5.4	0.0	-	-	18.5	44.8	36.6	0.0	-	-	10.6	48.5	41.0	0.0	-	-	-
Total %	3.5	31.5	5.3	0.0	-	40.3	2.5	28.4	1.8	0.0	-	32.7	2.5	6.1	5.0	0.0	-	13.6	1.4	6.5	5.5	0.0	-	13.3	-
PHF	0.833	0.966	0.865	0.000	-	0.965	0.632	0.953	0.833	0.000	-	0.916	0.896	0.788	0.924	0.000	-	0.866	0.600	0.917	0.930	0.000	-	0.915	0.950
Motorcycles	0	1	0	0	-	1	0	2	0	0	-	2	0	0	0	0	-	0	0	0	1	0	-	1	4
% Motorcycles	0.0	0.2	0.0	-	-	0.1	0.0	0.4	0.0	-	-	0.4	0.0	0.0	0.0	-	-	0.0	0.0	0.0	1.1	-	-	0.4	0.2
Cars & Light Goods	55	521	89	0	-	665	42	461	25	0	-	528	43	97	84	0	-	224	22	103	87	0	-	212	1629
% Cars & Light Goods	91.7	97.0	98.9	-	-	96.8	97.7	95.2	83.3	-	-	94.8	100.0	93.3	98.8	-	-	96.6	91.7	93.6	93.5	-	-	93.4	95.7
Buses	2	0	1	0	-	3	1	5	3	0	-	9	0	4	0	0	-	4	0	4	3	0	-	7	23
% Buses	3.3	0.0	1.1	-	-	0.4	2.3	1.0	10.0	-	-	1.6	0.0	3.8	0.0	-	-	1.7	0.0	3.6	3.2	-	-	3.1	1.4
Single-Unit Trucks	2	11	0	0	-	13	0	14	2	0	-	16	0	2	1	0	-	3	0	3	1	0	-	4	36
% Single-Unit Trucks	3.3	2.0	0.0	-	-	1.9	0.0	2.9	6.7	-	-	2.9	0.0	1.9	1.2	-	-	1.3	0.0	2.7	1.1	-	-	1.8	2.1
Articulated Trucks	1	4	0	0	-	5	0	2	0	0	-	2	0	1	0	0	-	1	2	0	1	0	-	3	11
% Articulated Trucks	1.7	0.7	0.0	-	-	0.7	0.0	0.4	0.0	-	-	0.4	0.0	1.0	0.0	-	-	0.4	8.3	0.0	1.1	-	-	1.3	0.6
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	6.3	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	30	-	-	-	-	-	14	-	-	-	-	-	3	-	-	-	-	-	12	-	-
% Pedestrians	-	-	-	-	93.8	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: 3rd Avenue East & 10th Street East
Site Code: 220220
Start Date: 05/04/2022



Turning Movement Peak Hour Data Plot (12:30 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: 3rd Avenue East & 10th Street East
Site Code: 220220
Start Date: 05/04/2022

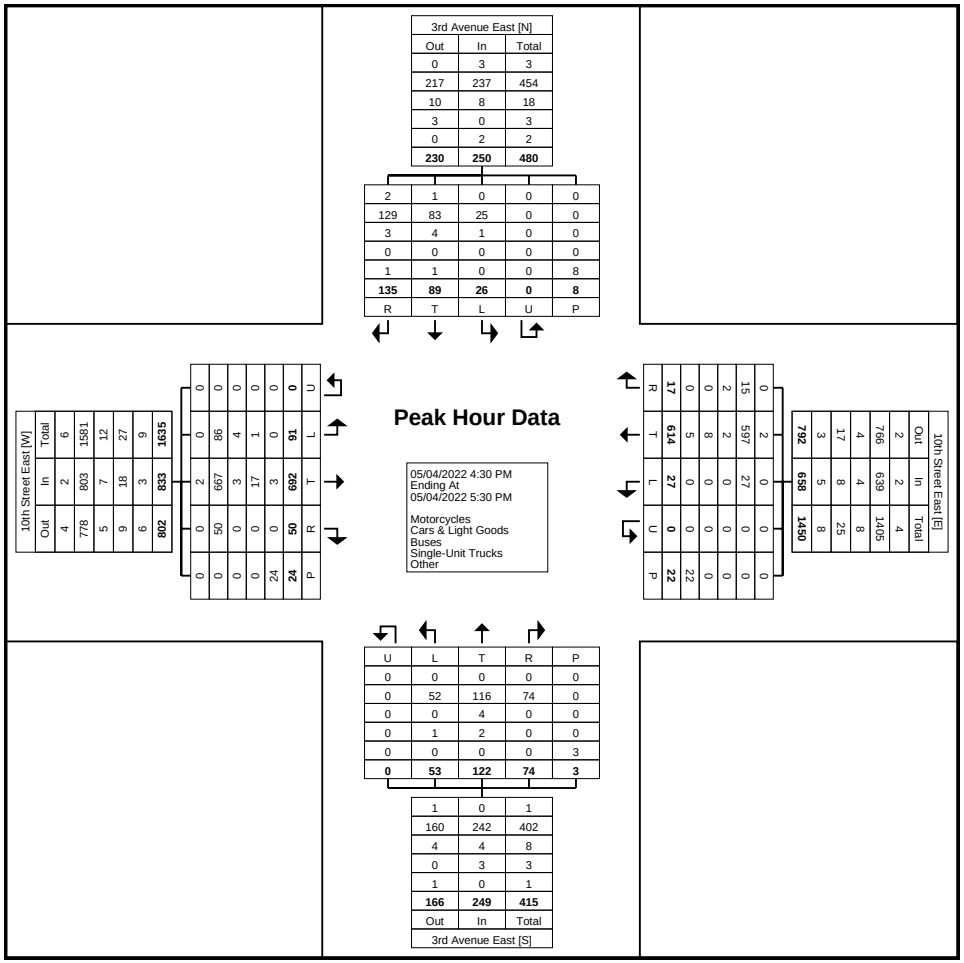
Turning Movement Peak Hour Data (4:30 PM)

Start Time	10th Street East Eastbound						10th Street East Westbound						3rd Avenue East Northbound						3rd Avenue East Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
4:30 PM	17	159	11	0	6	187	7	149	3	0	5	159	19	36	27	0	0	82	5	30	34	0	1	69	497
4:45 PM	23	192	11	0	6	226	5	149	6	0	3	160	10	29	15	0	1	54	1	22	24	0	1	47	487
5:00 PM	25	159	16	0	7	200	8	156	3	0	9	167	15	35	17	0	2	67	13	19	42	0	3	74	508
5:15 PM	26	182	12	0	5	220	7	160	5	0	5	172	9	22	15	0	0	46	7	18	35	0	3	60	498
Total	91	692	50	0	24	833	27	614	17	0	22	658	53	122	74	0	3	249	26	89	135	0	8	250	1990
Approach %	10.9	83.1	6.0	0.0	-	-	4.1	93.3	2.6	0.0	-	-	21.3	49.0	29.7	0.0	-	-	10.4	35.6	54.0	0.0	-	-	-
Total %	4.6	34.8	2.5	0.0	-	41.9	1.4	30.9	0.9	0.0	-	33.1	2.7	6.1	3.7	0.0	-	12.5	1.3	4.5	6.8	0.0	-	12.6	-
PHF	0.875	0.901	0.781	0.000	-	0.921	0.844	0.959	0.708	0.000	-	0.956	0.697	0.847	0.685	0.000	-	0.759	0.500	0.742	0.804	0.000	-	0.845	0.979
Motorcycles	0	2	0	0	-	2	0	2	0	0	-	2	0	0	0	0	-	0	0	1	2	0	-	3	7
% Motorcycles	0.0	0.3	0.0	-	-	0.2	0.0	0.3	0.0	-	-	0.3	0.0	0.0	0.0	-	-	0.0	0.0	1.1	1.5	-	-	1.2	0.4
Cars & Light Goods	86	667	50	0	-	803	27	597	15	0	-	639	52	116	74	0	-	242	25	83	129	0	-	237	1921
% Cars & Light Goods	94.5	96.4	100.0	-	-	96.4	100.0	97.2	88.2	-	-	97.1	98.1	95.1	100.0	-	-	97.2	96.2	93.3	95.6	-	-	94.8	96.5
Buses	4	3	0	0	-	7	0	2	2	0	-	4	0	4	0	0	-	4	1	4	3	0	-	8	23
% Buses	4.4	0.4	0.0	-	-	0.8	0.0	0.3	11.8	-	-	0.6	0.0	3.3	0.0	-	-	1.6	3.8	4.5	2.2	-	-	3.2	1.2
Single-Unit Trucks	1	17	0	0	-	18	0	8	0	0	-	8	1	2	0	0	-	3	0	0	0	0	-	0	29
% Single-Unit Trucks	1.1	2.5	0.0	-	-	2.2	0.0	1.3	0.0	-	-	1.2	1.9	1.6	0.0	-	-	1.2	0.0	0.0	0.0	-	-	0.0	1.5
Articulated Trucks	0	3	0	0	-	3	0	5	0	0	-	5	0	0	0	0	-	0	0	0	1	0	-	1	9
% Articulated Trucks	0.0	0.4	0.0	-	-	0.4	0.0	0.8	0.0	-	-	0.8	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.7	-	-	0.4	0.5
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	1
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	1.1	0.0	-	-	0.4	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	4.5	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	24	-	-	-	-	-	21	-	-	-	-	-	3	-	-	-	-	-	8	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	95.5	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: 3rd Avenue East & 10th Street East
Site Code: 220220
Start Date: 05/04/2022



Turning Movement Peak Hour Data Plot (4:30 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: 32nd Street & East Bayshore Road
Site Code: 220220
Start Date: 05/04/2022

Turning Movement Data

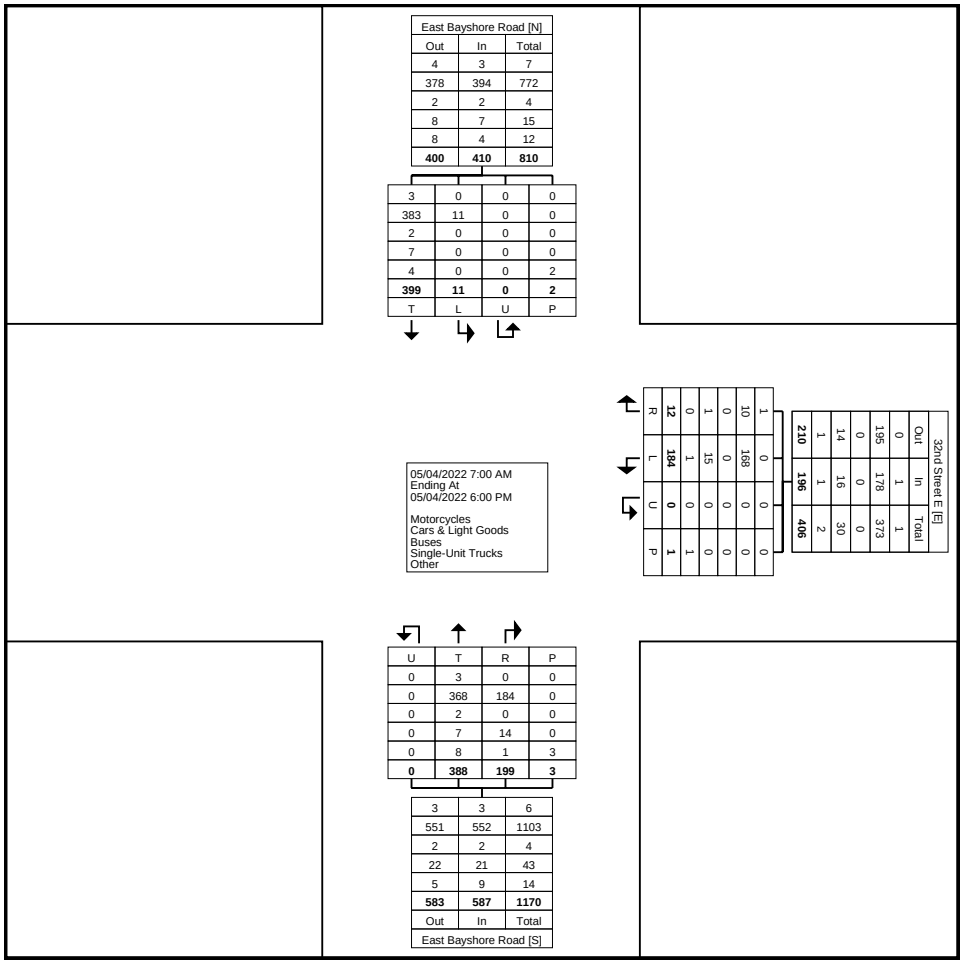
Start Time	32nd Street E Westbound					East Bayshore Road Northbound					East Bayshore Road Southbound					
	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Int. Total
7:00 AM	0	1	0	0	1	7	2	0	0	9	1	8	0	0	9	19
7:15 AM	4	0	0	0	4	7	3	0	0	10	0	9	0	0	9	23
7:30 AM	4	1	0	0	5	3	2	0	0	5	0	18	0	0	18	28
7:45 AM	5	0	0	0	5	1	3	0	0	4	1	7	0	0	8	17
Hourly Total	13	2	0	0	15	18	10	0	0	28	2	42	0	0	44	87
8:00 AM	5	0	0	0	5	2	8	0	0	10	0	9	0	0	9	24
8:15 AM	3	0	0	0	3	5	10	0	0	15	0	34	0	0	34	52
8:30 AM	5	0	0	0	5	9	5	0	0	14	0	19	0	0	19	38
8:45 AM	2	0	0	0	2	13	8	0	0	21	0	18	0	0	18	41
Hourly Total	15	0	0	0	15	29	31	0	0	60	0	80	0	0	80	155
9:00 AM	4	2	0	0	6	11	12	0	0	23	0	13	0	0	13	42
9:15 AM	6	1	0	0	7	9	5	0	0	14	0	9	0	0	9	30
9:30 AM	13	0	0	0	13	13	3	0	0	16	0	18	0	0	18	47
9:45 AM	8	0	0	0	8	8	3	0	0	11	2	9	0	0	11	30
Hourly Total	31	3	0	0	34	41	23	0	0	64	2	49	0	0	51	149
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:30 AM	6	0	0	0	6	7	4	0	0	11	0	6	0	0	6	23
11:45 AM	4	0	0	0	4	9	2	0	1	11	0	11	0	0	11	26
Hourly Total	10	0	0	0	10	16	6	0	1	22	0	17	0	0	17	49
12:00 PM	1	0	0	0	1	9	6	0	2	15	0	9	0	0	9	25
12:15 PM	4	0	0	0	4	18	2	0	0	20	0	12	0	0	12	36
12:30 PM	6	0	0	0	6	10	7	0	0	17	0	9	0	0	9	32
12:45 PM	2	0	0	0	2	17	5	0	0	22	1	17	0	0	18	42
Hourly Total	13	0	0	0	13	54	20	0	2	74	1	47	0	0	48	135
1:00 PM	2	0	0	0	2	6	3	0	0	9	0	11	0	0	11	22
1:15 PM	0	1	0	0	1	11	5	0	0	16	0	16	0	0	16	33
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	2	1	0	0	3	17	8	0	0	25	0	27	0	0	27	55
3:00 PM	11	0	0	0	11	12	2	0	0	14	0	18	0	0	18	43
3:15 PM	8	0	0	0	8	11	8	0	0	19	0	12	0	0	12	39
3:30 PM	8	0	0	0	8	17	8	0	0	25	1	9	0	0	10	43
3:45 PM	11	0	0	0	11	21	15	0	0	36	0	11	0	0	11	58
Hourly Total	38	0	0	0	38	61	33	0	0	94	1	50	0	0	51	183
4:00 PM	12	1	0	0	13	15	9	0	0	24	1	7	0	0	8	45
4:15 PM	4	1	0	0	5	19	13	0	0	32	0	10	0	0	10	47
4:30 PM	5	0	0	1	5	23	5	0	0	28	1	12	0	0	13	46

4:45 PM	6	0	0	0	6	23	7	0	0	30	1	9	0	0	10	46
Hourly Total	27	2	0	1	29	80	34	0	0	114	3	38	0	0	41	184
5:00 PM	9	1	0	0	10	23	13	0	0	36	1	11	0	0	12	58
5:15 PM	13	1	0	0	14	24	7	0	0	31	1	11	0	2	12	57
5:30 PM	5	1	0	0	6	16	7	0	0	23	0	11	0	0	11	40
5:45 PM	8	1	0	0	9	9	7	0	0	16	0	16	0	0	16	41
Hourly Total	35	4	0	0	39	72	34	0	0	106	2	49	0	2	51	196
Grand Total	184	12	0	1	196	388	199	0	3	587	11	399	0	2	410	1193
Approach %	93.9	6.1	0.0	-	-	66.1	33.9	0.0	-	-	2.7	97.3	0.0	-	-	-
Total %	15.4	1.0	0.0	-	16.4	32.5	16.7	0.0	-	49.2	0.9	33.4	0.0	-	34.4	-
Motorcycles	0	1	0	-	1	3	0	0	-	3	0	3	0	-	3	7
% Motorcycles	0.0	8.3	-	-	0.5	0.8	0.0	-	-	0.5	0.0	0.8	-	-	0.7	0.6
Cars & Light Goods	168	10	0	-	178	368	184	0	-	552	11	383	0	-	394	1124
% Cars & Light Goods	91.3	83.3	-	-	90.8	94.8	92.5	-	-	94.0	100.0	96.0	-	-	96.1	94.2
Buses	0	0	0	-	0	2	0	0	-	2	0	2	0	-	2	4
% Buses	0.0	0.0	-	-	0.0	0.5	0.0	-	-	0.3	0.0	0.5	-	-	0.5	0.3
Single-Unit Trucks	15	1	0	-	16	7	14	0	-	21	0	7	0	-	7	44
% Single-Unit Trucks	8.2	8.3	-	-	8.2	1.8	7.0	-	-	3.6	0.0	1.8	-	-	1.7	3.7
Articulated Trucks	1	0	0	-	1	4	1	0	-	5	0	2	0	-	2	8
% Articulated Trucks	0.5	0.0	-	-	0.5	1.0	0.5	-	-	0.9	0.0	0.5	-	-	0.5	0.7
Bicycles on Road	0	0	0	-	0	4	0	0	-	4	0	2	0	-	2	6
% Bicycles on Road	0.0	0.0	-	-	0.0	1.0	0.0	-	-	0.7	0.0	0.5	-	-	0.5	0.5
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	1	-	-	-	-	3	-	-	-	-	2	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: 32nd Street & East Bayshore Road
Site Code: 220220
Start Date: 05/04/2022



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: 32nd Street & East Bayshore Road
Site Code: 220220
Start Date: 05/04/2022

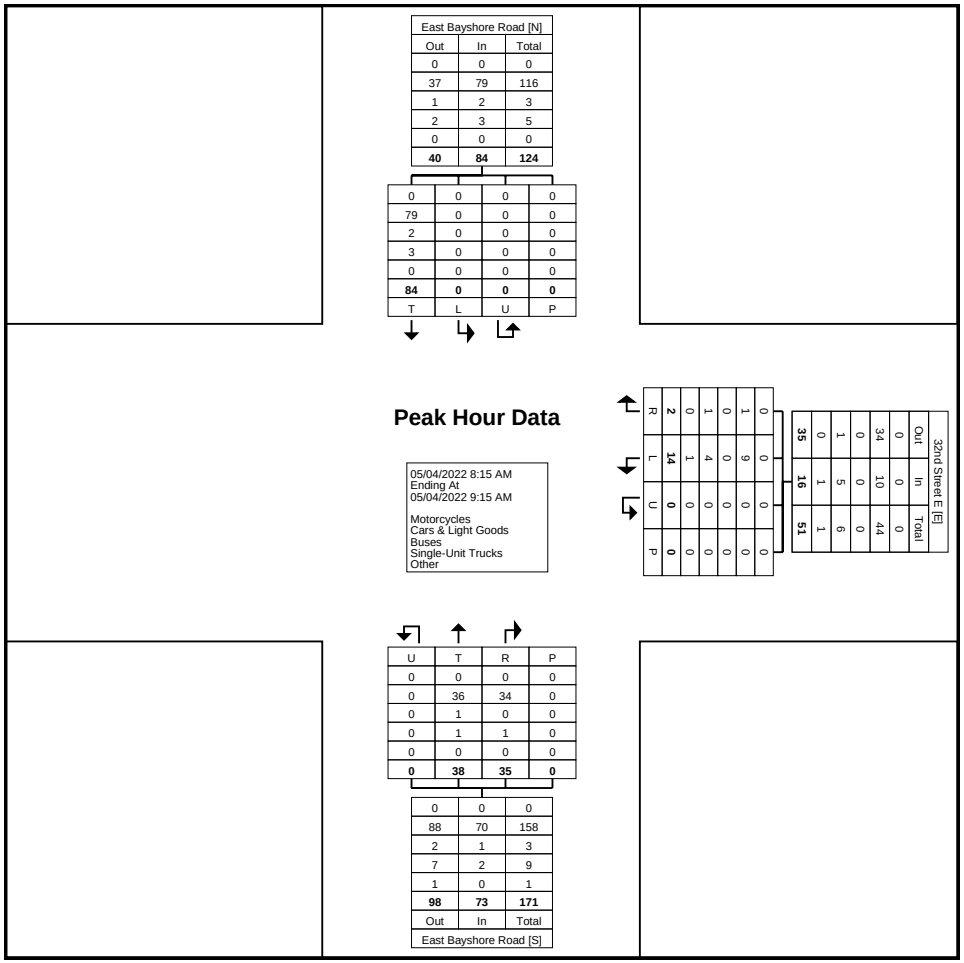
Turning Movement Peak Hour Data (8:15 AM)

Start Time	32nd Street E Westbound					East Bayshore Road Northbound					East Bayshore Road Southbound					
	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Int. Total
8:15 AM	3	0	0	0	3	5	10	0	0	15	0	34	0	0	34	52
8:30 AM	5	0	0	0	5	9	5	0	0	14	0	19	0	0	19	38
8:45 AM	2	0	0	0	2	13	8	0	0	21	0	18	0	0	18	41
9:00 AM	4	2	0	0	6	11	12	0	0	23	0	13	0	0	13	42
Total	14	2	0	0	16	38	35	0	0	73	0	84	0	0	84	173
Approach %	87.5	12.5	0.0	-	-	52.1	47.9	0.0	-	-	0.0	100.0	0.0	-	-	-
Total %	8.1	1.2	0.0	-	9.2	22.0	20.2	0.0	-	42.2	0.0	48.6	0.0	-	48.6	-
PHF	0.700	0.250	0.000	-	0.667	0.731	0.729	0.000	-	0.793	0.000	0.618	0.000	-	0.618	0.832
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	-	0.0	-	-	0.0	0.0
Cars & Light Goods	9	1	0	-	10	36	34	0	-	70	0	79	0	-	79	159
% Cars & Light Goods	64.3	50.0	-	-	62.5	94.7	97.1	-	-	95.9	-	94.0	-	-	94.0	91.9
Buses	0	0	0	-	0	1	0	0	-	1	0	2	0	-	2	3
% Buses	0.0	0.0	-	-	0.0	2.6	0.0	-	-	1.4	-	2.4	-	-	2.4	1.7
Single-Unit Trucks	4	1	0	-	5	1	1	0	-	2	0	3	0	-	3	10
% Single-Unit Trucks	28.6	50.0	-	-	31.3	2.6	2.9	-	-	2.7	-	3.6	-	-	3.6	5.8
Articulated Trucks	1	0	0	-	1	0	0	0	-	0	0	0	0	-	0	1
% Articulated Trucks	7.1	0.0	-	-	6.3	0.0	0.0	-	-	0.0	-	0.0	-	-	0.0	0.6
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	-	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: 32nd Street & East Bayshore Road
Site Code: 220220
Start Date: 05/04/2022



Turning Movement Peak Hour Data Plot (8:15 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: 32nd Street & East Bayshore Road
Site Code: 220220
Start Date: 05/04/2022

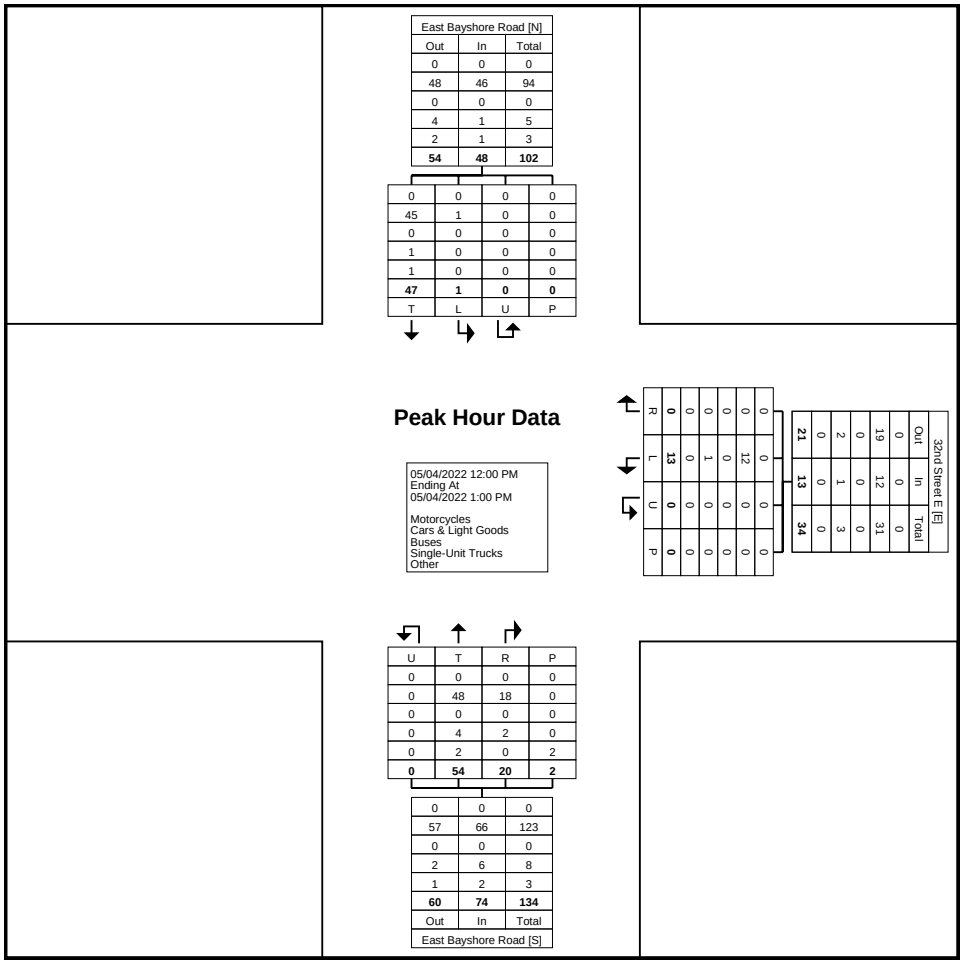
Turning Movement Peak Hour Data (12:00 PM)

Start Time	32nd Street E Westbound					East Bayshore Road Northbound					East Bayshore Road Southbound					
	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Int. Total
12:00 PM	1	0	0	0	1	9	6	0	2	15	0	9	0	0	9	25
12:15 PM	4	0	0	0	4	18	2	0	0	20	0	12	0	0	12	36
12:30 PM	6	0	0	0	6	10	7	0	0	17	0	9	0	0	9	32
12:45 PM	2	0	0	0	2	17	5	0	0	22	1	17	0	0	18	42
Total	13	0	0	0	13	54	20	0	2	74	1	47	0	0	48	135
Approach %	100.0	0.0	0.0	-	-	73.0	27.0	0.0	-	-	2.1	97.9	0.0	-	-	-
Total %	9.6	0.0	0.0	-	9.6	40.0	14.8	0.0	-	54.8	0.7	34.8	0.0	-	35.6	-
PHF	0.542	0.000	0.000	-	0.542	0.750	0.714	0.000	-	0.841	0.250	0.691	0.000	-	0.667	0.804
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	0.0	-	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	12	0	0	-	12	48	18	0	-	66	1	45	0	-	46	124
% Cars & Light Goods	92.3	-	-	-	92.3	88.9	90.0	-	-	89.2	100.0	95.7	-	-	95.8	91.9
Buses	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Buses	0.0	-	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Single-Unit Trucks	1	0	0	-	1	4	2	0	-	6	0	1	0	-	1	8
% Single-Unit Trucks	7.7	-	-	-	7.7	7.4	10.0	-	-	8.1	0.0	2.1	-	-	2.1	5.9
Articulated Trucks	0	0	0	-	0	2	0	0	-	2	0	1	0	-	1	3
% Articulated Trucks	0.0	-	-	-	0.0	3.7	0.0	-	-	2.7	0.0	2.1	-	-	2.1	2.2
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	-	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	2	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: 32nd Street & East Bayshore Road
Site Code: 220220
Start Date: 05/04/2022



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

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: 32nd Street & East Bayshore Road
Site Code: 220220
Start Date: 05/04/2022

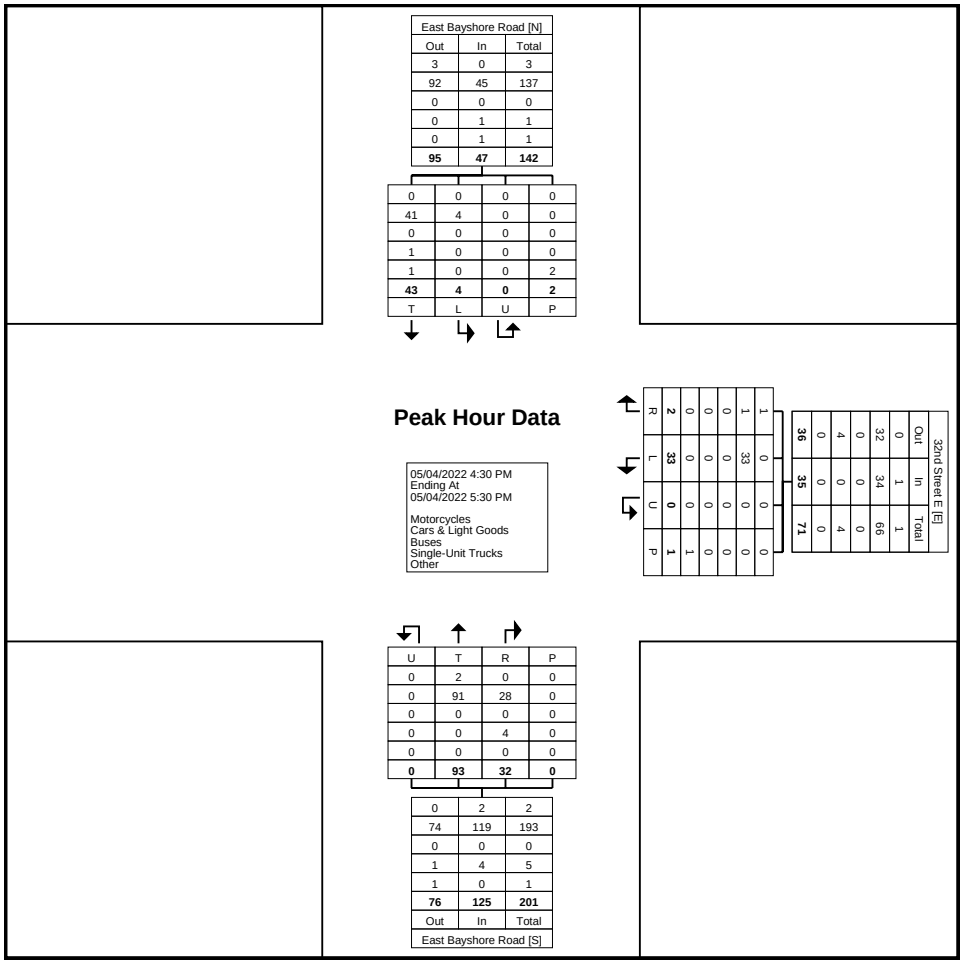
Turning Movement Peak Hour Data (4:30 PM)

Start Time	32nd Street E Westbound					East Bayshore Road Northbound					East Bayshore Road Southbound					
	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Int. Total
4:30 PM	5	0	0	1	5	23	5	0	0	28	1	12	0	0	13	46
4:45 PM	6	0	0	0	6	23	7	0	0	30	1	9	0	0	10	46
5:00 PM	9	1	0	0	10	23	13	0	0	36	1	11	0	0	12	58
5:15 PM	13	1	0	0	14	24	7	0	0	31	1	11	0	2	12	57
Total	33	2	0	1	35	93	32	0	0	125	4	43	0	2	47	207
Approach %	94.3	5.7	0.0	-	-	74.4	25.6	0.0	-	-	8.5	91.5	0.0	-	-	-
Total %	15.9	1.0	0.0	-	16.9	44.9	15.5	0.0	-	60.4	1.9	20.8	0.0	-	22.7	-
PHF	0.635	0.500	0.000	-	0.625	0.969	0.615	0.000	-	0.868	1.000	0.896	0.000	-	0.904	0.892
Motorcycles	0	1	0	-	1	2	0	0	-	2	0	0	0	-	0	3
% Motorcycles	0.0	50.0	-	-	2.9	2.2	0.0	-	-	1.6	0.0	0.0	-	-	0.0	1.4
Cars & Light Goods	33	1	0	-	34	91	28	0	-	119	4	41	0	-	45	198
% Cars & Light Goods	100.0	50.0	-	-	97.1	97.8	87.5	-	-	95.2	100.0	95.3	-	-	95.7	95.7
Buses	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Buses	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Single-Unit Trucks	0	0	0	-	0	0	4	0	-	4	0	1	0	-	1	5
% Single-Unit Trucks	0.0	0.0	-	-	0.0	0.0	12.5	-	-	3.2	0.0	2.3	-	-	2.1	2.4
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	1	0	-	1	1
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	2.3	-	-	2.1	0.5
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	1	-	-	-	-	0	-	-	-	-	2	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: 32nd Street & East Bayshore Road
Site Code: 220220
Start Date: 05/04/2022



Turning Movement Peak Hour Data Plot (4:30 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: East Bayshore Road & 3rd Avenue
Site Code: 220220
Start Date: 05/04/2022

Turning Movement Data

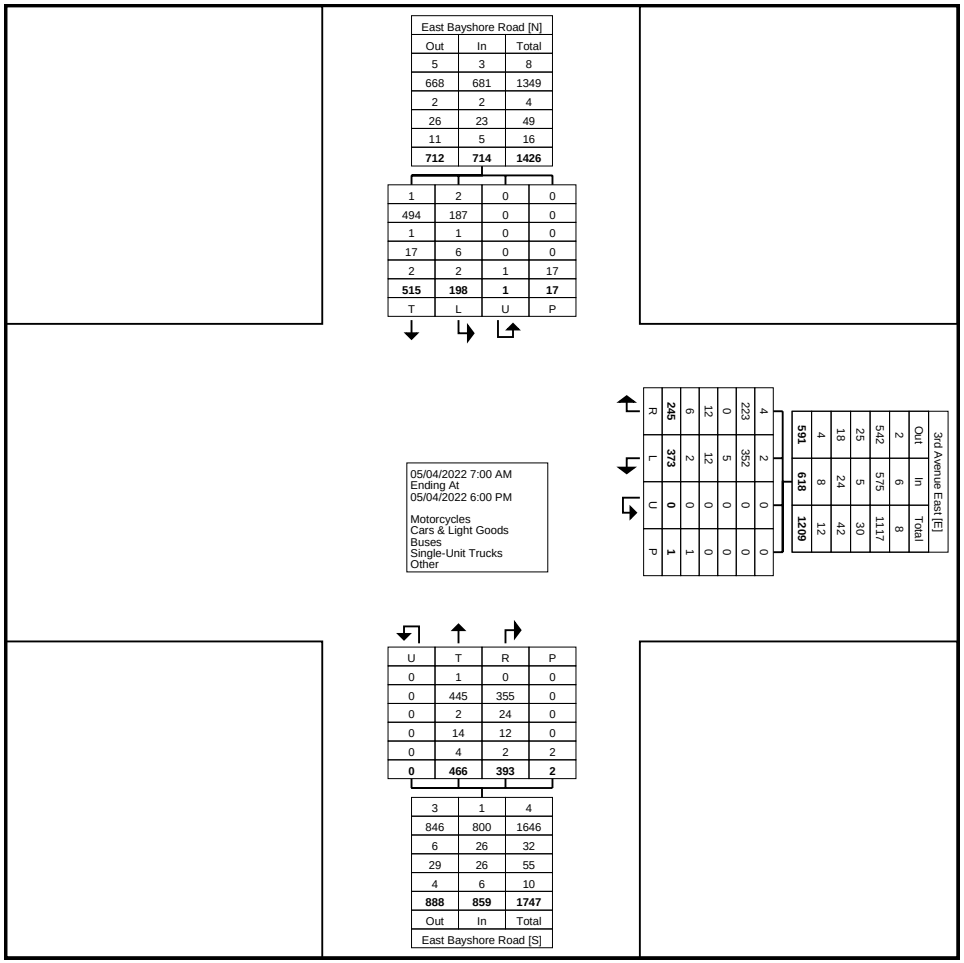
Start Time	3rd Avenue East Westbound					East Bayshore Road Northbound					East Bayshore Road Southbound					
	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Int. Total
7:00 AM	3	12	0	0	15	21	2	0	0	23	2	5	0	0	7	45
7:15 AM	5	13	0	0	18	29	4	0	0	33	4	13	0	0	17	68
7:30 AM	9	4	0	0	13	9	11	0	0	20	3	18	0	1	21	54
7:45 AM	13	3	0	0	16	6	8	0	0	14	3	13	0	1	16	46
Hourly Total	30	32	0	0	62	65	25	0	0	90	12	49	0	2	61	213
8:00 AM	10	3	0	0	13	6	10	0	0	16	5	8	0	0	13	42
8:15 AM	23	7	0	0	30	11	16	0	0	27	9	24	0	3	33	90
8:30 AM	26	6	0	0	32	9	24	0	0	33	10	18	0	0	28	93
8:45 AM	20	4	0	0	24	17	23	0	0	40	3	18	0	0	21	85
Hourly Total	79	20	0	0	99	43	73	0	0	116	27	68	0	3	95	310
9:00 AM	8	6	0	0	14	18	11	0	0	29	7	9	0	0	16	59
9:15 AM	4	5	0	1	9	12	11	0	0	23	3	15	0	1	18	50
9:30 AM	4	6	0	0	10	14	5	0	0	19	9	23	0	0	32	61
9:45 AM	9	2	0	0	11	9	9	0	0	18	7	12	0	0	19	48
Hourly Total	25	19	0	1	44	53	36	0	0	89	26	59	0	1	85	218
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:30 AM	6	1	0	0	7	6	11	0	0	17	5	10	1	0	16	40
11:45 AM	5	6	0	0	11	7	4	0	0	11	7	9	0	0	16	38
Hourly Total	11	7	0	0	18	13	15	0	0	28	12	19	1	0	32	78
12:00 PM	10	7	0	0	17	13	11	0	0	24	6	15	0	0	21	62
12:15 PM	13	13	0	0	26	17	9	0	0	26	5	13	0	1	18	70
12:30 PM	15	7	0	0	22	15	9	0	0	24	7	9	0	0	16	62
12:45 PM	14	6	0	0	20	17	8	0	0	25	3	15	0	0	18	63
Hourly Total	52	33	0	0	85	62	37	0	0	99	21	52	0	1	73	257
1:00 PM	5	3	0	0	8	10	8	0	0	18	2	12	0	0	14	40
1:15 PM	7	10	0	0	17	9	15	0	0	24	6	15	0	0	21	62
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	12	13	0	0	25	19	23	0	0	42	8	27	0	0	35	102
3:00 PM	8	5	0	0	13	8	16	0	0	24	5	23	0	0	28	65
3:15 PM	33	13	0	0	46	10	16	0	0	26	6	17	0	0	23	95
3:30 PM	16	10	0	0	26	16	15	0	1	31	5	13	0	0	18	75
3:45 PM	12	12	0	0	24	25	15	0	0	40	10	14	0	0	24	88
Hourly Total	69	40	0	0	109	59	62	0	1	121	26	67	0	0	93	323
4:00 PM	12	6	0	0	18	20	13	0	0	33	25	64	0	1	89	140
4:15 PM	8	20	0	0	28	12	13	0	0	25	6	14	0	1	20	73
4:30 PM	18	11	0	0	29	21	17	0	0	38	7	14	0	2	21	88

4:45 PM	9	12	0	0	21	21	20	0	0	41	2	15	0	3	17	79
Hourly Total	47	49	0	0	96	74	63	0	0	137	40	107	0	7	147	380
5:00 PM	15	9	0	0	24	29	15	0	0	44	6	18	0	0	24	92
5:15 PM	14	7	0	0	21	19	16	0	0	35	8	19	0	0	27	83
5:30 PM	12	9	0	0	21	18	17	0	0	35	4	14	0	0	18	74
5:45 PM	7	7	0	0	14	12	11	0	1	23	8	16	0	3	24	61
Hourly Total	48	32	0	0	80	78	59	0	1	137	26	67	0	3	93	310
Grand Total	373	245	0	1	618	466	393	0	2	859	198	515	1	17	714	2191
Approach %	60.4	39.6	0.0	-	-	54.2	45.8	0.0	-	-	27.7	72.1	0.1	-	-	-
Total %	17.0	11.2	0.0	-	28.2	21.3	17.9	0.0	-	39.2	9.0	23.5	0.0	-	32.6	-
Motorcycles	2	4	0	-	6	1	0	0	-	1	2	1	0	-	3	10
% Motorcycles	0.5	1.6	-	-	1.0	0.2	0.0	-	-	0.1	1.0	0.2	0.0	-	0.4	0.5
Cars & Light Goods	352	223	0	-	575	445	355	0	-	800	187	494	0	-	681	2056
% Cars & Light Goods	94.4	91.0	-	-	93.0	95.5	90.3	-	-	93.1	94.4	95.9	0.0	-	95.4	93.8
Buses	5	0	0	-	5	2	24	0	-	26	1	1	0	-	2	33
% Buses	1.3	0.0	-	-	0.8	0.4	6.1	-	-	3.0	0.5	0.2	0.0	-	0.3	1.5
Single-Unit Trucks	12	12	0	-	24	14	12	0	-	26	6	17	0	-	23	73
% Single-Unit Trucks	3.2	4.9	-	-	3.9	3.0	3.1	-	-	3.0	3.0	3.3	0.0	-	3.2	3.3
Articulated Trucks	1	3	0	-	4	3	2	0	-	5	1	2	1	-	4	13
% Articulated Trucks	0.3	1.2	-	-	0.6	0.6	0.5	-	-	0.6	0.5	0.4	100.0	-	0.6	0.6
Bicycles on Road	1	3	0	-	4	1	0	0	-	1	1	0	0	-	1	6
% Bicycles on Road	0.3	1.2	-	-	0.6	0.2	0.0	-	-	0.1	0.5	0.0	0.0	-	0.1	0.3
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	1	-	-	-	-	3	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	50.0	-	-	-	-	17.6	-	-
Pedestrians	-	-	-	1	-	-	-	-	1	-	-	-	-	14	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	50.0	-	-	-	-	82.4	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: East Bayshore Road & 3rd Avenue
Site Code: 220220
Start Date: 05/04/2022



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: East Bayshore Road & 3rd Avenue
Site Code: 220220
Start Date: 05/04/2022

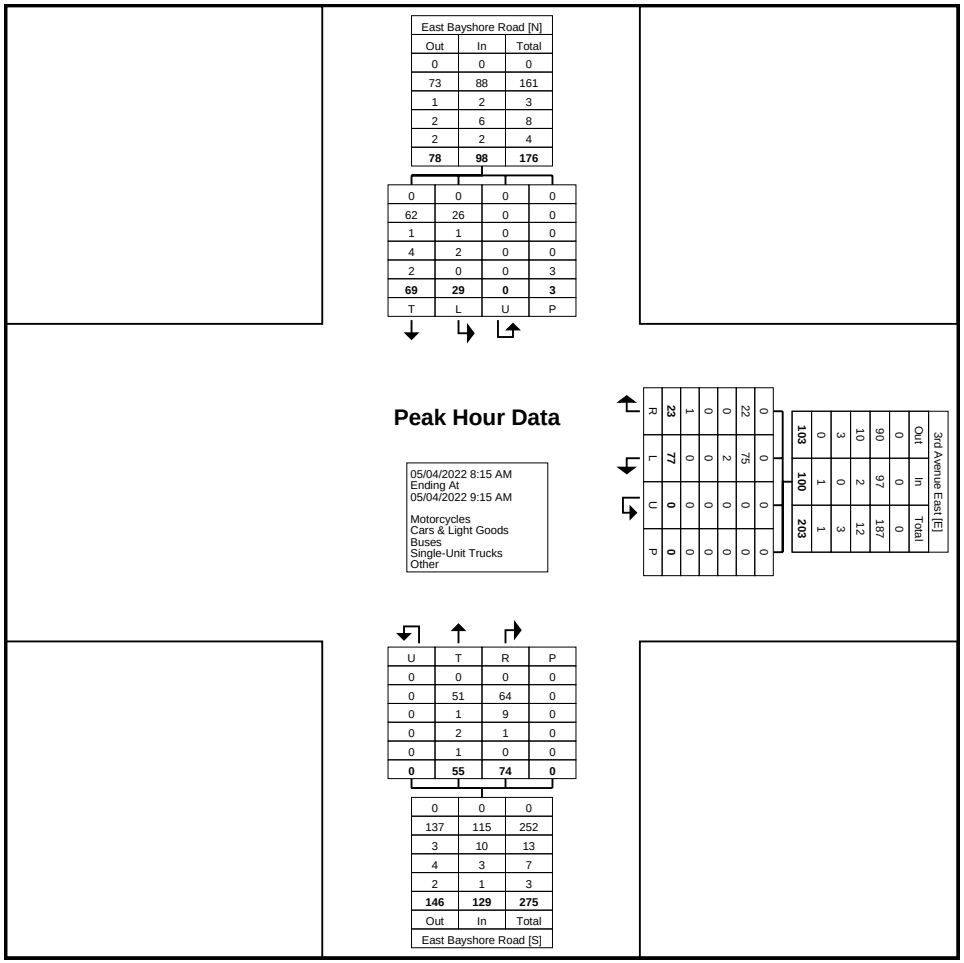
Turning Movement Peak Hour Data (8:15 AM)

Start Time	3rd Avenue East Westbound					East Bayshore Road Northbound					East Bayshore Road Southbound					
	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Int. Total
8:15 AM	23	7	0	0	30	11	16	0	0	27	9	24	0	3	33	90
8:30 AM	26	6	0	0	32	9	24	0	0	33	10	18	0	0	28	93
8:45 AM	20	4	0	0	24	17	23	0	0	40	3	18	0	0	21	85
9:00 AM	8	6	0	0	14	18	11	0	0	29	7	9	0	0	16	59
Total	77	23	0	0	100	55	74	0	0	129	29	69	0	3	98	327
Approach %	77.0	23.0	0.0	-	-	42.6	57.4	0.0	-	-	29.6	70.4	0.0	-	-	-
Total %	23.5	7.0	0.0	-	30.6	16.8	22.6	0.0	-	39.4	8.9	21.1	0.0	-	30.0	-
PHF	0.740	0.821	0.000	-	0.781	0.764	0.771	0.000	-	0.806	0.725	0.719	0.000	-	0.742	0.879
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	75	22	0	-	97	51	64	0	-	115	26	62	0	-	88	300
% Cars & Light Goods	97.4	95.7	-	-	97.0	92.7	86.5	-	-	89.1	89.7	89.9	-	-	89.8	91.7
Buses	2	0	0	-	2	1	9	0	-	10	1	1	0	-	2	14
% Buses	2.6	0.0	-	-	2.0	1.8	12.2	-	-	7.8	3.4	1.4	-	-	2.0	4.3
Single-Unit Trucks	0	0	0	-	0	2	1	0	-	3	2	4	0	-	6	9
% Single-Unit Trucks	0.0	0.0	-	-	0.0	3.6	1.4	-	-	2.3	6.9	5.8	-	-	6.1	2.8
Articulated Trucks	0	1	0	-	1	0	0	0	-	0	0	2	0	-	2	3
% Articulated Trucks	0.0	4.3	-	-	1.0	0.0	0.0	-	-	0.0	0.0	2.9	-	-	2.0	0.9
Bicycles on Road	0	0	0	-	0	1	0	0	-	1	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	-	-	0.0	1.8	0.0	-	-	0.8	0.0	0.0	-	-	0.0	0.3
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	66.7	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	33.3	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: East Bayshore Road & 3rd Avenue
Site Code: 220220
Start Date: 05/04/2022



Turning Movement Peak Hour Data Plot (8:15 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: East Bayshore Road & 3rd Avenue
Site Code: 220220
Start Date: 05/04/2022

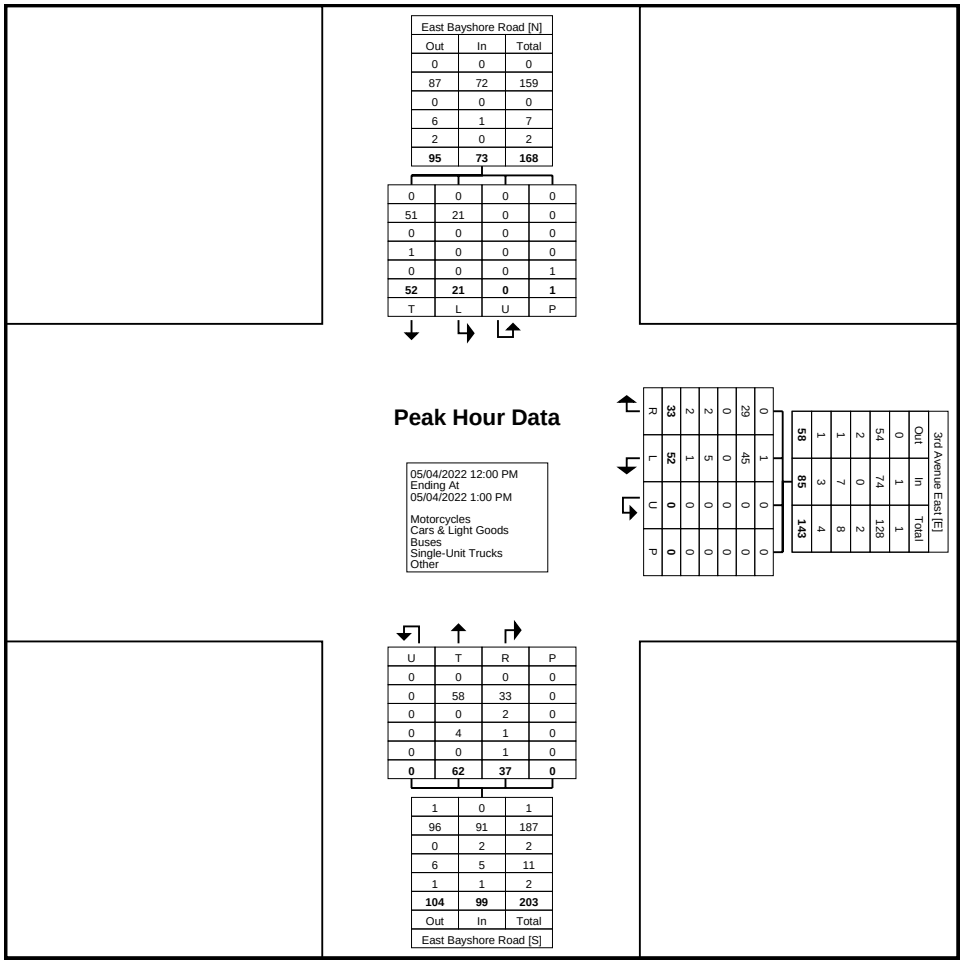
Turning Movement Peak Hour Data (12:00 PM)

Start Time	3rd Avenue East Westbound					East Bayshore Road Northbound					East Bayshore Road Southbound					
	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Int. Total
12:00 PM	10	7	0	0	17	13	11	0	0	24	6	15	0	0	21	62
12:15 PM	13	13	0	0	26	17	9	0	0	26	5	13	0	1	18	70
12:30 PM	15	7	0	0	22	15	9	0	0	24	7	9	0	0	16	62
12:45 PM	14	6	0	0	20	17	8	0	0	25	3	15	0	0	18	63
Total	52	33	0	0	85	62	37	0	0	99	21	52	0	1	73	257
Approach %	61.2	38.8	0.0	-	-	62.6	37.4	0.0	-	-	28.8	71.2	0.0	-	-	-
Total %	20.2	12.8	0.0	-	33.1	24.1	14.4	0.0	-	38.5	8.2	20.2	0.0	-	28.4	-
PHF	0.867	0.635	0.000	-	0.817	0.912	0.841	0.000	-	0.952	0.750	0.867	0.000	-	0.869	0.918
Motorcycles	1	0	0	-	1	0	0	0	-	0	0	0	0	-	0	1
% Motorcycles	1.9	0.0	-	-	1.2	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.4
Cars & Light Goods	45	29	0	-	74	58	33	0	-	91	21	51	0	-	72	237
% Cars & Light Goods	86.5	87.9	-	-	87.1	93.5	89.2	-	-	91.9	100.0	98.1	-	-	98.6	92.2
Buses	0	0	0	-	0	0	2	0	-	2	0	0	0	-	0	2
% Buses	0.0	0.0	-	-	0.0	0.0	5.4	-	-	2.0	0.0	0.0	-	-	0.0	0.8
Single-Unit Trucks	5	2	0	-	7	4	1	0	-	5	0	1	0	-	1	13
% Single-Unit Trucks	9.6	6.1	-	-	8.2	6.5	2.7	-	-	5.1	0.0	1.9	-	-	1.4	5.1
Articulated Trucks	1	1	0	-	2	0	1	0	-	1	0	0	0	-	0	3
% Articulated Trucks	1.9	3.0	-	-	2.4	0.0	2.7	-	-	1.0	0.0	0.0	-	-	0.0	1.2
Bicycles on Road	0	1	0	-	1	0	0	0	-	0	0	0	0	-	0	1
% Bicycles on Road	0.0	3.0	-	-	1.2	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.4
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: East Bayshore Road & 3rd Avenue
Site Code: 220220
Start Date: 05/04/2022



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

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: East Bayshore Road & 3rd Avenue
Site Code: 220220
Start Date: 05/04/2022

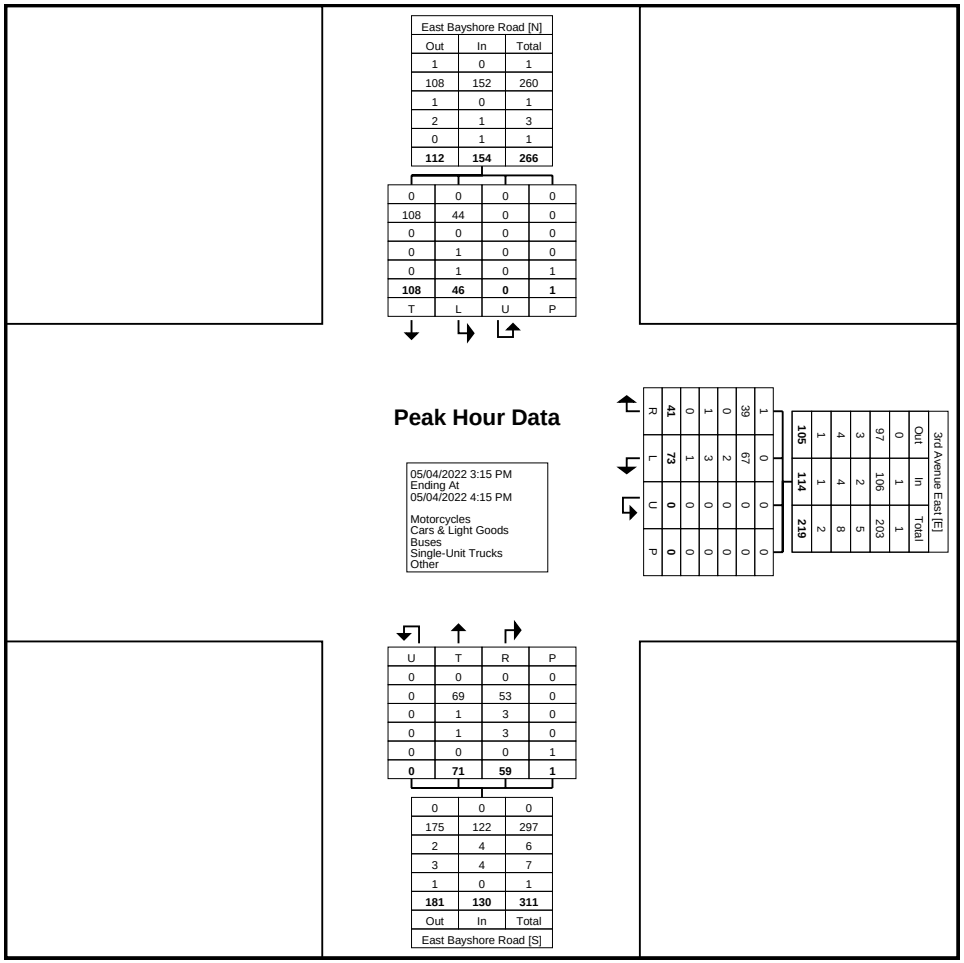
Turning Movement Peak Hour Data (3:15 PM)

Start Time	3rd Avenue East Westbound					East Bayshore Road Northbound					East Bayshore Road Southbound					
	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Int. Total
3:15 PM	33	13	0	0	46	10	16	0	0	26	6	17	0	0	23	95
3:30 PM	16	10	0	0	26	16	15	0	1	31	5	13	0	0	18	75
3:45 PM	12	12	0	0	24	25	15	0	0	40	10	14	0	0	24	88
4:00 PM	12	6	0	0	18	20	13	0	0	33	25	64	0	1	89	140
Total	73	41	0	0	114	71	59	0	1	130	46	108	0	1	154	398
Approach %	64.0	36.0	0.0	-	-	54.6	45.4	0.0	-	-	29.9	70.1	0.0	-	-	-
Total %	18.3	10.3	0.0	-	28.6	17.8	14.8	0.0	-	32.7	11.6	27.1	0.0	-	38.7	-
PHF	0.553	0.788	0.000	-	0.620	0.710	0.922	0.000	-	0.813	0.460	0.422	0.000	-	0.433	0.711
Motorcycles	0	1	0	-	1	0	0	0	-	0	0	0	0	-	0	1
% Motorcycles	0.0	2.4	-	-	0.9	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.3
Cars & Light Goods	67	39	0	-	106	69	53	0	-	122	44	108	0	-	152	380
% Cars & Light Goods	91.8	95.1	-	-	93.0	97.2	89.8	-	-	93.8	95.7	100.0	-	-	98.7	95.5
Buses	2	0	0	-	2	1	3	0	-	4	0	0	0	-	0	6
% Buses	2.7	0.0	-	-	1.8	1.4	5.1	-	-	3.1	0.0	0.0	-	-	0.0	1.5
Single-Unit Trucks	3	1	0	-	4	1	3	0	-	4	1	0	0	-	1	9
% Single-Unit Trucks	4.1	2.4	-	-	3.5	1.4	5.1	-	-	3.1	2.2	0.0	-	-	0.6	2.3
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	1	0	0	-	1	1
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	2.2	0.0	-	-	0.6	0.3
Bicycles on Road	1	0	0	-	1	0	0	0	-	0	0	0	0	-	0	1
% Bicycles on Road	1.4	0.0	-	-	0.9	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.3
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	1	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: East Bayshore Road & 3rd Avenue
Site Code: 220220
Start Date: 05/04/2022



Turning Movement Peak Hour Data Plot (3:15 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: 3rd Avenue E & 15th Street E
Site Code: 200036
Start Date: 02-12-2020

Turning Movement Data

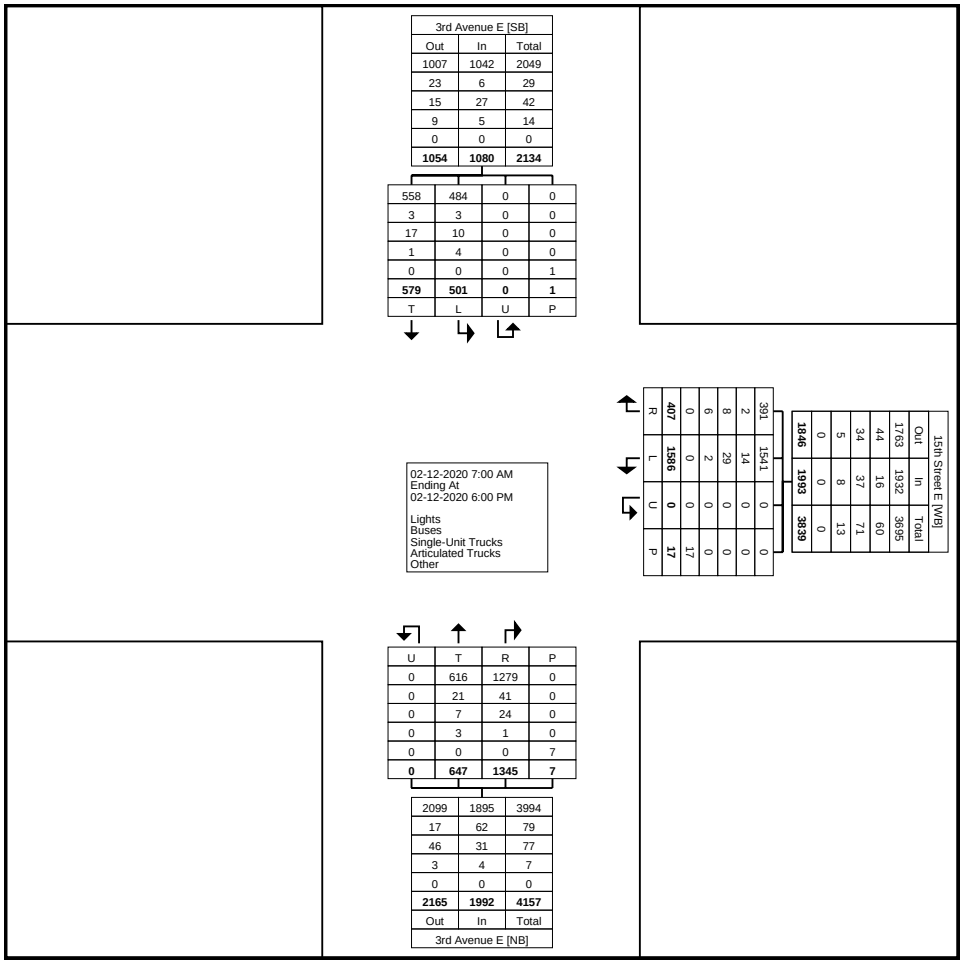
Start Time	15th Street E Westbound					3rd Avenue E Northbound					3rd Avenue E Southbound					
	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Int. Total
7:00 AM	20	6	0	0	26	25	15	0	0	40	7	11	0	0	18	84
7:15 AM	24	7	0	0	31	25	14	0	0	39	7	13	0	0	20	90
7:30 AM	27	10	0	0	37	15	24	0	0	39	12	9	0	1	21	97
7:45 AM	36	15	0	1	51	15	39	0	0	54	12	14	0	0	26	131
Hourly Total	107	38	0	1	145	80	92	0	0	172	38	47	0	1	85	402
8:00 AM	32	9	0	0	41	14	26	0	0	40	12	15	0	0	27	108
8:15 AM	42	21	0	0	63	17	45	0	4	62	15	19	0	0	34	159
8:30 AM	53	13	0	0	66	13	67	0	0	80	20	20	0	0	40	186
8:45 AM	50	12	0	0	62	24	51	0	0	75	15	19	0	0	34	171
Hourly Total	177	55	0	0	232	68	189	0	4	257	62	73	0	0	135	624
9:00 AM	50	10	0	1	60	17	34	0	0	51	11	13	0	0	24	135
9:15 AM	34	7	0	0	41	11	28	0	0	39	7	16	0	0	23	103
9:30 AM	42	11	0	0	53	11	34	0	0	45	14	16	0	0	30	128
9:45 AM	41	7	0	0	48	13	40	0	0	53	10	19	0	0	29	130
Hourly Total	167	35	0	1	202	52	136	0	0	188	42	64	0	0	106	496
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:30 AM	53	11	0	1	64	13	53	0	0	66	22	17	0	0	39	169
11:45 AM	58	13	0	1	71	10	39	0	0	49	20	17	0	0	37	157
Hourly Total	111	24	0	2	135	23	92	0	0	115	42	34	0	0	76	326
12:00 PM	42	11	0	0	53	18	53	0	0	71	21	21	0	0	42	166
12:15 PM	65	11	0	1	76	30	56	0	0	86	15	12	0	0	27	189
12:30 PM	66	14	0	0	80	27	53	0	0	80	21	15	0	0	36	196
12:45 PM	61	13	0	0	74	15	44	0	0	59	18	16	0	0	34	167
Hourly Total	234	49	0	1	283	90	206	0	0	296	75	64	0	0	139	718
1:00 PM	54	10	0	0	64	19	41	0	0	60	17	21	0	0	38	162
1:15 PM	69	8	0	0	77	16	49	0	0	65	12	9	0	0	21	163
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	123	18	0	0	141	35	90	0	0	125	29	30	0	0	59	325
3:00 PM	58	10	0	1	68	16	48	0	0	64	17	9	0	0	26	158
3:15 PM	75	12	0	3	87	18	42	0	2	60	10	11	0	0	21	168
3:30 PM	54	11	0	2	65	23	42	0	0	65	21	25	0	0	46	176
3:45 PM	52	11	0	0	63	22	41	0	0	63	19	20	0	0	39	165
Hourly Total	239	44	0	6	283	79	173	0	2	252	67	65	0	0	132	667
4:00 PM	66	11	0	0	77	26	62	0	0	88	27	47	0	0	74	239
4:15 PM	49	11	0	3	60	23	45	0	0	68	23	33	0	0	56	184
4:30 PM	64	14	0	0	78	26	49	0	0	75	31	29	0	0	60	213

4:45 PM	50	9	0	1	59	18	54	0	0	72	18	15	0	0	33	164
Hourly Total	229	45	0	4	274	93	210	0	0	303	99	124	0	0	223	800
5:00 PM	58	25	0	0	83	41	47	0	0	88	9	21	0	0	30	201
5:15 PM	52	23	0	1	75	32	38	0	0	70	15	22	0	0	37	182
5:30 PM	44	19	0	1	63	25	33	0	1	58	16	19	0	0	35	156
5:45 PM	45	32	0	0	77	29	39	0	0	68	7	16	0	0	23	168
Hourly Total	199	99	0	2	298	127	157	0	1	284	47	78	0	0	125	707
Grand Total	1586	407	0	17	1993	647	1345	0	7	1992	501	579	0	1	1080	5065
Approach %	79.6	20.4	0.0	-	-	32.5	67.5	0.0	-	-	46.4	53.6	0.0	-	-	-
Total %	31.3	8.0	0.0	-	39.3	12.8	26.6	0.0	-	39.3	9.9	11.4	0.0	-	21.3	-
Lights	1541	391	0	-	1932	616	1279	0	-	1895	484	558	0	-	1042	4869
% Lights	97.2	96.1	-	-	96.9	95.2	95.1	-	-	95.1	96.6	96.4	-	-	96.5	96.1
Buses	14	2	0	-	16	21	41	0	-	62	3	3	0	-	6	84
% Buses	0.9	0.5	-	-	0.8	3.2	3.0	-	-	3.1	0.6	0.5	-	-	0.6	1.7
Single-Unit Trucks	29	8	0	-	37	7	24	0	-	31	10	17	0	-	27	95
% Single-Unit Trucks	1.8	2.0	-	-	1.9	1.1	1.8	-	-	1.6	2.0	2.9	-	-	2.5	1.9
Articulated Trucks	2	6	0	-	8	3	1	0	-	4	4	1	0	-	5	17
% Articulated Trucks	0.1	1.5	-	-	0.4	0.5	0.1	-	-	0.2	0.8	0.2	-	-	0.5	0.3
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	17	-	-	-	-	7	-	-	-	-	1	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: 3rd Avenue E & 15th Street E
Site Code: 200036
Start Date: 02-12-2020



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: 3rd Avenue E & 15th Street E
Site Code: 200036
Start Date: 02-12-2020

Turning Movement Peak Hour Data (8:15 AM)

Start Time	15th Street E Westbound					3rd Avenue E Northbound					3rd Avenue E Southbound					
	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Int. Total
8:15 AM	42	21	0	0	63	17	45	0	4	62	15	19	0	0	34	159
8:30 AM	53	13	0	0	66	13	67	0	0	80	20	20	0	0	40	186
8:45 AM	50	12	0	0	62	24	51	0	0	75	15	19	0	0	34	171
9:00 AM	50	10	0	1	60	17	34	0	0	51	11	13	0	0	24	135
Total	195	56	0	1	251	71	197	0	4	268	61	71	0	0	132	651
Approach %	77.7	22.3	0.0	-	-	26.5	73.5	0.0	-	-	46.2	53.8	0.0	-	-	-
Total %	30.0	8.6	0.0	-	38.6	10.9	30.3	0.0	-	41.2	9.4	10.9	0.0	-	20.3	-
PHF	0.920	0.667	0.000	-	0.951	0.740	0.735	0.000	-	0.838	0.763	0.888	0.000	-	0.825	0.875
Lights	185	54	0	-	239	68	168	0	-	236	58	69	0	-	127	602
% Lights	94.9	96.4	-	-	95.2	95.8	85.3	-	-	88.1	95.1	97.2	-	-	96.2	92.5
Buses	7	1	0	-	8	2	23	0	-	25	0	0	0	-	0	33
% Buses	3.6	1.8	-	-	3.2	2.8	11.7	-	-	9.3	0.0	0.0	-	-	0.0	5.1
Single-Unit Trucks	3	1	0	-	4	0	6	0	-	6	3	2	0	-	5	15
% Single-Unit Trucks	1.5	1.8	-	-	1.6	0.0	3.0	-	-	2.2	4.9	2.8	-	-	3.8	2.3
Articulated Trucks	0	0	0	-	0	1	0	0	-	1	0	0	0	-	0	1
% Articulated Trucks	0.0	0.0	-	-	0.0	1.4	0.0	-	-	0.4	0.0	0.0	-	-	0.0	0.2
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	-	-	-
Pedestrians	-	-	-	1	-	-	-	-	4	-	-	-	-	0	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	-	-	-

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5A-150 Pinebush Rd

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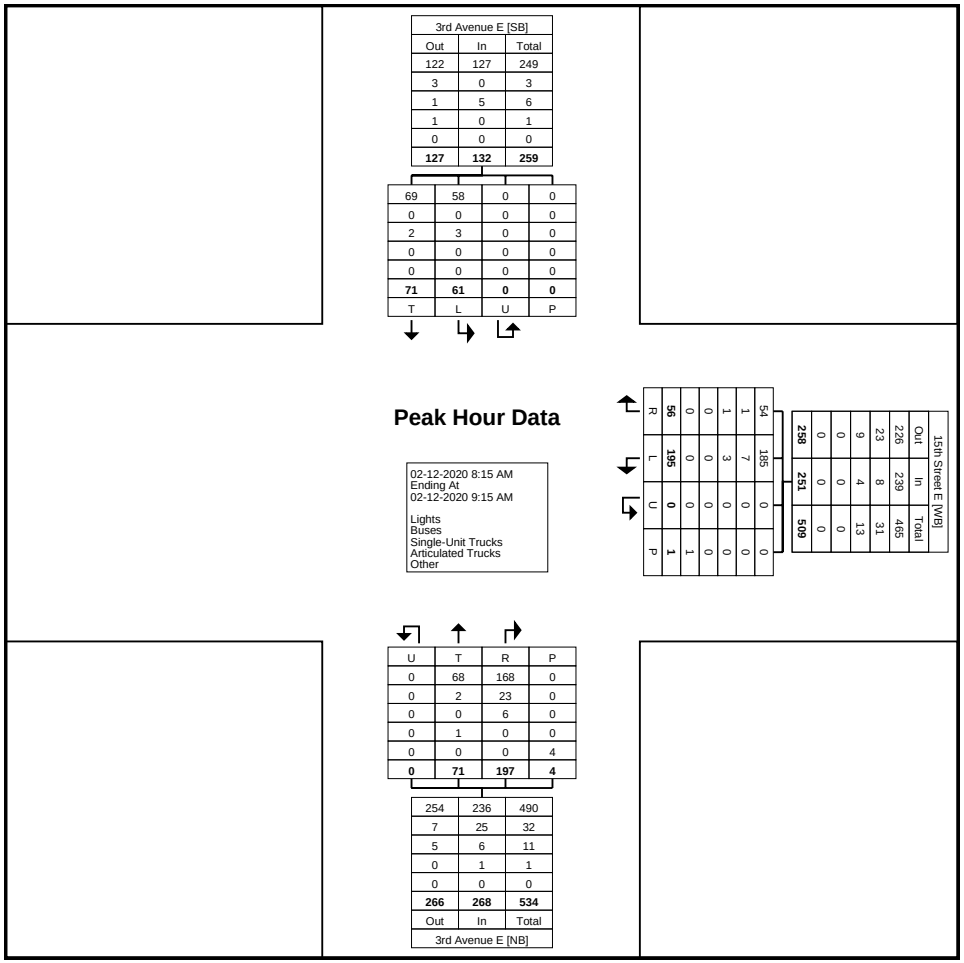
Count Name: 3rd Avenue E & 15th Street E
Site Code: 200036
Start Date: 02-12-2020



Turning Movement Peak Hour Data Plot (8:15 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: 3rd Avenue E & 15th Street E
Site Code: 200036
Start Date: 02-12-2020

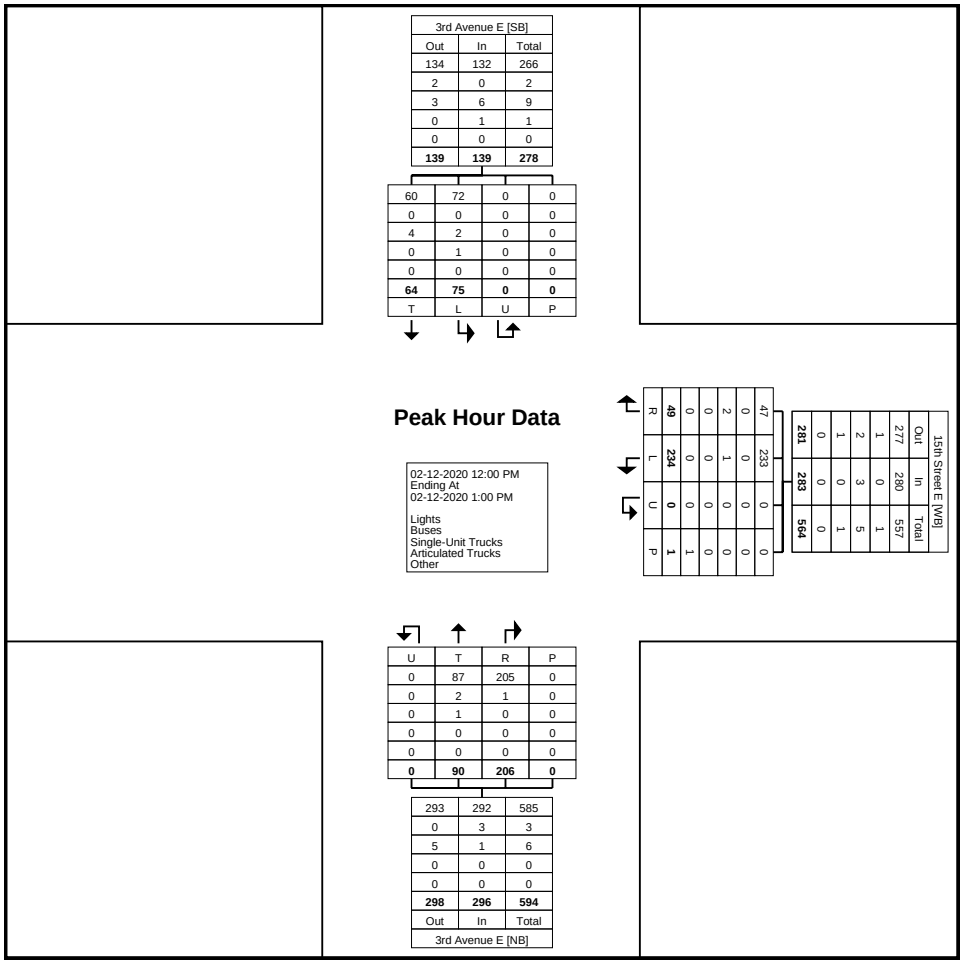
Turning Movement Peak Hour Data (12:00 PM)

Start Time	15th Street E Westbound					3rd Avenue E Northbound					3rd Avenue E Southbound					
	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Int. Total
12:00 PM	42	11	0	0	53	18	53	0	0	71	21	21	0	0	42	166
12:15 PM	65	11	0	1	76	30	56	0	0	86	15	12	0	0	27	189
12:30 PM	66	14	0	0	80	27	53	0	0	80	21	15	0	0	36	196
12:45 PM	61	13	0	0	74	15	44	0	0	59	18	16	0	0	34	167
Total	234	49	0	1	283	90	206	0	0	296	75	64	0	0	139	718
Approach %	82.7	17.3	0.0	-	-	30.4	69.6	0.0	-	-	54.0	46.0	0.0	-	-	-
Total %	32.6	6.8	0.0	-	39.4	12.5	28.7	0.0	-	41.2	10.4	8.9	0.0	-	19.4	-
PHF	0.886	0.875	0.000	-	0.884	0.750	0.920	0.000	-	0.860	0.893	0.762	0.000	-	0.827	0.916
Lights	233	47	0	-	280	87	205	0	-	292	72	60	0	-	132	704
% Lights	99.6	95.9	-	-	98.9	96.7	99.5	-	-	98.6	96.0	93.8	-	-	95.0	98.1
Buses	0	0	0	-	0	2	1	0	-	3	0	0	0	-	0	3
% Buses	0.0	0.0	-	-	0.0	2.2	0.5	-	-	1.0	0.0	0.0	-	-	0.0	0.4
Single-Unit Trucks	1	2	0	-	3	1	0	0	-	1	2	4	0	-	6	10
% Single-Unit Trucks	0.4	4.1	-	-	1.1	1.1	0.0	-	-	0.3	2.7	6.3	-	-	4.3	1.4
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	1	0	0	-	1	1
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	1.3	0.0	-	-	0.7	0.1
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	1	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: 3rd Avenue E & 15th Street E
Site Code: 200036
Start Date: 02-12-2020



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

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: 3rd Avenue E & 15th Street E
Site Code: 200036
Start Date: 02-12-2020

Turning Movement Peak Hour Data (3:45 PM)

Start Time	15th Street E Westbound					3rd Avenue E Northbound					3rd Avenue E Southbound					
	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Int. Total
3:45 PM	52	11	0	0	63	22	41	0	0	63	19	20	0	0	39	165
4:00 PM	66	11	0	0	77	26	62	0	0	88	27	47	0	0	74	239
4:15 PM	49	11	0	3	60	23	45	0	0	68	23	33	0	0	56	184
4:30 PM	64	14	0	0	78	26	49	0	0	75	31	29	0	0	60	213
Total	231	47	0	3	278	97	197	0	0	294	100	129	0	0	229	801
Approach %	83.1	16.9	0.0	-	-	33.0	67.0	0.0	-	-	43.7	56.3	0.0	-	-	-
Total %	28.8	5.9	0.0	-	34.7	12.1	24.6	0.0	-	36.7	12.5	16.1	0.0	-	28.6	-
PHF	0.875	0.839	0.000	-	0.891	0.933	0.794	0.000	-	0.835	0.806	0.686	0.000	-	0.774	0.838
Lights	226	45	0	-	271	93	189	0	-	282	98	125	0	-	223	776
% Lights	97.8	95.7	-	-	97.5	95.9	95.9	-	-	95.9	98.0	96.9	-	-	97.4	96.9
Buses	0	1	0	-	1	4	3	0	-	7	0	1	0	-	1	9
% Buses	0.0	2.1	-	-	0.4	4.1	1.5	-	-	2.4	0.0	0.8	-	-	0.4	1.1
Single-Unit Trucks	5	1	0	-	6	0	4	0	-	4	1	3	0	-	4	14
% Single-Unit Trucks	2.2	2.1	-	-	2.2	0.0	2.0	-	-	1.4	1.0	2.3	-	-	1.7	1.7
Articulated Trucks	0	0	0	-	0	0	1	0	-	1	1	0	0	-	1	2
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.5	-	-	0.3	1.0	0.0	-	-	0.4	0.2
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	3	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
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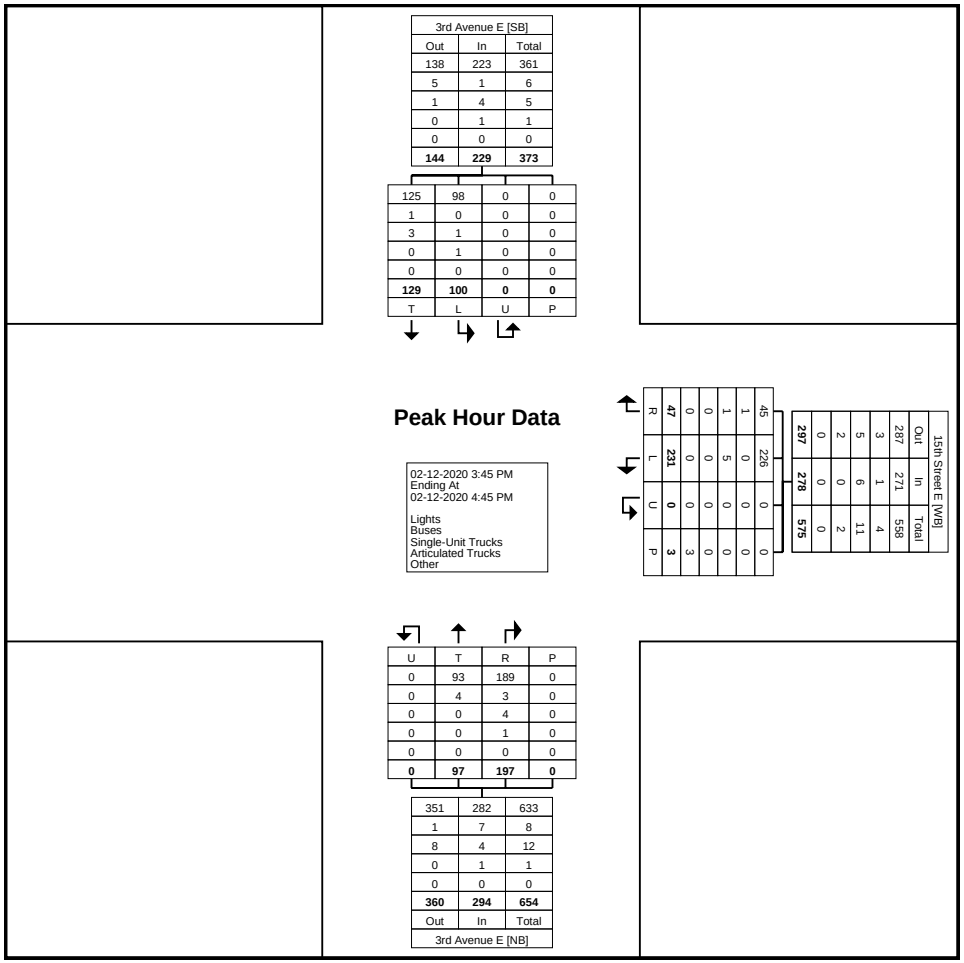
Start Date: 02-12-2020



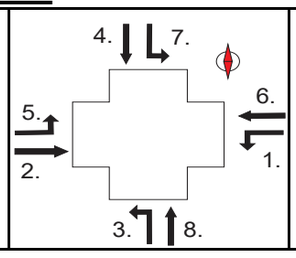
Turning Movement Peak Hour Data Plot (3:45 PM)

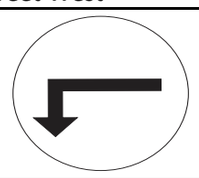
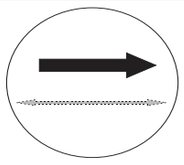
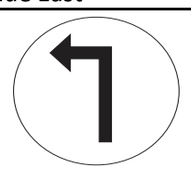
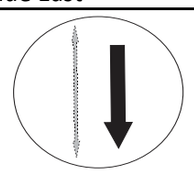
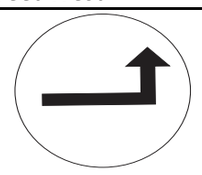
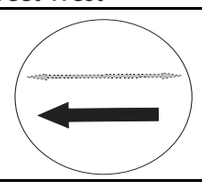
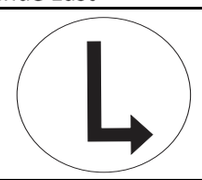
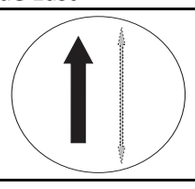
Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: 3rd Avenue E & 15th Street E
Site Code: 200036
Start Date: 02-12-2020

Signal Timing Plan

Date: Location: Prepared by:	2022-04-21 10th Street East/West, Owen Sound, Ontario, CA Safe Roads Engineering Inc. 3rd Ave E		

NEMA Phase Diagram	Phase	AM Peak 5:30 AM - 9:30 AM	Midday 9:30 AM - 3:00 PM	PM Peak 3:00 PM - 9:00 PM	Night 9:00 PM - 5:30 AM	Remarks/Comments
1. WB Left 10th Street West	WLK FDW					
	MIN MAX AMB ALR SPLIT	NOT USED	5 9.5 3.5 1 9.5	5 11 3.5 1 11	NOT USED	
2. EB Through 10th Street West	WLK FDW	10 15	10 15	10 15	10 15	
	MIN MAX AMB ALR SPLIT	25 31 4 2 47.5	25 31 4 2 39	25 31 4 2 73	25 31 4 2 54	
3. NB Left 3rd Avenue East	WLK FDW					
	MIN MAX AMB ALR SPLIT	NOT USED	NOT USED	NOT USED	NOT USED	
4. SB Through 3rd Avenue East	WLK FDW	10 16	10 16	10 15	10 15	
	MIN MAX AMB ALR SPLIT	26 32 4 2 42.5	26 32 4 2 41.5	25 31 4 2 36	26 32 4 2 36	
5. EB Left 10th Street West	WLK FDW					
	MIN MAX AMB ALR SPLIT	5 9.5 3.5 1 9.5	5 9.5 3.5 1 9.5	5 11 3.5 1 11	NOT USED	
6. WB Through 10th Street West	WLK FDW	10 15	10 15	10 15	10 15	
	MIN MAX AMB ALR SPLIT	25 31 4 2 38	25 31 4 2 39	25 31 4 2 73	25 31 4 2 54	
7. SB Left 3rd Avenue East	WLK FDW					
	MIN MAX AMB ALR SPLIT	5 9.5 3.5 1 9.5	5 9.5 3.5 1 9.5	NOT USED	NOT USED	
8. NB Through 3rd Avenue East	WLK FDW	10 16	10 16	10 15	10 16	
	MIN MAX AMB ALR SPLIT	26 32 4 2 33	26 32 4 2 32	25 31 4 2 36	26 32 4 2 36	
	CYCLE	90	90	120	90	
	OFFSET	0	0	88	/	

Appendix C

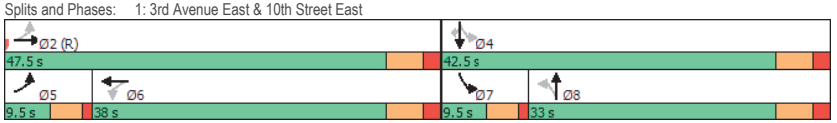
2022 Existing Operation Reports

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	107	550	54	18	390	29	30	108	38	17	84	84
Future Volume (vph)	107	550	54	18	390	29	30	108	38	17	84	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	15.0		0.0	0.0		25.0
Storage Lanes	0		0	0		0	1		0	0		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00		0.98	0.99			1.00	0.96
Frt		0.989			0.990			0.961				0.850
Flt Protected		0.993			0.998		0.950				0.992	
Satd. Flow (prot)	0	3295	0	0	3239	0	1687	1625	0	0	1711	1442
Flt Permitted		0.749			0.905		0.684				0.944	
Satd. Flow (perm)	0	2483	0	0	2937	0	1188	1625	0	0	1626	1388
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			9			20				95
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		381.6			301.4			44.9			104.0	
Travel Time (s)		27.5			21.7			3.2			7.5	
Confl. Peds. (#/hr)	8		5	5		8	25		10	10		25
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	17%	6%	2%	11%	9%	21%	7%	13%	8%	6%	11%	12%
Adj. Flow (vph)	122	625	61	20	443	33	34	123	43	19	95	95
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	808	0	0	496	0	34	166	0	0	114	95
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		6	6		8	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	25.0		25.0	25.0		26.0	26.0		5.0	26.0	26.0
Minimum Split (s)	9.5	31.0		31.0	31.0		32.0	32.0		9.5	32.0	32.0
Total Split (s)	9.5	47.5		38.0	38.0		33.0	33.0		9.5	42.5	42.5
Total Split (%)	10.6%	52.8%		42.2%	42.2%		36.7%	36.7%		10.6%	47.2%	47.2%
Maximum Green (s)	5.0	41.5		32.0	32.0		27.0	27.0		5.0	36.5	36.5
Yellow Time (s)	3.5	4.0		4.0	4.0		4.0	4.0		3.5	4.0	4.0
All-Red Time (s)	1.0	2.0		2.0	2.0		2.0	2.0		1.0	2.0	2.0
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)		6.0			6.0		6.0	6.0			6.0	6.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	Yes									Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	None		Max	Max		None	Max	Max
Walk Time (s)		10.0		10.0	10.0		10.0	10.0			10.0	10.0
Flash Dont Walk (s)		15.0		15.0	15.0		16.0	16.0			16.0	16.0
Pedestrian Calls (#/hr)		0		0	0		0	0			0	0
Act Effct Green (s)		41.5			41.5		36.5	36.5			36.5	36.5
Actuated g/C Ratio		0.46			0.46		0.41	0.41			0.41	0.41
v/c Ratio		0.70			0.36		0.07	0.25			0.17	0.15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay		23.1			16.4		17.0	16.7			18.0	4.4
Queue Delay		0.0			0.0		0.0	0.0			0.0	0.0
Total Delay		23.1			16.4		17.0	16.7			18.0	4.4
LOS		C			B		B	B			B	A
Approach Delay		23.1			16.4			16.7			11.9	
Approach LOS		C			B			B			B	
Queue Length 50th (m)		55.5			27.5		3.5	16.1			12.3	0.0
Queue Length 95th (m)		74.4			38.1		9.1	28.9			22.6	8.2
Internal Link Dist (m)		357.6			277.4			20.9			80.0	
Turn Bay Length (m)							15.0					25.0
Base Capacity (vph)		1151			1359		481	670			659	619
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		0.70			0.36		0.07	0.25			0.17	0.15

Intersection Summary		
Area Type:	Other	
Cycle Length: 90		
Actuated Cycle Length: 90		
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green		
Natural Cycle: 85		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.70		
Intersection Signal Delay: 19.0	Intersection LOS: B	
Intersection Capacity Utilization 79.2%	ICU Level of Service D	
Analysis Period (min) 15		

Splits and Phases: 1: 3rd Avenue East & 10th Street East



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	107	550	54	18	390	29	30	108	38	17	84	84
Future Volume (vph)	107	550	54	18	390	29	30	108	38	17	84	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0			6.0	6.0
Lane Util. Factor		0.95			0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes		1.00			1.00		1.00	0.99			1.00	0.96
Flpb, ped/bikes		1.00			1.00		0.98	1.00			1.00	1.00
Frt		0.99			0.99		1.00	0.96			1.00	0.85
Flt Protected		0.99			1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)		3289			3238		1650	1625			1708	1388
Flt Permitted		0.75			0.91		0.68	1.00			0.94	1.00
Satd. Flow (perm)		2483			2938		1187	1625			1626	1388
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	122	625	61	20	443	33	34	123	43	19	95	95
RTOR Reduction (vph)	0	6	0	0	5	0	0	12	0	0	0	56
Lane Group Flow (vph)	0	802	0	0	491	0	34	154	0	0	114	39
Confl. Peds. (#/hr)	8		5	5		8	25		10	10		25
Heavy Vehicles (%)	17%	6%	2%	11%	9%	21%	7%	13%	8%	6%	11%	12%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)		41.5			41.5		36.5	36.5			36.5	36.5
Effective Green, g (s)		41.5			41.5		36.5	36.5			36.5	36.5
Actuated g/C Ratio		0.46			0.46		0.41	0.41			0.41	0.41
Clearance Time (s)		6.0			6.0		6.0	6.0			6.0	6.0
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)		1144			1354		481	659			659	562
v/s Ratio Prot								c0.09				
v/s Ratio Perm		c0.32			0.17		0.03				0.07	0.03
v/c Ratio		0.70			0.36		0.07	0.23			0.17	0.07
Uniform Delay, d1		19.3			15.7		16.4	17.6			17.1	16.4
Progression Factor		1.00			1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2		2.0			0.2		0.3	0.8			0.1	0.2
Delay (s)		21.3			15.9		16.7	18.4			17.2	16.6
Level of Service		C			B		B	B			B	B
Approach Delay (s)		21.3			15.9			18.1			16.9	
Approach LOS		C			B			B			B	

Intersection Summary				
HCM 2000 Control Delay	18.8	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.54			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	21.0	
Intersection Capacity Utilization	79.2%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	197	56	72	199	61	72
Future Volume (vph)	197	56	72	199	61	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.970		0.901			
Flt Protected	0.963					0.978
Satd. Flow (prot)	1694	0	1528	0	0	1788
Flt Permitted	0.963					0.978
Satd. Flow (perm)	1694	0	1528	0	0	1788
Link Speed (k/h)	50		50			50
Link Distance (m)	107.8		731.0			342.1
Travel Time (s)	7.8		52.6			24.6
Confl. Peds. (#/hr)	4			1	1	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	5%	4%	4%	15%	5%	3%
Adj. Flow (vph)	224	64	82	226	69	82
Shared Lane Traffic (%)						
Lane Group Flow (vph)	288	0	308	0	0	151
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	47.6%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	7.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	197	56	72	199	61	72
Future Vol, veh/h	197	56	72	199	61	72
Conflicting Peds, #/hr	4	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	5	4	4	15	5	3
Mvmt Flow	224	64	82	226	69	82

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	420	196	0	0	309	0
Stage 1	196	-	-	-	-	-
Stage 2	224	-	-	-	-	-
Critical Hdwy	6.45	6.24	-	-	4.15	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.336	-	-	2.245	-
Pot Cap-1 Maneuver	584	840	-	-	1235	-
Stage 1	830	-	-	-	-	-
Stage 2	806	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	547	839	-	-	1234	-
Mov Cap-2 Maneuver	547	-	-	-	-	-
Stage 1	829	-	-	-	-	-
Stage 2	756	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.7	0	3.7
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	593	1234	-
HCM Lane V/C Ratio	-	-	0.485	0.056	-
HCM Control Delay (s)	-	-	16.7	8.1	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	2.6	0.2	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	1	12	4	3	3	14	63	0	0	69	79
Future Volume (vph)	58	1	12	4	3	3	14	63	0	0	69	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		35.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		1	0		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850		0.958						0.928	
Flt Protected		0.953			0.981			0.991				
Satd. Flow (prot)	0	1648	1615	0	1786	0	0	1614	0	0	1703	0
Flt Permitted		0.953			0.981			0.991				
Satd. Flow (perm)	0	1648	1615	0	1786	0	0	1614	0	0	1703	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		172.3			56.1			342.1			229.9	
Travel Time (s)		12.4			4.0			24.6			16.6	
Confl. Peds. (#/hr)			3	3								
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles (%)	10%	0%	0%	0%	0%	0%	29%	14%	0%	0%	3%	4%
Adj. Flow (vph)	72	1	15	5	4	4	17	78	0	0	85	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	73	15	0	13	0	0	95	0	0	183	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 29.5%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	58	1	12	4	3	3	14	63	0	0	69	79
Future Vol, veh/h	58	1	12	4	3	3	14	63	0	0	69	79
Conflicting Peds, #/hr	0	0	3	3	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	350	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	10	0	0	0	0	0	29	14	0	0	3	4
Mvmt Flow	72	1	15	5	4	4	17	78	0	0	85	98

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	250	246	137	257	295	78	183	0	0	78	0	0
Stage 1	134	134	-	112	112	-	-	-	-	-	-	-
Stage 2	116	112	-	145	183	-	-	-	-	-	-	-
Critical Hdwy	7.2	6.5	6.2	7.1	6.5	6.2	4.39	-	-	4.1	-	-
Critical Hdwy Stg 1	6.2	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.2	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.59	4	3.3	3.5	4	3.3	2.461	-	-	2.2	-	-
Pot Cap-1 Maneuver	687	660	917	700	620	988	1245	-	-	1533	-	-
Stage 1	851	789	-	898	807	-	-	-	-	-	-	-
Stage 2	870	807	-	863	752	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	674	651	915	678	611	988	1245	-	-	1533	-	-
Mov Cap-2 Maneuver	674	651	-	678	611	-	-	-	-	-	-	-
Stage 1	839	789	-	885	796	-	-	-	-	-	-	-
Stage 2	851	796	-	846	752	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.7	10.1	1.4	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1245	-	-	674	915	722	1533	-	-
HCM Lane V/C Ratio	0.014	-	-	0.108	0.016	0.017	-	-	-
HCM Control Delay (s)	7.9	0	-	11	9	10.1	0	-	-
HCM Lane LOS	A	A	-	B	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0	0.1	0	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	77	23	55	74	29	69
Future Volume (vph)	77	23	55	74	29	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850	0.923			
Flt Protected	0.950					0.985
Satd. Flow (prot)	1752	1553	1592	0	0	1701
Flt Permitted	0.950					0.985
Satd. Flow (perm)	1752	1553	1592	0	0	1701
Link Speed (k/h)	50		50			50
Link Distance (m)	60.1		43.2			365.1
Travel Time (s)	4.3		3.1			26.3
Confl. Peds. (#/hr)		3				
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	3%	4%	5%	14%	10%	10%
Adj. Flow (vph)	88	26	63	84	33	78
Shared Lane Traffic (%)						
Lane Group Flow (vph)	88	26	147	0	0	111
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	27.8%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	3.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	77	23	55	74	29	69
Future Vol, veh/h	77	23	55	74	29	69
Conflicting Peds, #/hr	0	3	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	4	5	14	10	10
Mvmt Flow	88	26	63	84	33	78

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	249	108	0	0	147	0
Stage 1	105	-	-	-	-	-
Stage 2	144	-	-	-	-	-
Critical Hdwy	6.43	6.24	-	-	4.2	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.336	-	-	2.29	-
Pot Cap-1 Maneuver	737	940	-	-	1387	-
Stage 1	917	-	-	-	-	-
Stage 2	881	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	719	938	-	-	1387	-
Mov Cap-2 Maneuver	719	-	-	-	-	-
Stage 1	917	-	-	-	-	-
Stage 2	859	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.3	0	2.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	719	938	1387	-
HCM Lane V/C Ratio	-	-	0.122	0.028	0.024	-
HCM Control Delay (s)	-	-	10.7	8.9	7.7	0
HCM Lane LOS	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0.1	0.1	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	14	2	38	35	0	84
Future Volume (vph)	14	2	38	35	0	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.986		0.936			
Flt Protected	0.957					
Satd. Flow (prot)	1304	0	1709	0	0	1792
Flt Permitted	0.957					
Satd. Flow (perm)	1304	0	1709	0	0	1792
Link Speed (k/h)	50		50			50
Link Distance (m)	182.2		224.8			117.7
Travel Time (s)	13.1		16.2			8.5
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	36%	50%	5%	3%	0%	6%
Adj. Flow (vph)	17	2	46	42	0	101
Shared Lane Traffic (%)						
Lane Group Flow (vph)	19	0	88	0	0	101
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 14.4%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	14	2	38	35	0	84
Future Vol, veh/h	14	2	38	35	0	84
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	36	50	5	3	0	6
Mvmt Flow	17	2	46	42	0	101

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	168	67	0	0	88	0
Stage 1	67	-	-	-	-	-
Stage 2	101	-	-	-	-	-
Critical Hdwy	6.76	6.7	-	-	4.1	-
Critical Hdwy Stg 1	5.76	-	-	-	-	-
Critical Hdwy Stg 2	5.76	-	-	-	-	-
Follow-up Hdwy	3.824	3.75	-	-	2.2	-
Pot Cap-1 Maneuver	750	877	-	-	1520	-
Stage 1	876	-	-	-	-	-
Stage 2	845	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	750	877	-	-	1520	-
Mov Cap-2 Maneuver	750	-	-	-	-	-
Stage 1	876	-	-	-	-	-
Stage 2	845	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.8	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	764	1520	-
HCM Lane V/C Ratio	-	-	0.025	-	-
HCM Control Delay (s)	-	-	9.8	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	91	692	50	27	614	17	53	122	74	26	89	135
Future Volume (vph)	91	692	50	27	614	17	53	122	74	26	89	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	15.0		0.0	0.0		25.0
Storage Lanes	0		0	0		0	1		0	0		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00		0.97	0.98			1.00	0.95
Frt		0.991			0.996			0.943				0.850
Flt Protected		0.995			0.998		0.950				0.989	
Satd. Flow (prot)	0	3445	0	0	3509	0	1770	1709	0	0	1794	1568
Flt Permitted		0.771			0.888		0.674				0.896	
Satd. Flow (perm)	0	2668	0	0	3122	0	1219	1709	0	0	1617	1496
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10			4			25				138
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		381.6			301.4			44.9			104.0	
Travel Time (s)		27.5			21.7			3.2			7.5	
Confl. Peds. (#/hr)	8		3	3		8	24		22	22		24
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	6%	3%	0%	0%	2%	12%	2%	5%	0%	4%	5%	3%
Adj. Flow (vph)	93	706	51	28	627	17	54	124	76	27	91	138
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	850	0	0	672	0	54	200	0	0	118	138
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		1	6		8	8		4	4	4
Switch Phase												
Minimum Initial (s)	5.0	25.0		5.0	25.0		25.0	25.0		25.0	25.0	25.0
Minimum Split (s)	9.5	31.0		9.5	31.0		31.0	31.0		31.0	31.0	31.0
Total Split (s)	11.0	73.0		11.0	73.0		36.0	36.0		36.0	36.0	36.0
Total Split (%)	9.2%	60.8%		9.2%	60.8%		30.0%	30.0%		30.0%	30.0%	30.0%
Maximum Green (s)	6.5	67.0		6.5	67.0		30.0	30.0		30.0	30.0	30.0
Yellow Time (s)	3.5	4.0		3.5	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	2.0		1.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)		6.0			6.0		6.0	6.0			6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes			Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	None		Max	Max		Max	Max	Max
Walk Time (s)		10.0			10.0		10.0	10.0		10.0	10.0	10.0
Flash Dont Walk (s)		15.0			15.0		15.0	15.0		15.0	15.0	15.0
Pedestrian Calls (#/hr)		0			0		0	0		0	0	0
Act Effct Green (s)		78.0			78.0		30.0	30.0			30.0	30.0
Actuated g/C Ratio		0.65			0.65		0.25	0.25			0.25	0.25
v/c Ratio		0.49			0.33		0.18	0.45			0.29	0.29

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay		11.8			9.8		37.3	36.8			38.8	7.5
Queue Delay		0.0			0.0		0.0	0.0			0.0	0.0
Total Delay		11.8			9.8		37.3	36.8			38.8	7.5
LOS		B			A		D	D			D	A
Approach Delay		11.8			9.8			36.9			21.9	
Approach LOS		B			A			D			C	
Queue Length 50th (m)		49.2			34.0		10.0	34.8			22.6	0.0
Queue Length 95th (m)		63.5			43.8		21.0	57.3			39.1	15.4
Internal Link Dist (m)		357.6			277.4			20.9			80.0	
Turn Bay Length (m)							15.0					25.0
Base Capacity (vph)		1737			2030		304	446			404	477
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		0.49			0.33		0.18	0.45			0.29	0.29

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 88 (73%), Referenced to phase 2:EBTL, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.49			
Intersection Signal Delay: 15.6		Intersection LOS: B	
Intersection Capacity Utilization 86.5%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 1: 3rd Avenue East & 10th Street East

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	91	692	50	27	614	17	53	122	74	26	89	135
Future Volume (vph)	91	692	50	27	614	17	53	122	74	26	89	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0			6.0	6.0
Lane Util. Factor		0.95			0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes		1.00			1.00		1.00	0.98			1.00	0.95
Flpb, ped/bikes		1.00			1.00		0.97	1.00			1.00	1.00
Frt		0.99			1.00		1.00	0.94			1.00	0.85
Flt Protected		0.99			1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)		3441			3509		1718	1709			1784	1496
Flt Permitted		0.77			0.89		0.67	1.00			0.90	1.00
Satd. Flow (perm)		2669			3121		1219	1709			1617	1496
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	93	706	51	28	627	17	54	124	76	27	91	138
RTOR Reduction (vph)	0	4	0	0	1	0	0	19	0	0	0	104
Lane Group Flow (vph)	0	847	0	0	671	0	54	181	0	0	118	35
Confl. Peds. (#/hr)	8		3	3		8	24		22	22		24
Heavy Vehicles (%)	6%	3%	0%	0%	2%	12%	2%	5%	0%	4%	5%	3%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)		78.0			78.0		30.0	30.0			30.0	30.0
Effective Green, g (s)		78.0			78.0		30.0	30.0			30.0	30.0
Actuated g/C Ratio		0.65			0.65		0.25	0.25			0.25	0.25
Clearance Time (s)		6.0			6.0		6.0	6.0			6.0	6.0
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)		1734			2028		304	427			404	374
v/s Ratio Prot								c0.11				
v/s Ratio Perm		c0.32			0.21		0.04				0.07	0.02
v/c Ratio		0.49			0.33		0.18	0.42			0.29	0.09
Uniform Delay, d1		10.8			9.4		35.3	37.8			36.4	34.5
Progression Factor		1.00			1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2		0.2			0.1		1.3	3.1			1.8	0.5
Delay (s)		11.0			9.5		36.6	40.8			38.2	35.0
Level of Service		B			A		D	D			D	D
Approach Delay (s)		11.0			9.5			39.9			36.5	
Approach LOS		B			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	17.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	86.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	233	47	98	199	101	130
Future Volume (vph)	233	47	98	199	101	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.977		0.910			
Flt Protected	0.960					0.979
Satd. Flow (prot)	1741	0	1662	0	0	1814
Flt Permitted	0.960					0.979
Satd. Flow (perm)	1741	0	1662	0	0	1814
Link Speed (k/h)	50		50			50
Link Distance (m)	107.8		731.0			342.1
Travel Time (s)	7.8		52.6			24.6
Confl. Peds. (#/hr)				3	3	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	2%	4%	4%	4%	2%	3%
Adj. Flow (vph)	277	56	117	237	120	155
Shared Lane Traffic (%)						
Lane Group Flow (vph)	333	0	354	0	0	275
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	55.8%	ICU Level of Service	B
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	13.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	233	47	98	199	101	130
Future Vol, veh/h	233	47	98	199	101	130
Conflicting Peds, #/hr	0	0	0	3	3	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	4	4	4	2	3
Mvmt Flow	277	56	117	237	120	155

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	634	239	0	0	357	0
Stage 1	239	-	-	-	-	-
Stage 2	395	-	-	-	-	-
Critical Hdwy	6.42	6.24	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.336	-	-	2.218	-
Pot Cap-1 Maneuver	443	795	-	-	1202	-
Stage 1	801	-	-	-	-	-
Stage 2	681	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	393	793	-	-	1199	-
Mov Cap-2 Maneuver	393	-	-	-	-	-
Stage 1	799	-	-	-	-	-
Stage 2	607	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	37.1	0	3.6
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	429	1199	-
HCM Lane V/C Ratio	-	-	0.777	0.1	-
HCM Control Delay (s)	-	-	37.1	8.3	0
HCM Lane LOS	-	-	E	A	A
HCM 95th %tile Q(veh)	-	-	6.7	0.3	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	84	5	10	0	4	6	13	162	1	2	80	61
Future Volume (vph)	84	5	10	0	4	6	13	162	1	2	80	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		35.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		1	0		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.921			0.999			0.942	
Flt Protected		0.955						0.996			0.999	
Satd. Flow (prot)	0	1748	1615	0	1750	0	0	1856	0	0	1765	0
Flt Permitted		0.955						0.996			0.999	
Satd. Flow (perm)	0	1748	1615	0	1750	0	0	1856	0	0	1765	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		172.3			56.1			342.1			229.9	
Travel Time (s)		12.4			4.0			24.6			16.6	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	4%	0%	0%	0%	0%	0%	0%	2%	0%	0%	0%	3%
Adj. Flow (vph)	101	6	12	0	5	7	16	195	1	2	96	73
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	107	12	0	12	0	0	212	0	0	171	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	34.6%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	84	5	10	0	4	6	13	162	1	2	80	61
Future Vol, veh/h	84	5	10	0	4	6	13	162	1	2	80	61
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	350	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	4	0	0	0	0	0	0	2	0	0	0	3
Mvmt Flow	101	6	12	0	5	7	16	195	1	2	96	73

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	371	365	133	374	401	196	169	0	0	196	0	0
Stage 1	137	137	-	228	228	-	-	-	-	-	-	-
Stage 2	234	228	-	146	173	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.14	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	582	566	922	587	541	850	1421	-	-	1389	-	-
Stage 1	861	787	-	779	719	-	-	-	-	-	-	-
Stage 2	765	719	-	861	760	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	566	558	922	568	533	850	1421	-	-	1389	-	-
Mov Cap-2 Maneuver	566	558	-	568	533	-	-	-	-	-	-	-
Stage 1	850	785	-	769	710	-	-	-	-	-	-	-
Stage 2	744	710	-	842	758	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.4	10.3	0.6	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1421	-	-	566	922	687	1389	-	-
HCM Lane V/C Ratio	0.011	-	-	0.189	0.013	0.018	0.002	-	-
HCM Control Delay (s)	7.6	0	-	12.8	9	10.3	7.6	0	-
HCM Lane LOS	A	A	-	B	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.7	0	0.1	0	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	73	41	71	59	46	108
Future Volume (vph)	73	41	71	59	46	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850	0.939			
Flt Protected	0.950					0.985
Satd. Flow (prot)	1687	1583	1680	0	0	1849
Flt Permitted	0.950					0.985
Satd. Flow (perm)	1687	1583	1680	0	0	1849
Link Speed (k/h)	50		50			50
Link Distance (m)	60.1		43.2			365.1
Travel Time (s)	4.3		3.1			26.3
Confl. Peds. (#/hr)	1	1				
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles (%)	7%	2%	3%	10%	4%	0%
Adj. Flow (vph)	103	58	100	83	65	152
Shared Lane Traffic (%)						
Lane Group Flow (vph)	103	58	183	0	0	217
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	29.9%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	4.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	73	41	71	59	46	108
Future Vol, veh/h	73	41	71	59	46	108
Conflicting Peds, #/hr	1	1	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	71	71	71	71	71	71
Heavy Vehicles, %	7	2	3	10	4	0
Mvmt Flow	103	58	100	83	65	152

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	425	143	0	0	183	0
Stage 1	142	-	-	-	-	-
Stage 2	283	-	-	-	-	-
Critical Hdwy	6.47	6.22	-	-	4.14	-
Critical Hdwy Stg 1	5.47	-	-	-	-	-
Critical Hdwy Stg 2	5.47	-	-	-	-	-
Follow-up Hdwy	3.563	3.318	-	-	2.236	-
Pot Cap-1 Maneuver	577	905	-	-	1380	-
Stage 1	873	-	-	-	-	-
Stage 2	754	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	547	904	-	-	1380	-
Mov Cap-2 Maneuver	547	-	-	-	-	-
Stage 1	873	-	-	-	-	-
Stage 2	715	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.7	0	2.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	547	904	1380	-
HCM Lane V/C Ratio	-	-	0.188	0.064	0.047	-
HCM Control Delay (s)	-	-	13.1	9.3	7.7	0
HCM Lane LOS	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	0.7	0.2	0.1	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	33	2	93	32	4	43
Future Volume (vph)	33	2	93	32	4	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.993		0.965			
Flt Protected	0.955					0.996
Satd. Flow (prot)	1802	0	1774	0	0	1858
Flt Permitted	0.955					0.996
Satd. Flow (perm)	1802	0	1774	0	0	1858
Link Speed (k/h)	50		50			50
Link Distance (m)	182.2		224.8			117.7
Travel Time (s)	13.1		16.2			8.5
Confl. Peds. (#/hr)		2		1	1	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	13%	0%	2%
Adj. Flow (vph)	37	2	104	36	4	48
Shared Lane Traffic (%)						
Lane Group Flow (vph)	39	0	140	0	0	52
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	17.7%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	1.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	33	2	93	32	4	43
Future Vol, veh/h	33	2	93	32	4	43
Conflicting Peds, #/hr	0	2	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	13	0	2
Mvmt Flow	37	2	104	36	4	48

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	179	125	0	0	141	0
Stage 1	123	-	-	-	-	-
Stage 2	56	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	815	931	-	-	1455	-
Stage 1	907	-	-	-	-	-
Stage 2	972	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	812	929	-	-	1454	-
Mov Cap-2 Maneuver	812	-	-	-	-	-
Stage 1	906	-	-	-	-	-
Stage 2	969	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.6	0	0.6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	818	1454	-
HCM Lane V/C Ratio	-	-	0.048	0.003	-
HCM Control Delay (s)	-	-	9.6	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Appendix D

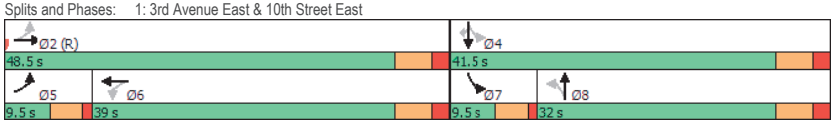
2030 Background Operation Reports

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	568	56	19	403	30	31	112	39	18	87	87
Future Volume (vph)	110	568	56	19	403	30	31	112	39	18	87	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	15.0		0.0	0.0		25.0
Storage Lanes	0		0	0		0	1		0	0		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00		0.98	0.99			1.00	0.96
Frt		0.988			0.990			0.961				0.850
Flt Protected		0.993			0.998		0.950				0.992	
Satd. Flow (prot)	0	3292	0	0	3239	0	1687	1625	0	0	1711	1442
Flt Permitted		0.744			0.899		0.681				0.942	
Satd. Flow (perm)	0	2464	0	0	2917	0	1183	1625	0	0	1623	1388
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13			9			19				99
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		381.6			301.4			44.9			104.0	
Travel Time (s)		27.5			21.7			3.2			7.5	
Confl. Peds. (#/hr)	8		5	5		8	25		10	10		25
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	17%	6%	2%	11%	9%	21%	7%	13%	8%	6%	11%	12%
Adj. Flow (vph)	125	645	64	22	458	34	35	127	44	20	99	99
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	834	0	0	514	0	35	171	0	0	119	99
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		6	6		8	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	25.0		25.0	25.0		26.0	26.0		5.0	26.0	26.0
Minimum Split (s)	9.5	31.0		31.0	31.0		32.0	32.0		9.5	32.0	32.0
Total Split (s)	9.5	48.5		39.0	39.0		32.0	32.0		9.5	41.5	41.5
Total Split (%)	10.6%	53.9%		43.3%	43.3%		35.6%	35.6%		10.6%	46.1%	46.1%
Maximum Green (s)	5.0	42.5		33.0	33.0		26.0	26.0		5.0	35.5	35.5
Yellow Time (s)	3.5	4.0		4.0	4.0		4.0	4.0		3.5	4.0	4.0
All-Red Time (s)	1.0	2.0		2.0	2.0		2.0	2.0		1.0	2.0	2.0
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)		6.0			6.0		6.0	6.0			6.0	6.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	Yes									Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	None		Max	Max		None	Max	Max
Walk Time (s)		10.0		10.0	10.0		10.0	10.0			10.0	10.0
Flash Dont Walk (s)		15.0		15.0	15.0		16.0	16.0			16.0	16.0
Pedestrian Calls (#/hr)		0		0	0		0	0			0	0
Act Effct Green (s)		42.5			42.5		35.5	35.5			35.5	35.5
Actuated g/C Ratio		0.47			0.47		0.39	0.39			0.39	0.39
v/c Ratio		0.71			0.37		0.08	0.26			0.19	0.16

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay		22.8			15.9		17.7	17.6			18.8	4.6
Queue Delay		0.0			0.0		0.0	0.0			0.0	0.0
Total Delay		22.8			15.9		17.7	17.6			18.8	4.6
LOS		C			B		B	B			B	A
Approach Delay		22.8			15.9			17.6			12.4	
Approach LOS		C			B			B			B	
Queue Length 50th (m)		57.2			28.1		3.7	17.2			13.2	0.0
Queue Length 95th (m)		76.2			38.7		9.4	30.5			23.9	8.7
Internal Link Dist (m)		357.6			277.4			20.9			80.0	
Turn Bay Length (m)							15.0					25.0
Base Capacity (vph)		1170			1382		466	652			640	607
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		0.71			0.37		0.08	0.26			0.19	0.16

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 18.9		Intersection LOS: B	
Intersection Capacity Utilization 79.2%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: 3rd Avenue East & 10th Street East



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	568	56	19	403	30	31	112	39	18	87	87
Future Volume (vph)	110	568	56	19	403	30	31	112	39	18	87	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0			6.0	6.0
Lane Util. Factor		0.95			0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes		1.00			1.00		1.00	0.99			1.00	0.96
Flpb, ped/bikes		1.00			1.00		0.98	1.00			1.00	1.00
Frt		0.99			0.99		1.00	0.96			1.00	0.85
Flt Protected		0.99			1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)		3289			3238		1650	1626			1708	1388
Flt Permitted		0.74			0.90		0.68	1.00			0.94	1.00
Satd. Flow (perm)		2465			2916		1182	1626			1622	1388
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	125	645	64	22	458	34	35	127	44	20	99	99
RTOR Reduction (vph)	0	7	0	0	5	0	0	12	0	0	0	60
Lane Group Flow (vph)	0	827	0	0	509	0	35	159	0	0	119	39
Confl. Peds. (#/hr)	8		5	5		8	25		10	10		25
Heavy Vehicles (%)	17%	6%	2%	11%	9%	21%	7%	13%	8%	6%	11%	12%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)		42.5			42.5		35.5	35.5			35.5	35.5
Effective Green, g (s)		42.5			42.5		35.5	35.5			35.5	35.5
Actuated g/C Ratio		0.47			0.47		0.39	0.39			0.39	0.39
Clearance Time (s)		6.0			6.0		6.0	6.0			6.0	6.0
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)		1164			1377		466	641			639	547
v/s Ratio Prot								c0.10				
v/s Ratio Perm		c0.34			0.17		0.03				0.07	0.03
v/c Ratio		0.71			0.37		0.08	0.25			0.19	0.07
Uniform Delay, d1		18.9			15.2		17.0	18.3			17.8	17.0
Progression Factor		1.00			1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2		2.1			0.2		0.3	0.9			0.1	0.3
Delay (s)		20.9			15.4		17.3	19.2			18.0	17.2
Level of Service		C			B		B	B			B	B
Approach Delay (s)		20.9			15.4			18.9			17.6	
Approach LOS		C			B			B			B	

Intersection Summary				
HCM 2000 Control Delay	18.7	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.57			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	21.0	
Intersection Capacity Utilization	79.2%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	203	58	74	205	63	74
Future Volume (vph)	203	58	74	205	63	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.970		0.901			
Flt Protected	0.963					0.977
Satd. Flow (prot)	1694	0	1527	0	0	1786
Flt Permitted	0.963					0.977
Satd. Flow (perm)	1694	0	1527	0	0	1786
Link Speed (k/h)	50		50			50
Link Distance (m)	107.8		731.0			342.1
Travel Time (s)	7.8		52.6			24.6
Confl. Peds. (#/hr)	4			1	1	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	5%	4%	4%	15%	5%	3%
Adj. Flow (vph)	231	66	84	233	72	84
Shared Lane Traffic (%)						
Lane Group Flow (vph)	297	0	317	0	0	156
Sign Control	Stop		Free			Free

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

Intersection	
Int Delay, s/veh	7.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	203	58	74	205	63	74
Future Vol, veh/h	203	58	74	205	63	74
Conflicting Peds, #/hr	4	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	5	4	4	15	5	3
Mvmt Flow	231	66	84	233	72	84

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	434	202	0	0	318	0
Stage 1	202	-	-	-	-	-
Stage 2	232	-	-	-	-	-
Critical Hdwy	6.45	6.24	-	-	4.15	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.336	-	-	2.245	-
Pot Cap-1 Maneuver	573	834	-	-	1225	-
Stage 1	825	-	-	-	-	-
Stage 2	799	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	535	833	-	-	1224	-
Mov Cap-2 Maneuver	535	-	-	-	-	-
Stage 1	824	-	-	-	-	-
Stage 2	747	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.5	0	3.7
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	581	1224	-
HCM Lane V/C Ratio	-	-	0.51	0.058	-
HCM Control Delay (s)	-	-	17.5	8.1	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	2.9	0.2	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	1	12	4	3	3	14	65	0	0	71	82
Future Volume (vph)	60	1	12	4	3	3	14	65	0	0	71	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		35.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		1	0		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850		0.958						0.928	
Flt Protected		0.953			0.981			0.991				
Satd. Flow (prot)	0	1648	1615	0	1786	0	0	1614	0	0	1703	0
Flt Permitted		0.953			0.981			0.991				
Satd. Flow (perm)	0	1648	1615	0	1786	0	0	1614	0	0	1703	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		172.3			56.1			342.1			229.9	
Travel Time (s)		12.4			4.0			24.6			16.6	
Confl. Peds. (#/hr)			3	3								
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles (%)	10%	0%	0%	0%	0%	0%	29%	14%	0%	0%	3%	4%
Adj. Flow (vph)	74	1	15	5	4	4	17	80	0	0	88	101
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	75	15	0	13	0	0	97	0	0	189	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	29.8%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	60	1	12	4	3	3	14	65	0	0	71	82
Future Vol, veh/h	60	1	12	4	3	3	14	65	0	0	71	82
Conflicting Peds, #/hr	0	0	3	3	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	350	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	10	0	0	0	0	0	29	14	0	0	3	4
Mvmt Flow	74	1	15	5	4	4	17	80	0	0	88	101

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	257	253	142	264	303	80	189	0	0	80	0	0
Stage 1	139	139	-	114	114	-	-	-	-	-	-	-
Stage 2	118	114	-	150	189	-	-	-	-	-	-	-
Critical Hdwy	7.2	6.5	6.2	7.1	6.5	6.2	4.39	-	-	4.1	-	-
Critical Hdwy Stg 1	6.2	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.2	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.59	4	3.3	3.5	4	3.3	2.461	-	-	2.2	-	-
Pot Cap-1 Maneuver	680	654	911	693	613	986	1238	-	-	1531	-	-
Stage 1	845	785	-	896	805	-	-	-	-	-	-	-
Stage 2	867	805	-	857	748	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	667	645	909	672	604	986	1238	-	-	1531	-	-
Mov Cap-2 Maneuver	667	645	-	672	604	-	-	-	-	-	-	-
Stage 1	833	785	-	883	794	-	-	-	-	-	-	-
Stage 2	848	794	-	840	748	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.8	10.1	1.4	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1238	-	-	667	909	716	1531	-	-
HCM Lane V/C Ratio	0.014	-	-	0.113	0.016	0.017	-	-	-
HCM Control Delay (s)	7.9	0	-	11.1	9	10.1	0	-	-
HCM Lane LOS	A	A	-	B	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.1	0.1	0	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	79	24	57	76	30	71
Future Volume (vph)	79	24	57	76	30	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850	0.923			
Flt Protected	0.950					0.985
Satd. Flow (prot)	1752	1553	1592	0	0	1701
Flt Permitted	0.950					0.985
Satd. Flow (perm)	1752	1553	1592	0	0	1701
Link Speed (k/h)	50		50			50
Link Distance (m)	60.1		43.2			365.1
Travel Time (s)	4.3		3.1			26.3
Confl. Peds. (#/hr)		3				
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	3%	4%	5%	14%	10%	10%
Adj. Flow (vph)	90	27	65	86	34	81
Shared Lane Traffic (%)						
Lane Group Flow (vph)	90	27	151	0	0	115
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	28.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	3.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	79	24	57	76	30	71
Future Vol, veh/h	79	24	57	76	30	71
Conflicting Peds, #/hr	0	3	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	4	5	14	10	10
Mvmt Flow	90	27	65	86	34	81

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	257	111	0	0	151	0
Stage 1	108	-	-	-	-	-
Stage 2	149	-	-	-	-	-
Critical Hdwy	6.43	6.24	-	-	4.2	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.336	-	-	2.29	-
Pot Cap-1 Maneuver	730	937	-	-	1382	-
Stage 1	914	-	-	-	-	-
Stage 2	876	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	711	935	-	-	1382	-
Mov Cap-2 Maneuver	711	-	-	-	-	-
Stage 1	914	-	-	-	-	-
Stage 2	853	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.4	0	2.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	711	935	1382	-
HCM Lane V/C Ratio	-	-	0.126	0.029	0.025	-
HCM Control Delay (s)	-	-	10.8	9	7.7	0
HCM Lane LOS	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0.1	0.1	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	14	2	39	36	0	87
Future Volume (vph)	14	2	39	36	0	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.986		0.935			
Flt Protected	0.957					
Satd. Flow (prot)	1304	0	1707	0	0	1792
Flt Permitted	0.957					
Satd. Flow (perm)	1304	0	1707	0	0	1792
Link Speed (k/h)	50		50			50
Link Distance (m)	182.2		224.8			117.7
Travel Time (s)	13.1		16.2			8.5
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	36%	50%	5%	3%	0%	6%
Adj. Flow (vph)	17	2	47	43	0	105
Shared Lane Traffic (%)						
Lane Group Flow (vph)	19	0	90	0	0	105
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 14.6%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	14	2	39	36	0	87
Future Vol, veh/h	14	2	39	36	0	87
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	36	50	5	3	0	6
Mvmt Flow	17	2	47	43	0	105

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	174	69	0	0	90	0
Stage 1	69	-	-	-	-	-
Stage 2	105	-	-	-	-	-
Critical Hdwy	6.76	6.7	-	-	4.1	-
Critical Hdwy Stg 1	5.76	-	-	-	-	-
Critical Hdwy Stg 2	5.76	-	-	-	-	-
Follow-up Hdwy	3.824	3.75	-	-	2.2	-
Pot Cap-1 Maneuver	744	875	-	-	1518	-
Stage 1	874	-	-	-	-	-
Stage 2	841	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	744	875	-	-	1518	-
Mov Cap-2 Maneuver	744	-	-	-	-	-
Stage 1	874	-	-	-	-	-
Stage 2	841	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.9	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	758	1518	-
HCM Lane V/C Ratio	-	-	0.025	-	-
HCM Control Delay (s)	-	-	9.9	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	94	714	52	28	634	18	55	126	76	27	92	139
Future Volume (vph)	94	714	52	28	634	18	55	126	76	27	92	139
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	15.0		0.0	0.0		25.0
Storage Lanes	0		0	0		0	1		0	0		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00		0.97	0.98			1.00	0.95
Frt		0.991			0.996			0.943				0.850
Flt Protected		0.995			0.998		0.950				0.989	
Satd. Flow (prot)	0	3445	0	0	3508	0	1770	1709	0	0	1794	1568
Flt Permitted		0.758			0.884		0.670				0.895	
Satd. Flow (perm)	0	2623	0	0	3107	0	1212	1709	0	0	1615	1496
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			4			25				142
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		381.6			301.4			44.9			104.0	
Travel Time (s)		27.5			21.7			3.2			7.5	
Confl. Peds. (#/hr)	8		3	3		8	24		22	22		24
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	6%	3%	0%	0%	2%	12%	2%	5%	0%	4%	5%	3%
Adj. Flow (vph)	96	729	53	29	647	18	56	129	78	28	94	142
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	878	0	0	694	0	56	207	0	0	122	142
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		1	6		8	8		4	4	4
Switch Phase												
Minimum Initial (s)	5.0	25.0		5.0	25.0		25.0	25.0		25.0	25.0	25.0
Minimum Split (s)	9.5	31.0		9.5	31.0		31.0	31.0		31.0	31.0	31.0
Total Split (s)	9.5	72.5		9.5	72.5		38.0	38.0		38.0	38.0	38.0
Total Split (%)	7.9%	60.4%		7.9%	60.4%		31.7%	31.7%		31.7%	31.7%	31.7%
Maximum Green (s)	5.0	66.5		5.0	66.5		32.0	32.0		32.0	32.0	32.0
Yellow Time (s)	3.5	4.0		3.5	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	2.0		1.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)		6.0			6.0		6.0	6.0			6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes			Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	None		Max	Max		Max	Max	Max
Walk Time (s)		10.0			10.0		10.0	10.0		10.0	10.0	10.0
Flash Dont Walk (s)		15.0			15.0		15.0	15.0		15.0	15.0	15.0
Pedestrian Calls (#/hr)		0			0		0	0		0	0	0
Act Effct Green (s)		76.0			76.0		32.0	32.0			32.0	32.0
Actuated g/C Ratio		0.63			0.63		0.27	0.27			0.27	0.27
v/c Ratio		0.53			0.35		0.17	0.44			0.28	0.28

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay		13.4			10.9		35.7	35.3			37.1	7.1
Queue Delay		0.0			0.0		0.0	0.0			0.0	0.0
Total Delay		13.4			10.9		35.7	35.3			37.1	7.1
LOS		B			B		D	D			D	A
Approach Delay		13.4			10.9			35.4			20.9	
Approach LOS		B			B			D			C	
Queue Length 50th (m)		55.1			37.4		10.2	35.5			22.8	0.0
Queue Length 95th (m)		71.1			48.2		21.2	58.1			39.5	15.0
Internal Link Dist (m)		357.6			277.4			20.9			80.0	
Turn Bay Length (m)							15.0					25.0
Base Capacity (vph)		1664			1969		323	474			430	503
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		0.53			0.35		0.17	0.44			0.28	0.28

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 88 (73%), Referenced to phase 2:EBTL, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay: 16.3		Intersection LOS: B	
Intersection Capacity Utilization 88.3%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 1: 3rd Avenue East & 10th Street East

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	94	714	52	28	634	18	55	126	76	27	92	139
Future Volume (vph)	94	714	52	28	634	18	55	126	76	27	92	139
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0			6.0	6.0
Lane Util. Factor		0.95			0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes		1.00			1.00		1.00	0.98			1.00	0.95
Flpb, ped/bikes		1.00			1.00		0.97	1.00			1.00	1.00
Frt		0.99			1.00		1.00	0.94			1.00	0.85
Flt Protected		0.99			1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)		3441			3508		1718	1710			1784	1496
Flt Permitted		0.76			0.88		0.67	1.00			0.90	1.00
Satd. Flow (perm)		2623			3106		1212	1710			1615	1496
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	96	729	53	29	647	18	56	129	78	28	94	142
RTOR Reduction (vph)	0	3	0	0	1	0	0	18	0	0	0	104
Lane Group Flow (vph)	0	875	0	0	693	0	56	189	0	0	122	38
Confl. Peds. (#/hr)	8		3	3		8	24		22	22		24
Heavy Vehicles (%)	6%	3%	0%	0%	2%	12%	2%	5%	0%	4%	5%	3%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)		76.0			76.0		32.0	32.0			32.0	32.0
Effective Green, g (s)		76.0			76.0		32.0	32.0			32.0	32.0
Actuated g/C Ratio		0.63			0.63		0.27	0.27			0.27	0.27
Clearance Time (s)		6.0			6.0		6.0	6.0			6.0	6.0
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)		1661			1967		323	456			430	398
v/s Ratio Prot								c0.11				
v/s Ratio Perm		c0.33			0.22		0.05				0.08	0.03
v/c Ratio		0.53			0.35		0.17	0.41			0.28	0.10
Uniform Delay, d1		12.1			10.4		33.8	36.3			34.9	33.1
Progression Factor		1.00			1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2		0.3			0.1		1.2	2.8			1.6	0.5
Delay (s)		12.4			10.5		35.0	39.0			36.6	33.6
Level of Service		B			B		C	D			D	C
Approach Delay (s)		12.4			10.5			38.2			35.0	
Approach LOS		B			B			D			C	

Intersection Summary					
HCM 2000 Control Delay	17.8	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.51				
Actuated Cycle Length (s)	120.0	Sum of lost time (s)		16.5	
Intersection Capacity Utilization	88.3%	ICU Level of Service		E	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	241	49	101	205	104	134
Future Volume (vph)	241	49	101	205	104	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.977		0.910			
Flt Protected	0.960					0.979
Satd. Flow (prot)	1741	0	1662	0	0	1814
Flt Permitted	0.960					0.979
Satd. Flow (perm)	1741	0	1662	0	0	1814
Link Speed (k/h)	50		50			50
Link Distance (m)	107.8		731.0			342.1
Travel Time (s)	7.8		52.6			24.6
Confl. Peds. (#/hr)				3	3	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	2%	4%	4%	4%	2%	3%
Adj. Flow (vph)	287	58	120	244	124	160
Shared Lane Traffic (%)						
Lane Group Flow (vph)	345	0	364	0	0	284
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	57.3%	ICU Level of Service	B
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	16.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	241	49	101	205	104	134
Future Vol, veh/h	241	49	101	205	104	134
Conflicting Peds, #/hr	0	0	0	3	3	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	4	4	4	2	3
Mvmt Flow	287	58	120	244	124	160

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	653	245	0	0	367	0
Stage 1	245	-	-	-	-	-
Stage 2	408	-	-	-	-	-
Critical Hdwy	6.42	6.24	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.336	-	-	2.218	-
Pot Cap-1 Maneuver	432	789	-	-	1192	-
Stage 1	796	-	-	-	-	-
Stage 2	671	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	381	787	-	-	1189	-
Mov Cap-2 Maneuver	381	-	-	-	-	-
Stage 1	794	-	-	-	-	-
Stage 2	595	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	43.6	0	3.7
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	417	1189	-
HCM Lane V/C Ratio	-	-	0.828	0.104	-
HCM Control Delay (s)	-	-	43.6	8.4	0
HCM Lane LOS	-	-	E	A	A
HCM 95th %tile Q(veh)	-	-	7.7	0.3	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	5	10	0	4	6	13	167	1	2	83	63
Future Volume (vph)	87	5	10	0	4	6	13	167	1	2	83	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		35.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		1	0		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.921			0.999			0.942	
Flt Protected		0.955						0.996			0.999	
Satd. Flow (prot)	0	1748	1615	0	1750	0	0	1856	0	0	1765	0
Flt Permitted		0.955						0.996			0.999	
Satd. Flow (perm)	0	1748	1615	0	1750	0	0	1856	0	0	1765	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		172.3			56.1			342.1			229.9	
Travel Time (s)		12.4			4.0			24.6			16.6	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	4%	0%	0%	0%	0%	0%	0%	2%	0%	0%	0%	3%
Adj. Flow (vph)	105	6	12	0	5	7	16	201	1	2	100	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	111	12	0	12	0	0	218	0	0	178	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	35.1%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	87	5	10	0	4	6	13	167	1	2	83	63
Future Vol, veh/h	87	5	10	0	4	6	13	167	1	2	83	63
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	350	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	4	0	0	0	0	0	0	2	0	0	0	3
Mvmt Flow	105	6	12	0	5	7	16	201	1	2	100	76

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	382	376	138	385	414	202	176	0	0	202	0	0
Stage 1	142	142	-	234	234	-	-	-	-	-	-	-
Stage 2	240	234	-	151	180	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.14	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	572	558	916	577	532	844	1412	-	-	1382	-	-
Stage 1	856	783	-	774	715	-	-	-	-	-	-	-
Stage 2	759	715	-	856	754	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	557	550	916	558	524	844	1412	-	-	1382	-	-
Mov Cap-2 Maneuver	557	550	-	558	524	-	-	-	-	-	-	-
Stage 1	845	781	-	764	706	-	-	-	-	-	-	-
Stage 2	738	706	-	837	752	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.7	10.4	0.5	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1412	-	-	557	916	678	1382	-	-
HCM Lane V/C Ratio	0.011	-	-	0.199	0.013	0.018	0.002	-	-
HCM Control Delay (s)	7.6	0	-	13.1	9	10.4	7.6	0	-
HCM Lane LOS	A	A	-	B	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.7	0	0.1	0	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	75	42	73	61	47	112
Future Volume (vph)	75	42	73	61	47	112
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850	0.939			
Flt Protected	0.950					0.985
Satd. Flow (prot)	1687	1583	1680	0	0	1850
Flt Permitted	0.950					0.985
Satd. Flow (perm)	1687	1583	1680	0	0	1850
Link Speed (k/h)	50		50			50
Link Distance (m)	60.1		43.2			365.1
Travel Time (s)	4.3		3.1			26.3
Confl. Peds. (#/hr)	1	1				
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles (%)	7%	2%	3%	10%	4%	0%
Adj. Flow (vph)	106	59	103	86	66	158
Shared Lane Traffic (%)						
Lane Group Flow (vph)	106	59	189	0	0	224
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	30.5%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	4.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	75	42	73	61	47	112
Future Vol, veh/h	75	42	73	61	47	112
Conflicting Peds, #/hr	1	1	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	71	71	71	71	71	71
Heavy Vehicles, %	7	2	3	10	4	0
Mvmt Flow	106	59	103	86	66	158

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	437	147	0	0	189	0
Stage 1	146	-	-	-	-	-
Stage 2	291	-	-	-	-	-
Critical Hdwy	6.47	6.22	-	-	4.14	-
Critical Hdwy Stg 1	5.47	-	-	-	-	-
Critical Hdwy Stg 2	5.47	-	-	-	-	-
Follow-up Hdwy	3.563	3.318	-	-	2.236	-
Pot Cap-1 Maneuver	567	900	-	-	1373	-
Stage 1	869	-	-	-	-	-
Stage 2	747	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	536	899	-	-	1373	-
Mov Cap-2 Maneuver	536	-	-	-	-	-
Stage 1	869	-	-	-	-	-
Stage 2	707	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.9	0	2.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	536	899	1373	-
HCM Lane V/C Ratio	-	-	0.197	0.066	0.048	-
HCM Control Delay (s)	-	-	13.4	9.3	7.8	0
HCM Lane LOS	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	0.7	0.2	0.2	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	34	2	96	33	4	44
Future Volume (vph)	34	2	96	33	4	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.993		0.966			
Flt Protected	0.955					0.996
Satd. Flow (prot)	1802	0	1776	0	0	1858
Flt Permitted	0.955					0.996
Satd. Flow (perm)	1802	0	1776	0	0	1858
Link Speed (k/h)	50		50			50
Link Distance (m)	182.2		224.8			117.7
Travel Time (s)	13.1		16.2			8.5
Confl. Peds. (#/hr)		2		1	1	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	13%	0%	2%
Adj. Flow (vph)	38	2	108	37	4	49
Shared Lane Traffic (%)						
Lane Group Flow (vph)	40	0	145	0	0	53
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	17.9%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	1.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	34	2	96	33	4	44
Future Vol, veh/h	34	2	96	33	4	44
Conflicting Peds, #/hr	0	2	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	13	0	2
Mvmt Flow	38	2	108	37	4	49

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	185	130	0	0	146	0
Stage 1	128	-	-	-	-	-
Stage 2	57	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	809	925	-	-	1448	-
Stage 1	903	-	-	-	-	-
Stage 2	971	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	806	923	-	-	1447	-
Mov Cap-2 Maneuver	806	-	-	-	-	-
Stage 1	902	-	-	-	-	-
Stage 2	968	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.7	0	0.6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	812	1447	-
HCM Lane V/C Ratio	-	-	0.05	0.003	-
HCM Control Delay (s)	-	-	9.7	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Appendix E

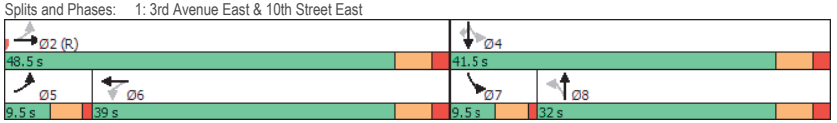
2030 Total Operation Reports

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	127	568	56	19	403	33	31	116	39	26	102	130
Future Volume (vph)	127	568	56	19	403	33	31	116	39	26	102	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	15.0		0.0	0.0		25.0
Storage Lanes	0		0	0		0	1		0	0		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00		0.98	0.99			1.00	0.96
Frt		0.989			0.989			0.962				0.850
Flt Protected		0.992			0.998		0.950				0.990	
Satd. Flow (prot)	0	3286	0	0	3232	0	1687	1627	0	0	1710	1442
Flt Permitted		0.729			0.898		0.664				0.919	
Satd. Flow (perm)	0	2412	0	0	2908	0	1154	1627	0	0	1585	1388
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13			10			19				148
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		381.6			301.4			44.9			104.0	
Travel Time (s)		27.5			21.7			3.2			7.5	
Confl. Peds. (#/hr)	8		5	5		8	25		10	10		25
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	17%	6%	2%	11%	9%	21%	7%	13%	8%	6%	11%	12%
Adj. Flow (vph)	144	645	64	22	458	38	35	132	44	30	116	148
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	853	0	0	518	0	35	176	0	0	146	148
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		6	6		8	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	25.0		25.0	25.0		26.0	26.0		5.0	26.0	26.0
Minimum Split (s)	9.5	31.0		31.0	31.0		32.0	32.0		9.5	32.0	32.0
Total Split (s)	9.5	48.5		39.0	39.0		32.0	32.0		9.5	41.5	41.5
Total Split (%)	10.6%	53.9%		43.3%	43.3%		35.6%	35.6%		10.6%	46.1%	46.1%
Maximum Green (s)	5.0	42.5		33.0	33.0		26.0	26.0		5.0	35.5	35.5
Yellow Time (s)	3.5	4.0		4.0	4.0		4.0	4.0		3.5	4.0	4.0
All-Red Time (s)	1.0	2.0		2.0	2.0		2.0	2.0		1.0	2.0	2.0
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)		6.0			6.0		6.0	6.0			6.0	6.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	Yes									Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	None		Max	Max		None	Max	Max
Walk Time (s)		10.0		10.0	10.0		10.0	10.0			10.0	10.0
Flash Dont Walk (s)		15.0		15.0	15.0		16.0	16.0			16.0	16.0
Pedestrian Calls (#/hr)		0		0	0		0	0			0	0
Act Effct Green (s)		42.5			42.5		35.5	35.5			35.5	35.5
Actuated g/C Ratio		0.47			0.47		0.39	0.39			0.39	0.39
v/c Ratio		0.74			0.38		0.08	0.27			0.23	0.23

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay		24.0			15.9		17.7	17.7			19.5	4.2
Queue Delay		0.0			0.0		0.0	0.0			0.0	0.0
Total Delay		24.0			15.9		17.7	17.7			19.5	4.2
LOS		C			B		B	B			B	A
Approach Delay		24.0			15.9			17.7			11.8	
Approach LOS		C			B			B			B	
Queue Length 50th (m)		59.8			28.4		3.7	17.8			16.5	0.0
Queue Length 95th (m)		80.1			39.0		9.4	31.4			28.8	10.3
Internal Link Dist (m)		357.6			277.4			20.9			80.0	
Turn Bay Length (m)							15.0					25.0
Base Capacity (vph)		1145			1378		455	653			625	637
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		0.74			0.38		0.08	0.27			0.23	0.23

Intersection Summary		
Area Type:	Other	
Cycle Length: 90		
Actuated Cycle Length: 90		
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green		
Natural Cycle: 85		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.74		
Intersection Signal Delay: 19.1	Intersection LOS: B	
Intersection Capacity Utilization 84.9%	ICU Level of Service E	
Analysis Period (min) 15		

Splits and Phases: 1: 3rd Avenue East & 10th Street East



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	127	568	56	19	403	33	31	116	39	26	102	130
Future Volume (vph)	127	568	56	19	403	33	31	116	39	26	102	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0			6.0	6.0
Lane Util. Factor		0.95			0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes		1.00			1.00		1.00	0.99			1.00	0.96
Flpb, ped/bikes		1.00			1.00		0.98	1.00			1.00	1.00
Frt		0.99			0.99		1.00	0.96			1.00	0.85
Flt Protected		0.99			1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)		3280			3231		1651	1627			1707	1388
Flt Permitted		0.73			0.90		0.66	1.00			0.92	1.00
Satd. Flow (perm)		2411			2907		1154	1627			1585	1388
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	144	645	64	22	458	38	35	132	44	30	116	148
RTOR Reduction (vph)	0	7	0	0	5	0	0	12	0	0	0	90
Lane Group Flow (vph)	0	846	0	0	513	0	35	164	0	0	146	58
Confl. Peds. (#/hr)	8		5	5		8	25		10	10		25
Heavy Vehicles (%)	17%	6%	2%	11%	9%	21%	7%	13%	8%	6%	11%	12%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)		42.5			42.5		35.5	35.5			35.5	35.5
Effective Green, g (s)		42.5			42.5		35.5	35.5			35.5	35.5
Actuated g/C Ratio		0.47			0.47		0.39	0.39			0.39	0.39
Clearance Time (s)		6.0			6.0		6.0	6.0			6.0	6.0
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)		1138			1372		455	641			625	547
v/s Ratio Prot								c0.10				
v/s Ratio Perm		c0.35			0.18		0.03				0.09	0.04
v/c Ratio		0.74			0.37		0.08	0.26			0.23	0.11
Uniform Delay, d1		19.3			15.2		17.0	18.4			18.2	17.2
Progression Factor		1.00			1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2		2.7			0.2		0.3	1.0			0.2	0.4
Delay (s)		22.0			15.4		17.3	19.3			18.4	17.6
Level of Service		C			B		B	B			B	B
Approach Delay (s)		22.0			15.4			19.0			18.0	
Approach LOS		C			B			B			B	

Intersection Summary				
HCM 2000 Control Delay	19.2	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.59			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	21.0	
Intersection Capacity Utilization	84.9%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	203	76	98	205	149	140
Future Volume (vph)	203	76	98	205	149	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.963		0.909			
Flt Protected	0.965					0.975
Satd. Flow (prot)	1686	0	1550	0	0	1781
Flt Permitted	0.965					0.975
Satd. Flow (perm)	1686	0	1550	0	0	1781
Link Speed (k/h)	50		50			50
Link Distance (m)	107.8		731.0			342.1
Travel Time (s)	7.8		52.6			24.6
Confl. Peds. (#/hr)	4			1	1	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	5%	4%	4%	15%	5%	3%
Adj. Flow (vph)	231	86	111	233	169	159
Shared Lane Traffic (%)						
Lane Group Flow (vph)	317	0	344	0	0	328
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	59.3%	ICU Level of Service	B
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	15.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	203	76	98	205	149	140
Future Vol, veh/h	203	76	98	205	149	140
Conflicting Peds, #/hr	4	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	5	4	4	15	5	3
Mvmt Flow	231	86	111	233	169	159

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	730	229	0	0	345	0
Stage 1	229	-	-	-	-	-
Stage 2	501	-	-	-	-	-
Critical Hdwy	6.45	6.24	-	-	4.15	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.336	-	-	2.245	-
Pot Cap-1 Maneuver	385	805	-	-	1197	-
Stage 1	802	-	-	-	-	-
Stage 2	603	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	324	804	-	-	1196	-
Mov Cap-2 Maneuver	324	-	-	-	-	-
Stage 1	801	-	-	-	-	-
Stage 2	508	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	44.9	0	4.4
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	387	1196	-
HCM Lane V/C Ratio	-	-	0.819	0.142	-
HCM Control Delay (s)	-	-	44.9	8.5	0
HCM Lane LOS	-	-	E	A	A
HCM 95th %tile Q(veh)	-	-	7.4	0.5	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	1	12	4	3	3	14	107	0	0	223	82
Future Volume (vph)	60	1	12	4	3	3	14	107	0	0	223	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		35.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		1	0		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850		0.958						0.964	
Flt Protected		0.953			0.981			0.994				
Satd. Flow (prot)	0	1648	1615	0	1786	0	0	1632	0	0	1774	0
Flt Permitted		0.953			0.981			0.994				
Satd. Flow (perm)	0	1648	1615	0	1786	0	0	1632	0	0	1774	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		172.3			56.1			342.1			229.9	
Travel Time (s)		12.4			4.0			24.6			16.6	
Confl. Peds. (#/hr)			3	3								
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles (%)	10%	0%	0%	0%	0%	0%	29%	14%	0%	0%	3%	4%
Adj. Flow (vph)	74	1	15	5	4	4	17	132	0	0	275	101
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	75	15	0	13	0	0	149	0	0	376	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	34.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	60	1	12	4	3	3	14	107	0	0	223	82
Future Vol, veh/h	60	1	12	4	3	3	14	107	0	0	223	82
Conflicting Peds, #/hr	0	0	3	3	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	350	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	10	0	0	0	0	0	29	14	0	0	3	4
Mvmt Flow	74	1	15	5	4	4	17	132	0	0	275	101

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	496	492	329	503	542	132	376	0	0	132	0	0
Stage 1	326	326	-	166	166	-	-	-	-	-	-	-
Stage 2	170	166	-	337	376	-	-	-	-	-	-	-
Critical Hdwy	7.2	6.5	6.2	7.1	6.5	6.2	4.39	-	-	4.1	-	-
Critical Hdwy Stg 1	6.2	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.2	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.59	4	3.3	3.5	4	3.3	2.461	-	-	2.2	-	-
Pot Cap-1 Maneuver	471	481	717	482	450	923	1049	-	-	1466	-	-
Stage 1	670	652	-	841	765	-	-	-	-	-	-	-
Stage 2	813	765	-	681	620	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	460	473	715	464	442	923	1049	-	-	1466	-	-
Mov Cap-2 Maneuver	460	473	-	464	442	-	-	-	-	-	-	-
Stage 1	659	652	-	827	752	-	-	-	-	-	-	-
Stage 2	792	752	-	664	620	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.7	11.9	1	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1049	-	-	460	715	536	1466	-	-
HCM Lane V/C Ratio	0.016	-	-	0.164	0.021	0.023	-	-	-
HCM Control Delay (s)	8.5	0	-	14.4	10.1	11.9	0	-	-
HCM Lane LOS	A	A	-	B	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0.1	0.1	0	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	79	27	99	76	38	223
Future Volume (vph)	79	27	99	76	38	223
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850	0.942			
Flt Protected	0.950					0.993
Satd. Flow (prot)	1752	1553	1644	0	0	1715
Flt Permitted	0.950					0.993
Satd. Flow (perm)	1752	1553	1644	0	0	1715
Link Speed (k/h)	50		50			50
Link Distance (m)	60.1		43.2			365.1
Travel Time (s)	4.3		3.1			26.3
Confl. Peds. (#/hr)		3				
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	3%	4%	5%	14%	10%	10%
Adj. Flow (vph)	90	31	113	86	43	253
Shared Lane Traffic (%)						
Lane Group Flow (vph)	90	31	199	0	0	296
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	38.9%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	79	27	99	76	38	223
Future Vol, veh/h	79	27	99	76	38	223
Conflicting Peds, #/hr	0	3	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	4	5	14	10	10
Mvmt Flow	90	31	113	86	43	253

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	495	159	0	0	199	0
Stage 1	156	-	-	-	-	-
Stage 2	339	-	-	-	-	-
Critical Hdwy	6.43	6.24	-	-	4.2	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.336	-	-	2.29	-
Pot Cap-1 Maneuver	532	881	-	-	1327	-
Stage 1	870	-	-	-	-	-
Stage 2	719	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	512	879	-	-	1327	-
Mov Cap-2 Maneuver	512	-	-	-	-	-
Stage 1	870	-	-	-	-	-
Stage 2	692	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.4	0	1.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	512	879	1327	-
HCM Lane V/C Ratio	-	-	0.175	0.035	0.033	-
HCM Control Delay (s)	-	-	13.5	9.2	7.8	0
HCM Lane LOS	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	0.6	0.1	0.1	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	55	4	45	47	1	89
Future Volume (vph)	55	4	45	47	1	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.990		0.931			
Flt Protected	0.956					
Satd. Flow (prot)	1313	0	1701	0	0	1793
Flt Permitted	0.956					
Satd. Flow (perm)	1313	0	1701	0	0	1793
Link Speed (k/h)	50		50			50
Link Distance (m)	182.2		224.8			117.7
Travel Time (s)	13.1		16.2			8.5
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	36%	50%	5%	3%	0%	6%
Adj. Flow (vph)	66	5	54	57	1	107
Shared Lane Traffic (%)						
Lane Group Flow (vph)	71	0	111	0	0	108
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 15.5%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	55	4	45	47	1	89
Future Vol, veh/h	55	4	45	47	1	89
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	36	50	5	3	0	6
Mvmt Flow	66	5	54	57	1	107

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	192	83	0	0	111	0
Stage 1	83	-	-	-	-	-
Stage 2	109	-	-	-	-	-
Critical Hdwy	6.76	6.7	-	-	4.1	-
Critical Hdwy Stg 1	5.76	-	-	-	-	-
Critical Hdwy Stg 2	5.76	-	-	-	-	-
Follow-up Hdwy	3.824	3.75	-	-	2.2	-
Pot Cap-1 Maneuver	726	859	-	-	1492	-
Stage 1	861	-	-	-	-	-
Stage 2	837	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	725	859	-	-	1492	-
Mov Cap-2 Maneuver	725	-	-	-	-	-
Stage 1	861	-	-	-	-	-
Stage 2	836	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.4	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	733	1492	-
HCM Lane V/C Ratio	-	-	0.097	0.001	-
HCM Control Delay (s)	-	-	10.4	7.4	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	119	6	86	34	2	142
Future Volume (vph)	119	6	86	34	2	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.962			
Flt Protected	0.950					0.999
Satd. Flow (prot)	1770	1583	1767	0	0	1727
Flt Permitted	0.950					0.999
Satd. Flow (perm)	1770	1583	1767	0	0	1727
Link Speed (k/h)	50		50			50
Link Distance (m)	95.8		448.2			224.8
Travel Time (s)	6.9		32.3			16.2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	4%	2%	2%	10%
Adj. Flow (vph)	129	7	93	37	2	154
Shared Lane Traffic (%)						
Lane Group Flow (vph)	129	7	130	0	0	156
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 22.3%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	3.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	119	6	86	34	2	142
Future Vol, veh/h	119	6	86	34	2	142
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	4	2	2	10
Mvmt Flow	129	7	93	37	2	154

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	270	112	0	0	130	0
Stage 1	112	-	-	-	-	-
Stage 2	158	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	719	941	-	-	1455	-
Stage 1	913	-	-	-	-	-
Stage 2	871	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	718	941	-	-	1455	-
Mov Cap-2 Maneuver	718	-	-	-	-	-
Stage 1	913	-	-	-	-	-
Stage 2	869	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	718	941	1455	-
HCM Lane V/C Ratio	-	-	0.18	0.007	0.001	-
HCM Control Delay (s)	-	-	11.1	8.9	7.5	0
HCM Lane LOS	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	0.7	0	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	36	12	0	17	43	0
Future Volume (vph)	36	12	0	17	43	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.966					
Flt Protected					0.950	
Satd. Flow (prot)	1786	0	0	1377	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	1786	0	0	1377	1770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	182.2			182.0	98.7	
Travel Time (s)	13.1			13.1	7.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	2%	2%	38%	2%	2%
Adj. Flow (vph)	39	13	0	18	47	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	52	0	0	18	47	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	3.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	36	12	0	17	43	0
Future Vol, veh/h	36	12	0	17	43	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	2	2	38	2	2
Mvmt Flow	39	13	0	18	47	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	52	0	64	46
Stage 1	-	-	-	-	46	-
Stage 2	-	-	-	-	18	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1554	-	942	1023
Stage 1	-	-	-	-	976	-
Stage 2	-	-	-	-	1005	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1554	-	942	1023
Mov Cap-2 Maneuver	-	-	-	-	942	-
Stage 1	-	-	-	-	976	-
Stage 2	-	-	-	-	1005	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	942	-	-	1554	-
HCM Lane V/C Ratio	0.05	-	-	-	-
HCM Control Delay (s)	9	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	150	714	52	28	634	26	55	143	76	34	100	175
Future Volume (vph)	150	714	52	28	634	26	55	143	76	34	100	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	15.0		0.0	0.0		25.0
Storage Lanes	0		0	0		0	1		0	0		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00		0.97	0.99			0.99	0.95
Frt		0.991			0.994			0.948				0.850
Flt Protected		0.992			0.998		0.950				0.987	
Satd. Flow (prot)	0	3430	0	0	3495	0	1770	1718	0	0	1790	1568
Flt Permitted		0.676			0.880		0.632				0.802	
Satd. Flow (perm)	0	2334	0	0	3082	0	1145	1718	0	0	1447	1496
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			6			21				179
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		381.6			301.4			44.9			104.0	
Travel Time (s)		27.5			21.7			3.2			7.5	
Confl. Peds. (#/hr)	8		3	3		8	24		22	22		24
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	6%	3%	0%	0%	2%	12%	2%	5%	0%	4%	5%	3%
Adj. Flow (vph)	153	729	53	29	647	27	56	146	78	35	102	179
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	935	0	0	703	0	56	224	0	0	137	179
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		1	6		8	8		4	4	4
Switch Phase												
Minimum Initial (s)	5.0	25.0		5.0	25.0		25.0	25.0		25.0	25.0	25.0
Minimum Split (s)	9.5	31.0		9.5	31.0		31.0	31.0		31.0	31.0	31.0
Total Split (s)	9.5	76.5		9.5	76.5		34.0	34.0		34.0	34.0	34.0
Total Split (%)	7.9%	63.8%		7.9%	63.8%		28.3%	28.3%		28.3%	28.3%	28.3%
Maximum Green (s)	5.0	70.5		5.0	70.5		28.0	28.0		28.0	28.0	28.0
Yellow Time (s)	3.5	4.0		3.5	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	2.0		1.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)		6.0			6.0		6.0	6.0			6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes			Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	None		Max	Max		Max	Max	Max
Walk Time (s)		10.0			10.0		10.0	10.0		10.0	10.0	10.0
Flash Dont Walk (s)		15.0			15.0		15.0	15.0		15.0	15.0	15.0
Pedestrian Calls (#/hr)		0			0		0	0		0	0	0
Act Effct Green (s)		80.0			80.0		28.0	28.0			28.0	28.0
Actuated g/C Ratio		0.67			0.67		0.23	0.23			0.23	0.23
v/c Ratio		0.60			0.34		0.21	0.54			0.41	0.37

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay		13.0			9.1		39.7	41.9			43.3	7.7
Queue Delay		0.0			0.0		0.0	0.0			0.0	0.0
Total Delay		13.0			9.1		39.7	41.9			43.3	7.7
LOS		B			A		D	D			D	A
Approach Delay		13.0			9.1			41.5			23.1	
Approach LOS		B			A			D			C	
Queue Length 50th (m)		58.2			34.1		10.7	42.1			27.5	0.0
Queue Length 95th (m)		76.5			43.8		22.3	67.2			46.7	17.6
Internal Link Dist (m)		357.6			277.4			20.9			80.0	
Turn Bay Length (m)							15.0					25.0
Base Capacity (vph)		1559			2056		267	416			337	486
Starvation Cap Reductn		0			0		0	0			0	0
Spillback Cap Reductn		0			0		0	0			0	0
Storage Cap Reductn		0			0		0	0			0	0
Reduced v/c Ratio		0.60			0.34		0.21	0.54			0.41	0.37

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 88 (73%), Referenced to phase 2:EBTL, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 16.8		Intersection LOS: B	
Intersection Capacity Utilization 96.6%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 1: 3rd Avenue East & 10th Street East

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	150	714	52	28	634	26	55	143	76	34	100	175
Future Volume (vph)	150	714	52	28	634	26	55	143	76	34	100	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0			6.0	6.0
Lane Util. Factor		0.95			0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes		1.00			1.00		1.00	0.99			1.00	0.95
Flpb, ped/bikes		1.00			1.00		0.97	1.00			0.99	1.00
Frt		0.99			0.99		1.00	0.95			1.00	0.85
Flt Protected		0.99			1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)		3427			3496		1721	1718			1782	1496
Flt Permitted		0.68			0.88		0.63	1.00			0.80	1.00
Satd. Flow (perm)		2336			3081		1144	1718			1447	1496
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	153	729	53	29	647	27	56	146	78	35	102	179
RTOR Reduction (vph)	0	3	0	0	2	0	0	16	0	0	0	137
Lane Group Flow (vph)	0	932	0	0	701	0	56	208	0	0	137	42
Confl. Peds. (#/hr)	8		3	3		8	24		22	22		24
Heavy Vehicles (%)	6%	3%	0%	0%	2%	12%	2%	5%	0%	4%	5%	3%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)		80.0			80.0		28.0	28.0			28.0	28.0
Effective Green, g (s)		80.0			80.0		28.0	28.0			28.0	28.0
Actuated g/C Ratio		0.67			0.67		0.23	0.23			0.23	0.23
Clearance Time (s)		6.0			6.0		6.0	6.0			6.0	6.0
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)		1557			2054		266	400			337	349
v/s Ratio Prot								c0.12				
v/s Ratio Perm		c0.40			0.23		0.05				0.09	0.03
v/c Ratio		0.60			0.34		0.21	0.52			0.41	0.12
Uniform Delay, d1		11.1			8.6		37.1	40.1			39.0	36.3
Progression Factor		1.00			1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2		0.6			0.1		1.8	4.8			3.6	0.7
Delay (s)		11.7			8.7		38.9	44.9			42.6	37.0
Level of Service		B			A		D	D			D	D
Approach Delay (s)		11.7			8.7			43.7			39.4	
Approach LOS		B			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	18.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	96.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	241	120	182	205	153	185
Future Volume (vph)	241	120	182	205	153	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.955		0.929			
Flt Protected	0.968					0.978
Satd. Flow (prot)	1711	0	1697	0	0	1812
Flt Permitted	0.968					0.978
Satd. Flow (perm)	1711	0	1697	0	0	1812
Link Speed (k/h)	50		50			50
Link Distance (m)	107.8		731.0			342.1
Travel Time (s)	7.8		52.6			24.6
Confl. Peds. (#/hr)				3	3	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	2%	4%	4%	4%	2%	3%
Adj. Flow (vph)	287	143	217	244	182	220
Shared Lane Traffic (%)						
Lane Group Flow (vph)	430	0	461	0	0	402
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	71.2%	ICU Level of Service	C
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	77.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	241	120	182	205	153	185
Future Vol, veh/h	241	120	182	205	153	185
Conflicting Peds, #/hr	0	0	0	3	3	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	4	4	4	2	3
Mvmt Flow	287	143	217	244	182	220

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	926	342	0	0	464	0
Stage 1	342	-	-	-	-	-
Stage 2	584	-	-	-	-	-
Critical Hdwy	6.42	6.24	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.336	-	-	2.218	-
Pot Cap-1 Maneuver	298	696	-	-	1097	-
Stage 1	719	-	-	-	-	-
Stage 2	557	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 241	694	-	-	1094	-
Mov Cap-2 Maneuver	~ 241	-	-	-	-	-
Stage 1	717	-	-	-	-	-
Stage 2	451	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	229.1	0	4
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	308	1094	-
HCM Lane V/C Ratio	-	-	1.395	0.166	-
HCM Control Delay (s)	-	-	229.1	8.9	0
HCM Lane LOS	-	-	F	A	A
HCM 95th %tile Q(veh)	-	-	22.4	0.6	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	5	10	0	4	6	13	319	1	2	183	63
Future Volume (vph)	87	5	10	0	4	6	13	319	1	2	183	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		35.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		1	0		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.921						0.966	
Flt Protected		0.955						0.998				
Satd. Flow (prot)	0	1748	1615	0	1750	0	0	1861	0	0	1821	0
Flt Permitted		0.955						0.998				
Satd. Flow (perm)	0	1748	1615	0	1750	0	0	1861	0	0	1821	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		172.3			56.1			342.1			229.9	
Travel Time (s)		12.4			4.0			24.6			16.6	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	4%	0%	0%	0%	0%	0%	0%	2%	0%	0%	0%	3%
Adj. Flow (vph)	105	6	12	0	5	7	16	384	1	2	220	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	111	12	0	12	0	0	401	0	0	298	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	43.8%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	87	5	10	0	4	6	13	319	1	2	183	63
Future Vol, veh/h	87	5	10	0	4	6	13	319	1	2	183	63
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	350	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	4	0	0	0	0	0	0	2	0	0	0	3
Mvmt Flow	105	6	12	0	5	7	16	384	1	2	220	76

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	685	679	258	688	717	385	296	0	0	385	0	0
Stage 1	262	262	-	417	417	-	-	-	-	-	-	-
Stage 2	423	417	-	271	300	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.14	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	360	376	786	363	358	667	1277	-	-	1185	-	-
Stage 1	739	695	-	617	595	-	-	-	-	-	-	-
Stage 2	605	595	-	739	669	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	347	369	786	348	352	667	1277	-	-	1185	-	-
Mov Cap-2 Maneuver	347	369	-	348	352	-	-	-	-	-	-	-
Stage 1	727	694	-	607	585	-	-	-	-	-	-	-
Stage 2	584	585	-	720	668	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19.1	12.5	0.3	0.1
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1277	-	-	348	786	491	1185	-	-
HCM Lane V/C Ratio	0.012	-	-	0.319	0.015	0.025	0.002	-	-
HCM Control Delay (s)	7.9	0	-	20.1	9.7	12.5	8	0	-
HCM Lane LOS	A	A	-	C	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	1.3	0	0.1	0	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	75	50	225	61	54	212
Future Volume (vph)	75	50	225	61	54	212
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850	0.971			
Flt Protected	0.950					0.990
Satd. Flow (prot)	1687	1583	1766	0	0	1866
Flt Permitted	0.950					0.990
Satd. Flow (perm)	1687	1583	1766	0	0	1866
Link Speed (k/h)	50		50			50
Link Distance (m)	60.1		43.2			365.1
Travel Time (s)	4.3		3.1			26.3
Confl. Peds. (#/hr)	1	1				
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles (%)	7%	2%	3%	10%	4%	0%
Adj. Flow (vph)	106	70	317	86	76	299
Shared Lane Traffic (%)						
Lane Group Flow (vph)	106	70	403	0	0	375
Sign Control	Stop		Free			Free

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

Intersection	
Int Delay, s/veh	3.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	75	50	225	61	54	212
Future Vol, veh/h	75	50	225	61	54	212
Conflicting Peds, #/hr	1	1	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	71	71	71	71	71	71
Heavy Vehicles, %	7	2	3	10	4	0
Mvmt Flow	106	70	317	86	76	299

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	812	361	0	0	403	0
Stage 1	360	-	-	-	-	-
Stage 2	452	-	-	-	-	-
Critical Hdwy	6.47	6.22	-	-	4.14	-
Critical Hdwy Stg 1	5.47	-	-	-	-	-
Critical Hdwy Stg 2	5.47	-	-	-	-	-
Follow-up Hdwy	3.563	3.318	-	-	2.236	-
Pot Cap-1 Maneuver	342	684	-	-	1145	-
Stage 1	695	-	-	-	-	-
Stage 2	631	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	314	683	-	-	1145	-
Mov Cap-2 Maneuver	314	-	-	-	-	-
Stage 1	695	-	-	-	-	-
Stage 2	580	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.7	0	1.7
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	314	683	1145	-
HCM Lane V/C Ratio	-	-	0.336	0.103	0.066	-
HCM Control Delay (s)	-	-	22.2	10.9	8.4	0
HCM Lane LOS	-	-	C	B	A	A
HCM 95th %tile Q(veh)	-	-	1.4	0.3	0.2	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	61	3	100	73	6	50
Future Volume (vph)	61	3	100	73	6	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.994		0.943			
Flt Protected	0.954					0.994
Satd. Flow (prot)	1802	0	1698	0	0	1856
Flt Permitted	0.954					0.994
Satd. Flow (perm)	1802	0	1698	0	0	1856
Link Speed (k/h)	50		50			50
Link Distance (m)	182.2		224.8			117.7
Travel Time (s)	13.1		16.2			8.5
Confl. Peds. (#/hr)		2		1	1	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	13%	0%	2%
Adj. Flow (vph)	69	3	112	82	7	56
Shared Lane Traffic (%)						
Lane Group Flow (vph)	72	0	194	0	0	63
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	20.8%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	2.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	61	3	100	73	6	50
Future Vol, veh/h	61	3	100	73	6	50
Conflicting Peds, #/hr	0	2	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	13	0	2
Mvmt Flow	69	3	112	82	7	56

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	224	156	0	0	195	0
Stage 1	154	-	-	-	-	-
Stage 2	70	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	769	895	-	-	1390	-
Stage 1	879	-	-	-	-	-
Stage 2	958	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	764	893	-	-	1389	-
Mov Cap-2 Maneuver	764	-	-	-	-	-
Stage 1	878	-	-	-	-	-
Stage 2	953	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.2	0	0.8
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	769	1389	-
HCM Lane V/C Ratio	-	-	0.094	0.005	-
HCM Control Delay (s)	-	-	10.2	7.6	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	80	4	169	120	6	105
Future Volume (vph)	80	4	169	120	6	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.944			
Flt Protected	0.950					0.997
Satd. Flow (prot)	1770	1583	1748	0	0	1874
Flt Permitted	0.950					0.997
Satd. Flow (perm)	1770	1583	1748	0	0	1874
Link Speed (k/h)	50		50			50
Link Distance (m)	95.8		448.2			224.8
Travel Time (s)	6.9		32.3			16.2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	3%	2%	2%	1%
Adj. Flow (vph)	87	4	184	130	7	114
Shared Lane Traffic (%)						
Lane Group Flow (vph)	87	4	314	0	0	121
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	27.3%	ICU Level of Service	A
Analysis Period (min)	15		

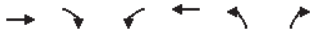
Intersection	
Int Delay, s/veh	2.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	80	4	169	120	6	105
Future Vol, veh/h	80	4	169	120	6	105
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	3	2	2	1
Mvmt Flow	87	4	184	130	7	114

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	377	249	0	0	314	0
Stage 1	249	-	-	-	-	-
Stage 2	128	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	625	790	-	-	1246	-
Stage 1	792	-	-	-	-	-
Stage 2	898	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	621	790	-	-	1246	-
Mov Cap-2 Maneuver	621	-	-	-	-	-
Stage 1	792	-	-	-	-	-
Stage 2	893	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.6	0	0.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	621	790	1246	-
HCM Lane V/C Ratio	-	-	0.14	0.006	0.005	-
HCM Control Delay (s)	-	-	11.7	9.6	7.9	0
HCM Lane LOS	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0	0	-



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	37	42	0	36	28	0
Future Volume (vph)	37	42	0	36	28	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.928					
Flt Protected					0.950	
Satd. Flow (prot)	1660	0	0	1900	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	1660	0	0	1900	1770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	182.2			182.0	98.7	
Travel Time (s)	13.1			13.1	7.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	11%	2%	2%	0%	2%	2%
Adj. Flow (vph)	40	46	0	39	30	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	86	0	0	39	30	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	14.5%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	1.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	37	42	0	36	28	0
Future Vol, veh/h	37	42	0	36	28	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	11	2	2	0	2	2
Mvmt Flow	40	46	0	39	30	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	86	0	102	63
Stage 1	-	-	-	-	63	-
Stage 2	-	-	-	-	39	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1510	-	896	1002
Stage 1	-	-	-	-	960	-
Stage 2	-	-	-	-	983	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1510	-	896	1002
Mov Cap-2 Maneuver	-	-	-	-	896	-
Stage 1	-	-	-	-	960	-
Stage 2	-	-	-	-	983	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	896	-	-	1510	-
HCM Lane V/C Ratio	0.034	-	-	-	-
HCM Control Delay (s)	9.2	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Appendix F

Traffic Signal Warrant

Signal Justification Calculation for Forecasted Volumes
(OTM Book 12 - Justification 7)

Horizon Year: 2030 Total
Region/City/Township: Owen Sound

Major Street: 3rd Avenue East
Minor Street: 15th Street East

North/South?: Y

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 3rd Avenue East						Minor Street 15th Street East						
	Northbound			Southbound			Eastbound			Westbound			Peds Crossing
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
AM Peak Hour	0	98	205	149	140	0	0	0	0	203	0	76	5
PM Peak Hour	0	182	205	153	185	0	0	0	0	241	0	120	3
Avg. Hourly Volume	0	70	103	76	81	0	0	0	0	111	0	49	2

Warrant	AHV
1A - All	489
1B - Minor	160
2A - Major	329
2B - Cross	113

Warrant 1 - Minimum Vehicular Volume

	Approach Lanes	1		2 or more		Average Hourly Volume
1A	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	All Approaches	480	720	600	900	489
					% Fulfilled	68%

	Approach Lanes	1		2 or more		Average Hourly Volume
1B	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Minor Street Approaches	180	255	180	255	160
					% Fulfilled	63%

Warrant 2 - Delay To Cross Traffic

	Approach Lanes	1		2 or more		Average Hourly Volume
2A	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Major Street Approaches	480	720	600	900	329
					% Fulfilled	46%

	Approach Lanes	1		2 or more		Average Hourly Volume
2B	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Traffic Crossing Major Street	50	75	50	75	113
					% Fulfilled	151%

Appendix G

2030 Total Operation Reports (15th Street East Improvements)

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	203	76	98	205	149	140
Future Volume (vph)	203	76	98	205	149	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	100.0	0.0		0.0	0.0	
Storage Lanes	1	1		0	0	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850	0.909			
Flt Protected	0.950					0.975
Satd. Flow (prot)	1719	1553	1550	0	0	1781
Flt Permitted	0.950					0.975
Satd. Flow (perm)	1719	1553	1550	0	0	1781
Link Speed (k/h)	50		50			50
Link Distance (m)	107.8		731.0			342.1
Travel Time (s)	7.8		52.6			24.6
Confl. Peds. (#/hr)	4			1	1	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	5%	4%	4%	15%	5%	3%
Adj. Flow (vph)	231	86	111	233	169	159
Shared Lane Traffic (%)						
Lane Group Flow (vph)	231	86	344	0	0	328
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	54.7%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	11.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	203	76	98	205	149	140
Future Vol, veh/h	203	76	98	205	149	140
Conflicting Peds, #/hr	4	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	1000	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	5	4	4	15	5	3
Mvmt Flow	231	86	111	233	169	159

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	730	229	0	0	345	0
Stage 1	229	-	-	-	-	-
Stage 2	501	-	-	-	-	-
Critical Hdwy	6.45	6.24	-	-	4.15	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.336	-	-	2.245	-
Pot Cap-1 Maneuver	385	805	-	-	1197	-
Stage 1	802	-	-	-	-	-
Stage 2	603	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	324	804	-	-	1196	-
Mov Cap-2 Maneuver	324	-	-	-	-	-
Stage 1	801	-	-	-	-	-
Stage 2	508	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	31.4	0	4.4
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	324	804	1196	-
HCM Lane V/C Ratio	-	-	0.712	0.107	0.142	-
HCM Control Delay (s)	-	-	39.4	10	8.5	0
HCM Lane LOS	-	-	E	B	A	A
HCM 95th %tile Q(veh)	-	-	5.1	0.4	0.5	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	241	120	182	205	153	185
Future Volume (vph)	241	120	182	205	153	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	100.0	0.0		0.0	0.0	
Storage Lanes	1	1		0	0	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850	0.929			
Flt Protected	0.950					0.978
Satd. Flow (prot)	1770	1553	1697	0	0	1812
Flt Permitted	0.950					0.978
Satd. Flow (perm)	1770	1553	1697	0	0	1812
Link Speed (k/h)	50		50			50
Link Distance (m)	107.8		731.0			342.1
Travel Time (s)	7.8		52.6			24.6
Confl. Peds. (#/hr)				3	3	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	2%	4%	4%	4%	2%	3%
Adj. Flow (vph)	287	143	217	244	182	220
Shared Lane Traffic (%)						
Lane Group Flow (vph)	287	143	461	0	0	402
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	38.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	241	120	182	205	153	185
Future Vol, veh/h	241	120	182	205	153	185
Conflicting Peds, #/hr	0	0	0	3	3	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	1000	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	4	4	4	2	3
Mvmt Flow	287	143	217	244	182	220

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	926	342	0	0	464	0
Stage 1	342	-	-	-	-	-
Stage 2	584	-	-	-	-	-
Critical Hdwy	6.42	6.24	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.336	-	-	2.218	-
Pot Cap-1 Maneuver	298	696	-	-	1097	-
Stage 1	719	-	-	-	-	-
Stage 2	557	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 241	694	-	-	1094	-
Mov Cap-2 Maneuver	~ 241	-	-	-	-	-
Stage 1	717	-	-	-	-	-
Stage 2	451	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	112	0	4
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	241	694	1094	-
HCM Lane V/C Ratio	-	-	1.19	0.206	0.166	-
HCM Control Delay (s)	-	-	162	11.5	8.9	0
HCM Lane LOS	-	-	F	B	A	A
HCM 95th %tile Q(veh)	-	-	13.6	0.8	0.6	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Appendix H

All-Way Stop Warrant

AM

EBL	EBT	EBR	Total	Pedestrians	Delay
0	0	0	0	0	0

WBL	WBT	WBR	Total	Pedestrians	Delay
203	0	76	279	5	45

NBL	NBT	NBR	Total	Pedestrians	Delay
0	98	205	303	5	0

SBL	SBT	SBR	Total	Pedestrians	Delay
149	140	0	289	5	4

PM

EBL	EBT	EBR	Total	Pedestrians	Delay
0	0	0	0	0	0

WBL	WBT	WBR	Total	Pedestrians	Delay
241	0	120	361	3	229

NBL	NBT	NBR	Total	Pedestrians	Delay
0	182	205	387	3	0

SBL	SBT	SBR	Total	Pedestrians	Delay
153	185	0	338	3	4

15th Street East	EB-WB
3rd Avenue East	NB-SB

Requirement	AM
1	1
2	1
3	1

Requirement	PM
1	1
2	1
3	1

Total 2030

Warranted	
AM	Yes
PM	Yes

AM

EBL	EBT	EBR	Total	Pedestrians	Delay
0	0	0	0	0	0

WBL	WBT	WBR	Total	Pedestrians	Delay
203	0	58	261	5	18

NBL	NBT	NBR	Total	Pedestrians	Delay
0	74	205	279	5	0

SBL	SBT	SBR	Total	Pedestrians	Delay
63	74	0	137	5	4

PM

EBL	EBT	EBR	Total	Pedestrians	Delay
0	0	0	0	0	0

WBL	WBT	WBR	Total	Pedestrians	Delay
241	0	49	290	3	44

NBL	NBT	NBR	Total	Pedestrians	Delay
0	101	205	306	3	0

SBL	SBT	SBR	Total	Pedestrians	Delay
104	134	0	238	3	4

15th Street East	EB-WB
3rd Avenue East	NB-SB

Requirement	AM
1	1
2	0
3	1

Requirement	PM
1	1
2	1
3	1

Background 2030

Warranted	
AM	No
PM	Yes

AM

EBL	EBT	EBR	Total	Pedestrians	Delay
0	0	0	0	0	0

WBL	WBT	WBR	Total	Pedestrians	Delay
197	0	56	253	5	17

NBL	NBT	NBR	Total	Pedestrians	Delay
0	72	199	271	5	0

SBL	SBT	SBR	Total	Pedestrians	Delay
61	72	0	133	5	4

PM

EBL	EBT	EBR	Total	Pedestrians	Delay
0	0	0	0	0	0

WBL	WBT	WBR	Total	Pedestrians	Delay
233	0	47	280	3	37

NBL	NBT	NBR	Total	Pedestrians	Delay
0	98	199	297	3	0

SBL	SBT	SBR	Total	Pedestrians	Delay
101	130	0	231	3	4

15th Street East	EB-WB
3rd Avenue East	NB-SB

Requirement	AM
1	1
2	0
3	1

Requirement	PM
1	1
2	1
3	1

Base 2022

Warranted	
AM	No
PM	Yes

Appendix I

2030 Total Operation Reports (All-Way Stop)

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	203	76	98	205	149	140
Future Volume (vph)	203	76	98	205	149	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.963		0.909			
Flt Protected	0.965					0.975
Satd. Flow (prot)	1686	0	1550	0	0	1781
Flt Permitted	0.965					0.975
Satd. Flow (perm)	1686	0	1550	0	0	1781
Link Speed (k/h)	50		50			50
Link Distance (m)	107.8		731.0			342.1
Travel Time (s)	7.8		52.6			24.6
Confl. Peds. (#/hr)	4			1	1	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	5%	4%	4%	15%	5%	3%
Adj. Flow (vph)	231	86	111	233	169	159
Shared Lane Traffic (%)						
Lane Group Flow (vph)	317	0	344	0	0	328
Sign Control	Stop		Stop			Stop

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	59.3%	ICU Level of Service	B
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	13.7
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	203	76	98	205	149	140
Future Vol, veh/h	203	76	98	205	149	140
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	5	4	4	15	5	3
Mvmt Flow	231	86	111	233	169	159
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	14.3	12.7	14.1
HCM LOS	B	B	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	73%	52%
Vol Thru, %	32%	0%	48%
Vol Right, %	68%	27%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	303	279	289
LT Vol	0	203	149
Through Vol	98	0	140
RT Vol	205	76	0
Lane Flow Rate	344	317	328
Geometry Grp	1	1	1
Degree of Util (X)	0.481	0.501	0.505
Departure Headway (Hd)	5.033	5.689	5.541
Convergence, Y/N	Yes	Yes	Yes
Cap	716	634	650
Service Time	3.073	3.728	3.582
HCM Lane V/C Ratio	0.48	0.5	0.505
HCM Control Delay	12.7	14.3	14.1
HCM Lane LOS	B	B	B
HCM 95th-tile Q	2.6	2.8	2.9

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	241	120	182	205	153	185
Future Volume (vph)	241	120	182	205	153	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.955		0.929			
Flt Protected	0.968					0.978
Satd. Flow (prot)	1711	0	1697	0	0	1812
Flt Permitted	0.968					0.978
Satd. Flow (perm)	1711	0	1697	0	0	1812
Link Speed (k/h)	50		50			50
Link Distance (m)	107.8		731.0			342.1
Travel Time (s)	7.8		52.6			24.6
Confl. Peds. (#/hr)				3	3	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	2%	4%	4%	4%	2%	3%
Adj. Flow (vph)	287	143	217	244	182	220
Shared Lane Traffic (%)						
Lane Group Flow (vph)	430	0	461	0	0	402
Sign Control	Stop		Stop			Stop

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	71.2%	ICU Level of Service	C
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	25.1
Intersection LOS	D

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	241	120	182	205	153	185
Future Vol, veh/h	241	120	182	205	153	185
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	2	4	4	4	2	3
Mvmt Flow	287	143	217	244	182	220
Number of Lanes	1	0	1	0	0	1

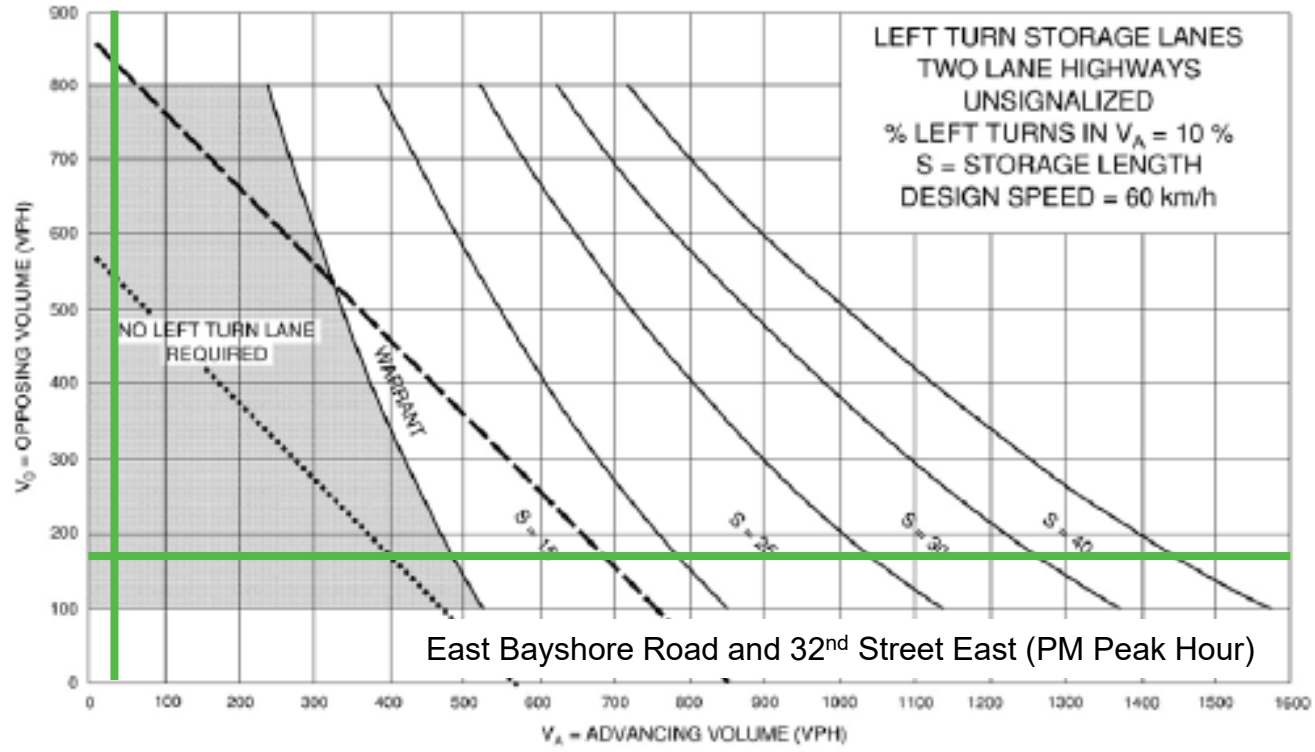
Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	26.6	25.1	23.5
HCM LOS	D	D	C

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	67%	45%
Vol Thru, %	47%	0%	55%
Vol Right, %	53%	33%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	387	361	338
LT Vol	0	241	153
Through Vol	182	0	185
RT Vol	205	120	0
Lane Flow Rate	461	430	402
Geometry Grp	1	1	1
Degree of Util (X)	0.756	0.759	0.709
Departure Headway (Hd)	5.91	6.362	6.346
Convergence, Y/N	Yes	Yes	Yes
Cap	613	572	567
Service Time	3.961	4.362	4.399
HCM Lane V/C Ratio	0.752	0.752	0.709
HCM Control Delay	25.1	26.6	23.5
HCM Lane LOS	D	D	C
HCM 95th-tile Q	6.8	6.8	5.7

Appendix J

Left-Turn Lane Warrant Nomographs

East Bayshore Road and Site Driveway 1 (PM Peak Hour)



East Bayshore Road and 32nd Street East (PM Peak Hour)