Pretty River Estates
Collingwood, ON
Transportation Impact Study

Paradigm Transportation Solutions Limited

May 2022
220121

ptsl.com

Project Summary

Pretty River Estates, Collingwood, ON
Transportation Impact Study

Project Number
220121

May 2022

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Executive Summary

Content

Paradigm Transportation Solutions Limited (Paradigm) was retained to conduct this Transportation Impact Study for a proposed townhouse development at the intersection of Portland Street and Cooper Street in the Town of Collingwood, Ontario.

This Transportation Impact Study (TIS) includes an analysis of existing traffic conditions, a description of the proposed development, traffic forecasts for the assumed full build-out (2024), five-year horizon (2029) and ten-year horizon (2034) from the assumed build-out, and any recommendations required to improve future traffic conditions.

Development Concept

The development plan proposes to build a townhouse development with 90 units. Vehicle access is proposed to Portland Street, opposite of Cooper Street.

Conclusions

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

- **Existing Traffic Conditions:** The study area intersections are currently operating within acceptable levels of service and not critical movements during the AM and PM peak hours.
- **Development Trip Generation:** the residential development is forecast to generate approximately 41 and 50 trips during the AM and PM peak hours upon full build-out.
- **2024 Background Traffic Conditions:** the study area intersections are forecast to operate within acceptable levels of service during the AM and PM peak hours with the following critical movements:
  - All eastbound movements at Hurontario Street and Findley Drive/Tracy Lane are forecast to have a v/c ratio that exceeds 0.85 during the AM peak hour.
- **2024 Total Traffic Conditions:** the study area intersections are forecast to operate within acceptable levels of service during the AM and PM peak hours with the following critical movements:
  - All eastbound movements at Hurontario Street and Findley Drive/Tracy Lane are forecast to have a v/c ratio that exceeds 0.85 during the AM peak hour.

- **2024 Impact of Site-Generated Traffic:** The addition of the site generated traffic volumes, the overall intersection delays at the study area intersections remain the same or increase during the AM and PM peak hours.
- **2029 Background Traffic Conditions:** the study area intersections are forecast to operate within acceptable levels of service during the AM and PM peak hours with the following critical movements:
  - All eastbound movements at Hurontario Street and Findley Drive/Tracy Lane are forecast to have a v/c ratio that exceeds 0.85 during the AM and PM peak hours.
- **2029 Total Traffic Conditions:** the study area intersections are forecast to operate within acceptable levels of service during the AM and PM peak hours with the following critical movements:
  - All eastbound movements at Hurontario Street and Findley Drive/Tracy Lane are forecast to have a v/c ratio that exceeds 0.85 during the AM and PM peak hours.
  - All southbound movements at Poplar Sideroad and Portland Street are forecast to have a v/c ratio that exceeds 0.85 during the AM peak hour.
- **2029 Impact of Site-Generated Traffic:** The addition of the site generated traffic volumes, the overall intersection delays at the study area intersections remain the same or increase during the AM and PM peak hours.
- **2034 Background Traffic Conditions:** the study area intersections are forecast to operate within acceptable levels of service during the AM and PM peak hours with the following critical movements:
  - All eastbound movements at Hurontario Street and Findley Drive/Tracy Lane are forecast to have a v/c ratio that exceeds 0.85 during the AM and PM peak hours.
  - All westbound movements at Hurontario Street and Findley Drive/Tracy Lane are forecast to have a v/c ratio that exceeds 0.85 during the AM peak hour.
  - All southbound movements at Poplar Sideroad and Portland Street are forecast to have a v/c ratio that exceeds 0.85 during the AM peak hour.
- **2034 Total Traffic Conditions:** the study area intersections are forecast to operate within acceptable levels of service during the AM and PM peak hours with the following critical movements:

- All eastbound movements at Hurontario Street and Findley Drive/Tracy Lane are forecast to have a v/c ratio that exceeds 0.85 during the AM and PM peak hours.
- All westbound movements at Hurontario Street and Findley Drive/Tracy Lane are forecast to have a v/c ratio that exceeds 0.85 during the AM peak hour.
- All southbound movements at Poplar Sideroad and Portland Street is forecast to have a v/c ratio that exceeds 0.85 during the AM peak hour.

- **2034 Impact of Site-Generated Traffic:** The addition of the site generated traffic volumes, the overall intersection delays at the study area intersections remain the same or increase during the AM and PM peak hours.

Recommendations

Based on the findings of this study, it is recommended that the development be approved with no requirement for off-site transportation improvements.

It is further recommended that the Town of Collingwood monitor the future traffic volumes at the intersections of Hurontario Street at Findley Drive/Tracy Lane and Poplar Sideroad at Portland Street and review the need for traffic control modifications.

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Figures

Tables

1 Introduction

1.1 Overview

Paradigm Transportation Solutions Limited (Paradigm) was retained to conduct this Transportation Impact Study for a townhouse development located at 17 Portland Street in the Town of Collingwood, Ontario. **Figure 1.1** illustrates the location of the subject site.

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

- Assessment of the current traffic and site conditions within the study area;
- Estimates of background traffic growth;
- Estimates of additional traffic generated by the subject site;
- Analysis of the impact of the future traffic on the surrounding road network for full build-out (year 2024), five-years and ten-years after full build-out (year 2029 and year 2034) horizon years; and
- Recommendations necessary to mitigate this future traffic in a satisfactory manner.

The study scope was developed in consultation with the Town of Collingwood and the County of Simcoe in March 2022. **Appendix A** contains the pre-study consultation material and response from the Town and they County.

1.2 Study Area

The intersections assessed in this study include:

- Poplar Sideroad and Portland Street (unsignalized);
- Portland Street and Cooper Street (unsignalized); and
- Hurontario Street and Findley Drive/Tracy Lane.

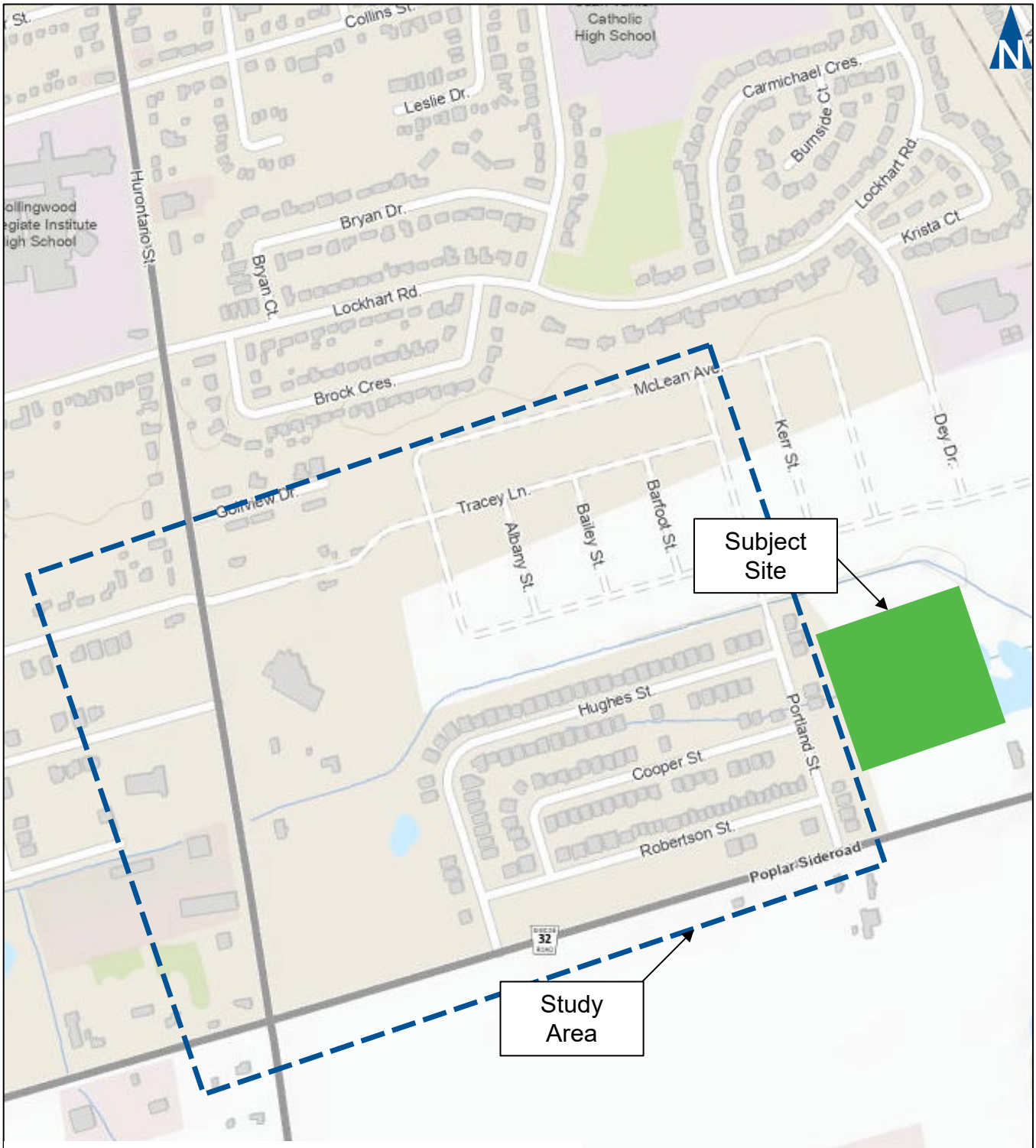

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Image Source: https://opengis.simcoe.ca/public/

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Location of Subject Site

2 Existing Conditions

2.1 Road Characteristics

The roadways of interest within the study area include Hurontario Street, Poplar Sideroad, Portland Street, Cooper Street, Findley Drive, and Tracy Lane. The first two roadways are under the jurisdiction of the County of Simcoe and the others are under the jurisdiction of the Town of Collingwood[1] and are generally described as follows:

- **Hurontario Street (County Road 124)** is designated as an arterial road within the study area. It has a two-lane cross-section with a two way left turn median and has a speed limit of 50 km/h. There are sidewalks on both sides of the roadway. However, south of Tracy Lane, there is no sidewalk on the east side of the roadway.
- **Poplar Sideroad (County Road 32)** is designated as an arterial road within the study area. It has a two-lane cross-section with a speed limit of 60 km/h. There are no sidewalks present however, paved shoulders are provided on both sides of the roadway.
- **Portland Street** is designated as a local road within the study area. It has a two-lane cross-section with a speed limit of 50 km/h. There is a sidewalk on the east side of the roadway.
- **Cooper Street** is designated as a local road within the study area. It has a two-lane cross-section with a speed limit of 50 km/h. There is a sidewalk on the north side of the roadway.
- **Findley Drive** is designated as a local road within the study area. It has a two-lane cross-section with a speed limit of 40 km/h. There is a sidewalk on the north side of the roadway.
- **Tracy Lane** is designated as a local road within the study area. It has a two-lane cross-section with a speed limit of 50 km/h. There are no sidewalks on either side of the roadway.

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

[1] Official Plan of the Town of Collingwood, Schedule 'D' – Transportation Plan

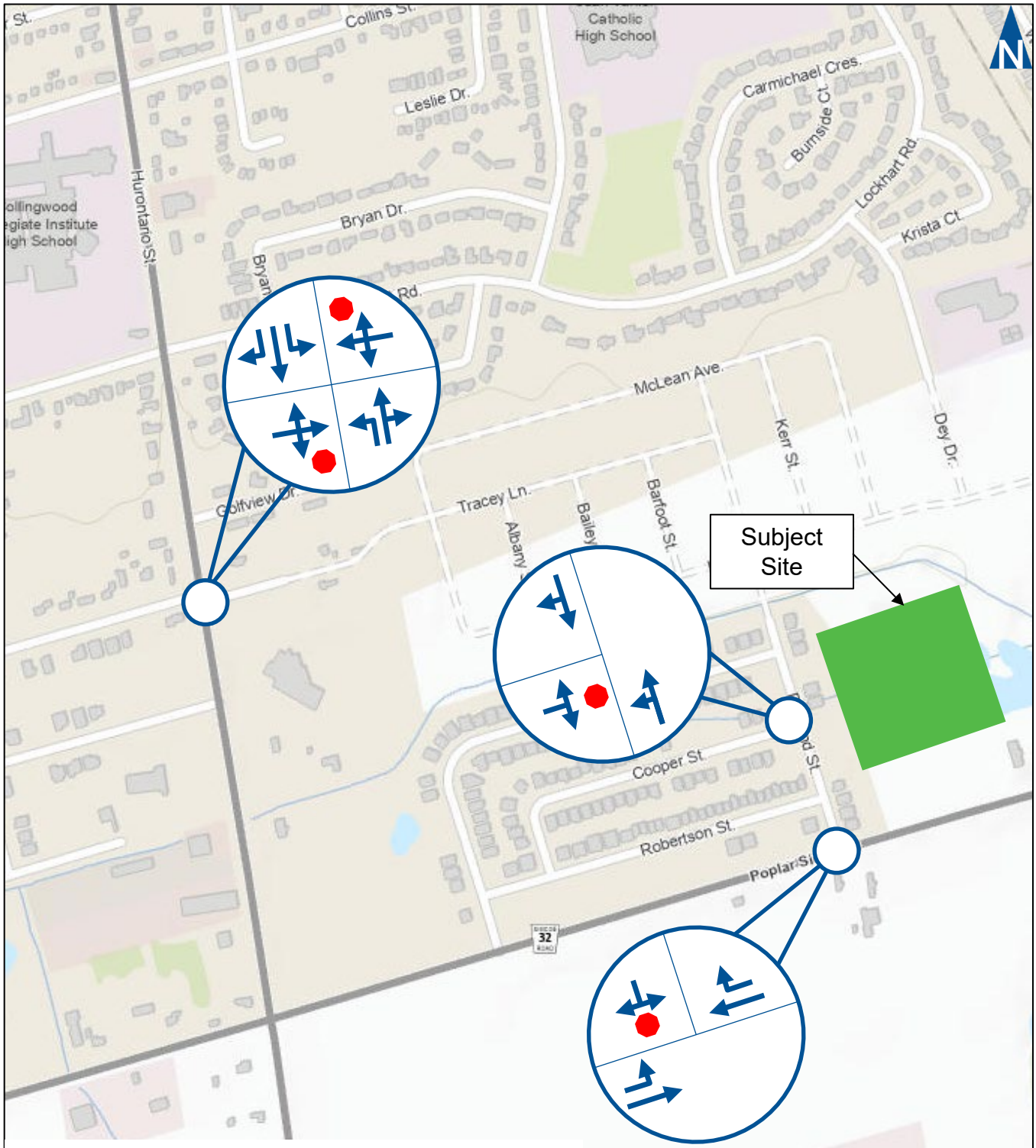

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Image Source: https://opengis.simcoe.ca/public/

Existing Lane Configuration and Traffic Control

2.2 Active Transportation

2.2.1 Walking

Figure 2.2 illustrates the existing trail network in the vicinity of the subject site. The Hamilton Drain Trail can be accessed through a connection on Portland Street north of the subject site.

2.2.2 Cycling

Figure 2.3 illustrates the proposed cycle network. The identified improvement includes paving the Hamilton Drain Trail.

NTS
Image Source: collingwood.ca/trails

Existing Trail Network

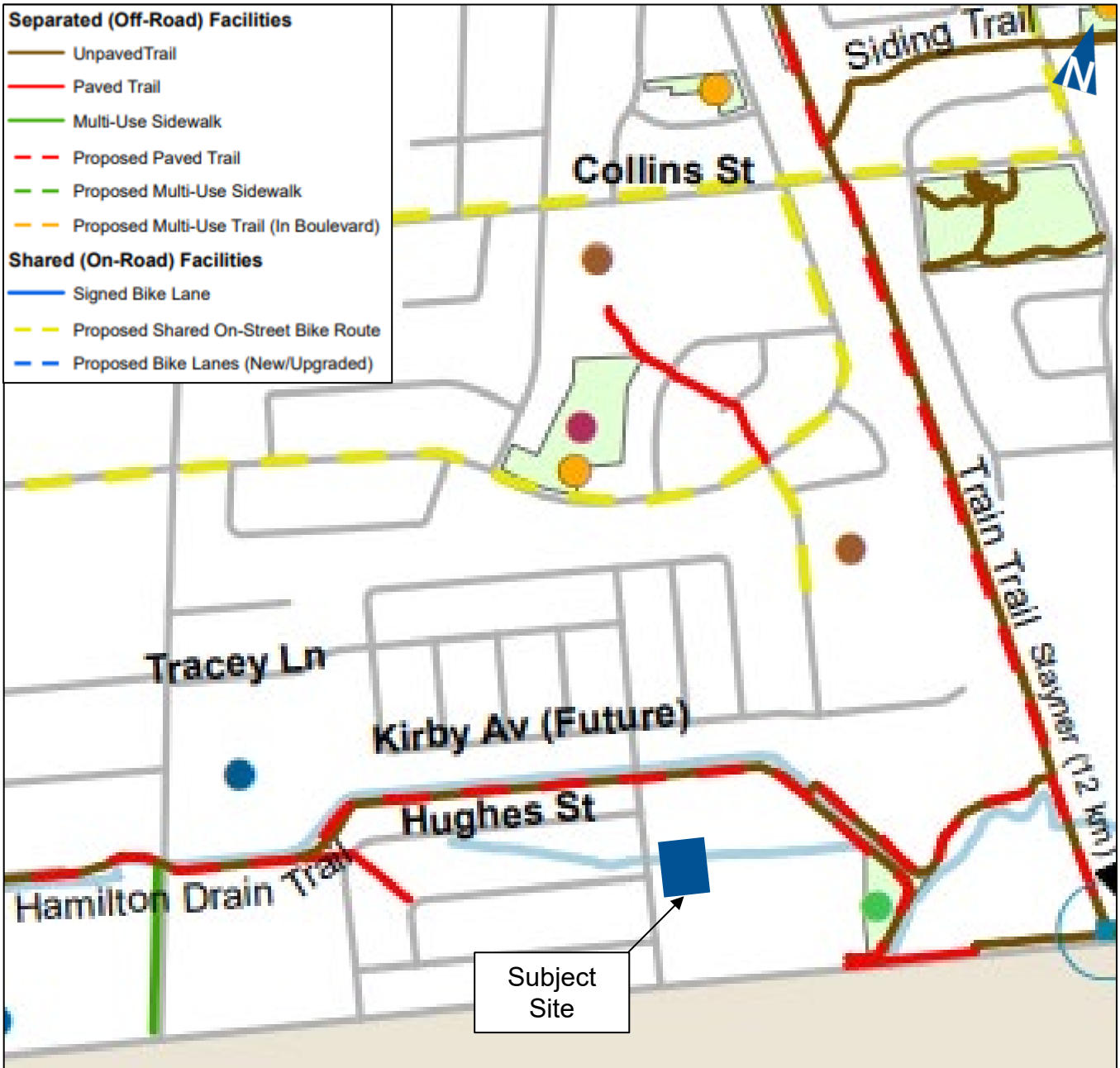

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Image Source: Town of Collingwood Cycling Plan Figure 3.7 Future Cycling Network

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Proposed Cycle Network

2.3 Transit Service

South Georgian Bay Regional Transit[2] does not currently operate routes in the vicinity of the subject development. The nearest routes that currently operate are:

- **Collingwood East Route** operates between the Collingwood Transit Terminal and the eastern area of Collingwood. It operates Monday to Friday from 6:30 AM to 3:25 PM, 6:30 PM to 8:55 PM with headways between 30 minutes to an hour. On Saturday, it operates from 6:30 AM to 7:25 AM, 11:30 AM to 1:25 PM, and 6:30 PM to 8:55 PM with headways between 30 minutes to an hour. On Sunday, it operates from 7:30 AM to 8:55 AM, 12:30 AM to 1:55 PM, and 7:30 PM to 8:55 PM with headways every hour
- **Collingwood Crosstown Route** operates all over the Town Collingwood, ON. It operates Monday to Sunday from 6:25 AM to 8:55 PM with headways every hour; and
- **Collingwood Wasaga Beach Link** operates between the Town of Collingwood and the Springhurst Beach area of Wasaga Beach, ON. It operates Monday to Sunday from 6:00 AM to 8:55 PM with headways every hour.

The closest transit stop to the subject site is located at the Hurontario Street and Lockhart Road intersection which is approximately 1.2 kilometers (15-minute walk) from the subject site.

Figure 2.4 illustrates the existing transit network.

[2] https://www.collingwood.ca/town-services/maps?page=2

NTS
Image Source: South Georgian Bay Regional Transit Map

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Transit Network

2.4 Traffic Volumes

Paradigm undertook turning movement counts at the study area intersections in April 2022.

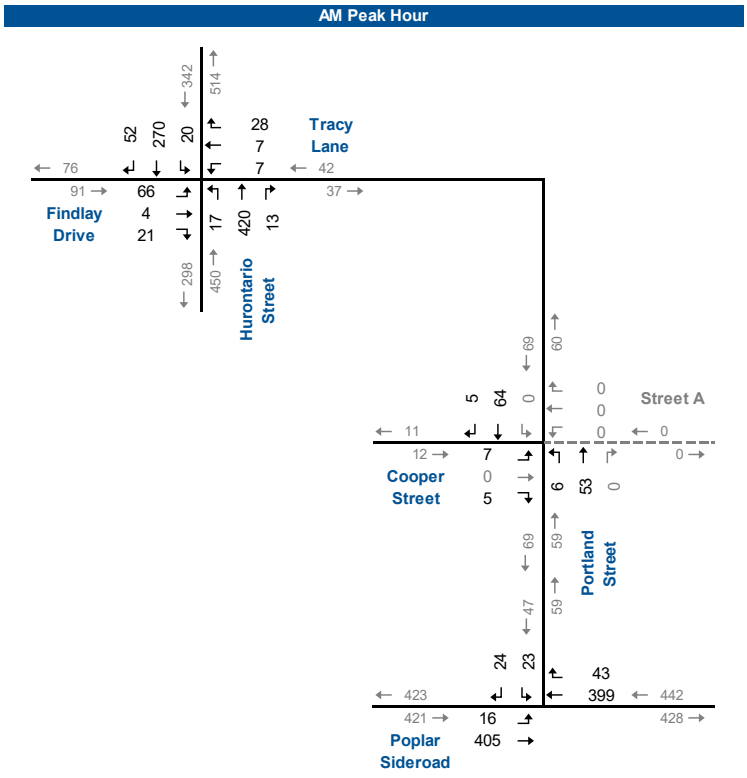
Appendix B contains the observed traffic counts for the study area intersections.

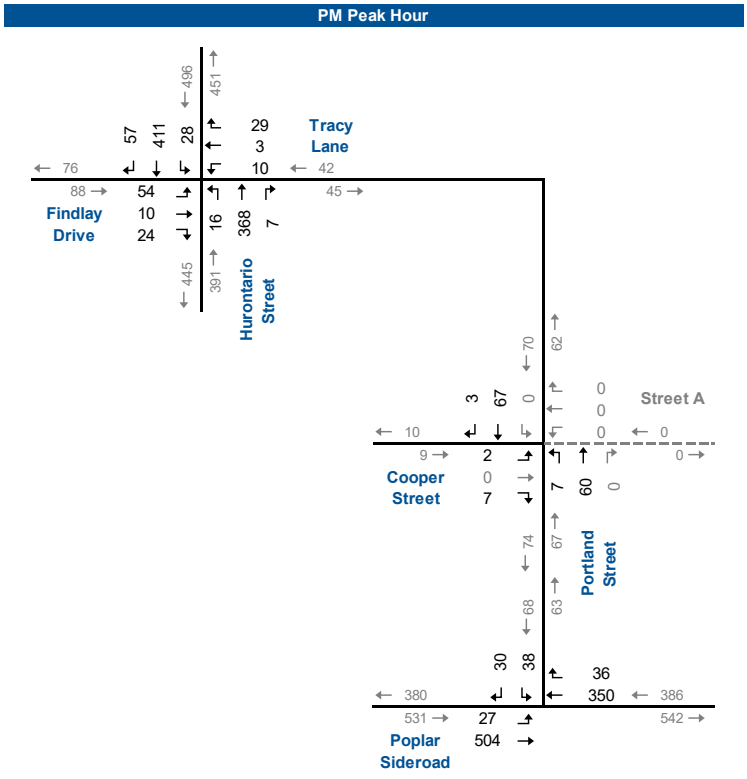
Figure 2.5 illustrate the factored base year weekday AM and PM peak hour traffic volumes.

Due to the 2020/2021 COVID-19 pandemic and the actions of the Federal and Provincial governments enacting such measures as school closures, travel bans and implementing many other physical distancing strategies, there has been a significant impact on travel demands and typical travel patterns.

A potential shift in travel demands and patterns may occur due to the COVID-19 global pandemic. Employers are beginning to shift away from traditional office-based environments to work-from-home models and with commercial/retail and service-based businesses adapting by adjusting business hours and/or switching to web-based e-commerce storefronts, resulting in travel demands and patterns potentially changing from the previous norm.

In a post-COVID condition, it is plausible that traffic volumes may never reach pre-COVID levels because of this shift. With changes in travel demand, behaviour, and patterns, the forecasts as analyzed are conservative (i.e., err on the high side) and potentially under post-COVID conditions, traffic volumes may be lower.





Base Year Traffic Volumes

17 Portland Street, Collingwood TIS
220121

Figure 2.5

2.3 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 base year traffic peak hour volumes.

The level of service conditions on the existing road network have been assessed using Synchro 10. As noted in the Ministry of Transportation Ontario TIS guidelines[3], movements are considered critical under the following conditions:

- The movement has a (v/c) ratio equal to or larger than 0.85;

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.

The study are intersections are currently operating with acceptable levels of service with no specific problem movements. **Appendix C** contains the detailed Synchro reports.

[3] Ministry of Transportation Ontario General Guidelines for the preparation of Traffic Impact Studies, February 2021

TABLE 2.1: BASE YEAR 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	Poplar Sideroad & Portland Street	TWSC	LOS	A	A		**A**		A	A	**A**					C		>	**C**	
			Delay	9	0		**0**		0	0	**0**					19		>	**19**	
			V/C	0.02	0.00				0.00	0.00						0.19		>		
			Q	1	0				0	0						5		>		
			Stor.	70	-				-	15						-		>		
			Avail.	69	-				-	15						-		>		
	Portland Street & Cooper Street	TWSC	LOS	A		>	**A**					A	A		**A**		A	A	**A**	
			Delay	10		>	**10**					8	0		**1**		0	0	**0**	
			V/C	0.02		>						0.01	0.00				0.00	0.00		
			Q	1		>						0	0				0	0		
	Hurontario Street & Findley Drive/Tracy Lane	TWSC	LOS	<	E	>	**E**	<	C	>	**C**	A	A	A	**A**	A	A	A	**A**	
			Delay	<	36	>	**36**	<	17	>	**17**	8	0	0	**0**	9	0	0	**0**	
			V/C	<	0.50	>		<	0.15	>		0.02	0.00	0.00		0.03	0.00	0.00		
			Q	<	20	>		<	4	>		1	0	0		1	0	0		
			Stor.	<	-	>		<	-	>		15	-	-		15	-	15		
			Avail.	<	-	>		<	-	>		14	-	-		14	-	15		
PM Peak Hour	Poplar Sideroad & Portland Street	TWSC	LOS	A	A		**A**		A	A	**A**					C		>	**C**	
			Delay	8	0		**0**		0	0	**0**					17		>	**17**	
			V/C	0.03	0.00				0.00	0.00						0.20		>		
			Q	1	0				0	0						5		>		
			Stor.	70	-				-	15						-		>		
			Avail.	69	-				-	15						-		>		
	Portland Street & Cooper Street	TWSC	LOS	A		>	**A**					A	A		**A**		A	A	**A**	
			Delay	9		>	**9**					8	0		**1**		0	0	**0**	
			V/C	0.01		>						0.01	0.00				0.00	0.00		
			Q	0		>						0	0				0	0		
	Hurontario Street & Findley Drive/Tracy Lane	TWSC	LOS	<	D	>	**D**	<	C	>	**C**	A	A	A	**A**	A	A	A	**A**	
			Delay	<	26	>	**26**	<	16	>	**16**	9	0	0	**0**	8	0	0	**0**	
			V/C	<	0.35	>		<	0.12	>		0.02	0.00	0.00		0.03	0.00	0.00		
			Q	<	11	>		<	3	>		1	0	0		1	0	0		
			Stor.	<	-	>		<	-	>		15	-	-		15	-	15		
			Avail.	<	-	>		<	-	>		14	-	-		14	-	15		

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

3 Development Concept

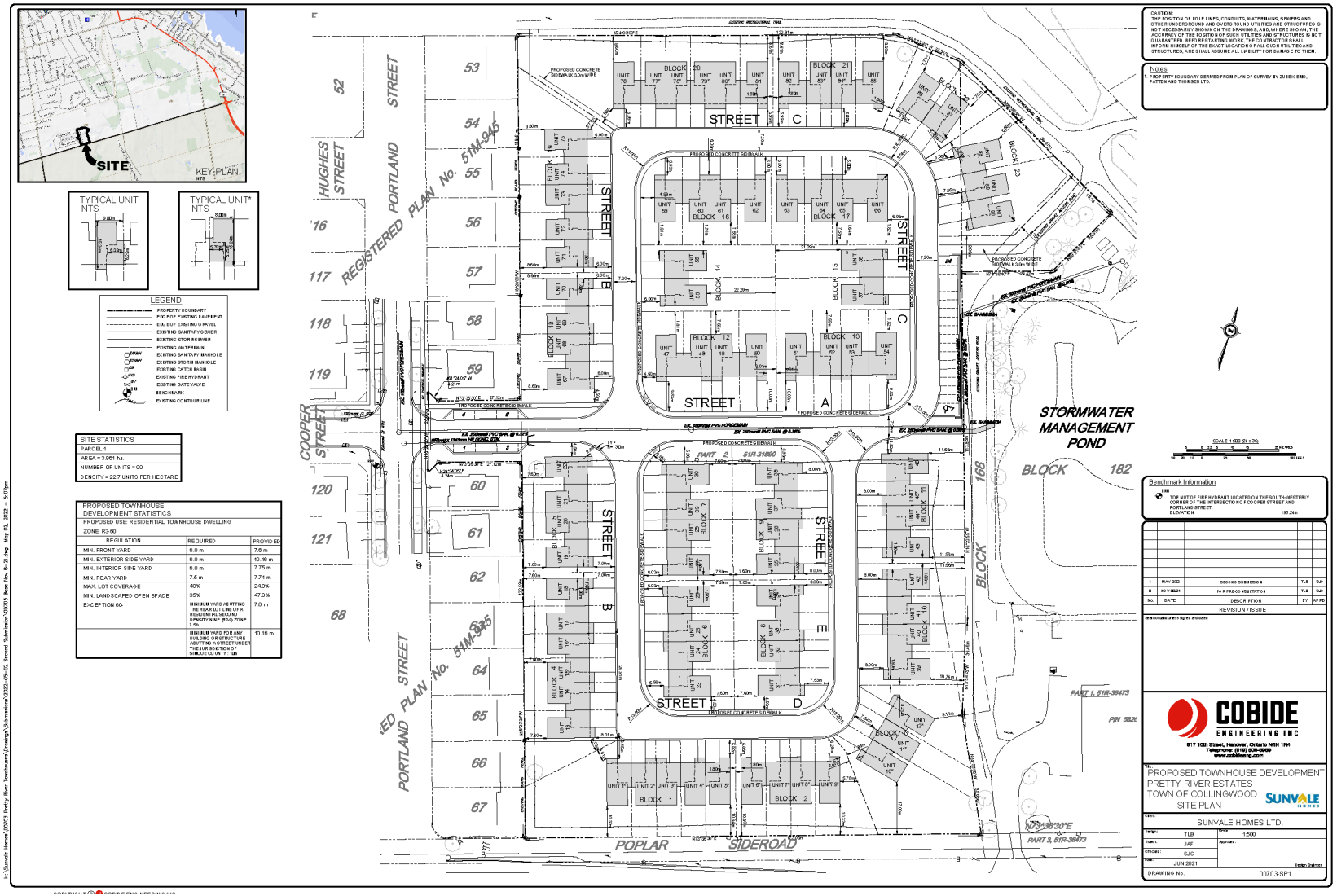
3.1 Development Description

The subject site is located at the intersection of Portland Street and Cooper Street in the Town of Collingwood, ON.

The development plan proposes to build a townhouse development with 90 units.

Vehicle access is proposed to Portland Street, opposite of Cooper Street.

Figure 3.1 shows the proposed development concepts.



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Concept Plan

17 Portland Street, Collingwood TIS
220121

Figure 3.1

3.2 Site Trip Generation

The Institute of Transportation Engineers (ITE) Trip Generation[4] methods predict the site trip generation. The following Land Use Code (LUC) was used to estimate the site trip generation:

- LUC 215 (Single Family Attached Housing).

The regression equation rates were used to calculate the site trips. **Table 3.1** summarizes the estimated trip generation. The site's base trip generation upon full build-out is estimated to be approximately 41 AM peak hour trips and 50 PM peak hour trips. No reductions for alternative modes of transportation were used in the calculation.

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 215 - Single Family Attached Housing	90	Eq	13	28	**41**	Eq	28	22	**50**
Total Trip Generation			**13**	**28**	**41**		**28**	**22**	**50**

LUC 215 - AM: T = 0.52(X) - 5.70 | PM: T = 0.60(X) - 3.93

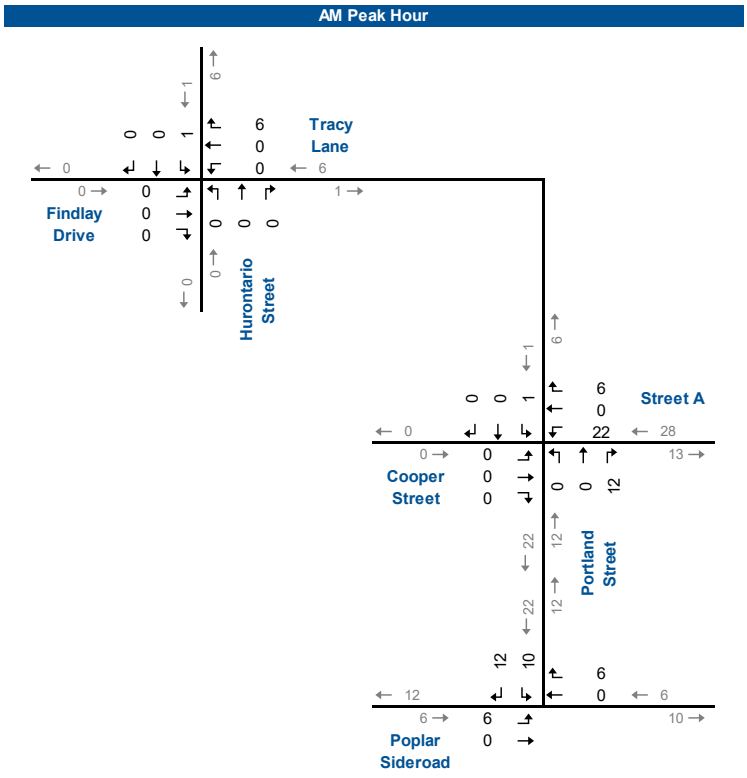
The trip distribution used for this study was based on the distribution from the Transportation Tomorrow Survey (TTS) data. The trip distribution is shown in **Table 3.2**.

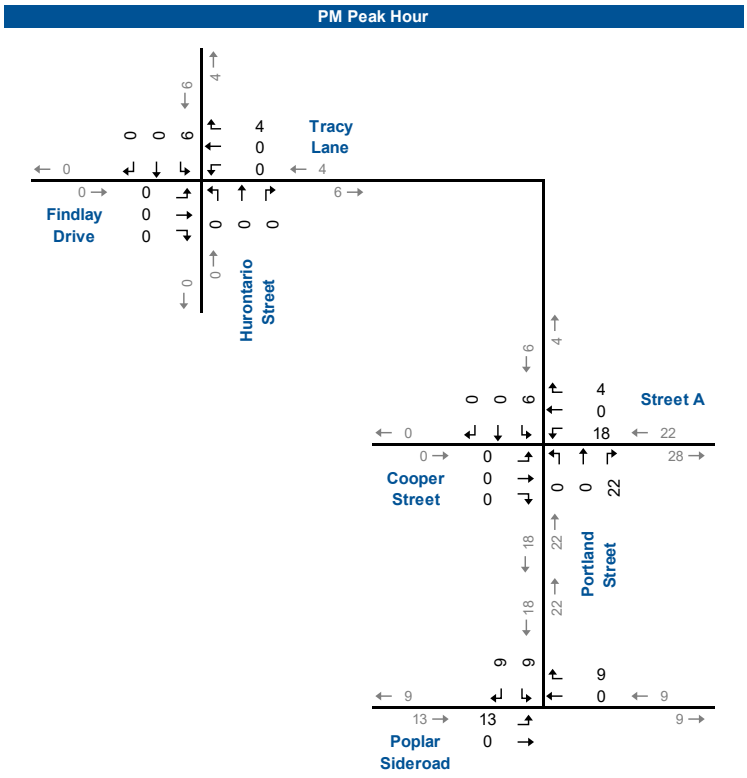
TABLE 3.2: TRIP DISTRIBUTION

Origin/Destination	AM		PM	
	IN	OUT	IN	OUT
North via Hurontario Street	11%	22%	22%	18%
East via Poplar Sideroad	45%	35%	33%	43%
West via Poplar Sideroad	44%	43%	46%	39%
Total	**100%**	**100%**	**100%**	**100%**

Figure 3.2 contains the AM and PM peak hour trip assignment.

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





Site Generated Traffic Volumes

4 Evaluation of Future Traffic Conditions

The assessment of the future traffic conditions contained in this section includes the future traffic forecasts as well as the level of service analysis. A full build-out (2024), five-year horizon (2029), and ten-year horizon (2034) following the anticipated build-out of the subject site has been assessed to determine the impact of the subject site.

The background traffic volumes reflect an annual growth rate of 2.0% per annum applied to the existing volumes on county roads. 0.5% per annum was applied to the existing volumes on local roads. The 2.0% and 0.5% growth rates were provided by the County and the Town, respectively.

The following background developments were identified by the Town for inclusion in the background traffic volumes:

- 452 Raglan Street;
- Summit View Subdivision (50% Completed);
- Eden Oak Subdivision; and
- Poplar Sideroad and Hurontario Street.

Appendix D illustrates the traffic volumes for the McClung South background development.

4.1 2024 Background Horizon

4.1.1 2024 Background Traffic Growth

Figure 4.1 illustrates the 2024 forecast background traffic volumes for the weekday AM and PM peak hours.

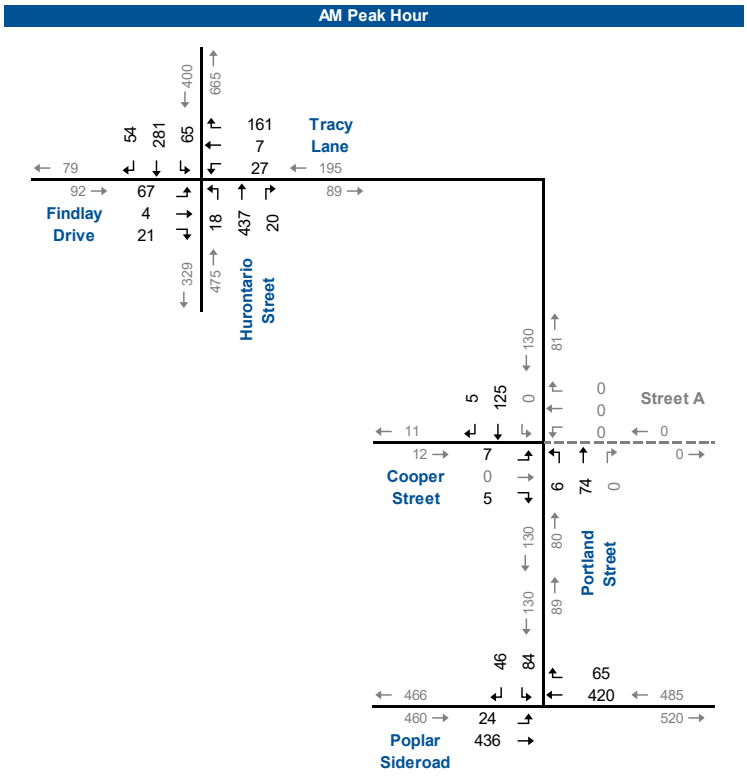
4.1.2 2024 Background Traffic Operations

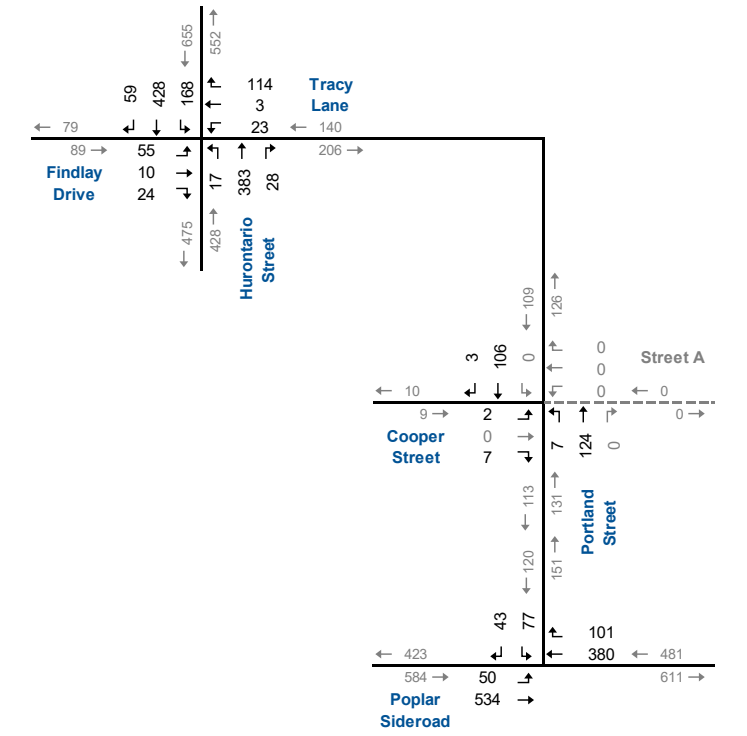
The operations at the study area intersections for the forecast background traffic scenario followed the same methodology used for the existing traffic conditions. **Table 4.1** details the level of service conditions.

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:

- All eastbound movements at Hurontario Street and Findley Drive/Tracy Lane are forecast to have a v/c ratio that exceeds 0.85 during the AM peak hour.

Appendix E contains the supporting detailed Synchro 10 reports.





2024 Background Traffic Volumes

17 Portland Street, Collingwood TIS
220121

Figure 4.1

TABLE 4.1: 2024 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	Poplar Sideroad & Portland Street	TWSC	LOS	A	A		**A**		A	A	**A**					E		>	**E**	
			Delay	9	0		**0**		0	0	**0**					45		>	**45**	
			V/C	0.04	0.00				0.00	0.00						0.68		>		
			Q	1	0				0	0						33		>		
			Stor.	70	-				-	15						-		>		
			Avail.	69	-				-	15						-		>		
	Portland Street & Cooper Street	TWSC	LOS	B		>	**B**					A	A		**A**		A	A	**A**	
			Delay	10		>	**10**					8	0		**1**		0	0	**0**	
			V/C	0.02		>						0.01	0.00				0.00	0.00		
			Q	1		>						0	0				0	0		
	Hurontario Street & Findley Drive/Tracy Lane	TWSC	LOS	<	F	>	**F**	<	D	>	**D**	A	A	A	**A**	A	A	A	**A**	
			Delay	<	201	>	**201**	<	33	>	**33**	8	0	0	**0**	9	0	0	**2**	
			V/C	<	1.12	>		<	0.68	>		0.02	0.00	0.00		0.09	0.00	0.00		
			Q	<	56	>		<	35	>		1	0	0		2	0	0		
			Stor.	<	-	>		<	-	>		15	-	-		15	-	15		
			Avail.	<	-	>		<	-	>		14	-	-		13	-	15		
PM Peak Hour	Poplar Sideroad & Portland Street	TWSC	LOS	A	A		**A**		A	A	**A**					D		>	**D**	
			Delay	9	0		**1**		0	0	**0**					26		>	**26**	
			V/C	0.05	0.00				0.00	0.00						0.44		>		
			Q	2	0				0	0						16		>		
			Stor.	70	-				-	15						-		>		
			Avail.	68	-				-	15						-		>		
	Portland Street & Cooper Street	TWSC	LOS	A		>	**A**					A	A		**A**		A	A	**A**	
			Delay	10		>	**10**					8	0		**0**		0	0	**0**	
			V/C	0.01		>						0.01	0.00				0.00	0.00		
			Q	0		>						0	0				0	0		
	Hurontario Street & Findley Drive/Tracy Lane	TWSC	LOS	<	F	>	**F**	<	D	>	**D**	A	A	A	**A**	A	A	A	**A**	
			Delay	<	103	>	**103**	<	26	>	**26**	9	0	0	**0**	9	0	0	**2**	
			V/C	<	0.80	>		<	0.48	>		0.02	0.00	0.00		0.16	0.00	0.00		
			Q	<	34	>		<	18	>		1	0	0		4	0	0		
			Stor.	<	-	>		<	-	>		15	-	-		15	-	15		
			Avail.	<	-	>		<	-	>		14	-	-		11	-	15		

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

4.2 2024 Total Traffic Horizon

4.2.1 2024 Total Traffic Volumes

Figure 4.2 illustrates the forecast 2024 total (background + site traffic) traffic volumes.

4.2.2 2024 Total Traffic Operations

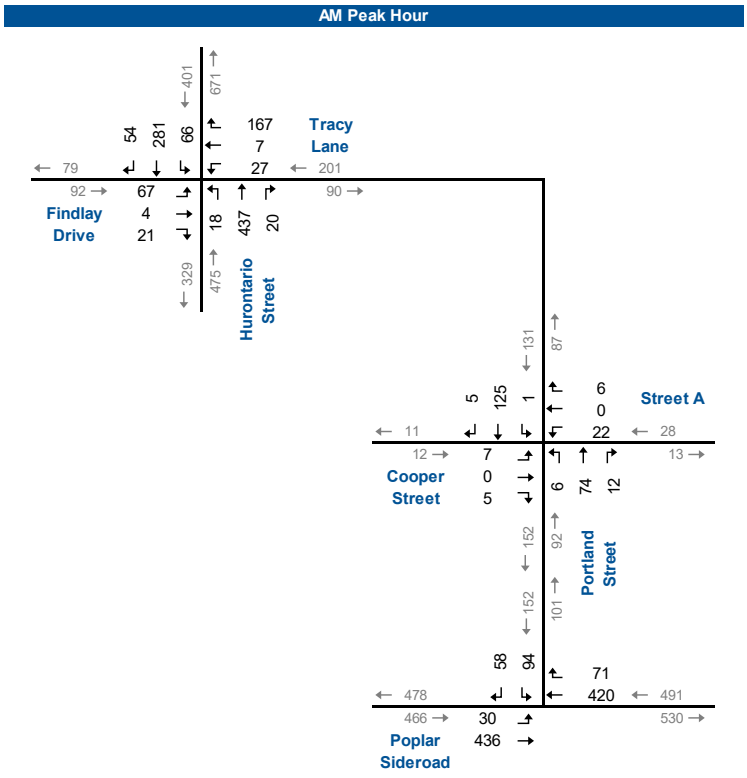
The study area intersection operations analysis for the future total traffic scenario followed the same methodology used for the existing and background traffic conditions. **Table 4.2** details the level of service conditions for the weekday AM and PM peak hours.

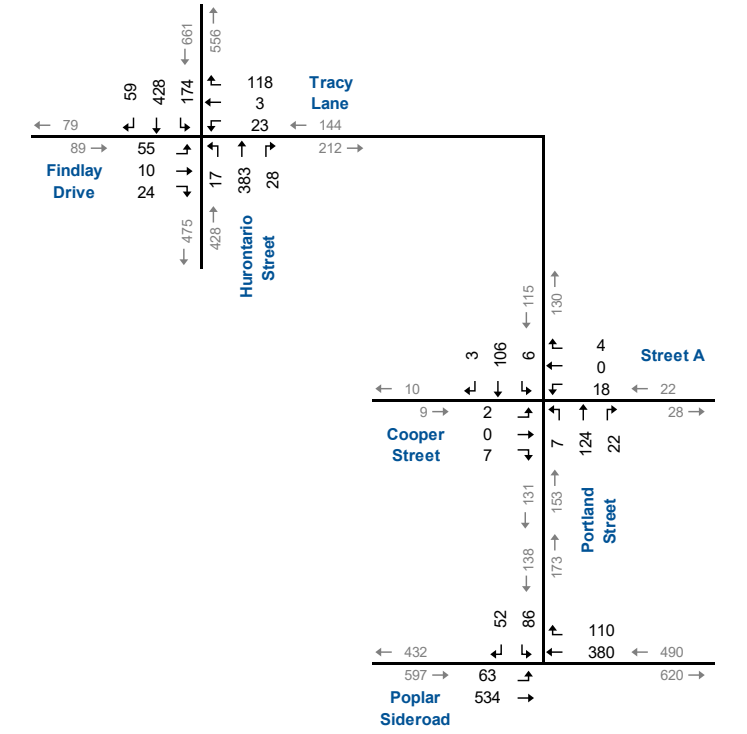
All study area intersections are forecast to operate within acceptable levels of service during the AM and PM peak hour with the following critical movements noted:

- Similarly to the 2024 Background forecasts, the eastbound movements at Hurontario Street and Findley Drive/Tracy Lane are forecast to have a v/c ratio that exceeds 0.85 during the AM peak hour.

With the addition of the site generated traffic volumes, the overall intersection delays at the study area intersections remain the same or increase during the AM and PM peak hours.

Appendix F contains the supporting detailed Synchro 10 reports.





paradigm TRANSPORTATION SOLUTIONS LIMITED

2024 Total Traffic Volumes

TABLE 4.2: 2024 TOTAL 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	Poplar Sideroad & Portland Street	TWSC	LOS	A	A		A		A	A	A					F		>	F	
			Delay	9	0		1		0	0	0					59		>	59	
			V/C	0.04	0.00				0.00	0.00						0.80		>		
			Q	1	0				0	0						46		>		
			Stor.	70	-				-	15						-		>		
			Avail.	69	-				-	15						-		>		
	Portland Street & Cooper Street	TWSC	LOS	<	B	>	B	<	B	>	B	A	A	A	A	A	A	A	A	
			Delay	<	10	>	10	<	11	>	11	8	0	0	0	8	0	0	0	
			V/C	<	0.02	>		<	0.06	>		0.01	0.00	0.00		0.00	0.00	0.00		
			Q	<	1	>		<	2	>		0	0	0		0	0	0		
	Hurontario Street & Findley Drive/Tracy Lane	TWSC	LOS	<	F	>	F	<	D	>	D	A	A	A	A	A	A	A	A	
			Delay	<	215	>	215	<	34	>	34	8	0	0	0	9	0	0	2	
			V/C	<	1.15	>		<	0.69	>		0.02	0.00	0.00		0.09	0.00	0.00		
			Q	<	57	>		<	38	>		1	0	0		2	0	0		
			Stor.	<	-	>		<	-	>		15	-	-		15	-	15		
			Avail.	<	-	>		<	-	>		14	-	-		13	-	15		
PM Peak Hour	Poplar Sideroad & Portland Street	TWSC	LOS	A	A		A		A	A	A					D		>	D	
			Delay	9	0		1		0	0	0					30		>	30	
			V/C	0.07	0.00				0.00	0.00						0.52		>		
			Q	2	0				0	0						21		>		
			Stor.	70	-				-	15						-		>		
			Avail.	68	-				-	15						-		>		
	Portland Street & Cooper Street	TWSC	LOS	<	A	>	A	<	B	>	B	A	A	A	A	A	A	A	A	
			Delay	<	10	>	10	<	11	>	11	8	0	0	0	8	0	0	0	
			V/C	<	0.01	>		<	0.04	>		0.01	0.00	0.00		0.01	0.00	0.00		
			Q	<	0	>		<	1	>		0	0	0		0	0	0		
	Hurontario Street & Findley Drive/Tracy Lane	TWSC	LOS	<	F	>	F	<	D	>	D	A	A	A	A	A	A	A	A	
			Delay	<	111	>	111	<	27	>	27	9	0	0	0	9	0	0	2	
			V/C	<	0.82	>		<	0.49	>		0.02	0.00	0.00		0.16	0.00	0.00		
			Q	<	36	>		<	20	>		1	0	0		4	0	0		
			Stor.	<	-	>		<	-	>		15	-	-		15	-	15		
			Avail.	<	-	>		<	-	>		14	-	-		11	-	15		

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

4.3 2029 Background Horizon

4.3.1 2029 Background Traffic Growth

Figure 4.3 illustrates the 2029 forecast background traffic volumes for the weekday AM and PM peak hours.

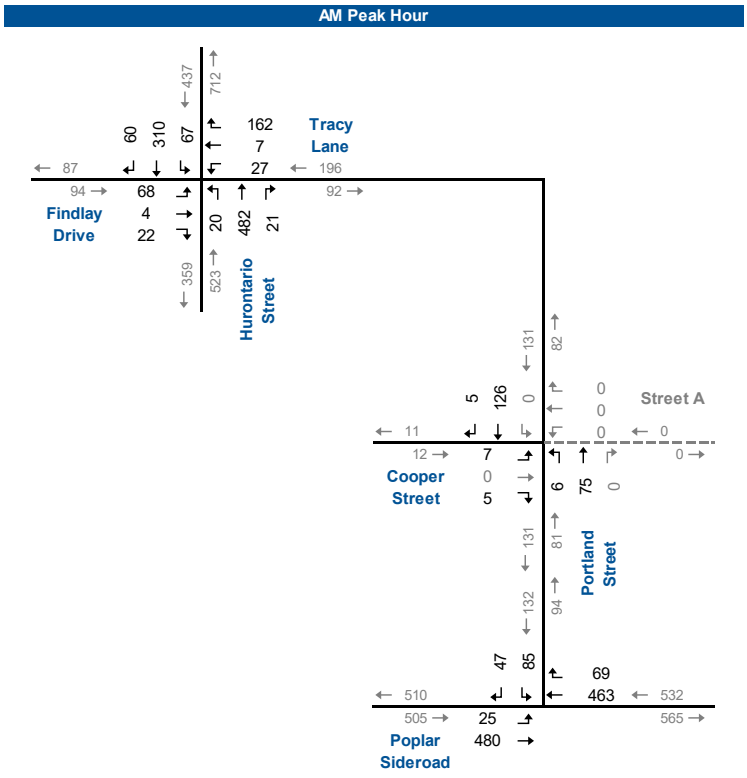
4.3.2 2029 Background Traffic Operations

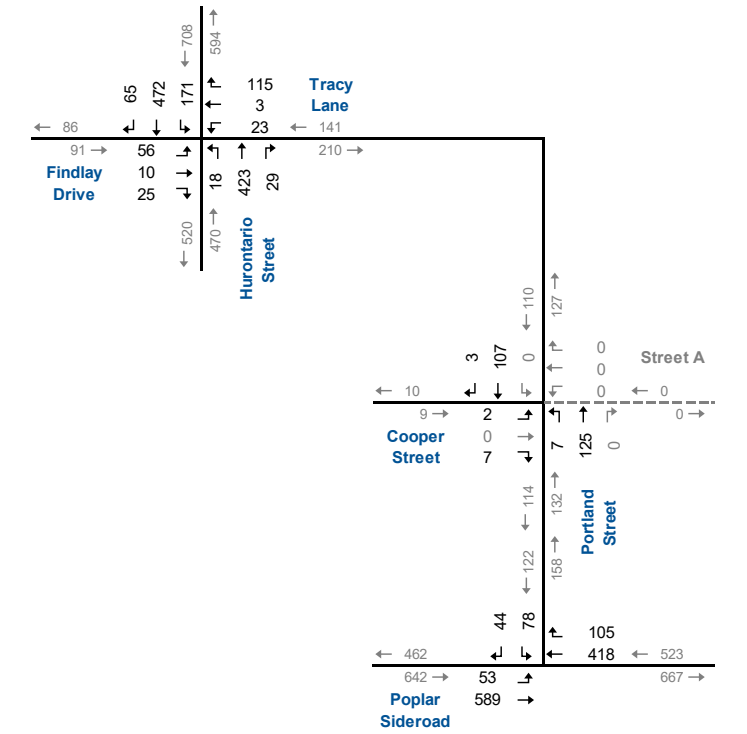
The operations at the study area intersections for the forecast background traffic scenario followed the same methodology used for the existing traffic conditions. **Table 4.3** details the level of service conditions.

The study area intersections are forecast to operate with acceptable levels of service during the weekday AM and PM peak hours with the following critical movements noted:

- All eastbound movements at Hurontario Street and Findley Drive/Tracy Lane are forecast to have a v/c ratio that exceeds 0.85 during the AM and PM peak hours.

Appendix G contains the supporting detailed Synchro 10 reports.





2029 Background Traffic Volumes

17 Portland Street, Collingwood TIS
220121

Figure 4.3

TABLE 4.3: 2029 BACKGROUND OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Poplar Sideroad & Portland Street	TWSC	LOS	A	A		**A**		A	A	**A**					F		>	**F**	
			Delay	9	0		**0**		0	0	**0**					67		>	**67**	
			V/C	0.04	0.00				0.00	0.00						0.81		>		
			Q	1	0				0	0						44		>		
			Stor.	70	-				-	15						-		>		
			Avail.	69	-				-	15						-		>		
	Portland Street & Cooper Street	TWSC	LOS	B		>	**B**					A	A		**A**		A	A	**A**	
			Delay	10		>	**10**					8	0		**1**		0	0	**0**	
			V/C	0.02		>						0.01	0.00				0.00	0.00		
			Q	1		>						0	0				0	0		
	Hurontario Street & Findley Drive/Tracy Lane	TWSC	LOS	<	F	>	**F**	<	E	>	**E**	A	A	A	**A**	A	A	A	**A**	
			Delay	<	341	>	**341**	<	46	>	**46**	9	0	0	**0**	9	0	0	**1**	
			V/C	<	1.43	>		<	0.77	>		0.03	0.00	0.00		0.09	0.00	0.00		
			Q	<	69	>		<	45	>		1	0	0		2	0	0		
			Stor.	<	-	>		<	-	>		15	-	-		15	-	15		
			Avail.	<	-	>		<	-	>		14	-	-		13	-	15		
PM Peak Hour	Poplar Sideroad & Portland Street	TWSC	LOS	A	A		**A**		A	A	**A**					D		>	**D**	
			Delay	9	0		**1**		0	0	**0**					32		>	**32**	
			V/C	0.06	0.00				0.00	0.00						0.51		>		
			Q	2	0				0	0						20		>		
			Stor.	70	-				-	15						-		>		
			Avail.	68	-				-	15						-		>		
	Portland Street & Cooper Street	TWSC	LOS	A		>	**A**					A	A		**A**		A	A	**A**	
			Delay	10		>	**10**					8	0		**0**		0	0	**0**	
			V/C	0.01		>						0.01	0.00				0.00	0.00		
			Q	0		>						0	0				0	0		
	Hurontario Street & Findley Drive/Tracy Lane	TWSC	LOS	<	F	>	**F**	<	D	>	**D**	A	A	A	**A**	A	A	A	**A**	
			Delay	<	159	>	**159**	<	33	>	**33**	9	0	0	**0**	9	0	0	**2**	
			V/C	<	0.97	>		<	0.55	>		0.02	0.00	0.00		0.17	0.00	0.00		
			Q	<	44	>		<	23	>		1	0	0		4	0	0		
			Stor.	<	-	>		<	-	>		15	-	-		15	-	15		
			Avail.	<	-	>		<	-	>		14	-	-		11	-	15		

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

4.4 2029 Total Traffic Horizon

4.4.1 2029 Total Traffic Volumes

Figure 4.4 illustrates the forecast 2029 total (background + site traffic) traffic volumes.

4.4.2 2029 Total Traffic Operations

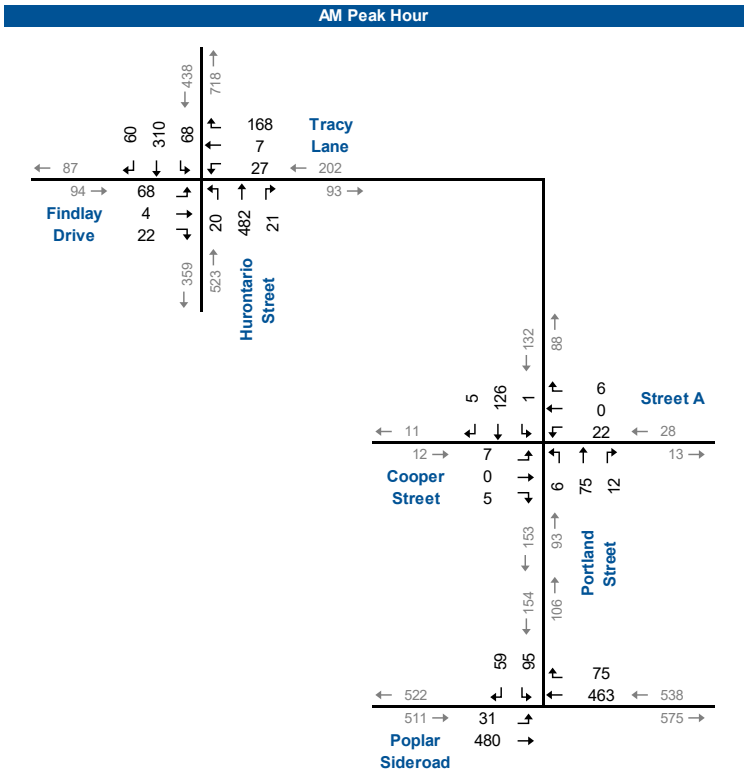
The study area intersection operations analysis for the future total traffic scenario followed the same methodology used for the existing and background traffic conditions. **Table 4.4** details the level of service conditions for the weekday AM and PM peak hours.

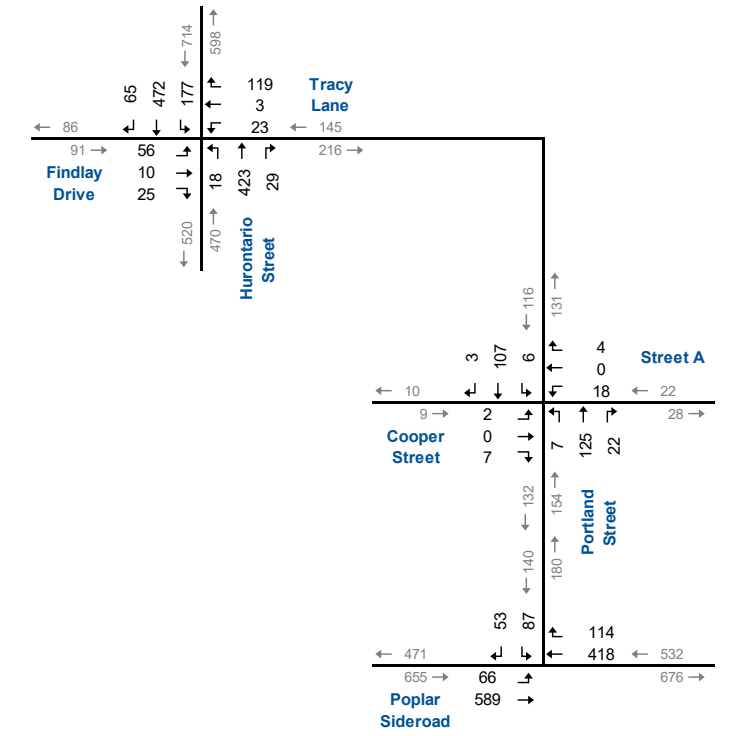
All study area intersections are forecast to operate within acceptable levels of service during the AM and PM peak hour with the following critical movements noted:

- Similar to the 2029 background forecasts, the eastbound movements at Hurontario Street and Findley Drive/Tracy Lane are forecast to have a v/c ratio that exceeds 0.85 during the AM and PM peak hours.
- The southbound movements at Poplar Sideroad and Portland Street are forecast to have a v/c ratio that exceeds 0.85 during the AM peak hour.

With the addition of the site generated traffic volumes, the overall intersection delays at the study area intersections remain the same or increase during the AM and PM peak hours**.**

Appendix H contains the supporting detailed Synchro 10 reports.





2029 Total Traffic Volumes

17 Portland Street, Collingwood TIS
220121

Figure 4.4

TABLE 4.4: 2029 TOTAL 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	Poplar Sideroad & Portland Street	TWSC	LOS	A	A		A		A	A	A					F		>	F	
			Delay	9	0		1		0	0	0					93		>	93	
			V/C	0.05	0.00				0.00	0.00						0.94		>		
			Q	1	0				0	0						60		>		
			Stor.	70	-				-	15						-		>		
			Avail.	69	-				-	15						-		>		
	Portland Street & Cooper Street	TWSC	LOS	<	B	>	B	<	B	>	B	A	A	A	A	A	A	A	A	
			Delay	<	10	>	10	<	11	>	11	8	0	0	0	8	0	0	0	
			V/C	<	0.03	>		<	0.06	>		0.01	0.00	0.00		0.00	0.00	0.00		
			Q	<	1	>		<	2	>		0	0	0		0	0	0		
	Hurontario Street & Findley Drive/Tracy Lane	TWSC	LOS	<	F	>	F	<	E	>	E	A	A	A	A	A	A	A	A	
			Delay	<	358	>	358	<	47	>	47	9	0	0	0	9	0	0	2	
			V/C	<	1.47	>		<	0.78	>		0.03	0.00	0.00		0.09	0.00	0.00		
			Q	<	70	>		<	47	>		1	0	0		2	0	0		
			Stor.	<	-	>		<	-	>		15	-	-		15	-	15		
			Avail.	<	-	>		<	-	>		14	-	-		13	-	15		
PM Peak Hour	Poplar Sideroad & Portland Street	TWSC	LOS	A	A		A		A	A	A					E		>	E	
			Delay	9	0		1		0	0	0					38		>	38	
			V/C	0.07	0.00				0.00	0.00						0.60		>		
			Q	2	0				0	0						26		>		
			Stor.	70	-				-	15						-		>		
			Avail.	68	-				-	15						-		>		
	Portland Street & Cooper Street	TWSC	LOS	<	A	>	A	<	B	>	B	A	A	A	A	A	A	A	A	
			Delay	<	10	>	10	<	11	>	11	8	0	0	0	8	0	0	0	
			V/C	<	0.01	>		<	0.04	>		0.01	0.00	0.00		0.01	0.00	0.00		
			Q	<	0	>		<	1	>		0	0	0		0	0	0		
	Hurontario Street & Findley Drive/Tracy Lane	TWSC	LOS	<	F	>	F	<	D	>	D	A	A	A	A	A	A	A	A	
			Delay	<	175	>	175	<	34	>	34	9	0	0	0	9	0	0	2	
			V/C	<	1.01	>		<	0.56	>		0.02	0.00	0.00		0.17	0.00	0.00		
			Q	<	46	>		<	24	>		1	0	0		4	0	0		
			Stor.	<	-	>		<	-	>		15	-	-		15	-	15		
			Avail.	<	-	>		<	-	>		14	-	-		11	-	15		

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

4.5 2034 Background Horizon

4.5.1 2034 Background Traffic Growth

Figure 4.5 illustrates the 2034 forecast background traffic volumes for the weekday AM and PM peak hours.

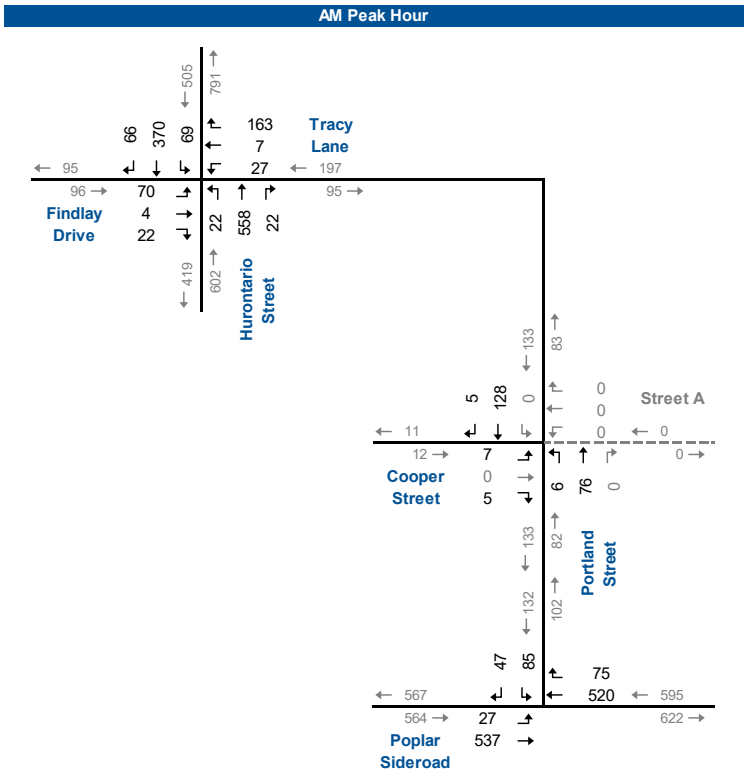
4.5.2 2034 Background Traffic Operations

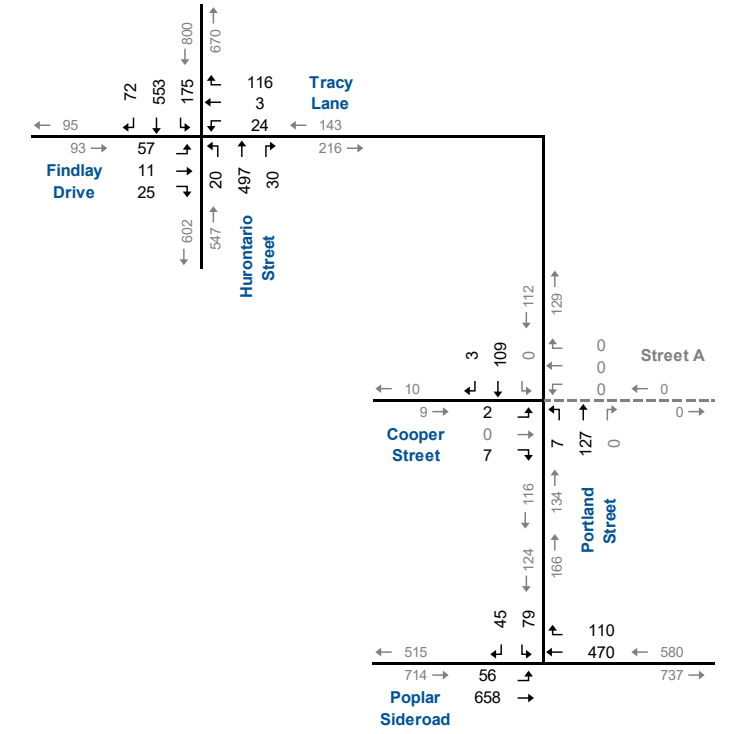
The operations at the study area intersections for the forecast background traffic scenario followed the same methodology used for the existing traffic conditions. **Table 4.5** details the level of service conditions.

The study area intersections are forecast to operate with acceptable levels of service during the weekday AM and PM peak hours with the following critical movements noted:

- The eastbound movements at Hurontario Street and Findley Drive/Tracy Lane are forecast to have a v/c ratio that exceeds 0.85 during the AM and PM peak hours.
- The westbound movements at Hurontario Street and Findley Drive/Tracy Lane are forecast to have a v/c ratio that exceeds 0.85 during the AM peak hour.
- The southbound movements at Poplar Sideroad and Portland Street are forecast to have a v/c ratio that exceeds 0.85 during the AM peak hour.

Appendix I contains the supporting detailed Synchro 10 reports.





2034 Background Traffic Volumes

TABLE 4.5: 2034 BACKGROUND OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Poplar Sideroad & Portland Street	TWSC	LOS	A	A		**A**		A	A	**A**					F		>	**F**	
			Delay	10	0		**0**		0	0	**0**					120		>	**120**	
			V/C	0.04	0.00				0.00	0.00						0.99		>		
			Q	1	0				0	0						61		>		
			Stor.	70	-				-	15						-		>		
			Avail.	69	-				-	15						-		>		
	Portland Street & Cooper Street	TWSC	LOS	B		>	**B**					A	A		**A**		A	A	**A**	
			Delay	10		>	**10**					8	0		**1**		0	0	**0**	
			V/C	0.02		>						0.01	0.00				0.00	0.00		
			Q	1		>						0	0				0	0		
	Hurontario Street & Findley Drive/Tracy Lane	TWSC	LOS	<	F	>	**F**	<	F	>	**F**	A	A	A	**A**	A	A	A	**A**	
			Delay	<	724	>	**724**	<	88	>	**88**	9	0	0	**0**	10	0	0	**1**	
			V/C	<	2.22	>		<	0.96	>		0.03	0.00	0.00		0.10	0.00	0.00		
			Q	<	90	>		<	68	>		1	0	0		2	0	0		
			Stor.	<	-	>		<	-	>		15	-	-		15	-	15		
			Avail.	<	-	>		<	-	>		14	-	-		13	-	15		
PM Peak Hour	Poplar Sideroad & Portland Street	TWSC	LOS	A	A		**A**		A	A	**A**					E		>	**E**	
			Delay	9	0		**1**		0	0	**0**					45		>	**45**	
			V/C	0.06	0.00				0.00	0.00						0.61		>		
			Q	2	0				0	0						27		>		
			Stor.	70	-				-	15						-		>		
			Avail.	68	-				-	15						-		>		
	Portland Street & Cooper Street	TWSC	LOS	A		>	**A**					A	A		**A**		A	A	**A**	
			Delay	10		>	**10**					8	0		**0**		0	0	**0**	
			V/C	0.01		>						0.01	0.00				0.00	0.00		
			Q	0		>						0	0				0	0		
	Hurontario Street & Findley Drive/Tracy Lane	TWSC	LOS	<	F	>	**F**	<	F	>	**F**	A	A	A	**A**	A	A	A	**A**	
			Delay	<	334	>	**334**	<	61	>	**61**	9	0	0	**0**	9	0	0	**2**	
			V/C	<	1.37	>		<	0.74	>		0.03	0.00	0.00		0.18	0.00	0.00		
			Q	<	60	>		<	37	>		1	0	0		5	0	0		
			Stor.	<	-	>		<	-	>		15	-	-		15	-	15		
			Avail.	<	-	>		<	-	>		14	-	-		10	-	15		

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

4.6 2034 Total Traffic Horizon

4.6.1 2034 Total Traffic Volumes

Figure 4.6 illustrates the forecast 2034 total (background + site traffic) traffic volumes.

4.6.2 2034 Total Traffic Operations

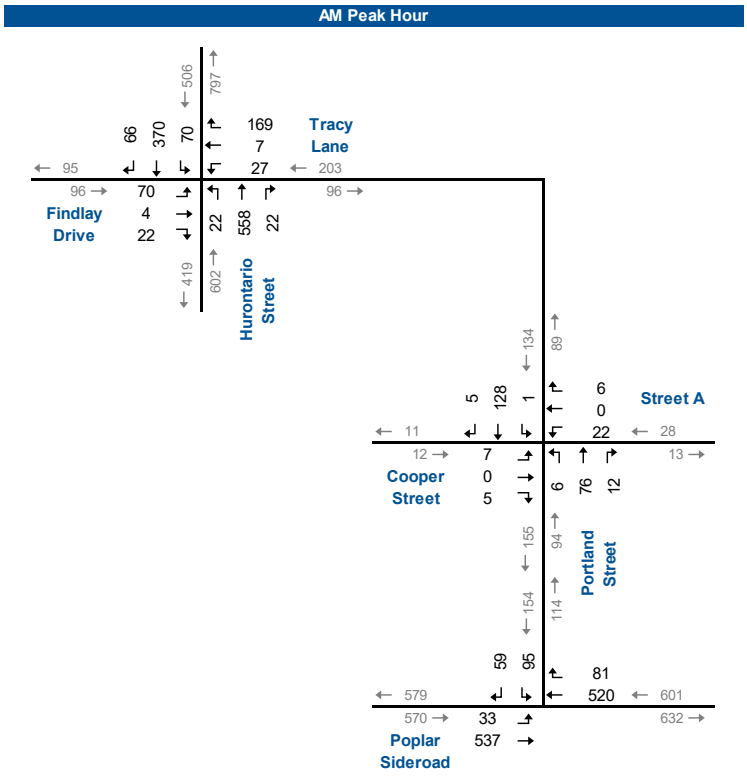
The study area intersection operations analysis for the future total traffic scenario followed the same methodology used for the existing and background traffic conditions. **Table 4.6** details the level of service conditions for the weekday AM and PM peak hours.

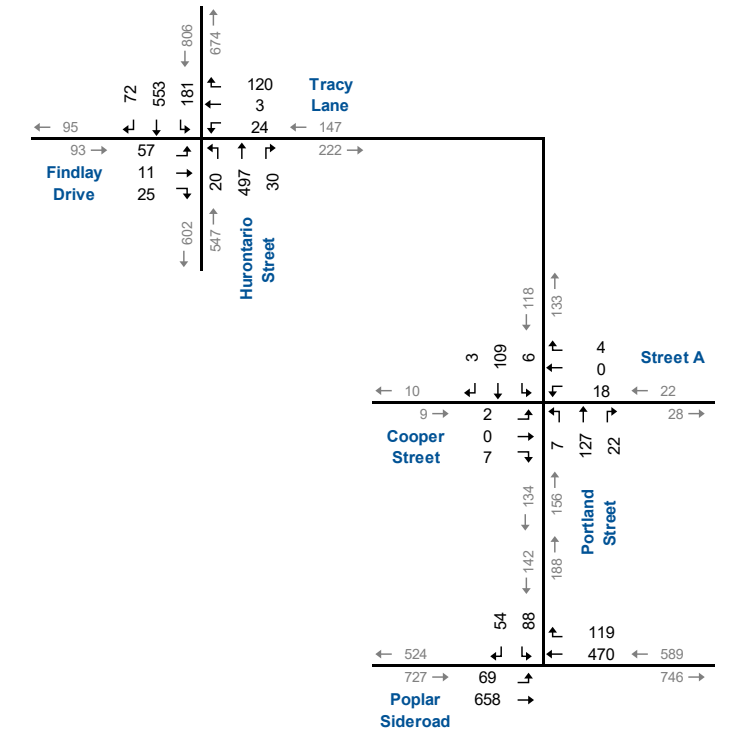
All study area intersections are forecast to operate within acceptable levels of service during the AM and PM peak hour with the following critical movements noted:

- Similar to the 2034 background forecasts, the eastbound movements at Hurontario Street and Findley Drive/Tracy Lane are forecast to have a v/c ratio that exceeds 0.85 during the AM and PM peak hours.
- Similar to the 2034 background forecasts, the westbound movements at Hurontario Street and Findley Drive/Tracy Lane are forecast to have a v/c ratio that exceeds 0.85 during the AM peak hour.
- Similar to the 2034 background forecasts, the southbound movements at Poplar Sideroad and Portland Street are forecast to have a v/c ratio that exceeds 0.85 during the AM peak hour.

With the addition of the site generated traffic volumes, the overall intersection delays at the study area intersections remain the same or increase during the AM and PM peak hours.

Appendix J contains the supporting detailed Synchro 10 reports.





2034 Total Traffic Volumes

TABLE 4.6: 2034 TOTAL 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	Poplar Sideroad & Portland Street	TWSC	LOS	A	A		A		A	A	A					F		>	F	
			Delay	10	0		1		0	0	0					170		>	170	
			V/C	0.06	0.00				0.00	0.00						1.16		>		
			Q	2	0				0	0						80		>		
			Stor.	70	-				-	15						-		>		
			Avail.	68	-				-	15						-		>		
	Portland Street & Cooper Street	TWSC	LOS	<	B	>	B	<	B	>	B	A	A	A	A	A	A	A	A	
			Delay	<	10	>	10	<	11	>	11	8	0	0	0	8	0	0	0	
			V/C	<	0.03	>		<	0.06	>		0.01	0.00	0.00		0.00	0.00	0.00		
			Q	<	1	>		<	2	>		0	0	0		0	0	0		
	Hurontario Street & Findley Drive/Tracy Lane	TWSC	LOS	<	F	>	F	<	F	>	F	A	A	A	A	A	A	A	A	
			Delay	<	789	>	789	<	93	>	93	9	0	0	0	10	0	0	1	
			V/C	<	2.35	>		<	0.98	>		0.03	0.00	0.00		0.10	0.00	0.00		
			Q	<	92	>		<	70	>		1	0	0		2	0	0		
			Stor.	<	-	>		<	-	>		15	-	-		15	-	15		
			Avail.	<	-	>		<	-	>		14	-	-		13	-	15		
PM Peak Hour	Poplar Sideroad & Portland Street	TWSC	LOS	A	A		A		A	A	A					F		>	F	
			Delay	9	0		1		0	0	0					57		>	57	
			V/C	0.08	0.00				0.00	0.00						0.72		>		
			Q	2	0				0	0						36		>		
			Stor.	70	-				-	15						-		>		
			Avail.	68	-				-	15						-		>		
	Portland Street & Cooper Street	TWSC	LOS	<	A	>	A	<	B	>	B	A	A	A	A	A	A	A	A	
			Delay	<	10	>	10	<	11	>	11	8	0	0	0	8	0	0	0	
			V/C	<	0.01	>		<	0.04	>		0.01	0.00	0.00		0.01	0.00	0.00		
			Q	<	0	>		<	1	>		0	0	0		0	0	0		
	Hurontario Street & Findley Drive/Tracy Lane	TWSC	LOS	<	F	>	F	<	F	>	F	A	A	A	A	A	A	A	A	
			Delay	<	363	>	363	<	63	>	63	9	0	0	0	9	0	0	2	
			V/C	<	1.43	>		<	0.76	>		0.03	0.00	0.00		0.19	0.00	0.00		
			Q	<	61	>		<	39	>		1	0	0		5	0	0		
			Stor.	<	-	>		<	-	>		15	-	-		15	-	15		
			Avail.	<	-	>		<	-	>		14	-	-		10	-	15		

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

5 Remedial Measures

5.1 Traffic Control Signal Justifications

The intersections of Hurontario Street at Findley Drive/Tracy Lane and Poplar Sideroad at Portland Street were assessed using the Ontario Traffic Manual (OTM Book 12 – Justification 7) signal warrant[5] procedures. **Appendix K** contains the warrant analysis. It indicates that traffic control signals are not warranted at both intersections evaluated under 2034 total traffic conditions. The minor roadway volumes are too low at both intersections however, without the signal warrant, the minor roadway movements remain critical.

5.2 Left-turn Lanes

The left-turn movements in which the proposed development is forecast to add volumes to already have left-turn lanes:

- Southbound on Hurontario Street at Tracey Lane; and
- Eastbound on Poplar Sideroad at Portland Street.

No other left-turn lanes are warranted.

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

6 Conclusions and Recommendations

6.1 Conclusions

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

- **Existing Traffic Conditions:** The study area intersections are currently operating within acceptable levels of service and not critical movements during the AM and PM peak hours.
- **Development Trip Generation:** the residential development is forecast to generate approximately 41 and 50 trips during the AM and PM peak hours upon full build-out.
- **2024 Background Traffic Conditions:** the study area intersections are forecast to operate within acceptable levels of service during the AM and PM peak hours with the following critical movements:
  - All eastbound movements at Hurontario Street and Findley Drive/Tracy Lane are forecast to have a v/c ratio that exceeds 0.85 during the AM peak hour.
- **2024 Total Traffic Conditions:** the study area intersections are forecast to operate within acceptable levels of service during the AM and PM peak hours with the following critical movements:
  - All eastbound movements at Hurontario Street and Findley Drive/Tracy Lane are forecast to have a v/c ratio that exceeds 0.85 during the AM peak hour.
- **2024 Impact of Site-Generated Traffic:** The addition of the site generated traffic volumes are not forecast to increase any movement above a v/c of 0.85.
- **2029 Background Traffic Conditions:** the study area intersections are forecast to operate within acceptable levels of service during the AM and PM peak hours with the following critical movements:
  - All eastbound movements at Hurontario Street and Findley Drive/Tracy Lane are forecast to have a v/c ratio that exceeds 0.85 during the AM and PM peak hours.
- **2029 Total Traffic Conditions:** the study area intersections are forecast to operate within acceptable levels of service during the AM and PM peak hours with the following critical movements:
  - All eastbound movements at Hurontario Street and Findley Drive/Tracy Lane are forecast to have a v/c ratio that exceeds 0.85 during the AM and PM peak hours.

- All southbound movements at Poplar Sideroad and Portland Street are forecast to have a v/c ratio that exceeds 0.85 during the AM peak hour.

- **2029 Impact of Site-Generated Traffic:** The addition of the site generated traffic volumes is forecast to increase the v/c of the southbound movements at Poplar Sideroad and Portland Street above 0.85.
- **2034 Background Traffic Conditions:** the study area intersections are forecast to operate within acceptable levels of service during the AM and PM peak hours with the following critical movements:
  - All eastbound movements at Hurontario Street and Findley Drive/Tracy Lane are forecast to have a v/c ratio that exceeds 0.85 during the AM and PM peak hours.
  - All westbound movements at Hurontario Street and Findley Drive/Tracy Lane are forecast to have a v/c ratio that exceeds 0.85 during the AM peak hour.
  - All southbound movements at Poplar Sideroad and Portland Street are forecast to have a v/c ratio that exceeds 0.85 during the AM peak hour.
- **2034 Total Traffic Conditions:** the study area intersections are forecast to operate within acceptable levels of service during the AM and PM peak hours with the following critical movements:
  - All eastbound movements at Hurontario Street and Findley Drive/Tracy Lane are forecast to have a v/c ratio that exceeds 0.85 during the AM and PM peak hours.
  - All westbound movements at Hurontario Street and Findley Drive/Tracy Lane are forecast to have a v/c ratio that exceeds 0.85 during the AM peak hour.
  - All southbound movements at Poplar Sideroad and Portland Street is forecast to have a v/c ratio that exceeds 0.85 during the AM peak hour.
- **2034 Impact of Site-Generated Traffic:** The addition of the site generated traffic volumes are not forecast to increase any movement above a v/c of 0.85.

6.2 Recommendations

Based on the findings of this study, it is recommended that the development be approved with no requirement for off-site transportation improvements.

It is further recommended that the Town of Collingwood monitor the future traffic volumes at the intersections of Hurontario Street at Findley Drive/Tracy Lane and Poplar Sideroad at Portland Street and review the need for traffic control modifications.

Appendix A

Pre-Study Consultation

From: Sheldon Hancock <shancock@collingwood.ca>
Sent: April 7, 2022 9:37 AM
To: Matt Brouwer; Andrew Orr
Cc: Doherty, Chris
Subject: RE: (220121) 17 Portland Street, Collingwood TIS - Scope of Work
Attachments: Traffic Impact Study - Dec 2015.pdf

Good morning Matt,

We are expecting first submission TIS for 869 Hurontario in the next few weeks, however estimated trips can be found in table 17 of the 2019 Transportation Study Update.

Also, you should be aware that development #38 (Summit view subdivision) is 50% built out. The TIS is attached for reference.

Regards,

Sheldon Hancock C.E.T.
Engineering Technologist, Engineering Services

Town of Collingwood
P.O Box 157, 545 Tenth Line North
Collingwood, ON, L9Y 3Z5
t: 705-445-1292 Ext. 4218
shancock@collingwood.ca | www.collingwood.ca

To help prevent the spread of COVID-19 Staff may be working remotely. For full details on how we are delivering services at this time visit www.collingwood.ca

From: Matt Brouwer <mbrouwer@ptsl.com>
Sent: April 6, 2022 8:59 AM
To: Sheldon Hancock <shancock@collingwood.ca>; Andrew Orr <aorr@ptsl.com>
Cc: John Velick <jvelick@collingwood.ca>; Doherty, Chris <Chris.Doherty@simcoe.ca>
Subject: RE: (220121) 17 Portland Street, Collingwood TIS - Scope of Work

Hi Sheldon, thanks for getting back to us. We were able to locate the TISs for the 452 Raglan and Eden Oak Subdivision, but were unable to find one for the commercial development at 869 Hurontario. Would you happen to have a copy you could send us, or at least the Trip Assignment used for that study?

Thanks,

Matt Brouwer, P.Eng.
Senior Project Manager, Associate
(He/Him)

Paradigm Transportation Solutions Limited
p: 519.896.3163 x201
m: 519.498.2663

From: Sheldon Hancock <shancock@collingwood.ca>
Sent: April 4, 2022 1:42 PM
To: Andrew Orr <aorr@ptsl.com>
Cc: John Velick <jvelick@collingwood.ca>; Doherty, Chris <Chris.Doherty@simcoe.ca>; Matt Brouwer <mbrouwer@ptsl.com>
Subject: RE: (220121) 17 Portland Street, Collingwood TIS - Scope of Work

Hello Andrew,

Our comments regarding the Terms of Reference are:

1. Study intersections to include Trancey Lane/ Findlay Drive and Hurontario Street
2. Trips generated from applicable developments (close proximity) within the Town's updated Transportation Study should be applied including #7 – 452 Raglan St., #19 – 869 Hurontario St., #37 – Eden Oak Subdivision (386 Units total) etc..
3. In addition to the growth rates provided by the County, the background growth rate should also consider traffic growth forecasts from the Collingwood Transportation Study Update, August 2019. Prepared by Burnside for comparative purposes.

I Have also copied Chris Doherty from the County of Simcoe for his comments.

Regards,

Sheldon Hancock C.E.T.
Engineering Technologist, Engineering Services

Town of Collingwood
P.O Box 157, 545 Tenth Line North
Collingwood, ON, L9Y 3Z5

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shancock@collingwood.ca | www.collingwood.ca

To help prevent the spread of COVID-19 Staff may be working remotely. For full details on how we are delivering services at this time visit www.collingwood.ca

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From: Andrew Orr
Sent: March 25, 2022 3:45 PM
To: shancock@collingwood.ca; Zoran.Nedelkovski@simcoe.ca
Cc: Matt Brouwer <mbrouwer@ptsl.com>
Subject: (220121) 17 Portland Street, Collingwood TIS - Scope of Work

Greetings,

Paradigm Transportation Solutions Limited is preparing the Transportation Impact Assessment for the proposed townhouse development of the lands 17 Portland Street, Collingwood, ON.

Below is a brief description of the concept and our proposed terms of reference for the TIS.

Please review and provide comment at your earliest convenience.

SITE DESCRIPTION

The subject site is located at 17 Portland Street in Collingwood. The property owner is proposing to build a townhouse development with 90 units. **A preliminary concept plan is attached**.

Vehicle access is proposed to Portland Street, opposite of Cooper Street.

PROPOSED TERMS OF REFERENCE

Study Area Intersections:

- Poplar Sideroad and Portland Street (unsignalized); and
- Portland Street and Cooper Street (unsignalized).

Analysis Periods:

- Weekday AM peak hour
- Weekday PM peak hour

Existing Data:

- Existing 8-hour TMC data for the above noted intersections.

Horizon Year

- Year of full buildout;
- Five-years from the full buildout; and
- Ten-years from the full buildout.

Analysis

- Synchro 10, HCM 6 analysis

Background Traffic

- Background traffic annual growth rate. **To be identified by County**
- Other Approved but not yet built developments to include in background. **To be identified by County**

Future Road Improvements (if any)

- **To be identified by County**

Trip Generation

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

Site Traffic Distribution

- Existing Traffic Patterns and TTS Data.

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 Orr, M.A.Sc., EIT
Transportation Consultant

Paradigm Transportation Solutions Limited
5A-150 Pinebush Road, Cambridge ON N1R 8J8
p: 519.896.3163 x210
m: 289-808-8997
e: aorrr@ptsl.com
w: www.ptsl.com

From: Nedelkovski, Zoran <Zoran.Nedelkovski@simcoe.ca>
Sent: March 28, 2022 9:23 AM
To: Andrew Orr
Cc: Matt Brouwer; shancock@collingwood.ca
Subject: RE: (220121) 17 Portland Street, Collingwood TIS - Scope of Work

Good Morning Andrew,

The following comments were provided from the County's Traffic group:

"The TOR as presented are acceptable. To answer their questions, they should use a background growth rate of 2%, they can contact the Town of Collingwood for approved, but not yet built, developments and there are currently no plans for future road improvements."

Regards,

Zoran Nedelkovski, C.E.T
Engineering Technician
Transportation and Engineering Department
County of Simcoe
1110 Highway 26, Midhurst, Ontario, L9X 1N6
Tel: 705-726-9300 Ext. 1222
Fax: 705-727-7984
E-mail: zoran.nedelkovski@simcoe.ca
Website: www.simcoe.ca

From: Andrew Orr <aorr@ptsl.com>
Sent: Friday, March 25, 2022 3:45 PM
To: shancock@collingwood.ca; Nedelkovski, Zoran <Zoran.Nedelkovski@simcoe.ca>
Cc: Matt Brouwer <mbrouwer@ptsl.com>
Subject: [EXTERNAL] (220121) 17 Portland Street, Collingwood TIS - Scope of Work

Greetings,

Paradigm Transportation Solutions Limited is preparing the Transportation Impact Assessment for the proposed townhouse development of the lands 17 Portland Street, Collingwood, ON.

Below is a brief description of the concept and our proposed terms of reference for the TIS.

Please review and provide comment at your earliest convenience.

SITE DESCRIPTION

The subject site is located at 17 Portland Street in Collingwood. The property owner is proposing to build a townhouse development with 90 units. **A preliminary concept plan is attached**.

Vehicle access is proposed to Portland Street, opposite of Cooper Street.

PROPOSED TERMS OF REFERENCE

Study Area Intersections:
- Poplar Sideroad and Portland Street (unsignalized); and
- Portland Street and Cooper Street (unsignalized).

Analysis Periods:
- Weekday AM peak hour
- Weekday PM peak hour

Existing Data:
- Existing 8-hour TMC data for the above noted intersections.

Horizon Year
- Year of full buildout;
- Five-years from the full buildout; and
- Ten-years from the full buildout.

Analysis
- Synchro 10, HCM 6 analysis

Background Traffic
- Background traffic annual growth rate. **To be identified by County**
- Other Approved but not yet built developments to include in background. **To be identified by County**

Future Road Improvements (if any)
- **To be identified by County**

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

Site Traffic Distribution
- Existing Traffic Patterns and TTS Data.

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 Orr, M.A.Sc., EIT
Transportation Consultant

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e: aorrr@ptsl.com
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Appendix B

Traffic Data

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Cooper Street & Portland Street
Site Code: 220121
Start Date: 04/12/2022

Turning Movement Data

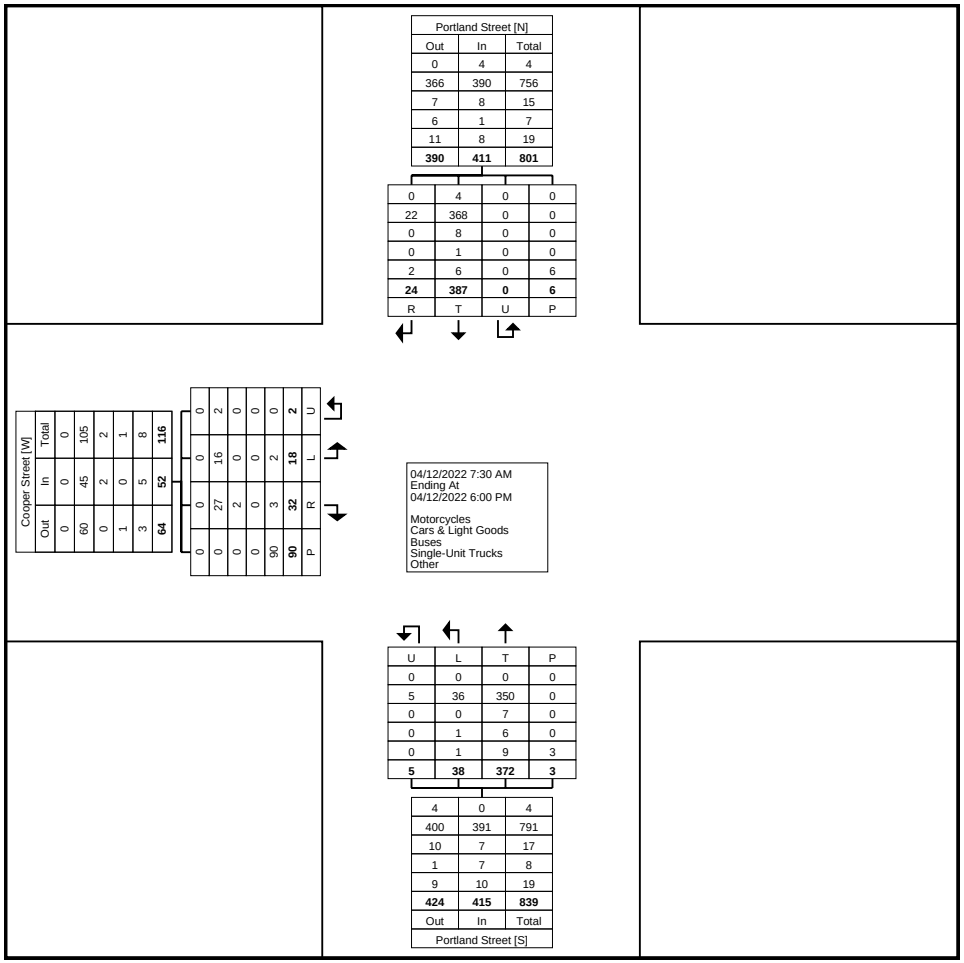
Start Time	Cooper Street Eastbound					Portland Street Northbound					Portland Street Southbound					
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Int. Total
7:30 AM	0	0	0	0	0	0	13	0	0	13	9	0	0	0	9	22
7:45 AM	0	1	0	1	1	0	15	0	0	15	8	0	0	0	8	24
Hourly Total	0	1	0	1	1	0	28	0	0	28	17	0	0	0	17	46
8:00 AM	0	0	0	1	0	2	12	0	0	14	11	1	0	0	12	26
8:15 AM	3	1	0	5	4	0	11	0	0	11	11	0	0	1	11	26
8:30 AM	0	1	0	4	1	2	10	0	0	12	13	0	0	0	13	26
8:45 AM	3	1	0	7	4	0	13	1	0	14	18	0	0	0	18	36
Hourly Total	6	3	0	17	9	4	46	1	0	51	53	1	0	1	54	114
9:00 AM	3	1	0	10	4	1	18	0	0	19	21	4	0	0	25	48
9:15 AM	0	2	1	1	3	2	12	0	0	14	12	1	0	0	13	30
9:30 AM	0	1	0	0	1	1	8	0	0	9	8	1	0	0	9	19
9:45 AM	0	1	0	2	1	1	7	0	0	8	14	0	0	0	14	23
Hourly Total	3	5	1	13	9	5	45	0	0	50	55	6	0	0	61	120
10:00 AM	0	2	0	1	2	1	6	1	1	8	9	0	0	0	9	19
10:15 AM	0	2	0	0	2	2	5	0	0	7	11	1	0	0	12	21
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	4	0	1	4	3	11	1	1	15	20	1	0	0	21	40
12:00 PM	0	3	0	2	3	0	9	0	0	9	7	0	0	0	7	19
12:15 PM	0	0	0	1	0	2	15	0	0	17	10	2	0	0	12	29
12:30 PM	0	0	0	1	0	2	9	0	0	11	13	1	0	2	14	25
12:45 PM	0	0	0	2	0	0	6	0	0	6	8	0	0	0	8	14
Hourly Total	0	3	0	6	3	4	39	0	0	43	38	3	0	2	41	87
1:00 PM	0	0	0	1	0	1	11	0	0	12	12	0	0	0	12	24
1:15 PM	0	0	0	2	0	0	8	1	0	9	10	1	0	0	11	20
1:30 PM	0	2	0	7	2	0	8	0	0	8	9	1	0	1	10	20
1:45 PM	0	2	1	1	3	2	8	0	0	10	13	0	0	0	13	26
Hourly Total	0	4	1	11	5	3	35	1	0	39	44	2	0	1	46	90
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	2	0	0	2	2	1	12	0	0	13	10	1	0	0	11	26
3:15 PM	1	1	0	6	2	0	21	0	1	21	11	1	0	0	12	35
3:30 PM	0	5	0	9	5	0	13	0	1	13	21	2	0	2	23	41
3:45 PM	0	0	0	4	0	3	14	0	0	17	16	0	0	0	16	33
Hourly Total	3	6	0	21	9	4	60	0	2	64	58	4	0	2	62	135
4:00 PM	1	1	0	5	2	3	12	1	0	16	19	0	0	0	19	37
4:15 PM	0	2	0	0	2	1	14	0	0	15	9	1	0	0	10	27
4:30 PM	2	0	0	3	2	0	16	0	0	16	13	1	0	0	14	32

4:45 PM	1	0	0	5	1	1	17	0	0	18	14	0	0	0	14	33
Hourly Total	4	3	0	13	7	5	59	1	0	65	55	2	0	0	57	129
5:00 PM	1	2	0	6	3	5	13	0	0	18	11	1	0	0	12	33
5:15 PM	0	1	0	0	1	1	13	0	0	14	15	0	0	0	15	30
5:30 PM	1	0	0	1	1	2	15	1	0	18	12	1	0	0	13	32
5:45 PM	0	0	0	0	0	2	8	0	0	10	9	3	0	0	12	22
Hourly Total	2	3	0	7	5	10	49	1	0	60	47	5	0	0	52	117
Grand Total	18	32	2	90	52	38	372	5	3	415	387	24	0	6	411	878
Approach %	34.6	61.5	3.8	-	-	9.2	89.6	1.2	-	-	94.2	5.8	0.0	-	-	-
Total %	2.1	3.6	0.2	-	5.9	4.3	42.4	0.6	-	47.3	44.1	2.7	0.0	-	46.8	-
Motorcycles	0	0	0	-	0	0	0	0	-	0	4	0	0	-	4	4
% Motorcycles	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	1.0	0.0	-	-	1.0	0.5
Cars & Light Goods	16	27	2	-	45	36	350	5	-	391	368	22	0	-	390	826
% Cars & Light Goods	88.9	84.4	100.0	-	86.5	94.7	94.1	100.0	-	94.2	95.1	91.7	-	-	94.9	94.1
Buses	0	2	0	-	2	0	7	0	-	7	8	0	0	-	8	17
% Buses	0.0	6.3	0.0	-	3.8	0.0	1.9	0.0	-	1.7	2.1	0.0	-	-	1.9	1.9
Single-Unit Trucks	0	0	0	-	0	1	6	0	-	7	1	0	0	-	1	8
% Single-Unit Trucks	0.0	0.0	0.0	-	0.0	2.6	1.6	0.0	-	1.7	0.3	0.0	-	-	0.2	0.9
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	2	3	0	-	5	1	9	0	-	10	6	2	0	-	8	23
% Bicycles on Road	11.1	9.4	0.0	-	9.6	2.6	2.4	0.0	-	2.4	1.6	8.3	-	-	1.9	2.6
Bicycles on Crosswalk	-	-	-	17	-	-	-	-	0	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	18.9	-	-	-	-	0.0	-	-	-	-	16.7	-	-
Pedestrians	-	-	-	73	-	-	-	-	3	-	-	-	-	5	-	-
% Pedestrians	-	-	-	81.1	-	-	-	-	100.0	-	-	-	-	83.3	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Cooper Street & Portland Street
Site Code: 220121
Start Date: 04/12/2022



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: Cooper Street & Portland Street
Site Code: 220121
Start Date: 04/12/2022

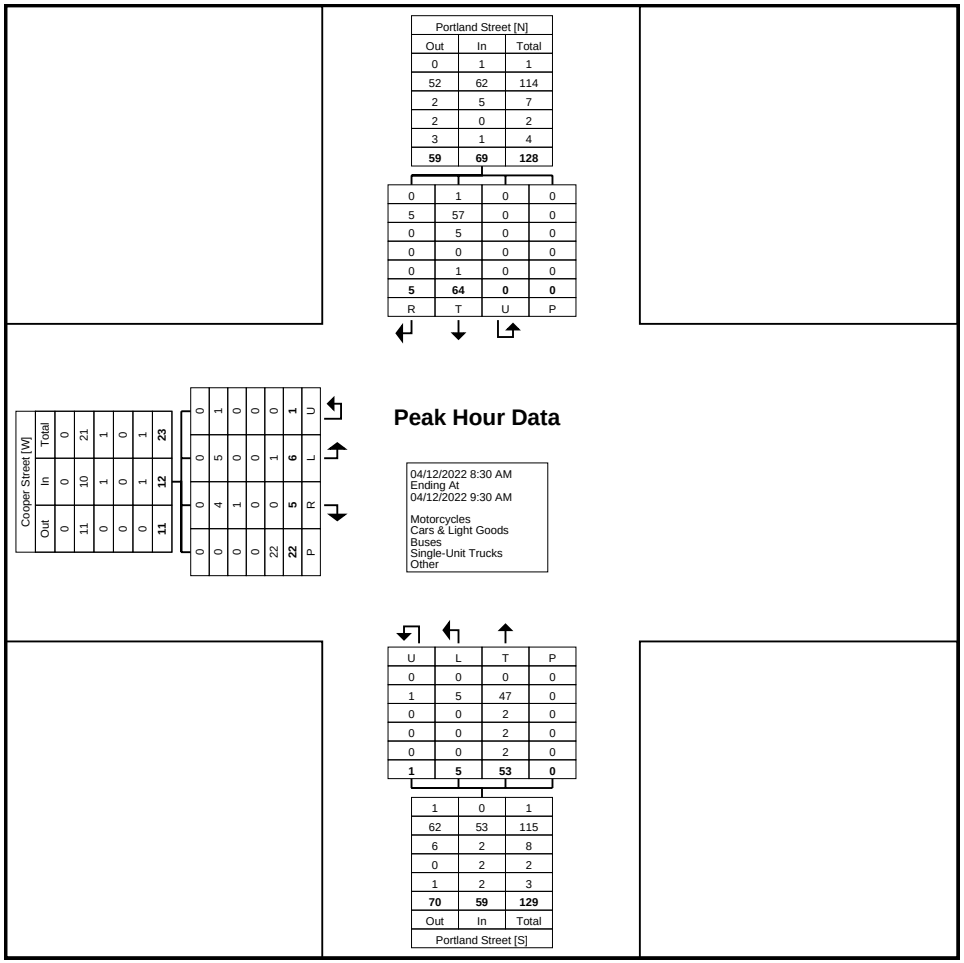
Turning Movement Peak Hour Data (8:30 AM)

Start Time	Cooper Street Eastbound					Portland Street Northbound					Portland Street Southbound					
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Int. Total
8:30 AM	0	1	0	4	1	2	10	0	0	12	13	0	0	0	13	26
8:45 AM	3	1	0	7	4	0	13	1	0	14	18	0	0	0	18	36
9:00 AM	3	1	0	10	4	1	18	0	0	19	21	4	0	0	25	48
9:15 AM	0	2	1	1	3	2	12	0	0	14	12	1	0	0	13	30
Total	6	5	1	22	12	5	53	1	0	59	64	5	0	0	69	140
Approach %	50.0	41.7	8.3	-	-	8.5	89.8	1.7	-	-	92.8	7.2	0.0	-	-	-
Total %	4.3	3.6	0.7	-	8.6	3.6	37.9	0.7	-	42.1	45.7	3.6	0.0	-	49.3	-
PHF	0.500	0.625	0.250	-	0.750	0.625	0.736	0.250	-	0.776	0.762	0.313	0.000	-	0.690	0.729
Motorcycles	0	0	0	-	0	0	0	0	-	0	1	0	0	-	1	1
% Motorcycles	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	1.6	0.0	-	-	1.4	0.7
Cars & Light Goods	5	4	1	-	10	5	47	1	-	53	57	5	0	-	62	125
% Cars & Light Goods	83.3	80.0	100.0	-	83.3	100.0	88.7	100.0	-	89.8	89.1	100.0	-	-	89.9	89.3
Buses	0	1	0	-	1	0	2	0	-	2	5	0	0	-	5	8
% Buses	0.0	20.0	0.0	-	8.3	0.0	3.8	0.0	-	3.4	7.8	0.0	-	-	7.2	5.7
Single-Unit Trucks	0	0	0	-	0	0	2	0	-	2	0	0	0	-	0	2
% Single-Unit Trucks	0.0	0.0	0.0	-	0.0	0.0	3.8	0.0	-	3.4	0.0	0.0	-	-	0.0	1.4
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	1	0	0	-	1	0	2	0	-	2	1	0	0	-	1	4
% Bicycles on Road	16.7	0.0	0.0	-	8.3	0.0	3.8	0.0	-	3.4	1.6	0.0	-	-	1.4	2.9
Bicycles on Crosswalk	-	-	-	7	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	31.8	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	15	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	68.2	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Cooper Street & Portland Street
Site Code: 220121
Start Date: 04/12/2022



Turning Movement Peak Hour Data Plot (8:30 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Cooper Street & Portland Street
Site Code: 220121
Start Date: 04/12/2022

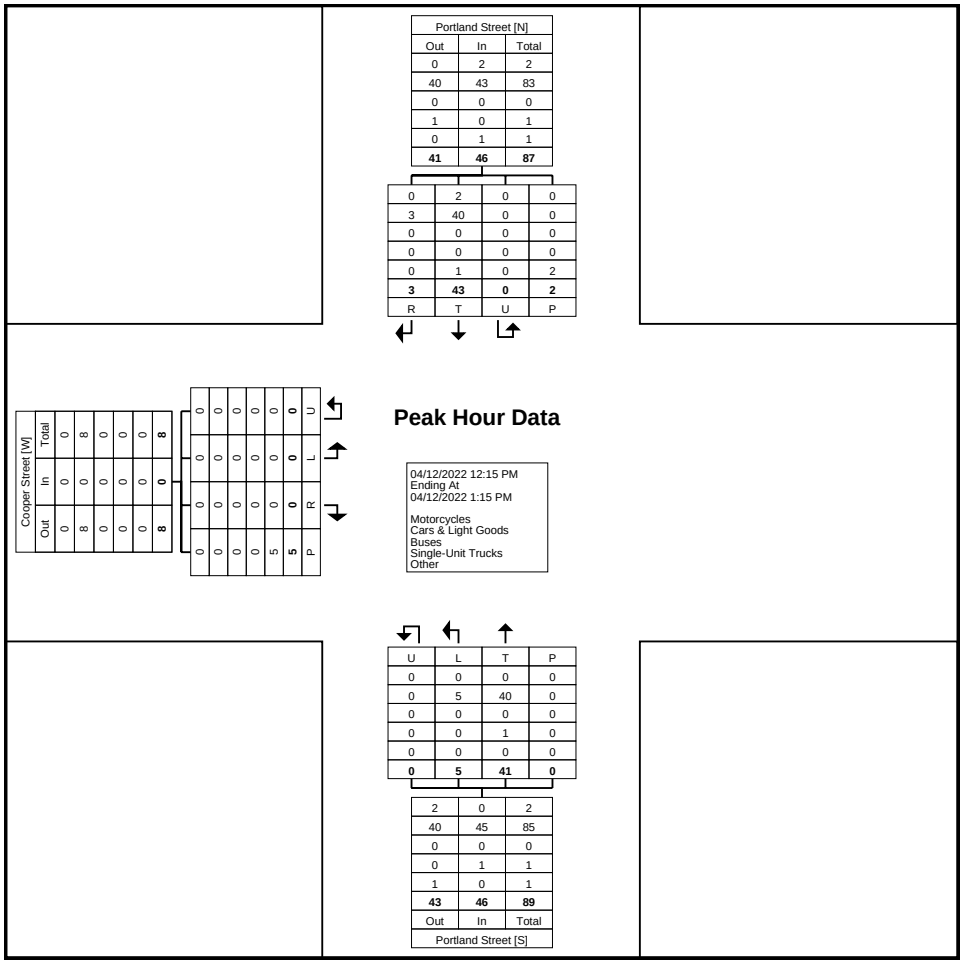
Turning Movement Peak Hour Data (12:15 PM)

Start Time	Cooper Street Eastbound					Portland Street Northbound					Portland Street Southbound					
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Int. Total
12:15 PM	0	0	0	1	0	2	15	0	0	17	10	2	0	0	12	29
12:30 PM	0	0	0	1	0	2	9	0	0	11	13	1	0	2	14	25
12:45 PM	0	0	0	2	0	0	6	0	0	6	8	0	0	0	8	14
1:00 PM	0	0	0	1	0	1	11	0	0	12	12	0	0	0	12	24
Total	0	0	0	5	0	5	41	0	0	46	43	3	0	2	46	92
Approach %	0.0	0.0	0.0	-	-	10.9	89.1	0.0	-	-	93.5	6.5	0.0	-	-	-
Total %	0.0	0.0	0.0	-	0.0	5.4	44.6	0.0	-	50.0	46.7	3.3	0.0	-	50.0	-
PHF	0.000	0.000	0.000	-	0.000	0.625	0.683	0.000	-	0.676	0.827	0.375	0.000	-	0.821	0.793
Motorcycles	0	0	0	-	0	0	0	0	-	0	2	0	0	-	2	2
% Motorcycles	-	-	-	-	-	0.0	0.0	-	-	0.0	4.7	0.0	-	-	4.3	2.2
Cars & Light Goods	0	0	0	-	0	5	40	0	-	45	40	3	0	-	43	88
% Cars & Light Goods	-	-	-	-	-	100.0	97.6	-	-	97.8	93.0	100.0	-	-	93.5	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
Single-Unit Trucks	0	0	0	-	0	0	1	0	-	1	0	0	0	-	0	1
% Single-Unit Trucks	-	-	-	-	-	0.0	2.4	-	-	2.2	0.0	0.0	-	-	0.0	1.1
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
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	1	0	0	-	1	1
% Bicycles on Road	-	-	-	-	-	0.0	0.0	-	-	0.0	2.3	0.0	-	-	2.2	1.1
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	5	-	-	-	-	0	-	-	-	-	2	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Cooper Street & Portland Street
Site Code: 220121
Start Date: 04/12/2022



Turning Movement Peak Hour Data Plot (12:15 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Cooper Street & Portland Street
Site Code: 220121
Start Date: 04/12/2022

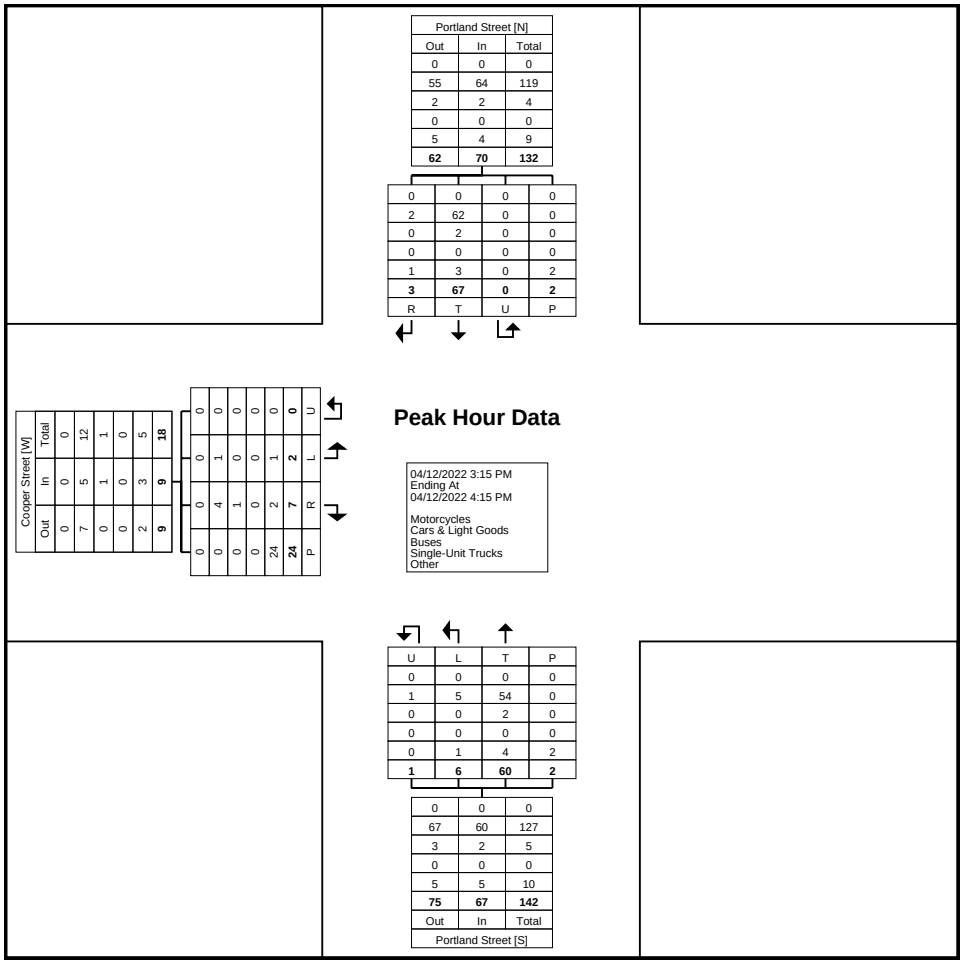
Turning Movement Peak Hour Data (3:15 PM)

Start Time	Cooper Street Eastbound					Portland Street Northbound					Portland Street Southbound					
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Int. Total
3:15 PM	1	1	0	6	2	0	21	0	1	21	11	1	0	0	12	35
3:30 PM	0	5	0	9	5	0	13	0	1	13	21	2	0	2	23	41
3:45 PM	0	0	0	4	0	3	14	0	0	17	16	0	0	0	16	33
4:00 PM	1	1	0	5	2	3	12	1	0	16	19	0	0	0	19	37
Total	2	7	0	24	9	6	60	1	2	67	67	3	0	2	70	146
Approach %	22.2	77.8	0.0	-	-	9.0	89.6	1.5	-	-	95.7	4.3	0.0	-	-	-
Total %	1.4	4.8	0.0	-	6.2	4.1	41.1	0.7	-	45.9	45.9	2.1	0.0	-	47.9	-
PHF	0.500	0.350	0.000	-	0.450	0.500	0.714	0.250	-	0.798	0.798	0.375	0.000	-	0.761	0.890
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	1	4	0	-	5	5	54	1	-	60	62	2	0	-	64	129
% Cars & Light Goods	50.0	57.1	-	-	55.6	83.3	90.0	100.0	-	89.6	92.5	66.7	-	-	91.4	88.4
Buses	0	1	0	-	1	0	2	0	-	2	2	0	0	-	2	5
% Buses	0.0	14.3	-	-	11.1	0.0	3.3	0.0	-	3.0	3.0	0.0	-	-	2.9	3.4
Single-Unit Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Single-Unit Trucks	0.0	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
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	1	2	0	-	3	1	4	0	-	5	3	1	0	-	4	12
% Bicycles on Road	50.0	28.6	-	-	33.3	16.7	6.7	0.0	-	7.5	4.5	33.3	-	-	5.7	8.2
Bicycles on Crosswalk	-	-	-	2	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	8.3	-	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	22	-	-	-	-	2	-	-	-	-	2	-	-
% Pedestrians	-	-	-	91.7	-	-	-	-	100.0	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Cooper Street & Portland Street
Site Code: 220121
Start Date: 04/12/2022



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 cbowness@ptsl.com

Count Name: Hurontario Street & Tracey Lane
Site Code: 220121
Start Date: 04/12/2022

Turning Movement Data

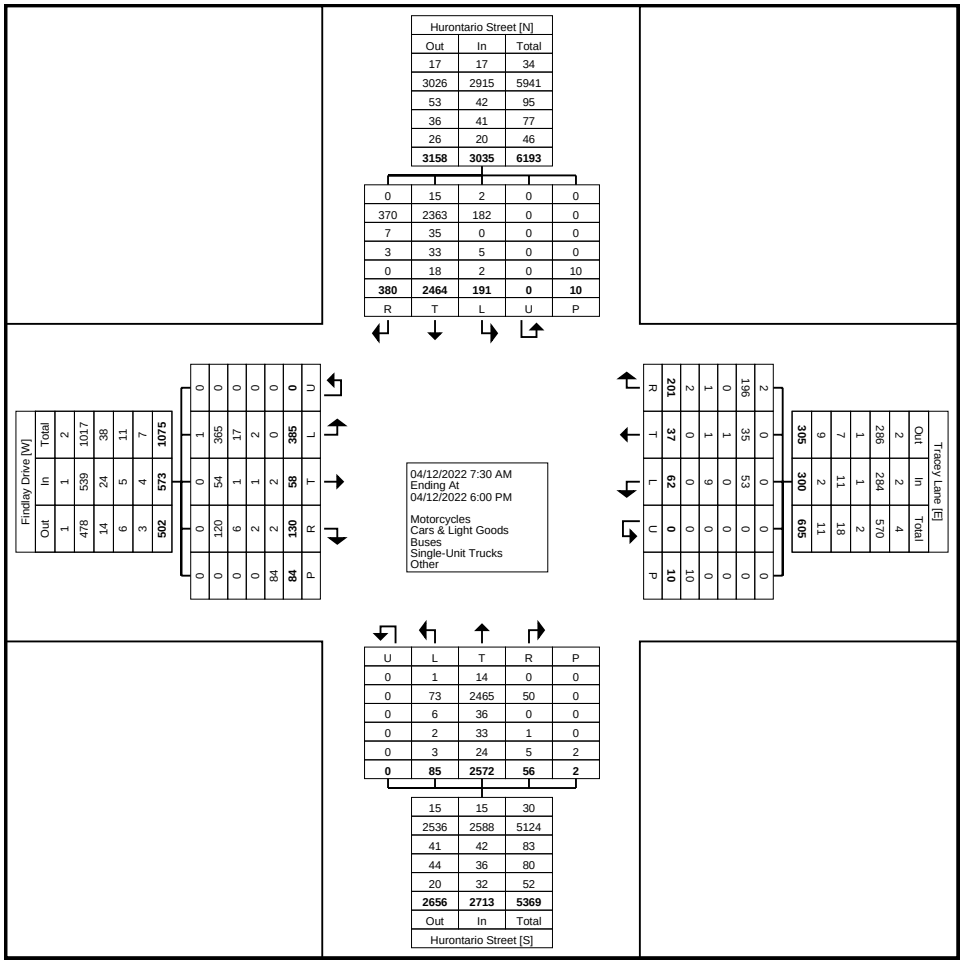
Start Time	Findlay Drive Eastbound						Tracey Lane Westbound						Hurontario Street Northbound						Hurontario Street Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:30 AM	9	0	5	0	1	14	1	0	9	0	0	10	2	94	3	0	0	99	2	56	0	0	0	58	181
7:45 AM	15	0	4	0	4	19	1	0	8	0	1	9	5	151	3	0	0	159	4	90	7	0	0	101	288
Hourly Total	24	0	9	0	5	33	2	0	17	0	1	19	7	245	6	0	0	258	6	146	7	0	0	159	469
8:00 AM	13	0	2	0	3	15	2	2	9	0	0	13	1	84	6	0	0	91	4	65	7	0	0	76	195
8:15 AM	14	1	3	0	1	18	0	1	0	0	0	1	4	76	3	0	0	83	8	55	13	0	0	76	178
8:30 AM	24	3	12	0	2	39	4	4	11	0	1	19	7	109	1	0	0	117	4	60	25	0	0	89	264
8:45 AM	29	4	6	0	3	39	2	2	9	0	0	13	6	108	1	0	0	115	8	80	13	0	0	101	268
Hourly Total	80	8	23	0	9	111	8	9	29	0	1	46	18	377	11	0	0	406	24	260	58	0	0	342	905
9:00 AM	12	2	3	0	2	17	2	2	7	0	0	11	3	83	2	0	0	88	7	70	9	0	2	86	202
9:15 AM	10	0	4	0	5	14	4	2	6	0	0	12	1	70	2	0	0	73	2	67	8	0	0	77	176
9:30 AM	2	3	2	0	2	7	2	2	1	0	0	5	0	58	3	0	0	61	5	51	4	0	0	60	133
9:45 AM	10	1	1	0	2	12	0	0	4	0	0	4	2	51	0	0	0	53	4	55	9	0	0	68	137
Hourly Total	34	6	10	0	11	50	8	6	18	0	0	32	6	262	7	0	0	275	18	243	30	0	2	291	648
10:00 AM	5	0	7	0	3	12	1	1	6	0	0	8	1	55	0	0	0	56	3	44	9	0	0	56	132
10:15 AM	11	1	1	0	1	13	1	1	8	0	1	10	2	64	1	0	0	67	5	56	10	0	0	71	161
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	16	1	8	0	4	25	2	2	14	0	1	18	3	119	1	0	0	123	8	100	19	0	0	127	293
12:00 PM	12	2	1	0	3	15	1	1	8	0	0	10	2	73	2	0	0	77	8	72	17	0	2	97	199
12:15 PM	8	2	2	0	1	12	2	0	5	0	0	7	0	46	1	0	0	47	5	75	11	0	0	91	157
12:30 PM	14	3	5	0	2	22	0	2	2	0	0	4	1	76	2	0	0	79	6	69	7	0	0	82	187
12:45 PM	13	0	1	0	1	14	1	0	10	0	0	11	1	72	1	0	0	74	7	84	7	0	0	98	197
Hourly Total	47	7	9	0	7	63	4	3	25	0	0	32	4	267	6	0	0	277	26	300	42	0	2	368	740
1:00 PM	7	2	3	0	1	12	2	2	3	0	1	7	1	84	2	0	0	87	8	67	11	0	0	86	192
1:15 PM	6	1	4	0	5	11	5	1	7	0	0	13	3	82	2	0	0	87	4	79	19	0	2	102	213
1:30 PM	12	0	2	0	0	14	1	0	7	0	0	8	2	62	2	0	0	66	5	77	9	0	1	91	179
1:45 PM	7	2	2	0	3	11	1	1	5	0	0	7	0	80	2	0	1	82	5	69	9	0	0	83	183
Hourly Total	32	5	11	0	9	48	9	4	22	0	1	35	6	308	8	0	1	322	22	292	48	0	3	362	767
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	18	3	4	0	4	25	2	0	5	0	0	7	4	101	0	0	0	105	2	106	13	0	3	121	258
3:15 PM	27	3	7	0	3	37	1	1	2	0	0	4	6	84	1	0	0	91	10	101	13	0	0	124	256
3:30 PM	9	5	12	0	4	26	6	3	8	0	0	17	1	61	1	0	0	63	5	113	16	0	0	134	240
3:45 PM	19	4	6	0	3	29	2	0	8	0	1	10	5	106	1	0	0	112	1	86	13	0	0	100	251
Hourly Total	73	15	29	0	14	117	11	4	23	0	1	38	16	352	3	0	0	371	18	406	55	0	3	479	1005
4:00 PM	13	4	6	0	2	23	3	3	6	0	2	12	4	83	4	0	0	91	4	116	15	0	0	135	261
4:15 PM	9	2	6	0	1	17	2	0	9	0	0	11	5	91	1	0	0	97	7	88	14	0	0	109	234

4:30 PM	13	0	6	0	5	19	3	0	6	0	1	9	2	88	1	0	0	91	16	121	15	0	0	152	271
4:45 PM	6	0	3	0	3	9	1	0	11	0	0	12	3	90	1	0	0	94	9	76	14	0	0	99	214
Hourly Total	41	6	21	0	11	68	9	3	32	0	3	44	14	352	7	0	0	373	36	401	58	0	0	495	980
5:00 PM	10	4	3	0	4	17	0	1	6	0	2	7	5	71	1	0	0	77	12	94	16	0	0	122	223
5:15 PM	11	5	2	0	3	18	4	2	6	0	0	12	2	76	1	0	0	79	5	84	19	0	0	108	217
5:30 PM	12	1	2	0	4	15	3	2	6	0	0	11	1	62	1	0	0	64	7	91	20	0	0	118	208
5:45 PM	5	0	3	0	3	8	2	1	3	0	0	6	3	81	4	0	1	88	9	47	8	0	0	64	166
Hourly Total	38	10	10	0	14	58	9	6	21	0	2	36	11	290	7	0	1	308	33	316	63	0	0	412	814
Grand Total	385	58	130	0	84	573	62	37	201	0	10	300	85	2572	56	0	2	2713	191	2464	380	0	10	3035	6621
Approach %	67.2	10.1	22.7	0.0	-	-	20.7	12.3	67.0	0.0	-	-	3.1	94.8	2.1	0.0	-	-	6.3	81.2	12.5	0.0	-	-	-
Total %	5.8	0.9	2.0	0.0	-	8.7	0.9	0.6	3.0	0.0	-	4.5	1.3	38.8	0.8	0.0	-	41.0	2.9	37.2	5.7	0.0	-	45.8	-
Motorcycles	1	0	0	0	-	1	0	0	2	0	-	2	1	14	0	0	-	15	2	15	0	0	-	17	35
% Motorcycles	0.3	0.0	0.0	-	-	0.2	0.0	0.0	1.0	-	-	0.7	1.2	0.5	0.0	-	-	0.6	1.0	0.6	0.0	-	-	0.6	0.5
Cars & Light Goods	365	54	120	0	-	539	53	35	196	0	-	284	73	2465	50	0	-	2588	182	2363	370	0	-	2915	6326
% Cars & Light Goods	94.8	93.1	92.3	-	-	94.1	85.5	94.6	97.5	-	-	94.7	85.9	95.8	89.3	-	-	95.4	95.3	95.9	97.4	-	-	96.0	95.5
Buses	17	1	6	0	-	24	0	1	0	0	-	1	6	36	0	0	-	42	0	35	7	0	-	42	109
% Buses	4.4	1.7	4.6	-	-	4.2	0.0	2.7	0.0	-	-	0.3	7.1	1.4	0.0	-	-	1.5	0.0	1.4	1.8	-	-	1.4	1.6
Single-Unit Trucks	2	1	2	0	-	5	9	1	1	0	-	11	2	33	1	0	-	36	5	33	3	0	-	41	93
% Single-Unit Trucks	0.5	1.7	1.5	-	-	0.9	14.5	2.7	0.5	-	-	3.7	2.4	1.3	1.8	-	-	1.3	2.6	1.3	0.8	-	-	1.4	1.4
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	1	17	2	0	-	20	0	14	0	0	-	14	34
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	1.2	0.7	3.6	-	-	0.7	0.0	0.6	0.0	-	-	0.5	0.5
Bicycles on Road	0	2	2	0	-	4	0	0	2	0	-	2	2	7	3	0	-	12	2	4	0	0	-	6	24
% Bicycles on Road	0.0	3.4	1.5	-	-	0.7	0.0	0.0	1.0	-	-	0.7	2.4	0.3	5.4	-	-	0.4	1.0	0.2	0.0	-	-	0.2	0.4
Bicycles on Crosswalk	-	-	-	-	18	-	-	-	-	-	4	-	-	-	-	-	0	-	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	-	21.4	-	-	-	-	-	40.0	-	-	-	-	-	0.0	-	-	-	-	-	20.0	-	-
Pedestrians	-	-	-	-	66	-	-	-	-	-	6	-	-	-	-	-	2	-	-	-	-	-	8	-	-
% Pedestrians	-	-	-	-	78.6	-	-	-	-	-	60.0	-	-	-	-	-	100.0	-	-	-	-	-	80.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Hurontario Street & Tracey Lane
Site Code: 220121
Start Date: 04/12/2022



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: Hurontario Street & Tracey Lane
Site Code: 220121
Start Date: 04/12/2022

Turning Movement Peak Hour Data (7:45 AM)

Start Time	Findlay Drive Eastbound						Tracey Lane Westbound						Hurontario Street Northbound						Hurontario Street 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	
7:45 AM	15	0	4	0	4	19	1	0	8	0	1	9	5	151	3	0	0	159	4	90	7	0	0	101	288
8:00 AM	13	0	2	0	3	15	2	2	9	0	0	13	1	84	6	0	0	91	4	65	7	0	0	76	195
8:15 AM	14	1	3	0	1	18	0	1	0	0	0	1	4	76	3	0	0	83	8	55	13	0	0	76	178
8:30 AM	24	3	12	0	2	39	4	4	11	0	1	19	7	109	1	0	0	117	4	60	25	0	0	89	264
Total	66	4	21	0	10	91	7	7	28	0	2	42	17	420	13	0	0	450	20	270	52	0	0	342	925
Approach %	72.5	4.4	23.1	0.0	-	-	16.7	16.7	66.7	0.0	-	-	3.8	93.3	2.9	0.0	-	-	5.8	78.9	15.2	0.0	-	-	-
Total %	7.1	0.4	2.3	0.0	-	9.8	0.8	0.8	3.0	0.0	-	4.5	1.8	45.4	1.4	0.0	-	48.6	2.2	29.2	5.6	0.0	-	37.0	-
PHF	0.688	0.333	0.438	0.000	-	0.583	0.438	0.438	0.636	0.000	-	0.553	0.607	0.695	0.542	0.000	-	0.708	0.625	0.750	0.520	0.000	-	0.847	0.803
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	1
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.2	0.0	-	-	0.2	0.0	0.0	0.0	-	-	0.0	0.1
Cars & Light Goods	59	4	20	0	-	83	6	7	28	0	-	41	14	400	12	0	-	426	18	257	49	0	-	324	874
% Cars & Light Goods	89.4	100.0	95.2	-	-	91.2	85.7	100.0	100.0	-	-	97.6	82.4	95.2	92.3	-	-	94.7	90.0	95.2	94.2	-	-	94.7	94.5
Buses	7	0	1	0	-	8	0	0	0	0	-	0	3	14	0	0	-	17	0	9	3	0	-	12	37
% Buses	10.6	0.0	4.8	-	-	8.8	0.0	0.0	0.0	-	-	0.0	17.6	3.3	0.0	-	-	3.8	0.0	3.3	5.8	-	-	3.5	4.0
Single-Unit Trucks	0	0	0	0	-	0	1	0	0	0	-	1	0	2	0	0	-	2	2	2	0	0	-	4	7
% Single-Unit Trucks	0.0	0.0	0.0	-	-	0.0	14.3	0.0	0.0	-	-	2.4	0.0	0.5	0.0	-	-	0.4	10.0	0.7	0.0	-	-	1.2	0.8
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	3	1	0	-	4	0	1	0	0	-	1	5
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.7	7.7	-	-	0.9	0.0	0.4	0.0	-	-	0.3	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	0.4	0.0	-	-	0.3	0.1
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	10.0	-	-	-	-	-	50.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	9	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	90.0	-	-	-	-	-	50.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Hurontario Street & Tracey Lane
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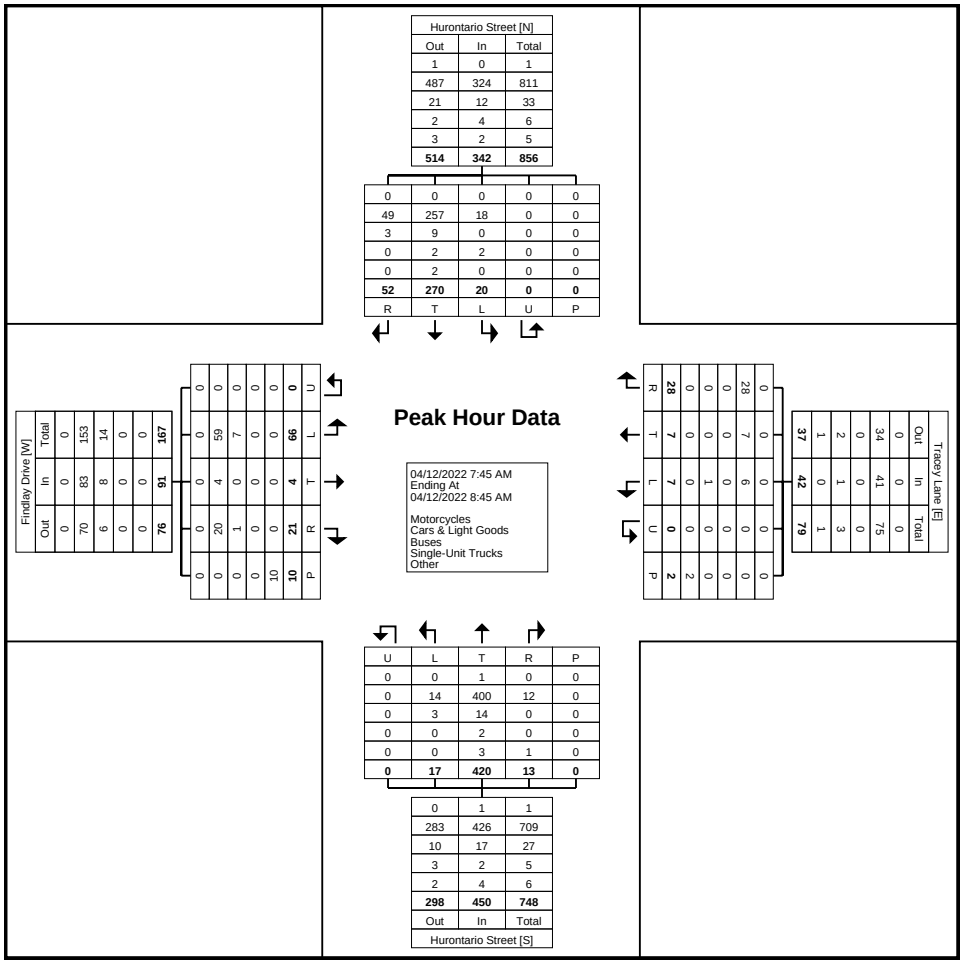
Start Date: 04/12/2022



Turning Movement Peak Hour Data Plot (7:45 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Hurontario Street & Tracey Lane
Site Code: 220121
Start Date: 04/12/2022

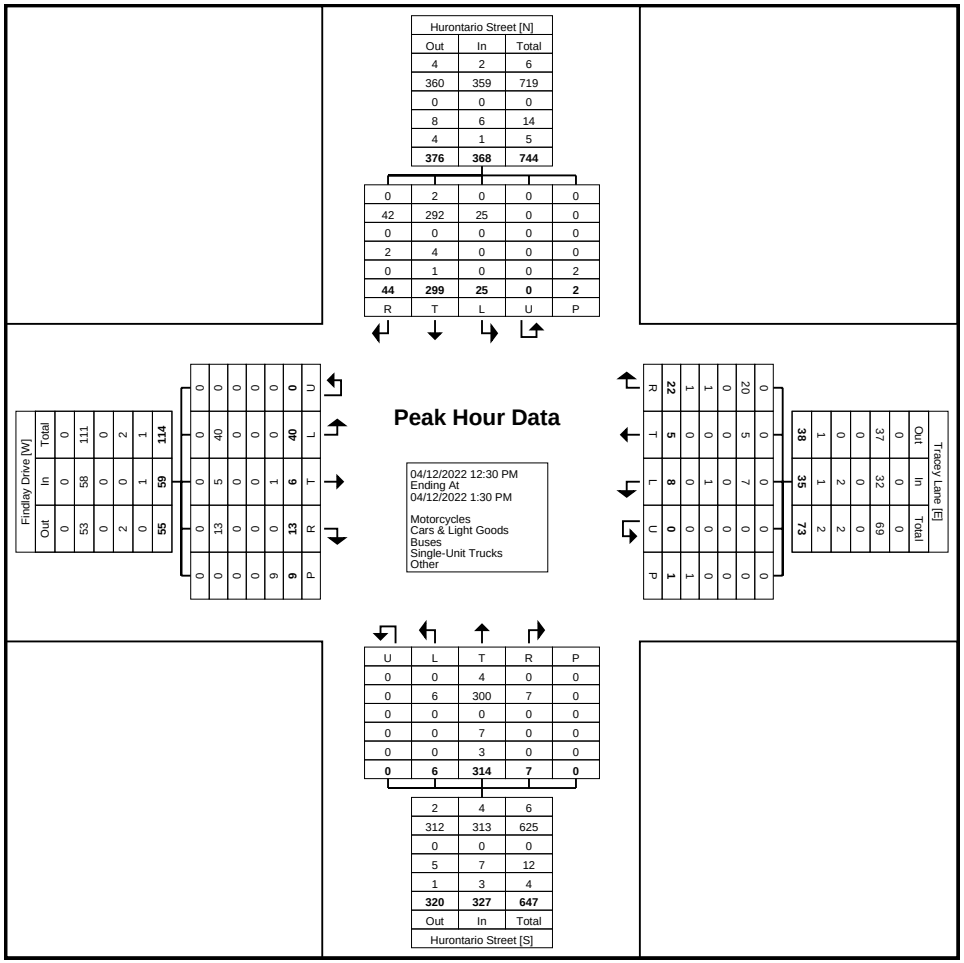
Turning Movement Peak Hour Data (12:30 PM)

Start Time	Findlay Drive Eastbound						Tracey Lane Westbound						Hurontario Street Northbound						Hurontario Street 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	14	3	5	0	2	22	0	2	2	0	0	4	1	76	2	0	0	79	6	69	7	0	0	82	187
12:45 PM	13	0	1	0	1	14	1	0	10	0	0	11	1	72	1	0	0	74	7	84	7	0	0	98	197
1:00 PM	7	2	3	0	1	12	2	2	3	0	1	7	1	84	2	0	0	87	8	67	11	0	0	86	192
1:15 PM	6	1	4	0	5	11	5	1	7	0	0	13	3	82	2	0	0	87	4	79	19	0	2	102	213
Total	40	6	13	0	9	59	8	5	22	0	1	35	6	314	7	0	0	327	25	299	44	0	2	368	789
Approach %	67.8	10.2	22.0	0.0	-	-	22.9	14.3	62.9	0.0	-	-	1.8	96.0	2.1	0.0	-	-	6.8	81.3	12.0	0.0	-	-	-
Total %	5.1	0.8	1.6	0.0	-	7.5	1.0	0.6	2.8	0.0	-	4.4	0.8	39.8	0.9	0.0	-	41.4	3.2	37.9	5.6	0.0	-	46.6	-
PHF	0.714	0.500	0.650	0.000	-	0.670	0.400	0.625	0.550	0.000	-	0.673	0.500	0.935	0.875	0.000	-	0.940	0.781	0.890	0.579	0.000	-	0.902	0.926
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	4	0	0	-	4	0	2	0	0	-	2	6
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	1.3	0.0	-	-	1.2	0.0	0.7	0.0	-	-	0.5	0.8
Cars & Light Goods	40	5	13	0	-	58	7	5	20	0	-	32	6	300	7	0	-	313	25	292	42	0	-	359	762
% Cars & Light Goods	100.0	83.3	100.0	-	-	98.3	87.5	100.0	90.9	-	-	91.4	100.0	95.5	100.0	-	-	95.7	100.0	97.7	95.5	-	-	97.6	96.6
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Single-Unit Trucks	0	0	0	0	-	0	1	0	1	0	-	2	0	7	0	0	-	7	0	4	2	0	-	6	15
% Single-Unit Trucks	0.0	0.0	0.0	-	-	0.0	12.5	0.0	4.5	-	-	5.7	0.0	2.2	0.0	-	-	2.1	0.0	1.3	4.5	-	-	1.6	1.9
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	2	0	0	-	2	0	0	0	0	-	0	2
% Articulated Trucks	0.0	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	0.3
Bicycles on Road	0	1	0	0	-	1	0	0	1	0	-	1	0	1	0	0	-	1	0	1	0	0	-	1	4
% Bicycles on Road	0.0	16.7	0.0	-	-	1.7	0.0	0.0	4.5	-	-	2.9	0.0	0.3	0.0	-	-	0.3	0.0	0.3	0.0	-	-	0.3	0.5
Bicycles on Crosswalk	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	-	33.3	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-
Pedestrians	-	-	-	-	6	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	66.7	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Hurontario Street & Tracey Lane
Site Code: 220121
Start Date: 04/12/2022



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: Hurontario Street & Tracey Lane
Site Code: 220121
Start Date: 04/12/2022

Turning Movement Peak Hour Data (3:45 PM)

Start Time	Findlay Drive Eastbound						Tracey Lane Westbound						Hurontario Street Northbound						Hurontario Street 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	
3:45 PM	19	4	6	0	3	29	2	0	8	0	1	10	5	106	1	0	0	112	1	86	13	0	0	100	251
4:00 PM	13	4	6	0	2	23	3	3	6	0	2	12	4	83	4	0	0	91	4	116	15	0	0	135	261
4:15 PM	9	2	6	0	1	17	2	0	9	0	0	11	5	91	1	0	0	97	7	88	14	0	0	109	234
4:30 PM	13	0	6	0	5	19	3	0	6	0	1	9	2	88	1	0	0	91	16	121	15	0	0	152	271
Total	54	10	24	0	11	88	10	3	29	0	4	42	16	368	7	0	0	391	28	411	57	0	0	496	1017
Approach %	61.4	11.4	27.3	0.0	-	-	23.8	7.1	69.0	0.0	-	-	4.1	94.1	1.8	0.0	-	-	5.6	82.9	11.5	0.0	-	-	-
Total %	5.3	1.0	2.4	0.0	-	8.7	1.0	0.3	2.9	0.0	-	4.1	1.6	36.2	0.7	0.0	-	38.4	2.8	40.4	5.6	0.0	-	48.8	-
PHF	0.711	0.625	1.000	0.000	-	0.759	0.833	0.250	0.806	0.000	-	0.875	0.800	0.868	0.438	0.000	-	0.873	0.438	0.849	0.950	0.000	-	0.816	0.938
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	1	1	0	0	-	2	1	3	0	0	-	4	6
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	6.3	0.3	0.0	-	-	0.5	3.6	0.7	0.0	-	-	0.8	0.6
Cars & Light Goods	52	10	24	0	-	86	8	3	29	0	-	40	12	363	3	0	-	378	27	400	57	0	-	484	988
% Cars & Light Goods	96.3	100.0	100.0	-	-	97.7	80.0	100.0	100.0	-	-	95.2	75.0	98.6	42.9	-	-	96.7	96.4	97.3	100.0	-	-	97.6	97.1
Buses	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	1	0	0	0	0	-	0	1
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	6.3	0.0	0.0	-	-	0.3	0.0	0.0	0.0	-	-	0.0	0.1
Single-Unit Trucks	2	0	0	0	-	2	2	0	0	0	-	2	1	4	1	0	-	6	0	5	0	0	-	5	15
% Single-Unit Trucks	3.7	0.0	0.0	-	-	2.3	20.0	0.0	0.0	-	-	4.8	6.3	1.1	14.3	-	-	1.5	0.0	1.2	0.0	-	-	1.0	1.5
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	2	0	0	-	2	2
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.5	0.0	-	-	0.4	0.2
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	1	0	3	0	-	4	0	1	0	0	-	1	5
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	6.3	0.0	42.9	-	-	1.0	0.0	0.2	0.0	-	-	0.2	0.5
Bicycles on Crosswalk	-	-	-	-	4	-	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	36.4	-	-	-	-	-	75.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	7	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	63.6	-	-	-	-	-	25.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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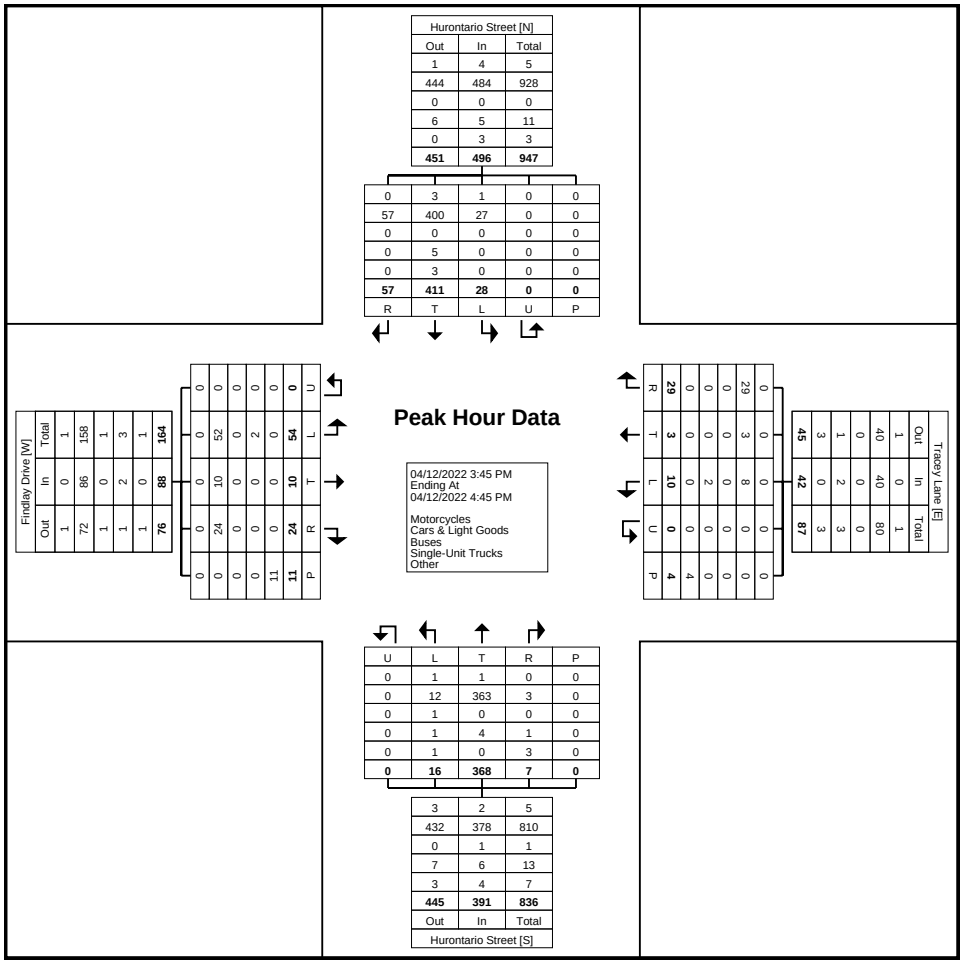
Start Date: 04/12/2022



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 cbowness@ptsl.com

Count Name: Poplar Sideroad & Portland Street
Site Code: 220121
Start Date: 04/12/2022

Turning Movement Data

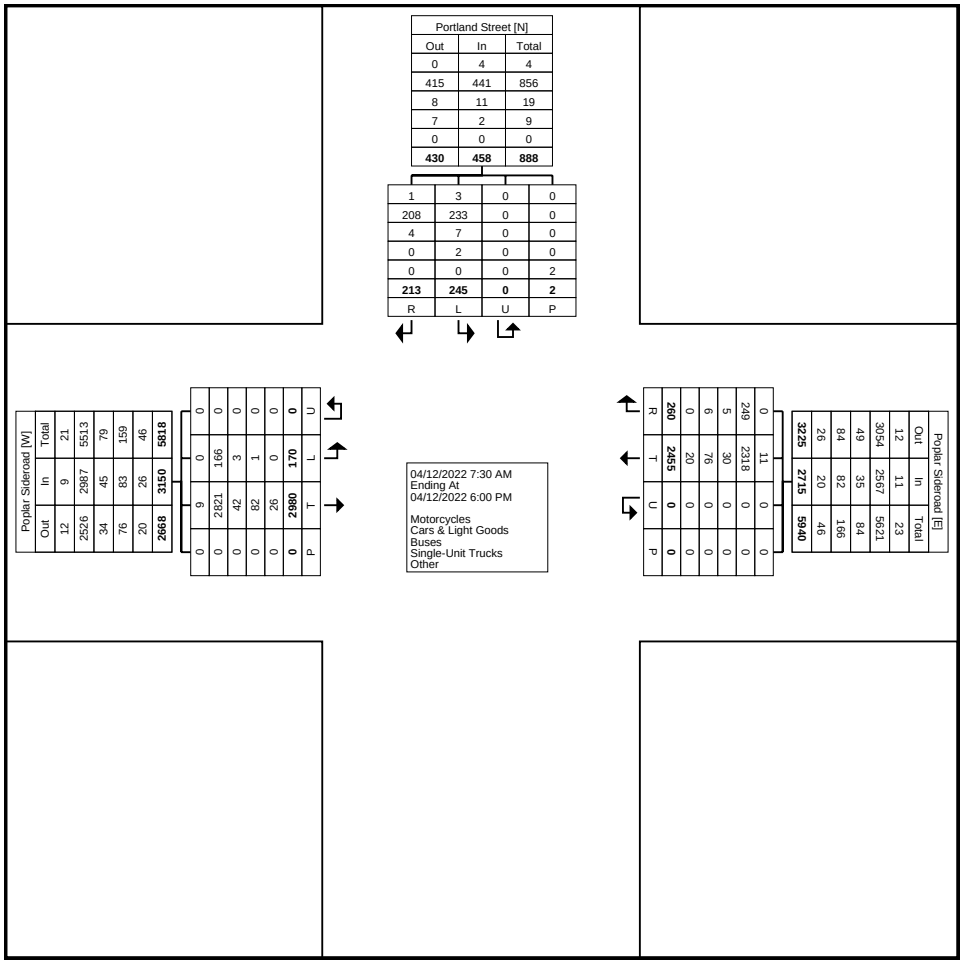
Start Time	Poplar Sideroad Eastbound					Poplar Sideroad Westbound					Portland Street Southbound					
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
7:30 AM	3	96	0	0	99	101	12	0	0	113	5	4	0	0	9	221
7:45 AM	3	133	0	0	136	141	12	0	0	153	8	7	0	0	15	304
Hourly Total	6	229	0	0	235	242	24	0	0	266	13	11	0	0	24	525
8:00 AM	7	90	0	0	97	84	8	0	0	92	8	3	0	0	11	200
8:15 AM	3	86	0	0	89	73	11	0	0	84	2	10	0	0	12	185
8:30 AM	6	79	0	0	85	96	5	0	0	101	10	8	0	0	18	204
8:45 AM	9	111	0	0	120	95	4	0	0	99	7	10	0	0	17	236
Hourly Total	25	366	0	0	391	348	28	0	0	376	27	31	0	0	58	825
9:00 AM	9	84	0	0	93	70	8	0	0	78	13	12	0	0	25	196
9:15 AM	4	83	0	0	87	71	9	0	0	80	3	10	0	0	13	180
9:30 AM	2	83	0	0	85	66	7	0	0	73	7	3	0	0	10	168
9:45 AM	4	68	0	0	72	60	5	0	0	65	8	7	0	0	15	152
Hourly Total	19	318	0	0	337	267	29	0	0	296	31	32	0	0	63	696
10:00 AM	5	60	0	0	65	49	4	0	0	53	7	6	0	0	13	131
10:15 AM	2	58	0	0	60	60	5	0	0	65	8	6	0	0	14	139
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	7	118	0	0	125	109	9	0	0	118	15	12	0	0	27	270
12:00 PM	4	73	0	0	77	71	7	0	0	78	5	6	0	1	11	166
12:15 PM	9	74	0	0	83	58	10	0	0	68	4	6	0	0	10	161
12:30 PM	7	75	0	0	82	61	6	0	0	67	10	4	0	0	14	163
12:45 PM	3	82	0	0	85	62	7	0	0	69	5	4	0	0	9	163
Hourly Total	23	304	0	0	327	252	30	0	0	282	24	20	0	1	44	653
1:00 PM	5	89	0	0	94	63	6	0	0	69	8	9	0	0	17	180
1:15 PM	6	81	0	0	87	57	5	0	0	62	7	5	0	1	12	161
1:30 PM	2	85	0	0	87	72	6	0	0	78	7	5	0	0	12	177
1:45 PM	6	64	0	0	70	58	2	0	0	60	9	6	0	0	15	145
Hourly Total	19	319	0	0	338	250	19	0	0	269	31	25	0	1	56	663
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	3	92	0	0	95	80	8	0	0	88	3	3	0	0	6	189
3:15 PM	10	111	0	0	121	86	10	0	0	96	10	6	0	0	16	233
3:30 PM	6	109	0	0	115	69	10	0	0	79	11	10	0	0	21	215
3:45 PM	8	118	0	0	126	80	4	0	0	84	7	12	0	0	19	229
Hourly Total	27	430	0	0	457	315	32	0	0	347	31	31	0	0	62	866
4:00 PM	9	145	0	0	154	81	9	0	0	90	13	7	0	0	20	264
4:15 PM	3	129	0	0	132	98	13	0	0	111	7	3	0	0	10	253
4:30 PM	7	112	0	0	119	91	10	0	0	101	11	8	0	0	19	239

4:45 PM	2	102	0	0	104	76	15	0	0	91	9	9	0	0	18	213
Hourly Total	21	488	0	0	509	346	47	0	0	393	40	27	0	0	67	969
5:00 PM	7	104	0	0	111	113	12	0	0	125	9	6	0	0	15	251
5:15 PM	4	110	0	0	114	75	12	0	0	87	12	5	0	0	17	218
5:30 PM	9	100	0	0	109	74	10	0	0	84	9	6	0	0	15	208
5:45 PM	3	94	0	0	97	64	8	0	0	72	3	7	0	0	10	179
Hourly Total	23	408	0	0	431	326	42	0	0	368	33	24	0	0	57	856
Grand Total	170	2980	0	0	3150	2455	260	0	0	2715	245	213	0	2	458	6323
Approach %	5.4	94.6	0.0	-	-	90.4	9.6	0.0	-	-	53.5	46.5	0.0	-	-	-
Total %	2.7	47.1	0.0	-	49.8	38.8	4.1	0.0	-	42.9	3.9	3.4	0.0	-	7.2	-
Motorcycles	0	9	0	-	9	11	0	0	-	11	3	1	0	-	4	24
% Motorcycles	0.0	0.3	-	-	0.3	0.4	0.0	-	-	0.4	1.2	0.5	-	-	0.9	0.4
Cars & Light Goods	166	2821	0	-	2987	2318	249	0	-	2567	233	208	0	-	441	5995
% Cars & Light Goods	97.6	94.7	-	-	94.8	94.4	95.8	-	-	94.5	95.1	97.7	-	-	96.3	94.8
Buses	3	42	0	-	45	30	5	0	-	35	7	4	0	-	11	91
% Buses	1.8	1.4	-	-	1.4	1.2	1.9	-	-	1.3	2.9	1.9	-	-	2.4	1.4
Single-Unit Trucks	1	82	0	-	83	76	6	0	-	82	2	0	0	-	2	167
% Single-Unit Trucks	0.6	2.8	-	-	2.6	3.1	2.3	-	-	3.0	0.8	0.0	-	-	0.4	2.6
Articulated Trucks	0	24	0	-	24	19	0	0	-	19	0	0	0	-	0	43
% Articulated Trucks	0.0	0.8	-	-	0.8	0.8	0.0	-	-	0.7	0.0	0.0	-	-	0.0	0.7
Bicycles on Road	0	2	0	-	2	1	0	0	-	1	0	0	0	-	0	3
% Bicycles on Road	0.0	0.1	-	-	0.1	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	-	-	-	-	0	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Poplar Sideroad & Portland Street
Site Code: 220121
Start Date: 04/12/2022



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: Poplar Sideroad & Portland Street
Site Code: 220121
Start Date: 04/12/2022

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Poplar Sideroad Eastbound					Poplar Sideroad Westbound					Portland Street Southbound					
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
7:30 AM	3	96	0	0	99	101	12	0	0	113	5	4	0	0	9	221
7:45 AM	3	133	0	0	136	141	12	0	0	153	8	7	0	0	15	304
8:00 AM	7	90	0	0	97	84	8	0	0	92	8	3	0	0	11	200
8:15 AM	3	86	0	0	89	73	11	0	0	84	2	10	0	0	12	185
Total	16	405	0	0	421	399	43	0	0	442	23	24	0	0	47	910
Approach %	3.8	96.2	0.0	-	-	90.3	9.7	0.0	-	-	48.9	51.1	0.0	-	-	-
Total %	1.8	44.5	0.0	-	46.3	43.8	4.7	0.0	-	48.6	2.5	2.6	0.0	-	5.2	-
PHF	0.571	0.761	0.000	-	0.774	0.707	0.896	0.000	-	0.722	0.719	0.600	0.000	-	0.783	0.748
Motorcycles	0	0	0	-	0	1	0	0	-	1	0	0	0	-	0	1
% Motorcycles	0.0	0.0	-	-	0.0	0.3	0.0	-	-	0.2	0.0	0.0	-	-	0.0	0.1
Cars & Light Goods	15	390	0	-	405	366	42	0	-	408	23	24	0	-	47	860
% Cars & Light Goods	93.8	96.3	-	-	96.2	91.7	97.7	-	-	92.3	100.0	100.0	-	-	100.0	94.5
Buses	1	5	0	-	6	13	1	0	-	14	0	0	0	-	0	20
% Buses	6.3	1.2	-	-	1.4	3.3	2.3	-	-	3.2	0.0	0.0	-	-	0.0	2.2
Single-Unit Trucks	0	8	0	-	8	14	0	0	-	14	0	0	0	-	0	22
% Single-Unit Trucks	0.0	2.0	-	-	1.9	3.5	0.0	-	-	3.2	0.0	0.0	-	-	0.0	2.4
Articulated Trucks	0	2	0	-	2	5	0	0	-	5	0	0	0	-	0	7
% Articulated Trucks	0.0	0.5	-	-	0.5	1.3	0.0	-	-	1.1	0.0	0.0	-	-	0.0	0.8
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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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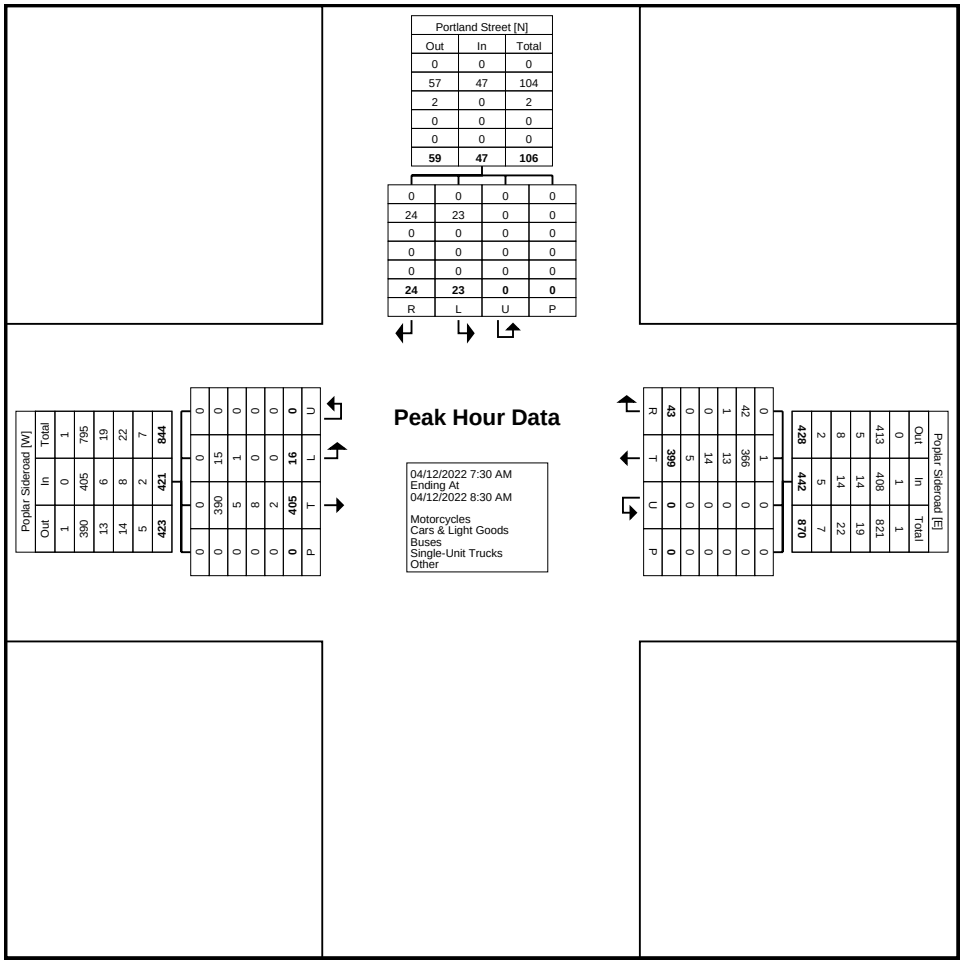

Turning Movement Peak Hour Data Plot (7:30 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Poplar Sideroad & Portland Street
Site Code: 220121
Start Date: 04/12/2022

Turning Movement Peak Hour Data (12:45 PM)

Start Time	Poplar Sideroad Eastbound					Poplar Sideroad Westbound					Portland Street Southbound					
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
12:45 PM	3	82	0	0	85	62	7	0	0	69	5	4	0	0	9	163
1:00 PM	5	89	0	0	94	63	6	0	0	69	8	9	0	0	17	180
1:15 PM	6	81	0	0	87	57	5	0	0	62	7	5	0	1	12	161
1:30 PM	2	85	0	0	87	72	6	0	0	78	7	5	0	0	12	177
Total	16	337	0	0	353	254	24	0	0	278	27	23	0	1	50	681
Approach %	4.5	95.5	0.0	-	-	91.4	8.6	0.0	-	-	54.0	46.0	0.0	-	-	-
Total %	2.3	49.5	0.0	-	51.8	37.3	3.5	0.0	-	40.8	4.0	3.4	0.0	-	7.3	-
PHF	0.667	0.947	0.000	-	0.939	0.882	0.857	0.000	-	0.891	0.844	0.639	0.000	-	0.735	0.946
Motorcycles	0	3	0	-	3	4	0	0	-	4	0	1	0	-	1	8
% Motorcycles	0.0	0.9	-	-	0.8	1.6	0.0	-	-	1.4	0.0	4.3	-	-	2.0	1.2
Cars & Light Goods	16	319	0	-	335	238	23	0	-	261	26	22	0	-	48	644
% Cars & Light Goods	100.0	94.7	-	-	94.9	93.7	95.8	-	-	93.9	96.3	95.7	-	-	96.0	94.6
Buses	0	0	0	-	0	1	0	0	-	1	1	0	0	-	1	2
% Buses	0.0	0.0	-	-	0.0	0.4	0.0	-	-	0.4	3.7	0.0	-	-	2.0	0.3
Single-Unit Trucks	0	10	0	-	10	8	1	0	-	9	0	0	0	-	0	19
% Single-Unit Trucks	0.0	3.0	-	-	2.8	3.1	4.2	-	-	3.2	0.0	0.0	-	-	0.0	2.8
Articulated Trucks	0	4	0	-	4	3	0	0	-	3	0	0	0	-	0	7
% Articulated Trucks	0.0	1.2	-	-	1.1	1.2	0.0	-	-	1.1	0.0	0.0	-	-	0.0	1.0
Bicycles on Road	0	1	0	-	1	0	0	0	-	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.3	-	-	0.3	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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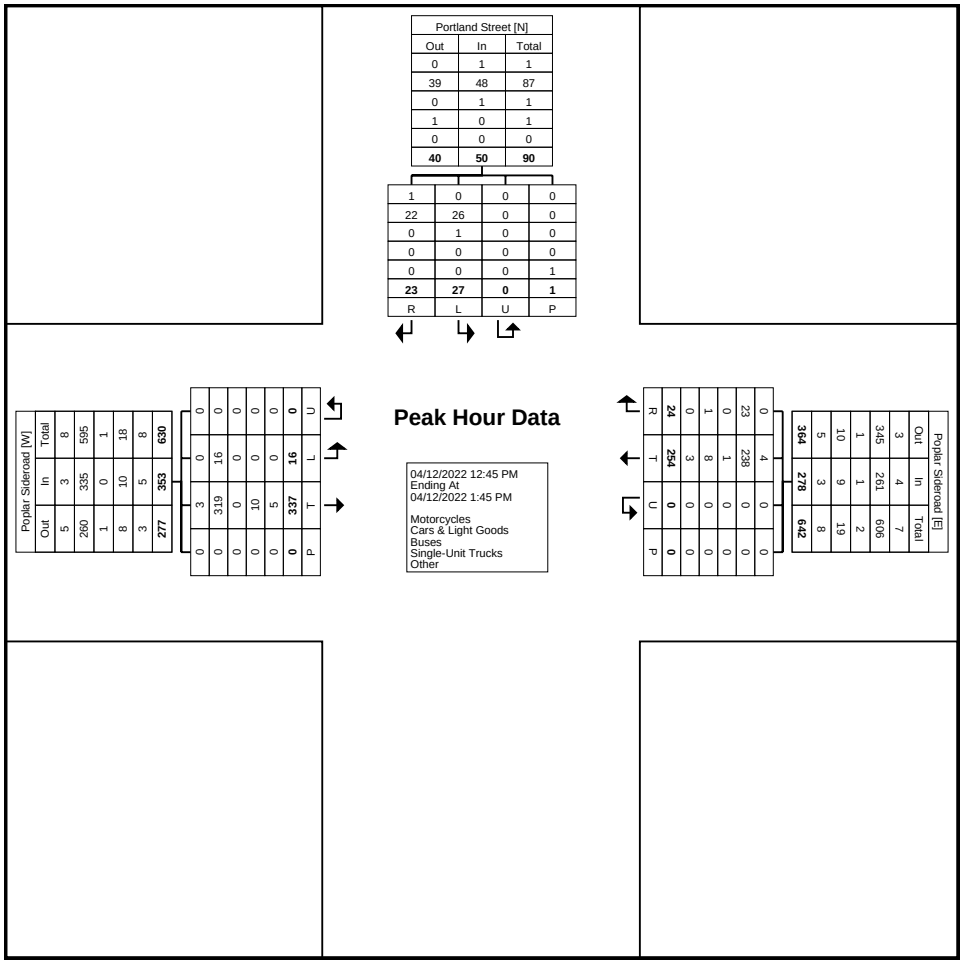
519-896-3163 cbowness@ptsl.com

Count Name: Poplar Sideroad & Portland Street
Site Code: 220121
Start Date: 04/12/2022



Turning Movement Peak Hour Data Plot (12:45 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Poplar Sideroad & Portland Street
Site Code: 220121
Start Date: 04/12/2022

Turning Movement Peak Hour Data (3:45 PM)

Start Time	Poplar Sideroad Eastbound					Poplar Sideroad Westbound					Portland Street Southbound					
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
3:45 PM	8	118	0	0	126	80	4	0	0	84	7	12	0	0	19	229
4:00 PM	9	145	0	0	154	81	9	0	0	90	13	7	0	0	20	264
4:15 PM	3	129	0	0	132	98	13	0	0	111	7	3	0	0	10	253
4:30 PM	7	112	0	0	119	91	10	0	0	101	11	8	0	0	19	239
Total	27	504	0	0	531	350	36	0	0	386	38	30	0	0	68	985
Approach %	5.1	94.9	0.0	-	-	90.7	9.3	0.0	-	-	55.9	44.1	0.0	-	-	-
Total %	2.7	51.2	0.0	-	53.9	35.5	3.7	0.0	-	39.2	3.9	3.0	0.0	-	6.9	-
PHF	0.750	0.869	0.000	-	0.862	0.893	0.692	0.000	-	0.869	0.731	0.625	0.000	-	0.850	0.933
Motorcycles	0	0	0	-	0	1	0	0	-	1	1	0	0	-	1	2
% Motorcycles	0.0	0.0	-	-	0.0	0.3	0.0	-	-	0.3	2.6	0.0	-	-	1.5	0.2
Cars & Light Goods	27	479	0	-	506	336	36	0	-	372	37	29	0	-	66	944
% Cars & Light Goods	100.0	95.0	-	-	95.3	96.0	100.0	-	-	96.4	97.4	96.7	-	-	97.1	95.8
Buses	0	8	0	-	8	0	0	0	-	0	0	1	0	-	1	9
% Buses	0.0	1.6	-	-	1.5	0.0	0.0	-	-	0.0	0.0	3.3	-	-	1.5	0.9
Single-Unit Trucks	0	13	0	-	13	10	0	0	-	10	0	0	0	-	0	23
% Single-Unit Trucks	0.0	2.6	-	-	2.4	2.9	0.0	-	-	2.6	0.0	0.0	-	-	0.0	2.3
Articulated Trucks	0	3	0	-	3	2	0	0	-	2	0	0	0	-	0	5
% Articulated Trucks	0.0	0.6	-	-	0.6	0.6	0.0	-	-	0.5	0.0	0.0	-	-	0.0	0.5
Bicycles on Road	0	1	0	-	1	1	0	0	-	1	0	0	0	-	0	2
% Bicycles on Road	0.0	0.2	-	-	0.2	0.3	0.0	-	-	0.3	0.0	0.0	-	-	0.0	0.2
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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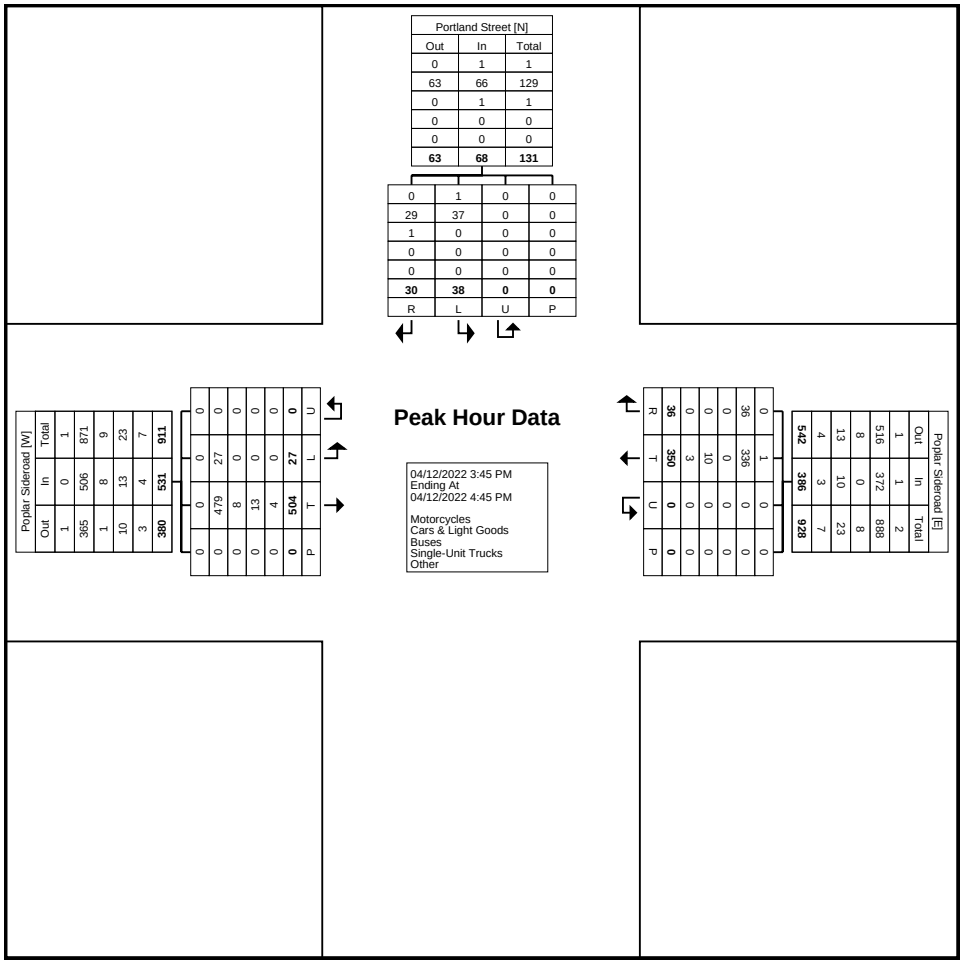
Start Date: 04/12/2022



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

Appendix C

Base Year Operation Reports

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	16	405	399	43	23	24
Future Volume (vph)	16	405	399	43	23	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0			15.0	0.0	0.0
Storage Lanes	1			1	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.931	
Flt Protected	0.950				0.976	
Satd. Flow (prot)	1703	1827	1759	1583	1726	0
Flt Permitted	0.950				0.976	
Satd. Flow (perm)	1703	1827	1759	1583	1726	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		152.9	86.4		145.5	
Travel Time (s)		9.2	5.2		10.5	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	6%	4%	8%	2%	0%	0%
Adj. Flow (vph)	21	540	532	57	31	32
Shared Lane Traffic (%)						
Lane Group Flow (vph)	21	540	532	57	63	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	31.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	16	405	399	43	23	24
Future Vol, veh/h	16	405	399	43	23	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	700	-	-	150	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	6	4	8	2	0	0
Mvmt Flow	21	540	532	57	31	32

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	589	0	-	0	1114	532
Stage 1	-	-	-	-	532	-
Stage 2	-	-	-	-	582	-
Critical Hdwy	4.16	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.254	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	967	-	-	-	232	551
Stage 1	-	-	-	-	593	-
Stage 2	-	-	-	-	563	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	967	-	-	-	227	551
Mov Cap-2 Maneuver	-	-	-	-	227	-
Stage 1	-	-	-	-	580	-
Stage 2	-	-	-	-	563	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	18.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	967	-	-	-	324
HCM Lane V/C Ratio	0.022	-	-	-	0.193
HCM Control Delay (s)	8.8	-	-	-	18.8
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.7

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	7	5	6	53	64	5
Future Volume (vph)	7	5	6	53	64	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.944				0.990	
Flt Protected	0.971			0.995		
Satd. Flow (prot)	1609	0	0	1763	1751	0
Flt Permitted	0.971			0.995		
Satd. Flow (perm)	1609	0	0	1763	1751	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	303.0			145.5	89.1	
Travel Time (s)	21.8			10.5	6.4	
Confl. Peds. (#/hr)			22			22
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles (%)	0%	20%	0%	8%	8%	0%
Adj. Flow (vph)	10	7	8	73	88	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	17	0	0	81	95	0
Sign Control	Stop			Free	Free	

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

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	5	6	53	64	5
Future Vol, veh/h	7	5	6	53	64	5
Conflicting Peds, #/hr	0	0	22	0	0	22
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	73	73	73	73	73	73
Heavy Vehicles, %	0	20	0	8	8	0
Mvmt Flow	10	7	8	73	88	7

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	203	114	117	0	-	0
Stage 1	114	-	-	-	-	-
Stage 2	89	-	-	-	-	-
Critical Hdwy	6.4	6.4	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.48	2.2	-	-	-
Pot Cap-1 Maneuver	790	892	1484	-	-	-
Stage 1	916	-	-	-	-	-
Stage 2	940	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	756	875	1456	-	-	-
Mov Cap-2 Maneuver	756	-	-	-	-	-
Stage 1	893	-	-	-	-	-
Stage 2	922	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.6	0.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1456	-	801	-	-
HCM Lane V/C Ratio	0.006	-	0.021	-	-
HCM Control Delay (s)	7.5	0	9.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	4	21	7	7	28	17	420	13	20	270	52
Future Volume (vph)	66	4	21	7	7	28	17	420	13	20	270	52
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	15.0		15.0
Storage Lanes	0		0	0		0	1		0	1		1
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		0.969			0.911			0.996				0.850
Flt Protected		0.965			0.992		0.950			0.950		
Satd. Flow (prot)	0	1628	0	0	1677	0	1530	1801	0	1641	1827	1524
Flt Permitted		0.965			0.992		0.950			0.950		
Satd. Flow (perm)	0	1628	0	0	1677	0	1530	1801	0	1641	1827	1524
Link Speed (k/h)		40			50			50			50	
Link Distance (m)		189.3			103.3			249.9			188.8	
Travel Time (s)		17.0			7.4			18.0			13.6	
Confl. Peds. (#/hr)							10		2	2		10
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	11%	0%	5%	14%	0%	0%	18%	5%	8%	10%	4%	6%
Adj. Flow (vph)	83	5	26	9	9	35	21	525	16	25	338	65
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	114	0	0	53	0	21	541	0	25	338	65
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	41.4%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	66	4	21	7	7	28	17	420	13	20	270	52
Future Vol, veh/h	66	4	21	7	7	28	17	420	13	20	270	52
Conflicting Peds, #/hr	0	0	0	0	0	0	10	0	2	2	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	150	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	11	0	5	14	0	0	18	5	8	10	4	6
Mvmt Flow	83	5	26	9	9	35	21	525	16	25	338	65

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	995	983	348	1013	1040	535	413	0	0	543	0	0
Stage 1	398	398	-	577	577	-	-	-	-	-	-	-
Stage 2	597	585	-	436	463	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.5	6.25	7.24	6.5	6.2	4.28	-	-	4.2	-	-
Critical Hdwy Stg 1	6.21	5.5	-	6.24	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.5	-	6.24	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4	3.345	3.626	4	3.3	2.362	-	-	2.29	-	-
Pot Cap-1 Maneuver	215	251	688	207	232	549	1065	-	-	987	-	-
Stage 1	610	606	-	482	505	-	-	-	-	-	-	-
Stage 2	474	501	-	576	568	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	187	237	682	189	219	548	1056	-	-	985	-	-
Mov Cap-2 Maneuver	187	237	-	189	219	-	-	-	-	-	-	-
Stage 1	593	586	-	471	494	-	-	-	-	-	-	-
Stage 2	427	490	-	535	549	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	35.8	17.1	0.3	0.5
HCM LOS	E	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1056	-	-	227	350	985	-	-
HCM Lane V/C Ratio	0.02	-	-	0.501	0.15	0.025	-	-
HCM Control Delay (s)	8.5	-	-	35.8	17.1	8.8	-	-
HCM Lane LOS	A	-	-	E	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	2.6	0.5	0.1	-	-

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	27	504	350	36	38	30
Future Volume (vph)	27	504	350	36	38	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0			15.0	0.0	0.0
Storage Lanes	1			1	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.941	
Flt Protected	0.950				0.973	
Satd. Flow (prot)	1805	1810	1827	1615	1717	0
Flt Permitted	0.950				0.973	
Satd. Flow (perm)	1805	1810	1827	1615	1717	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		152.9	86.4		145.5	
Travel Time (s)		9.2	5.2		10.5	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	5%	4%	0%	0%	3%
Adj. Flow (vph)	29	542	376	39	41	32
Shared Lane Traffic (%)						
Lane Group Flow (vph)	29	542	376	39	73	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	37.1%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	27	504	350	36	38	30
Future Vol, veh/h	27	504	350	36	38	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	700	-	-	150	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	5	4	0	0	3
Mvmt Flow	29	542	376	39	41	32

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	415	0	-	0	976	376
Stage 1	-	-	-	-	376	-
Stage 2	-	-	-	-	600	-
Critical Hdwy	4.1	-	-	-	6.4	6.23
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.327
Pot Cap-1 Maneuver	1155	-	-	-	281	668
Stage 1	-	-	-	-	699	-
Stage 2	-	-	-	-	552	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1155	-	-	-	274	668
Mov Cap-2 Maneuver	-	-	-	-	274	-
Stage 1	-	-	-	-	682	-
Stage 2	-	-	-	-	552	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	17.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1155	-	-	-	370
HCM Lane V/C Ratio	0.025	-	-	-	0.198
HCM Control Delay (s)	8.2	-	-	-	17.1
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.7

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	2	7	7	60	67	3
Future Volume (vph)	2	7	7	60	67	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.892				0.995	
Flt Protected	0.990			0.995		
Satd. Flow (prot)	1509	0	0	1841	1837	0
Flt Permitted	0.990			0.995		
Satd. Flow (perm)	1509	0	0	1841	1837	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	303.0			145.5	89.1	
Travel Time (s)	21.8			10.5	6.4	
Confl. Peds. (#/hr)	2	2	24			24
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	14%	0%	3%	3%	0%
Adj. Flow (vph)	2	8	8	67	75	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	0	0	75	78	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	19.7%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	7	7	60	67	3
Future Vol, veh/h	2	7	7	60	67	3
Conflicting Peds, #/hr	2	2	24	0	0	24
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	14	0	3	3	0
Mvmt Flow	2	8	8	67	75	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	186	103	102	0	-	0
Stage 1	101	-	-	-	-	-
Stage 2	85	-	-	-	-	-
Critical Hdwy	6.4	6.34	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.426	2.2	-	-	-
Pot Cap-1 Maneuver	808	920	1503	-	-	-
Stage 1	928	-	-	-	-	-
Stage 2	943	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	772	900	1472	-	-	-
Mov Cap-2 Maneuver	772	-	-	-	-	-
Stage 1	904	-	-	-	-	-
Stage 2	924	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.2	0.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1472	-	868	-	-
HCM Lane V/C Ratio	0.005	-	0.012	-	-
HCM Control Delay (s)	7.5	0	9.2	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	10	24	10	3	29	16	368	7	28	411	57
Future Volume (vph)	54	10	24	10	3	29	16	368	7	28	411	57
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	15.0		15.0
Storage Lanes	0		0	0		0	1		0	1		1
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		0.963			0.907			0.997				0.850
Flt Protected		0.971			0.988		0.950			0.950		
Satd. Flow (prot)	0	1735	0	0	1623	0	1597	1871	0	1805	1863	1615
Flt Permitted		0.971			0.988		0.950			0.950		
Satd. Flow (perm)	0	1735	0	0	1623	0	1597	1871	0	1805	1863	1615
Link Speed (k/h)		40			50			50			50	
Link Distance (m)		189.3			103.3			249.9			188.8	
Travel Time (s)		17.0			7.4			18.0			13.6	
Confl. Peds. (#/hr)							11		4	4		11
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	4%	0%	0%	20%	0%	0%	13%	1%	14%	0%	2%	0%
Adj. Flow (vph)	57	11	26	11	3	31	17	391	7	30	437	61
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	94	0	0	45	0	17	398	0	30	437	61
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	41.1%	ICU Level of Service A	
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	54	10	24	10	3	29	16	368	7	28	411	57
Future Vol, veh/h	54	10	24	10	3	29	16	368	7	28	411	57
Conflicting Peds, #/hr	0	0	0	0	0	0	11	0	4	4	0	11
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	150	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	4	0	0	20	0	0	13	1	14	0	2	0
Mvmt Flow	57	11	26	11	3	31	17	391	7	30	437	61

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	954	944	448	979	1002	399	509	0	0	402	0	0
Stage 1	508	508	-	433	433	-	-	-	-	-	-	-
Stage 2	446	436	-	546	569	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.5	6.2	7.3	6.5	6.2	4.23	-	-	4.1	-	-
Critical Hdwy Stg 1	6.14	5.5	-	6.3	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.5	-	6.3	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4	3.3	3.68	4	3.3	2.317	-	-	2.2	-	-
Pot Cap-1 Maneuver	236	264	615	213	244	655	1002	-	-	1168	-	-
Stage 1	544	542	-	567	585	-	-	-	-	-	-	-
Stage 2	588	583	-	491	509	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	213	250	609	190	231	653	993	-	-	1164	-	-
Mov Cap-2 Maneuver	213	250	-	190	231	-	-	-	-	-	-	-
Stage 1	530	523	-	556	573	-	-	-	-	-	-	-
Stage 2	548	571	-	449	491	-	-	-	-	-	-	-

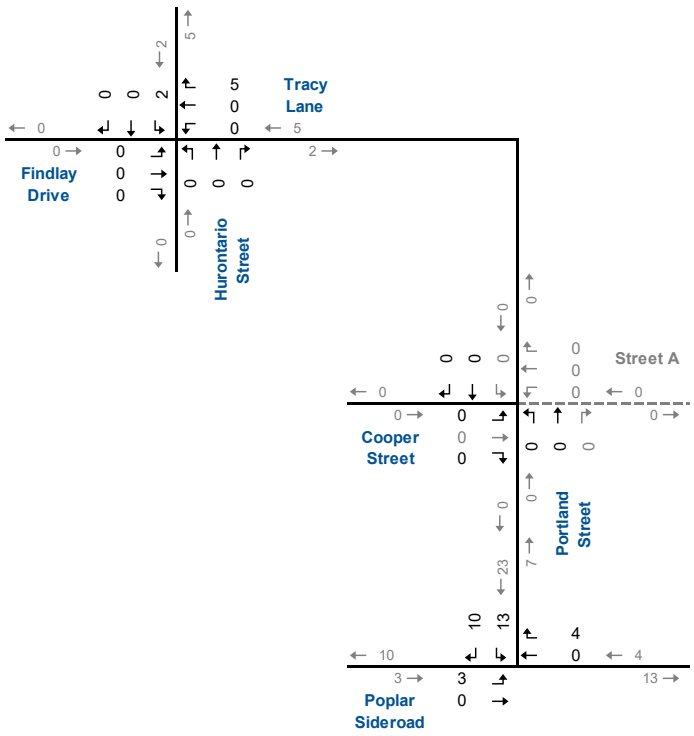
Approach	EB	WB	NB	SB
HCM Control Delay, s	25.9	15.7	0.4	0.5
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	993	-	-	264	382	1164	-	-
HCM Lane V/C Ratio	0.017	-	-	0.355	0.117	0.026	-	-
HCM Control Delay (s)	8.7	-	-	25.9	15.7	8.2	-	-
HCM Lane LOS	A	-	-	D	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.5	0.4	0.1	-	-

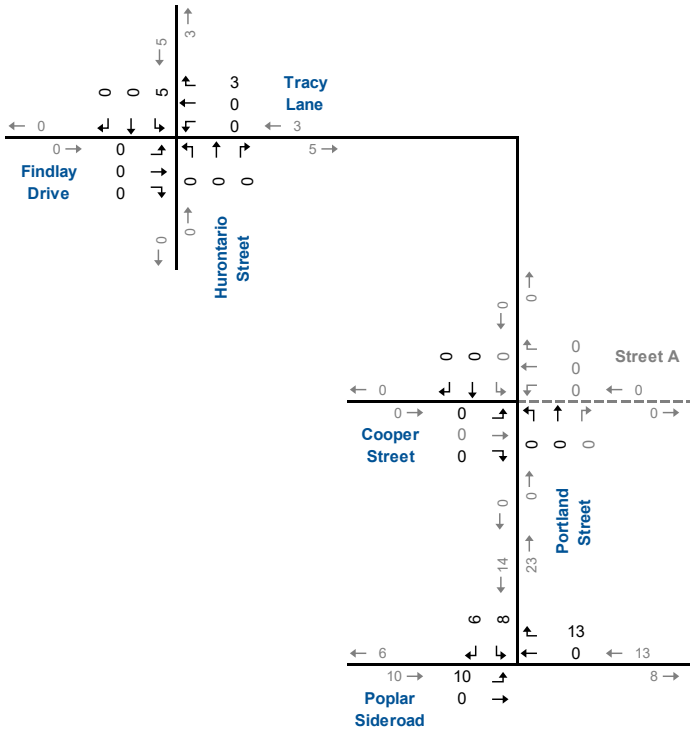
Appendix D

Background Development Traffic Volumes

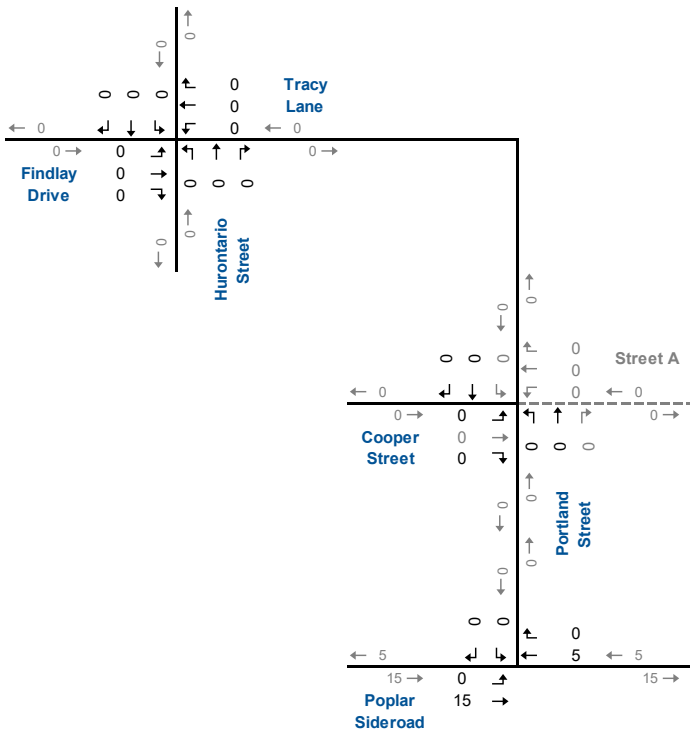
AM Peak Hour



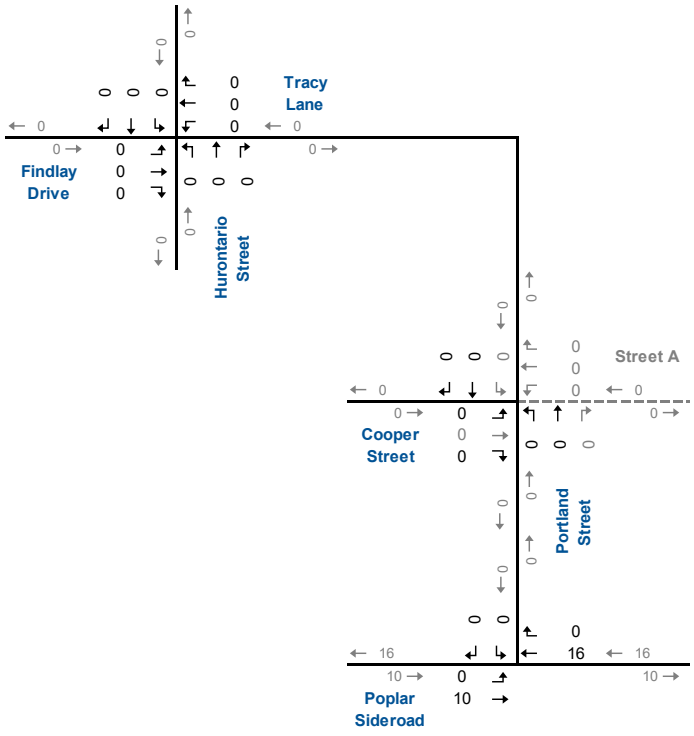
PM Peak Hour

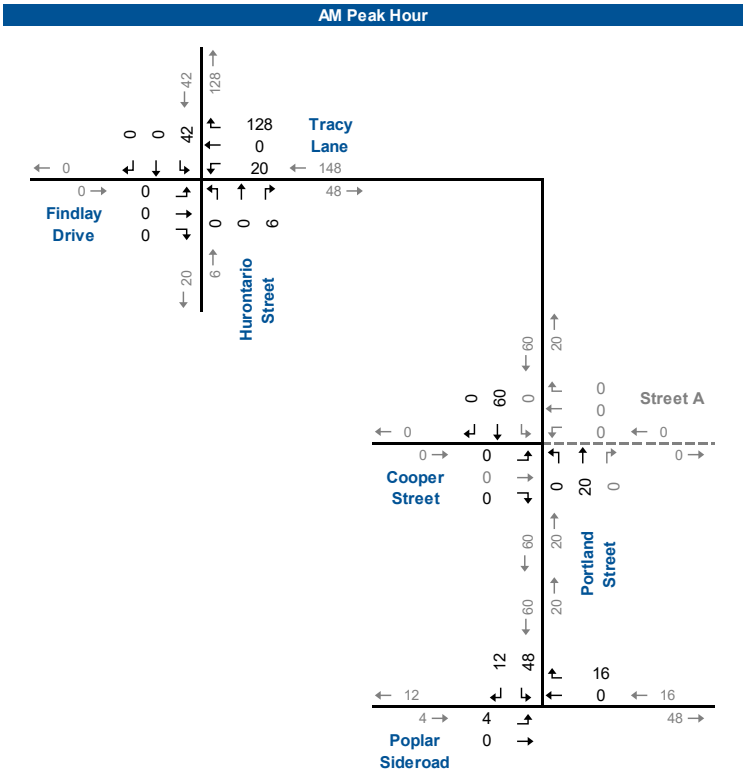


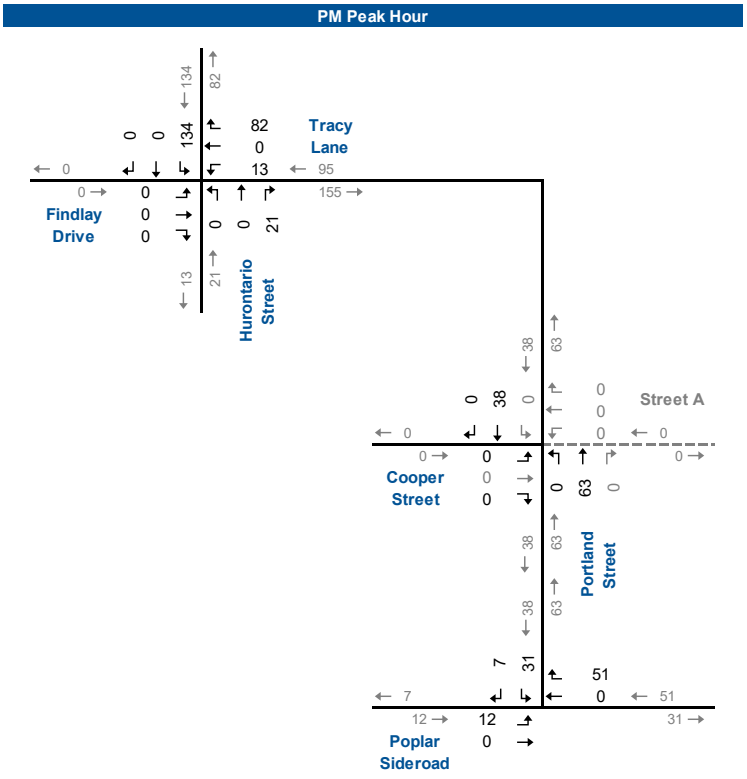
AM Peak Hour



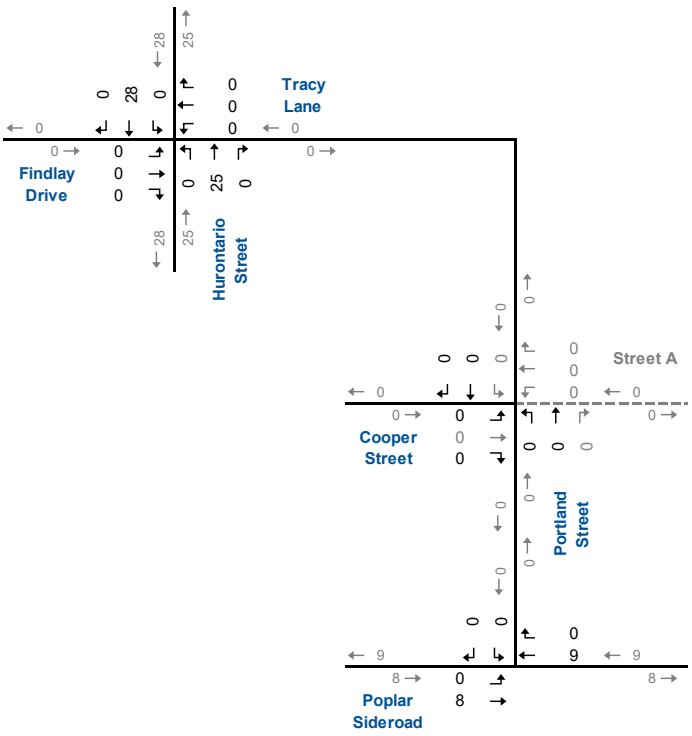
PM Peak Hour



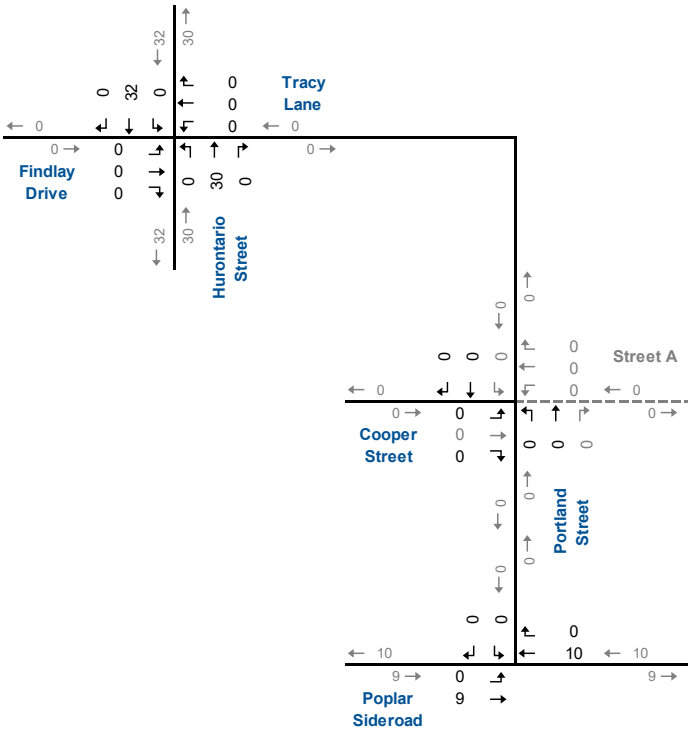

AM Peak Hour
Tracy Lane
Findlay Drive
Hurontario Street
Street A
Cooper Street
Portland Street
Poplar Sideroad


PM Peak Hour
Tracy Lane
Findlay Drive
Hurontario Street
Street A
Cooper Street
Portland Street
Poplar Sideroad

AM Peak Hour



PM Peak Hour



Appendix E

2024 Background Operation Reports

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	24	436	420	65	84	46
Future Volume (vph)	24	436	420	65	84	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0			15.0	0.0	0.0
Storage Lanes	1			1	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.952	
Flt Protected	0.950				0.969	
Satd. Flow (prot)	1703	1827	1759	1583	1753	0
Flt Permitted	0.950				0.969	
Satd. Flow (perm)	1703	1827	1759	1583	1753	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		152.9	86.4		145.5	
Travel Time (s)		9.2	5.2		10.5	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	6%	4%	8%	2%	0%	0%
Adj. Flow (vph)	32	581	560	87	112	61
Shared Lane Traffic (%)						
Lane Group Flow (vph)	32	581	560	87	173	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	37.1%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	24	436	420	65	84	46
Future Vol, veh/h	24	436	420	65	84	46
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	700	-	-	150	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	6	4	8	2	0	0
Mvmt Flow	32	581	560	87	112	61

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	647	0	-	0	1205	560
Stage 1	-	-	-	-	560	-
Stage 2	-	-	-	-	645	-
Critical Hdwy	4.16	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.254	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	920	-	-	-	205	532
Stage 1	-	-	-	-	576	-
Stage 2	-	-	-	-	526	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	920	-	-	-	198	532
Mov Cap-2 Maneuver	-	-	-	-	198	-
Stage 1	-	-	-	-	556	-
Stage 2	-	-	-	-	526	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	44.6
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	920	-	-	-	255
HCM Lane V/C Ratio	0.035	-	-	-	0.68
HCM Control Delay (s)	9.1	-	-	-	44.6
HCM Lane LOS	A	-	-	-	E
HCM 95th %tile Q(veh)	0.1	-	-	-	4.4

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	7	5	6	74	125	5
Future Volume (vph)	7	5	6	74	125	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.944				0.995	
Flt Protected	0.971			0.996		
Satd. Flow (prot)	1609	0	0	1762	1756	0
Flt Permitted	0.971			0.996		
Satd. Flow (perm)	1609	0	0	1762	1756	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	303.0			145.5	89.1	
Travel Time (s)	21.8			10.5	6.4	
Confl. Peds. (#/hr)			22			22
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles (%)	0%	20%	0%	8%	8%	0%
Adj. Flow (vph)	10	7	8	101	171	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	17	0	0	109	178	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	20.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	5	6	74	125	5
Future Vol, veh/h	7	5	6	74	125	5
Conflicting Peds, #/hr	0	0	22	0	0	22
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	73	73	73	73	73	73
Heavy Vehicles, %	0	20	0	8	8	0
Mvmt Flow	10	7	8	101	171	7

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	314	197	200	0	-	0
Stage 1	197	-	-	-	-	-
Stage 2	117	-	-	-	-	-
Critical Hdwy	6.4	6.4	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.48	2.2	-	-	-
Pot Cap-1 Maneuver	683	800	1384	-	-	-
Stage 1	841	-	-	-	-	-
Stage 2	913	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	654	785	1358	-	-	-
Mov Cap-2 Maneuver	654	-	-	-	-	-
Stage 1	820	-	-	-	-	-
Stage 2	896	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.2	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1358	-	703	-	-
HCM Lane V/C Ratio	0.006	-	0.023	-	-
HCM Control Delay (s)	7.7	0	10.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	67	4	21	27	7	161	18	437	20	65	281	54
Future Volume (vph)	67	4	21	27	7	161	18	437	20	65	281	54
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	15.0		15.0
Storage Lanes	0		0	0		0	1		0	1		1
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		0.969			0.889			0.993				0.850
Flt Protected		0.965			0.993		0.950			0.950		
Satd. Flow (prot)	0	1627	0	0	1645	0	1530	1795	0	1641	1827	1524
Flt Permitted		0.965			0.993		0.950			0.950		
Satd. Flow (perm)	0	1627	0	0	1645	0	1530	1795	0	1641	1827	1524
Link Speed (k/h)		40			50			50			50	
Link Distance (m)		189.3			103.3			249.9			188.8	
Travel Time (s)		17.0			7.4			18.0			13.6	
Confl. Peds. (#/hr)							10		2	2		10
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	11%	0%	5%	14%	0%	0%	18%	5%	8%	10%	4%	6%
Adj. Flow (vph)	84	5	26	34	9	201	23	546	25	81	351	68
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	115	0	0	244	0	23	571	0	81	351	68
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	57.1%	ICU Level of Service B	
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	22.2

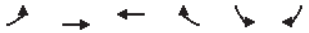
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	67	4	21	27	7	161	18	437	20	65	281	54
Future Vol, veh/h	67	4	21	27	7	161	18	437	20	65	281	54
Conflicting Peds, #/hr	0	0	0	0	0	0	10	0	2	2	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	150	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	11	0	5	14	0	0	18	5	8	10	4	6
Mvmt Flow	84	5	26	34	9	201	23	546	25	81	351	68

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1233	1142	361	1170	1198	561	429	0	0	573	0	0
Stage 1	523	523	-	607	607	-	-	-	-	-	-	-
Stage 2	710	619	-	563	591	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.5	6.25	7.24	6.5	6.2	4.28	-	-	4.2	-	-
Critical Hdwy Stg 1	6.21	5.5	-	6.24	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.5	-	6.24	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4	3.345	3.626	4	3.3	2.362	-	-	2.29	-	-
Pot Cap-1 Maneuver	147	202	677	161	187	531	1050	-	-	961	-	-
Stage 1	521	534	-	463	489	-	-	-	-	-	-	-
Stage 2	410	483	-	490	498	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 80	179	671	139	166	530	1041	-	-	959	-	-
Mov Cap-2 Maneuver	~ 80	179	-	139	166	-	-	-	-	-	-	-
Stage 1	505	485	-	452	477	-	-	-	-	-	-	-
Stage 2	244	471	-	427	453	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	201.2	33.4	0.3	1.5
HCM LOS	F	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1041	-	-	103	361	959	-	-
HCM Lane V/C Ratio	0.022	-	-	1.117	0.675	0.085	-	-
HCM Control Delay (s)	8.5	-	-	201.2	33.4	9.1	-	-
HCM Lane LOS	A	-	-	F	D	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	7.4	4.7	0.3	-	-

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



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	50	534	380	101	77	43
Future Volume (vph)	50	534	380	101	77	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0			15.0	0.0	0.0
Storage Lanes	1			1	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.952	
Flt Protected	0.950				0.969	
Satd. Flow (prot)	1805	1810	1827	1615	1734	0
Flt Permitted	0.950				0.969	
Satd. Flow (perm)	1805	1810	1827	1615	1734	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		152.9	86.4		145.5	
Travel Time (s)		9.2	5.2		10.5	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	5%	4%	0%	0%	3%
Adj. Flow (vph)	54	574	409	109	83	46
Shared Lane Traffic (%)						
Lane Group Flow (vph)	54	574	409	109	129	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	41.7%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	50	534	380	101	77	43
Future Vol, veh/h	50	534	380	101	77	43
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	700	-	-	150	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	5	4	0	0	3
Mvmt Flow	54	574	409	109	83	46

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	518	0	-	0	1091	409
Stage 1	-	-	-	-	409	-
Stage 2	-	-	-	-	682	-
Critical Hdwy	4.1	-	-	-	6.4	6.23
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.327
Pot Cap-1 Maneuver	1058	-	-	-	240	640
Stage 1	-	-	-	-	675	-
Stage 2	-	-	-	-	506	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1058	-	-	-	228	640
Mov Cap-2 Maneuver	-	-	-	-	228	-
Stage 1	-	-	-	-	641	-
Stage 2	-	-	-	-	506	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	26.2
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1058	-	-	-	296
HCM Lane V/C Ratio	0.051	-	-	-	0.436
HCM Control Delay (s)	8.6	-	-	-	26.2
HCM Lane LOS	A	-	-	-	D
HCM 95th %tile Q(veh)	0.2	-	-	-	2.1

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	2	7	7	124	106	3
Future Volume (vph)	2	7	7	124	106	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.892				0.997	
Flt Protected	0.990			0.997		
Satd. Flow (prot)	1509	0	0	1842	1840	0
Flt Permitted	0.990			0.997		
Satd. Flow (perm)	1509	0	0	1842	1840	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	303.0			145.5	89.1	
Travel Time (s)	21.8			10.5	6.4	
Confl. Peds. (#/hr)	2	2	24			24
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	14%	0%	3%	3%	0%
Adj. Flow (vph)	2	8	8	139	119	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	0	0	147	122	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	22.9%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	7	7	124	106	3
Future Vol, veh/h	2	7	7	124	106	3
Conflicting Peds, #/hr	2	2	24	0	0	24
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	14	0	3	3	0
Mvmt Flow	2	8	8	139	119	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	302	147	146	0	-	0
Stage 1	145	-	-	-	-	-
Stage 2	157	-	-	-	-	-
Critical Hdwy	6.4	6.34	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.426	2.2	-	-	-
Pot Cap-1 Maneuver	694	869	1448	-	-	-
Stage 1	887	-	-	-	-	-
Stage 2	876	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	663	850	1419	-	-	-
Mov Cap-2 Maneuver	663	-	-	-	-	-
Stage 1	864	-	-	-	-	-
Stage 2	858	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.6	0.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1419	-	800	-	-
HCM Lane V/C Ratio	0.006	-	0.013	-	-
HCM Control Delay (s)	7.6	0	9.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	10	24	23	3	114	17	383	28	168	428	59
Future Volume (vph)	55	10	24	23	3	114	17	383	28	168	428	59
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	15.0		15.0
Storage Lanes	0		0	0		0	1		0	1		1
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		0.963			0.890			0.990				0.850
Flt Protected		0.970			0.992		0.950			0.950		
Satd. Flow (prot)	0	1732	0	0	1625	0	1597	1846	0	1805	1863	1615
Flt Permitted		0.970			0.992		0.950			0.950		
Satd. Flow (perm)	0	1732	0	0	1625	0	1597	1846	0	1805	1863	1615
Link Speed (k/h)		40			50			50			50	
Link Distance (m)		189.3			103.3			249.9			188.8	
Travel Time (s)		17.0			7.4			18.0			13.6	
Confl. Peds. (#/hr)							11		4	4		11
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	4%	0%	0%	20%	0%	0%	13%	1%	14%	0%	2%	0%
Adj. Flow (vph)	59	11	26	24	3	121	18	407	30	179	455	63
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	96	0	0	148	0	18	437	0	179	455	63
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	52.9%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	11.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	55	10	24	23	3	114	17	383	28	168	428	59
Future Vol, veh/h	55	10	24	23	3	114	17	383	28	168	428	59
Conflicting Peds, #/hr	0	0	0	0	0	0	11	0	4	4	0	11
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	150	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	4	0	0	20	0	0	13	1	14	0	2	0
Mvmt Flow	59	11	26	24	3	121	18	407	30	179	455	63

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1344	1301	466	1325	1349	426	529	0	0	441	0	0
Stage 1	824	824	-	462	462	-	-	-	-	-	-	-
Stage 2	520	477	-	863	887	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.5	6.2	7.3	6.5	6.2	4.23	-	-	4.1	-	-
Critical Hdwy Stg 1	6.14	5.5	-	6.3	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.5	-	6.3	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4	3.3	3.68	4	3.3	2.317	-	-	2.2	-	-
Pot Cap-1 Maneuver	128	162	601	122	152	633	985	-	-	1130	-	-
Stage 1	364	390	-	547	568	-	-	-	-	-	-	-
Stage 2	536	559	-	325	365	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	87	132	595	95	124	631	976	-	-	1126	-	-
Mov Cap-2 Maneuver	87	132	-	95	124	-	-	-	-	-	-	-
Stage 1	354	325	-	535	556	-	-	-	-	-	-	-
Stage 2	423	547	-	253	304	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	103.1	26.5	0.3	2.3
HCM LOS	F	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	976	-	-	119	313	1126	-	-
HCM Lane V/C Ratio	0.019	-	-	0.796	0.476	0.159	-	-
HCM Control Delay (s)	8.8	-	-	103.1	26.5	8.8	-	-
HCM Lane LOS	A	-	-	F	D	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	4.6	2.4	0.6	-	-

Appendix F

2024 Total Operation Reports

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	30	436	420	71	94	58
Future Volume (vph)	30	436	420	71	94	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0			15.0	0.0	0.0
Storage Lanes	1			1	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.949	
Flt Protected	0.950				0.970	
Satd. Flow (prot)	1703	1827	1759	1583	1749	0
Flt Permitted	0.950				0.970	
Satd. Flow (perm)	1703	1827	1759	1583	1749	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		152.9	86.4		145.5	
Travel Time (s)		9.2	5.2		10.5	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	6%	4%	8%	2%	0%	0%
Adj. Flow (vph)	40	581	560	95	125	77
Shared Lane Traffic (%)						
Lane Group Flow (vph)	40	581	560	95	202	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	8.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	30	436	420	71	94	58
Future Vol, veh/h	30	436	420	71	94	58
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	700	-	-	150	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	6	4	8	2	0	0
Mvmt Flow	40	581	560	95	125	77

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	655	0	-	0	1221	560
Stage 1	-	-	-	-	560	-
Stage 2	-	-	-	-	661	-
Critical Hdwy	4.16	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.254	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	913	-	-	-	200	532
Stage 1	-	-	-	-	576	-
Stage 2	-	-	-	-	517	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	913	-	-	-	191	532
Mov Cap-2 Maneuver	-	-	-	-	191	-
Stage 1	-	-	-	-	551	-
Stage 2	-	-	-	-	517	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	58.9
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	913	-	-	-	253
HCM Lane V/C Ratio	0.044	-	-	-	0.801
HCM Control Delay (s)	9.1	-	-	-	58.9
HCM Lane LOS	A	-	-	-	F
HCM 95th %tile Q(veh)	0.1	-	-	-	6.1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	0	5	22	0	6	6	74	12	1	125	5
Future Volume (vph)	7	0	5	22	0	6	6	74	12	1	125	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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		0.944			0.972			0.983			0.995	
Flt Protected		0.971			0.962			0.997				
Satd. Flow (prot)	0	1609	0	0	1742	0	0	1745	0	0	1756	0
Flt Permitted		0.971			0.962			0.997				
Satd. Flow (perm)	0	1609	0	0	1742	0	0	1745	0	0	1756	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		303.0			172.4			145.5			89.1	
Travel Time (s)		21.8			12.4			10.5			6.4	
Confl. Peds. (#/hr)							22					22
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles (%)	0%	2%	20%	2%	2%	2%	0%	8%	2%	2%	8%	0%
Adj. Flow (vph)	10	0	7	30	0	8	8	101	16	1	171	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	17	0	0	38	0	0	125	0	0	179	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	20.4%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	0	5	22	0	6	6	74	12	1	125	5
Future Vol, veh/h	7	0	5	22	0	6	6	74	12	1	125	5
Conflicting Peds, #/hr	0	0	0	0	0	0	22	0	0	0	0	22
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	73	73	73	73	73	73	73	73	73	73	73	73
Heavy Vehicles, %	0	2	20	2	2	2	0	8	2	2	8	0
Mvmt Flow	10	0	7	30	0	8	8	101	16	1	171	7

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	328	332	197	305	327	109	200	0	0	117	0	0
Stage 1	199	199	-	125	125	-	-	-	-	-	-	-
Stage 2	129	133	-	180	202	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.52	6.4	7.12	6.52	6.22	4.1	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.018	3.48	3.518	4.018	3.318	2.2	-	-	2.218	-	-
Pot Cap-1 Maneuver	629	588	800	647	591	945	1384	-	-	1471	-	-
Stage 1	807	736	-	879	792	-	-	-	-	-	-	-
Stage 2	880	786	-	822	734	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	609	573	785	638	576	945	1358	-	-	1471	-	-
Mov Cap-2 Maneuver	609	573	-	638	576	-	-	-	-	-	-	-
Stage 1	787	721	-	874	787	-	-	-	-	-	-	-
Stage 2	867	781	-	814	719	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.5	10.6	0.5	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1358	-	-	672	686	1471	-	-
HCM Lane V/C Ratio	0.006	-	-	0.024	0.056	0.001	-	-
HCM Control Delay (s)	7.7	0	-	10.5	10.6	7.5	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.2	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	67	4	21	27	7	167	18	437	20	66	281	54
Future Volume (vph)	67	4	21	27	7	167	18	437	20	66	281	54
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	15.0		15.0
Storage Lanes	0		0	0		0	1		0	1		1
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		0.969			0.888			0.993				0.850
Flt Protected		0.965			0.993		0.950			0.950		
Satd. Flow (prot)	0	1627	0	0	1644	0	1530	1795	0	1641	1827	1524
Flt Permitted		0.965			0.993		0.950			0.950		
Satd. Flow (perm)	0	1627	0	0	1644	0	1530	1795	0	1641	1827	1524
Link Speed (k/h)		40			50			50			50	
Link Distance (m)		189.3			103.3			249.9			188.8	
Travel Time (s)		17.0			7.4			18.0			13.6	
Confl. Peds. (#/hr)							10		2	2		10
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	11%	0%	5%	14%	0%	0%	18%	5%	8%	10%	4%	6%
Adj. Flow (vph)	84	5	26	34	9	209	23	546	25	83	351	68
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	115	0	0	252	0	23	571	0	83	351	68
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	57.5%	ICU Level of Service B	
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	23.5

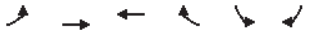
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	67	4	21	27	7	167	18	437	20	66	281	54
Future Vol, veh/h	67	4	21	27	7	167	18	437	20	66	281	54
Conflicting Peds, #/hr	0	0	0	0	0	0	10	0	2	2	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	150	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	11	0	5	14	0	0	18	5	8	10	4	6
Mvmt Flow	84	5	26	34	9	209	23	546	25	83	351	68

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1241	1146	361	1174	1202	561	429	0	0	573	0	0
Stage 1	527	527	-	607	607	-	-	-	-	-	-	-
Stage 2	714	619	-	567	595	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.5	6.25	7.24	6.5	6.2	4.28	-	-	4.2	-	-
Critical Hdwy Stg 1	6.21	5.5	-	6.24	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.5	-	6.24	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4	3.345	3.626	4	3.3	2.362	-	-	2.29	-	-
Pot Cap-1 Maneuver	145	201	677	160	186	531	1050	-	-	961	-	-
Stage 1	518	532	-	463	489	-	-	-	-	-	-	-
Stage 2	408	483	-	488	496	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 77	178	671	138	164	530	1041	-	-	959	-	-
Mov Cap-2 Maneuver	~ 77	178	-	138	164	-	-	-	-	-	-	-
Stage 1	502	482	-	452	477	-	-	-	-	-	-	-
Stage 2	237	471	-	424	449	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	215.4	34.5	0.3	1.5
HCM LOS	F	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1041	-	-	100	363	959	-	-
HCM Lane V/C Ratio	0.022	-	-	1.15	0.692	0.086	-	-
HCM Control Delay (s)	8.5	-	-	215.4	34.5	9.1	-	-
HCM Lane LOS	A	-	-	F	D	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	7.6	5	0.3	-	-

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



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	63	534	380	110	86	52
Future Volume (vph)	63	534	380	110	86	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0			15.0	0.0	0.0
Storage Lanes	1			1	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.949	
Flt Protected	0.950				0.970	
Satd. Flow (prot)	1805	1810	1827	1615	1729	0
Flt Permitted	0.950				0.970	
Satd. Flow (perm)	1805	1810	1827	1615	1729	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		152.9	86.4		145.5	
Travel Time (s)		9.2	5.2		10.5	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	5%	4%	0%	0%	3%
Adj. Flow (vph)	68	574	409	118	92	56
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	574	409	118	148	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	42.7%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	63	534	380	110	86	52
Future Vol, veh/h	63	534	380	110	86	52
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	700	-	-	150	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	5	4	0	0	3
Mvmt Flow	68	574	409	118	92	56

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	527	0	-	0	1119	409
Stage 1	-	-	-	-	409	-
Stage 2	-	-	-	-	710	-
Critical Hdwy	4.1	-	-	-	6.4	6.23
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.327
Pot Cap-1 Maneuver	1050	-	-	-	231	640
Stage 1	-	-	-	-	675	-
Stage 2	-	-	-	-	491	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1050	-	-	-	216	640
Mov Cap-2 Maneuver	-	-	-	-	216	-
Stage 1	-	-	-	-	631	-
Stage 2	-	-	-	-	491	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	30.1
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1050	-	-	-	288
HCM Lane V/C Ratio	0.065	-	-	-	0.515
HCM Control Delay (s)	8.7	-	-	-	30.1
HCM Lane LOS	A	-	-	-	D
HCM 95th %tile Q(veh)	0.2	-	-	-	2.8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	7	18	0	4	7	124	22	6	106	3
Future Volume (vph)	2	0	7	18	0	4	7	124	22	6	106	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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		0.892			0.977			0.980			0.997	
Flt Protected		0.990			0.960			0.998			0.997	
Satd. Flow (prot)	0	1509	0	0	1747	0	0	1809	0	0	1836	0
Flt Permitted		0.990			0.960			0.998			0.997	
Satd. Flow (perm)	0	1509	0	0	1747	0	0	1809	0	0	1836	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		303.0			172.4			145.5			89.1	
Travel Time (s)		21.8			12.4			10.5			6.4	
Confl. Peds. (#/hr)	2		2				24					24
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	2%	14%	2%	2%	2%	0%	3%	2%	2%	3%	0%
Adj. Flow (vph)	2	0	8	20	0	4	8	139	25	7	119	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	10	0	0	24	0	0	172	0	0	129	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	21.6%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	0	7	18	0	4	7	124	22	6	106	3
Future Vol, veh/h	2	0	7	18	0	4	7	124	22	6	106	3
Conflicting Peds, #/hr	2	0	2	0	0	0	24	0	0	0	0	24
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	2	14	2	2	2	0	3	2	2	3	0
Mvmt Flow	2	0	8	20	0	4	8	139	25	7	119	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	331	339	147	309	328	154	146	0	0	164	0	0
Stage 1	159	159	-	168	168	-	-	-	-	-	-	-
Stage 2	172	180	-	141	160	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.52	6.34	7.12	6.52	6.22	4.1	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.018	3.426	3.518	4.018	3.318	2.2	-	-	2.218	-	-
Pot Cap-1 Maneuver	626	582	869	643	591	892	1448	-	-	1414	-	-
Stage 1	848	766	-	834	759	-	-	-	-	-	-	-
Stage 2	835	750	-	862	766	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	604	564	850	631	573	890	1419	-	-	1414	-	-
Mov Cap-2 Maneuver	604	564	-	631	573	-	-	-	-	-	-	-
Stage 1	826	747	-	829	754	-	-	-	-	-	-	-
Stage 2	824	746	-	848	747	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.7	10.6	0.3	0.4
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1419	-	-	779	666	1414	-	-
HCM Lane V/C Ratio	0.006	-	-	0.013	0.037	0.005	-	-
HCM Control Delay (s)	7.6	0	-	9.7	10.6	7.6	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	10	24	23	3	118	17	383	28	174	428	59
Future Volume (vph)	55	10	24	23	3	118	17	383	28	174	428	59
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	15.0		15.0
Storage Lanes	0		0	0		0	1		0	1		1
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		0.963			0.889			0.990				0.850
Flt Protected		0.970			0.992		0.950			0.950		
Satd. Flow (prot)	0	1732	0	0	1625	0	1597	1846	0	1805	1863	1615
Flt Permitted		0.970			0.992		0.950			0.950		
Satd. Flow (perm)	0	1732	0	0	1625	0	1597	1846	0	1805	1863	1615
Link Speed (k/h)		40			50			50			50	
Link Distance (m)		189.3			103.3			249.9			188.8	
Travel Time (s)		17.0			7.4			18.0			13.6	
Confl. Peds. (#/hr)							11		4	4		11
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	4%	0%	0%	20%	0%	0%	13%	1%	14%	0%	2%	0%
Adj. Flow (vph)	59	11	26	24	3	126	18	407	30	185	455	63
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	96	0	0	153	0	18	437	0	185	455	63
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	56.3%	ICU Level of Service B	
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	11.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	55	10	24	23	3	118	17	383	28	174	428	59
Future Vol, veh/h	55	10	24	23	3	118	17	383	28	174	428	59
Conflicting Peds, #/hr	0	0	0	0	0	0	11	0	4	4	0	11
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	150	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	4	0	0	20	0	0	13	1	14	0	2	0
Mvmt Flow	59	11	26	24	3	126	18	407	30	185	455	63

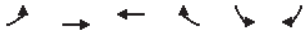
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1359	1313	466	1337	1361	426	529	0	0	441	0	0
Stage 1	836	836	-	462	462	-	-	-	-	-	-	-
Stage 2	523	477	-	875	899	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.5	6.2	7.3	6.5	6.2	4.23	-	-	4.1	-	-
Critical Hdwy Stg 1	6.14	5.5	-	6.3	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.5	-	6.3	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4	3.3	3.68	4	3.3	2.317	-	-	2.2	-	-
Pot Cap-1 Maneuver	125	160	601	119	150	633	985	-	-	1130	-	-
Stage 1	359	385	-	547	568	-	-	-	-	-	-	-
Stage 2	534	559	-	320	360	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	84	130	595	92	122	631	976	-	-	1126	-	-
Mov Cap-2 Maneuver	84	130	-	92	122	-	-	-	-	-	-	-
Stage 1	349	319	-	535	556	-	-	-	-	-	-	-
Stage 2	417	547	-	247	298	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	111.3	27.2	0.3	2.3
HCM LOS	F	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	976	-	-	115	312	1126	-	-
HCM Lane V/C Ratio	0.019	-	-	0.823	0.491	0.164	-	-
HCM Control Delay (s)	8.8	-	-	111.3	27.2	8.8	-	-
HCM Lane LOS	A	-	-	F	D	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	4.8	2.6	0.6	-	-

Appendix G

2029 Background Operation Reports



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	25	480	463	69	85	47
Future Volume (vph)	25	480	463	69	85	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0			15.0	0.0	0.0
Storage Lanes	1			1	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.952	
Flt Protected	0.950				0.969	
Satd. Flow (prot)	1703	1827	1759	1583	1753	0
Flt Permitted	0.950				0.969	
Satd. Flow (perm)	1703	1827	1759	1583	1753	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		152.9	86.4		145.5	
Travel Time (s)		9.2	5.2		10.5	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	6%	4%	8%	2%	0%	0%
Adj. Flow (vph)	33	640	617	92	113	63
Shared Lane Traffic (%)						
Lane Group Flow (vph)	33	640	617	92	176	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	39.5%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	7.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	25	480	463	69	85	47
Future Vol, veh/h	25	480	463	69	85	47
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	700	-	-	150	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	6	4	8	2	0	0
Mvmt Flow	33	640	617	92	113	63

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	709	0	-	0	1323	617
Stage 1	-	-	-	-	617	-
Stage 2	-	-	-	-	706	-
Critical Hdwy	4.16	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.254	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	872	-	-	-	174	494
Stage 1	-	-	-	-	542	-
Stage 2	-	-	-	-	493	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	872	-	-	-	167	494
Mov Cap-2 Maneuver	-	-	-	-	167	-
Stage 1	-	-	-	-	521	-
Stage 2	-	-	-	-	493	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	66.9
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	872	-	-	-	218
HCM Lane V/C Ratio	0.038	-	-	-	0.807
HCM Control Delay (s)	9.3	-	-	-	66.9
HCM Lane LOS	A	-	-	-	F
HCM 95th %tile Q(veh)	0.1	-	-	-	5.9

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	7	5	6	75	126	5
Future Volume (vph)	7	5	6	75	126	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.944				0.995	
Flt Protected	0.971			0.996		
Satd. Flow (prot)	1609	0	0	1762	1756	0
Flt Permitted	0.971			0.996		
Satd. Flow (perm)	1609	0	0	1762	1756	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	303.0			145.5	89.1	
Travel Time (s)	21.8			10.5	6.4	
Confl. Peds. (#/hr)			22			22
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles (%)	0%	20%	0%	8%	8%	0%
Adj. Flow (vph)	10	7	8	103	173	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	17	0	0	111	180	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	20.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	5	6	75	126	5
Future Vol, veh/h	7	5	6	75	126	5
Conflicting Peds, #/hr	0	0	22	0	0	22
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	73	73	73	73	73	73
Heavy Vehicles, %	0	20	0	8	8	0
Mvmt Flow	10	7	8	103	173	7

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	318	199	202	0	-	0
Stage 1	199	-	-	-	-	-
Stage 2	119	-	-	-	-	-
Critical Hdwy	6.4	6.4	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.48	2.2	-	-	-
Pot Cap-1 Maneuver	679	798	1382	-	-	-
Stage 1	839	-	-	-	-	-
Stage 2	911	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	650	783	1356	-	-	-
Mov Cap-2 Maneuver	650	-	-	-	-	-
Stage 1	818	-	-	-	-	-
Stage 2	894	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.3	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1356	-	700	-	-
HCM Lane V/C Ratio	0.006	-	0.023	-	-
HCM Control Delay (s)	7.7	0	10.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	4	22	27	7	162	20	482	21	67	310	60
Future Volume (vph)	68	4	22	27	7	162	20	482	21	67	310	60
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	15.0		15.0
Storage Lanes	0		0	0		0	1		0	1		1
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		0.968			0.889			0.994				0.850
Flt Protected		0.965			0.993		0.950			0.950		
Satd. Flow (prot)	0	1627	0	0	1645	0	1530	1797	0	1641	1827	1524
Flt Permitted		0.965			0.993		0.950			0.950		
Satd. Flow (perm)	0	1627	0	0	1645	0	1530	1797	0	1641	1827	1524
Link Speed (k/h)		40			50			50			50	
Link Distance (m)		189.3			103.3			249.9			188.8	
Travel Time (s)		17.0			7.4			18.0			13.6	
Confl. Peds. (#/hr)							10		2	2		10
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	11%	0%	5%	14%	0%	0%	18%	5%	8%	10%	4%	6%
Adj. Flow (vph)	85	5	28	34	9	203	25	603	26	84	388	75
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	118	0	0	246	0	25	629	0	84	388	75
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	60.0%	ICU Level of Service	B
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	33.4

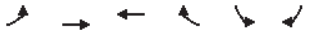
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	68	4	22	27	7	162	20	482	21	67	310	60
Future Vol, veh/h	68	4	22	27	7	162	20	482	21	67	310	60
Conflicting Peds, #/hr	0	0	0	0	0	0	10	0	2	2	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	150	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	11	0	5	14	0	0	18	5	8	10	4	6
Mvmt Flow	85	5	28	34	9	203	25	603	26	84	388	75

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1338	1247	398	1278	1309	618	473	0	0	631	0	0
Stage 1	566	566	-	668	668	-	-	-	-	-	-	-
Stage 2	772	681	-	610	641	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.5	6.25	7.24	6.5	6.2	4.28	-	-	4.2	-	-
Critical Hdwy Stg 1	6.21	5.5	-	6.24	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.5	-	6.24	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4	3.345	3.626	4	3.3	2.362	-	-	2.29	-	-
Pot Cap-1 Maneuver	124	175	645	135	161	493	1010	-	-	914	-	-
Stage 1	493	511	-	429	459	-	-	-	-	-	-	-
Stage 2	379	453	-	462	473	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 63	153	640	115	141	492	1001	-	-	912	-	-
Mov Cap-2 Maneuver	~ 63	153	-	115	141	-	-	-	-	-	-	-
Stage 1	477	460	-	417	447	-	-	-	-	-	-	-
Stage 2	213	441	-	397	426	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 340.7	45.5	0.3	1.4
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1001	-	-	82	319	912	-	-
HCM Lane V/C Ratio	0.025	-	-	1.433	0.768	0.092	-	-
HCM Control Delay (s)	8.7	-	-	$ 340.7	45.5	9.3	-	-
HCM Lane LOS	A	-	-	F	E	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	9.2	6	0.3	-	-

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



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	53	589	418	105	78	44
Future Volume (vph)	53	589	418	105	78	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0			15.0	0.0	0.0
Storage Lanes	1			1	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.952	
Flt Protected	0.950				0.969	
Satd. Flow (prot)	1805	1810	1827	1615	1734	0
Flt Permitted	0.950				0.969	
Satd. Flow (perm)	1805	1810	1827	1615	1734	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		152.9	86.4		145.5	
Travel Time (s)		9.2	5.2		10.5	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	5%	4%	0%	0%	3%
Adj. Flow (vph)	57	633	449	113	84	47
Shared Lane Traffic (%)						
Lane Group Flow (vph)	57	633	449	113	131	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	44.7%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	53	589	418	105	78	44
Future Vol, veh/h	53	589	418	105	78	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	700	-	-	150	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	5	4	0	0	3
Mvmt Flow	57	633	449	113	84	47

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	562	0	-	0	1196	449
Stage 1	-	-	-	-	449	-
Stage 2	-	-	-	-	747	-
Critical Hdwy	4.1	-	-	-	6.4	6.23
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.327
Pot Cap-1 Maneuver	1019	-	-	-	208	608
Stage 1	-	-	-	-	647	-
Stage 2	-	-	-	-	472	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1019	-	-	-	196	608
Mov Cap-2 Maneuver	-	-	-	-	196	-
Stage 1	-	-	-	-	611	-
Stage 2	-	-	-	-	472	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	32.4
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1019	-	-	-	259
HCM Lane V/C Ratio	0.056	-	-	-	0.506
HCM Control Delay (s)	8.7	-	-	-	32.4
HCM Lane LOS	A	-	-	-	D
HCM 95th %tile Q(veh)	0.2	-	-	-	2.6

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	2	7	7	125	107	3
Future Volume (vph)	2	7	7	125	107	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.892				0.997	
Flt Protected	0.990			0.997		
Satd. Flow (prot)	1509	0	0	1842	1840	0
Flt Permitted	0.990			0.997		
Satd. Flow (perm)	1509	0	0	1842	1840	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	303.0			145.5	89.1	
Travel Time (s)	21.8			10.5	6.4	
Confl. Peds. (#/hr)	2	2	24			24
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	14%	0%	3%	3%	0%
Adj. Flow (vph)	2	8	8	140	120	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	0	0	148	123	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	22.9%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	7	7	125	107	3
Future Vol, veh/h	2	7	7	125	107	3
Conflicting Peds, #/hr	2	2	24	0	0	24
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	14	0	3	3	0
Mvmt Flow	2	8	8	140	120	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	304	148	147	0	-	0
Stage 1	146	-	-	-	-	-
Stage 2	158	-	-	-	-	-
Critical Hdwy	6.4	6.34	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.426	2.2	-	-	-
Pot Cap-1 Maneuver	692	868	1447	-	-	-
Stage 1	886	-	-	-	-	-
Stage 2	875	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	661	849	1418	-	-	-
Mov Cap-2 Maneuver	661	-	-	-	-	-
Stage 1	863	-	-	-	-	-
Stage 2	858	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.6	0.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1418	-	799	-	-
HCM Lane V/C Ratio	0.006	-	0.013	-	-
HCM Control Delay (s)	7.6	0	9.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	10	25	23	3	115	18	423	29	171	472	65
Future Volume (vph)	56	10	25	23	3	115	18	423	29	171	472	65
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	15.0		15.0
Storage Lanes	0		0	0		0	1		0	1		1
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		0.963			0.889			0.990				0.850
Flt Protected		0.970			0.992		0.950			0.950		
Satd. Flow (prot)	0	1732	0	0	1623	0	1597	1847	0	1805	1863	1615
Flt Permitted		0.970			0.992		0.950			0.950		
Satd. Flow (perm)	0	1732	0	0	1623	0	1597	1847	0	1805	1863	1615
Link Speed (k/h)		40			50			50			50	
Link Distance (m)		189.3			103.3			249.9			188.8	
Travel Time (s)		17.0			7.4			18.0			13.6	
Confl. Peds. (#/hr)							11		4	4		11
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	4%	0%	0%	20%	0%	0%	13%	1%	14%	0%	2%	0%
Adj. Flow (vph)	60	11	27	24	3	122	19	450	31	182	502	69
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	98	0	0	149	0	19	481	0	182	502	69
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	55.3%	ICU Level of Service B	
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	14.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	56	10	25	23	3	115	18	423	29	171	472	65
Future Vol, veh/h	56	10	25	23	3	115	18	423	29	171	472	65
Conflicting Peds, #/hr	0	0	0	0	0	0	11	0	4	4	0	11
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	150	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	4	0	0	20	0	0	13	1	14	0	2	0
Mvmt Flow	60	11	27	24	3	122	19	450	31	182	502	69

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1443	1400	513	1428	1454	470	582	0	0	485	0	0
Stage 1	877	877	-	508	508	-	-	-	-	-	-	-
Stage 2	566	523	-	920	946	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.5	6.2	7.3	6.5	6.2	4.23	-	-	4.1	-	-
Critical Hdwy Stg 1	6.14	5.5	-	6.3	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.5	-	6.3	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4	3.3	3.68	4	3.3	2.317	-	-	2.2	-	-
Pot Cap-1 Maneuver	109	142	565	103	131	598	940	-	-	1088	-	-
Stage 1	340	369	-	516	542	-	-	-	-	-	-	-
Stage 2	505	534	-	302	343	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	72	114	560	78	106	596	931	-	-	1084	-	-
Mov Cap-2 Maneuver	72	114	-	78	106	-	-	-	-	-	-	-
Stage 1	330	304	-	504	530	-	-	-	-	-	-	-
Stage 2	391	522	-	231	283	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	159.3	33.2	0.3	2.2
HCM LOS	F	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	931	-	-	100	273	1084	-	-
HCM Lane V/C Ratio	0.021	-	-	0.968	0.549	0.168	-	-
HCM Control Delay (s)	8.9	-	-	159.3	33.2	9	-	-
HCM Lane LOS	A	-	-	F	D	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	5.8	3.1	0.6	-	-

Appendix H

2029 Total Operation Reports

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	31	480	463	75	95	59
Future Volume (vph)	31	480	463	75	95	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0			15.0	0.0	0.0
Storage Lanes	1			1	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.948	
Flt Protected	0.950				0.970	
Satd. Flow (prot)	1703	1827	1759	1583	1747	0
Flt Permitted	0.950				0.970	
Satd. Flow (perm)	1703	1827	1759	1583	1747	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		152.9	86.4		145.5	
Travel Time (s)		9.2	5.2		10.5	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	6%	4%	8%	2%	0%	0%
Adj. Flow (vph)	41	640	617	100	127	79
Shared Lane Traffic (%)						
Lane Group Flow (vph)	41	640	617	100	206	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	41.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	12.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	31	480	463	75	95	59
Future Vol, veh/h	31	480	463	75	95	59
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	700	-	-	150	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	6	4	8	2	0	0
Mvmt Flow	41	640	617	100	127	79

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	717	0	-	0	1339	617
Stage 1	-	-	-	-	617	-
Stage 2	-	-	-	-	722	-
Critical Hdwy	4.16	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.254	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	866	-	-	-	170	494
Stage 1	-	-	-	-	542	-
Stage 2	-	-	-	-	485	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	866	-	-	-	162	494
Mov Cap-2 Maneuver	-	-	-	-	162	-
Stage 1	-	-	-	-	517	-
Stage 2	-	-	-	-	485	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	93.1
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	866	-	-	-	218
HCM Lane V/C Ratio	0.048	-	-	-	0.942
HCM Control Delay (s)	9.4	-	-	-	93.1
HCM Lane LOS	A	-	-	-	F
HCM 95th %tile Q(veh)	0.1	-	-	-	8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	0	5	22	0	6	6	75	12	1	126	5
Future Volume (vph)	7	0	5	22	0	6	6	75	12	1	126	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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		0.944			0.972			0.983			0.995	
Flt Protected		0.971			0.962			0.997				
Satd. Flow (prot)	0	1609	0	0	1742	0	0	1745	0	0	1756	0
Flt Permitted		0.971			0.962			0.997				
Satd. Flow (perm)	0	1609	0	0	1742	0	0	1745	0	0	1756	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		303.0			172.4			145.5			89.1	
Travel Time (s)		21.8			12.4			10.5			6.4	
Confl. Peds. (#/hr)							22					22
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles (%)	0%	2%	20%	2%	2%	2%	0%	8%	2%	2%	8%	0%
Adj. Flow (vph)	10	0	7	30	0	8	8	103	16	1	173	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	17	0	0	38	0	0	127	0	0	181	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	20.4%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	0	5	22	0	6	6	75	12	1	126	5
Future Vol, veh/h	7	0	5	22	0	6	6	75	12	1	126	5
Conflicting Peds, #/hr	0	0	0	0	0	0	22	0	0	0	0	22
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	73	73	73	73	73	73	73	73	73	73	73	73
Heavy Vehicles, %	0	2	20	2	2	2	0	8	2	2	8	0
Mvmt Flow	10	0	7	30	0	8	8	103	16	1	173	7

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	332	336	199	309	331	111	202	0	0	119	0	0
Stage 1	201	201	-	127	127	-	-	-	-	-	-	-
Stage 2	131	135	-	182	204	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.52	6.4	7.12	6.52	6.22	4.1	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.018	3.48	3.518	4.018	3.318	2.2	-	-	2.218	-	-
Pot Cap-1 Maneuver	625	585	798	643	588	942	1382	-	-	1469	-	-
Stage 1	805	735	-	877	791	-	-	-	-	-	-	-
Stage 2	877	785	-	820	733	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	605	570	783	634	573	942	1356	-	-	1469	-	-
Mov Cap-2 Maneuver	605	570	-	634	573	-	-	-	-	-	-	-
Stage 1	785	720	-	872	786	-	-	-	-	-	-	-
Stage 2	864	780	-	812	718	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.5	10.6	0.5	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1356	-	-	668	682	1469	-	-
HCM Lane V/C Ratio	0.006	-	-	0.025	0.056	0.001	-	-
HCM Control Delay (s)	7.7	0	-	10.5	10.6	7.5	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.2	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	4	22	27	7	168	20	482	21	68	310	60
Future Volume (vph)	68	4	22	27	7	168	20	482	21	68	310	60
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	15.0		15.0
Storage Lanes	0		0	0		0	1		0	1		1
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		0.968			0.888			0.994				0.850
Flt Protected		0.965			0.993		0.950			0.950		
Satd. Flow (prot)	0	1627	0	0	1644	0	1530	1797	0	1641	1827	1524
Flt Permitted		0.965			0.993		0.950			0.950		
Satd. Flow (perm)	0	1627	0	0	1644	0	1530	1797	0	1641	1827	1524
Link Speed (k/h)		40			50			50			50	
Link Distance (m)		189.3			103.3			249.9			188.8	
Travel Time (s)		17.0			7.4			18.0			13.6	
Confl. Peds. (#/hr)							10		2	2		10
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	11%	0%	5%	14%	0%	0%	18%	5%	8%	10%	4%	6%
Adj. Flow (vph)	85	5	28	34	9	210	25	603	26	85	388	75
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	118	0	0	253	0	25	629	0	85	388	75
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	60.4%	ICU Level of Service	B
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	34.9

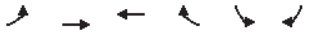
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	68	4	22	27	7	168	20	482	21	68	310	60
Future Vol, veh/h	68	4	22	27	7	168	20	482	21	68	310	60
Conflicting Peds, #/hr	0	0	0	0	0	0	10	0	2	2	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	150	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	11	0	5	14	0	0	18	5	8	10	4	6
Mvmt Flow	85	5	28	34	9	210	25	603	26	85	388	75

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1344	1249	398	1280	1311	618	473	0	0	631	0	0
Stage 1	568	568	-	668	668	-	-	-	-	-	-	-
Stage 2	776	681	-	612	643	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.5	6.25	7.24	6.5	6.2	4.28	-	-	4.2	-	-
Critical Hdwy Stg 1	6.21	5.5	-	6.24	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.5	-	6.24	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4	3.345	3.626	4	3.3	2.362	-	-	2.29	-	-
Pot Cap-1 Maneuver	123	175	645	135	160	493	1010	-	-	914	-	-
Stage 1	492	510	-	429	459	-	-	-	-	-	-	-
Stage 2	377	453	-	460	472	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 61	153	640	115	140	492	1001	-	-	912	-	-
Mov Cap-2 Maneuver	~ 61	153	-	115	140	-	-	-	-	-	-	-
Stage 1	476	459	-	417	447	-	-	-	-	-	-	-
Stage 2	207	441	-	395	425	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 357.6	46.6	0.3	1.5
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1001	-	-	80	323	912	-	-
HCM Lane V/C Ratio	0.025	-	-	1.469	0.782	0.093	-	-
HCM Control Delay (s)	8.7	-	-	$ 357.6	46.6	9.4	-	-
HCM Lane LOS	A	-	-	F	E	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	9.4	6.3	0.3	-	-

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



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	66	589	418	114	87	53
Future Volume (vph)	66	589	418	114	87	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0			15.0	0.0	0.0
Storage Lanes	1			1	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.949	
Flt Protected	0.950				0.970	
Satd. Flow (prot)	1805	1810	1827	1615	1729	0
Flt Permitted	0.950				0.970	
Satd. Flow (perm)	1805	1810	1827	1615	1729	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		152.9	86.4		145.5	
Travel Time (s)		9.2	5.2		10.5	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	5%	4%	0%	0%	3%
Adj. Flow (vph)	71	633	449	123	94	57
Shared Lane Traffic (%)						
Lane Group Flow (vph)	71	633	449	123	151	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	66	589	418	114	87	53
Future Vol, veh/h	66	589	418	114	87	53
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	700	-	-	150	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	5	4	0	0	3
Mvmt Flow	71	633	449	123	94	57

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	572	0	-	0	1224	449
Stage 1	-	-	-	-	449	-
Stage 2	-	-	-	-	775	-
Critical Hdwy	4.1	-	-	-	6.4	6.23
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.327
Pot Cap-1 Maneuver	1011	-	-	-	200	608
Stage 1	-	-	-	-	647	-
Stage 2	-	-	-	-	458	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1011	-	-	-	186	608
Mov Cap-2 Maneuver	-	-	-	-	186	-
Stage 1	-	-	-	-	602	-
Stage 2	-	-	-	-	458	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	38.5
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1011	-	-	-	252
HCM Lane V/C Ratio	0.07	-	-	-	0.597
HCM Control Delay (s)	8.8	-	-	-	38.5
HCM Lane LOS	A	-	-	-	E
HCM 95th %tile Q(veh)	0.2	-	-	-	3.5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	7	18	0	4	7	125	22	6	107	3
Future Volume (vph)	2	0	7	18	0	4	7	125	22	6	107	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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		0.892			0.977			0.980			0.997	
Flt Protected		0.990			0.960			0.998			0.997	
Satd. Flow (prot)	0	1509	0	0	1747	0	0	1809	0	0	1836	0
Flt Permitted		0.990			0.960			0.998			0.997	
Satd. Flow (perm)	0	1509	0	0	1747	0	0	1809	0	0	1836	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		303.0			172.4			145.5			89.1	
Travel Time (s)		21.8			12.4			10.5			6.4	
Confl. Peds. (#/hr)	2		2				24					24
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	2%	14%	2%	2%	2%	0%	3%	2%	2%	3%	0%
Adj. Flow (vph)	2	0	8	20	0	4	8	140	25	7	120	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	10	0	0	24	0	0	173	0	0	130	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	21.6%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	0	7	18	0	4	7	125	22	6	107	3
Future Vol, veh/h	2	0	7	18	0	4	7	125	22	6	107	3
Conflicting Peds, #/hr	2	0	2	0	0	0	24	0	0	0	0	24
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	2	14	2	2	2	0	3	2	2	3	0
Mvmt Flow	2	0	8	20	0	4	8	140	25	7	120	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	333	341	148	311	330	155	147	0	0	165	0	0
Stage 1	160	160	-	169	169	-	-	-	-	-	-	-
Stage 2	173	181	-	142	161	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.52	6.34	7.12	6.52	6.22	4.1	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.018	3.426	3.518	4.018	3.318	2.2	-	-	2.218	-	-
Pot Cap-1 Maneuver	624	581	868	642	589	891	1447	-	-	1413	-	-
Stage 1	847	766	-	833	759	-	-	-	-	-	-	-
Stage 2	834	750	-	861	765	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	602	563	849	630	571	889	1418	-	-	1413	-	-
Mov Cap-2 Maneuver	602	563	-	630	571	-	-	-	-	-	-	-
Stage 1	825	747	-	828	754	-	-	-	-	-	-	-
Stage 2	823	746	-	847	746	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.7	10.6	0.3	0.4
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1418	-	-	778	665	1413	-	-
HCM Lane V/C Ratio	0.006	-	-	0.013	0.037	0.005	-	-
HCM Control Delay (s)	7.6	0	-	9.7	10.6	7.6	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	10	25	23	3	119	18	423	29	177	472	65
Future Volume (vph)	56	10	25	23	3	119	18	423	29	177	472	65
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	15.0		15.0
Storage Lanes	0		0	0		0	1		0	1		1
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		0.963			0.889			0.990				0.850
Flt Protected		0.970			0.992		0.950			0.950		
Satd. Flow (prot)	0	1732	0	0	1625	0	1597	1847	0	1805	1863	1615
Flt Permitted		0.970			0.992		0.950			0.950		
Satd. Flow (perm)	0	1732	0	0	1625	0	1597	1847	0	1805	1863	1615
Link Speed (k/h)		40			50			50			50	
Link Distance (m)		189.3			103.3			249.9			188.8	
Travel Time (s)		17.0			7.4			18.0			13.6	
Confl. Peds. (#/hr)							11		4	4		11
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	4%	0%	0%	20%	0%	0%	13%	1%	14%	0%	2%	0%
Adj. Flow (vph)	60	11	27	24	3	127	19	450	31	188	502	69
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	98	0	0	154	0	19	481	0	188	502	69
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	59.0%	ICU Level of Service B	
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	15.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	56	10	25	23	3	119	18	423	29	177	472	65
Future Vol, veh/h	56	10	25	23	3	119	18	423	29	177	472	65
Conflicting Peds, #/hr	0	0	0	0	0	0	11	0	4	4	0	11
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	150	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	4	0	0	20	0	0	13	1	14	0	2	0
Mvmt Flow	60	11	27	24	3	127	19	450	31	188	502	69

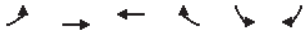
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1458	1412	513	1440	1466	470	582	0	0	485	0	0
Stage 1	889	889	-	508	508	-	-	-	-	-	-	-
Stage 2	569	523	-	932	958	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.5	6.2	7.3	6.5	6.2	4.23	-	-	4.1	-	-
Critical Hdwy Stg 1	6.14	5.5	-	6.3	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.5	-	6.3	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4	3.3	3.68	4	3.3	2.317	-	-	2.2	-	-
Pot Cap-1 Maneuver	106	139	565	101	129	598	940	-	-	1088	-	-
Stage 1	335	364	-	516	542	-	-	-	-	-	-	-
Stage 2	504	534	-	297	338	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	69	111	560	76	103	596	931	-	-	1084	-	-
Mov Cap-2 Maneuver	69	111	-	76	103	-	-	-	-	-	-	-
Stage 1	325	298	-	504	530	-	-	-	-	-	-	-
Stage 2	387	522	-	225	277	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	174.9	34	0.3	2.2
HCM LOS	F	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	931	-	-	96	273	1084	-	-
HCM Lane V/C Ratio	0.021	-	-	1.008	0.565	0.174	-	-
HCM Control Delay (s)	8.9	-	-	174.9	34	9	-	-
HCM Lane LOS	A	-	-	F	D	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	6.1	3.2	0.6	-	-

Appendix I

2034 Background Operation Reports



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	27	537	520	75	85	47
Future Volume (vph)	27	537	520	75	85	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0			15.0	0.0	0.0
Storage Lanes	1			1	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.952	
Flt Protected	0.950				0.969	
Satd. Flow (prot)	1703	1827	1759	1583	1753	0
Flt Permitted	0.950				0.969	
Satd. Flow (perm)	1703	1827	1759	1583	1753	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		152.9	86.4		145.5	
Travel Time (s)		9.2	5.2		10.5	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	6%	4%	8%	2%	0%	0%
Adj. Flow (vph)	36	716	693	100	113	63
Shared Lane Traffic (%)						
Lane Group Flow (vph)	36	716	693	100	176	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	12.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	27	537	520	75	85	47
Future Vol, veh/h	27	537	520	75	85	47
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	700	-	-	150	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	6	4	8	2	0	0
Mvmt Flow	36	716	693	100	113	63

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	793	0	-	0	1481	693
Stage 1	-	-	-	-	693	-
Stage 2	-	-	-	-	788	-
Critical Hdwy	4.16	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.254	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	810	-	-	-	139	447
Stage 1	-	-	-	-	500	-
Stage 2	-	-	-	-	452	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	810	-	-	-	133	447
Mov Cap-2 Maneuver	-	-	-	-	133	-
Stage 1	-	-	-	-	478	-
Stage 2	-	-	-	-	452	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	119.5
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	810	-	-	-	177
HCM Lane V/C Ratio	0.044	-	-	-	0.994
HCM Control Delay (s)	9.7	-	-	-	119.5
HCM Lane LOS	A	-	-	-	F
HCM 95th %tile Q(veh)	0.1	-	-	-	8.1

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	7	5	6	76	128	5
Future Volume (vph)	7	5	6	76	128	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.944				0.995	
Flt Protected	0.971			0.996		
Satd. Flow (prot)	1609	0	0	1762	1755	0
Flt Permitted	0.971			0.996		
Satd. Flow (perm)	1609	0	0	1762	1755	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	303.0			145.5	89.1	
Travel Time (s)	21.8			10.5	6.4	
Confl. Peds. (#/hr)			22			22
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles (%)	0%	20%	0%	8%	8%	0%
Adj. Flow (vph)	10	7	8	104	175	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	17	0	0	112	182	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	20.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	5	6	76	128	5
Future Vol, veh/h	7	5	6	76	128	5
Conflicting Peds, #/hr	0	0	22	0	0	22
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	73	73	73	73	73	73
Heavy Vehicles, %	0	20	0	8	8	0
Mvmt Flow	10	7	8	104	175	7

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	321	201	204	0	-	0
Stage 1	201	-	-	-	-	-
Stage 2	120	-	-	-	-	-
Critical Hdwy	6.4	6.4	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.48	2.2	-	-	-
Pot Cap-1 Maneuver	677	796	1380	-	-	-
Stage 1	838	-	-	-	-	-
Stage 2	910	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	648	781	1354	-	-	-
Mov Cap-2 Maneuver	648	-	-	-	-	-
Stage 1	817	-	-	-	-	-
Stage 2	893	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.3	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1354	-	697	-	-
HCM Lane V/C Ratio	0.006	-	0.024	-	-
HCM Control Delay (s)	7.7	0	10.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	4	22	27	7	163	22	558	22	69	370	66
Future Volume (vph)	70	4	22	27	7	163	22	558	22	69	370	66
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	15.0		15.0
Storage Lanes	0		0	0		0	1		0	1		1
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		0.969			0.889			0.994				0.850
Flt Protected		0.965			0.993		0.950			0.950		
Satd. Flow (prot)	0	1628	0	0	1646	0	1530	1797	0	1641	1827	1524
Flt Permitted		0.965			0.993		0.950			0.950		
Satd. Flow (perm)	0	1628	0	0	1646	0	1530	1797	0	1641	1827	1524
Link Speed (k/h)		40			50			50			50	
Link Distance (m)		189.3			103.3			249.9			188.8	
Travel Time (s)		17.0			7.4			18.0			13.6	
Confl. Peds. (#/hr)							10		2	2		10
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	11%	0%	5%	14%	0%	0%	18%	5%	8%	10%	4%	6%
Adj. Flow (vph)	88	5	28	34	9	204	28	698	28	86	463	83
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	121	0	0	247	0	28	726	0	86	463	83
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	64.8%	ICU Level of Service	C
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	62.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	70	4	22	27	7	163	22	558	22	69	370	66
Future Vol, veh/h	70	4	22	27	7	163	22	558	22	69	370	66
Conflicting Peds, #/hr	0	0	0	0	0	0	10	0	2	2	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	150	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	11	0	5	14	0	0	18	5	8	10	4	6
Mvmt Flow	88	5	28	34	9	204	28	698	28	86	463	83

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1520	1429	473	1463	1498	714	556	0	0	728	0	0
Stage 1	645	645	-	770	770	-	-	-	-	-	-	-
Stage 2	875	784	-	693	728	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.5	6.25	7.24	6.5	6.2	4.28	-	-	4.2	-	-
Critical Hdwy Stg 1	6.21	5.5	-	6.24	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.5	-	6.24	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4	3.345	3.626	4	3.3	2.362	-	-	2.29	-	-
Pot Cap-1 Maneuver	93	136	585	100	124	435	939	-	-	840	-	-
Stage 1	446	471	-	376	413	-	-	-	-	-	-	-
Stage 2	332	407	-	415	432	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 41	117	580	83	107	434	931	-	-	839	-	-
Mov Cap-2 Maneuver	~ 41	117	-	83	107	-	-	-	-	-	-	-
Stage 1	429	419	-	364	400	-	-	-	-	-	-	-
Stage 2	167	394	-	351	384	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 723.9	87.9	0.3	1.3
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	931	-	-	54	257	839	-	-
HCM Lane V/C Ratio	0.03	-	-	2.222	0.958	0.103	-	-
HCM Control Delay (s)	9	-	-	$ 723.9	87.9	9.8	-	-
HCM Lane LOS	A	-	-	F	F	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	12	9	0.3	-	-

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

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	56	658	470	110	79	45
Future Volume (vph)	56	658	470	110	79	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0			15.0	0.0	0.0
Storage Lanes	1			1	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.951	
Flt Protected	0.950				0.969	
Satd. Flow (prot)	1805	1810	1827	1615	1732	0
Flt Permitted	0.950				0.969	
Satd. Flow (perm)	1805	1810	1827	1615	1732	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		152.9	86.4		145.5	
Travel Time (s)		9.2	5.2		10.5	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	5%	4%	0%	0%	3%
Adj. Flow (vph)	60	708	505	118	85	48
Shared Lane Traffic (%)						
Lane Group Flow (vph)	60	708	505	118	133	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	48.4%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	56	658	470	110	79	45
Future Vol, veh/h	56	658	470	110	79	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	700	-	-	150	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	5	4	0	0	3
Mvmt Flow	60	708	505	118	85	48

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	623	0	-	0	1333	505
Stage 1	-	-	-	-	505	-
Stage 2	-	-	-	-	828	-
Critical Hdwy	4.1	-	-	-	6.4	6.23
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.327
Pot Cap-1 Maneuver	968	-	-	-	172	565
Stage 1	-	-	-	-	610	-
Stage 2	-	-	-	-	432	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	968	-	-	-	161	565
Mov Cap-2 Maneuver	-	-	-	-	161	-
Stage 1	-	-	-	-	572	-
Stage 2	-	-	-	-	432	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	44.9
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	968	-	-	-	217
HCM Lane V/C Ratio	0.062	-	-	-	0.614
HCM Control Delay (s)	9	-	-	-	44.9
HCM Lane LOS	A	-	-	-	E
HCM 95th %tile Q(veh)	0.2	-	-	-	3.6

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	2	7	7	127	109	3
Future Volume (vph)	2	7	7	127	109	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.892				0.997	
Flt Protected	0.990			0.997		
Satd. Flow (prot)	1509	0	0	1842	1840	0
Flt Permitted	0.990			0.997		
Satd. Flow (perm)	1509	0	0	1842	1840	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	303.0			145.5	89.1	
Travel Time (s)	21.8			10.5	6.4	
Confl. Peds. (#/hr)	2	2	24			24
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	14%	0%	3%	3%	0%
Adj. Flow (vph)	2	8	8	143	122	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	0	0	151	125	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	23.0%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	7	7	127	109	3
Future Vol, veh/h	2	7	7	127	109	3
Conflicting Peds, #/hr	2	2	24	0	0	24
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	14	0	3	3	0
Mvmt Flow	2	8	8	143	122	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	309	150	149	0	-	0
Stage 1	148	-	-	-	-	-
Stage 2	161	-	-	-	-	-
Critical Hdwy	6.4	6.34	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.426	2.2	-	-	-
Pot Cap-1 Maneuver	687	866	1445	-	-	-
Stage 1	884	-	-	-	-	-
Stage 2	873	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	656	847	1416	-	-	-
Mov Cap-2 Maneuver	656	-	-	-	-	-
Stage 1	861	-	-	-	-	-
Stage 2	856	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.6	0.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1416	-	796	-	-
HCM Lane V/C Ratio	0.006	-	0.013	-	-
HCM Control Delay (s)	7.6	0	9.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	11	25	24	3	116	20	497	30	175	553	72
Future Volume (vph)	57	11	25	24	3	116	20	497	30	175	553	72
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	15.0		15.0
Storage Lanes	0		0	0		0	1		0	1		1
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		0.964			0.891			0.991				0.850
Flt Protected		0.970			0.992		0.950			0.950		
Satd. Flow (prot)	0	1734	0	0	1624	0	1597	1851	0	1805	1863	1615
Flt Permitted		0.970			0.992		0.950			0.950		
Satd. Flow (perm)	0	1734	0	0	1624	0	1597	1851	0	1805	1863	1615
Link Speed (k/h)		40			50			50			50	
Link Distance (m)		189.3			103.3			249.9			188.8	
Travel Time (s)		17.0			7.4			18.0			13.6	
Confl. Peds. (#/hr)							11		4	4		11
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	4%	0%	0%	20%	0%	0%	13%	1%	14%	0%	2%	0%
Adj. Flow (vph)	61	12	27	26	3	123	21	529	32	186	588	77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	100	0	0	152	0	21	561	0	186	588	77
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	59.6%	ICU Level of Service B	
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	26.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	57	11	25	24	3	116	20	497	30	175	553	72
Future Vol, veh/h	57	11	25	24	3	116	20	497	30	175	553	72
Conflicting Peds, #/hr	0	0	0	0	0	0	11	0	4	4	0	11
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	150	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	4	0	0	20	0	0	13	1	14	0	2	0
Mvmt Flow	61	12	27	26	3	123	21	529	32	186	588	77

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1621	1578	599	1609	1639	549	676	0	0	565	0	0
Stage 1	971	971	-	591	591	-	-	-	-	-	-	-
Stage 2	650	607	-	1018	1048	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.5	6.2	7.3	6.5	6.2	4.23	-	-	4.1	-	-
Critical Hdwy Stg 1	6.14	5.5	-	6.3	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.5	-	6.3	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4	3.3	3.68	4	3.3	2.317	-	-	2.2	-	-
Pot Cap-1 Maneuver	82	110	505	76	101	539	866	-	-	1017	-	-
Stage 1	302	334	-	463	498	-	-	-	-	-	-	-
Stage 2	455	489	-	265	307	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 51	87	500	54	80	537	858	-	-	1014	-	-
Mov Cap-2 Maneuver	~ 51	87	-	54	80	-	-	-	-	-	-	-
Stage 1	292	271	-	450	485	-	-	-	-	-	-	-
Stage 2	340	476	-	196	249	-	-	-	-	-	-	-

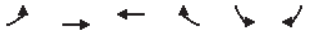
Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 334.1	60.6	0.3	2
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	858	-	-	72	205	1014	-	-
HCM Lane V/C Ratio	0.025	-	-	1.374	0.742	0.184	-	-
HCM Control Delay (s)	9.3	-	-	$ 334.1	60.6	9.3	-	-
HCM Lane LOS	A	-	-	F	F	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	8	4.9	0.7	-	-

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

Appendix J

2034 Total Operation Reports



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	33	537	520	81	95	59
Future Volume (vph)	33	537	520	81	95	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0			15.0	0.0	0.0
Storage Lanes	1			1	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.948	
Flt Protected	0.950				0.970	
Satd. Flow (prot)	1703	1827	1759	1583	1747	0
Flt Permitted	0.950				0.970	
Satd. Flow (perm)	1703	1827	1759	1583	1747	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		152.9	86.4		145.5	
Travel Time (s)		9.2	5.2		10.5	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	6%	4%	8%	2%	0%	0%
Adj. Flow (vph)	44	716	693	108	127	79
Shared Lane Traffic (%)						
Lane Group Flow (vph)	44	716	693	108	206	0
Sign Control		Free	Free		Stop	

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	20.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	33	537	520	81	95	59
Future Vol, veh/h	33	537	520	81	95	59
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	700	-	-	150	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	6	4	8	2	0	0
Mvmt Flow	44	716	693	108	127	79

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	801	0	-	0	1497	693
Stage 1	-	-	-	-	693	-
Stage 2	-	-	-	-	804	-
Critical Hdwy	4.16	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.254	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	805	-	-	-	136	447
Stage 1	-	-	-	-	500	-
Stage 2	-	-	-	-	444	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	805	-	-	-	129	447
Mov Cap-2 Maneuver	-	-	-	-	129	-
Stage 1	-	-	-	-	473	-
Stage 2	-	-	-	-	444	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	170.5
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	805	-	-	-	177
HCM Lane V/C Ratio	0.055	-	-	-	1.16
HCM Control Delay (s)	9.7	-	-	-	170.5
HCM Lane LOS	A	-	-	-	F
HCM 95th %tile Q(veh)	0.2	-	-	-	10.7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	0	5	22	0	6	6	76	12	1	128	5
Future Volume (vph)	7	0	5	22	0	6	6	76	12	1	128	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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		0.944			0.972			0.983			0.995	
Flt Protected		0.971			0.962			0.997				
Satd. Flow (prot)	0	1609	0	0	1742	0	0	1744	0	0	1756	0
Flt Permitted		0.971			0.962			0.997				
Satd. Flow (perm)	0	1609	0	0	1742	0	0	1744	0	0	1756	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		303.0			172.4			145.5			89.1	
Travel Time (s)		21.8			12.4			10.5			6.4	
Confl. Peds. (#/hr)							22					22
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles (%)	0%	2%	20%	2%	2%	2%	0%	8%	2%	2%	8%	0%
Adj. Flow (vph)	10	0	7	30	0	8	8	104	16	1	175	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	17	0	0	38	0	0	128	0	0	183	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	20.5%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	0	5	22	0	6	6	76	12	1	128	5
Future Vol, veh/h	7	0	5	22	0	6	6	76	12	1	128	5
Conflicting Peds, #/hr	0	0	0	0	0	0	22	0	0	0	0	22
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	73	73	73	73	73	73	73	73	73	73	73	73
Heavy Vehicles, %	0	2	20	2	2	2	0	8	2	2	8	0
Mvmt Flow	10	0	7	30	0	8	8	104	16	1	175	7

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	335	339	201	312	334	112	204	0	0	120	0	0
Stage 1	203	203	-	128	128	-	-	-	-	-	-	-
Stage 2	132	136	-	184	206	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.52	6.4	7.12	6.52	6.22	4.1	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.018	3.48	3.518	4.018	3.318	2.2	-	-	2.218	-	-
Pot Cap-1 Maneuver	622	582	796	641	586	941	1380	-	-	1468	-	-
Stage 1	804	733	-	876	790	-	-	-	-	-	-	-
Stage 2	876	784	-	818	731	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	602	567	781	632	571	941	1354	-	-	1468	-	-
Mov Cap-2 Maneuver	602	567	-	632	571	-	-	-	-	-	-	-
Stage 1	784	718	-	871	785	-	-	-	-	-	-	-
Stage 2	863	779	-	810	716	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.5	10.6	0.5	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1354	-	-	666	680	1468	-	-
HCM Lane V/C Ratio	0.006	-	-	0.025	0.056	0.001	-	-
HCM Control Delay (s)	7.7	0	-	10.5	10.6	7.5	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.2	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	4	22	27	7	169	22	558	22	70	370	66
Future Volume (vph)	70	4	22	27	7	169	22	558	22	70	370	66
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	15.0		15.0
Storage Lanes	0		0	0		0	1		0	1		1
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		0.969			0.888			0.994				0.850
Flt Protected		0.965			0.993		0.950			0.950		
Satd. Flow (prot)	0	1628	0	0	1645	0	1530	1797	0	1641	1827	1524
Flt Permitted		0.965			0.993		0.950			0.950		
Satd. Flow (perm)	0	1628	0	0	1645	0	1530	1797	0	1641	1827	1524
Link Speed (k/h)		40			50			50			50	
Link Distance (m)		189.3			103.3			249.9			188.8	
Travel Time (s)		17.0			7.4			18.0			13.6	
Confl. Peds. (#/hr)							10		2	2		10
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	11%	0%	5%	14%	0%	0%	18%	5%	8%	10%	4%	6%
Adj. Flow (vph)	88	5	28	34	9	211	28	698	28	88	463	83
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	121	0	0	254	0	28	726	0	88	463	83
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	65.2%	ICU Level of Service	C
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	67.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	70	4	22	27	7	169	22	558	22	70	370	66
Future Vol, veh/h	70	4	22	27	7	169	22	558	22	70	370	66
Conflicting Peds, #/hr	0	0	0	0	0	0	10	0	2	2	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	150	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	11	0	5	14	0	0	18	5	8	10	4	6
Mvmt Flow	88	5	28	34	9	211	28	698	28	88	463	83

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1527	1433	473	1467	1502	714	556	0	0	728	0	0
Stage 1	649	649	-	770	770	-	-	-	-	-	-	-
Stage 2	878	784	-	697	732	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.5	6.25	7.24	6.5	6.2	4.28	-	-	4.2	-	-
Critical Hdwy Stg 1	6.21	5.5	-	6.24	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.5	-	6.24	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4	3.345	3.626	4	3.3	2.362	-	-	2.29	-	-
Pot Cap-1 Maneuver	92	135	585	99	123	435	939	-	-	840	-	-
Stage 1	444	469	-	376	413	-	-	-	-	-	-	-
Stage 2	330	407	-	413	430	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 39	116	580	82	106	434	931	-	-	839	-	-
Mov Cap-2 Maneuver	~ 39	116	-	82	106	-	-	-	-	-	-	-
Stage 1	427	416	-	364	400	-	-	-	-	-	-	-
Stage 2	161	394	-	348	382	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 789.2	92.8	0.3	1.4
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	931	-	-	51	259	839	-	-
HCM Lane V/C Ratio	0.03	-	-	2.353	0.98	0.104	-	-
HCM Control Delay (s)	9	-	-	$ 789.2	92.8	9.8	-	-
HCM Lane LOS	A	-	-	F	F	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	12.3	9.4	0.3	-	-

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

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	69	658	470	119	88	54
Future Volume (vph)	69	658	470	119	88	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0			15.0	0.0	0.0
Storage Lanes	1			1	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.949	
Flt Protected	0.950				0.970	
Satd. Flow (prot)	1805	1810	1827	1615	1729	0
Flt Permitted	0.950				0.970	
Satd. Flow (perm)	1805	1810	1827	1615	1729	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		152.9	86.4		145.5	
Travel Time (s)		9.2	5.2		10.5	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	5%	4%	0%	0%	3%
Adj. Flow (vph)	74	708	505	128	95	58
Shared Lane Traffic (%)						
Lane Group Flow (vph)	74	708	505	128	153	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	49.5%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	69	658	470	119	88	54
Future Vol, veh/h	69	658	470	119	88	54
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	700	-	-	150	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	5	4	0	0	3
Mvmt Flow	74	708	505	128	95	58

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	633	0	-	0	1361	505
Stage 1	-	-	-	-	505	-
Stage 2	-	-	-	-	856	-
Critical Hdwy	4.1	-	-	-	6.4	6.23
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.327
Pot Cap-1 Maneuver	960	-	-	-	165	565
Stage 1	-	-	-	-	610	-
Stage 2	-	-	-	-	420	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	960	-	-	-	152	565
Mov Cap-2 Maneuver	-	-	-	-	152	-
Stage 1	-	-	-	-	563	-
Stage 2	-	-	-	-	420	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	57
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	960	-	-	-	211
HCM Lane V/C Ratio	0.077	-	-	-	0.724
HCM Control Delay (s)	9.1	-	-	-	57
HCM Lane LOS	A	-	-	-	F
HCM 95th %tile Q(veh)	0.3	-	-	-	4.8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	7	18	0	4	7	127	22	6	109	3
Future Volume (vph)	2	0	7	18	0	4	7	127	22	6	109	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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		0.892			0.977			0.981			0.997	
Flt Protected		0.990			0.960			0.998			0.997	
Satd. Flow (prot)	0	1509	0	0	1747	0	0	1811	0	0	1836	0
Flt Permitted		0.990			0.960			0.998			0.997	
Satd. Flow (perm)	0	1509	0	0	1747	0	0	1811	0	0	1836	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		303.0			172.4			145.5			89.1	
Travel Time (s)		21.8			12.4			10.5			6.4	
Confl. Peds. (#/hr)	2		2				24					24
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	2%	14%	2%	2%	2%	0%	3%	2%	2%	3%	0%
Adj. Flow (vph)	2	0	8	20	0	4	8	143	25	7	122	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	10	0	0	24	0	0	176	0	0	132	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	21.6%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	0	7	18	0	4	7	127	22	6	109	3
Future Vol, veh/h	2	0	7	18	0	4	7	127	22	6	109	3
Conflicting Peds, #/hr	2	0	2	0	0	0	24	0	0	0	0	24
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	2	14	2	2	2	0	3	2	2	3	0
Mvmt Flow	2	0	8	20	0	4	8	143	25	7	122	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	338	346	150	316	335	158	149	0	0	168	0	0
Stage 1	162	162	-	172	172	-	-	-	-	-	-	-
Stage 2	176	184	-	144	163	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.52	6.34	7.12	6.52	6.22	4.1	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.018	3.426	3.518	4.018	3.318	2.2	-	-	2.218	-	-
Pot Cap-1 Maneuver	620	577	866	637	585	887	1445	-	-	1410	-	-
Stage 1	845	764	-	830	756	-	-	-	-	-	-	-
Stage 2	831	747	-	859	763	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	598	559	847	625	567	885	1416	-	-	1410	-	-
Mov Cap-2 Maneuver	598	559	-	625	567	-	-	-	-	-	-	-
Stage 1	823	745	-	825	751	-	-	-	-	-	-	-
Stage 2	820	743	-	845	744	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.7	10.7	0.3	0.4
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1416	-	-	775	660	1410	-	-
HCM Lane V/C Ratio	0.006	-	-	0.013	0.037	0.005	-	-
HCM Control Delay (s)	7.6	0	-	9.7	10.7	7.6	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	11	25	24	3	120	20	497	30	181	553	72
Future Volume (vph)	57	11	25	24	3	120	20	497	30	181	553	72
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	15.0		15.0
Storage Lanes	0		0	0		0	1		0	1		1
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		0.964			0.890			0.991				0.850
Flt Protected		0.970			0.992		0.950			0.950		
Satd. Flow (prot)	0	1734	0	0	1624	0	1597	1851	0	1805	1863	1615
Flt Permitted		0.970			0.992		0.950			0.950		
Satd. Flow (perm)	0	1734	0	0	1624	0	1597	1851	0	1805	1863	1615
Link Speed (k/h)		40			50			50			50	
Link Distance (m)		189.3			103.3			249.9			188.8	
Travel Time (s)		17.0			7.4			18.0			13.6	
Confl. Peds. (#/hr)							11		4	4		11
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	4%	0%	0%	20%	0%	0%	13%	1%	14%	0%	2%	0%
Adj. Flow (vph)	61	12	27	26	3	128	21	529	32	193	588	77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	100	0	0	157	0	21	561	0	193	588	77
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	63.1%	ICU Level of Service	B
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	28.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	57	11	25	24	3	120	20	497	30	181	553	72
Future Vol, veh/h	57	11	25	24	3	120	20	497	30	181	553	72
Conflicting Peds, #/hr	0	0	0	0	0	0	11	0	4	4	0	11
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	150	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	4	0	0	20	0	0	13	1	14	0	2	0
Mvmt Flow	61	12	27	26	3	128	21	529	32	193	588	77

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1638	1592	599	1623	1653	549	676	0	0	565	0	0
Stage 1	985	985	-	591	591	-	-	-	-	-	-	-
Stage 2	653	607	-	1032	1062	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.5	6.2	7.3	6.5	6.2	4.23	-	-	4.1	-	-
Critical Hdwy Stg 1	6.14	5.5	-	6.3	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.5	-	6.3	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4	3.3	3.68	4	3.3	2.317	-	-	2.2	-	-
Pot Cap-1 Maneuver	80	108	505	75	99	539	866	-	-	1017	-	-
Stage 1	296	329	-	463	498	-	-	-	-	-	-	-
Stage 2	453	489	-	260	303	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 49	84	500	53	77	537	858	-	-	1014	-	-
Mov Cap-2 Maneuver	~ 49	84	-	53	77	-	-	-	-	-	-	-
Stage 1	286	264	-	450	485	-	-	-	-	-	-	-
Stage 2	335	476	-	190	243	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 362.6	62.7	0.3	2.1
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	858	-	-	69	206	1014	-	-
HCM Lane V/C Ratio	0.025	-	-	1.434	0.759	0.19	-	-
HCM Control Delay (s)	9.3	-	-	$ 362.6	62.7	9.4	-	-
HCM Lane LOS	A	-	-	F	F	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	8.2	5.2	0.7	-	-

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

Appendix K

Traffic Control Signal Warrant

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

Horizon Year: 2034 Total
Region/City/Township: Collingwood

Major Street: Hurontario Street
Minor Street: Findley Drive/Tracy Lane

North/South?: Y

Number of Approach Lanes: 1
Tee Intersection? N
Flow Conditions: Restricted

PM Forecast Only? N

Warrant Results		
150% Satisfied	No	Justification for new intersections with forecast traffic
120% Satisfied	No	Justification for existing intersections with forecast traffic

Time Period	Major Street Hurontario Street						Minor Street Findley Drive/Tracy Lane						
	Northbound			Southbound			Eastbound			Westbound			Peds
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	Crossing
AM Peak Hour	22	558	22	70	370	66	70	4	22	27	7	169	12
PM Peak Hour	20	497	30	181	553	72	57	11	25	24	3	120	15
Avg. Hourly Volume	11	264	13	63	231	35	32	4	12	13	3	72	7

Warrant	AHV
1A - All	750
1B - Minor	135
2A - Major	615
2B - Cross	55

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	750
					% Fulfilled	104%

	Approach Lanes	1		2 or more		Average Hourly Volume
1B	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Minor Street Approaches	120	170	120	170	135
					% Fulfilled	79%

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	615
					% Fulfilled	85%

	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	55
					% Fulfilled	73%

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

Horizon Year: 2034 Total
Region/City/Township: Collingwood

Major Street: Poplar Sideroad
Minor Street: Portland Street

North/South?: N

Number of Approach Lanes: 1
Tee Intersection? Y
Flow Conditions: Restricted

PM Forecast Only? N

Warrant Results		
150% Satisfied	No	Justification for new intersections with forecast traffic
120% Satisfied	No	Justification for existing intersections with forecast traffic

Time Period	Major Street						Minor Street						
	Poplar Sideroad						Portland Street						
	Eastbound			Westbound			Northbound			Southbound			Peds
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	Crossing
AM Peak Hour	33	537	0	0	520	81	0	0	0	95	0	59	0
PM Peak Hour	69	658	0	0	470	119	0	0	0	88	0	54	0
Avg. Hourly Volume	26	299	0	0	248	50	0	0	0	46	0	28	0

Warrant	AHV
1A - All	696
1B - Minor	74
2A - Major	622
2B - Cross	46

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	696
					% Fulfilled	97%

	Approach Lanes	1		2 or more		Average Hourly Volume
1B	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Minor Street Approaches	180	255	180	255	74
					% Fulfilled	29%

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	622
					% Fulfilled	86%

	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	46
					% Fulfilled	61%