2076 Old Lakeshore Road City of Burlington Traffic Impact Study

Paradigm Transportation Solutions Limited

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Project Summary

2076 Old Lakeshore Road, City of Burlington, Transportation Impact Study

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Executive Summary

Content

Paradigm Transportation Solutions Limited (Paradigm) was retained to conduct this Transportation Impact Study (TIS) for a proposed mixed-use development at 2076 Old Lakeshore Road in the City of Burlington.

This study examines the impact of development traffic on the surrounding road network and identifies recommended improvements, if necessary, to accommodate the site-generated traffic.

Development Concept

The subject site is located at 2076 Old Lakeshore Road, currently operating as the Marquis Lakeside Inn in the City of Burlington. The applicant proposes to redevelop the existing land into a 23-storey mixed-use development comprising 154 hotel rooms, shared amenity space, and 50 residential units. Vehicle access to the site is proposed via a single driveway connection from Old Lakeshore Road, providing entry to both the automated underground parking system and the waste collection/loading area. A lay-by area is also proposed, west of the driveway, to accommodate valet parking. The site plan includes four levels of automated underground parking, offering a total of 82 parking spaces.

The build-out is anticipated to occur by 2028, with timing subject to change and market conditions.

Conclusions

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

- **Study Area**: The intersections assessed in this study include:
  - Lakeshore Road and Old Lakeshore Road (unsignalized);
  - Lakeshore Road and Martha Street (unsignalized);
  - Lakeshore Road and Pearl Street/Old Lakeshore Road (signalized);
  - Lakeshore Road and Elizabeth Street (signalized); and
  - One proposed driveway connection to Old Lakeshore Road.
- **Existing Traffic Conditions:** The study area intersections operate at acceptable service levels and within capacity during the weekday peak hours. However, at the intersection of

Elizabeth Street and Lakeshore Road, the 95th percentile queue length in the northbound left-turn lane exceeds the available storage during the weekday peak hour. The southbound left-turn lane at Pearl Street and Lakeshore Road also exhibits queues exceeding storage capacity at the 95th percentile during the weekday PM peak hour.

- **Trip Generation:** The site's vehicular trip generation is estimated to be approximately 82-102 weekday AM/PM peak-hour trips.
- **Vehicle Circulation:** No conflicts with the proposed on-site geometry are noted.
- **Background Traffic Conditions:** Under background traffic conditions, the critical movements identified in the base year traffic analysis are forecast to remain critical. Under the opening-year horizon, the northbound left-turn lane at Pearl Street and Lakeshore Road is forecast to exhibit 95th percentile queues that exceed the available storage during weekday peak hours.
- **Total Traffic Conditions:** Under total traffic conditions, operations at the study area intersections are similar to the base year and background conditions. Critical movement is forecast in the northbound approach at the intersection of Old Lakeshore Road and Lakeshore Road, degrading to LOS D during the weekday AM peak hour. However, this is common for minor roadways approaching a major road and is still expected to operate with acceptable delays, as indicated by a v/c ratio of 0.44.

  The driveway approach to Old Lakeshore Road is forecast to operate within capacity with a v/c ratio of less than 0.10 and delays of LOS B or better. The 95th percentile queue length is forecast to be one vehicle or less.
- **Remedial Measures:** Based upon the warrant assessment, traffic control signals are not warranted at the unsignalized intersections of Lakeshore Road at Martha Street and Lakeshore Road at Old Lakeshore Road.

  The site's driveway connection to Old Lakeshore Road should operate under stop control.

  The left-turn warrant analysis indicates that the westbound left-turn lanes are not warranted on Old Lakeshore Road at the Site Driveway. No changes to the existing lane configuration are recommended along Old Lakeshore Road.
- **Transportation Demand Management:** The proposed development includes TDM measures such as bicycle parking to

encourage cycling and pedestrian facilities to provide accessibility to and from the development.

The applicant will consider developing marketing or informational materials outlining available transportation options, which could be shared with future residents and hotel guests as part of a welcome package. These materials may include transit schedules for local and regional services, maps of bicycle routes and trail networks, as well as the locations of nearby retail and recreational destinations.

By limiting on-site parking to match projected demand, the development encourages the use of alternative transportation modes. In doing so, it sets a positive example for residents and visitors to reduce reliance on single-occupant vehicles (SOV) and consider more sustainable travel options.

- **MMLOS Assessment:** The existing study area segments and intersections along Lakeshore Road meet or exceed the level of service targets for pedestrians, transit, trucks, and cars. To further improve these modes, the City of Burlington should explore enhanced transit facilities, wider sidewalks, improved pedestrian measures, and protected cycling facilities.

Recommendations

Based on the findings of this study, the following is recommended:

- The City of Burlington recognizes the conclusions drawn above.
- The City may explore reallocating street space along Lakeshore Road to enhance pedestrian and cycling facilities, including wider sidewalks, increased pedestrian buffers, additional transit facilities, and protected cycling lanes, to improve MMLOS targets further.
- The site's TDM program should be implemented and monitored over time to help manage its transportation and parking impacts.

"Plain Language" Summary

The proposed redevelopment at 2076 Old Lakeshore Road will replace the existing Marquis Lakeside Inn with a 23-storey mixed-use building that includes 154 hotel rooms, 50 residential units, and 82 underground parking spaces with valet service.

A Transportation Impact Study determined that the project will generate approximately 84 vehicle trips during the AM peak hour and 102 during the PM peak hour. The current road network can manage these without requiring new signals or turn lanes. Intersection performance will remain within acceptable standards, and on-site vehicle staging, along with at least four valet attendants, will help keep queues to a minimum.

The plan includes Transportation Demand Management measures, such as bicycle parking, improved pedestrian access, and transit information, to promote alternatives to driving. The City may consider future improvements along Lakeshore Road, such as wider sidewalks, protected cycling lanes, and upgraded transit facilities, to further encourage sustainable travel.

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1 Introduction

Paradigm Transportation Solutions Limited (Paradigm) was retained to conduct this Transportation Impact Study (TIS) for a proposed mixed-use development at 2076 Old Lakeshore Road in the City of Burlington. **Figure 1.1** illustrates the site location.

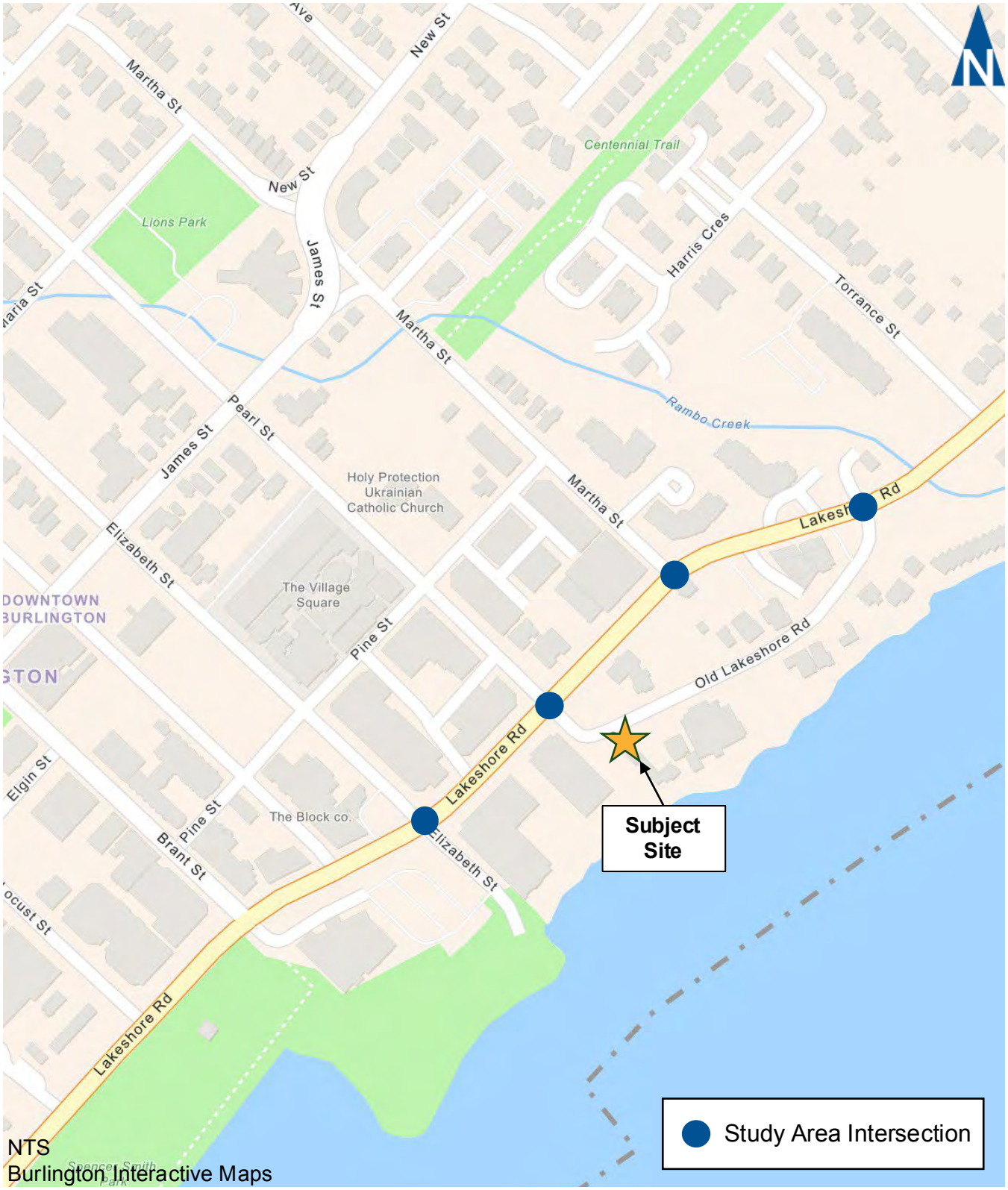
The scope of the study includes:

- Assessment of the current traffic conditions within the study area;
- Estimates of background traffic growth;
- A queue analysis for the proposed automated underground parking system;
- Estimates of additional traffic generated by the subject site;
- Analyses of the impact of future traffic on the surrounding road network;
- Recommendations are necessary to mitigate this future traffic satisfactorily;
- A multimodal level of service (MMLOS) assessment; and
- A transportation demand management (TDM) assessment.

A pre-study consultation was conducted with the City of Burlington in April 2025. The material for this consultation is contained in **Appendix A**.

The intersections assessed in this study include:

- Lakeshore Road and Old Lakeshore Road (unsignalized);
- Lakeshore Road and Martha Street (unsignalized);
- Lakeshore Road and Pearl Street/Old Lakeshore Road (signalized);
- Lakeshore Road and Elizabeth Street (signalized); and
- A single-site driveway connection to Old Lakeshore Road.



Subject Site Location

2076 Old Lakeshore Road, Burlington
250220

Figure 1.1

2 Existing Conditions

The section of the report provides an overview of the existing conditions of the roadways in the study area, as well as other features of the transportation network, including transit and active transportation infrastructure.

2.1 Road Network

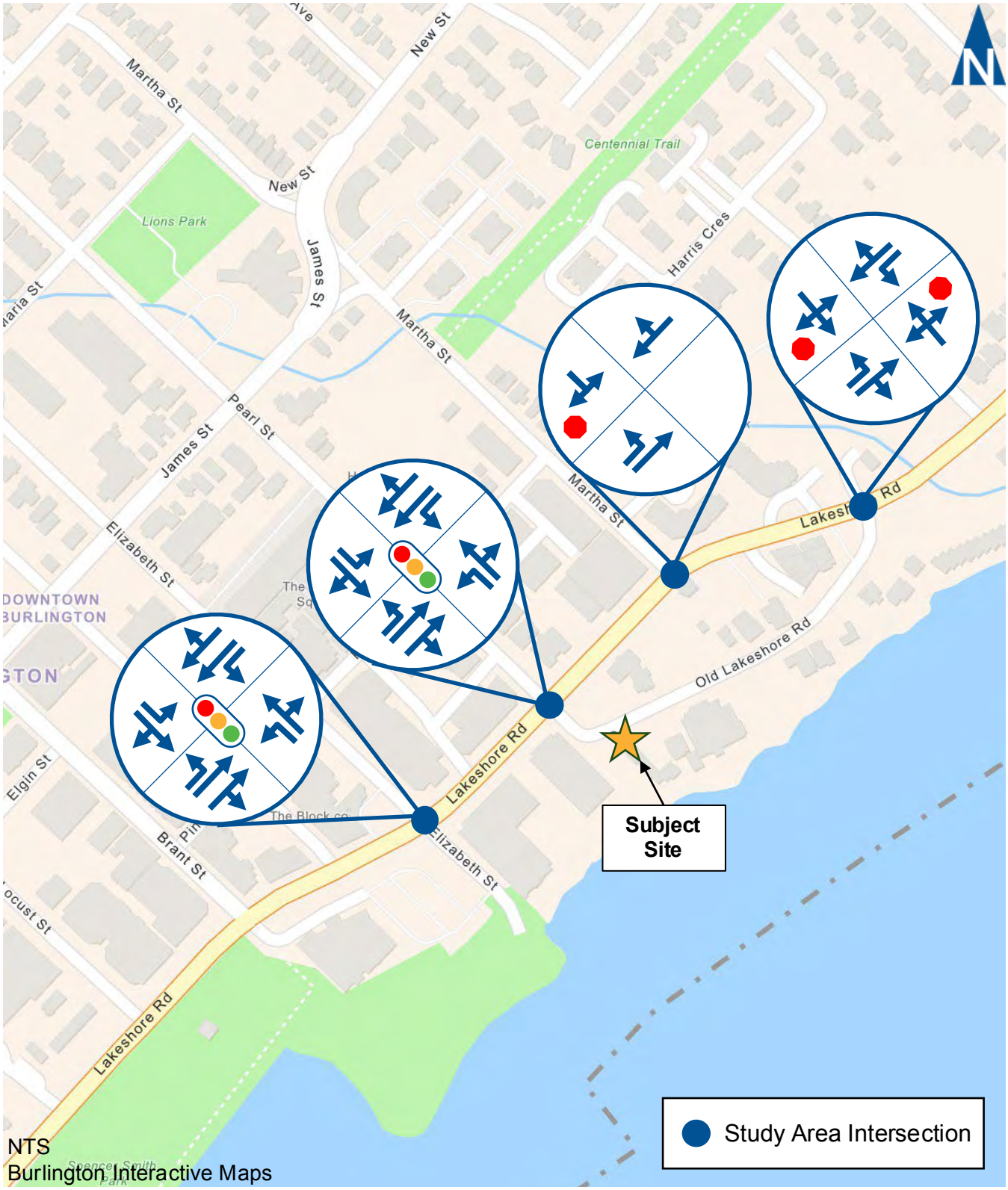
The roadways of interest within the study area include:

- **Old Lakeshore Road** is an east-west local roadway [1] with a two-lane urban cross-section and an assumed statutory speed limit of 50 km/h. Sidewalks are present on both sides of the roadway; however, there are no dedicated cycling facilities along this roadway within the study area. The intersection with Lakeshore Road is signalized. Within the study area, on-street parking is permitted along the south side of the road.
- **Lakeshore Road** is an east-west main roadway with a two-lane urban cross-section and a posted speed limit of 50 km/h. The intersections with Elizabeth Street and Pearl Street/Old Lakeshore Road are signalized, whereas the intersection with Martha Street is unsignalized. Within the study area, sidewalks are present on both sides of the roadway. On-street parking provisions are provided along the south side of the roadway, between Elizabeth Street and Pearl Street; however, no stopping restrictions are provided along the north side of the roadway. There are no dedicated cycling facilities along this roadway within the study area.
- **Elizabeth Street** is a north-south neighbourhood connector with a two-lane urban cross-section and an assumed statutory speed limit of 50 km/h. Sidewalks are present on both sides of the roadway, along with on-street parking. There are no dedicated cycling facilities along this roadway within the study area.
- **Pearl Street** is a north-south neighbourhood connector with a two-lane urban cross-section and an assumed statutory speed limit of 50 km/h. Sidewalks are present on both sides of the roadway, along with on-street parking. The roadway is designated as a shared-use lane through the use of sharrow pavement markings.
- **Martha Street** is a north-south neighbourhood connector with a two-lane urban cross-section and an assumed statutory speed

[1] The City of Burlington Official Plan, Schedule O-1: Classification of Transportation Facilities Urban Area, November 2020

limit of 50 km/h. Sidewalks are present on both sides of the roadway, along with on-street parking. The roadway is designated as a shared-use lane through the use of sharrow pavement markings.

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



Existing Lane Configuration & Traffic Control

2076 Old Lakeshore Road, Burlington
250220

Figure 2.1

2.2 Pedestrian Network

Pedestrian sidewalks are provided along both sides of roadways through the majority of the study area. There is one gap in the sidewalk network, on Lakeshore Road between Martha Street and Old Lakeshore. This gap is expected to be filled in by adjacent development applications.

At the signalized intersections, crosswalks, pedestrian pushbuttons, pedestrian signal heads and indicators are provided on all approaches.

The site is within walking distance of numerous and significant employment, retail, cultural, and recreational opportunities, providing a range of destinations for prospective residents of the proposed building that can be readily accessed without the use of a car. The proximity of the site to a range of amenities and destinations within walking distance helps reduce the need for residents of the building to travel by car regularly.

Walk Score is an online tool that assigns a numerical walkability score ranging from 0 to 100 for addresses in Australia, Canada, the United States, and New Zealand. Walk Score ranks communities nationwide based on how many businesses, parks, theatres, schools and other common destinations are within walking distance of any given address. The subject site is noted to have a Walk Score of 93 and is considered a "Very Walkable" location, which means most daily errands can be accomplished on foot without the need for a personal vehicle.

Figure 2.2 illustrates the existing pedestrian infrastructure.

2.3 Cycling Network

Cycling infrastructure typically consists of on-street and off-street facilities. On-street facilities comprise cycling lanes, signed cycling routes, and paved shoulders. Off-street facilities are in the form of multi-use or informal trails.

The City of Burlington's bicycle network provides a variety of cycling facilities within the study area. **Figures 2.3 and 2.4** illustrate the existing and future cycling networks**,** respectively.

Designated on-street bicycle lanes are provided on Pearl Street. Pearl Street currently operates with shared-use shoulders (sharrows). The City of Burlington's draft Cycling Plan [2] Identifies that additional painted bikeways are proposed along Lakeshore Road as a Bicycle Priority Street with short-term project priority.

[2] City of Burlington Cycling Plan – Draft 08/01/2019. Map 5 – Proposed Network. Map 7 – Proposed Project Priority

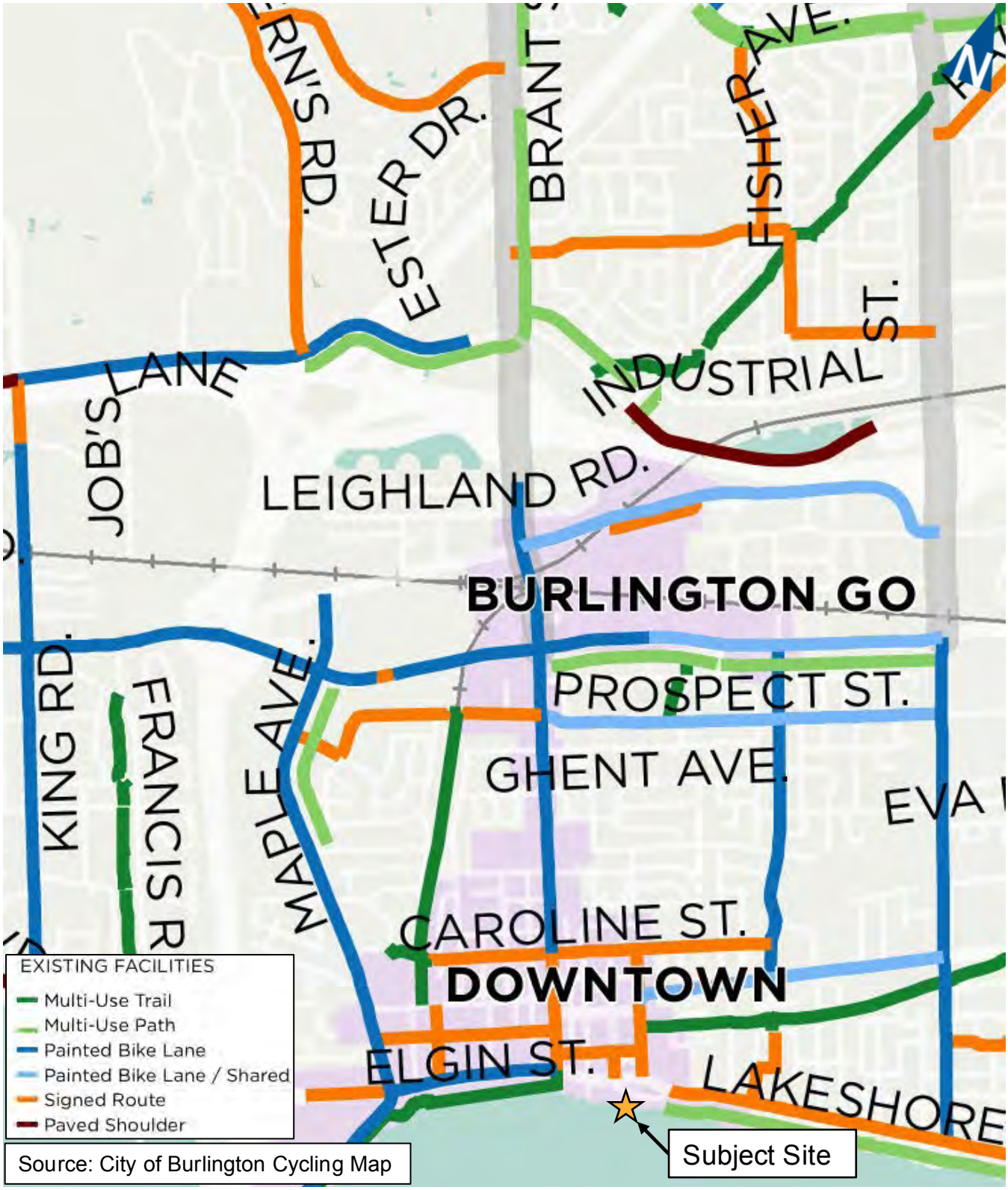


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Existing Pedestrian Infrastructure

2076 Old Lakeshore Road, Burlington
250220

Figure 2.2

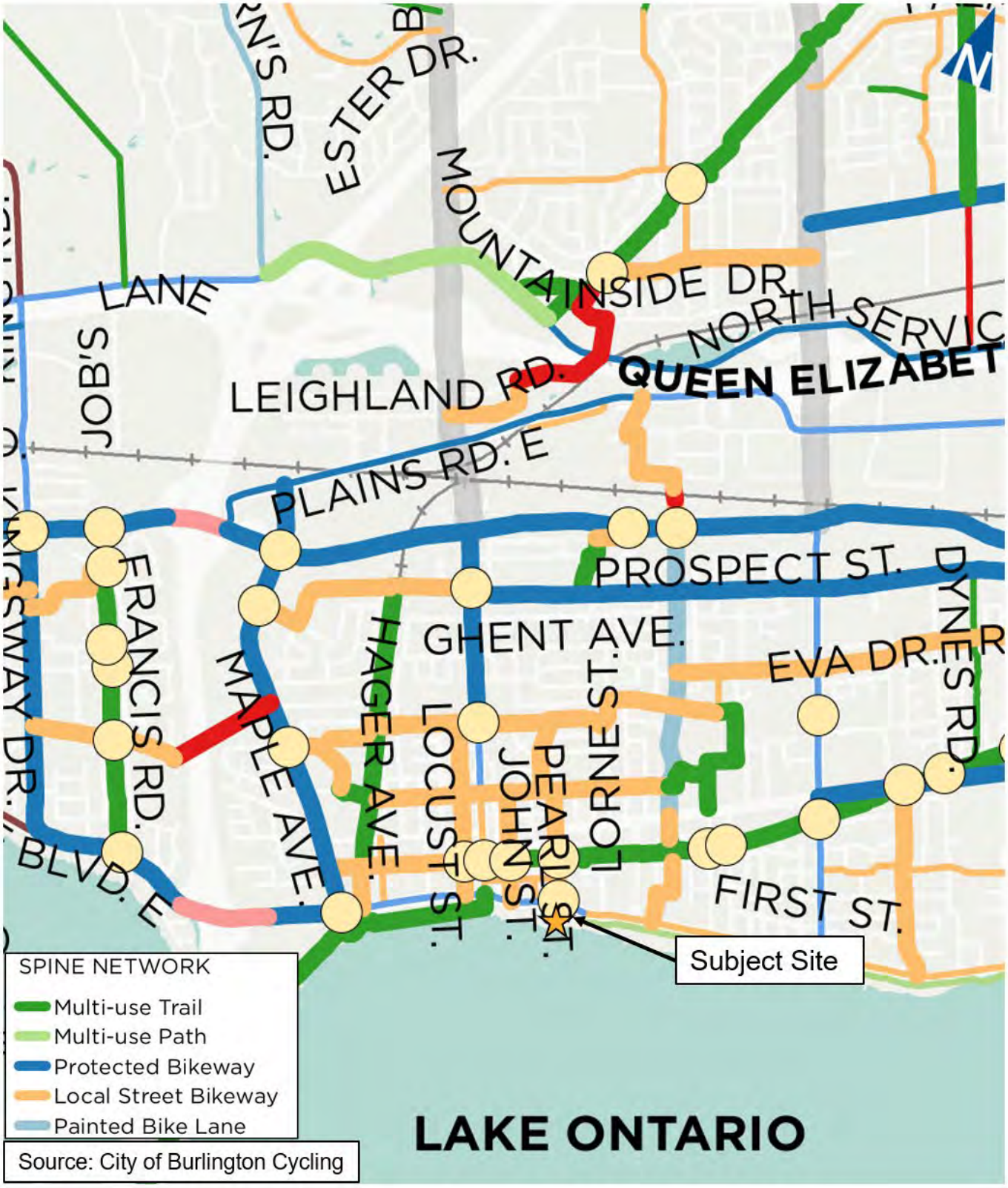


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Existing Cycling Network

2076 Old Lakeshore Road, Burlington
250220

Figure 2.3



Source: City of Burlington Cycling

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Future Cycling Network

2076 Old Lakeshore Road, Burlington
250220

Figure 2.4

2.4 Transit Service

2.4.1 Burlington Transit

Burlington Transit [3] is the public transit operator in the City of Burlington. **Figure 2.5** illustrates the existing transit network relative to the subject site's location. The following routes provide direct connections to the site:

- **Route 2, 3 (Brant/Guelph)** provides service between the Downtown Terminal (John Street) and the Highway 407 Carpool Lot. Weekday headways range from 15 to 30 minutes depending on the time of day. Weekend headways range from 30 to 60 minutes, depending on the time of day.
- **Route 4 (Central)** provides service between the Aldershot GO Station and the Appleby GO Station. Weekday headways range from 30 to 60 minutes depending on the time of day. Weekend headways operate at intervals of approximately 60 minutes.
- **Route 10 (New-Maple)** provides service between the Burlington GO Station and Appleby GO Station. Weekday and weekend headways range from 15 to 30 minutes depending on the time of day.
- **Route 50 (Burlington South)** provides late-night service around the southern portion of the City, with service beginning and terminating at the Burlington GO Station. Buses operate with approximately 60-minute headways and provide a connection at the John Street Transit Terminal.
- **Route 52 (Burlington Northwest)** provides late-night service around the northwest portion of the City with service beginning and terminating at the Burlington GO Station. Buses operate with approximately 60-minute headways and provide a connection at the John Street Transit Terminal.

The closest bus stop is located less than 150 m (two-minute walk) away at the intersection of Lakeshore Road and Pearl Street. In addition, the development is approximately a 250 m walk (a four-minute walk) to the Downtown Burlington bus terminal, which provides significant access to additional local routes.

2.4.2 GO Transit

The Burlington GO station is located about 3.1 km north of the subject site, which is easily accessible via Burlington Transit. As this GO line provides bus and/or train service to major cities, including Downtown

[3] Burlington Transit Ride Guide | City of Burlington, Ontario, Canada

Toronto, it is a significant transportation link for residents and commuters in the region.

2.5 Downtown Parking Supply

The Downtown Burlington Parking Plan (June 2025) confirms that the existing parking system has sufficient capacity to support ongoing and future needs. future development, even under aggressive growth scenarios.

A calibrated, context-specific shared parking model, considering local walkability, mixed-use trip chaining, and mode share, showed that while traditional industry standards suggest a need for more than 5,000 spaces, actual peak demand on weekends is closer to 2,100 spaces, which is well below the observed supply of 4,125. Including planned residential and commercial developments currently under construction or in the approval pipeline, future demand is expected to rise modestly but stay within system capacity.

Even under a hypothetical high-growth scenario that incorporates the redevelopment of significant sites and reduced Transportation Demand Management (TDM) effectiveness, the study forecasts that the parking system will remain underutilized, with excess supply across the network. Furthermore, the study concludes that achieving the City's Integrated Mobility Plan (IMP) mode shift targets would further reduce parking demand, particularly for commercial land uses.

While localized high occupancy was observed at a few public facilities, the broader system exhibited considerable underutilization, underscoring the importance of demand management, improved distribution, and temporary supply planning during redevelopment. Based on this analysis, the proposed redevelopment is not expected to generate parking-related impacts that exceed the functional capacity of the Downtown Burlington parking system.

2.6 Traffic Data

Paradigm collected typical Turning Movement Counts (TMC) data at the study area intersections in April and May 2025. **Appendix B** contains the existing count data. **Figure 2.6** illustrates the existing peak-hour traffic volumes.

2.6.1 Typical Traffic

Typical traffic refers to the volume of traffic on a roadway during normal operating conditions and is used in a Transportation Impact Assessment (TIA). The goal of a traffic impact assessment at the development level is to ensure that traffic generated by the proposed development can be safely and efficiently integrated into the existing transportation infrastructure under normal operating conditions.

It is acknowledged that traffic volumes on municipal streets can vary significantly, particularly when major adjacent highways experience congestion. During delays at ramp terminals and along freeway mainlines, drivers often choose alternative routes. Research indicates that substantial traffic shifts can occur on parallel arterial roads during incidents or construction. In the City of Burlington, for example, when the Queen Elizabeth Way (QEW) experiences heavy congestion due to incidents, construction, or peak demand periods, some traffic will divert to municipal streets in search of alternative routes. This diversion can temporarily increase traffic volumes above typical baseline conditions.

While it is recognized that diversion from major highways, such as the QEW, can temporarily increase traffic volumes on municipal roadways during congestion events, this situation reflects existing network dynamics rather than impacts specifically related to a new development.

Comprehensive, network-wide congestion issues are generally addressed through broader transportation planning studies, such as Transportation Master Plans, corridor studies, or regional traffic management studies. These strategic assessments examine system-wide traffic operations, evaluate alternative routing strategies, and develop coordinated solutions between municipal and provincial transportation networks to manage traffic diversion and overall network performance during both normal and congested conditions.



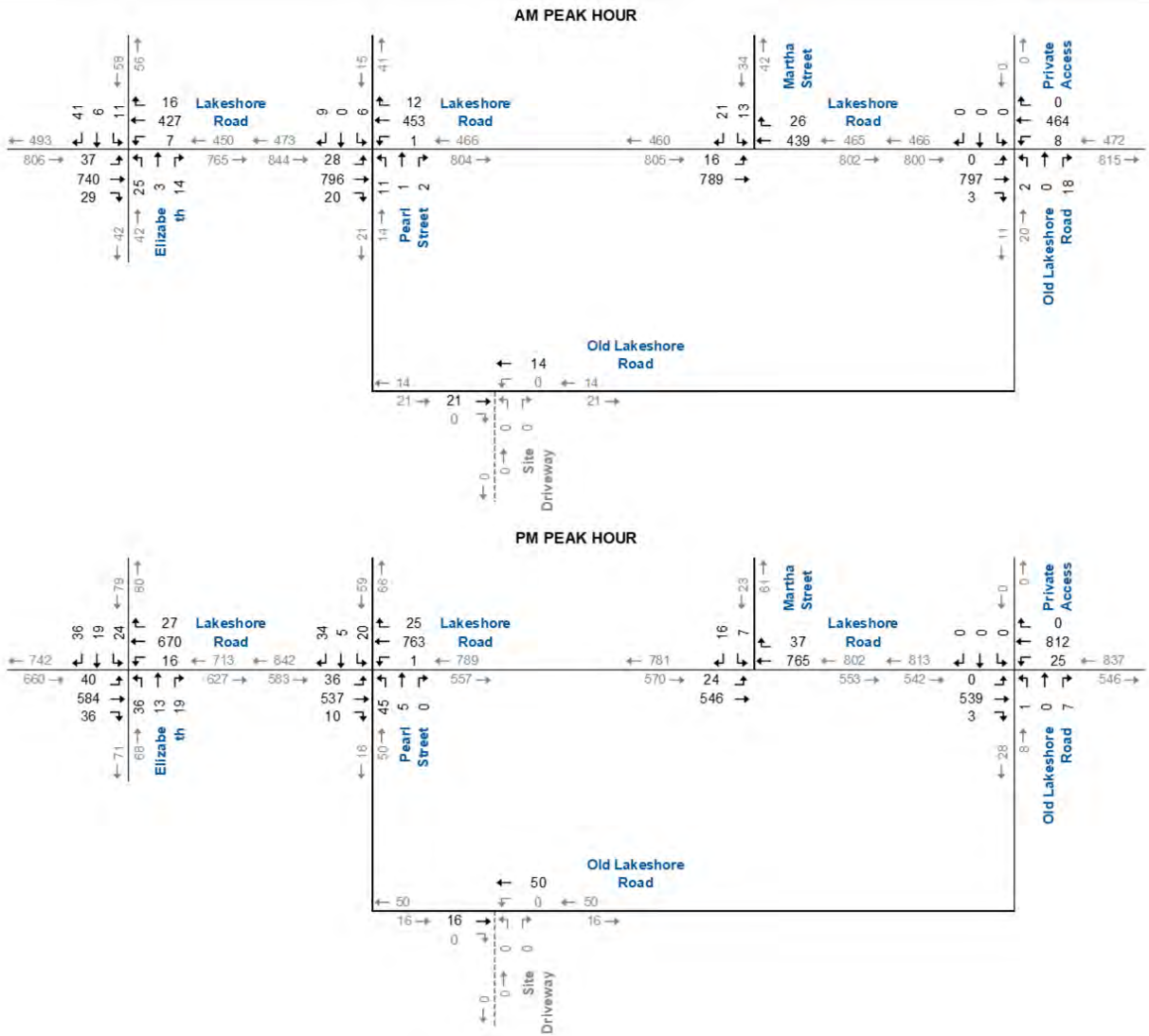
Source: Burlington Transit Route Map

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Existing Transit Network

2076 Old Lakeshore Road, Burlington
250220

Figure 2.5



Base Year Traffic Volumes

2076 Old Lakeshore Road, Burlington
250220

Figure 2.6

2.7 Traffic Operations

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

The operations of the study area intersections were evaluated under existing traffic volumes using Synchro 12 and HCM 2000 procedures. The intersection analysis considered the following measures of performance:

- The LOS for each turning movement. LOS is based on the average control delay per vehicle;
- The volume to capacity ratio (v/c) for each intersection; and
- 95th percentile queue length (m) using Synchro.

Under The Halton Region's TIS Guidelines [4], the following criteria indicate critical conditions and signify that mitigation measures may need to be considered:

- At signalized intersections,
  - Movements increased to v/c 0.85 or above; and
  - Movements increased to v/c 0.95 or above for exclusive turning movements.
- At unsignalized intersections,
  - LOS, based on average delay per vehicle, on individual movements, is expected to operate at a LOS "D" or worse.
- At all intersections,
  - An exclusive turning movement in which the 95th percentile queue will exceed the available storage space.

[4] Halton Region, *Transportation Impact Study Guidelines,* January 2015

Table 2.1 summarizes the results of the analysis for the base year weekday AM and PM peak hour intersection operations. The following critical movements are noted:

AM Peak Hour

- Elizabeth Street & Lakeshore Road (Signalized)
  - Northbound Left-Turn: The 95th percentile queue is forecast to exceed the available storage by approximately 1 m (less than one vehicle).

PM Peak Hour

- Elizabeth Street & Lakeshore Road (Signalized)
  - Northbound Left-Turn: The 95th percentile queue is forecast to exceed the available storage by less than 10 m.
- Pearl Street & Lakeshore Road (Signalized)
  - Southbound Left-Turn: The 95th percentile queue is forecast to exceed the available storage by less than 10 m.

Appendix C contains the supporting detailed Synchro 12 output.

TABLE 2.1: EXISTING INTERSECTION 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	Elizabeth Street & Lakeshore Road	TCS	LOS	A	B	>	B	A	A	>	A	C	C	>	C	C	C	>	C	B
			Delay	9	12	>	11	6	9	>	9	31	30	>	31	30	30	>	30	12
			V/C	0.08	0.38	>		0.02	0.22	>		0.08	0.02	>		0.05	0.05	>		0.29
			Q	8	55	>		1	28	>		11	6	>		7	10	>		
			Stor.	40	-	>		30	-	>		10	-	>		20	-	>		
			Avail.	32	-	>		29	-	>		-1	-	>		13	-	>		
	Pearl Street & Lakeshore Road	TCS	LOS	A	A	>	A	A	A	>	A	D	D	>	D	D	D	>	D	A
			Delay	1	6	>	6	1	2	>	2	53	53	>	53	53	52	>	52	6
			V/C	0.04	0.53	>		0.00	0.31	>		0.22	0.02	>		0.11	0.01	>		0.52
			Q	1	76	>		0	32	>		7	3	>		5	0	>		
			Stor.	45	-	>		15	-	>		20	-	>		5	-	>		
			Avail.	44	-	>		15	-	>		13	-	>		0	-	>		
	Lakeshore Road & Martha Street	TWSC	LOS	A	A		A		A	>	A					B		>	B	
			Delay	8	0		0		0	>	0					14		>	14	
			V/C	0.02	0.50				0.30	>						0.09		>		
			Q	0	0				0	>						2		>		
			Stor.	15	-				-	>						-		>		
			Avail.	15	-				-	>						-		>		
	Old Lakeshore Road/Private Access & Lakeshore Road	TWSC	LOS	A	A	>	A	A	A	>	A	<	C	>	C	<	A	>	A	
			Delay	0	0	>	0	10	0	>	0	<	16	>	16	<	0	>	0	
			V/C	0.00	0.51	>		0.01	0.30	>		<	0.06	>		<	0.00	>		
			Q	0	0	>		0	0	>		<	2	>		<	0	>		
			Stor.	10	-	>		15	-	>		<	-	>		<	-	>		
			Avail.	10	-	>		15	-	>		<	-	>		<	-	>		
PM Peak Hour	Elizabeth Street & Lakeshore Road	TCS	LOS	A	A	>	A	A	A	>	A	D	D	>	D	D	D	>	D	A
			Delay	9	10	>	10	4	4	>	4	36	35	>	36	36	36	>	36	10
			V/C	0.11	0.29	>		0.04	0.33	>		0.12	0.05	>		0.09	0.08	>		0.28
			Q	9	43	>		1	16	>		16	11	>		12	15	>		
			Stor.	40	-	>		30	-	>		10	-	>		20	-	>		
			Avail.	31	-	>		29	-	>		-6	-	>		8	-	>		
	Pearl Street & Lakeshore Road	TCS	LOS	A	A	>	A	A	B	>	B	D	D	>	D	D	D	>	D	B
			Delay	5	7	>	7	7	15	>	15	39	37	>	39	38	37	>	38	13
			V/C	0.13	0.46	>		0.00	0.67	>		0.16	0.01	>		0.07	0.04	>		0.54
			Q	3	26	>		1	149	>		20	4	>		11	10	>		
			Stor.	45	-	>		15	-	>		20	-	>		5	-	>		
			Avail.	42	-	>		14	-	>		0	-	>		-6	-	>		
	Lakeshore Road & Martha Street	TWSC	LOS	A	A		A		A	>	A					C		>	C	
			Delay	10	0		0		0	>	0					16		>	16	
			V/C	0.03	0.33				0.49	>						0.07		>		
			Q	1	0				0	>						2		>		
			Stor.	15	-				-	>						-		>		
			Avail.	14	-				-	>						-		>		
	Old Lakeshore Road/Private Access & Lakeshore Road	TWSC	LOS	A	A	>	A	A	A	>	A	<	B	>	B	<	A	>	A	
			Delay	0	0	>	0	9	0	>	0	<	12	>	12	<	0	>	0	
			V/C	0.00	0.33	>		0.03	0.49	>		<	0.02	>		<	0.00	>		
			Q	0	0	>		1	0	>		<	0	>		<	0	>		
			Stor.	10	-	>		15	-	>		<	-	>		<	-	>		
			Avail.	10	-	>		14	-	>		<	-	>		<	-	>		

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

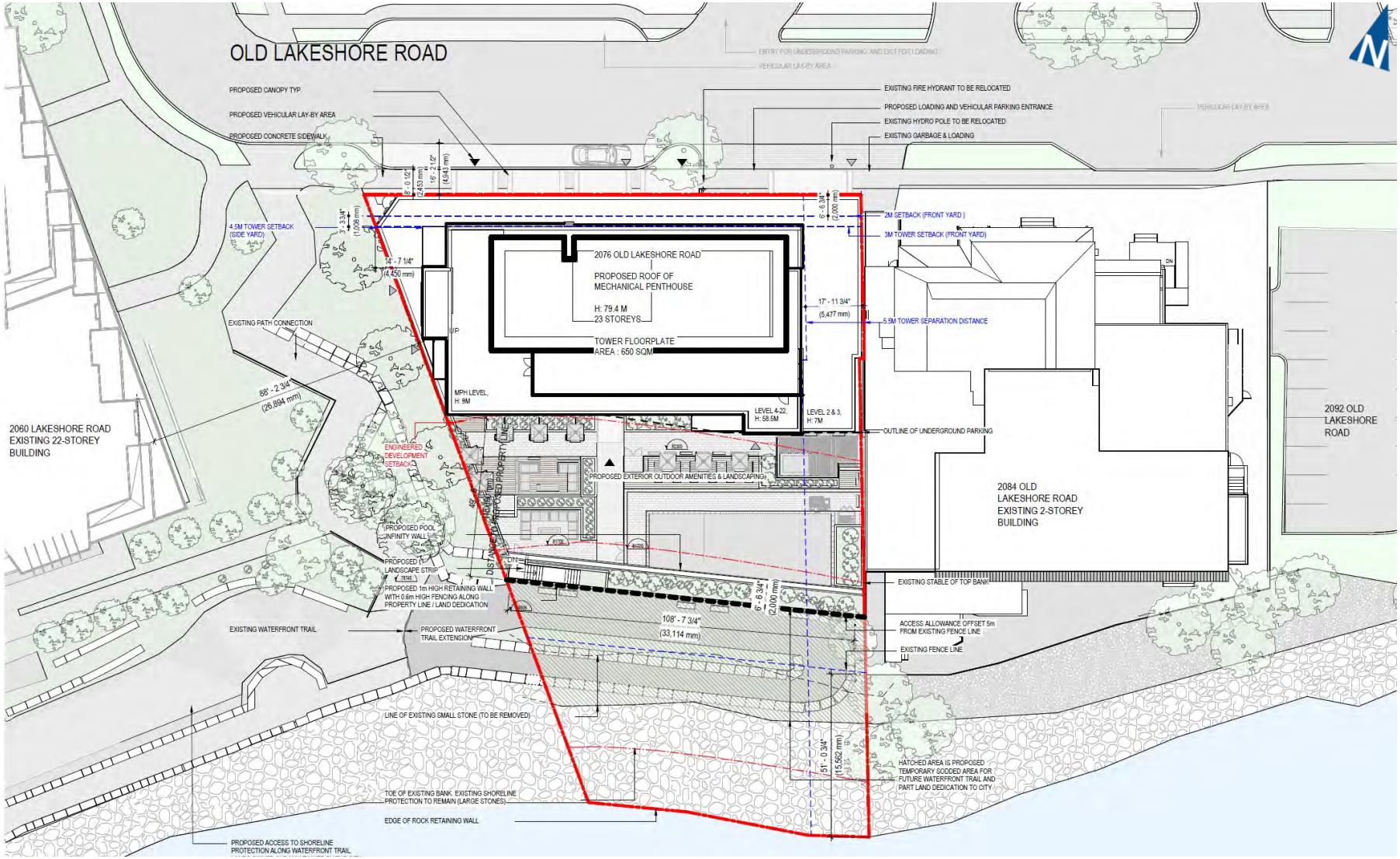
3 Development Concept

3.1 Development Description

The subject site is located at 2076 Old Lakeshore Road, currently operating as the Marquis Lakeside Inn in the City of Burlington. The applicant proposes to redevelop the existing land into a 23-storey mixed-use development comprising 154 hotel rooms, shared amenity space, and 50 residential units. Vehicle access to the site is proposed via a single driveway connection from Old Lakeshore Road, providing entry to both the automated underground parking system and the waste collection/loading area. A lay-by area is also proposed west of the driveway to accommodate short-term parking. The site plan includes four levels of automated underground parking, offering a total of 82 parking spaces; 50 residential spaces and 32 visitor/hotel spaces.

The build-out is anticipated to occur by 2028, with timing subject to change and market conditions.

Figure 3.1 illustrates the site concept plan.



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Site Concept Plan

2076 Old Lakeshore Road, Burlington
250220

Figure 3.1

3.2 Trip Generation

The Institute of Transportation Engineers (ITE) Trip Generation manual [5] provides rates and equations to estimate the peak-hour traffic volumes generated by the proposed development. The following land-use codes were used to estimate the weekday AM and PM peak-hour traffic volumes that the development will generate:

- Multifamily Housing (High-Rise) (LUC 222); and
- Hotel (LUC 310).

Table 3.1 summarizes the forecast site-generated trips. The site's trip generation is estimated to be approximately 84 weekday AM peak hour trips and 102 weekday PM peak hour trips. To remain conservative, no reductions accounting for alternative modes of transportation (i.e., transit and active transportation) have been applied.

TABLE 3.1: TRIP GENERATION

ITE Land Use Code / Number of Units/Rooms	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
222 - Multifamily Housing (High-Rise) - 50 units	4	10	**14**	10	6	**16**
310 - Hotel – 154 rooms	39	31	**70**	44	42	**86**
Total Generation	**43**	**41**	**84**	**54**	**48**	**102**

Equations
LUC 221 Avg Rate Per Unit AM = 0.27, PM = 0.32
LUC 310 Eqn Per Room AM T = 0.50(X) - 7.45 | PM T = 0.74(X) - 27.89

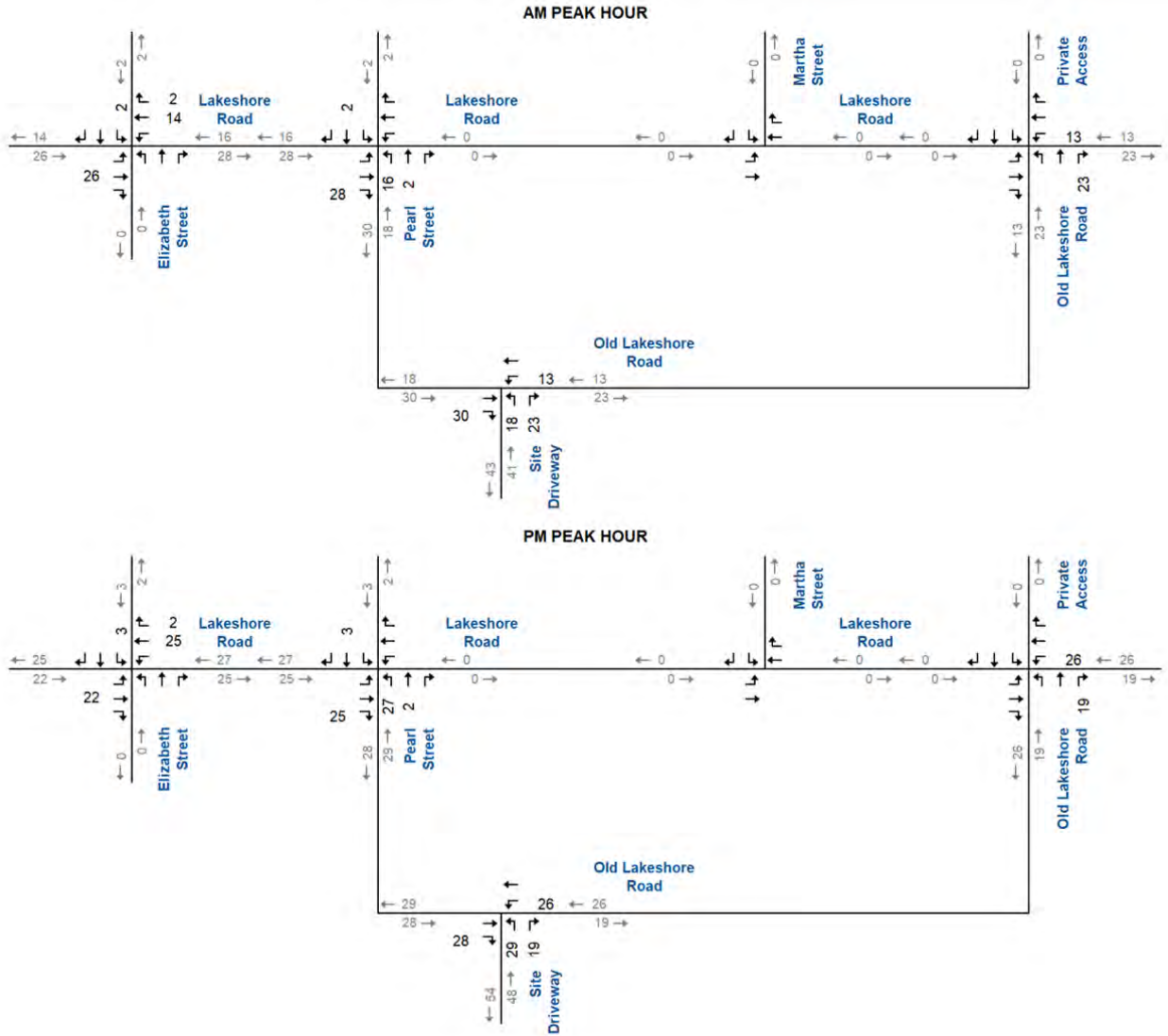
The site's trip distribution follows existing travel patterns observed from the collected traffic data, as the surrounding area is primarily residential and reflects commuter travel.

Table 3.2 summarizes the estimated trip distribution. **Figure 3.2** illustrates the site-generated traffic estimates assigned to the transportation network.

[5] Institute of Transportation Engineers, *Trip Generation Manual,* 11th ed., (Washington DC: ITE, 2021).

TABLE 3.2: TRIP DISTRIBUTION

Origin/Destination	AM		PM	
	In	Out	In	Out
East via Lakeshore Road	30%	55%	50%	40%
West via Lakeshore Road	60%	35%	40%	50%
North via Elizabeth Street	5%	5%	5%	5%
North via Pearl Street	5%	5%	5%	5%
Total	**100%**	**100%**	**100%**	**100%**



Forecast Site Generated Traffic

2076 Old Lakeshore Road, Burlington
250220

Figure 3.2

3.3 Vehicle Elevator Operation

The proposed development will provide 82 parking spaces situated in an underground parking structure. Access to the underground parking is via the proposed driveway off Old Lakeshore Road.

Automobile elevators are proposed as an alternative to ramps within the parking garage, allowing cars to be pulled into an elevator off the street and enter the parking garage by travelling vertically between levels. An automobile elevator would occupy significantly less space than ramps within a parking garage. The width of the driveway and the opening in the building required for two automobile elevators side by side (in this case, approximately 7 metres) would be similar to the width required for a garage with one lane entering and one lane exiting.

One significant operational difference between automobile elevators and ramps is that each automobile elevator can only handle one vehicle at a time. In contrast, many vehicles could be on a ramp at the same time, all travelling to parking spaces. Because of this, an alternative parking facility that utilizes automobile elevators to access the garage may require space for vehicles to wait for the elevator, which this report refers to as a "valet staging area," particularly during peak usage times.

An important part of the pick-up and drop-off (PUDO) operation is to determine if any queuing issues will occur, given the time required to park and retrieve a vehicle from the automobile elevator system, which is proposed to operate as a dual-lane entry system during peak hours. During the weekday morning peak hour, it is expected that both car elevators will cater to outbound vehicles leaving the site. Conversely, during the afternoon peak hour, a reversal will occur, with both car elevators servicing inbound demand.

3.3.1 Peak Hour Parking Demand

Parking demand for the proposed development was estimated using a parking supply-based methodology, rather than traditional unit-based trip generation rates, as outlined in **Table 3.1** for the hotel component.

Given the limited parking supply proposed for the hotel component, traditional ITE-based trip rates would significantly overestimate the parking demand generated during the peak hours. Instead, the parking demand was calculated using turnover assumptions based on supply.

As shown in **Table 3.1**, the projected trip generation for the hotel land-use is 70 weekday AM and 86 weekday PM peak hour trips, which is

significantly higher than the proposed on-site parking supply of 32 spaces. This result is commonly reflective of industry data for hotels, which estimate trip generation based on the number of hotel rooms rather than the availability of parking spaces. However, it is important to note that not all trips to the hotel will require on-site parking, as a portion of trips are expected to consist of passenger drop-offs and pick-ups, such as taxis, shuttles, or personal vehicles making short-term stops. Therefore, the difference between trip generation and parking supply does not indicate a deficiency, and the proposed parking can adequately accommodate demand in real-world conditions.

As noted, the site provides 32 spaces which can be used by hotel patrons or visitors to the site. If we were to utilize the typical trip generation rates as previously calculated, parking demand estimates would be upwards of 44 parking spaces, whereas there are only 32 spaces available. Therefore, the use of parking supply and turnover-based estimates provides a more realistic forecast of hotel-generated vehicular demand for the vehicle elevator assessment.

The analysis assumes a hotel parking turnover rate of 0.46 trips per parking space during the weekday AM peak hour and 0.59 trips per parking space during the weekday PM peak hour. These rates are consistent with ITE Land Use Code 310 (Hotel) regarding average trip demand per hotel unit. Utilizing these rates, it is estimated that the hotel component could generate 15 trips during the weekday AM peak hour and 19 trips during the weekday PM peak hour.

Regarding the residential assumption, since the proposed parking supply offers a parking rate of 1.00 space per unit, the parking supply is not limited, and the turnover assumption based on supply is not required. As a result, trip generation estimates in **Table 3.1** have been used in the assumptions and indicate that the residential component could generate 14 trips during the weekday morning peak hour and 16 trips during the weekday afternoon peak hour.

Based on the above, the total parking demand expected during the weekday AM peak hour is 29 trips, and 35 trips during the weekday PM peak hour, reflecting both residential and hotel parking demand during the weekday peak hours.

3.3.2 Parking Operations

Residents and hotel guests arriving by vehicle will pull into the short-term loading and drop-off zone along Old Lakeshore Road, situated in front of the proposed building and serving as its layby area. A valet station will be situated here, where attendants will receive vehicles and

drive them to the on-site garage and into the vehicle elevator. As this loading and drop-off zone cannot be reserved exclusively for valet operations, it will remain available for use by the general public. If the zone is occupied at the time of arrival, valet attendants will direct vehicles immediately to the designated staging area adjacent to the car elevator, which can accommodate up to four vehicles. When the vehicle elevator is in use, vehicles will be temporarily parked in this staging area until the elevator becomes available.

3.3.3 Elevator Service Rate

Based on preliminary vehicle elevator information gathered (see **Appendix D)**, an estimate of the elevator's lift capacity was determined.

Typically, a mechanical vehicle elevator for vertical vehicle conveyance is specified to travel at a speed of approximately 50 feet per minute. Given that the bottom level of the parking structure is approximately 40 feet below ground level (assuming each parking level has a floor-to-floor height of 10 feet), it would take the elevator approximately 48 seconds to travel between Old Lakeshore Road and level four, 36 seconds between level three, 24 seconds between level two, and 12 seconds between level one of the parking garage.

With four parking levels, it is expected that valet attendants will initially use the upper levels of underground parking when demand is low and then expand vehicle parking to the lower levels as demand increases. Given that levels two to four offer equal parking capacity, the average vertical lift for parking or retrieving a vehicle has been considered.

This method provides a representative estimate of typical elevator usage without making the model overly complex. Because the vertical spacing between levels is consistent and the elevator moves at a constant speed, the average travel distance and, consequently, the average travel time provide a valuable and balanced input for planning. It simplifies queue and cycle time estimates while still reflecting the expected distribution of trips, making it a fair and efficient assumption for early-stage garage design or operational assessments. Based on this, the average service rate for the vehicle elevator was calculated at 30 seconds.

Under the "inefficient scenario," where a vehicle is being parked and the elevator then returns empty to Old Lakeshore Road to load another car for parking, an additional 30 seconds of vertical conveyance has been added, resulting in a total of 60 seconds for the overall elevator service rate. Based on this estimate, the vehicle elevator would theoretically be able to handle approximately 60 vehicles per hour if

they were each used inefficiently for parking only or retrieving only. With two elevator lifts, this translates into a theoretical operating capacity of approximately 120 vehicles per hour.

3.3.4 Pick-Up Drop-Off Service Time

The average service time for the site valet vehicle drop-off and retrieval is estimated to be 2 minutes and 55 seconds (175 seconds) based on the site layout and approximate interaction times. The following summarizes the valet service time estimation:

- Exchange between the valet attendant and driver (15 seconds)
- Attendant drives the vehicle from the lay-by area to the vehicle elevator (20 seconds)
- Vehicle elevator descends/ascends (60 seconds)
- Attendant parks vehicle (20 seconds)
- Attendant returns to valet desk (60 seconds)
- Total service rate per valet: 2:55 minutes or 20 vehicles (3600 seconds/175 seconds)

3.3.5 Valet Staffing Levels

To ensure efficient operation of the two-car elevators servicing the underground parking garage, a detailed analysis of valet staffing needs was conducted. The system will need to handle approximately 35 vehicle movements per hour during the busiest time of day (weekday PM peak hour).

Using the service rate per valet calculated above, the total handling time of 175 seconds per valet action is determined, which equates to the total valet labour demand of approximately 102 minutes per hour. This reflects the combined effort to manage both inbound and outbound vehicle flows efficiently.

Considering the available work time per valet is 60 minutes per hour, the analysis examined scenarios ranging from two to four valet attendants:

- Two valets operate at a utilization of approximately 85%, which is tight and may lead to queuing or delays.
- A minimum of three valets is recommended to bring utilization down to around 58%, managing demand and reliability.

- Increasing staffing to four valets further improves system resilience, allowing flexibility to manage peak demand periods, staff breaks, and future growth.

The staffing strategy is crucial because, with elevators capable of servicing up to 60 vehicles per hour, the bottleneck shifts from mechanical capacity to valet coordination. Adequate valet presence ensures vehicles are staged and moved quickly, maintaining continuous elevator use and reducing queues.

3.3.6 Queue Assessment

To determine the queue implications of this system, a multi-channel queuing model has been utilized. The multi-channel queueing model assumes that arrivals follow a Poisson probability distribution and that service times are exponentially distributed, with all arriving vehicles performing at the same rate.

The multi-channel formula has been used to calculate the probability of vehicle queues, assuming the following:

- m = the number of valet drivers – Three to four valet drivers have been assumed.
- λ = average arrival rate – The average arrival rate is approximately 35 vehicles per hour.
- μ = average service rate – The average service rate for each valet driver is 20, representing the number of vehicles each valet can park within an hour.

An iterative approach was used to determine the optimal number of valet attendants required to accommodate the proposed parking demand during the analysis peak hour, ensuring that the probability of the vehicle queue extending beyond the designated valet staging area of four vehicles was less than 5%.

Table 3.3 outlines the operating characteristics. The queuing analysis is provided in **Appendix D**.

Based on the calculations, assuming three valet attendants are provided, the probability that a vehicle queue will not exceed four vehicles is estimated to be 89%. If the number of valet attendants increases to four, the probability rises to 95% that the queue will not exceed four vehicles. Since 95% is generally the threshold that offers the highest confidence in queue assessments, it is recommended that four valet attendants constitute the minimum operational staff for effective system performance during peak operations, given the projected demand.

In addition to the on-site valet staging area, an on-street lay-by adjacent to the facility entrance provides an alternative vehicle staging area. This lay-by allows vehicles, especially those waiting for elevator access or valet processing, to queue outside the central circulation and elevator zones. By offloading short-term waiting from the garage interior, the staging area helps minimize on-site congestion and provides valets with greater flexibility to manage inbound and outbound vehicles seamlessly.

As the valet staging area can accommodate up to four vehicles and the lay-by area along Old Lakeshore Road can accommodate an additional three cars, the PUDO is deemed sufficient for peak parking demand operations with a minimum of four valet attendants.

TABLE 3.3: VEHICLE ELEVATOR OPERATIONAL SUMMARY

Three Valet Attendants		
Operating Characteristic Weekday PM Peak Hour	Results	
Average Valet Utilization (p)	58%	
Average number of vehicles in the PUDO(L_q)	0.47 vehicles	
Average time spent in the PUDO (W_q)	1:20 min	
Probability (% of time) PUDO is empty (P_0)	16%	
Queue Number	Probability	Cumulative
0	15.6%	15.6%
1	27.2%	42.8%
2	23.8%	66.6%
3	13.9%	80.5%
4	8.1%	88.6%
5	4.7%	93.3%
6	2.8%	96.1%
7+	3.9%	100.0%
Four Valet Attendants		
Operating Characteristic Weekday PM Peak Hour	Results	
Average Valet Utilization (p)	44%	
Average number of vehicles in the PUDO(L_q)	0.09 vehicles	
Average time spent in the PUDO (W_q)	0:16 min	
Probability (% of time) PUDO is empty (P_0)	17%	
Queue Number	Probability	Cumulative
0	17.0%	17.0%
1	29.8%	46.8%
2	26.1%	72.9%
3	15.2%	88.1%
4	6.7%	94.8%
5	2.9%	97.7%
6	1.3%	99.0%
7+	1.0%	100.0%

3.4 Site Access Review

Heavy vehicle and site circulation were assessed using AutoTURN swept path analysis software. two design vehicles were used in the analysis representing the large vehicles expected to use the site; garbage truck and moving truck as well as a typical passenger vehicle:

- Transportation Association of Canada (TAC) Medium Single Unit (MSU);
- TAC Passenger Car (P);

Appendix F contains the AutoTURN swept path analysis. No conflicts with the proposed on-site geometry are noted. At the Site Plan Stage, a detailed signage and pavement marking plan will be prepared for the site.

4 Future Conditions

The assessment of future conditions in this section includes the following components:

- Background traffic forecast;
- Total traffic forecast;
- Level of service analysis for background traffic (pre-development); and
- Level of service analysis for total traffic (post-development).

Two horizon years have been assessed in this study: the full build-out year (Year 2028) and five years from full build-out of the development (Year 2033).

4.1 Forecast Traffic Volumes

Future traffic volumes near the subject site are estimated to consist of:

- Generalized background traffic growth of 1% per annum, as identified during pre-study consultation;
- Traffic generated by the following background development:
  - **2072 Lakeshore Road** [6] – 20-storey high-rise residential building with 165 units and 583 m² (6,270 ft²) of retail space.
  - **2083 Old Lakeshore Road** [7] – 27-storey mixed-use building with approximately 196 units and 418 m² (4,502 ft²) of retail space.
  - **374 Martha Street** [8] – 26-storey residential condominium building with 192 units and 3,520 ft² of ground floor retail space.
  - **2107 Old Lakeshore Road** [9] - 27-storey mixed-use building that will contain 599 m² (6,451 ft²) of retail space and 150 condominium units.

[6] LEA Consulting Limited, *Transportation Impact Study 2072 Lakeshore Road,* December 2024
[7] Paradigm Transportation Solutions Limited, *2083 Old Lakeshore Road Transportation Impact and Parking Study,* December 2024
[8] Paradigm Transportation Solutions Limited, *374 Martha Street Transportation Impact Study,* September 2015
[9] Paradigm Transportation Solutions Limited, *Old Lakeshore Road Transportation Impact Study, Parking Study and TDM Options Report,* February 2020

- **2100 Lakeshore Road** [10] – 27-storey mixed-use building with 310 residential units and 701.1 m² (7,547 ft²) of retail space at grade.
- **2069 Lakeshore Road** [11] – 29-storey mixed-use building that will contain 675 m² (7,262 ft²) of retail space, 280 condominium units and two live/work units.

- The projected background development traffic volumes have been incorporated into the 2028 future horizon analysis.
- Traffic generated by the subject site.

Appendix G contains the individual trip assignments for the background development included in this study.

The future traffic volumes are illustrated in the following figures:

- **Figure 4.1** illustrates the 2028 horizon background traffic volumes.
- **Figure 4.2** illustrates the 2028 horizon total traffic volumes.
- **Figure 4.3** illustrates the 2033 horizon background traffic volumes.
- **Figure 4.4** illustrates the 2033 horizon total traffic volumes.

4.1.1 Existing Motel Trip Reduction

The development site is currently occupied by the Marquis Lakeside Inn, which supports 11- motel units. As the site will be redeveloped to support the proposed development, trips generated by the existing inn will no longer contribute to traffic volumes within the study area. Therefore, the estimated trips associated with the inn have been removed from the future total horizon traffic forecasts. Land-use code 320 (Motels) was used to estimate the weekday AM and PM peak-hour traffic volumes that the existing Inn currently generates.

Table 4.1 summarizes the estimated site-generated trips from the existing Inn. The site's trip generation is estimated to be approximately 4 weekday AM and PM peak hour trips. To remain conservative, no reductions accounting for alternative modes of transportation (i.e., transit and active transportation) have been applied.

[10] LEA Consulting Limited, *2100 Lakeshore Road Transportation Impact Study,* August 2019

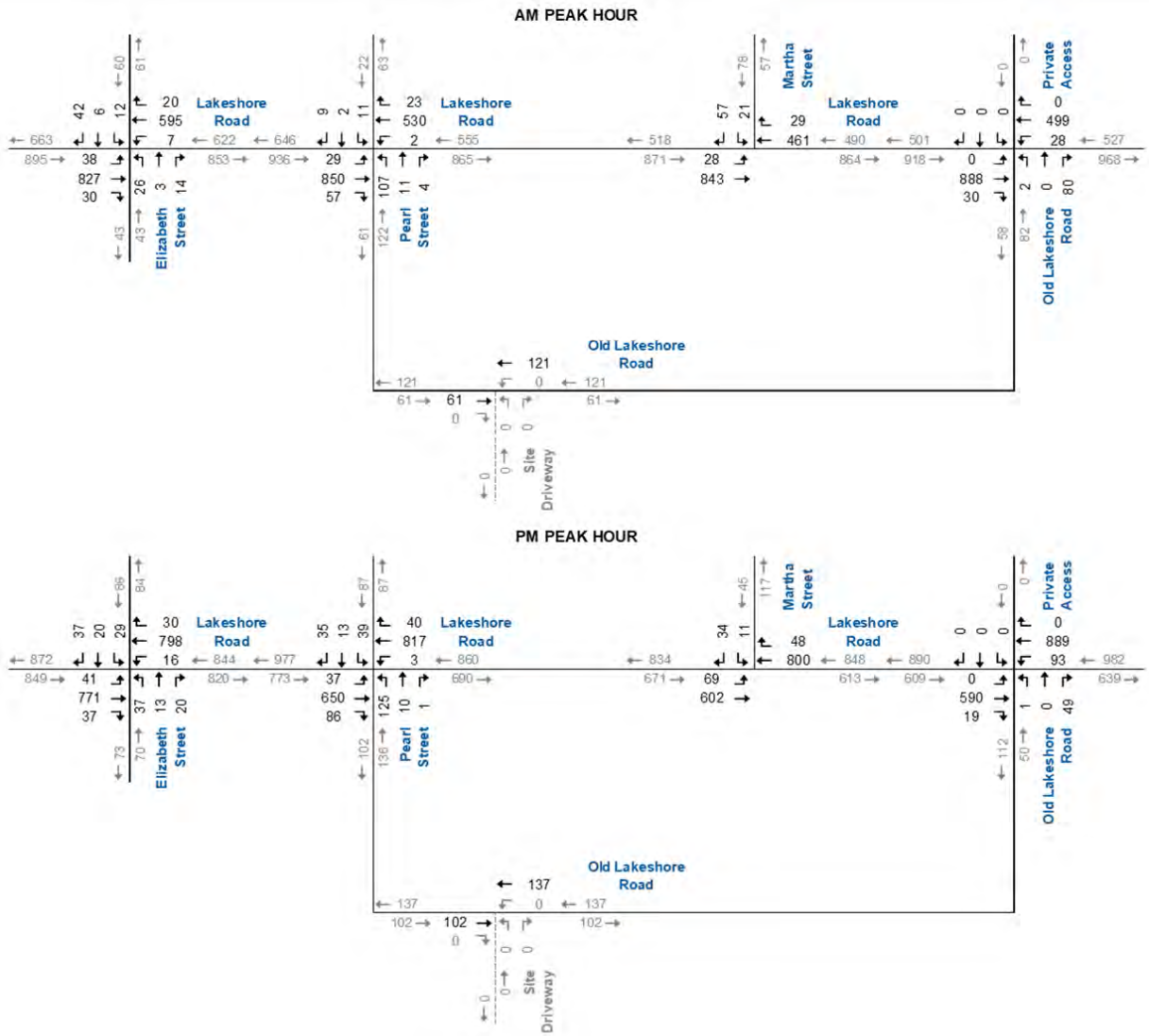
[11] Paradigm Transportation Solutions Limited, *2069 Lakeshore Road Transportation Impact Study, Parking Study and TDM Options Report,* August 2018

TABLE 4.1: TRIP GENERATION

ITE Land Use Code / Number of Units/Rooms	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
320 - Motel – 11 rooms	2	2	**4**	2	2	**4**
Total Generation	**2**	**2**	**4**	**2**	**2**	**4**

Equations
LUC 320 Eqn Per Room AM T = 0.32(X) + 0.48 | PM Avg Rate Per Unit = 0.37

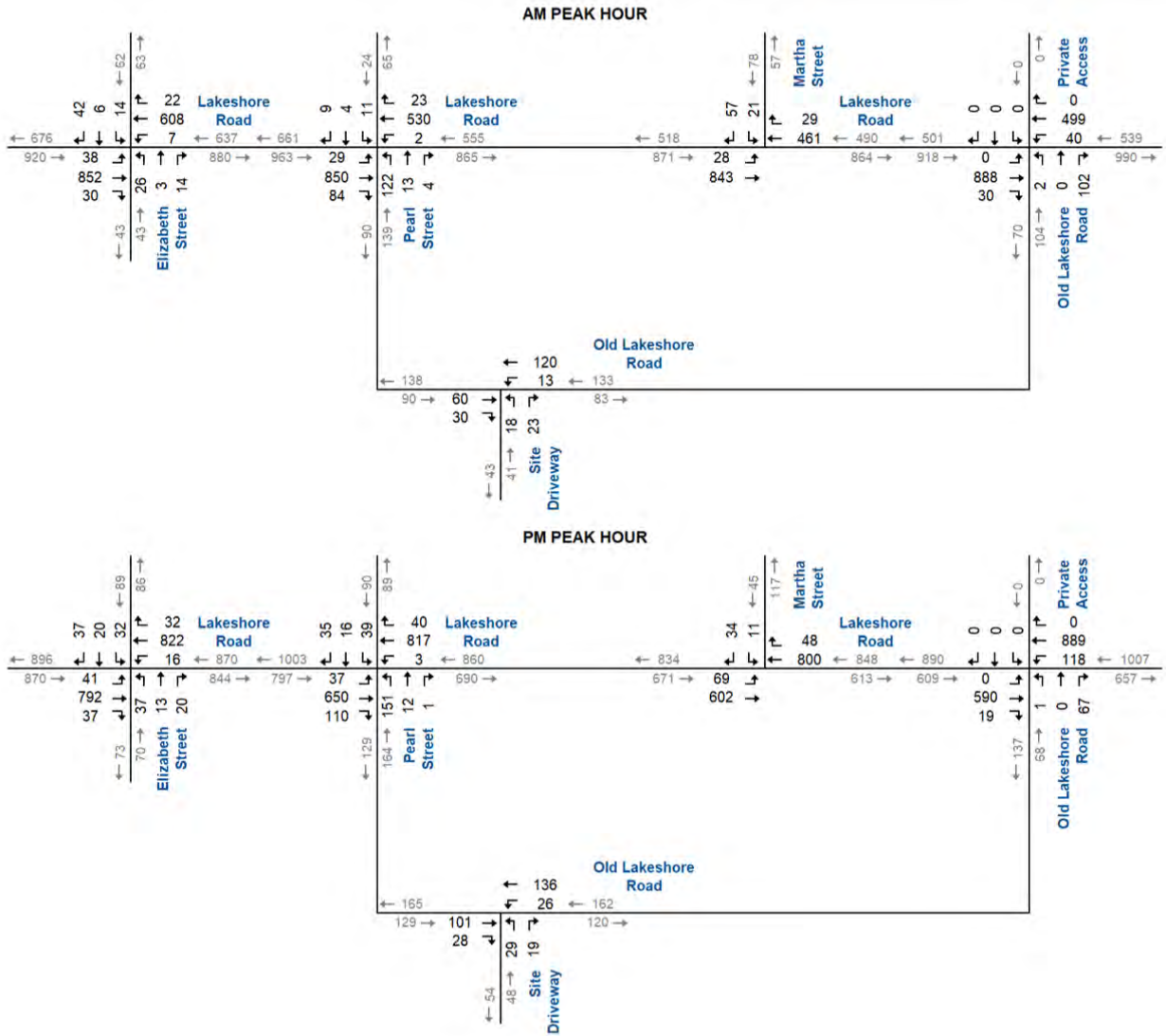
The Inn's trip distribution is expected to follow existing travel patterns observed from the collected traffic data, as the surrounding area is primarily residential and reflects commuter travel.



Background Traffic Volumes Opening-Year Horizon

2076 Old Lakeshore Road, Burlington
250220

Figure 4.1

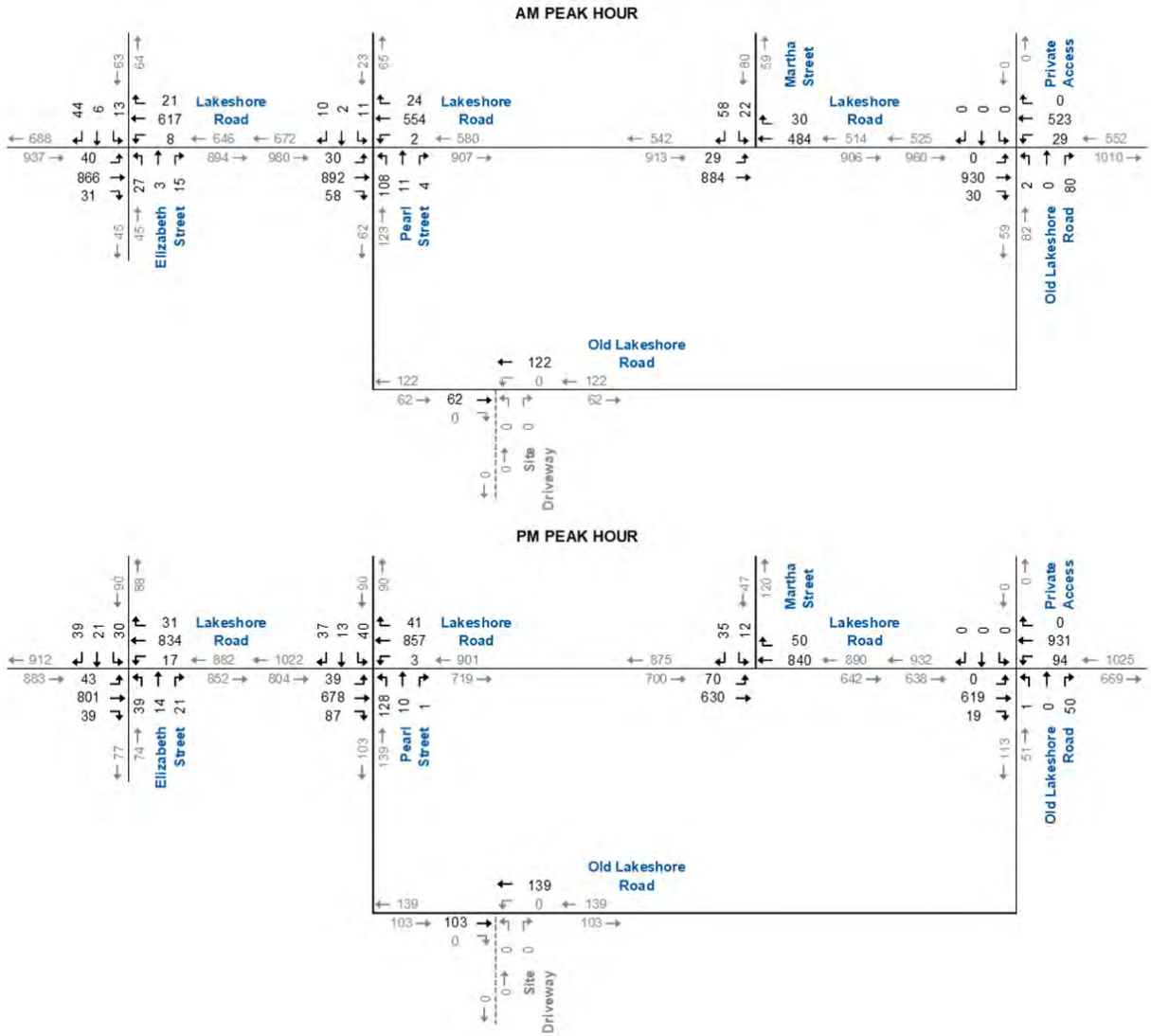


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Total Traffic Volumes Opening-Year Horizon

2076 Old Lakeshore Road, Burlington
250220

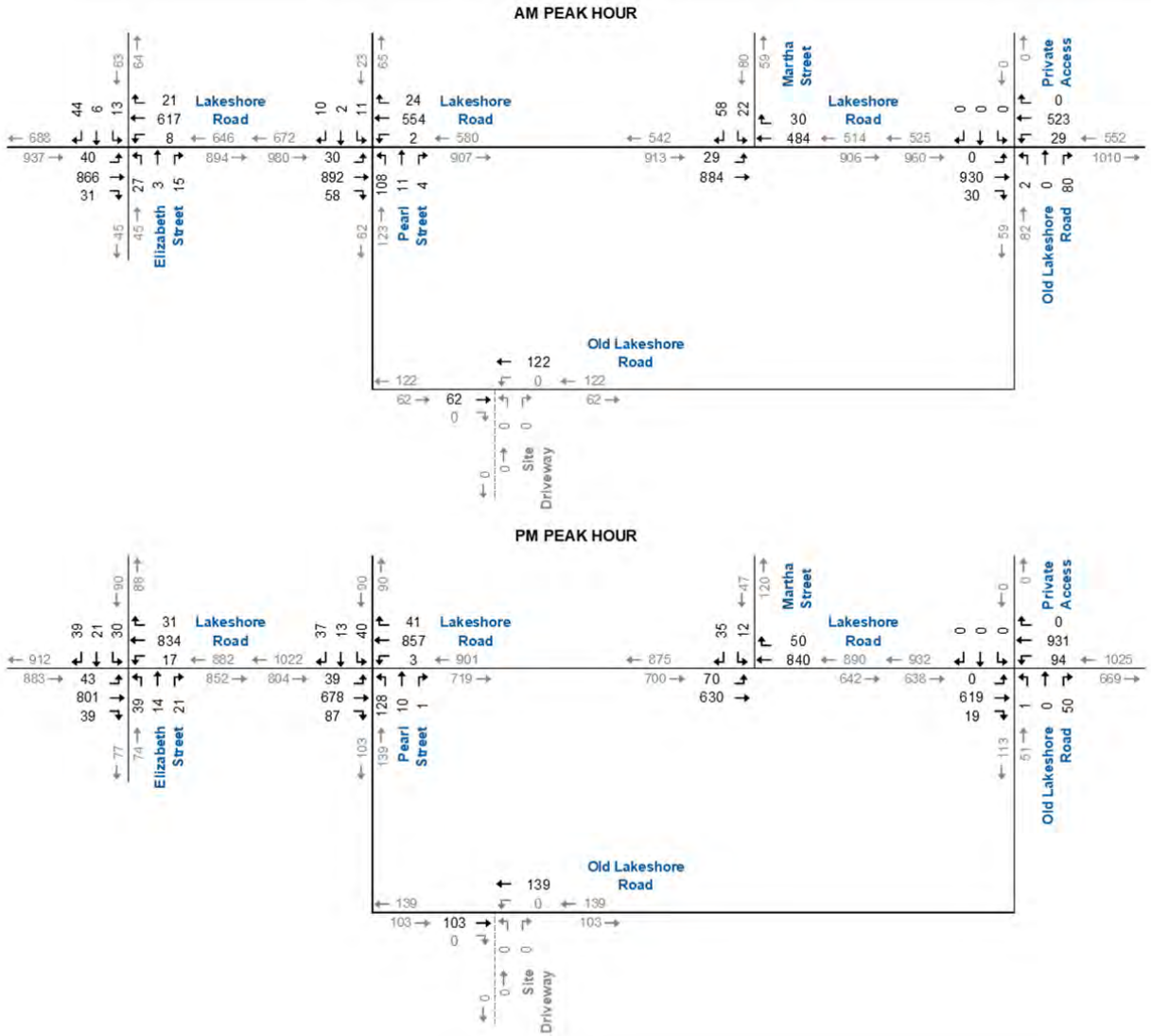
Figure 4.2



Background Traffic Volumes Five-Year Horizon

2076 Old Lakeshore Road, Burlington
250220

Figure 4.3



Background Traffic Volumes Five-Year Horizon

2076 Old Lakeshore Road, Burlington
250220

Figure 4.3

4.2 Opening-Year Horizon

The study area intersection operational analysis follows the same methodology used for existing conditions. No changes to the existing lane configurations or traffic control are assumed.

4.2.1 Background Traffic Operations

Table 4.2 summarizes the Opening-Year horizon background traffic level of service conditions.

AM Peak Hour

- Elizabeth Street & Lakeshore Road (Signalized)
  - Northbound Left-Turn: The 95th percentile queue is forecast to exceed the available storage by less than 5 m.
- Pearl Street & Lakeshore Road (Signalized)
  - Northbound Left-Turn: The 95th percentile queue is forecast to exceed the available storage by less than 20 m.
  - Southbound Left-Turn: The 95th percentile queue is forecast to exceed the available storage by less than 5 m.

PM Peak Hour

- Elizabeth Street & Lakeshore Road (Signalized)
  - Northbound Left-Turn: The 95th percentile queue is forecast to exceed the available storage by less than 10m.
- Pearl Street & Lakeshore Road (Signalized)
  - Northbound Left-Turn: The 95th percentile queue is forecast to exceed the available storage by less than 30 m.
  - Southbound Left-Turn: The 95th percentile queue is forecast to exceed the available storage by less than 15 m.

Appendix H contains the detailed Synchro 12 reports.



TABLE 4.2: OPENING YEAR HORIZON – BACKGROUND TRAFFIC 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	Elizabeth Street & Lakeshore Road	TCS	LOS	A	B	>	B	A	A	>	A	C	C	>	C	C	C	>	C	B
			Delay	9	12	>	12	7	9	>	9	31	30	>	31	31	30	>	30	12
			V/C	0.10	0.42	>		0.02	0.30	>		0.08	0.02	>		0.05	0.05	>		0.32
			Q	8	63	>		1	26	>		12	6	>		7	10	>		
			Stor.	40	-	>		30	-	>		10	-	>		20	-	>		
			Avail.	32	-	>		29	-	>		-2	-	>		13	-	>		
	Pearl Street & Lakeshore Road	TCS	LOS	A	A	>	A	A	A	>	A	D	D	>	D	D	D	>	D	B
			Delay	2	8	>	8	4	6	>	6	50	39	>	49	42	41	>	42	11
			V/C	0.05	0.68	>		0.01	0.41	>		0.64	0.05	>		0.06	0.01	>		0.67
			Q	1	102	>		1	71	>		36	6	>		7	5	>		
			Stor.	45	-	>		15	-	>		20	-	>		5	-	>		
			Avail.	44	-	>		14	-	>		-16	-	>		-2	-	>		
	Lakeshore Road & Martha Street	TWSC	LOS	A	A		A		A	>	A					C		>	C	
			Delay	9	0		0		0	>	0					16		>	16	
			V/C	0.03	0.54				0.31	>						0.20		>		
			Q	1	0				0	>						6		>		
			Stor.	15	-				-	>						-		>		
			Avail.	14	-				-	>						-		>		
	Old Lakeshore Road/Private Access & Lakeshore Road	TWSC	LOS	A	A	>	A	B	A	>	A	<	C	>	C	<	A	>	A	
			Delay	0	0	>	0	12	0	>	1	<	24	>	24	<	0	>	0	
			V/C	0.00	0.59	>		0.05	0.32	>		<	0.32	>		<	0.00	>		
			Q	0	0	>		1	0	>		<	10	>		<	0	>		
			Stor.	10	-	>		15	-	>		<	-	>		<	-	>		
			Avail.	10	-	>		14	-	>		<	-	>		<	-	>		
PM Peak Hour	Elizabeth Street & Lakeshore Road	TCS	LOS	A	B	>	B	A	A	>	A	D	D	>	D	D	D	>	D	B
			Delay	10	11	>	11	6	6	>	6	36	35	>	36	36	36	>	36	11
			V/C	0.14	0.38	>		0.05	0.40	>		0.13	0.05	>		0.12	0.09	>		0.32
			Q	9	59	>		1	28	>		17	11	>		14	15	>		
			Stor.	40	-	>		30	-	>		10	-	>		20	-	>		
			Avail.	31	-	>		29	-	>		-7	-	>		6	-	>		
	Pearl Street & Lakeshore Road	TCS	LOS	A	A	>	A	A	B	>	B	D	D	>	D	D	D	>	D	B
			Delay	5	9	>	9	7	17	>	17	44	36	>	43	39	38	>	38	16
			V/C	0.16	0.62	>		0.01	0.73	>		0.45	0.03	>		0.13	0.06	>		0.66
			Q	3	54	>		1	176	>		47	7	>		18	13	>		
			Stor.	45	-	>		15	-	>		20	-	>		5	-	>		
			Avail.	42	-	>		14	-	>		-27	-	>		-13	-	>		
	Lakeshore Road & Martha Street	TWSC	LOS	B	A		A		A	>	A					C		>	C	
			Delay	10	0		1		0	>	0					18		>	18	
			V/C	0.10	0.37				0.52	>						0.14		>		
			Q	2	0				0	>						4		>		
			Stor.	15	-				-	>						-		>		
			Avail.	13	-				-	>						-		>		
	Old Lakeshore Road/Private Access & Lakeshore Road	TWSC	LOS	A	A	>	A	A	A	>	A	<	B	>	B	<	A	>	A	
			Delay	0	0	>	0	9	0	>	1	<	13	>	13	<	0	>	0	
			V/C	0.00	0.37	>		0.10	0.54	>		<	0.10	>		<	0.00	>		
			Q	0	0	>		3	0	>		<	3	>		<	0	>		
			Stor.	10	-	>		15	-	>		<	-	>		<	-	>		
			Avail.	10	-	>		12	-	>		<	-	>		<	-	>		

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

4.2.2 Total Traffic Operations

Table 4.3 summarizes the Opening-Year horizon total traffic level of service conditions.

AM Peak Hour

- Elizabeth Street & Lakeshore Road (Signalized)
  - Northbound Left-Turn: The 95th percentile queue is forecast to exceed the available storage by less than 5 m.
- Pearl Street & Lakeshore Road (Signalized)
  - Northbound Left-Turn: The 95th percentile queue is forecast to exceed the available storage by less than 25 m.
  - Southbound Left-Turn: The 95th percentile queue is forecast to exceed the available storage by less than 5 m.
- Old Lakeshore Road & Lakeshore Road (Unsignalized)
  - Northbound Approach: Forecast to operate at LOS D with a v/c ratio of 0.40. Although classified as a critical movement, this approach is expected to operate well within capacity (i.e. a v/c ratio of 0.40).

PM Peak Hour

- Elizabeth Street & Lakeshore Road (Signalized)
  - Northbound Left-Turn: The 95th percentile queue is forecast to exceed the available storage by less than 10 m.
- Pearl Street & Lakeshore Road (Signalized)
  - Northbound Left-Turn: The 95th percentile queue is forecast to exceed the available storage by approximately 40 m.
  - Southbound Left-Turn: The 95th percentile queue is forecast to exceed the available storage by less than 15 m.

The proposed site connection to Old Lakeshore Road is forecast to operate with acceptable levels of service. Delays for the site driveway are forecast to operate at LOS B or better with a v/c ratio less than 0.10 during the weekday peak hours. The 95th percentile queue length is expected to be less than one vehicle.

Appendix I contains the detailed Synchro 12 reports.

TABLE 4.3: OPENING YEAR HORIZON – TOTAL TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Elizabeth Street & Lakeshore Road	TCS	LOS	A	B	>	B	A	A	>	A	C	C	>	C	C	C	>	C	B
			Delay	9	12	>	12	7	9	>	9	31	30	>	31	31	30	>	30	12
			V/C	0.10	0.44	>		0.02	0.31	>		0.08	0.02	>		0.06	0.05	>		0.33
			Q	8	66	>		1	28	>		12	6	>		8	10	>		
			Stor.	40	-	>		30	-	>		10	-	>		20	-	>		
			Avail.	32	-	>		29	-	>		-2	-	>		12	-	>		
	Pearl Street & Lakeshore Road	TCS	LOS	A	A	>	A	A	A	>	A	D	D	>	D	D	D	>	D	B
			Delay	2	10	>	9	4	7	>	7	51	38	>	50	40	40	>	40	12
			V/C	0.05	0.71	>		0.01	0.42	>		0.68	0.05	>		0.05	0.02	>		0.71
			Q	2	113	>		1	76	>		41	7	>		7	6	>		
			Stor.	45	-	>		15	-	>		20	-	>		5	-	>		
			Avail.	43	-	>		14	-	>		-21	-	>		-2	-	>		
	Lakeshore Road & Martha Street	TWSC	LOS	A	A		A		A	>	A					C		>	C	
			Delay	9	0		0		0	>	0					16		>	16	
			V/C	0.03	0.54				0.31	>						0.20		>		
			Q	1	0				0	>						6		>		
			Stor.	15	-				-	>						-		>		
			Avail.	14	-				-	>						-		>		
	Old Lakeshore Road/Private Access & Lakeshore Road	TWSC	LOS	A	A	>	A	B	A	>	A	<	D	>	D	<	A	>	A	
			Delay	0	0	>	0	12	0	>	1	<	26	>	26	<	0	>	0	
			V/C	0.00	0.59	>		0.07	0.32	>		<	0.40	>		<	0.00	>		
			Q	0	0	>		2	0	>		<	14	>		<	0	>		
			Stor.	10	-	>		15	-	>		<	-	>		<	-	>		
			Avail.	10	-	>		13	-	>		<	-	>		<	-	>		
	Site Driveway & Old Lakeshore Road/Pearl Street	TWSC	LOS		A	>	A	<	A		A	A		>	A					
			Delay		0	>	0	<	1		1	9		>	9					
			V/C		0.06	>		<	0.00*			0.05		>						
			Q		0	>		<	0			1		>						
PM Peak Hour	Elizabeth Street & Lakeshore Road	TCS	LOS	A	B	>	B	A	A	>	A	D	D	>	D	D	D	>	D	B
			Delay	10	11	>	11	6	7	>	7	36	35	>	36	36	36	>	36	11
			V/C	0.15	0.39	>		0.05	0.41	>		0.13	0.05	>		0.13	0.09	>		0.33
			Q	9	61	>		1	32	>		17	11	>		15	15	>		
			Stor.	40	-	>		30	-	>		10	-	>		20	-	>		
			Avail.	31	-	>		29	-	>		-7	-	>		5	-	>		
	Pearl Street & Lakeshore Road	TCS	LOS	A	A	>	A	A	B	>	B	D	D	>	D	D	D	>	D	B
			Delay	5	9	>	9	7	17	>	17	48	36	>	47	39	38	>	38	17
			V/C	0.16	0.64	>		0.01	0.73	>		0.54	0.03	>		0.13	0.07	>		0.68
			Q	3	60	>		1	176	>		56	7	>		18	14	>		
			Stor.	45	-	>		15	-	>		20	-	>		5	-	>		
			Avail.	42	-	>		14	-	>		-36	-	>		-13	-	>		
	Lakeshore Road & Martha Street	TWSC	LOS	B	A		A		A	>	A					C		>	C	
			Delay	10	0		1		0	>	0					18		>	18	
			V/C	0.10	0.37				0.52	>						0.14		>		
			Q	2	0				0	>						4		>		
			Stor.	15	-				-	>						-		>		
			Avail.	13	-				-	>						-		>		
	Old Lakeshore Road/Private Access & Lakeshore Road	TWSC	LOS	A	A	>	A	A	A	>	A	<	B	>	B	<	A	>	A	
			Delay	0	0	>	0	10	0	>	1	<	13	>	13	<	0	>	0	
			V/C	0.00	0.37	>		0.13	0.54	>		<	0.14	>		<	0.00	>		
			Q	0	0	>		4	0	>		<	4	>		<	0	>		
			Stor.	10	-	>		15	-	>		<	-	>		<	-	>		
			Avail.	10	-	>		11	-	>		<	-	>		<	-	>		
	Site Driveway & Old Lakeshore Road/Pearl Street	TWSC	LOS		A	>	A	<	A		A	B		>	B					
			Delay		0	>	0	<	1		1	10		>	10					
			V/C		0.08	>		<	0.02			0.07		>						
			Q		0	>		<	0			2		>						

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

4.3 Five-Year Horizon

The study area intersection operational analysis follows the same methodology used for existing conditions. No changes to the existing lane configurations or traffic control are assumed.

4.3.1 Background Traffic Operations

Table 4.4 summarizes the Five-Year horizon background traffic level of service conditions.

AM Peak Hour

- Elizabeth Street & Lakeshore Road (Signalized)
  - Northbound Left-Turn: The 95th percentile queue is forecast to exceed the available storage by less than 5 m.
- Pearl Street & Lakeshore Road (Signalized)
  - Northbound Left-Turn: The 95th percentile queue is forecast to exceed the available storage by less than 20 m.
  - Southbound Left-Turn: The 95th percentile queue is forecast to exceed the available storage by less than 5 m.
- Old Lakeshore Road & Lakeshore Road (Unsignalized)
  - Northbound Approach: Forecast to operate at LOS D with a v/c ratio less than 0.35. Although classified as a critical movement, this approach is expected to operate well within capacity (i.e. a v/c ratio of 0.34).

PM Peak Hour

- Elizabeth Street & Lakeshore Road (Signalized)
  - Northbound Left-Turn: The 95th percentile queue is forecast to exceed the available storage by less than 10 m.
- Pearl Street & Lakeshore Road (Signalized)
  - Northbound Left-Turn: The 95th percentile queue is forecast to exceed the available storage by less than 30 m.
  - Southbound Left-Turn: The 95th percentile queue is forecast to exceed the available storage by less than 15 m.

Appendix H contains the detailed Synchro 12 reports.



TABLE 4.4: FIVE-YEAR HORIZON – BACKGROUND TRAFFIC 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	Elizabeth Street & Lakeshore Road	TCS	LOS	A	B	>	B	A	A	>	A	C	C	>	C	C	C	>	C	B
			Delay	10	12	>	12	7	9	>	9	31	30	>	31	31	30	>	30	12
			V/C	0.11	0.44	>		0.03	0.31	>		0.08	0.02	>		0.06	0.05	>		0.34
			Q	9	67	>		1	26	>		12	6	>		7	10	>		
			Stor.	40	-	>		30	-	>		10	-	>		20	-	>		
			Avail.	31	-	>		29	-	>		-2	-	>		13	-	>		
	Pearl Street & Lakeshore Road	TCS	LOS	A	A	>	A	A	A	>	A	D	D	>	D	D	D	>	D	B
			Delay	2	10	>	9	4	7	>	7	50	39	>	49	42	41	>	42	12
			V/C	0.05	0.71	>		0.01	0.43	>		0.65	0.05	>		0.06	0.02	>		0.70
			Q	1	116	>		1	76	>		36	6	>		7	6	>		
			Stor.	45	-	>		15	-	>		20	-	>		5	-	>		
			Avail.	44	-	>		14	-	>		-16	-	>		-2	-	>		
	Lakeshore Road & Martha Street	TWSC	LOS	A	A		A		A	>	A					C		>	C	
			Delay	9	0		0		0	>	0					16		>	16	
			V/C	0.03	0.57				0.33	>						0.22		>		
			Q	1	0				0	>						6		>		
			Stor.	15	-				-	>						-		>		
			Avail.	14	-				-	>						-		>		
	Old Lakeshore Road/Private Access & Lakeshore Road	TWSC	LOS	A	A	>	A	B	A	>	A	<	D	>	D	<	A	>	A	
			Delay	0	0	>	0	12	0	>	1	<	26	>	26	<	0	>	0	
			V/C	0.00	0.61	>		0.06	0.33	>		<	0.35	>		<	0.00	>		
			Q	0	0	>		1	0	>		<	11	>		<	0	>		
			Stor.	10	-	>		15	-	>		<	-	>		<	-	>		
			Avail.	10	-	>		14	-	>		<	-	>		<	-	>		
PM Peak Hour	Elizabeth Street & Lakeshore Road	TCS	LOS	A	B	>	B	A	A	>	A	D	D	>	D	D	D	>	D	B
			Delay	10	11	>	11	5	6	>	6	36	35	>	36	36	36	>	36	11
			V/C	0.16	0.39	>		0.05	0.41	>		0.13	0.05	>		0.12	0.09	>		0.34
			Q	10	62	>		1	29	>		17	12	>		15	16	>		
			Stor.	40	-	>		30	-	>		10	-	>		20	-	>		
			Avail.	30	-	>		29	-	>		-7	-	>		5	-	>		
	Pearl Street & Lakeshore Road	TCS	LOS	A	A	>	A	A	B	>	B	D	D	>	D	D	D	>	D	B
			Delay	6	9	>	9	7	18	>	18	44	36	>	44	39	38	>	38	17
			V/C	0.20	0.65	>		0.01	0.77	>		0.46	0.03	>		0.14	0.06	>		0.69
			Q	3	59	>		1	194	>		48	7	>		18	13	>		
			Stor.	45	-	>		15	-	>		20	-	>		5	-	>		
			Avail.	42	-	>		14	-	>		-28	-	>		-13	-	>		
	Lakeshore Road & Martha Street	TWSC	LOS	B	A		A		A	>	A					C		>	C	
			Delay	11	0		1		0	>	0					19		>	19	
			V/C	0.10	0.39				0.55	>						0.15		>		
			Q	3	0				0	>						4		>		
			Stor.	15	-				-	>						-		>		
			Avail.	12	-				-	>						-		>		
	Old Lakeshore Road/Private Access & Lakeshore Road	TWSC	LOS	A	A	>	A	A	A	>	A	<	B	>	B	<	A	>	A	
			Delay	0	0	>	0	10	0	>	1	<	14	>	14	<	0	>	0	
			V/C	0.00	0.39	>		0.11	0.56	>		<	0.11	>		<	0.00	>		
			Q	0	0	>		3	0	>		<	3	>		<	0	>		
			Stor.	10	-	>		15	-	>		<	-	>		<	-	>		
			Avail.	10	-	>		12	-	>		<	-	>		<	-	>		

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

4.3.2 Total Traffic Operations

Table 4.5 summarizes the Five-Year horizon total traffic level of service conditions.

AM Peak Hour

- Elizabeth Street & Lakeshore Road (Signalized)
  - Northbound Left-Turn: The 95th percentile queue is forecast to exceed the available storage by less than 5 m.
- Pearl Street & Lakeshore Road (Signalized)
  - Northbound Left-Turn: The 95th percentile queue is forecast to exceed the available storage by approximately 20 m.
  - Southbound Left-Turn: The 95th percentile queue is forecast to exceed the available storage by less than 5 m.
- Old Lakeshore Road & Lakeshore Road (Unsignalized)
  - Northbound Approach: Forecast to operate at LOS D with a v/c ratio less than 0.45. Although classified as a critical movement, this approach is expected to operate well within capacity (i.e. a v/c ratio of 0.44).

PM Peak Hour

- Elizabeth Street & Lakeshore Road (Signalized)
  - Northbound Left-Turn: The 95th percentile queue is forecast to exceed the available storage by less than 10 m.
- Pearl Street & Lakeshore Road (Signalized)
  - Northbound Left-Turn: The 95th percentile queue is forecast to exceed the available storage by less than 40 m.
  - Southbound Left-Turn: The 95th percentile queue is forecast to exceed the available storage by less than 15 m.

The proposed site connection to Old Lakeshore Road is forecast to operate with acceptable levels of service. Delays for the site driveway are forecast to operate at LOS B or better with a v/c ratio less than 0.10 during the weekday peak hours. The 95th percentile queue length is expected to be less than one vehicle.

Appendix I contains the detailed Synchro 12 reports.

TABLE 4.5: FIVE-YEAR HORIZON – TOTAL TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Elizabeth Street & Lakeshore Road	TCS	LOS	A	B	>	B	A	A	>	A	C	C	>	C	C	C	>	C	B
			Delay	10	12	>	12	7	9	>	9	31	30	>	31	31	30	>	30	12
			V/C	0.11	0.46	>		0.03	0.32	>		0.08	0.02	>		0.06	0.05	>		0.34
			Q	9	70	>		1	29	>		12	6	>		8	10	>		
			Stor.	40	-	>		30	-	>		10	-	>		20	-	>		
			Avail.	31	-	>		29	-	>		-2	-	>		12	-	>		
	Pearl Street & Lakeshore Road	TCS	LOS	A	B	>	B	A	A	>	A	D	D	>	D	D	D	>	D	B
			Delay	2	11	>	10	4	7	>	7	52	39	>	50	40	40	>	40	13
			V/C	0.06	0.75	>		0.01	0.44	>		0.68	0.05	>		0.05	0.02	>		0.73
			Q	2	128	>		1	81	>		40	7	>		7	6	>		
			Stor.	45	-	>		15	-	>		20	-	>		5	-	>		
			Avail.	43	-	>		14	-	>		-20	-	>		-2	-	>		
	Lakeshore Road & Martha Street	TWSC	LOS	A	A		A		A	>	A					C		>	C	
			Delay	9	0		0		0	>	0					16		>	16	
			V/C	0.03	0.57				0.33	>						0.22		>		
			Q	1	0				0	>						6		>		
			Stor.	15	-				-	>						-		>		
			Avail.	14	-				-	>						-		>		
	Old Lakeshore Road/Private Access & Lakeshore Road	TWSC	LOS	A	A	>	A	B	A	>	A	<	D	>	D	<	A	>	A	
			Delay	0	0	>	0	12	0	>	1	<	30	>	30	<	0	>	0	
			V/C	0.00	0.61	>		0.08	0.33	>		<	0.44	>		<	0.00	>		
			Q	0	0	>		2	0	>		<	16	>		<	0	>		
			Stor.	10	-	>		15	-	>		<	-	>		<	-	>		
			Avail.	10	-	>		13	-	>		<	-	>		<	-	>		
	Site Driveway & Old Lakeshore Road/Pearl Street	TWSC	LOS		A	>	A	<	A		A	A		>	A					
			Delay		0	>	0	<	1		1	9		>	9					
			V/C		0.06	>		<	0.00*			0.05		>						
			Q		0	>		<	0			1		>						
PM Peak Hour	Elizabeth Street & Lakeshore Road	TCS	LOS	A	B	>	B	A	A	>	A	D	D	>	D	D	D	>	D	B
			Delay	10	11	>	11	6	7	>	7	36	35	>	36	37	36	>	36	11
			V/C	0.16	0.40	>		0.06	0.43	>		0.13	0.05	>		0.13	0.09	>		0.35
			Q	10	64	>		2	33	>		17	12	>		16	16	>		
			Stor.	40	-	>		30	-	>		10	-	>		20	-	>		
			Avail.	30	-	>		28	-	>		-7	-	>		4	-	>		
	Pearl Street & Lakeshore Road	TCS	LOS	A	A	>	A	A	B	>	B	D	D	>	D	D	D	>	D	B
			Delay	6	10	>	10	7	18	>	18	48	37	>	47	39	38	>	38	18
			V/C	0.20	0.67	>		0.01	0.77	>		0.55	0.03	>		0.14	0.07	>		0.71
			Q	3	65	>		1	194	>		57	7	>		18	14	>		
			Stor.	45	-	>		15	-	>		20	-	>		5	-	>		
			Avail.	42	-	>		14	-	>		-37	-	>		-13	-	>		
	Lakeshore Road & Martha Street	TWSC	LOS	B	A		A		A	>	A					C		>	C	
			Delay	11	0		1		0	>	0					19		>	19	
			V/C	0.10	0.39				0.55	>						0.15		>		
			Q	3	0				0	>						4		>		
			Stor.	15	-				-	>						-		>		
			Avail.	12	-				-	>						-		>		
	Old Lakeshore Road/Private Access & Lakeshore Road	TWSC	LOS	A	A	>	A	A	A	>	A	<	B	>	B	<	A	>	A	
			Delay	0	0	>	0	10	0	>	1	<	14	>	14	<	0	>	0	
			V/C	0.00	0.39	>		0.14	0.56	>		<	0.15	>		<	0.00	>		
			Q	0	0	>		4	0	>		<	4	>		<	0	>		
			Stor.	10	-	>		15	-	>		<	-	>		<	-	>		
			Avail.	10	-	>		11	-	>		<	-	>		<	-	>		
	Site Driveway & Old Lakeshore Road/Pearl Street	TWSC	LOS		A	>	A	<	A		A	B		>	B					
			Delay		0	>	0	<	1		1	10		>	10					
			V/C		0.08	>		<	0.02			0.07		>						
			Q		0	>		<	0			2		>						

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

5 Remedial Measures

The following section discusses potential remedial measures that could be considered better to accommodate the forecasted traffic volumes in the study area.

5.1 Queuing Assessment

A queue assessment of the study area intersections was conducted to provide a more accurate assessment of the potential queues. SimTraffic was utilized rather than Synchro in this assessment, as microscopic models, such as SimTraffic, individually track each vehicle in the traffic system through the model and collect comprehensive operational measures of effectiveness for every vehicle during each 0.1-second interval of the simulation. Unlike Synchro, SimTraffic measures the full impact of queuing and blocking. Synchro is best suited for determining the level of service and delay at the macro level, but it is not ideal for assessments that simulate real-world conditions. The analysis consisted of five (5) iterations of sixty (60) minute simulations to forecast the delay per vehicle in seconds. **Appendix J** provides the SimTraffic results.

Table 5.1 summarizes the existing storage lengths and the forecast 95th percentile queue lengths under the existing year (2028) and 2033 background conditions, as well as the 2028 and 2033 total conditions.

AM Peak Hour

- Elizabeth Street & Lakeshore Road (Signalized)
  - The eastbound through-right lane is projected to exhibit a 95th percentile queue by up to 119 m, which may impact the operation of upstream intersections.
- Pearl Street & Lakeshore Road (Signalized)
  - The westbound through-right lane is projected to exhibit a 95th percentile queue by up to 71 m.
- Lakeshore Road & Martha Street (Unsignalized)
  - 95th percentile queues at all approaches are expected to be manageable, with lengths less than 30 m and are expected to operate with minimal delays.
- Old Lakeshore Road & Lakeshore Road (Unsignalized)
  - 95th percentile queues at all approaches are expected to be manageable, with lengths less than 30 m and are expected to operate with minimal delays.

PM Peak Hour

- Elizabeth Street & Lakeshore Road (Signalized)
  - The eastbound through-right lane is projected to exhibit a 95th percentile queue by up to 112 m, which may impact the operation of upstream intersections.
- Pearl Street & Lakeshore Road (Signalized)
  - The westbound through-right lane is projected to exhibit a 95th percentile queue by up to 115 m, which may impact the operation of upstream intersections.
- Lakeshore Road & Martha Street (Unsignalized)
  - 95th percentile queues at all approaches are expected to be manageable, with lengths up to 60 m and are expected to operate with minimal delays.
- Old Lakeshore Road & Lakeshore Road (Unsignalized)
  - 95th percentile queues at all approaches are expected to be manageable, with lengths less than 30 m and are expected to operate with minimal delays.

Most critical queues are exhibited along the eastbound and westbound approaches to the Lakeshore Road intersections, particularly at Elizabeth Street and Pearl Street, where high traffic volumes contribute to 95th percentile queues nearing or exceeding 100 m. SimTraffic accounts for vehicle congestion throughout the network, which results in longer queues at intersections.

TABLE 5.1: FORECAST QUEUE LENGTHS SUMMARY

Analysis Period	Intersection	Horizon Year	Direction/Movement/Approach Queue Length (m)											
			Eastbound			Westbound			Northbound			Southbound		
			Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
AM Peak Hour	Elizabeth Street & Lakeshore Road	2025 Base	24	110	>	6	25	>	14	13	>	11	18	>
		2028 Background	29	117	>	8	37	>	14	14	>	13	18	>
		2033 Background	31	116	>	9	34	>	14	13	>	16	19	>
		2028 Total	29	119	>	7	36	>	15	11	>	13	17	>
		2033 Total	36	113	>	8	39	>	14	15	>	12	20	>
	Pearl Street & Lakeshore Road	2025 Base	10	37	>	6	53	>	12	6	>	5	7	>
		2028 Background	11	51	>	6	70	>	32	40	>	6	10	>
		2033 Background	10	55	>	5	71	>	31	35	>	9	11	>
		2028 Total	14	51	>	5	65	>	32	39	>	8	11	>
		2033 Total	15	55	>	7	67	>	32	41	>	9	12	>
	Lakeshore Road & Martha Street	2025 Base	8	9			4	>				15		>
		2028 Background	10	13			9	>				24		>
		2033 Background	12	16			11	>				26		>
		2028 Total	10	15			11	>				25		>
		2033 Total	11	19			9	>				22		>
	Old Lakeshore Road/Private Access & Lakeshore Road	2025 Base	0	1	>	6	3	>	<	9	>	<	0	>
		2028 Background	0	16	>	12	5	>	<	20	>	<	0	>
		2033 Background	0	13	>	13	7	>	<	23	>	<	0	>
		2028 Total	0	15	>	14	6	>	<	28	>	<	0	>
		2033 Total	0	12	>	14	4	>	<	23	>	<	0	>
	Site Driveway & Old Lakeshore Road/Pearl Street	2028 Total		0	>	<	7		13		>			
		2033 Total		0	>	<	7		13		>			
PM Peak Hour	Elizabeth Street & Lakeshore Road	2025 Base	24	79	>	9	22	>	18	17	>	20	26	>
		2028 Background	30	111	>	10	34	>	18	18	>	21	24	>
		2033 Background	30	112	>	11	37	>	19	24	>	19	28	>
		2028 Total	29	109	>	11	39	>	19	18	>	19	24	>
		2033 Total	30	111	>	10	38	>	18	19	>	22	27	>
	Pearl Street & Lakeshore Road	2025 Base	16	37	>	2	100	>	23	6	>	12	18	>
		2028 Background	17	21	>	4	103	>	31	38	>	15	26	>
		2033 Background	25	53	>	4	112	>	32	39	>	15	26	>
		2028 Total	22	54	>	5	110	>	32	54	>	15	27	>
		2033 Total	28	60	>	7	115	>	31	48	>	15	25	>
	Lakeshore Road & Martha Street	2025 Base	13	10			24	>				13		>
		2028 Background	20	21			28	>				18		>
		2033 Background	23	33			60	>				26		>
		2028 Total	20	23			48	>				17		>
		2033 Total	22	39			49	>				19		>
	Old Lakeshore Road/Private Access & Lakeshore Road	2025 Base	0	9	>	10	10	>	<	8	>	<	0	>
		2028 Background	0	10	>	16	21	>	<	14	>	<	0	>
		2033 Background	0	10	>	17	26	>	<	14	>	<	0	>
		2028 Total	0	9	>	17	17	>	<	15	>	<	0	>
		2033 Total	0	10	>	18	24	>	<	18	>	<	0	>
	Site Driveway & Old Lakeshore Road/Pearl Street	2028 Total		7	>	<	13		17		>			
		2033 Total		0	>	<	13		17		>			

< / > - Shared with through movement

5.2 Traffic Control Signal

The unsignalized intersection of Lakeshore Road and Martha Street within the study area was assessed using the Ontario Traffic Manual (OTM Book 12 – Justification 7) signal warrant procedures. [12]. Specifically, the total traffic forecasts were assessed. **Appendix I** contains the warrant analysis.

Based on the warrant assessment, traffic control signals are not warranted at the unsignalized intersection of Lakeshore Road and Martha Street under the existing, forecast background, and forecast total traffic conditions.

5.3 Auxiliary Turn Lanes

The MTO *Design Supplement for the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads* [13] guides the assessment and/or need for auxiliary left-turn lanes. The warrant nomograph to determine if a left-turn lane is needed is based on the following criteria:

- Design speed of the road (posted speed + 10 km/h);
- Advancing volume;
- Opposing volume; and
- Percent of advancing vehicles performing a left-turn maneuver.

The movements were analyzed using the nomographs for left-turn lanes on two-lane undivided highways at unsignalized intersections. **Appendix K** contains the MTO left-turn lane nomographs for the site driveway intersections with Old Lakeshore Road.

The warrant analysis indicates that westbound left-turn lanes are not warranted along Old Lakeshore Road for the site driveway. No changes to the existing lane configuration are recommended.

[12] (Ministry of Transportation Ontario). Ontario Traffic Manual Book 12 Traffic Signals, Justification 7. (Ontario, March 2012).
[13] MTO Design Supplement for TAC Geometric Design Guide for Canadian Roads, June 2017 Appendix 9 for Chapter 9 Intersections

5.4 Multimodal Level of Service

Intersection **Level of Service** (LOS) is a recognized metric for categorizing the delay experienced by drivers at intersections. The term "Level of Service" refers to the efficiency with which a traffic movement operates under given traffic demands, lane arrangements, and traffic controls. It converts average delay at intersections into a scale from A to F, where A indicates the least delay and F indicates the most significant delay. The metric is extensively used in transportation planning, but it is limited to the experience of car drivers.

Multimodal Level of Service (MMLOS) extends this concept to incorporate the experience of modes beyond car drivers. It converts a variety of factors into a scale from A to F for each mode, where A indicates the best experience for users of that mode and F denotes the worst experience. As the output is a *set* of indicators, it reveals where changes have different (or opposite) effects on each mode.

This study has used the MMLOS guidelines created by the Ontario Traffic Council (OTC). [14] These were developed after reviewing national and international best practices in MMLOS analysis. **Table 5.2** outlines the street type classification assumed for the study area roadways.

TABLE 5.2: MMLOS STREET TYPE CLASSIFICATION

Roadway	Classification	MMLOS Applicable Classification
Lakeshore Road	Urban Main Street	Urban Main Street

5.5 Level of Service Targets

Based on the street type, the MMLOS guidelines provide base LOS targets, which ultimately identify the modes that should be prioritized. **Table 5.3** summarizes the base and adjusted LOS target (used in the analysis), as directed by the City of Burlington. The LOS for each user is based on the following criteria:

- Pedestrian LOS criteria include facility width, buffer width and maximum distance between controlled crossings.
- Cycling LOS criteria include facility width, buffer width and conflicts with other modes (in-lane conflicts and crossing point conflicts).

[14] Dillion Consulting. *Multi-Modal Level of Service Guidelines*. (Toronto: Ontario Traffic Council, 2022)

- Transit LOS criteria include the facility type, passenger amenities, and pedestrian level of service. The level of service for trucks is based on the width of the curb lane and the level of service for cars.
- Car LOS criteria relate to the mid-block v/c ratio and curb lane conflicts.

TABLE 5.3: MMLOS TARGETS PER STREET TYPE

Street Classification	Pedestrian	Bikes	Transit	Trucks	Cars
Urban Main Street	C	C	D	D	D

5.6 MMLOS Segment Analysis

Table 5.4 summarizes the MMLOS analysis for the roadways. The existing and future conditions for the segment's lengths are assumed to be the same.

Pedestrian MMLOS along Lakeshore Road between Elizabeth Street to Pearl Street is assessed to be in the A and C range, reaching the target of LOS C. Pedestrian MMLOS can be further improved between Pearl Street to Old Lakeshore Road/Private Driveway by widening the pedestrian facility width, increasing pedestrian buffer width, or by adding additional controlled crossings to reduce the maximum distance between crossings.

Cycling MMLOS along Lakeshore Road, between Elizabeth Street and Pearl Street, is not applicable as no dedicated cycling facilities are present along the assessed roadway segments. The City of Burlington Cycling Master Plan proposes a painted bikeway from Brant Street to Old Lakeshore Road, which can be expected to improve the cycling MMLOS in the future. Once these facilities are implemented, the cycling MMLOS can be further improved by increasing the bicycle facility and buffer widths.

Transit MMLOS along Lakeshore Road, between Elizabeth Street to Pearl Street is assessed to be in the C range, satisfying the target grade of LOS D. In contrast, Pearl Street to Old Lakeshore Road operate at LOS D. Passenger amenities such as shelters, seating, and posted schedules can help further enhance Transit MMLOS by improving comfort and accessibility at transit stops.

The truck MMLOS along Lakeshore Road, between Elizabeth Street and Pearl Street, is in the D range, meeting the target grade.

Car MMLOS along Lakeshore Road between Elizabeth Street and Pearl Street is in the B range, exceeding the target grade.

Appendix L contains the detailed MMLOS assessment.

TABLE 5.4: MMLOS SEGMENT ANALYSIS

Segment	Pedestrian	Bikes	Transit	Trucks	Cars
Lakeshore Road (Elizabeth Street to Pearl Street)	A	n/a	C	D	B
Lakeshore Road (Pearl Street to Martha Street)	C	n/a	D	D	B
Lakeshore Road (Martha Street to Old Lakeshore Road/Private Driveway)	C	n/a	D	D	B

6 Transportation Demand Management

Based on best practices and policy objectives, there is merit in further reducing transportation demand through a Transportation Demand Management (TDM) program.

A TDM plan aims to reduce the development's overall traffic and parking impacts by implementing strategies to affect the demand side of the transportation equation. TDM strategies include incentives and disincentives that increase people's likelihood of changing travel behaviour. Strategies include financial incentives, time incentives, new or enhanced commuter services, information dissemination, and alternative marketing services. Such methods include providing information on modes accessible to the site, bike parking, and the proper amount of parking.

The TDM plan has been formulated to extend reasonable and practical strategies that encourage residents and visitors to take alternative modes of transportation. The identified strategies are expected to enhance transportation access and connectivity for the proposed development.

6.1 Potential TDM Measures

The development will implement the proposed strategies identified herein to reduce the number of auto-trips made to/from the Development:

6.1.1 Transportation Information

Knowing which modes are available and accessible is a significant part of mode choice. As a component of the resident welcome packet, information on transportation options and links to the relevant websites should be provided to all prospective residents.

Available information should include schedules for local and regional transit services, bicycle and trail networks and the location of retail and recreational establishments.

6.1.2 Cycling

By providing additional opportunities and safeguards for residents who choose to travel to/from the development by cycling, sustainable transportation, and a reduction in automobile trips and parking requirements are expected to occur.

the City of Burlington City-Wide Parking Standards Review [15] provides guidelines regarding the amount of bicycle parking that should be provided. Based on the Parking Standard Review requirements:

- Residential:
  - Bicycle parking shall be provided at a rate of 0.5 long-term spaces per unit; and
  - 0.05 short-term bicycle parking spaces per unit.

Table 6.1 summarizes the required bicycle parking supply outlined by the Parking Standards Review. Based on the rates, the site should provide at least 25 long-term bicycle parking spaces and three short-term bicycle parking spaces to support a reduced parking supply.

The site statistics indicate a provision of 32 long-term and three short-term bicycle parking spaces, which meet or exceed the City's Zoning By-law requirement.

TABLE 6.1: REQUIRED BICYCLE PARKING SUPPLY

Land Use	Parking Type	Minimum Parking Rate	Parking Spaces Required	Parking Spaces Provided
Residential mixed-use building (50 units)	Short Term	0.05 spaces per dwelling unit	3	3
	Long Term	0.5 spaces per dwelling unit	25	32

[15] IBI Group, *Burlington City-Wide Parking Standards Review*, (Burlington: IBI Group, 2017), 116.

6.1.3 Walking

Similar to cycling, providing a safe and attractive environment for residents walking to/from the development will contribute to sustainable transportation.

Walking is encouraged by the provision of a pedestrian-friendly site layout that features an extensive network of sidewalks and entrances at key points both within the site and connecting to the existing pedestrian network. The site's connection to Old Lakeshore Road enhances pedestrian accessibility by strengthening overall connectivity to the surrounding network, including Lakeshore Road and the Waterfront Trail. This integrated network of pedestrian routes is intended to create a seamless and enjoyable walking experience for all site users.

By leveraging the future public sidewalk network to attract and serve pedestrians, combined with multiple pedestrian connections within the site, the development offers walkability as a key design feature.

6.1.4 Parking

A parking management plan recognizes the need to provide adequate parking but values strategies that result in more efficient use of parking resources and reduce the amount of parking needed at a particular location.

Rather than establishing generous parking requirements to satisfy the maximum potential demand that may occur, parking management allows contingency-based planning, which means that various solutions are identified which can be deployed if needed.

The single most significant contributor to the ubiquitous use of the SOV is the oversupply of inexpensive parking. By limiting parking supply, the developer provides a key ingredient in managing parking demand at the site. Reducing the parking supply to match but not exceed the expected demand can positively influence the selection of alternative travel modes.

As the development promotes the use of other modes of transportation through limited on-site parking to meet projected demand, it plays a significant role in setting an example for residents and visitors to consider non-automotive travel.

6.1.5 Unbundled Parking

Implementing a paid parking operation is one of the most effective TDM strategies for encouraging alternative travel habits. Occupants

are not forced to pay for parking they do not need; consumers can adjust their parking supply to reflect their needs. To further encourage apartment building residents to utilize sustainable travel modes, parking should be unbundled from the cost of the units.

This is an essential factor, as residents are notified at the project's onset that parking will be provided as an additional cost, in addition to the price of renting a unit. If residents are significantly considering changing their travel behaviour, the cost of renting a parking space could contribute to this change.

7 Conclusions and Recommendations

7.1 Conclusions

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

- **Study Area**: The intersections assessed in this study include:
  - Lakeshore Road and Old Lakeshore Road (unsignalized);
  - Lakeshore Road and Martha Street (unsignalized);
  - Lakeshore Road and Pearl Street/Old Lakeshore Road (signalized);
  - Lakeshore Road and Elizabeth Street (signalized); and
  - One proposed driveway connection to Old Lakeshore Road.
- **Existing Traffic Conditions:** The study area intersections operate at acceptable service levels and within capacity during the weekday peak hours. However, at the intersection of Elizabeth Street and Lakeshore Road, the 95th percentile queue length in the northbound left-turn lane exceeds the available storage during the weekday peak hour. The southbound left-turn lane at Pearl Street and Lakeshore Road also exhibits queues exceeding storage capacity at the 95th percentile during the weekday PM peak hour.
- **Trip Generation:** The site's vehicular trip generation is estimated to be approximately 84-102 weekday AM/PM peak-hour trips.
- **Heavy Vehicle Circulation:** No conflicts with the proposed on-site geometry are noted.
- **Background Traffic Conditions:** Under background traffic conditions, the critical movements identified in the base year traffic analysis are forecast to remain critical. Under the opening-year horizon, the northbound left-turn lane at Pearl Street and Lakeshore Road is forecast to exhibit 95th percentile queues that exceed the available storage during weekday peak hours.
- **Total Traffic Conditions:** Under total traffic conditions, operations at the study area intersections are similar to the base year and background conditions. Critical movement is forecast in the northbound approach at the intersection of Old Lakeshore Road and Lakeshore Road, degrading to LOS D during the weekday AM peak hour. However, this is common for minor roadways approaching a major road and is still expected to

operate with acceptable delays, as indicated by a v/c ratio of 0.44.

The driveway approach to Old Lakeshore Road is forecast to operate within capacity with a v/c ratio of less than 0.10 and delays of LOS B or better. The 95th percentile queue length is forecast to be one vehicle or less.

- **Remedial Measures:** Based upon the warrant assessment, traffic control signals are not warranted at the unsignalized intersections of Lakeshore Road at Martha Street and Lakeshore Road at Old Lakeshore Road.

  The site's driveway connection to Old Lakeshore Road should operate under stop control.

  The left-turn warrant analysis indicates that the westbound left-turn lanes are not warranted on Old Lakeshore Road at the Site Driveway. No changes to the existing lane configuration are recommended along Old Lakeshore Road.

- **Transportation Demand Management:** The proposed development includes TDM measures such as bicycle parking to encourage cycling and pedestrian facilities to provide accessibility to and from the development.

  The applicant will consider developing marketing or informational materials outlining available transportation options, which could be shared with future residents and hotel guests as part of a welcome package. These materials may include transit schedules for local and regional services, maps of bicycle routes and trail networks, as well as the locations of nearby retail and recreational destinations.

  By limiting on-site parking to match projected demand, the development encourages the use of alternative transportation modes. In doing so, it sets a positive example for residents and visitors to reduce reliance on single-occupant vehicles (SOV) and consider more sustainable travel options.

- **MMLOS Assessment:** The existing study area segments and intersections along Lakeshore Road meet or exceed the level of service targets for pedestrians, transit, trucks, and cars. To further improve these modes, the City of Burlington should explore enhanced transit facilities, wider sidewalks, improved pedestrian measures, and protected cycling facilities.

7.2 Recommendations

Based on the findings of this study, the following is recommended:

- The City of Burlington recognizes the conclusions drawn above.
- The City may explore reallocating street space along Lakeshore Road to enhance pedestrian and cycling facilities, including wider sidewalks, increased pedestrian buffers, additional transit facilities, and protected cycling lanes, to improve MMLOS targets further.
- The site's TDM program should be implemented and monitored over time to help manage its transportation and parking impacts.

Appendix A

Terms of Reference

Outlook

RE: 250220: 2076 Old Lakeshore Road, Burlington - Transportation Impact Study - Terms of Reference

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From Napoli, Derek <Derek.Napoli@burlington.ca>
Date Fri 2025-04-25 3:27 PM
To Brian Kim <bkim@ptsl.com>
Cc Adam Makarewicz <amakarewicz@ptsl.com>; Lucas, Sandra <Sandra.Lucas@burlington.ca>

Hi Brian,

Please find our comments in red text for the Terms of Reference. Let me know if you have any questions or if you would like to discuss.

Proposed Terms of Reference including Transportation Planning Comments in red text

Generally, follow Halton Region's Transportation Impact Study Guidelines.

Study Area Intersections
- Lakeshore Road and Old Lakeshore Road (unsignalized)
- Lakeshore Road and Martha Street (unsignalized)
- Lakeshore Road and Peal Street/Old Lakeshore Road (signalized)
- Lakeshore Road and Elizabeth Street (signalized)
- Up to two site driveways

Existing Data
- TMCs to be collected by Paradigm.
- The following standard practices for collecting turning movement count data must be followed:
  - The counts are conducted on a "typical" mid-week weekday (Tuesday, Wednesday or Thursday),
  - Avoid counts during the Thanksgiving and Christmas holidays (mid-December to mid-January),
  - Avoid counts during March Break, and
  - Avoid counts during the summer (mid June to mid September).

Horizon Years
- 2025 Base Year
- Full build-out year if before 2030 or five years from date of the study (2030)
- Five years post full build-out or 2035

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

Analysis
- Synchro 12
- HCM 2000 – Synchro output files must be submitted with the report.
- SimTraffic Queueing (five 60-min iterations) – include an assessment of queueing lengths and SimTraffic output files must be submitted with the report.

- Following the City's IMP, development location is within the downtown Enhanced Pedestrian Realm, adjacent to cycling routes, and a future transit priority corridor, therefore a Multimodal Level of Service (MMLOS) analysis is required. The analysis must evaluate the benefits of "complete streets" design option for Lakeshore Road. Additionally, MMLOS analysis must identify the area where the transportation system needs improvement, prioritize investments in transportation infrastructure and inform transportation planning and policy decision. The City's MMLOS Targets for each travel mode will be provided upon request.

Background Traffic

- Generalized growth rate 1% per annum
- **Please identify any adjacent development applications to include in the traffic forecast.**
  - 2072 Lakeshore Road
  - 2083 Old Lakeshore Road
  - 374 Martha Street
  - 2107 Old Lakeshore Road & 2119 Lakeshore Road
  - 2093, 2097, 2101 Old Lakeshore Road & 2096, 2100 Lakeshore Road
  - 2069-2079 Lakeshore Road & 383-385 Pearl Street

Future Road Improvements

- Lakeshore Road Resurfacing - 2027 Between Brant Street and Torrance Avenue. The City's Integrated Mobility Plan identifies an enhanced pedestrian realm and buffered bike lanes from Brant Street to Martha Street.
- Note that the lane configuration at the Lakeshore Road and Pearl Street intersection shall be coded with only a single eastbound receiving lane, as the existing curb lane ends only 30 metres after the intersection.

Site Traffic Estimates

- ITE Trip Generation Data On-line Edition – site traffic volume estimates shall be based on full build-out and/or maximum land use intensity allowed.
- Assessment of site generated transit demand on transit services and stops that are expected to experience a ridership increase of 5% or more.
- No modal split reductions

Site Traffic Distribution

- Existing travel patterns/TTS data

Parking and Loading

- The City of Burlington Zoning By-law 2020 will be reviewed for parking and loading requirements.
- If a parking reduction is proposed, appropriate analyses and justification will be provided to demonstrate the adequacy of the proposed supply.
  - Prior to conducting any Parking Surveys, a list of comparable proxy sites shall be submitted to the City for approval.
- The City of Burlington Site Plan Application Guidelines will be reviewed for underground parking garage requirements.

Access and Circulation Review

- ACR will be conducted to ensure compliance of the proposed development plan with review agency requirements and applicable industry guidelines
- The ACR will ensure that vehicular movements can be accommodated at the proposed driveway access(es), loading bay, surface and underground parking stalls, drive aisles, and parking garage ramps.

TDM Plan

- Will outline existing and proposed TDM measures that will aid in reducing single occupancy vehicle trips and increase the mode share active transportation and transit modes. Assess their likely effectiveness for the proposed development
- TDM measures should extend beyond general information sharing. Please include specific strategies along with their anticipated outcomes.

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

Regards,
Derek Napoli, C.E.T.
Transportation Planning Technologist
Transportation Services Department
(905) 335-7600 ext.7972
derek.napoli@burlington.ca

City of Burlington Logo
Our working hours may be different. You are not obligated to reply outside of your typical working hours.

From: Napoli, Derek
Sent: Tuesday, April 22, 2025 3:26 PM
To: Brian Kim <bkim@ptsl.com>
Cc: Adam Makarewicz <amakarewicz@ptsl.com>; Lucas, Sandra <Sandra.Lucas@burlington.ca>
Subject: RE: 250220: 2076 Old Lakeshore Road, Burlington - Transportation Impact Study - Terms of Reference

Hi Brian,

I hope you had a great long weekend. We're still finalizing a few details on our comments for the ToR, so they're not quite ready yet. We'll be sure to get them over to you before the end of the week.

Regards,
Derek Napoli, C.E.T.
Transportation Planning Technologist
Transportation Services Department
(905) 335-7600 ext.7972
derek.napoli@burlington.ca

City of Burlington Logo
Our working hours may be different. You are not obligated to reply outside of your typical working hours.

From: Brian Kim <bkim@ptsl.com>
Sent: Tuesday, April 22, 2025 10:50 AM
To: Mailbox, Transportation Planning <devapptransportationplanning@burlington.ca>
Cc: Adam Makarewicz <amakarewicz@ptsl.com>; Napoli, Derek <Derek.Napoli@burlington.ca>
Subject: Re: 250220: 2076 Old Lakeshore Road, Burlington - Transportation Impact Study - Terms of Reference

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Sandra,

I hope you're doing well. Just wanted to follow up on this.

Thanks!

Brian Kim
Transportation Consultant

5A-150 Pinebush Road, Cambridge ON, N1R 8J8
p: 905.381.2229 x301
e: bkim@ptsl.com
w: www.ptsl.com

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

From: Mailbox, Transportation Planning <devapptransportationplanning@burlington.ca>
Sent: April 9, 2025 10:35 AM
To: Brian Kim <bkim@ptsl.com>
Cc: Adam Makarewicz <amakarewicz@ptsl.com>; Napoli, Derek <Derek.Napoli@burlington.ca>; Mailbox, Transportation Planning <devapptransportationplanning@burlington.ca>
Subject: RE: 250220: 2076 Old Lakeshore Road, Burlington - Transportation Impact Study - Terms of Reference

Thanks Brian,

We will get back to you.

Regards

Sandra Lucas (she/her)
Supervisor of Transportation Planning
Transportation Services Department

MAIN: 905-335-7600 ext 7401
sandra.lucas@burlington.ca

426 Brant Street P.O. Box 5013, Burlington, Ontario, L7R 3Z6

Our working hours may be different. You are not obligated to reply outside of your typical working hours.

From: Brian Kim <bkim@ptsl.com>
Sent: April 7, 2025 4:13 PM
To: Mailbox, Transportation Planning <devapptransportationplanning@burlington.ca>
Cc: Adam Makarewicz <amakarewicz@ptsl.com>
Subject: 250220: 2076 Old Lakeshore Road, Burlington - Transportation Impact Study - Terms of Reference

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hello,

Paradigm Transportations Solutions Limited has been retained to conduct a Transportation Impact Study for a proposed development at 2076 Old Lakeshore Road, currently operating as the Ascot Motel in the City of Burlington. The applicant is proposing to construct a 28-story mixed-use development containing 187 hotel rooms (floors 1-14), shared amenity space (floor 15), and 82 residential units (floors 16-28). Regarding parking, the site plan included two levels of an automated underground parking system that will provide 82 parking spaces. Vehicle access is proposed via two driveway connections to Old Lakeshore Road.

We'd like to prepare our report based on the following scope, subject to your comments:

Proposed Terms of Reference

Study Area Intersections

- Lakeshore Road and Old Lakeshore Road (unsignalized)
- Lakeshore Road and Martha Street (unsignalized)
- Lakeshore Road and Peal Street/Old Lakeshore Road (signalized)
- Up to two site driveways

Existing Data

- TMCs to be collected by Paradigm.

Horizon Years

- 2025 Base Year
- Five years from date of the study (2030)

Analysis Periods

- Weekday AM peak hour
- Weekday PM peak hour

Analysis

- Synchro 12
- HCM 2000
- SimTraffic Queueing (five 60-min iterations)

Background Traffic

- Generalized growth rate 1% per annum
- **Please identify any adjacent development applications to include in the traffic forecast.**

Site Traffic Estimates

- ITE Trip Generation Data On-line Edition
- No modal split reductions

Site Traffic Distribution

- Existing travel patterns/TTS data

Access and Circulation Review

- ACR will be conducted to ensure compliance of the proposed development plan with review agency requirements and applicable industry guidelines

TDM Plan

- Will outline existing and proposed TDM measures and assess their likely effectiveness for the proposed development

Report

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

Please let us know if you have any comments on the proposed study.

Thank you,

Brian Kim
Transportation Consultant

5A-150 Pinebush Road, Cambridge ON, N1R 8J8
p: 905.381.2229 x301
e: bkim@ptsl.com
w: www.ptsl.com

Paradigm operates on a four-day workweek. Our offices are closed on Fridays.
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This message, including any attachments, is privileged and intended only for the addressee(s) named above. If you are not the intended recipient, you must not read, use or disseminate the information contained in this email/fax. If you have received this email/fax transmission in error, please notify the sender immediately by telephone, fax or email and permanently delete this email from your computer/shred this fax, including any attachments, without making a copy. Access to this email/fax by anyone else is unauthorized. Thank you.

Appendix B

Existing Traffic Data



Lakeshore Rd @ Martha St

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 10:00:00

One Hour Peak
From: 7:45:00
To: 8:45:00

Municipality: Burlington
Site #: 0000000002
Intersection: Lakeshore Rd & Martha St
TFR File #: 2
Count date: 15-Apr-2025

Weather conditions:
Clear/Dry

Person(s) who counted:
Pyramid Traffic Inc

**** Non-Signalized Intersection ****

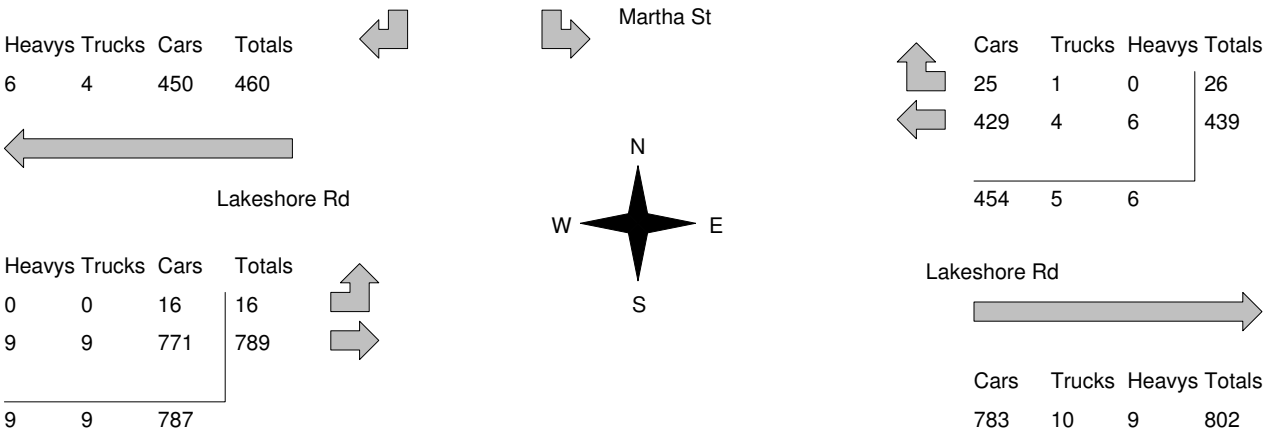
Major Road: Lakeshore Rd runs W/E

North Leg Total: 76
North Entering: 34
North Peds: 14
Peds Cross: ⋈

Heavys	0	0	0
Trucks	0	1	1
Cars	21	12	33
Totals	21	13	

Heavys	0
Trucks	1
Cars	41
Totals	42

East Leg Total: 1267
East Entering: 465
East Peds: 1
Peds Cross: ⧖



Peds Cross: ⧖
West Peds: 8
West Entering: 805
West Leg Total: 1265

Comments

Lakeshore Rd @ Martha St

Mid-day Peak Diagram

Specified Period
From: 11:00:00
To: 14:00:00

One Hour Peak
From: 11:00:00
To: 12:00:00

Municipality: Burlington
Site #: 0000000002
Intersection: Lakeshore Rd & Martha St
TFR File #: 2
Count date: 15-Apr-2025

Weather conditions:
Clear/Dry

Person(s) who counted:
Pyramid Traffic Inc

**** Non-Signalized Intersection ****

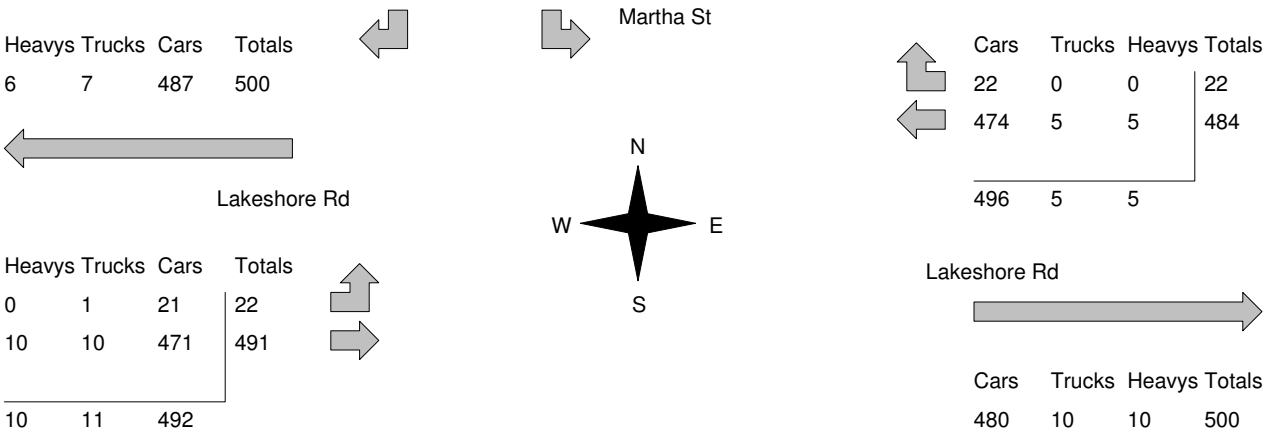
Major Road: Lakeshore Rd runs W/E

North Leg Total: 69
North Entering: 25
North Peds: 5
Peds Cross: ⋈

Heavys	1	0	1
Trucks	2	0	2
Cars	13	9	22
Totals	16	9	

Heavys	0
Trucks	1
Cars	43
Totals	44

East Leg Total: 1006
East Entering: 506
East Peds: 6
Peds Cross: ⧖



Peds Cross: ⧖
West Peds: 9
West Entering: 513
West Leg Total: 1013

Comments

Lakeshore Rd @ Martha St

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 18:00:00

One Hour Peak
From: 15:30:00
To: 16:30:00

Municipality: Burlington
Site #: 0000000002
Intersection: Lakeshore Rd & Martha St
TFR File #: 2
Count date: 15-Apr-2025

Weather conditions:
Clear/Dry

Person(s) who counted:
Pyramid Traffic Inc

**** Non-Signalized Intersection ****

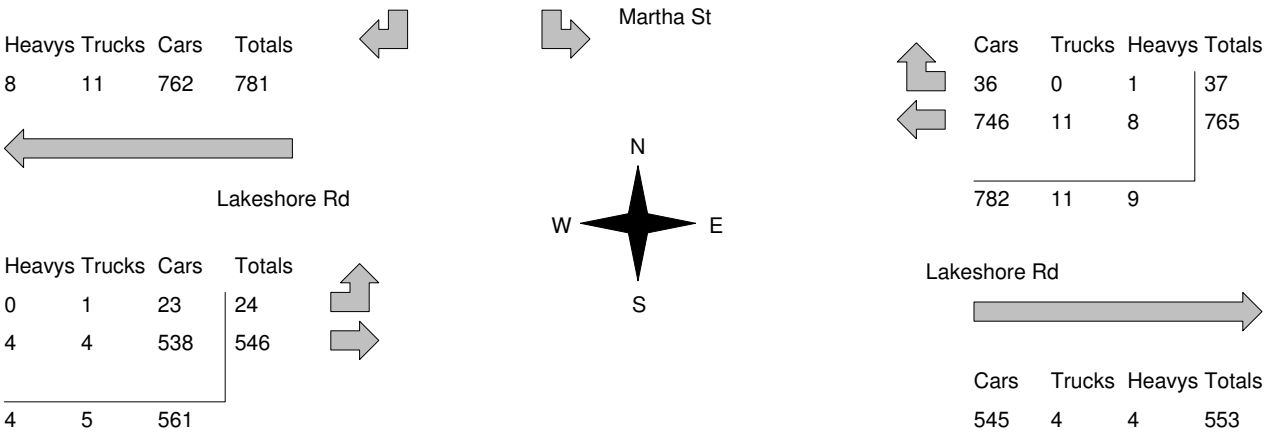
Major Road: Lakeshore Rd runs W/E

North Leg Total: 84
North Entering: 23
North Peds: 7
Peds Cross: ⋈

Heavys	0	0	0
Trucks	0	0	0
Cars	16	7	23
Totals	16	7	

Heavys	1
Trucks	1
Cars	59
Totals	61

East Leg Total: 1355
East Entering: 802
East Peds: 3
Peds Cross: ⧖



Peds Cross: ⧖
West Peds: 10
West Entering: 570
West Leg Total: 1351

Comments

Lakeshore Rd @ Martha St

Total Count Diagram

Municipality: Burlington
Site #: 0000000002
Intersection: Lakeshore Rd & Martha St
TFR File #: 2
Count date: 15-Apr-2025

Weather conditions:
Clear/Dry

Person(s) who counted:
Pyramid Traffic Inc

**** Non-Signalized Intersection ****

Major Road: Lakeshore Rd runs W/E

North Leg Total: 696
North Entering: 215
North Peds: 73
Peds Cross: ⋈

Heavys	3	0	3
Trucks	2	2	4
Cars	146	62	208
Totals	151	64	

Heavys	3
Trucks	8
Cars	470
Totals	481

East Leg Total: 9975
East Entering: 4835
East Peds: 31
Peds Cross: ⧖

Martha St

Heavys	Trucks	Cars	Totals
68	48	4611	4727

Cars	Trucks	Heavys	Totals
253	4	2	259
4465	46	65	4576
4718	50	67	

Lakeshore Rd

N
W E
S

Heavys	Trucks	Cars	Totals
1	4	217	222
73	55	4948	5076
74	59	5165	

Lakeshore Rd

Cars	Trucks	Heavys	Totals
5010	57	73	5140

Peds Cross: ⧖
West Peds: 56
West Entering: 5298
West Leg Total: 10025

Comments

Lakeshore Rd @ Old Lakeshore Rd

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 10:00:00

One Hour Peak
From: 7:45:00
To: 8:45:00

Municipality: Burlington
Site #: 0000000003
Intersection: Lakeshore Rd & Old Lakeshore Rd
TFR File #: 3
Count date: 15-Apr-2025

Weather conditions:
Clear/Dry

Person(s) who counted:
Pyramid Traffic Inc

**** Non-Signalized Intersection ****

Major Road: Lakeshore Rd runs W/E

North Leg Total: 0
North Entering: 0
North Peds: 11
Peds Cross: ⋈

Heavys	0	0	0	0
Trucks	0	0	0	0
Cars	0	0	0	0
Totals	0	0	0	

Heavys	0
Trucks	0
Cars	0
Totals	0

East Leg Total: 1287
East Entering: 472
East Peds: 3
Peds Cross: ⧖

Heavys	Trucks	Cars	Totals
9	5	452	466

Driveway

Cars	Trucks	Heavys	Totals
0	0	0	0
450	5	9	464
8	0	0	8
458	5	9	

Lakeshore Rd

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W E
S

Heavys	Trucks	Cars	Totals
0	0	0	0
9	9	779	797
0	1	2	3
9	10	781	

Lakeshore Rd

Cars	Trucks	Heavys	Totals
797	9	9	815

Old Lakeshore Rd

Peds Cross: ⧖
West Peds: 1
West Entering: 800
West Leg Total: 1266

Cars	10
Trucks	1
Heavys	0
Totals	11

Cars	2	0	18	20
Trucks	0	0	0	0
Heavys	0	0	0	0
Totals	2	0	18	

Peds Cross: ⋈
South Peds: 1
South Entering: 20
South Leg Total: 31

Comments

Lakeshore Rd @ Old Lakeshore Rd

Mid-day Peak Diagram

Specified Period
From: 11:00:00
To: 14:00:00

One Hour Peak
From: 11:00:00
To: 12:00:00

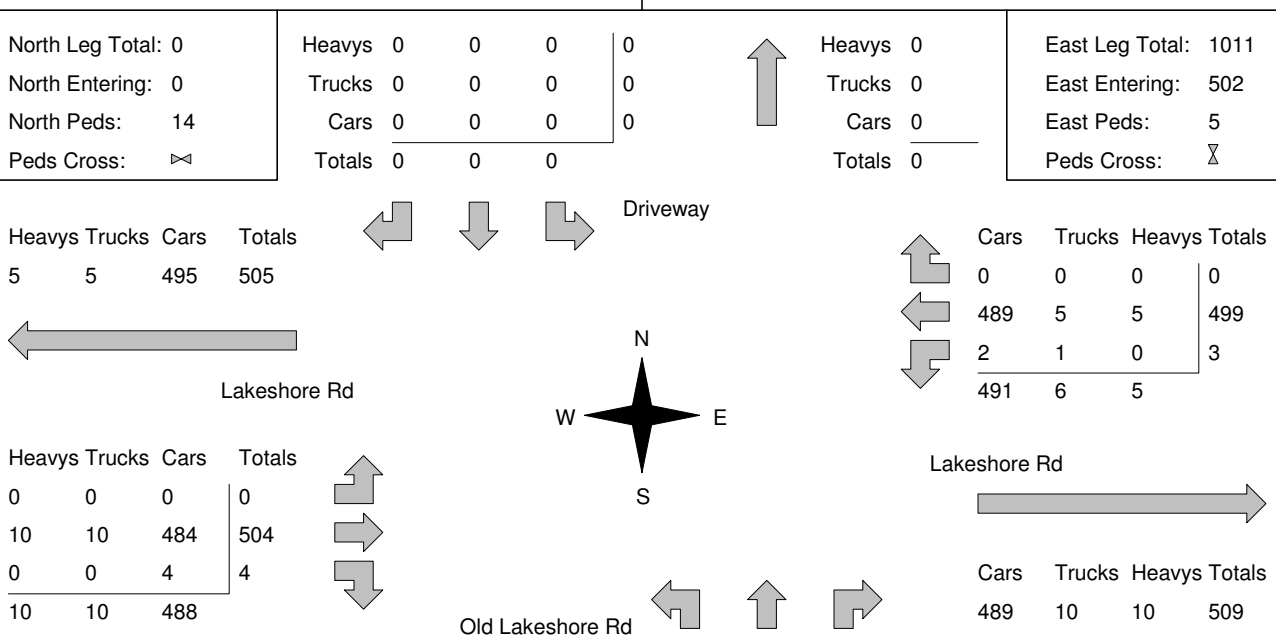
Municipality: Burlington
Site #: 0000000003
Intersection: Lakeshore Rd & Old Lakeshore Rd
TFR File #: 3
Count date: 15-Apr-2025

Weather conditions:
Clear/Dry

Person(s) who counted:
Pyramid Traffic Inc

**** Non-Signalized Intersection ****

Major Road: Lakeshore Rd runs W/E



Comments

Lakeshore Rd @ Old Lakeshore Rd

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 18:00:00

One Hour Peak
From: 15:30:00
To: 16:30:00

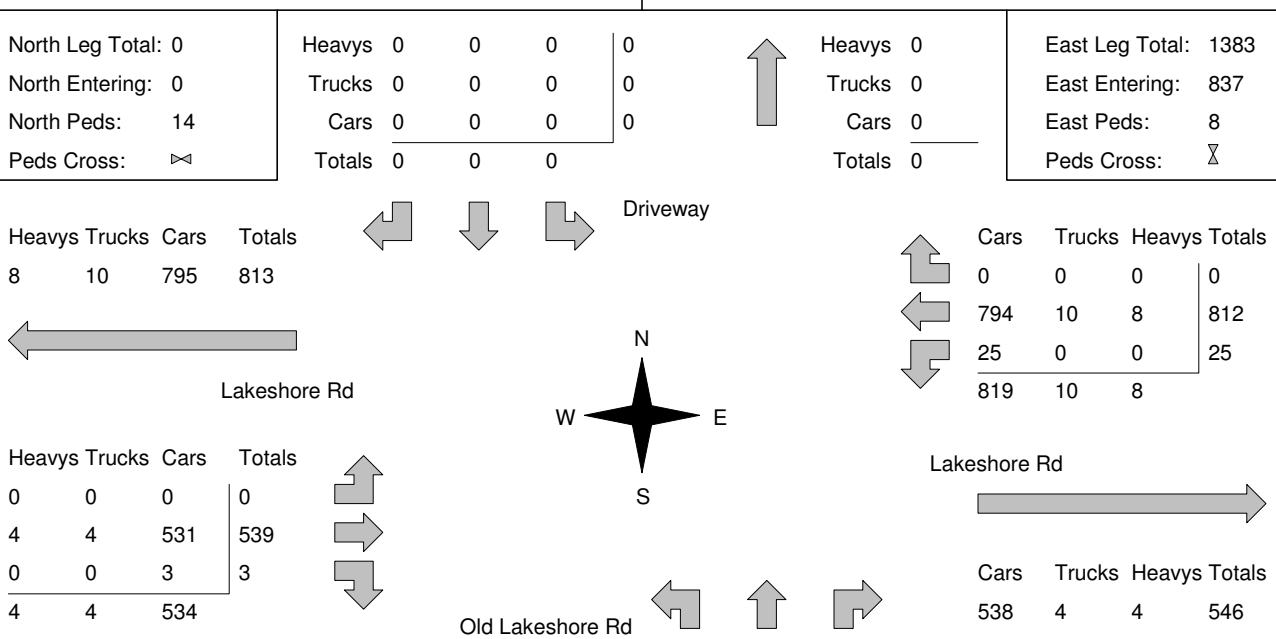
Municipality: Burlington
Site #: 0000000003
Intersection: Lakeshore Rd & Old Lakeshore Rd
TFR File #: 3
Count date: 15-Apr-2025

Weather conditions:
Clear/Dry

Person(s) who counted:
Pyramid Traffic Inc

**** Non-Signalized Intersection ****

Major Road: Lakeshore Rd runs W/E



Comments

Lakeshore Rd @ Old Lakeshore Rd

Total Count Diagram

Municipality: Burlington
Site #: 0000000003
Intersection: Lakeshore Rd & Old Lakeshore Rd
TFR File #: 3
Count date: 15-Apr-2025

Weather conditions:
Clear/Dry

Person(s) who counted:
Pyramid Traffic Inc

**** Non-Signalized Intersection ****

Major Road: Lakeshore Rd runs W/E

North Leg Total: 0
North Entering: 0
North Peds: 122
Peds Cross: ⋈

Heavys	0	0	0	0
Trucks	0	0	0	0
Cars	0	0	0	0
Totals	0	0	0	

Heavys	0
Trucks	0
Cars	0
Totals	0

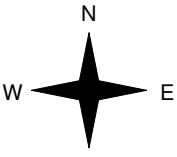
East Leg Total: 10072
East Entering: 4910
East Peds: 67
Peds Cross: ⧖

Heavys	Trucks	Cars	Totals
67	50	4719	4836

Driveway

Cars	Trucks	Heavys	Totals
0	0	0	0
4693	50	67	4810
99	1	0	100
4792	51	67	

Lakeshore Rd



Heavys	Trucks	Cars	Totals
0	0	0	0
74	53	4953	5080
1	1	20	22
75	54	4973	

Lakeshore Rd

Cars	Trucks	Heavys	Totals
5033	55	74	5162

Old Lakeshore Rd

Peds Cross: ⧖
West Peds: 7
West Entering: 5102
West Leg Total: 9938

Cars	119
Trucks	2
Heavys	1
Totals	122

Cars	26	0	80	106
Trucks	0	0	2	2
Heavys	0	0	0	0
Totals	26	0	82	

Peds Cross: ⋈
South Peds: 19
South Entering: 108
South Leg Total: 230

Comments

Lakeshore Rd @ Pearl St

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 10:00:00

One Hour Peak
From: 7:45:00
To: 8:45:00

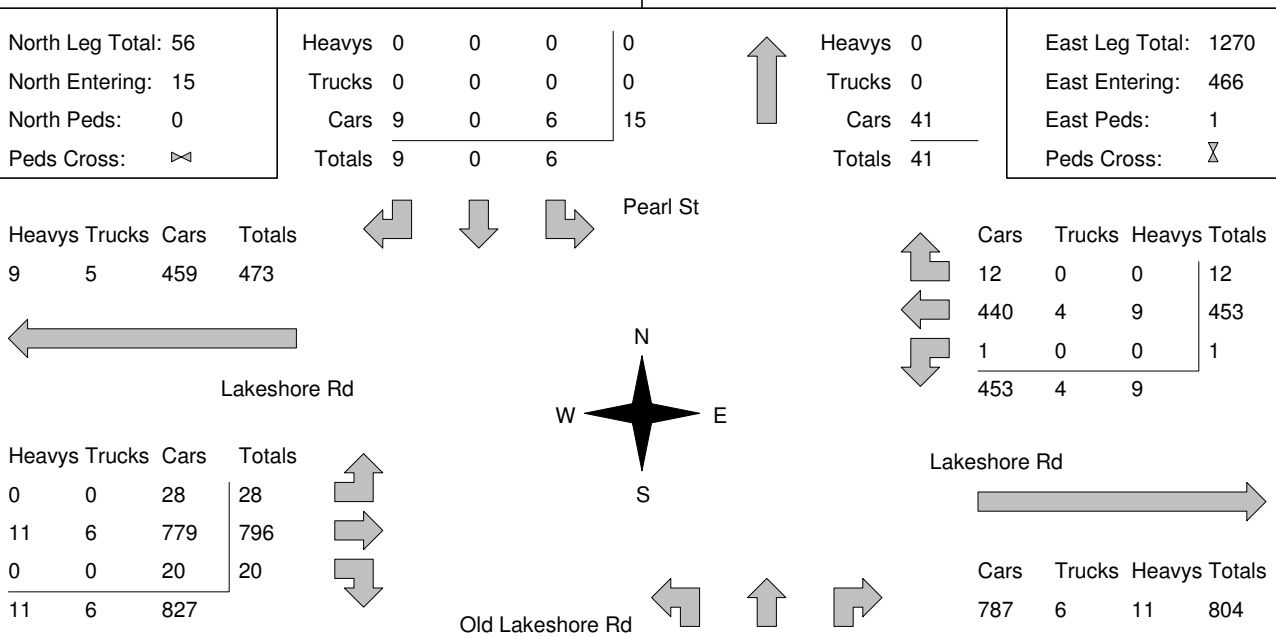
Municipality: Burlington
Site #: 0000000001
Intersection: Lakeshore Rd & Pearl St
TFR File #: 1
Count date: 15-Apr-2025

Weather conditions:
Clear/Dry

Person(s) who counted:
Pyramid Traffic Inc

**** Signalized Intersection ****

Major Road: Lakeshore Rd runs W/E



Comments

Lakeshore Rd @ Pearl St

Mid-day Peak Diagram

Specified Period
From: 11:00:00
To: 14:00:00

One Hour Peak
From: 11:30:00
To: 12:30:00

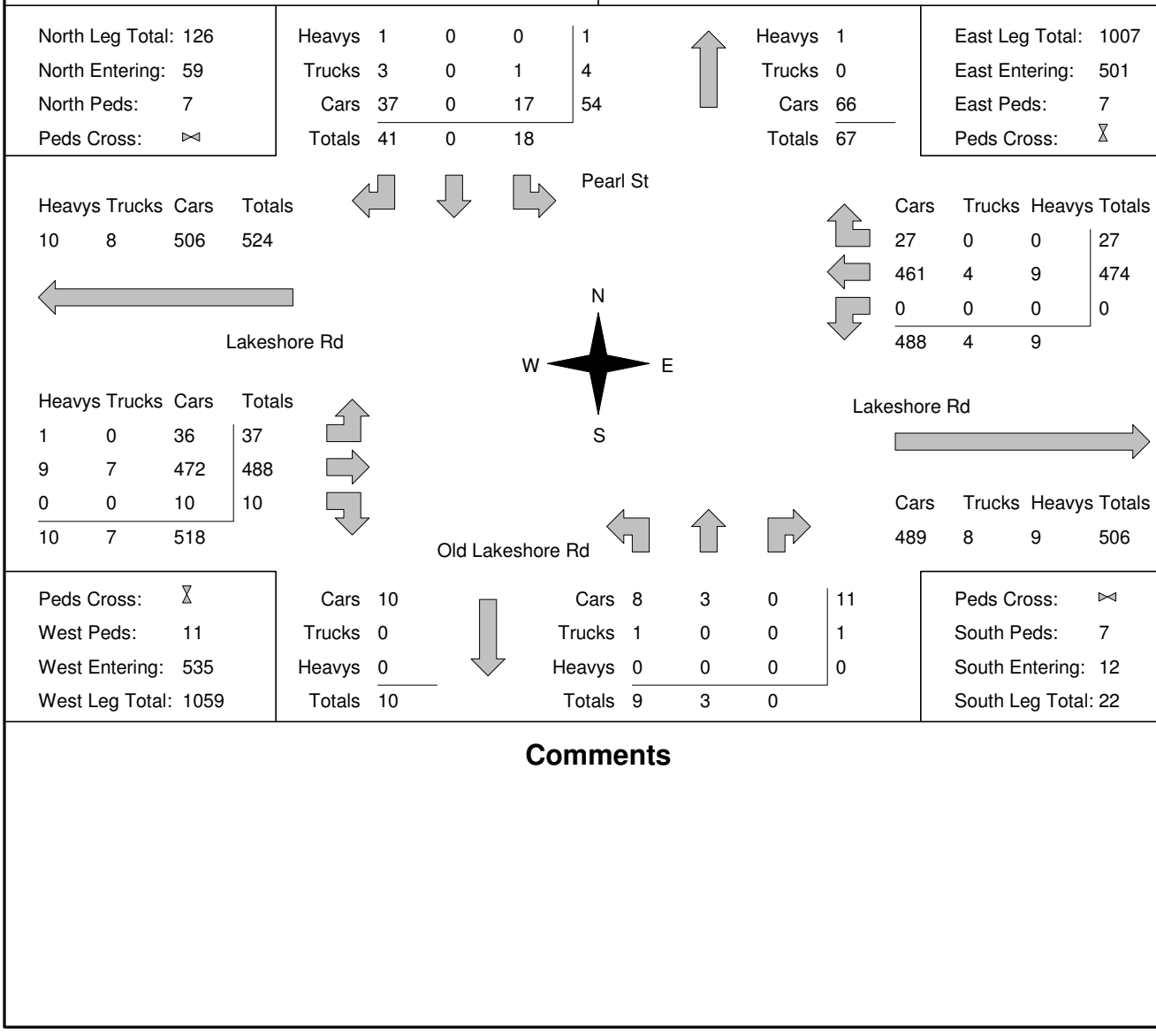
Municipality: Burlington
Site #: 0000000001
Intersection: Lakeshore Rd & Pearl St
TFR File #: 1
Count date: 15-Apr-2025

Weather conditions:
Clear/Dry

Person(s) who counted:
Pyramid Traffic Inc

**** Signalized Intersection ****

Major Road: Lakeshore Rd runs W/E



Comments

Lakeshore Rd @ Pearl St

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 18:00:00

One Hour Peak
From: 15:00:00
To: 16:00:00

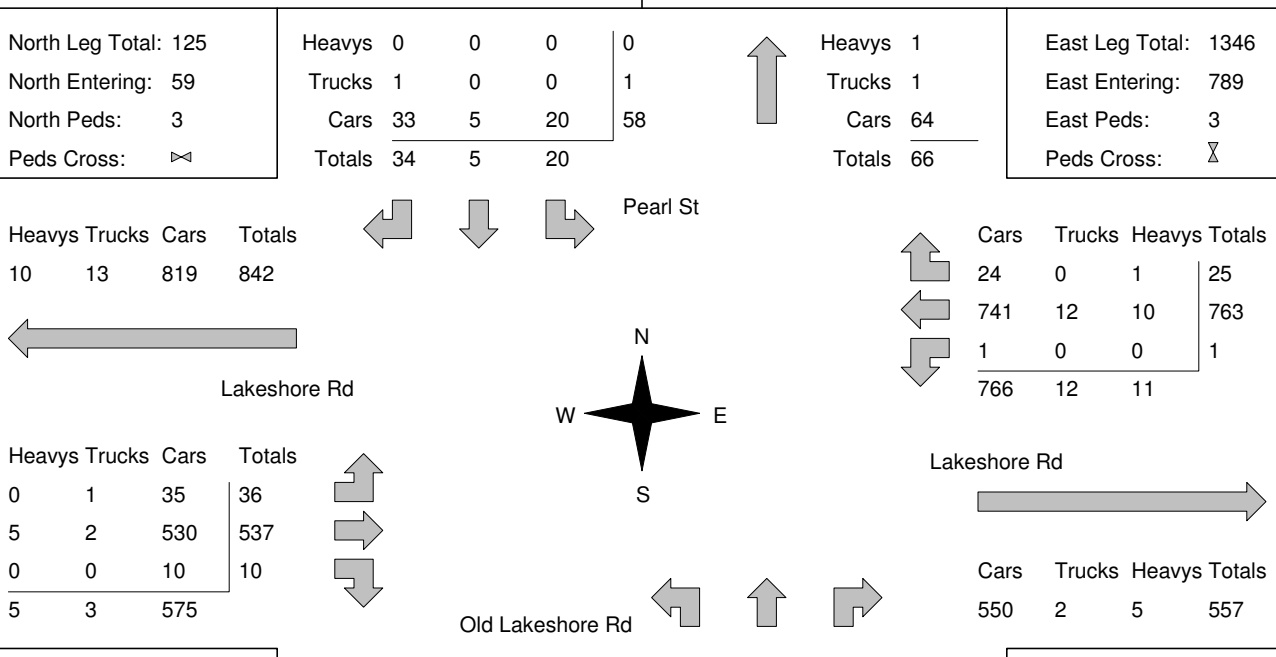
Municipality: Burlington
Site #: 0000000001
Intersection: Lakeshore Rd & Pearl St
TFR File #: 1
Count date: 15-Apr-2025

Weather conditions:
Clear/Dry

Person(s) who counted:
Pyramid Traffic Inc

**** Signalized Intersection ****

Major Road: Lakeshore Rd runs W/E



Comments

Lakeshore Rd @ Pearl St

Total Count Diagram

Municipality: Burlington
Site #: 0000000001
Intersection: Lakeshore Rd & Pearl St
TFR File #: 1
Count date: 15-Apr-2025

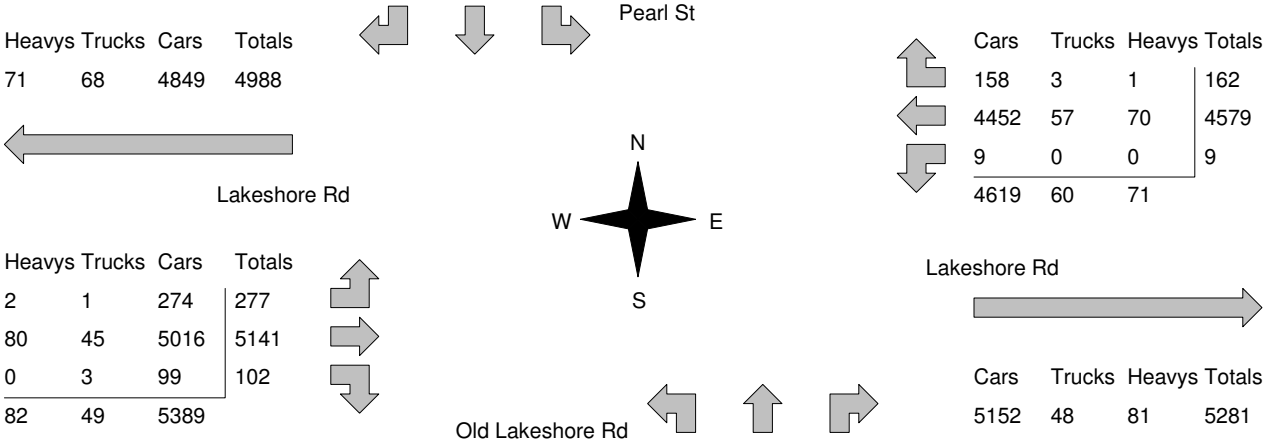
Weather conditions:
Clear/Dry

Person(s) who counted:
Pyramid Traffic Inc

**** Signalized Intersection ****

Major Road: Lakeshore Rd runs W/E

North Leg Total:	882			
North Entering:	412			
North Peds:	22			
Peds Cross:	⋈			
Heavys	1	0	1	2
Trucks	9	1	3	13
Cars	259	15	123	397
Totals	269	16	127	
Heavys	3			
Trucks	5			
Cars	462			
Totals	470			
East Leg Total:	10031			
East Entering:	4750			
East Peds:	19			
Peds Cross:	⧖			



Peds Cross:	⧖							Peds Cross:	⋈
West Peds:	196							South Peds:	55
West Entering:	5520							South Entering:	184
West Leg Total:	10508							South Leg Total:	311
Cars	123			Cars	138	30	13	181	
Trucks	4			Trucks	2	1	0	3	
Heavys	0			Heavys	0	0	0	0	
Totals	127			Totals	140	31	13		

Comments

Lakeshore Rd @ Elizabeth St

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 10:00:00

One Hour Peak
From: 7:45:00
To: 8:45:00

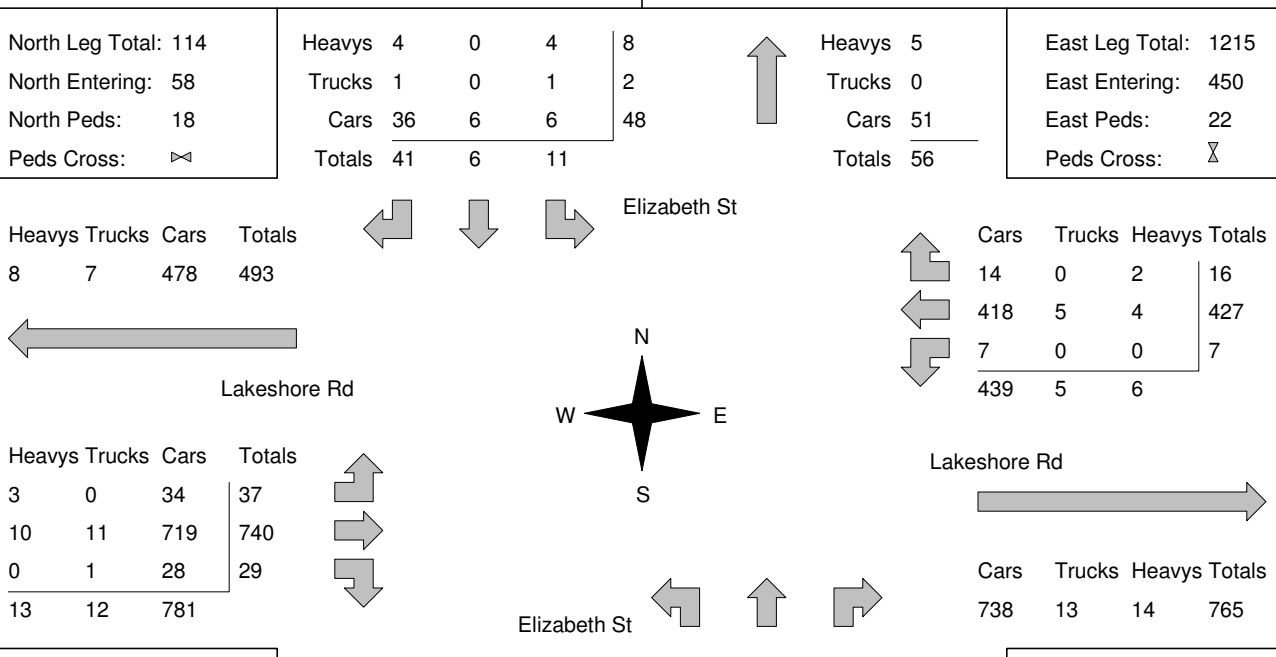
Municipality: Burlington
Site #: 0000000001
Intersection: Lakeshore Rd & Elizabeth St
TFR File #: 1
Count date: 14-May-2025

Weather conditions:
Cloudy/Dry

Person(s) who counted:
Pyramid Traffic Inc

**** Signalized Intersection ****

Major Road: Lakeshore Rd runs W/E



Comments

Lakeshore Rd @ Elizabeth St

Mid-day Peak Diagram

Specified Period
From: 11:00:00
To: 14:00:00

One Hour Peak
From: 13:00:00
To: 14:00:00

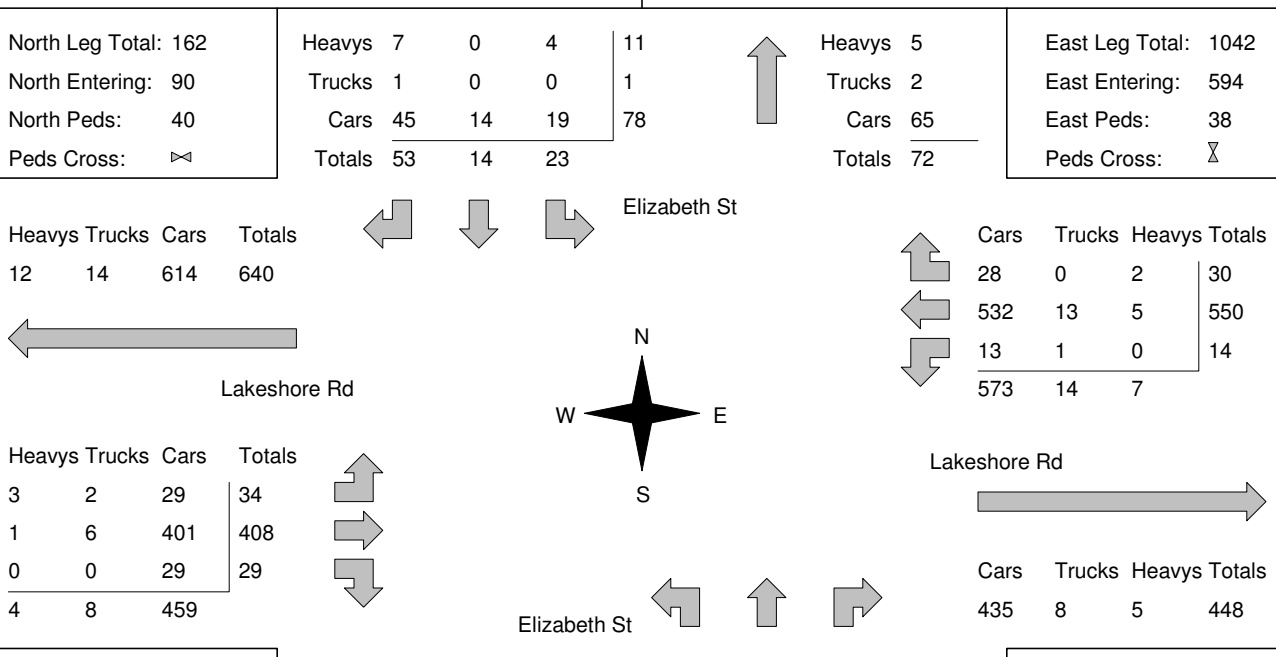
Municipality: Burlington
Site #: 0000000001
Intersection: Lakeshore Rd & Elizabeth St
TFR File #: 1
Count date: 14-May-2025

Weather conditions:
Cloudy/Dry

Person(s) who counted:
Pyramid Traffic Inc

**** Signalized Intersection ****

Major Road: Lakeshore Rd runs W/E



Comments

Lakeshore Rd @ Elizabeth St

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 18:00:00

One Hour Peak
From: 15:45:00
To: 16:45:00

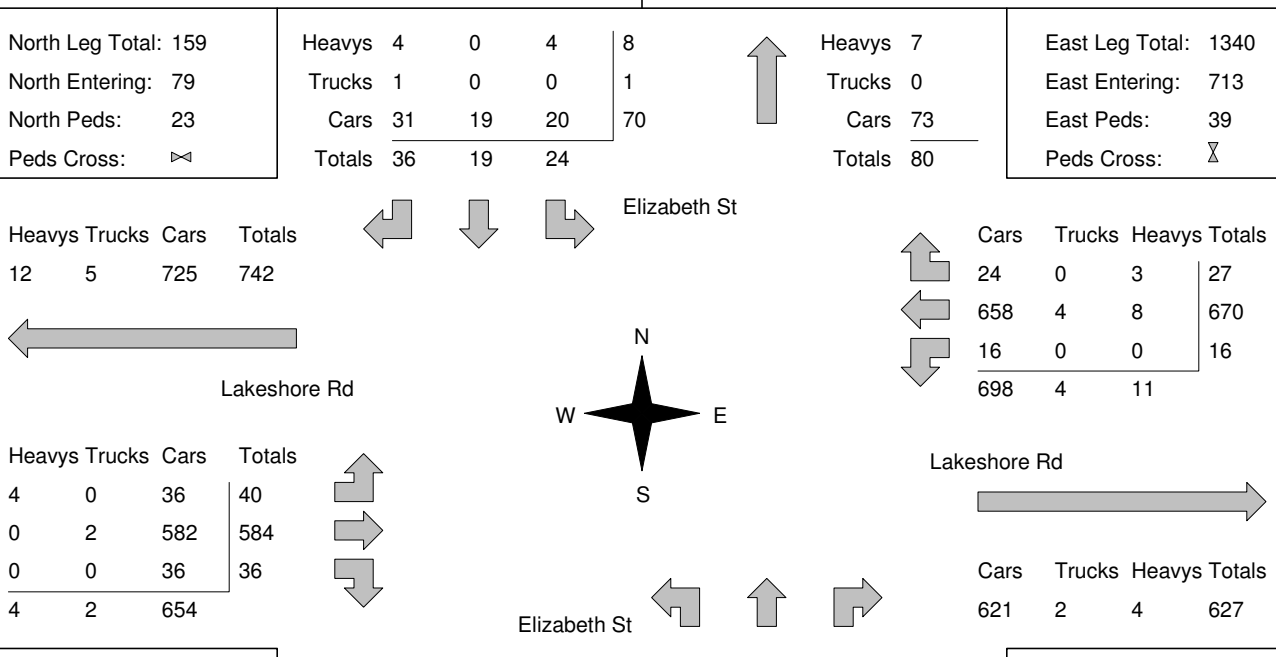
Municipality: Burlington
Site #: 0000000001
Intersection: Lakeshore Rd & Elizabeth St
TFR File #: 1
Count date: 14-May-2025

Weather conditions:
Cloudy/Dry

Person(s) who counted:
Pyramid Traffic Inc

**** Signalized Intersection ****

Major Road: Lakeshore Rd runs W/E



Comments

Lakeshore Rd @ Elizabeth St

Total Count Diagram

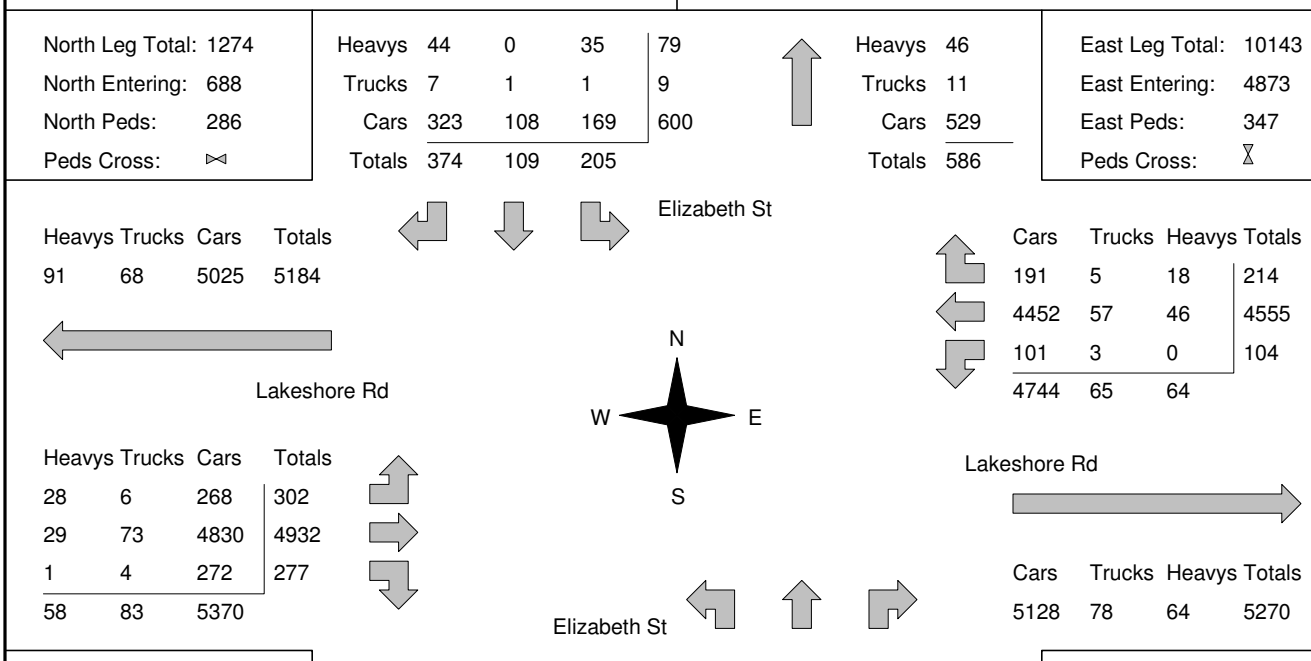
Municipality: Burlington
Site #: 0000000001
Intersection: Lakeshore Rd & Elizabeth St
TFR File #: 1
Count date: 14-May-2025

Weather conditions:
Cloudy/Dry

Person(s) who counted:
Pyramid Traffic Inc

**** Signalized Intersection ****

Major Road: Lakeshore Rd runs W/E



Comments

Intersection Name:	TS ID:	Controller Make:	Model:	IP address:
Lakeshore Road @ Elizabeth Street	211	Econolite	ASC/3	172.24.42.2

*-Start from Main Menu

Type of Operation: 8 Phase Semi-Actuated

No	Date			Description	Prepared by
	Y	M	D		
13	2023	8	31	Implement new weekend coord plan	PT
14	2023	9	27	Implement LPI	MA
15	2025	4	10	Optimization	JR

PHASE DESCRIPTION

Ph1		Ph5	
Ph2	EB - Lakeshore Rd	Ph6	WB - Lakeshore Rd
Ph3		Ph7	
Ph4	NB - Elizabeth St	Ph8	SB - Elizabeth St

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

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

CONTROLLER TIMING DATA - VEHICLE TIMING * - 2 - 1

Timing Plan: 1

	Phase: 1	2	3	4	5	6	7	8
Minimum Green		8		8		8		8
Bike Minimum Green								
Delay Green				6				6
Walk		16		8		16		8
Ped. Clearance		18		21		18		21
Vehicle Extension		3		3		3		3
MAX 1		35		30		35		30
MAX 2		35		30		35		30
Yellow Change		4		4		4		4
Red Clearance		3		3		3		3
Phase Minimum:	**0**	**41**	**0**	**36**	**0**	**41**	**0**	**36**

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

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

4/8 during PM Peak only

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

Coordinator Pattern (CP)	Cycle Length	Offset (sec)	Timing Plan	Split Pattern	Phases (sec)							
					1	2	3	4	5	6	7	8
1	110	42	1	1	11	63		36		74		36
2	100	46	1	2	11	53		36		64		36
3	120	56	1	3	11	73		36		84		36
4	90	84	1	4	0	49		41		49		41
5	110	49	1	5	0	60		50		60		50
10			1	254								

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

Day Plan	Sched. #	Action Plan	Time Period	Pattern	Timing Plan
1	1	4	06:30	4	1
1	1	1	07:00	1	1
1	1	2	09:00	2	1
1	1	3	15:30	3	1
1	1	4	19:00	4	1
2	2	1	07:00	1	1
2	2	5	18:00	5	1
2	2	10	23:00	254	1
2	2	1	08:30	1	1
2	2	5	18:00	5	1
2	2	10	22:00	254	1

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

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

Action Plan 10 = free (254)

Special Programming: **4/8 ped recall on during weekday PM peak only**

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

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

Intersection Name:	TS ID:	Controller Make:	Model:	IP address:
Lakeshore Road @ Pearl Street	212	Econolite	ASC/3	172.24.43.2

*-Start from Main Menu

Type of Operation: 8 Phase Semi-Actuated

No	Date			Description	Prepared by
	Y	M	D		
13	2023	11	27	Revert back timings	MA
14	2024	4	8	Revert back timings	MA
15	2025	4	10	Optimization	JR

PHASE DESCRIPTION

Ph1		Ph5	
Ph2	EB - Lakeshore Rd	Ph6	WB - Lakeshore Rd
Ph3		Ph7	
Ph4	NB - Pearl St	Ph8	SB - Pearl St

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

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

CONTROLLER TIMING DATA - VEHICLE TIMING * - 2 - 1

Timing Plan: 1

	Phase: 1	2	3	4	5	6	7	8
Minimum Green		8		8		8		8
Bike Minimum Green								
Delay Green				5				5
Walk		16		8		16		8
Ped. Clearance		17		17		17		17
Vehicle Extension		3		3		3		3
MAX 1		35		25		35		25
MAX 2		35		25		35		25
Yellow Change		4		4		4		4
Red Clearance		3		3		3		3
Phase Minimum:	0	40	0	32	0	40	0	32

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

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

4/8 during PM Peak only

COORDINATION: COORDINATOR PATTERN, SPLIT PATTERN

* - 3 - 2, - 3 - 3

Coordinator Pattern (CP)	Cycle Length	Offset (sec)	Timing Plan	Split Pattern	Phases (sec)							
					1	2	3	4	5	6	7	8
1	110	42	1	1		77		33		77		33
2	100	44	1	2		67		33		67		33
3	120	51	1	3		87		33		87		33
4	90	88	1	4		57		33		57		33
10			1	254								

TIME BASE: ACTION PLAN, DAY PLAN

* - 5 - 2, - 5 - 3, -5 - 4

Day Plan	Sched. #	Action Plan	Time Period	Pattern	Timing Plan
1	1	4	06:30	4	1
1	1	1	07:00	1	1
1	1	2	09:00	2	1
1	1	3	15:30	3	1
1	1	4	19:00	4	1
1	1	10	20:30	254	1
2	2	1	07:00	1	1
2	2	10	20:30	254	1
3	3	1	08:30	1	1
3	3	10	20:30	254	1

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

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

Action Plan 10 = free (254)

Special Programming: **Phase 4/8 ped recall on during weekday PM Peak only**

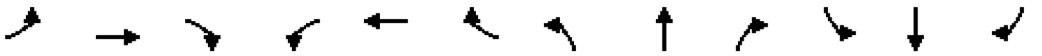
TIME BASE DATA - TIME OF YEAR EVENTS

* - 5 - 5

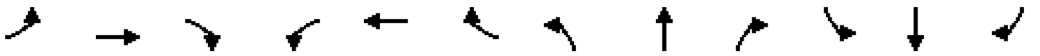
Events	Exception Day		MON/ MON	DOW/ DOW	WOM/ Year	Day Plan
New Year's Day	1	Fixed	1	1	0	3
Family Day	2	Float				3
Good Friday	3	Float				3
Victoria Day	4	Float				3
Canada Day	5	Fixed	7	1	0	3
Civic Day	6	Float				3
Labour Day	7	Float				3
Thanksgiving	8	Float				3
Christmas Day	9	Fixed	12	25	0	3

Appendix C

Base Year Traffic Operation Reports



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	740	29	7	427	16	25	3	14	11	6	41
Future Volume (vph)	37	740	29	7	427	16	25	3	14	11	6	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		15.0	30.0		0.0	10.0		0.0	20.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98	1.00		0.99	1.00		0.99	0.97		0.98	0.98	
Frt		0.994			0.995			0.875			0.868	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1690	3515	0	1825	3541	0	1755	1540	0	1259	1476	0
Flt Permitted	0.482			0.310			0.724			0.746		
Satd. Flow (perm)	844	3515	0	589	3541	0	1322	1540	0	964	1476	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			6			15			44	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		106.8			55.1			68.6			100.8	
Travel Time (s)		7.7			4.0			4.9			7.3	
Confl. Peds. (#/hr)	18		23	23		18	11		22	22		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 (%)	8%	3%	3%	0%	2%	13%	4%	0%	7%	45%	0%	12%
Adj. Flow (vph)	39	787	31	7	454	17	27	3	15	12	6	44
Shared Lane Traffic (%)												
Lane Group Flow (vph)	39	818	0	7	471	0	27	18	0	12	50	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	41.0	41.0		41.0	41.0		36.0	36.0		36.0	36.0	
Total Split (s)	74.0	74.0		74.0	74.0		36.0	36.0		36.0	36.0	
Total Split (%)	67.3%	67.3%		67.3%	67.3%		32.7%	32.7%		32.7%	32.7%	
Maximum Green (s)	67.0	67.0		67.0	67.0		29.0	29.0		29.0	29.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		Max	Max		Max	Max	
Walk Time (s)	16.0	16.0		16.0	16.0		8.0	8.0		8.0	8.0	
Flash Don't Walk (s)	18.0	18.0		18.0	18.0		21.0	21.0		21.0	21.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	67.0	67.0		67.0	67.0		29.0	29.0		29.0	29.0	
Actuated g/C Ratio	0.61	0.61		0.61	0.61		0.26	0.26		0.26	0.26	
v/c Ratio	0.08	0.38		0.02	0.22		0.08	0.04		0.05	0.12	
Control Delay (s/veh)	9.4	11.5		6.6	8.6		31.4	15.8		31.0	11.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	9.4	11.5		6.6	8.6		31.4	15.8		31.0	11.7	
LOS	A	B		A	A		C	B		C	B	
Approach Delay (s/veh)		11.4			8.6			25.1			15.4	
Approach LOS		B			A			C			B	
Queue Length 50th (m)	3.2	43.4		0.6	23.0		4.4	0.5		1.9	1.0	
Queue Length 95th (m)	7.7	55.3		m1.4	28.3		11.4	6.0		6.8	10.1	
Internal Link Dist (m)		82.8			31.1			44.6			76.8	
Turn Bay Length (m)	40.0			30.0			10.0			20.0		
Base Capacity (vph)	514	2143		358	2159		348	417		254	421	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	47		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.08	0.39		0.02	0.22		0.08	0.04		0.05	0.12	

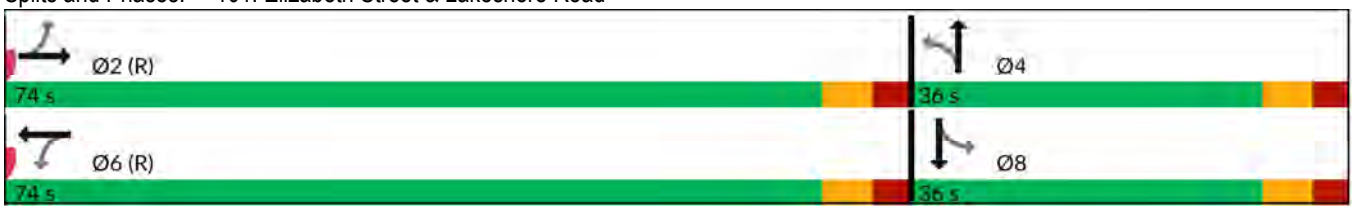
Intersection Summary	
Area Type:	Other
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 42 (38%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.38	
Intersection Signal Delay (s/veh): 11.1	Intersection LOS: B

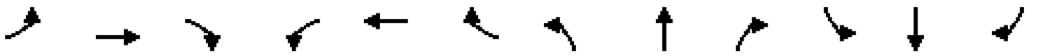
Intersection Capacity Utilization 66.6% ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 101: Elizabeth Street & Lakeshore Road

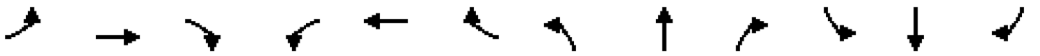




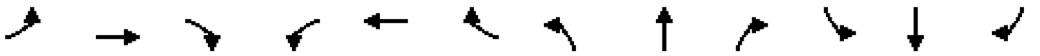
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	740	29	7	427	16	25	3	14	11	6	41
Future Volume (vph)	37	740	29	7	427	16	25	3	14	11	6	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.97		1.00	0.98	
Flpb, ped/bikes	0.98	1.00		0.99	1.00		0.99	1.00		0.98	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.88		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1664	3516		1805	3539		1734	1540		1228	1476	
Flt Permitted	0.48	1.00		0.31	1.00		0.72	1.00		0.75	1.00	
Satd. Flow (perm)	844	3516		589	3539		1323	1540		964	1476	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	39	787	31	7	454	17	27	3	15	12	6	44
RTOR Reduction (vph)	0	2	0	0	2	0	0	11	0	0	32	0
Lane Group Flow (vph)	39	816	0	7	469	0	27	7	0	12	18	0
Confl. Peds. (#/hr)	18		23	23		18	11		22	22		11
Heavy Vehicles (%)	8%	3%	3%	0%	2%	13%	4%	0%	7%	45%	0%	12%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	67.0	67.0		67.0	67.0		29.0	29.0		29.0	29.0	
Effective Green, g (s)	67.0	67.0		67.0	67.0		29.0	29.0		29.0	29.0	
Actuated g/C Ratio	0.61	0.61		0.61	0.61		0.26	0.26		0.26	0.26	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	514	2141		358	2155		348	406		254	389	
v/s Ratio Prot		c0.23			0.13			0.00			0.01	
v/s Ratio Perm	0.05			0.01			c0.02			0.01		
v/c Ratio	0.08	0.38		0.02	0.22		0.08	0.02		0.05	0.05	
Uniform Delay, d1	8.8	10.9		8.5	9.7		30.4	30.0		30.2	30.2	
Progression Factor	1.00	1.00		0.74	0.87		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.5		0.1	0.2		0.4	0.1		0.4	0.2	
Delay (s)	9.1	11.5		6.4	8.7		30.9	30.0		30.5	30.4	
Level of Service	A	B		A	A		C	C		C	C	
Approach Delay (s/veh)		11.4			8.6			30.5			30.4	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	11.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	66.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	796	20	1	453	12	11	1	2	6	0	9
Future Volume (vph)	28	796	20	1	453	12	11	1	2	6	0	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	15.0		0.0	20.0		0.0	5.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.6			7.6			7.6			7.6		
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		1.00		1.00			0.97	0.99		1.00	0.96	
Frt		0.996			0.996			0.900			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1825	1875	0	1825	1859	0	1674	1703	0	1825	1561	0
Flt Permitted	0.490			0.318								
Satd. Flow (perm)	941	1875	0	610	1859	0	1705	1703	0	1917	1561	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			2			2			423	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		68.9			116.1			61.5			107.3	
Travel Time (s)		5.0			8.4			4.4			7.7	
Confl. Peds. (#/hr)			7	7			25		1	1		25
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	9%	0%	0%	0%	0%	0%
Adj. Flow (vph)	29	821	21	1	467	12	11	1	2	6	0	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	842	0	1	479	0	11	3	0	6	9	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	40.0	40.0		40.0	40.0		32.0	32.0		32.0	32.0	
Total Split (s)	77.0	77.0		77.0	77.0		33.0	33.0		33.0	33.0	
Total Split (%)	70.0%	70.0%		70.0%	70.0%		30.0%	30.0%		30.0%	30.0%	
Maximum Green (s)	70.0	70.0		70.0	70.0		26.0	26.0		26.0	26.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	16.0	16.0		16.0	16.0		8.0	8.0		8.0	8.0	
Flash Don't Walk (s)	17.0	17.0		17.0	17.0		17.0	17.0		17.0	17.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	101.1	101.1		101.1	101.1		8.1	8.1		8.1	8.1	
Actuated g/C Ratio	0.92	0.92		0.92	0.92		0.07	0.07		0.07	0.07	
v/c Ratio	0.03	0.49		0.00	0.28		0.09	0.02		0.04	0.02	
Control Delay (s/veh)	1.0	5.2		2.0	2.0		48.1	37.7		48.0	0.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	1.0	5.2		2.0	2.0		48.1	37.7		48.0	0.1	
LOS	A	A		A	A		D	D		D	A	
Approach Delay (s/veh)		5.1			2.0			45.9			19.3	
Approach LOS		A			A			D			B	
Queue Length 50th (m)	0.0	53.1		0.0	0.0		2.2	0.1		1.2	0.0	
Queue Length 95th (m)	1.3	75.7		0.3	31.9		m7.1	m2.6		5.3	0.0	
Internal Link Dist (m)		44.9			92.1			37.5			83.3	
Turn Bay Length (m)	45.0			15.0			20.0			5.0		
Base Capacity (vph)	865	1724		561	1709		403	404		453	691	
Starvation Cap Reductn	0	8		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.03	0.49		0.00	0.28		0.03	0.01		0.01	0.01	

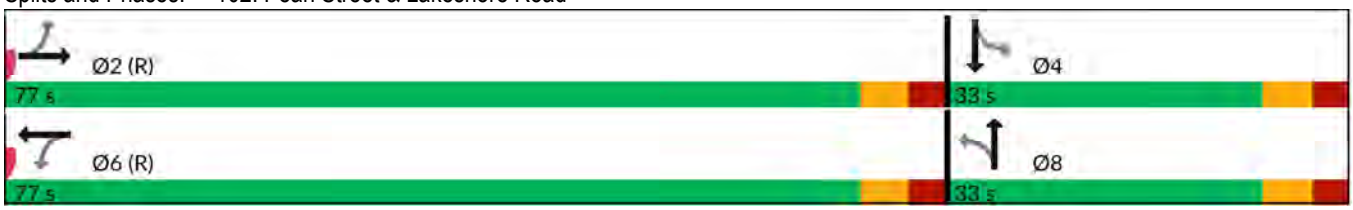
Intersection Summary	
Area Type:	Other
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 42 (38%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.49	
Intersection Signal Delay (s/veh): 4.6	Intersection LOS: A

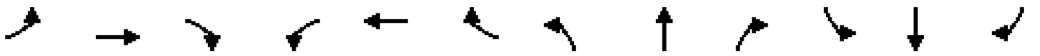
Intersection Capacity Utilization 69.5% ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 102: Pearl Street & Lakeshore Road

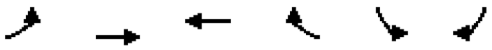




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	796	20	1	453	12	11	1	2	6	0	9
Future Volume (vph)	28	796	20	1	453	12	11	1	2	6	0	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.96	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.97	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.90		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1825	1876		1819	1860		1620	1703		1821	1561	
Flt Permitted	0.49	1.00		0.32	1.00		1.00	1.00		1.00	1.00	
Satd. Flow (perm)	940	1876		610	1860		1705	1703		1917	1561	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	29	821	21	1	467	12	11	1	2	6	0	9
RTOR Reduction (vph)	0	0	0	0	0	0	0	2	0	0	9	0
Lane Group Flow (vph)	29	842	0	1	479	0	11	1	0	6	0	0
Confl. Peds. (#/hr)			7	7			25		1	1		25
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	9%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	92.7	92.7		92.7	92.7		3.3	3.3		3.3	3.3	
Effective Green, g (s)	92.7	92.7		92.7	92.7		3.3	3.3		3.3	3.3	
Actuated g/C Ratio	0.84	0.84		0.84	0.84		0.03	0.03		0.03	0.03	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	792	1580		514	1567		51	51		57	46	
v/s Ratio Prot		c0.45			0.26			0.00			0.00	
v/s Ratio Perm	0.03			0.00			c0.01			0.00		
v/c Ratio	0.04	0.53		0.00	0.31		0.22	0.02		0.11	0.01	
Uniform Delay, d1	1.4	2.5		1.4	1.8		52.1	51.8		51.9	51.8	
Progression Factor	0.55	1.89		1.00	1.00		0.98	1.02		1.00	1.00	
Incremental Delay, d2	0.1	1.2		0.0	0.5		2.1	0.2		0.8	0.1	
Delay (s)	0.8	5.9		1.4	2.3		53.0	52.8		52.7	51.8	
Level of Service	A	A		A	A		D	D		D	D	
Approach Delay (s/veh)		5.7			2.3			52.9			52.2	
Approach LOS		A			A			D			D	

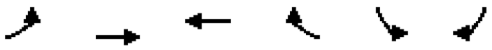
Intersection Summary			
HCM 2000 Control Delay (s/veh)	5.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	16	789	439	26	13	21
Future Volume (vph)	16	789	439	26	13	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.6				7.6	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.993		0.916	
Flt Protected	0.950				0.981	
Satd. Flow (prot)	1825	1883	1868	0	1676	0
Flt Permitted	0.950				0.981	
Satd. Flow (perm)	1825	1883	1868	0	1676	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		116.1	143.3		106.3	
Travel Time (s)		8.4	10.3		7.7	
Confl. Peds. (#/hr)	14			14	1	8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	4%	8%	0%
Adj. Flow (vph)	17	858	477	28	14	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	17	858	505	0	37	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	4.9		4.9	
Two way Left Turn Lane			Yes			
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.9%		ICU Level of Service A	
Analysis Period (min) 15			



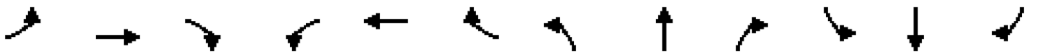
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	16	789	439	26	13	21
Future Volume (Veh/h)	16	789	439	26	13	21
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	17	858	477	28	14	23
Pedestrians		8	1		14	
Lane Width (m)		3.7	3.7		3.7	
Walking Speed (m/s)		1.1	1.1		1.1	
Percent Blockage		1	0		1	
Right turn flare (veh)						
Median type		None	TWLTL			
Median storage veh)			2			
Upstream signal (m)		116				
pX, platoon unblocked					0.85	
vC, conflicting volume	519				1398	513
vC1, stage 1 conf vol					505	
vC2, stage 2 conf vol					893	
vCu, unblocked vol	519				1380	513
tC, single (s)	4.1				6.5	6.2
tC, 2 stage (s)					5.5	
tF (s)	2.2				3.6	3.3
p0 queue free %	98				96	96
cM capacity (veh/h)	1043				322	553

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	17	858	505	37
Volume Left	17	0	0	14
Volume Right	0	0	28	23
cSH	1043	1700	1700	435
Volume to Capacity	0.02	0.50	0.30	0.09
Queue Length 95th (m)	0.4	0.0	0.0	2.1
Control Delay (s/veh)	8.5	0.0	0.0	14.0
Lane LOS	A			B
Approach Delay (s/veh)	0.2		0.0	14.0
Approach LOS				B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	53.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	797	3	8	464	0	2	0	18	0	0	0
Future Volume (vph)	0	797	3	8	464	0	2	0	18	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	10.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.6			7.6			7.6			7.6		
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		0.999						0.877				
Flt Protected				0.950				0.995				
Satd. Flow (prot)	1921	1880	0	1825	1865	0	0	1676	0	0	1921	0
Flt Permitted				0.950				0.995				
Satd. Flow (perm)	1921	1880	0	1825	1865	0	0	1676	0	0	1921	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		143.3			89.6			228.6			61.5	
Travel Time (s)		10.3			6.5			16.5			4.4	
Confl. Peds. (#/hr)	11		1	1		11	1		3	3		1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	33%	0%	3%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	866	3	9	504	0	2	0	20	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	869	0	9	504	0	0	22	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Free			Free			Stop			Stop	

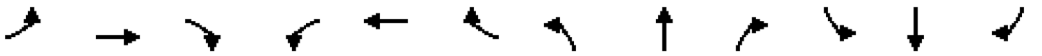
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.1%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	797	3	8	464	0	2	0	18	0	0	0
Future Volume (Veh/h)	0	797	3	8	464	0	2	0	18	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	866	3	9	504	0	2	0	20	0	0	0
Pedestrians		1			3			1			11	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		0			0			0			1	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		259										
pX, platoon unblocked				0.84			0.84	0.84	0.84	0.84	0.84	
vC, conflicting volume	515			870			1392	1402	872	1422	1403	516
vC1, stage 1 conf vol							869	869		533	533	
vC2, stage 2 conf vol							523	533		889	870	
vCu, unblocked vol	515			750			1371	1383	751	1407	1384	516
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			99	100	94	100	100	100
cM capacity (veh/h)	1050			728			295	305	346	267	299	556

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	0	869	9	504	22	0
Volume Left	0	0	9	0	2	0
Volume Right	0	3	0	0	20	0
cSH	1700	1700	728	1700	341	1700
Volume to Capacity	0.00	0.51	0.01	0.30	0.06	0.00
Queue Length 95th (m)	0.0	0.0	0.3	0.0	1.6	0.0
Control Delay (s/veh)	0.0	0.0	10.0	0.0	16.3	0.0
Lane LOS			B		C	A
Approach Delay (s/veh)	0.0		0.2		16.3	0.0
Approach LOS					C	A

Intersection Summary				
Average Delay	0.3			
Intersection Capacity Utilization	53.1%	ICU Level of Service		A
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	584	36	16	670	27	36	13	19	24	19	36
Future Volume (vph)	40	584	36	16	670	27	36	13	19	24	19	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		15.0	30.0		0.0	10.0		0.0	20.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		0.98	1.00		0.95	0.96		0.95	0.96	
Frt		0.991			0.994			0.910			0.902	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1659	3600	0	1825	3537	0	1825	1686	0	1560	1523	0
Flt Permitted	0.340			0.377			0.718			0.734		
Satd. Flow (perm)	586	3600	0	707	3537	0	1313	1686	0	1150	1523	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10			7			21			39	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		106.8			54.3			68.6			100.8	
Travel Time (s)		7.7			3.9			4.9			7.3	
Confl. Peds. (#/hr)	23		37	37		23	42		39	39		42
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	10%	0%	0%	0%	2%	11%	0%	0%	0%	17%	0%	14%
Adj. Flow (vph)	43	635	39	17	728	29	39	14	21	26	21	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	43	674	0	17	757	0	39	35	0	26	60	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	41.0	41.0		41.0	41.0		36.0	36.0		36.0	36.0	
Total Split (s)	84.0	84.0		84.0	84.0		36.0	36.0		36.0	36.0	
Total Split (%)	70.0%	70.0%		70.0%	70.0%		30.0%	30.0%		30.0%	30.0%	
Maximum Green (s)	77.0	77.0		77.0	77.0		29.0	29.0		29.0	29.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		Max	Max		Max	Max	
Walk Time (s)	16.0	16.0		16.0	16.0		8.0	8.0		8.0	8.0	
Flash Don't Walk (s)	18.0	18.0		18.0	18.0		21.0	21.0		21.0	21.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	77.0	77.0		77.0	77.0		29.0	29.0		29.0	29.0	
Actuated g/C Ratio	0.64	0.64		0.64	0.64		0.24	0.24		0.24	0.24	
v/c Ratio	0.11	0.29		0.04	0.33		0.12	0.08		0.09	0.15	
Control Delay (s/veh)	9.3	9.7		4.3	4.2		37.0	20.0		36.6	17.4	
Queue Delay	0.0	0.0		0.0	0.3		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	9.3	9.7		4.3	4.5		37.0	20.0		36.6	17.4	
LOS	A	A		A	A		D	C		D	B	
Approach Delay (s/veh)		9.7			4.5			29.0			23.2	
Approach LOS		A			A			C			C	
Queue Length 50th (m)	3.6	33.4		0.6	12.2		7.2	2.6		4.8	3.8	
Queue Length 95th (m)	8.6	42.8		m0.9	16.0		16.5	10.8		12.4	14.8	
Internal Link Dist (m)		82.8			30.3			44.6			76.8	
Turn Bay Length (m)	40.0			30.0			10.0			20.0		
Base Capacity (vph)	376	2313		453	2272		317	423		277	397	
Starvation Cap Reductn	0	0		0	838		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.11	0.29		0.04	0.53		0.12	0.08		0.09	0.15	

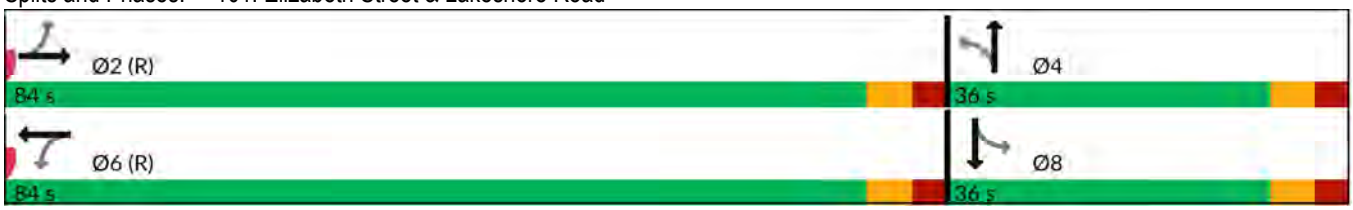
Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 56 (47%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.33	
Intersection Signal Delay (s/veh): 8.8	Intersection LOS: A

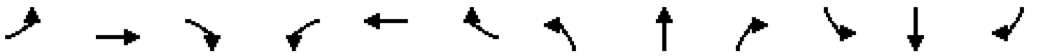
Intersection Capacity Utilization 69.1% ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 101: Elizabeth Street & Lakeshore Road

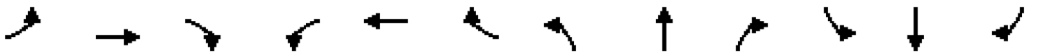




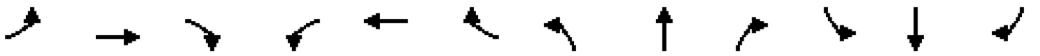
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	584	36	16	670	27	36	13	19	24	19	36
Future Volume (vph)	40	584	36	16	670	27	36	13	19	24	19	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.96		1.00	0.96	
Flpb, ped/bikes	0.99	1.00		0.98	1.00		0.95	1.00		0.95	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.91		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1637	3601		1781	3538		1738	1686		1488	1524	
Flt Permitted	0.34	1.00		0.38	1.00		0.72	1.00		0.73	1.00	
Satd. Flow (perm)	586	3601		707	3538		1313	1686		1150	1524	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	43	635	39	17	728	29	39	14	21	26	21	39
RTOR Reduction (vph)	0	4	0	0	3	0	0	16	0	0	30	0
Lane Group Flow (vph)	43	670	0	17	754	0	39	19	0	26	30	0
Confl. Peds. (#/hr)	23		37	37		23	42		39	39		42
Heavy Vehicles (%)	10%	0%	0%	0%	2%	11%	0%	0%	0%	17%	0%	14%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	77.0	77.0		77.0	77.0		29.0	29.0		29.0	29.0	
Effective Green, g (s)	77.0	77.0		77.0	77.0		29.0	29.0		29.0	29.0	
Actuated g/C Ratio	0.64	0.64		0.64	0.64		0.24	0.24		0.24	0.24	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	376	2310		453	2270		317	407		277	368	
v/s Ratio Prot		0.19			c0.21			0.01			0.02	
v/s Ratio Perm	0.07			0.02			c0.03			0.02		
v/c Ratio	0.11	0.29		0.04	0.33		0.12	0.05		0.09	0.08	
Uniform Delay, d1	8.3	9.5		7.9	9.8		35.6	34.9		35.3	35.2	
Progression Factor	1.00	1.00		0.51	0.40		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.3		0.1	0.3		0.8	0.2		0.7	0.4	
Delay (s)	8.9	9.8		4.2	4.2		36.4	35.1		36.0	35.6	
Level of Service	A	A		A	A		D	D		D	D	
Approach Delay (s/veh)		9.7			4.2			35.8			35.7	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	9.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	537	10	1	763	25	45	5	0	20	5	34
Future Volume (vph)	36	537	10	1	763	25	45	5	0	20	5	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	15.0		0.0	20.0		0.0	5.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.6			7.6			7.6			7.6		
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	1.00	1.00		0.99	1.00		0.98			0.99	0.97	
Frt		0.997			0.995						0.868	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1772	1895	0	1825	1854	0	1825	1921	0	1825	1573	0
Flt Permitted	0.234			0.381			0.730			0.754		
Satd. Flow (perm)	436	1895	0	727	1854	0	1370	1921	0	1438	1573	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			3						36	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		69.6			116.1			61.5			107.3	
Travel Time (s)		5.0			8.4			4.4			7.7	
Confl. Peds. (#/hr)	3		10	10		3	17		3	3		17
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	3%	1%	0%	0%	3%	4%	0%	0%	0%	0%	0%	3%
Adj. Flow (vph)	38	565	11	1	803	26	47	5	0	21	5	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	576	0	1	829	0	47	5	0	21	41	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	40.0	40.0		40.0	40.0		32.0	32.0		32.0	32.0	
Total Split (s)	87.0	87.0		87.0	87.0		33.0	33.0		33.0	33.0	
Total Split (%)	72.5%	72.5%		72.5%	72.5%		27.5%	27.5%		27.5%	27.5%	
Maximum Green (s)	80.0	80.0		80.0	80.0		26.0	26.0		26.0	26.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		Max	Max		Max	Max	
Walk Time (s)	16.0	16.0		16.0	16.0		8.0	8.0		8.0	8.0	
Flash Don't Walk (s)	17.0	17.0		17.0	17.0		17.0	17.0		17.0	17.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	80.0	80.0		80.0	80.0		26.0	26.0		26.0	26.0	
Actuated g/C Ratio	0.67	0.67		0.67	0.67		0.22	0.22		0.22	0.22	
v/c Ratio	0.13	0.46		0.00	0.67		0.16	0.01		0.07	0.11	
Control Delay (s/veh)	5.2	6.8		7.0	15.4		39.4	37.6		38.2	14.7	
Queue Delay	0.0	0.1		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	5.2	6.8		7.0	15.4		39.4	37.6		38.2	14.7	
LOS	A	A		A	B		D	D		D	B	
Approach Delay (s/veh)		6.7			15.4			39.2			22.7	
Approach LOS		A			B			D			C	
Queue Length 50th (m)	1.4	20.6		0.1	107.3		9.1	1.0		4.0	0.9	
Queue Length 95th (m)	3.1	26.5		0.7	148.7		19.6	m4.4		10.8	10.2	
Internal Link Dist (m)		45.6			92.1			37.5			83.3	
Turn Bay Length (m)	45.0			15.0			20.0			5.0		
Base Capacity (vph)	290	1264		484	1237		296	416		311	369	
Starvation Cap Reductn	0	98		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.13	0.49		0.00	0.67		0.16	0.01		0.07	0.11	

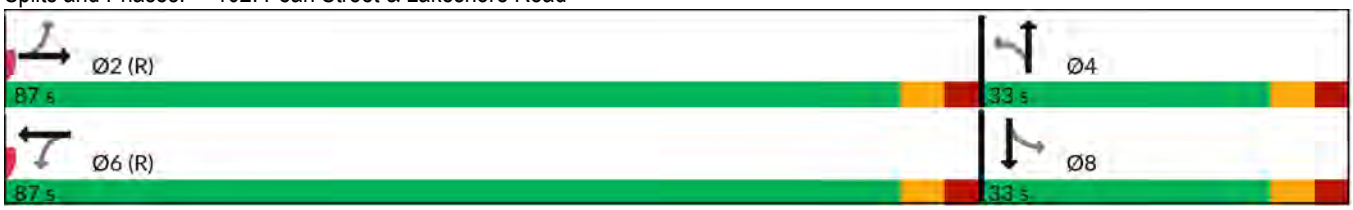
Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 51 (43%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay (s/veh): 13.1	Intersection LOS: B

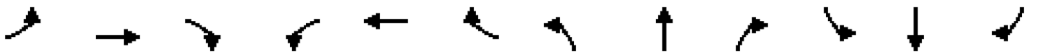
Intersection Capacity Utilization 74.2% ICU Level of Service D

Analysis Period (min) 15

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

Splits and Phases: 102: Pearl Street & Lakeshore Road

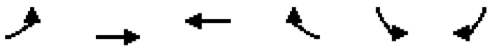




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	537	10	1	763	25	45	5	0	20	5	34
Future Volume (vph)	36	537	10	1	763	25	45	5	0	20	5	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		0.98	1.00		0.99	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1896		1813	1854		1783	1921		1812	1574	
Flt Permitted	0.23	1.00		0.38	1.00		0.73	1.00		0.75	1.00	
Satd. Flow (perm)	435	1896		728	1854		1371	1921		1439	1574	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	38	565	11	1	803	26	47	5	0	21	5	36
RTOR Reduction (vph)	0	1	0	0	1	0	0	0	0	0	28	0
Lane Group Flow (vph)	38	575	0	1	828	0	47	5	0	21	13	0
Confl. Peds. (#/hr)	3		10	10		3	17		3	3		17
Heavy Vehicles (%)	3%	1%	0%	0%	3%	4%	0%	0%	0%	0%	0%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	80.0	80.0		80.0	80.0		26.0	26.0		26.0	26.0	
Effective Green, g (s)	80.0	80.0		80.0	80.0		26.0	26.0		26.0	26.0	
Actuated g/C Ratio	0.67	0.67		0.67	0.67		0.22	0.22		0.22	0.22	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	290	1264		485	1236		297	416		311	341	
v/s Ratio Prot		0.30			c0.45			0.00			0.01	
v/s Ratio Perm	0.09			0.00			c0.03			0.01		
v/c Ratio	0.13	0.46		0.00	0.67		0.16	0.01		0.07	0.04	
Uniform Delay, d1	7.3	9.6		6.7	12.0		38.1	36.9		37.4	37.1	
Progression Factor	0.55	0.57		1.00	1.00		0.99	1.01		1.00	1.00	
Incremental Delay, d2	0.9	1.2		0.0	2.9		1.1	0.1		0.4	0.2	
Delay (s)	4.9	6.6		6.7	14.9		38.7	37.4		37.8	37.3	
Level of Service	A	A		A	B		D	D		D	D	
Approach Delay (s/veh)		6.5			14.9			38.6			37.5	
Approach LOS		A			B			D			D	

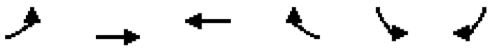
Intersection Summary			
HCM 2000 Control Delay (s/veh)	13.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	74.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	24	546	765	37	7	16
Future Volume (vph)	24	546	765	37	7	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.6				7.6	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.994		0.904	
Flt Protected	0.950				0.986	
Satd. Flow (prot)	1755	1902	1871	0	1712	0
Flt Permitted	0.950				0.986	
Satd. Flow (perm)	1755	1902	1871	0	1712	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		116.1	143.3		106.3	
Travel Time (s)		8.4	10.3		7.7	
Confl. Peds. (#/hr)	7			7	3	10
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	1%	2%	3%	0%	0%
Adj. Flow (vph)	25	569	797	39	7	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	25	569	836	0	24	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	4.9		4.9	
Two way Left Turn Lane			Yes			
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 55.4%		ICU Level of Service B	
Analysis Period (min) 15			



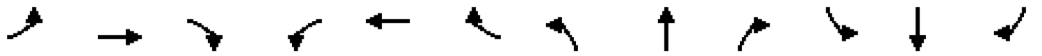
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	24	546	765	37	7	16
Future Volume (Veh/h)	24	546	765	37	7	16
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	25	569	797	39	7	17
Pedestrians		10	3		7	
Lane Width (m)		3.7	3.7		3.7	
Walking Speed (m/s)		1.1	1.1		1.1	
Percent Blockage		1	0		1	
Right turn flare (veh)						
Median type		None	TWLTL			
Median storage veh)			2			
Upstream signal (m)		116				
pX, platoon unblocked					0.85	
vC, conflicting volume	843				1446	834
vC1, stage 1 conf vol					824	
vC2, stage 2 conf vol					622	
vCu, unblocked vol	843				1436	834
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	97				98	95
cM capacity (veh/h)	779				345	365

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	25	569	836	24
Volume Left	25	0	0	7
Volume Right	0	0	39	17
cSH	779	1700	1700	359
Volume to Capacity	0.03	0.33	0.49	0.07
Queue Length 95th (m)	0.8	0.0	0.0	1.6
Control Delay (s/veh)	9.8	0.0	0.0	15.7
Lane LOS	A			C
Approach Delay (s/veh)	0.4		0.0	15.7
Approach LOS				C

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	55.4%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	539	3	25	812	0	1	0	7	0	0	0
Future Volume (vph)	0	539	3	25	812	0	1	0	7	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	10.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.6			7.6			7.6			7.6		
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		0.999						0.882				
Flt Protected				0.950				0.994				
Satd. Flow (prot)	1921	1900	0	1825	1883	0	0	1684	0	0	1921	0
Flt Permitted				0.950				0.994				
Satd. Flow (perm)	1921	1900	0	1825	1883	0	0	1684	0	0	1921	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		143.3			89.6			239.6			61.5	
Travel Time (s)		10.3			6.5			17.3			4.4	
Confl. Peds. (#/hr)	14		3	3		14			8	8		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	556	3	26	837	0	1	0	7	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	559	0	26	837	0	0	8	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 55.1%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	539	3	25	812	0	1	0	7	0	0	0
Future Volume (Veh/h)	0	539	3	25	812	0	1	0	7	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	0	556	3	26	837	0	1	0	7	0	0	0
Pedestrians					8			3			14	
Lane Width (m)					3.7			3.7			3.7	
Walking Speed (m/s)					1.1			1.1			1.1	
Percent Blockage					1			0			1	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		259										
pX, platoon unblocked				0.85			0.85	0.85	0.85	0.85	0.85	
vC, conflicting volume	851			562			1450	1464	569	1474	1465	851
vC1, stage 1 conf vol							561	561		903	903	
vC2, stage 2 conf vol							889	903		571	562	
vCu, unblocked vol	851			403			1441	1457	410	1470	1459	851
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			100	100	99	100	100	100
cM capacity (veh/h)	785			995			287	296	546	273	292	358

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	0	559	26	837	8	0
Volume Left	0	0	26	0	1	0
Volume Right	0	3	0	0	7	0
cSH	1700	1700	995	1700	491	1700
Volume to Capacity	0.00	0.33	0.03	0.49	0.02	0.00
Queue Length 95th (m)	0.0	0.0	0.6	0.0	0.4	0.0
Control Delay (s/veh)	0.0	0.0	8.7	0.0	12.5	0.0
Lane LOS			A		B	A
Approach Delay (s/veh)	0.0		0.3		12.5	0.0
Approach LOS					B	A

Intersection Summary				
Average Delay	0.2			
Intersection Capacity Utilization	55.1%	ICU Level of Service	B	
Analysis Period (min)	15			

Appendix D

Vehicle Elevator Specifications

2500 Williams Parkway East, Unit 7
Brampton, Ontario. L6S 5M9. Canada
Phone: + 1 (905) 799-3777
Email: sales@expresselp.com
www.expresselevatorslifts.com

Ref: 9736_01
Project: West Harbour Condo, 41 Stuart Street, Hamilton, ON. L8L 1B5
Subject: Technical Specifications.

Product	Hydraulic Freight [Automobile] Elevator
Capacity	8,000 lbs. (3,629 kg)
Class of Loading	B, Automobile Loading.
Speed:	50 fpm (0.25 m/ sec)
Nominal Car Size	9′ – 0″ (2743mm) Wide x 20′ – 0″ (6096mm) Long x 7′ – 0″ (2134mm) High
Hoistway shaft size required	11′ – 8″ (3556mm) Wide X 21′ – 8″ (6604mm) Long
Hoistway shaft type	Cast in place concrete or reinforced masonry shaft wall by others
Overhead Required	14′ – 8″ (4166mm) clear to the underside of the hoisting beam.
Floor to Floor	❖ G to P1: 10′ – 6″ (3200mm) ❖ P1 to P2: 14′ – 1″ (4300mm)
Travel	24′ – 7″ (7500mm)
Pit depth required (Approximate):	72″ (1829 mm) with no habitable space below pit
Stops:	❖ Total 3 ❖ Ground, P1 and P2
Entrances:	❖ Total 3 ❖ 1 Front at Ground, P1 and P2
Operation:	Single Automatic Pushbutton Operation.
Power unit:	❖ Approximate 40 HP ❖ 600 Volts, 3 Phase, 60 Hz
Elevator Car:	❖ Steel checkered floor ❖ Steel walls, 84″ high ❖ Expanded metal sheets ceiling panel with light fixture. ❖ Car platform, wall and ceiling panels to be in enamel painted finish. ❖ Car operating panel with operation buttons and stop button. Car position indicator. ❖ Battery operated alarm ❖ Battery operated emergency light. ❖ Fire fighters service phase 1 & 2. ❖ 1 in number, power operated, 72″ high, mesh steel, single section, vertical slide-up car gate
Elevator Entrances:	❖ 3 in number. ❖ Nominal 9′ – 0″ Wide x 7′ – 0″ High. ❖ Automatic, vertical bi-parting steel panel doors ❖ Electro-mechanical interlocking ❖ 1.5-hour fire rating
Machine room location and size	❖ Adjacent to the hoistway shaft at P2. ❖ Machine room size required: 13′ - 1″ (4000mm) wide X 10′ – 0″ (3048mm) long X 7′ – 0″ (2134mm) high.

Appendix E

Queue Analysis

Data

Arrival rate (λ)	35
Service rate (μ)	20
Number of entrances (M)	3

Results

Average server utilization(ρ)	0.58	
Average number of vehicles in the queue(L_q)	0.47	
Average number of vehicles in the system(L)	2.22	
Average waiting time in the queue(W_q)	0.01	0.80 min
Average time in the system(W)	0.06	3.80 min
Probability (% of time) system is empty (P_0)	0.16	15.56%

Probabilities

Number	Probability	Cumulative Probability	
0	15.6%	15.6%	84.435798%
1	27.2%	42.8%	57.198444%
2	23.8%	66.6%	33.365759%
3	13.9%	80.5%	19.463359%
4	8.1%	88.6%	11.353626%
5	4.7%	93.4%	6.622949%
6	2.8%	96.1%	3.863387%
7	1.6%	97.7%	2.253642%
8	0.9%	98.7%	1.314625%
9	0.5%	99.2%	0.766864%
10	0.3%	99.6%	0.447338%
11	0.2%	99.7%	0.260947%
12	0.1%	99.8%	0.152219%
13	0.1%	99.9%	0.088794%
14	0.0%	99.9%	0.051797%
15	0.0%	100.0%	0.030215%
16	0.0%	100.0%	0.017625%
17	0.0%	100.0%	0.010281%
18	0.0%	100.0%	0.005997%
19	0.0%	100.0%	0.003499%
20	0.0%	100.0%	0.002041%

Computations

n or s	(lam/mu)^n/n!	Cumsum(n-1)	term2	P0(s)	Rho(s)	Lq(s)	L(s)	Wq(s)	W(S)
0	1								
1	1.75	1	-2.333333333	-0.75	1.75	-4.083333333	-2.33333	-0.11667	-0.06667
2	1.53125	2.75	12.25	0.06667	0.875	5.716666667	7.466667	0.163333	0.213333
3	0.893229167	4.28125	2.14375	0.15564	0.583333	0.467120623	2.217121	0.013346	0.063346
4	0.39078776	5.174479167	0.694733796	0.17038	0.4375	0.092064901	1.842065	0.00263	0.05263
5	0.136775716	5.565266927	0.210424179	0.17314	0.35	0.019617622	1.769618	0.000561	0.050561
6	0.039892917	5.702042643	0.056319413	0.17366	0.291667	0.004027247	1.754027	0.000115	0.050115
7	0.009973229	5.74193556	0.013297639	0.17375	0.25	0.000770177	1.75077	2.2E-05	0.050022
8	0.002181644	5.75190879	0.002792504	0.17377	0.21875	0.000135872	1.750136	3.88E-06	0.050004
9	0.000424209	5.754090434	0.000526604	0.17377	0.194444	2.20886E-05	1.750022	6.31E-07	0.050001
10	7.42365E-05	5.754514642	8.99836E-05	0.17377	0.175	3.3169E-06	1.750003	9.48E-08	0.05
11	1.18104E-05	5.754588879	1.40447E-05	0.17377	0.159091	4.61737E-07	1.75	1.32E-08	0.05
12	1.72234E-06	5.754600689	2.0164E-06	0.17377	0.145833	5.98241E-08	1.75	1.71E-09	0.05
13	2.31854E-07	5.754602411	2.6792E-07	0.17377	0.134615	7.24228E-09	1.75	2.07E-10	0.05
14	2.89817E-08	5.754602643	3.3122E-08	0.17377	0.125	8.22248E-10	1.75	2.35E-11	0.05
15	3.3812E-09	5.754602672	3.82778E-09	0.17377	0.116667	8.78523E-11	1.75	2.51E-12	0.05
16	3.69819E-10	5.754602676	4.15235E-10	0.17377	0.109375	8.8614E-12	1.75	2.53E-13	0.05
17	3.80696E-11	5.754602676	4.24382E-11	0.17377	0.102941	8.46273E-13	1.75	2.42E-14	0.05
18	3.70121E-12	5.754602676	4.0998E-12	0.17377	0.097222	7.67242E-14	1.75	2.19E-15	0.05
19	3.40901E-13	5.754602676	3.75485E-13	0.17377	0.092105	6.61952E-15	1.75	1.89E-16	0.05
20	2.98288E-14	5.754602676	3.26891E-14	0.17377	0.0875	5.44707E-16	1.75	1.56E-17	0.05
21	2.48574E-15	5.754602676	2.71171E-15	0.17377	0.083333	4.28386E-17	1.75	1.22E-18	0.05
22	1.97729E-16	5.754602676	2.14817E-16	0.17377	0.079545	3.22601E-18	1.75	9.22E-20	0.05

Data

Arrival rate (λ)	35
Service rate (μ)	20
Number of entrances (M)	4

Results

Average server utilization(ρ)	0.44	
Average number of vehicles in the queue(L_q)	0.09	
Average number of vehicles in the system(L)	1.84	
Average waiting time in the queue(W_q)	0.00	0.16 min
Average time in the system(W)	0.05	3.16 min
Probability (% of time) system is empty (P_0)	0.17	17.04%

Probabilities

Number	Probability	Cumulative Probability	
0	17.0%	17.0%	82.961940%
1	29.8%	46.9%	53.145336%
2	26.1%	72.9%	27.055808%
3	15.2%	88.2%	11.836916%
4	6.7%	94.8%	5.178651%
5	2.9%	97.7%	2.265660%
6	1.3%	99.0%	0.991226%
7	0.6%	99.6%	0.433661%
8	0.2%	99.8%	0.189727%
9	0.1%	99.9%	0.083006%
10	0.0%	100.0%	0.036315%
11	0.0%	100.0%	0.015888%
12	0.0%	100.0%	0.006951%
13	0.0%	100.0%	0.003041%
14	0.0%	100.0%	0.001330%
15	0.0%	100.0%	0.000582%
16	0.0%	100.0%	0.000255%
17	0.0%	100.0%	0.000111%
18	0.0%	100.0%	0.000049%
19	0.0%	100.0%	0.000021%
20	0.0%	100.0%	0.000009%

Computations

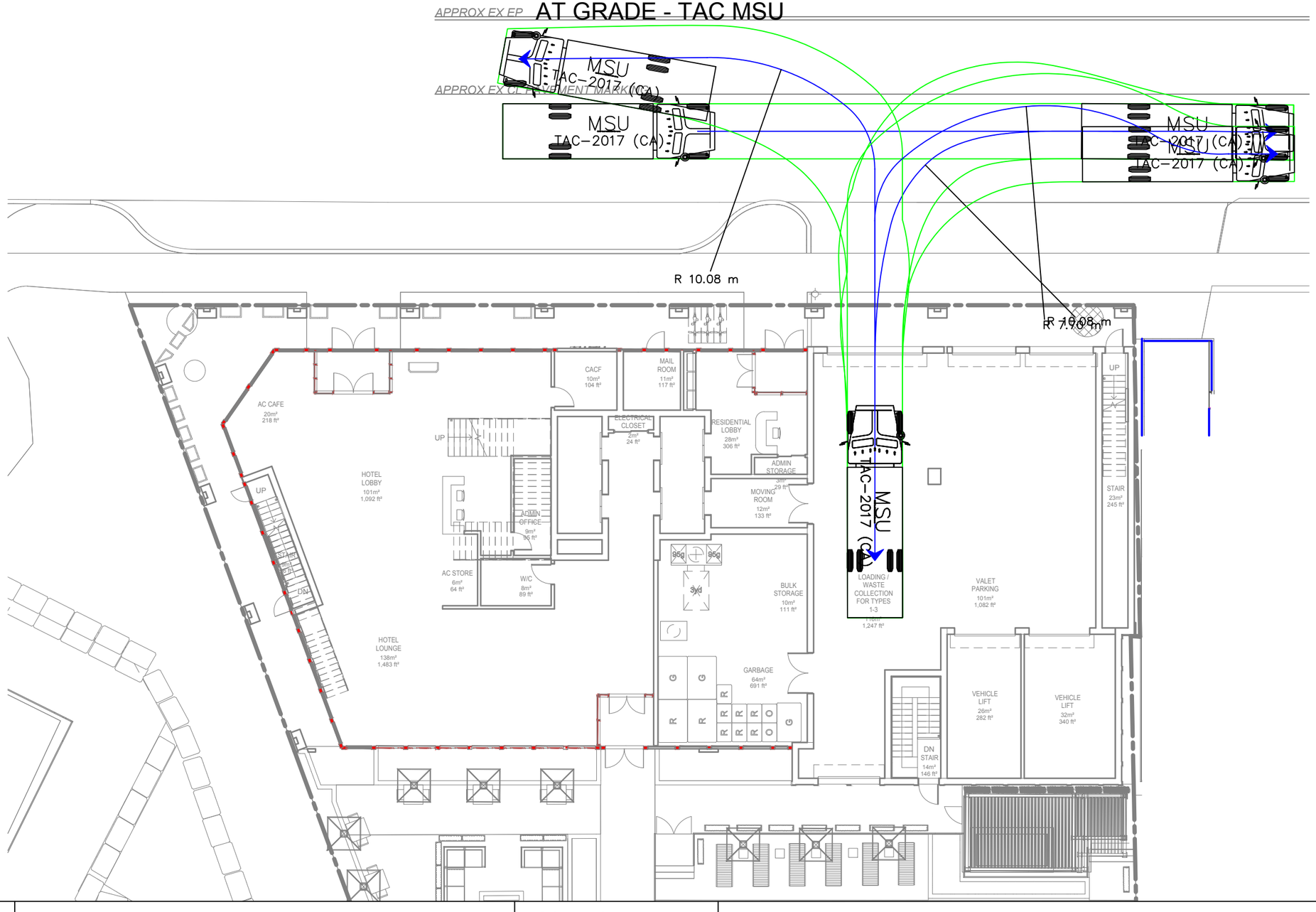
n or s	(lam/mu)^n/n!	Cumsum(n-1)	term2	P0(s)	Rho(s)	Lq(s)	L(s)	Wq(s)	W(S)
0	1								
1	1.75	1	-2.333333333	-0.75	1.75	-4.083333333	-2.33333	-0.11667	-0.06667
2	1.53125	2.75	12.25	0.06667	0.875	5.716666667	7.466667	0.163333	0.213333
3	0.893229167	4.28125	2.14375	0.15564	0.583333	0.467120623	2.217121	0.013346	0.063346
4	0.39078776	5.174479167	0.694733796	0.17038	0.4375	0.092064901	1.842065	0.00263	0.05263
5	0.136775716	5.565266927	0.210424179	0.17314	0.35	0.019617622	1.769618	0.000561	0.050561
6	0.039892917	5.702042643	0.056319413	0.17366	0.291667	0.004027247	1.754027	0.000115	0.050115
7	0.009973229	5.74193556	0.013297639	0.17375	0.25	0.000770177	1.75077	2.2E-05	0.050022
8	0.002181644	5.75190879	0.002792504	0.17377	0.21875	0.000135872	1.750136	3.88E-06	0.050004
9	0.000424209	5.754090434	0.000526604	0.17377	0.194444	2.20886E-05	1.750022	6.31E-07	0.050001
10	7.42365E-05	5.754514642	8.99836E-05	0.17377	0.175	3.3169E-06	1.750003	9.48E-08	0.05
11	1.18104E-05	5.754588879	1.40447E-05	0.17377	0.159091	4.61737E-07	1.75	1.32E-08	0.05
12	1.72234E-06	5.754600689	2.0164E-06	0.17377	0.145833	5.98241E-08	1.75	1.71E-09	0.05
13	2.31854E-07	5.754602411	2.6792E-07	0.17377	0.134615	7.24228E-09	1.75	2.07E-10	0.05
14	2.89817E-08	5.754602643	3.3122E-08	0.17377	0.125	8.22248E-10	1.75	2.35E-11	0.05
15	3.3812E-09	5.754602672	3.82778E-09	0.17377	0.116667	8.78523E-11	1.75	2.51E-12	0.05
16	3.69819E-10	5.754602676	4.15235E-10	0.17377	0.109375	8.8614E-12	1.75	2.53E-13	0.05
17	3.80696E-11	5.754602676	4.24382E-11	0.17377	0.102941	8.46273E-13	1.75	2.42E-14	0.05
18	3.70121E-12	5.754602676	4.0998E-12	0.17377	0.097222	7.67242E-14	1.75	2.19E-15	0.05
19	3.40901E-13	5.754602676	3.75485E-13	0.17377	0.092105	6.61952E-15	1.75	1.89E-16	0.05
20	2.98288E-14	5.754602676	3.26891E-14	0.17377	0.0875	5.44707E-16	1.75	1.56E-17	0.05
21	2.48574E-15	5.754602676	2.71171E-15	0.17377	0.083333	4.28386E-17	1.75	1.22E-18	0.05
22	1.97729E-16	5.754602676	2.14817E-16	0.17377	0.079545	3.22601E-18	1.75	9.22E-20	0.05

Appendix F

AutoTURN Analysis

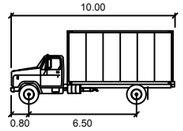
THIS AUTOTURN SWEPT PATH ANALYSIS HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

AT GRADE - TAC MSU



NO.	DATE	INITIAL	REVISION DETAIL

DESIGN VEHICLE:



MSU

	meters
Width	: 2.60
Track	: 2.60
Lock to Lock Time	: 6.0
Steering Angle	: 40.2

AUTOTURN ASSESSMENT
2076 OLD LAKESHORE RD
CITY OF BURLINGTON

paradigm TRANSPORTATION SOLUTIONS LIMITED

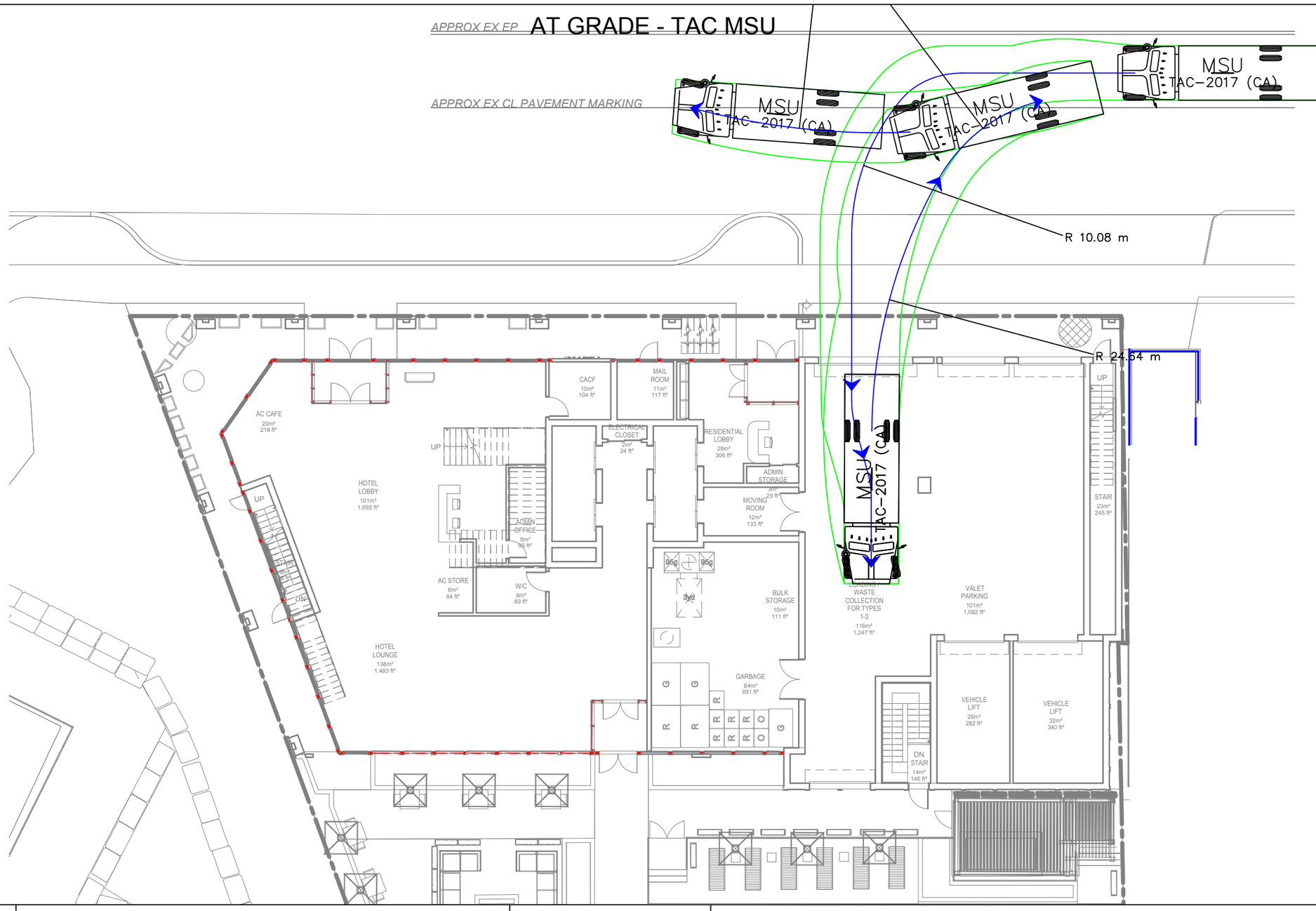
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THIS AUTOTURN SWEPT PATH ANALYSIS HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY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

AT GRADE - TAC MSU

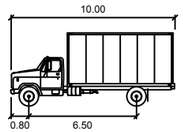
APPROX EX EP

APPROX EX CL PAVEMENT MARKING



NO.	DATE	INITIAL	REVISION DETAIL

DESIGN VEHICLE:



MSU

	meters
Width	: 2.60
Track	: 2.60
Lock to Lock Time	: 6.0
Steering Angle	: 40.2

AUTOTURN ASSESSMENT
2076 OLD LAKESHORE RD
CITY OF BURLINGTON

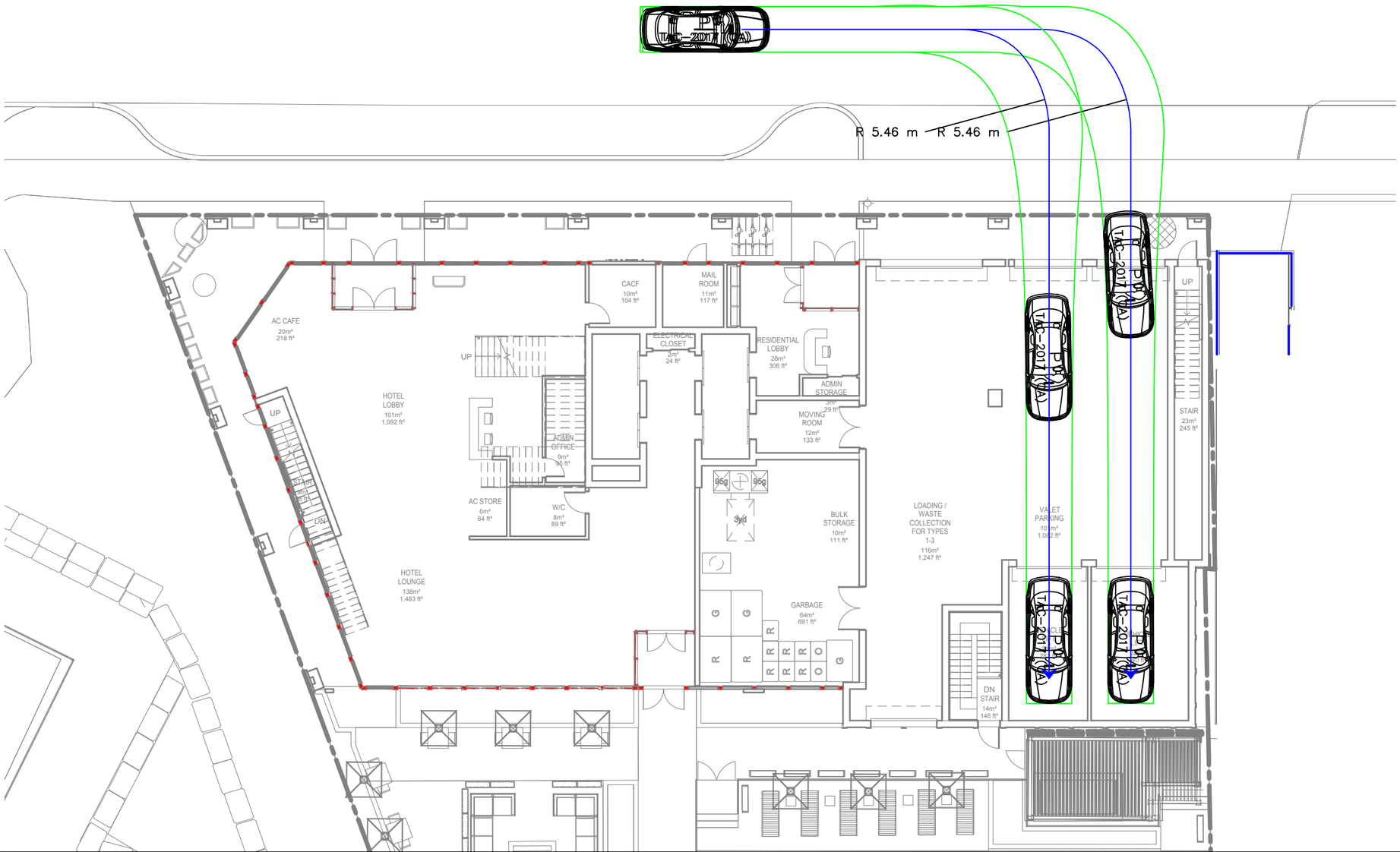
paradigm TRANSPORTATION SOLUTIONS LIMITED

PROJECT NO.: 250220	DATE: SEPT 2025	SCALE: 1:200	DRAWING NO.: 02
DESIGN: SC	DRAWN: SC	CHECK: AMa	

APPROX EX EP

AT GRADE - TAC P

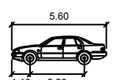
APPROX EX CL PAVEMENT MARKING



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NO.	DATE	INITIAL	REVISION DETAIL

DESIGN VEHICLE:



P

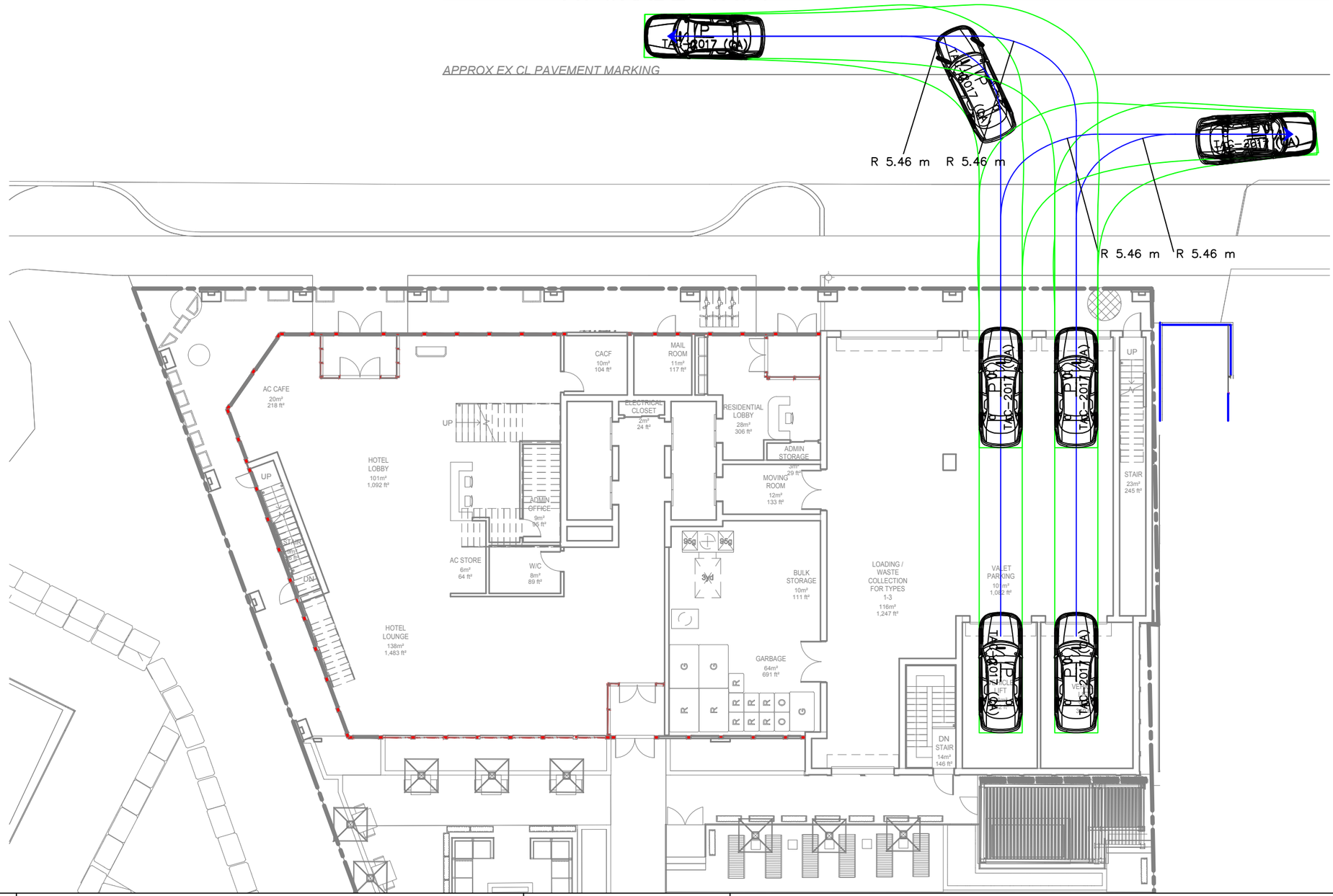
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Lock to Lock Time	: 6.0
Steering Angle	: 35.9

AUTOTURN ASSESSMENT
2076 OLD LAKESHORE RD
CITY OF BURLINGTON

paradigm TRANSPORTATION SOLUTIONS LIMITED

PROJECT NO.: 250220	DATE: SEPT 2025	SCALE: 1:200	DRAWING NO.: 03
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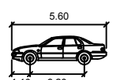
AT GRADE - TAC P



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NO.	DATE	INITIAL	REVISION DETAIL

DESIGN VEHICLE:



P

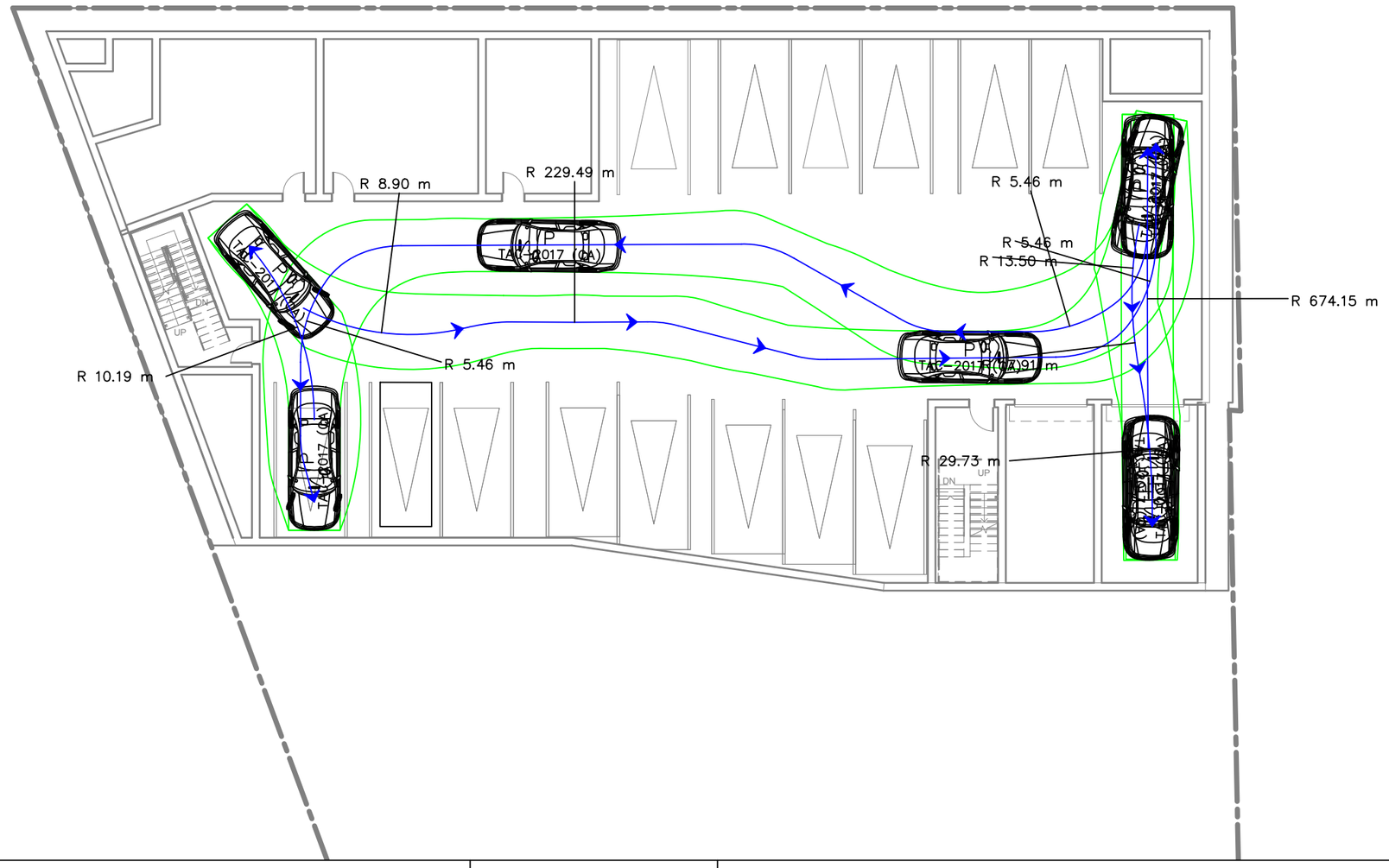
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Steering Angle	: 35.9

AUTOTURN ASSESSMENT
2076 OLD LAKESHORE RD
CITY OF BURLINGTON

paradigm TRANSPORTATION SOLUTIONS LIMITED

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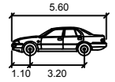
PARKING LEVEL 1 - TAC P



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

NO.	DATE	INITIAL	REVISION DETAIL

DESIGN VEHICLE:



P

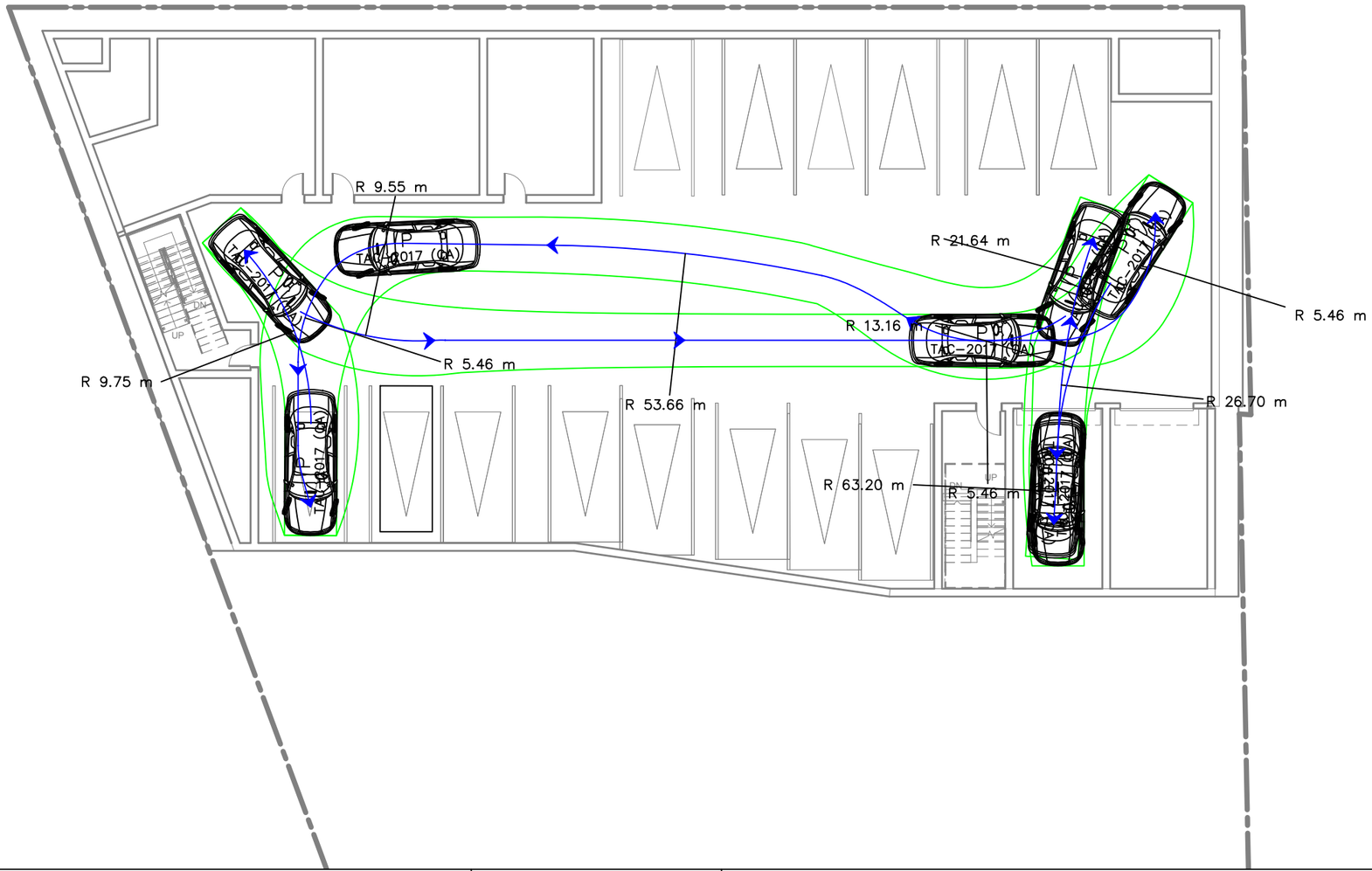
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Lock to Lock Time	: 6.0
Steering Angle	: 35.9

AUTOTURN ASSESSMENT
2076 OLD LAKESHORE RD
CITY OF BURLINGTON

paradigm TRANSPORTATION SOLUTIONS LIMITED

PROJECT NO.: 250220	DATE: SEPT 2025	SCALE: 1:200	DRAWING NO.: 05
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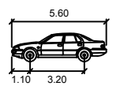
PARKING LEVEL 1 - TAC P



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

NO.	DATE	INITIAL	REVISION DETAIL

DESIGN VEHICLE:



P

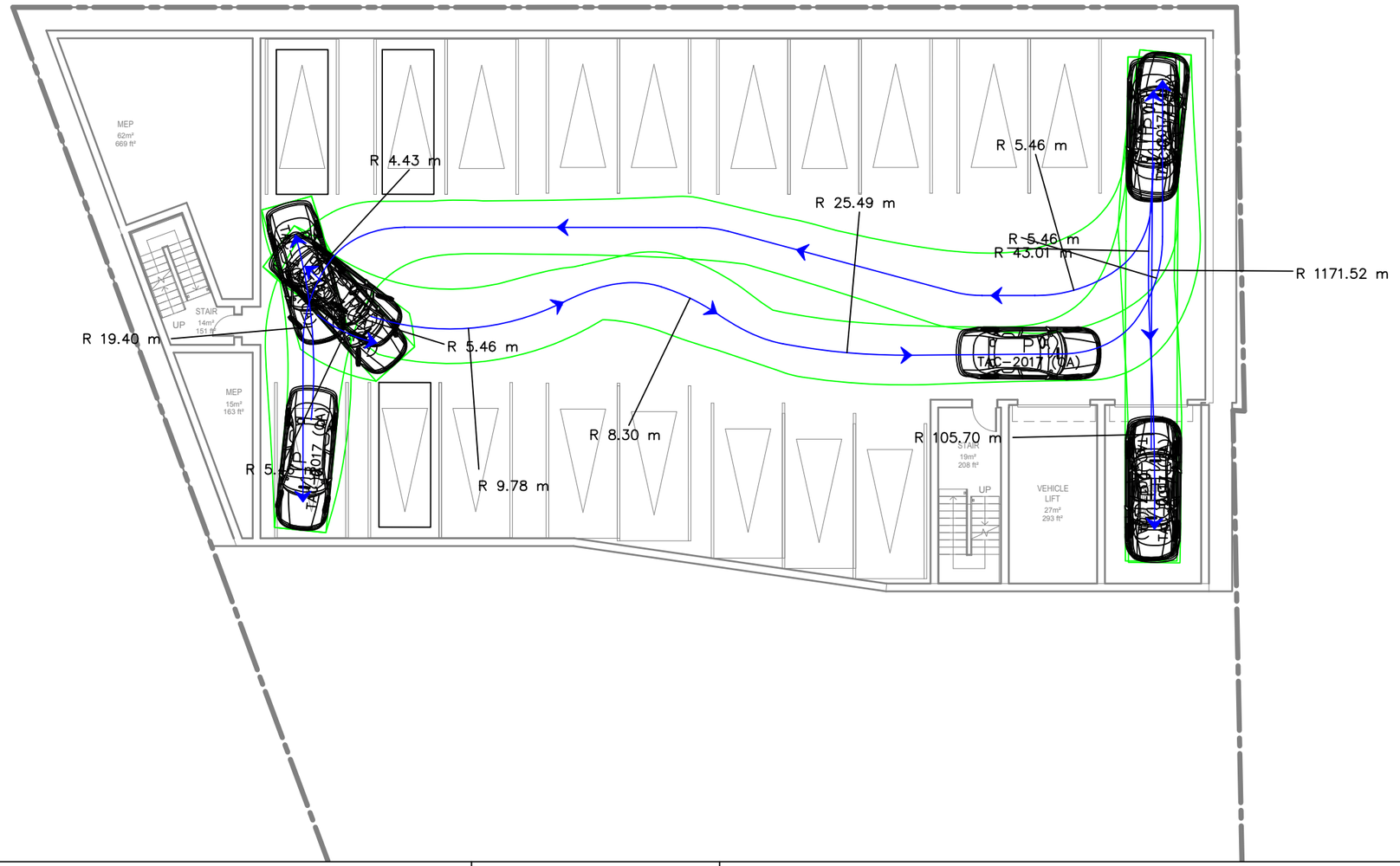
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Lock to Lock Time	: 6.0
Steering Angle	: 35.9

AUTOTURN ASSESSMENT
2076 OLD LAKESHORE RD
CITY OF BURLINGTON

paradigm TRANSPORTATION SOLUTIONS LIMITED

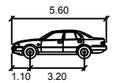
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DESIGN: SC	DRAWN: SC	CHECK: AMa	

PARKING LEVEL 2 - TAC P



NO.	DATE	INITIAL	REVISION DETAIL

DESIGN VEHICLE:



P

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

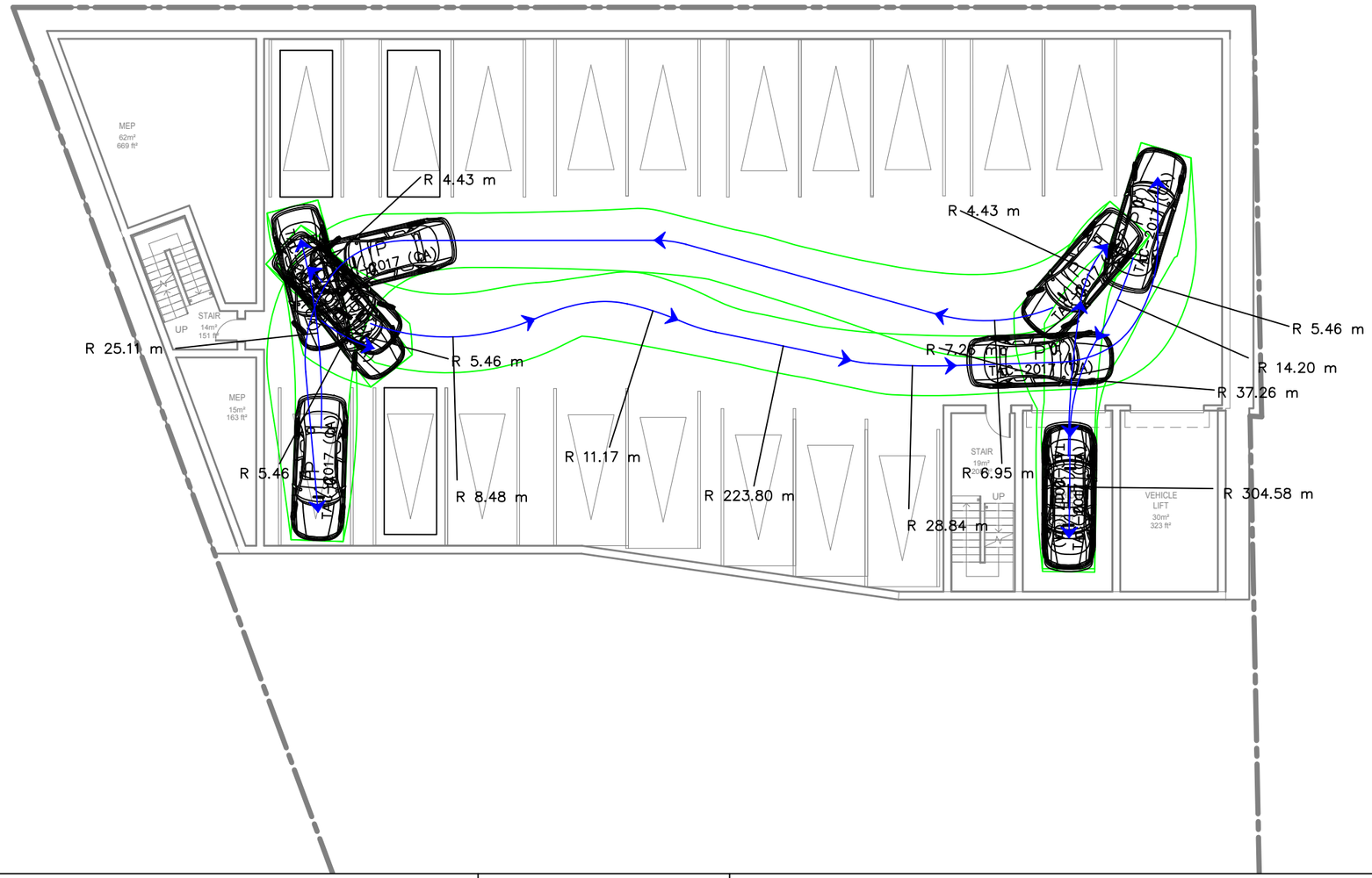
AUTOTURN ASSESSMENT
2076 OLD LAKESHORE RD
CITY OF BURLINGTON

paradigm TRANSPORTATION SOLUTIONS LIMITED

PROJECT NO.: 250220	DATE: SEPT 2025	SCALE: 1:200	DRAWING NO.:
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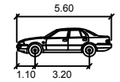
THIS AUTOTURN SWEPT PATH ANALYSIS HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

PARKING LEVEL 2 - TAC P



NO.	DATE	INITIAL	REVISION DETAIL

DESIGN VEHICLE:



P

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

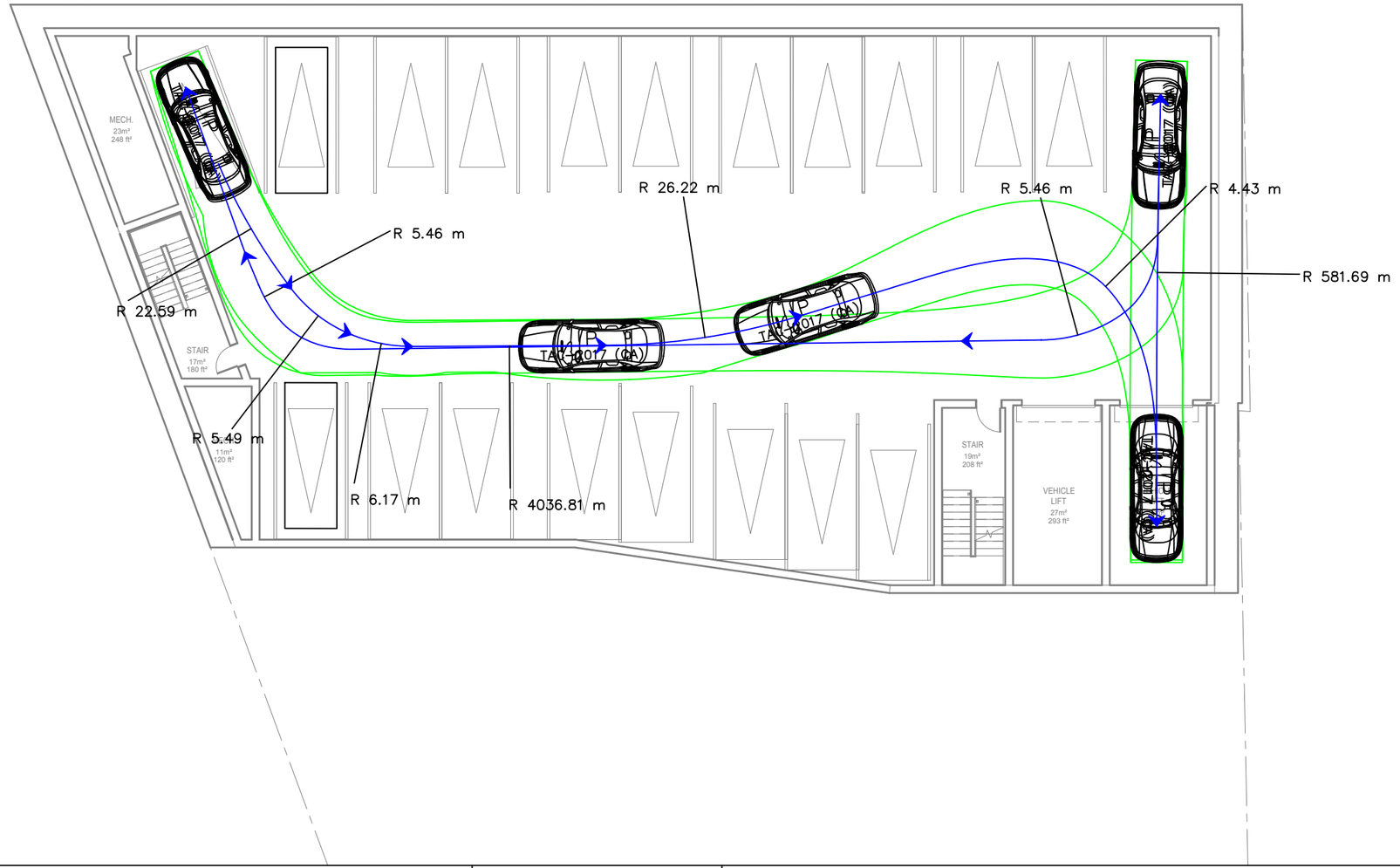
AUTOTURN ASSESSMENT
2076 OLD LAKESHORE RD
CITY OF BURLINGTON

paradigm TRANSPORTATION SOLUTIONS LIMITED

PROJECT NO.: 250220	DATE: SEPT 2025	SCALE: 1:200	DRAWING NO.:
DESIGN: SC	DRAWN: SC	CHECK: AMa	08

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

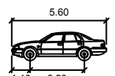
PARKING LEVEL 3-4 - TAC P



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

NO.	DATE	INITIAL	REVISION DETAIL

DESIGN VEHICLE:



P

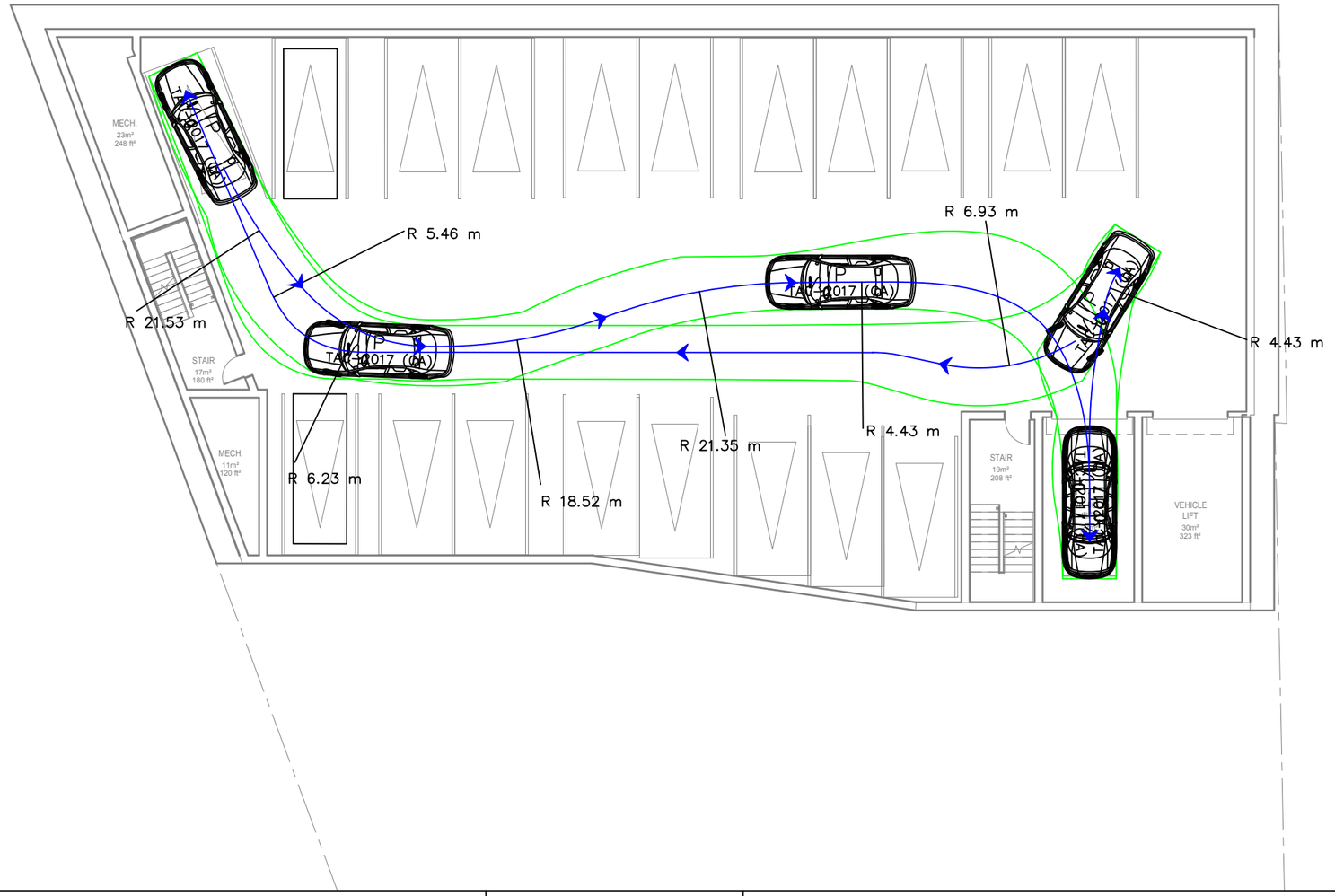
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Width	: 2.00
Track	: 2.00
Lock to Lock Time	: 6.0
Steering Angle	: 35.9

AUTOTURN ASSESSMENT
2076 OLD LAKESHORE RD
CITY OF BURLINGTON

paradigm TRANSPORTATION SOLUTIONS LIMITED

PROJECT NO.: 250220	DATE: SEPT 2025	SCALE: 1:200	DRAWING NO.: 09
DESIGN: SC	DRAWN: SC	CHECK: AMa	

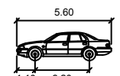
PARKING LEVEL 3-4 - TAC P



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

NO.	DATE	INITIAL	REVISION DETAIL

DESIGN VEHICLE:



P

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

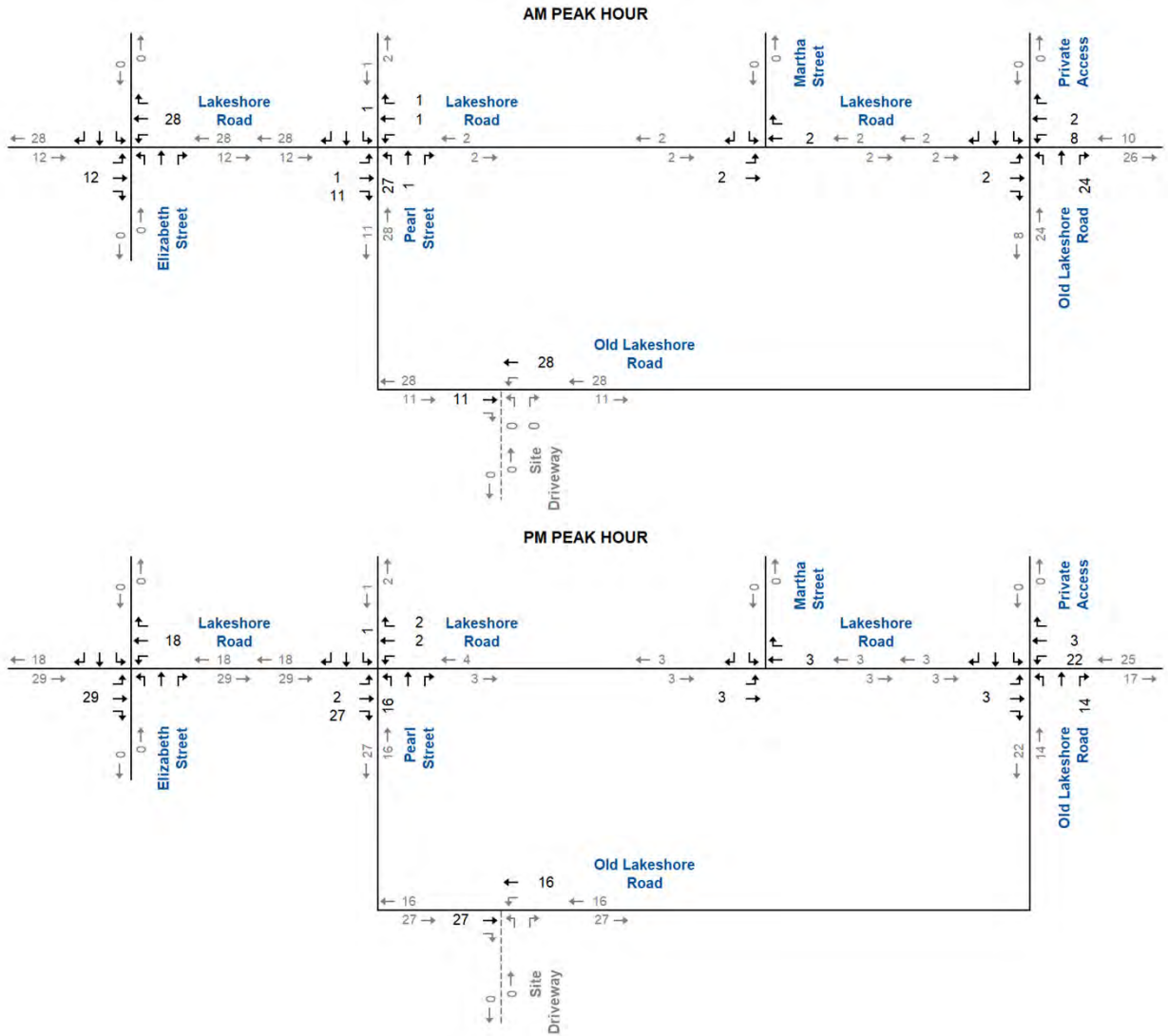
AUTOTURN ASSESSMENT
2076 OLD LAKESHORE RD
CITY OF BURLINGTON

paradigm TRANSPORTATION SOLUTIONS LIMITED

PROJECT NO.: 250220	DATE: SEPT 2025	SCALE: 1:200	DRAWING NO.: 10
DESIGN: SC	DRAWN: SC	CHECK: AMa	

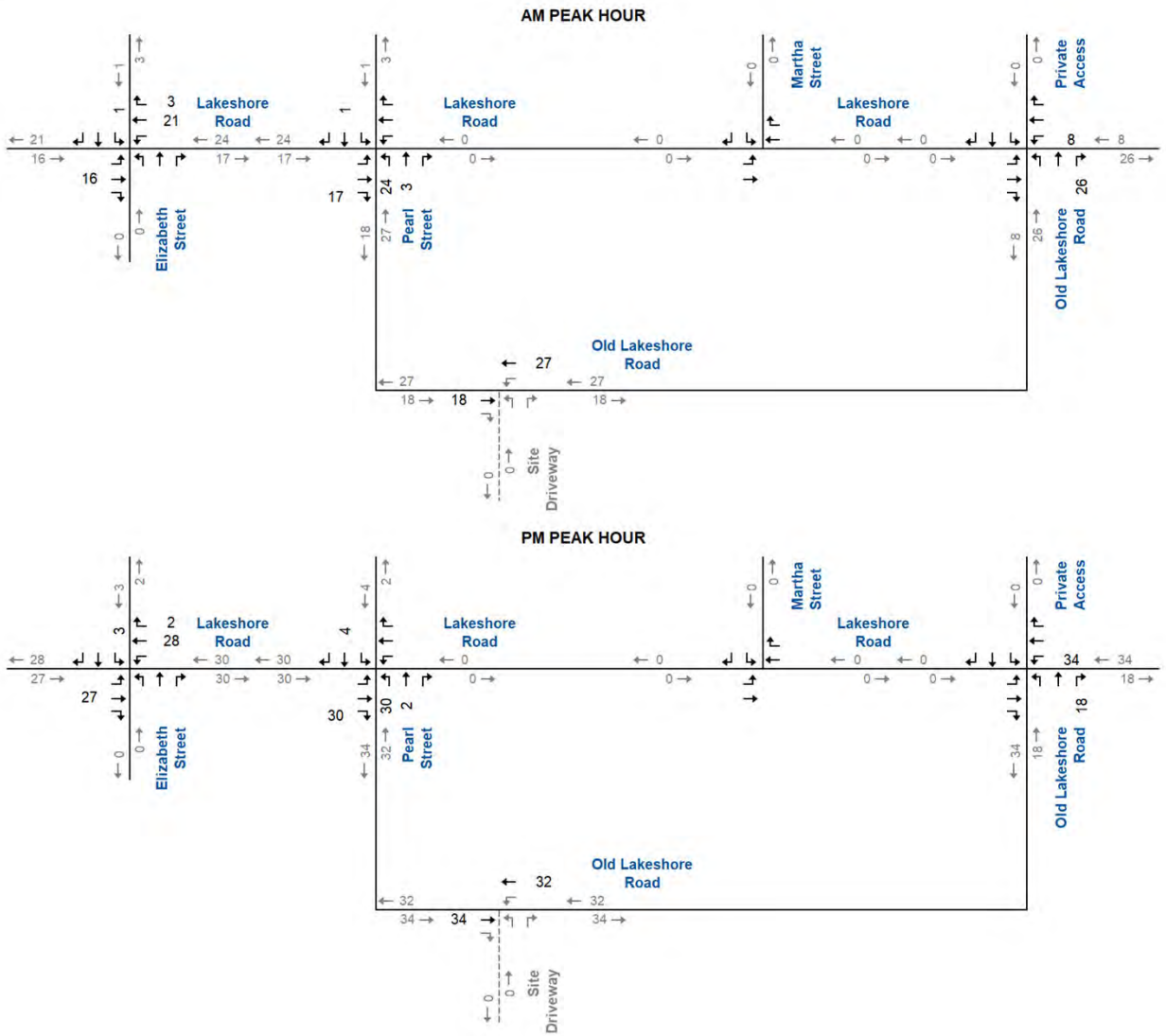
Appendix G

Adjacent Development Traffic Forecasts



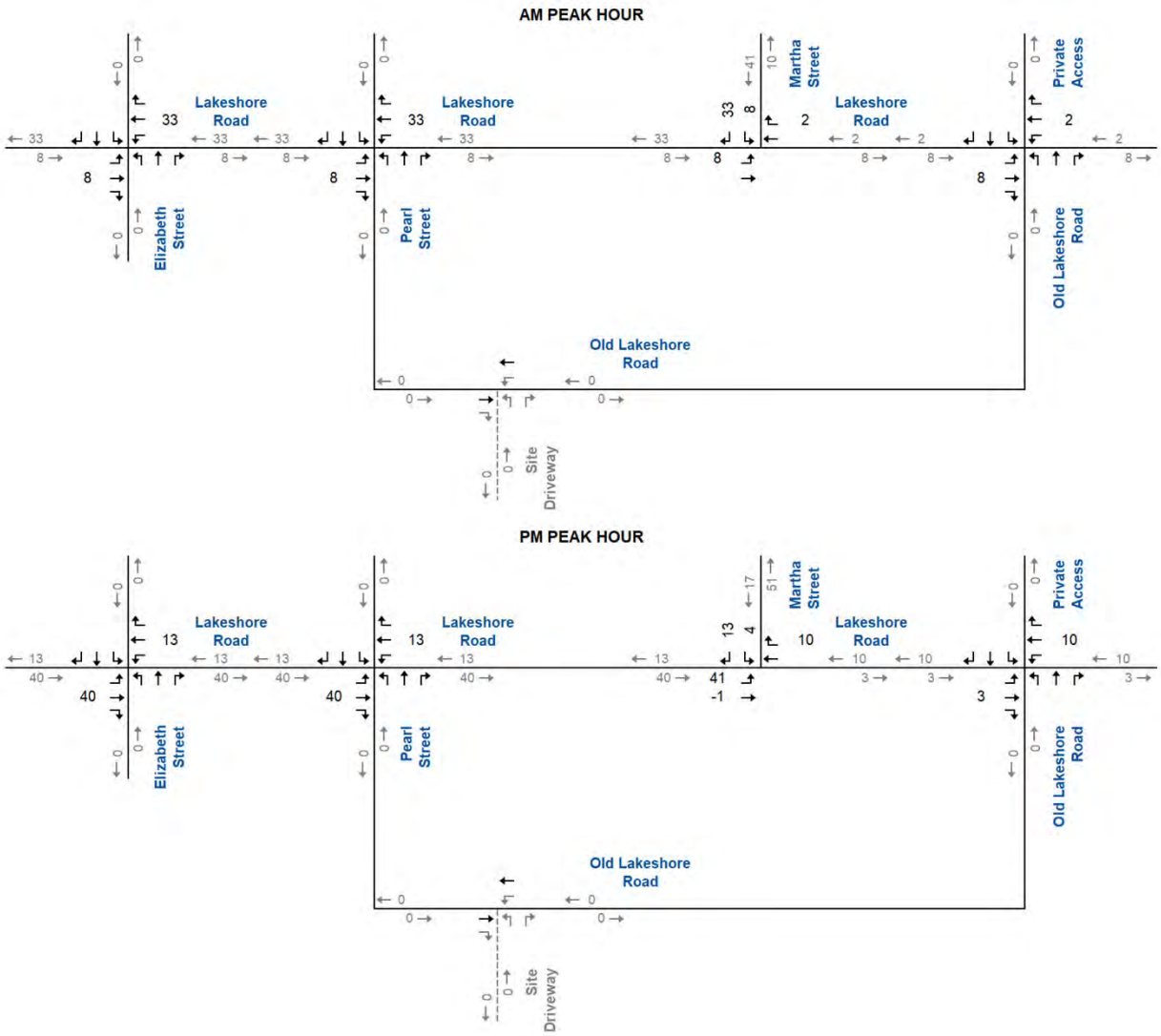
2072 Lakeshore Road

Appendix G



2083 Old Lakeshore Road

Appendix G

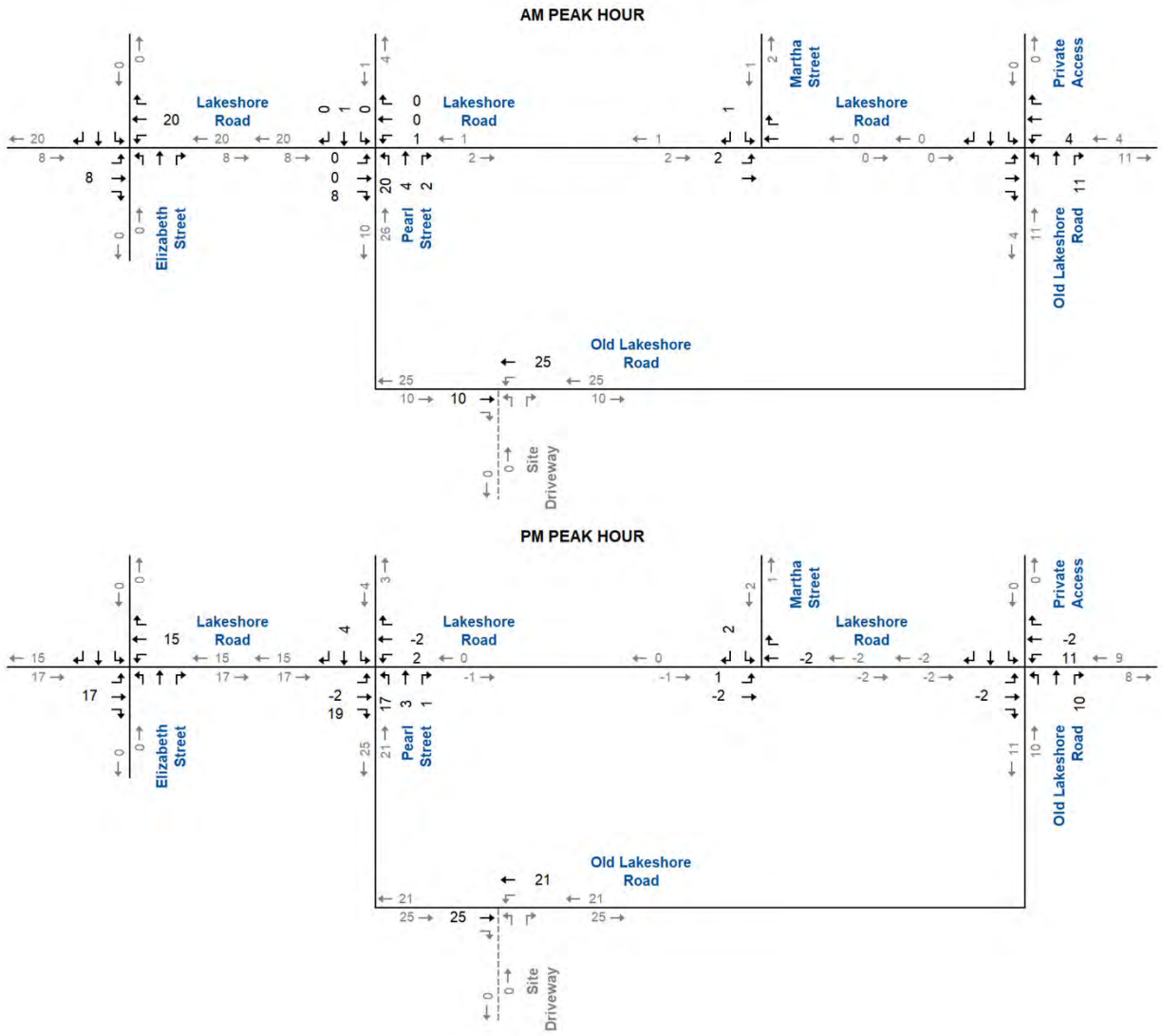


paradigm TRANSPORTATION SOLUTIONS LIMITED

374 Martha Street

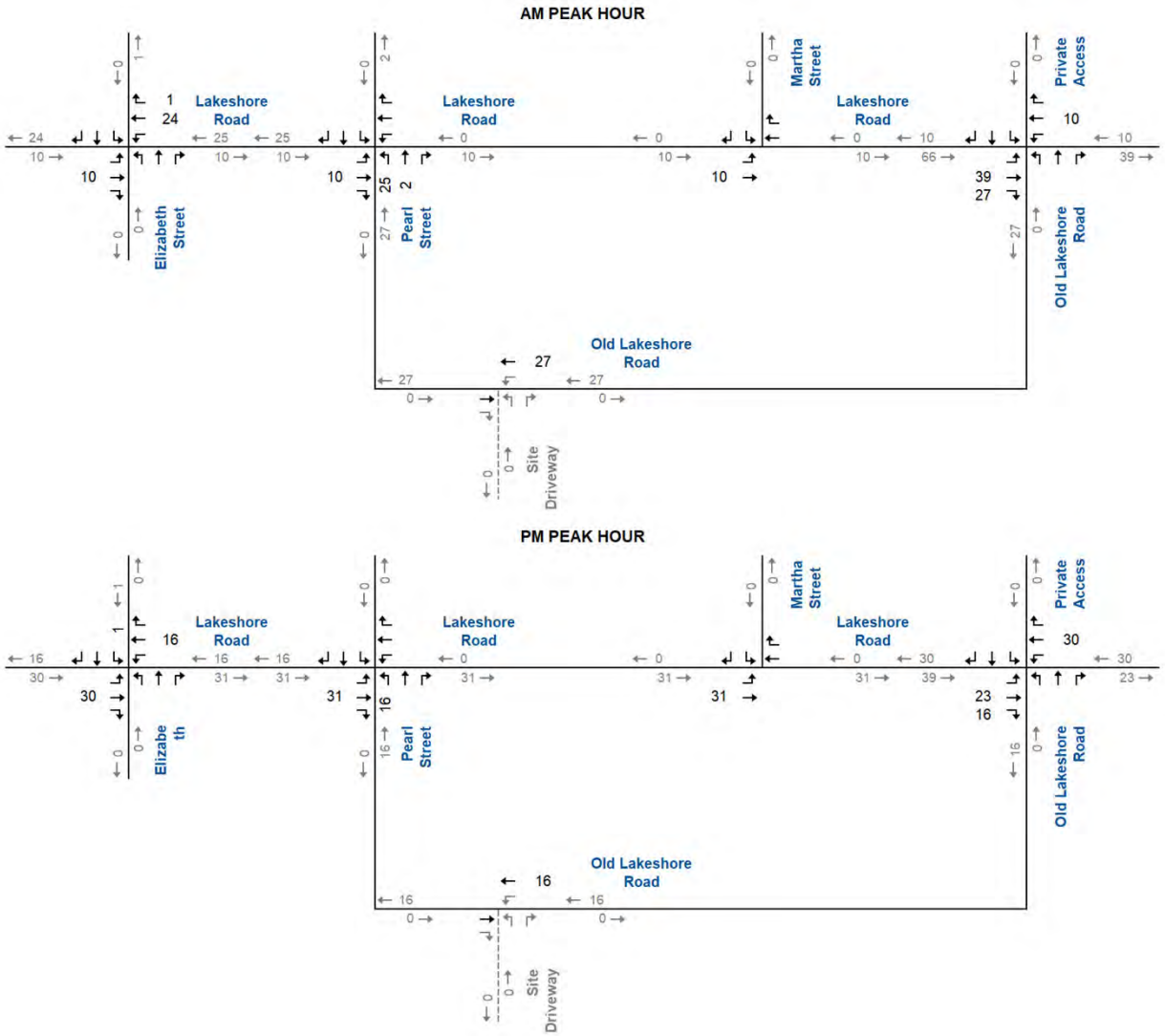
2076 Old Lakeshore Road, Burlington
250220

Appendix G



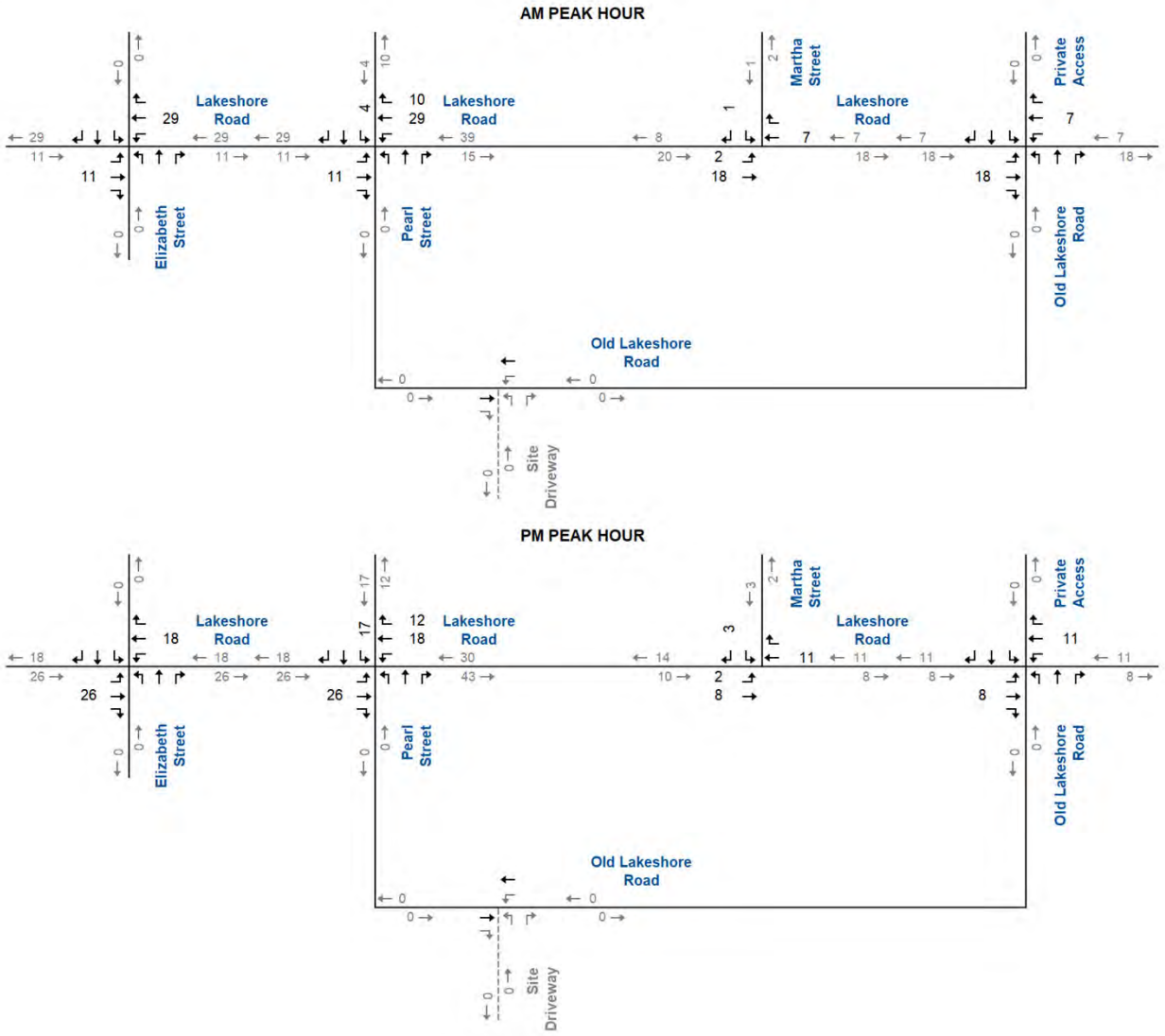
2107 Old Lakeshore Road

Appendix G



2100 Lakeshore Road

Appendix G

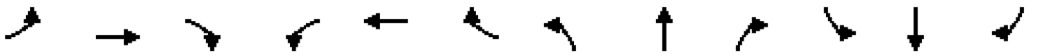


2069 Lakeshore Road

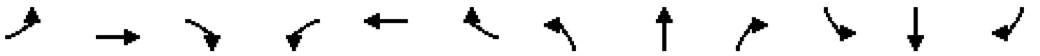
Appendix G

Appendix H

Background Traffic Operation Reports



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	827	30	7	595	20	26	3	14	12	6	42
Future Volume (vph)	38	827	30	7	595	20	26	3	14	12	6	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		15.0	30.0		0.0	10.0		0.0	20.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		0.99	1.00		0.99	0.97		0.98	0.98	
Frt		0.995			0.995			0.875			0.868	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1690	3519	0	1825	3543	0	1755	1540	0	1259	1476	0
Flt Permitted	0.384			0.272			0.724			0.746		
Satd. Flow (perm)	675	3519	0	518	3543	0	1322	1540	0	964	1476	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			5			15			45	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		106.8			52.9			68.6			100.8	
Travel Time (s)		7.7			3.8			4.9			7.3	
Confl. Peds. (#/hr)	18		23	23		18	11		22	22		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 (%)	8%	3%	3%	0%	2%	13%	4%	0%	7%	45%	0%	12%
Adj. Flow (vph)	40	880	32	7	633	21	28	3	15	13	6	45
Shared Lane Traffic (%)												
Lane Group Flow (vph)	40	912	0	7	654	0	28	18	0	13	51	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	41.0	41.0		41.0	41.0		36.0	36.0		36.0	36.0	
Total Split (s)	74.0	74.0		74.0	74.0		36.0	36.0		36.0	36.0	
Total Split (%)	67.3%	67.3%		67.3%	67.3%		32.7%	32.7%		32.7%	32.7%	
Maximum Green (s)	67.0	67.0		67.0	67.0		29.0	29.0		29.0	29.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		Max	Max		Max	Max	
Walk Time (s)	16.0	16.0		16.0	16.0		8.0	8.0		8.0	8.0	
Flash Don't Walk (s)	18.0	18.0		18.0	18.0		21.0	21.0		21.0	21.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	67.0	67.0		67.0	67.0		29.0	29.0		29.0	29.0	
Actuated g/C Ratio	0.61	0.61		0.61	0.61		0.26	0.26		0.26	0.26	
v/c Ratio	0.10	0.43		0.02	0.30		0.08	0.04		0.05	0.12	
Control Delay (s/veh)	9.7	12.0		6.9	8.8		31.4	15.8		31.2	11.5	
Queue Delay	0.0	0.0		0.0	0.2		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	9.7	12.0		6.9	9.1		31.4	15.8		31.2	11.5	
LOS	A	B		A	A		C	B		C	B	
Approach Delay (s/veh)		11.9			9.0			25.3			15.5	
Approach LOS		B			A			C			B	
Queue Length 50th (m)	3.3	50.2		0.4	27.2		4.5	0.5		2.1	1.0	
Queue Length 95th (m)	8.1	63.3		m1.0	26.1		11.7	6.0		7.0	10.1	
Internal Link Dist (m)		82.8			28.9			44.6			76.8	
Turn Bay Length (m)	40.0			30.0			10.0			20.0		
Base Capacity (vph)	411	2145		315	2159		348	417		254	422	
Starvation Cap Reductn	0	0		0	758		0	0		0	0	
Spillback Cap Reductn	0	113		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.10	0.45		0.02	0.47		0.08	0.04		0.05	0.12	

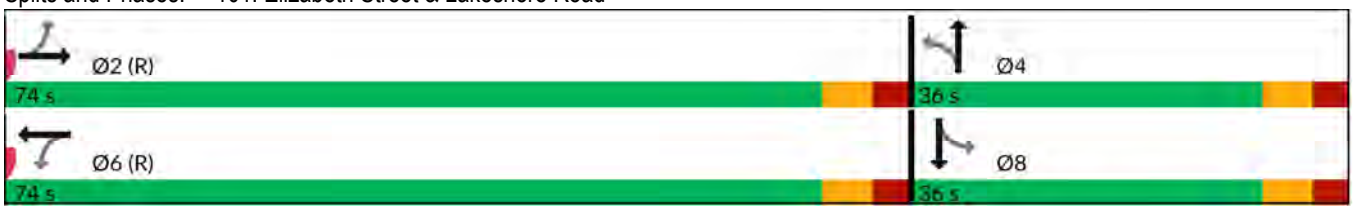
Intersection Summary	
Area Type:	Other
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 42 (38%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.43	
Intersection Signal Delay (s/veh): 11.3	Intersection LOS: B

Intersection Capacity Utilization 67.4% ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 101: Elizabeth Street & Lakeshore Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	827	30	7	595	20	26	3	14	12	6	42
Future Volume (vph)	38	827	30	7	595	20	26	3	14	12	6	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.97		1.00	0.98	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		0.99	1.00		0.98	1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.88		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1671	3518		1808	3543		1734	1540		1228	1475	
Flt Permitted	0.38	1.00		0.27	1.00		0.72	1.00		0.75	1.00	
Satd. Flow (perm)	676	3518		519	3543		1321	1540		964	1475	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	40	880	32	7	633	21	28	3	15	13	6	45
RTOR Reduction (vph)	0	2	0	0	2	0	0	11	0	0	33	0
Lane Group Flow (vph)	40	910	0	7	652	0	28	7	0	13	18	0
Confl. Peds. (#/hr)	18		23	23		18	11		22	22		11
Heavy Vehicles (%)	8%	3%	3%	0%	2%	13%	4%	0%	7%	45%	0%	12%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	67.0	67.0		67.0	67.0		29.0	29.0		29.0	29.0	
Effective Green, g (s)	67.0	67.0		67.0	67.0		29.0	29.0		29.0	29.0	
Actuated g/C Ratio	0.61	0.61		0.61	0.61		0.26	0.26		0.26	0.26	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	411	2142		316	2158		348	406		254	388	
v/s Ratio Prot		c0.26			0.18			0.00			0.01	
v/s Ratio Perm	0.06			0.01			c0.02			0.01		
v/c Ratio	0.10	0.42		0.02	0.30		0.08	0.02		0.05	0.05	
Uniform Delay, d1	8.9	11.3		8.5	10.3		30.5	30.0		30.2	30.2	
Progression Factor	1.00	1.00		0.77	0.82		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.6		0.1	0.3		0.5	0.1		0.4	0.2	
Delay (s)	9.4	12.0		6.7	8.8		30.9	30.0		30.6	30.4	
Level of Service	A	B		A	A		C	C		C	C	
Approach Delay (s/veh)		11.8			8.8			30.6			30.5	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	11.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	850	57	2	530	23	107	11	4	11	2	9
Future Volume (vph)	29	850	57	2	530	23	107	11	4	11	2	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	15.0		0.0	20.0		0.0	5.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.6			7.6			7.6			7.6		
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		1.00					0.97	0.99		1.00	0.96	
Frt		0.991			0.994			0.960			0.877	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1825	1865	0	1825	1856	0	1674	1833	0	1825	1624	0
Flt Permitted	0.415			0.226			0.750			0.748		
Satd. Flow (perm)	797	1865	0	434	1856	0	1279	1833	0	1434	1624	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			4			4			9	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		71.0			116.1			61.5			107.3	
Travel Time (s)		5.1			8.4			4.4			7.7	
Confl. Peds. (#/hr)			7	7			25		1	1		25
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	9%	0%	0%	0%	0%	0%
Adj. Flow (vph)	30	876	59	2	546	24	110	11	4	11	2	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	30	935	0	2	570	0	110	15	0	11	11	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	40.0	40.0		40.0	40.0		32.0	32.0		32.0	32.0	
Total Split (s)	77.0	77.0		77.0	77.0		33.0	33.0		33.0	33.0	
Total Split (%)	70.0%	70.0%		70.0%	70.0%		30.0%	30.0%		30.0%	30.0%	
Maximum Green (s)	70.0	70.0		70.0	70.0		26.0	26.0		26.0	26.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	16.0	16.0		16.0	16.0		8.0	8.0		8.0	8.0	
Flash Don't Walk (s)	17.0	17.0		17.0	17.0		17.0	17.0		17.0	17.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	81.3	81.3		81.3	81.3		14.7	14.7		14.7	14.7	
Actuated g/C Ratio	0.74	0.74		0.74	0.74		0.13	0.13		0.13	0.13	
v/c Ratio	0.05	0.68		0.01	0.42		0.64	0.06		0.06	0.05	
Control Delay (s/veh)	2.3	9.4		5.5	7.1		58.3	30.4		39.0	22.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	2.3	9.4		5.5	7.1		58.3	30.4		39.0	22.5	
LOS	A	A		A	A		E	C		D	C	
Approach Delay (s/veh)		9.1			7.1			55.0			30.7	
Approach LOS		A			A			D			C	
Queue Length 50th (m)	0.5	70.5		0.1	39.3		22.3	2.0		2.1	0.4	
Queue Length 95th (m)	m1.4	102.3		0.9	71.4		m36.2	m6.3		6.8	5.2	
Internal Link Dist (m)		47.0			92.1			37.5			83.3	
Turn Bay Length (m)	45.0			15.0			20.0			5.0		
Base Capacity (vph)	588	1379		320	1372		302	436		338	390	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.05	0.68		0.01	0.42		0.36	0.03		0.03	0.03	

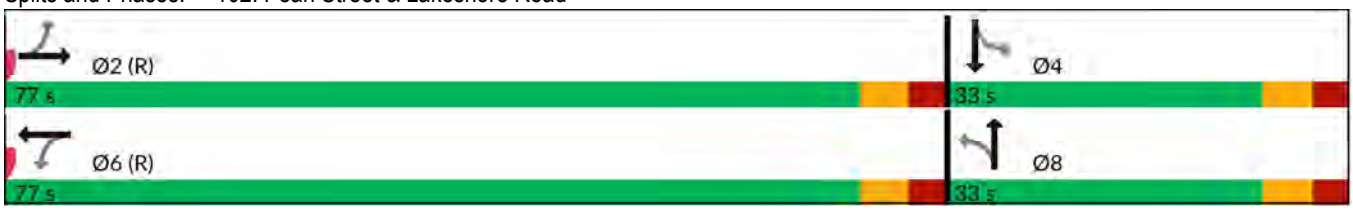
Intersection Summary	
Area Type:	Other
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 42 (38%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay (s/veh): 12.1	Intersection LOS: B

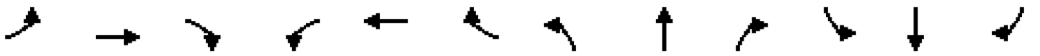
Intersection Capacity Utilization 74.8% ICU Level of Service D

Analysis Period (min) 15

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

Splits and Phases: 102: Pearl Street & Lakeshore Road

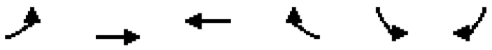




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	850	57	2	530	23	107	11	4	11	2	9
Future Volume (vph)	29	850	57	2	530	23	107	11	4	11	2	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.96	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.97	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.96		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1825	1864		1821	1856		1620	1833		1821	1624	
Flt Permitted	0.42	1.00		0.23	1.00		0.75	1.00		0.75	1.00	
Satd. Flow (perm)	798	1864		432	1856		1280	1833		1433	1624	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	30	876	59	2	546	24	110	11	4	11	2	9
RTOR Reduction (vph)	0	2	0	0	1	0	0	3	0	0	8	0
Lane Group Flow (vph)	30	933	0	2	569	0	110	12	0	11	3	0
Confl. Peds. (#/hr)			7	7			25		1	1		25
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	9%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	81.3	81.3		81.3	81.3		14.7	14.7		14.7	14.7	
Effective Green, g (s)	81.3	81.3		81.3	81.3		14.7	14.7		14.7	14.7	
Actuated g/C Ratio	0.74	0.74		0.74	0.74		0.13	0.13		0.13	0.13	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	589	1377		319	1371		171	244		191	217	
v/s Ratio Prot		c0.50			0.31			0.01			0.00	
v/s Ratio Perm	0.04			0.00			c0.09			0.01		
v/c Ratio	0.05	0.68		0.01	0.41		0.64	0.05		0.06	0.01	
Uniform Delay, d1	3.9	7.5		3.8	5.4		45.2	41.5		41.6	41.4	
Progression Factor	0.42	0.77		1.00	1.00		0.94	0.94		1.00	1.00	
Incremental Delay, d2	0.2	2.5		0.0	0.9		8.0	0.1		0.1	0.0	
Delay (s)	1.8	8.3		3.8	6.3		50.3	39.3		41.7	41.4	
Level of Service	A	A		A	A		D	D		D	D	
Approach Delay (s/veh)		8.1			6.3			49.0			41.6	
Approach LOS		A			A			D			D	

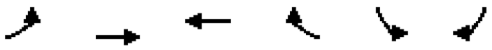
Intersection Summary			
HCM 2000 Control Delay (s/veh)	11.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	74.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	28	843	461	29	21	57
Future Volume (vph)	28	843	461	29	21	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.6				7.6	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.992		0.902	
Flt Protected	0.950				0.987	
Satd. Flow (prot)	1825	1883	1866	0	1674	0
Flt Permitted	0.950				0.987	
Satd. Flow (perm)	1825	1883	1866	0	1674	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		116.1	143.3		106.3	
Travel Time (s)		8.4	10.3		7.7	
Confl. Peds. (#/hr)	14			14	1	8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	4%	8%	0%
Adj. Flow (vph)	30	916	501	32	23	62
Shared Lane Traffic (%)						
Lane Group Flow (vph)	30	916	533	0	85	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	4.9		4.9	
Two way Left Turn Lane			Yes			
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.2%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	28	843	461	29	21	57
Future Volume (Veh/h)	28	843	461	29	21	57
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	30	916	501	32	23	62
Pedestrians		8	1		14	
Lane Width (m)		3.7	3.7		3.7	
Walking Speed (m/s)		1.1	1.1		1.1	
Percent Blockage		1	0		1	
Right turn flare (veh)						
Median type		None	TWLTL			
Median storage veh)			2			
Upstream signal (m)		116				
pX, platoon unblocked					0.72	
vC, conflicting volume	547				1508	539
vC1, stage 1 conf vol					531	
vC2, stage 2 conf vol					977	
vCu, unblocked vol	547				1511	539
tC, single (s)	4.1				6.5	6.2
tC, 2 stage (s)					5.5	
tF (s)	2.2				3.6	3.3
p0 queue free %	97				92	88
cM capacity (veh/h)	1018				275	535

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	30	916	533	85
Volume Left	30	0	0	23
Volume Right	0	0	32	62
cSH	1018	1700	1700	426
Volume to Capacity	0.03	0.54	0.31	0.20
Queue Length 95th (m)	0.7	0.0	0.0	5.6
Control Delay (s/veh)	8.6	0.0	0.0	15.5
Lane LOS	A			C
Approach Delay (s/veh)	0.3		0.0	15.5
Approach LOS				C

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	58.2%	ICU Level of Service	B
Analysis Period (min)	15		

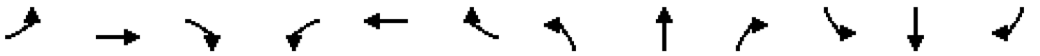
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	888	30	28	499	0	2	0	80	0	0	0
Future Volume (vph)	0	888	30	28	499	0	2	0	80	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	10.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.6			7.6			7.6			7.6		
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		0.995						0.868				
Flt Protected				0.950				0.999				
Satd. Flow (prot)	1921	1855	0	1825	1865	0	0	1666	0	0	1921	0
Flt Permitted				0.950				0.999				
Satd. Flow (perm)	1921	1855	0	1825	1865	0	0	1666	0	0	1921	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		143.3			89.6			238.2			61.5	
Travel Time (s)		10.3			6.5			17.2			4.4	
Confl. Peds. (#/hr)	11		1	1		11	1		3	3		1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	33%	0%	3%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	965	33	30	542	0	2	0	87	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	998	0	30	542	0	0	89	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 61.4%		ICU Level of Service B	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	888	30	28	499	0	2	0	80	0	0	0
Future Volume (Veh/h)	0	888	30	28	499	0	2	0	80	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	965	33	30	542	0	2	0	87	0	0	0
Pedestrians		1			3			1			11	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		0			0			0			1	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		259										
pX, platoon unblocked				0.69			0.69	0.69	0.69	0.69	0.69	
vC, conflicting volume	553			999			1586	1596	986	1668	1612	554
vC1, stage 1 conf vol							983	983		613	613	
vC2, stage 2 conf vol							603	613		1055	999	
vCu, unblocked vol	553			779			1623	1637	760	1742	1661	554
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			95			99	100	69	100	100	100
cM capacity (veh/h)	1016			588			238	246	283	131	223	530

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	0	998	30	542	89	0
Volume Left	0	0	30	0	2	0
Volume Right	0	33	0	0	87	0
cSH	1700	1700	588	1700	282	1700
Volume to Capacity	0.00	0.59	0.05	0.32	0.32	0.00
Queue Length 95th (m)	0.0	0.0	1.2	0.0	10.0	0.0
Control Delay (s/veh)	0.0	0.0	11.5	0.0	23.5	0.0
Lane LOS			B		C	A
Approach Delay (s/veh)	0.0		0.6		23.5	0.0
Approach LOS					C	A

Intersection Summary				
Average Delay	1.5			
Intersection Capacity Utilization	61.4%	ICU Level of Service		B
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	866	31	8	617	21	27	3	15	13	6	44
Future Volume (vph)	40	866	31	8	617	21	27	3	15	13	6	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		15.0	30.0		0.0	10.0		0.0	20.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		0.99	1.00		0.99	0.97		0.98	0.98	
Frt		0.995			0.995			0.874			0.867	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1690	3519	0	1825	3543	0	1755	1537	0	1259	1473	0
Flt Permitted	0.373			0.257			0.722			0.745		
Satd. Flow (perm)	656	3519	0	490	3543	0	1318	1537	0	963	1473	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			5			16			47	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		106.8			53.0			68.6			100.8	
Travel Time (s)		7.7			3.8			4.9			7.3	
Confl. Peds. (#/hr)	18		23	23		18	11		22	22		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 (%)	8%	3%	3%	0%	2%	13%	4%	0%	7%	45%	0%	12%
Adj. Flow (vph)	43	921	33	9	656	22	29	3	16	14	6	47
Shared Lane Traffic (%)												
Lane Group Flow (vph)	43	954	0	9	678	0	29	19	0	14	53	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	41.0	41.0		41.0	41.0		36.0	36.0		36.0	36.0	
Total Split (s)	74.0	74.0		74.0	74.0		36.0	36.0		36.0	36.0	
Total Split (%)	67.3%	67.3%		67.3%	67.3%		32.7%	32.7%		32.7%	32.7%	
Maximum Green (s)	67.0	67.0		67.0	67.0		29.0	29.0		29.0	29.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		Max	Max		Max	Max	
Walk Time (s)	16.0	16.0		16.0	16.0		8.0	8.0		8.0	8.0	
Flash Don't Walk (s)	18.0	18.0		18.0	18.0		21.0	21.0		21.0	21.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	67.0	67.0		67.0	67.0		29.0	29.0		29.0	29.0	
Actuated g/C Ratio	0.61	0.61		0.61	0.61		0.26	0.26		0.26	0.26	
v/c Ratio	0.11	0.44		0.03	0.31		0.08	0.05		0.06	0.13	
Control Delay (s/veh)	9.9	12.3		7.0	8.8		31.4	15.4		31.2	11.4	
Queue Delay	0.0	0.1		0.0	0.2		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	9.9	12.3		7.0	9.0		31.4	15.4		31.2	11.4	
LOS	A	B		A	A		C	B		C	B	
Approach Delay (s/veh)		12.2			9.0			25.1			15.6	
Approach LOS		B			A			C			B	
Queue Length 50th (m)	3.6	53.4		0.5	28.0		4.7	0.5		2.3	1.0	
Queue Length 95th (m)	8.7	67.1		m1.3	26.5		12.1	6.2		7.3	10.4	
Internal Link Dist (m)		82.8			29.0			44.6			76.8	
Turn Bay Length (m)	40.0			30.0			10.0			20.0		
Base Capacity (vph)	399	2145		298	2159		347	416		253	422	
Starvation Cap Reductn	0	0		0	735		0	0		0	0	
Spillback Cap Reductn	0	166		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.11	0.48		0.03	0.48		0.08	0.05		0.06	0.13	

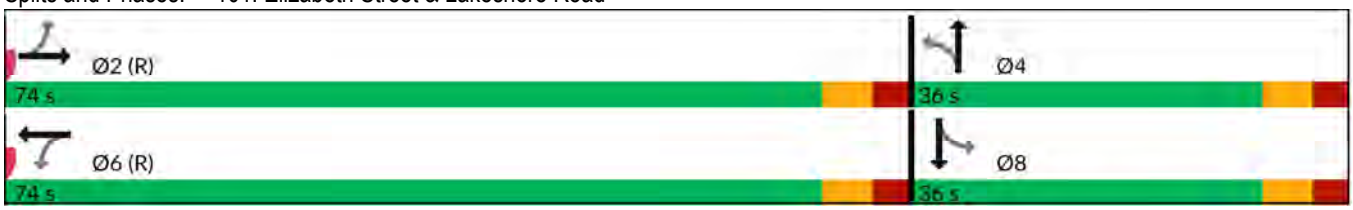
Intersection Summary	
Area Type:	Other
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 42 (38%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.44	
Intersection Signal Delay (s/veh): 11.4	Intersection LOS: B

Intersection Capacity Utilization 69.1% ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 101: Elizabeth Street & Lakeshore Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	866	31	8	617	21	27	3	15	13	6	44
Future Volume (vph)	40	866	31	8	617	21	27	3	15	13	6	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.97		1.00	0.98	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		0.99	1.00		0.98	1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.87		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1672	3519		1810	3543		1734	1536		1228	1473	
Flt Permitted	0.37	1.00		0.26	1.00		0.72	1.00		0.75	1.00	
Satd. Flow (perm)	656	3519		489	3543		1319	1536		963	1473	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	43	921	33	9	656	22	29	3	16	14	6	47
RTOR Reduction (vph)	0	2	0	0	2	0	0	12	0	0	35	0
Lane Group Flow (vph)	43	952	0	9	676	0	29	7	0	14	18	0
Confl. Peds. (#/hr)	18		23	23		18	11		22	22		11
Heavy Vehicles (%)	8%	3%	3%	0%	2%	13%	4%	0%	7%	45%	0%	12%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	67.0	67.0		67.0	67.0		29.0	29.0		29.0	29.0	
Effective Green, g (s)	67.0	67.0		67.0	67.0		29.0	29.0		29.0	29.0	
Actuated g/C Ratio	0.61	0.61		0.61	0.61		0.26	0.26		0.26	0.26	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	399	2143		297	2158		347	404		253	388	
v/s Ratio Prot		c0.27			0.19			0.00			0.01	
v/s Ratio Perm	0.07			0.02			c0.02			0.01		
v/c Ratio	0.11	0.44		0.03	0.31		0.08	0.02		0.06	0.05	
Uniform Delay, d1	9.0	11.5		8.6	10.4		30.5	30.0		30.3	30.2	
Progression Factor	1.00	1.00		0.77	0.81		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.7		0.2	0.4		0.5	0.1		0.4	0.2	
Delay (s)	9.5	12.2		6.7	8.8		31.0	30.0		30.7	30.4	
Level of Service	A	B		A	A		C	C		C	C	
Approach Delay (s/veh)		12.1			8.7			30.6			30.5	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	12.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	892	58	2	554	24	108	11	4	11	2	10
Future Volume (vph)	30	892	58	2	554	24	108	11	4	11	2	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	15.0		0.0	20.0		0.0	5.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.6			7.6			7.6			7.6		
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		1.00					0.97	0.99		1.00	0.96	
Frt		0.991			0.994			0.960			0.875	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1825	1865	0	1825	1856	0	1674	1833	0	1825	1619	0
Flt Permitted	0.400			0.203			0.750			0.748		
Satd. Flow (perm)	768	1865	0	390	1856	0	1279	1833	0	1434	1619	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			4			4			10	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		70.9			116.1			61.5			107.3	
Travel Time (s)		5.1			8.4			4.4			7.7	
Confl. Peds. (#/hr)			7	7			25		1	1		25
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	9%	0%	0%	0%	0%	0%
Adj. Flow (vph)	31	920	60	2	571	25	111	11	4	11	2	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	31	980	0	2	596	0	111	15	0	11	12	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	40.0	40.0		40.0	40.0		32.0	32.0		32.0	32.0	
Total Split (s)	77.0	77.0		77.0	77.0		33.0	33.0		33.0	33.0	
Total Split (%)	70.0%	70.0%		70.0%	70.0%		30.0%	30.0%		30.0%	30.0%	
Maximum Green (s)	70.0	70.0		70.0	70.0		26.0	26.0		26.0	26.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	16.0	16.0		16.0	16.0		8.0	8.0		8.0	8.0	
Flash Don't Walk (s)	17.0	17.0		17.0	17.0		17.0	17.0		17.0	17.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	81.2	81.2		81.2	81.2		14.8	14.8		14.8	14.8	
Actuated g/C Ratio	0.74	0.74		0.74	0.74		0.13	0.13		0.13	0.13	
v/c Ratio	0.05	0.71		0.01	0.44		0.65	0.06		0.06	0.05	
Control Delay (s/veh)	2.3	10.8		5.5	7.3		58.4	30.1		38.9	21.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	2.3	10.8		5.5	7.3		58.4	30.1		38.9	21.4	
LOS	A	B		A	A		E	C		D	C	
Approach Delay (s/veh)		10.5			7.3			55.0			29.8	
Approach LOS		B			A			E			C	
Queue Length 50th (m)	0.6	79.5		0.1	42.0		22.4	2.0		2.1	0.4	
Queue Length 95th (m)	m1.4	116.5		0.9	76.2		m36.2	m6.2		6.8	5.5	
Internal Link Dist (m)		46.9			92.1			37.5			83.3	
Turn Bay Length (m)	45.0			15.0			20.0			5.0		
Base Capacity (vph)	566	1377		287	1370		302	436		338	390	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.05	0.71		0.01	0.44		0.37	0.03		0.03	0.03	

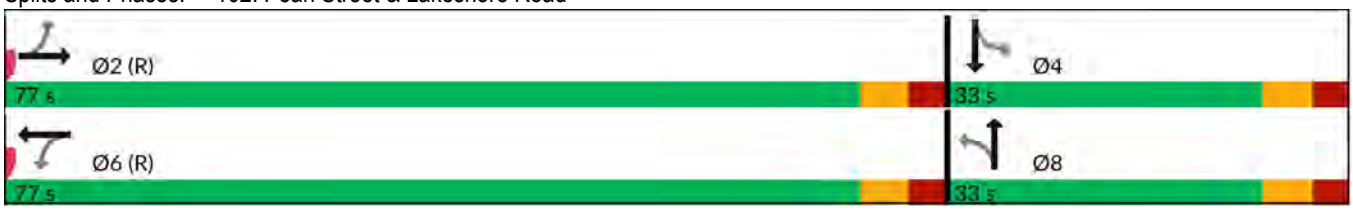
Intersection Summary	
Area Type:	Other
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 42 (38%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay (s/veh): 12.9	Intersection LOS: B

Intersection Capacity Utilization 77.1% ICU Level of Service D

Analysis Period (min) 15

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

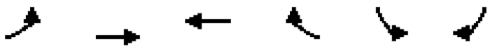
Splits and Phases: 102: Pearl Street & Lakeshore Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	892	58	2	554	24	108	11	4	11	2	10
Future Volume (vph)	30	892	58	2	554	24	108	11	4	11	2	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.96	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.97	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.96		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1825	1865		1822	1856		1620	1833		1821	1619	
Flt Permitted	0.40	1.00		0.20	1.00		0.75	1.00		0.75	1.00	
Satd. Flow (perm)	769	1865		390	1856		1278	1833		1433	1619	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	31	920	60	2	571	25	111	11	4	11	2	10
RTOR Reduction (vph)	0	2	0	0	1	0	0	3	0	0	9	0
Lane Group Flow (vph)	31	978	0	2	595	0	111	12	0	11	3	0
Confl. Peds. (#/hr)			7	7			25		1	1		25
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	9%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	81.2	81.2		81.2	81.2		14.8	14.8		14.8	14.8	
Effective Green, g (s)	81.2	81.2		81.2	81.2		14.8	14.8		14.8	14.8	
Actuated g/C Ratio	0.74	0.74		0.74	0.74		0.13	0.13		0.13	0.13	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	567	1376		287	1370		171	246		192	217	
v/s Ratio Prot		c0.52			0.32			0.01			0.00	
v/s Ratio Perm	0.04			0.01			c0.09			0.01		
v/c Ratio	0.05	0.71		0.01	0.43		0.65	0.05		0.06	0.02	
Uniform Delay, d1	3.9	7.9		3.8	5.5		45.1	41.5		41.5	41.3	
Progression Factor	0.42	0.83		1.00	1.00		0.94	0.94		1.00	1.00	
Incremental Delay, d2	0.2	2.9		0.0	1.0		8.2	0.1		0.1	0.0	
Delay (s)	1.8	9.5		3.8	6.6		50.4	39.0		41.6	41.3	
Level of Service	A	A		A	A		D	D		D	D	
Approach Delay (s/veh)		9.3			6.5			49.1			41.5	
Approach LOS		A			A			D			D	

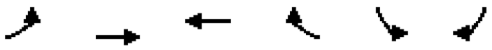
Intersection Summary			
HCM 2000 Control Delay (s/veh)	11.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	77.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	29	884	484	30	22	58
Future Volume (vph)	29	884	484	30	22	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.6				7.6	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.992		0.902	
Flt Protected	0.950				0.986	
Satd. Flow (prot)	1825	1883	1866	0	1672	0
Flt Permitted	0.950				0.986	
Satd. Flow (perm)	1825	1883	1866	0	1672	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		116.1	143.3		106.3	
Travel Time (s)		8.4	10.3		7.7	
Confl. Peds. (#/hr)	14			14	1	8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	4%	8%	0%
Adj. Flow (vph)	32	961	526	33	24	63
Shared Lane Traffic (%)						
Lane Group Flow (vph)	32	961	559	0	87	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	4.9		4.9	
Two way Left Turn Lane			Yes			
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	

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



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	29	884	484	30	22	58
Future Volume (Veh/h)	29	884	484	30	22	58
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	32	961	526	33	24	63
Pedestrians		8	1		14	
Lane Width (m)		3.7	3.7		3.7	
Walking Speed (m/s)		1.1	1.1		1.1	
Percent Blockage		1	0		1	
Right turn flare (veh)						
Median type		None	TWLTL			
Median storage veh)			2			
Upstream signal (m)		116				
pX, platoon unblocked					0.68	
vC, conflicting volume	573				1583	565
vC1, stage 1 conf vol					557	
vC2, stage 2 conf vol					1026	
vCu, unblocked vol	573				1621	565
tC, single (s)	4.1				6.5	6.2
tC, 2 stage (s)					5.5	
tF (s)	2.2				3.6	3.3
p0 queue free %	97				90	88
cM capacity (veh/h)	996				252	517

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	32	961	559	87
Volume Left	32	0	0	24
Volume Right	0	0	33	63
cSH	996	1700	1700	401
Volume to Capacity	0.03	0.57	0.33	0.22
Queue Length 95th (m)	0.8	0.0	0.0	6.2
Control Delay (s/veh)	8.7	0.0	0.0	16.4
Lane LOS	A			C
Approach Delay (s/veh)	0.3		0.0	16.4
Approach LOS				C

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	60.4%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	930	30	29	523	0	2	0	80	0	0	0
Future Volume (vph)	0	930	30	29	523	0	2	0	80	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	10.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.6			7.6			7.6			7.6		
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		0.995						0.868				
Flt Protected				0.950				0.999				
Satd. Flow (prot)	1921	1856	0	1825	1865	0	0	1666	0	0	1921	0
Flt Permitted				0.950				0.999				
Satd. Flow (perm)	1921	1856	0	1825	1865	0	0	1666	0	0	1921	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		143.3			89.6			239.9			61.5	
Travel Time (s)		10.3			6.5			17.3			4.4	
Confl. Peds. (#/hr)	11		1	1		11	1		3	3		1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	33%	0%	3%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	1011	33	32	568	0	2	0	87	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1044	0	32	568	0	0	89	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 63.6%		ICU Level of Service B	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	930	30	29	523	0	2	0	80	0	0	0
Future Volume (Veh/h)	0	930	30	29	523	0	2	0	80	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1011	33	32	568	0	2	0	87	0	0	0
Pedestrians		1			3			1			11	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		0			0			0			1	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		259										
pX, platoon unblocked				0.65			0.65	0.65	0.65	0.65	0.65	
vC, conflicting volume	579			1045			1662	1672	1032	1744	1688	580
vC1, stage 1 conf vol							1029	1029		643	643	
vC2, stage 2 conf vol							633	643		1101	1045	
vCu, unblocked vol	579			802			1748	1763	782	1874	1788	580
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			94			99	100	66	100	100	100
cM capacity (veh/h)	994			541			217	226	258	109	201	512

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	0	1044	32	568	89	0
Volume Left	0	0	32	0	2	0
Volume Right	0	33	0	0	87	0
cSH	1700	1700	541	1700	257	1700
Volume to Capacity	0.00	0.61	0.06	0.33	0.35	0.00
Queue Length 95th (m)	0.0	0.0	1.4	0.0	11.3	0.0
Control Delay (s/veh)	0.0	0.0	12.1	0.0	26.2	0.0
Lane LOS			B		D	A
Approach Delay (s/veh)	0.0		0.6		26.2	0.0
Approach LOS					D	A

Intersection Summary				
Average Delay	1.6			
Intersection Capacity Utilization	63.6%	ICU Level of Service		B
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	771	37	16	798	30	37	13	20	29	20	37
Future Volume (vph)	41	771	37	16	798	30	37	13	20	29	20	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		15.0	30.0		0.0	10.0		0.0	20.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		0.98	1.00		0.95	0.96		0.95	0.96	
Frt		0.993			0.994			0.908			0.903	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1659	3611	0	1825	3538	0	1825	1681	0	1560	1526	0
Flt Permitted	0.282			0.290			0.717			0.734		
Satd. Flow (perm)	487	3611	0	548	3538	0	1312	1681	0	1150	1526	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			6			22			40	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		106.8			54.3			68.6			100.8	
Travel Time (s)		7.7			3.9			4.9			7.3	
Confl. Peds. (#/hr)	23		37	37		23	42		39	39		42
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	10%	0%	0%	0%	2%	11%	0%	0%	0%	17%	0%	14%
Adj. Flow (vph)	45	838	40	17	867	33	40	14	22	32	22	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	45	878	0	17	900	0	40	36	0	32	62	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	41.0	41.0		41.0	41.0		36.0	36.0		36.0	36.0	
Total Split (s)	84.0	84.0		84.0	84.0		36.0	36.0		36.0	36.0	
Total Split (%)	70.0%	70.0%		70.0%	70.0%		30.0%	30.0%		30.0%	30.0%	
Maximum Green (s)	77.0	77.0		77.0	77.0		29.0	29.0		29.0	29.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		Max	Max		Max	Max	
Walk Time (s)	16.0	16.0		16.0	16.0		8.0	8.0		8.0	8.0	
Flash Don't Walk (s)	18.0	18.0		18.0	18.0		21.0	21.0		21.0	21.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	77.0	77.0		77.0	77.0		29.0	29.0		29.0	29.0	
Actuated g/C Ratio	0.64	0.64		0.64	0.64		0.24	0.24		0.24	0.24	
v/c Ratio	0.14	0.38		0.05	0.40		0.13	0.09		0.12	0.16	
Control Delay (s/veh)	9.9	10.6		5.6	6.2		37.0	19.6		37.0	17.5	
Queue Delay	0.0	0.0		0.0	0.5		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	9.9	10.6		5.6	6.7		37.0	19.6		37.0	17.5	
LOS	A	B		A	A		D	B		D	B	
Approach Delay (s/veh)		10.6			6.7			28.8			24.1	
Approach LOS		B			A			C			C	
Queue Length 50th (m)	3.9	47.1		0.8	23.4		7.4	2.6		5.9	4.0	
Queue Length 95th (m)	9.3	58.7		m1.3	28.5		16.7	11.0		14.4	15.1	
Internal Link Dist (m)		82.8			30.3			44.6			76.8	
Turn Bay Length (m)	40.0			30.0			10.0			20.0		
Base Capacity (vph)	312	2319		351	2272		317	422		277	399	
Starvation Cap Reductn	0	0		0	838		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.14	0.38		0.05	0.63		0.13	0.09		0.12	0.16	

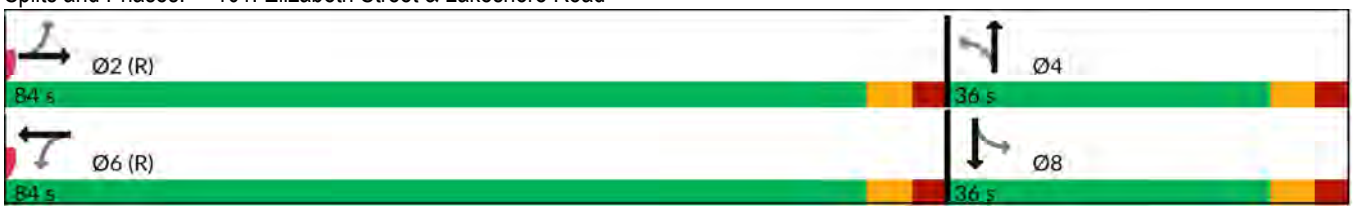
Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 56 (47%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.40	
Intersection Signal Delay (s/veh): 10.1	Intersection LOS: B

Intersection Capacity Utilization 69.9% ICU Level of Service C

Analysis Period (min) 15

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

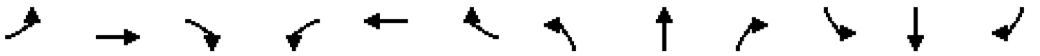
Splits and Phases: 101: Elizabeth Street & Lakeshore Road



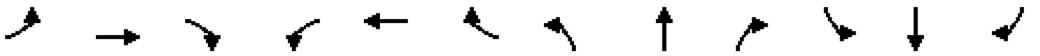
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	771	37	16	798	30	37	13	20	29	20	37
Future Volume (vph)	41	771	37	16	798	30	37	13	20	29	20	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.96		1.00	0.96	
Flpb, ped/bikes	0.99	1.00		0.98	1.00		0.95	1.00		0.95	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.91		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1642	3611		1794	3540		1738	1682		1488	1527	
Flt Permitted	0.28	1.00		0.29	1.00		0.72	1.00		0.73	1.00	
Satd. Flow (perm)	488	3611		549	3540		1311	1682		1149	1527	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	45	838	40	17	867	33	40	14	22	32	22	40
RTOR Reduction (vph)	0	3	0	0	2	0	0	17	0	0	30	0
Lane Group Flow (vph)	45	875	0	17	898	0	40	19	0	32	32	0
Confl. Peds. (#/hr)	23		37	37		23	42		39	39		42
Heavy Vehicles (%)	10%	0%	0%	0%	2%	11%	0%	0%	0%	17%	0%	14%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	77.0	77.0		77.0	77.0		29.0	29.0		29.0	29.0	
Effective Green, g (s)	77.0	77.0		77.0	77.0		29.0	29.0		29.0	29.0	
Actuated g/C Ratio	0.64	0.64		0.64	0.64		0.24	0.24		0.24	0.24	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	313	2317		352	2271		316	406		277	369	
v/s Ratio Prot		0.24			c0.25			0.01			0.02	
v/s Ratio Perm	0.09			0.03			c0.03			0.03		
v/c Ratio	0.14	0.38		0.05	0.40		0.13	0.05		0.12	0.09	
Uniform Delay, d1	8.5	10.2		8.0	10.3		35.6	34.9		35.5	35.2	
Progression Factor	1.00	1.00		0.66	0.57		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	0.5		0.2	0.4		0.8	0.2		0.8	0.5	
Delay (s)	9.5	10.6		5.5	6.2		36.4	35.1		36.3	35.7	
Level of Service	A	B		A	A		D	D		D	D	
Approach Delay (s/veh)		10.6			6.2			35.8			35.9	
Approach LOS		B			A			D			D	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	10.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	69.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	650	86	3	817	40	125	10	1	39	13	35
Future Volume (vph)	37	650	86	3	817	40	125	10	1	39	13	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	15.0		0.0	20.0		0.0	5.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.6			7.6			7.6			7.6		
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		1.00		1.00	1.00		0.98	1.00		0.99	0.97	
Frt		0.982			0.993			0.987			0.891	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1772	1862	0	1825	1849	0	1825	1892	0	1825	1632	0
Flt Permitted	0.193			0.264			0.724			0.750		
Satd. Flow (perm)	360	1862	0	505	1849	0	1359	1892	0	1431	1632	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			4			1			37	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		69.6			116.1			61.5			107.3	
Travel Time (s)		5.0			8.4			4.4			7.7	
Confl. Peds. (#/hr)	3		10	10		3	17		3	3		17
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	3%	1%	0%	0%	3%	4%	0%	0%	0%	0%	0%	3%
Adj. Flow (vph)	39	684	91	3	860	42	132	11	1	41	14	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	39	775	0	3	902	0	132	12	0	41	51	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	40.0	40.0		40.0	40.0		32.0	32.0		32.0	32.0	
Total Split (s)	87.0	87.0		87.0	87.0		33.0	33.0		33.0	33.0	
Total Split (%)	72.5%	72.5%		72.5%	72.5%		27.5%	27.5%		27.5%	27.5%	
Maximum Green (s)	80.0	80.0		80.0	80.0		26.0	26.0		26.0	26.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		Max	Max		Max	Max	
Walk Time (s)	16.0	16.0		16.0	16.0		8.0	8.0		8.0	8.0	
Flash Don't Walk (s)	17.0	17.0		17.0	17.0		17.0	17.0		17.0	17.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	80.0	80.0		80.0	80.0		26.0	26.0		26.0	26.0	
Actuated g/C Ratio	0.67	0.67		0.67	0.67		0.22	0.22		0.22	0.22	
v/c Ratio	0.16	0.62		0.01	0.73		0.45	0.03		0.13	0.13	
Control Delay (s/veh)	5.5	9.0		7.0	17.4		44.7	34.4		39.4	17.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	5.5	9.0		7.0	17.4		44.7	34.4		39.4	17.6	
LOS	A	A		A	B		D	C		D	B	
Approach Delay (s/veh)		8.8			17.4			43.8			27.3	
Approach LOS		A			B			D			C	
Queue Length 50th (m)	1.3	39.7		0.2	126.0		27.3	2.2		7.8	2.6	
Queue Length 95th (m)	3.1	54.5		1.3	176.1		46.8	m6.6		17.6	13.0	
Internal Link Dist (m)		45.6			92.1			37.5			83.3	
Turn Bay Length (m)	45.0			15.0			20.0			5.0		
Base Capacity (vph)	240	1245		336	1234		294	410		310	382	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.16	0.62		0.01	0.73		0.45	0.03		0.13	0.13	

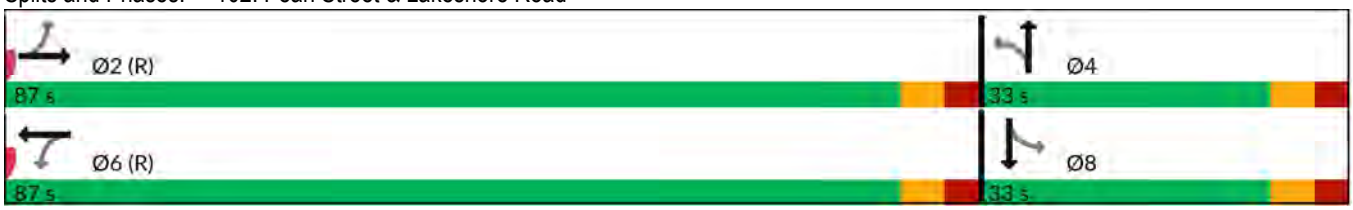
Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 51 (43%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay (s/veh): 16.2	Intersection LOS: B

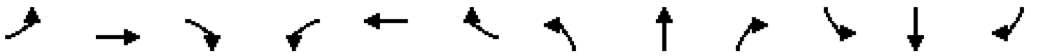
Intersection Capacity Utilization 77.9% ICU Level of Service D

Analysis Period (min) 15

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

Splits and Phases: 102: Pearl Street & Lakeshore Road

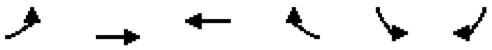




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	650	86	3	817	40	125	10	1	39	13	35
Future Volume (vph)	37	650	86	3	817	40	125	10	1	39	13	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.98	1.00		0.99	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.99		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1772	1862		1818	1849		1783	1893		1812	1632	
Flt Permitted	0.19	1.00		0.26	1.00		0.72	1.00		0.75	1.00	
Satd. Flow (perm)	361	1862		505	1849		1359	1893		1430	1632	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	39	684	91	3	860	42	132	11	1	41	14	37
RTOR Reduction (vph)	0	4	0	0	1	0	0	1	0	0	29	0
Lane Group Flow (vph)	39	771	0	3	901	0	132	11	0	41	22	0
Confl. Peds. (#/hr)	3		10	10		3	17		3	3		17
Heavy Vehicles (%)	3%	1%	0%	0%	3%	4%	0%	0%	0%	0%	0%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	80.0	80.0		80.0	80.0		26.0	26.0		26.0	26.0	
Effective Green, g (s)	80.0	80.0		80.0	80.0		26.0	26.0		26.0	26.0	
Actuated g/C Ratio	0.67	0.67		0.67	0.67		0.22	0.22		0.22	0.22	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	240	1241		336	1232		294	410		309	353	
v/s Ratio Prot		0.41			c0.49			0.01			0.01	
v/s Ratio Perm	0.11			0.01			c0.10			0.03		
v/c Ratio	0.16	0.62		0.01	0.73		0.45	0.03		0.13	0.06	
Uniform Delay, d1	7.5	11.4		6.7	13.0		40.8	37.0		37.9	37.3	
Progression Factor	0.52	0.58		1.00	1.00		0.96	0.97		1.00	1.00	
Incremental Delay, d2	1.4	2.2		0.0	3.8		4.9	0.1		0.9	0.3	
Delay (s)	5.2	8.9		6.8	16.9		43.9	36.1		38.8	37.7	
Level of Service	A	A		A	B		D	D		D	D	
Approach Delay (s/veh)		8.7			16.8			43.2			38.2	
Approach LOS		A			B			D			D	

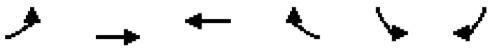
Intersection Summary			
HCM 2000 Control Delay (s/veh)	16.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	77.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	69	602	800	48	11	34
Future Volume (vph)	69	602	800	48	11	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.6				7.6	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.992		0.897	
Flt Protected	0.950				0.988	
Satd. Flow (prot)	1755	1902	1867	0	1703	0
Flt Permitted	0.950				0.988	
Satd. Flow (perm)	1755	1902	1867	0	1703	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		116.1	143.3		106.3	
Travel Time (s)		8.4	10.3		7.7	
Confl. Peds. (#/hr)	7			7	3	10
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	1%	2%	3%	0%	0%
Adj. Flow (vph)	72	627	833	50	11	35
Shared Lane Traffic (%)						
Lane Group Flow (vph)	72	627	883	0	46	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	4.9		4.9	
Two way Left Turn Lane			Yes			
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	

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



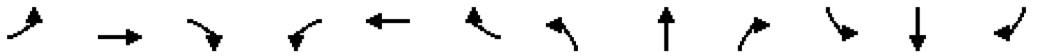
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	69	602	800	48	11	34
Future Volume (Veh/h)	69	602	800	48	11	34
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	72	627	833	50	11	35
Pedestrians		10	3		7	
Lane Width (m)		3.7	3.7		3.7	
Walking Speed (m/s)		1.1	1.1		1.1	
Percent Blockage		1	0		1	
Right turn flare (veh)						
Median type		None	TWLTL			
Median storage veh)			2			
Upstream signal (m)		116				
pX, platoon unblocked					0.77	
vC, conflicting volume	890				1639	875
vC1, stage 1 conf vol					865	
vC2, stage 2 conf vol					774	
vCu, unblocked vol	890				1679	875
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	90				96	90
cM capacity (veh/h)	748				288	346

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	72	627	883	46
Volume Left	72	0	0	11
Volume Right	0	0	50	35
cSH	748	1700	1700	330
Volume to Capacity	0.10	0.37	0.52	0.14
Queue Length 95th (m)	2.4	0.0	0.0	3.6
Control Delay (s/veh)	10.3	0.0	0.0	17.7
Lane LOS	B			C
Approach Delay (s/veh)	1.1		0.0	17.7
Approach LOS				C

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	65.2%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	590	19	93	889	0	1	0	49	0	0	0
Future Volume (vph)	0	590	19	93	889	0	1	0	49	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	10.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.6			7.6			7.6			7.6		
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		0.995						0.868				
Flt Protected				0.950				0.999				
Satd. Flow (prot)	1921	1893	0	1825	1883	0	0	1666	0	0	1921	0
Flt Permitted				0.950				0.999				
Satd. Flow (perm)	1921	1893	0	1825	1883	0	0	1666	0	0	1921	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		143.3			89.6			237.4			61.5	
Travel Time (s)		10.3			6.5			17.1			4.4	
Confl. Peds. (#/hr)	14		3	3		14			8	8		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	608	20	96	916	0	1	0	51	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	628	0	96	916	0	0	52	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 66.2%		ICU Level of Service C	
Analysis Period (min) 15			

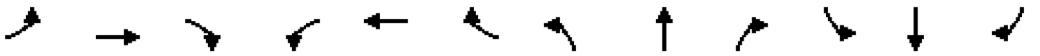


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	590	19	93	889	0	1	0	49	0	0	0
Future Volume (Veh/h)	0	590	19	93	889	0	1	0	49	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	0	608	20	96	916	0	1	0	51	0	0	0
Pedestrians					8			3			14	
Lane Width (m)					3.7			3.7			3.7	
Walking Speed (m/s)					1.1			1.1			1.1	
Percent Blockage					1			0			1	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		259										
pX, platoon unblocked				0.79			0.79	0.79	0.79	0.79	0.79	
vC, conflicting volume	930			631			1729	1743	629	1789	1753	930
vC1, stage 1 conf vol							621	621		1122	1122	
vC2, stage 2 conf vol							1108	1122		667	631	
vCu, unblocked vol	930			402			1789	1807	400	1865	1820	930
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			90			100	100	90	100	100	100
cM capacity (veh/h)	734			921			206	221	513	180	209	322

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	0	628	96	916	52	0
Volume Left	0	0	96	0	1	0
Volume Right	0	20	0	0	51	0
cSH	1700	1700	921	1700	498	1700
Volume to Capacity	0.00	0.37	0.10	0.54	0.10	0.00
Queue Length 95th (m)	0.0	0.0	2.6	0.0	2.6	0.0
Control Delay (s/veh)	0.0	0.0	9.4	0.0	13.1	0.0
Lane LOS			A		B	A
Approach Delay (s/veh)	0.0		0.9		13.1	0.0
Approach LOS					B	A

Intersection Summary				
Average Delay	0.9			
Intersection Capacity Utilization	66.2%	ICU Level of Service	C	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	801	39	17	834	31	39	14	21	30	21	39
Future Volume (vph)	43	801	39	17	834	31	39	14	21	30	21	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		15.0	30.0		0.0	10.0		0.0	20.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		0.98	1.00		0.95	0.96		0.95	0.96	
Frt		0.993			0.995			0.909			0.903	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1659	3611	0	1825	3542	0	1825	1683	0	1560	1526	0
Flt Permitted	0.267			0.277			0.715			0.732		
Satd. Flow (perm)	462	3611	0	524	3542	0	1308	1683	0	1147	1526	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			6			23			42	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		106.8			52.9			68.6			100.8	
Travel Time (s)		7.7			3.8			4.9			7.3	
Confl. Peds. (#/hr)	23		37	37		23	42		39	39		42
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	10%	0%	0%	0%	2%	11%	0%	0%	0%	17%	0%	14%
Adj. Flow (vph)	47	871	42	18	907	34	42	15	23	33	23	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	47	913	0	18	941	0	42	38	0	33	65	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	41.0	41.0		41.0	41.0		36.0	36.0		36.0	36.0	
Total Split (s)	84.0	84.0		84.0	84.0		36.0	36.0		36.0	36.0	
Total Split (%)	70.0%	70.0%		70.0%	70.0%		30.0%	30.0%		30.0%	30.0%	
Maximum Green (s)	77.0	77.0		77.0	77.0		29.0	29.0		29.0	29.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		Max	Max		Max	Max	
Walk Time (s)	16.0	16.0		16.0	16.0		8.0	8.0		8.0	8.0	
Flash Don't Walk (s)	18.0	18.0		18.0	18.0		21.0	21.0		21.0	21.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	77.0	77.0		77.0	77.0		29.0	29.0		29.0	29.0	
Actuated g/C Ratio	0.64	0.64		0.64	0.64		0.24	0.24		0.24	0.24	
v/c Ratio	0.16	0.39		0.05	0.41		0.13	0.09		0.12	0.16	
Control Delay (s/veh)	10.3	10.8		5.6	6.2		37.2	19.7		37.0	17.4	
Queue Delay	0.0	0.0		0.0	0.5		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	10.3	10.8		5.6	6.7		37.2	19.7		37.0	17.4	
LOS	B	B		A	A		D	B		D	B	
Approach Delay (s/veh)		10.8			6.7			28.9			24.0	
Approach LOS		B			A			C			C	
Queue Length 50th (m)	4.1	49.7		0.9	24.1		7.8	2.7		6.1	4.2	
Queue Length 95th (m)	9.7	61.6		m1.3	29.3		17.4	11.6		14.8	15.6	
Internal Link Dist (m)		82.8			28.9			44.6			76.8	
Turn Bay Length (m)	40.0			30.0			10.0			20.0		
Base Capacity (vph)	296	2319		336	2274		316	424		277	400	
Starvation Cap Reductn	0	0		0	840		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.16	0.39		0.05	0.66		0.13	0.09		0.12	0.16	

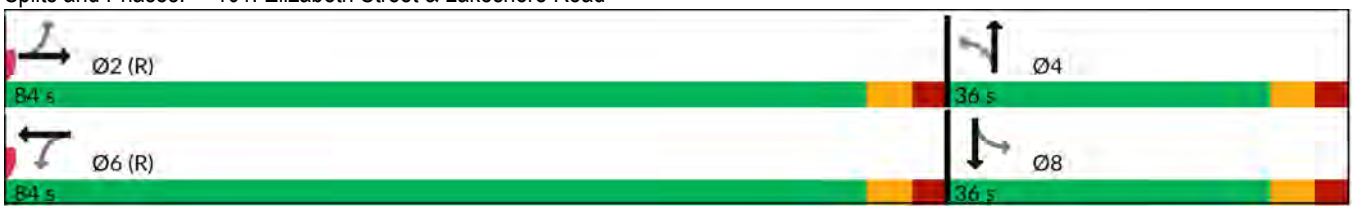
Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 56 (47%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.41	
Intersection Signal Delay (s/veh): 10.2	Intersection LOS: B

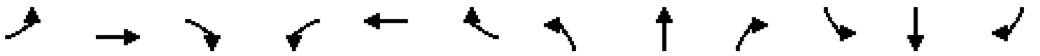
Intersection Capacity Utilization 71.6% ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 101: Elizabeth Street & Lakeshore Road



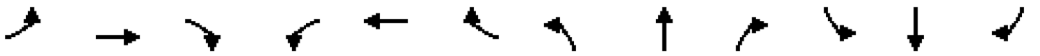


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	801	39	17	834	31	39	14	21	30	21	39
Future Volume (vph)	43	801	39	17	834	31	39	14	21	30	21	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.96		1.00	0.96	
Flpb, ped/bikes	0.99	1.00		0.98	1.00		0.95	1.00		0.95	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.91		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1643	3611		1796	3540		1738	1684		1488	1526	
Flt Permitted	0.27	1.00		0.28	1.00		0.71	1.00		0.73	1.00	
Satd. Flow (perm)	462	3611		524	3540		1308	1684		1147	1526	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	47	871	42	18	907	34	42	15	23	33	23	42
RTOR Reduction (vph)	0	3	0	0	2	0	0	17	0	0	32	0
Lane Group Flow (vph)	47	910	0	18	939	0	42	21	0	33	33	0
Confl. Peds. (#/hr)	23		37	37		23	42		39	39		42
Heavy Vehicles (%)	10%	0%	0%	0%	2%	11%	0%	0%	0%	17%	0%	14%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	77.0	77.0		77.0	77.0		29.0	29.0		29.0	29.0	
Effective Green, g (s)	77.0	77.0		77.0	77.0		29.0	29.0		29.0	29.0	
Actuated g/C Ratio	0.64	0.64		0.64	0.64		0.24	0.24		0.24	0.24	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	296	2317		336	2271		316	406		277	368	
v/s Ratio Prot		0.25			c0.27			0.01			0.02	
v/s Ratio Perm	0.10			0.03			c0.03			0.03		
v/c Ratio	0.16	0.39		0.05	0.41		0.13	0.05		0.12	0.09	
Uniform Delay, d1	8.6	10.3		8.0	10.5		35.6	34.9		35.5	35.3	
Progression Factor	1.00	1.00		0.65	0.55		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.1	0.5		0.2	0.4		0.9	0.2		0.9	0.5	
Delay (s)	9.7	10.8		5.4	6.2		36.5	35.2		36.4	35.8	
Level of Service	A	B		A	A		D	D		D	D	
Approach Delay (s/veh)		10.7			6.2			35.9			36.0	
Approach LOS		B			A			D			D	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	10.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	678	87	3	857	41	128	10	1	40	13	37
Future Volume (vph)	39	678	87	3	857	41	128	10	1	40	13	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	15.0		0.0	20.0		0.0	5.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.6			7.6			7.6			7.6		
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		1.00		1.00	1.00		0.98	1.00		0.99	0.97	
Frt		0.983			0.993			0.987			0.890	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1772	1864	0	1825	1849	0	1825	1892	0	1825	1629	0
Flt Permitted	0.170			0.246			0.722			0.750		
Satd. Flow (perm)	317	1864	0	471	1849	0	1355	1892	0	1431	1629	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			4			1			39	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		71.0			116.1			61.5			107.3	
Travel Time (s)		5.1			8.4			4.4			7.7	
Confl. Peds. (#/hr)	3		10	10		3	17		3	3		17
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	3%	1%	0%	0%	3%	4%	0%	0%	0%	0%	0%	3%
Adj. Flow (vph)	41	714	92	3	902	43	135	11	1	42	14	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	41	806	0	3	945	0	135	12	0	42	53	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	40.0	40.0		40.0	40.0		32.0	32.0		32.0	32.0	
Total Split (s)	87.0	87.0		87.0	87.0		33.0	33.0		33.0	33.0	
Total Split (%)	72.5%	72.5%		72.5%	72.5%		27.5%	27.5%		27.5%	27.5%	
Maximum Green (s)	80.0	80.0		80.0	80.0		26.0	26.0		26.0	26.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		Max	Max		Max	Max	
Walk Time (s)	16.0	16.0		16.0	16.0		8.0	8.0		8.0	8.0	
Flash Don't Walk (s)	17.0	17.0		17.0	17.0		17.0	17.0		17.0	17.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	80.0	80.0		80.0	80.0		26.0	26.0		26.0	26.0	
Actuated g/C Ratio	0.67	0.67		0.67	0.67		0.22	0.22		0.22	0.22	
v/c Ratio	0.19	0.65		0.01	0.77		0.46	0.03		0.14	0.14	
Control Delay (s/veh)	6.1	9.4		7.0	18.9		45.1	34.2		39.5	17.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	6.1	9.4		7.0	18.9		45.1	34.2		39.5	17.1	
LOS	A	A		A	B		D	C		D	B	
Approach Delay (s/veh)		9.3			18.8			44.2			27.0	
Approach LOS		A			B			D			C	
Queue Length 50th (m)	1.4	42.8		0.2	138.2		27.8	2.1		8.1	2.6	
Queue Length 95th (m)	3.2	59.4		1.3	194.2		m47.5	m6.6		17.9	13.2	
Internal Link Dist (m)		47.0			92.1			37.5			83.3	
Turn Bay Length (m)	45.0			15.0			20.0			5.0		
Base Capacity (vph)	211	1246		314	1234		293	410		310	383	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.19	0.65		0.01	0.77		0.46	0.03		0.14	0.14	

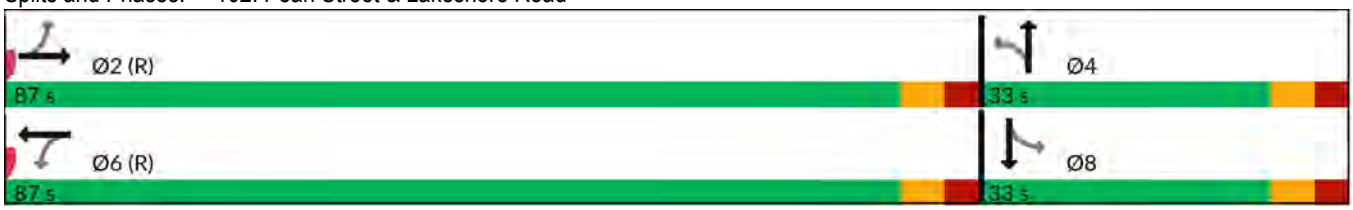
Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 51 (43%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay (s/veh): 17.1	Intersection LOS: B

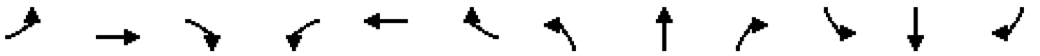
Intersection Capacity Utilization 80.1% ICU Level of Service D

Analysis Period (min) 15

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

Splits and Phases: 102: Pearl Street & Lakeshore Road

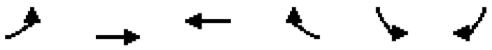




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	678	87	3	857	41	128	10	1	40	13	37
Future Volume (vph)	39	678	87	3	857	41	128	10	1	40	13	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.98	1.00		0.99	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.99		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1772	1864		1818	1849		1784	1893		1812	1628	
Flt Permitted	0.17	1.00		0.25	1.00		0.72	1.00		0.75	1.00	
Satd. Flow (perm)	316	1864		472	1849		1356	1893		1430	1628	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	41	714	92	3	902	43	135	11	1	42	14	39
RTOR Reduction (vph)	0	4	0	0	1	0	0	1	0	0	31	0
Lane Group Flow (vph)	41	802	0	3	944	0	135	11	0	42	22	0
Confl. Peds. (#/hr)	3		10	10		3	17		3	3		17
Heavy Vehicles (%)	3%	1%	0%	0%	3%	4%	0%	0%	0%	0%	0%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	80.0	80.0		80.0	80.0		26.0	26.0		26.0	26.0	
Effective Green, g (s)	80.0	80.0		80.0	80.0		26.0	26.0		26.0	26.0	
Actuated g/C Ratio	0.67	0.67		0.67	0.67		0.22	0.22		0.22	0.22	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	210	1242		314	1232		293	410		309	352	
v/s Ratio Prot		0.43			c0.51			0.01			0.01	
v/s Ratio Perm	0.13			0.01			c0.10			0.03		
v/c Ratio	0.20	0.65		0.01	0.77		0.46	0.03		0.14	0.06	
Uniform Delay, d1	7.7	11.7		6.7	13.6		40.9	37.0		37.9	37.3	
Progression Factor	0.50	0.59		1.00	1.00		0.96	0.97		1.00	1.00	
Incremental Delay, d2	2.0	2.5		0.1	4.6		5.1	0.1		0.9	0.3	
Delay (s)	5.8	9.3		6.8	18.2		44.3	35.9		38.8	37.7	
Level of Service	A	A		A	B		D	D		D	D	
Approach Delay (s/veh)		9.1			18.2			43.6			38.2	
Approach LOS		A			B			D			D	

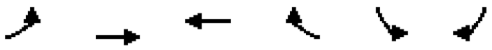
Intersection Summary			
HCM 2000 Control Delay (s/veh)	17.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	80.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	70	630	840	50	12	35
Future Volume (vph)	70	630	840	50	12	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.6				7.6	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.992		0.901	
Flt Protected	0.950				0.987	
Satd. Flow (prot)	1755	1902	1867	0	1708	0
Flt Permitted	0.950				0.987	
Satd. Flow (perm)	1755	1902	1867	0	1708	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		116.1	143.3		106.3	
Travel Time (s)		8.4	10.3		7.7	
Confl. Peds. (#/hr)	7			7	3	10
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	1%	2%	3%	0%	0%
Adj. Flow (vph)	73	656	875	52	13	36
Shared Lane Traffic (%)						
Lane Group Flow (vph)	73	656	927	0	49	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	4.9		4.9	
Two way Left Turn Lane			Yes			
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 67.5%		ICU Level of Service C	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	70	630	840	50	12	35
Future Volume (Veh/h)	70	630	840	50	12	35
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	73	656	875	52	12	36
Pedestrians		10	3		7	
Lane Width (m)		3.7	3.7		3.7	
Walking Speed (m/s)		1.1	1.1		1.1	
Percent Blockage		1	0		1	
Right turn flare (veh)						
Median type		None	TWLTL			
Median storage veh)			2			
Upstream signal (m)		116				
pX, platoon unblocked					0.76	
vC, conflicting volume	934				1713	918
vC1, stage 1 conf vol					908	
vC2, stage 2 conf vol					805	
vCu, unblocked vol	934				1781	918
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	90				96	89
cM capacity (veh/h)	720				272	327

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	73	656	927	48
Volume Left	73	0	0	12
Volume Right	0	0	52	36
cSH	720	1700	1700	311
Volume to Capacity	0.10	0.39	0.55	0.15
Queue Length 95th (m)	2.6	0.0	0.0	4.1
Control Delay (s/veh)	10.6	0.0	0.0	18.7
Lane LOS	B			C
Approach Delay (s/veh)	1.1		0.0	18.7
Approach LOS				C

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	619	19	94	931	0	1	0	50	0	0	0
Future Volume (vph)	0	619	19	94	931	0	1	0	50	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	10.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.6			7.6			7.6			7.6		
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		0.995						0.868				
Flt Protected				0.950				0.999				
Satd. Flow (prot)	1921	1893	0	1825	1883	0	0	1666	0	0	1921	0
Flt Permitted				0.950				0.999				
Satd. Flow (perm)	1921	1893	0	1825	1883	0	0	1666	0	0	1921	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		143.3			89.6			239.2			61.5	
Travel Time (s)		10.3			6.5			17.2			4.4	
Confl. Peds. (#/hr)	14		3	3		14			8	8		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	638	20	97	960	0	1	0	52	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	658	0	97	960	0	0	53	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 68.5%		ICU Level of Service C	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	619	19	94	931	0	1	0	50	0	0	0
Future Volume (Veh/h)	0	619	19	94	931	0	1	0	50	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	0	638	20	97	960	0	1	0	52	0	0	0
Pedestrians					8			3			14	
Lane Width (m)					3.7			3.7			3.7	
Walking Speed (m/s)					1.1			1.1			1.1	
Percent Blockage					1			0			1	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		259										
pX, platoon unblocked				0.77			0.77	0.77	0.77	0.77	0.77	
vC, conflicting volume	974			661			1805	1819	659	1866	1829	974
vC1, stage 1 conf vol							651	651		1168	1168	
vC2, stage 2 conf vol							1154	1168		698	661	
vCu, unblocked vol	974			413			1895	1913	410	1974	1926	974
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			89			99	100	89	100	100	100
cM capacity (veh/h)	706			890			193	208	493	168	197	304

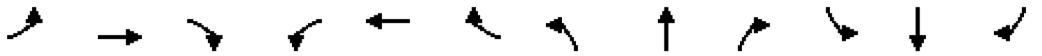
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	0	658	97	960	53	0
Volume Left	0	0	97	0	1	0
Volume Right	0	20	0	0	52	0
cSH	1700	1700	890	1700	479	1700
Volume to Capacity	0.00	0.39	0.11	0.56	0.11	0.00
Queue Length 95th (m)	0.0	0.0	2.8	0.0	2.8	0.0
Control Delay (s/veh)	0.0	0.0	9.5	0.0	13.5	0.0
Lane LOS			A		B	A
Approach Delay (s/veh)	0.0		0.9		13.5	0.0
Approach LOS					B	A

Intersection Summary				
Average Delay	0.9			
Intersection Capacity Utilization	68.5%	ICU Level of Service	C	
Analysis Period (min)	15			

Appendix I

Total Traffic Operation Reports





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	852	30	7	608	22	26	3	14	14	6	42
Future Volume (vph)	38	852	30	7	608	22	26	3	14	14	6	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		15.0	30.0		0.0	10.0		0.0	20.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		0.99	1.00		0.99	0.97		0.98	0.98	
Frt		0.995			0.995			0.875			0.868	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1690	3519	0	1825	3542	0	1755	1540	0	1259	1476	0
Flt Permitted	0.376			0.263			0.724			0.746		
Satd. Flow (perm)	662	3519	0	501	3542	0	1322	1540	0	964	1476	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			6			15			45	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		106.8			55.1			68.6			100.8	
Travel Time (s)		7.7			4.0			4.9			7.3	
Confl. Peds. (#/hr)	18		23	23		18	11		22	22		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 (%)	8%	3%	3%	0%	2%	13%	4%	0%	7%	45%	0%	12%
Adj. Flow (vph)	40	906	32	7	647	23	28	3	15	15	6	45
Shared Lane Traffic (%)												
Lane Group Flow (vph)	40	938	0	7	670	0	28	18	0	15	51	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	41.0	41.0		41.0	41.0		36.0	36.0		36.0	36.0	
Total Split (s)	74.0	74.0		74.0	74.0		36.0	36.0		36.0	36.0	
Total Split (%)	67.3%	67.3%		67.3%	67.3%		32.7%	32.7%		32.7%	32.7%	
Maximum Green (s)	67.0	67.0		67.0	67.0		29.0	29.0		29.0	29.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		Max	Max		Max	Max	
Walk Time (s)	16.0	16.0		16.0	16.0		8.0	8.0		8.0	8.0	
Flash Don't Walk (s)	18.0	18.0		18.0	18.0		21.0	21.0		21.0	21.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	67.0	67.0		67.0	67.0		29.0	29.0		29.0	29.0	
Actuated g/C Ratio	0.61	0.61		0.61	0.61		0.26	0.26		0.26	0.26	
v/c Ratio	0.10	0.44		0.02	0.31		0.08	0.04		0.06	0.12	
Control Delay (s/veh)	9.8	12.2		7.0	8.9		31.4	15.8		31.3	11.5	
Queue Delay	0.0	0.0		0.0	0.2		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	9.8	12.2		7.0	9.1		31.4	15.8		31.3	11.5	
LOS	A	B		A	A		C	B		C	B	
Approach Delay (s/veh)		12.1			9.1			25.3			16.0	
Approach LOS		B			A			C			B	
Queue Length 50th (m)	3.3	52.2		0.5	25.7		4.5	0.5		2.4	1.0	
Queue Length 95th (m)	8.2	65.6		m1.0	28.5		11.7	6.0		7.7	10.1	
Internal Link Dist (m)		82.8			31.1			44.6			76.8	
Turn Bay Length (m)	40.0			30.0			10.0			20.0		
Base Capacity (vph)	403	2145		305	2159		348	417		254	422	
Starvation Cap Reductn	0	0		0	748		0	0		0	0	
Spillback Cap Reductn	0	143		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.10	0.47		0.02	0.47		0.08	0.04		0.06	0.12	

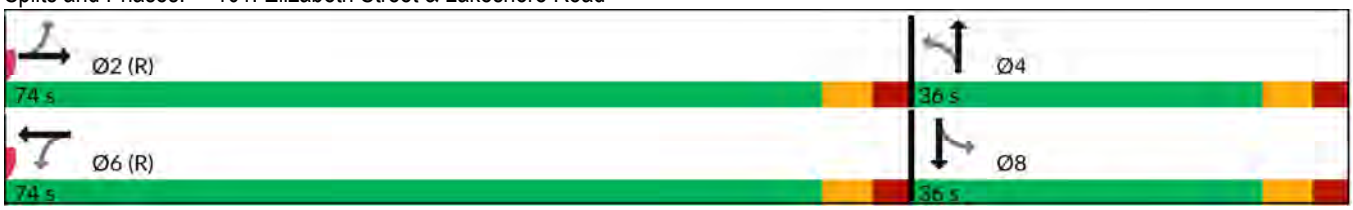
Intersection Summary	
Area Type:	Other
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 42 (38%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.44	
Intersection Signal Delay (s/veh): 11.4	Intersection LOS: B

Intersection Capacity Utilization 67.4% ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 101: Elizabeth Street & Lakeshore Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	852	30	7	608	22	26	3	14	14	6	42
Future Volume (vph)	38	852	30	7	608	22	26	3	14	14	6	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.97		1.00	0.98	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		0.99	1.00		0.98	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.88		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1671	3519		1809	3541		1734	1540		1228	1475	
Flt Permitted	0.38	1.00		0.26	1.00		0.72	1.00		0.75	1.00	
Satd. Flow (perm)	662	3519		500	3541		1321	1540		964	1475	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	40	906	32	7	647	23	28	3	15	15	6	45
RTOR Reduction (vph)	0	2	0	0	2	0	0	11	0	0	33	0
Lane Group Flow (vph)	40	936	0	7	668	0	28	7	0	15	18	0
Confl. Peds. (#/hr)	18		23	23		18	11		22	22		11
Heavy Vehicles (%)	8%	3%	3%	0%	2%	13%	4%	0%	7%	45%	0%	12%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	67.0	67.0		67.0	67.0		29.0	29.0		29.0	29.0	
Effective Green, g (s)	67.0	67.0		67.0	67.0		29.0	29.0		29.0	29.0	
Actuated g/C Ratio	0.61	0.61		0.61	0.61		0.26	0.26		0.26	0.26	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	403	2143		304	2156		348	406		254	388	
v/s Ratio Prot		c0.27			0.19			0.00			0.01	
v/s Ratio Perm	0.06			0.01			c0.02			0.02		
v/c Ratio	0.10	0.44		0.02	0.31		0.08	0.02		0.06	0.05	
Uniform Delay, d1	8.9	11.4		8.5	10.4		30.5	30.0		30.3	30.2	
Progression Factor	1.00	1.00		0.79	0.83		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.6		0.1	0.3		0.5	0.1		0.4	0.2	
Delay (s)	9.4	12.1		6.8	8.9		30.9	30.0		30.7	30.4	
Level of Service	A	B		A	A		C	C		C	C	
Approach Delay (s/veh)		12.0			8.9			30.6			30.5	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	12.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	850	84	2	530	23	122	13	4	11	4	9
Future Volume (vph)	29	850	84	2	530	23	122	13	4	11	4	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	15.0		0.0	20.0		0.0	5.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.6			7.6			7.6			7.6		
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		1.00					0.97	0.99		1.00	0.97	
Frt		0.986			0.994			0.965			0.896	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1825	1855	0	1825	1856	0	1674	1844	0	1825	1668	0
Flt Permitted	0.411			0.204			0.749			0.746		
Satd. Flow (perm)	790	1855	0	392	1856	0	1277	1844	0	1430	1668	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			4			4			9	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		68.8			116.1			61.5			107.3	
Travel Time (s)		5.0			8.4			4.4			7.7	
Confl. Peds. (#/hr)			7	7			25		1	1		25
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	9%	0%	0%	0%	0%	0%
Adj. Flow (vph)	30	876	87	2	546	24	126	13	4	11	4	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	30	963	0	2	570	0	126	17	0	11	13	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	40.0	40.0		40.0	40.0		32.0	32.0		32.0	32.0	
Total Split (s)	77.0	77.0		77.0	77.0		33.0	33.0		33.0	33.0	
Total Split (%)	70.0%	70.0%		70.0%	70.0%		30.0%	30.0%		30.0%	30.0%	
Maximum Green (s)	70.0	70.0		70.0	70.0		26.0	26.0		26.0	26.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	16.0	16.0		16.0	16.0		8.0	8.0		8.0	8.0	
Flash Don't Walk (s)	17.0	17.0		17.0	17.0		17.0	17.0		17.0	17.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	79.9	79.9		79.9	79.9		16.1	16.1		16.1	16.1	
Actuated g/C Ratio	0.73	0.73		0.73	0.73		0.15	0.15		0.15	0.15	
v/c Ratio	0.05	0.71		0.01	0.42		0.68	0.06		0.05	0.05	
Control Delay (s/veh)	2.4	10.8		6.0	7.8		58.9	29.5		37.5	23.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	2.4	10.8		6.0	7.8		58.9	29.5		37.5	23.2	
LOS	A	B		A	A		E	C		D	C	
Approach Delay (s/veh)		10.5			7.7			55.4			29.8	
Approach LOS		B			A			E			C	
Queue Length 50th (m)	0.5	76.8		0.1	41.6		25.6	2.3		2.1	0.8	
Queue Length 95th (m)	m1.5	112.7		1.0	76.0		m41.0	m7.0		6.7	5.8	
Internal Link Dist (m)		44.8			92.1			37.5			83.3	
Turn Bay Length (m)	45.0			15.0			20.0			5.0		
Base Capacity (vph)	573	1349		284	1349		301	438		338	401	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.05	0.71		0.01	0.42		0.42	0.04		0.03	0.03	

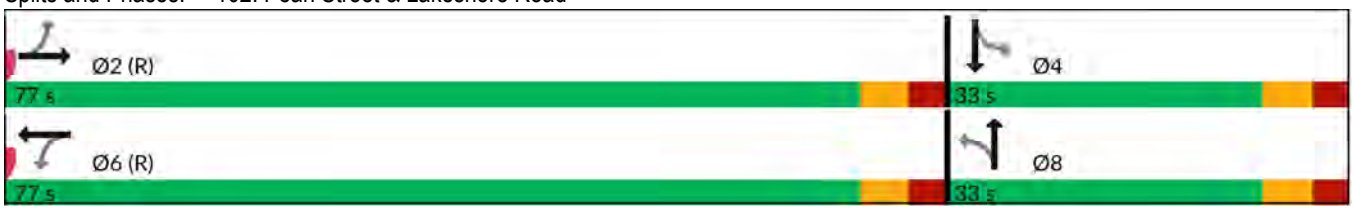
Intersection Summary	
Area Type:	Other
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 42 (38%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay (s/veh): 13.6	Intersection LOS: B

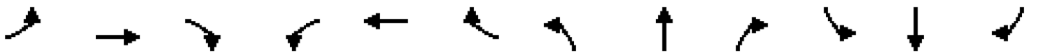
Intersection Capacity Utilization 76.5% ICU Level of Service D

Analysis Period (min) 15

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

Splits and Phases: 102: Pearl Street & Lakeshore Road

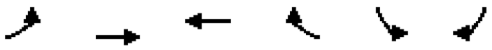




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	850	84	2	530	23	122	13	4	11	4	9
Future Volume (vph)	29	850	84	2	530	23	122	13	4	11	4	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.97	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.96		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1825	1856		1822	1856		1620	1844		1821	1669	
Flt Permitted	0.41	1.00		0.20	1.00		0.75	1.00		0.75	1.00	
Satd. Flow (perm)	789	1856		391	1856		1277	1844		1431	1669	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	30	876	87	2	546	24	126	13	4	11	4	9
RTOR Reduction (vph)	0	2	0	0	1	0	0	3	0	0	8	0
Lane Group Flow (vph)	30	961	0	2	569	0	126	14	0	11	5	0
Confl. Peds. (#/hr)			7	7			25		1	1		25
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	9%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	79.9	79.9		79.9	79.9		16.1	16.1		16.1	16.1	
Effective Green, g (s)	79.9	79.9		79.9	79.9		16.1	16.1		16.1	16.1	
Actuated g/C Ratio	0.73	0.73		0.73	0.73		0.15	0.15		0.15	0.15	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	573	1348		284	1348		186	269		209	244	
v/s Ratio Prot		c0.52			0.31			0.01			0.00	
v/s Ratio Perm	0.04			0.01			c0.10			0.01		
v/c Ratio	0.05	0.71		0.01	0.42		0.68	0.05		0.05	0.02	
Uniform Delay, d1	4.3	8.5		4.1	5.9		44.5	40.4		40.4	40.2	
Progression Factor	0.41	0.76		1.00	1.00		0.94	0.94		1.00	1.00	
Incremental Delay, d2	0.2	3.0		0.0	1.0		9.4	0.1		0.1	0.0	
Delay (s)	1.9	9.5		4.2	6.9		51.4	38.0		40.5	40.2	
Level of Service	A	A		A	A		D	D		D	D	
Approach Delay (s/veh)		9.3			6.9			49.8			40.4	
Approach LOS		A			A			D			D	

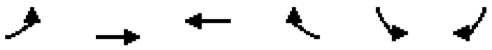
Intersection Summary			
HCM 2000 Control Delay (s/veh)	12.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	76.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	28	843	461	29	21	57
Future Volume (vph)	28	843	461	29	21	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.6				7.6	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.992		0.902	
Flt Protected	0.950				0.987	
Satd. Flow (prot)	1825	1883	1866	0	1674	0
Flt Permitted	0.950				0.987	
Satd. Flow (perm)	1825	1883	1866	0	1674	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		116.1	143.3		106.3	
Travel Time (s)		8.4	10.3		7.7	
Confl. Peds. (#/hr)	14			14	1	8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	4%	8%	0%
Adj. Flow (vph)	30	916	501	32	23	62
Shared Lane Traffic (%)						
Lane Group Flow (vph)	30	916	533	0	85	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	4.9		4.9	
Two way Left Turn Lane			Yes			
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.2%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	28	843	461	29	21	57
Future Volume (Veh/h)	28	843	461	29	21	57
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	30	916	501	32	23	62
Pedestrians		8	1		14	
Lane Width (m)		3.7	3.7		3.7	
Walking Speed (m/s)		1.1	1.1		1.1	
Percent Blockage		1	0		1	
Right turn flare (veh)						
Median type		None	TWLTL			
Median storage veh)			2			
Upstream signal (m)		116				
pX, platoon unblocked					0.69	
vC, conflicting volume	547				1508	539
vC1, stage 1 conf vol					531	
vC2, stage 2 conf vol					977	
vCu, unblocked vol	547				1512	539
tC, single (s)	4.1				6.5	6.2
tC, 2 stage (s)					5.5	
tF (s)	2.2				3.6	3.3
p0 queue free %	97				92	88
cM capacity (veh/h)	1018				273	535

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	30	916	533	85
Volume Left	30	0	0	23
Volume Right	0	0	32	62
cSH	1018	1700	1700	424
Volume to Capacity	0.03	0.54	0.31	0.20
Queue Length 95th (m)	0.7	0.0	0.0	5.6
Control Delay (s/veh)	8.6	0.0	0.0	15.6
Lane LOS	A			C
Approach Delay (s/veh)	0.3		0.0	15.6
Approach LOS				C

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	58.2%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	888	30	40	499	0	2	0	102	0	0	0
Future Volume (vph)	0	888	30	40	499	0	2	0	102	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	10.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.6			7.6			7.6			7.6		
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		0.995						0.867				
Flt Protected				0.950				0.999				
Satd. Flow (prot)	1921	1855	0	1825	1865	0	0	1664	0	0	1921	0
Flt Permitted				0.950				0.999				
Satd. Flow (perm)	1921	1855	0	1825	1865	0	0	1664	0	0	1921	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		143.3			89.6			231.3			61.5	
Travel Time (s)		10.3			6.5			16.7			4.4	
Confl. Peds. (#/hr)	11		1	1		11	1		3	3		1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	33%	0%	3%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	965	33	43	542	0	2	0	111	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	998	0	43	542	0	0	113	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 62.6%		ICU Level of Service B	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	888	30	40	499	0	2	0	102	0	0	0
Future Volume (Veh/h)	0	888	30	40	499	0	2	0	102	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	965	33	43	542	0	2	0	111	0	0	0
Pedestrians		1			3			1			11	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		0			0			0			1	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		259										
pX, platoon unblocked				0.67			0.67	0.67	0.67	0.67	0.67	
vC, conflicting volume	553			999			1612	1622	986	1718	1638	554
vC1, stage 1 conf vol							983	983		639	639	
vC2, stage 2 conf vol							629	639		1079	999	
vCu, unblocked vol	553			750			1667	1682	730	1826	1707	554
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			93			99	100	61	100	100	100
cM capacity (veh/h)	1016			579			232	239	283	94	209	530

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	0	998	43	542	113	0
Volume Left	0	0	43	0	2	0
Volume Right	0	33	0	0	111	0
cSH	1700	1700	579	1700	282	1700
Volume to Capacity	0.00	0.59	0.07	0.32	0.40	0.00
Queue Length 95th (m)	0.0	0.0	1.8	0.0	14.0	0.0
Control Delay (s/veh)	0.0	0.0	11.7	0.0	26.0	0.0
Lane LOS			B		D	A
Approach Delay (s/veh)	0.0		0.9		26.0	0.0
Approach LOS					D	A

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	62.6%	ICU Level of Service	B
Analysis Period (min)	15		



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	60	30	13	120	18	23
Future Volume (vph)	60	30	13	120	18	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.955				0.925	
Flt Protected				0.995	0.978	
Satd. Flow (prot)	1799	0	0	1874	1704	0
Flt Permitted				0.995	0.978	
Satd. Flow (perm)	1799	0	0	1874	1704	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	61.5			231.3	41.1	
Travel Time (s)	4.4			16.7	3.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	65	33	14	130	20	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	98	0	0	144	45	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 23.7%		ICU Level of Service A	
Analysis Period (min) 15			

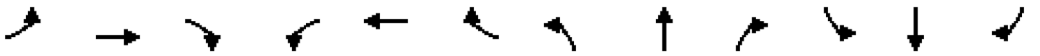


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	60	30	13	120	18	23
Future Volume (Veh/h)	60	30	13	120	18	23
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	65	33	14	130	20	25
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	62					
pX, platoon unblocked						
vC, conflicting volume			98		240	82
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			98		240	82
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		97	97
cM capacity (veh/h)			1495		742	978

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	98	144	45
Volume Left	0	14	20
Volume Right	33	0	25
cSH	1700	1495	857
Volume to Capacity	0.06	0.00*	0.05
Queue Length 95th (m)	0.0	0.2	1.3
Control Delay (s/veh)	0.0	0.8	9.4
Lane LOS		A	A
Approach Delay (s/veh)	0.0	0.8	9.4
Approach LOS			A

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	23.7%	ICU Level of Service	A
Analysis Period (min)	15		

* Value less than 0.01.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	891	31	8	630	23	27	3	15	15	6	44
Future Volume (vph)	40	891	31	8	630	23	27	3	15	15	6	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		15.0	30.0		0.0	10.0		0.0	20.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		0.99	1.00		0.99	0.97		0.98	0.98	
Frt		0.995			0.995			0.874			0.867	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1690	3519	0	1825	3541	0	1755	1537	0	1259	1473	0
Flt Permitted	0.365			0.247			0.722			0.745		
Satd. Flow (perm)	642	3519	0	471	3541	0	1318	1537	0	963	1473	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			6			16			47	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		106.8			55.1			68.6			100.8	
Travel Time (s)		7.7			4.0			4.9			7.3	
Confl. Peds. (#/hr)	18		23	23		18	11		22	22		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 (%)	8%	3%	3%	0%	2%	13%	4%	0%	7%	45%	0%	12%
Adj. Flow (vph)	43	948	33	9	670	24	29	3	16	16	6	47
Shared Lane Traffic (%)												
Lane Group Flow (vph)	43	981	0	9	694	0	29	19	0	16	53	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	41.0	41.0		41.0	41.0		36.0	36.0		36.0	36.0	
Total Split (s)	74.0	74.0		74.0	74.0		36.0	36.0		36.0	36.0	
Total Split (%)	67.3%	67.3%		67.3%	67.3%		32.7%	32.7%		32.7%	32.7%	
Maximum Green (s)	67.0	67.0		67.0	67.0		29.0	29.0		29.0	29.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		Max	Max		Max	Max	
Walk Time (s)	16.0	16.0		16.0	16.0		8.0	8.0		8.0	8.0	
Flash Don't Walk (s)	18.0	18.0		18.0	18.0		21.0	21.0		21.0	21.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	67.0	67.0		67.0	67.0		29.0	29.0		29.0	29.0	
Actuated g/C Ratio	0.61	0.61		0.61	0.61		0.26	0.26		0.26	0.26	
v/c Ratio	0.11	0.46		0.03	0.32		0.08	0.05		0.06	0.13	
Control Delay (s/veh)	10.0	12.4		7.0	8.8		31.4	15.4		31.3	11.4	
Queue Delay	0.0	0.1		0.0	0.2		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	10.0	12.5		7.0	9.1		31.4	15.4		31.3	11.4	
LOS	A	B		A	A		C	B		C	B	
Approach Delay (s/veh)		12.4			9.0			25.1			16.0	
Approach LOS		B			A			C			B	
Queue Length 50th (m)	3.6	55.5		0.6	26.1		4.7	0.5		2.6	1.0	
Queue Length 95th (m)	8.7	69.6		m1.3	28.8		12.1	6.2		8.2	10.4	
Internal Link Dist (m)		82.8			31.1			44.6			76.8	
Turn Bay Length (m)	40.0			30.0			10.0			20.0		
Base Capacity (vph)	391	2145		286	2159		347	416		253	422	
Starvation Cap Reductn	0	0		0	723		0	0		0	0	
Spillback Cap Reductn	0	223		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.11	0.51		0.03	0.48		0.08	0.05		0.06	0.13	

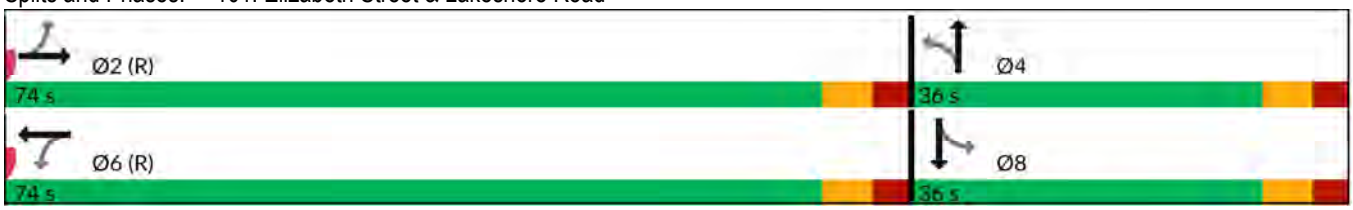
Intersection Summary	
Area Type:	Other
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 42 (38%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.46	
Intersection Signal Delay (s/veh): 11.6	Intersection LOS: B

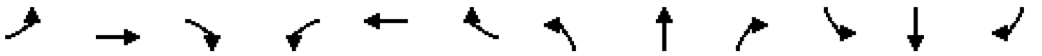
Intersection Capacity Utilization 69.1% ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 101: Elizabeth Street & Lakeshore Road

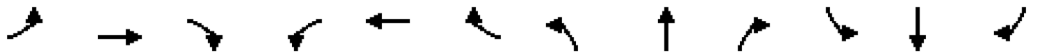




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	891	31	8	630	23	27	3	15	15	6	44
Future Volume (vph)	40	891	31	8	630	23	27	3	15	15	6	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.97		1.00	0.98	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		0.99	1.00		0.98	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.87		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1672	3519		1810	3541		1734	1536		1228	1473	
Flt Permitted	0.36	1.00		0.25	1.00		0.72	1.00		0.75	1.00	
Satd. Flow (perm)	642	3519		471	3541		1319	1536		963	1473	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	43	948	33	9	670	24	29	3	16	16	6	47
RTOR Reduction (vph)	0	2	0	0	2	0	0	12	0	0	35	0
Lane Group Flow (vph)	43	979	0	9	692	0	29	7	0	16	18	0
Confl. Peds. (#/hr)	18		23	23		18	11		22	22		11
Heavy Vehicles (%)	8%	3%	3%	0%	2%	13%	4%	0%	7%	45%	0%	12%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	67.0	67.0		67.0	67.0		29.0	29.0		29.0	29.0	
Effective Green, g (s)	67.0	67.0		67.0	67.0		29.0	29.0		29.0	29.0	
Actuated g/C Ratio	0.61	0.61		0.61	0.61		0.26	0.26		0.26	0.26	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	391	2143		286	2156		347	404		253	388	
v/s Ratio Prot		c0.28			0.20			0.00			0.01	
v/s Ratio Perm	0.07			0.02			c0.02			0.02		
v/c Ratio	0.11	0.46		0.03	0.32		0.08	0.02		0.06	0.05	
Uniform Delay, d1	9.0	11.6		8.6	10.4		30.5	30.0		30.3	30.2	
Progression Factor	1.00	1.00		0.77	0.81		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.7		0.2	0.4		0.5	0.1		0.5	0.2	
Delay (s)	9.6	12.3		6.7	8.8		31.0	30.0		30.8	30.4	
Level of Service	A	B		A	A		C	C		C	C	
Approach Delay (s/veh)		12.2			8.8			30.6			30.5	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	12.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	892	85	2	554	24	123	13	4	11	4	10
Future Volume (vph)	30	892	85	2	554	24	123	13	4	11	4	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	15.0		0.0	20.0		0.0	5.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.6			7.6			7.6			7.6		
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		1.00					0.97	0.99		1.00	0.97	
Frt		0.987			0.994			0.965			0.893	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1825	1857	0	1825	1856	0	1674	1844	0	1825	1661	0
Flt Permitted	0.396			0.181			0.748			0.746		
Satd. Flow (perm)	761	1857	0	348	1856	0	1276	1844	0	1430	1661	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			4			4			10	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		68.9			116.1			61.5			107.3	
Travel Time (s)		5.0			8.4			4.4			7.7	
Confl. Peds. (#/hr)			7	7			25		1	1		25
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	9%	0%	0%	0%	0%	0%
Adj. Flow (vph)	31	920	88	2	571	25	127	13	4	11	4	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	31	1008	0	2	596	0	127	17	0	11	14	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	40.0	40.0		40.0	40.0		32.0	32.0		32.0	32.0	
Total Split (s)	77.0	77.0		77.0	77.0		33.0	33.0		33.0	33.0	
Total Split (%)	70.0%	70.0%		70.0%	70.0%		30.0%	30.0%		30.0%	30.0%	
Maximum Green (s)	70.0	70.0		70.0	70.0		26.0	26.0		26.0	26.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	16.0	16.0		16.0	16.0		8.0	8.0		8.0	8.0	
Flash Don't Walk (s)	17.0	17.0		17.0	17.0		17.0	17.0		17.0	17.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	79.8	79.8		79.8	79.8		16.2	16.2		16.2	16.2	
Actuated g/C Ratio	0.73	0.73		0.73	0.73		0.15	0.15		0.15	0.15	
v/c Ratio	0.06	0.75		0.01	0.44		0.68	0.06		0.05	0.06	
Control Delay (s/veh)	2.5	12.2		6.0	8.0		59.0	30.1		37.5	22.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	2.5	12.2		6.0	8.0		59.0	30.1		37.5	22.2	
LOS	A	B		A	A		E	C		D	C	
Approach Delay (s/veh)		12.0			8.0			55.5			28.9	
Approach LOS		B			A			E			C	
Queue Length 50th (m)	0.6	86.6		0.1	44.5		25.6	2.3		2.1	0.8	
Queue Length 95th (m)	m1.5	128.1		1.0	81.0		m40.5	m7.1		6.7	5.9	
Internal Link Dist (m)		44.9			92.1			37.5			83.3	
Turn Bay Length (m)	45.0			15.0			20.0			5.0		
Base Capacity (vph)	552	1349		252	1347		301	438		338	400	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.06	0.75		0.01	0.44		0.42	0.04		0.03	0.04	

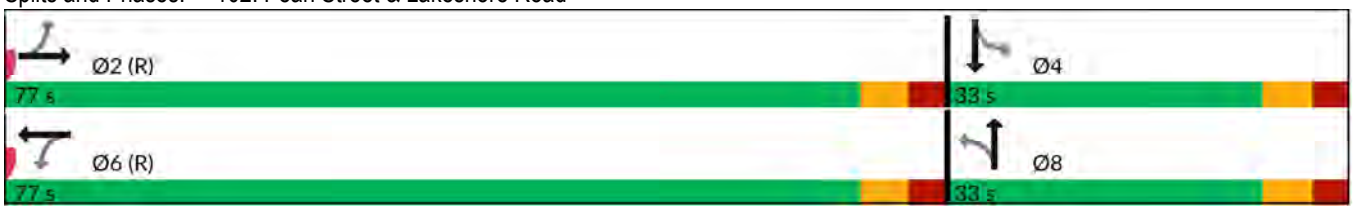
Intersection Summary	
Area Type:	Other
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 42 (38%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay (s/veh): 14.4	Intersection LOS: B

Intersection Capacity Utilization 78.8% ICU Level of Service D

Analysis Period (min) 15

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

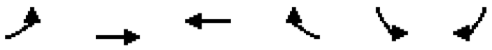
Splits and Phases: 102: Pearl Street & Lakeshore Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	892	85	2	554	24	123	13	4	11	4	10
Future Volume (vph)	30	892	85	2	554	24	123	13	4	11	4	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.97	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.96		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1825	1857		1822	1856		1620	1844		1821	1661	
Flt Permitted	0.40	1.00		0.18	1.00		0.75	1.00		0.75	1.00	
Satd. Flow (perm)	760	1857		348	1856		1276	1844		1431	1661	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	31	920	88	2	571	25	127	13	4	11	4	10
RTOR Reduction (vph)	0	2	0	0	1	0	0	3	0	0	9	0
Lane Group Flow (vph)	31	1006	0	2	595	0	127	14	0	11	5	0
Confl. Peds. (#/hr)			7	7			25		1	1		25
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	9%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	79.8	79.8		79.8	79.8		16.2	16.2		16.2	16.2	
Effective Green, g (s)	79.8	79.8		79.8	79.8		16.2	16.2		16.2	16.2	
Actuated g/C Ratio	0.73	0.73		0.73	0.73		0.15	0.15		0.15	0.15	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	551	1347		252	1346		187	271		210	244	
v/s Ratio Prot		c0.54			0.32			0.01			0.00	
v/s Ratio Perm	0.04			0.01			c0.10			0.01		
v/c Ratio	0.06	0.75		0.01	0.44		0.68	0.05		0.05	0.02	
Uniform Delay, d1	4.3	9.0		4.2	6.1		44.4	40.3		40.3	40.1	
Progression Factor	0.41	0.80		1.00	1.00		0.95	0.96		1.00	1.00	
Incremental Delay, d2	0.2	3.5		0.1	1.1		9.4	0.1		0.1	0.0	
Delay (s)	1.9	10.8		4.2	7.2		51.5	38.8		40.4	40.2	
Level of Service	A	B		A	A		D	D		D	D	
Approach Delay (s/veh)		10.5			7.1			50.0			40.3	
Approach LOS		B			A			D			D	

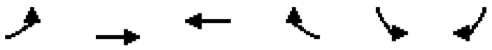
Intersection Summary			
HCM 2000 Control Delay (s/veh)	12.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	29	884	484	30	22	58
Future Volume (vph)	29	884	484	30	22	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.6				7.6	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.992		0.902	
Flt Protected	0.950				0.986	
Satd. Flow (prot)	1825	1883	1866	0	1672	0
Flt Permitted	0.950				0.986	
Satd. Flow (perm)	1825	1883	1866	0	1672	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		116.1	143.3		106.3	
Travel Time (s)		8.4	10.3		7.7	
Confl. Peds. (#/hr)	14			14	1	8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	4%	8%	0%
Adj. Flow (vph)	32	961	526	33	24	63
Shared Lane Traffic (%)						
Lane Group Flow (vph)	32	961	559	0	87	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	4.9		4.9	
Two way Left Turn Lane			Yes			
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	

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



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	29	884	484	30	22	58
Future Volume (Veh/h)	29	884	484	30	22	58
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	32	961	526	33	24	63
Pedestrians		8	1		14	
Lane Width (m)		3.7	3.7		3.7	
Walking Speed (m/s)		1.1	1.1		1.1	
Percent Blockage		1	0		1	
Right turn flare (veh)						
Median type		None	TWLTL			
Median storage veh)			2			
Upstream signal (m)		116				
pX, platoon unblocked					0.65	
vC, conflicting volume	573				1583	565
vC1, stage 1 conf vol					557	
vC2, stage 2 conf vol					1026	
vCu, unblocked vol	573				1627	565
tC, single (s)	4.1				6.5	6.2
tC, 2 stage (s)					5.5	
tF (s)	2.2				3.6	3.3
p0 queue free %	97				90	88
cM capacity (veh/h)	996				249	517

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	32	961	559	87
Volume Left	32	0	0	24
Volume Right	0	0	33	63
cSH	996	1700	1700	399
Volume to Capacity	0.03	0.57	0.33	0.22
Queue Length 95th (m)	0.8	0.0	0.0	6.2
Control Delay (s/veh)	8.7	0.0	0.0	16.5
Lane LOS	A			C
Approach Delay (s/veh)	0.3		0.0	16.5
Approach LOS				C

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	60.4%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	930	30	41	523	0	2	0	102	0	0	0
Future Volume (vph)	0	930	30	41	523	0	2	0	102	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	10.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.6			7.6			7.6			7.6		
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		0.995						0.867				
Flt Protected				0.950				0.999				
Satd. Flow (prot)	1921	1856	0	1825	1865	0	0	1664	0	0	1921	0
Flt Permitted				0.950				0.999				
Satd. Flow (perm)	1921	1856	0	1825	1865	0	0	1664	0	0	1921	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		143.3			89.6			235.4			61.5	
Travel Time (s)		10.3			6.5			16.9			4.4	
Confl. Peds. (#/hr)	11		1	1		11	1		3	3		1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	33%	0%	3%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	1011	33	45	568	0	2	0	111	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1044	0	45	568	0	0	113	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Free			Free			Stop			Stop	

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	930	30	41	523	0	2	0	102	0	0	0
Future Volume (Veh/h)	0	930	30	41	523	0	2	0	102	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1011	33	45	568	0	2	0	111	0	0	0
Pedestrians		1			3			1			11	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		0			0			0			1	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		259										
pX, platoon unblocked				0.62			0.62	0.62	0.62	0.62	0.62	
vC, conflicting volume	579			1045			1688	1698	1032	1794	1714	580
vC1, stage 1 conf vol							1029	1029		669	669	
vC2, stage 2 conf vol							659	669		1125	1045	
vCu, unblocked vol	579			769			1801	1817	747	1972	1844	580
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			92			99	100	57	100	100	100
cM capacity (veh/h)	994			531			212	219	258	71	186	512

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	0	1044	45	568	113	0
Volume Left	0	0	45	0	2	0
Volume Right	0	33	0	0	111	0
cSH	1700	1700	531	1700	257	1700
Volume to Capacity	0.00	0.61	0.08	0.33	0.44	0.00
Queue Length 95th (m)	0.0	0.0	2.1	0.0	16.0	0.0
Control Delay (s/veh)	0.0	0.0	12.4	0.0	29.6	0.0
Lane LOS			B		D	A
Approach Delay (s/veh)	0.0		0.9		29.6	0.0
Approach LOS					D	A

Intersection Summary				
Average Delay	2.2			
Intersection Capacity Utilization	64.8%	ICU Level of Service	C	
Analysis Period (min)	15			



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	61	30	13	121	18	23
Future Volume (vph)	61	30	13	121	18	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.955				0.925	
Flt Protected				0.995	0.978	
Satd. Flow (prot)	1799	0	0	1874	1704	0
Flt Permitted				0.995	0.978	
Satd. Flow (perm)	1799	0	0	1874	1704	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	61.5			235.4	41.1	
Travel Time (s)	4.4			16.9	3.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	66	33	14	132	20	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	99	0	0	146	45	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 23.8%		ICU Level of Service A	
Analysis Period (min) 15			

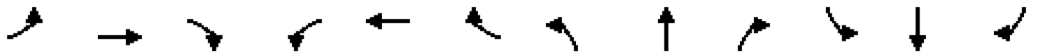


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	61	30	13	121	18	23
Future Volume (Veh/h)	61	30	13	121	18	23
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	66	33	14	132	20	25
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	62					
pX, platoon unblocked						
vC, conflicting volume			99		243	83
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			99		243	83
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		97	97
cM capacity (veh/h)			1494		739	977

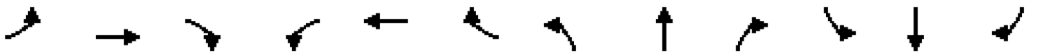
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	99	146	45
Volume Left	0	14	20
Volume Right	33	0	25
cSH	1700	1494	855
Volume to Capacity	0.06	0.00*	0.05
Queue Length 95th (m)	0.0	0.2	1.3
Control Delay (s/veh)	0.0	0.8	9.4
Lane LOS		A	A
Approach Delay (s/veh)	0.0	0.8	9.4
Approach LOS			A

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	23.8%	ICU Level of Service	A
Analysis Period (min)	15		

* Value less than 0.01.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	792	37	16	822	32	37	13	20	32	20	37
Future Volume (vph)	41	792	37	16	822	32	37	13	20	32	20	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		15.0	30.0		0.0	10.0		0.0	20.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		0.98	1.00		0.95	0.96		0.95	0.96	
Frt		0.993			0.994			0.908			0.903	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1659	3611	0	1825	3537	0	1825	1681	0	1560	1526	0
Flt Permitted	0.272			0.282			0.717			0.734		
Satd. Flow (perm)	470	3611	0	533	3537	0	1312	1681	0	1150	1526	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			6			22			40	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		106.8			52.9			68.6			100.8	
Travel Time (s)		7.7			3.8			4.9			7.3	
Confl. Peds. (#/hr)	23		37	37		23	42		39	39		42
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	10%	0%	0%	0%	2%	11%	0%	0%	0%	17%	0%	14%
Adj. Flow (vph)	45	861	40	17	893	35	40	14	22	35	22	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	45	901	0	17	928	0	40	36	0	35	62	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

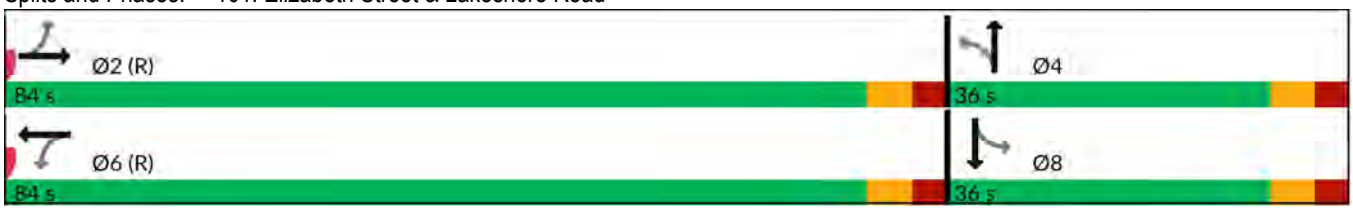


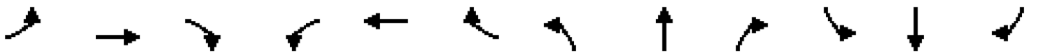
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	41.0	41.0		41.0	41.0		36.0	36.0		36.0	36.0	
Total Split (s)	84.0	84.0		84.0	84.0		36.0	36.0		36.0	36.0	
Total Split (%)	70.0%	70.0%		70.0%	70.0%		30.0%	30.0%		30.0%	30.0%	
Maximum Green (s)	77.0	77.0		77.0	77.0		29.0	29.0		29.0	29.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		Max	Max		Max	Max	
Walk Time (s)	16.0	16.0		16.0	16.0		8.0	8.0		8.0	8.0	
Flash Don't Walk (s)	18.0	18.0		18.0	18.0		21.0	21.0		21.0	21.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	77.0	77.0		77.0	77.0		29.0	29.0		29.0	29.0	
Actuated g/C Ratio	0.64	0.64		0.64	0.64		0.24	0.24		0.24	0.24	
v/c Ratio	0.15	0.39		0.05	0.41		0.13	0.09		0.13	0.16	
Control Delay (s/veh)	10.0	10.8		5.9	6.7		37.0	19.6		37.2	17.5	
Queue Delay	0.0	0.0		0.0	0.5		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	10.0	10.8		5.9	7.3		37.0	19.6		37.2	17.5	
LOS	B	B		A	A		D	B		D	B	
Approach Delay (s/veh)		10.7			7.2			28.8			24.6	
Approach LOS		B			A			C			C	
Queue Length 50th (m)	3.9	48.8		1.0	26.7		7.4	2.6		6.5	4.0	
Queue Length 95th (m)	9.3	60.6		m1.4	32.3		16.7	11.0		15.2	15.1	
Internal Link Dist (m)		82.8			28.9			44.6			76.8	
Turn Bay Length (m)	40.0			30.0			10.0			20.0		
Base Capacity (vph)	301	2319		342	2271		317	422		277	399	
Starvation Cap Reductn	0	0		0	834		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.15	0.39		0.05	0.65		0.13	0.09		0.13	0.16	

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 56 (47%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.41	
Intersection Signal Delay (s/veh): 10.4	Intersection LOS: B

Intersection Capacity Utilization 69.9% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 101: Elizabeth Street & Lakeshore Road



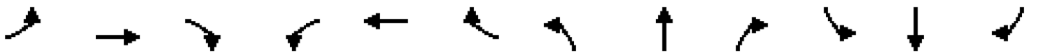


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	792	37	16	822	32	37	13	20	32	20	37
Future Volume (vph)	41	792	37	16	822	32	37	13	20	32	20	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.96		1.00	0.96	
Flpb, ped/bikes	0.99	1.00		0.98	1.00		0.95	1.00		0.95	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.91		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1643	3612		1795	3538		1738	1682		1488	1527	
Flt Permitted	0.27	1.00		0.28	1.00		0.72	1.00		0.73	1.00	
Satd. Flow (perm)	470	3612		532	3538		1311	1682		1149	1527	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	45	861	40	17	893	35	40	14	22	35	22	40
RTOR Reduction (vph)	0	3	0	0	2	0	0	17	0	0	30	0
Lane Group Flow (vph)	45	898	0	17	926	0	40	19	0	35	32	0
Confl. Peds. (#/hr)	23		37	37		23	42		39	39		42
Heavy Vehicles (%)	10%	0%	0%	0%	2%	11%	0%	0%	0%	17%	0%	14%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	77.0	77.0		77.0	77.0		29.0	29.0		29.0	29.0	
Effective Green, g (s)	77.0	77.0		77.0	77.0		29.0	29.0		29.0	29.0	
Actuated g/C Ratio	0.64	0.64		0.64	0.64		0.24	0.24		0.24	0.24	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	301	2317		341	2270		316	406		277	369	
v/s Ratio Prot		0.25			c0.26			0.01			0.02	
v/s Ratio Perm	0.10			0.03			c0.03			0.03		
v/c Ratio	0.15	0.39		0.05	0.41		0.13	0.05		0.13	0.09	
Uniform Delay, d1	8.5	10.3		8.0	10.4		35.6	34.9		35.6	35.2	
Progression Factor	1.00	1.00		0.70	0.61		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	0.5		0.2	0.4		0.8	0.2		0.9	0.5	
Delay (s)	9.6	10.7		5.7	6.7		36.4	35.1		36.5	35.7	
Level of Service	A	B		A	A		D	D		D	D	
Approach Delay (s/veh)		10.7			6.7			35.8			36.0	
Approach LOS		B			A			D			D	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	11.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	69.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	650	110	3	817	40	151	12	1	39	16	35
Future Volume (vph)	37	650	110	3	817	40	151	12	1	39	16	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	15.0		0.0	20.0		0.0	5.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.6			7.6			7.6			7.6		
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		0.99		1.00	1.00		0.98	1.00		0.99	0.98	
Frt		0.978			0.993			0.989			0.897	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1772	1853	0	1825	1849	0	1825	1896	0	1825	1647	0
Flt Permitted	0.193			0.250			0.722			0.748		
Satd. Flow (perm)	360	1853	0	478	1849	0	1356	1896	0	1427	1647	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			4			1			37	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		71.0			116.1			61.5			107.3	
Travel Time (s)		5.1			8.4			4.4			7.7	
Confl. Peds. (#/hr)	3		10	10		3	17		3	3		17
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	3%	1%	0%	0%	3%	4%	0%	0%	0%	0%	0%	3%
Adj. Flow (vph)	39	684	116	3	860	42	159	13	1	41	17	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	39	800	0	3	902	0	159	14	0	41	54	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	40.0	40.0		40.0	40.0		32.0	32.0		32.0	32.0	
Total Split (s)	87.0	87.0		87.0	87.0		33.0	33.0		33.0	33.0	
Total Split (%)	72.5%	72.5%		72.5%	72.5%		27.5%	27.5%		27.5%	27.5%	
Maximum Green (s)	80.0	80.0		80.0	80.0		26.0	26.0		26.0	26.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		Max	Max		Max	Max	
Walk Time (s)	16.0	16.0		16.0	16.0		8.0	8.0		8.0	8.0	
Flash Don't Walk (s)	17.0	17.0		17.0	17.0		17.0	17.0		17.0	17.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	80.0	80.0		80.0	80.0		26.0	26.0		26.0	26.0	
Actuated g/C Ratio	0.67	0.67		0.67	0.67		0.22	0.22		0.22	0.22	
v/c Ratio	0.16	0.65		0.01	0.73		0.54	0.03		0.13	0.14	
Control Delay (s/veh)	5.6	9.5		7.0	17.4		48.5	34.8		39.4	18.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	5.6	9.5		7.0	17.4		48.5	34.8		39.4	18.2	
LOS	A	A		A	B		D	C		D	B	
Approach Delay (s/veh)		9.3			17.4			47.3			27.4	
Approach LOS		A			B			D			C	
Queue Length 50th (m)	1.4	43.1		0.2	126.0		33.4	2.5		7.8	3.2	
Queue Length 95th (m)	3.1	59.9		1.3	176.1		55.9	m7.4		17.6	13.8	
Internal Link Dist (m)		47.0			92.1			37.5			83.3	
Turn Bay Length (m)	45.0			15.0			20.0			5.0		
Base Capacity (vph)	240	1240		318	1234		293	411		309	385	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.16	0.65		0.01	0.73		0.54	0.03		0.13	0.14	

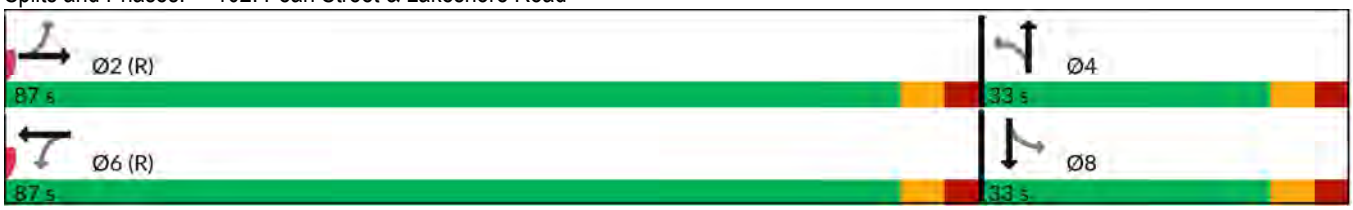
Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 51 (43%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay (s/veh): 17.0	Intersection LOS: B

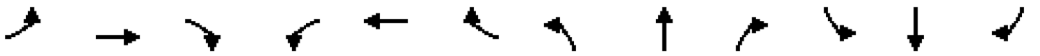
Intersection Capacity Utilization 77.9% ICU Level of Service D

Analysis Period (min) 15

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

Splits and Phases: 102: Pearl Street & Lakeshore Road

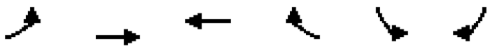




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	650	110	3	817	40	151	12	1	39	16	35
Future Volume (vph)	37	650	110	3	817	40	151	12	1	39	16	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.98	1.00		0.99	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.99		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1772	1853		1818	1849		1784	1897		1812	1647	
Flt Permitted	0.19	1.00		0.25	1.00		0.72	1.00		0.75	1.00	
Satd. Flow (perm)	361	1853		478	1849		1355	1897		1428	1647	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	39	684	116	3	860	42	159	13	1	41	17	37
RTOR Reduction (vph)	0	5	0	0	1	0	0	1	0	0	29	0
Lane Group Flow (vph)	39	795	0	3	901	0	159	13	0	41	25	0
Confl. Peds. (#/hr)	3		10	10		3	17		3	3		17
Heavy Vehicles (%)	3%	1%	0%	0%	3%	4%	0%	0%	0%	0%	0%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	80.0	80.0		80.0	80.0		26.0	26.0		26.0	26.0	
Effective Green, g (s)	80.0	80.0		80.0	80.0		26.0	26.0		26.0	26.0	
Actuated g/C Ratio	0.67	0.67		0.67	0.67		0.22	0.22		0.22	0.22	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	240	1235		318	1232		293	411		309	356	
v/s Ratio Prot		0.43			c0.49			0.01			0.02	
v/s Ratio Perm	0.11			0.01			c0.12			0.03		
v/c Ratio	0.16	0.64		0.01	0.73		0.54	0.03		0.13	0.07	
Uniform Delay, d1	7.5	11.7		6.7	13.0		41.7	37.1		37.9	37.4	
Progression Factor	0.52	0.59		1.00	1.00		0.97	0.97		1.00	1.00	
Incremental Delay, d2	1.4	2.5		0.1	3.8		7.0	0.1		0.9	0.4	
Delay (s)	5.3	9.3		6.8	16.9		47.6	36.2		38.8	37.8	
Level of Service	A	A		A	B		D	D		D	D	
Approach Delay (s/veh)		9.2			16.8			46.7			38.2	
Approach LOS		A			B			D			D	

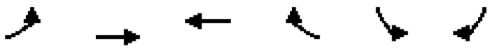
Intersection Summary			
HCM 2000 Control Delay (s/veh)	17.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	77.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	69	602	800	48	11	34
Future Volume (vph)	69	602	800	48	11	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.6				7.6	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.992		0.897	
Flt Protected	0.950				0.988	
Satd. Flow (prot)	1755	1902	1867	0	1703	0
Flt Permitted	0.950				0.988	
Satd. Flow (perm)	1755	1902	1867	0	1703	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		116.1	143.3		106.3	
Travel Time (s)		8.4	10.3		7.7	
Confl. Peds. (#/hr)	7			7	3	10
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	1%	2%	3%	0%	0%
Adj. Flow (vph)	72	627	833	50	11	35
Shared Lane Traffic (%)						
Lane Group Flow (vph)	72	627	883	0	46	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	4.9		4.9	
Two way Left Turn Lane			Yes			
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	

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



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	69	602	800	48	11	34
Future Volume (Veh/h)	69	602	800	48	11	34
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	72	627	833	50	11	35
Pedestrians		10	3		7	
Lane Width (m)		3.7	3.7		3.7	
Walking Speed (m/s)		1.1	1.1		1.1	
Percent Blockage		1	0		1	
Right turn flare (veh)						
Median type		None	TWLTL			
Median storage veh)			2			
Upstream signal (m)		116				
pX, platoon unblocked					0.76	
vC, conflicting volume	890				1639	875
vC1, stage 1 conf vol					865	
vC2, stage 2 conf vol					774	
vCu, unblocked vol	890				1682	875
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	90				96	90
cM capacity (veh/h)	748				288	346

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	72	627	883	46
Volume Left	72	0	0	11
Volume Right	0	0	50	35
cSH	748	1700	1700	330
Volume to Capacity	0.10	0.37	0.52	0.14
Queue Length 95th (m)	2.4	0.0	0.0	3.6
Control Delay (s/veh)	10.3	0.0	0.0	17.7
Lane LOS	B			C
Approach Delay (s/veh)	1.1		0.0	17.7
Approach LOS				C

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	65.2%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	590	19	118	889	0	1	0	67	0	0	0
Future Volume (vph)	0	590	19	118	889	0	1	0	67	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	10.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.6			7.6			7.6			7.6		
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		0.995						0.867				
Flt Protected				0.950				0.999				
Satd. Flow (prot)	1921	1893	0	1825	1883	0	0	1664	0	0	1921	0
Flt Permitted				0.950				0.999				
Satd. Flow (perm)	1921	1893	0	1825	1883	0	0	1664	0	0	1921	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		143.3			89.6			234.1			61.5	
Travel Time (s)		10.3			6.5			16.9			4.4	
Confl. Peds. (#/hr)	14		3	3		14			8	8		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	608	20	122	916	0	1	0	69	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	628	0	122	916	0	0	70	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 67.1%		ICU Level of Service C	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	590	19	118	889	0	1	0	67	0	0	0
Future Volume (Veh/h)	0	590	19	118	889	0	1	0	67	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	0	608	20	122	916	0	1	0	69	0	0	0
Pedestrians					8			3			14	
Lane Width (m)					3.7			3.7			3.7	
Walking Speed (m/s)					1.1			1.1			1.1	
Percent Blockage					1			0			1	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		259										
pX, platoon unblocked				0.78			0.78	0.78	0.78	0.78	0.78	
vC, conflicting volume	930			631			1781	1795	629	1859	1805	930
vC1, stage 1 conf vol							621	621		1174	1174	
vC2, stage 2 conf vol							1160	1174		685	631	
vCu, unblocked vol	930			391			1859	1876	389	1958	1889	930
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			87			99	100	87	100	100	100
cM capacity (veh/h)	734			921			189	205	515	158	192	322

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	0	628	122	916	70	0
Volume Left	0	0	122	0	1	0
Volume Right	0	20	0	0	69	0
cSH	1700	1700	921	1700	502	1700
Volume to Capacity	0.00	0.37	0.13	0.54	0.14	0.00
Queue Length 95th (m)	0.0	0.0	3.5	0.0	3.7	0.0
Control Delay (s/veh)	0.0	0.0	9.5	0.0	13.3	0.0
Lane LOS			A		B	A
Approach Delay (s/veh)	0.0		1.1		13.3	0.0
Approach LOS					B	A

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	67.1%	ICU Level of Service	C
Analysis Period (min)	15		



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	101	28	26	136	29	19
Future Volume (vph)	101	28	26	136	29	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.971				0.947	
Flt Protected				0.992	0.971	
Satd. Flow (prot)	1829	0	0	1868	1732	0
Flt Permitted				0.992	0.971	
Satd. Flow (perm)	1829	0	0	1868	1732	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	61.5			234.1	41.1	
Travel Time (s)	4.4			16.9	3.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	110	30	28	148	32	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	140	0	0	176	53	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	

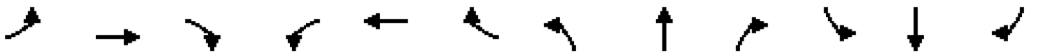
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 28.9%		ICU Level of Service A	
Analysis Period (min) 15			



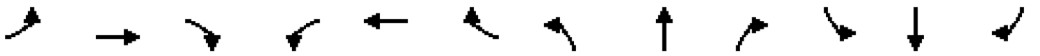
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	101	28	26	136	29	19
Future Volume (Veh/h)	101	28	26	136	29	19
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	110	30	28	148	32	21
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	62					
pX, platoon unblocked						
vC, conflicting volume			140		329	125
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			140		329	125
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		95	98
cM capacity (veh/h)			1443		653	926

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	140	176	53
Volume Left	0	28	32
Volume Right	30	0	21
cSH	1700	1443	739
Volume to Capacity	0.08	0.02	0.07
Queue Length 95th (m)	0.0	0.5	1.8
Control Delay (s/veh)	0.0	1.3	10.2
Lane LOS		A	B
Approach Delay (s/veh)	0.0	1.3	10.2
Approach LOS			B

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	28.9%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	822	39	17	858	33	39	14	21	33	21	39
Future Volume (vph)	43	822	39	17	858	33	39	14	21	33	21	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		15.0	30.0		0.0	10.0		0.0	20.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		0.98	1.00		0.95	0.96		0.95	0.96	
Frt		0.993			0.994			0.909			0.903	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1659	3611	0	1825	3538	0	1825	1683	0	1560	1526	0
Flt Permitted	0.257			0.269			0.715			0.732		
Satd. Flow (perm)	445	3611	0	509	3538	0	1308	1683	0	1147	1526	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			6			23			42	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		106.8			55.1			68.6			100.8	
Travel Time (s)		7.7			4.0			4.9			7.3	
Confl. Peds. (#/hr)	23		37	37		23	42		39	39		42
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	10%	0%	0%	0%	2%	11%	0%	0%	0%	17%	0%	14%
Adj. Flow (vph)	47	893	42	18	933	36	42	15	23	36	23	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	47	935	0	18	969	0	42	38	0	36	65	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	41.0	41.0		41.0	41.0		36.0	36.0		36.0	36.0	
Total Split (s)	84.0	84.0		84.0	84.0		36.0	36.0		36.0	36.0	
Total Split (%)	70.0%	70.0%		70.0%	70.0%		30.0%	30.0%		30.0%	30.0%	
Maximum Green (s)	77.0	77.0		77.0	77.0		29.0	29.0		29.0	29.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		Max	Max		Max	Max	
Walk Time (s)	16.0	16.0		16.0	16.0		8.0	8.0		8.0	8.0	
Flash Don't Walk (s)	18.0	18.0		18.0	18.0		21.0	21.0		21.0	21.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	77.0	77.0		77.0	77.0		29.0	29.0		29.0	29.0	
Actuated g/C Ratio	0.64	0.64		0.64	0.64		0.24	0.24		0.24	0.24	
v/c Ratio	0.16	0.40		0.06	0.43		0.13	0.09		0.13	0.16	
Control Delay (s/veh)	10.4	10.9		5.8	6.7		37.2	19.7		37.3	17.4	
Queue Delay	0.0	0.0		0.0	0.6		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	10.4	10.9		5.8	7.3		37.2	19.7		37.3	17.4	
LOS	B	B		A	A		D	B		D	B	
Approach Delay (s/veh)		10.9			7.3			28.9			24.5	
Approach LOS		B			A			C			C	
Queue Length 50th (m)	4.1	51.3		1.0	27.6		7.8	2.7		6.7	4.2	
Queue Length 95th (m)	9.8	63.6		m1.5	33.2		17.4	11.6		15.6	15.6	
Internal Link Dist (m)		82.8			31.1			44.6			76.8	
Turn Bay Length (m)	40.0			30.0			10.0			20.0		
Base Capacity (vph)	285	2319		326	2272		316	424		277	400	
Starvation Cap Reductn	0	0		0	835		0	0		0	0	
Spillback Cap Reductn	0	18		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.16	0.41		0.06	0.67		0.13	0.09		0.13	0.16	

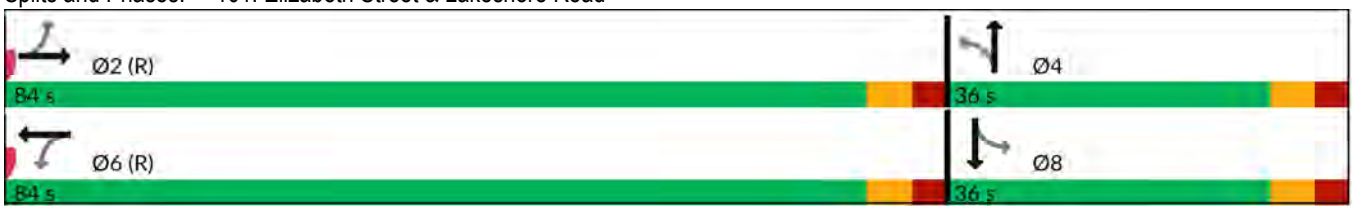
Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 56 (47%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.43	
Intersection Signal Delay (s/veh): 10.5	Intersection LOS: B

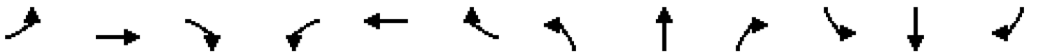
Intersection Capacity Utilization 71.6% ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 101: Elizabeth Street & Lakeshore Road

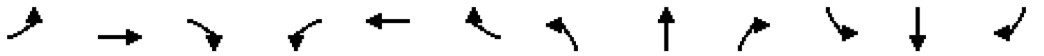




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	822	39	17	858	33	39	14	21	33	21	39
Future Volume (vph)	43	822	39	17	858	33	39	14	21	33	21	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.96		1.00	0.96	
Flpb, ped/bikes	0.99	1.00		0.98	1.00		0.95	1.00		0.95	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.91		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1644	3612		1797	3539		1738	1684		1488	1526	
Flt Permitted	0.26	1.00		0.27	1.00		0.71	1.00		0.73	1.00	
Satd. Flow (perm)	445	3612		509	3539		1308	1684		1147	1526	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	47	893	42	18	933	36	42	15	23	36	23	42
RTOR Reduction (vph)	0	3	0	0	2	0	0	17	0	0	32	0
Lane Group Flow (vph)	47	932	0	18	967	0	42	21	0	36	33	0
Confl. Peds. (#/hr)	23		37	37		23	42		39	39		42
Heavy Vehicles (%)	10%	0%	0%	0%	2%	11%	0%	0%	0%	17%	0%	14%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	77.0	77.0		77.0	77.0		29.0	29.0		29.0	29.0	
Effective Green, g (s)	77.0	77.0		77.0	77.0		29.0	29.0		29.0	29.0	
Actuated g/C Ratio	0.64	0.64		0.64	0.64		0.24	0.24		0.24	0.24	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	285	2317		326	2270		316	406		277	368	
v/s Ratio Prot		0.26			c0.27			0.01			0.02	
v/s Ratio Perm	0.11			0.04			c0.03			0.03		
v/c Ratio	0.16	0.40		0.06	0.43		0.13	0.05		0.13	0.09	
Uniform Delay, d1	8.6	10.4		8.0	10.6		35.6	34.9		35.6	35.3	
Progression Factor	1.00	1.00		0.68	0.59		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.2	0.5		0.2	0.4		0.9	0.2		1.0	0.5	
Delay (s)	9.9	10.9		5.7	6.7		36.5	35.2		36.6	35.8	
Level of Service	A	B		A	A		D	D		D	D	
Approach Delay (s/veh)		10.9			6.7			35.9			36.1	
Approach LOS		B			A			D			D	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	11.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	678	111	3	857	41	154	12	1	40	16	37
Future Volume (vph)	39	678	111	3	857	41	154	12	1	40	16	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	15.0		0.0	20.0		0.0	5.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.6			7.6			7.6			7.6		
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		0.99		1.00	1.00		0.98	1.00		0.99	0.97	
Frt		0.979			0.993			0.989			0.896	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1772	1855	0	1825	1849	0	1825	1896	0	1825	1644	0
Flt Permitted	0.170			0.233			0.720			0.748		
Satd. Flow (perm)	317	1855	0	446	1849	0	1352	1896	0	1427	1644	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			4			1			39	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		68.8			116.1			61.5			107.3	
Travel Time (s)		5.0			8.4			4.4			7.7	
Confl. Peds. (#/hr)	3		10	10		3	17		3	3		17
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	3%	1%	0%	0%	3%	4%	0%	0%	0%	0%	0%	3%
Adj. Flow (vph)	41	714	117	3	902	43	162	13	1	42	17	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	41	831	0	3	945	0	162	14	0	42	56	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	40.0	40.0		40.0	40.0		32.0	32.0		32.0	32.0	
Total Split (s)	87.0	87.0		87.0	87.0		33.0	33.0		33.0	33.0	
Total Split (%)	72.5%	72.5%		72.5%	72.5%		27.5%	27.5%		27.5%	27.5%	
Maximum Green (s)	80.0	80.0		80.0	80.0		26.0	26.0		26.0	26.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		Max	Max		Max	Max	
Walk Time (s)	16.0	16.0		16.0	16.0		8.0	8.0		8.0	8.0	
Flash Don't Walk (s)	17.0	17.0		17.0	17.0		17.0	17.0		17.0	17.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	80.0	80.0		80.0	80.0		26.0	26.0		26.0	26.0	
Actuated g/C Ratio	0.67	0.67		0.67	0.67		0.22	0.22		0.22	0.22	
v/c Ratio	0.19	0.67		0.01	0.77		0.55	0.03		0.14	0.15	
Control Delay (s/veh)	6.2	10.0		7.0	18.9		48.9	35.1		39.5	17.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	6.2	10.0		7.0	18.9		48.9	35.1		39.5	17.9	
LOS	A	A		A	B		D	D		D	B	
Approach Delay (s/veh)		9.8			18.8			47.8			27.1	
Approach LOS		A			B			D			C	
Queue Length 50th (m)	1.4	47.0		0.2	138.2		34.2	2.5		8.1	3.2	
Queue Length 95th (m)	3.2	65.0		1.3	194.2		m56.8	m7.4		17.9	14.0	
Internal Link Dist (m)		44.8			92.1			37.5			83.3	
Turn Bay Length (m)	45.0			15.0			20.0			5.0		
Base Capacity (vph)	211	1241		297	1234		292	411		309	386	
Starvation Cap Reductn	0	1		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.19	0.67		0.01	0.77		0.55	0.03		0.14	0.15	

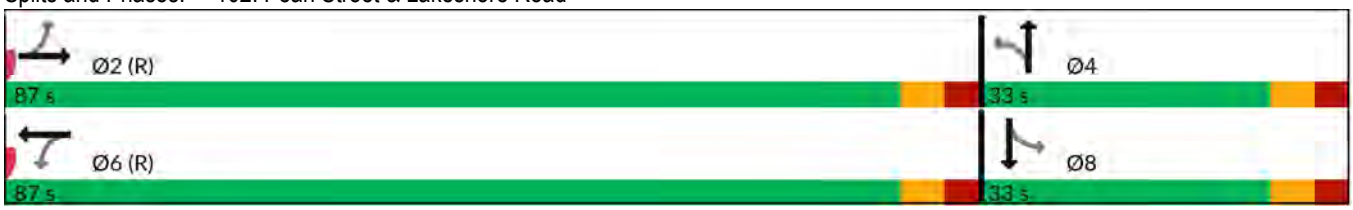
Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 51 (43%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay (s/veh): 17.9	Intersection LOS: B

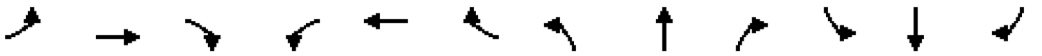
Intersection Capacity Utilization 80.1% ICU Level of Service D

Analysis Period (min) 15

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

Splits and Phases: 102: Pearl Street & Lakeshore Road

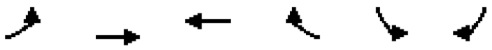




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	678	111	3	857	41	154	12	1	40	16	37
Future Volume (vph)	39	678	111	3	857	41	154	12	1	40	16	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.98	1.00		0.99	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.99		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1772	1855		1819	1849		1784	1897		1812	1643	
Flt Permitted	0.17	1.00		0.23	1.00		0.72	1.00		0.75	1.00	
Satd. Flow (perm)	316	1855		445	1849		1353	1897		1428	1643	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	41	714	117	3	902	43	162	13	1	42	17	39
RTOR Reduction (vph)	0	5	0	0	1	0	0	1	0	0	31	0
Lane Group Flow (vph)	41	826	0	3	944	0	162	13	0	42	25	0
Confl. Peds. (#/hr)	3		10	10		3	17		3	3		17
Heavy Vehicles (%)	3%	1%	0%	0%	3%	4%	0%	0%	0%	0%	0%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	80.0	80.0		80.0	80.0		26.0	26.0		26.0	26.0	
Effective Green, g (s)	80.0	80.0		80.0	80.0		26.0	26.0		26.0	26.0	
Actuated g/C Ratio	0.67	0.67		0.67	0.67		0.22	0.22		0.22	0.22	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	210	1236		296	1232		293	411		309	355	
v/s Ratio Prot		0.45			c0.51			0.01			0.02	
v/s Ratio Perm	0.13			0.01			c0.12			0.03		
v/c Ratio	0.20	0.67		0.01	0.77		0.55	0.03		0.14	0.07	
Uniform Delay, d1	7.7	12.0		6.7	13.6		41.8	37.1		37.9	37.4	
Progression Factor	0.51	0.59		1.00	1.00		0.97	0.98		1.00	1.00	
Incremental Delay, d2	1.9	2.7		0.1	4.6		7.3	0.1		0.9	0.4	
Delay (s)	5.8	9.9		6.8	18.2		47.9	36.6		38.8	37.8	
Level of Service	A	A		A	B		D	D		D	D	
Approach Delay (s/veh)		9.7			18.2			47.0			38.2	
Approach LOS		A			B			D			D	

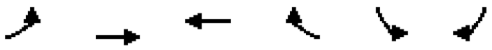
Intersection Summary			
HCM 2000 Control Delay (s/veh)	18.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	80.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	70	630	840	50	12	35
Future Volume (vph)	70	630	840	50	12	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.6				7.6	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.992		0.901	
Flt Protected	0.950				0.987	
Satd. Flow (prot)	1755	1902	1867	0	1708	0
Flt Permitted	0.950				0.987	
Satd. Flow (perm)	1755	1902	1867	0	1708	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		116.1	143.3		106.3	
Travel Time (s)		8.4	10.3		7.7	
Confl. Peds. (#/hr)	7			7	3	10
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	1%	2%	3%	0%	0%
Adj. Flow (vph)	73	656	875	52	13	36
Shared Lane Traffic (%)						
Lane Group Flow (vph)	73	656	927	0	49	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	4.9		4.9	
Two way Left Turn Lane			Yes			
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 67.5%		ICU Level of Service C	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	70	630	840	50	12	35
Future Volume (Veh/h)	70	630	840	50	12	35
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	73	656	875	52	12	36
Pedestrians		10	3		7	
Lane Width (m)		3.7	3.7		3.7	
Walking Speed (m/s)		1.1	1.1		1.1	
Percent Blockage		1	0		1	
Right turn flare (veh)						
Median type		None	TWLTL			
Median storage veh)			2			
Upstream signal (m)		116				
pX, platoon unblocked					0.74	
vC, conflicting volume	934				1713	918
vC1, stage 1 conf vol					908	
vC2, stage 2 conf vol					805	
vCu, unblocked vol	934				1786	918
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	90				96	89
cM capacity (veh/h)	720				272	327

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	73	656	927	48
Volume Left	73	0	0	12
Volume Right	0	0	52	36
cSH	720	1700	1700	311
Volume to Capacity	0.10	0.39	0.55	0.15
Queue Length 95th (m)	2.6	0.0	0.0	4.1
Control Delay (s/veh)	10.6	0.0	0.0	18.7
Lane LOS	B			C
Approach Delay (s/veh)	1.1		0.0	18.7
Approach LOS				C

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	619	19	119	931	0	1	0	68	0	0	0
Future Volume (vph)	0	619	19	119	931	0	1	0	68	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	10.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.6			7.6			7.6			7.6		
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		0.995						0.867				
Flt Protected				0.950				0.999				
Satd. Flow (prot)	1921	1893	0	1825	1883	0	0	1664	0	0	1921	0
Flt Permitted				0.950				0.999				
Satd. Flow (perm)	1921	1893	0	1825	1883	0	0	1664	0	0	1921	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		143.3			89.6			237.0			61.5	
Travel Time (s)		10.3			6.5			17.1			4.4	
Confl. Peds. (#/hr)	14		3	3		14			8	8		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	638	20	123	960	0	1	0	70	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	658	0	123	960	0	0	71	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 69.4%		ICU Level of Service C	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	619	19	119	931	0	1	0	68	0	0	0
Future Volume (Veh/h)	0	619	19	119	931	0	1	0	68	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	0	638	20	123	960	0	1	0	70	0	0	0
Pedestrians					8			3			14	
Lane Width (m)					3.7			3.7			3.7	
Walking Speed (m/s)					1.1			1.1			1.1	
Percent Blockage					1			0			1	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		259										
pX, platoon unblocked				0.76			0.76	0.76	0.76	0.76	0.76	
vC, conflicting volume	974			661			1857	1871	659	1936	1881	974
vC1, stage 1 conf vol							651	651		1220	1220	
vC2, stage 2 conf vol							1206	1220		716	661	
vCu, unblocked vol	974			400			1968	1987	397	2072	2000	974
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			86			99	100	86	100	100	100
cM capacity (veh/h)	706			889			177	193	495	146	180	304

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	0	658	123	960	71	0
Volume Left	0	0	123	0	1	0
Volume Right	0	20	0	0	70	0
cSH	1700	1700	889	1700	483	1700
Volume to Capacity	0.00	0.39	0.14	0.56	0.15	0.00
Queue Length 95th (m)	0.0	0.0	3.6	0.0	3.9	0.0
Control Delay (s/veh)	0.0	0.0	9.7	0.0	13.7	0.0
Lane LOS			A		B	A
Approach Delay (s/veh)	0.0		1.1		13.7	0.0
Approach LOS					B	A

Intersection Summary				
Average Delay	1.2			
Intersection Capacity Utilization	69.4%	ICU Level of Service	C	
Analysis Period (min)	15			



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	102	28	26	138	29	19
Future Volume (vph)	102	28	26	138	29	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.971				0.947	
Flt Protected				0.992	0.971	
Satd. Flow (prot)	1829	0	0	1868	1732	0
Flt Permitted				0.992	0.971	
Satd. Flow (perm)	1829	0	0	1868	1732	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	61.5			237.0	41.1	
Travel Time (s)	4.4			17.1	3.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	111	30	28	150	32	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	141	0	0	178	53	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 29.1%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	102	28	26	138	29	19
Future Volume (Veh/h)	102	28	26	138	29	19
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	111	30	28	150	32	21
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	62					
pX, platoon unblocked						
vC, conflicting volume			141		332	126
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			141		332	126
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		95	98
cM capacity (veh/h)			1442		650	924

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	141	178	53
Volume Left	0	28	32
Volume Right	30	0	21
cSH	1700	1442	737
Volume to Capacity	0.08	0.02	0.07
Queue Length 95th (m)	0.0	0.5	1.8
Control Delay (s/veh)	0.0	1.3	10.3
Lane LOS		A	B
Approach Delay (s/veh)	0.0	1.3	10.3
Approach LOS			B

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	29.1%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix J

SimTraffic Reports

Intersection: 101: Elizabeth Street & Lakeshore Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (m)	42.5	102.4	22.5	9.0	29.3	27.6	17.0	14.7	16.5	22.0
Average Queue (m)	5.9	68.0	2.3	1.4	11.8	10.1	5.0	4.0	2.7	7.1
95th Queue (m)	24.0	109.5	12.7	6.2	24.6	23.5	14.1	12.9	11.2	17.7
Link Distance (m)		90.4			37.6	37.6		53.0		81.8
Upstream Blk Time (%)		4			0	0				
Queuing Penalty (veh)		0			0	0				
Storage Bay Dist (m)	40.0		15.0	30.0			10.0		20.0	
Storage Blk Time (%)		26	0		0		13	7	0	0
Queuing Penalty (veh)		115	0		0		2	2	0	0

Intersection: 102: Pearl Street & Lakeshore Road

Movement	EB	EB	B2	B2	WB	NB	NB	SB	SB
Directions Served	L	TR	T		TR	L	TR	L	TR
Maximum Queue (m)	13.2	41.8	6.1	12.4	58.6	17.3	10.0	8.0	8.7
Average Queue (m)	3.3	15.9	0.2	0.5	23.2	3.6	1.0	1.0	1.8
95th Queue (m)	10.2	36.5	3.3	5.5	53.0	12.4	5.7	5.1	7.4
Link Distance (m)		51.2	37.6	37.6	97.4		44.9		91.6
Upstream Blk Time (%)		0							
Queuing Penalty (veh)		0							
Storage Bay Dist (m)	45.0					20.0		5.0	
Storage Blk Time (%)		0			12	1	0	6	1
Queuing Penalty (veh)		0			0	0	0	1	0

Intersection: 103: Lakeshore Road & Martha Street

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (m)	10.3	17.8	9.2	21.1
Average Queue (m)	2.1	1.2	0.4	6.5
95th Queue (m)	8.4	9.0	4.3	14.7
Link Distance (m)		97.4	122.3	95.6
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)	15.0			
Storage Blk Time (%)	0	0		
Queuing Penalty (veh)	0	0		

Intersection: 104: Old Lakeshore Road/Private Access & Lakeshore Road

Movement	EB	WB	WB	NB
Directions Served	TR	L	TR	LTR
Maximum Queue (m)	1.7	7.7	3.2	14.5
Average Queue (m)	0.1	1.3	0.2	2.8
95th Queue (m)	1.2	5.9	2.6	9.1
Link Distance (m)	122.3		78.8	209.5
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)		15.0		
Storage Blk Time (%)	0		0	
Queuing Penalty (veh)	0		0	

Zone Summary

Zone wide Queuing Penalty: 121

Intersection: 101: Elizabeth Street & Lakeshore Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (m)	47.4	102.9	21.4	12.5	37.3	42.1	16.5	17.3	18.0	25.6
Average Queue (m)	7.5	79.2	2.0	2.0	17.6	19.9	4.7	4.4	3.0	7.5
95th Queue (m)	28.6	116.8	11.8	8.0	30.6	36.5	13.9	13.5	12.6	18.4
Link Distance (m)		90.4			35.4	35.4		53.0		81.8
Upstream Blk Time (%)		11			0	1				
Queuing Penalty (veh)		0			1	2				
Storage Bay Dist (m)	40.0		15.0	30.0			10.0		20.0	
Storage Blk Time (%)	0	30	0		1		13	7	1	1
Queuing Penalty (veh)	0	143	0		0		2	2	0	0

Intersection: 102: Pearl Street & Lakeshore Road

Movement	EB	EB	B2	B2	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	T		L	TR	L	TR	L	TR
Maximum Queue (m)	15.8	58.6	14.6	9.8	9.9	84.7	27.5	48.7	9.0	11.9
Average Queue (m)	3.9	28.2	0.7	0.5	0.7	36.3	20.3	11.6	1.4	2.7
95th Queue (m)	11.3	50.6	6.7	4.9	6.1	69.6	32.3	39.8	6.3	9.5
Link Distance (m)		53.3	35.4	35.4		97.4		44.9		91.6
Upstream Blk Time (%)		1	0			0		3		
Queuing Penalty (veh)		9	0			0		3		
Storage Bay Dist (m)	45.0				15.0		20.0		5.0	
Storage Blk Time (%)		2				16	26	0	6	3
Queuing Penalty (veh)		1				0	4	0	1	0

Intersection: 103: Lakeshore Road & Martha Street

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (m)	10.7	31.4	17.1	32.1
Average Queue (m)	2.6	2.0	1.4	11.1
95th Queue (m)	9.5	13.3	8.7	23.9
Link Distance (m)		97.4	125.9	95.6
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)	15.0			
Storage Blk Time (%)	0	0		
Queuing Penalty (veh)	0	0		

Intersection: 104: Old Lakeshore Road/Private Access & Lakeshore Road

Movement	EB	WB	WB	NB
Directions Served	TR	L	TR	LTR
Maximum Queue (m)	39.1	14.2	11.9	27.3
Average Queue (m)	2.3	4.3	0.5	11.3
95th Queue (m)	16.0	11.9	4.5	20.2
Link Distance (m)	125.9		78.8	224.2
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)		15.0		
Storage Blk Time (%)	1	1	0	
Queuing Penalty (veh)	0	4	0	

Zone Summary

Zone wide Queuing Penalty: 174

Intersection: 101: Elizabeth Street & Lakeshore Road

Movement	EB	EB	EB	WB	WB	WB	B2	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	T	L	TR	L	TR
Maximum Queue (m)	47.4	102.6	18.3	15.3	38.6	39.9	1.1	15.2	22.2	24.8	25.9
Average Queue (m)	7.8	81.8	2.6	2.1	18.2	19.8	0.0	5.4	3.7	4.8	7.9
95th Queue (m)	30.7	115.9	13.6	9.1	31.1	34.0	0.8	13.9	13.2	16.4	18.9
Link Distance (m)		90.4			35.6	35.6	53.2		53.1		81.8
Upstream Blk Time (%)		13			0	0					
Queuing Penalty (veh)		0			1	1					
Storage Bay Dist (m)	40.0		15.0	30.0				10.0		20.0	
Storage Blk Time (%)	0	31	0		1			16	5	2	1
Queuing Penalty (veh)	0	154	0		0			3	1	1	0

Intersection: 102: Pearl Street & Lakeshore Road

Movement	EB	EB	B2	B2	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	T		L	TR	L	TR	L	TR
Maximum Queue (m)	12.8	62.1	16.4	17.2	11.0	79.6	27.5	45.1	12.3	16.1
Average Queue (m)	3.7	31.8	0.6	0.7	0.6	36.9	20.1	10.1	2.3	3.2
95th Queue (m)	10.4	55.2	7.2	6.5	4.8	71.2	31.3	34.9	8.5	11.1
Link Distance (m)		53.2	35.6	35.6		97.4		44.9		91.6
Upstream Blk Time (%)		1	0			0		1		
Queuing Penalty (veh)		6	0			0		2		
Storage Bay Dist (m)	45.0				15.0		20.0		5.0	
Storage Blk Time (%)		3				18	22	0	10	4
Queuing Penalty (veh)		1				0	3	0	1	0

Intersection: 103: Lakeshore Road & Martha Street

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (m)	15.3	31.2	20.4	36.8
Average Queue (m)	3.8	2.9	1.9	12.5
95th Queue (m)	11.7	16.0	10.7	25.8
Link Distance (m)		97.4	125.9	95.6
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)	15.0			
Storage Blk Time (%)	0	0		
Queuing Penalty (veh)	1	0		

Intersection: 104: Old Lakeshore Road/Private Access & Lakeshore Road

Movement	EB	WB	WB	NB
Directions Served	TR	L	TR	LTR
Maximum Queue (m)	20.9	14.2	17.5	29.0
Average Queue (m)	2.0	5.0	0.9	12.1
95th Queue (m)	13.2	12.7	6.7	23.3
Link Distance (m)	125.9		78.8	225.1
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)		15.0		
Storage Blk Time (%)	0	1	0	
Queuing Penalty (veh)	0	5	0	

Zone Summary

Zone wide Queuing Penalty: 181

Intersection: 101: Elizabeth Street & Lakeshore Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (m)	47.4	105.0	22.7	9.0	37.2	44.6	17.2	11.4	20.1	24.3
Average Queue (m)	7.2	83.7	3.6	1.8	18.5	20.1	5.9	3.4	3.1	7.4
95th Queue (m)	28.6	118.6	16.6	7.1	31.2	36.2	14.8	11.4	12.8	17.3
Link Distance (m)		90.4			37.4	37.4		52.8		81.8
Upstream Blk Time (%)		13			0	0				
Queuing Penalty (veh)		0			0	1				
Storage Bay Dist (m)	40.0		15.0	30.0			10.0		20.0	
Storage Blk Time (%)		32	0		1		5	4	1	1
Queuing Penalty (veh)		157	0		0		1	1	0	0

Intersection: 102: Pearl Street & Lakeshore Road

Movement	EB	EB	B5	B5	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	T		L	TR	L	TR	L	TR
Maximum Queue (m)	23.1	57.9	18.6	11.1	9.5	74.7	27.5	47.2	9.8	13.8
Average Queue (m)	4.4	32.2	1.0	0.8	0.7	35.6	21.8	11.6	2.3	3.5
95th Queue (m)	14.1	51.3	9.2	6.1	5.1	65.1	31.9	39.2	8.1	11.1
Link Distance (m)		51.4	37.4	37.4		97.4		44.9		91.8
Upstream Blk Time (%)		1	0					2		
Queuing Penalty (veh)		8	0					2		
Storage Bay Dist (m)	45.0				15.0		20.0		5.0	
Storage Blk Time (%)		2				18	27	0	10	5
Queuing Penalty (veh)		1				0	5	0	1	1

Intersection: 103: Lakeshore Road & Martha Street

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (m)	10.3	32.0	18.9	35.4
Average Queue (m)	2.7	2.8	1.8	11.2
95th Queue (m)	9.5	15.3	11.0	24.5
Link Distance (m)		97.4	124.8	95.6
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)	15.0			
Storage Blk Time (%)	0	0		
Queuing Penalty (veh)	0	0		

Intersection: 104: Old Lakeshore Road/Private Access & Lakeshore Road

Movement	EB	WB	WB	NB
Directions Served	TR	L	TR	LTR
Maximum Queue (m)	31.3	16.2	14.0	34.0
Average Queue (m)	2.2	5.9	0.6	14.3
95th Queue (m)	14.8	13.7	5.9	27.5
Link Distance (m)	124.8		78.8	215.2
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)		15.0		
Storage Blk Time (%)	0	2	0	
Queuing Penalty (veh)	0	9	0	

Intersection: 105: Site Driveway & Old Lakeshore Road/Pearl Street

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (m)	15.2	13.2
Average Queue (m)	1.0	7.0
95th Queue (m)	7.3	13.0
Link Distance (m)	215.2	33.3
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 188

Intersection: 101: Elizabeth Street & Lakeshore Road

Movement	EB	EB	EB	WB	WB	WB	B2	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	T	L	TR	L	TR
Maximum Queue (m)	47.4	100.4	18.3	11.6	38.8	51.1	2.8	16.2	19.2	22.5	27.4
Average Queue (m)	9.6	86.5	1.3	1.8	18.8	20.1	0.1	5.5	5.0	2.9	7.8
95th Queue (m)	36.0	112.5	9.6	7.7	33.3	38.5	2.0	14.0	14.8	12.1	19.9
Link Distance (m)		90.4			37.6	37.6	51.2		53.0		81.8
Upstream Blk Time (%)		17			0	1					
Queuing Penalty (veh)		0			1	3					
Storage Bay Dist (m)	40.0		15.0	30.0				10.0		20.0	
Storage Blk Time (%)		32			1			16	8	1	1
Queuing Penalty (veh)		167			0			3	2	1	0

Intersection: 102: Pearl Street & Lakeshore Road

Movement	EB	EB	B2	B2	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	T		L	TR	L	TR	L	TR
Maximum Queue (m)	24.9	60.9	16.5	16.3	14.2	82.1	27.5	46.2	12.3	17.5
Average Queue (m)	5.0	35.7	0.8	0.8	1.3	37.5	20.9	13.0	2.7	3.8
95th Queue (m)	15.1	54.6	6.8	6.6	7.1	66.8	32.2	41.1	9.2	12.4
Link Distance (m)		51.2	37.6	37.6		97.4		44.9		91.6
Upstream Blk Time (%)		2						2		
Queuing Penalty (veh)		20						2		
Storage Bay Dist (m)	45.0				15.0		20.0		5.0	
Storage Blk Time (%)		4				19	27	0	11	6
Queuing Penalty (veh)		1				0	5	0	2	1

Intersection: 103: Lakeshore Road & Martha Street

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (m)	13.2	34.3	15.2	29.1
Average Queue (m)	3.3	3.1	1.3	11.5
95th Queue (m)	10.9	18.8	8.7	21.8
Link Distance (m)		97.4	125.9	95.6
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)	15.0			
Storage Blk Time (%)	0	0		
Queuing Penalty (veh)	1	0		

Intersection: 104: Old Lakeshore Road/Private Access & Lakeshore Road

Movement	EB	WB	WB	NB
Directions Served	TR	L	TR	LTR
Maximum Queue (m)	25.5	15.5	12.2	28.0
Average Queue (m)	1.5	5.7	0.5	13.0
95th Queue (m)	12.2	13.5	4.3	22.9
Link Distance (m)	125.9		78.8	221.1
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)		15.0		
Storage Blk Time (%)	0	2	0	
Queuing Penalty (veh)	0	9	0	

Intersection: 105: Site Driveway & Old Lakeshore Road/Pearl Street

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (m)	15.5	13.2
Average Queue (m)	1.0	6.4
95th Queue (m)	6.8	13.3
Link Distance (m)	221.1	33.2
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 218

Intersection: 101: Elizabeth Street & Lakeshore Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (m)	40.1	91.0	22.4	9.4	23.9	28.6	17.1	23.4	26.4	38.7
Average Queue (m)	6.1	44.5	2.3	2.6	9.5	10.2	8.1	6.8	7.8	10.2
95th Queue (m)	24.3	79.4	12.8	8.8	20.9	21.8	17.9	17.1	19.8	25.6
Link Distance (m)		90.4			36.8	36.8		53.0		81.8
Upstream Blk Time (%)		0				0				
Queuing Penalty (veh)		0				0				
Storage Bay Dist (m)	40.0		15.0	30.0			10.0		20.0	
Storage Blk Time (%)		21	0		0		24	12	2	2
Queuing Penalty (veh)		76	0		0		8	4	1	0

Intersection: 102: Pearl Street & Lakeshore Road

Movement	EB	EB	B2	B2	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	T		L	TR	L	TR	L	TR
Maximum Queue (m)	19.5	48.9	13.0	12.2	4.9	99.7	25.4	8.9	12.4	18.1
Average Queue (m)	6.1	18.6	0.6	0.5	0.2	62.7	11.0	1.2	4.7	7.8
95th Queue (m)	16.2	36.9	5.6	5.1	2.1	100.3	23.1	5.7	12.0	17.9
Link Distance (m)		51.9	36.8	36.8		97.4		44.9		91.6
Upstream Blk Time (%)		0				1				
Queuing Penalty (veh)		1				5				
Storage Bay Dist (m)	45.0				15.0		20.0		5.0	
Storage Blk Time (%)		0				25	6		16	11
Queuing Penalty (veh)		0				0	0		6	2

Intersection: 103: Lakeshore Road & Martha Street

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (m)	13.4	21.2	46.9	15.6
Average Queue (m)	4.3	1.6	5.7	5.1
95th Queue (m)	12.5	10.1	24.4	13.1
Link Distance (m)		97.4	125.8	95.6
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)	15.0			
Storage Blk Time (%)	1	0		
Queuing Penalty (veh)	4	0		

Intersection: 104: Old Lakeshore Road/Private Access & Lakeshore Road

Movement	EB	WB	WB	NB
Directions Served	TR	L	TR	LTR
Maximum Queue (m)	18.7	11.3	17.5	8.6
Average Queue (m)	1.2	2.9	1.8	2.0
95th Queue (m)	8.9	9.7	10.0	7.7
Link Distance (m)	125.8		78.9	220.2
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)		15.0		
Storage Blk Time (%)	0	0	0	
Queuing Penalty (veh)	0	1	0	

Zone Summary

Zone wide Queuing Penalty: 109

Intersection: 101: Elizabeth Street & Lakeshore Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (m)	47.4	96.1	22.3	12.8	34.1	40.6	17.5	22.8	24.0	32.7
Average Queue (m)	9.0	69.5	3.0	3.0	17.5	20.0	8.4	7.3	7.9	10.5
95th Queue (m)	30.1	110.5	15.1	9.9	30.5	34.2	18.0	17.5	20.5	24.2
Link Distance (m)		90.4			36.8	36.8		53.0		81.8
Upstream Blk Time (%)		6			0	0				
Queuing Penalty (veh)		0			1	2				
Storage Bay Dist (m)	40.0		15.0	30.0			10.0		20.0	
Storage Blk Time (%)	0	25	0		1		24	14	3	3
Queuing Penalty (veh)	0	116	0		0		8	5	2	1

Intersection: 102: Pearl Street & Lakeshore Road

Movement	EB	EB	B2	B2	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	T		L	TR	L	TR	L	TR
Maximum Queue (m)	22.6	59.1	10.2	8.8	7.3	98.3	27.5	46.4	12.4	32.9
Average Queue (m)	6.8	25.0	0.8	0.5	0.5	67.4	21.9	10.9	8.2	12.6
95th Queue (m)	17.3	50.6	6.1	5.0	4.4	102.6	30.9	38.1	15.0	25.7
Link Distance (m)		51.9	36.8	36.8		97.4		44.9		91.6
Upstream Blk Time (%)		1				1		1		
Queuing Penalty (veh)		10				7		2		
Storage Bay Dist (m)	45.0				15.0		20.0		5.0	
Storage Blk Time (%)		3				26	25	0	30	14
Queuing Penalty (veh)		1				1	3	0	14	5

Intersection: 103: Lakeshore Road & Martha Street

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (m)	22.5	38.5	43.3	21.8
Average Queue (m)	9.6	3.6	6.5	8.3
95th Queue (m)	20.3	20.5	27.6	17.7
Link Distance (m)		97.4	125.9	95.6
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)	15.0			
Storage Blk Time (%)	4	0		
Queuing Penalty (veh)	22	0		

Intersection: 104: Old Lakeshore Road/Private Access & Lakeshore Road

Movement	EB	WB	WB	NB
Directions Served	TR	L	TR	LTR
Maximum Queue (m)	18.0	19.1	42.7	13.0
Average Queue (m)	1.6	7.5	3.6	7.5
95th Queue (m)	10.0	16.4	20.7	13.5
Link Distance (m)	125.9		78.8	222.6
Upstream Blk Time (%)			0	
Queuing Penalty (veh)			0	
Storage Bay Dist (m)		15.0		
Storage Blk Time (%)	0	2	0	
Queuing Penalty (veh)	0	16	0	

Zone Summary

Zone wide Queuing Penalty: 217

Intersection: 101: Elizabeth Street & Lakeshore Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (m)	47.4	96.2	22.5	13.9	36.1	41.4	17.5	32.8	26.4	37.1
Average Queue (m)	9.1	72.4	2.4	3.7	17.5	20.7	9.5	8.9	6.8	11.8
95th Queue (m)	30.2	111.8	13.0	11.0	32.9	36.7	19.1	24.2	19.3	28.4
Link Distance (m)		90.4			35.4	35.4		53.0		81.8
Upstream Blk Time (%)		6			0	1				
Queuing Penalty (veh)		0			1	5				
Storage Bay Dist (m)	40.0		15.0	30.0			10.0		20.0	
Storage Blk Time (%)	0	26	0		1		26	16	3	3
Queuing Penalty (veh)	0	124	0		0		9	6	2	1

Intersection: 102: Pearl Street & Lakeshore Road

Movement	EB	EB	B2	B2	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	T		L	TR	L	TR	L	TR
Maximum Queue (m)	34.4	61.3	8.6	6.3	8.3	100.5	27.5	46.3	12.4	31.8
Average Queue (m)	10.0	27.7	0.3	0.2	0.6	75.4	22.1	11.3	7.4	11.8
95th Queue (m)	25.4	53.1	3.6	3.2	4.0	111.8	31.5	39.0	14.5	26.1
Link Distance (m)		53.3	35.4	35.4		97.4		44.9		91.6
Upstream Blk Time (%)	0	1				2		1		
Queuing Penalty (veh)	0	10				22		2		
Storage Bay Dist (m)	45.0				15.0		20.0		5.0	
Storage Blk Time (%)		3				27	28	0	26	16
Queuing Penalty (veh)		1				1	3	0	13	7

Intersection: 103: Lakeshore Road & Martha Street

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (m)	22.6	63.0	81.5	34.0
Average Queue (m)	12.0	6.6	17.0	11.5
95th Queue (m)	22.5	33.3	60.3	25.9
Link Distance (m)		97.4	125.8	95.6
Upstream Blk Time (%)		0	0	
Queuing Penalty (veh)		0	1	
Storage Bay Dist (m)	15.0			
Storage Blk Time (%)	8	1		
Queuing Penalty (veh)	48	0		

Intersection: 104: Old Lakeshore Road/Private Access & Lakeshore Road

Movement	EB	WB	WB	NB
Directions Served	TR	L	TR	LTR
Maximum Queue (m)	19.3	21.7	52.4	15.9
Average Queue (m)	1.6	8.6	5.0	7.3
95th Queue (m)	9.8	17.1	25.6	14.4
Link Distance (m)	125.8		78.9	223.9
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)		15.0		
Storage Blk Time (%)	0	2	1	
Queuing Penalty (veh)	0	15	1	

Zone Summary

Zone wide Queuing Penalty: 273

Intersection: 101: Elizabeth Street & Lakeshore Road

Movement	EB	EB	EB	WB	WB	WB	B2	B2	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	T	T	L	TR	L	TR
Maximum Queue (m)	47.4	97.2	22.6	13.0	42.8	41.8	1.1	1.5	17.1	24.1	22.5	32.0
Average Queue (m)	7.8	68.6	2.5	3.6	19.4	23.0	0.0	0.1	9.4	7.4	7.5	10.5
95th Queue (m)	28.7	109.4	13.4	10.8	36.1	39.1	0.8	1.4	19.4	18.2	18.7	24.4
Link Distance (m)		90.4			35.4	35.4	53.3	53.3		53.0		81.8
Upstream Blk Time (%)		5			1	1						
Queuing Penalty (veh)		0			4	6						
Storage Bay Dist (m)	40.0		15.0	30.0					10.0		20.0	
Storage Blk Time (%)	0	24	0		2				28	14	3	3
Queuing Penalty (veh)	0	115	0		0				9	5	2	1

Intersection: 102: Pearl Street & Lakeshore Road

Movement	EB	EB	B2	B2	WB	WB	NB	NB	SB	SB		
Directions Served	L	TR	T		L	TR	L	TR	L	TR		
Maximum Queue (m)	38.1	61.7	14.8	12.8	11.1	100.2	27.5	48.0	12.4	34.3		
Average Queue (m)	7.7	27.9	0.7	0.8	0.7	72.0	24.6	21.1	7.9	12.4		
95th Queue (m)	21.6	53.7	6.5	6.5	5.2	110.4	31.5	54.4	15.1	26.7		
Link Distance (m)		53.3	35.4	35.4		97.4		44.9		91.6		
Upstream Blk Time (%)	0	1				2		5				
Queuing Penalty (veh)	0	12				14		8				
Storage Bay Dist (m)	45.0				15.0		20.0		5.0			
Storage Blk Time (%)		3				27	38	0	29	17		
Queuing Penalty (veh)		1				1	5	0	15	6		

Intersection: 103: Lakeshore Road & Martha Street

Movement	EB	EB	WB	SB								
Directions Served	L	T	TR	LR								
Maximum Queue (m)	21.4	49.6	77.7	19.9								
Average Queue (m)	9.9	4.1	12.4	8.4								
95th Queue (m)	19.9	22.7	48.0	16.9								
Link Distance (m)		97.4	125.9	95.6								
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	15.0											
Storage Blk Time (%)	5	1										
Queuing Penalty (veh)	29	0										

Intersection: 104: Old Lakeshore Road/Private Access & Lakeshore Road

Movement	EB	WB	WB	NB
Directions Served	TR	L	TR	LTR
Maximum Queue (m)	15.0	21.1	37.4	18.8
Average Queue (m)	1.5	8.5	2.6	9.0
95th Queue (m)	8.5	17.4	16.8	14.9
Link Distance (m)	125.9		78.8	218.7
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)		15.0		
Storage Blk Time (%)	0	2	0	
Queuing Penalty (veh)	0	20	0	

Intersection: 105: Site Driveway & Old Lakeshore Road/Pearl Street

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (m)	9.6	21.8	21.4
Average Queue (m)	0.5	2.7	8.5
95th Queue (m)	7.3	12.6	16.5
Link Distance (m)	44.9	218.7	32.9
Upstream Blk Time (%)	0		0
Queuing Penalty (veh)	0		0
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 254

Intersection: 101: Elizabeth Street & Lakeshore Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (m)	47.2	96.1	22.5	12.6	37.9	43.9	17.1	26.1	26.3	38.0
Average Queue (m)	8.9	71.3	2.7	3.5	19.2	22.4	9.1	8.0	8.5	12.5
95th Queue (m)	30.1	111.0	14.0	10.4	34.3	37.9	18.3	18.5	21.7	27.0
Link Distance (m)		90.4			37.4	37.4		52.8		81.8
Upstream Blk Time (%)		7			0	1				
Queuing Penalty (veh)		0			1	5				
Storage Bay Dist (m)	40.0		15.0	30.0			10.0		20.0	
Storage Blk Time (%)	0	25	0		1		11	15	3	4
Queuing Penalty (veh)	0	125	0		0		4	6	2	1

Intersection: 102: Pearl Street & Lakeshore Road

Movement	EB	EB	B5	B5	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	T		L	TR	L	TR	L	TR
Maximum Queue (m)	34.9	74.2	26.1	12.7	14.1	99.7	27.5	47.0	12.4	31.6
Average Queue (m)	10.8	30.4	1.6	0.7	1.1	73.6	24.0	16.6	6.6	11.9
95th Queue (m)	27.8	59.6	11.1	5.9	6.6	115.0	31.4	47.9	14.5	25.1
Link Distance (m)		51.4	37.4	37.4		97.4		44.9		91.8
Upstream Blk Time (%)		4	0			2		3		
Queuing Penalty (veh)		33	0			21		5		
Storage Bay Dist (m)	45.0				15.0		20.0		5.0	
Storage Blk Time (%)		5				27	32	0	23	15
Queuing Penalty (veh)		2				1	4	0	12	6

Intersection: 103: Lakeshore Road & Martha Street

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (m)	22.4	73.1	77.8	25.3
Average Queue (m)	10.7	7.3	14.8	9.3
95th Queue (m)	21.7	38.5	48.7	19.3
Link Distance (m)		97.4	125.9	95.6
Upstream Blk Time (%)		0		
Queuing Penalty (veh)		1		
Storage Bay Dist (m)	15.0			
Storage Blk Time (%)	7	0		
Queuing Penalty (veh)	42	0		

Intersection: 104: Old Lakeshore Road/Private Access & Lakeshore Road

Movement	EB	WB	WB	NB
Directions Served	TR	L	TR	LTR
Maximum Queue (m)	21.4	19.3	43.9	21.9
Average Queue (m)	1.4	9.5	4.1	10.2
95th Queue (m)	9.6	18.1	24.3	17.8
Link Distance (m)	125.9		78.8	221.9
Upstream Blk Time (%)			0	
Queuing Penalty (veh)			0	
Storage Bay Dist (m)		15.0		
Storage Blk Time (%)	0	3	0	
Queuing Penalty (veh)	0	29	1	

Intersection: 105: Site Driveway & Old Lakeshore Road/Pearl Street

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (m)	22.6	19.6
Average Queue (m)	2.3	8.2
95th Queue (m)	12.8	16.7
Link Distance (m)	221.9	32.8
Upstream Blk Time (%)		0
Queuing Penalty (veh)		0
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 302

Appendix K

Signal Warrant

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

Horizon Year: 2025
Region/City/Township: Burlington

Major Street: Lakeshore Road
Minor Street: Martha Street
North/South: N

Number of Approach Lanes: 2 or more
Tee Intersection? Y
Flow Conditions: Free

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: Lakeshore Road						Minor Street: Martha Street						Peds Crossing Main Road
	Eastbound			Westbound			Northbound			Southbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
AM Peak Hour	16	789			439	26				13		21	9
PM Peak Hour	24	546			765	37				7		16	13
Average Hourly Volume	**10**	**334**	**0**	**0**	**301**	**16**	**0**	**0**	**0**	**5**	**0**	**9**	**6**

Warrant 1 - Minimum Vehicular Volume

Warrant	AHV
1A - All	675
1B - Minor	14
2A - Major	661
2B - Cross	11

1A	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
				X		
	All Approaches	480	720	600	900	675
					% Fulfilled	**112.5%**

1B	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Minor Street Approaches	120	170	120	170	14
					% Fulfilled	**8.4%**

Warrant 2 - Delay To Cross Traffic

2A	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
				X		
	Major Street Approaches	480	720	600	900	661
					% Fulfilled	**110.1%**

2B	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Traffic Crossing Major Street	50	75	120	170	11
					% Fulfilled	**14.0%**

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

Horizon Year: 2028 Background
Region/City/Township: Burlington

Major Street: Lakeshore Road
Minor Street: Martha Street
North/South: N

Number of Approach Lanes: 2 or more
Tee Intersection? Y
Flow Conditions: Free

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: Lakeshore Road						Minor Street: Martha Street						Peds Crossing Main Road
	Eastbound			Westbound			Northbound			Southbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
AM Peak Hour	28	843			461	29				21		57	9
PM Peak Hour	69	602			800	48				11		34	13
Average Hourly Volume	**24**	**361**	**0**	**0**	**315**	**19**	**0**	**0**	**0**	**8**	**0**	**23**	**6**

Warrant 1 - Minimum Vehicular Volume

Warrant	AHV
1A - All	751
1B - Minor	31
2A - Major	720
2B - Cross	14

1A	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
				X		
	All Approaches	480	720	600	900	751
					% Fulfilled	125.1%

1B	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Minor Street Approaches	120	170	120	170	31
					% Fulfilled	18.1%

Warrant 2 - Delay To Cross Traffic

2A	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
				X		
	Major Street Approaches	480	720	600	900	720
					% Fulfilled	120.0%

2B	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Traffic Crossing Major Street	50	75	120	170	14
					% Fulfilled	18.0%

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

Horizon Year: 2033 Background
Region/City/Township: Burlington

Major Street: Lakeshore Road
Minor Street: Martha Street
North/South: N

Number of Approach Lanes: 2 or more
Tee Intersection? Y
Flow Conditions: Free

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: Lakeshore Road						Minor Street: Martha Street						Peds Crossing Main Road
	Eastbound			Westbound			Northbound			Southbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
AM Peak Hour	29	884			484	30				22		58	9
PM Peak Hour	70	630			840	50				12		35	13
Average Hourly Volume	**25**	**379**	**0**	**0**	**331**	**20**	**0**	**0**	**0**	**9**	**0**	**23**	**6**

Warrant 1 - Minimum Vehicular Volume

Warrant	AHV
1A - All	786
1B - Minor	32
2A - Major	754
2B - Cross	14

1A	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
				X		
	All Approaches	480	720	600	900	786
					% Fulfilled	131.0%

1B	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Minor Street Approaches	120	170	120	170	32
					% Fulfilled	18.7%

Warrant 2 - Delay To Cross Traffic

2A	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
				X		
	Major Street Approaches	480	720	600	900	754
					% Fulfilled	125.7%

2B	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Traffic Crossing Major Street	50	75	120	170	14
					% Fulfilled	18.7%

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

Horizon Year: 2028 Total
Region/City/Township: Burlington

Major Street: Lakeshore Road
Minor Street: Martha Street
North/South: N

Number of Approach Lanes: 2 or more
Tee Intersection? Y
Flow Conditions: Free

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: Lakeshore Road						Minor Street: Martha Street						Peds Crossing Main Road
	Eastbound			Westbound			Northbound			Southbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
AM Peak Hour	28	843			461	29				21		57	9
PM Peak Hour	69	602			800	48				11		34	13
Average Hourly Volume	**24**	**361**	**0**	**0**	**315**	**19**	**0**	**0**	**0**	**8**	**0**	**23**	**6**

Warrant 1 - Minimum Vehicular Volume

Warrant	AHV
1A - All	751
1B - Minor	31
2A - Major	720
2B - Cross	14

1A	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
				X		
	All Approaches	480	720	600	900	751
					% Fulfilled	**125.1%**

1B	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Minor Street Approaches	120	170	120	170	31
					% Fulfilled	**18.1%**

Warrant 2 - Delay To Cross Traffic

2A	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
				X		
	Major Street Approaches	480	720	600	900	720
					% Fulfilled	**120.0%**

2B	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Traffic Crossing Major Street	50	75	120	170	14
					% Fulfilled	**18.0%**

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

Horizon Year: 2033 Total
Region/City/Township: Burlington

Major Street: Lakeshore Road
Minor Street: Martha Street
North/South: N

Number of Approach Lanes: 2 or more
Tee Intersection? Y
Flow Conditions: Free

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: Lakeshore Road						Minor Street: Martha Street						Peds Crossing Main Road
	Eastbound			Westbound			Northbound			Southbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
AM Peak Hour	29	884			484	30				22		58	9
PM Peak Hour	70	630			840	50				12		35	13
Average Hourly Volume	**25**	**379**	**0**	**0**	**331**	**20**	**0**	**0**	**0**	**9**	**0**	**23**	**6**

Warrant 1 - Minimum Vehicular Volume

Warrant	AHV
1A - All	786
1B - Minor	32
2A - Major	754
2B - Cross	14

1A	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
				X		
	All Approaches	480	720	600	900	786
					% Fulfilled	131.0%

1B	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Minor Street Approaches	120	170	120	170	32
					% Fulfilled	18.7%

Warrant 2 - Delay To Cross Traffic

2A	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
				X		
	Major Street Approaches	480	720	600	900	754
					% Fulfilled	125.7%

2B	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Traffic Crossing Major Street	50	75	120	170	14
					% Fulfilled	18.7%

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

Horizon Year: 2025
Region/City/Township: Burlington

Major Street: Lakeshore Road
Minor Street: Old Lakeshore Road
North/South: N

Number of Approach Lanes: 2 or more
Tee Intersection? N
Flow Conditions: Free

PM Forecast Only? N

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

Time Period	Major Street						Minor Street						Peds Crossing Main Road
	Lakeshore Road						Old Lakeshore Road						
	Eastbound			Westbound			Northbound			Southbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
AM Peak Hour	0	797	3	8	464	0	2	0	18	0	0	0	4
PM Peak Hour	0	539	3	25	812	0	1	0	7	0	0	0	8
Average Hourly Volume	**0**	**334**	**2**	**8**	**319**	**0**	**1**	**0**	**6**	**0**	**0**	**0**	**3**

Warrant 1 - Minimum Vehicular Volume

Warrant	AHV
1A - All	670
1B - Minor	7
2A - Major	663
2B - Cross	4

1A	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
				X		
	All Approaches	480	720	600	900	670
					% Fulfilled	**111.6%**

1B	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Minor Street Approaches	120	170	120	170	7
					% Fulfilled	**4.1%**

Warrant 2 - Delay To Cross Traffic

2A	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
				X		
	Major Street Approaches	480	720	600	900	663
					% Fulfilled	**110.5%**

2B	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Traffic Crossing Major Street	50	75	120	170	4
					% Fulfilled	**5.0%**

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

Horizon Year: 2028 Background
Region/City/Township: Burlington

Major Street: Lakeshore Road
Minor Street: Old Lakeshore Road
North/South: N

Number of Approach Lanes: 2 or more
Tee Intersection? N
Flow Conditions: Free

PM Forecast Only? N

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

Time Period	Major Street						Minor Street						Peds Crossing Main Road
	Lakeshore Road						Old Lakeshore Road						
	Eastbound			Westbound			Northbound			Southbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
AM Peak Hour	0	888	30	28	499	0	2	0	80	0	0	0	4
PM Peak Hour	0	590	19	93	889	0	1	0	49	0	0	0	8
Average Hourly Volume	**0**	**370**	**12**	**30**	**347**	**0**	**1**	**0**	**32**	**0**	**0**	**0**	**3**

Warrant 1 - Minimum Vehicular Volume

Warrant	AHV
1A - All	792
1B - Minor	33
2A - Major	759
2B - Cross	4

1A	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
				X		
	All Approaches	480	720	600	900	792
					% Fulfilled	**132.0%**

1B	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Minor Street Approaches	120	170	120	170	33
					% Fulfilled	**19.4%**

Warrant 2 - Delay To Cross Traffic

2A	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
				X		
	Major Street Approaches	480	720	600	900	759
					% Fulfilled	**126.5%**

2B	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Traffic Crossing Major Street	50	75	120	170	4
					% Fulfilled	**5.0%**

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

Horizon Year: 2033 Background
Region/City/Township: Burlington

Major Street: Lakeshore Road
Minor Street: Old Lakeshore Road
North/South: N

Number of Approach Lanes: 2 or more
Tee Intersection? N
Flow Conditions: Free

PM Forecast Only? N

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

Time Period	Major Street						Minor Street						Peds Crossing Main Road
	Lakeshore Road						Old Lakeshore Road						
	Eastbound			Westbound			Northbound			Southbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
AM Peak Hour	0	930	30	29	523	0	2	0	80	0	0	0	4
PM Peak Hour	0	619	19	94	931	0	1	0	50	0	0	0	8
Average Hourly Volume	**0**	**387**	**12**	**31**	**364**	**0**	**1**	**0**	**33**	**0**	**0**	**0**	**3**

Warrant 1 - Minimum Vehicular Volume

Warrant	AHV
1A - All	827
1B - Minor	33
2A - Major	794
2B - Cross	4

1A	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
				X		
	All Approaches	480	720	600	900	827
					% Fulfilled	**137.8%**

1B	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Minor Street Approaches	120	170	120	170	33
					% Fulfilled	**19.6%**

Warrant 2 - Delay To Cross Traffic

2A	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
				X		
	Major Street Approaches	480	720	600	900	794
					% Fulfilled	**132.3%**

2B	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Traffic Crossing Major Street	50	75	120	170	4
					% Fulfilled	**5.0%**

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

Horizon Year: 2028 Total
Region/City/Township: Burlington

Major Street: Lakeshore Road
Minor Street: Old Lakeshore Road
North/South: N

Number of Approach Lanes: 2 or more
Tee Intersection? N
Flow Conditions: Free

PM Forecast Only? N

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

Time Period	Major Street						Minor Street						Peds Crossing Main Road
	Lakeshore Road						Old Lakeshore Road						
	Eastbound			Westbound			Northbound			Southbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
AM Peak Hour	0	888	30	40	499	0	2	0	102	0	0	0	4
PM Peak Hour	0	590	19	118	889	0	1	0	67	0	0	0	8
Average Hourly Volume	**0**	**370**	**12**	**40**	**347**	**0**	**1**	**0**	**42**	**0**	**0**	**0**	**3**

Warrant 1 - Minimum Vehicular Volume

Warrant	AHV
1A - All	811
1B - Minor	43
2A - Major	768
2B - Cross	4

1A	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
				X		
	All Approaches	480	720	600	900	811
					% Fulfilled	**135.2%**

1B	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Minor Street Approaches	120	170	120	170	43
					% Fulfilled	**25.3%**

Warrant 2 - Delay To Cross Traffic

2A	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
				X		
	Major Street Approaches	480	720	600	900	768
					% Fulfilled	**128.0%**

2B	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Traffic Crossing Major Street	50	75	120	170	4
					% Fulfilled	**5.0%**

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

Horizon Year: 2033 Total
Region/City/Township: Burlington

Major Street: Lakeshore Road
Minor Street: Old Lakeshore Road
North/South: N

Number of Approach Lanes: 2 or more
Tee Intersection? N
Flow Conditions: Free

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: Lakeshore Road						Minor Street: Old Lakeshore Road						Peds Crossing Main Road
	Eastbound			Westbound			Northbound			Southbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
AM Peak Hour	0	930	30	41	523	0	2	0	102	0	0	0	4
PM Peak Hour	0	619	19	119	931	0	1	0	68	0	0	0	8
Average Hourly Volume	**0**	**387**	**12**	**40**	**364**	**0**	**1**	**0**	**43**	**0**	**0**	**0**	**3**

Warrant 1 - Minimum Vehicular Volume

Warrant	AHV
1A - All	846
1B - Minor	43
2A - Major	803
2B - Cross	4

1A	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
				X		
	All Approaches	480	720	600	900	846
					% Fulfilled	**141.0%**

1B	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Minor Street Approaches	120	170	120	170	43
					% Fulfilled	**25.4%**

Warrant 2 - Delay To Cross Traffic

2A	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
				X		
	Major Street Approaches	480	720	600	900	803
					% Fulfilled	**133.8%**

2B	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Traffic Crossing Major Street	50	75	120	170	4
					% Fulfilled	**5.0%**

Appendix L

MMLOS Data Sheets

LOS AND DATA ENTRY - Use this to enter what you know and for detailed or summary results presentation

Actual	A		C	D	B
SCENARIO:	***Lakeshore Road (Elizabeth Street to Pearl Street)***				
Area Type:	***Urban Main Street***				
MODE					
Type	**SEGMENTS**				
Target (Custom if necessary)					
Adjustment for Planning Direction	None	None	None	None	None
Reasons for adjustment (if applicable)					
Adjustment for Strategic Policy	None	None	None	None	None
Reasons for adjustment (if applicable)					
Actual	A		C	D	B

Active Transportation Design Check	
Do the pedestrian facilities provide direct access to all properties along the segment? (Direct access can be provided by an adjacent facility or designated crossing to the property in question)	Yes
Does the bicycle facility selected correspond with the minimum appropriate facility type identified in the context appropriate nomograph (Figure 6.1, 6.2)?	No
-	
-	
-	

MMLOS Evaluation

Measure 1	Pedestrian Facility Width (m)	Bike Facility Width per Direction (m)	Transit Facility Type	Width of Curb Lane (m)	Mid-block V/C Ratio
	Greater than 3.0		Mixed traffic with > 1 lane per direction	Less than 3.4	Less than 0.60
Measure 2	Pedestrian Buffer Width (m)	Bike Buffer Width (m)	Transit Passenger Amenities	Car Level of Service	Curb Lane Conflicts
	Greater than 2.5		Low presence of passenger amenities such as shelters, seating, shade trees, etc.	B	3-4
Measure 3	Max Distance Between Controlled Crossings (m)	Conflicts with Other Modes (in-lane conflicts and cross point conflicts)	Pedestrian Level of Service	-	-
	200		A		
Measure 4		-	-	-	-

Desirable Cycling Facility Pre-Selection Nomograph
Urban/Suburban Context

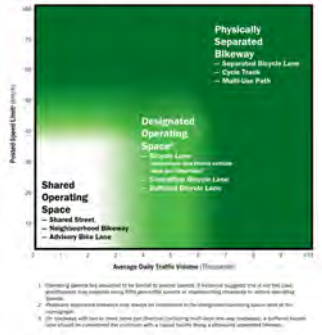


Figure 5.5 – Desirable Cycling Facility Pre-selection Nomograph – Urban/Suburban Context

Desirable Cycling Facility Pre-Selection Nomograph
Rural Context[1]

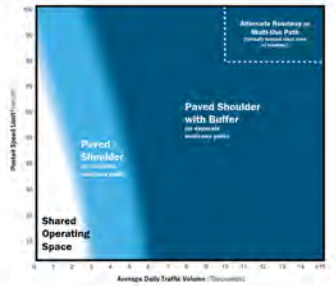


Figure 5.6 – Desirable Cycling Facility Pre-selection Nomograph – Rural Context

LOS AND DATA ENTRY - Use this to enter what you know and for detailed or summary results presentation

Actual	**C**		**D**	**D**	**B**
SCENARIO:	***Lakeshore Road (Pearl Street to Martha Street)***				
Area Type:	***Urban Main Street***				
MODE					
Type	**SEGMENTS**				
Target (Custom if necessary)					
Adjustment for Planning Direction	**None**	**None**	**None**	**None**	**None**
Reasons for adjustment (if applicable)					
Adjustment for Strategic Policy	**None**	**None**	**None**	**None**	**None**
Reasons for adjustment (if applicable)					
Actual	**C**		**D**	**D**	**B**

Active Transportation Design Check	
Do the pedestrian facilities provide direct access to all properties along the segment? (Direct access can be provided by an adjacent facility or designated crossing to the property in question)	Yes
Does the bicycle facility selected correspond with the minimum appropriate facility type identified in the context appropriate nomograph (Figure 6.1, 6.2)?	No
-	
-	
-	

MMLOS Evaluation

Measure 1	Pedestrian Facility Width (m)	Bike Facility Width per Direction (m)	Transit Facility Type	Width of Curb Lane (m)	Mid-block V/C Ratio
	1.8 - 2.0		Mixed traffic with 1 lane per direction	Less than 3.4	Less than 0.60
Measure 2	Pedestrian Buffer Width (m)	Bike Buffer Width (m)	Transit Passenger Amenities	Car Level of Service	Curb Lane Conflicts
	1.3 - 1.5		Low presence of passenger amenities such as shelters, seating, shade trees, etc.	B	3-4
Measure 3	Max Distance Between Controlled Crossings (m)	Conflicts with Other Modes (in-lane conflicts and cross point conflicts)	Pedestrian Level of Service	-	-
	200		C		
Measure 4		-	-	-	-

Desirable Cycling Facility Pre-Selection Nomograph
Urban/Suburban Context

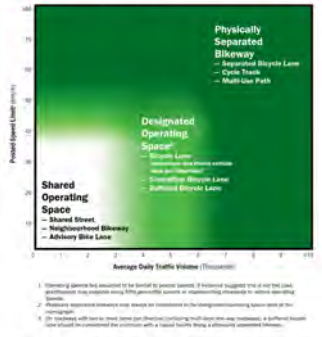


Figure 5.5 - Desirable Cycling Facility Pre-selection Nomograph – Urban/Suburban Context

Desirable Cycling Facility Pre-Selection Nomograph
Rural Context[1]

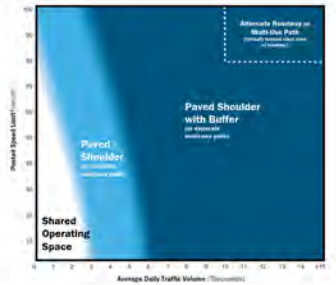


Figure 5.6 - Desirable Cycling Facility Pre-selection Nomograph – Rural Context

LOS AND DATA ENTRY - Use this to enter what you know and for detailed or summary results presentation

Actual	C		D	D	B
SCENARIO:	***Lakeshore Road (Martha Street to Old Lakeshore Road/Private Driveway)***				
Area Type:	***Urban Main Street***				
MODE					
Type	**SEGMENTS**				
Target (Custom if necessary)					
Adjustment for Planning Direction	None	None	None	None	None
Reasons for adjustment (if applicable)					
Adjustment for Strategic Policy	None	None	None	None	None
Reasons for adjustment (if applicable)					
Actual	C		D	D	B

Active Transportation Design Check	
Do the pedestrian facilities provide direct access to all properties along the segment? (Direct access can be provided by an adjacent facility or designated crossing to the property in question)	Yes
Does the bicycle facility selected correspond with the minimum appropriate facility type identified in the context appropriate nomograph (Figure 6.1, 6.2)?	No
-	
-	
-	

MMLOS Evaluation

Measure 1	Pedestrian Facility Width (m)	Bike Facility Width per Direction (m)	Transit Facility Type	Width of Curb Lane (m)	Mid-block V/C Ratio
	1.8 - 2.0		Mixed traffic with 1 lane per direction	Less than 3.4	Less than 0.60
Measure 2	Pedestrian Buffer Width (m)	Bike Buffer Width (m)	Transit Passenger Amenities	Car Level of Service	Curb Lane Conflicts
	1.3 - 1.5		Low presence of passenger amenities such as shelters, seating, shade trees, etc.	B	5-6
Measure 3	Max Distance Between Controlled Crossings (m)	Conflicts with Other Modes (in-lane conflicts and cross point conflicts)	Pedestrian Level of Service	-	-
	200		C		
Measure 4		-	-	-	-

Desirable Cycling Facility Pre-Selection Nomograph
Urban/Suburban Context

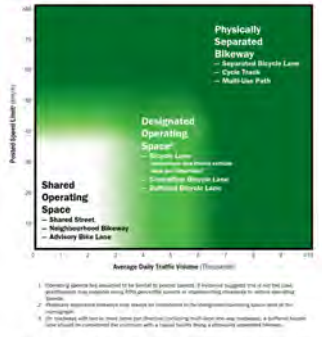


Figure 5.5 - Desirable Cycling Facility Pre-selection Nomograph – Urban/Suburban Context

Desirable Cycling Facility Pre-Selection Nomograph
Rural Context[1]

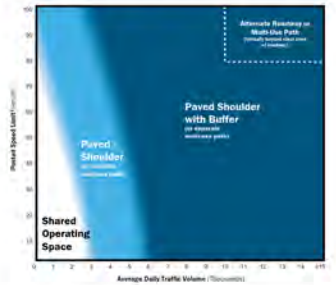


Figure 5.6 - Desirable Cycling Facility Pre-selection Nomograph – Rural Context