2020 Lakeshore Road, Burlington Transportation, Parking &, TDM Study (1st Submission)

Paradigm Transportation Solutions Limited

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Project Summary

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2020 Lakeshore Road, Burlington Transportation, Parking & TDM Study (1st Submission)



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Executive Summary

Content

Paradigm Transportation Solutions Limited (Paradigm) was retained to conduct this Transportation Impact Study, Parking Study, and TDM Options Report for the proposed redevelopment of the lands known municipally as 2020 Lakeshore Road in the City of Burlington, Ontario.

The purpose of this study is to determine the net impacts of the development traffic on the surrounding road network, document the adequacy of the proposed parking supply and provide options for reducing personal vehicle use through TDM policies. This study will identify any improvements, if needed, to support the development of the subject site.

Conclusions

This study determines the impacts of the development traffic on the surrounding road network and identify any improvements necessary to accommodate the increase in traffic generated by this development. The subject site is located within the southwest corner of Lakeshore Road and Elizabeth Street at the municipal address of 2020 Lakeshore Road in the City of Burlington.

The proposed development would see the demolition of the existing hotel and restaurant and would result in the construction of a new two-tower high-rise building with maximum tower heights of 35 and 30 storeys. Overall, the development proposes: 557 new residential units comprised of a variety of unit types and sizes; 122 new hotel suites; 46,802 square feet of office space; and 47,846 square feet of retail space. A total of 598 parking spaces will be provided for the overall project.

Additionally, with redevelopment of the lands, the south leg of the intersection of Lakeshore Road and Brant Street will be closed off providing for improved operations at the Lakeshore and Brant Street intersection as well as improve the pedestrian crossing environment on the south side of Lakeshore Road. Build out is anticipated to occur in one phase by 2025 for the purposes of this report.

Vehicular access to the site is proposed via a driveway connection to Elizabeth Street.

Transportation Overview

The proposed development is projected to generate approximately 302 new vehicle trips during the weekday AM peak hour and 333 new vehicle trips during the weekday PM peak hour.

The capacity analysis showed that deficiencies currently exist for some sections of Lakeshore Road and projected to occur with anticipated growth in traffic. The following summarizes the analysis:

- **Lakeshore Road at Locust Street:** Individual movements at the unsignalized intersection of Lakeshore Road at Locust Street presently operate at LOS "D" or better with a v/c ratio no greater than 0.15 under the base year conditions. Increased delay is expected for the stop controlled southbound approached that will degrade in operation from LOS "D" to "F" under the 2030 horizon during the weekday AM peak hour (without the proposed development). It is noted that a v/c ratio for these movements is not projected to exceed 0.45, indicating spare capacity is still projected.

  The City of Burlington's Downtown Traffic Overview[1] was commissioned by the City of Burlington to quantify the direct impacts of the new planned development on the traffic operations in the expanded study area and is in support of the Scoped Re-Examination of the Adopted Official Plan for the Downtown Burlington. This study further identified with regard to the operations of Lakeshore Road and Locust Street that the stop-controlled southbound approach of Locust Street has relatively low traffic volumes compared to the adjacent main roadway of Lakeshore Road; therefore, their operations is of lower priority.

  As the southbound movement is operating at 45% or less of its available capacity, mitigation measures to improve operations are not expected to be required.

- **Lakeshore Road at Brant Street:** Presently operates with satisfactory conditions during the weekday AM and PM peak hours. With additional growth in background traffic under the 2030 horizon, increased delay is projected for the eastbound approach during weekday AM and PM peak hours which are projected to operate at LOS F with a v/c ratio exceeding 1.00.

  For clarification, delays at this intersection have been previously documented as a foreseeable issue along the Lakeshore Road corridor without the proposed development as contained in the

[1] City of Burlington, Downtown Burlington Traffic Overview, CIMA+, October 2019

City of Burlington's Downtown Traffic Overview. The traffic review recognized capacity constraints, further remedial measures to improve intersection capacity are not likely to be implemented. Rather, future improvements to the transportation network are expected to largely focus on sustainable forms of transportation as recognized in the Official Plan.

With redevelopment of the lands, the south leg of the intersection of Lakeshore Road and Brant Street will be closed off providing for an opportunity to further improve signal operations by allocating additional green time to the Lakeshore Road corridor. Additionally, the pedestrian crossing environment along the south side of Lakeshore Road will be improved as pedestrians will be subject to less conflict as a result of the removal of the south leg of Lakeshore Road and Brant Street.

A sensitivity analysis has been undertaken at the intersection with optimized phasing, splits and an increased cycle length and indicated significant improvements is projected at the intersection with all movements operating at LOS D or better during the weekday AM and PM Peak hours.

- **Lakeshore Road at Elizabeth Street:** Presently operates with acceptable conditions during the weekday AM and PM peak hours. With additional growth in background traffic under the 2030 horizon, the intersection is expected to continue to operate with acceptable conditions. With the addition of the proposed development, increased delay is recognized to occur for the eastbound through movement and westbound left turn movement given access to the site is provided off of Elizabeth Street.

  A sensitivity analysis has been undertaken at the intersection with optimized phasing, splits and an increased cycle length and indicated significant improvements is projected at the intersection with all movements operating at LOS D or better with exception to the eastbound shared through/right turn movement which is projected to operate with delays and extensive queues during the weekday AM and PM Peak hours.

  While expanding Lakeshore Road to add the addition of an eastbound right turn lane or increasing the road platform to a four-lane cross-section would improve operations, widening of any arterial roads for the purposes of accommodating vehicular traffic volumes is not recommended as it is counter-intuitive to the vision of a people-centric, pedestrian friendly environment that expects people to use more sustainable modes to travel.

Additionally, there are physical constraints that limit the ability to implement geometric improvements, namely the permeable, fine grid street pattern that is made up of short blocks. The traffic operations at the intersection of Lakeshore Road and Elizabeth Street under the future total traffic conditions are noted to be reflective of an urban environment such as the downtown area.

Regardless, the Applicant intends to advance improvements by implementing a number of TDM measures and limiting the provided parking supply to curb the developments dependency towards vehicular traffic with a focus towards sustainable transportation modes to better balance travel demand. These measures work together to mutually reinforce one another and strengthen the developments efforts to reduce its dependence on driving and reduce its impact to the adjacent transportation network.

- **Lakeshore Road at John Street:** Individual movements at the signalized intersection of Lakeshore Road at John Street presently operate at LOS "C" or better with a volume to capacity ratio no greater than 0.41 under the base year conditions. Similar levels of operation are expected under future total conditions with the intersection projected to operate at LOS "D" or better with a v/c ratio no greater than 0.52. Overall, the intersection is not projected to operate with any capacity issues.
- **Lakeshore Road at Pearl Street/Old Lakeshore Road:** Individual movements at the signalized intersection of Lakeshore Road at John Street presently operate at LOS "D" or better with a volume to capacity ratio no greater than 0.70 under the base year conditions. Similar levels of operation are expected under future total conditions with the intersection projected to operate at LOS "D" or better with a v/c ratio no greater than 0.93. Overall, the intersection is approaching capacity, however the level of delay is still manageable.
- **Elizabeth Street at Driveway:** Individual movements at the unsignalized intersection of Elizabeth Street at the proposed Driveway is projected to operate at y operate at LOS "B" or better with a volume to capacity ratio no greater than 0.24 under the future total traffic conditions. The intersection is not projected to operate with any capacity issues.

Consistent with the findings of the Downtown Traffic Overview commissioned by the City of Burlington, the increase in traffic, can be accommodated within the existing road network, much of the congestion that may appear in the network is due to regular background growth and constrained turning movements are typical of urban areas such as the downtown Burlington and road users in such

environment generally have an increased tolerance for higher levels of traffic congestion.

Overall, with the combined addition of the transportation and land use changes assumed as part of this study, some vehicle operational impacts, whether delay- or queuing-related, are likely to be a trade-off with the improvements for people walking or biking that this project would entail. The project would also provide improved access to the waterfront by enlarging and expanding the waterfront trail to provide a significant access point with Lakeshore Road. The City of Burlington and stakeholders should consider this broader multimodal context to determine the balance between the identified vehicle impacts and the broader mobility benefits provided by the proposed transportation improvements.

Parking/TDM Overview

The parking requirement for the development under the City's Zoning By-Law is 697 parking spaces, equating to a parking rate of 1.25 residential parking spaces per unit. The proposed parking supply of 598 spaces (557 residential spaces at a rate of 1.00 spaces/unit and 41 mixed-use spaces) results in a reduction of 99 spaces.

The study area falls in a zoning designation of "Downtown Parking Exemption Area" which recognizes the high-density, mixed-use development of the area. Parking requirements within this area have been updated to reflect the general oversupply of parking required in the zoning by-laws. While these updates are in the right direction, there is still room for improvement regarding parking rates.

Minimum parking requirements have long been a staple of planning regulations based on some formulation. These regulations unfortunately have been driven by auto-centric engineering models. Over the past seven decades, the built form in Burlington has evolved significantly. Recent changes in transportation technology and services, characterized by ride-hailing and automobile sharing, and the emerging technologies dominated by autonomous vehicles (AVs) suggest that automobile ownership is likely to experience declines in the future.

The City's of Burlington's strategic vision is about creating an attractive and safe City that evokes pride, passion, and a sense of belonging - a city where people of all ages and abilities can enjoy a good quality of life. The Official Plan (OP) emphasizes the importance of basic rights, including embracing sustainability and creating a vision for compact complete communities served by streets made for walking, cycling and by an attractive transit system. This vision is supported by policies

aimed at reducing auto-dependence and limiting the amount of land occupied by automobile parking. The transportation policies are deliberately interspersed with the land use policies to emphasize the importance of considering both areas in order to achieve the overall vision of compact complete communities.

The intent is to reprioritize mobility in a way that balances the transportation system. A more sustainable city requires an integrated transportation system that supports a compact urban form. Bringing jobs, housing services and amenities closer together encourages non automobile modes of travel, providing more choice to Burlington residents.

Burlington's Council has further identified Burlington as "feeling the effects of climate change over the past several years" and climate change is ranked as the third highest risk on the City's Enterprise Risk Register. Specifically, the city's Climate Action Plan stipulates Burlington will work toward being a net carbon neutral community by year 2050.To achieve the reductions needed, significant change is required as soon as possible.

If the City wishes to encourage active transportation and transit friendly neighbourhoods as outlined in the OP and strategic vision; the City needs to recognize that minimum parking requirements are presenting a significant barrier to these goals. Parking should not be viewed as only an amenity required to support our cities and our ability to drive; instead, it must be viewed as a significant economic investment that carries with it outcomes that shape our cities and regions. It needs to be recognized that parking carries significant costs, heavily subsidizes the choice to drive, and hampers the ability to promote sustainable developments.

The site will be in existence well beyond 2050 when it is anticipated that autonomous vehicles will be playing a more significant role in our mode choice. It is expected that auto ownership will be significantly reduced when we are able to request a vehicle on demand for our travel needs. Recent societal changes have made it easier to live without owning a car. Vehicles-for-hire and bicycles have both increased in popularity. Online shopping has reduced the need for a vehicle to bring large purchases home and in some areas have made it convenient for everyday errands to be delivered (i.e., groceries, household items). The future arrival of automated vehicles will further reduce personal automobile ownership and these societal changes will

result in a decreased need for vehicle parking. Lastly, as documented in the City-Wide Parking Standards Review[2]:

"It is also important to clarify the role of residential parking requirements. In general, there is little risk in reducing minimum residential parking requirements as availability of parking is a key decision in an individual's residential choice. Developers are well attuned to their potential customers' parking needs and will not reduce parking provision so much as to compromise the marketability of their development."

Based on empirical survey data that has been collected by both Paradigm and the City staff at multi-family residential buildings in Downtown Burlington as well as a review of industry parking data and policy framework of the Growth Plan, the Provincial Policy Statement and Burlington's OP, a reduced parking supply for the proposed development is supportable.

The current requirements for hotels, office and commercial land uses within the Downtown Exemption Zone does not require any on-site parking to be provided. By providing limited parking on-site for these uses, the development provides a significant incentive for these users to change and shape the travel choices to be in line with sustainable modes. However, as the development recognizes not all users are able to commit to sustainable mode choices, the development is proposing to supply 41 on-site parking spaces that will be shared between the hotel, office, visitors and commercial uses.

Overall, a parking supply rate of 1.074 spaces per residential dwelling unit, which is inclusive of parking to be shared between the mixed-use non-residential uses and visitor parking is appropriate and supportable for the proposed development.

The development will also be implementing a suite of Transportation Demand Management (TDM) Measures to further reduce the dependency on vehicular travel. These measures include:

- Active uses at grade along street frontages
- Building owner will charge parking as a separate cost to occupants
- Welcome Packets including information regarding alternative mode use in the area

The TDM plan and the developments transportation context will provide residents with a range of mobility choices other than a

[2] Burlington City-Wide Parking Standards Review, IBI Group, July 21, 2017

privately-owned vehicle and support an appropriate parking supply in the building.

Recommendations

Based on the findings of this study, it is recommended that:

- The Applicant implement TDM measures as discussed within this report to curb it dependency on vehicular traffic and create a balanced needs approach that encourages alternative modes of transportation rather that focusing solely on vehicle operations.
- The City continue to monitor operations along Lakeshore Road and continue to coordinate the signal progression of the broader corridor to manage the flow of vehicles into the Downtown to help reduce congestion at reduce delay.

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1 Introduction

1.1 Overview

Paradigm Transportation Solutions Limited (Paradigm) was retained to conduct this Transportation Impact Study, Parking Study, and TDM Options Report for the proposed redevelopment of the lands known municipally as 2020 Lakeshore Road in the City of Burlington, Ontario. **Figure 1.1** details the location of the subject site and the study area. **Appendix A** contains the pre-study consultation material.

1.2 Purpose and Scope

The purpose of this study is to determine the net impacts of the development traffic on the surrounding road network, document the adequacy of the proposed parking supply and provide options for reducing personal vehicle use through TDM policies. This study will identify any improvements, if needed, to support the development of the subject site.

The scope of this study is to:

- Document current traffic and site conditions in the vicinity of the development;
- Estimate the background traffic growth in the area;
- Estimate the additional traffic forecast to be generated by the redevelopment of the subject site;
- Assign the forecast traffic to the surrounding road network based on the existing traffic patterns in the study area;
- Assess future total traffic within the study area for a 2030 horizon year (five years beyond opening year);
- Assess the site's circulation of delivery and waste collection;
- Identify any operational or safety concerns and any mitigation measures that may be required to improve operations;
- Review the City of Burlington's Zoning By-Law requirements;
- Review and identify potential Transportation Demand Management (TDM) measures that can be implemented for the proposed development.

This report has been prepared to meet the Region of Halton's TIS Guidelines[3]. The report assesses the 2030 horizon (five (5) years beyond expected opening year of the site).

1.3 Study Area

Based on pre-consultation with the City of Burlington, the following intersections have been identified as requiring investigation with respect to the impacts of the additional traffic due to the development of the subject site:

- Lakeshore Road at Locust Street (unsignalized);
- Lakeshore Road at Brant Street (signalized);
- Lakeshore Road at John Street (unsignalized);
- Lakeshore Road at Elizabeth Street (signalized);
- Lakeshore Road at Pearl Street/Old Lakeshore Road (signalized);

[3] Region of Halton. Transportation Impact Study Guidelines. January 2015.



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Location of Subject Site

2020 Lakeshore Road, Burlington
210056

Figure 1.1

2 Existing Conditions

This section of the report provides an overview of the existing conditions on the roadways in the study area.

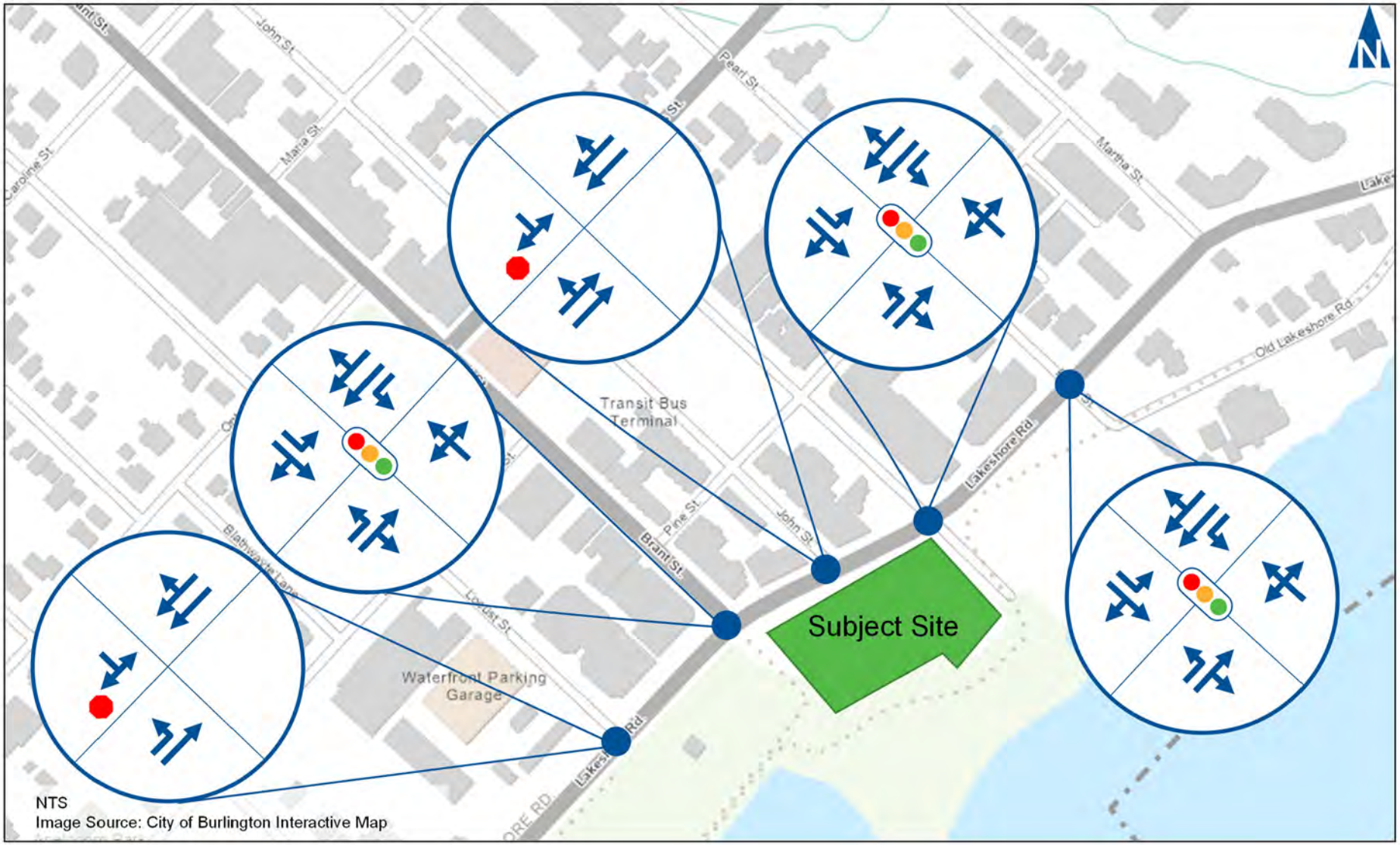
2.1 Existing Roadways

The main roadways in the vicinity of the subject site that have been assessed include Lakeshore Road, James Street, Pine Street, Martha Street, Pearl Street, Elizabeth Street, John Street and Brant Street. The characteristics of these roadways are as follows:

- **Lakeshore Road** is an east-west two-lane minor arterial roadway that operates under the jurisdiction of the City of Burlington. Within the study area, it has an urban cross-section, sidewalks and no stopping restrictions on both sides of the roadway. The posted speed limit is 50 km/h.
- **Locust Street** is a north-south two-lane collector roadway that operates under the jurisdiction of the City of Burlington. Within the study area, it has an urban cross-section, on-street parking and sidewalks on both sides. The statutory speed limit of 50 km/h is assumed.
- **Brant Street** is a north-south two-lane local roadway that operates under the jurisdiction of the City of Burlington. Within the study area, it has an urban cross-section, on-street parking and sidewalks on both sides. The statutory speed limit of 50 km/h is assumed.
- **John Street** is a north-south two-lane collector roadway that operates under the jurisdiction of the City of Burlington. Within the study area, it has an urban cross-section, on-street parking and sidewalks on both sides. The statutory speed limit of 50 km/h is assumed.
- **Elizabeth Street** is a north-south two-lane collector roadway that operates under the jurisdiction of the City of Burlington. Within the study area, it has an urban cross-section, on-street parking and sidewalks on both sides. The statutory speed limit of 50 km/h is assumed.
- **Pearl Street** is a north-south two-lane collector roadway that operates under the jurisdiction of the City of Burlington. Within the study area, it has an urban cross-section, on-street parking and sidewalks on both sides. The statutory speed limit of 50 km/h is assumed.
- **Old Lakeshore Road** is an east-west two-lane minor arterial roadway that operates under the jurisdiction of the City of

Burlington. Within the study area, it has an urban cross-section, on-street parking and sidewalks on both sides. The statutory speed limit of 50 km/h is assumed.

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



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Existing Lane Configurations & Traffic Control

2020 Lakeshore Road, Burlington
210056

Figure 2.1

2.2 Existing Transit Service

2.2.1 City of Burlington Transit Service

Burlington Transit (BT) is the public transit operator for the City of Burlington and operates six routes within the study area:

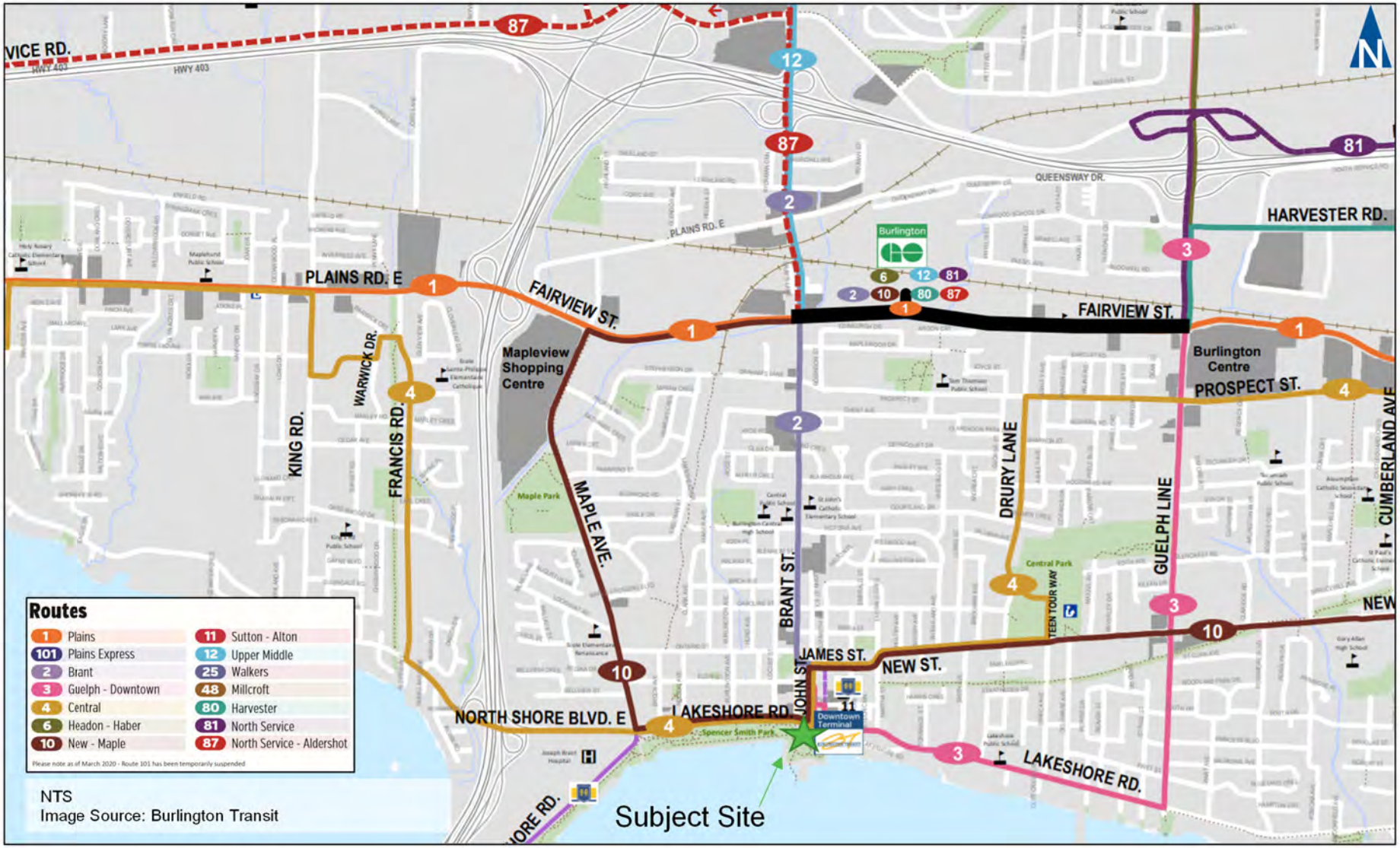
- **Route 2, 3 (Guelph-Downtown)** runs between the Burlington GO Station and the Highway 407 Carpool Lot via Downtown Burlington. The route runs with approximately 20-minute headways during weekday peak hours, and 30-minute headways during other service hours.
- **Route 4 (Central)** runs between Aldershot GO Station and the Appleby GO Station through Downtown Burlington. The route runs with approximately 30-minute headways during the weekday afternoon peak hour, and other service times. No service is provided during the AM peak hour.
- **Route 10 (New-Maple)** runs between Burlington GO Station and Appleby GO Station via Downtown Burlington. The route operates with approximately 20-minute headways during weekday peaks and 30-minute headways during all other weekday service hours.
- **Route 50 (Burlington South)** provides late night service around the southern portion of the City emanating and terminating at the Burlington GO Station. Buses operate with one-hour headways and provide a connection at the John Street Transit Terminal. The service runs between 10:55 PM and 1:16 AM, Monday to Saturday.
- **Route 52 (Burlington Northwest)** provides late night service around the northwest portion of the City emanating and terminating at the Burlington GO Station. Buses operate with one-hour headways and stop in Downtown Burlington. The service runs between 10:55 PM and 1:22 AM, Monday to Saturday.

The closest bus stop is located less than 50 metres (1-minute walk) away at the intersection of Lakeshore Road and Brant Street. In addition, the development is approximately a 250-metre walk (4-minute walk) to the Downtown Burlington bus terminal which provides significant access to additional local routes.

2.2.2 GO Transit Service

The Burlington GO station is located about two and a half kilometres north of the subject site which is easily accessible via Burlington Transit. Since this GO line provides train service to Mississauga, Downtown Toronto and other parts of the GTA, it is expected that the subject development will attract residents that will utilize both City transit and inter-regional transit for commuting purposes.

Figure 2.2 illustrates the existing transit network.



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Existing Transit Network

2020 Lakeshore Road, Burlington
210056

Figure 2.2

2.3 Active Transportation

2.3.1 Walkability

Pedestrian sidewalks are provided along both sides of roadways through the majority of the study area. Crosswalks, pedestrian pushbuttons, and indicators are provided for all approaches at the signalized intersections within the study area.

The site is within walking distance of numerous and significant employment, retail, cultural and recreational opportunities providing for 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 such a range of amenities and destinations within walking distance serves to reduce the need for residents of the building to travel on a regular basis using a car.

Walk Score is an online tool that assigns a numerical walkability score between 0 and 100 for addresses in Australia, Canada, 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 89 and is considered a "Very Walkable" location which means most daily errands can be accomplished on foot without the need of a personal vehicle[4].

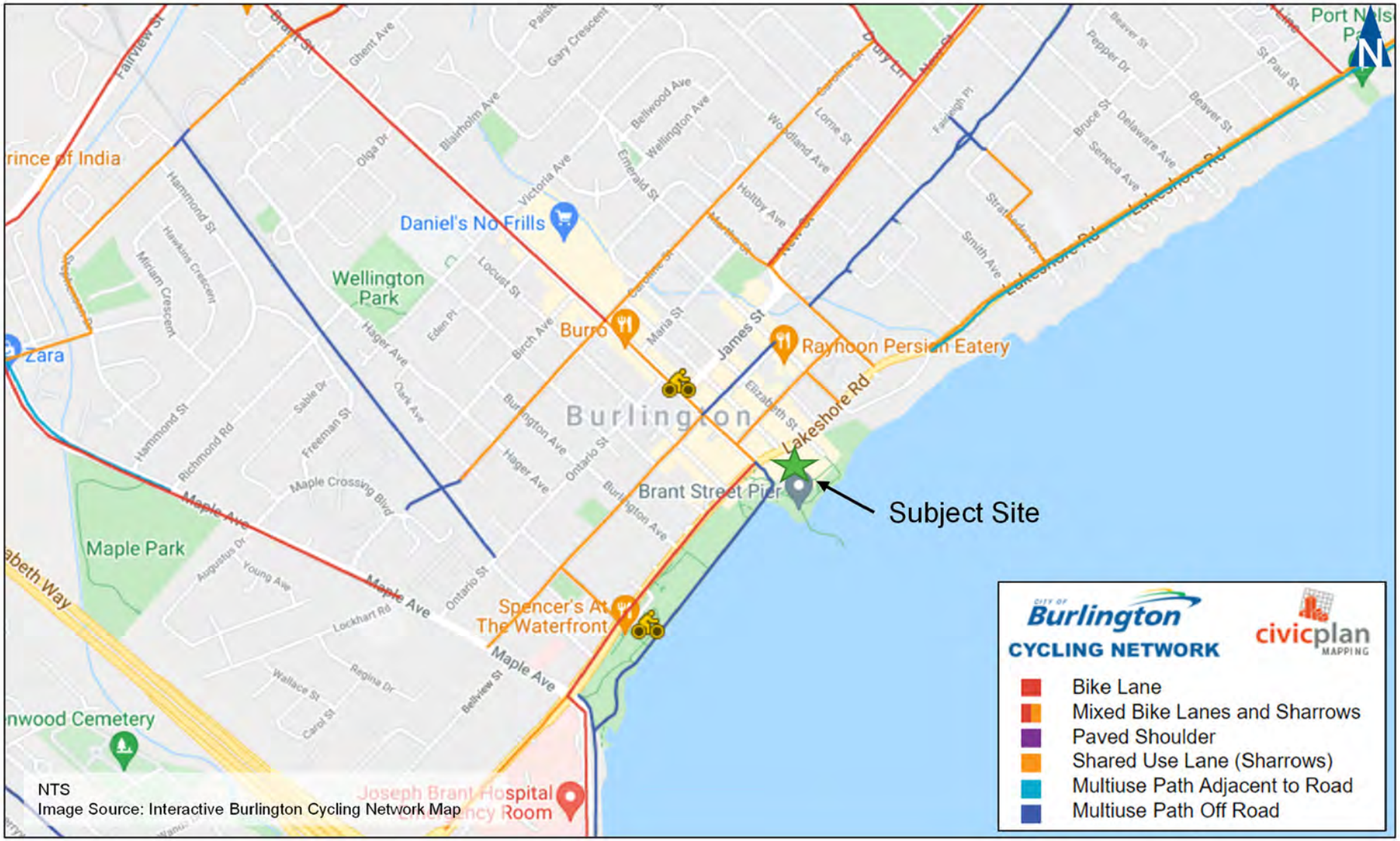
2.3.2 Cycling

The City's cycling infrastructure consists of on-street and off-street facilities. On-street routes are comprised of bicycle lanes, signed bicycle routes and paved shoulders. Off-street facilities are in the form of multi-use paths.

The City's Interactive Cycling Map[5] identifies several cycling facilities on the study area roadways. Brant Street and Pearl Street currently operate with shared use shoulders (sharrows). Lakeshore Road currently has a bike lane from Brant Street west to Maple Avenue. An off-road multi-use path is also available along the Waterfront Trail from Brant Street to Maple Avenue. A review of the City's Cycling Plan[6] has identified Lakeshore Road and Brant Street as proposed Bicycle Priority Streets with short term project priority.

Figure 2.3 illustrates the existing cycling network within the study area.

[4] https://www.walkscore.com/score/2020-lakeshore-rd-burlington-on-canada
[5] City of Burlington: Cycling Network. Civic Plan Mapping, 2016.
[6] City of Burlington: Cycling Plan. March 2021.



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Existing Cycling Network

2020 Lakeshore Road, Burlington
210056

Figure 2.3

2.4 Existing Traffic Volumes

To assess intersection operations, turning movement counts are used to quantify the movement of vehicles. Existing traffic data at an intersection or on a road section forms the foundation for analysis. The counts are usually taken during peak periods at an intersection to complete level of service analysis. **Appendix B** contains the traffic data utilized in this report.

2.4.1 Traffic Data

In March 2020, the Provincial and Federal governments enacted measures to reduce the spread of COVID-19. Provincial measures included the closure of non-essential businesses and schools. Federal measures included the closure of the International Border to the United States of America, except for essential travel.

As a result of the COVID-19 pandemic, the ability to collect new traffic count data was not feasible at the commencement of the study given the irregular traffic volumes that would be present, and the data collection would of occurred during the summer months which is discouraged for collection by the city staff. However, there are a number of tools and methods we can rely on to develop reasonable traffic demand projections for the study area roadways based on historical count data available. It is noted that this methodology is consistent with best practices and was employed within the Downtown Burlington Traffic Overview[7] study commissioned by the city which used historic traffic counts with a factor applied.

Table 2.1 summarizes the historical traffic date of each the study area intersections.

TABLE 2.1: TRAFFIC DATA SUMMARY

Intersection	Date	Conduced By
Lakeshore Road at Locust Street	June 2017	CIMA+
Lakeshore Road at Brant Street	December 2018	LEA
Lakeshore Road at John Street	June 2018	CIMA+
Lakeshore Road at Pearl Street	November 2018	Paradigm
Lakeshore Road at Elizabeth Street	December 2018	LEA

[7] City of Burlington, Downtown Burlington Traffic Overview, CIMA+, October 2019



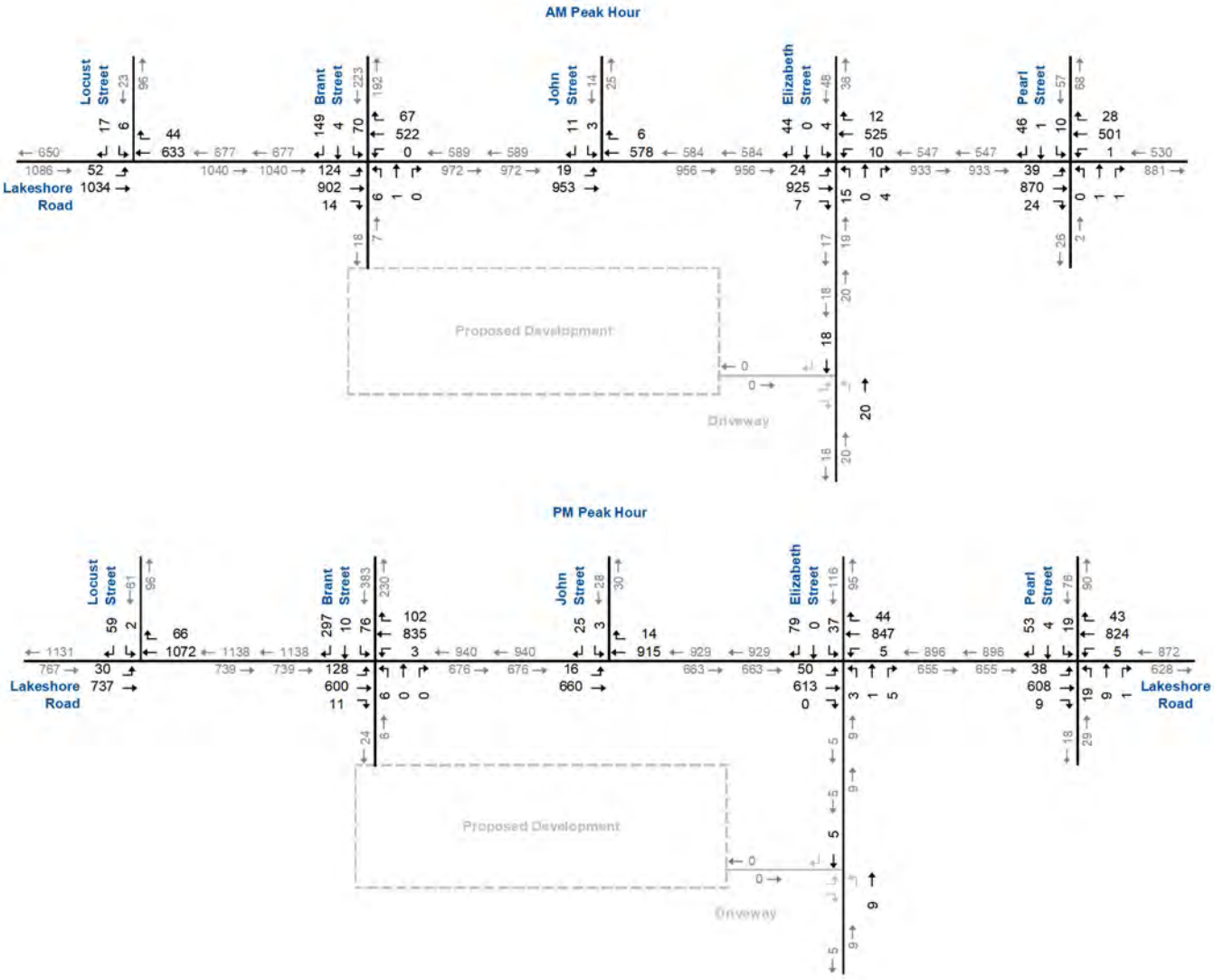
2.4.2 Base Year Adjustments

Reasonable demand projections can be produced through the use of a growth rate to factor that counts to be representative of base year volumes. Based on the correspondence with city staff, the turning movement counts have been factored with the use of a 1.0 percent per annum growth rate to reflect 2021 Base Year conditions.

2.4.3 Volume Balancing

As no major intersections or access points are provided between Locust Street and Pearl Street, volume balancing has been applied to the traffic volumes along Lakeshore Road to ensure reasonable upstream and downstream flow was maintained at these study area intersections.

Figure 2.4 illustrates the base year traffic volumes with adjustments incorporated as described herein.



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Base Year Traffic Volumes

2020 Lakeshore Road, Burlington
210056

Figure 2.4

2.5 Traffic Operations

Intersection level of service (LOS) is a recognized method of quantifying the efficiency of traffic flow at intersections. It is based on the delay experienced by individual vehicles executing the various movements. The delay is related to the number of vehicles desiring to make a movement, 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 or less than 10 seconds per vehicle. When the average delay exceeds 80 seconds at signalized intersections (50 seconds at unsignalized intersections), the movement is considered to have a LOS F and remedial measures are usually implemented if they are feasible.

The operations of the intersections in the study area were evaluated using the existing lane configuration, traffic control, existing base year traffic volumes and signal timings. In locations where existing signal timings were not available, Synchro optimized signal timings were used.

The level of service conditions on the existing road network have been assessed using Synchro 10. Based on the Halton Region Transportation Impact Study Guidelines[8], movements are considered critical under the following conditions:

- Signalized intersections:
  - Volume to capacity ratios for through movements or shared through/turning movements are greater than or equal to 0.85,
  - Volume to capacity ratios for exclusive turning movements are greater than or equal to 0.95, and
  - Queue lengths for individual movements that are projected to exceed the available turning lane storage. Queue lengths estimated using Synchro.
- Unsignalized intersections
  - Delays classified as LOS E-F;
  - Queue lengths for individual movements that are projected to exceed the available turning lane storage. Queue lengths estimated using Synchro.

[8] Halton Region – Transportation Impact Study Guidelines 2015

The level of service conditions on the existing road network have been assessed using Synchro 10.

Table 2.2 summarizes the results of the analysis for the existing weekday AM and PM peak hour intersection operations, and the critical movements are summarized below:

Weekday AM Peak Hour

- Lakeshore Road & Brant Street (signalized):
  - Eastbound through/right lane operates with delays in the LOS D range with a v/c ratio greater than 1.00.
  - Southbound through/right lane queue lengths extend beyond the available storage.

Weekday PM Peak Hour

- Lakeshore Road & Brant Street (signalized):
  - Southbound through/right lane queue lengths extend beyond the available storage.
- Lakeshore Road & Old Lakeshore Road/Pearl Street (signalized):
  - Southbound left lane queue lengths extend beyond the available storage.

Congestion occurs in the study area with queues forming along Lakeshore Road in the eastbound direction in the AM and PM peak hours.

Appendix C contains the supporting detailed Synchro 10 output.

TABLE 2.2: BASE YEAR 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	1 - Lakeshore Road & Locust Street	TWSC	LOS	A	A		A		A	>	A					D		>	D	
			Delay	9	0		0		0	>	0					31		>	31	
			V/C	0.06	0.66				0.27	>						0.15		>		
			Q	2	0				0	>						4		>		
			Ex	--	--				--	>						--		>		
			Avail.	--	--				--	>						--		>		
	2 - Lakeshore Road & Brant Street	TCS	LOS	A	D	>	D	A	A	>		<	C	>	C	C	C	>	C	C
			Delay	5	50	>	45	0	9	>		<	26	>	26	28	27	>	27	31
			V/C	0.26	1.02	>		0.00	0.35	>		<	0.04	>		0.34	0.13	>		
			Q	11	257	>		0	39	>		<	5	>		22	16	>		
			Ex	55	--	>		25	--	>		<	--	>		--	15	>		
			Avail.	44	--	>		25	--	>		<	--	>		--	-1	>		
	3 - Lakeshore Road & John Street	TWSC	LOS	<	A	A	A	A	A	>	A					B		>	B	
			Delay	<	1	0	0	0	0	>	0					13		>	13	
			V/C	<	0.02	0.41		0.25	0.13	>						0.03		>		
			Q	<	1	0		0	0	>						1		>		
			Ex	<	--	--		--	--	>						--		>		
			Avail.	<	--	--		--	--	>						--		>		
	4 - Lakeshore Road & Elizabeth Street	TCS	LOS	A	A	>	A	A	A	>	A	<	D	>	D	D	D	>	D	A
			Delay	2	7	>	7	2	2	>	2	<	40	>	40	40	40	>	40	6
			V/C	0.04	0.73	>		0.03	0.22	>		<	0.02	>		0.04	0.03	>		
			Q	2	126	>		1	15	>		<	3	>		4	0	>		
			Ex	--	--	>		25	--	>		<	--	>		20	--	>		
			Avail.	--	--	>		24	--	>		<	--	>		16	--	>		
	5 - Old Lakeshore Road/Pearl Street & Lakeshore Road	TCS	LOS	A	A	>	A	A	A	>	A	<	D	>	D	D	D	>	D	A
			Delay	2	5	>	5	1	2	>	2	<	42	>	42	43	42	>	42	5
			V/C	0.07	0.70	>		0.00	0.22	>		<	0.01	>		0.10	0.04	>		
			Q	3	108	>		0	14	>		<	2	>		7	11	>		
			Ex	40	--	>		20	--	>		<	--	>		7	--	>		
			Avail.	37	--	>		20	--	>		<	--	>		0	--	>		
PM Peak Hour	1 - Lakeshore Road & Locust Street	TWSC	LOS	B	A		A		A	>	A					B		>	B	
			Delay	11	0		0		0	>	0					13		>	13	
			V/C	0.05	0.47				0.46	>						0.13		>		
			Q	1	0				0	>						4		>		
			Ex	--	--				--	>						--		>		
			Avail.	--	--				--	>						--		>		
	2 - Lakeshore Road & Brant Street	TCS	LOS	A	B	>	B	A	B	>		<	D	>	D	D	D	>	D	B
			Delay	7	14	>	13	7	11	>		<	35	>	35	37	41	>	40	17
			V/C	0.39	0.62	>		0.01	0.51	>		<	0.11	>		0.37	0.57	>		
			Q	18	151	>		2	94	>		<	5	>		29	52	>		
			Ex	55	--	>		25	--	>		<	--	>		--	15	>		
			Avail.	37	--	>		23	--	>		<	--	>		--	-37	>		
	3 - Lakeshore Road & John Street	TWSC	LOS	<	A	A	A	A	A	>	A					B		>	B	
			Delay	<	1	0	0	0	0	>	0					13		>	13	
			V/C	<	0.02	0.28		0.39	0.20	>						0.06		>		
			Q	<	1	0		0	0	>						2		>		
			Ex	<	--	--		--	--	>						--		>		
			Avail.	<	--	--		--	--	>						--		>		
	4 - Lakeshore Road & Elizabeth Street	TCS	LOS	A	A	>	A	A	A	>	A	<	D	>	D	D	D	>	D	A
			Delay	3	4	>	4	2	3	>	3	<	41	>	41	44	42	>	42	6
			V/C	0.14	0.49	>		0.01	0.37	>		<	0.03	>		0.31	0.06	>		
			Q	6	62	>		1	36	>		<	5	>		18	0	>		
			Ex	--	--	>		25	--	>		<	--	>		20	--	>		
			Avail.	--	--	>		24	--	>		<	--	>		2	--	>		
	5 - Old Lakeshore Road/Pearl Street & Lakeshore Road	TCS	LOS	A	A	>	A	A	A	>	A	<	D	>	D	D	D	>	D	A
			Delay	2	3	>	5	1	2	>	2	<	48	>	48	47	46	>	46	5
			V/C	0.10	0.48	>		0.01	0.35	>		<	0.28	>		0.17	0.07	>		
			Q	4	53	>		1	29	>		<	15	>		12	13	>		
			Ex	40	--	>		20	--	>		<	--	>		7	--	>		
			Avail.	36	--	>		19	--	>		<	--	>		-5	--	>		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
Q - 95th Percentile Queue Length
Ex. - Existing Available Storage
Avail. - Available Storage
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
AWSC - All-Way Stop Control
RBT - Roundabout
< - Shared Left-turn
> - Shared Right-turn

3 Development Concept

3.1 Site Description

The subject site is located within the southwest corner of Lakeshore Road and Elizabeth Street at the municipal address of 2020 Lakeshore Road in the City of Burlington. The property owner is proposing to redevelopment the property for a commercial/residential mixed-use, high-rise building.

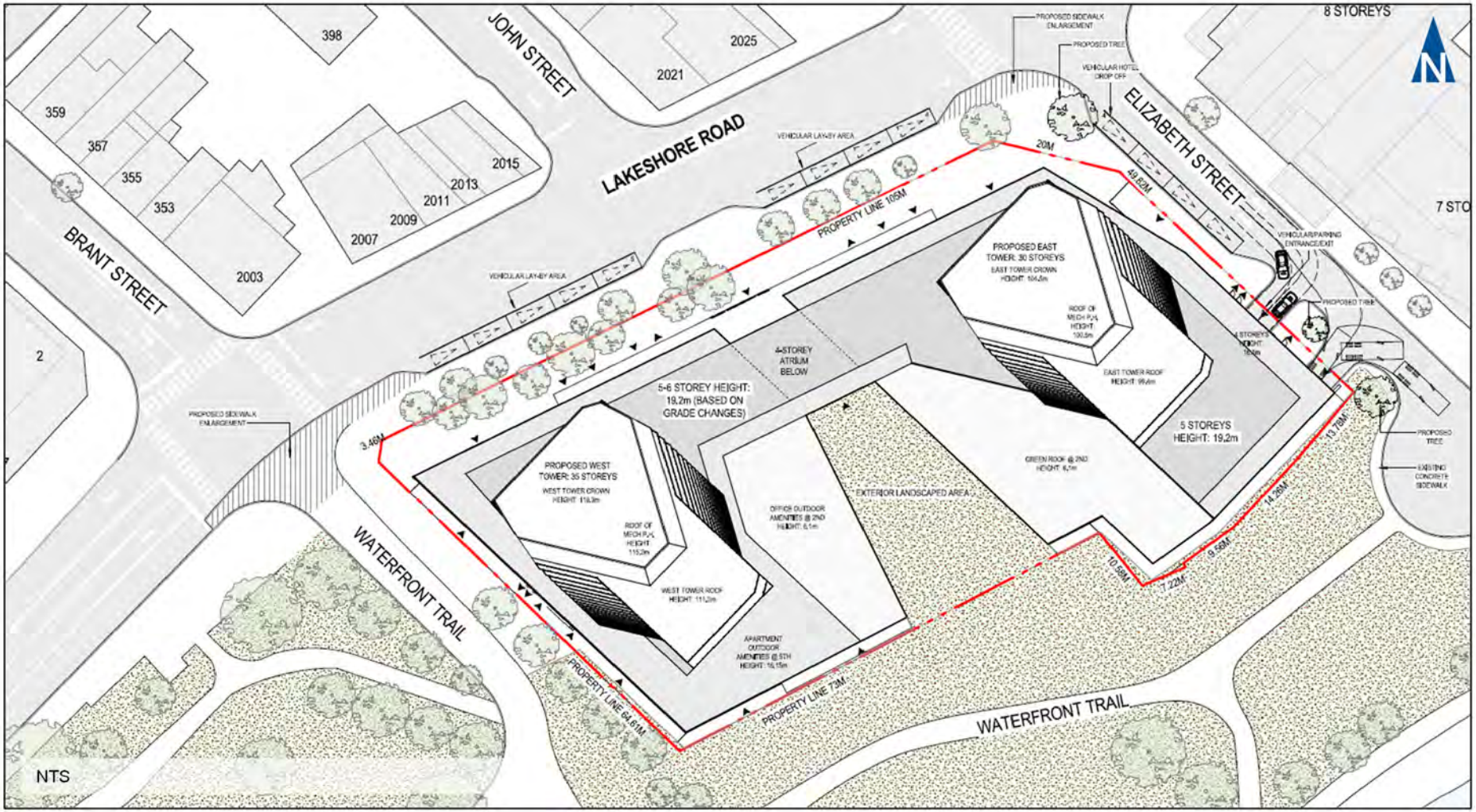
The proposed development would see the demolition of the existing hotel and restaurant and would result in the construction of a new two-tower high-rise building with maximum tower heights of 35 and 30 storeys. Overall, the development proposes: 557 new residential units comprised of a variety of unit types and sizes; 122 new hotel suites; 46,802 square feet of office space; and 47,846 square feet of retail space. A total of 598 parking spaces will be provided for the overall project.

Additionally, with redevelopment of the lands, the south leg of the intersection of Lakeshore Road and Brant Street will be closed off providing for improved operations at the Lakeshore and Brant Street intersection as well as improve the pedestrian crossing environment on the south side of Lakeshore Road. Build out is anticipated to occur in one phase by 2025 for the purposes of this report.

Vehicular access to the site is proposed via a driveway connection the Elizabeth Street.

Parking would be provided via 4 levels of underground parking, and vehicular access to the property is proposed off of Elizabeth Street. A total parking supply of 598 spaces is proposed. This supply does not meet the City of Burlington zoning requirements as currently planned.

Figure 3.1 illustrates the conceptual layout of the ground floor of the development.



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Site Concept Plan

2020 Lakeshore Road, Burlington
210056

Figure 3.1

3.2 Development Trip Generation

Trip generation information is used to forecast the anticipated level of traffic activity as a result of the development. Trip generation for each land use type were summed to establish total site trip generation for the respective AM and PM peak hours. The following sub-sections provides the methodology used.

3.2.1 Institute of Transportation Engineers (ITE)

The rate at which any development generates traffic is dependent upon a number of factors such as size, location and concentration of surrounding developments. To estimate the volume of traffic generated by the development, traffic projections were based on trip generation data published in ITE's Trip Generation, 10th Edition[9]. The following land uses (LUC) have been utilized:

- 222 – Multi-Family Housing (High-Rise);
- 310 – Hotel;
- 710 – Office; and
- 820 – Shopping Centre.

Data for the peak hour of adjacent street traffic were used to estimate trip generation. Fitted curve equations with satisfactory R^2 values and independent variables were applied. If no equations were provided or satisfactory R^2 values and independent variables were unavailable, the average rates have been applied.

The resulting summation is the "raw" trip generation – unadjusted for modal split credits. The effects of these other various factors on the actual net new trip generation on the local roadway system is discussed in detail in the following sections.

3.2.2 Internal Capture

The ITE Trip Generation Handbook describes a multi-use development as a single project that consists of two or more ITE land use classifications in which trips can be made between land uses without using the off-site roadway system. This sharing of trips between compatible land uses, without traveling off-site, is known as an internal capture.

[9] Trip Generation Tenth Edition, Institute of Transportation Engineers, Washington D.C., 2017

Based on this information, the proposed Development is considered a multi-use development, with compatible commercial land uses that are likely to share – or capture – trips that do not require vehicular travel outside the site.

By way of example, it is likely that some portion of the traffic destined to and from the retail uses located within the site will originate from the on-site residential units, requiring only a walking trip. The ITE Trip Generation Handbook has been utilized to account for internal trips within the development. The detailed calculations are provided in **Appendix D**.

ITE data suggests an internal capture rate of 5% for the weekday AM peak hour and 20% for the weekday PM peak hour.

3.2.3 Pass-By Trips

The estimates of pass-by trips were derived using the Trip Generation Handbook published by ITE[10]. Pass-by trips are a subset of trip generation that only apply to commercial/retail developments. These trips are made by vehicles already present on the roadway in which businesses attract them into their site as they are passing by.

An example of a pass-by trip is a vehicle driving from home to work and stopping for coffee on the way. It is noted that pass-by trips are already included in the background traffic stream and do not load additional traffic onto the road network. The ITE Trip Generation Handbook provides a 34 percent pass-by trip rate for LUC 820 during the weekday PM peak hour. No information is available for a pass-by rate during the weekday AM peak hour.

3.2.4 Study Area Modal Split

It is recognized that transit, cyclist and pedestrian facilities that surround the subject site will likely result in some residential trips being made by bike or on foot. This causes a reduction in the overall trip generation estimates. Data on primary modes of transportation for all trips within GTA 2011 Zones 2059-2069) was extracted from the 2016 Transportation Tomorrow Survey (TTS)[11] and is outlined in **Table 3.1**.

[10] Institute of Transportation Engineers. Trip Generation Handbook, 2nd Edition. Washington D.C. 2004.

[11] Transportation Tomorrow Survey (TTS), 2016, Summary by Traffic Zones, Data Management Group, University of Toronto.

TABLE 3.1: 2016 TTS MODE OF TRAVEL

Modes of Travel	%
Walk	6%
Vehicle (Driver)	71%
Vehicle (Passenger)	14%
Transit	8%
Cycle	1%
Total	**100%**
Sustainable Modal Split (Transit/Walk/Cycle/Carpool)	**29%**

Travel by modes other than vehicles is relatively high within the immediate area as close to 30% utilize sustainable travel. Based on the TTS data and to remain conservative (err on the high side), *a reduction of 20% has* been applied to account for travel by transit and active travel modes for the residential component.

3.2.5 Region Modal Split Targets

The Halton Region Transportation Master Plan (2031) – The Road to Change[12] defines a sustainable, integrated transportation system that considers all modes of travel (automobiles, transit, cycling, walking) and supports the policies and objectives arising out of the Halton Region Official Plan Review to the year 2031 (ROPA 38). The vision for this plan is:

> *"The Road to Change must accommodate various travel choices and support a sustainable and multi-modal network. It must encourage people to change their travel characteristics, maximise the use of transit and other alternatives to the single occupant vehicle, and be aware of the consequences if they do not change".*

The intensification of the downtown will be key to moving towards the Region's mode share targets by directing growth to encourage a pedestrian, cycling and transit-first community, where dependence on the private automobile is minimized. The location, design, configuration and mix of uses in a transit-oriented development provide an alternative to current suburban development trends by emphasizing a pedestrian-oriented environment and reinforcing the use of transit.

The Region has identified aggressive transit mode share targets to be reached over the next 12 years with transit mode share seeking a target of 20% of all trips. Since the immediate study area is currently

[12] The Road to Change, Halton Regional Transportation Master Plan (2031), September 2011.

achieving half of this target, the intensification of this site as a transit-oriented development will transform the resident mode share that is needed to meet the Region's target.

3.2.6 Net Trip Generation Estimates

Table 3.2 summarizes the projected trip generation associated with the build-out of the development. These estimates were based on the standardized ITE rates with internal, pass-by and modal split credits made as noted earlier.

As shown, the development will generate approximately 302 net new trips during the weekday AM peak hour and 333 during the weekday PM peak hour. With the net new forecast volume of traffic traveling within the study area being determined, these new trips can be assigned to the surrounding roadway network as described in the following sections.

TABLE 3.2: NET TRIP GENERATION SUMMARY

Land Use Code	GFA (sq. ft.)	Units	Trips	AM Peak Hour				PM Peak Hour			
				Rate	In	Out	Total	Rate	In	Out	Total
222 - Multi-Family Housing High Rise (Units)	-	557	Total	0.31	41	132	**173**	0.36	122	79	**201**
			Internal	2%	1	2	**3**	20%	27	14	**41**
			Modal Split	20%	8	26	**34**	20%	24	16	**40**
			New	78%	32	104	**136**	60%	71	49	**120**
310 - Hotel		122	Total	0.67	49	33	**82**	0.89	59	50	**109**
			Internal	2%	0	2	**2**	8%	7	2	**9**
			New	98%	49	31	**80**	92%	52	48	**100**
710 - Office (GFA)	46,802	-	Total	1.16	46	8	**54**	1.15	9	45	**54**
			Internal	11%	4	2	**6**	24%	5	8	**13**
			New	89%	42	6	**48**	76%	4	37	**41**
820 - Shopping Centre (GFA)	47,846	-	Total	0.94	28	17	**45**	3.81	87	95	**182**
			Internal	16%	4	3	**7**	28%	18	33	**51**
			Pass-By	0%	0	0	**0**	34%	30	30	**59**
			New	84%	24	14	**38**	72%	39	32	**72**
Total Trip Generation			**Total**	100%	164	190	**354**	100%	277	269	**546**
			Internal	5%	9	9	**18**	21%	57	57	**114**
			Modal Split	10%	8	26	**34**	7%	24	16	**40**
			Pass-By	0%	0	0	**0**	11%	30	30	**59**
			New	85%	147	155	**302**	61%	166	166	**333**

3.3 Development Trip Distribution and Assignment

3.3.1 Trip Distribution

The trip distribution for the site was developed based on the 2016 Transportation Tomorrow Survey (TTS)[13]. For the Burlington Zone, the trip distribution was further refined based on the existing link volumes at the external limits of the study area.

Table 3.3 summarizes the estimated trip distribution for the development.

TABLE 3.3: TRIP DISTRIBUTION

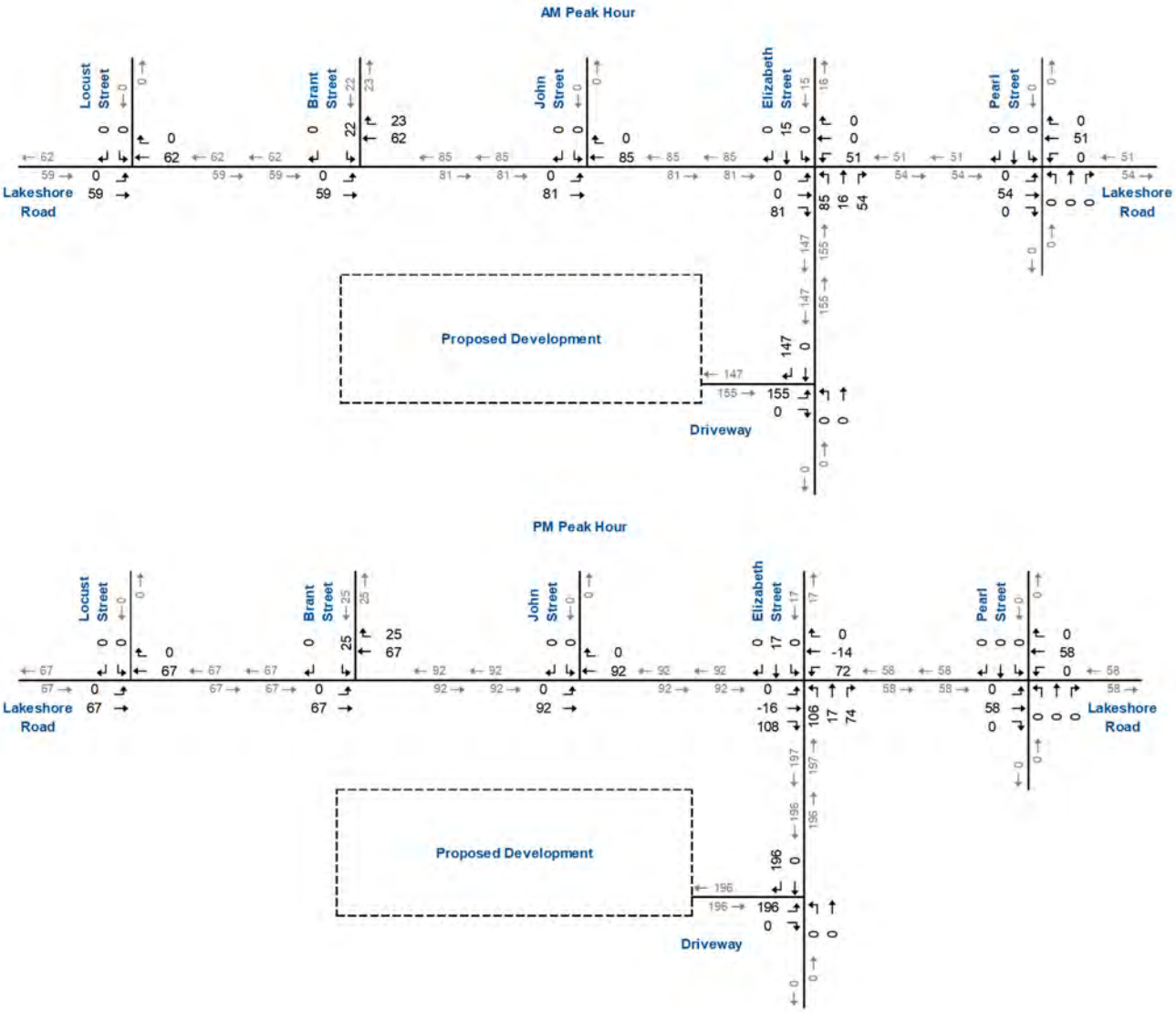
Direction (to/from)	Travel Route	Distribution
North	Brant Street	15%
North	Elizabeth Street	10%
East	Lakeshore Road	35%
West	Lakeshore Road	40%
Total		**100%**

Using the trip generation data and trip distribution estimates the site traffic was assigned to the road network.

3.3.2 Assignment

The assignment of development forecasts utilized a single access to the development via Elizabeth Street. The weekday AM and PM peak hour site generated traffic volumes are illustrated in **Figures 3.2**

13 Transportation Tomorrow Survey (TTS), 2016, Summary by Wards, Data Management Group, University of Toronto.



Site Generated Traffic Volumes

2020 Lakeshore Road, Burlington
210056

Figure 3.2

4 Future Conditions

A horizon year of 2030 (five years after opening year) has been used for traffic forecasting and analysis purposes.

4.1 Traffic Growth

Traffic growth on area roadways is a function of the expected land development, economic activity, and changes in demographics. A frequently used procedure is to estimate an annual percentage increase and apply that increase to the study area traffic volumes. An alternative procedure is to identify estimated traffic generated by specific planned major developments that would be expected to affect the project study area roadways. For the purpose of this assessment, both methods were utilized.

4.1.1 General Growth

A general growth rate of 1.0 percent was applied to the area roadways to account for population and employment growth.

4.1.2 Area Development Growth

Paradigm prepared a TIS for 2069 Lakeshore Road[14]. The following developments are included in the 2069 Lakeshore Road TIS (501-515 John Street; 2042-2054 Lakeshore Road; 374 Martha Street; 425 Locust Street; 421-431 Brant Street; 2069 Lakeshore Road; 409 Brant Street). This TIS provides traffic forecast for a planning horizon of 2027 with a development assumption of 1,200 residential units, 150 hotel units, 108,00 square feet of office space and 30,000 square feet of commercial space.

Additionally, since this study was completed, it is understood that a number of additional developments are proposed:

- 401-417 Martha Street;
- 2085 Pine Street;
- 2082, 2086 and 2090 James Street;
- 1381 Lakeshore Road;
- 2100 Lakeshore Road; and

[14] 170177: 2069 Lakeshore Road Transportation Impact Study, Parking Study and TDM Options Report Paradigm, August 2018.

The projections for these sites have been taken from the respective studies completed for these sites.

Paradigm also prepared a TIS for 2107 and 2119 Old Lakeshore Road[15]. This TIS provides traffic forecast for a planning horizon of 2029 with a development assumption of a 27-storey mixed-use building containing 599 square metres (6,451 square feet) of retail space and 150 condominium units.

Appendix E contains the background development projections.

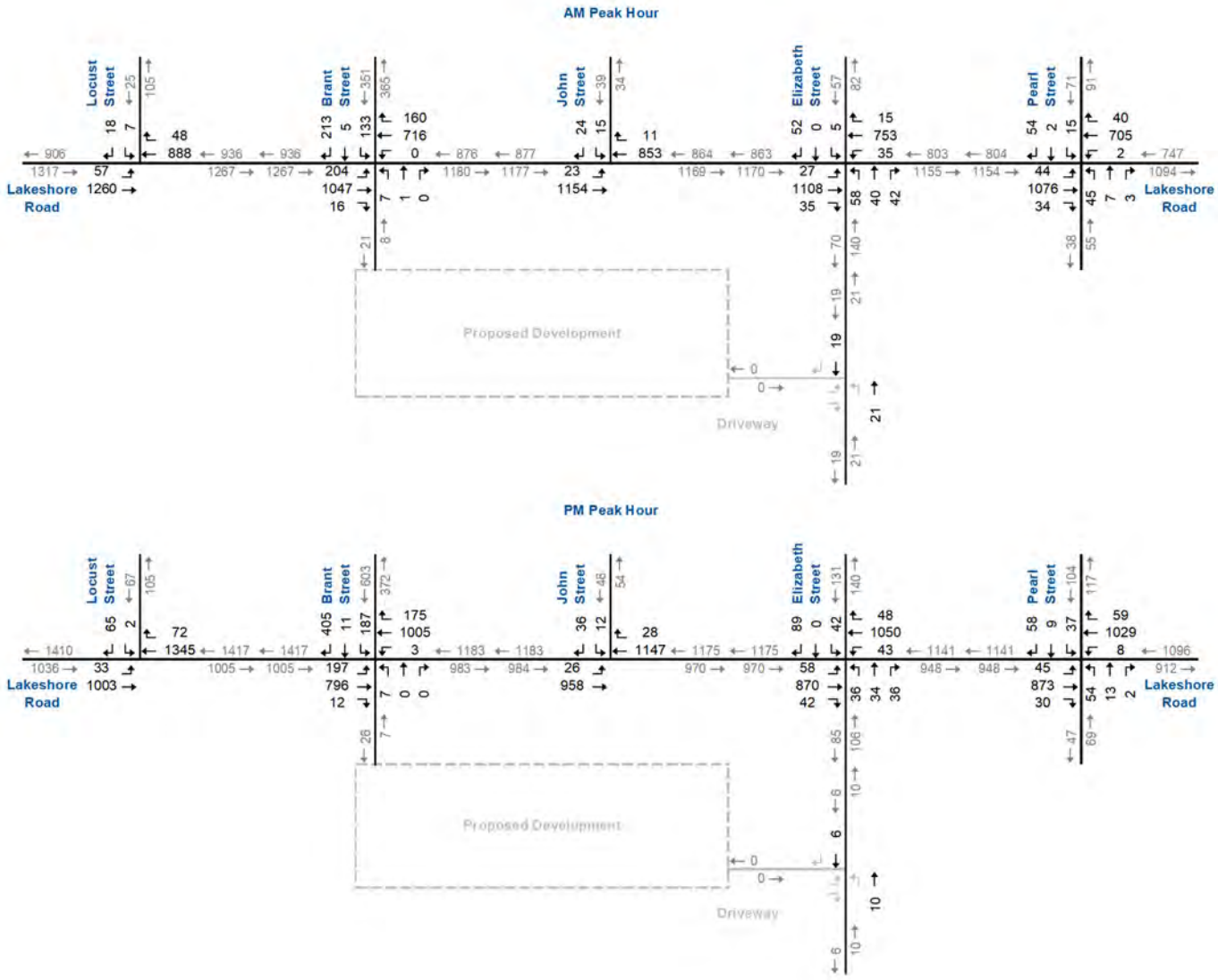
4.1.3 Background Projections

The weekday peak hour background traffic volumes for 2030 are illustrated in **Figure 4.1**.

4.1.4 Total Projections

The projected site-generated traffic volumes were added to the Background projections to develop the Total traffic volumes. The weekday peak hour Total traffic volumes for 2030 are illustrated in **Figure 4.2**.

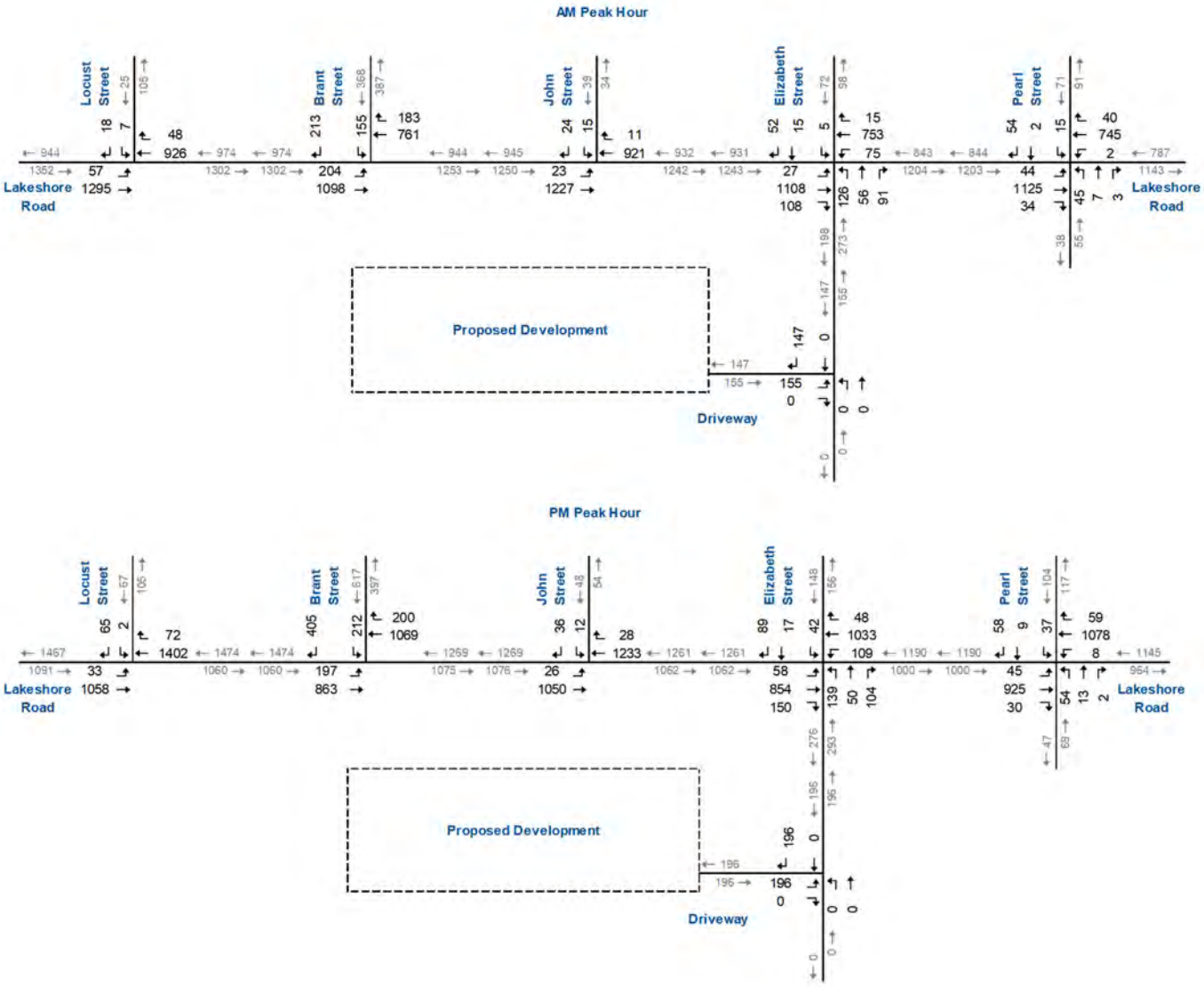
[15] 170177: 2069 Lakeshore Road Transportation Impact Study, Parking Study and TDM Options Report Paradigm, August 2018.



2030 Background Traffic Volumes

2020 Lakeshore Road, Burlington
210056

Figure 4.1



2030 Total Traffic Volumes

2020 Lakeshore Road, Burlington
210056

Figure 4.2

4.2 Operational Analysis

The study area intersection operations analysis for the background traffic scenario followed the same methodology used for the existing traffic conditions with the existing traffic signal timings.

4.2.1 Background Traffic Operations

Table 4.1 details the level of service conditions for the AM and PM peak hours. The critical movements are summarized below:

Weekday AM Peak Hour

- Lakeshore Road & Locust Street (unsignalized):
  - Southbound left/right lane is forecast to operate with delays in the LOS F range.
- Lakeshore Road & Brant Street (signalized):
  - Eastbound through/right lane is forecast to operate with delays in the LOS F range with a v/c ratio greater than 1.00.
  - Southbound through/right lane queue lengths are forecast to extend beyond the available storage.
- Lakeshore Road & Elizabeth Street (signalized):
  - Eastbound through/right lane is forecast to operate with delays in the LOS D range with a v/c ratio greater than 1.00.
- Lakeshore Road & Old Lakeshore Road/Pearl Street (signalized):
  - Eastbound through/right lane is forecast to operate with delays in the LOS B range with a v/c ratio greater than 0.85.
  - Southbound left lane queue lengths are forecast to extend beyond the available storage.

Weekday PM Peak Hour

- Lakeshore Road & Brant Street (signalized):
  - Eastbound left lane queue lengths are forecast to extend beyond the available storage.
  - Eastbound through/right lane is forecast to operate with delays in the LOS B range with a v/c ratio greater than 0.85.
  - Southbound through/right lane queue lengths are forecast to extend beyond the available storage.



- Lakeshore Road & Old Lakeshore Road/Pearl Street (signalized):
  - Southbound left lane queue lengths are forecast to extend beyond the available storage.

Congestion is forecast to occur in the study area with queues forming along Lakeshore Road in the eastbound direction in the AM and PM peak hours.

Southbound movements at Lakeshore Road at Brant Street are forecast to experience lengthy queue lengths due to through/right turn lane storage.

Appendix F contains the supporting detailed Synchro 10 output.

TABLE 4.1: 2030 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	1 - Lakeshore Road & Locust Street	TWSC	LOS	A	A		A		A	>	A					F		>	F	
			Delay	10	0		0		0	>	0					84		>	84	
			V/C	0.08	0.81				0.38	>						0.39		>		
			Q	2	0				0	>						12		>		
			Ex	--	--				--	>						--		>		
			Avail.	--	--				--	>						--		>		
	2 - Lakeshore Road & Brant Street	TCS	LOS	B	F	>	F	A	B	>		<	C	>	C	C	C	>	C	E
			Delay	12	109	>	93	0	11	>		<	27	>	27	32	30	>	31	56
			V/C	0.65	1.18	>		0.00	0.52	>		<	0.03	>		0.54	0.18	>		
			Q	28	354	>		0	74	>		<	5	>		40	19	>		
			Ex	55	--	>		25	--	>		<	--	>		--	15	>		
			Avail.	27	--	>			--	>		<	--	>		--	-4	>		
	3 - Lakeshore Road & John Street	TWSC	LOS	<	A	A	A	A	A	>	A					D		>	D	
			Delay	<	1	0	0	0	0	>	0					25		>	25	
			V/C	<	0.03	0.49		0.36	0.19	>						0.19		>		
			Q	<	1	0		0	0	>						6		>		
			Ex	<	--	--		--	--	>						--		>		
			Avail.	<	--	--		--	--	>						--		>		
	4 - Lakeshore Road & Elizabeth Street	TCS	LOS	A	D	>	D	C	A	>	A	<	D	>	D	C	C	>	C	C
			Delay	4	39	>	38	22	5	>	6	<	41	>	41	35	35	>	35	26
			V/C	0.07	1.00	>		0.46	0.35	>		<	0.57	>		0.03	0.04	>		
			Q	5	389	>		22	47	>		<	45	>		4	0	>		
			Ex	--	--	>		25	--	>		<	--	>		20	--	>		
			Avail.	--	--	>		3	--	>		<	--	>		16	--	>		
	5 - Old Lakeshore Road/Pearl Street & Lakeshore Road	TCS	LOS	A	B	>	B	A	A	>	A	<	D	>	D	D	D	>	D	B
			Delay	2	14	>	11	2	3	>	3	<	45	>	45	41	41	>	41	11
			V/C	0.10	0.89	>		0.01	0.31	>		<	0.45	>		0.12	0.05	>		
			Q	5	332	>		1	30	>		<	24	>		9	12	>		
			Ex	40	--	>		20	--	>		<	--	>		7	--	>		
			Avail.	35	--	>		19	--	>		<	--	>		-2	--	>		
	6 - Elizabeth Street & Driveway	AWSC	LOS		A	>	A					<	A		A		A	>	A	
			Delay		0	>	0					<	0		0		0	>	0	
			V/C		0.00	>						<	0.00				0.01	>		
			Q		0	>						<	0				0	>		
			Ex		--	>						<	--				--	>		
			Avail.		--	>						<	--				--	>		
PM Peak Hour	1 - Lakeshore Road & Locust Street	TWSC	LOS	B	A		A		A	>	A					C		>	C	
			Delay	13	0		0		0	>	0					19		>	19	
			V/C	0.07	0.64				0.57	>						0.22		>		
			Q	2	0				0	>						7		>		
			Ex	--	--				--	>						--		>		
			Avail.	--	--				--	>						--		>		
	2 - Lakeshore Road & Brant Street	TCS	LOS	E	D	>	D	B	C	>		<	C	>	C	D	D	>	D	C
			Delay	58	38	>	42	11	21	>		<	33	>	33	40	53	>	49	34
			V/C	0.93	0.93	>		0.03	0.72	>		<	0.14	>		0.61	0.83	>		
			Q	58	303	>		2	155	>		<	6	>		67	112	>		
			Ex	55	--	>		25	--	>		<	--	>		--	15	>		
			Avail.	-3	--	>			--	>		<	--	>		--	-97	>		
	3 - Lakeshore Road & John Street	TWSC	LOS	<	A	A	A	A	A	>	A					D		>	D	
			Delay	<	2	0	1	0	0	>	0					27		>	27	
			V/C	<	0.05	0.41		0.49	0.26	>						0.24		>		
			Q	<	1	0		0	0	>						7		>		
			Ex	<	--	--		--	--	>						--		>		
			Avail.	<	--	--		--	--	>						--		>		
	4 - Lakeshore Road & Elizabeth Street	TCS	LOS	A	B	>	B	A	A	>	A	<	D	>	D	D	D	>	D	B
			Delay	5	11	>	11	4	5	>	5	<	43	>	43	41	39	>	40	11
			V/C	0.23	0.77	>		0.17	0.49	>		<	0.49	>		0.32	0.07	>		
			Q	10	198	>		7	66	>		<	37	>		20	11	>		
			Ex	--	--	>		25	--	>		<	--	>		20	--	>		
			Avail.	--	--	>		18	--	>		<	--	>		0	--	>		
	5 - Old Lakeshore Road/Pearl Street & Lakeshore Road	TCS	LOS	A	A	>	A	A	A	>	A	<	D	>	D	D	D	>	D	A
			Delay	2	7	>	8	2	4	>	4	<	50	>	50	45	43	>	44	8
			V/C	0.16	0.72	>		0.03	0.46	>		<	0.54	>		0.28	0.10	>		
			Q	7	172	>		2	58	>		<	30	>		19	15	>		
			Ex	40	--	>		20	--	>		<	--	>		7	--	>		
			Avail.	33	--	>			--	>		<	--	>		-12	--	>		
	6 - Elizabeth Street & Driveway	AWSC	LOS		A	>	A					<	A		A		A	>	A	
			Delay		0	>	0					<	7		7		7	>	7	
			V/C		0.00	>						<	0.01				0.01	>		
			Q		0	>						<	0				0	>		
			Ex		--	>						<	--				--	>		
			Avail.		--	>						<	--				--	>		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds

Q - 95th Percentile Queue Length
Ex. - Existing Available Storage
Avail. - Available Storage

TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
AWSC - All-Way Stop Control

RBT - Roundabout
< - Shared Left-turn
> - Shared Right-turn

4.2.2 Total Traffic Operations

Table 4.2 details the level of service conditions for the AM and PM peak hours. It is noted the analysis is based on an earlier concept plan that projected an additional 5 trips during the weekday AM peak hour and 7 trips during the weekday PM hour. The marginal difference in trips will not have an impact with regard to the analysis. The critical movements are summarized below:

Weekday AM Peak Hour

- Lakeshore Road & Locust Street (unsignalized):
  - Southbound left/right lane is forecast to operate with delays in the LOS F range.
- Lakeshore Road & Brant Street (signalized):
  - Eastbound through/right lane is forecast to operate with delays in the LOS F range with a v/c ratio greater than 1.00.
  - Southbound through/right lane queue lengths are forecast to extend beyond the available storage.
- Lakeshore Road & Elizabeth Street (signalized):
  - Eastbound through/right lane is forecast to operate with delays in the LOS F range with a v/c ratio greater than 1.00.
  - Westbound left lane is forecast to operate with delays in the LOS F range with a v/c ratio greater than 1.00. Queue lengths are forecast to extend beyond the available storage.
  - Northbound left/through/right lane is forecast to operate with delays in the LOS E range with a v/c ratio greater than 0.85.
- Lakeshore Road & Old Lakeshore Road/Pearl Street (signalized):
  - Eastbound through/right lane is forecast to operate with delays in the LOS B range with a v/c ratio greater than 0.90.
  - Southbound left lane queue lengths are forecast to extend beyond the available storage.

Weekday PM Peak Hour

- Lakeshore Road & Brant Street (signalized):
  - Eastbound left lane queue lengths are forecast to extend beyond the available storage.
  - Eastbound through/right lane is forecast to operate with delays in the LOS D range with a v/c ratio greater than 0.95.

Southbound through/right lane queue lengths are forecast to extend beyond the available storage.

- Lakeshore Road & Elizabeth Street (signalized):
  - Eastbound through/right lane is forecast to operate with delays in the LOS D range with a v/c ratio of 1.00.
  - Westbound left lane is forecast to operate with delays in the LOS F range with a v/c ratio greater than 1.00. Queue lengths are forecast to extend beyond the available storage.
  - Northbound left/through/right lane is forecast to operate with delays in the LOS F range with a v/c ratio greater than 0.95.
- Lakeshore Road & Old Lakeshore Road/Pearl Street (signalized):
  - Southbound left lane queue lengths are forecast to extend beyond the available storage.

The site driveway is expected to operate without any congestion in the respective peak hours.

Appendix G contains the supporting detailed Synchro 10 output.

TABLE 4.2: 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	1 - Lakeshore Road & Locust Street	TWSC	LOS	B	A		A		A	>	A					F		>	F		
			Delay	10	0		0		0	>	0					104		>	104		
			V/C	0.08	0.83				0.40	>						0.45		>			
			Q	2	0				0	>						14		>			
			Ex	--	--				--	>						--		>			
			Avail.	--	--				--	>						--		>			
	2 - Lakeshore Road & Brant Street	TCS	LOS	B	F	>	F	A	B	>		<	A	>	A	C		C	C	E	
			Delay	14	118	>	102	0	12	>		<	0	>	0	31		31	31	59	
			V/C	0.69	1.20	>		0.00	0.55	>		<	0.00	>		0.52		0.25			
			Q	29	354	>		0	77	>		<	0	>		44		23			
			Ex	55	--	>		25	--	>		<	--	>		--		15			
			Avail.	26	--	>		25	--	>		<	--	>		--		-8			
	3 - Lakeshore Road & John Street	TWSC	LOS	<	A	A	A	A	A	>	A					D		>	D		
			Delay	<	1	0	0	0	0	>	0					29		>	29		
			V/C	<	0.03	0.52		0.39	0.20	>						0.22		>			
			Q	<	1	0		0	0	>						6		>			
			Ex	<	--	--		--	--	>						--		>			
			Avail.	<	--	--		--	--	>						--		>			
	4 - Lakeshore Road & Elizabeth Street	TCS	LOS	A	F	>	F	F	A	>	C	<	E	>	E	C	C	>	C	E	
			Delay	7	110	>	107	250	8	>	30	<	58	>	58	31	31	>	31	73	
			V/C	0.08	1.18	>		1.34	0.39	>		<	0.86	>		0.02	0.08	>			
			Q	6	449	>		43	52	>		<	108	>		4	14	>			
			Ex	--	--	>		25	--	>		<	--	>		20	--	>			
			Avail.	--	--	>		-18	--	>		<	--	>		16	--	>			
	5 - Old Lakeshore Road/Pearl Street & Lakeshore Road	TCS	LOS	A	B	>	B	A	A	>	A	<	D	>	D	D	D	>	D	B	
			Delay	2	18	>	14	2	3	>	3	<	45	>	45	41	41	>	41	14	
			V/C	0.11	0.93	>		0.01	0.33	>		<	0.45	>		0.12	0.05	>			
			Q	5	356	>		1	32	>		<	24	>		9	12	>			
			Ex	40	--	>		20	--	>		<	--	>		7	--	>			
			Avail.	35	--	>		19	--	>		<	--	>		-2	--	>			
	6 - Elizabeth Street & Driveway	AWSC	LOS		A	>	A					<	A		A		A	>	A		
			Delay		10	>	10					<	0		0		0	>	0		
			V/C		0.19	>						<	0.00				0.09	>			
			Q		5	>						<	0				0	>			
			Ex		--	>						<	--				--	>			
			Avail.		--	>						<	--				--	>			
PM Peak Hour	1 - Lakeshore Road & Locust Street	TWSC	LOS	B	A		A		A	>	A					C		>	C		
			Delay	13	0		0		0	>	0					24		>	24		
			V/C	0.07	0.68				0.60	>						0.28		>			
			Q	2	0				0	>						9		>			
			Ex	--	--				--	>						--		>			
			Avail.	--	--				--	>						--		>			
	2 - Lakeshore Road & Brant Street	TCS	LOS	F	D	>	E	A	C	>		<	A	>	A	D		E	E	D	
			Delay	97	52	>	61	0	23	>		<	0	>	0	37		65	55	43	
			V/C	1.04	0.99	>		0.00	0.78	>		<	0.00	>		0.54		0.89			
			Q	85	334	>		0	176	>		<	0	>		72		122			
			Ex	55	--	>		25	--	>		<	--	>		--		15			
			Avail.	-30	--	>		25	--	>		<	--	>		--		-107			
	3 - Lakeshore Road & John Street	TWSC	LOS	<	A	A	A	A	A	>	A					D		>	D		
			Delay	<	2	0	1	0	0	>	0					31		>	31		
			V/C	<	0.05	0.45		0.53	0.28	>						0.27		>			
			Q	<	1	0		0	0	>						9		>			
			Ex	<	--	--		--	--	>						--		>			
			Avail.	<	--	--		--	--	>						--		>			
	4 - Lakeshore Road & Elizabeth Street	TCS	LOS	B	D	>	D	F	B	>	D	<	F	>	F	C	C	>	C	D	
			Delay	12	46	>	45	273	12	>	36	<	84	>	84	35	33	>	34	45	
			V/C	0.30	1.00	>		1.44	0.56	>		<	0.96	>		0.20	0.11	>			
			Q	15	363	>		60	91	>		<	135	>		20	18	>			
			Ex	--	--	>		25	--	>		<	--	>		20	--	>			
			Avail.	--	--	>		-35	--	>		<	--	>		0	--	>			
	5 - Old Lakeshore Road/Pearl Street & Lakeshore Road	TCS	LOS	A	A	>	A	A	A	>	A	<	D	>	D	D	D	>	D	A	
			Delay	3	8	>	9	2	4	>	4	<	50	>	50	45	43	>	44	9	
			V/C	0.17	0.77	>		0.03	0.48	>		<	0.54	>		0.28	0.10	>			
			Q	7	205	>		2	63	>		<	30	>		19	15	>			
			Ex	40	--	>		20	--	>		<	--	>		7	--	>			
			Avail.	33	--	>		18	--	>		<	--	>		-12	--	>			
	6 - Elizabeth Street & Driveway	AWSC	LOS		B	>	B					<	A		A		A	>	A		
			Delay		10	>	10					<	0		0		0	>	0		
			V/C		0.24	>						<	0.00				0.13	>			
			Q		8	>						<	0				0	>			
			Ex		--	>						<	--				--	>			
			Avail.		--	>						<	--				--	>			

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds

Q - 95th Percentile Queue Length
Ex. - Existing Available Storage
Avail. - Available Storage

TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
AWSC - All-Way Stop Control

RBT - Roundabout
< - Shared Left-turn
> - Shared Right-turn

4.3 Site Access Review

The site circulation has been assessed using a Front-End Waste Garbage Truck.

Appendix H contains reduced scale vehicle turning movement diagrams for the site's loading zones and main circulation drive aisles. The diagrams were produced using the site concept plan and AutoTURN swept path analysis software.

Based on the analysis the design vehicle has some minor clipping on the north curb to the loading zone. Other than this minor issue that will be corrected by the design team, the Front-End Waste Garbage Truck can circulate the site without any issues..

5 Proposed Mitigation Measures

As summarized in the analysis tables in the previous chapter, Lakeshore Road is forecast to experience operational deficiencies independent of the development. The analysis also concludes that the development would have minimal impacts on traffic conditions in the study area outside of localized congestion for eastbound and westbound movements at Lakeshore Road and Elizabeth Street.

5.1 Lakeshore Road Corridor

As a general guideline, the lane capacity of an arterial lane is about 900 vehicles per hour. The peak hour, peak direction base year traffic volumes indicate volumes exceeding 900 vehicles per hour along Lakeshore Road in the eastbound direction which exceeds the capacity of single lane. With background traffic growth accounted for, this volume is expected to increase to well over 1,000 vehicles per hour.

Widening existing roads or building new ones, in most circumstances, will encroach on private property, impact mature trees and green space or compromise the existing public realm (e.g., sidewalks, boulevards). A more sustainable transportation strategy is to move more people per kilometre by walking, cycling and transit or in combination with high occupancy vehicles. It is generally acknowledged that the future travel needs of Burlington residents and workers cannot be met solely by improving the road system alone as echoed in the Region's Transportation Master Plan.

Burlington's current Capital Projects Plan does not indicate any roadway improvements to the Lakeshore Road within the study area. Due to the high levels of congestion occurring today at the intersection and the expected future growth in population and employment for Burlington, remedial measures to improve intersection capacity are not likely to be implemented. Rather, future improvements to the transportation network are expected to largely focus on public transit infrastructure.

The basic goal of future transit planning is to create a network that will serve all segments of Burlington and more importantly Halton Region. By focusing on shifting commuter travel to public transit, intersection operations could be expected to maintain the status quo (capacity conditions during peak hours) or to possibly improve if fewer vehicles traverse the intersections during the peak hours of a typical weekday. It is also worthwhile to note that increased traffic congestion

encourages drivers to consider other modes of transportation. The City's OP[16] states that,

> *"At some locations, such as Mixed-Use Intensification Areas and Areas of Employment, increased tolerance for at-capacity conditions."*

To accommodate future travel to, from, and within the downtown, a full-spectrum multi-modal transportation system is required. However, until improvements to the multi-modal system is established, and a greater portion of the population utilizes transit to a greater degree, an interim improvement option could be to optimize the intersection signal timings with an increased cycle length.

5.2 Intersection / Roadway Mitigation

5.1.1 Lakeshore Road at Locust Street

Individual movements at the unsignalized intersection of Lakeshore Road at Locust Street presently operate at LOS "D" or better with a v/c ratio no greater than 0.15 under the base year conditions. Increased delay is expected for the stop controlled southbound approached that will degrade in operation from LOS "D" to "F" under the 2030 horizon during the weekday AM peak hour (without the proposed development). It is noted that a v/c ratio for these movements is not projected to exceed 0.45, indicating spare capacity is still projected.

The City of Burlington's Downtown Traffic Overview[17] was commissioned by the City of Burlington to quantify the direct impacts of the new planned development on the traffic operations in the expanded study area and is in support of the Scoped Re-Examination of the Adopted Official Plan for the Downtown Burlington. This study further identified with regard to the operations of Lakeshore Road and Locust Street that the stop-controlled southbound approach of Locust Street has relatively low traffic volumes compared to the adjacent main roadway of Lakeshore Road; therefore, their operations is of lower priority.

As the southbound movement is operating at 45% or less of its available capacity, mitigation measures to improve operations are not expected to be required.

[16] Burlington Official Plan, Adopted on April 26, 2018.
[17] City of Burlington, Downtown Burlington Traffic Overview, CIMA+, October 2019

5.1.2 Lakeshore Road at Brant Street

Presently operates with satisfactory conditions during the weekday AM and PM peak hours. With additional growth in background traffic under the 2030 horizon, increased delay is projected for the eastbound approach during weekday AM and PM peak hours which are projected to operate at LOS F with a v/c ratio exceeding 1.00.

For clarification, delays at this intersection have been previously documented as a foreseeable issue along the Lakeshore Road corridor without the proposed development as contained in the City of Burlington's Downtown Traffic Overview. The traffic review recognized capacity constraints, further remedial measures to improve intersection capacity are not likely to be implemented. Rather, future improvements to the transportation network are expected to largely focus on sustainable forms of transportation as recognized in the Official Plan.

With redevelopment of the lands, the south leg of the intersection of Lakeshore Road and Brant Street will be closed off providing for an opportunity to further improve signal operations by allocating additional green time to the Lakeshore Road corridor. Additionally, the pedestrian crossing environment along the south side of Lakeshore Road will be improved as pedestrians will be subject to less conflict as a result of the removal of the south leg of Lakeshore Road and Brant Street.

A sensitivity analysis has been undertaken at the intersection with optimized phasing, splits and an increased cycle length and indicated significant improvements is projected at the intersection with all movements operating at LOS D or better during the weekday AM and PM Peak hours. The sensitivity analysis is further discussion **Section 5.3**.

5.1.3 Lakeshore Road at Elizabeth Street:

Presently operates with acceptable conditions during the weekday AM and PM peak hours. With additional growth in background traffic under the 2030 horizon, the intersection is expected to continue to operate with acceptable conditions. With the addition of the proposed development, increased delay is recognized to occur for the eastbound through movement and westbound left turn movement given access to the site is provided off of Elizabeth Street.

A sensitivity analysis has been undertaken at the intersection with optimized phasing, splits and an increased cycle length and indicated significant improvements is projected at the intersection with all

movements operating at LOS D or better with exception to the eastbound shared through/right turn movement which is projected to operate with delays and extensive queues during the weekday AM and PM Peak hours.

While expanding Lakeshore Road to add the addition of an eastbound right turn lane or increasing the road platform to a four-lane cross-section would improve operations, widening of any arterial roads for the purposes of accommodating vehicular traffic volumes is not recommended as it is counter-intuitive to the vision of a people-centric, pedestrian friendly environment that expects people to use more sustainable modes to travel.

Additionally, there are physical constraints that limit the ability to implement geometric improvements, namely the permeable, fine grid street pattern that is made up of short blocks. The traffic operations at the intersection of Lakeshore Road and Elizabeth Street under the future total traffic conditions are noted to be reflective of an urban environment such as the downtown area.

Regardless, the Applicant intends to advance improvements by implementing a number of TDM measures and limiting the provided parking supply to curb the developments dependency towards vehicular traffic with a focus towards sustainable transportation modes to better balance travel demand. These measures work together to mutually reinforce one another and strengthen the developments efforts to reduce its dependence on driving and reduce its impact to the adjacent transportation network.

A sensitivity analysis has been undertaken for the Total traffic conditions with optimized signal timings and indicates Lakeshore Road and Brant Street as well as Lakeshore Road and Elizabeth Street are projected to operate with improved operations during the weekday AM and PM peak hours. The sensitivity analysis is further discussion **Section 5.3**.

5.1.4 Lakeshore Road at John Street:

Individual movements at the signalized intersection of Lakeshore Road at John Street presently operate at LOS “C” or better with a volume to capacity ratio no greater than 0.41 under the base year conditions. Similar levels of operation are expected under future total conditions with the intersection projected to operate at LOS “D” or better with a v/c ratio no greater than 0.52. Overall, the intersection is not projected to operate with any capacity issues.

Lakeshore Road at Pearl Street/Old Lakeshore Road: Individual movements at the signalized intersection of Lakeshore Road at John Street presently operate at LOS "D" or better with a volume to capacity ratio no greater than 0.70 under the base year conditions. Similar levels of operation are expected under future total conditions with the intersection projected to operate at LOS "D" or better with a v/c ratio no greater than 0.93. Overall, the intersection is approaching capacity, however the level of delay is still manageable.

5.1.5 Elizabeth Street at Driveway:

Individual movements at the unsignalized intersection of Elizabeth Street at the proposed Driveway is projected to operate at y operate at LOS "B" or better with a volume to capacity ratio no greater than 0.24 under the future total traffic conditions. The intersection is not projected to operate with any capacity issues.

5.3 Sensitivity Analysis

A sensitivity analysis has been undertaken for the Total traffic conditions with optimized signal timings at Lakeshore Road intersection with Brant Street and Elizabeth Street during the weekday AM and PM peak hours. **Table 5.1** summarizes the results of the sensitivity analysis. **Appendix L** contains the detailed Synchro reports and signal timings. The following is noted:

- At the intersection of Lakeshore Road and Brant Street, signal optimization significantly improves eastbound through/right-turn and eastbound left-turn movements in the AM and PM peak hour. Eastbound through/right-turn movements are forecast to decrease from LOS F to LOS D in the AM peak hour while eastbound left-turn movements are forecast to decrease from LOS F to LOS A in the PM peak hour.

- At the intersection of Lakeshore Road and Elizabeth Street signal optimization significantly improves operations of westbound left-turn and northbound left/through/right turn movements. In the AM and PM peak hour, westbound left-turns improve from LOS F to LOS C. Northbound movements show improvements from LOS E-F to LOS C-D in the peak hours.

TABLE 5.1: SENSITIVITY ANALYSIS

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	2 - Lakeshore Road & Brant Street	TCS	LOS	C	D	>	D	A	A	>		<	A	>	A	C		C	C		C
			Delay	30	43	>	41	0	6	>		<	0	>	0	31		32	31		27
			V/C	0.80	1.02	>		0.00	0.47	>		<	0.00	>		0.52		0.39			
			Q	79	322	>		0	56	>		<	0	>		44		32			
			Ex	55	--	>		25	--	>		<	--	>		--		15			
			Avail.	-24	--	>		25	--	>		<	--	>		--		-17			
	4 - Lakeshore Road & Elizabeth Street	TCS	LOS	A	F	>	F	C	A	>	A	<	D	>	D	C	C	>	C	E	
			Delay	7	133	>	131	27	6	>	8	<	36	>	39	33	34	>	34	75	
			V/C	0.08	1.24	>		0.47	0.36	>		<	0.35	>		0.03	0.09	>			
			Q	7	481	>		18	51	>		<	35	>		4	15	>			
			Ex	--	--	>		25	--	>		<	--	>		20	--	>			
			Avail.	--	--	>		7	--	>		<	--	>		16	--	>			
PM Peak Hour	2 - Lakeshore Road & Brant Street	TCS	LOS	A	B	>	B	A	B	>		<	D	>	D	D		D	D	B	
			Delay	7	14	>	13	7	11	>		<	35	>	35	37		41	40	17	
			V/C	0.39	0.62	>		0.01	0.51	>		<	0.11	>		0.37		0.57			
			Q	74	338	>		0	174	>		<	0	>		78		122			
			Ex	55	--	>		25	--	>		<	--	>		--		15			
			Avail.	-19	--	>		25	--	>		<	--	>		--		-107			
	4 - Lakeshore Road & Elizabeth Street	TCS	LOS	B	F	>	F	C	A	>	B	<	C	>	D	D	D	>	D	D	
			Delay	13	103	>	98	25	9	>	10	<	29	>	43	38	36	>	37	50	
			V/C	0.29	1.16	>		0.58	0.55	>		<	0.24	>		0.31	0.16	>			
			Q	16	347	>		29	79	>		<	27	>		19	19	>			
			Ex	--	--	>		25	--	>		<	--	>		20	--	>			
			Avail.	--	--	>		-4	--	>		<	--	>		1	--	>			

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
Q - 95th Percentile Queue Length
Ex. - Existing Available Storage
Avail. - Available Storage
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
AWSC - All-Way Stop Control
RBT - Roundabout
< - Shared Left-turn
> - Shared Right-turn

5.4 Lay-By

Curbside space, the access point between the road and the sidewalk, is increasingly in high-demand for a number of competing users including motor vehicle drivers, cyclists, transit, taxis, motorcoaches, couriers, other goods movement operators, parking (including accessible parking), Wheel-Trans, filming, food trucks, local businesses, and emergency services.

In early 2020, when cities went into lockdown due to the COVID-19 pandemic, social distancing guidelines went into effect, and restaurants and businesses could not let customers inside. Many traditional uses of the curb were put to the side to make space for tactical urbanism projects.

There are now many examples of creative repurposing of space for socially distanced recreation, shopping, and dining – including closing lanes or streets to cars and temporarily waiving permitting fees and applications to allow restaurants and retail businesses to expand their business footprint onto the public right-of-way or into privately owned parking facilities. Street patios have taken over both curbside space and travel lanes and remain a safe way for restaurants to stay open.

A lay-by along Lakeshore Road is proposed within the city's Right of Way (ROW). Providing a lay-by is expected to reduce incident of vehicles illegally stopping and blocking lanes or, alternatively, circling around the block unnecessarily trying to locate a temporary parking area as documented within the Institute of Transportation Engineers (ITE) Curbside Management Practitioner's Guide[18].

Roadway design must consider the space and operational needs of first responders such as fire, paramedics and police. Fire trucks are the largest emergency response vehicles and need accommodation in the design of roadways. They must have adequate space in the roadway to access structures and fire routes; deploy apparatus, equipment, and personnel safely and efficiently; and provide passable (drivable) space to ensure effective, timely and safe emergency response.

One of the potential benefits that could be realized through the implementation of the lay-by is it creates an additional area for vehicles to pull over for an emergency vehicles which could reduce response times through this section of Lakeshore Road.

[18] ITE Curbside Management Practitioners Guide,

Further consultation with Burlington Fire Service (BFS) and Emergency Medical Service (EMS) will be conducted as the project progresses further.

Through the events of 2020, cities have needed to adapt quickly about how the curb can play a major role in creating thriving community spaces. The proposed lay-by provides benefits to various curbside demands now and in the years to come.

6 Parking Review

6.1 Zoning By-Law Requirements

6.1.1 Vehicle Parking

Zoning By-law 2020 is the current in-force By-law for the City of Burlington. Based on the City Zoning By-law, the subject site is within the "Downtown Parking Exemption Area" which exempts all non-residential properties from providing on-site parking.

The minimum parking rates for the proposed development are as follows:

- Apartment Dwelling Units: 1.25 spaces per unit;
- Hotel: Parking Exempt
- Office: Parking Exempt; and
- Retail: Parking Exempt.

Table 6.1 summarizes Zoning By-Law 2020 minimum parking standard calculations for the development.

TABLE 6.1: EXISTING ZONING REQUIREMENTS

Land Use	Units	Rate*	Spaces Required
Residential	557 Units	1.25 spaces/unit	696
Hotel	122 Rooms	0 space/suite	0
Office	4,348 m^2	0 space/100m^2	0
Retail Store	4,445 m^2	0 space/100m^2 GFA	0
Total			**696**
Total Parking Required			**697**

*Zoning By-Law 2020 - Downtown Parking Exemption Area

As indicated, under the City's Zoning By-Law, the proposed development requires 697 parking spaces. The proposed parking supply of 598 spaces (557 residential spaces at a rate of 1.00 spaces/unit and 41 mixed-use spaces) at a rate of 0.07 results in a reduction of 99 spaces.

6.1.2 Burlington City-Wide Parking Standards Review

In 2017, the city retained IBI Group to undertake a Burlington City-Wide Parking Standards Review (CWPSR). The primary goal of this study is to review the "Parking Requirements" contained within By-law 2020 and to provide detailed recommendations on how they should be modified to better reflect the transportation and land use realities and objectives across Burlington.

A comprehensive approach in determining the recommended parking rates involved assessing existing standards in Burlington and other jurisdictions, conducting parking surveys, estimating parking demand directly from first principles, and considering policy objectives. **Table 4.3** summarises the recommended parking ratios for apartment units in an Intensification Area as contained in the CWPSR.

TABLE 6.2: CWPSR INTENSIFICATION PARKING – APARTMENT

Assignment	Parking Ratio (spaces/unit)	
	Min.	Max.
Resident	1.00	1.50
Visitor	0.25	0.25

The Planning and Development Committee of Burlington Council approved revising the parking rates at a statutory public meeting on September 17, 2019, and the rates outlined in **Table 4.2** were approved by Council on September 23, 2019 as contained within Zoning By-law Amendment (2020-414).

An appeal to the Local Planning Appeal Tribunal (LPAT) of the passing of By-law 2020.414 which amends Zoning By-law 2020 for the purposes of updating the parking rates for residential land uses was made on October 16, 2019. The residential parking rates contained in the Zoning By-law 2020 Amendment are based on the parking rates recommended in the CWPSR.

The LPAT decision regarding the City of Burlington's Zoning By-law Amendment accepted the following:

"For those lands within a 'Primary Growth Area' as identified in the City's new Official Plan approved November 30, 2020, a minimum parking rate of 1.25 spaces per unit for apartment dwellings inclusive of visitors regardless of the number of bedrooms. This rate is to be identified as interim and subject to further study. Further, any application to reduce the parking rate below a rate of 1.25 spaces per unit for apartment dwellings inclusive of visitors will be required to be supported by a parking justification study that is acceptable to the city."

In accordance with the Zoning By-law Amendment requirement confirmed in the LPAT decision, the following critique of the CWPSR which formed the basis for the rates contained in the Zoning By-Law Amendment 2020.414:

- As part of undertaking the CWPSR, spot surveys were completed. The survey data observed a maximum parking demand of 1.10 space per unit, with a maximum visitor demand of 0.10 space per unit at apartment sites in Burlington. There is no rationale or methodology provided as to why a visitor parking requirement of 0.25 spaces per unit is recommended for intensification areas; more than double the observed maximum rate.

- The CWPSR is largely dismissive of the negative impacts that parking requirements have. While the CWPSR does recognize that there are negative impacts associated with parking minimums, and that the Ontario Climate Change Plan prescribes removal of parking minimums from all municipal by-laws, the recommendations viewed parking minimums as necessary for the foreseeable future. This dismissal runs counter to the literature reviewed as part of the CWPSR which found that parking minimums have significant negative impacts and that there are several policy alternatives available.

- The CWPSR suggests that there is little risk in reducing minimum residential parking requirements as availability of parking is a key decision in an individual's residential choice. Developers are well attuned to their potential customers' parking needs and will not reduce parking provision so much as to compromise the marketability of their development. It stands to reason that the economic demand for parking would create self-enforced minimums and that the report could have also suggested that an elimination of minimums was also possible.

- The CWPSR identified the use of shared parking as a viable tool that encourages more efficient use of the parking supply. However, the CWPSR fails to further expand on the "macro" scale recognizing shared parking can extend beyond a specific site and can include several developments. Specifically, parking can be shared among different buildings and facilities in an area to take advantage of public parking facilities during different peak periods. This type of arrangement is not new, particularly for the City of Burlington which has employed a shared parking strategy. As City Hall does not provide on-site parking for employees, the city has been using a shared parking arrangement by virtue of the municipal parking lots near City

Hall. These municipal parking spaces are efficiently shared since peak parking demands of City Hall employees occur during weekdays, while restaurants and visitors to the Downtown peak parking demands would occur during evenings and weekends.

- The CWPSR did not deviate from the status quo of parking policy within intensification areas, despite recognizing that there are negative impacts associated with the provisions of parking. Given this report created the scope for future parking requirement studies, adhering to the status quo of still requiring 1.25 spaces per unit in Intensification Areas limits opportunities for change and more importantly deviates from Provincial, Regional and Municipal planning policy including Ontario's Climate Action Plan.
- A final critique on the CWPSR methodology is that it failed to study auto ownership trends to determine how parking demand has changed over time and will continue to change. As the literature review suggested, auto ownership is decreasing within the general population, and the decrease is even more pronounced with younger generations. By basing parking requirements on existing auto-ownership rates this exercise fails to create the space for reduced parking requirements that reflect changing mobility trends and policy goals. The proposed minimum parking requirements are based on providing at least enough parking to meet existing auto-ownership rates; they do not reflect changing mobility trends or policies that encourage a shift away from automobile-based travel.

6.2 Residential Parking Supply

6.2.1 Institute of Transportation Engineers (ITE)

The ITE Parking Generation 5th Edition is regarded as a reliable source for parking generation. The requirements specified by ITE's Parking Generation for Multi-Family High-Rise dwellings within a City Centre Core area indicates the parking demand for the Site is reflective of a parking rate of 0.55 spaces per unit (resident and visitor supply).

Additionally, ITE further provides parking rates for Dense Multi-Use Urban areas as well as General Urban/Suburban areas. The parking rates for these two areas is noted to be 0.55 spaces per unit (Dense Multi-Use Urban) and 0.97 space per unit (General Urban/Suburban). Even under these two other area classifications, a reduced residential parking supply is supportable.

6.2.2 Vehicle Ownership Rates

A review of vehicle ownership data from the Transportation Tomorrow Survey (TTS) found that 14% of residents living in apartment units in and around zones with the study area do not own a vehicle. From the study, it is also calculated that the vehicle ownership rate for the surrounding area is approximately 1.09 vehicles/dwelling unit. **Table 6.2** summarizes the TTS data. **Appendix J** includes the TTS data.

TABLE 6.3: VEHICLE OWNERSHIP – DOWNTOWN BURLINGTON*

Year	Vehicles Per Household					Households	Vehicles	Ownership
	0	1	2	3	4			
	921	4,416	1,272	71	35			
2016	14%	69%	16%	1%	0%	6714	7313	1.09

**TTS Zones 4060, 4059, 4057, 4061*

6.2.3 Parking Utilization Surveys

Paradigm has on file parking surveys conducted at two sites within Burlington Downtown completed prior to the COVID-19 pandemic. The surveys were conducted at two different residential sites in the City of Burlington over four (4) different days. Surveys were conducted from 16:00 to 22:00 on weekdays (Tuesday-Thursday) between November 2016 by Paradigm Staff. The surveyed sites included:

- Site 1 – 551 Maple Avenue, Strata Condominium. A 19-storey building with 186 units located in the Downtown Intensification Area.

- Site 2 – 360 Pearl Street, 360 on Pearl Condominiums. A 17-storey building with 75 units located in the Downtown Intensification Area.

Parking demands at the two locations were observed at 0.86 to 0.90 spaces per unit (resident and visitor supply). These observed parking rates are consistent with the ITE data and support a reduced parking supply.

In 2021, the City of Burlington undertook further parking surveys in advance of the Major Transit Station Area (MTSA) Area Specific Planning which is anticipated to be completed in 2022. The city collected parking survey data within the Downtown from April 2021 to May 2021 in order to re-evaluate the appropriateness of parking rates.

City staff surveyed the following five residential buildings that share the characteristics of the Site and is based on a larger sample size than what occurred during the 2016 surveys:

- 442 Maple Avenue – 135 residential units
- 505 Locust Street – 117 residential units
- 360 Pearl Street – 75 residential units
- 2121 Lakeshore Road – 39 residential units
- 1477 Lakeshore Road – 60 residential units

Parking demands at the five locations were observed at 1.07 spaces per unit inclusive of residential and visitor supply. These observed parking rates are slightly higher than the ITE data, however, still supports a reduced parking supply.

Appendix K contains the parking study data.

6.3 Policy Framework

6.3.1 Sustainability

Traditionally, transportation networks focused on increasing the capacity of the road network to accommodate more vehicles. However, as outlined in the Region of Halton's Transportation Master Plan[19] (TMP), the transportation system needs to look at a “balanced needs” approach that encourages alternative modes of transportation.

The City of Burlington’s OP identifies, an integrated and multi-modal transportation system will be achieved by prioritizing decision-making to shift more trips away from the private car and to more sustainable transportation options, such as walking, biking, transit and car sharing.

The intent is to reprioritize mobility in a way that balances the transportation system. A more sustainable city requires an integrated transportation system that supports a compact urban form. Bringing jobs, housing services and amenities closer together encourages non automobile modes of travel, providing more choice to Burlington residents.

As the development is unable to accommodate parking on-site, the development places significant emphasis on sustainable modes of transportation that are complimented by the areas convenient transit and active transportation network.

6.3.2 Burlington Climate Emergency

In order to achieve a sustainable community, and human and ecosystem health, climate change and air pollution must be addressed. Climate change and air pollution impacts are caused primarily by burning fossil fuels, resulting in the emission of greenhouse gases and air pollutants. These impacts can be reduced through sustainable and efficient land use and transportation policies that reduce air and greenhouse gas emissions.

Burlington’s Council unanimously passed a motion to declare a climate emergency in 2019 and directed staff to complete a Climate Action Plan. Council has identified Burlington as “feeling the effects of climate change over the past several years” and climate change is ranked as the third highest risk on the City’s Enterprise Risk Register, which measures overall risk to the city.

[19] The Road to Change, Halton Region Transportation Master Plan 2031, Dillion + GHD, 2011

The city' Climate Action Plan includes seven key program areas to help the community transition away from the use of fossil fuels, particularly for buildings and transportation:

- Low Carbon New Building Guideline
- Deep Energy Retrofit Program
- Renewable Energy Cooperative
- Integrated Mobility Plan
- Electric Mobility & Equipment Program
- Waste Reduction Initiative
- Industrial Innovation Program

Of importance is goals of the Climate Action Plan. Specifically, the city will work toward being a net carbon neutral community by year 2050, with an interim target of reducing emissions to 50% below 2016 levels by 2030. However, to meet the 2050 goal, the city will need to offset carbon dioxide emissions through purchasing carbon offsets, or through further actions at reducing emissions.

To achieve the reductions needed to meet the city's emissions target, significant change is required as soon as possible. If Burlington's current emissions patterns do not decrease, the carbon budget will run out in 8.5 years, the same amount of time as remaining in the global budget[20]. As the climate emergency declaration is a Council priority, the importance of supporting a low carbon re-development project that places a focus on integrated mobility is apparent.

6.3.3 Parking and Emissions

Whilst single occupant vehicle trips are commonly targeted in transport policies, they are in reality only a consequence of the spatial layout and densities of the accompanying land uses. Therefore, there is merit in targeting the underlying cause of these carbon emissions rather than solely focussing on polices to reduce private vehicle use.

In this respect, car parking is the "glue" between these facets of the land use and transport environment. In addition, car parking is a critical factor which can be targeted relatively easily by planners and their municipality plans. Parking management has an important role to play as an instrument to reduce carbon emissions[21].

[20] Climate Action Plan, City of Burlington, April 2020
[21] Parking as a tool to reduce carbon emissions, McCormick Rankin Cagney Pty Ltd, 2009

The transportation sector is currently responsible for 23% of Canada's GHG emissions[22] and offers tremendous opportunities for significant emissions reduction. To reduce emissions, municipalities need to drive a transition towards zero and low-emissions transportation modes, increase the use of cleaner fuels, increase public transit ridership, and encourage denser, mixed-use communities. Municipalities in Canada are lagging behind other countries in supporting zero emission vehicles and other sustainable transportation policies. To significantly reduce greenhouse gas emissions related to the transportation sector, a significant encouragement is needed to shift travel modes from single occupant vehicles towards public transit, auto-share and active transportation.

With this development focused on sustainable transportation mode choices for the residential component, the development is expected to reduce its contribution to greenhouse gas emission by a total 4.86 $KtCO_2e$ by 2050[23]. To provide this in context, the City's goal is to offset 126 $KtCO_2e$ within this time frame and the proposal can be seen as a low-carbon development proposal, supporting the climate action plan.

6.3.4 Societal Changes

A sudden, dramatic shift in travel patterns occurred early in 2020 as society adjusted to the emergence of COVID-19, its declaration as a pandemic and subsequent public health measures to stop its spread.

As a result, recent societal changes have made it easier to live without owning a car. Vehicles-for-hire and bicycles have both increased in popularity. Online shopping has reduced the need for a vehicle to bring large purchases home and in some areas have made it convenient for everyday errands to be delivered (i.e., groceries, household items). The future arrival of automated vehicles may further support a reduction in personal automobile ownership and use and these societal changes will result in a decreased need for vehicle parking with a shift to curbside management.

As businesses have adapted and residents have embraced the convenience of the delivery of everyday items, it is expected these changes will remain for the foreseeable future, providing further incentive to residents in not requiring a vehicle.

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[22] Reducing GHG Emissions in Canada's Transportation Sector, Clean Energy Canada, June 2016.

[23] In meeting the by-law, the development would provide parking for an additional 104 vehicles. Assume each vehicle is a compact passenger vehicle with an average of 16,000 kilometres driven each year creating 2.6 metric tonnes of CO_2 each year.

Results from the 2016 TTS show that approximately 4% of households in Burlington do not own a vehicle. When looking at the downtown area (South of QEW and West of Guelph Line) where there is a greater proportion of apartments and high-density developments, this number increases to 9%. It its likely that these proportions have increased since 2016 and will continue to increase as a result of societal changes.

Given the expected changes in automobile ownership brought about b the changes in mobility-related technologies, it is likely that if change is parking policy framework is not revised, new residential developments will be left with an oversupply of parking, which if provided below grade will result in redundant space that will not be repurposed in the future.

6.3.5 Electric Vehicles

There are two general approaches to reducing transportation emissions: cleaner vehicles strategies that reduce travel emission rates, and vehicle travel reduction strategies that reduce total distance travelled.

Electric vehicles are much more efficient than internal combustion engine (ICE) powered vehicles, and so the adoption of electric vehicles is a major contributor to the greater efficiency and lower conversion losses in low-carbon developments. Electric vehicles however typically cost more than a typical combustion-powered vehicle. Even with tax credits and limited maintenance required, the capital cost to afford an electric vehicle is high and primarily benefits affluent households that purchase new vehicles rather than cater to a portion of the population seeking affordable housing[24]. Additionally, if each ICE powered vehicle is transitioned over to an electric vehicle, single occupant use would still be present which creates automobile-dependent transportation systems and sprawled development patterns.

Table 6.4 outlines a basic framework for comparing the various strategies.

[24] Win-Win Transportation Emission Reduction Strategies, Victoria Transport Policy Institute, April 2021.

TABLE 6.4: COMPARING EMISSION REDUCTION STRATEGIES

Community Goal	Electric Vehicle	Reduced Travel
Congestion reduction	Worse	Better
Roadway cost savings	Worse	Better
Consumer savings and affordability	Mixed	Better
Traffic safety	Worse	Better
Mobility options for non-drivers	Worse	Better
Energy conservation	Better	Better
Pollution reduction	Better	Better
Physical fitness and health	Worse	Better
More compact development	Worse	Better

Although both electric vehicles and reduced travel reduce greenhouse gas emissions, electric vehicles tend to increase total vehicle travel and encourage sprawl development, which reduces their net benefits and increases their external costs.

However, through the lens of an economic, social, and environmental goals, reduced travel is consistent with the Region's TMP and the City's OP that calls for a "balanced" transportation system.

6.3.6 Affordable Housing

Access to safe, affordable, and adequate housing touches almost every aspect of a community's well being and affects all of its members. Communities with a range of housing choices that meet the full range of their housing needs - including the needs of low- and moderate-income citizens - are generally more liveable, more economically competitive and resilient and is one of the objectives of the City's strategic plan[25].

The cost of providing parking, particularly in areas of higher land costs and/or where underground parking is needed, can add significantly to development costs. The City of Burlington can reduce capital and maintenance costs for itself and developers, while facilitating pedestrian-friendly and transit-supportive areas, through agreements that reduce requirements or exempt owners or occupants of a building from providing and maintaining parking facilities, particularly where public transit is available. This helps to facilitate pedestrian-friendly and transit-supportive areas[26].

[25] 2018-2022 Burlington's Plan From Vision to Focus, 2019
[26] Ministry of Municipal Affairs and Housing, Municipal Tools for Affordable Housing, 2011

Parking minimums increase the cost of housing, by adding to construction costs which may in turn be passed on to residents. The ability however for residents to avoid the cost of parking by choosing housing without parking is limited by the existence of minimum parking requirements that represent a barrier in accommodating affordable housing.

6.4 Mixed-Used Parking Supply

The current requirements for hotels, office and commercial land uses within the Downtown Exemption Zone does not require any on-site parking to be provided. By providing limited parking on-site for these uses, the development provides a significant incentive for these users to change and shape the travel choices to be in line with sustainable modes.

However, as the development recognizes not all users are able to commit to sustainable mode choices, the development is proposing to supply 41 on-site parking spaces that will be shared between the hotel, office, visitors and commercial uses.

6.4.1 Shared Parking Arrangement

Shared parking opportunities is common within mixed-use facilities. The concept of shared and/or managed parking reflects the variations in usage levels of different land uses by time of day, day of week and seasonal factors to derive efficiencies in overall parking supply requirements through a permissive sharing of a common pool of parking that support the range of planned uses at different times.

Each land use does not need its own dedicated supply of parking, yet that is exactly what standard analysis and zoning indicate is needed. In reality, throughout the day, different uses have different peak demand: for example, an office may have a high demand until 5PM, and a restaurant open for dinner may have a high demand only after 5PM. Based on the uses proposed, the following is noted with the peak demand during a typical weekday:

- Residential visitor peak demand occurs between 7PM – 11PM
- Hotel peak demand occurs between 10PM – 9AM;
- Office peak demand occurs between 9AM – 5PM; and
- Commercial peak demand occurs between 12PM – 7PM

The office and commercial land uses have a peak parking demand overlap for 5 hours during a typical day while the hotel and residential visitor uses have a peak parking demand overlap of 1 hour. All other

times of the day, there is no peak parking demand overlap during peak hours that will occur. This is particularly important for the residential visitor parking supply which tend to rise in the early evening when retail and office demand falls and reduce in the late evening when hotel uses surge in demand.

Overall, although the zoning requirements do not require parking to be provided for the hotel, office and commercial uses, the Applicant intends to allocate a portion of parking on-site for these uses that will benefit through a shared parking arrangement.

6.5 Summary

Minimum parking requirements have long been a staple of planning regulations based on some formulation. These regulations unfortunately have been driven by auto-centric engineering models. Over the past seven decades, the built form in Burlington has evolved significantly. Recent changes in transportation technology and services, characterized by ride-hailing and automobile sharing, and the emerging technologies dominated by autonomous vehicles (AVs) suggest that automobile ownership is likely to experience declines in the future.

The City's of Burlington's strategic vision is about creating an attractive and safe City that evokes pride, passion, and a sense of belonging - a city where people of all ages and abilities can enjoy a good quality of life. The Official Plan (OP) emphasizes the importance of basic rights, including embracing sustainability and creating a vision for compact complete communities served by streets made for walking, cycling and by an attractive transit system. This vision is supported by policies aimed at reducing auto-dependence and limiting the amount of land occupied by automobile parking. The transportation policies are deliberately interspersed with the land use policies to emphasize the importance of considering both areas in order to achieve the overall vision of compact complete communities.

The intent is to reprioritize mobility in a way that balances the transportation system. A more sustainable city requires an integrated transportation system that supports a compact urban form. Bringing jobs, housing services and amenities closer together encourages non automobile modes of travel, providing more choice to Burlington residents.

Burlington's Council has further identified Burlington as "feeling the effects of climate change over the past several years" and climate change is ranked as the third highest risk on the City's Enterprise Risk Register. Specifically, the city's Climate Action Plan stipulates



Burlington will work toward being a net carbon neutral community by year 2050.To achieve the reductions needed, significant change is required as soon as possible.

If the City wishes to encourage active transportation and transit friendly neighbourhoods as outlined in the OP and strategic vision; the City needs to recognize that minimum parking requirements are presenting a significant barrier to these goals. Parking should not be viewed as only an amenity required to support our cities and our ability to drive; instead, it must be viewed as a significant economic investment that carries with it outcomes that shape our cities and regions. It needs to be recognized that parking carries significant costs, heavily subsidizes the choice to drive, and hampers the ability to promote sustainable developments.

The site will be in existence well beyond 2050 when it is anticipated that autonomous vehicles will be playing a more significant role in our mode choice. It is expected that auto ownership will be significantly reduced when we are able to request a vehicle on demand for our travel needs. Recent societal changes have made it easier to live without owning a car. Vehicles-for-hire and bicycles have both increased in popularity. Online shopping has reduced the need for a vehicle to bring large purchases home and in some areas have made it convenient for everyday errands to be delivered (i.e., groceries, household items). The future arrival of automated vehicles will further reduce personal automobile ownership and these societal changes will result in a decreased need for vehicle parking. Lastly, as documented in the City-Wide Parking Standards Review[27]:

"It is also important to clarify the role of residential parking requirements. In general, there is little risk in reducing minimum residential parking requirements as availability of parking is a key decision in an individual's residential choice. Developers are well attuned to their potential customers' parking needs and will not reduce parking provision so much as to compromise the marketability of their development."

Based on empirical survey data that has been collected by both Paradigm and the City staff at multi-family residential buildings in Downtown Burlington as well as a review of industry parking data and policy framework of the Growth Plan, the Provincial Policy Statement and Burlington's OP, a reduced parking supply for the proposed development is supportable.

[27] Burlington City-Wide Parking Standards Review, IBI Group, July 21, 2017

The current requirements for hotels, office and commercial land uses within the Downtown Exemption Zone does not require any on-site parking to be provided. By providing limited parking on-site for these uses, the development provides a significant incentive for these users to change and shape the travel choices to be in line with sustainable modes. However, as the development recognizes not all users are able to commit to sustainable mode choices, the development is proposing to supply 41 on-site parking spaces that will be shared between the hotel, office, visitors and commercial uses.

Overall, a parking supply rate of 1.074 spaces per residential dwelling unit, which is inclusive of parking to be shared between the mixed-use non-residential uses and visitor parking is appropriate and supportable for the proposed development.

7 Transportation Demand Management (TMD)

The goal of a Transportation Demand Management (TDM) plan is to reduce the development's overall traffic and parking impacts through the implementation of strategies that are aimed at affecting the demand side of the transportation equation, rather than the supply side. By there very nature, TDM programs attempt to change people's behavior, and to be successful, they must rely on incentives or disincentives to makeshifts in behavior attractive to the commuter.

TDM strategies include financial incentives, time incentives, the provision of new or enhanced commuter services, dissemination of information, and marketing alternative services. TDM strategies include all the incentives and disincentives that increase the likelihood for people to change their existing travel behavior.

The TDM plan has been formulated to extent reasonable and practical strategies that encourage residents and visitors to take alternative modes of transportation. The strategies identified are expected to improve transportation access and connectivity within the development, as well as to the reset of the study area. For each strategy, an explanation of the is provided, as well as a description of what the applicant is proposing to provide.

7.1 Through Design

Supporting land-use/infrastructure that encourage people to choose travel modes other than driving alone are a number of factors that influence peoples' travel mode choices. These strategies are already accounted for through the developments overall design and include the following.

7.1.1 Housing Density

Designing the plan with increased densities reduces Greenhouse Gas (GHG) emissions associated with traffic in several ways. Density is usually measured in terms of persons, jobs, or dwellings per unit area. Increased densities generally shorten the distance people travel and provide greater options for the mode of travel they choose. This strategy also provides a foundation for implementation of many other strategies which would benefit from increased densities.

7.1.2 Land Use-Density Mix

Having different types of land uses in close proximity can decrease vehicle mode share since trips between land use types are shorter and may be accommodated by non-automotive transportation. The mix of high-density housing and commercial uses provides land use diversity that should reduce the number of automobile trips that residents or employees make.

7.1.3 Pedestrian Facilities

Accessibility to and from a development is essential in helping to ensure that those that can walk, do. Proper pedestrian connections from the surrounding community to the development should be constructed to ensure safety and to enhance the overall pedestrian experience.

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 majority of the site is provided with direct public access for pedestrians via multiple street level entrances from Lakeshore Road, Elizabeth Street, and the Waterfront Trail. This is intended to provide a comprehensive network of pedestrian connections to allow for an enhanced pedestrian experience for all users of the site.

By taking advantage of the future public sidewalk network to attract and serve pedestrians, combined with multiple pedestrian connections within the site, the development offers walkability as one of the key design features.

7.1.4 Bicycle Facilities

Increasing bicycling to, from and within Burlington is a key strategy to reducing vehicle trips. The number of people bicycling is directly related to the quality of the bicycling network and presence of bicycling facilities. As outlined in **Section 2.3.2**, bicycle facilities are provided along Lakeshore Road and within the study area.

7.1.5 Transit

The use of transit places less reliance on the use of personal automobiles for trips that can be completed by convenient and desirable transit options. The provision of convenient and desirable transit can be made by providing well-lit transit stops with seating, and weather protective shelters. Additional amenities including bicycle parking, schedule information, real time bus status, and maps can increase the convenience of the transit network.

The subject site is currently served by seven (7) BT Routes that operate primarily on Lakeshore Road connecting between Burlington GO Station, Aldershot GO Station and the Appleby GO Station. Headways are on the order of 30 minutes during most service hours, with shorter headways provided during peak hour services.

The closest bus stop is located less than 50 metres (1-minute walk) away at the intersection of Lakeshore Road and Brant Street. In addition, the development is approximately a 250-metre walk (4-minute walk) to the Downtown Burlington bus terminal which provides significant access to additional local routes.

The improvement of these stops, including the installation of bus shelters with seating, would enhance the transit services. Through these modifications, the transit network would be a viable and convenient option for residents, visitors and employees of the development.

At the development level, direct links connecting residents and visitor to nearby bus stops are planned to be provided as part of the overall design scheme making the development area more navigable towards local bus stops.

7.2 Proposed Strategies

The proposed strategies identified herein should be considered by the development to reduce the number of auto-trips made to/from the development:

7.2.1 Transportation Information

The applicant will consider developing marketing/informational materials as part of their initial scope of work. Information on transportation options and/or links to the appropriate website should be conveyed to all prospective residents as a component of a resident welcome packet.

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

7.2.2 Parking Supply

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

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

7.2.3 Unbundled Parking

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

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

8 Conclusions and Recommendations

8.1 Conclusions

This study determines the impacts of the development traffic on the surrounding road network and identify any improvements necessary to accommodate the increase in traffic generated by this development. The subject site is located within the southwest corner of Lakeshore Road and Elizabeth Street at the municipal address of 2020 Lakeshore Road in the City of Burlington.

The proposed development would see the demolition of the existing hotel and restaurant and would result in the construction of a new two-tower high-rise building with maximum tower heights of 35 and 30 storeys. Overall, the development proposes: 557 new residential units comprised of a variety of unit types and sizes; 122 new hotel suites; 46,802 square feet of office space; and 47,846 square feet of retail space. A total of 598 parking spaces will be provided for the overall project.

Additionally, with redevelopment of the lands, the south leg of the intersection of Lakeshore Road and Brant Street will be closed off providing for improved operations at the Lakeshore and Brant Street intersection as well as improve the pedestrian crossing environment on the south side of Lakeshore Road. Build out is anticipated to occur in one phase by 2025 for the purposes of this report.

Vehicular access to the site is proposed via a driveway connection to Elizabeth Street.

Transportation Study

The proposed development is projected to generate approximately 302 new vehicle trips during the weekday AM peak hour and 333 new vehicle trips during the weekday PM peak hour.

The capacity analysis showed that deficiencies currently exist for some sections of Lakeshore Road and projected to occur with anticipated growth in traffic. The following summarizes the analysis:

- **Lakeshore Road at Locust Street:** Individual movements at the unsignalized intersection of Lakeshore Road at Locust Street presently operate at LOS “D” or better with a v/c ratio no greater than 0.15 under the base year conditions. Increased delay is expected for the stop controlled southbound approached that will degrade in operation from LOS “D” to “F” under the 2030 horizon during the weekday AM peak hour

(without the proposed development). It is noted that a v/c ratio for these movements is not projected to exceed 0.45, indicating spare capacity is still projected.

The City of Burlington's Downtown Traffic Overview[28] was commissioned by the City of Burlington to quantify the direct impacts of the new planned development on the traffic operations in the expanded study area and is in support of the Scoped Re-Examination of the Adopted Official Plan for the Downtown Burlington. This study further identified with regard to the operations of Lakeshore Road and Locust Street that the stop-controlled southbound approach of Locust Street has relatively low traffic volumes compared to the adjacent main roadway of Lakeshore Road; therefore, their operations is of lower priority.

As the southbound movement is operating at 45% or less of its available capacity, mitigation measures to improve operations are not expected to be required.

- **Lakeshore Road at Brant Street:** Presently operates with satisfactory conditions during the weekday AM and PM peak hours. With additional growth in background traffic under the 2030 horizon, increased delay is projected for the eastbound approach during weekday AM and PM peak hours which are projected to operate at LOS F with a v/c ratio exceeding 1.00.

  For clarification, delays at this intersection have been previously documented as a foreseeable issue along the Lakeshore Road corridor without the proposed development as contained in the City of Burlington's Downtown Traffic Overview. The traffic review recognized capacity constraints, further remedial measures to improve intersection capacity are not likely to be implemented. Rather, future improvements to the transportation network are expected to largely focus on sustainable forms of transportation as recognized in the Official Plan.

  With redevelopment of the lands, the south leg of the intersection of Lakeshore Road and Brant Street will be closed off providing for an opportunity to further improve signal operations by allocating additional green time to the Lakeshore Road corridor. Additionally, the pedestrian crossing environment along the south side of Lakeshore Road will be improved as pedestrians will be subject to less conflict as a result of the removal of the south leg of Lakeshore Road and Brant Street.

[28] City of Burlington, Downtown Burlington Traffic Overview, CIMA+, October 2019

A sensitivity analysis has been undertaken at the intersection with optimized phasing, splits and an increased cycle length and indicated significant improvements is projected at the intersection with all movements operating at LOS D or better during the weekday AM and PM Peak hours.

- **Lakeshore Road at Elizabeth Street:** Presently operates with acceptable conditions during the weekday AM and PM peak hours. With additional growth in background traffic under the 2030 horizon, the intersection is expected to continue to operate with acceptable conditions. With the addition of the proposed development, increased delay is recognized to occur for the eastbound through movement and westbound left turn movement given access to the site is provided off of Elizabeth Street.

  A sensitivity analysis has been undertaken at the intersection with optimized phasing, splits and an increased cycle length and indicated significant improvements is projected at the intersection with all movements operating at LOS D or better with exception to the eastbound shared through/right turn movement which is projected to operate with delays and extensive queues during the weekday AM and PM Peak hours.

  While expanding Lakeshore Road to add the addition of an eastbound right turn lane or increasing the road platform to a four-lane cross-section would improve operations, widening of any arterial roads for the purposes of accommodating vehicular traffic volumes is not recommended as it is counter-intuitive to the vision of a people-centric, pedestrian friendly environment that expects people to use more sustainable modes to travel.

  Additionally, there are physical constraints that limit the ability to implement geometric improvements, namely the permeable, fine grid street pattern that is made up of short blocks. The traffic operations at the intersection of Lakeshore Road and Elizabeth Street under the future total traffic conditions are noted to be reflective of an urban environment such as the downtown area.

Regardless, the Applicant intends to advance improvements by implementing a number of TDM measures and limiting the provided parking supply to curb the developments dependency towards vehicular traffic with a focus towards sustainable transportation modes to better balance travel demand. These measures work together to mutually reinforce one another and strengthen the developments efforts to reduce its dependence on driving and reduce its impact to the adjacent transportation network.

- **Lakeshore Road at John Street:** Individual movements at the signalized intersection of Lakeshore Road at John Street presently operate at LOS "C" or better with a volume to capacity ratio no greater than 0.41 under the base year conditions. Similar levels of operation are expected under future total conditions with the intersection projected to operate at LOS "D" or better with a v/c ratio no greater than 0.52. Overall, the intersection is not projected to operate with any capacity issues.
- **Lakeshore Road at Pearl Street/Old Lakeshore Road:** Individual movements at the signalized intersection of Lakeshore Road at John Street presently operate at LOS "D" or better with a volume to capacity ratio no greater than 0.70 under the base year conditions. Similar levels of operation are expected under future total conditions with the intersection projected to operate at LOS "D" or better with a v/c ratio no greater than 0.93. Overall, the intersection is approaching capacity, however the level of delay is still manageable.
- **Elizabeth Street at Driveway:** Individual movements at the unsignalized intersection of Elizabeth Street at the proposed Driveway is projected to operate at y operate at LOS "B" or better with a volume to capacity ratio no greater than 0.24 under the future total traffic conditions. The intersection is not projected to operate with any capacity issues.

Consistent with the findings of the Downtown Traffic Overview commissioned by the City of Burlington, the increase in traffic, can be accommodated within the existing road network, much of the congestion that may appear in the network is due to regular background growth and constrained turning movements are typical of urban areas such as the downtown Burlington and road users in such environment generally have an increased tolerance for higher levels of traffic congestion.

Overall, with the combined addition of the transportation and land use changes assumed as part of this study, some vehicle operational impacts, whether delay- or queuing-related, are likely to be a trade-off with the improvements for people walking or biking that this project would entail. The project would also provide improved access to the waterfront by enlarging and expanding the waterfront trail to provide a significant access point with Lakeshore Road. The City of Burlington and stakeholders should consider this broader multimodal context to determine the balance between the identified vehicle impacts and the broader mobility benefits provided by the proposed transportation improvements.

Parking Study

The parking requirement for the development under the City's Zoning By-Law is 697 parking spaces, equating to a parking rate of 1.25 residential parking spaces per unit (resident). The proposed parking supply of 598 spaces (557 residential spaces at a rate of 1.0 spaces/unit and 41 mixed-use spaces) at a rate of 0.07 results in a reduction of 99 spaces.

The study area falls in a zoning designation of "Downtown Parking Exemption Area" which recognizes the high-density, mixed-use development of the area. Parking requirements within this area have been updated to reflect the general oversupply of parking required in the zoning by-laws. While these updates are in the right direction, there is still room for improvement regarding parking rates.

Minimum parking requirements have long been a staple of planning regulations based on some formulation. These regulations unfortunately have been driven by auto-centric engineering models. Over the past seven decades, the built form in Burlington has evolved significantly. Recent changes in transportation technology and services, characterized by ride-hailing and automobile sharing, and the emerging technologies dominated by autonomous vehicles (AVs) suggest that automobile ownership is likely to experience declines in the future.

The City's of Burlington's strategic vision is about creating an attractive and safe City that evokes pride, passion, and a sense of belonging - a city where people of all ages and abilities can enjoy a good quality of life. The Official Plan (OP) emphasizes the importance of basic rights, including embracing sustainability and creating a vision for compact complete communities served by streets made for walking, cycling and by an attractive transit system. This vision is supported by policies aimed at reducing auto-dependence and limiting the amount of land occupied by automobile parking. The transportation policies are deliberately interspersed with the land use policies to emphasize the importance of considering both areas in order to achieve the overall vision of compact complete communities.

The intent is to reprioritize mobility in a way that balances the transportation system. A more sustainable city requires an integrated transportation system that supports a compact urban form. Bringing jobs, housing services and amenities closer together encourages non automobile modes of travel, providing more choice to Burlington residents.

Burlington's Council has further identified Burlington as "feeling the effects of climate change over the past several years" and climate change is ranked as the third highest risk on the City's Enterprise Risk Register. Specifically, the city's Climate Action Plan stipulates Burlington will work toward being a net carbon neutral community by year 2050.To achieve the reductions needed, significant change is required as soon as possible.

If the City wishes to encourage active transportation and transit friendly neighbourhoods as outlined in the OP and strategic vision; the City needs to recognize that minimum parking requirements are presenting a significant barrier to these goals. Parking should not be viewed as only an amenity required to support our cities and our ability to drive; instead, it must be viewed as a significant economic investment that carries with it outcomes that shape our cities and regions. It needs to be recognized that parking carries significant costs, heavily subsidizes the choice to drive, and hampers the ability to promote sustainable developments.

The site will be in existence well beyond 2050 when it is anticipated that autonomous vehicles will be playing a more significant role in our mode choice. It is expected that auto ownership will be significantly reduced when we are able to request a vehicle on demand for our travel needs. Recent societal changes have made it easier to live without owning a car. Vehicles-for-hire and bicycles have both increased in popularity. Online shopping has reduced the need for a vehicle to bring large purchases home and in some areas have made it convenient for everyday errands to be delivered (i.e., groceries, household items). The future arrival of automated vehicles will further reduce personal automobile ownership and these societal changes will result in a decreased need for vehicle parking. Lastly, as documented in the City-Wide Parking Standards Review[29]:

"It is also important to clarify the role of residential parking requirements. In general, there is little risk in reducing minimum residential parking requirements as availability of parking is a key decision in an individual's residential choice. Developers are well attuned to their potential customers' parking needs and will not reduce

[29] Burlington City-Wide Parking Standards Review, IBI Group, July 21, 2017

parking provision so much as to compromise the marketability of their development."

Based on empirical survey data that has been collected by both Paradigm and the City staff at multi-family residential buildings in Downtown Burlington as well as a review of industry parking data and policy framework of the Growth Plan, the Provincial Policy Statement and Burlington's OP, a reduced parking supply for the proposed development is supportable.

The current requirements for hotels, office and commercial land uses within the Downtown Exemption Zone does not require any on-site parking to be provided. By providing limited parking on-site for these uses, the development provides a significant incentive for these users to change and shape the travel choices to be in line with sustainable modes. However, as the development recognizes not all users are able to commit to sustainable mode choices, the development is proposing to supply 41 on-site parking spaces that will be shared between the hotel, office, and commercial uses.

Overall, a parking supply rate of 1.074 spaces per residential dwelling unit, which is inclusive of parking to be shared between the mixed-use non-residential uses and visitor parking is appropriate and supportable for the proposed development.

The development will also be implementing a suite of Transportation Demand Management (TDM) Measures to further reduce the dependency on vehicular travel. These measures include:

- Active uses at grade along street frontages
- Building owner will charge parking as a separate cost to occupants
- Welcome Packets including information regarding alternative mode use in the area

The TDM plan and the developments transportation context will provide residents with a range of mobility choices other than a privately-owned vehicle and support an appropriate parking supply in the building.

8.2 Recommendations

Based on the findings of this study, it is recommended that:

- The Applicant implement TDM measures as discussed within this report to curb it dependency on vehicular traffic and create a balanced needs approach that encourages alternative modes

of transportation rather that focusing solely on vehicle operations.

- The city continue to monitor operations along Lakeshore Road and continue to coordinate the signal progression of the broader corridor to manage the flow of vehicles into the Downtown to help reduce congestion at reduce delay.

Appendix A

Terms of Reference

From: Ozimkovic , Danijel
To: Adam Makarewicz
Subject: RE: 210056: 2020 Lakeshore Road Transportation Study - TOR
Date: 14-Jul-21 3:06:16 PM
Attachments: image001.png

Hi Adam,
Hope you are doing well. Thanks for sharing the terms of reference. Here are my comments:

- Please include the unsignalized intersection of Locust and Lakeshore;
- Reflect the transportation findings that were done through the Downtown Official Plan; and
- We will be asking for the parking rates based on the surveys that are being completed by City staff.

Please let me know if you have any questions or comments.
Thanks,
Dan

From: Adam Makarewicz <amakarewicz@ptsl.com>
Sent: Monday, July 12, 2021 10:19 AM
To: Ozimkovic , Danijel <Danijel.Ozimkovic@burlington.ca>
Subject: 210056: 2020 Lakeshore Road Transportation Study - TOR

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 Dan,

We've been retained to complete a Transportation Impact Assessment (TIA), Parking Study (PS), Transportation Demand Management (TDM) Plan and, an Access and Circulation Review (ACR) for the proposed redevelopment of 2020 Lakeshore Road in Burlington (located within the southwest corner of Lakeshore Road and Elizabeth Street).

The property owner is proposing to redevelop the subject property for a commercial/residential mixed-use, high-rise building. The proposed redevelopment would see the demolition of the existing hotel and restaurant and would result in the construction of a new two-tower high-rise building with maximum tower heights of 35 and 30 storeys. Overall, the development proposes: 557 new residential units comprised of a variety of unit types and sizes; 128 new hotel suites; and 11,926 square metres of total amenity space. Parking would be provided via 4 levels of underground parking providing 628 parking spaces, and vehicular access to the property is proposed off of Elizabeth Street.

Transportation Impact Study

Development Study Area: We will comment on existing transportation facilities within 500 metres of the subject site. Existing key roadways, major intersections, transit services, and pedestrian facilities will be discussed, as appropriate.

Analysis Time Periods and Intersections: Based on the proposed development's land use, size, and proximity, we plan to analyze the following intersections during the weekday AM and PM peak periods:

- Lakeshore Road at Brant Street (signalized);
- Lakeshore Road at John Street (unsignalized);
- Lakeshore Road at Elizabeth Street (signalized);
- Lakeshore Road at Pearl Street (signalized);
- Up to one (1) site driveways

2021 Existing Conditions: Traffic counts at the study area intersections will be obtained through the City of Burlington, if available. If up-to-date (within the past 2 years) turning movement counts are not readily available for these intersections, new turning movement counts will be collected. The 2021 existing traffic operations at the aforementioned intersections will be analyzed using the software program Synchro for the weekday AM and PM peak hours.

2030 Future Background Traffic Conditions: The background traffic volumes will be determined for the study area intersections, five years after opening year (2025). We will identify an applicable background traffic growth rate and other area developments that may introduce traffic into the study area, based on our previous assumptions and discussions with the City. Planned road improvements and other approved developments within close proximity will be taken into consideration. The 2030 background traffic operations will be analyzed for the weekday AM and PM peak hours.

- General Background Growth will be accounted for at 1% per annum
- Confirmation required from City staff regarding other nearby developments

Site Traffic Generation and Trip Distribution: The size and nature of the proposed subject site will be documented based on the received site drawings and statistics, and will be used to estimate the number of automobile and nonautomobile trips likely to be produced during the weekday AM and PM peak hours. The estimation will be based on information from the Institute of Transportation Engineers (ITE) publication, Trip Generation, 10th Edition. The trip distribution for the proposed site will be based on a review of the 2016 Transportation Tomorrow Survey (TTS). The forecast site traffic for the development will be added to the road network based on the trip distribution and assigned to the network based on existing travel patterns, logical travel routes, and available traffic capacity.

2030 Future Total Traffic Conditions: The estimated site traffic volumes will be combined with the future background traffic volumes to determine the 2030 total traffic volumes for the study area intersections. Intersection operations analysis will be undertaken for the weekday AM and PM peak hours. Any necessary road improvements required to accommodate total traffic volumes will be identified if necessary, such as additional turning lanes, storage length modifications, intersection reconfigurations, signal timing adjustments, and signal installation.

Parking Study

City of Burlington Zoning By-law Review: The proposed development's parking requirements as per City of Burlington Zoning By-law will be determined. The by-law parking requirement will be used as a baseline for comparison with the parking demand observed during the parking utilization survey.

Parking Utilization Survey: In order to estimate the proposed development's peak parking demand, parking utilization surveys conducted at two sites previously approved by the City of Burlington will be reviewed: 360 Pearl Street and 551 Maple Avenue. The proxy site surveys were completed in 2016 between 4:00PM and 10:00PM on four separate weekdays. These survey times represent the anticipated peak conditions of the residential component. The parking surveys recorded parking demand every 15 minutes. Updated 2021 spot surveys will be completed at 360 Pearl Street and 551 Maple Avenue to confirm the data is still relevant given a number of years has passed since the data was collected. The spot surveys will be completed between 8PM and 11PM on one typical weekday and one typical Saturday.

Parking Demand Review: Using the observed parking rate obtained from the proxy site survey data, a parking rate will be recommended that is deemed applicable to the subject site. The recommended rate will then be used to estimate the number of parking spaces needed to meet the projected parking demand. The estimated parking supply needed will be compared to the By-law required supply to assess the feasibility of providing less than the By-law supply requirements. In the event that the parking review determines that a parking reduction cannot be justified, the report will speak to this point.

Access Review

Site access: The analysis will be completed using AutoTURN and include assessments of vehicle access and egress, clearance and swept path manoeuvres within the site based on a MSU design vehicle to identify potential conflicts with the site driveway.

Transportation Demand Management

TDM Plan: We will prepare a TDM Plan for the proposed development. The plan will capture:

- Existing TDM opportunities near the development site (e.g. proximity to existing or planned transit or active transportation networks); and
- Proposed TDM measures to be implemented on the site. This list of measures to encourage greater use of more sustainable modes of transportation (transit, walking, cycling) and trip decision making that reduces, combines, or shortens vehicle trips will be developed in consultation with the client (and/or its agents).

The plan will summarize existing and proposed measures, assess their likely effectiveness for the proposed development and determine implementation requirements to facilitate their use.

Regards,

Adam J. Makarewicz
Senior Project Manager

Paradigm Transportation Solutions Limited
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e: amakarewicz@ptsl.com
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Please be advised that summer hours (office closure at 12 PM on Fridays) are in effect July 5th – September 6th

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Appendix B

Existing Traffic Data

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 akung@LEA.ca

Count Name: 19275_BrantSt&LakeshoreRd-AM
Site Code: 19275
Start Date: 12/11/2018

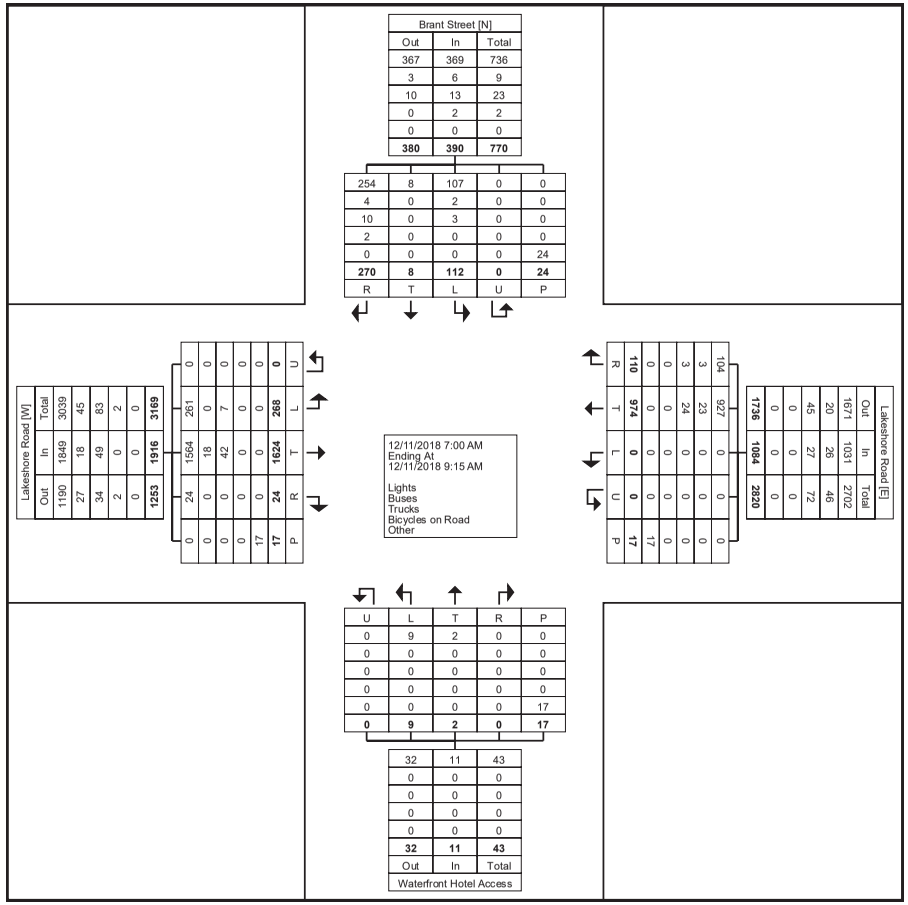
Turning Movement Data

Start Time	Brant Street Southbound						Lakeshore Road Westbound						Waterfront Hotel Access Northbound						Lakeshore Road Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
7:00 AM	21	2	9	0	5	32	7	77	0	0	2	84	0	0	1	0	2	1	3	142	27	0	3	172	289
7:15 AM	24	0	9	0	3	33	8	84	0	0	5	92	0	0	0	0	1	0	4	212	52	0	4	268	393
7:30 AM	34	1	10	0	1	45	7	124	0	0	1	131	0	0	0	0	1	0	1	232	37	0	1	270	446
7:45 AM	38	1	13	0	7	52	6	155	0	0	2	161	0	1	1	0	0	2	4	241	29	0	2	274	489
Hourly Total	117	4	41	0	16	162	28	440	0	0	10	468	0	1	2	0	4	3	12	827	145	0	10	984	1617
8:00 AM	31	2	18	0	3	51	17	120	0	0	2	137	0	0	2	0	4	2	4	230	22	0	0	256	446
8:15 AM	46	1	26	0	1	73	18	143	0	0	2	161	0	0	1	0	2	1	4	213	19	0	1	236	471
8:30 AM	30	0	11	0	0	41	24	137	0	0	1	161	0	0	2	0	2	2	2	192	50	0	2	244	448
8:45 AM	46	1	16	0	3	63	21	132	0	0	2	153	0	1	2	0	4	3	2	161	32	0	4	195	414
Hourly Total	153	4	71	0	7	228	80	532	0	0	7	612	0	1	7	0	12	8	12	796	123	0	7	931	1779
9:00 AM	0	0	0	0	1	0	2	2	0	0	0	4	0	0	0	0	1	0	0	1	0	0	0	1	5
Grand Total	270	8	112	0	24	390	110	974	0	0	17	1084	0	2	9	0	17	11	24	1624	268	0	17	1916	3401
Approach %	69.2	2.1	28.7	0.0	-	-	10.1	89.9	0.0	0.0	-	-	0.0	18.2	81.8	0.0	-	-	1.3	84.8	14.0	0.0	-	-	-
Total %	7.9	0.2	3.3	0.0	-	11.5	3.2	28.6	0.0	0.0	-	31.9	0.0	0.1	0.3	0.0	-	0.3	0.7	47.8	7.9	0.0	-	56.3	-
Lights	254	8	107	0	-	369	104	927	0	0	-	1031	0	2	9	0	-	11	24	1564	261	0	-	1849	3260
% Lights	94.1	100.0	95.5	-	-	94.6	94.5	95.2	-	-	-	95.1	-	100.0	100.0	-	-	100.0	100.0	96.3	97.4	-	-	96.5	95.9
Buses	4	0	2	0	-	6	3	23	0	0	-	26	0	0	0	0	-	0	0	18	0	0	-	18	50
% Buses	1.5	0.0	1.8	-	-	1.5	2.7	2.4	-	-	-	2.4	-	0.0	0.0	-	-	0.0	0.0	1.1	0.0	-	-	0.9	1.5
Trucks	10	0	3	0	-	13	3	24	0	0	-	27	0	0	0	0	-	0	0	42	7	0	-	49	89
% Trucks	3.7	0.0	2.7	-	-	3.3	2.7	2.5	-	-	-	2.5	-	0.0	0.0	-	-	0.0	0.0	2.6	2.6	-	-	2.6	2.6
Bicycles on Road	2	0	0	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	2
% Bicycles on Road	0.7	0.0	0.0	-	-	0.5	0.0	0.0	-	-	-	0.0	-	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	5.9	-	-
Pedestrians	-	-	-	-	24	-	-	-	-	-	17	-	-	-	-	-	17	-	-	-	-	-	16	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	94.1	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 akung@LEA.ca

Count Name: 19275_BrantSt&LakeshoreRd-AM
Site Code: 19275
Start Date: 12/11/2018



Turning Movement Data Plot

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 akung@LEA.ca

Count Name: 19275_BrantSt&LakeshoreRd-AM
Site Code: 19275
Start Date: 12/11/2018

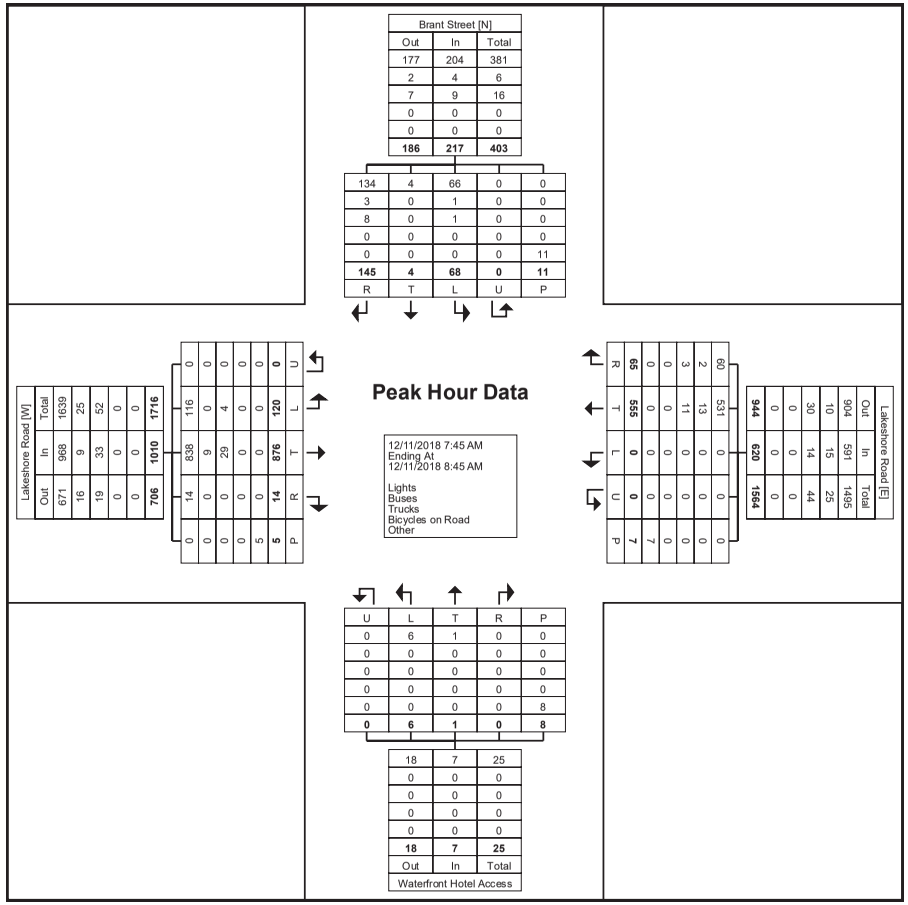
Turning Movement Peak Hour Data (7:45 AM)

Start Time	Brant Street Southbound						Lakeshore Road Westbound						Waterfront Hotel Access Northbound						Lakeshore Road Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
7:45 AM	38	1	13	0	7	52	6	155	0	0	2	161	0	1	1	0	0	2	4	241	29	0	2	274	489
8:00 AM	31	2	18	0	3	51	17	120	0	0	2	137	0	0	2	0	4	2	4	230	22	0	0	256	446
8:15 AM	46	1	26	0	1	73	18	143	0	0	2	161	0	0	1	0	2	1	4	213	19	0	1	236	471
8:30 AM	30	0	11	0	0	41	24	137	0	0	1	161	0	0	2	0	2	2	2	192	50	0	2	244	448
Total	145	4	68	0	11	217	65	555	0	0	7	620	0	1	6	0	8	7	14	876	120	0	5	1010	1854
Approach %	66.8	1.8	31.3	0.0	-	-	10.5	89.5	0.0	0.0	-	-	0.0	14.3	85.7	0.0	-	-	1.4	86.7	11.9	0.0	-	-	-
Total %	7.8	0.2	3.7	0.0	-	11.7	3.5	29.9	0.0	0.0	-	33.4	0.0	0.1	0.3	0.0	-	0.4	0.8	47.2	6.5	0.0	-	54.5	-
PHF	0.788	0.500	0.654	0.000	-	0.743	0.677	0.895	0.000	0.000	-	0.963	0.000	0.250	0.750	0.000	-	0.875	0.875	0.909	0.600	0.000	-	0.922	0.948
Lights	134	4	66	0	-	204	60	531	0	0	-	591	0	1	6	0	-	7	14	838	116	0	-	968	1770
% Lights	92.4	100.0	97.1	-	-	94.0	92.3	95.7	-	-	-	95.3	-	100.0	100.0	-	-	100.0	100.0	95.7	96.7	-	-	95.8	95.5
Buses	3	0	1	0	-	4	2	13	0	0	-	15	0	0	0	0	-	0	0	9	0	0	-	9	28
% Buses	2.1	0.0	1.5	-	-	1.8	3.1	2.3	-	-	-	2.4	-	0.0	0.0	-	-	0.0	0.0	1.0	0.0	-	-	0.9	1.5
Trucks	8	0	1	0	-	9	3	11	0	0	-	14	0	0	0	0	-	0	0	29	4	0	-	33	56
% Trucks	5.5	0.0	1.5	-	-	4.1	4.6	2.0	-	-	-	2.3	-	0.0	0.0	-	-	0.0	0.0	3.3	3.3	-	-	3.3	3.0
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	-	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	11	-	-	-	-	-	7	-	-	-	-	-	8	-	-	-	-	-	5	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 akung@LEA.ca

Count Name: 19275_BrantSt&LakeshoreRd-AM
Site Code: 19275
Start Date: 12/11/2018



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

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 akung@LEA.ca

Count Name: 19275_BrantSt&LakeshoreRd-PM
Site Code: 19275
Start Date: 12/11/2018

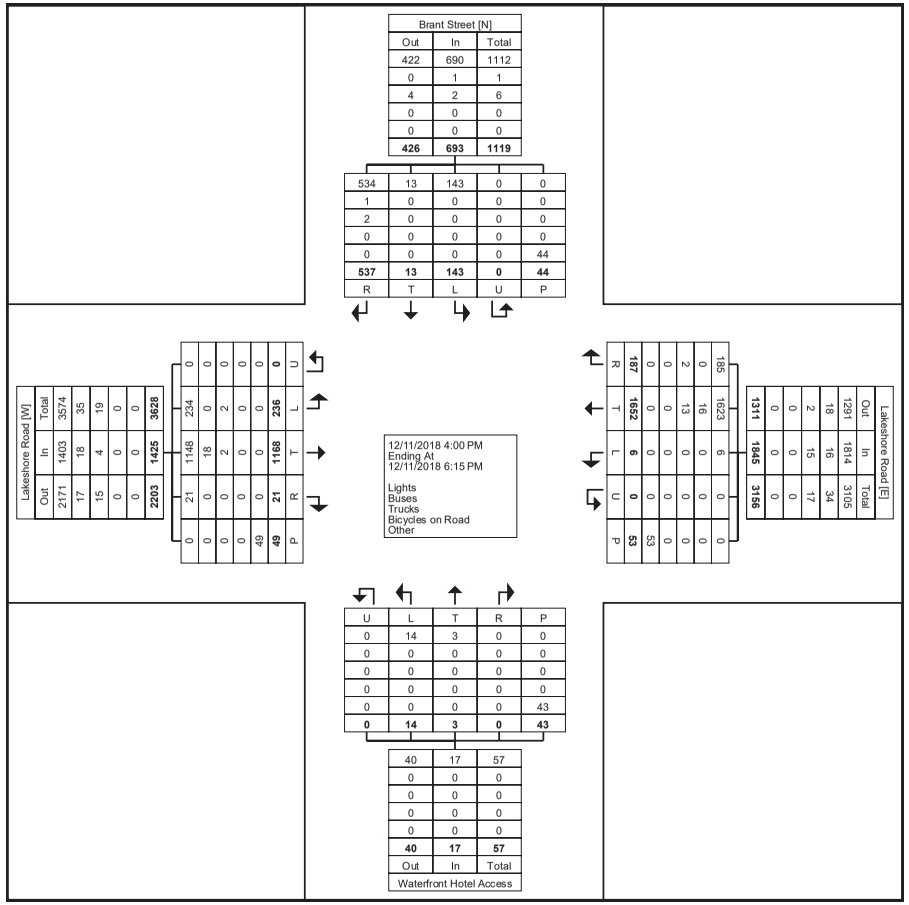
Turning Movement Data

Start Time	Brant Street Southbound						Lakeshore Road Westbound						Waterfront Hotel Access Northbound						Lakeshore Road Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
4:00 PM	56	0	20	0	6	76	19	195	2	0	7	216	0	1	3	0	7	4	0	130	30	0	6	160	456
4:15 PM	63	1	16	0	2	80	23	228	0	0	7	251	0	1	1	0	1	2	4	162	31	0	2	197	530
4:30 PM	68	1	17	0	8	86	24	190	1	0	5	215	0	1	4	0	1	5	2	133	30	0	6	165	471
4:45 PM	61	1	16	0	5	78	22	228	0	0	4	250	0	0	0	0	1	0	4	160	21	0	4	185	513
Hourly Total	248	3	69	0	21	320	88	841	3	0	23	932	0	3	8	0	10	11	10	585	112	0	18	707	1970
5:00 PM	72	1	21	0	2	94	21	172	0	0	8	193	0	0	3	0	7	3	3	124	31	0	6	158	448
5:15 PM	64	1	13	0	8	78	34	218	0	0	6	252	0	0	1	0	4	1	2	172	31	0	2	205	536
5:30 PM	75	2	17	0	8	94	24	218	0	0	5	242	0	0	2	0	11	2	3	133	28	0	10	164	502
5:45 PM	77	6	23	0	5	106	20	203	3	0	11	226	0	0	0	0	11	0	3	154	34	0	13	191	523
Hourly Total	288	10	74	0	23	372	99	811	3	0	30	913	0	0	6	0	33	6	11	583	124	0	31	718	2009
6:00 PM	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	537	13	143	0	44	693	187	1652	6	0	53	1845	0	3	14	0	43	17	21	1168	236	0	49	1425	3980
Approach %	77.5	1.9	20.6	0.0	-	-	10.1	89.5	0.3	0.0	-	-	0.0	17.6	82.4	0.0	-	-	1.5	82.0	16.6	0.0	-	-	-
Total %	13.5	0.3	3.6	0.0	-	17.4	4.7	41.5	0.2	0.0	-	46.4	0.0	0.1	0.4	0.0	-	0.4	0.5	29.3	5.9	0.0	-	35.8	-
Lights	534	13	143	0	-	690	185	1623	6	0	-	1814	0	3	14	0	-	17	21	1148	234	0	-	1403	3924
% Lights	99.4	100.0	100.0	-	-	99.6	98.9	98.2	100.0	-	-	98.3	-	100.0	100.0	-	-	100.0	100.0	98.3	99.2	-	-	98.5	98.6
Buses	1	0	0	0	-	1	0	16	0	0	-	16	0	0	0	0	-	0	0	18	0	0	-	18	35
% Buses	0.2	0.0	0.0	-	-	0.1	0.0	1.0	0.0	-	-	0.9	-	0.0	0.0	-	-	0.0	0.0	1.5	0.0	-	-	1.3	0.9
Trucks	2	0	0	0	-	2	2	13	0	0	-	15	0	0	0	0	-	0	0	2	2	0	-	4	21
% Trucks	0.4	0.0	0.0	-	-	0.3	1.1	0.8	0.0	-	-	0.8	-	0.0	0.0	-	-	0.0	0.0	0.2	0.8	-	-	0.3	0.5
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	-	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	2	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	1.9	-	-	-	-	-	4.7	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	44	-	-	-	-	-	52	-	-	-	-	-	41	-	-	-	-	-	49	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	98.1	-	-	-	-	-	95.3	-	-	-	-	-	100.0	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 akung@LEA.ca

Count Name: 19275_BrantSt&LakeshoreRd-PM
Site Code: 19275
Start Date: 12/11/2018



Turning Movement Data Plot

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 akung@LEA.ca

Count Name: 19275_BrantSt&LakeshoreRd-PM
Site Code: 19275
Start Date: 12/11/2018

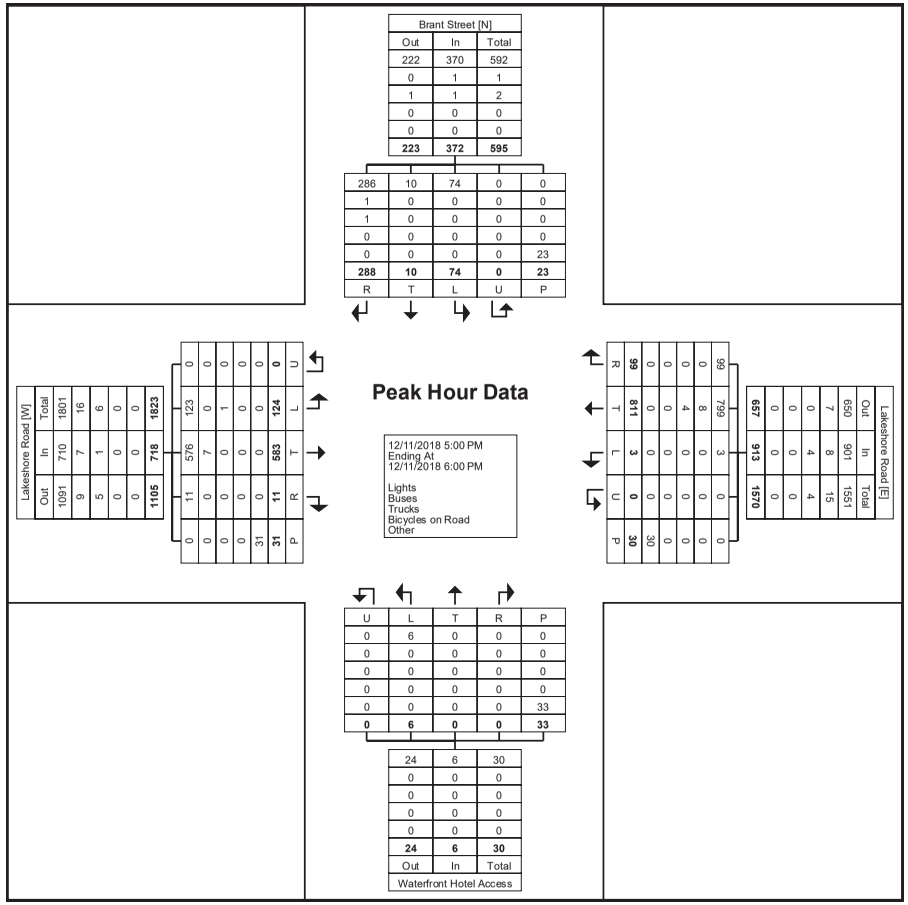
Turning Movement Peak Hour Data (5:00 PM)

Start Time	Brant Street Southbound						Lakeshore Road Westbound						Waterfront Hotel Access Northbound						Lakeshore Road Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
5:00 PM	72	1	21	0	2	94	21	172	0	0	8	193	0	0	3	0	7	3	3	124	31	0	6	158	448
5:15 PM	64	1	13	0	8	78	34	218	0	0	6	252	0	0	1	0	4	1	2	172	31	0	2	205	536
5:30 PM	75	2	17	0	8	94	24	218	0	0	5	242	0	0	2	0	11	2	3	133	28	0	10	164	502
5:45 PM	77	6	23	0	5	106	20	203	3	0	11	226	0	0	0	0	11	0	3	154	34	0	13	191	523
Total	288	10	74	0	23	372	99	811	3	0	30	913	0	0	6	0	33	6	11	583	124	0	31	718	2009
Approach %	77.4	2.7	19.9	0.0	-	-	10.8	88.8	0.3	0.0	-	-	0.0	0.0	100.0	0.0	-	-	1.5	81.2	17.3	0.0	-	-	-
Total %	14.3	0.5	3.7	0.0	-	18.5	4.9	40.4	0.1	0.0	-	45.4	0.0	0.0	0.3	0.0	-	0.3	0.5	29.0	6.2	0.0	-	35.7	-
PHF	0.935	0.417	0.804	0.000	-	0.877	0.728	0.930	0.250	0.000	-	0.906	0.000	0.000	0.500	0.000	-	0.500	0.917	0.847	0.912	0.000	-	0.876	0.937
Lights	286	10	74	0	-	370	99	799	3	0	-	901	0	0	6	0	-	6	11	576	123	0	-	710	1987
% Lights	99.3	100.0	100.0	-	-	99.5	100.0	98.5	100.0	-	-	98.7	-	-	100.0	-	-	100.0	100.0	98.8	99.2	-	-	98.9	98.9
Buses	1	0	0	0	-	1	0	8	0	0	-	8	0	0	0	0	-	0	0	7	0	0	-	7	16
% Buses	0.3	0.0	0.0	-	-	0.3	0.0	1.0	0.0	-	-	0.9	-	-	0.0	-	-	0.0	0.0	1.2	0.0	-	-	1.0	0.8
Trucks	1	0	0	0	-	1	0	4	0	0	-	4	0	0	0	0	-	0	0	0	1	0	-	1	6
% Trucks	0.3	0.0	0.0	-	-	0.3	0.0	0.5	0.0	-	-	0.4	-	-	0.0	-	-	0.0	0.0	0.0	0.8	-	-	0.1	0.3
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	-	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	23	-	-	-	-	-	30	-	-	-	-	-	33	-	-	-	-	-	31	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 akung@LEA.ca

Count Name: 19275_BrantSt&LakeshoreRd-PM
Site Code: 19275
Start Date: 12/11/2018



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

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 akung@LEA.ca

Count Name: 19275_ElizabethSt&LakeshoreRd-AM
Site Code: 19275
Start Date: 12/11/2018

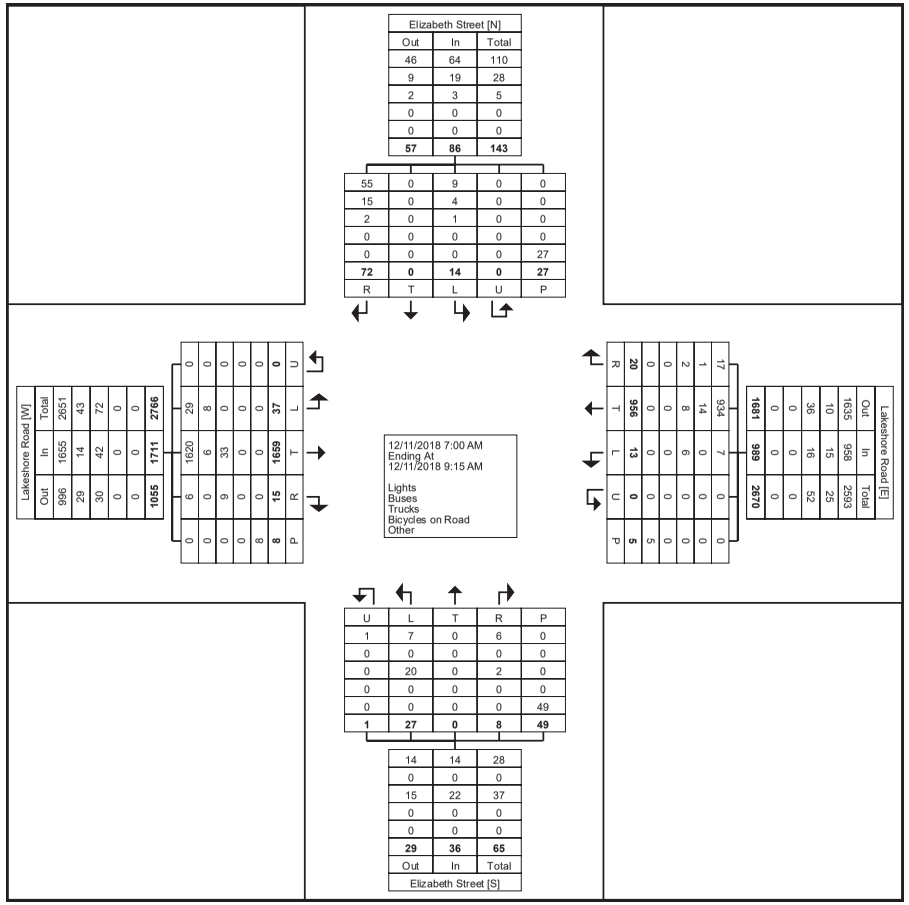
Turning Movement Data

Start Time	Elizabeth Street Southbound						Lakeshore Road Westbound						Elizabeth Street Northbound						Lakeshore Road Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
7:00 AM	7	0	0	0	2	7	0	72	0	0	0	72	0	0	5	0	17	5	3	147	1	0	0	151	235
7:15 AM	5	0	1	0	1	6	3	80	0	0	1	83	0	0	4	0	8	4	1	220	3	0	0	224	317
7:30 AM	9	0	4	0	3	13	1	111	3	0	0	115	4	0	2	0	6	6	3	226	6	0	3	235	369
7:45 AM	12	0	0	0	9	12	3	134	1	0	0	138	1	0	1	0	4	2	0	245	3	0	1	248	400
Hourly Total	33	0	5	0	15	38	7	397	4	0	1	408	5	0	12	0	35	17	7	838	13	0	4	858	1321
8:00 AM	11	0	0	0	3	11	1	121	1	0	1	123	1	0	4	1	0	6	0	229	7	0	0	236	376
8:15 AM	11	0	2	0	1	13	4	138	4	0	0	146	2	0	4	0	2	6	3	237	4	0	2	244	409
8:30 AM	9	0	2	0	4	11	4	144	4	0	1	152	0	0	6	0	4	6	4	188	9	0	1	201	370
8:45 AM	8	0	5	0	4	13	4	156	0	0	2	160	0	0	1	0	8	1	1	166	4	0	1	171	345
Hourly Total	39	0	9	0	12	48	13	559	9	0	4	581	3	0	15	1	14	19	8	820	24	0	4	852	1500
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
Grand Total	72	0	14	0	27	86	20	956	13	0	5	989	8	0	27	1	49	36	15	1659	37	0	8	1711	2822
Approach %	83.7	0.0	16.3	0.0	-	-	2.0	96.7	1.3	0.0	-	-	22.2	0.0	75.0	2.8	-	-	0.9	97.0	2.2	0.0	-	-	-
Total %	2.6	0.0	0.5	0.0	-	3.0	0.7	33.9	0.5	0.0	-	35.0	0.3	0.0	1.0	0.0	-	1.3	0.5	58.8	1.3	0.0	-	60.6	-
Lights	55	0	9	0	-	64	17	934	7	0	-	958	6	0	7	1	-	14	6	1620	29	0	-	1655	2691
% Lights	76.4	-	64.3	-	-	74.4	85.0	97.7	53.8	-	-	96.9	75.0	-	25.9	100.0	-	38.9	40.0	97.6	78.4	-	-	96.7	95.4
Buses	15	0	4	0	-	19	1	14	0	0	-	15	0	0	0	0	-	0	0	6	8	0	-	14	48
% Buses	20.8	-	28.6	-	-	22.1	5.0	1.5	0.0	-	-	1.5	0.0	-	0.0	0.0	-	0.0	0.0	0.4	21.6	-	-	0.8	1.7
Trucks	2	0	1	0	-	3	2	8	6	0	-	16	2	0	20	0	-	22	9	33	0	0	-	42	83
% Trucks	2.8	-	7.1	-	-	3.5	10.0	0.8	46.2	-	-	1.6	25.0	-	74.1	0.0	-	61.1	60.0	2.0	0.0	-	-	2.5	2.9
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	27	-	-	-	-	-	5	-	-	-	-	-	49	-	-	-	-	-	8	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 akung@LEA.ca

Count Name: 19275_ElizabethSt&LakeshoreRd-AM
Site Code: 19275
Start Date: 12/11/2018



Turning Movement Data Plot

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 akung@LEA.ca

Count Name: 19275_ElizabethSt&LakeshoreRd-AM
Site Code: 19275
Start Date: 12/11/2018

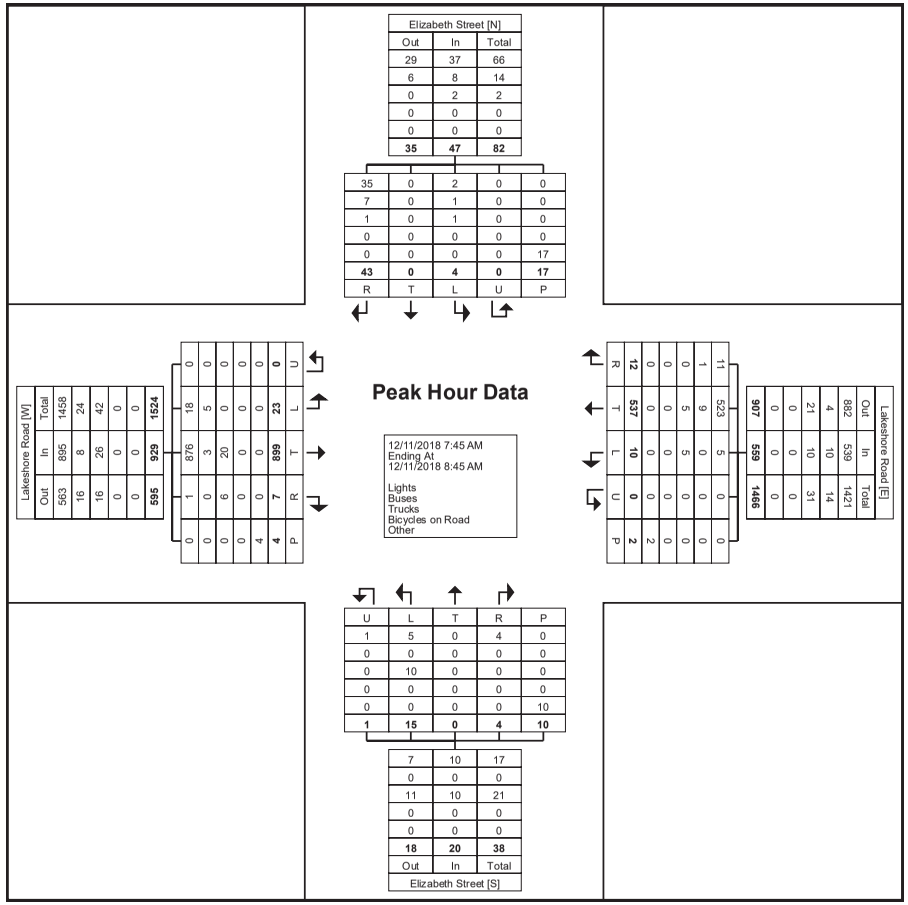
Turning Movement Peak Hour Data (7:45 AM)

Start Time	Elizabeth Street Southbound						Lakeshore Road Westbound						Elizabeth Street Northbound						Lakeshore Road Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
7:45 AM	12	0	0	0	9	12	3	134	1	0	0	138	1	0	1	0	4	2	0	245	3	0	1	248	400
8:00 AM	11	0	0	0	3	11	1	121	1	0	1	123	1	0	4	1	0	6	0	229	7	0	0	236	376
8:15 AM	11	0	2	0	1	13	4	138	4	0	0	146	2	0	4	0	2	6	3	237	4	0	2	244	409
8:30 AM	9	0	2	0	4	11	4	144	4	0	1	152	0	0	6	0	4	6	4	188	9	0	1	201	370
Total	43	0	4	0	17	47	12	537	10	0	2	559	4	0	15	1	10	20	7	899	23	0	4	929	1555
Approach %	91.5	0.0	8.5	0.0	-	-	2.1	96.1	1.8	0.0	-	-	20.0	0.0	75.0	5.0	-	-	0.8	96.8	2.5	0.0	-	-	-
Total %	2.8	0.0	0.3	0.0	-	3.0	0.8	34.5	0.6	0.0	-	35.9	0.3	0.0	1.0	0.1	-	1.3	0.5	57.8	1.5	0.0	-	59.7	-
PHF	0.896	0.000	0.500	0.000	-	0.904	0.750	0.932	0.625	0.000	-	0.919	0.500	0.000	0.625	0.250	-	0.833	0.438	0.917	0.639	0.000	-	0.936	0.950
Lights	35	0	2	0	-	37	11	523	5	0	-	539	4	0	5	1	-	10	1	876	18	0	-	895	1481
% Lights	81.4	-	50.0	-	-	78.7	91.7	97.4	50.0	-	-	96.4	100.0	-	33.3	100.0	-	50.0	14.3	97.4	78.3	-	-	96.3	95.2
Buses	7	0	1	0	-	8	1	9	0	0	-	10	0	0	0	0	-	0	0	3	5	0	-	8	26
% Buses	16.3	-	25.0	-	-	17.0	8.3	1.7	0.0	-	-	1.8	0.0	-	0.0	0.0	-	0.0	0.0	0.3	21.7	-	-	0.9	1.7
Trucks	1	0	1	0	-	2	0	5	5	0	-	10	0	0	10	0	-	10	6	20	0	0	-	26	48
% Trucks	2.3	-	25.0	-	-	4.3	0.0	0.9	50.0	-	-	1.8	0.0	-	66.7	0.0	-	50.0	85.7	2.2	0.0	-	-	2.8	3.1
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	17	-	-	-	-	-	2	-	-	-	-	-	10	-	-	-	-	-	4	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 akung@LEA.ca

Count Name: 19275_ElizabethSt&LakeshoreRd-AM
Site Code: 19275
Start Date: 12/11/2018



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

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 akung@LEA.ca

Count Name: 19275_ElizabethSt&LakeshoreRd-PM
Site Code: 19275
Start Date: 12/11/2018

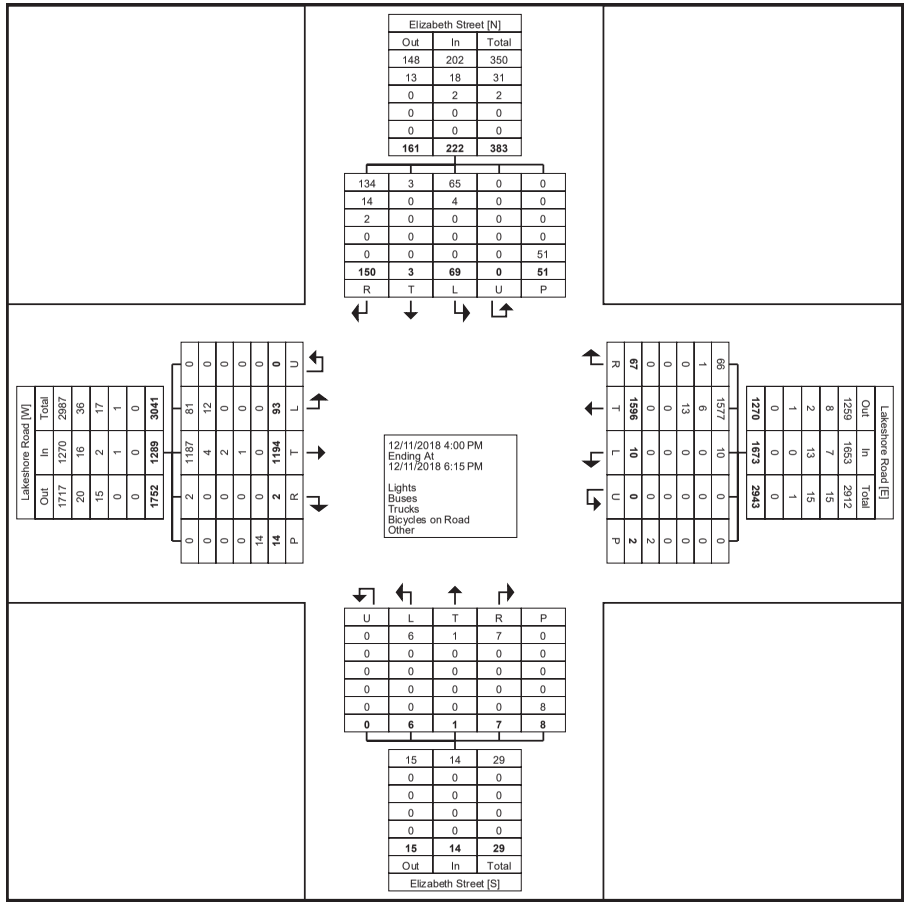
Turning Movement Data

Start Time	Elizabeth Street Southbound						Lakeshore Road Westbound						Elizabeth Street Northbound						Lakeshore Road Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
4:00 PM	18	0	8	0	8	26	4	181	1	0	1	186	2	0	1	0	4	3	0	138	8	0	1	146	361
4:15 PM	11	0	8	0	5	19	1	222	1	0	0	224	0	0	2	0	3	2	1	166	9	0	0	176	421
4:30 PM	15	0	6	0	4	21	6	208	0	0	0	214	1	1	1	0	0	3	0	130	12	0	3	142	380
4:45 PM	21	0	11	0	3	32	5	222	1	0	0	228	2	0	0	0	0	2	0	164	13	0	3	177	439
Hourly Total	65	0	33	0	20	98	16	833	3	0	1	852	5	1	4	0	7	10	1	598	42	0	7	641	1601
5:00 PM	17	0	7	0	5	24	17	168	2	0	1	187	1	0	2	0	1	3	0	126	12	0	2	138	352
5:15 PM	24	0	12	0	6	36	15	205	2	0	0	222	1	0	0	0	0	1	0	175	12	0	0	187	446
5:30 PM	20	1	6	0	12	27	12	191	1	0	0	204	0	0	0	0	0	0	0	130	13	0	3	143	374
5:45 PM	23	2	11	0	8	36	7	199	2	0	0	208	0	0	0	0	0	0	1	164	14	0	2	179	423
Hourly Total	84	3	36	0	31	123	51	763	7	0	1	821	2	0	2	0	1	4	1	595	51	0	7	647	1595
6:00 PM	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2
Grand Total	150	3	69	0	51	222	67	1596	10	0	2	1673	7	1	6	0	8	14	2	1194	93	0	14	1289	3198
Approach %	67.6	1.4	31.1	0.0	-	-	4.0	95.4	0.6	0.0	-	-	50.0	7.1	42.9	0.0	-	-	0.2	92.6	7.2	0.0	-	-	-
Total %	4.7	0.1	2.2	0.0	-	6.9	2.1	49.9	0.3	0.0	-	52.3	0.2	0.0	0.2	0.0	-	0.4	0.1	37.3	2.9	0.0	-	40.3	-
Lights	134	3	65	0	-	202	66	1577	10	0	-	1653	7	1	6	0	-	14	2	1187	81	0	-	1270	3139
% Lights	89.3	100.0	94.2	-	-	91.0	98.5	98.8	100.0	-	-	98.8	100.0	100.0	100.0	-	-	100.0	100.0	99.4	87.1	-	-	98.5	98.2
Buses	14	0	4	0	-	18	1	6	0	0	-	7	0	0	0	0	-	0	0	4	12	0	-	16	41
% Buses	9.3	0.0	5.8	-	-	8.1	1.5	0.4	0.0	-	-	0.4	0.0	0.0	0.0	-	-	0.0	0.0	0.3	12.9	-	-	1.2	1.3
Trucks	2	0	0	0	-	2	0	13	0	0	-	13	0	0	0	0	-	0	0	2	0	0	-	2	17
% Trucks	1.3	0.0	0.0	-	-	0.9	0.0	0.8	0.0	-	-	0.8	0.0	0.0	0.0	-	-	0.0	0.0	0.2	0.0	-	-	0.2	0.5
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	1
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.1	0.0	-	-	0.1	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	51	-	-	-	-	-	2	-	-	-	-	-	8	-	-	-	-	-	14	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 akung@LEA.ca

Count Name: 19275_ElizabethSt&LakeshoreRd-PM
Site Code: 19275
Start Date: 12/11/2018



Turning Movement Data Plot

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 akung@LEA.ca

Count Name: 19275_ElizabethSt&LakeshoreRd-PM
Site Code: 19275
Start Date: 12/11/2018

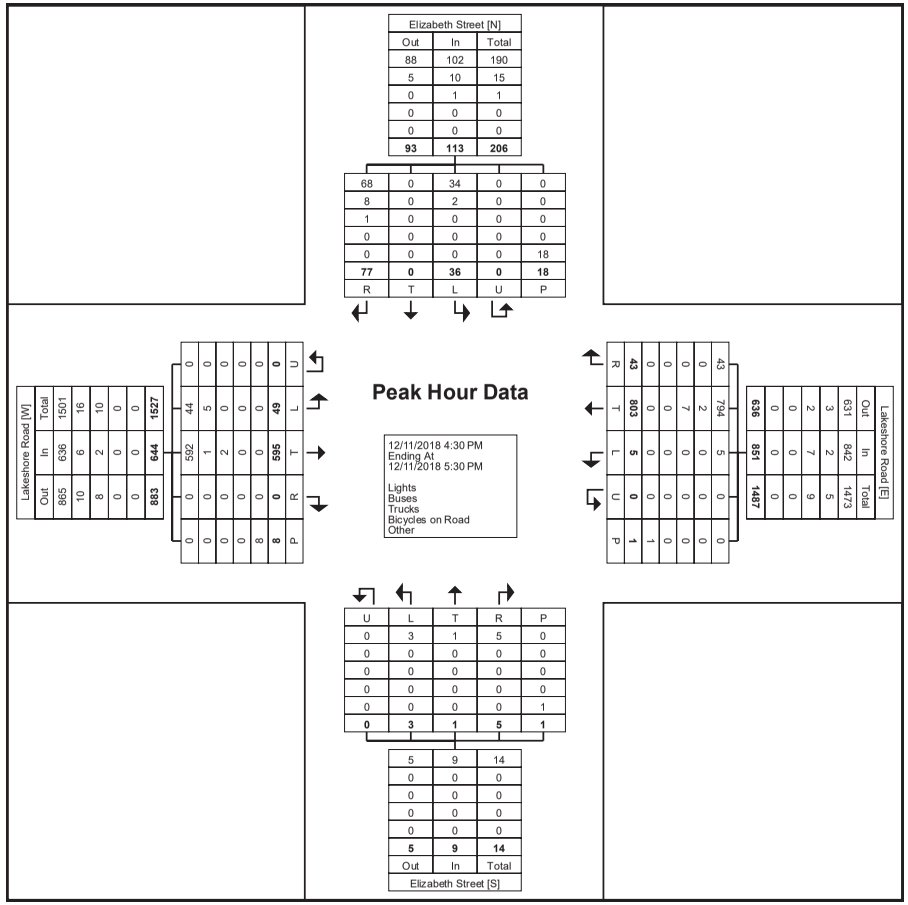
Turning Movement Peak Hour Data (4:30 PM)

Start Time	Elizabeth Street Southbound						Lakeshore Road Westbound						Elizabeth Street Northbound						Lakeshore Road Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
4:30 PM	15	0	6	0	4	21	6	208	0	0	0	214	1	1	1	0	0	3	0	130	12	0	3	142	380
4:45 PM	21	0	11	0	3	32	5	222	1	0	0	228	2	0	0	0	0	2	0	164	13	0	3	177	439
5:00 PM	17	0	7	0	5	24	17	168	2	0	1	187	1	0	2	0	1	3	0	126	12	0	2	138	352
5:15 PM	24	0	12	0	6	36	15	205	2	0	0	222	1	0	0	0	0	1	0	175	12	0	0	187	446
Total	77	0	36	0	18	113	43	803	5	0	1	851	5	1	3	0	1	9	0	595	49	0	8	644	1617
Approach %	68.1	0.0	31.9	0.0	-	-	5.1	94.4	0.6	0.0	-	-	55.6	11.1	33.3	0.0	-	-	0.0	92.4	7.6	0.0	-	-	-
Total %	4.8	0.0	2.2	0.0	-	7.0	2.7	49.7	0.3	0.0	-	52.6	0.3	0.1	0.2	0.0	-	0.6	0.0	36.8	3.0	0.0	-	39.8	-
PHF	0.802	0.000	0.750	0.000	-	0.785	0.632	0.904	0.625	0.000	-	0.933	0.625	0.250	0.375	0.000	-	0.750	0.000	0.850	0.942	0.000	-	0.861	0.906
Lights	68	0	34	0	-	102	43	794	5	0	-	842	5	1	3	0	-	9	0	592	44	0	-	636	1589
% Lights	88.3	-	94.4	-	-	90.3	100.0	98.9	100.0	-	-	98.9	100.0	100.0	100.0	-	-	100.0	-	99.5	89.8	-	-	98.8	98.3
Buses	8	0	2	0	-	10	0	2	0	0	-	2	0	0	0	0	-	0	0	1	5	0	-	6	18
% Buses	10.4	-	5.6	-	-	8.8	0.0	0.2	0.0	-	-	0.2	0.0	0.0	0.0	-	-	0.0	-	0.2	10.2	-	-	0.9	1.1
Trucks	1	0	0	0	-	1	0	7	0	0	-	7	0	0	0	0	-	0	0	2	0	0	-	2	10
% Trucks	1.3	-	0.0	-	-	0.9	0.0	0.9	0.0	-	-	0.8	0.0	0.0	0.0	-	-	0.0	-	0.3	0.0	-	-	0.3	0.6
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	-	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	18	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	8	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 akung@LEA.ca

Count Name: 19275_ElizabethSt&LakeshoreRd-PM
Site Code: 19275
Start Date: 12/11/2018



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

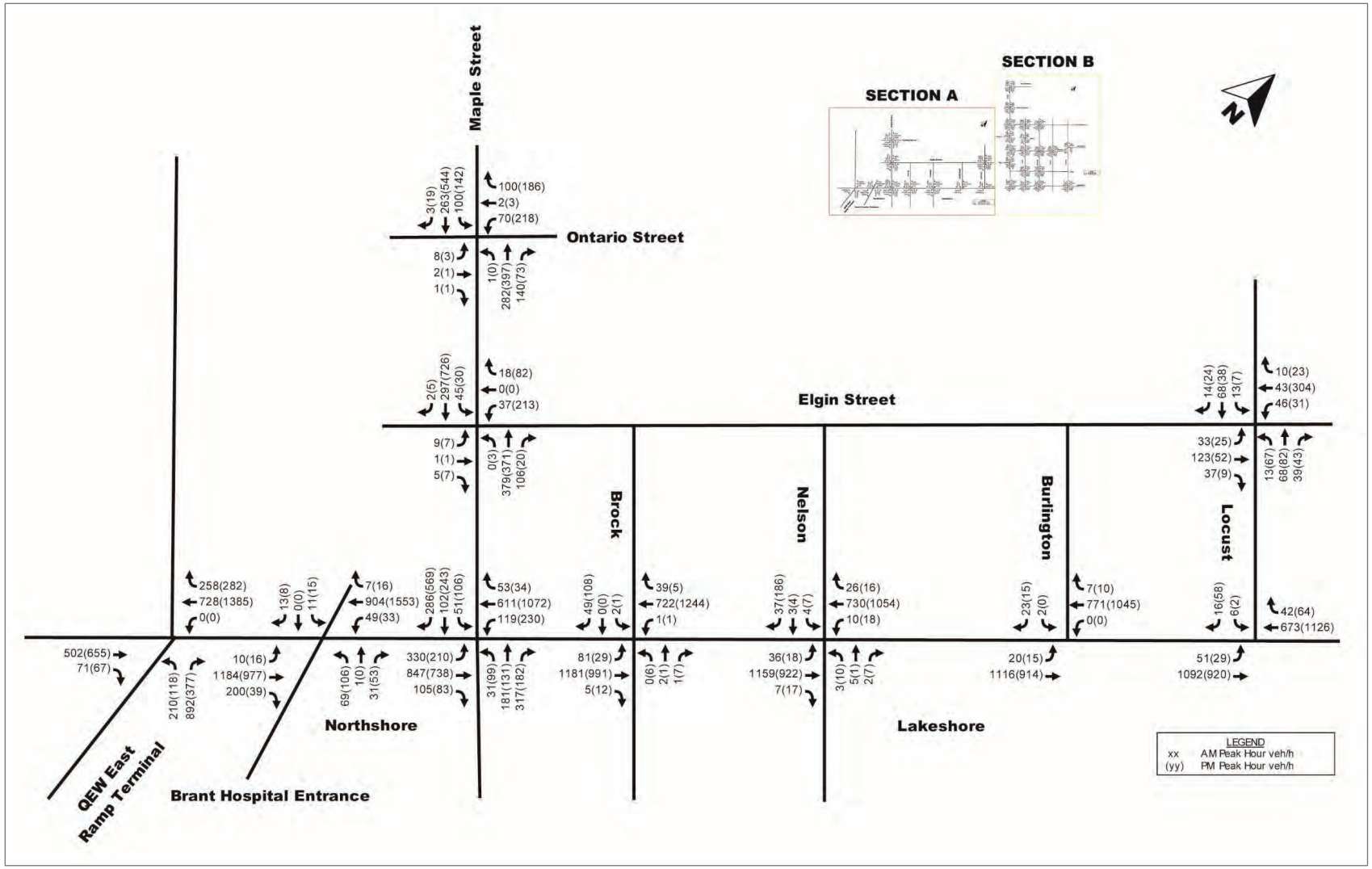


Figure 4-a: Existing Traffic Volume (Section A)

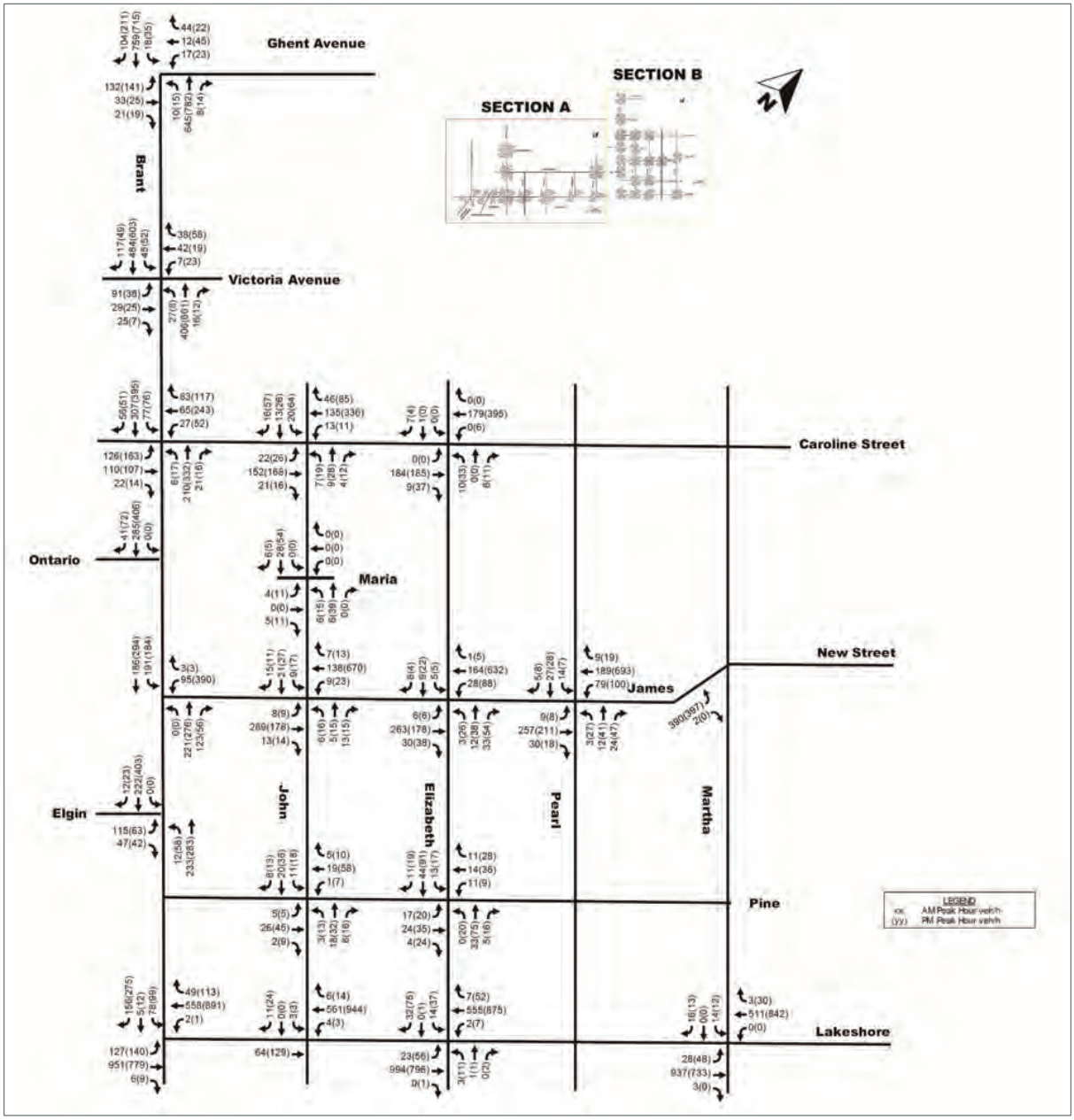


Figure 4-b: Existing Traffic Volume (Section B)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Pearl Street & Lakeshore Road
Site Code:
Start Date: 11/20/2018

Turning Movement Data

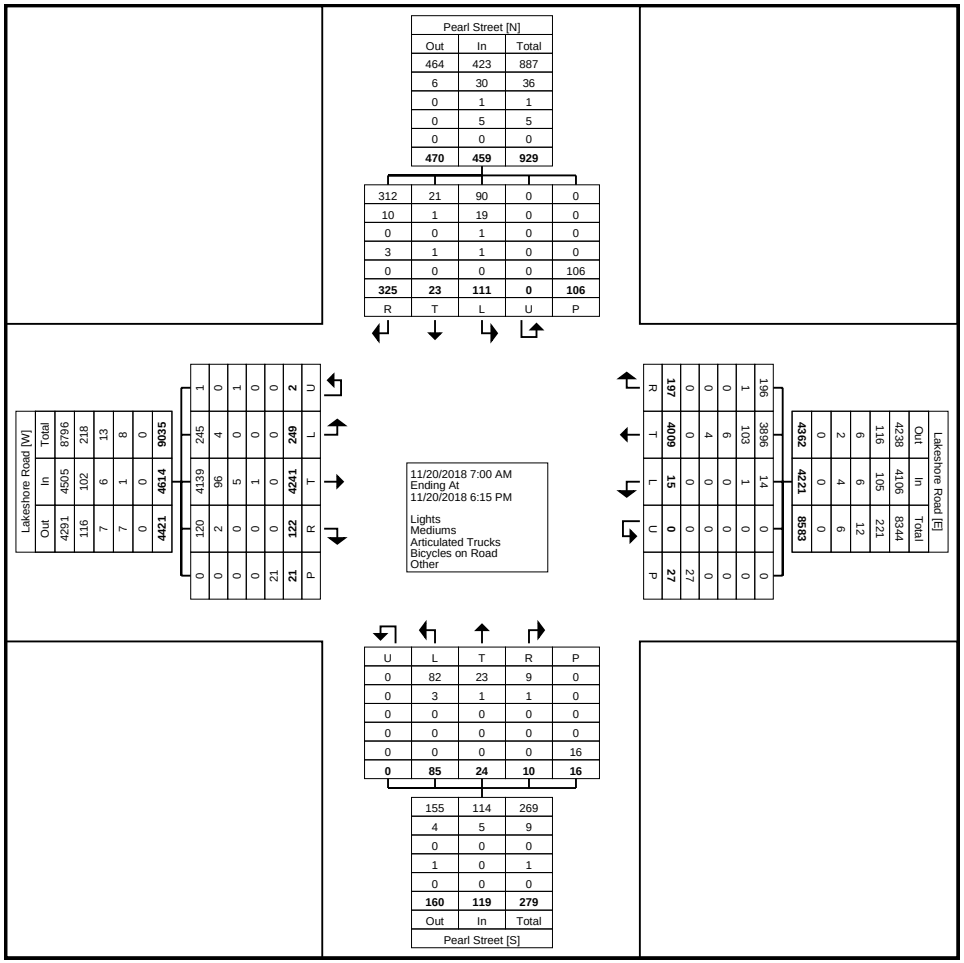
Start Time	Lakeshore Road Eastbound						Lakeshore Road Westbound						Pearl Street Northbound						Pearl Street Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	6	213	0	0	1	219	0	65	2	0	0	67	0	0	0	0	0	0	0	0	6	0	1	6	292
7:15 AM	2	229	1	0	0	232	0	94	2	0	2	96	0	0	0	0	0	0	0	1	3	0	3	4	332
7:30 AM	6	198	4	0	0	208	0	111	4	0	0	115	0	0	0	0	0	0	4	0	8	0	0	12	335
7:45 AM	5	180	3	0	0	188	0	114	7	0	0	121	4	0	0	0	0	4	6	0	13	0	1	19	332
Hourly Total	19	820	8	0	1	847	0	384	15	0	2	399	4	0	0	0	0	4	10	1	30	0	5	41	1291
8:00 AM	7	244	1	0	0	252	0	132	1	0	1	133	0	0	1	0	0	1	3	0	15	0	2	18	404
8:15 AM	12	219	7	0	0	238	0	136	8	0	1	144	0	0	0	0	0	0	2	1	10	0	4	13	395
8:30 AM	8	209	7	0	0	224	1	116	11	0	0	128	0	0	0	0	0	0	1	0	6	0	6	7	359
8:45 AM	11	193	8	0	0	212	0	120	7	0	0	127	0	1	0	0	0	1	4	0	14	0	8	18	358
Hourly Total	38	865	23	0	0	926	1	504	27	0	2	532	0	1	1	0	0	2	10	1	45	0	20	56	1516
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	6	81	6	0	4	93	0	118	6	0	1	124	6	1	0	0	3	7	4	1	7	0	3	12	236
11:15 AM	6	118	6	1	1	131	1	100	3	0	4	104	2	1	0	0	3	3	7	2	10	0	8	19	257
11:30 AM	6	102	5	0	1	113	0	129	7	0	2	136	5	1	0	0	0	6	4	3	6	0	1	13	268
11:45 AM	11	104	7	0	2	122	1	102	7	0	4	110	5	1	0	0	1	6	6	2	6	0	6	14	252
Hourly Total	29	405	24	1	8	459	2	449	23	0	11	474	18	4	0	0	7	22	21	8	29	0	18	58	1013
12:00 PM	7	122	4	0	0	133	2	110	10	0	1	122	2	1	0	0	0	3	2	1	10	0	0	13	271
12:15 PM	10	91	7	0	1	108	0	119	8	0	0	127	0	0	1	0	2	1	5	0	16	0	2	21	257
12:30 PM	10	101	4	0	0	115	1	134	8	0	0	143	5	0	1	0	0	6	4	1	10	0	0	15	279
12:45 PM	10	130	8	0	3	148	0	123	12	0	0	135	5	1	1	0	0	7	4	1	16	0	1	21	311
Hourly Total	37	444	23	0	4	504	3	486	38	0	1	527	12	2	3	0	2	17	15	3	52	0	3	70	1118
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	13	147	3	0	0	163	1	147	3	0	1	151	4	0	0	0	0	4	4	0	14	0	4	18	336
3:15 PM	12	130	3	0	1	145	0	188	3	0	0	191	1	1	1	0	2	3	2	1	7	0	7	10	349
3:30 PM	15	135	3	0	1	153	0	190	8	0	5	198	7	0	0	0	1	7	5	1	9	0	8	15	373
3:45 PM	6	139	8	0	0	153	1	193	8	0	1	202	6	0	0	0	0	6	8	1	14	0	7	23	384
Hourly Total	46	551	17	0	2	614	2	718	22	0	7	742	18	1	1	0	3	20	19	3	44	0	26	66	1442
4:00 PM	12	141	6	1	0	160	0	213	4	0	0	217	4	0	1	0	1	5	9	1	18	0	2	28	410
4:15 PM	13	143	4	0	3	160	1	166	5	0	1	172	2	1	1	0	0	4	5	0	20	0	6	25	361
4:30 PM	7	147	3	0	0	157	0	153	18	0	1	171	6	5	0	0	0	11	2	0	20	0	3	22	361
4:45 PM	6	153	3	0	0	162	1	161	14	0	0	176	7	1	0	0	1	8	7	2	18	0	2	27	373

Hourly Total	38	584	16	1	3	639	2	693	41	0	2	736	19	7	2	0	2	28	23	3	76	0	13	102	1505
5:00 PM	11	164	2	0	0	177	0	209	14	0	2	223	8	3	0	0	0	11	3	1	11	0	5	15	426
5:15 PM	9	156	1	0	2	166	2	204	9	0	0	215	3	4	0	0	1	7	4	0	6	0	9	10	398
5:30 PM	11	139	3	0	0	153	2	190	5	0	0	197	0	1	1	0	1	2	4	1	16	0	4	21	373
5:45 PM	11	113	5	0	1	129	1	172	3	0	0	176	3	1	2	0	0	6	2	2	16	0	3	20	331
Hourly Total	42	572	11	0	3	625	5	775	31	0	2	811	14	9	3	0	2	26	13	4	49	0	21	66	1528
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	249	4241	122	2	21	4614	15	4009	197	0	27	4221	85	24	10	0	16	119	111	23	325	0	106	459	9413
Approach %	5.4	91.9	2.6	0.0	-	-	0.4	95.0	4.7	0.0	-	-	71.4	20.2	8.4	0.0	-	-	24.2	5.0	70.8	0.0	-	-	-
Total %	2.6	45.1	1.3	0.0	-	49.0	0.2	42.6	2.1	0.0	-	44.8	0.9	0.3	0.1	0.0	-	1.3	1.2	0.2	3.5	0.0	-	4.9	-
Lights	245	4139	120	1	-	4505	14	3896	196	0	-	4106	82	23	9	0	-	114	90	21	312	0	-	423	9148
% Lights	98.4	97.6	98.4	50.0	-	97.6	93.3	97.2	99.5	-	-	97.3	96.5	95.8	90.0	-	-	95.8	81.1	91.3	96.0	-	-	92.2	97.2
Mediums	4	96	2	0	-	102	1	103	1	0	-	105	3	1	1	0	-	5	19	1	10	0	-	30	242
% Mediums	1.6	2.3	1.6	0.0	-	2.2	6.7	2.6	0.5	-	-	2.5	3.5	4.2	10.0	-	-	4.2	17.1	4.3	3.1	-	-	6.5	2.6
Articulated Trucks	0	5	0	1	-	6	0	6	0	0	-	6	0	0	0	0	-	0	1	0	0	0	-	1	13
% Articulated Trucks	0.0	0.1	0.0	50.0	-	0.1	0.0	0.1	0.0	-	-	0.1	0.0	0.0	0.0	-	-	0.0	0.9	0.0	0.0	-	-	0.2	0.1
Bicycles on Road	0	1	0	0	-	1	0	4	0	0	-	4	0	0	0	0	-	0	1	1	3	0	-	5	10
% Bicycles on Road	0.0	0.0	0.0	0.0	-	0.0	0.0	0.1	0.0	-	-	0.1	0.0	0.0	0.0	-	-	0.0	0.9	4.3	0.9	-	-	1.1	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	21	-	-	-	-	-	27	-	-	-	-	-	16	-	-	-	-	-	106	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Pearl Street & Lakeshore Road
Site Code:
Start Date: 11/20/2018



Turning Movement Data Plot

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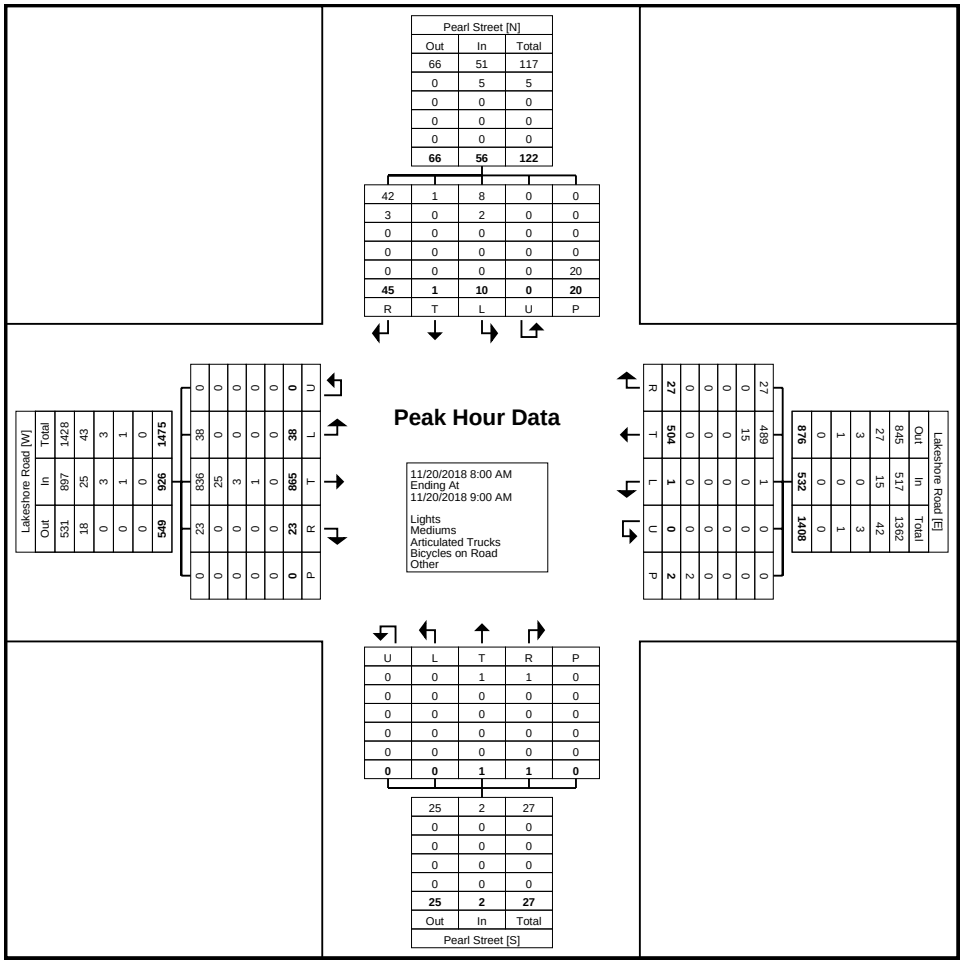
Turning Movement Peak Hour Data (8:00 AM)

Start Time	Lakeshore Road Eastbound						Lakeshore Road Westbound						Pearl Street Northbound						Pearl Street Southbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
8:00 AM	7	244	1	0	0	252	0	132	1	0	1	133	0	0	1	0	0	1	3	0	15	0	2	18	404
8:15 AM	12	219	7	0	0	238	0	136	8	0	1	144	0	0	0	0	0	0	2	1	10	0	4	13	395
8:30 AM	8	209	7	0	0	224	1	116	11	0	0	128	0	0	0	0	0	0	1	0	6	0	6	7	359
8:45 AM	11	193	8	0	0	212	0	120	7	0	0	127	0	1	0	0	0	1	4	0	14	0	8	18	358
Total	38	865	23	0	0	926	1	504	27	0	2	532	0	1	1	0	0	2	10	1	45	0	20	56	1516
Approach %	4.1	93.4	2.5	0.0	-	-	0.2	94.7	5.1	0.0	-	-	0.0	50.0	50.0	0.0	-	-	17.9	1.8	80.4	0.0	-	-	-
Total %	2.5	57.1	1.5	0.0	-	61.1	0.1	33.2	1.8	0.0	-	35.1	0.0	0.1	0.1	0.0	-	0.1	0.7	0.1	3.0	0.0	-	3.7	-
PHF	0.792	0.886	0.719	0.000	-	0.919	0.250	0.926	0.614	0.000	-	0.924	0.000	0.250	0.250	0.000	-	0.500	0.625	0.250	0.750	0.000	-	0.778	0.938
Lights	38	836	23	0	-	897	1	489	27	0	-	517	0	1	1	0	-	2	8	1	42	0	-	51	1467
% Lights	100.0	96.6	100.0	-	-	96.9	100.0	97.0	100.0	-	-	97.2	-	100.0	100.0	-	-	100.0	80.0	100.0	93.3	-	-	91.1	96.8
Mediums	0	25	0	0	-	25	0	15	0	0	-	15	0	0	0	0	-	0	2	0	3	0	-	5	45
% Mediums	0.0	2.9	0.0	-	-	2.7	0.0	3.0	0.0	-	-	2.8	-	0.0	0.0	-	-	0.0	20.0	0.0	6.7	-	-	8.9	3.0
Articulated Trucks	0	3	0	0	-	3	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	3
% Articulated Trucks	0.0	0.3	0.0	-	-	0.3	0.0	0.0	0.0	-	-	0.0	-	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.2
Bicycles on Road	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.1	0.0	-	-	0.1	0.0	0.0	0.0	-	-	0.0	-	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	20	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

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Start Date: 11/20/2018



Turning Movement Peak Hour Data Plot (8:00 AM)

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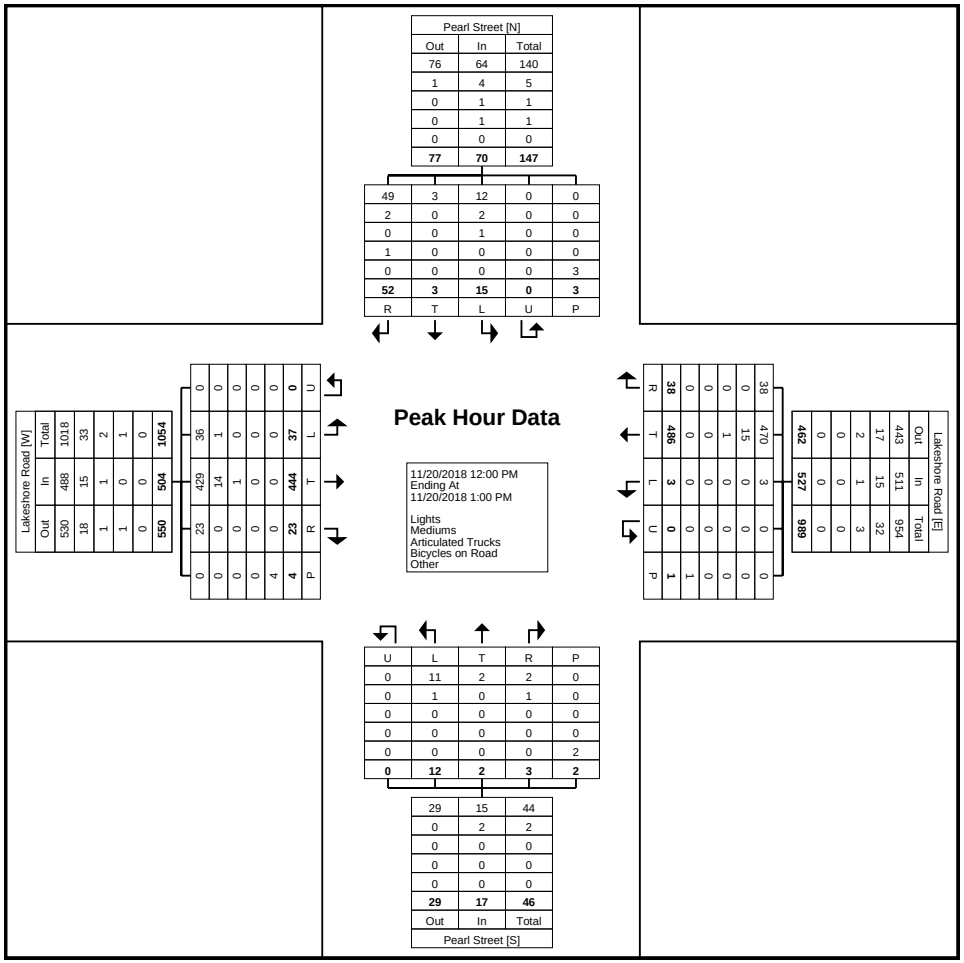
Turning Movement Peak Hour Data (12:00 PM)

Start Time	Lakeshore Road Eastbound						Lakeshore Road Westbound						Pearl Street Northbound						Pearl Street Southbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
12:00 PM	7	122	4	0	0	133	2	110	10	0	1	122	2	1	0	0	0	3	2	1	10	0	0	13	271
12:15 PM	10	91	7	0	1	108	0	119	8	0	0	127	0	0	1	0	2	1	5	0	16	0	2	21	257
12:30 PM	10	101	4	0	0	115	1	134	8	0	0	143	5	0	1	0	0	6	4	1	10	0	0	15	279
12:45 PM	10	130	8	0	3	148	0	123	12	0	0	135	5	1	1	0	0	7	4	1	16	0	1	21	311
Total	37	444	23	0	4	504	3	486	38	0	1	527	12	2	3	0	2	17	15	3	52	0	3	70	1118
Approach %	7.3	88.1	4.6	0.0	-	-	0.6	92.2	7.2	0.0	-	-	70.6	11.8	17.6	0.0	-	-	21.4	4.3	74.3	0.0	-	-	-
Total %	3.3	39.7	2.1	0.0	-	45.1	0.3	43.5	3.4	0.0	-	47.1	1.1	0.2	0.3	0.0	-	1.5	1.3	0.3	4.7	0.0	-	6.3	-
PHF	0.925	0.854	0.719	0.000	-	0.851	0.375	0.907	0.792	0.000	-	0.921	0.600	0.500	0.750	0.000	-	0.607	0.750	0.750	0.813	0.000	-	0.833	0.899
Lights	36	429	23	0	-	488	3	470	38	0	-	511	11	2	2	0	-	15	12	3	49	0	-	64	1078
% Lights	97.3	96.6	100.0	-	-	96.8	100.0	96.7	100.0	-	-	97.0	91.7	100.0	66.7	-	-	88.2	80.0	100.0	94.2	-	-	91.4	96.4
Mediums	1	14	0	0	-	15	0	15	0	0	-	15	1	0	1	0	-	2	2	0	2	0	-	4	36
% Mediums	2.7	3.2	0.0	-	-	3.0	0.0	3.1	0.0	-	-	2.8	8.3	0.0	33.3	-	-	11.8	13.3	0.0	3.8	-	-	5.7	3.2
Articulated Trucks	0	1	0	0	-	1	0	1	0	0	-	1	0	0	0	0	-	0	1	0	0	0	-	1	3
% Articulated Trucks	0.0	0.2	0.0	-	-	0.2	0.0	0.2	0.0	-	-	0.2	0.0	0.0	0.0	-	-	0.0	6.7	0.0	0.0	-	-	1.4	0.3
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	1
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	1.9	-	-	1.4	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	4	-	-	-	-	-	1	-	-	-	-	-	2	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

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

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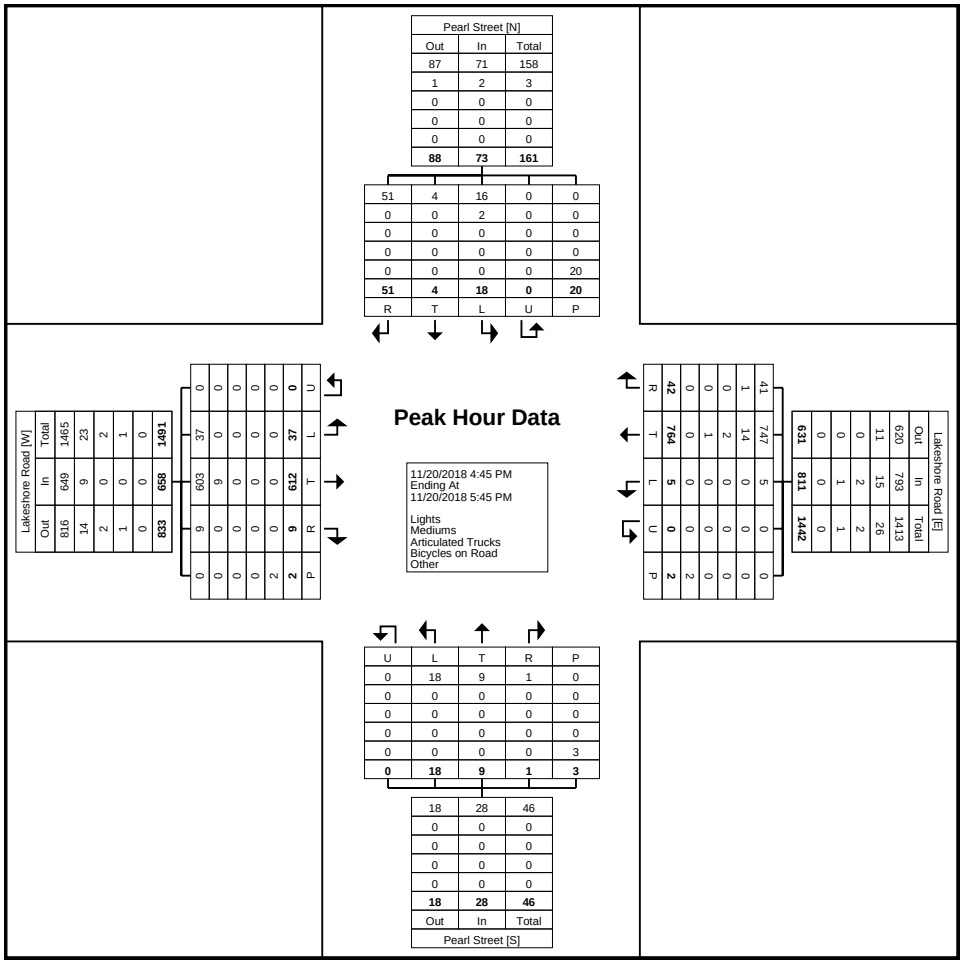
Turning Movement Peak Hour Data (4:45 PM)

Start Time	Lakeshore Road Eastbound						Lakeshore Road Westbound						Pearl Street Northbound						Pearl Street Southbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
4:45 PM	6	153	3	0	0	162	1	161	14	0	0	176	7	1	0	0	1	8	7	2	18	0	2	27	373
5:00 PM	11	164	2	0	0	177	0	209	14	0	2	223	8	3	0	0	0	11	3	1	11	0	5	15	426
5:15 PM	9	156	1	0	2	166	2	204	9	0	0	215	3	4	0	0	1	7	4	0	6	0	9	10	398
5:30 PM	11	139	3	0	0	153	2	190	5	0	0	197	0	1	1	0	1	2	4	1	16	0	4	21	373
Total	37	612	9	0	2	658	5	764	42	0	2	811	18	9	1	0	3	28	18	4	51	0	20	73	1570
Approach %	5.6	93.0	1.4	0.0	-	-	0.6	94.2	5.2	0.0	-	-	64.3	32.1	3.6	0.0	-	-	24.7	5.5	69.9	0.0	-	-	-
Total %	2.4	39.0	0.6	0.0	-	41.9	0.3	48.7	2.7	0.0	-	51.7	1.1	0.6	0.1	0.0	-	1.8	1.1	0.3	3.2	0.0	-	4.6	-
PHF	0.841	0.933	0.750	0.000	-	0.929	0.625	0.914	0.750	0.000	-	0.909	0.563	0.563	0.250	0.000	-	0.636	0.643	0.500	0.708	0.000	-	0.676	0.921
Lights	37	603	9	0	-	649	5	747	41	0	-	793	18	9	1	0	-	28	16	4	51	0	-	71	1541
% Lights	100.0	98.5	100.0	-	-	98.6	100.0	97.8	97.6	-	-	97.8	100.0	100.0	100.0	-	-	100.0	88.9	100.0	100.0	-	-	97.3	98.2
Mediums	0	9	0	0	-	9	0	14	1	0	-	15	0	0	0	0	-	0	2	0	0	0	-	2	26
% Mediums	0.0	1.5	0.0	-	-	1.4	0.0	1.8	2.4	-	-	1.8	0.0	0.0	0.0	-	-	0.0	11.1	0.0	0.0	-	-	2.7	1.7
Articulated Trucks	0	0	0	0	-	0	0	2	0	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	2
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.3	0.0	-	-	0.2	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Road	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.1	0.0	-	-	0.1	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	2	-	-	-	-	-	2	-	-	-	-	-	3	-	-	-	-	-	20	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Pearl Street & Lakeshore Road
Site Code:
Start Date: 11/20/2018



Turning Movement Peak Hour Data Plot (4:45 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

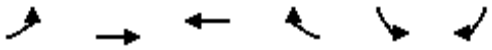
Cambridge, Ontario, Canada N1R 8J8
519-896-3163 amakarewicz@ptsl.com

Count Name: Pearl Street & Lakeshore Road
Site Code:
Start Date: 11/20/2018

Appendix C

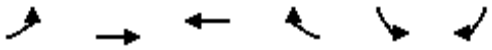
Base Year Traffic Operations





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	52	1034	632	43	6	16
Future Volume (vph)	52	1034	632	43	6	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt			0.990		0.904	
Flt Protected	0.950				0.986	
Satd. Flow (prot)	1770	1863	3504	0	1660	0
Flt Permitted	0.950				0.986	
Satd. Flow (perm)	1770	1863	3504	0	1660	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		148.5	99.8		213.0	
Travel Time (s)		10.7	7.2		15.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	57	1124	687	47	7	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	57	1124	734	0	24	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

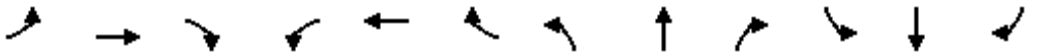
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 64.4%		ICU Level of Service C	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	52	1034	632	43	6	16
Future Volume (Veh/h)	52	1034	632	43	6	16
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)	57	1124	687	47	7	17
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			100			
pX, platoon unblocked	0.92				0.92	0.92
vC, conflicting volume	734				1948	367
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	538				1858	139
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	94				88	98
cM capacity (veh/h)	945				56	813

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	57	1124	458	276	24
Volume Left	57	0	0	0	7
Volume Right	0	0	0	47	17
cSH	945	1700	1700	1700	165
Volume to Capacity	0.06	0.66	0.27	0.16	0.15
Queue Length 95th (m)	1.5	0.0	0.0	0.0	4.0
Control Delay (s)	9.1	0.0	0.0	0.0	30.5
Lane LOS	A				D
Approach Delay (s)	0.4		0.0		30.5
Approach LOS					D

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	64.4%	ICU Level of Service	C
Analysis Period (min)	15		

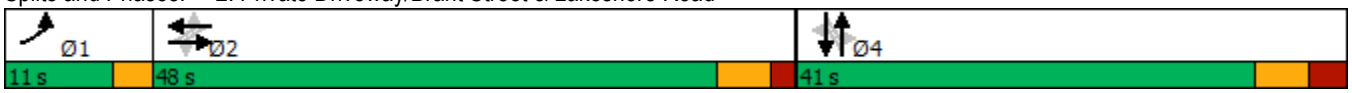


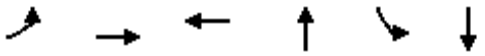
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	123	902	14	0	521	66	6	1	0	70	4	149
Future Volume (vph)	123	902	14	0	521	66	6	1	0	70	4	149
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		0.0	25.0		0.0	0.0		0.0	0.0		15.0
Storage Lanes	1		0	1		0	0		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.983						0.854	
Flt Protected	0.950							0.958		0.950		
Satd. Flow (prot)	1593	1673	0	1676	3131	0	0	1606	0	1593	1432	0
Flt Permitted	0.378							0.748		0.752		
Satd. Flow (perm)	634	1673	0	1676	3131	0	0	1254	0	1261	1432	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			18						162	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		99.8			72.3			72.5			121.7	
Travel Time (s)		7.2			5.2			5.2			8.8	
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
Adj. Flow (vph)	134	980	15	0	566	72	7	1	0	76	4	162
Shared Lane Traffic (%)												
Lane Group Flow (vph)	134	995	0	0	638	0	0	8	0	76	166	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)		3.6			3.6			0.0			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
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)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	1	2			2			4			4	
Permitted Phases	2	2		2			4			4		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	1	2		2	2		4	4		4	4	
Switch Phase												
Minimum Initial (s)	6.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	9.0	33.0		33.0	33.0		38.0	38.0		38.0	38.0	
Total Split (s)	11.0	48.0		48.0	48.0		41.0	41.0		41.0	41.0	
Total Split (%)	11.0%	48.0%		48.0%	48.0%		41.0%	41.0%		41.0%	41.0%	
Maximum Green (s)	8.0	42.0		42.0	42.0		34.0	34.0		34.0	34.0	
Yellow Time (s)	3.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	-2.0		-2.0	-2.0			-3.0		-3.0	-3.0	
Total Lost Time (s)	3.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lead/Lag	Lead	Lag		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Max		Max	Max		None	None		None	None	
Walk Time (s)		11.0		11.0	11.0		12.0	12.0		12.0	12.0	
Flash Dont Walk (s)		16.0		16.0	16.0		19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)		0		0	0		0	0		0	0	
Act Effct Green (s)	52.4	44.1			44.1			13.3		13.3	13.3	
Actuated g/C Ratio	0.69	0.58			0.58			0.18		0.18	0.18	
v/c Ratio	0.25	1.02			0.35			0.04		0.34	0.43	
Control Delay	4.6	53.4			9.1			26.0		32.1	9.1	
Queue Delay	0.0	0.0			0.0			0.0		0.0	0.0	
Total Delay	4.6	53.4			9.1			26.0		32.1	9.1	
LOS	A	D			A			C		C	A	
Approach Delay		47.6			9.1			26.0			16.3	
Approach LOS		D			A			C			B	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 100			
Actuated Cycle Length: 75.7			
Natural Cycle: 120			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.02			
Intersection Signal Delay: 31.6		Intersection LOS: C	
Intersection Capacity Utilization 80.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Private Driveway/Brant Street & Lakeshore Road



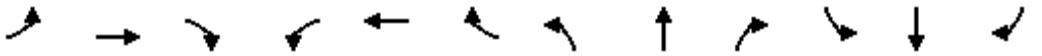


Lane Group	EBL	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	134	995	638	8	76	166
v/c Ratio	0.25	1.02	0.35	0.04	0.34	0.43
Control Delay	4.6	53.4	9.1	26.0	32.1	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.6	53.4	9.1	26.0	32.1	9.1
Queue Length 50th (m)	4.5	~145.3	22.8	1.0	10.2	0.5
Queue Length 95th (m)	11.2	#256.6	38.5	4.6	22.4	15.8
Internal Link Dist (m)		75.8	48.3	48.5		97.7
Turn Bay Length (m)	55.0					
Base Capacity (vph)	546	974	1831	614	617	783
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.25	1.02	0.35	0.01	0.12	0.21

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

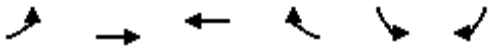
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	123	902	14	0	521	66	6	1	0	70	4	149
Future Volume (vph)	123	902	14	0	521	66	6	1	0	70	4	149
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.0			4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00			0.95			1.00		1.00	1.00	
Frt	1.00	1.00			0.98			1.00		1.00	0.85	
Flt Protected	0.95	1.00			1.00			0.96		0.95	1.00	
Satd. Flow (prot)	1593	1673			3131			1606		1593	1431	
Flt Permitted	0.38	1.00			1.00			0.75		0.75	1.00	
Satd. Flow (perm)	634	1673			3131			1254		1261	1431	
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)	134	980	15	0	566	72	7	1	0	76	4	162
RTOR Reduction (vph)	0	0	0	0	8	0	0	0	0	0	134	0
Lane Group Flow (vph)	134	995	0	0	630	0	0	8	0	76	32	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	1	2			2			4			4	
Permitted Phases	2	2		2			4			4		
Actuated Green, G (s)	49.4	42.1			42.1			10.3		10.3	10.3	
Effective Green, g (s)	49.4	44.1			44.1			13.3		13.3	13.3	
Actuated g/C Ratio	0.65	0.58			0.58			0.18		0.18	0.18	
Clearance Time (s)	3.0	6.0			6.0			7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0			3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	506	974			1824			220		221	251	
v/s Ratio Prot	c0.03	c0.59			0.20						0.02	
v/s Ratio Perm	0.15							0.01		c0.06		
v/c Ratio	0.26	1.02			0.35			0.04		0.34	0.13	
Uniform Delay, d1	5.1	15.8			8.3			25.9		27.4	26.3	
Progression Factor	1.00	1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.3	34.3			0.5			0.1		0.9	0.2	
Delay (s)	5.4	50.1			8.8			26.0		28.3	26.6	
Level of Service	A	D			A			C		C	C	
Approach Delay (s)		44.8			8.8			26.0			27.1	
Approach LOS		D			A			C			C	

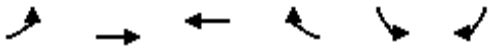
Intersection Summary			
HCM 2000 Control Delay	31.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	75.7	Sum of lost time (s)	11.0
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	18	952	577	6	3	11
Future Volume (vph)	18	952	577	6	3	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	10.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt			0.998		0.892	
Flt Protected		0.999			0.990	
Satd. Flow (prot)	0	3182	3179	0	1480	0
Flt Permitted		0.999			0.990	
Satd. Flow (perm)	0	3182	3179	0	1480	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		72.3	73.8		133.2	
Travel Time (s)		5.2	5.3		9.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	1035	627	7	3	12
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1055	634	0	15	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

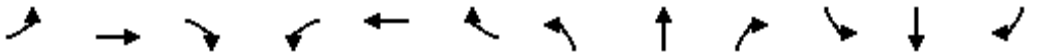
Intersection Summary			
Area Type:	CBD		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.5%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	18	952	577	6	3	11
Future Volume (Veh/h)	18	952	577	6	3	11
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)	20	1035	627	7	3	12
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		72	74			
pX, platoon unblocked	0.97				0.97	0.97
vC, conflicting volume	634				1188	317
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	573				1141	248
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				98	98
cM capacity (veh/h)	971				185	733

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	365	690	418	216	15
Volume Left	20	0	0	0	3
Volume Right	0	0	0	7	12
cSH	971	1700	1700	1700	461
Volume to Capacity	0.02	0.41	0.25	0.13	0.03
Queue Length 95th (m)	0.5	0.0	0.0	0.0	0.8
Control Delay (s)	0.7	0.0	0.0	0.0	13.1
Lane LOS	A				B
Approach Delay (s)	0.2		0.0		13.1
Approach LOS					B

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	53.5%	ICU Level of Service	A
Analysis Period (min)	15		



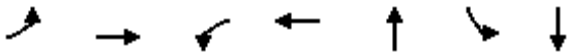
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	924	7	10	525	12	15	0	4	4	0	44
Future Volume (vph)	23	924	7	10	525	12	15	0	4	4	0	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	25.0		0.0	0.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.997			0.973			0.850	
Flt Protected	0.950			0.950				0.962		0.950		
Satd. Flow (prot)	1593	1675	0	1593	3176	0	0	1569	0	1593	1425	0
Flt Permitted	0.432			0.236				0.736		0.744		
Satd. Flow (perm)	724	1675	0	396	3176	0	0	1201	0	1247	1425	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			4			40			347	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		73.8			118.3			64.8			56.3	
Travel Time (s)		5.3			8.5			4.7			4.1	
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
Adj. Flow (vph)	25	1004	8	11	571	13	16	0	4	4	0	48
Shared Lane Traffic (%)												
Lane Group Flow (vph)	25	1012	0	11	584	0	0	20	0	4	48	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)		3.6			3.6			0.0			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
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)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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		33.0	33.0		33.0	33.0	
Total Split (s)	75.0	75.0		75.0	75.0		35.0	35.0		35.0	35.0	
Total Split (%)	68.2%	68.2%		68.2%	68.2%		31.8%	31.8%		31.8%	31.8%	
Maximum Green (s)	68.0	68.0		68.0	68.0		28.0	28.0		28.0	28.0	
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)	-3.0	-3.0		-3.0	-3.0			-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
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	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	20.0	20.0		20.0	20.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		16.0	16.0		16.0	16.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	80.1	80.1		80.1	80.1			11.0		11.0	11.0	
Actuated g/C Ratio	0.88	0.88		0.88	0.88			0.12		0.12	0.12	
v/c Ratio	0.04	0.69		0.03	0.21			0.11		0.03	0.10	
Control Delay	2.1	7.0		2.3	1.9			6.1		35.8	0.4	
Queue Delay	0.0	1.5		0.0	0.2			0.0		0.0	0.0	
Total Delay	2.1	8.5		2.3	2.1			6.1		35.8	0.4	
LOS	A	A		A	A			A		D	A	
Approach Delay		8.4			2.1			6.1			3.1	
Approach LOS		A			A			A			A	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 110			
Actuated Cycle Length: 91.4			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 6.0		Intersection LOS: A	
Intersection Capacity Utilization 69.0%		ICU Level of Service C	
Analysis Period (min) 15			

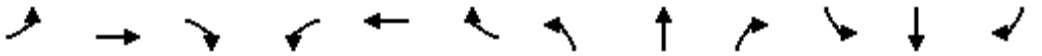
Splits and Phases: 4: Lakeshore Road & Elizabeth Street





Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	25	1012	11	584	20	4	48
v/c Ratio	0.04	0.69	0.03	0.21	0.11	0.03	0.10
Control Delay	2.1	7.0	2.3	1.9	6.1	35.8	0.4
Queue Delay	0.0	1.5	0.0	0.2	0.0	0.0	0.0
Total Delay	2.1	8.5	2.3	2.1	6.1	35.8	0.4
Queue Length 50th (m)	0.8	73.8	0.3	10.8	0.0	0.7	0.0
Queue Length 95th (m)	2.2	125.8	1.3	14.9	3.3	3.8	0.0
Internal Link Dist (m)		49.8		94.3	40.8		32.3
Turn Bay Length (m)			25.0			20.0	
Base Capacity (vph)	634	1468	347	2783	433	423	713
Starvation Cap Reductn	0	267	0	1353	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.84	0.03	0.41	0.05	0.01	0.07

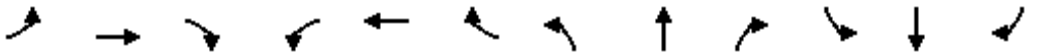
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	924	7	10	525	12	15	0	4	4	0	44
Future Volume (vph)	23	924	7	10	525	12	15	0	4	4	0	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00			0.97		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00			0.96		0.95	1.00	
Satd. Flow (prot)	1593	1674		1593	3175			1568		1593	1425	
Flt Permitted	0.43	1.00		0.24	1.00			0.74		0.74	1.00	
Satd. Flow (perm)	724	1674		396	3175			1201		1248	1425	
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)	25	1004	8	11	571	13	16	0	4	4	0	48
RTOR Reduction (vph)	0	0	0	0	1	0	0	18	0	0	44	0
Lane Group Flow (vph)	25	1012	0	11	583	0	0	2	0	4	4	0
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)	75.4	75.4		75.4	75.4			4.8		4.8	4.8	
Effective Green, g (s)	78.4	78.4		78.4	78.4			7.8		7.8	7.8	
Actuated g/C Ratio	0.83	0.83		0.83	0.83			0.08		0.08	0.08	
Clearance Time (s)	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	
Lane Grp Cap (vph)	602	1393		329	2642			99		103	117	
v/s Ratio Prot		c0.60			0.18						0.00	
v/s Ratio Perm	0.03			0.03				0.00		c0.00		
v/c Ratio	0.04	0.73		0.03	0.22			0.02		0.04	0.03	
Uniform Delay, d1	1.4	3.4		1.4	1.6			39.7		39.8	39.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.1	3.3		0.2	0.2			0.1		0.2	0.1	
Delay (s)	1.5	6.7		1.6	1.8			39.7		39.9	39.9	
Level of Service	A	A		A	A			D		D	D	
Approach Delay (s)		6.6			1.8			39.7			39.9	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	6.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	94.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



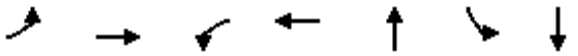
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	869	23	1	501	27	0	1	1	10	1	46
Future Volume (vph)	39	869	23	1	501	27	0	1	1	10	1	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		0.0	20.0		0.0	0.0		0.0	7.0		0.0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.992			0.932			0.853	
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1593	1670	0	1593	3160	0	0	1562	0	1593	1430	0
Flt Permitted	0.436			0.253						0.757		
Satd. Flow (perm)	731	1670	0	424	3160	0	0	1562	0	1269	1430	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			11			1			50	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		118.3			60.3			53.5			57.7	
Travel Time (s)		8.5			4.3			3.9			4.2	
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
Adj. Flow (vph)	42	945	25	1	545	29	0	1	1	11	1	50
Shared Lane Traffic (%)												
Lane Group Flow (vph)	42	970	0	1	574	0	0	2	0	11	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)		3.6			3.6			0.0			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
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)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	
Turn Type	Perm	NA		Perm	NA			NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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)	37.0	37.0		37.0	37.0		28.0	28.0		28.0	28.0	
Total Split (s)	79.0	79.0		79.0	79.0		31.0	31.0		31.0	31.0	
Total Split (%)	71.8%	71.8%		71.8%	71.8%		28.2%	28.2%		28.2%	28.2%	
Maximum Green (s)	73.0	73.0		73.0	73.0		25.0	25.0		25.0	25.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0			-2.0		-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
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	None	None		Max	Max		None	None		None	None	
Walk Time (s)	20.0	20.0		20.0	20.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	84.3	84.3		84.3	84.3			10.2		10.2	10.2	
Actuated g/C Ratio	0.85	0.85		0.85	0.85			0.10		0.10	0.10	
v/c Ratio	0.07	0.68		0.00	0.21			0.01		0.08	0.27	
Control Delay	2.1	6.8		2.0	2.0			32.5		40.0	15.4	
Queue Delay	0.0	4.0		0.0	0.0			0.0		0.0	0.0	
Total Delay	2.1	10.7		2.0	2.0			32.5		40.0	15.4	
LOS	A	B		A	A			C		D	B	
Approach Delay		10.4			2.0			32.5			19.8	
Approach LOS		B			A			C			B	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 110			
Actuated Cycle Length: 98.8			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 7.8		Intersection LOS: A	
Intersection Capacity Utilization 66.3%		ICU Level of Service C	
Analysis Period (min) 15			

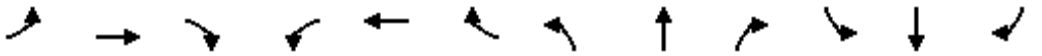
Splits and Phases: 5: Old Lakeshore Road/Pearl Street & Lakeshore Road





Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	42	970	1	574	2	11	51
v/c Ratio	0.07	0.68	0.00	0.21	0.01	0.08	0.27
Control Delay	2.1	6.8	2.0	2.0	32.5	40.0	15.4
Queue Delay	0.0	4.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.1	10.7	2.0	2.0	32.5	40.0	15.4
Queue Length 50th (m)	1.2	61.4	0.0	9.6	0.2	2.2	0.2
Queue Length 95th (m)	3.2	108.4	0.3	14.2	2.3	7.3	11.1
Internal Link Dist (m)		94.3		36.3	29.5		33.7
Turn Bay Length (m)	40.0		20.0			7.0	
Base Capacity (vph)	623	1425	361	2698	429	348	428
Starvation Cap Reductn	0	363	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.91	0.00	0.21	0.00	0.03	0.12

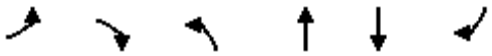
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	869	23	1	501	27	0	1	1	10	1	46
Future Volume (vph)	39	869	23	1	501	27	0	1	1	10	1	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99			0.93		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1593	1670		1593	3161			1563		1593	1430	
Flt Permitted	0.44	1.00		0.25	1.00			1.00		0.76	1.00	
Satd. Flow (perm)	731	1670		424	3161			1563		1268	1430	
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)	42	945	25	1	545	29	0	1	1	11	1	50
RTOR Reduction (vph)	0	0	0	0	2	0	0	1	0	0	46	0
Lane Group Flow (vph)	42	970	0	1	572	0	0	1	0	11	5	0
Turn Type	Perm	NA		Perm	NA			NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	81.5	81.5		81.5	81.5			6.5		6.5	6.5	
Effective Green, g (s)	83.5	83.5		83.5	83.5			8.5		8.5	8.5	
Actuated g/C Ratio	0.84	0.84		0.84	0.84			0.08		0.08	0.08	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	610	1394		354	2639			132		107	121	
v/s Ratio Prot		c0.58			0.18			0.00			0.00	
v/s Ratio Perm	0.06			0.00						c0.01		
v/c Ratio	0.07	0.70		0.00	0.22			0.01		0.10	0.04	
Uniform Delay, d1	1.4	3.2		1.4	1.7			41.9		42.2	42.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.0	1.5		0.0	0.2			0.0		0.4	0.1	
Delay (s)	1.5	4.8		1.4	1.9			41.9		42.7	42.2	
Level of Service	A	A		A	A			D		D	D	
Approach Delay (s)		4.6			1.9			41.9			42.3	
Approach LOS		A			A			D			D	

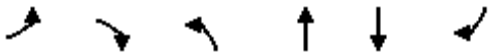
Intersection Summary			
HCM 2000 Control Delay	5.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	19	17	0
Future Volume (vph)	0	0	0	19	17	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	76.5			51.6	64.8	
Travel Time (s)	5.5			3.7	4.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	21	18	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	21	18	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Stop	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 6.7%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	0	0	0	19	17	0
Future Volume (vph)	0	0	0	19	17	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	21	18	0

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	0	21	18
Volume Left (vph)	0	0	0
Volume Right (vph)	0	0	0
Hadj (s)	0.00	0.03	0.03
Departure Headway (s)	4.0	4.0	4.0
Degree Utilization, x	0.00	0.02	0.02
Capacity (veh/h)	900	907	905
Control Delay (s)	7.0	7.0	7.0
Approach Delay (s)	0.0	7.0	7.0
Approach LOS	A	A	A

Intersection Summary			
Delay	7.0		
Level of Service	A		
Intersection Capacity Utilization	6.7%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection: 1: Lakeshore Road & Locust Street

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (m)	126.4	152.5	4.0	39.5
Average Queue (m)	51.1	75.8	0.1	11.6
95th Queue (m)	160.8	177.9	1.7	37.9
Link Distance (m)	142.3	142.3	79.3	199.2
Upstream Blk Time (%)	19	22		
Queuing Penalty (veh)	0	0		
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 2: Private Driveway/Brant Street & Lakeshore Road

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	T	TR	LTR	L	TR
Maximum Queue (m)	62.4	84.6	46.5	46.9	8.4	45.4	22.7
Average Queue (m)	34.3	74.8	18.8	15.4	1.7	14.5	15.3
95th Queue (m)	77.0	98.1	36.4	33.4	7.1	31.2	24.4
Link Distance (m)		79.3	49.0	49.0	59.1	107.6	
Upstream Blk Time (%)		12	0	0			
Queuing Penalty (veh)		124	0	1			
Storage Bay Dist (m)	55.0						15.0
Storage Blk Time (%)	0	26	3			12	4
Queuing Penalty (veh)	0	32	0			18	3

Intersection: 3: Lakeshore Road & John Street

Movement	EB	EB	WB	WB	SB
Directions Served	LT	T	T	TR	LR
Maximum Queue (m)	12.6	50.8	1.8	7.4	8.2
Average Queue (m)	2.4	13.9	0.1	0.3	3.1
95th Queue (m)	9.3	43.0	1.3	4.4	9.2
Link Distance (m)		49.0	49.9	49.9	117.4
Upstream Blk Time (%)		0			
Queuing Penalty (veh)		4			
Storage Bay Dist (m)	10.0				
Storage Blk Time (%)	1	4			
Queuing Penalty (veh)	5	21			

Intersection: 4: Lakeshore Road & Elizabeth Street

Movement	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	T	TR	LTR	L	TR
Maximum Queue (m)	7.6	54.8	11.6	37.0	33.2	15.4	8.1	16.6
Average Queue (m)	1.7	35.3	2.1	11.4	8.5	4.8	0.9	6.9
95th Queue (m)	6.1	66.6	8.4	27.0	22.3	13.7	4.7	13.8
Link Distance (m)	49.9	49.9		97.5	97.5	44.1		38.0
Upstream Blk Time (%)		2						
Queuing Penalty (veh)		11						
Storage Bay Dist (m)			25.0				20.0	
Storage Blk Time (%)				1				0
Queuing Penalty (veh)				0				0

Intersection: 5: Old Lakeshore Road/Pearl Street & Lakeshore Road

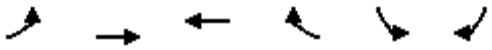
Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	T	TR	LTR	L	TR
Maximum Queue (m)	27.4	88.3	31.0	23.6	7.0	11.8	16.5
Average Queue (m)	4.7	33.0	10.2	6.6	0.4	2.5	8.3
95th Queue (m)	17.3	77.4	25.3	18.6	3.3	9.4	15.7
Link Distance (m)		97.5	50.3	50.3	43.2		43.4
Upstream Blk Time (%)		0					
Queuing Penalty (veh)		0					
Storage Bay Dist (m)	40.0					7.0	
Storage Blk Time (%)		4	1			7	6
Queuing Penalty (veh)		1	0			3	1

Intersection: 6: Driveway

Movement	NB	SB
Directions Served	LT	TR
Maximum Queue (m)	10.7	12.2
Average Queue (m)	4.4	4.3
95th Queue (m)	12.0	12.4
Link Distance (m)	44.9	44.1
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

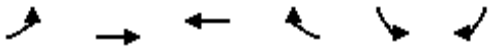
Network Summary

Network wide Queuing Penalty: 224



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	30	737	1071	65	2	59
Future Volume (vph)	30	737	1071	65	2	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt			0.991		0.869	
Flt Protected	0.950				0.998	
Satd. Flow (prot)	1770	1863	3507	0	1615	0
Flt Permitted	0.950				0.998	
Satd. Flow (perm)	1770	1863	3507	0	1615	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		148.5	99.8		213.0	
Travel Time (s)		10.7	7.2		15.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	801	1164	71	2	64
Shared Lane Traffic (%)						
Lane Group Flow (vph)	33	801	1235	0	66	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

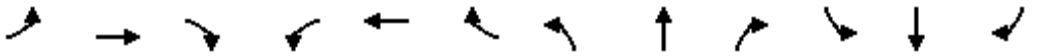
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 49.2%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	30	737	1071	65	2	59
Future Volume (Veh/h)	30	737	1071	65	2	59
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)	33	801	1164	71	2	64
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			100			
pX, platoon unblocked	0.84				0.84	0.84
vC, conflicting volume	1235				2066	618
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	906				1892	173
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	95				96	91
cM capacity (veh/h)	629				49	708

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	33	801	776	459	66
Volume Left	33	0	0	0	2
Volume Right	0	0	0	71	64
cSH	629	1700	1700	1700	504
Volume to Capacity	0.05	0.47	0.46	0.27	0.13
Queue Length 95th (m)	1.3	0.0	0.0	0.0	3.6
Control Delay (s)	11.0	0.0	0.0	0.0	13.2
Lane LOS	B				B
Approach Delay (s)	0.4		0.0		13.2
Approach LOS					B

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		

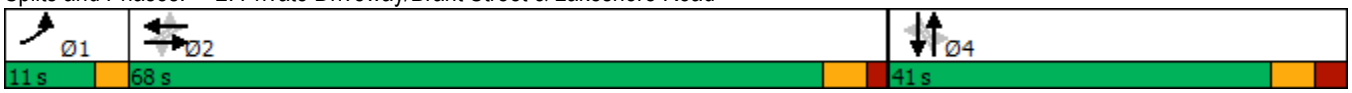


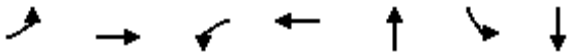
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	127	600	11	3	835	101	6	0	0	76	10	296
Future Volume (vph)	127	600	11	3	835	101	6	0	0	76	10	296
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		0.0	25.0		0.0	0.0		0.0	0.0		15.0
Storage Lanes	1		0	1		0	0		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997			0.984						0.855	
Flt Protected	0.950			0.950				0.950		0.950		
Satd. Flow (prot)	1593	1671	0	1593	3134	0	0	1593	0	1593	1433	0
Flt Permitted	0.230			0.302				0.221		0.753		
Satd. Flow (perm)	386	1671	0	506	3134	0	0	371	0	1262	1433	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			17						226	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		99.8			72.3			72.5			121.7	
Travel Time (s)		7.2			5.2			5.2			8.8	
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
Adj. Flow (vph)	138	652	12	3	908	110	7	0	0	83	11	322
Shared Lane Traffic (%)												
Lane Group Flow (vph)	138	664	0	3	1018	0	0	7	0	83	333	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)		3.6			3.6			0.0			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
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)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	1	2			2			4			4	
Permitted Phases	2	2		2			4			4		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	1	2		2	2		4	4		4	4	
Switch Phase												
Minimum Initial (s)	6.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	9.0	33.0		33.0	33.0		38.0	38.0		38.0	38.0	
Total Split (s)	11.0	68.0		68.0	68.0		41.0	41.0		41.0	41.0	
Total Split (%)	9.2%	56.7%		56.7%	56.7%		34.2%	34.2%		34.2%	34.2%	
Maximum Green (s)	8.0	62.0		62.0	62.0		34.0	34.0		34.0	34.0	
Yellow Time (s)	3.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	-2.0		-2.0	-2.0			-3.0		-3.0	-3.0	
Total Lost Time (s)	3.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lead/Lag	Lead	Lag		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Max		Max	Max		None	None		None	None	
Walk Time (s)		11.0		11.0	11.0		12.0	12.0		12.0	12.0	
Flash Dont Walk (s)		16.0		16.0	16.0		19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)		0		0	0		0	0		0	0	
Act Effct Green (s)	72.6	64.3		64.3	64.3			18.1		18.1	18.1	
Actuated g/C Ratio	0.72	0.64		0.64	0.64			0.18		0.18	0.18	
v/c Ratio	0.38	0.62		0.01	0.51			0.11		0.37	0.75	
Control Delay	7.6	15.8		9.7	11.8			36.7		40.3	24.1	
Queue Delay	0.0	0.0		0.0	0.7			0.0		0.0	0.0	
Total Delay	7.6	15.8		9.7	12.4			36.7		40.3	24.1	
LOS	A	B		A	B			D		D	C	
Approach Delay		14.4			12.4			36.7			27.3	
Approach LOS		B			B			D			C	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 120			
Actuated Cycle Length: 100.8			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 15.9		Intersection LOS: B	
Intersection Capacity Utilization 73.4%		ICU Level of Service D	
Analysis Period (min) 15			

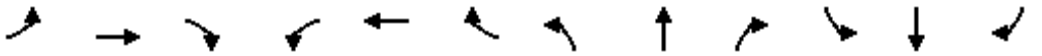
Splits and Phases: 2: Private Driveway/Brant Street & Lakeshore Road





Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	138	664	3	1018	7	83	333
v/c Ratio	0.38	0.62	0.01	0.51	0.11	0.37	0.75
Control Delay	7.6	15.8	9.7	11.8	36.7	40.3	24.1
Queue Delay	0.0	0.0	0.0	0.7	0.0	0.0	0.0
Total Delay	7.6	15.8	9.7	12.4	36.7	40.3	24.1
Queue Length 50th (m)	6.1	72.9	0.2	51.5	1.2	15.2	19.8
Queue Length 95th (m)	17.6	150.5	1.7	93.8	5.4	29.4	52.4
Internal Link Dist (m)		75.8		48.3	48.5		97.7
Turn Bay Length (m)	55.0		25.0				
Base Capacity (vph)	377	1066	322	2005	136	465	671
Starvation Cap Reductn	0	0	0	581	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.62	0.01	0.71	0.05	0.18	0.50

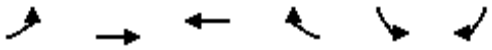
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	127	600	11	3	835	101	6	0	0	76	10	296
Future Volume (vph)	127	600	11	3	835	101	6	0	0	76	10	296
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.98			1.00		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00			0.95		0.95	1.00	
Satd. Flow (prot)	1593	1672		1593	3134			1593		1593	1433	
Flt Permitted	0.23	1.00		0.30	1.00			0.22		0.75	1.00	
Satd. Flow (perm)	385	1672		506	3134			370		1263	1433	
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)	138	652	12	3	908	110	7	0	0	83	11	322
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0	0	185	0
Lane Group Flow (vph)	138	664	0	3	1012	0	0	7	0	83	148	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	1	2			2			4			4	
Permitted Phases	2	2		2			4			4		
Actuated Green, G (s)	69.6	62.3		62.3	62.3			15.1		15.1	15.1	
Effective Green, g (s)	69.6	64.3		64.3	64.3			18.1		18.1	18.1	
Actuated g/C Ratio	0.69	0.64		0.64	0.64			0.18		0.18	0.18	
Clearance Time (s)	3.0	6.0		6.0	6.0			7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	353	1067		323	2001			66		227	257	
v/s Ratio Prot	c0.03	c0.40			0.32						c0.10	
v/s Ratio Perm	0.24			0.01				0.02		0.07		
v/c Ratio	0.39	0.62		0.01	0.51			0.11		0.37	0.57	
Uniform Delay, d1	6.2	10.9		6.6	9.7			34.5		36.3	37.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.7	2.7		0.1	0.9			0.7		1.0	3.1	
Delay (s)	6.9	13.6		6.7	10.6			35.2		37.3	40.9	
Level of Service	A	B		A	B			D		D	D	
Approach Delay (s)		12.5			10.6			35.2			40.1	
Approach LOS		B			B			D			D	

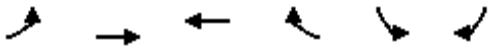
Intersection Summary			
HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	100.7	Sum of lost time (s)	11.0
Intersection Capacity Utilization	73.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	16	660	915	14	3	24
Future Volume (vph)	16	660	915	14	3	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	10.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt			0.998		0.879	
Flt Protected		0.999			0.995	
Satd. Flow (prot)	0	3182	3179	0	1466	0
Flt Permitted		0.999			0.995	
Satd. Flow (perm)	0	3182	3179	0	1466	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		72.3	73.8		133.2	
Travel Time (s)		5.2	5.3		9.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	717	995	15	3	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	734	1010	0	29	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

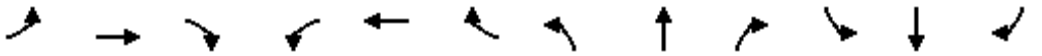
Intersection Summary			
Area Type:	CBD		
Control Type: Unsignalized			
Intersection Capacity Utilization	43.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	16	660	915	14	3	24
Future Volume (Veh/h)	16	660	915	14	3	24
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	717	995	15	3	26
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		72	74			
pX, platoon unblocked	0.93				0.93	0.93
vC, conflicting volume	1010				1395	505
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	854				1269	310
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				98	96
cM capacity (veh/h)	724				145	636

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	256	478	663	347	29
Volume Left	17	0	0	0	3
Volume Right	0	0	0	15	26
cSH	724	1700	1700	1700	471
Volume to Capacity	0.02	0.28	0.39	0.20	0.06
Queue Length 95th (m)	0.6	0.0	0.0	0.0	1.6
Control Delay (s)	0.9	0.0	0.0	0.0	13.1
Lane LOS	A				B
Approach Delay (s)	0.3		0.0		13.1
Approach LOS					B

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	43.0%	ICU Level of Service	A
Analysis Period (min)	15		



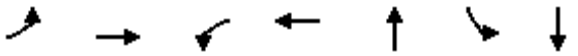
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	612	0	5	847	44	3	1	5	37	0	79
Future Volume (vph)	50	612	0	5	847	44	3	1	5	37	0	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	25.0		0.0	0.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.993			0.925			0.850	
Flt Protected	0.950			0.950				0.984		0.950		
Satd. Flow (prot)	1593	1676	0	1593	3163	0	0	1526	0	1593	1425	0
Flt Permitted	0.284			0.378				0.888		0.752		
Satd. Flow (perm)	476	1676	0	634	3163	0	0	1377	0	1261	1425	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					9			5			178	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		73.8			118.3			64.8			56.3	
Travel Time (s)		5.3			8.5			4.7			4.1	
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
Adj. Flow (vph)	54	665	0	5	921	48	3	1	5	40	0	86
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	665	0	5	969	0	0	9	0	40	86	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)		3.6			3.6			0.0			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
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)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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		33.0	33.0		33.0	33.0	
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)	-3.0	-3.0		-3.0	-3.0			-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
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	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	20.0	20.0		20.0	20.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		16.0	16.0		16.0	16.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	84.5	84.5		84.5	84.5			12.3		12.3	12.3	
Actuated g/C Ratio	0.84	0.84		0.84	0.84			0.12		0.12	0.12	
v/c Ratio	0.14	0.47		0.01	0.37			0.05		0.26	0.26	
Control Delay	3.4	4.5		2.4	3.1			29.2		44.5	1.9	
Queue Delay	0.0	0.9		0.0	0.5			0.0		0.0	0.0	
Total Delay	3.4	5.5		2.4	3.7			29.2		44.5	1.9	
LOS	A	A		A	A			C		D	A	
Approach Delay		5.3			3.7			29.3			15.4	
Approach LOS		A			A			C			B	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 120			
Actuated Cycle Length: 100.9			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.47			
Intersection Signal Delay: 5.2		Intersection LOS: A	
Intersection Capacity Utilization 59.1%		ICU Level of Service B	
Analysis Period (min) 15			

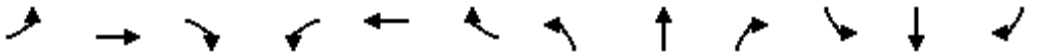
Splits and Phases: 4: Lakeshore Road & Elizabeth Street





Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	54	665	5	969	9	40	86
v/c Ratio	0.14	0.47	0.01	0.37	0.05	0.26	0.26
Control Delay	3.4	4.5	2.4	3.1	29.2	44.5	1.9
Queue Delay	0.0	0.9	0.0	0.5	0.0	0.0	0.0
Total Delay	3.4	5.5	2.4	3.7	29.2	44.5	1.9
Queue Length 50th (m)	1.8	33.2	0.2	21.8	0.7	7.5	0.0
Queue Length 95th (m)	5.6	61.8	1.0	35.5	5.4	17.9	0.0
Internal Link Dist (m)		49.8		94.3	40.8		32.3
Turn Bay Length (m)			25.0			20.0	
Base Capacity (vph)	398	1403	530	2649	440	399	573
Starvation Cap Reductn	0	450	0	1157	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.70	0.01	0.65	0.02	0.10	0.15

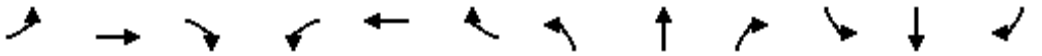
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	612	0	5	847	44	3	1	5	37	0	79
Future Volume (vph)	50	612	0	5	847	44	3	1	5	37	0	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99			0.93		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00			0.98		0.95	1.00	
Satd. Flow (prot)	1593	1676		1593	3162			1525		1593	1425	
Flt Permitted	0.28	1.00		0.38	1.00			0.89		0.75	1.00	
Satd. Flow (perm)	475	1676		633	3162			1377		1260	1425	
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)	54	665	0	5	921	48	3	1	5	40	0	86
RTOR Reduction (vph)	0	0	0	0	2	0	0	4	0	0	77	0
Lane Group Flow (vph)	54	665	0	5	967	0	0	5	0	40	9	0
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)	80.7	80.7		80.7	80.7			7.7		7.7	7.7	
Effective Green, g (s)	83.7	83.7		83.7	83.7			10.7		10.7	10.7	
Actuated g/C Ratio	0.82	0.82		0.82	0.82			0.10		0.10	0.10	
Clearance Time (s)	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	
Lane Grp Cap (vph)	388	1369		517	2584			143		131	148	
v/s Ratio Prot		c0.40			0.31						0.01	
v/s Ratio Perm	0.11			0.01				0.00		c0.03		
v/c Ratio	0.14	0.49		0.01	0.37			0.03		0.31	0.06	
Uniform Delay, d1	1.9	2.8		1.7	2.5			41.2		42.4	41.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.7	1.2		0.0	0.4			0.1		1.3	0.2	
Delay (s)	2.7	4.1		1.8	2.9			41.3		43.7	41.5	
Level of Service	A	A		A	A			D		D	D	
Approach Delay (s)		4.0			2.9			41.3			42.2	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	6.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	102.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



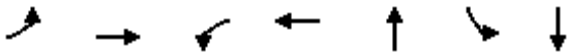
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	608	9	5	823	43	18	9	1	18	4	52
Future Volume (vph)	38	608	9	5	823	43	18	9	1	18	4	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		0.0	20.0		0.0	0.0		0.0	7.0		0.0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.993			0.996			0.860	
Flt Protected	0.950			0.950				0.969		0.950		
Satd. Flow (prot)	1593	1673	0	1593	3163	0	0	1618	0	1593	1442	0
Flt Permitted	0.295			0.382				0.768		0.862		
Satd. Flow (perm)	495	1673	0	640	3163	0	0	1282	0	1445	1442	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			11			1			57	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		118.3			60.3			53.5			57.7	
Travel Time (s)		8.5			4.3			3.9			4.2	
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
Adj. Flow (vph)	41	661	10	5	895	47	20	10	1	20	4	57
Shared Lane Traffic (%)												
Lane Group Flow (vph)	41	671	0	5	942	0	0	31	0	20	61	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)		3.6			3.6			0.0			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
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)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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)	37.0	37.0		37.0	37.0		28.0	28.0		28.0	28.0	
Total Split (s)	89.0	89.0		89.0	89.0		31.0	31.0		31.0	31.0	
Total Split (%)	74.2%	74.2%		74.2%	74.2%		25.8%	25.8%		25.8%	25.8%	
Maximum Green (s)	83.0	83.0		83.0	83.0		25.0	25.0		25.0	25.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0			-2.0		-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
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	None	None		Max	Max		None	None		None	None	
Walk Time (s)	20.0	20.0		20.0	20.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	91.6	91.6		91.6	91.6			10.8		10.8	10.8	
Actuated g/C Ratio	0.86	0.86		0.86	0.86			0.10		0.10	0.10	
v/c Ratio	0.10	0.47		0.01	0.35			0.24		0.14	0.31	
Control Delay	2.5	3.8		2.0	2.5			47.0		44.9	17.2	
Queue Delay	0.0	1.6		0.0	0.0			0.0		0.0	0.0	
Total Delay	2.5	5.4		2.0	2.5			47.0		44.9	17.2	
LOS	A	A		A	A			D		D	B	
Approach Delay		5.2			2.5			47.0			24.1	
Approach LOS		A			A			D			C	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 120			
Actuated Cycle Length: 106.7			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.47			
Intersection Signal Delay: 5.3		Intersection LOS: A	
Intersection Capacity Utilization 51.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 5: Old Lakeshore Road/Pearl Street & Lakeshore Road





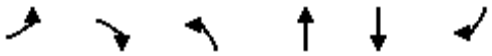
Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	41	671	5	942	31	20	61
v/c Ratio	0.10	0.47	0.01	0.35	0.24	0.14	0.31
Control Delay	2.5	3.8	2.0	2.5	47.0	44.9	17.2
Queue Delay	0.0	1.6	0.0	0.0	0.0	0.0	0.0
Total Delay	2.5	5.4	2.0	2.5	47.0	44.9	17.2
Queue Length 50th (m)	1.2	29.8	0.2	18.5	6.0	3.9	0.8
Queue Length 95th (m)	3.7	53.4	0.8	29.2	15.4	11.5	13.2
Internal Link Dist (m)		94.3		36.3	29.5		33.7
Turn Bay Length (m)	40.0		20.0			7.0	
Base Capacity (vph)	425	1436	549	2717	325	366	408
Starvation Cap Reductn	0	554	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.76	0.01	0.35	0.10	0.05	0.15

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	608	9	5	823	43	18	9	1	18	4	52
Future Volume (vph)	38	608	9	5	823	43	18	9	1	18	4	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99			1.00		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00			0.97		0.95	1.00	
Satd. Flow (prot)	1593	1673		1593	3161			1617		1593	1441	
Flt Permitted	0.30	1.00		0.38	1.00			0.77		0.86	1.00	
Satd. Flow (perm)	495	1673		640	3161			1282		1446	1441	
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)	41	661	10	5	895	47	20	10	1	20	4	57
RTOR Reduction (vph)	0	0	0	0	2	0	0	1	0	0	52	0
Lane Group Flow (vph)	41	671	0	5	940	0	0	30	0	20	9	0
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)	88.8	88.8		88.8	88.8			7.1		7.1	7.1	
Effective Green, g (s)	90.8	90.8		90.8	90.8			9.1		9.1	9.1	
Actuated g/C Ratio	0.84	0.84		0.84	0.84			0.08		0.08	0.08	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	416	1407		538	2660			108		121	121	
v/s Ratio Prot		c0.40			0.30						0.01	
v/s Ratio Perm	0.08			0.01				c0.02		0.01		
v/c Ratio	0.10	0.48		0.01	0.35			0.28		0.17	0.07	
Uniform Delay, d1	1.5	2.3		1.4	1.9			46.3		45.9	45.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.3		0.0	0.4			1.4		0.6	0.3	
Delay (s)	1.6	2.5		1.4	2.3			47.7		46.5	45.8	
Level of Service	A	A		A	A			D		D	D	
Approach Delay (s)		2.5			2.3			47.7			46.0	
Approach LOS		A			A			D			D	

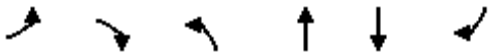
Intersection Summary			
HCM 2000 Control Delay	5.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	107.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	9	5	0
Future Volume (vph)	0	0	0	9	5	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	76.5			51.6	64.8	
Travel Time (s)	5.5			3.7	4.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	10	5	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	10	5	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Stop	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 6.7%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	0	0	0	9	5	0
Future Volume (vph)	0	0	0	9	5	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	10	5	0

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	0	10	5
Volume Left (vph)	0	0	0
Volume Right (vph)	0	0	0
Hadj (s)	0.00	0.03	0.03
Departure Headway (s)	3.9	3.9	3.9
Degree Utilization, x	0.00	0.01	0.01
Capacity (veh/h)	900	910	907
Control Delay (s)	6.9	7.0	7.0
Approach Delay (s)	0.0	7.0	7.0
Approach LOS	A	A	A

Intersection Summary			
Delay	7.0		
Level of Service	A		
Intersection Capacity Utilization	6.7%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection: 1: Lakeshore Road & Locust Street

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (m)	16.8	44.4	5.3	24.5
Average Queue (m)	5.2	6.0	0.3	9.4
95th Queue (m)	14.2	28.2	2.3	18.9
Link Distance (m)	142.3	142.3	79.3	199.2
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 2: Private Driveway/Brant Street & Lakeshore Road

Movement	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	T	TR	LTR	L	TR
Maximum Queue (m)	56.6	82.2	12.4	52.9	51.6	8.5	91.4	22.9
Average Queue (m)	20.0	49.0	0.6	33.2	30.7	1.3	33.8	21.1
95th Queue (m)	49.0	85.9	5.6	57.3	52.7	6.2	66.7	25.2
Link Distance (m)		79.3		49.0	49.0	59.1	107.6	
Upstream Blk Time (%)		2		2	2		0	
Queuing Penalty (veh)		12		11	8		0	
Storage Bay Dist (m)	55.0		25.0					15.0
Storage Blk Time (%)	0	6		13			16	31
Queuing Penalty (veh)	0	8		0			50	24

Intersection: 3: Lakeshore Road & John Street

Movement	EB	EB	WB	WB	SB
Directions Served	LT	T	T	TR	LR
Maximum Queue (m)	15.2	36.2	28.4	29.3	13.0
Average Queue (m)	3.7	3.9	3.2	2.7	5.1
95th Queue (m)	12.2	20.6	16.3	15.1	11.7
Link Distance (m)		49.0	49.9	49.9	117.4
Upstream Blk Time (%)		0	0		
Queuing Penalty (veh)		0	0		
Storage Bay Dist (m)	10.0				
Storage Blk Time (%)	3	1			
Queuing Penalty (veh)	10	5			

Intersection: 4: Lakeshore Road & Elizabeth Street

Movement	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	T	TR	LTR	L	TR
Maximum Queue (m)	15.2	50.6	14.3	41.8	46.0	11.5	20.5	23.1
Average Queue (m)	4.5	20.0	0.9	18.6	16.1	2.2	7.3	10.1
95th Queue (m)	11.7	47.9	6.7	36.8	35.7	8.8	17.1	18.6
Link Distance (m)	49.9	49.9		97.5	97.5	44.1		38.0
Upstream Blk Time (%)		1						
Queuing Penalty (veh)		2						
Storage Bay Dist (m)			25.0				20.0	
Storage Blk Time (%)				3			3	0
Queuing Penalty (veh)				0			2	0

Intersection: 5: Old Lakeshore Road/Pearl Street & Lakeshore Road

Movement	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	T	TR	LTR	L	TR
Maximum Queue (m)	33.6	88.2	6.6	50.3	45.6	24.3	13.0	24.5
Average Queue (m)	6.8	26.9	1.0	19.4	14.8	7.3	4.2	8.8
95th Queue (m)	20.0	63.9	5.1	38.8	34.3	18.0	11.9	18.5
Link Distance (m)		97.5		50.3	50.3	43.2		43.4
Upstream Blk Time (%)		0		0	0			
Queuing Penalty (veh)		0		0	0			
Storage Bay Dist (m)	40.0		20.0				7.0	
Storage Blk Time (%)		2		4			16	10
Queuing Penalty (veh)		1		0			9	2

Intersection: 6: Driveway

Movement	NB	SB
Directions Served	LT	TR
Maximum Queue (m)	9.1	9.2
Average Queue (m)	1.9	1.5
95th Queue (m)	8.0	7.0
Link Distance (m)	44.9	44.1
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 143

Appendix D

ITE Trip Generation Internal Capture

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	210056: 2020 Lakeshore	**Organization:**	Paradigm Transportation Solutions Limited
Project Location:	Burlington	**Performed By:**	
Scenario Description:		**Date:**	
Analysis Year:	Site Generated Traffic	**Checked By:**	
Analysis Period:	**AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	43,335	Square Feet	50	43	7
Retail	820	50,386	Square Feet	47	29	18
Restaurant				0		
Cinema/Entertainment	-	-	-	0		
Residential		557	Dwelling Units	173	41	132
Hotel	310	128	Rooms	86	51	35
All Other Land Uses[2]				0		
Total				356	164	192

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		2	0	0	0	0
Retail	2		0	0	1	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	1	0	0		0
Hotel	1	1	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	356	164	192
Internal Capture Percentage	5%	5%	5%
External Vehicle-Trips[3]	338	155	183
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	9%	29%
Retail	14%	17%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	2%	2%
Hotel	0%	6%

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	210056: 2020 Lakeshore
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	43	43	1.00	7	7
Retail	1.00	29	29	1.00	18	18
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	41	41	1.00	132	132
Hotel	1.00	51	51	1.00	35	35

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		2	4	0	0	0
Retail	5		2	0	3	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	3	1	26	0		0
Hotel	26	5	3	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		9	0	0	0	0
Retail	2		0	0	1	0
Restaurant	6	2		0	2	2
Cinema/Entertainment	0	0	0		0	0
Residential	1	5	0	0		0
Hotel	1	1	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	4	39	43	39	0	0
Retail	4	25	29	25	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	40	41	40	0	0
Hotel	0	51	51	51	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	2	5	7	5	0	0
Retail	3	15	18	15	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	2	130	132	130	0	0
Hotel	2	33	35	33	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	210056: 2020 Lakeshore	**Organization:**	Paradigm Transportation Solutions Limited
Project Location:	Burlington	**Performed By:**	
Scenario Description:		**Date:**	
Analysis Year:	Site Generated Traffic	**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	43,335	Square Feet	50	8	42
Retail	820	50,386	Square Feet	192	92	100
Restaurant				0		
Cinema/Entertainment	-	-	-	0		
Residential	-	557	Dwelling Units	201	122	79
Hotel	310	128	Rooms	114	62	52
All Other Land Uses[2]				0		
Total				557	284	273

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		7	0	0	1	0
Retail	2		0	0	26	5
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	3	9	0	0		2
Hotel	0	2	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	557	284	273
Internal Capture Percentage	20%	20%	21%
External Vehicle-Trips[3]	443	227	216
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	63%	19%
Retail	20%	33%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	22%	18%
Hotel	11%	4%

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	210056: 2020 Lakeshore
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	8	8	1.00	42	42
Retail	1.00	92	92	1.00	100	100
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	122	122	1.00	79	79
Hotel	1.00	62	62	1.00	52	52

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		8	2	0	1	0
Retail	2		29	4	26	5
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	3	33	17	0		2
Hotel	0	8	35	0	1	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		7	0	0	5	0
Retail	2		0	0	56	11
Restaurant	2	46		0	20	44
Cinema/Entertainment	0	4	0		5	1
Residential	5	9	0	0		7
Hotel	0	2	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	5	3	8	3	0	0
Retail	18	74	92	74	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	27	95	122	95	0	0
Hotel	7	55	62	55	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	8	34	42	34	0	0
Retail	33	67	100	67	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	14	65	79	65	0	0
Hotel	2	50	52	50	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

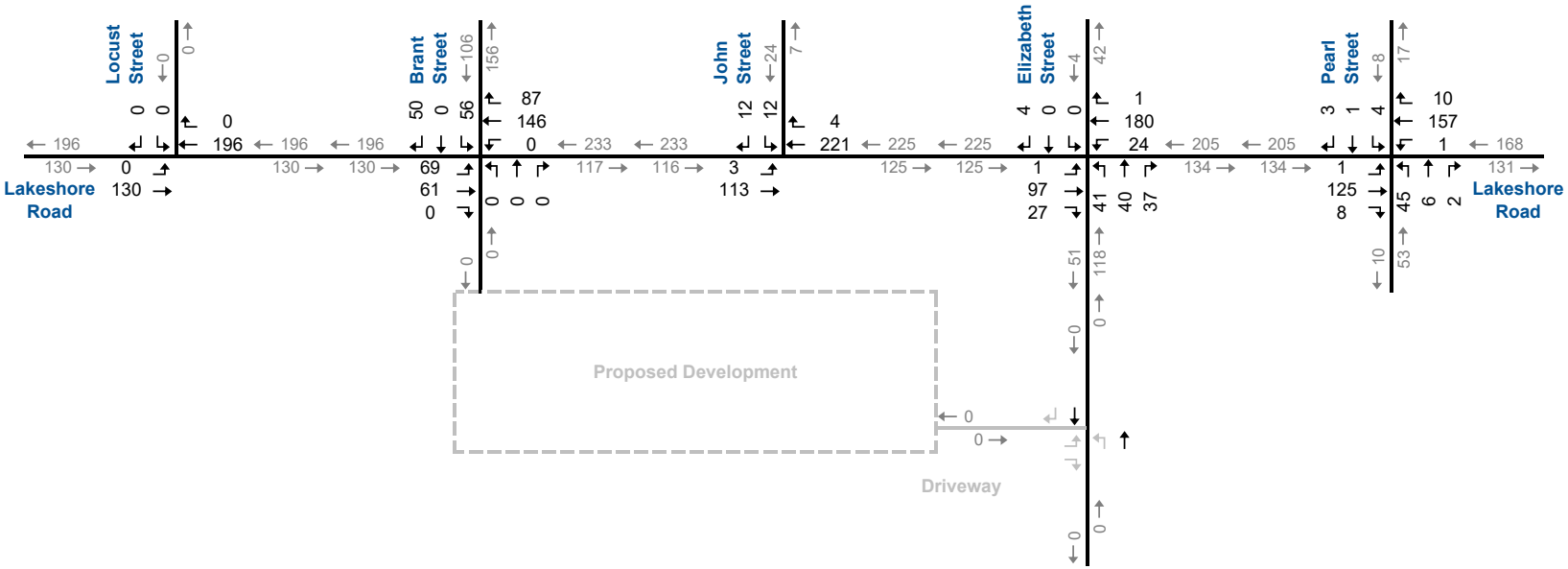
[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

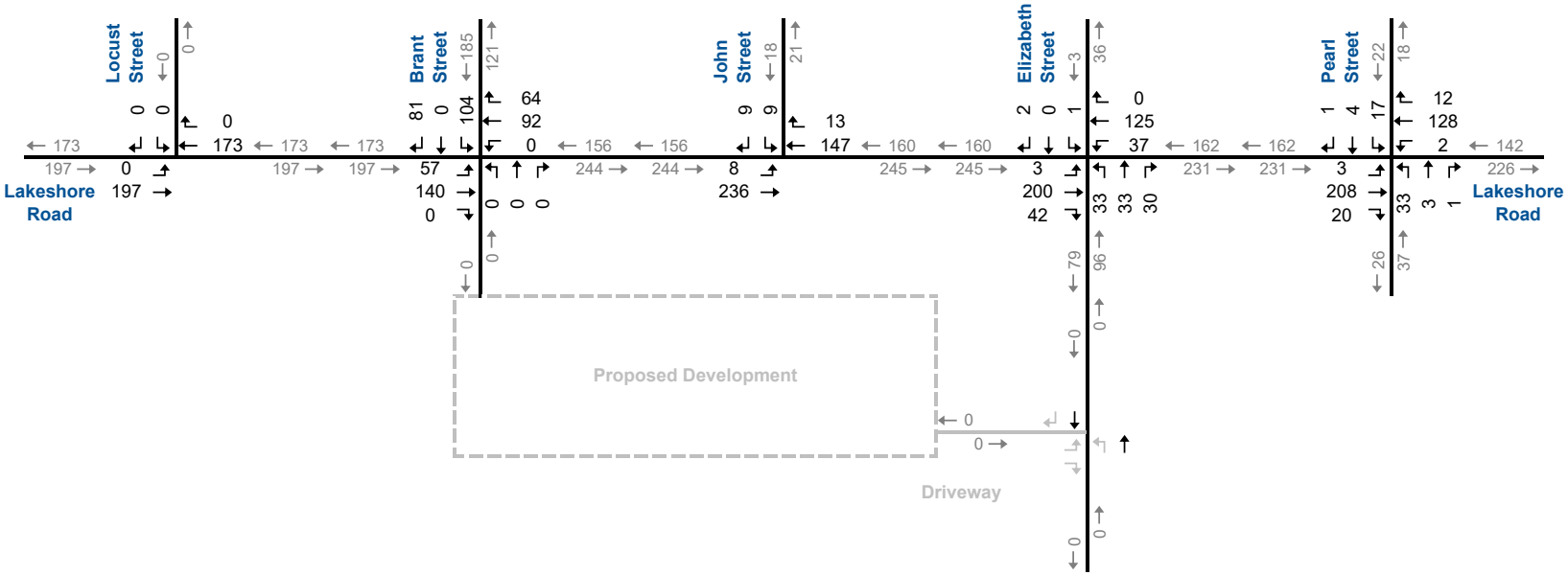
*Indicates computation that has been rounded to the nearest whole number.

Appendix E

Background Development Traffic Projections

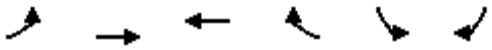



Locust Street
Brant Street
John Street
Elizabeth Street
Pearl Street
Lakeshore Road
Lakeshore Road
Proposed Development
Driveway


Locust Street
Brant Street
John Street
Elizabeth Street
Pearl Street
Lakeshore Road
Lakeshore Road
Proposed Development
Driveway

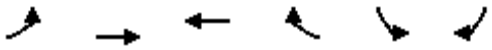
Appendix F

Future Background Traffic Operations



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	57	1260	888	48	7	18
Future Volume (vph)	57	1260	888	48	7	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	170.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt			0.992		0.904	
Flt Protected	0.950				0.986	
Satd. Flow (prot)	1770	1863	3511	0	1660	0
Flt Permitted	0.950				0.986	
Satd. Flow (perm)	1770	1863	3511	0	1660	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		122.3	99.8		159.7	
Travel Time (s)		8.8	7.2		11.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	62	1370	965	52	8	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	62	1370	1017	0	28	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

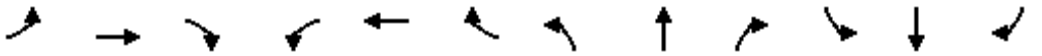
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	76.3%	ICU Level of Service	D
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	57	1260	888	48	7	18
Future Volume (Veh/h)	57	1260	888	48	7	18
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)	62	1370	965	52	8	20
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			100			
pX, platoon unblocked	0.85				0.85	0.85
vC, conflicting volume	1017				2485	508
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	666				2394	67
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	92				64	98
cM capacity (veh/h)	781				22	834

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	62	1370	643	374	28
Volume Left	62	0	0	0	8
Volume Right	0	0	0	52	20
cSH	781	1700	1700	1700	72
Volume to Capacity	0.08	0.81	0.38	0.22	0.39
Queue Length 95th (m)	2.1	0.0	0.0	0.0	12.0
Control Delay (s)	10.0	0.0	0.0	0.0	83.8
Lane LOS	B				F
Approach Delay (s)	0.4		0.0		83.8
Approach LOS					F

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	76.3%	ICU Level of Service	D
Analysis Period (min)	15		

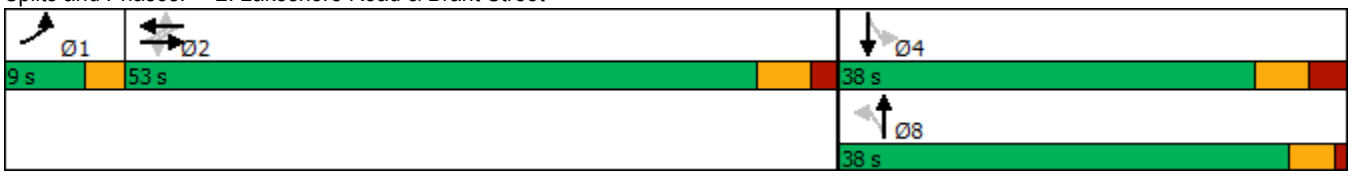


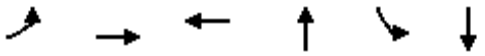
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	204	1047	16	0	716	160	7	1	0	133	5	213
Future Volume (vph)	204	1047	16	0	716	160	7	1	0	133	5	213
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		0.0	25.0		0.0	0.0		0.0	0.0		15.0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.973						0.853	
Flt Protected	0.950							0.957		0.950		
Satd. Flow (prot)	1593	1673	0	1676	3099	0	0	1604	0	1593	1430	0
Flt Permitted	0.240							0.790		0.752		
Satd. Flow (perm)	402	1673	0	1676	3099	0	0	1324	0	1261	1430	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			38						232	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		99.8			72.3			93.6			121.7	
Travel Time (s)		7.2			5.2			6.7			8.8	
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
Adj. Flow (vph)	222	1138	17	0	778	174	8	1	0	145	5	232
Shared Lane Traffic (%)												
Lane Group Flow (vph)	222	1155	0	0	952	0	0	9	0	145	237	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
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)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	1	2			2			8			4	
Permitted Phases	2	2		2			8			4		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	1	2		2	2		8	8		4	4	
Switch Phase												
Minimum Initial (s)	6.0	8.0		8.0	8.0		5.0	5.0		8.0	8.0	
Minimum Split (s)	9.0	33.0		33.0	33.0		22.5	22.5		38.0	38.0	
Total Split (s)	9.0	53.0		53.0	53.0		38.0	38.0		38.0	38.0	
Total Split (%)	9.0%	53.0%		53.0%	53.0%		38.0%	38.0%		38.0%	38.0%	
Maximum Green (s)	6.0	47.0		47.0	47.0		33.5	33.5		31.0	31.0	
Yellow Time (s)	3.0	4.0		4.0	4.0		3.5	3.5		4.0	4.0	
All-Red Time (s)	0.0	2.0		2.0	2.0		1.0	1.0		3.0	3.0	
Lost Time Adjust (s)	0.0	-2.0		0.0	-2.0			0.0		-3.0	0.0	
Total Lost Time (s)	3.0	4.0		6.0	4.0			4.5		4.0	7.0	
Lead/Lag	Lead	Lag		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Max		Max	Max		None	None		None	None	
Walk Time (s)		11.0		11.0	11.0		7.0	7.0		12.0	12.0	
Flash Dont Walk (s)		16.0		16.0	16.0		11.0	11.0		19.0	19.0	
Pedestrian Calls (#/hr)		0		0	0		0	0		0	0	
Act Effct Green (s)	56.2	49.1			49.1			17.3		17.8	14.8	
Actuated g/C Ratio	0.67	0.58			0.58			0.21		0.21	0.18	
v/c Ratio	0.63	1.18			0.52			0.03		0.54	0.54	
Control Delay	15.2	112.5			11.9			25.6		37.2	9.3	
Queue Delay	0.0	0.0			0.3			0.0		0.0	0.0	
Total Delay	15.2	112.5			12.2			25.6		37.2	9.3	
LOS	B	F			B			C		D	A	
Approach Delay		96.8			12.2			25.6			19.9	
Approach LOS		F			B			C			B	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 100			
Actuated Cycle Length: 84			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.18			
Intersection Signal Delay: 56.2		Intersection LOS: E	
Intersection Capacity Utilization 98.1%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 2: Lakeshore Road & Brant Street



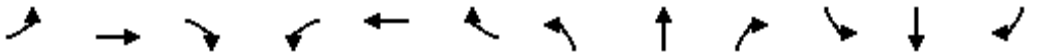


Lane Group	EBL	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	222	1155	952	9	145	237
v/c Ratio	0.63	1.18	0.52	0.03	0.54	0.54
Control Delay	15.2	112.5	11.9	25.6	37.2	9.3
Queue Delay	0.0	0.0	0.3	0.0	0.0	0.0
Total Delay	15.2	112.5	12.2	25.6	37.2	9.3
Queue Length 50th (m)	10.7	~237.2	43.9	1.2	21.8	0.7
Queue Length 95th (m)	#27.6	#354.4	73.6	5.0	40.2	19.1
Internal Link Dist (m)		75.8	48.3	69.6		97.7
Turn Bay Length (m)	55.0					
Base Capacity (vph)	354	979	1828	529	512	675
Starvation Cap Reductn	0	0	341	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.63	1.18	0.64	0.02	0.28	0.35

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

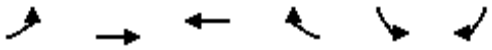
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	204	1047	16	0	716	160	7	1	0	133	5	213
Future Volume (vph)	204	1047	16	0	716	160	7	1	0	133	5	213
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.0			4.0			4.5		4.0	7.0	
Lane Util. Factor	1.00	1.00			0.95			1.00		1.00	1.00	
Frt	1.00	1.00			0.97			1.00		1.00	0.85	
Flt Protected	0.95	1.00			1.00			0.96		0.95	1.00	
Satd. Flow (prot)	1593	1673			3098			1605		1593	1430	
Flt Permitted	0.24	1.00			1.00			0.79		0.75	1.00	
Satd. Flow (perm)	403	1673			3098			1325		1260	1430	
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)	222	1138	17	0	778	174	8	1	0	145	5	232
RTOR Reduction (vph)	0	0	0	0	16	0	0	0	0	0	191	0
Lane Group Flow (vph)	222	1155	0	0	936	0	0	9	0	145	46	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	1	2			2			8			4	
Permitted Phases	2	2		2			8			4		
Actuated Green, G (s)	53.1	47.1			47.1			17.3		14.8	14.8	
Effective Green, g (s)	53.1	49.1			49.1			17.3		17.8	14.8	
Actuated g/C Ratio	0.63	0.59			0.59			0.21		0.21	0.18	
Clearance Time (s)	3.0	6.0			6.0			4.5		7.0	7.0	
Vehicle Extension (s)	3.0	3.0			3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	340	979			1813			273		267	252	
v/s Ratio Prot	c0.05	c0.69			0.30						0.03	
v/s Ratio Perm	0.37							0.01		c0.12		
v/c Ratio	0.65	1.18			0.52			0.03		0.54	0.18	
Uniform Delay, d1	7.5	17.4			10.3			26.6		29.4	29.4	
Progression Factor	1.00	1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2	4.5	91.4			1.1			0.0		2.3	0.3	
Delay (s)	12.0	108.8			11.4			26.7		31.7	29.8	
Level of Service	B	F			B			C		C	C	
Approach Delay (s)		93.2			11.4			26.7			30.5	
Approach LOS		F			B			C			C	

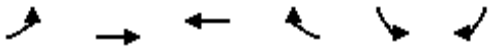
Intersection Summary			
HCM 2000 Control Delay	55.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	83.9	Sum of lost time (s)	14.0
Intersection Capacity Utilization	98.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	23	1154	853	11	15	24
Future Volume (vph)	23	1154	853	11	15	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	10.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt			0.998		0.916	
Flt Protected		0.999			0.981	
Satd. Flow (prot)	0	3182	3179	0	1506	0
Flt Permitted		0.999			0.981	
Satd. Flow (perm)	0	3182	3179	0	1506	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		72.3	73.8		133.2	
Travel Time (s)		5.2	5.3		9.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	25	1254	927	12	16	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1279	939	0	42	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	CBD		
Control Type: Unsignalized			
Intersection Capacity Utilization	63.7%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	23	1154	853	11	15	24
Future Volume (Veh/h)	23	1154	853	11	15	24
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)	25	1254	927	12	16	26
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		72	74			
pX, platoon unblocked	0.92				0.92	0.92
vC, conflicting volume	939				1610	470
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	748				1481	235
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				84	96
cM capacity (veh/h)	784				103	702

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	443	836	618	321	42
Volume Left	25	0	0	0	16
Volume Right	0	0	0	12	26
cSH	784	1700	1700	1700	218
Volume to Capacity	0.03	0.49	0.36	0.19	0.19
Queue Length 95th (m)	0.8	0.0	0.0	0.0	5.5
Control Delay (s)	0.9	0.0	0.0	0.0	25.4
Lane LOS	A				D
Approach Delay (s)	0.3		0.0		25.4
Approach LOS					D

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	63.7%	ICU Level of Service	B
Analysis Period (min)	15		

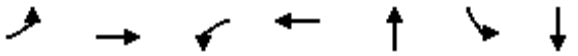
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	1108	35	35	753	15	58	40	42	5	0	52
Future Volume (vph)	27	1108	35	35	753	15	58	40	42	5	0	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	25.0		0.0	0.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995			0.997			0.959			0.850	
Flt Protected	0.950			0.950				0.980		0.950		
Satd. Flow (prot)	1593	1668	0	1593	3176	0	0	1576	0	1593	1425	0
Flt Permitted	0.318			0.067				0.843		0.573		
Satd. Flow (perm)	533	1668	0	112	3176	0	0	1355	0	961	1425	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			4			19			218	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		73.8			118.3			64.8			56.3	
Travel Time (s)		5.3			8.5			4.7			4.1	
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
Adj. Flow (vph)	29	1204	38	38	818	16	63	43	46	5	0	57
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	1242	0	38	834	0	0	152	0	5	57	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)		3.6			3.6			0.0			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
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)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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		33.0	33.0		33.0	33.0	
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)	-3.0	-3.0		-3.0	-3.0			-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
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	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	20.0	20.0		20.0	20.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		16.0	16.0		16.0	16.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	75.2	75.2		75.2	75.2			18.1		18.1	18.1	
Actuated g/C Ratio	0.74	0.74		0.74	0.74			0.18		0.18	0.18	
v/c Ratio	0.07	1.00		0.46	0.35			0.59		0.03	0.13	
Control Delay	5.2	41.8		29.7	5.5			42.3		32.4	0.6	
Queue Delay	0.0	35.3		0.0	0.7			0.0		0.0	0.0	
Total Delay	5.2	77.1		29.7	6.2			42.3		32.4	0.6	
LOS	A	E		C	A			D		C	A	
Approach Delay		75.4			7.2			42.3			3.2	
Approach LOS		E			A			D			A	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 110			
Actuated Cycle Length: 101.3			
Natural Cycle: 140			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.00			
Intersection Signal Delay: 46.2		Intersection LOS: D	
Intersection Capacity Utilization 89.2%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 4: Lakeshore Road & Elizabeth Street



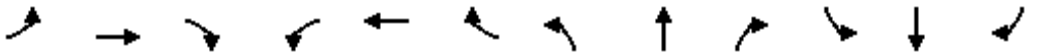


Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	29	1242	38	834	152	5	57
v/c Ratio	0.07	1.00	0.46	0.35	0.59	0.03	0.13
Control Delay	5.2	41.8	29.7	5.5	42.3	32.4	0.6
Queue Delay	0.0	35.3	0.0	0.7	0.0	0.0	0.0
Total Delay	5.2	77.1	29.7	6.2	42.3	32.4	0.6
Queue Length 50th (m)	1.4	~221.6	2.6	26.0	24.7	0.9	0.0
Queue Length 95th (m)	5.2	#388.5	#22.1	46.5	45.2	3.9	0.0
Internal Link Dist (m)		49.8		94.3	40.8		32.3
Turn Bay Length (m)			25.0			20.0	
Base Capacity (vph)	395	1239	83	2359	401	275	563
Starvation Cap Reductn	0	137	0	1080	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	1.13	0.46	0.65	0.38	0.02	0.10

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

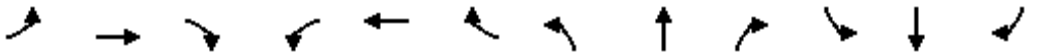
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	1108	35	35	753	15	58	40	42	5	0	52
Future Volume (vph)	27	1108	35	35	753	15	58	40	42	5	0	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00			0.96		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00			0.98		0.95	1.00	
Satd. Flow (prot)	1593	1669		1593	3176			1575		1593	1425	
Flt Permitted	0.32	1.00		0.07	1.00			0.84		0.57	1.00	
Satd. Flow (perm)	533	1669		113	3176			1355		961	1425	
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)	29	1204	38	38	818	16	63	43	46	5	0	57
RTOR Reduction (vph)	0	1	0	0	1	0	0	16	0	0	47	0
Lane Group Flow (vph)	29	1241	0	38	833	0	0	136	0	5	10	0
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)	72.3	72.3		72.3	72.3			15.1		15.1	15.1	
Effective Green, g (s)	75.3	75.3		75.3	75.3			18.1		18.1	18.1	
Actuated g/C Ratio	0.74	0.74		0.74	0.74			0.18		0.18	0.18	
Clearance Time (s)	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	
Lane Grp Cap (vph)	395	1239		83	2358			241		171	254	
v/s Ratio Prot		c0.74			0.26						0.01	
v/s Ratio Perm	0.05			0.34				c0.10		0.01		
v/c Ratio	0.07	1.00		0.46	0.35			0.57		0.03	0.04	
Uniform Delay, d1	3.6	13.1		5.1	4.6			38.1		34.4	34.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.4	26.0		17.1	0.4			3.0		0.1	0.1	
Delay (s)	3.9	39.0		22.2	5.0			41.1		34.5	34.5	
Level of Service	A	D		C	A			D		C	C	
Approach Delay (s)		38.2			5.7			41.1			34.5	
Approach LOS		D			A			D			C	

Intersection Summary			
HCM 2000 Control Delay	26.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	101.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	89.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



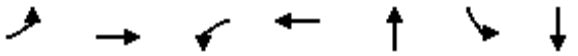
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	1076	34	2	705	40	45	7	3	15	2	54
Future Volume (vph)	44	1076	34	2	705	40	45	7	3	15	2	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		0.0	20.0		0.0	0.0		0.0	7.0		0.0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995			0.992			0.993			0.855	
Flt Protected	0.950			0.950				0.961		0.950		
Satd. Flow (prot)	1593	1668	0	1593	3160	0	0	1600	0	1593	1433	0
Flt Permitted	0.339			0.145				0.724		0.767		
Satd. Flow (perm)	568	1668	0	243	3160	0	0	1205	0	1286	1433	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			13			2			59	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		118.3			60.3			53.5			57.7	
Travel Time (s)		8.5			4.3			3.9			4.2	
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
Adj. Flow (vph)	48	1170	37	2	766	43	49	8	3	16	2	59
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	1207	0	2	809	0	0	60	0	16	61	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)		3.6			3.6			0.0			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
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)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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)	37.0	37.0		37.0	37.0		28.0	28.0		28.0	28.0	
Total Split (s)	82.0	82.0		82.0	82.0		28.0	28.0		28.0	28.0	
Total Split (%)	74.5%	74.5%		74.5%	74.5%		25.5%	25.5%		25.5%	25.5%	
Maximum Green (s)	76.0	76.0		76.0	76.0		22.0	22.0		22.0	22.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0			-2.0		-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
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	None	None		Max	Max		None	None		None	None	
Walk Time (s)	20.0	20.0		20.0	20.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	82.9	82.9		82.9	82.9			12.4		12.4	12.4	
Actuated g/C Ratio	0.83	0.83		0.83	0.83			0.12		0.12	0.12	
v/c Ratio	0.10	0.87		0.01	0.31			0.40		0.10	0.27	
Control Delay	3.3	16.9		3.0	3.0			46.6		39.1	14.0	
Queue Delay	0.0	17.0		0.0	0.0			0.0		0.0	0.0	
Total Delay	3.3	33.9		3.0	3.0			46.6		39.1	14.0	
LOS	A	C		A	A			D		D	B	
Approach Delay		32.8			3.0			46.6			19.2	
Approach LOS		C			A			D			B	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 110			
Actuated Cycle Length: 99.6			
Natural Cycle: 110			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 21.7		Intersection LOS: C	
Intersection Capacity Utilization 81.9%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 5: Old Lakeshore Road/Pearl Street & Lakeshore Road

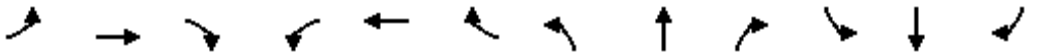




Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	48	1207	2	809	60	16	61
v/c Ratio	0.10	0.87	0.01	0.31	0.40	0.10	0.27
Control Delay	3.3	16.9	3.0	3.0	46.6	39.1	14.0
Queue Delay	0.0	17.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.3	33.9	3.0	3.0	46.6	39.1	14.0
Queue Length 50th (m)	1.6	133.5	0.1	17.2	10.8	2.9	0.4
Queue Length 95th (m)	5.2	#331.9	0.6	30.1	23.7	9.3	11.9
Internal Link Dist (m)		94.3		36.3	29.5		33.7
Turn Bay Length (m)	40.0		20.0			7.0	
Base Capacity (vph)	472	1389	202	2632	292	310	390
Starvation Cap Reductn	0	205	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	1.02	0.01	0.31	0.21	0.05	0.16

Intersection Summary

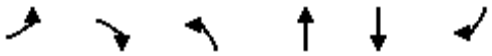
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	1076	34	2	705	40	45	7	3	15	2	54
Future Volume (vph)	44	1076	34	2	705	40	45	7	3	15	2	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99			0.99		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00			0.96		0.95	1.00	
Satd. Flow (prot)	1593	1669		1593	3160			1600		1593	1433	
Flt Permitted	0.34	1.00		0.14	1.00			0.72		0.77	1.00	
Satd. Flow (perm)	568	1669		243	3160			1205		1286	1433	
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)	48	1170	37	2	766	43	49	8	3	16	2	59
RTOR Reduction (vph)	0	1	0	0	2	0	0	2	0	0	53	0
Lane Group Flow (vph)	48	1206	0	2	807	0	0	58	0	16	8	0
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			8.7		8.7	8.7	
Effective Green, g (s)	82.0	82.0		82.0	82.0			10.7		10.7	10.7	
Actuated g/C Ratio	0.81	0.81		0.81	0.81			0.11		0.11	0.11	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	462	1359		197	2573			128		136	152	
v/s Ratio Prot		c0.72			0.26						0.01	
v/s Ratio Perm	0.08			0.01				c0.05		0.01		
v/c Ratio	0.10	0.89		0.01	0.31			0.45		0.12	0.05	
Uniform Delay, d1	1.9	6.3		1.8	2.3			42.3		40.7	40.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.1	7.4		0.1	0.3			2.6		0.4	0.1	
Delay (s)	2.0	13.6		1.8	2.7			44.8		41.1	40.6	
Level of Service	A	B		A	A			D		D	D	
Approach Delay (s)		13.2			2.6			44.8			40.7	
Approach LOS		B			A			D			D	

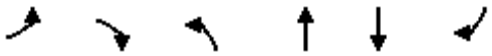
Intersection Summary			
HCM 2000 Control Delay	11.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	100.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	21	19	0
Future Volume (vph)	0	0	0	21	19	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	84.6			53.6	64.8	
Travel Time (s)	6.1			3.9	4.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	23	21	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	23	21	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 6.7%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	21	19	0
Future Volume (Veh/h)	0	0	0	21	19	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	23	21	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					65	
pX, platoon unblocked						
vC, conflicting volume	44	21	21			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	44	21	21			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	967	1056	1595			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	0	23	21
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1595	1700
Volume to Capacity	0.00	0.00	0.01
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.0	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	6.7%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection: 1: Lakeshore Road & Locust Street

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (m)	132.6	131.4	2.5	96.9
Average Queue (m)	118.3	119.6	0.1	48.3
95th Queue (m)	152.0	144.3	1.3	116.4
Link Distance (m)		115.8	79.4	145.9
Upstream Blk Time (%)	66	77		
Queuing Penalty (veh)	0	0		
Storage Bay Dist (m)	170.0			
Storage Blk Time (%)	66	77		
Queuing Penalty (veh)	834	44		

Intersection: 2: Lakeshore Road & Brant Street

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	T	TR	LTR	L	TR
Maximum Queue (m)	62.4	84.1	50.7	51.0	11.0	50.3	42.4
Average Queue (m)	44.7	81.4	28.5	29.2	1.1	23.7	19.2
95th Queue (m)	81.3	87.6	50.9	52.2	5.9	41.3	34.0
Link Distance (m)		79.4	46.2	46.2	79.0	107.6	107.6
Upstream Blk Time (%)		24	1	2			
Queuing Penalty (veh)		304	7	7			
Storage Bay Dist (m)	55.0						
Storage Blk Time (%)	0	39	9				
Queuing Penalty (veh)	0	80	0				

Intersection: 3: Lakeshore Road & John Street

Movement	EB	EB	WB	WB	SB
Directions Served	LT	T	T	TR	LR
Maximum Queue (m)	17.3	49.1	16.7	21.7	32.0
Average Queue (m)	4.2	26.9	1.5	1.9	10.1
95th Queue (m)	13.2	60.2	9.0	10.9	24.2
Link Distance (m)		46.2	49.9	49.9	117.4
Upstream Blk Time (%)		3			
Queuing Penalty (veh)		30			
Storage Bay Dist (m)	10.0				
Storage Blk Time (%)	2	12			
Queuing Penalty (veh)	13	70			

Intersection: 4: Lakeshore Road & Elizabeth Street

Movement	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	T	TR	LTR	L	TR
Maximum Queue (m)	10.4	56.0	27.2	52.8	51.6	33.0	8.1	17.6
Average Queue (m)	2.0	44.2	8.9	23.9	22.2	22.3	1.5	7.5
95th Queue (m)	7.1	67.6	21.3	44.2	42.3	33.0	6.1	15.7
Link Distance (m)	49.9	49.9		97.5	97.5	44.2		38.0
Upstream Blk Time (%)		8				0		
Queuing Penalty (veh)		44				0		
Storage Bay Dist (m)			25.0				20.0	
Storage Blk Time (%)			0	4				0
Queuing Penalty (veh)			2	2				0

Intersection: 5: Old Lakeshore Road/Pearl Street & Lakeshore Road

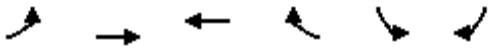
Movement	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	T	TR	LTR	L	TR
Maximum Queue (m)	47.3	98.2	11.7	46.0	38.5	32.6	13.3	23.9
Average Queue (m)	7.0	50.7	0.4	17.8	12.1	12.8	3.3	9.8
95th Queue (m)	27.4	99.6	4.8	35.9	29.0	25.6	11.1	19.5
Link Distance (m)		97.5		50.3	50.3	43.2		43.4
Upstream Blk Time (%)		0		0	0			
Queuing Penalty (veh)		2		0	0			
Storage Bay Dist (m)	40.0		20.0				7.0	
Storage Blk Time (%)	0	8		3			9	10
Queuing Penalty (veh)	0	4		0			5	2

Intersection: 6: Driveway

Movement
Directions Served
Maximum Queue (m)
Average Queue (m)
95th Queue (m)
Link Distance (m)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (m)
Storage Blk Time (%)
Queuing Penalty (veh)

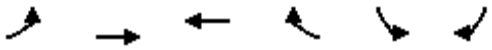
Network Summary

Network wide Queuing Penalty: 1448



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	33	1003	1345	72	2	65
Future Volume (vph)	33	1003	1345	72	2	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt			0.992		0.869	
Flt Protected	0.950				0.999	
Satd. Flow (prot)	1770	1863	3511	0	1617	0
Flt Permitted	0.950				0.999	
Satd. Flow (perm)	1770	1863	3511	0	1617	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		148.5	99.8		213.0	
Travel Time (s)		10.7	7.2		15.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	36	1090	1462	78	2	71
Shared Lane Traffic (%)						
Lane Group Flow (vph)	36	1090	1540	0	73	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

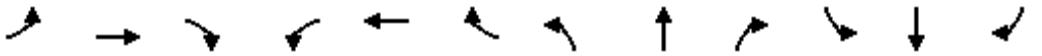
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 63.6%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	33	1003	1345	72	2	65
Future Volume (Veh/h)	33	1003	1345	72	2	65
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)	36	1090	1462	78	2	71
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			100			
pX, platoon unblocked	0.71				0.71	0.71
vC, conflicting volume	1540				2663	770
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	958				2529	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	93				87	91
cM capacity (veh/h)	510				15	775

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	36	1090	975	565	73
Volume Left	36	0	0	0	2
Volume Right	0	0	0	78	71
cSH	510	1700	1700	1700	325
Volume to Capacity	0.07	0.64	0.57	0.33	0.22
Queue Length 95th (m)	1.8	0.0	0.0	0.0	6.8
Control Delay (s)	12.6	0.0	0.0	0.0	19.3
Lane LOS	B				C
Approach Delay (s)	0.4		0.0		19.3
Approach LOS					C

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		

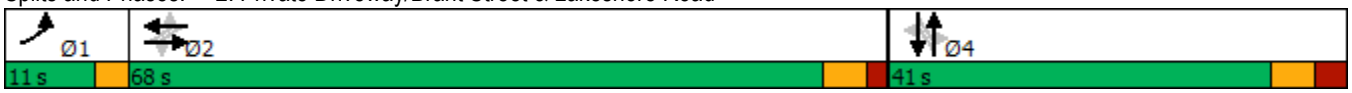


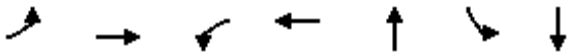
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	197	796	12	3	1005	175	7	0	0	187	11	405
Future Volume (vph)	197	796	12	3	1005	175	7	0	0	187	11	405
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		0.0	25.0		0.0	0.0		0.0	0.0		15.0
Storage Lanes	1		0	1		0	0		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.978						0.854	
Flt Protected	0.950			0.950				0.950		0.950		
Satd. Flow (prot)	1593	1673	0	1593	3115	0	0	1593	0	1593	1432	0
Flt Permitted	0.128			0.113				0.133		0.752		
Satd. Flow (perm)	215	1673	0	189	3115	0	0	223	0	1261	1432	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			25						188	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		99.8			72.3			72.5			121.7	
Travel Time (s)		7.2			5.2			5.2			8.8	
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
Adj. Flow (vph)	214	865	13	3	1092	190	8	0	0	203	12	440
Shared Lane Traffic (%)												
Lane Group Flow (vph)	214	878	0	3	1282	0	0	8	0	203	452	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)		3.6			3.6			0.0			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
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)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	1	2			2			4			4	
Permitted Phases	2	2		2			4			4		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	1	2		2	2		4	4		4	4	
Switch Phase												
Minimum Initial (s)	6.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	9.0	33.0		33.0	33.0		38.0	38.0		38.0	38.0	
Total Split (s)	11.0	68.0		68.0	68.0		41.0	41.0		41.0	41.0	
Total Split (%)	9.2%	56.7%		56.7%	56.7%		34.2%	34.2%		34.2%	34.2%	
Maximum Green (s)	8.0	62.0		62.0	62.0		34.0	34.0		34.0	34.0	
Yellow Time (s)	3.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	-2.0		-2.0	-2.0			-3.0		-3.0	-3.0	
Total Lost Time (s)	3.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lead/Lag	Lead	Lag		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Max		Max	Max		None	None		None	None	
Walk Time (s)		11.0		11.0	11.0		12.0	12.0		12.0	12.0	
Flash Dont Walk (s)		16.0		16.0	16.0		19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)		0		0	0		0	0		0	0	
Act Effct Green (s)	73.3	64.3		64.3	64.3			30.1		30.1	30.1	
Actuated g/C Ratio	0.65	0.57		0.57	0.57			0.27		0.27	0.27	
v/c Ratio	0.91	0.93		0.03	0.72			0.14		0.61	0.87	
Control Delay	55.3	41.0		14.3	21.7			36.7		44.4	41.2	
Queue Delay	0.0	0.0		0.0	5.9			0.0		0.0	0.0	
Total Delay	55.3	41.0		14.3	27.7			36.7		44.4	41.2	
LOS	E	D		B	C			D		D	D	
Approach Delay		43.8			27.6			36.7			42.2	
Approach LOS		D			C			D			D	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 120			
Actuated Cycle Length: 113.4			
Natural Cycle: 110			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 36.6		Intersection LOS: D	
Intersection Capacity Utilization 92.5%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 2: Private Driveway/Brant Street & Lakeshore Road

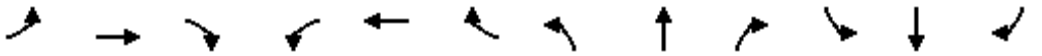




Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	214	878	3	1282	8	203	452
v/c Ratio	0.91	0.93	0.03	0.72	0.14	0.61	0.87
Control Delay	55.3	41.0	14.3	21.7	36.7	44.4	41.2
Queue Delay	0.0	0.0	0.0	5.9	0.0	0.0	0.0
Total Delay	55.3	41.0	14.3	27.7	36.7	44.4	41.2
Queue Length 50th (m)	20.0	189.5	0.3	115.0	1.4	41.4	62.3
Queue Length 95th (m)	#58.0	#302.6	2.1	154.7	5.9	66.8	#112.4
Internal Link Dist (m)		75.8		48.3	48.5		97.7
Turn Bay Length (m)	55.0		25.0				
Base Capacity (vph)	236	948	107	1776	73	412	595
Starvation Cap Reductn	0	0	0	437	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.91	0.93	0.03	0.96	0.11	0.49	0.76

Intersection Summary

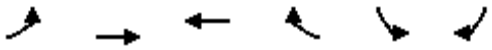
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	197	796	12	3	1005	175	7	0	0	187	11	405
Future Volume (vph)	197	796	12	3	1005	175	7	0	0	187	11	405
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.98			1.00		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00			0.95		0.95	1.00	
Satd. Flow (prot)	1593	1673		1593	3114			1593		1593	1432	
Flt Permitted	0.13	1.00		0.11	1.00			0.13		0.75	1.00	
Satd. Flow (perm)	214	1673		190	3114			223		1261	1432	
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)	214	865	13	3	1092	190	8	0	0	203	12	440
RTOR Reduction (vph)	0	0	0	0	11	0	0	0	0	0	138	0
Lane Group Flow (vph)	214	878	0	3	1271	0	0	8	0	203	314	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	1	2			2			4			4	
Permitted Phases	2	2		2			4			4		
Actuated Green, G (s)	70.3	62.3		62.3	62.3			27.1		27.1	27.1	
Effective Green, g (s)	70.3	64.3		64.3	64.3			30.1		30.1	30.1	
Actuated g/C Ratio	0.62	0.57		0.57	0.57			0.27		0.27	0.27	
Clearance Time (s)	3.0	6.0		6.0	6.0			7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	229	948		107	1765			59		334	380	
v/s Ratio Prot	c0.07	c0.52			0.41						c0.22	
v/s Ratio Perm	0.51			0.02				0.04		0.16		
v/c Ratio	0.93	0.93		0.03	0.72			0.14		0.61	0.83	
Uniform Delay, d1	16.4	22.4		10.8	18.0			31.7		36.5	39.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	41.4	16.0		0.5	2.6			1.1		3.1	13.6	
Delay (s)	57.8	38.4		11.3	20.5			32.8		39.6	52.8	
Level of Service	E	D		B	C			C		D	D	
Approach Delay (s)		42.2			20.5			32.8			48.7	
Approach LOS		D			C			C			D	

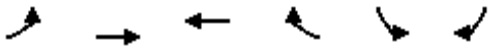
Intersection Summary			
HCM 2000 Control Delay	34.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	113.4	Sum of lost time (s)	11.0
Intersection Capacity Utilization	92.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	26	958	1147	28	12	36
Future Volume (vph)	26	958	1147	28	12	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	10.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt			0.996		0.899	
Flt Protected		0.999			0.988	
Satd. Flow (prot)	0	3182	3173	0	1489	0
Flt Permitted		0.999			0.988	
Satd. Flow (perm)	0	3182	3173	0	1489	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		72.3	73.8		133.2	
Travel Time (s)		5.2	5.3		9.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	1041	1247	30	13	39
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1069	1277	0	52	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

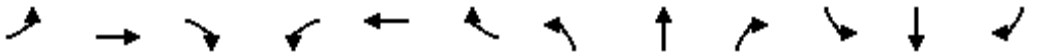
Intersection Summary			
Area Type:	CBD		
Control Type: Unsignalized			
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	26	958	1147	28	12	36
Future Volume (Veh/h)	26	958	1147	28	12	36
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)	28	1041	1247	30	13	39
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		72	74			
pX, platoon unblocked	0.87				0.87	0.87
vC, conflicting volume	1277				1838	638
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1019				1664	284
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	95				82	94
cM capacity (veh/h)	589				73	620

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	375	694	831	446	52
Volume Left	28	0	0	0	13
Volume Right	0	0	0	30	39
cSH	589	1700	1700	1700	215
Volume to Capacity	0.05	0.41	0.49	0.26	0.24
Queue Length 95th (m)	1.2	0.0	0.0	0.0	7.3
Control Delay (s)	1.5	0.0	0.0	0.0	27.0
Lane LOS	A				D
Approach Delay (s)	0.5		0.0		27.0
Approach LOS					D

Intersection Summary				
Average Delay	0.8			
Intersection Capacity Utilization	60.2%	ICU Level of Service		B
Analysis Period (min)	15			



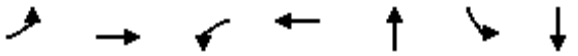
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	870	42	43	1050	48	36	34	36	42	0	89
Future Volume (vph)	58	870	42	43	1050	48	36	34	36	42	0	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	25.0		0.0	0.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.993			0.993			0.954			0.850	
Flt Protected	0.950			0.950				0.983		0.950		
Satd. Flow (prot)	1593	1665	0	1593	3163	0	0	1572	0	1593	1425	0
Flt Permitted	0.211			0.211				0.849		0.589		
Satd. Flow (perm)	354	1665	0	354	3163	0	0	1358	0	987	1425	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			8			21			113	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		73.8			118.3			64.8			56.3	
Travel Time (s)		5.3			8.5			4.7			4.1	
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
Adj. Flow (vph)	63	946	46	47	1141	52	39	37	39	46	0	97
Shared Lane Traffic (%)												
Lane Group Flow (vph)	63	992	0	47	1193	0	0	115	0	46	97	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)		3.6			3.6			0.0			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
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)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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		33.0	33.0		33.0	33.0	
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)	-3.0	-3.0		-3.0	-3.0			-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
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	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	20.0	20.0		20.0	20.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		16.0	16.0		16.0	16.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	81.8	81.8		81.8	81.8			15.6		15.6	15.6	
Actuated g/C Ratio	0.78	0.78		0.78	0.78			0.15		0.15	0.15	
v/c Ratio	0.23	0.77		0.17	0.49			0.53		0.32	0.32	
Control Delay	6.4	12.6		5.5	5.4			41.9		44.8	8.0	
Queue Delay	0.0	8.6		0.0	1.4			0.0		0.0	0.0	
Total Delay	6.4	21.2		5.5	6.7			41.9		44.8	8.0	
LOS	A	C		A	A			D		D	A	
Approach Delay		20.4			6.7			41.9			19.9	
Approach LOS		C			A			D			B	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 120			
Actuated Cycle Length: 105.4			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 14.7		Intersection LOS: B	
Intersection Capacity Utilization 73.7%		ICU Level of Service D	
Analysis Period (min) 15			

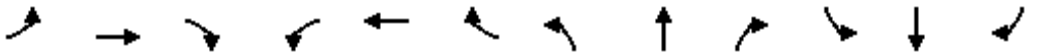
Splits and Phases: 4: Lakeshore Road & Elizabeth Street





Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	63	992	47	1193	115	46	97
v/c Ratio	0.23	0.77	0.17	0.49	0.53	0.32	0.32
Control Delay	6.4	12.6	5.5	5.4	41.9	44.8	8.0
Queue Delay	0.0	8.6	0.0	1.4	0.0	0.0	0.0
Total Delay	6.4	21.2	5.5	6.7	41.9	44.8	8.0
Queue Length 50th (m)	3.0	94.0	2.1	38.5	18.4	8.8	0.0
Queue Length 95th (m)	9.9	198.4	7.4	65.5	36.5	20.1	11.0
Internal Link Dist (m)		49.8		94.3	40.8		32.3
Turn Bay Length (m)			25.0			20.0	
Base Capacity (vph)	274	1292	274	2455	427	299	511
Starvation Cap Reductn	0	270	0	987	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.97	0.17	0.81	0.27	0.15	0.19

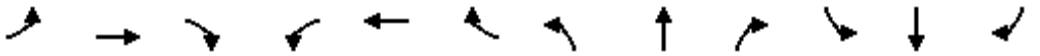
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	870	42	43	1050	48	36	34	36	42	0	89
Future Volume (vph)	58	870	42	43	1050	48	36	34	36	42	0	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99			0.95		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00			0.98		0.95	1.00	
Satd. Flow (prot)	1593	1665		1593	3164			1573		1593	1425	
Flt Permitted	0.21	1.00		0.21	1.00			0.85		0.59	1.00	
Satd. Flow (perm)	354	1665		353	3164			1358		987	1425	
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)	63	946	46	47	1141	52	39	37	39	46	0	97
RTOR Reduction (vph)	0	1	0	0	2	0	0	18	0	0	83	0
Lane Group Flow (vph)	63	991	0	47	1191	0	0	97	0	46	14	0
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)	78.8	78.8		78.8	78.8			12.6		12.6	12.6	
Effective Green, g (s)	81.8	81.8		81.8	81.8			15.6		15.6	15.6	
Actuated g/C Ratio	0.78	0.78		0.78	0.78			0.15		0.15	0.15	
Clearance Time (s)	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	
Lane Grp Cap (vph)	274	1292		273	2455			200		146	210	
v/s Ratio Prot		c0.60			0.38						0.01	
v/s Ratio Perm	0.18			0.13				c0.07		0.05		
v/c Ratio	0.23	0.77		0.17	0.49			0.49		0.32	0.07	
Uniform Delay, d1	3.2	6.5		3.0	4.2			41.2		40.1	38.6	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	2.0	4.4		1.4	0.7			1.9		1.2	0.1	
Delay (s)	5.2	10.9		4.4	4.9			43.1		41.4	38.8	
Level of Service	A	B		A	A			D		D	D	
Approach Delay (s)		10.6			4.9			43.1			39.6	
Approach LOS		B			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	105.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	73.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



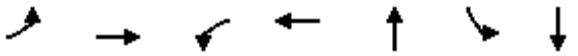
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	873	30	8	1029	59	54	13	2	37	9	58
Future Volume (vph)	45	873	30	8	1029	59	54	13	2	37	9	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		0.0	20.0		0.0	0.0		0.0	7.0		0.0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995			0.992			0.996			0.871	
Flt Protected	0.950			0.950				0.962		0.950		
Satd. Flow (prot)	1593	1668	0	1593	3160	0	0	1606	0	1593	1460	0
Flt Permitted	0.221			0.236				0.719		0.746		
Satd. Flow (perm)	371	1668	0	396	3160	0	0	1201	0	1251	1460	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			12			1			63	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		118.3			60.3			53.5			57.7	
Travel Time (s)		8.5			4.3			3.9			4.2	
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
Adj. Flow (vph)	49	949	33	9	1118	64	59	14	2	40	10	63
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	982	0	9	1182	0	0	75	0	40	73	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)		3.6			3.6			0.0			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
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)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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)	37.0	37.0		37.0	37.0		28.0	28.0		28.0	28.0	
Total Split (s)	89.0	89.0		89.0	89.0		31.0	31.0		31.0	31.0	
Total Split (%)	74.2%	74.2%		74.2%	74.2%		25.8%	25.8%		25.8%	25.8%	
Maximum Green (s)	83.0	83.0		83.0	83.0		25.0	25.0		25.0	25.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0			-2.0		-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
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	None	None		Max	Max		None	None		None	None	
Walk Time (s)	20.0	20.0		20.0	20.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	89.0	89.0		89.0	89.0			13.9		13.9	13.9	
Actuated g/C Ratio	0.83	0.83		0.83	0.83			0.13		0.13	0.13	
v/c Ratio	0.16	0.71		0.03	0.45			0.48		0.25	0.30	
Control Delay	4.6	9.4		3.2	4.1			52.9		45.2	16.3	
Queue Delay	0.0	6.0		0.0	0.0			0.0		0.0	0.0	
Total Delay	4.6	15.4		3.2	4.1			52.9		45.2	16.3	
LOS	A	B		A	A			D		D	B	
Approach Delay		14.9			4.1			52.9			26.6	
Approach LOS		B			A			D			C	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 120			
Actuated Cycle Length: 107.2			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 11.3		Intersection LOS: B	
Intersection Capacity Utilization 70.6%		ICU Level of Service C	
Analysis Period (min) 15			

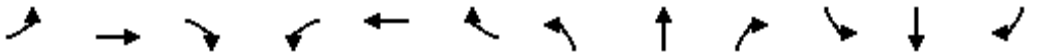
Splits and Phases: 5: Old Lakeshore Road/Pearl Street & Lakeshore Road





Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	49	982	9	1182	75	40	73
v/c Ratio	0.16	0.71	0.03	0.45	0.48	0.25	0.30
Control Delay	4.6	9.4	3.2	4.1	52.9	45.2	16.3
Queue Delay	0.0	6.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.6	15.4	3.2	4.1	52.9	45.2	16.3
Queue Length 50th (m)	2.0	82.6	0.3	34.0	15.3	8.0	2.0
Queue Length 95th (m)	6.7	172.4	1.7	58.0	30.4	18.5	15.3
Internal Link Dist (m)		94.3		36.3	29.5		33.7
Turn Bay Length (m)	40.0		20.0			7.0	
Base Capacity (vph)	308	1385	328	2625	303	315	415
Starvation Cap Reductn	0	346	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.95	0.03	0.45	0.25	0.13	0.18

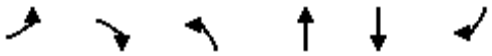
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	873	30	8	1029	59	54	13	2	37	9	58
Future Volume (vph)	45	873	30	8	1029	59	54	13	2	37	9	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99			1.00		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00			0.96		0.95	1.00	
Satd. Flow (prot)	1593	1668		1593	3159			1607		1593	1459	
Flt Permitted	0.22	1.00		0.24	1.00			0.72		0.75	1.00	
Satd. Flow (perm)	370	1668		395	3159			1201		1250	1459	
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)	49	949	33	9	1118	64	59	14	2	40	10	63
RTOR Reduction (vph)	0	1	0	0	2	0	0	1	0	0	56	0
Lane Group Flow (vph)	49	981	0	9	1180	0	0	74	0	40	17	0
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)	86.2	86.2		86.2	86.2			10.3		10.3	10.3	
Effective Green, g (s)	88.2	88.2		88.2	88.2			12.3		12.3	12.3	
Actuated g/C Ratio	0.81	0.81		0.81	0.81			0.11		0.11	0.11	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	300	1355		321	2567			136		141	165	
v/s Ratio Prot		c0.59			0.37						0.01	
v/s Ratio Perm	0.13			0.02				c0.06		0.03		
v/c Ratio	0.16	0.72		0.03	0.46			0.54		0.28	0.10	
Uniform Delay, d1	2.2	4.6		1.9	3.0			45.5		44.1	43.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.3	2.0		0.2	0.6			4.4		1.1	0.3	
Delay (s)	2.4	6.6		2.1	3.6			49.9		45.2	43.4	
Level of Service	A	A		A	A			D		D	D	
Approach Delay (s)		6.4			3.6			49.9			44.0	
Approach LOS		A			A			D			D	

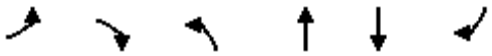
Intersection Summary			
HCM 2000 Control Delay	8.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	108.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	10	6	0
Future Volume (vph)	0	0	0	10	6	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	76.5			51.6	64.8	
Travel Time (s)	5.5			3.7	4.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	11	7	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	11	7	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Stop	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 6.7%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	0	0	0	10	6	0
Future Volume (vph)	0	0	0	10	6	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	11	7	0

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	0	11	7
Volume Left (vph)	0	0	0
Volume Right (vph)	0	0	0
Hadj (s)	0.00	0.03	0.03
Departure Headway (s)	3.9	3.9	3.9
Degree Utilization, x	0.00	0.01	0.01
Capacity (veh/h)	900	910	907
Control Delay (s)	6.9	7.0	7.0
Approach Delay (s)	0.0	7.0	7.0
Approach LOS	A	A	A

Intersection Summary			
Delay	7.0		
Level of Service	A		
Intersection Capacity Utilization	6.7%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection: 1: Lakeshore Road & Locust Street

Movement	EB	EB	WB	WB	SB
Directions Served	L	T	T	TR	LR
Maximum Queue (m)	156.9	158.7	1.3	1.2	167.0
Average Queue (m)	142.2	147.6	0.0	0.0	88.5
95th Queue (m)	188.5	163.1	0.9	0.9	216.0
Link Distance (m)	142.3	142.3	79.3	79.3	199.2
Upstream Blk Time (%)	72	79			18
Queuing Penalty (veh)	0	0			0
Storage Bay Dist (m)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 2: Private Driveway/Brant Street & Lakeshore Road

Movement	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	T	TR	LTR	L	TR
Maximum Queue (m)	62.4	87.1	10.9	55.4	57.5	9.8	122.2	22.6
Average Queue (m)	50.4	82.3	1.3	47.6	47.7	1.5	108.8	22.0
95th Queue (m)	78.9	86.1	8.3	61.4	60.8	7.1	132.1	26.0
Link Distance (m)		79.3		49.0	49.0	59.1	107.6	
Upstream Blk Time (%)		34		14	14		56	
Queuing Penalty (veh)		337		85	86		0	
Storage Bay Dist (m)	55.0		25.0					15.0
Storage Blk Time (%)	5	44		30			49	42
Queuing Penalty (veh)	41	86		1			203	78

Intersection: 3: Lakeshore Road & John Street

Movement	EB	EB	WB	WB	SB
Directions Served	LT	T	T	TR	LR
Maximum Queue (m)	17.2	61.8	57.0	54.8	24.5
Average Queue (m)	6.7	23.6	24.5	26.7	9.8
95th Queue (m)	17.5	61.3	57.2	60.2	20.4
Link Distance (m)		49.0	49.9	49.9	117.4
Upstream Blk Time (%)		2	3	3	
Queuing Penalty (veh)		21	15	18	
Storage Bay Dist (m)	10.0				
Storage Blk Time (%)	7	8			
Queuing Penalty (veh)	35	39			

Intersection: 4: Lakeshore Road & Elizabeth Street

Movement	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	T	TR	LTR	L	TR
Maximum Queue (m)	24.5	54.4	32.2	85.9	83.3	31.0	26.4	37.0
Average Queue (m)	7.3	36.4	11.3	34.1	33.7	18.3	8.1	13.0
95th Queue (m)	17.8	67.7	26.1	69.5	67.8	30.0	19.4	27.5
Link Distance (m)	49.9	49.9		97.5	97.5	44.1		38.0
Upstream Blk Time (%)		5		0	0			1
Queuing Penalty (veh)		24		0	0			0
Storage Bay Dist (m)			25.0				20.0	
Storage Blk Time (%)			1	8			1	4
Queuing Penalty (veh)			3	4			1	2

Intersection: 5: Old Lakeshore Road/Pearl Street & Lakeshore Road

Movement	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	T	TR	LTR	L	TR
Maximum Queue (m)	34.4	95.5	15.8	54.8	54.1	36.9	15.8	35.5
Average Queue (m)	9.2	44.3	1.4	27.0	24.0	15.3	7.6	14.6
95th Queue (m)	28.4	90.5	8.1	49.5	49.5	30.9	16.5	27.5
Link Distance (m)		97.5		50.3	50.3	43.2		43.4
Upstream Blk Time (%)		0		1	1	0		0
Queuing Penalty (veh)		3		0	0	0		0
Storage Bay Dist (m)	40.0		20.0				7.0	
Storage Blk Time (%)		7		7			30	21
Queuing Penalty (veh)		3		1			20	8

Intersection: 6: Driveway

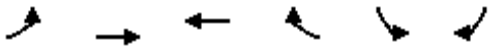
Movement	NB	SB
Directions Served	LT	TR
Maximum Queue (m)	9.1	9.3
Average Queue (m)	2.7	1.6
95th Queue (m)	9.6	7.2
Link Distance (m)	44.9	44.1
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 1112

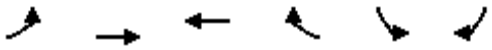
Appendix G

Future Total Traffic Operations



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	57	1295	927	48	7	18
Future Volume (vph)	57	1295	927	48	7	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	170.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt			0.993		0.904	
Flt Protected	0.950				0.986	
Satd. Flow (prot)	1770	1863	3514	0	1660	0
Flt Permitted	0.950				0.986	
Satd. Flow (perm)	1770	1863	3514	0	1660	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		122.3	99.8		159.7	
Travel Time (s)		8.8	7.2		11.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	62	1408	1008	52	8	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	62	1408	1060	0	28	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

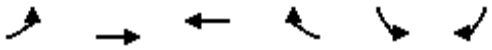
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	78.2%	ICU Level of Service	D
Analysis Period (min)	15		



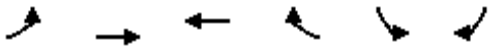
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	57	1295	927	48	7	18
Future Volume (Veh/h)	57	1295	927	48	7	18
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	62	1408	1008	52	8	20
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			100			
pX, platoon unblocked	0.83				0.83	0.83
vC, conflicting volume	1060				2566	530
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	670				2479	33
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	92				57	98
cM capacity (veh/h)	763				19	860

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	62	1408	672	388	28
Volume Left	62	0	0	0	8
Volume Right	0	0	0	52	20
cSH	763	1700	1700	1700	62
Volume to Capacity	0.08	0.83	0.40	0.23	0.45
Queue Length 95th (m)	2.1	0.0	0.0	0.0	14.0
Control Delay (s)	10.1	0.0	0.0	0.0	103.6
Lane LOS	B				F
Approach Delay (s)	0.4		0.0		103.6
Approach LOS					F

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	78.2%	ICU Level of Service	D
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	204	1098	762	183	155	213
Future Volume (vph)	204	1098	762	183	155	213
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0			0.0	0.0	15.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt			0.971			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1593	1676	3093	0	1593	1425
Flt Permitted	0.217				0.950	
Satd. Flow (perm)	364	1676	3093	0	1593	1425
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			41			207
Link Speed (k/h)		50	50		50	
Link Distance (m)		99.8	72.3		121.7	
Travel Time (s)		7.2	5.2		8.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	222	1193	828	199	168	232
Shared Lane Traffic (%)						
Lane Group Flow (vph)	222	1193	1027	0	168	232
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0
Detector 1 Type	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
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	pm+pt	NA	NA		Perm	Perm
Protected Phases	1	2	2			
Permitted Phases	2	2			4	4

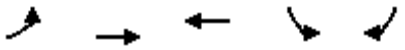


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	1	2	2		4	4
Switch Phase						
Minimum Initial (s)	4.5	8.0	8.0		8.0	8.0
Minimum Split (s)	9.0	33.0	33.0		38.0	38.0
Total Split (s)	9.0	53.0	53.0		38.0	38.0
Total Split (%)	9.0%	53.0%	53.0%		38.0%	38.0%
Maximum Green (s)	6.0	47.0	47.0		31.0	31.0
Yellow Time (s)	3.0	4.0	4.0		4.0	4.0
All-Red Time (s)	0.0	2.0	2.0		3.0	3.0
Lost Time Adjust (s)	0.0	-2.0	-2.0		-3.0	0.0
Total Lost Time (s)	3.0	4.0	4.0		4.0	7.0
Lead/Lag	Lead	Lag	Lag			
Lead-Lag Optimize?	Yes	Yes	Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	Max	Max		None	None
Walk Time (s)		11.0	11.0		12.0	12.0
Flash Dont Walk (s)		16.0	16.0		19.0	19.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)	56.1	49.1	49.1		16.9	13.9
Actuated g/C Ratio	0.68	0.59	0.59		0.20	0.17
v/c Ratio	0.66	1.21	0.56		0.52	0.57
Control Delay	17.0	122.4	11.9		35.3	12.1
Queue Delay	0.0	0.0	0.4		0.0	0.0
Total Delay	17.0	122.4	12.2		35.3	12.1
LOS	B	F	B		D	B
Approach Delay		105.9	12.2		21.9	
Approach LOS		F	B		C	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 100			
Actuated Cycle Length: 83			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.21			
Intersection Signal Delay: 60.2		Intersection LOS: E	
Intersection Capacity Utilization 80.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Lakeshore Road & Brant Street



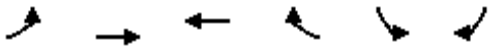


Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	222	1193	1027	168	232
v/c Ratio	0.66	1.21	0.56	0.52	0.57
Control Delay	17.0	122.4	11.9	35.3	12.1
Queue Delay	0.0	0.0	0.4	0.0	0.0
Total Delay	17.0	122.4	12.2	35.3	12.1
Queue Length 50th (m)	10.3	~244.8	47.7	25.0	3.6
Queue Length 95th (m)	#28.6	#354.2	77.4	44.2	23.4
Internal Link Dist (m)		75.8	48.3	97.7	
Turn Bay Length (m)	55.0				15.0
Base Capacity (vph)	334	990	1845	653	662
Starvation Cap Reductn	0	0	329	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.66	1.21	0.68	0.26	0.35

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

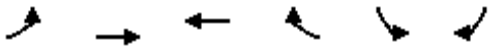
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	204	1098	762	183	155	213
Future Volume (vph)	204	1098	762	183	155	213
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.0	4.0		4.0	7.0
Lane Util. Factor	1.00	1.00	0.95		1.00	1.00
Frt	1.00	1.00	0.97		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1593	1676	3093		1593	1425
Flt Permitted	0.22	1.00	1.00		0.95	1.00
Satd. Flow (perm)	363	1676	3093		1593	1425
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	222	1193	828	199	168	232
RTOR Reduction (vph)	0	0	17	0	0	172
Lane Group Flow (vph)	222	1193	1010	0	168	60
Turn Type	pm+pt	NA	NA		Perm	Perm
Protected Phases	1	2	2			
Permitted Phases	2	2			4	4
Actuated Green, G (s)	53.1	47.1	47.1		13.9	13.9
Effective Green, g (s)	53.1	49.1	49.1		16.9	13.9
Actuated g/C Ratio	0.64	0.59	0.59		0.20	0.17
Clearance Time (s)	3.0	6.0	6.0		7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	321	991	1829		324	238
v/s Ratio Prot	c0.05	c0.71	0.33			
v/s Ratio Perm	0.39				c0.11	0.04
v/c Ratio	0.69	1.20	0.55		0.52	0.25
Uniform Delay, d1	7.5	16.9	10.3		29.4	30.0
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	6.3	101.4	1.2		1.4	0.6
Delay (s)	13.8	118.4	11.5		30.8	30.6
Level of Service	B	F	B		C	C
Approach Delay (s)		102.0	11.5		30.7	
Approach LOS		F	B		C	

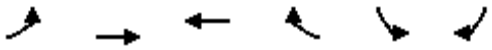
Intersection Summary			
HCM 2000 Control Delay	59.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	83.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	23	1227	922	11	15	24
Future Volume (vph)	23	1227	922	11	15	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	10.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt			0.998		0.916	
Flt Protected		0.999			0.981	
Satd. Flow (prot)	0	3182	3179	0	1506	0
Flt Permitted		0.999			0.981	
Satd. Flow (perm)	0	3182	3179	0	1506	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		72.3	73.8		133.2	
Travel Time (s)		5.2	5.3		9.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	25	1334	1002	12	16	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1359	1014	0	42	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

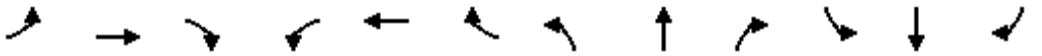
Intersection Summary			
Area Type:	CBD		
Control Type: Unsignalized			
Intersection Capacity Utilization	65.9%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	23	1227	922	11	15	24
Future Volume (Veh/h)	23	1227	922	11	15	24
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)	25	1334	1002	12	16	26
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		72	74			
pX, platoon unblocked	0.89				0.89	0.89
vC, conflicting volume	1014				1725	507
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	768				1567	199
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				82	96
cM capacity (veh/h)	749				88	720

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	470	889	668	346	42
Volume Left	25	0	0	0	16
Volume Right	0	0	0	12	26
cSH	749	1700	1700	1700	192
Volume to Capacity	0.03	0.52	0.39	0.20	0.22
Queue Length 95th (m)	0.8	0.0	0.0	0.0	6.4
Control Delay (s)	1.0	0.0	0.0	0.0	28.9
Lane LOS	A				D
Approach Delay (s)	0.3		0.0		28.9
Approach LOS					D

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	65.9%	ICU Level of Service	C
Analysis Period (min)	15		



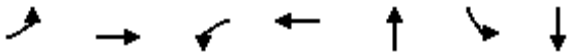
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	1108	108	75	753	15	127	56	92	5	15	52
Future Volume (vph)	27	1108	108	75	753	15	127	56	92	5	15	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	25.0		0.0	0.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987			0.997			0.955			0.883	
Flt Protected	0.950			0.950				0.977		0.950		
Satd. Flow (prot)	1593	1655	0	1593	3176	0	0	1564	0	1593	1480	0
Flt Permitted	0.304			0.055				0.817		0.515		
Satd. Flow (perm)	510	1655	0	92	3176	0	0	1308	0	863	1480	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			4			22			57	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		73.8			118.3			64.8			56.3	
Travel Time (s)		5.3			8.5			4.7			4.1	
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
Adj. Flow (vph)	29	1204	117	82	818	16	138	61	100	5	16	57
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	1321	0	82	834	0	0	299	0	5	73	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)		3.6			3.6			0.0			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
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)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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		33.0	33.0		33.0	33.0	
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)	-3.0	-3.0		-3.0	-3.0			-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
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	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	20.0	20.0		20.0	20.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		16.0	16.0		16.0	16.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	73.1	73.1		73.1	73.1			27.4		27.4	27.4	
Actuated g/C Ratio	0.67	0.67		0.67	0.67			0.25		0.25	0.25	
v/c Ratio	0.08	1.18		1.32	0.39			0.86		0.02	0.18	
Control Delay	7.4	112.0		249.8	8.7			60.3		30.6	12.7	
Queue Delay	0.0	0.4		0.0	1.1			0.0		0.0	0.0	
Total Delay	7.4	112.4		249.8	9.7			60.3		30.6	12.7	
LOS	A	F		F	A			E		C	B	
Approach Delay		110.2			31.2			60.3			13.8	
Approach LOS		F			C			E			B	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 110			
Actuated Cycle Length: 108.5			
Natural Cycle: 140			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.32			
Intersection Signal Delay: 74.3		Intersection LOS: E	
Intersection Capacity Utilization 102.7%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 4: Lakeshore Road & Elizabeth Street



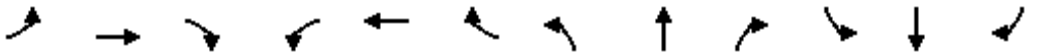


Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	29	1321	82	834	299	5	73
v/c Ratio	0.08	1.18	1.32	0.39	0.86	0.02	0.18
Control Delay	7.4	112.0	249.8	8.7	60.3	30.6	12.7
Queue Delay	0.0	0.4	0.0	1.1	0.0	0.0	0.0
Total Delay	7.4	112.4	249.8	9.7	60.3	30.6	12.7
Queue Length 50th (m)	2.1	~364.3	~24.3	40.8	59.5	0.9	2.7
Queue Length 95th (m)	5.8	#448.8	#43.0	52.3	#107.5	3.9	14.3
Internal Link Dist (m)		49.8		94.3	40.8		32.3
Turn Bay Length (m)			25.0			20.0	
Base Capacity (vph)	343	1117	62	2140	366	230	438
Starvation Cap Reductn	0	89	0	993	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	1.29	1.32	0.73	0.82	0.02	0.17

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

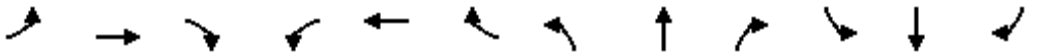
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	1108	108	75	753	15	127	56	92	5	15	52
Future Volume (vph)	27	1108	108	75	753	15	127	56	92	5	15	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00			0.95		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00			0.98		0.95	1.00	
Satd. Flow (prot)	1593	1654		1593	3176			1565		1593	1480	
Flt Permitted	0.30	1.00		0.05	1.00			0.82		0.51	1.00	
Satd. Flow (perm)	509	1654		92	3176			1307		863	1480	
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)	29	1204	117	82	818	16	138	61	100	5	16	57
RTOR Reduction (vph)	0	3	0	0	1	0	0	16	0	0	43	0
Lane Group Flow (vph)	29	1318	0	82	833	0	0	283	0	5	30	0
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)	70.1	70.1		70.1	70.1			24.4		24.4	24.4	
Effective Green, g (s)	73.1	73.1		73.1	73.1			27.4		27.4	27.4	
Actuated g/C Ratio	0.67	0.67		0.67	0.67			0.25		0.25	0.25	
Clearance Time (s)	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	
Lane Grp Cap (vph)	342	1114		61	2139			330		217	373	
v/s Ratio Prot		0.80			0.26						0.02	
v/s Ratio Perm	0.06			c0.89				c0.22		0.01		
v/c Ratio	0.08	1.18		1.34	0.39			0.86		0.02	0.08	
Uniform Delay, d1	6.1	17.7		17.7	7.8			38.7		30.5	30.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.5	91.8		231.9	0.5			19.1		0.0	0.1	
Delay (s)	6.6	109.5		249.6	8.4			57.7		30.5	31.0	
Level of Service	A	F		F	A			E		C	C	
Approach Delay (s)		107.3			30.0			57.7			31.0	
Approach LOS		F			C			E			C	

Intersection Summary			
HCM 2000 Control Delay	72.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	108.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	102.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



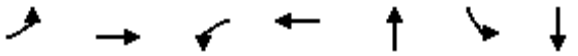
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	1126	34	2	745	40	45	7	3	15	2	54
Future Volume (vph)	44	1126	34	2	745	40	45	7	3	15	2	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		0.0	20.0		0.0	0.0		0.0	7.0		0.0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.992			0.993			0.855	
Flt Protected	0.950			0.950				0.961		0.950		
Satd. Flow (prot)	1593	1670	0	1593	3160	0	0	1600	0	1593	1433	0
Flt Permitted	0.323			0.121				0.724		0.767		
Satd. Flow (perm)	542	1670	0	203	3160	0	0	1205	0	1286	1433	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			12			2			59	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		118.3			60.3			53.5			57.7	
Travel Time (s)		8.5			4.3			3.9			4.2	
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
Adj. Flow (vph)	48	1224	37	2	810	43	49	8	3	16	2	59
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	1261	0	2	853	0	0	60	0	16	61	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)		3.6			3.6			0.0			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
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)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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)	37.0	37.0		37.0	37.0		28.0	28.0		28.0	28.0	
Total Split (s)	82.0	82.0		82.0	82.0		28.0	28.0		28.0	28.0	
Total Split (%)	74.5%	74.5%		74.5%	74.5%		25.5%	25.5%		25.5%	25.5%	
Maximum Green (s)	76.0	76.0		76.0	76.0		22.0	22.0		22.0	22.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0			-2.0		-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
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	None	None		Max	Max		None	None		None	None	
Walk Time (s)	20.0	20.0		20.0	20.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	82.9	82.9		82.9	82.9			12.4		12.4	12.4	
Actuated g/C Ratio	0.83	0.83		0.83	0.83			0.12		0.12	0.12	
v/c Ratio	0.11	0.91		0.01	0.32			0.40		0.10	0.27	
Control Delay	3.3	20.6		3.0	3.1			46.6		39.1	14.0	
Queue Delay	0.0	22.1		0.0	0.0			0.0		0.0	0.0	
Total Delay	3.3	42.6		3.0	3.1			46.6		39.1	14.0	
LOS	A	D		A	A			D		D	B	
Approach Delay		41.2			3.1			46.6			19.2	
Approach LOS		D			A			D			B	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 110			
Actuated Cycle Length: 99.6			
Natural Cycle: 120			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay: 26.4		Intersection LOS: C	
Intersection Capacity Utilization 84.9%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 5: Old Lakeshore Road/Pearl Street & Lakeshore Road

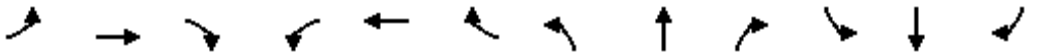




Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	48	1261	2	853	60	16	61
v/c Ratio	0.11	0.91	0.01	0.32	0.40	0.10	0.27
Control Delay	3.3	20.6	3.0	3.1	46.6	39.1	14.0
Queue Delay	0.0	22.1	0.0	0.0	0.0	0.0	0.0
Total Delay	3.3	42.6	3.0	3.1	46.6	39.1	14.0
Queue Length 50th (m)	1.6	157.8	0.1	18.5	10.8	2.9	0.4
Queue Length 95th (m)	5.3	#356.3	0.6	32.4	23.7	9.3	11.9
Internal Link Dist (m)		94.3		36.3	29.5		33.7
Turn Bay Length (m)	40.0		20.0			7.0	
Base Capacity (vph)	451	1390	168	2632	292	310	390
Starvation Cap Reductn	0	176	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	1.04	0.01	0.32	0.21	0.05	0.16

Intersection Summary

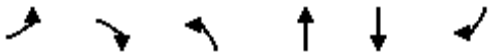
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	1126	34	2	745	40	45	7	3	15	2	54
Future Volume (vph)	44	1126	34	2	745	40	45	7	3	15	2	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99			0.99		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00			0.96		0.95	1.00	
Satd. Flow (prot)	1593	1669		1593	3161			1600		1593	1433	
Flt Permitted	0.32	1.00		0.12	1.00			0.72		0.77	1.00	
Satd. Flow (perm)	541	1669		203	3161			1205		1286	1433	
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)	48	1224	37	2	810	43	49	8	3	16	2	59
RTOR Reduction (vph)	0	1	0	0	2	0	0	2	0	0	53	0
Lane Group Flow (vph)	48	1260	0	2	851	0	0	58	0	16	8	0
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			8.7		8.7	8.7	
Effective Green, g (s)	82.0	82.0		82.0	82.0			10.7		10.7	10.7	
Actuated g/C Ratio	0.81	0.81		0.81	0.81			0.11		0.11	0.11	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	440	1359		165	2574			128		136	152	
v/s Ratio Prot		c0.76			0.27						0.01	
v/s Ratio Perm	0.09			0.01				c0.05		0.01		
v/c Ratio	0.11	0.93		0.01	0.33			0.45		0.12	0.05	
Uniform Delay, d1	1.9	7.1		1.8	2.4			42.3		40.7	40.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.1	11.0		0.1	0.3			2.6		0.4	0.1	
Delay (s)	2.0	18.1		1.9	2.7			44.8		41.1	40.6	
Level of Service	A	B		A	A			D		D	D	
Approach Delay (s)		17.5			2.7			44.8			40.7	
Approach LOS		B			A			D			D	

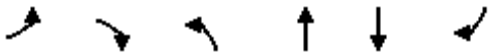
Intersection Summary			
HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	100.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	84.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	157	0	0	0	0	147
Future Volume (vph)	157	0	0	0	0	147
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					0.865	
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	0	1863	1611	0
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	0	1863	1611	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	84.6			53.6	64.8	
Travel Time (s)	6.1			3.9	4.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	171	0	0	0	0	160
Shared Lane Traffic (%)						
Lane Group Flow (vph)	171	0	0	0	160	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 24.5%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	157	0	0	0	0	147
Future Volume (Veh/h)	157	0	0	0	0	147
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	171	0	0	0	0	160
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					65	
pX, platoon unblocked						
vC, conflicting volume	80	80	160			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	80	80	160			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	81	100	100			
cM capacity (veh/h)	922	980	1419			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	171	0	160
Volume Left	171	0	0
Volume Right	0	0	160
cSH	922	1700	1700
Volume to Capacity	0.19	0.00	0.09
Queue Length 95th (m)	5.4	0.0	0.0
Control Delay (s)	9.8	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.8	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	5.1		
Intersection Capacity Utilization	24.5%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection: 1: Lakeshore Road & Locust Street

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (m)	130.8	133.6	1.3	119.9
Average Queue (m)	121.8	122.4	0.0	56.8
95th Queue (m)	126.8	128.6	0.9	124.0
Link Distance (m)		115.8	79.4	145.9
Upstream Blk Time (%)	70	84		0
Queuing Penalty (veh)	0	0		0
Storage Bay Dist (m)	170.0			
Storage Blk Time (%)	70	84		
Queuing Penalty (veh)	908	48		

Intersection: 2: Lakeshore Road & Brant Street

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	TR	L	R
Maximum Queue (m)	62.5	83.9	58.5	61.3	101.3	22.5
Average Queue (m)	41.7	81.7	37.4	40.3	44.1	20.3
95th Queue (m)	79.5	83.6	60.6	62.8	91.0	26.4
Link Distance (m)		79.4	53.8	53.8	107.6	
Upstream Blk Time (%)		30	2	3	2	
Queuing Penalty (veh)		393	11	15	0	
Storage Bay Dist (m)	55.0					15.0
Storage Blk Time (%)	0	46			38	11
Queuing Penalty (veh)	3	95			80	18

Intersection: 3: Lakeshore Road & John Street

Movement	EB	EB	WB	WB	SB
Directions Served	LT	T	T	TR	LR
Maximum Queue (m)	16.1	60.6	36.9	42.6	40.8
Average Queue (m)	3.8	45.4	4.4	6.9	14.8
95th Queue (m)	13.2	73.3	20.3	27.9	34.9
Link Distance (m)		53.8	49.9	49.9	117.5
Upstream Blk Time (%)		7		0	
Queuing Penalty (veh)		88		1	
Storage Bay Dist (m)	10.0				
Storage Blk Time (%)	3	22			
Queuing Penalty (veh)	16	137			

Intersection: 4: Lakeshore Road & Elizabeth Street

Movement	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	T	TR	LTR	L	TR
Maximum Queue (m)	14.8	54.9	32.3	76.6	70.4	47.8	6.9	30.3
Average Queue (m)	2.3	51.3	23.6	38.3	33.0	38.3	0.8	10.7
95th Queue (m)	7.8	59.2	37.6	74.0	64.5	51.4	4.5	22.3
Link Distance (m)	49.9	49.9		97.5	97.5	44.2		38.0
Upstream Blk Time (%)		16		0	0	9		0
Queuing Penalty (veh)		98		0	0	13		0
Storage Bay Dist (m)			25.0				20.0	
Storage Blk Time (%)			32	7				3
Queuing Penalty (veh)			122	5				0

Intersection: 5: Old Lakeshore Road/Pearl Street & Lakeshore Road

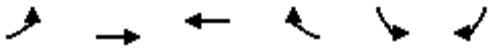
Movement	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	T	TR	LTR	L	TR
Maximum Queue (m)	33.8	95.0	6.4	46.0	43.9	30.7	13.0	23.6
Average Queue (m)	5.6	41.8	0.5	18.2	14.0	11.4	3.8	10.0
95th Queue (m)	21.2	85.9	3.5	35.5	31.5	24.7	11.7	19.4
Link Distance (m)		97.5		50.3	50.3	43.2		43.4
Upstream Blk Time (%)		0		0	0			
Queuing Penalty (veh)		1		0	0			
Storage Bay Dist (m)	40.0		20.0				7.0	
Storage Blk Time (%)		6		4			10	11
Queuing Penalty (veh)		2		0			6	2

Intersection: 6: Driveway

Movement	EB
Directions Served	LR
Maximum Queue (m)	25.1
Average Queue (m)	12.4
95th Queue (m)	20.5
Link Distance (m)	76.2
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

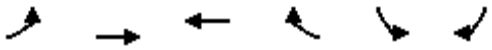
Network Summary

Network wide Queuing Penalty: 2063



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	33	1060	1402	72	2	65
Future Volume (vph)	33	1060	1402	72	2	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt			0.993		0.869	
Flt Protected	0.950				0.999	
Satd. Flow (prot)	1770	1863	3514	0	1617	0
Flt Permitted	0.950				0.999	
Satd. Flow (perm)	1770	1863	3514	0	1617	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		148.5	99.8		213.0	
Travel Time (s)		10.7	7.2		15.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	36	1152	1524	78	2	71
Shared Lane Traffic (%)						
Lane Group Flow (vph)	36	1152	1602	0	73	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

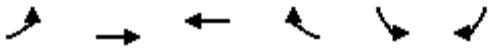
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 66.6%		ICU Level of Service C	
Analysis Period (min) 15			



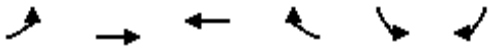
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	33	1060	1402	72	2	65
Future Volume (Veh/h)	33	1060	1402	72	2	65
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	36	1152	1524	78	2	71
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			100			
pX, platoon unblocked	0.67				0.67	0.67
vC, conflicting volume	1602				2787	801
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	916				2682	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	93				82	90
cM capacity (veh/h)	497				11	727

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	36	1152	1016	586	73
Volume Left	36	0	0	0	2
Volume Right	0	0	0	78	71
cSH	497	1700	1700	1700	261
Volume to Capacity	0.07	0.68	0.60	0.34	0.28
Queue Length 95th (m)	1.9	0.0	0.0	0.0	8.9
Control Delay (s)	12.8	0.0	0.0	0.0	24.0
Lane LOS	B				C
Approach Delay (s)	0.4		0.0		24.0
Approach LOS					C

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	66.6%	ICU Level of Service	C
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	197	865	1069	201	213	405
Future Volume (vph)	197	865	1069	201	213	405
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0			0.0	0.0	15.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt			0.976			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1593	1676	3109	0	1593	1425
Flt Permitted	0.103				0.950	
Satd. Flow (perm)	173	1676	3109	0	1593	1425
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			28			177
Link Speed (k/h)		50	50		50	
Link Distance (m)		99.8	72.3		121.7	
Travel Time (s)		7.2	5.2		8.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	214	940	1162	218	232	440
Shared Lane Traffic (%)						
Lane Group Flow (vph)	214	940	1380	0	232	440
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0
Detector 1 Type	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
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	pm+pt	NA	NA		Perm	Perm
Protected Phases	1	2	2			
Permitted Phases	2	2			4	4

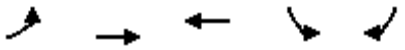


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	1	2	2		4	4
Switch Phase						
Minimum Initial (s)	6.0	8.0	8.0		8.0	8.0
Minimum Split (s)	9.0	33.0	33.0		38.0	38.0
Total Split (s)	11.0	68.0	68.0		41.0	41.0
Total Split (%)	9.2%	56.7%	56.7%		34.2%	34.2%
Maximum Green (s)	8.0	62.0	62.0		34.0	34.0
Yellow Time (s)	3.0	4.0	4.0		4.0	4.0
All-Red Time (s)	0.0	2.0	2.0		3.0	3.0
Lost Time Adjust (s)	0.0	-2.0	-2.0		-3.0	0.0
Total Lost Time (s)	3.0	4.0	4.0		4.0	7.0
Lead/Lag	Lead	Lag	Lag			
Lead-Lag Optimize?	Yes	Yes	Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	Max	Max		None	None
Walk Time (s)		11.0	11.0		12.0	12.0
Flash Dont Walk (s)		16.0	16.0		19.0	19.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)	73.3	64.2	64.2		30.5	27.5
Actuated g/C Ratio	0.64	0.56	0.56		0.27	0.24
v/c Ratio	1.01	0.99	0.78		0.54	0.92
Control Delay	87.7	54.6	24.0		40.4	50.5
Queue Delay	0.0	0.0	16.5		0.0	0.0
Total Delay	87.7	54.6	40.5		40.4	50.5
LOS	F	D	D		D	D
Approach Delay		60.7	40.5		47.0	
Approach LOS		E	D		D	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 120			
Actuated Cycle Length: 113.8			
Natural Cycle: 110			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.01			
Intersection Signal Delay: 49.2		Intersection LOS: D	
Intersection Capacity Utilization 77.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Lakeshore Road & Brant Street



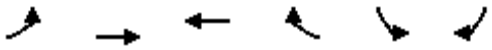


Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	214	940	1380	232	440
v/c Ratio	1.01	0.99	0.78	0.54	0.92
Control Delay	87.7	54.6	24.0	40.4	50.5
Queue Delay	0.0	0.0	16.5	0.0	0.0
Total Delay	87.7	54.6	40.5	40.4	50.5
Queue Length 50th (m)	~30.9	~241.2	132.6	46.5	64.2
Queue Length 95th (m)	#84.9	#333.7	175.7	71.8	#121.6
Internal Link Dist (m)		75.8	48.3	97.7	
Turn Bay Length (m)	55.0				15.0
Base Capacity (vph)	211	945	1767	519	551
Starvation Cap Reductn	0	0	409	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.01	0.99	1.02	0.45	0.80

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

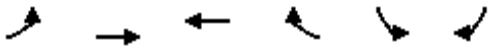
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	197	865	1069	201	213	405
Future Volume (vph)	197	865	1069	201	213	405
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.0	4.0		4.0	7.0
Lane Util. Factor	1.00	1.00	0.95		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1593	1676	3110		1593	1425
Flt Permitted	0.10	1.00	1.00		0.95	1.00
Satd. Flow (perm)	173	1676	3110		1593	1425
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	214	940	1162	218	232	440
RTOR Reduction (vph)	0	0	12	0	0	134
Lane Group Flow (vph)	214	940	1368	0	232	306
Turn Type	pm+pt	NA	NA		Perm	Perm
Protected Phases	1	2	2			
Permitted Phases	2	2			4	4
Actuated Green, G (s)	70.2	62.2	62.2		27.5	27.5
Effective Green, g (s)	70.2	64.2	64.2		30.5	27.5
Actuated g/C Ratio	0.62	0.56	0.56		0.27	0.24
Clearance Time (s)	3.0	6.0	6.0		7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	206	946	1756		427	344
v/s Ratio Prot	c0.07	0.56	0.44			
v/s Ratio Perm	c0.57				0.15	c0.21
v/c Ratio	1.04	0.99	0.78		0.54	0.89
Uniform Delay, d1	23.6	24.5	19.2		35.6	41.6
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	73.2	27.8	3.5		1.4	23.1
Delay (s)	96.8	52.3	22.7		37.0	64.8
Level of Service	F	D	C		D	E
Approach Delay (s)		60.6	22.7		55.2	
Approach LOS		E	C		E	

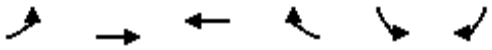
Intersection Summary			
HCM 2000 Control Delay	43.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	113.7	Sum of lost time (s)	14.0
Intersection Capacity Utilization	77.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	26	1053	1234	28	12	36
Future Volume (vph)	26	1053	1234	28	12	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	10.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt			0.997		0.899	
Flt Protected		0.999			0.988	
Satd. Flow (prot)	0	3182	3176	0	1489	0
Flt Permitted		0.999			0.988	
Satd. Flow (perm)	0	3182	3176	0	1489	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		72.3	73.8		133.2	
Travel Time (s)		5.2	5.3		9.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	1145	1341	30	13	39
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1173	1371	0	52	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

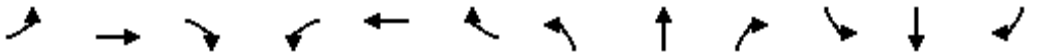
Intersection Summary			
Area Type:	CBD		
Control Type: Unsignalized			
Intersection Capacity Utilization 63.1%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	26	1053	1234	28	12	36
Future Volume (Veh/h)	26	1053	1234	28	12	36
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)	28	1145	1341	30	13	39
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		72	74			
pX, platoon unblocked	0.81				0.81	0.81
vC, conflicting volume	1371				1984	686
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	983				1743	135
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	95				78	95
cM capacity (veh/h)	564				60	718

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	410	763	894	477	52
Volume Left	28	0	0	0	13
Volume Right	0	0	0	30	39
cSH	564	1700	1700	1700	191
Volume to Capacity	0.05	0.45	0.53	0.28	0.27
Queue Length 95th (m)	1.3	0.0	0.0	0.0	8.5
Control Delay (s)	1.5	0.0	0.0	0.0	30.8
Lane LOS	A				D
Approach Delay (s)	0.5		0.0		30.8
Approach LOS					D

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	63.1%	ICU Level of Service	B
Analysis Period (min)	15		



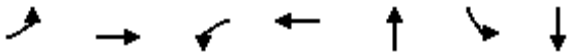
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	853	154	111	1033	48	140	50	106	42	17	89
Future Volume (vph)	58	853	154	111	1033	48	140	50	106	42	17	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	25.0		0.0	0.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.977			0.993			0.952			0.873	
Flt Protected	0.950			0.950				0.977		0.950		
Satd. Flow (prot)	1593	1638	0	1593	3163	0	0	1559	0	1593	1464	0
Flt Permitted	0.190			0.076				0.742		0.516		
Satd. Flow (perm)	319	1638	0	127	3163	0	0	1184	0	865	1464	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16			8			23			97	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		73.8			118.3			64.8			56.3	
Travel Time (s)		5.3			8.5			4.7			4.1	
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
Adj. Flow (vph)	63	927	167	121	1123	52	152	54	115	46	18	97
Shared Lane Traffic (%)												
Lane Group Flow (vph)	63	1094	0	121	1175	0	0	321	0	46	115	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)		3.6			3.6			0.0			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
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)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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		33.0	33.0		33.0	33.0	
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)	-3.0	-3.0		-3.0	-3.0			-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
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	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	20.0	20.0		20.0	20.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		16.0	16.0		16.0	16.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	80.0	80.0		80.0	80.0			32.0		32.0	32.0	
Actuated g/C Ratio	0.67	0.67		0.67	0.67			0.27		0.27	0.27	
v/c Ratio	0.30	1.00		1.44	0.56			0.97		0.20	0.25	
Control Delay	12.8	47.1		276.7	11.8			82.8		37.0	10.8	
Queue Delay	0.0	36.5		0.0	6.1			0.0		0.0	0.0	
Total Delay	12.8	83.6		276.7	17.9			82.8		37.0	10.8	
LOS	B	F		F	B			F		D	B	
Approach Delay		79.7			42.0			82.8			18.3	
Approach LOS		E			D			F			B	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 120			
Actuated Cycle Length: 120			
Natural Cycle: 120			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.44			
Intersection Signal Delay: 60.0		Intersection LOS: E	
Intersection Capacity Utilization 102.5%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 4: Lakeshore Road & Elizabeth Street



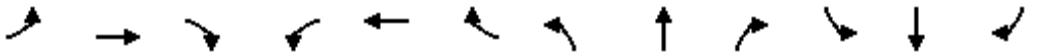


Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	63	1094	121	1175	321	46	115
v/c Ratio	0.30	1.00	1.44	0.56	0.97	0.20	0.25
Control Delay	12.8	47.1	276.7	11.8	82.8	37.0	10.8
Queue Delay	0.0	36.5	0.0	6.1	0.0	0.0	0.0
Total Delay	12.8	83.6	276.7	17.9	82.8	37.0	10.8
Queue Length 50th (m)	5.9	244.7	~40.6	73.7	74.1	8.9	3.3
Queue Length 95th (m)	14.9	#363.2	#59.8	91.2	#134.5	19.7	18.3
Internal Link Dist (m)		49.8		94.3	40.8		32.3
Turn Bay Length (m)			25.0			20.0	
Base Capacity (vph)	212	1097	84	2111	332	230	461
Starvation Cap Reductn	0	182	0	874	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	1.20	1.44	0.95	0.97	0.20	0.25

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

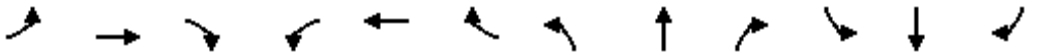
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	853	154	111	1033	48	140	50	106	42	17	89
Future Volume (vph)	58	853	154	111	1033	48	140	50	106	42	17	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.99			0.95		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00			0.98		0.95	1.00	
Satd. Flow (prot)	1593	1638		1593	3164			1558		1593	1464	
Flt Permitted	0.19	1.00		0.08	1.00			0.74		0.52	1.00	
Satd. Flow (perm)	318	1638		127	3164			1185		865	1464	
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)	63	927	167	121	1123	52	152	54	115	46	18	97
RTOR Reduction (vph)	0	5	0	0	3	0	0	17	0	0	71	0
Lane Group Flow (vph)	63	1089	0	121	1172	0	0	304	0	46	44	0
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	
Effective Green, g (s)	80.0	80.0		80.0	80.0			32.0		32.0	32.0	
Actuated g/C Ratio	0.67	0.67		0.67	0.67			0.27		0.27	0.27	
Clearance Time (s)	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	
Lane Grp Cap (vph)	212	1092		84	2109			316		230	390	
v/s Ratio Prot		0.66			0.37						0.03	
v/s Ratio Perm	0.20			c0.95				c0.26		0.05		
v/c Ratio	0.30	1.00		1.44	0.56			0.96		0.20	0.11	
Uniform Delay, d1	8.3	19.9		20.0	10.6			43.4		34.1	33.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	3.6	26.5		253.1	1.1			40.3		0.4	0.1	
Delay (s)	11.9	46.4		273.1	11.7			83.7		34.5	33.4	
Level of Service	B	D		F	B			F		C	C	
Approach Delay (s)		44.5			36.1			83.7			33.7	
Approach LOS		D			D			F			C	

Intersection Summary			
HCM 2000 Control Delay	44.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.30		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	102.5%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



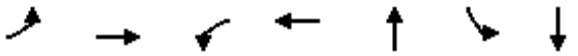
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	926	30	8	1080	59	54	13	2	37	9	58
Future Volume (vph)	45	926	30	8	1080	59	54	13	2	37	9	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		0.0	20.0		0.0	0.0		0.0	7.0		0.0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995			0.992			0.996			0.871	
Flt Protected	0.950			0.950				0.962		0.950		
Satd. Flow (prot)	1593	1668	0	1593	3160	0	0	1606	0	1593	1460	0
Flt Permitted	0.207			0.212				0.719		0.746		
Satd. Flow (perm)	347	1668	0	355	3160	0	0	1201	0	1251	1460	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			11			1			63	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		118.3			60.3			53.5			57.7	
Travel Time (s)		8.5			4.3			3.9			4.2	
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
Adj. Flow (vph)	49	1007	33	9	1174	64	59	14	2	40	10	63
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	1040	0	9	1238	0	0	75	0	40	73	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)		3.6			3.6			0.0			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
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)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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)	37.0	37.0		37.0	37.0		28.0	28.0		28.0	28.0	
Total Split (s)	89.0	89.0		89.0	89.0		31.0	31.0		31.0	31.0	
Total Split (%)	74.2%	74.2%		74.2%	74.2%		25.8%	25.8%		25.8%	25.8%	
Maximum Green (s)	83.0	83.0		83.0	83.0		25.0	25.0		25.0	25.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0			-2.0		-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
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	None	None		Max	Max		None	None		None	None	
Walk Time (s)	20.0	20.0		20.0	20.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	89.0	89.0		89.0	89.0			13.9		13.9	13.9	
Actuated g/C Ratio	0.83	0.83		0.83	0.83			0.13		0.13	0.13	
v/c Ratio	0.17	0.75		0.03	0.47			0.48		0.25	0.30	
Control Delay	4.8	10.9		3.4	4.3			52.9		45.2	16.3	
Queue Delay	0.0	8.3		0.0	0.0			0.0		0.0	0.0	
Total Delay	4.8	19.2		3.4	4.3			52.9		45.2	16.3	
LOS	A	B		A	A			D		D	B	
Approach Delay		18.5			4.3			52.9			26.6	
Approach LOS		B			A			D			C	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 120			
Actuated Cycle Length: 107.2			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 12.9		Intersection LOS: B	
Intersection Capacity Utilization 73.7%		ICU Level of Service D	
Analysis Period (min) 15			

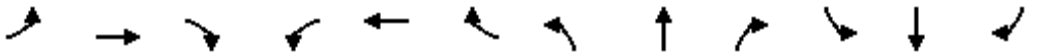
Splits and Phases: 5: Old Lakeshore Road/Pearl Street & Lakeshore Road





Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	49	1040	9	1238	75	40	73
v/c Ratio	0.17	0.75	0.03	0.47	0.48	0.25	0.30
Control Delay	4.8	10.9	3.4	4.3	52.9	45.2	16.3
Queue Delay	0.0	8.3	0.0	0.0	0.0	0.0	0.0
Total Delay	4.8	19.2	3.4	4.3	52.9	45.2	16.3
Queue Length 50th (m)	2.0	95.7	0.3	36.7	15.3	8.0	2.0
Queue Length 95th (m)	6.9	205.0	1.7	62.5	30.4	18.5	15.3
Internal Link Dist (m)		94.3		36.3	29.5		33.7
Turn Bay Length (m)	40.0		20.0			7.0	
Base Capacity (vph)	288	1385	294	2624	303	315	415
Starvation Cap Reductn	0	312	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.97	0.03	0.47	0.25	0.13	0.18

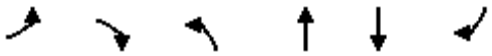
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	926	30	8	1080	59	54	13	2	37	9	58
Future Volume (vph)	45	926	30	8	1080	59	54	13	2	37	9	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99			1.00		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00			0.96		0.95	1.00	
Satd. Flow (prot)	1593	1668		1593	3161			1607		1593	1459	
Flt Permitted	0.21	1.00		0.21	1.00			0.72		0.75	1.00	
Satd. Flow (perm)	346	1668		355	3161			1201		1250	1459	
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)	49	1007	33	9	1174	64	59	14	2	40	10	63
RTOR Reduction (vph)	0	1	0	0	2	0	0	1	0	0	56	0
Lane Group Flow (vph)	49	1039	0	9	1236	0	0	74	0	40	17	0
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)	86.2	86.2		86.2	86.2			10.3		10.3	10.3	
Effective Green, g (s)	88.2	88.2		88.2	88.2			12.3		12.3	12.3	
Actuated g/C Ratio	0.81	0.81		0.81	0.81			0.11		0.11	0.11	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	281	1355		288	2569			136		141	165	
v/s Ratio Prot		c0.62			0.39						0.01	
v/s Ratio Perm	0.14			0.03				c0.06		0.03		
v/c Ratio	0.17	0.77		0.03	0.48			0.54		0.28	0.10	
Uniform Delay, d1	2.2	5.0		1.9	3.1			45.5		44.1	43.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.3	2.7		0.2	0.6			4.4		1.1	0.3	
Delay (s)	2.5	7.7		2.2	3.8			49.9		45.2	43.4	
Level of Service	A	A		A	A			D		D	D	
Approach Delay (s)		7.5			3.8			49.9			44.0	
Approach LOS		A			A			D			D	

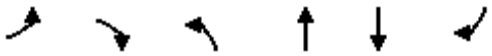
Intersection Summary			
HCM 2000 Control Delay	8.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	108.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	73.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	200	0	0	0	0	203
Future Volume (vph)	200	0	0	0	0	203
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					0.865	
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	0	1863	1611	0
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	0	1863	1611	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	76.5			51.6	64.8	
Travel Time (s)	5.5			3.7	4.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	217	0	0	0	0	221
Shared Lane Traffic (%)						
Lane Group Flow (vph)	217	0	0	0	221	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 30.3%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	200	0	0	0	0	203
Future Volume (Veh/h)	200	0	0	0	0	203
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	217	0	0	0	0	221
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					65	
pX, platoon unblocked						
vC, conflicting volume	110	110	221			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	110	110	221			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	76	100	100			
cM capacity (veh/h)	886	943	1348			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	217	0	221
Volume Left	217	0	0
Volume Right	0	0	221
cSH	886	1700	1700
Volume to Capacity	0.24	0.00	0.13
Queue Length 95th (m)	7.7	0.0	0.0
Control Delay (s)	10.4	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.4	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	5.1		
Intersection Capacity Utilization	30.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection: 1: Lakeshore Road & Locust Street

Movement	EB	EB	WB	WB	SB
Directions Served	L	T	T	TR	LR
Maximum Queue (m)	156.0	159.0	3.0	2.6	171.5
Average Queue (m)	148.0	148.8	0.2	0.1	104.1
95th Queue (m)	152.6	154.7	2.9	1.6	237.3
Link Distance (m)	142.3	142.3	79.3	79.3	199.2
Upstream Blk Time (%)	77	85			29
Queuing Penalty (veh)	0	0			0
Storage Bay Dist (m)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 2: Lakeshore Road & Brant Street

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	TR	L	R
Maximum Queue (m)	62.4	88.6	62.1	62.6	120.8	22.5
Average Queue (m)	50.3	82.0	49.4	52.0	109.8	22.3
95th Queue (m)	77.2	85.4	68.4	67.1	131.4	23.8
Link Distance (m)		79.3	53.8	53.8	107.6	
Upstream Blk Time (%)		36	13	17	69	
Queuing Penalty (veh)		386	81	105	0	
Storage Bay Dist (m)	55.0					15.0
Storage Blk Time (%)	7	47			60	39
Queuing Penalty (veh)	61	92			244	84

Intersection: 3: Lakeshore Road & John Street

Movement	EB	EB	WB	WB	SB
Directions Served	LT	T	T	TR	LR
Maximum Queue (m)	17.7	57.5	56.2	57.3	41.8
Average Queue (m)	6.9	39.3	27.3	32.5	15.8
95th Queue (m)	17.7	77.0	63.8	67.5	35.2
Link Distance (m)		53.8	49.9	49.9	117.5
Upstream Blk Time (%)		8	4	5	
Queuing Penalty (veh)		90	25	34	
Storage Bay Dist (m)	10.0				
Storage Blk Time (%)	9	20			
Queuing Penalty (veh)	48	113			

Intersection: 4: Lakeshore Road & Elizabeth Street

Movement	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	T	TR	LTR	L	TR
Maximum Queue (m)	26.3	54.8	32.3	104.1	111.9	47.8	27.3	42.2
Average Queue (m)	7.6	45.2	29.5	83.8	81.0	41.6	9.5	18.8
95th Queue (m)	19.2	67.0	38.8	123.1	126.4	53.5	23.5	36.2
Link Distance (m)	49.9	49.9		97.5	97.5	44.1		38.0
Upstream Blk Time (%)		16		23	8	16		1
Queuing Penalty (veh)		83		140	47	32		0
Storage Bay Dist (m)			25.0				20.0	
Storage Blk Time (%)			66	15			3	11
Queuing Penalty (veh)			338	16			3	4

Intersection: 5: Old Lakeshore Road/Pearl Street & Lakeshore Road

Movement	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	T	TR	LTR	L	TR
Maximum Queue (m)	35.4	99.9	27.2	60.2	59.8	45.1	14.7	40.3
Average Queue (m)	8.8	52.1	3.3	42.4	36.0	19.6	8.5	16.7
95th Queue (m)	26.5	101.5	15.5	69.0	68.1	39.0	16.6	34.0
Link Distance (m)		97.5		50.3	50.3	43.2		43.4
Upstream Blk Time (%)		1		31	15	4		1
Queuing Penalty (veh)		12		0	0	0		0
Storage Bay Dist (m)	40.0		20.0				7.0	
Storage Blk Time (%)		8	0	42			35	30
Queuing Penalty (veh)		4	0	3			24	11

Intersection: 6: Driveway

Movement	EB
Directions Served	LR
Maximum Queue (m)	42.7
Average Queue (m)	16.4
95th Queue (m)	31.2
Link Distance (m)	68.0
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

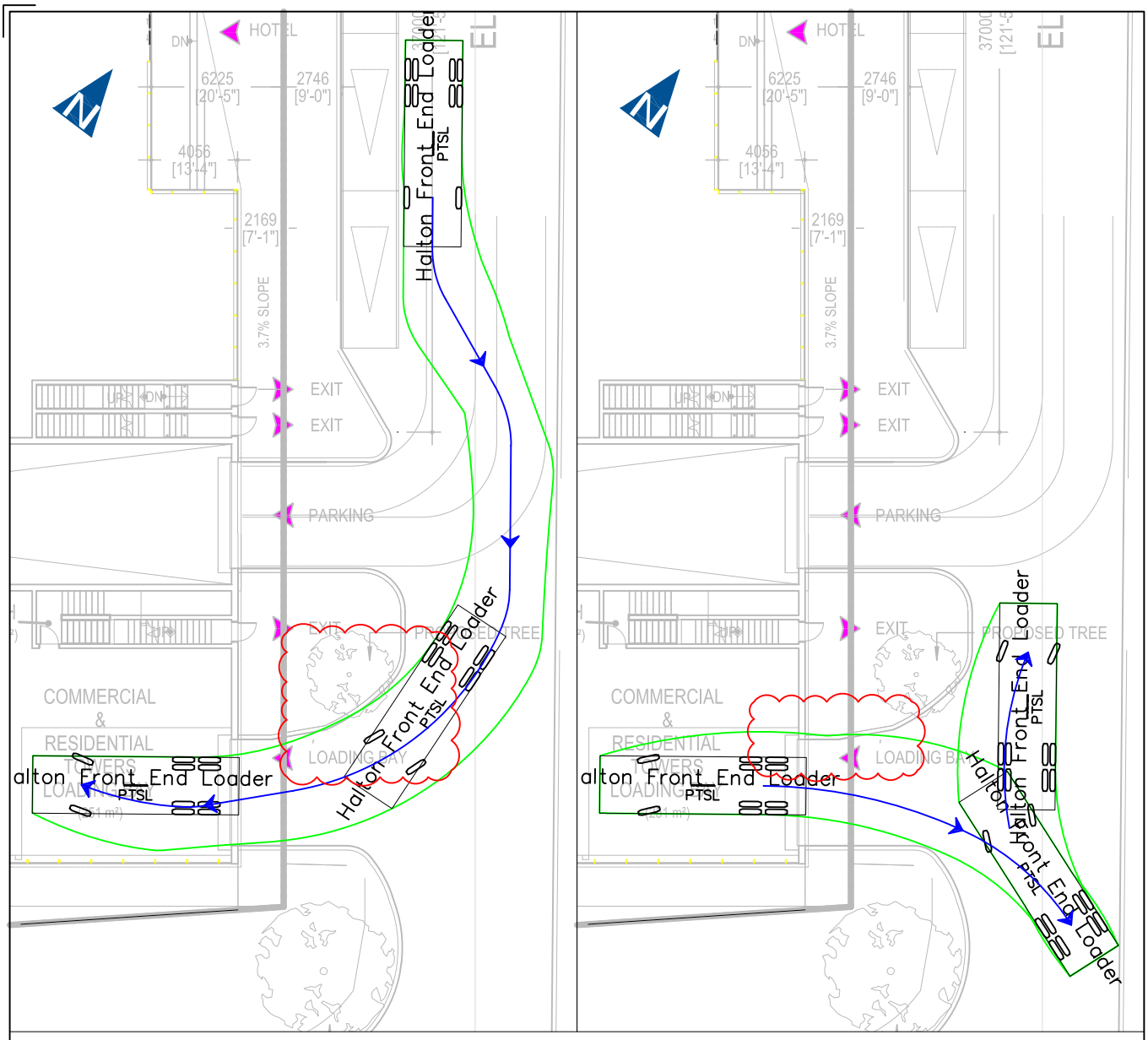
Network Summary

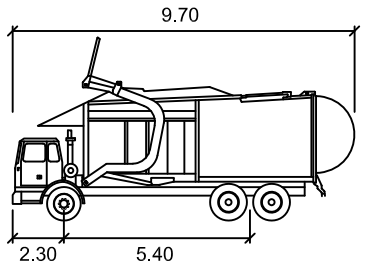
Network wide Queuing Penalty: 2077

Appendix H

Site Circulation







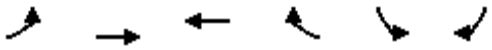
Halton Front End Loader

	meters
Width	: 2.70
Track	: 2.70
Lock to Lock Time	: 6.0
Steering Angle	: 24.5

NTS

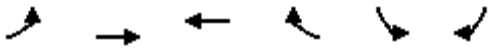
Appendix I

Total Traffic Sensitivity Operations



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	57	1295	927	48	7	18
Future Volume (vph)	57	1295	927	48	7	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	170.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt			0.993		0.904	
Flt Protected	0.950				0.986	
Satd. Flow (prot)	1770	1863	3514	0	1660	0
Flt Permitted	0.950				0.986	
Satd. Flow (perm)	1770	1863	3514	0	1660	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		122.3	99.8		159.7	
Travel Time (s)		8.8	7.2		11.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	62	1408	1008	52	8	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	62	1408	1060	0	28	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

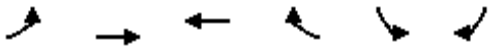
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	78.2%	ICU Level of Service	D
Analysis Period (min)	15		



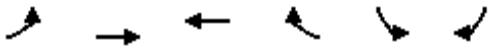
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	57	1295	927	48	7	18
Future Volume (Veh/h)	57	1295	927	48	7	18
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	62	1408	1008	52	8	20
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			100			
pX, platoon unblocked	0.89				0.89	0.89
vC, conflicting volume	1060				2566	530
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	812				2511	214
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	91				58	97
cM capacity (veh/h)	718				19	701

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	62	1408	672	388	28
Volume Left	62	0	0	0	8
Volume Right	0	0	0	52	20
cSH	718	1700	1700	1700	62
Volume to Capacity	0.09	0.83	0.40	0.23	0.45
Queue Length 95th (m)	2.3	0.0	0.0	0.0	14.0
Control Delay (s)	10.5	0.0	0.0	0.0	104.4
Lane LOS	B				F
Approach Delay (s)	0.4		0.0		104.4
Approach LOS					F

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	78.2%	ICU Level of Service	D
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	204	1098	762	183	155	213
Future Volume (vph)	204	1098	762	183	155	213
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0			0.0	0.0	15.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt			0.971			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1593	1676	3093	0	1593	1425
Flt Permitted	0.246				0.950	
Satd. Flow (perm)	412	1676	3093	0	1593	1425
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			50			167
Link Speed (k/h)		50	50		50	
Link Distance (m)		99.8	72.3		121.7	
Travel Time (s)		7.2	5.2		8.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	222	1193	828	199	168	232
Shared Lane Traffic (%)						
Lane Group Flow (vph)	222	1193	1027	0	168	232
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0
Detector 1 Type	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
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm	NA	NA		Perm	Perm
Protected Phases		2	2			
Permitted Phases	2	2			4	4

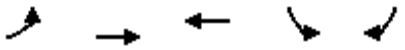


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	2	2	2		4	4
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0		8.0	8.0
Minimum Split (s)	33.0	33.0	33.0		38.0	38.0
Total Split (s)	62.0	62.0	62.0		38.0	38.0
Total Split (%)	62.0%	62.0%	62.0%		38.0%	38.0%
Maximum Green (s)	56.0	56.0	56.0		31.0	31.0
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	2.0	2.0	2.0		3.0	3.0
Lost Time Adjust (s)	0.0	-2.0	-2.0		-3.0	0.0
Total Lost Time (s)	6.0	4.0	4.0		4.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	Max	Max	Max		None	None
Walk Time (s)	11.0	11.0	11.0		12.0	12.0
Flash Dont Walk (s)	16.0	16.0	16.0		19.0	19.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	56.1	58.1	58.1		16.9	13.9
Actuated g/C Ratio	0.68	0.70	0.70		0.20	0.17
v/c Ratio	0.80	1.02	0.47		0.52	0.62
Control Delay	36.3	46.5	6.6		35.3	17.7
Queue Delay	0.0	0.0	0.3		0.0	0.0
Total Delay	36.3	46.5	6.9		35.3	17.7
LOS	D	D	A		D	B
Approach Delay		44.9	6.9		25.1	
Approach LOS		D	A		C	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 100			
Actuated Cycle Length: 83			
Natural Cycle: 140			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.02			
Intersection Signal Delay: 28.4		Intersection LOS: C	
Intersection Capacity Utilization 80.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Lakeshore Road & Brant Street



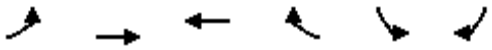


Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	222	1193	1027	168	232
v/c Ratio	0.80	1.02	0.47	0.52	0.62
Control Delay	36.3	46.5	6.6	35.3	17.7
Queue Delay	0.0	0.0	0.3	0.0	0.0
Total Delay	36.3	46.5	6.9	35.3	17.7
Queue Length 50th (m)	22.4	~185.4	31.8	25.0	9.6
Queue Length 95th (m)	#79.4	#322.2	56.2	44.2	31.5
Internal Link Dist (m)		75.8	48.3	97.7	
Turn Bay Length (m)	55.0				15.0
Base Capacity (vph)	278	1173	2179	653	637
Starvation Cap Reductn	0	0	539	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.80	1.02	0.63	0.26	0.36

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

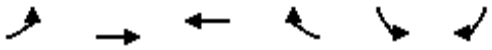
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	204	1098	762	183	155	213
Future Volume (vph)	204	1098	762	183	155	213
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	4.0	4.0		4.0	7.0
Lane Util. Factor	1.00	1.00	0.95		1.00	1.00
Frt	1.00	1.00	0.97		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1593	1676	3093		1593	1425
Flt Permitted	0.25	1.00	1.00		0.95	1.00
Satd. Flow (perm)	412	1676	3093		1593	1425
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	222	1193	828	199	168	232
RTOR Reduction (vph)	0	0	15	0	0	139
Lane Group Flow (vph)	222	1193	1012	0	168	93
Turn Type	Perm	NA	NA		Perm	Perm
Protected Phases		2	2			
Permitted Phases	2	2			4	4
Actuated Green, G (s)	56.1	56.1	56.1		13.9	13.9
Effective Green, g (s)	56.1	58.1	58.1		16.9	13.9
Actuated g/C Ratio	0.68	0.70	0.70		0.20	0.17
Clearance Time (s)	6.0	6.0	6.0		7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	278	1173	2165		324	238
v/s Ratio Prot		c0.71	0.33			
v/s Ratio Perm	0.54				c0.11	0.07
v/c Ratio	0.80	1.02	0.47		0.52	0.39
Uniform Delay, d1	9.5	12.4	5.6		29.4	30.8
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	20.9	30.6	0.7		1.4	1.1
Delay (s)	30.3	43.1	6.3		30.8	31.8
Level of Service	C	D	A		C	C
Approach Delay (s)		41.1	6.3		31.4	
Approach LOS		D	A		C	

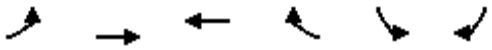
Intersection Summary			
HCM 2000 Control Delay	27.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	83.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	23	1227	922	11	15	24
Future Volume (vph)	23	1227	922	11	15	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	10.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt			0.998		0.916	
Flt Protected		0.999			0.981	
Satd. Flow (prot)	0	3182	3179	0	1506	0
Flt Permitted		0.999			0.981	
Satd. Flow (perm)	0	3182	3179	0	1506	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		72.3	73.8		133.2	
Travel Time (s)		5.2	5.3		9.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	25	1334	1002	12	16	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1359	1014	0	42	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

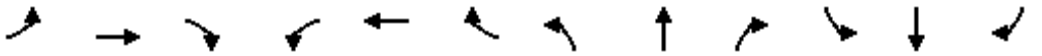
Intersection Summary			
Area Type:	CBD		
Control Type: Unsignalized			
Intersection Capacity Utilization	65.9%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	23	1227	922	11	15	24
Future Volume (Veh/h)	23	1227	922	11	15	24
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)	25	1334	1002	12	16	26
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		72	74			
pX, platoon unblocked	0.91				0.91	0.91
vC, conflicting volume	1014				1725	507
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	816				1598	258
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				81	96
cM capacity (veh/h)	734				85	674

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	470	889	668	346	42
Volume Left	25	0	0	0	16
Volume Right	0	0	0	12	26
cSH	734	1700	1700	1700	186
Volume to Capacity	0.03	0.52	0.39	0.20	0.23
Queue Length 95th (m)	0.8	0.0	0.0	0.0	6.7
Control Delay (s)	1.0	0.0	0.0	0.0	30.0
Lane LOS	A				D
Approach Delay (s)	0.3		0.0		30.0
Approach LOS					D

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	65.9%	ICU Level of Service	C
Analysis Period (min)	15		



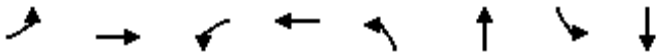
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	1108	108	75	753	15	127	56	92	5	15	52
Future Volume (vph)	27	1108	108	75	753	15	127	56	92	5	15	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	25.0		0.0	0.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987			0.997			0.907			0.883	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1593	1655	0	1593	3176	0	1593	1521	0	1593	1480	0
Flt Permitted	0.338			0.060			0.709			0.521		
Satd. Flow (perm)	567	1655	0	101	3176	0	1189	1521	0	873	1480	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			4			73			57	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		73.8			118.3			64.8			56.3	
Travel Time (s)		5.3			8.5			4.7			4.1	
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
Adj. Flow (vph)	29	1204	117	82	818	16	138	61	100	5	16	57
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	1321	0	82	834	0	138	161	0	5	73	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)		3.6			3.6			0.0			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
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)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			4			8	
Permitted Phases	2			6			4			8		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	2	2		1	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	8.0	8.0		5.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	40.0	40.0		9.5	40.0		33.0	33.0		33.0	33.0	
Total Split (s)	67.5	67.5		9.5	77.0		33.0	33.0		33.0	33.0	
Total Split (%)	61.4%	61.4%		8.6%	70.0%		30.0%	30.0%		30.0%	30.0%	
Maximum Green (s)	60.5	60.5		5.0	70.0		26.0	26.0		26.0	26.0	
Yellow Time (s)	4.0	4.0		3.5	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		1.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		1.5	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		None	Max		None	None		None	None	
Walk Time (s)	20.0	20.0			20.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	13.0	13.0			13.0		16.0	16.0		16.0	16.0	
Pedestrian Calls (#/hr)	0	0			0		0	0		0	0	
Act Effct Green (s)	65.7	65.7		75.7	73.2		19.9	19.9		19.9	19.9	
Actuated g/C Ratio	0.65	0.65		0.75	0.72		0.20	0.20		0.20	0.20	
v/c Ratio	0.08	1.23		0.42	0.36		0.59	0.45		0.03	0.22	
Control Delay	9.6	131.1		17.3	6.3		47.4	23.3		31.6	13.7	
Queue Delay	0.0	0.3		0.0	0.7		0.0	0.0		0.0	0.0	
Total Delay	9.6	131.4		17.3	7.1		47.4	23.3		31.6	13.7	
LOS	A	F		B	A		D	C		C	B	
Approach Delay		128.8			8.0			34.4			14.9	
Approach LOS		F			A			C			B	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 110			
Actuated Cycle Length: 101.1			
Natural Cycle: 145			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.23			
Intersection Signal Delay: 72.9		Intersection LOS: E	
Intersection Capacity Utilization 93.2%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 4: Lakeshore Road & Elizabeth Street



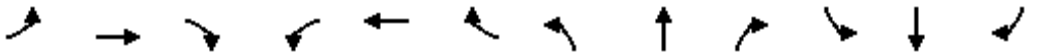


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	29	1321	82	834	138	161	5	73
v/c Ratio	0.08	1.23	0.42	0.36	0.59	0.45	0.03	0.22
Control Delay	9.6	131.1	17.3	6.3	47.4	23.3	31.6	13.7
Queue Delay	0.0	0.3	0.0	0.7	0.0	0.0	0.0	0.0
Total Delay	9.6	131.4	17.3	7.1	47.4	23.3	31.6	13.7
Queue Length 50th (m)	2.1	~345.4	3.7	28.6	26.0	15.6	0.9	2.7
Queue Length 95th (m)	7.3	#480.7	18.4	51.4	46.0	34.8	3.9	14.5
Internal Link Dist (m)		49.8		94.3		40.8		32.3
Turn Bay Length (m)			25.0				20.0	
Base Capacity (vph)	368	1078	194	2300	341	489	251	466
Starvation Cap Reductn	0	75	0	1056	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	0.08	1.32	0.42	0.67	0.40	0.33	0.02	0.16

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

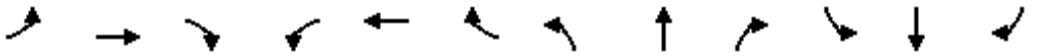
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	1108	108	75	753	15	127	56	92	5	15	52
Future Volume (vph)	27	1108	108	75	753	15	127	56	92	5	15	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		1.5	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.91		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)	1593	1654		1593	3176		1593	1520		1593	1480	
Flt Permitted	0.34	1.00		0.06	1.00		0.71	1.00		0.52	1.00	
Satd. Flow (perm)	566	1654		100	3176		1189	1520		874	1480	
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)	29	1204	117	82	818	16	138	61	100	5	16	57
RTOR Reduction (vph)	0	3	0	0	1	0	0	59	0	0	46	0
Lane Group Flow (vph)	29	1318	0	82	833	0	138	102	0	5	27	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	62.7	62.7		71.1	71.1		16.9	16.9		16.9	16.9	
Effective Green, g (s)	65.7	65.7		74.1	74.1		19.9	19.9		19.9	19.9	
Actuated g/C Ratio	0.64	0.64		0.73	0.73		0.20	0.20		0.20	0.20	
Clearance Time (s)	7.0	7.0		4.5	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)	364	1065		173	2307		231	296		170	288	
v/s Ratio Prot		c0.80		c0.03	0.26			0.07			0.02	
v/s Ratio Perm	0.05			0.31			c0.12			0.01		
v/c Ratio	0.08	1.24		0.47	0.36		0.60	0.35		0.03	0.09	
Uniform Delay, d1	6.8	18.1		24.6	5.2		37.4	35.4		33.2	33.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	115.1		2.0	0.4		4.1	0.7		0.1	0.1	
Delay (s)	7.2	133.3		26.7	5.6		41.5	36.1		33.3	33.8	
Level of Service	A	F		C	A		D	D		C	C	
Approach Delay (s)		130.6			7.5			38.6			33.8	
Approach LOS		F			A			D			C	

Intersection Summary			
HCM 2000 Control Delay	74.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	102.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



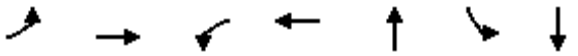
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	1126	34	2	745	40	45	7	3	15	2	54
Future Volume (vph)	44	1126	34	2	745	40	45	7	3	15	2	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		0.0	20.0		0.0	0.0		0.0	7.0		0.0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.992			0.993			0.855	
Flt Protected	0.950			0.950				0.961		0.950		
Satd. Flow (prot)	1593	1670	0	1593	3160	0	0	1600	0	1593	1433	0
Flt Permitted	0.323			0.121				0.724		0.767		
Satd. Flow (perm)	542	1670	0	203	3160	0	0	1205	0	1286	1433	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			12			2			59	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		118.3			60.3			53.5			57.7	
Travel Time (s)		8.5			4.3			3.9			4.2	
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
Adj. Flow (vph)	48	1224	37	2	810	43	49	8	3	16	2	59
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	1261	0	2	853	0	0	60	0	16	61	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)		3.6			3.6			0.0			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
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)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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)	37.0	37.0		37.0	37.0		28.0	28.0		28.0	28.0	
Total Split (s)	82.0	82.0		82.0	82.0		28.0	28.0		28.0	28.0	
Total Split (%)	74.5%	74.5%		74.5%	74.5%		25.5%	25.5%		25.5%	25.5%	
Maximum Green (s)	76.0	76.0		76.0	76.0		22.0	22.0		22.0	22.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0			-2.0		-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
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	None	None		Max	Max		None	None		None	None	
Walk Time (s)	20.0	20.0		20.0	20.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	82.9	82.9		82.9	82.9			12.4		12.4	12.4	
Actuated g/C Ratio	0.83	0.83		0.83	0.83			0.12		0.12	0.12	
v/c Ratio	0.11	0.91		0.01	0.32			0.40		0.10	0.27	
Control Delay	3.3	20.6		3.0	3.1			46.6		39.1	14.0	
Queue Delay	0.0	22.1		0.0	0.0			0.0		0.0	0.0	
Total Delay	3.3	42.6		3.0	3.1			46.6		39.1	14.0	
LOS	A	D		A	A			D		D	B	
Approach Delay		41.2			3.1			46.6			19.2	
Approach LOS		D			A			D			B	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 110			
Actuated Cycle Length: 99.6			
Natural Cycle: 120			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay: 26.4		Intersection LOS: C	
Intersection Capacity Utilization 84.9%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 5: Old Lakeshore Road/Pearl Street & Lakeshore Road

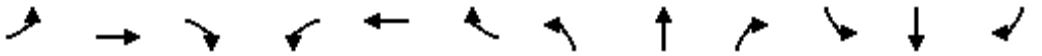




Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	48	1261	2	853	60	16	61
v/c Ratio	0.11	0.91	0.01	0.32	0.40	0.10	0.27
Control Delay	3.3	20.6	3.0	3.1	46.6	39.1	14.0
Queue Delay	0.0	22.1	0.0	0.0	0.0	0.0	0.0
Total Delay	3.3	42.6	3.0	3.1	46.6	39.1	14.0
Queue Length 50th (m)	1.6	157.8	0.1	18.5	10.8	2.9	0.4
Queue Length 95th (m)	5.3	#356.3	0.6	32.4	23.7	9.3	11.9
Internal Link Dist (m)		94.3		36.3	29.5		33.7
Turn Bay Length (m)	40.0		20.0			7.0	
Base Capacity (vph)	451	1390	168	2632	292	310	390
Starvation Cap Reductn	0	176	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	1.04	0.01	0.32	0.21	0.05	0.16

Intersection Summary

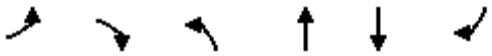
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	1126	34	2	745	40	45	7	3	15	2	54
Future Volume (vph)	44	1126	34	2	745	40	45	7	3	15	2	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99			0.99		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00			0.96		0.95	1.00	
Satd. Flow (prot)	1593	1669		1593	3161			1600		1593	1433	
Flt Permitted	0.32	1.00		0.12	1.00			0.72		0.77	1.00	
Satd. Flow (perm)	541	1669		203	3161			1205		1286	1433	
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)	48	1224	37	2	810	43	49	8	3	16	2	59
RTOR Reduction (vph)	0	1	0	0	2	0	0	2	0	0	53	0
Lane Group Flow (vph)	48	1260	0	2	851	0	0	58	0	16	8	0
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			8.7		8.7	8.7	
Effective Green, g (s)	82.0	82.0		82.0	82.0			10.7		10.7	10.7	
Actuated g/C Ratio	0.81	0.81		0.81	0.81			0.11		0.11	0.11	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	440	1359		165	2574			128		136	152	
v/s Ratio Prot		c0.76			0.27						0.01	
v/s Ratio Perm	0.09			0.01				c0.05		0.01		
v/c Ratio	0.11	0.93		0.01	0.33			0.45		0.12	0.05	
Uniform Delay, d1	1.9	7.1		1.8	2.4			42.3		40.7	40.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.1	11.0		0.1	0.3			2.6		0.4	0.1	
Delay (s)	2.0	18.1		1.9	2.7			44.8		41.1	40.6	
Level of Service	A	B		A	A			D		D	D	
Approach Delay (s)		17.5			2.7			44.8			40.7	
Approach LOS		B			A			D			D	

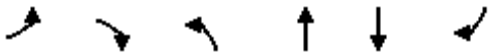
Intersection Summary			
HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	100.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	84.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	157	0	0	0	0	147
Future Volume (vph)	157	0	0	0	0	147
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					0.865	
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	0	1863	1611	0
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	0	1863	1611	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	84.6			53.6	64.8	
Travel Time (s)	6.1			3.9	4.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	171	0	0	0	0	160
Shared Lane Traffic (%)						
Lane Group Flow (vph)	171	0	0	0	160	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 24.5%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	157	0	0	0	0	147
Future Volume (Veh/h)	157	0	0	0	0	147
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	171	0	0	0	0	160
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					65	
pX, platoon unblocked						
vC, conflicting volume	80	80	160			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	80	80	160			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	81	100	100			
cM capacity (veh/h)	922	980	1419			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	171	0	160
Volume Left	171	0	0
Volume Right	0	0	160
cSH	922	1700	1700
Volume to Capacity	0.19	0.00	0.09
Queue Length 95th (m)	5.4	0.0	0.0
Control Delay (s)	9.8	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.8	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	5.1		
Intersection Capacity Utilization	24.5%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection: 1: Lakeshore Road & Locust Street

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (m)	133.0	133.5	3.7	84.2
Average Queue (m)	121.7	122.6	0.1	38.5
95th Queue (m)	127.1	128.9	2.0	78.2
Link Distance (m)		115.8	79.4	145.9
Upstream Blk Time (%)	71	82		
Queuing Penalty (veh)	0	0		
Storage Bay Dist (m)	170.0			
Storage Blk Time (%)	71	82		
Queuing Penalty (veh)	917	47		

Intersection: 2: Lakeshore Road & Brant Street

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	TR	L	R
Maximum Queue (m)	62.5	85.2	56.9	57.8	108.2	22.7
Average Queue (m)	45.6	81.4	34.7	36.4	50.1	20.1
95th Queue (m)	80.8	85.7	59.2	62.0	97.5	27.6
Link Distance (m)		79.4	53.8	53.8	107.6	
Upstream Blk Time (%)		28	2	2	5	
Queuing Penalty (veh)		364	9	10	0	
Storage Bay Dist (m)	55.0					15.0
Storage Blk Time (%)	1	44			46	15
Queuing Penalty (veh)	15	91			97	23

Intersection: 3: Lakeshore Road & John Street

Movement	EB	EB	WB	WB	SB
Directions Served	LT	T	T	TR	LR
Maximum Queue (m)	17.4	57.6	29.1	38.5	79.4
Average Queue (m)	4.7	51.8	4.2	4.7	38.1
95th Queue (m)	14.7	69.0	19.2	21.4	77.6
Link Distance (m)		53.8	49.9	49.9	117.5
Upstream Blk Time (%)		14		0	
Queuing Penalty (veh)		173		0	
Storage Bay Dist (m)	10.0				
Storage Blk Time (%)	2	30			
Queuing Penalty (veh)	15	189			

Intersection: 4: Lakeshore Road & Elizabeth Street

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	TR	L	TR	L	TR
Maximum Queue (m)	11.1	54.8	32.3	63.6	57.0	41.9	44.9	9.3	28.8
Average Queue (m)	2.0	51.7	16.2	26.8	25.4	23.8	23.7	1.1	10.0
95th Queue (m)	7.2	58.3	31.2	50.7	48.7	38.1	39.3	5.4	21.4
Link Distance (m)	49.9	49.9		97.5	97.5	43.3	43.3		38.0
Upstream Blk Time (%)		22				0	1		0
Queuing Penalty (veh)		136				0	1		0
Storage Bay Dist (m)			25.0					20.0	
Storage Blk Time (%)			2	6					2
Queuing Penalty (veh)			7	5					0

Intersection: 5: Old Lakeshore Road/Pearl Street & Lakeshore Road

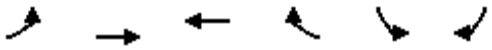
Movement	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	T	TR	LTR	L	TR
Maximum Queue (m)	39.3	98.3	3.3	44.9	40.1	29.6	12.1	23.2
Average Queue (m)	8.2	46.1	0.3	18.4	14.3	11.5	3.6	8.8
95th Queue (m)	29.8	97.7	2.8	37.7	32.7	24.6	11.1	17.8
Link Distance (m)		97.5		50.3	50.3	43.2		43.4
Upstream Blk Time (%)		0		0	0			
Queuing Penalty (veh)		4		0	0			
Storage Bay Dist (m)	40.0		20.0				7.0	
Storage Blk Time (%)	0	7		4			12	9
Queuing Penalty (veh)	0	3		0			7	1

Intersection: 6: Driveway

Movement	EB
Directions Served	LR
Maximum Queue (m)	18.0
Average Queue (m)	11.3
95th Queue (m)	17.3
Link Distance (m)	76.2
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

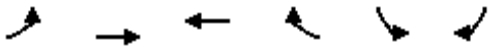
Network Summary

Network wide Queuing Penalty: 2116



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	33	1060	1402	72	2	65
Future Volume (vph)	33	1060	1402	72	2	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt			0.993		0.869	
Flt Protected	0.950				0.999	
Satd. Flow (prot)	1770	1863	3514	0	1617	0
Flt Permitted	0.950				0.999	
Satd. Flow (perm)	1770	1863	3514	0	1617	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		148.5	99.8		213.0	
Travel Time (s)		10.7	7.2		15.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	36	1152	1524	78	2	71
Shared Lane Traffic (%)						
Lane Group Flow (vph)	36	1152	1602	0	73	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

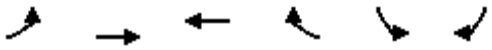
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 66.6%		ICU Level of Service C	
Analysis Period (min) 15			



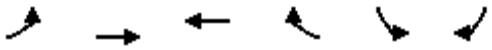
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	33	1060	1402	72	2	65
Future Volume (Veh/h)	33	1060	1402	72	2	65
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	36	1152	1524	78	2	71
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			100			
pX, platoon unblocked	0.68				0.68	0.68
vC, conflicting volume	1602				2787	801
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	939				2686	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	93				82	90
cM capacity (veh/h)	492				11	735

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	36	1152	1016	586	73
Volume Left	36	0	0	0	2
Volume Right	0	0	0	78	71
cSH	492	1700	1700	1700	263
Volume to Capacity	0.07	0.68	0.60	0.34	0.28
Queue Length 95th (m)	1.9	0.0	0.0	0.0	8.8
Control Delay (s)	12.9	0.0	0.0	0.0	23.8
Lane LOS	B				C
Approach Delay (s)	0.4		0.0		23.8
Approach LOS					C

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	66.6%	ICU Level of Service	C
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	197	865	1069	201	213	405
Future Volume (vph)	197	865	1069	201	213	405
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0			0.0	0.0	15.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt			0.976			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1593	1676	3109	0	1593	1425
Flt Permitted	0.107				0.950	
Satd. Flow (perm)	179	1676	3109	0	1593	1425
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			28			209
Link Speed (k/h)		50	50		50	
Link Distance (m)		99.8	72.3		121.7	
Travel Time (s)		7.2	5.2		8.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	214	940	1162	218	232	440
Shared Lane Traffic (%)						
Lane Group Flow (vph)	214	940	1380	0	232	440
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0
Detector 1 Type	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
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	pm+pt	NA	NA		Perm	Perm
Protected Phases	1	2	2			
Permitted Phases	2	2			4	4

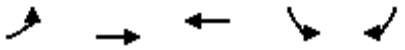


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	1	2	2		4	4
Switch Phase						
Minimum Initial (s)	6.0	8.0	8.0		8.0	8.0
Minimum Split (s)	9.0	33.0	33.0		38.0	38.0
Total Split (s)	14.0	73.0	73.0		38.0	38.0
Total Split (%)	11.2%	58.4%	58.4%		30.4%	30.4%
Maximum Green (s)	11.0	67.0	67.0		31.0	31.0
Yellow Time (s)	3.0	4.0	4.0		4.0	4.0
All-Red Time (s)	0.0	2.0	2.0		3.0	3.0
Lost Time Adjust (s)	0.0	-2.0	-2.0		-3.0	0.0
Total Lost Time (s)	3.0	4.0	4.0		4.0	7.0
Lead/Lag	Lead	Lag	Lag			
Lead-Lag Optimize?	Yes	Yes	Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	Max	Max		None	None
Walk Time (s)		11.0	11.0		12.0	12.0
Flash Dont Walk (s)		16.0	16.0		19.0	19.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)	81.3	69.2	69.2		29.1	26.1
Actuated g/C Ratio	0.68	0.57	0.57		0.24	0.22
v/c Ratio	0.86	0.98	0.77		0.60	0.93
Control Delay	49.9	50.4	23.6		47.3	51.6
Queue Delay	0.0	0.0	19.0		0.0	0.0
Total Delay	49.9	50.4	42.5		47.3	51.6
LOS	D	D	D		D	D
Approach Delay		50.3	42.5		50.1	
Approach LOS		D	D		D	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 125			
Actuated Cycle Length: 120.4			
Natural Cycle: 110			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.98			
Intersection Signal Delay: 46.9		Intersection LOS: D	
Intersection Capacity Utilization 77.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Lakeshore Road & Brant Street



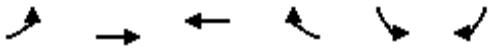


Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	214	940	1380	232	440
v/c Ratio	0.86	0.98	0.77	0.60	0.93
Control Delay	49.9	50.4	23.6	47.3	51.6
Queue Delay	0.0	0.0	19.0	0.0	0.0
Total Delay	49.9	50.4	42.5	47.3	51.6
Queue Length 50th (m)	27.0	~244.0	140.9	51.3	61.3
Queue Length 95th (m)	#74.3	#337.6	174.0	78.3	#122.4
Internal Link Dist (m)		75.8	48.3	97.7	
Turn Bay Length (m)	55.0				15.0
Base Capacity (vph)	250	963	1799	451	523
Starvation Cap Reductn	0	0	451	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.86	0.98	1.02	0.51	0.84

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

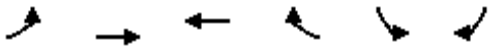
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	197	865	1069	201	213	405
Future Volume (vph)	197	865	1069	201	213	405
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.0	4.0		4.0	7.0
Lane Util. Factor	1.00	1.00	0.95		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1593	1676	3110		1593	1425
Flt Permitted	0.11	1.00	1.00		0.95	1.00
Satd. Flow (perm)	179	1676	3110		1593	1425
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	214	940	1162	218	232	440
RTOR Reduction (vph)	0	0	12	0	0	164
Lane Group Flow (vph)	214	940	1368	0	232	276
Turn Type	pm+pt	NA	NA		Perm	Perm
Protected Phases	1	2	2			
Permitted Phases	2	2			4	4
Actuated Green, G (s)	78.2	67.2	67.2		26.1	26.1
Effective Green, g (s)	78.2	69.2	69.2		29.1	26.1
Actuated g/C Ratio	0.65	0.58	0.58		0.24	0.22
Clearance Time (s)	3.0	6.0	6.0		7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	245	964	1788		385	309
v/s Ratio Prot	c0.08	c0.56	0.44			
v/s Ratio Perm	0.49				0.15	c0.19
v/c Ratio	0.87	0.98	0.77		0.60	0.89
Uniform Delay, d1	23.3	24.7	19.4		40.5	45.8
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	27.2	23.6	3.2		2.7	26.2
Delay (s)	50.4	48.3	22.6		43.1	72.0
Level of Service	D	D	C		D	E
Approach Delay (s)		48.7	22.6		62.0	
Approach LOS		D	C		E	

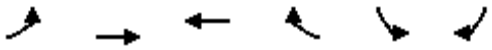
Intersection Summary			
HCM 2000 Control Delay	40.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	120.3	Sum of lost time (s)	14.0
Intersection Capacity Utilization	77.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	26	1053	1234	28	12	36
Future Volume (vph)	26	1053	1234	28	12	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	10.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt			0.997		0.899	
Flt Protected		0.999			0.988	
Satd. Flow (prot)	0	3182	3176	0	1489	0
Flt Permitted		0.999			0.988	
Satd. Flow (perm)	0	3182	3176	0	1489	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		72.3	73.8		133.2	
Travel Time (s)		5.2	5.3		9.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	1145	1341	30	13	39
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1173	1371	0	52	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

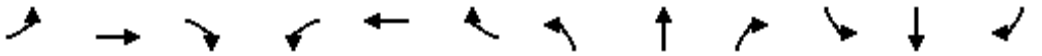
Intersection Summary			
Area Type:	CBD		
Control Type: Unsignalized			
Intersection Capacity Utilization 63.1%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	26	1053	1234	28	12	36
Future Volume (Veh/h)	26	1053	1234	28	12	36
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)	28	1145	1341	30	13	39
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		72	74			
pX, platoon unblocked	0.81				0.81	0.81
vC, conflicting volume	1371				1984	686
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1000				1753	158
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	95				78	94
cM capacity (veh/h)	560				59	700

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	410	763	894	477	52
Volume Left	28	0	0	0	13
Volume Right	0	0	0	30	39
cSH	560	1700	1700	1700	189
Volume to Capacity	0.05	0.45	0.53	0.28	0.28
Queue Length 95th (m)	1.3	0.0	0.0	0.0	8.6
Control Delay (s)	1.5	0.0	0.0	0.0	31.2
Lane LOS	A				D
Approach Delay (s)	0.5		0.0		31.2
Approach LOS					D

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	63.1%	ICU Level of Service	B
Analysis Period (min)	15		

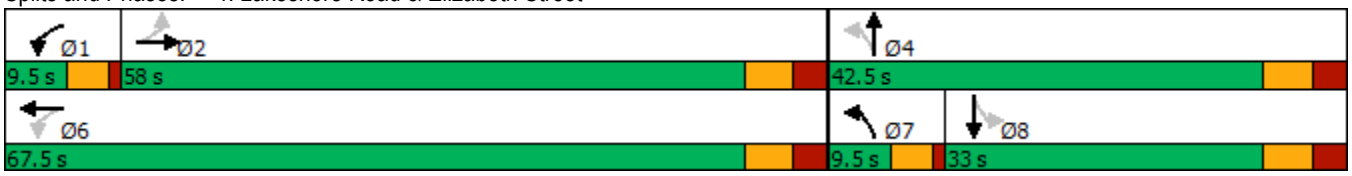


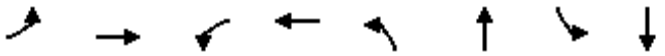
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	853	154	111	1033	48	140	50	106	42	17	89
Future Volume (vph)	58	853	154	111	1033	48	140	50	106	42	17	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	25.0		0.0	15.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.977			0.993			0.898			0.873	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1593	1638	0	1593	3163	0	1593	1505	0	1593	1464	0
Flt Permitted	0.230			0.072			0.399			0.650		
Satd. Flow (perm)	386	1638	0	121	3163	0	669	1505	0	1090	1464	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			7			107			97	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		73.8			118.3			64.8			56.3	
Travel Time (s)		5.3			8.5			4.7			4.1	
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
Adj. Flow (vph)	63	927	167	121	1123	52	152	54	115	46	18	97
Shared Lane Traffic (%)												
Lane Group Flow (vph)	63	1094	0	121	1175	0	152	169	0	46	115	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)		3.6			3.6			0.0			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
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)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2			6			4			8		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	2	2		1	6		7	4		8	8	
Switch Phase												
Minimum Initial (s)	8.0	8.0		5.0	8.0		5.0	8.0		8.0	8.0	
Minimum Split (s)	40.0	40.0		9.5	40.0		9.5	33.0		33.0	33.0	
Total Split (s)	58.0	58.0		9.5	67.5		9.5	42.5		33.0	33.0	
Total Split (%)	52.7%	52.7%		8.6%	61.4%		8.6%	38.6%		30.0%	30.0%	
Maximum Green (s)	51.0	51.0		5.0	60.5		5.0	35.5		26.0	26.0	
Yellow Time (s)	4.0	4.0		3.5	4.0		3.5	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		1.0	3.0		1.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0		0.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		1.5	4.0		4.5	4.0		4.0	4.0	
Lead/Lag	Lag	Lag		Lead			Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		None	Max		None	None		None	None	
Walk Time (s)	20.0	20.0			20.0			10.0		10.0	10.0	
Flash Dont Walk (s)	13.0	13.0			13.0			16.0		16.0	16.0	
Pedestrian Calls (#/hr)	0	0			0			0		0	0	
Act Effct Green (s)	54.0	54.0		66.0	63.5		22.0	22.5		13.0	13.0	
Actuated g/C Ratio	0.57	0.57		0.70	0.68		0.23	0.24		0.14	0.14	
v/c Ratio	0.29	1.16		0.58	0.55		0.74	0.38		0.31	0.40	
Control Delay	15.2	104.6		24.0	9.3		54.3	14.6		42.0	15.0	
Queue Delay	0.0	0.6		0.0	2.0		0.0	0.0		0.0	0.0	
Total Delay	15.2	105.2		24.0	11.3		54.3	14.6		42.0	15.0	
LOS	B	F		C	B		D	B		D	B	
Approach Delay		100.3			12.5			33.4			22.7	
Approach LOS		F			B			C			C	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 110			
Actuated Cycle Length: 94			
Natural Cycle: 145			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.16			
Intersection Signal Delay: 49.9		Intersection LOS: D	
Intersection Capacity Utilization 97.3%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 4: Lakeshore Road & Elizabeth Street



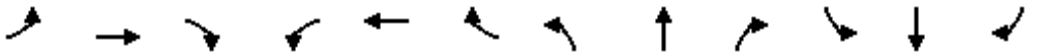


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	63	1094	121	1175	152	169	46	115
v/c Ratio	0.29	1.16	0.58	0.55	0.74	0.38	0.31	0.40
Control Delay	15.2	104.6	24.0	9.3	54.3	14.6	42.0	15.0
Queue Delay	0.0	0.6	0.0	2.0	0.0	0.0	0.0	0.0
Total Delay	15.2	105.2	24.0	11.3	54.3	14.6	42.0	15.0
Queue Length 50th (m)	5.6	~245.4	6.2	51.7	24.7	9.4	8.0	3.1
Queue Length 95th (m)	16.1	#347.1	#29.1	79.0	#48.9	27.0	19.0	18.5
Internal Link Dist (m)		49.8		94.3		40.8		32.3
Turn Bay Length (m)			25.0		15.0		20.0	
Base Capacity (vph)	221	946	210	2139	205	679	336	518
Starvation Cap Reductn	0	102	0	772	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	0.29	1.30	0.58	0.86	0.74	0.25	0.14	0.22

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

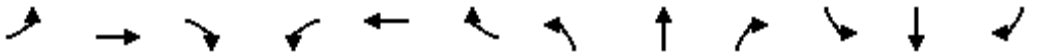
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	853	154	111	1033	48	140	50	106	42	17	89
Future Volume (vph)	58	853	154	111	1033	48	140	50	106	42	17	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		1.5	4.0		4.5	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.90		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)	1593	1638		1593	3164		1593	1505		1593	1464	
Flt Permitted	0.23	1.00		0.07	1.00		0.40	1.00		0.65	1.00	
Satd. Flow (perm)	385	1638		121	3164		669	1505		1090	1464	
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)	63	927	167	121	1123	52	152	54	115	46	18	97
RTOR Reduction (vph)	0	5	0	0	2	0	0	81	0	0	84	0
Lane Group Flow (vph)	63	1089	0	121	1173	0	152	88	0	46	31	0
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	51.0	51.0		60.5	60.5		19.5	19.5		10.0	10.0	
Effective Green, g (s)	54.0	54.0		63.5	63.5		19.5	22.5		13.0	13.0	
Actuated g/C Ratio	0.57	0.57		0.68	0.68		0.21	0.24		0.14	0.14	
Clearance Time (s)	7.0	7.0		4.5	7.0		4.5	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)	221	940		207	2137		187	360		150	202	
v/s Ratio Prot		c0.66		c0.05	0.37		c0.04	0.06			0.02	
v/s Ratio Perm	0.16			0.35			c0.12			0.04		
v/c Ratio	0.29	1.16		0.58	0.55		0.81	0.24		0.31	0.16	
Uniform Delay, d1	10.2	20.0		20.6	7.9		35.1	28.9		36.4	35.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.2	83.3		4.2	1.0		22.9	0.4		1.2	0.4	
Delay (s)	13.4	103.3		24.8	8.9		57.9	29.2		37.6	36.0	
Level of Service	B	F		C	A		E	C		D	D	
Approach Delay (s)		98.4			10.4			42.8			36.5	
Approach LOS		F			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	50.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	94.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	97.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



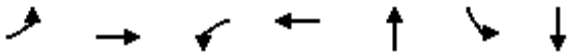
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	926	30	8	1080	59	54	13	2	37	9	58
Future Volume (vph)	45	926	30	8	1080	59	54	13	2	37	9	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		0.0	20.0		0.0	0.0		0.0	7.0		0.0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995			0.992			0.996			0.871	
Flt Protected	0.950			0.950				0.962		0.950		
Satd. Flow (prot)	1593	1668	0	1593	3160	0	0	1606	0	1593	1460	0
Flt Permitted	0.207			0.212				0.719		0.746		
Satd. Flow (perm)	347	1668	0	355	3160	0	0	1201	0	1251	1460	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			11			1			63	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		118.3			60.3			53.5			57.7	
Travel Time (s)		8.5			4.3			3.9			4.2	
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
Adj. Flow (vph)	49	1007	33	9	1174	64	59	14	2	40	10	63
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	1040	0	9	1238	0	0	75	0	40	73	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)		3.6			3.6			0.0			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
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)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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)	37.0	37.0		37.0	37.0		28.0	28.0		28.0	28.0	
Total Split (s)	89.0	89.0		89.0	89.0		31.0	31.0		31.0	31.0	
Total Split (%)	74.2%	74.2%		74.2%	74.2%		25.8%	25.8%		25.8%	25.8%	
Maximum Green (s)	83.0	83.0		83.0	83.0		25.0	25.0		25.0	25.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0			-2.0		-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
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	None	None		Max	Max		None	None		None	None	
Walk Time (s)	20.0	20.0		20.0	20.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	89.0	89.0		89.0	89.0			13.9		13.9	13.9	
Actuated g/C Ratio	0.83	0.83		0.83	0.83			0.13		0.13	0.13	
v/c Ratio	0.17	0.75		0.03	0.47			0.48		0.25	0.30	
Control Delay	4.8	10.9		3.4	4.3			52.9		45.2	16.3	
Queue Delay	0.0	8.3		0.0	0.0			0.0		0.0	0.0	
Total Delay	4.8	19.2		3.4	4.3			52.9		45.2	16.3	
LOS	A	B		A	A			D		D	B	
Approach Delay		18.5			4.3			52.9			26.6	
Approach LOS		B			A			D			C	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 120			
Actuated Cycle Length: 107.2			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 12.9		Intersection LOS: B	
Intersection Capacity Utilization 73.7%		ICU Level of Service D	
Analysis Period (min) 15			

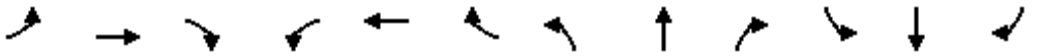
Splits and Phases: 5: Old Lakeshore Road/Pearl Street & Lakeshore Road





Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	49	1040	9	1238	75	40	73
v/c Ratio	0.17	0.75	0.03	0.47	0.48	0.25	0.30
Control Delay	4.8	10.9	3.4	4.3	52.9	45.2	16.3
Queue Delay	0.0	8.3	0.0	0.0	0.0	0.0	0.0
Total Delay	4.8	19.2	3.4	4.3	52.9	45.2	16.3
Queue Length 50th (m)	2.0	95.7	0.3	36.7	15.3	8.0	2.0
Queue Length 95th (m)	6.9	205.0	1.7	62.5	30.4	18.5	15.3
Internal Link Dist (m)		94.3		36.3	29.5		33.7
Turn Bay Length (m)	40.0		20.0			7.0	
Base Capacity (vph)	288	1385	294	2624	303	315	415
Starvation Cap Reductn	0	312	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.97	0.03	0.47	0.25	0.13	0.18

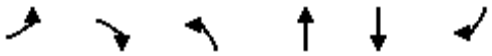
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	926	30	8	1080	59	54	13	2	37	9	58
Future Volume (vph)	45	926	30	8	1080	59	54	13	2	37	9	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99			1.00		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00			0.96		0.95	1.00	
Satd. Flow (prot)	1593	1668		1593	3161			1607		1593	1459	
Flt Permitted	0.21	1.00		0.21	1.00			0.72		0.75	1.00	
Satd. Flow (perm)	346	1668		355	3161			1201		1250	1459	
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)	49	1007	33	9	1174	64	59	14	2	40	10	63
RTOR Reduction (vph)	0	1	0	0	2	0	0	1	0	0	56	0
Lane Group Flow (vph)	49	1039	0	9	1236	0	0	74	0	40	17	0
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)	86.2	86.2		86.2	86.2			10.3		10.3	10.3	
Effective Green, g (s)	88.2	88.2		88.2	88.2			12.3		12.3	12.3	
Actuated g/C Ratio	0.81	0.81		0.81	0.81			0.11		0.11	0.11	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	281	1355		288	2569			136		141	165	
v/s Ratio Prot		c0.62			0.39						0.01	
v/s Ratio Perm	0.14			0.03				c0.06		0.03		
v/c Ratio	0.17	0.77		0.03	0.48			0.54		0.28	0.10	
Uniform Delay, d1	2.2	5.0		1.9	3.1			45.5		44.1	43.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.3	2.7		0.2	0.6			4.4		1.1	0.3	
Delay (s)	2.5	7.7		2.2	3.8			49.9		45.2	43.4	
Level of Service	A	A		A	A			D		D	D	
Approach Delay (s)		7.5			3.8			49.9			44.0	
Approach LOS		A			A			D			D	

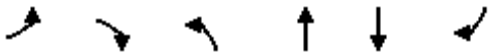
Intersection Summary			
HCM 2000 Control Delay	8.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	108.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	73.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	200	0	0	0	0	203
Future Volume (vph)	200	0	0	0	0	203
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					0.865	
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	0	1863	1611	0
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	0	1863	1611	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	76.5			51.6	64.8	
Travel Time (s)	5.5			3.7	4.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	217	0	0	0	0	221
Shared Lane Traffic (%)						
Lane Group Flow (vph)	217	0	0	0	221	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 30.3%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	200	0	0	0	0	203
Future Volume (Veh/h)	200	0	0	0	0	203
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	217	0	0	0	0	221
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					65	
pX, platoon unblocked						
vC, conflicting volume	110	110	221			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	110	110	221			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	76	100	100			
cM capacity (veh/h)	886	943	1348			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	217	0	221
Volume Left	217	0	0
Volume Right	0	0	221
cSH	886	1700	1700
Volume to Capacity	0.24	0.00	0.13
Queue Length 95th (m)	7.7	0.0	0.0
Control Delay (s)	10.4	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.4	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	5.1		
Intersection Capacity Utilization	30.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection: 1: Lakeshore Road & Locust Street

Movement	EB	EB	WB	WB	SB
Directions Served	L	T	T	TR	LR
Maximum Queue (m)	158.0	157.0	3.4	1.3	96.0
Average Queue (m)	148.1	148.8	0.1	0.0	66.3
95th Queue (m)	153.2	154.5	2.4	0.9	193.0
Link Distance (m)	142.3	142.3	79.3	79.3	199.2
Upstream Blk Time (%)	79	86			16
Queuing Penalty (veh)	0	0			0
Storage Bay Dist (m)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 2: Lakeshore Road & Brant Street

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	TR	L	R
Maximum Queue (m)	62.4	87.9	61.1	61.0	121.5	22.6
Average Queue (m)	46.9	81.7	51.2	52.0	113.0	21.4
95th Queue (m)	79.4	85.2	65.4	65.3	117.5	28.3
Link Distance (m)		79.3	53.8	53.8	107.6	
Upstream Blk Time (%)		38	13	13	82	
Queuing Penalty (veh)		405	84	86	0	
Storage Bay Dist (m)	55.0					15.0
Storage Blk Time (%)	3	51			60	36
Queuing Penalty (veh)	25	101			243	77

Intersection: 3: Lakeshore Road & John Street

Movement	EB	EB	WB	WB	SB
Directions Served	LT	T	T	TR	LR
Maximum Queue (m)	17.4	58.1	54.7	56.4	42.9
Average Queue (m)	5.9	48.4	25.5	29.4	14.5
95th Queue (m)	17.2	72.9	55.5	60.3	36.1
Link Distance (m)		53.8	49.9	49.9	117.5
Upstream Blk Time (%)		13	1	2	
Queuing Penalty (veh)		139	9	16	
Storage Bay Dist (m)	10.0				
Storage Blk Time (%)	5	27			
Queuing Penalty (veh)	26	147			

Intersection: 4: Lakeshore Road & Elizabeth Street

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	TR	L	TR	L	TR
Maximum Queue (m)	18.9	55.0	32.3	92.7	85.5	22.4	47.6	26.7	38.6
Average Queue (m)	5.7	50.7	21.4	47.6	45.5	19.0	33.1	9.7	16.7
95th Queue (m)	14.1	61.4	35.4	83.0	78.3	27.8	51.7	22.1	31.0
Link Distance (m)	49.9	49.9		97.5	97.5		43.9		38.0
Upstream Blk Time (%)		21		0	0		5		1
Queuing Penalty (veh)		112		1	0		11		0
Storage Bay Dist (m)			25.0			15.0		20.0	
Storage Blk Time (%)			5	16		35	32	4	7
Queuing Penalty (veh)			25	18		55	44	4	3

Intersection: 5: Old Lakeshore Road/Pearl Street & Lakeshore Road

Movement	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	T	TR	LTR	L	TR
Maximum Queue (m)	40.7	97.1	18.8	56.4	56.1	42.2	14.3	38.0
Average Queue (m)	8.1	42.9	2.6	31.2	24.2	17.3	7.1	14.9
95th Queue (m)	27.2	89.1	10.4	53.9	47.7	34.7	16.2	28.7
Link Distance (m)		97.5		50.3	50.3	43.2		43.4
Upstream Blk Time (%)		0		1	1	1		0
Queuing Penalty (veh)		2		0	0	0		0
Storage Bay Dist (m)	40.0		20.0				7.0	
Storage Blk Time (%)		6	0	9			28	23
Queuing Penalty (veh)		3	0	1			19	9

Intersection: 6: Driveway

Movement	EB
Directions Served	LR
Maximum Queue (m)	30.0
Average Queue (m)	14.3
95th Queue (m)	24.0
Link Distance (m)	66.3
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 1663

Appendix J

TTS Vehicle Ownership

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Trip purpose - trip_purp
Column: Primary travel mode of trip - mode_prime

Filters:
2006 GTA zone of household - gta06_hhld In 2059-2069

Trip 2016
Table:

	Transit excluding GO rai	Cycle	Auto driver	GO rail onl	Joint GO r	Auto passe	School bus	Taxi passenge	Walk	
Home-Based Work	659	0	5782	36	23	408	0	0	98	
Home-based School	556	0	92	0	0	588	81	0	619	
Home-based Discretionary	0	21	4793	0	0	1255	0	0	54	
Non Home-based	37	0	1506	6	0	130	0	79	0	
	1252	21	12173	42	23	2381	81	79	771	16823
	7%	0%	72%	0%	0%	14%	0%	0%	5%	

Appendix K

Parking Study Data

551 Maple Avenue - Residential Parking Utilization Survey (186 Units)

Time Ending	Thursday November 1, 2016			Wednesday November 2, 2016			Tuesday November 8, 2016			Wednesday November 9, 2016			Four Day Average		
	Occupied	Unoccupied	Rate	Occupied	Unoccupied	Rate	Occupied	Unoccupied	Rate	Occupied	Unoccupied	Rate	Occupied	Unoccupied	Rate
4:15	60	181	0.32	43	198	0.23	52	189	0.28	58	183	0.31	57	184	0.30
4:30	56	185	0.30	39	202	0.21	53	188	0.28	60	181	0.32	56	185	0.30
4:45	57	184	0.31	47	194	0.25	60	181	0.32	60	181	0.32	59	182	0.32
5:00	60	181	0.32	52	189	0.28	61	180	0.33	63	178	0.34	61	180	0.33
5:15	68	173	0.37	56	185	0.30	60	181	0.32	65	176	0.35	64	177	0.35
5:30	80	161	0.43	60	181	0.32	76	165	0.41	68	173	0.37	75	166	0.40
5:45	82	159	0.44	78	163	0.42	84	157	0.45	69	172	0.37	78	163	0.42
6:00	84	157	0.45	89	152	0.48	84	157	0.45	72	169	0.39	80	161	0.43
6:15	93	148	0.50	90	151	0.48	88	153	0.47	88	153	0.47	90	151	0.48
6:30	96	145	0.52	101	140	0.54	93	148	0.50	95	146	0.51	95	146	0.51
6:45	93	148	0.50	102	139	0.55	96	145	0.52	103	138	0.55	97	144	0.52
7:00	103	138	0.55	110	131	0.59	98	143	0.53	108	133	0.58	103	138	0.55
7:15	112	129	0.60	118	123	0.63	104	137	0.56	111	130	0.60	109	132	0.59
7:30	110	131	0.59	130	111	0.70	110	131	0.59	115	126	0.62	112	129	0.60
7:45	120	121	0.65	129	112	0.69	118	123	0.63	122	119	0.66	120	121	0.65
8:00	132	109	0.71	133	108	0.72	125	116	0.67	128	113	0.69	128	113	0.69
8:15	134	107	0.72	131	110	0.70	132	109	0.71	130	111	0.70	132	109	0.71
8:30	133	108	0.72	146	95	0.78	138	103	0.74	138	103	0.74	136	105	0.73
8:45	134	107	0.72	149	92	0.80	142	99	0.76	135	106	0.73	137	104	0.74
9:00	140	101	0.75	155	86	0.83	147	94	0.79	132	109	0.71	140	101	0.75
9:15	141	100	0.76	154	87	0.83	145	96	0.78	132	109	0.71	139	102	0.75
9:30	143	98	0.77	154	87	0.83	150	91	0.81	145	96	0.78	146	95	0.78
9:45	146	95	0.78	153	88	0.82	151	90	0.81	148	93	0.80	148	93	0.80
10:00	146	95	0.78	153	88	0.82	154	87	0.83	148	93	0.80	149	92	0.80
Maximum Observed	**146**	**185**	**0.78**	**155**	**202**	**0.83**	**154**	**189**	**0.83**	**148**	**183**	**0.80**	**149**	**185**	**0.80**
Minimum Observed	**56**	**95**	**0.30**	**39**	**86**	**0.21**	**52**	**87**	**0.28**	**58**	**93**	**0.31**	**56**	**92**	**0.30**
Average Observed	**105**	**136**	**0.57**	**107**	**134**	**0.58**	**105**	**136**	**0.56**	**104**	**137**	**0.56**	**105**	**136**	**0.56**

551 Maple Avenue - Visitor Parking Utilization Survey (186 Units)

Time Ending	Thursday November 1, 2016			Wednesday November 2, 2016			Tuesday November 8, 2016			Wednesday November 9, 2016			Four Day Average		
	Occupied	Unoccupied	Rate	Occupied	Unoccupied	Rate	Occupied	Unoccupied	Rate	Occupied	Unoccupied	Rate	Occupied	Unoccupied	Rate
4:15	12	35	0.06	9	38	0.05	15	32	0.08	12	35	0.06	13	34	0.07
4:30	8	39	0.04	7	40	0.04	15	32	0.08	9	38	0.05	11	36	0.06
4:45	12	35	0.06	11	36	0.06	15	32	0.08	13	34	0.07	13	34	0.07
5:00	13	34	0.07	13	34	0.07	12	35	0.06	13	34	0.07	13	34	0.07
5:15	13	34	0.07	13	34	0.07	15	32	0.08	13	34	0.07	14	33	0.07
5:30	15	32	0.08	13	34	0.07	11	36	0.06	12	35	0.06	13	34	0.07
5:45	12	35	0.06	15	32	0.08	12	35	0.06	12	35	0.06	12	35	0.06
6:00	19	28	0.10	13	34	0.07	11	36	0.06	13	34	0.07	14	33	0.08
6:15	17	30	0.09	15	32	0.08	15	32	0.08	16	31	0.09	16	31	0.09
6:30	15	32	0.08	15	32	0.08	12	35	0.06	15	32	0.08	14	33	0.08
6:45	13	34	0.07	16	31	0.09	13	34	0.07	15	32	0.08	14	33	0.07
7:00	15	32	0.08	20	27	0.11	15	32	0.08	16	31	0.09	15	32	0.08
7:15	15	32	0.08	21	26	0.11	19	28	0.10	19	28	0.10	18	29	0.09
7:30	15	32	0.08	22	25	0.12	22	25	0.12	19	28	0.10	19	28	0.10
7:45	15	32	0.08	24	23	0.13	17	30	0.09	19	28	0.10	17	30	0.09
8:00	15	32	0.08	25	22	0.13	15	32	0.08	19	28	0.10	16	31	0.09
8:15	16	31	0.09	23	24	0.12	17	30	0.09	19	28	0.10	17	30	0.09
8:30	16	31	0.09	20	27	0.11	15	32	0.08	17	30	0.09	16	31	0.09
8:45	15	32	0.08	23	24	0.12	13	34	0.07	16	31	0.09	15	32	0.08
9:00	15	32	0.08	23	24	0.12	13	34	0.07	17	30	0.09	15	32	0.08
9:15	16	31	0.09	20	27	0.11	15	32	0.08	17	30	0.09	16	31	0.09
9:30	16	31	0.09	16	31	0.09	13	34	0.07	15	32	0.08	15	32	0.08
9:45	16	31	0.09	16	31	0.09	16	31	0.09	16	31	0.09	16	31	0.09
10:00	15	32	0.08	16	31	0.09	16	31	0.09	16	31	0.09	16	31	0.08
Maximum Observed	**19**	**39**	**0.10**	**25**	**40**	**0.13**	**22**	**36**	**0.12**	**19**	**38**	**0.10**	**19**	**36**	**0.10**
Minimum Observed	**8**	**28**	**0.04**	**7**	**22**	**0.04**	**11**	**25**	**0.06**	**9**	**28**	**0.05**	**11**	**28**	**0.06**
Average Observed	**15**	**32**	**0.08**	**17**	**30**	**0.09**	**15**	**32**	**0.08**	**15**	**32**	**0.08**	**15**	**32**	**0.08**

360 Pearl Street - Residential Parking Utilization Survey (75 Units)

Time Ending	Thursday November 1, 2016			Wednesday November 2, 2016			Tuesday November 8, 2016			Wednesday November 9, 2016			Four Day Average		
	Occupied	Unoccupied	Rate	Occupied	Unoccupied	Rate	Occupied	Unoccupied	Rate	Occupied	Unoccupied	Rate	Occupied	Unoccupied	Rate
4:15	13	101	0.17	21	93	0.28	18	96	0.24	18	96	0.24	16	225	0.22
4:30	12	102	0.16	20	94	0.27	17	97	0.23	18	96	0.24	16	225	0.21
4:45	15	99	0.20	20	94	0.27	19	95	0.25	21	93	0.28	18	223	0.24
5:00	17	97	0.23	21	93	0.28	20	94	0.27	22	92	0.29	20	221	0.26
5:15	19	95	0.25	24	90	0.32	22	92	0.29	21	93	0.28	21	220	0.28
5:30	20	94	0.27	29	85	0.39	26	88	0.35	28	86	0.37	25	216	0.33
5:45	28	86	0.37	30	84	0.40	30	84	0.40	31	83	0.41	30	211	0.40
6:00	32	82	0.43	31	83	0.41	31	83	0.41	31	83	0.41	31	210	0.42
6:15	33	81	0.44	35	79	0.47	33	81	0.44	32	82	0.43	33	208	0.44
6:30	37	77	0.49	36	78	0.48	36	78	0.48	35	79	0.47	36	205	0.48
6:45	38	76	0.51	36	78	0.48	37	77	0.49	36	78	0.48	37	204	0.49
7:00	41	73	0.55	40	74	0.53	39	75	0.52	37	77	0.49	39	202	0.52
7:15	44	70	0.59	42	72	0.56	42	72	0.56	39	75	0.52	42	199	0.56
7:30	49	65	0.65	41	73	0.55	44	70	0.59	41	73	0.55	45	196	0.60
7:45	48	66	0.64	45	69	0.60	46	68	0.61	45	69	0.60	46	195	0.62
8:00	50	64	0.67	50	64	0.67	50	64	0.67	47	67	0.63	49	192	0.65
8:15	53	61	0.71	51	63	0.68	52	62	0.69	50	64	0.67	52	189	0.69
8:30	55	59	0.73	51	63	0.68	53	61	0.71	53	61	0.71	54	187	0.72
8:45	56	58	0.75	51	63	0.68	54	60	0.72	54	60	0.72	55	186	0.73
9:00	56	58	0.75	53	61	0.71	56	58	0.75	56	58	0.75	56	185	0.75
9:15	58	56	0.77	54	60	0.72	56	58	0.75	55	59	0.73	56	185	0.75
9:30	58	56	0.77	55	59	0.73	57	57	0.76	55	59	0.73	57	184	0.76
9:45	58	56	0.77	56	58	0.75	57	57	0.76	55	59	0.73	57	184	0.76
10:00	58	56	0.77	58	56	0.77	57	57	0.76	55	59	0.73	57	184	0.76
Maximum Observed	**58**	**102**	**0.77**	**58**	**94**	**0.77**	**57**	**97**	**0.76**	**56**	**96**	**0.75**	**57**	**225**	**0.76**
Minimum Observed	**12**	**56**	**0.16**	**20**	**56**	**0.27**	**17**	**57**	**0.23**	**18**	**58**	**0.24**	**16**	**184**	**0.21**
Average Observed	**40**	**75**	**0.53**	**40**	**74**	**0.53**	**40**	**74**	**0.53**	**39**	**75**	**0.52**	**39**	**202**	**0.53**

360 Pearl Street - Visitor Parking Utilization Survey (75 Units)

Time Ending	Thursday November 1, 2016			Wednesday November 2, 2016			Tuesday November 8, 2016			Wednesday November 9, 2016			Four Day Average		
	Occupied	Unoccupied	Rate	Occupied	Unoccupied	Rate	Occupied	Unoccupied	Rate	Occupied	Unoccupied	Rate	Occupied	Unoccupied	Rate
4:15	7	5	0.09	7	5	0.09	9	3	0.12	5	7	0.07	7	40	0.09
4:30	6	6	0.08	7	5	0.09	10	2	0.13	5	7	0.07	7	40	0.09
4:45	6	6	0.08	7	5	0.09	8	4	0.11	4	8	0.05	6	41	0.08
5:00	7	5	0.09	6	6	0.08	8	4	0.11	6	6	0.08	7	40	0.09
5:15	7	5	0.09	7	5	0.09	8	4	0.11	6	6	0.08	7	40	0.09
5:30	8	4	0.11	6	6	0.08	8	4	0.11	6	6	0.08	7	40	0.10
5:45	6	6	0.08	8	4	0.11	8	4	0.11	6	6	0.08	7	40	0.09
6:00	5	7	0.07	7	5	0.09	8	4	0.11	6	6	0.08	6	41	0.08
6:15	6	6	0.08	6	6	0.08	8	4	0.11	6	6	0.08	7	40	0.09
6:30	7	5	0.09	7	5	0.09	7	5	0.09	5	7	0.07	6	41	0.08
6:45	7	5	0.09	7	5	0.09	7	5	0.09	6	6	0.08	7	40	0.09
7:00	7	5	0.09	7	5	0.09	8	4	0.11	6	6	0.08	7	40	0.09
7:15	5	7	0.07	8	4	0.11	8	4	0.11	6	6	0.08	6	41	0.08
7:30	5	7	0.07	8	4	0.11	7	5	0.09	5	7	0.07	6	41	0.08
7:45	5	7	0.07	7	5	0.09	6	6	0.08	5	7	0.07	5	42	0.07
8:00	6	6	0.08	8	4	0.11	6	6	0.08	4	8	0.05	5	42	0.07
8:15	6	6	0.08	7	5	0.09	5	7	0.07	4	8	0.05	5	42	0.07
8:30	6	6	0.08	7	5	0.09	5	7	0.07	4	8	0.05	5	42	0.07
8:45	5	7	0.07	6	6	0.08	4	8	0.05	3	9	0.04	4	43	0.05
9:00	5	7	0.07	5	7	0.07	4	8	0.05	3	9	0.04	4	43	0.05
9:15	5	7	0.07	5	7	0.07	3	9	0.04	2	10	0.03	3	44	0.04
9:30	4	8	0.05	5	7	0.07	3	9	0.04	3	9	0.04	3	44	0.04
9:45	4	8	0.05	5	7	0.07	3	9	0.04	4	8	0.05	4	43	0.05
10:00	4	8	0.05	2	10	0.03	3	9	0.04	4	8	0.05	4	43	0.05
Maximum Observed	**8**	**8**	**0.11**	**8**	**10**	**0.11**	**10**	**9**	**0.13**	**6**	**10**	**0.08**	**7**	**44**	**0.10**
Minimum Observed	**4**	**4**	**0.05**	**2**	**4**	**0.03**	**3**	**2**	**0.04**	**2**	**6**	**0.03**	**3**	**40**	**0.04**
Average Observed	**6**	**6**	**0.08**	**6**	**6**	**0.09**	**6**	**6**	**0.09**	**5**	**7**	**0.06**	**6**	**41**	**0.08**

Appendix C - Survey Data

City of Burlington Downtown Survey Data (April 6th - May 8th, 2021)

					Surveyed				
Address	Intensification Zone	LandUse	Date	Time (24 Hr)	Occupant (Observed)	Visitor (Observed)	Number of Units	Calculated Occupant Rate	Calculated Visitor Rate
442 Maple Ave	Primary	Apartment Building	Tues, April 6	8:00	146	5	135	1.08	0.04
442 Maple Ave	Primary	Apartment Building	Tues, April 6	9:00	148	5	135	1.10	0.04
442 Maple Ave	Primary	Apartment Building	Tues, April 6	10:00	148	6	135	1.10	0.04
505 Locust St	Primary	Apartment Building	Tues, April 6	8:30	101	0	117	0.86	
505 Locust St	Primary	Apartment Building	Tues, April 6	9:30	103	0	117	0.88	
505 Locust St	Primary	Apartment Building	Tues, April 6	10:30	103	0	117	0.88	
442 Maple Ave	Primary	Apartment Building	Thurs, April 8	8:00	143	8	135	1.06	0.06
442 Maple Ave	Primary	Apartment Building	Thurs, April 8	9:00	146	5	135	1.08	0.04
442 Maple Ave	Primary	Apartment Building	Thurs, April 8	10:00	145	5	135	1.07	0.04
505 Locust St	Primary	Apartment Building	Thurs, April 8	8:30	116	0	117	0.99	
505 Locust St	Primary	Apartment Building	Thurs, April 8	9:30	120	0	117	1.03	
505 Locust St	Primary	Apartment Building	Thurs, April 8	10:30	121	0	117	1.03	
505 Locust St	Primary	Apartment Building	Sat, April 17	8:30	100	0	117	0.85	
505 Locust St	Primary	Apartment Building	Sat, April 17	9:30	104	0	117	0.89	
505 Locust St	Primary	Apartment Building	Sat, April 17	10:30	107	0	117	0.91	
442 Maple Ave	Primary	Apartment Building	Sat, April 17	8:00	137	9	135	1.01	0.07
442 Maple Ave	Primary	Apartment Building	Sat, April 17	9:00	139	4	135	1.03	0.03
442 Maple Ave	Primary	Apartment Building	Sat, April 17	10:00	138	4	135	1.02	0.03
360 Pearl St	Primary	Apartment Building	Tues, April 27	8:00	87	0	75	1.16	
360 Pearl St	Primary	Apartment Building	Tues, April 27	9:00	93	0	75	1.24	
360 Pearl St	Primary	Apartment Building	Tues, April 27	10:00	94	0	75	1.25	
360 Pearl St	Primary	Apartment Building	Thurs, April 29	8:00	75	0	75	1.00	
360 Pearl St	Primary	Apartment Building	Thurs, April 29	9:00	78	0	75	1.04	
360 Pearl St	Primary	Apartment Building	Thurs, April 29	10:00	84	0	75	1.12	
2121 Lakeshore Rd	Primary	Apartment Building	Sat, May 1	8:15	36	2	39	0.92	0.05
2121 Lakeshore Rd	Primary	Apartment Building	Sat, May 1	9:15	39	1	39	1.00	0.03
2121 Lakeshore Rd	Primary	Apartment Building	Sat, May 1	10:00	40	1	39	1.03	0.03
1477 Lakeshore Rd	Primary	Apartment Building	Sat, May 1	9:00	61	0	60	1.02	
1477 Lakeshore Rd	Primary	Apartment Building	Sat, May 1	9:45	63	0	60	1.05	
1477 Lakeshore Rd	Primary	Apartment Building	Sat, May 1	10:30	63	0	60	1.05	
2121 Lakeshore Rd	Primary	Apartment Building	Tues, May 4	8:00	42	1	39	1.08	0.03
2121 Lakeshore Rd	Primary	Apartment Building	Tues, May 4	9:00	42	1	39	1.08	0.03

2121 Lakeshore Rd	Primary	Apartment Building	Tues, May 4	10:00	45	0	39	1.15	0.00
1477 Lakeshore Rd	Primary	Apartment Building	Tues, May 4	8:30	65	0	60	1.08	
1477 Lakeshore Rd	Primary	Apartment Building	Tues, May 4	9:30	66	0	60	1.10	
1477 Lakeshore Rd	Primary	Apartment Building	Tues, May 4	10:30	65	0	60	1.08	
2121 Lakeshore Rd	Primary	Apartment Building	Thurs, May 6	8:00	39	1	39	1.00	0.03
2121 Lakeshore Rd	Primary	Apartment Building	Thurs, May 6	9:00	41	0	39	1.05	0
2121 Lakeshore Rd	Primary	Apartment Building	Thurs, May 6	10:00	41	0	39	1.05	0
1477 Lakeshore Rd	Primary	Apartment Building	Thurs, May 6	8:30	64	0	60	1.07	
1477 Lakeshore Rd	Primary	Apartment Building	Thurs, May 6	9:30	63	0	60	1.05	
1477 Lakeshore Rd	Primary	Apartment Building	Thurs, May 6	10:30	64	0	60	1.07	
360 Pearl St	Primary	Apartment Building	Sat, May 8	8:00	69	0	75	0.92	
360 Pearl St	Primary	Apartment Building	Sat, May 8	9:00	77	0	75	1.03	
360 Pearl St	Primary	Apartment Building	Sat, May 8	10:00	78	0	75	1.04	

Appendix C - Occupant Parking Regression

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.97461193
R Square	0.949868415
Adjusted R Square	0.948702564
Standard Error	8.258974916
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	55574.14133	55574.14133	814.7426796	1.39874E-29
Residual	43	2933.058666	68.21066666		
Total	44	58507.2			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	3.613939165	3.187410031	1.133816839	0.263153198	-2.814085779	10.04196411	-2.814085779	10.04196411
Units	0.984969415	0.034507422	28.54369772	1.39874E-29	0.915378567	1.054560263	0.915378567	1.054560263

RESIDUAL OUTPUT

Observation	*dicted Vehicles Coun*	*Residuals*	*Standard Residuals*
1	136.5848102	9.415189794	1.153174532
2	136.5848102	11.41518979	1.398134975
3	136.5848102	11.41518979	1.398134975
4	118.8553607	-17.85536073	-2.186928539
5	118.8553607	-15.85536073	-1.941968096
6	118.8553607	-15.85536073	-1.941968096
7	136.5848102	6.415189794	0.785733867
8	136.5848102	9.415189794	1.153174532
9	136.5848102	8.415189794	1.030694311
10	118.8553607	-2.855360734	-0.349725215
11	118.8553607	1.144639266	0.140195671
12	118.8553607	2.144639266	0.262675893
13	118.8553607	-18.85536073	-2.309408761
14	118.8553607	-14.85536073	-1.819487874
15	118.8553607	-11.85536073	-1.45204721

PROBABILITY OUTPUT

Percentile	*Vehicles Counted*
1.111111111	36
3.333333333	39
5.555555556	39
7.777777778	40
10	41
12.22222222	41
14.44444444	42
16.66666667	42
18.88888889	45
21.11111111	61
23.33333333	63
25.55555556	63
27.77777778	63
30	64
32.22222222	64

16	136.5848102	0.415189794	0.050852538	34.44444444	65
17	136.5848102	2.415189794	0.295812981	36.66666667	65
18	136.5848102	1.415189794	0.17333276	38.88888889	66
19	77.4866453	9.513354701	1.165197792	41.11111111	69
20	77.4866453	15.5133547	1.900079121	43.33333333	75
21	77.4866453	16.5133547	2.022559343	45.55555556	77
22	77.4866453	-2.486645299	-0.304564867	47.77777778	78
23	77.4866453	0.513354701	0.062875798	50	78
24	77.4866453	6.513354701	0.797757127	52.22222222	84
25	42.02774635	-6.027746355	-0.738279709	54.44444444	87
26	42.02774635	-3.027746355	-0.370839044	56.66666667	93
27	42.02774635	-2.027746355	-0.248358823	58.88888889	94
28	62.71210407	-1.712104072	-0.209698886	61.11111111	100
29	62.71210407	0.287895928	0.035261557	63.33333333	101
30	62.71210407	0.287895928	0.035261557	65.55555556	103
31	42.02774635	-0.027746355	-0.00339838	67.77777778	103
32	42.02774635	-0.027746355	-0.00339838	70	104
33	42.02774635	2.972253645	0.364042285	72.22222222	107
34	62.71210407	2.287895928	0.280222	74.44444444	116
35	62.71210407	3.287895928	0.402702222	76.66666667	120
36	62.71210407	2.287895928	0.280222	78.88888889	121
37	42.02774635	-3.027746355	-0.370839044	81.11111111	137
38	42.02774635	-1.027746355	-0.125878601	83.33333333	138
39	42.02774635	-1.027746355	-0.125878601	85.55555556	139
40	62.71210407	1.287895928	0.157741779	87.77777778	143
41	62.71210407	0.287895928	0.035261557	90	145
42	62.71210407	1.287895928	0.157741779	92.22222222	146
43	77.4866453	-8.486645299	-1.039446197	94.44444444	146
44	77.4866453	-0.486645299	-0.059604424	96.66666667	148
45	77.4866453	0.513354701	0.062875798	98.88888889	148

Appendix C - Visitor Parking Regression

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.892217816
R Square	0.796052632
Adjusted R Square	0.783305921
Standard Error	1.312334646
Observations	18

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	107.5555556	107.5555556	62.4516129	6.49792E-07
Residual	16	27.55555556	1.722222222		
Total	17	135.1111111			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-1.208333333	0.640312047	-1.887100733	0.077425904	-2.565734235	0.149067569	-2.565734235	0.149067569
Units	0.050925926	0.006444172	7.902633289	6.49792E-07	0.037264892	0.06458696	0.037264892	0.06458696

RESIDUAL OUTPUT

Observation	*Predicted Vehicles Counted*	*Residuals*	*Standard Residuals*
1	5.666666667	-0.666666667	-0.523634938
2	5.666666667	-0.666666667	-0.523634938
3	5.666666667	0.333333333	0.261817469
4	5.666666667	2.333333333	1.832722283
5	5.666666667	-0.666666667	-0.523634938
6	5.666666667	-0.666666667	-0.523634938
7	5.666666667	3.333333333	2.61817469
8	5.666666667	-1.666666667	-1.309087345
9	5.666666667	-1.666666667	-1.309087345
10	0.777777778	1.222222222	0.959997386
11	0.777777778	0.222222222	0.174544979
12	0.777777778	0.222222222	0.174544979
13	0.777777778	0.222222222	0.174544979
14	0.777777778	0.222222222	0.174544979
15	0.777777778	-0.777777778	-0.610907428
16	0.777777778	0.222222222	0.174544979
17	0.777777778	-0.777777778	-0.610907428
18	0.777777778	-0.777777778	-0.610907428

PROBABILITY OUTPUT

Percentile	*Vehicles Counted*
2.777777778	0
8.333333333	0
13.88888889	0
19.44444444	1
25	1
30.55555556	1
36.11111111	1
41.66666667	1
47.22222222	2
52.77777778	4
58.33333333	4
63.88888889	5
69.44444444	5
75	5
80.55555556	5
86.11111111	6
91.66666667	8
97.22222222	9