Core FSC Lakeshore LP & Core FSC Lakeshore PG Inc.

2100 Lakeshore Road Burlington, ON

(includes properties of 2093,2097,2101 Old Lakeshore Road and 2096 & 2100 Lakeshore Road)

Transportation Impact Study

August 2019

19275

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August 22, 2019 **Reference Number:** [19275/200]

Ida Assogna
Core Development Group Ltd.
287 Macpherson Avenue, Suite 202
Toronto, ON
M4V 1A4

Dear Ms. Assogna,

RE: Transportation Impact Study for the proposed mixed-use development at 2100 Lakeshore Road, City of Burlington

LEA Consulting Ltd. is pleased to present the findings of our Transportation Impact Study for the proposed mixed-use development at 2100 Lakeshore Road in the City of Burlington.

Should you have any questions regarding this Transportation Impact Study, please do not hesitate to contact Christopher Sidlar (416-572-1791, csidlar@lea.ca) or Kelsey Waugh (416-572-1793, kwaugh@lea.ca).

Yours truly,

LEA CONSULTING LTD.





Kelsey Waugh, P.Eng., RSP1
Transportation Engineer

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:cs/kw/rk

Encl: 2100 Lakeshore Road Transportation Impact Study

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1 INTRODUCTION

1.1 PROPOSED DEVELOPMENT

LEA Consulting Limited (LEA) was retained by Core FSC Lakeshore LP and Core FSC Lakeshore GP Inc. to prepare a Transportation Impact Study (TIS) for a proposed mixed-use development located at 2100 Lakeshore Road in the City of Burlington, Ontario. The proposed development includes the properties of 2093,2097,2101 Old Lakeshore Road and 2096 & 2100 Lakeshore Road and proposes a 27-storey (plus mph) building replacing five existing buildings and surface parking. The proposed development contains 310 residential units and 707.1 m^2 of retail GFA (at grade). A total of 332 vehicle parking spaces (equivalent to 345 zoning by-law spaces) are proposed, including 294 resident spaces, 4 car-share spaces, 30 visitor parking spaces and 4 small car spaces. The proposed development will also provide 180 bicycle parking spaces, with 24 and 156 allocated for short and long-term parking respectively. Vehicle access is proposed to occur via an access off of Lakeshore Road, which has been shifted slightly east from the site's existing access. **Figure 1** shows the ground floor plan.

Figure 1: Conceptual Rendering of Proposed Development (Image: Core Architects)

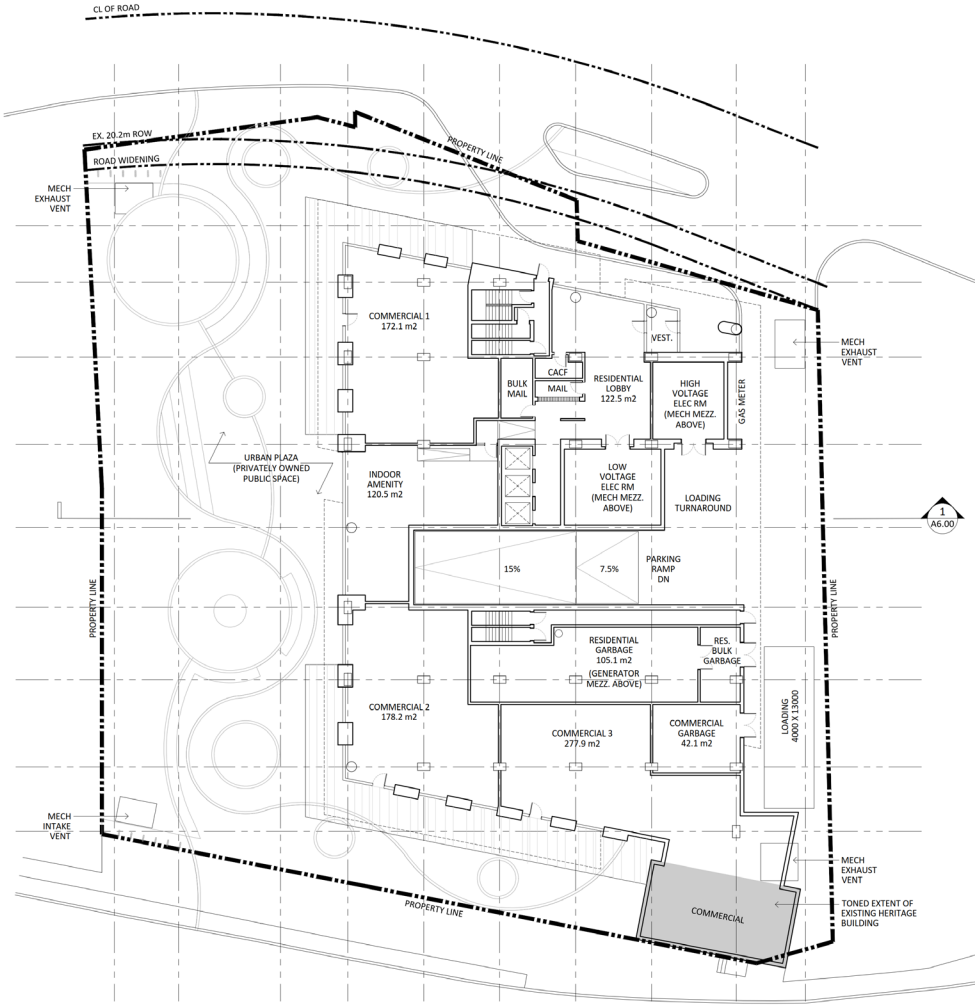


Table 1 shows a breakdown of the proposed site statistics:

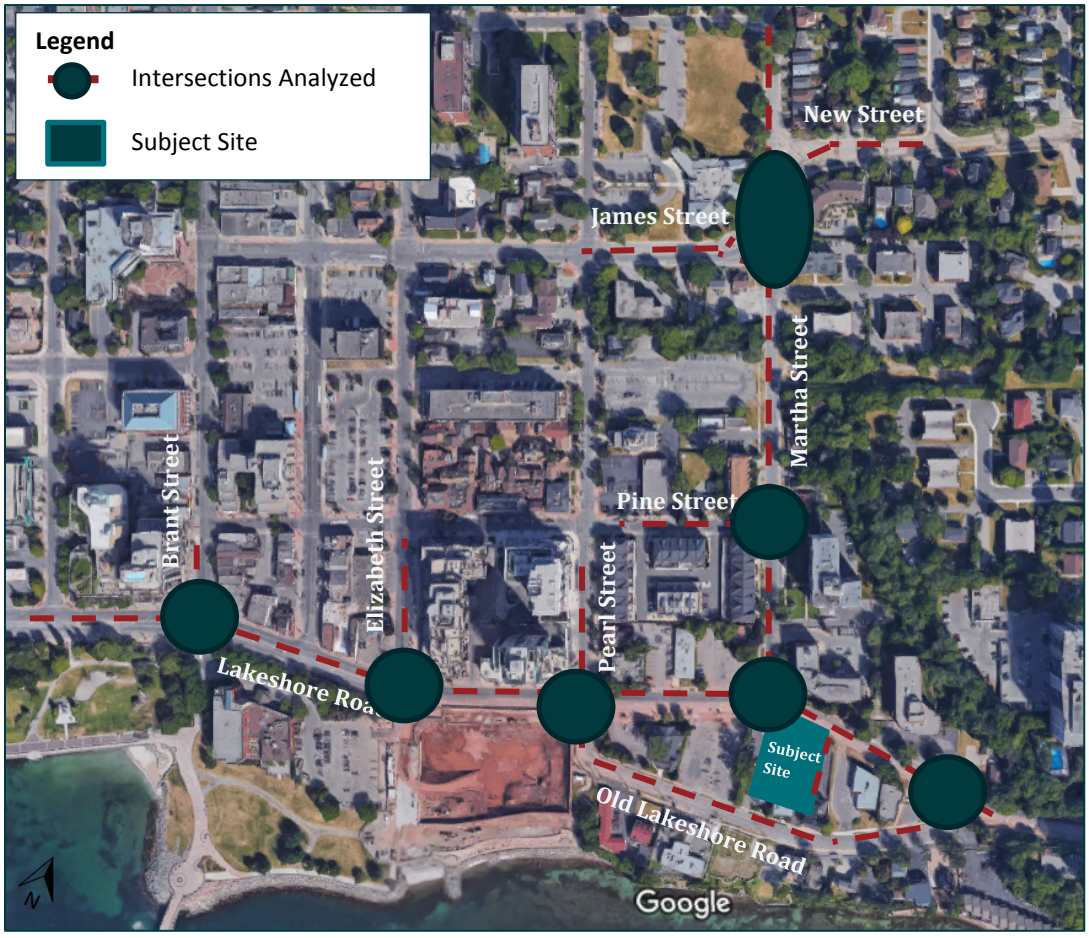
Table 1: Site Statistics

Type of Use	Units/GFA
Residential	310
Commercial	707.1 m^2
Parking and Loading	**Number of Spaces**
Vehicle Parking	344 (including 4 carshare and 4 small car spaces) *332 physical spaces, 4 car share provides an effective increase of 12 spaces
Bicycle Parking	180
Loading Spaces	1 space (13m x 4m)

1.2 STUDY AREA

The study area for this TIS is indicated in **Figure 2**.

Figure 2: Study Area (Image: Google Maps)



2 EXISTING TRANSPORTATION CONDITIONS

2.1 EXISTING STREET NETWORK

Lakeshore Road is an east-west major arterial road and has two lanes of vehicle traffic (one lane per direction) and turning lanes at several intersections within the study area. The roadway operates with a speed limit of 60km/hr. It is connected to the North Shore Boulevard East at Maple Avenue.

Old Lakeshore Road is a local road connecting Pearl Street to Lakeshore Road. 3-hour limit on-street parking is free from Monday-Friday (6:00 AM to 9:00 AM and 6:00 PM to 1:00 AM) and Saturday-Sunday (6:00 AM to 1:00AM). On Monday-Friday from 9:00 AM to 6:00 PM, it is paid parking with a 3-hour limit. On-street parking is not permitted overnight between 1:00 AM to 6:00 AM.

Brant Street is a north-south major arterial road carrying two lanes of vehicle traffic. The roadway operates with a speed limit of 60km/hr. 3-hour limit on-street parking is free from Monday-Friday (6:00 AM to 9:00 AM and 6:00 PM to 1:00 AM) and Saturday-Sunday (6:00 AM to 1:00AM). On Monday-Friday from 9:00 AM to 6:00 PM, it is paid parking with a 3-hour limit. On-street parking is not permitted overnight between 1:00 AM to 6:00 AM.

James/New Street is an east-west major arterial road that carries two lanes of traffic. James Street starts perpendicularly to Brant Street for approximately 400m and merges into New Street. On-street free parking is allowed on James Street for a maximum of 3 hours from Monday-Friday (6:00 AM to 9:00 AM and 6:00 PM to 1:00 AM) and Saturday-Sunday (6:00 AM to 1:00AM). On Monday-Friday from 9:00 AM to 6:00 PM, it is paid parking with a 3-hour limit. On-street parking is not permitted overnight between 1:00 AM to 6:00 AM.

Elizabeth Street is a north-south local road that carries two lanes of vehicle traffic. 3-hour limit on-street parking is free from Monday-Friday (6:00 AM to 9:00 AM and 6:00 PM to 1:00 AM) and Saturday-Sunday (6:00 AM to 1:00AM). On Monday-Friday from 9:00 AM to 6:00 PM, it is paid parking with a 3-hour limit. On-street parking is not permitted overnight between 1:00 AM to 6:00 AM.

Martha Street is a north-south local road, carrying two lanes of vehicle traffic and sharing lanes with the cyclists. On-street parking is available.

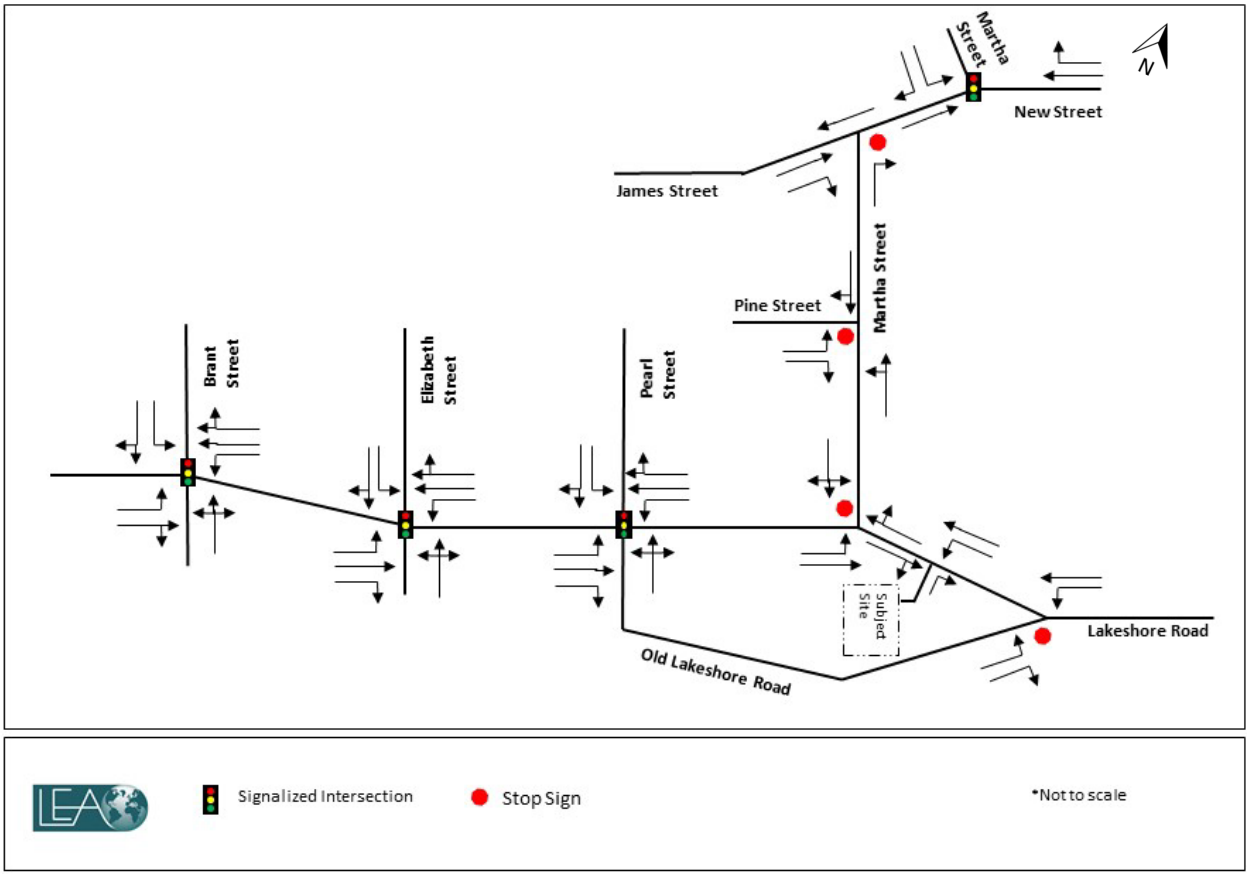
Pearl Street is a north-south local road that carries two lanes of vehicle traffic. It operates with a speed limit of 40km/hr. On-street parking is available in both directions, only in specified parking spaces.

The following existing intersections have been included in the traffic study:

- Lakeshore Road and Brant Street (signalized);
- Lakeshore Road and Elizabeth Street (signalized);
- Lakeshore Road and Pearl Street (signalized);
- Lakeshore Road and Pearl Street (signalized);
- Lakeshore Road and Martha Street (unsignalized);
- Site Access and Lakeshore Road (unsignalized);
- Old Lakeshore Road and Lakeshore Road (unsignalized);
- Martha Street and Pine Street (unsignalized); and
- James/New Street and Martha Street (signalized);

Figure 3 illustrates the lane configurations for the aforementioned roadways and intersections assessed in this report.

Figure 3: Existing Lane Configuration



2.2 EXISTING TRANSIT NETWORK

The subject site is served by Burlington Transit bus network. The following routes are located in close proximity of the subject site. The subject site can be reached by bus from the Burlington GO station in approximately 15-minutes. **Figure 4** illustrates the existing transit network surrounding the proposed development.

Guelph – Downtown (Route 3)

This route contains two branches – the 3 and the 3A. The 3 Guelph Downtown operates seven days a week. The 3A Guelph Downtown operates from Monday to Friday. It travels along Brant Street, Lakeshore Boulevard, and Guelph Line, stopping at Burlington GO and Aldershot GO. The nearest bus stop is located on Lakeshore Road, a 1-minute walk from the subject site.

Central (Route 4)

This route operates seven days a week. The 4 Central travels along New Street and Drury Lane, stopping at Aldershot GO. The closest bus stop is located at the intersection of James Street and Pearl Street, a 5-minute walk from the subject site.

Francis – Downtown (Route 5)

The 5 Francis – Downtown operates six days a week, from Monday to Saturday. It travels along Francis Road and portions of North Shore Boulevard East. The closest stop to the subject site is at the John Street Terminal (Downtown Terminal), a 5-minute walk from the subject site.

New – Maple (Route 10)

The 10 New – Maple is available seven days a week, including holidays. It travels along Plains Road East, Maple Avenue, and New Street, stopping by Burlington GO and Appleby GO. The nearest bus stop is at John Street Terminal (Downtown Terminal), a 5-minute walk to the subject site.

Burlington South (Route 50)

The 50 Burlington South is a late-night service route, operating from Monday to Saturday. It travels along Maple Avenue, Brant Street, and Plains Road East, and stops at Burlington GO. The nearest bus stop is at the John Street Terminal (Downtown Terminal), a 5-minute walk from the subject site.

Burlington Northwest (Route 52)

The 52 Burlington Northwest is a late-night service route, operating from Monday to Saturday. It travels along Brant Street, New Street, and Guelph Line, stopping at Burlington GO. The closest bus stop is located at James Street and Pearl Street, a 5-minute walk from the subject site.

Aldershot (Route 300)

The 300 Aldershot is a community connection route that operates on weekdays. It only has 6 scheduled stops, including the Seniors Centre, Downtown Terminal, Joseph Brant Hospital, and Mapleview Mall. The nearest bus stop is at the John Street Terminal (Downtown Terminal), a 5-minute walk from the subject site.

Figure 4: Existing Transit Network (Image: Burlington Transit)



2.3 EXISTING CYCLING NETWORK

There are no designated bike lanes within the study area, and cyclists share the roadway with vehicles. The closest bike lane runs along Lakeshore Boulevard, starting approximately 430 metres west of the subject site. Lakeshore Road also has an east-west shared lane, stopping approximately 100 metres east from the subject site. In addition, Martha Street, Brant Street, and Pearl Street provide north-south shared use lanes. **Figure 5** illustrates the existing cycling network surrounding the proposed development.

Figure 5: Existing Cycling Network (Image: City of Burlington)



2.4 TRAFFIC DATA COLLECTION

LEA conducted traffic counts for the peak periods within the study area (7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m.). Heavy vehicle traffic, bus blockages, and pedestrians were recorded separately and accounted for in the capacity analysis. **Table 2** summarizes the sources and dates of the data utilized in this traffic study. Traffic count information is provided in **Appendix B**.

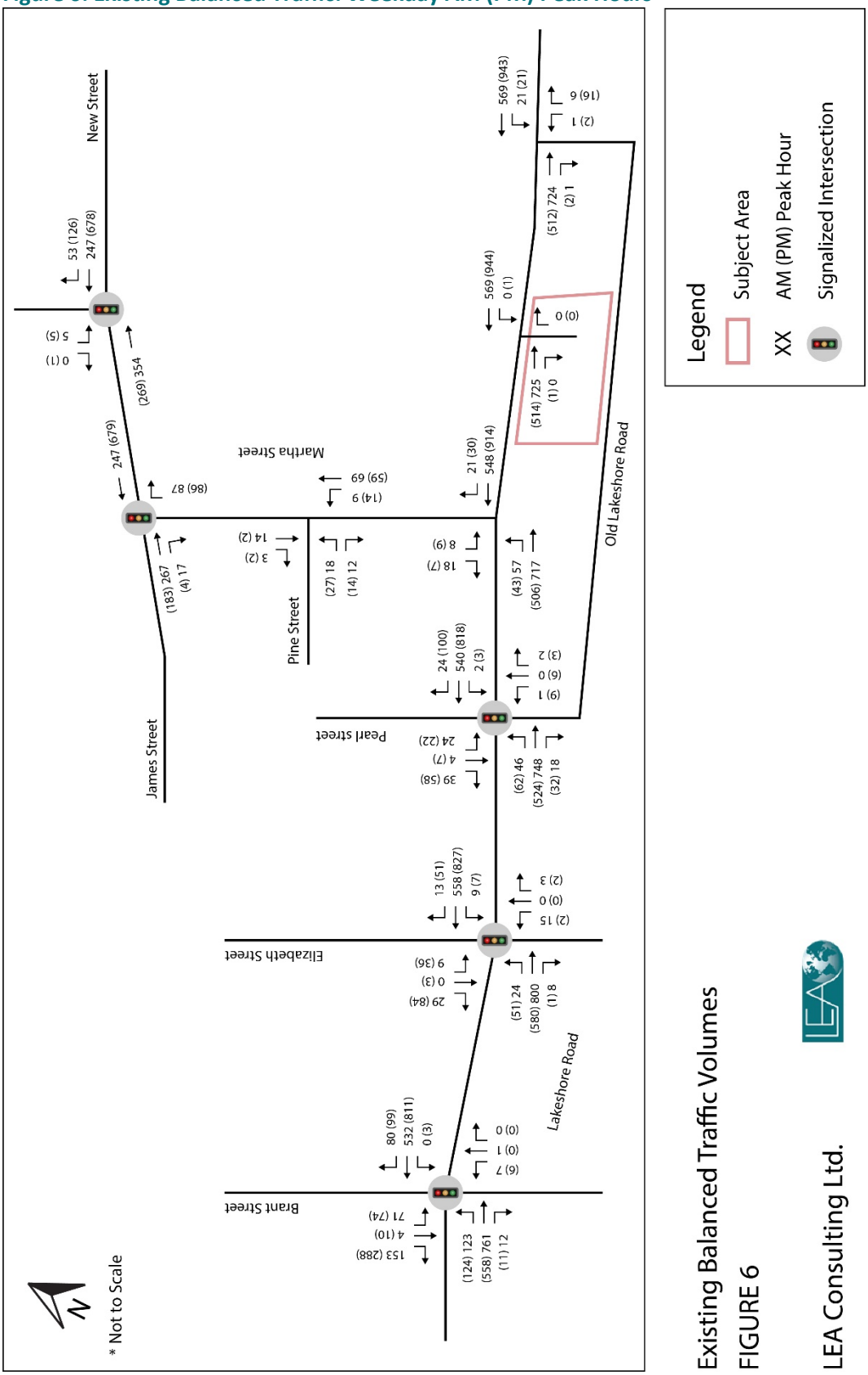
Table 2: Traffic Data Sources

Intersection	Date of Survey	Source
Lakeshore Road and Old Lakeshore Road	Tuesday, December 11th, 2018	LEA Consulting Ltd.
Lakeshore Road and Martha Street		
Lakeshore Road and Pearl Street		
Lakeshore Road and Elizabeth Street		
Lakeshore Road and Brant Street		
Lakeshore Road and Site Access		
Old Lakeshore Road and Site Access		
Martha Street and Pine Street	Tuesday, January 8th, 2019	
James/New Street and Martha Street		

2.5 EXISTING TRAFFIC VOLUMES

The existing traffic volumes for the weekday AM and PM peak hours are shown in **Figure 6**. The weekday AM peak hour was found to be 8:00 – 9:00 AM and the weekday PM peak hour is 5:00 – 6:00 PM. The AM and PM peak hours were identified based on observed traffic volumes. Minor volume balancing was conducted to balance traffic volumes between the two survey days.

Figure 6: Existing Balanced Traffic: Weekday AM (PM) Peak Hours



2.6 ROAD NETWORK - INTERSECTION CAPACITY ANALYSIS

Intersection capacity analyses were conducted for the existing traffic conditions using Synchro Version 9.1 software based on the methodology outlined in the Highway Capacity Manual (2000). The analysis incorporates signal timing plans obtained from the City of Burlington, provided in **Appendix C**.

A summary of existing traffic analysis for signalized intersections are provided in **Table 3** and **Table 4** for the weekday AM and PM peak hours, respectively.

Table 5 provides a summary of results of the unsignalized intersection analysis. At signalized intersections dedicated left turn movements are deemed to be "critical" in terms of operation if they have a v/c ratio greater than 0.95 and all other movements if the v/c ratio is greater than 0.85. Detailed results of the existing traffic intersection capacity analysis are provided in **Appendix D**.

The existing conditions capacity analysis for the AM peak hour indicates that all signalized intersections are operating well with a good LOS, as indicated in **Table 3**. East-west movements along Lakeshore Road, the primary travel corridor within the study area, operate with minimal vehicle delay and a LOS of A at all signalized intersections. The intersection at James/New Street and Martha Street also operates well with no significant capacity constraints.

Table 3: Signalized Levels of Service - Existing Traffic - Weekday AM Peak Hour

Intersection	AM Peak Hour								
	Overall			Movements of Interest					
	V/C	Delay (s)	LOS	Movement	V/C	Delay (s)	LOS	Queue (m)	
								50th	95th
Brant Street & Lakeshore Road	0.63	12.7	B	EBL	0.28	4.3	A	6.5	18.4
				EBT	0.65	9.3	A	74.1	190.6
				WBT	0.30	6.6	A	21.2	27.4
				NBT	0.04	39.9	D	1.8	5.4
				SBL	0.47	44.3	D	20.4	25.0
				SBT	0.14	40.7	D	1.0	9.2
Elizabeth Street & Lakeshore Road	0.58	7.9	A	EBL	0.07	2.6	A	2.5	0.9
				EBT	0.68	8.6	A	156.7	39.3
				EBR	0.01	3.9	A	0.0	0.0
				WBL	0.04	3.0	A	0.4	1.4
				WBT	0.25	3.5	A	28.2	16.8
				NBT	0.02	39.5	D	0.0	3.8
				SBL	0.07	39.9	D	2.1	6.2
				SBT	0.03	39.6	D	0.0	0.0
Pearl Street & Lakeshore Road	0.55	4.5	A	EBL	0.10	0.8	A	0.0	0.0
				EBT	0.59	1.9	A	11.9	10.0
				EBR	0.01	0.0	A	0.0	0.0
				WBT	0.23	2.6	A	12.3	31.0
				SBL	0.28	47.4	D	6.9	12.2
				SBT	0.06	45.3	D	0.9	11.4
James/New Street & Martha Street	0.52	2.5	A	EBT	0.27	2.5	A	0.0	45.4
				WBT	0.21	2.3	A	0.0	29.8
				WBR	0.04	1.7	A	0.0	3.3
				SBL	0.04	30.4	C	0.6	2.7

The existing conditions capacity analysis for the PM peak hour indicated that all signalized intersections are operating well with a good LOS, as shown in **Table 4**. These level of service, delay and queuing results are consistent with other traffic studies conducted for background developments. However, the queues indicated by the analysis for the westbound through volumes are much lower than those observed on site, which were observed to extend past Martha Street during the peak 15 minutes of the peak period. To examine this further, a sensitivity analysis was conducted and is discussed in **Section 2.6.1**.

Table 4: Signalized Levels of Service - Existing Traffic - Weekday PM Peak Hour

Intersection	PM Peak Hour								
	Overall			Movements of Interest					
	V/C	Delay (s)	LOS	Movement	V/C	Delay (s)	LOS	Queue (m)	
								50th	95th
Brant Street & Lakeshore Road	0.67	17.1	B	EBL	0.34	10.4	B	5.8	16.2
				EBT	0.47	6.2	A	48.1	94.3
				WBL	0.01	6.2	A	0.2	0.4
				WBT	0.70	11.4	B	61.7	221.8
				WBR	0.10	4.6	A	1.4	3.5
				NBT	0.10	45.5	D	1.3	5.1
				SBL	0.49	49.4	D	21.8	31.0
				SBT	0.62	53.8	D	23.8	31.6
Elizabeth Street & Lakeshore Road	0.57	7.2	A	EBL	0.15	2.1	A	1.1	2.3
				EBT	0.45	3.5	A	64.5	16.4
				WBL	0.02	1.6	A	0.2	0.5
				WBT	0.59	3.4	A	22.2	33.2
				WBR	0.04	0.8	A	0.0	0.3
				SBL	0.38	53.1	D	11.5	19.5
				SBT	0.09	50.0	D	0.7	16.9
Pearl Street & Lakeshore Road	0.55	8.1	A	EBL	0.22	3.1	A	3.2	3.6
				EBT	0.41	3.6	A	64.9	21.0
				EBR	0.03	1.1	A	0.0	0.3
				WBL	0.01	2.8	A	0.2	1.0
				WBT	0.62	7.3	A	105.8	146.6
				WBR	0.09	3.1	A	0.0	2.8
				NBT	0.07	46.0	D	3.1	9.8
				SBL	0.18	46.9	D	6.0	12.6
				SBT	0.08	45.9	D	1.4	15.5
James/New Street & Martha Street	0.52	2.5	A	EBT	0.19	1.3	A	0.0	16.2
				WBT	0.53	2.9	A	0.0	52.7
				WBR	0.11	1.1	A	0.0	4.1
				SBL	0.10	43.5	D	0.9	4.2

The existing conditions capacity analysis for unsignalized intersections indicates that all intersections are operating well during both the AM and PM peak hour. No movements are deemed critical within the study area.

Table 5: Unsignalized Level of Service - Existing Traffic

Intersection	Movement of Interest	AM Peak Hour					
		Flow Rate (vph)	Capacity (vph)	Control Delay (s)	95th Queue (m)	V/C	LOS
Lakeshore Road & Martha Street	EBL	64	944	9.1	1.7	0.07	A
	SBLR	35	192	27.8	5.2	0.18	D
Site Access & Lakeshore Road	NBR	0	1700	0.0	0.0	0.00	A
Old Lakeshore Road & Lakeshore Road	WBL	28	704	10.3	1.0	0.04	B
	NBLR	6	338	15.8	0.4	0.02	C
Martha Street & Pine Street	EBLR	40	934	9.0	1.1	0.04	A
	NBL	12	1549	1.0	0.2	0.01	A
Martha Street & James Street	NBR	97	739	10.6	3.6	0.13	B
Intersection	**Movement of Interest**	**PM Peak Hour**					
		Flow Rate (vph)	**Capacity (vph)**	**Control Delay (s)**	**95th Queue (m)**	**V/C**	**LOS**
Lakeshore Road & Martha Street	EBL	57	664	10.9	2.2	0.09	B
	SBLR	16	123	38.6	3.5	0.13	E
Site Access & Lakeshore Road	WBL	1	1013	8.6	0.0	0.00	A
	NBR	0	1700	0.0	0.0	0.00	A
Old Lakeshore Road & Lakeshore Road	WBL	28	1012	8.7	0.7	0.03	A
	NBLR	23	371	15.3	1.6	0.06	C
Martha Street & Pine Street	EBLR	48	928	9.1	1.3	0.05	A
	NBL	19	1598	1.5	0.3	0.01	A
Martha Street & James Street	NBR	104	839	9.9	3.4	0.12	A

2.6.1 Existing Intersection Capacity PM Sensitivity Analysis

A sensitivity analysis was conducted to calibrate the Synchro model to existing conditions observed on site in the PM peak hour. Specifically, the queues for westbound traffic on Lakeshore around 5pm were noted to extend from the west end of the study area (Brant Street) past the east end of the study area. For approximately half an hour, the queues at the downstream signal extend past the available storage (the full link length), and vehicles cannot travel through the intersection despite the light being green. The congestion is likely a result of merging traffic west of Brant Street, where Lakeshore reduces from 2 lanes to 1 lane westbound, and 1 lanes east of Pearl Street. The centre lane of traffic between Pearl Street and Brant Street saw a much higher utilization of traffic than the curb lane. This results in fewer vehicles travelling through the intersection than if the downstream capacity was available. This is shown in **Table 6** below, which shows a lower volume during the congested period (5:00 to 5:14:59), than during the remainder of the peak hour.

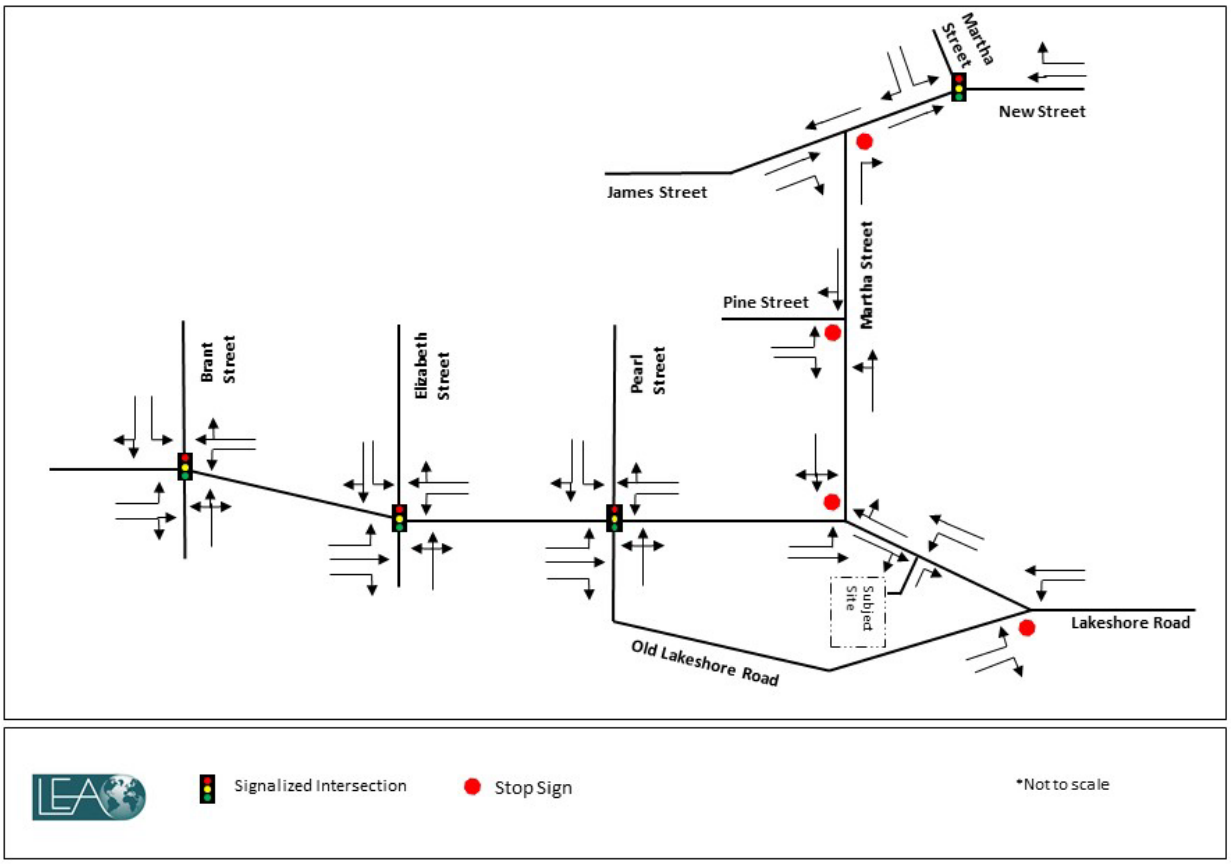
Table 6: PM Peak Hour WBT Volumes, by 15 minutes

Start Time	Westbound Through Volume
5:00 PM	168
5:15 PM	205
5:30 PM	191
5:45 PM	199

It is a limitation of Synchro 9 (HCM 2000) to accurately reflect the impact of downstream queuing conditions for each intersection analysis in congested conditions. Due to a bottleneck occurring downstream from the study intersections (at Locust Street where Lakeshore Road is reduced to one lane), the capacity available between Brant St and Pearl St is unable to be realized and many vehicles were observed to merge into the centre lane well before the lane reduction, essentially reducing the road capacity to one lane. A number of calibration options were considered to reflect the existing merging conditions on the westbound through lanes, including:

- Modifying the lane utilization factor, which did not provide sufficient queueing to reflect existing;
- Modifying the peak hour factor, which required a significant deviation from the counted peak hour factor to achieve the queuing levels observed; and
- Reducing Lakeshore Rd westbound lanes to one lane between Martha Street and west of Brant Street. This provided a sufficient reduction in the flow rates of eastbound traffic to reflect existing westbound delays and queuing conditions. The lane conditions assumed for this analysis are shown in **Figure 7**. This modification provided results consistent with the observed existing conditions.

Figure 7: PM Sensitivity Analysis Lane Configurations



The capacity analysis for existing conditions, using the modified model with one lane westbound on Lakeshore Road is shown in **Table 7**. This model shows queuing conditions more consistent with observations of existing conditions in the PM peak hour along Lakeshore Road. While delay for westbound movements are within acceptable levels, queues for through movements extend past the upstream intersection. This is representative of queues observed during the peak 15 minutes of the existing conditions. The remainder of movements within the network shows available capacity.

Table 7: Signalized Levels of Service - Existing Traffic Sensitivity Analysis - Weekday PM Peak Hour

Intersection	PM Peak Hour								
	Overall			Movements of Interest					
	V/C	Delay (s)	LOS	Movement	V/C	Delay (s)	LOS	Queue (m)	
								50th	95th
Brant Street & Lakeshore Road	0.76	20.7	C	EBL	0.43	17.5	B	5.8	16.2
				EBT	0.47	6.2	A	48.1	94.3
				WBL	0.01	7.7	A	0.2	0.4
				WBT	0.84	17.5	B	71.5	348.0
				NBT	0.10	45.5	D	1.3	5.1
				SBL	0.49	49.4	D	21.8	31.0
				SBT	0.62	53.8	D	23.8	31.6
Elizabeth Street & Lakeshore Road	0.61	7.2	A	EBL	0.16	2.3	A	1.1	2.3
				EBT	0.45	3.5	A	64.5	16.4
				WBL	0.02	1.6	A	0.2	0.5
				WBT	0.63	3.5	A	23.8	35.6
				SBL	0.38	53.1	D	11.5	19.5
				SBT	0.09	50.0	D	0.7	16.9
Pearl Street & Lakeshore Road	0.64	9.7	A	EBL	0.29	4.3	A	3.7	3.6
				EBT	0.41	3.6	A	64.9	21.0
				EBR	0.03	1.1	A	0.0	0.3
				WBL	0.01	2.8	A	0.2	1.0
				WBT	0.72	9.5	A	142.1	204.4
				NBT	0.07	46.0	D	3.1	9.8
				SBL	0.18	46.9	D	6.0	12.6
				SBT	0.08	45.9	D	1.4	15.5
				WBT	0.53	2.9	A	0.0	52.7
				SBL	0.11	1.1	A	0.0	4.1
				EBT	0.10	43.5	D	0.9	4.2

3 FUTURE BACKGROUND (2024) TRANSPORTATION CONDITIONS

The horizon year for the study will be (5) five years from existing, 2024. The following sections detail the assumptions for future background traffic conditions including additional site traffic as generated by other developments in the area and general traffic growth on corridors.

3.1 BACKGROUND DEVELOPMENTS

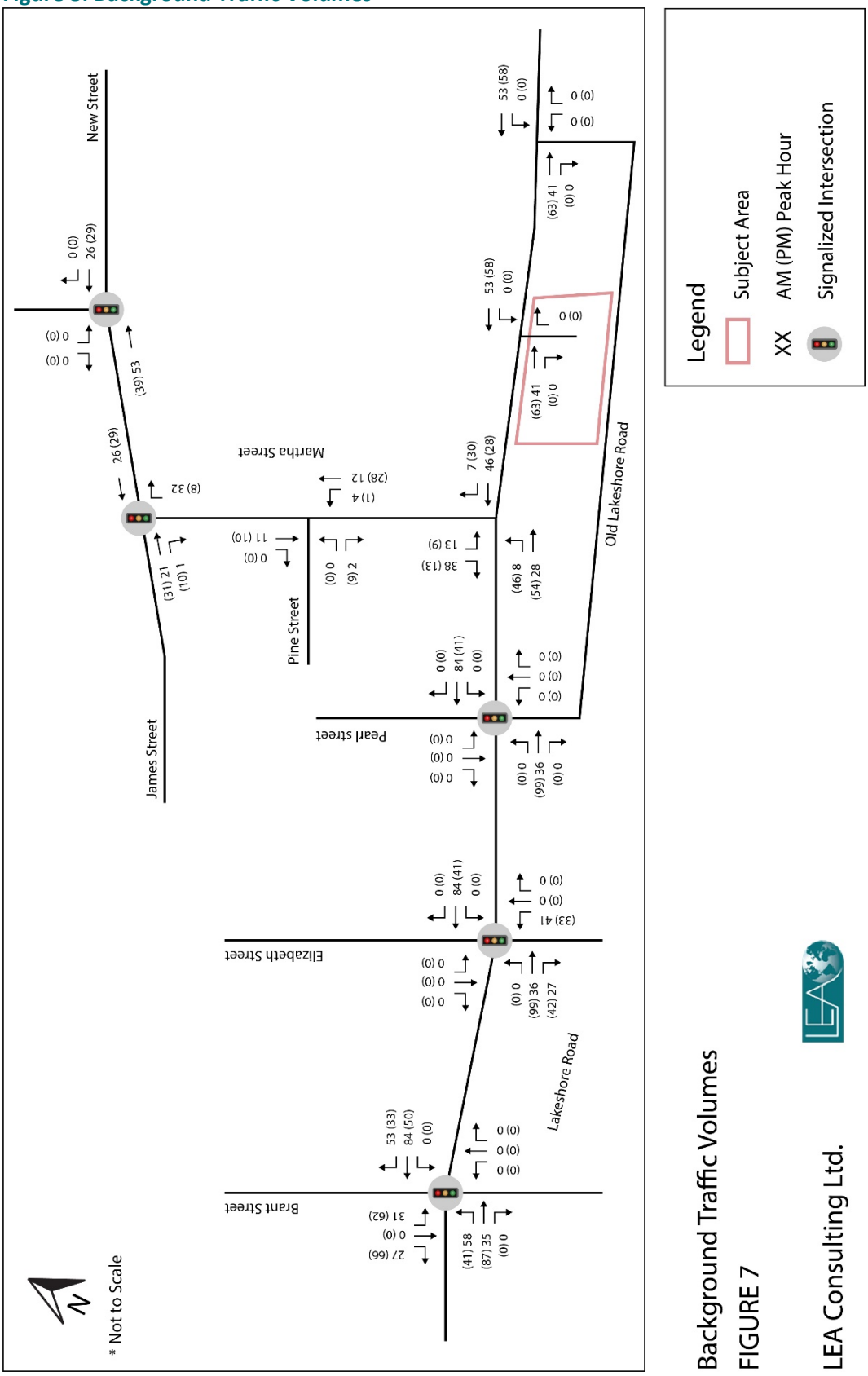
There are several significant development proposals or recent approvals located to the north of the study area. Site traffic for each of these developments was extracted from their respective transportation studies. It was assumed that all proposed developments would be completed by the year 2024. **Table 8** outlines a list of the background developments that were included in the study.

Table 8: Background Developments

#	Address of Development	Number of Units / Commercial GFA	Status
1	374 Martha Street	240 Residential Units 423 m^2 Commercial GFA	Approved by LPAT
2	2042-2054 Lakeshore Road	150 Residential Units 130 Hotel Units 2,775 m^2 Commercial GFA	Under Construction
3	2082-2090 James Street	153 Residential Units	Under Review
4	409 Brant Street	227 Residential Units 597 m^2 Commercial GFA	Appealed to LPAT
5	421-431 Brant Street	183 Residential Units 1,327 m^2 Office GFA 966 m^2 Commercial GFA	Approved
6	2030 Caroline Street 510 Elizabeth Street 2025 Maria Street	120 Residential Units 8,860 m^2 Office GFA 2,343 m^2 Commercial GFA	Under Construction

Figure 8 summarizes the cumulative traffic that these developments are predicted to create within the study area.

Figure 8: Background Traffic Volumes

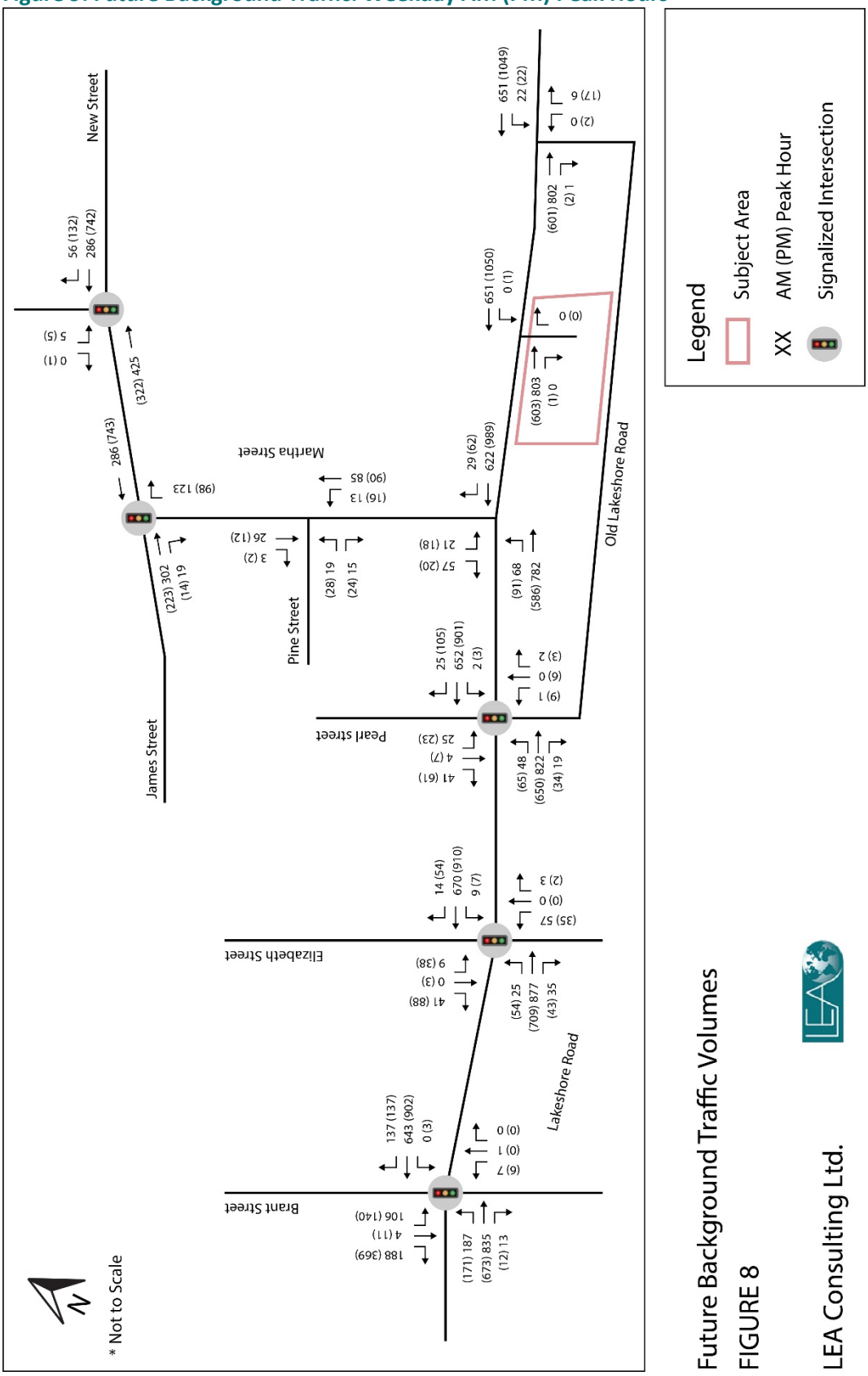


3.2 CORRIDOR GROWTH RATE AND FUTURE ROAD NETWORK

In consultation with City Staff, a corridor growth rate of 1.0% was applied to all observed traffic within the study area. Development traffic identified in **Section 3.1** was added on top of the growth adjusted existing traffic volumes to determine future background conditions. The future background traffic volumes for the weekday AM and PM peak hours can be found in **Figure 9**.

While the policies contained in Section 5.5.7.2 of the City of Burlington Official Plan suggest that an undefined portion of Old Lakeshore Road may eventually be closed to "achieve re-development and intensification", no timeline has been provided for this potential change and it is assumed that the existing road network will continue to be in place by the year 2024.

Figure 9: Future Background Traffic: Weekday AM (PM) Peak Hours



3.3 ROAD NETWORK - INTERSECTION CAPACITY ANALYSIS

The future background traffic conditions were tested again under the initial base parameters as with existing traffic analyses. **Table 9** and **Table 10** summarize the results of the signalized intersection analysis for the weekday AM and PM peak hours, respectively.

Table 11 summarizes the results of the unsignalized intersection analysis for the AM and PM peak hour. Detailed results of the future background traffic capacity analysis can be found in **Appendix E**.

During the weekday AM peak hour under future background conditions signalized intersections continue to operate well with good LOS. A small increase in vehicle delay and reduced capacity is observed across all intersections, particularly along Lakeshore Road. No movements are deemed critical within the study area.

Table 9: Signalized Levels of Service - Future Background Traffic – Weekday AM Peak Hour

Intersection	AM Peak Hour								
	Overall			Movements of Interest					
	V/C	Delay (s)	LOS	Movement	V/C	Delay (s)	LOS	Queue (m)	
								50th	95th
Brant Street & Lakeshore Road	0.73	15.2	B	EBL	0.41	5.0	A	9.5	20.6
				EBT	0.69	9.7	A	90.9	173.4
				WBT	0.40	7.9	A	30.4	38.5
				NBT	0.05	40.6	D	1.8	6.1
				SBL	0.61	49.3	D	25.3	42.1
				SBT	0.16	41.4	D	0.8	20.8
Elizabeth Street& Lakeshore Road	0.67	9.4	A	EBL	0.05	1.3	A	0.5	1.0
				EBT	0.65	4.9	A	45.8	39.8
				EBR	0.03	0.5	A	0.1	0.2
				WBL	0.03	1.8	A	0.3	1.3
				WBT	0.27	2.1	A	12.3	18.1
				NBT	0.29	49.3	D	5.6	19.0
				SBL	0.09	47.3	D	2.1	7.4
				SBT	0.03	46.9	D	0.0	0.0
Pearl Street & Lakeshore Road	0.61	4.5	A	EBL	0.12	1.1	A	0.0	1.4
				EBT	0.65	2.3	A	11.6	17.5
				EBR	0.02	0.2	A	0.0	0.2
				WBL	0.01	2.0	A	0.1	0.9
				WBT	0.27	2.7	A	15.5	38.3
				SBL	0.28	47.4	D	7.1	12.4
				SBT	0.06	45.3	D	0.9	11.8
James/New Street & Martha Street	0.30	2.7	A	EBT	0.33	2.8	A	0.0	56.9
				WBT	0.25	2.4	A	0.0	34.7
				WBR	0.05	1.7	A	0.0	3.3
				SBL	0.04	30.4	C	0.6	2.7

Under future background conditions during the weekday PM peak hour all signalized intersections are expected to continue operating well. A small increase in vehicle delay and reduced capacity is experienced across all signalized intersections.

Table 10: Signalized Levels of Service – Future Background Traffic - Weekday PM Peak Hour

Intersection	PM Peak Hour								
	Overall			Movements of Interest					
	V/C	Delay (s)	LOS	Movement	V/C	Delay (s)	LOS	Queue (m)	
								50th	95th
Brant Street & Lakeshore Road	0.85	27.7	C	EBL	0.75	42.6	D	22.4	70.9
				EBT	0.62	12.0	B	97.5	155.8
				WBL	0.01	10.2	B	0.2	0.6
				WBT	0.89	25.2	C	101.4	327.2
				WBR	0.16	8.2	A	2.9	7.7
				NBT	0.10	38.8	D	1.2	4.8
				SBL	0.61	46.8	D	39.4	50.0
				SBT	0.80	58.6	E	53.0	57.6
Elizabeth Street& Lakeshore Road	0.63	7.7	A	EBL	0.19	3.0	A	1.9	3.6
				EBT	0.55	3.9	A	26.7	35.0
				EBR	0.03	1.5	A	0.2	0.7
				WBL	0.02	1.7	A	0.2	0.4
				WBT	0.65	3.7	A	24.4	35.8
				WBR	0.04	0.8	A	0.0	0.3
				NBT	0.04	49.4	D	0.2	10.7
				SBL	0.41	53.2	D	12.2	20.1
				SBT	0.09	49.8	D	0.7	17.3
Pearl Street & Lakeshore Road	0.61	8.3	A	EBL	0.27	3.3	A	2.7	3.3
				EBT	0.51	3.4	A	67.2	22.3
				EBR	0.03	0.7	A	0.0	0.3
				WBL	0.01	2.8	A	0.2	1.1
				WBT	0.68	8.5	A	128.7	180.6
				WBR	0.09	3.1	A	0.0	2.8
				NBT	0.07	45.9	D	3.1	9.5
				SBL	0.19	47.0	D	6.4	13.0
				SBT	0.08	45.9	D	1.4	15.7
James/New Street & Martha Street	0.56	2.7	A	EBT	0.23	1.4	A	0.0	19.8
				WBT	0.58	3.3	A	0.0	62.1
				WBR	0.12	1.2	A	0.0	4.5
				SBL	0.10	43.5	D	0.9	4.2

The future background capacity analysis for unsignalized intersections indicates that most movements continue to operate well with good LOS. The only exception is southbound turning movements at the intersection of Lakeshore Road and Martha Street, which are required to yield to east-west through traffic along Lakeshore Road and experience an LOS of F during the AM and PM peak hour respectively. There is capacity for additional vehicles in both peak hours.

Table 11: Unsignalized Level of Service – Future Background Traffic

Intersection	Movement of Interest	AM Peak Hour					
		Flow Rate (vph)	Capacity (vph)	Control Delay (s)	95th Queue (m)	V/C	LOS
Lakeshore Road & Martha Street	EBL	76	874	9.5	2.3	0.09	A
	SBLR	104	148	72.2	32.4	0.70	F
Site Access & Lakeshore Road	NBR	0	1700	0.0	0.0	0.00	A
Old Lakeshore Road & Lakeshore Road	WBL	29	616	11.1	1.2	0.05	B
	NBLR	6	287	17.8	0.5	0.02	C
Martha Street & Pine Street	EBLR	45	903	9.2	1.3	0.05	A
	NBL	17	1531	1.2	0.3	0.01	A
Martha Street & James Street	NBR	137	703	11.4	5.8	0.19	B
Intersection	**Movement of Interest**	**PM Peak Hour**					
		Flow Rate (vph)	**Capacity (vph)**	**Control Delay (s)**	**95th Queue (m)**	**V/C**	**LOS**
Lakeshore Road & Martha Street	EBL	121	595	12.6	6.0	0.20	B
	SBLR	38	74	96.0	17.1	0.51	F
Site Access & Lakeshore Road	WBL	1	920	8.9	0.0	0.00	A
	NBR	0	1700	0.0	0.0	0.00	A
Old Lakeshore Road & Lakeshore Road	WBL	29	919	9.0	0.8	0.03	A
	NBLR	25	299	18.2	2.2	0.08	C
Martha Street & Pine Street	EBLR	60	902	9.3	1.7	0.07	A
	NBL	21	1581	1.2	0.3	0.01	A
Martha Street & James Street	NBR	118	792	10.3	4.2	0.15	B

3.3.1 Future Background Intersection Capacity PM Sensitivity Analysis

The sensitivity analysis was conducted using the same parameters as in **Section 2.6.1** for future background conditions. **Table 12** shows the summary of the analysis results. As with the existing condition sensitivity analysis, the westbound traffic queues are expected to exceed the available storage within each link. The largest increase from existing conditions is observed at Brant Street, where the delay for westbound movements is increased by 63.8 seconds (17.5 to 81.3) and the queues are observed to increase by 84.1 metres (348 to 432.1). The remainder of the movement delays are expected to increase by less than 6 seconds. The westbound queues at Pearl Street are expected to increase by 58.7 metres (204.4 to 263.1), consistent with the increase expected at Brant Street.

Other than the westbound movements along Lakeshore Road, the capacity analysis demonstrates additional capacity available within the transportation network.

Table 12: Signalized Levels of Service – Future Background Sensitivity Analysis - Weekday PM Peak Hour

Intersection	PM Peak Hour								
	Overall			Movements of Interest					
	V/C	Delay (s)	LOS	Movement	V/C	Delay (s)	LOS	Queue (m)	
								50th	95th
Brant Street & Lakeshore Road	0.99	53.0	D	EBL	0.75	49.5	D	27.4	79.9
				EBT	0.62	12.0	B	97.5	155.8
				WBL	0.01	11.8	B	0.2	0.6
				WBT	1.11	81.3	F	338.9	432.1
				NBT	0.10	38.8	D	1.2	4.8
				SBL	0.61	46.8	D	39.4	50.0
Elizabeth Street& Lakeshore Road	0.67	8.0	A	EBL	0.21	3.3	A	1.9	3.6
				EBT	0.55	3.9	A	26.7	35.0
				EBR	0.03	1.5	A	0.2	0.7
				WBL	0.02	1.9	A	0.2	0.5
				WBT	0.69	4.0	A	26.1	47.6
				NBT	0.04	49.4	D	0.2	10.7
				SBL	0.41	53.2	D	12.2	20.1
				SBT	0.09	49.8	D	0.7	17.3
Pearl Street & Lakeshore Road	0.70	10.5	B	EBL	0.38	5.9	A	3.3	3.3
				EBT	0.51	3.4	A	67.2	22.3
				EBR	0.03	0.7	A	0.0	0.3
				WBL	0.01	2.8	A	0.2	1.1
				WBT	0.79	11.7	B	177.6	263.1
				NBT	0.07	45.9	D	3.1	9.5
				SBL	0.19	47.0	D	6.4	13.0
				SBT	0.08	45.9	D	1.4	15.7
				WBT	0.58	3.3	A	0.0	62.1
				WBR	0.12	1.2	A	0.0	4.5
				SBL	0.10	43.5	D	0.9	4.2

4 TRIP GENERATION AND DISTRIBUTION

4.1 TRIP GENERATION

It was assumed that residential trips will be the primary site trip generator. Given that no retail parking is required on site and the retail units are to be ancillary in nature, the retail trips are anticipated to be predominantly pass-by and walk-in trips. Therefore, retail trips were not considered in the analysis. Given these assumptions, vehicle trips for retail uses were not estimated for the site.

Trip generation for residential uses was calculated using the ITE Trip Generation Manual 10th Edition ITE Land Use Code 222. The total number of vehicle trips were calculated by applying the local modal split, derived using the 2016 Transportation Tomorrow Survey (TTS). Home-based work trips were utilized for the calculation of the site modal split as it was assumed that the majority of weekday peak hour trips would be commuting trips. Local modal split and trip generation are detailed in **Table 13** and **Table 14** respectively. A detailed description of the trip generation calculations is provided in **Appendix F**.

Table 13: 2016 TTS Modal Split

AM (7:00-9:00)				
Trip Type	**Auto Driver %**	**Transit %**	**Active Transportation %**	**Other %**
Home-Based Work	85%	2%	8%	5%
PM (16:00-19:00)				
Trip Type	**Auto Driver %**	**Transit %**	**Active Transportation %**	**Other %**
Home-Based Work	85%	4%	7%	4%

Table 14: Trip Generation

Trip Type	Weekday AM Peak Hour			Weekday PM Peak Hour		
	In	Out	Total	In	Out	Total
ITE Vehicle Trip Rate (96% auto mode split assumed)	0.07	0.24	0.31	0.22	0.14	0.36
ITE Vehicle Trips	23	73	96	68	44	112
Total Person Trips	24	76	100	71	46	117
Total Vehicle Trips (Applying 85% Auto Mode)	*20*	*65*	*85*	*61*	*39*	*100*

As indicated in **Table 14**, the subject site is anticipated to generate 101 and 117 person trips during the weekday AM and PM peak hours respectively. Assuming a vehicle modal share of 85%, it is anticipated that an additional 85 and 100 vehicle trips will be generated during the weekday AM and PM peak hours respectively.

4.2 AS-OF-RIGHT TRIP GENERATION COMPARISON

For comparison purposes, trip generation was also estimated using the as-of-right density permitted on-site. Based on information provided by the project architect, it was determined that approximately 195,200 sq. ft. of residential could be accommodated under the as-of-right zoning for the site. It was conservatively assumed that 80% of the gross building GFA would be useable, and that the average unit size would be 800 sq. ft. Given these assumptions, 195 residential units could be built as-of-right. Detailed in **Table 15** is the number of trips anticipated based on what is permitted as-of-right. Similar to

the proposed development, no vehicle trip generation was assumed for any retail component given its ancillary nature.

Table 15: As-of-Right and Proposed Vehicle Trip Generation

Situation	Weekday AM Peak Hour			Weekday PM Peak Hour		
	In	Out	Total	In	Out	Total
As-of-Right	13	41	54	38	24	62
Proposed	20	66	85	61	39	100
Difference	**+7**	**+25**	**+31**	**+23**	**+15**	**+38**

As indicated in **Table 15**, the vehicle trip generation associated with the as-of-right and proposed developments are largely comparable. Relative to the as-of-right building permitted, the proposed development will generate 31 and 38 additional vehicle trips in the weekday AM and PM peak hour respectively. This represents a small increase in vehicle traffic during both peak hours.

4.3 TRIP DISTRIBUTION AND ASSIGNMENT

The trip distribution of site traffic was estimated using the 2016 Transportation Tomorrow Survey (TTS) data. The analysis was confined to motorized trips and the approach direction was estimated based on logical routing choices. Vehicular access to the proposed development will be provided via a driveway connection to Lakeshore Road. The existing northbound left turn prohibition will be maintained, giving a three-movement access. To travel west on Lakeshore, vehicles are expected to make an eastbound right at the intersection of Lakeshore Road and Old Lakeshore Road, followed by a northbound left at the intersection of Lakeshore Road and Pearl Street. The distribution of inbound and outbound site trips is indicated in **Figure 10** and **Figure 11** respectively. **Figure 12** illustrates future site traffic.

Figure 10: Site Trip Distribution - Inbound

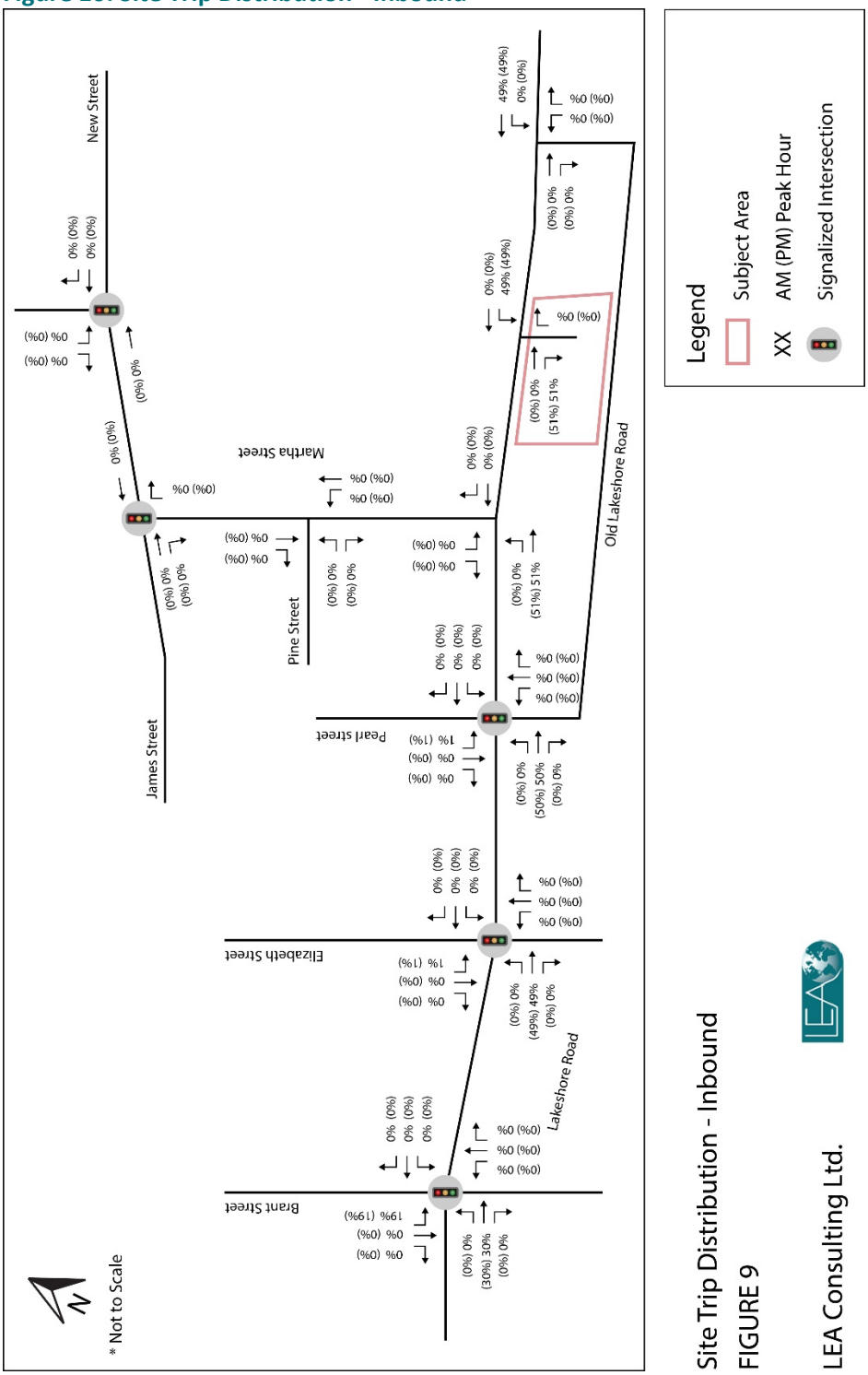


Figure 11: Site Trip Distribution - Outbound

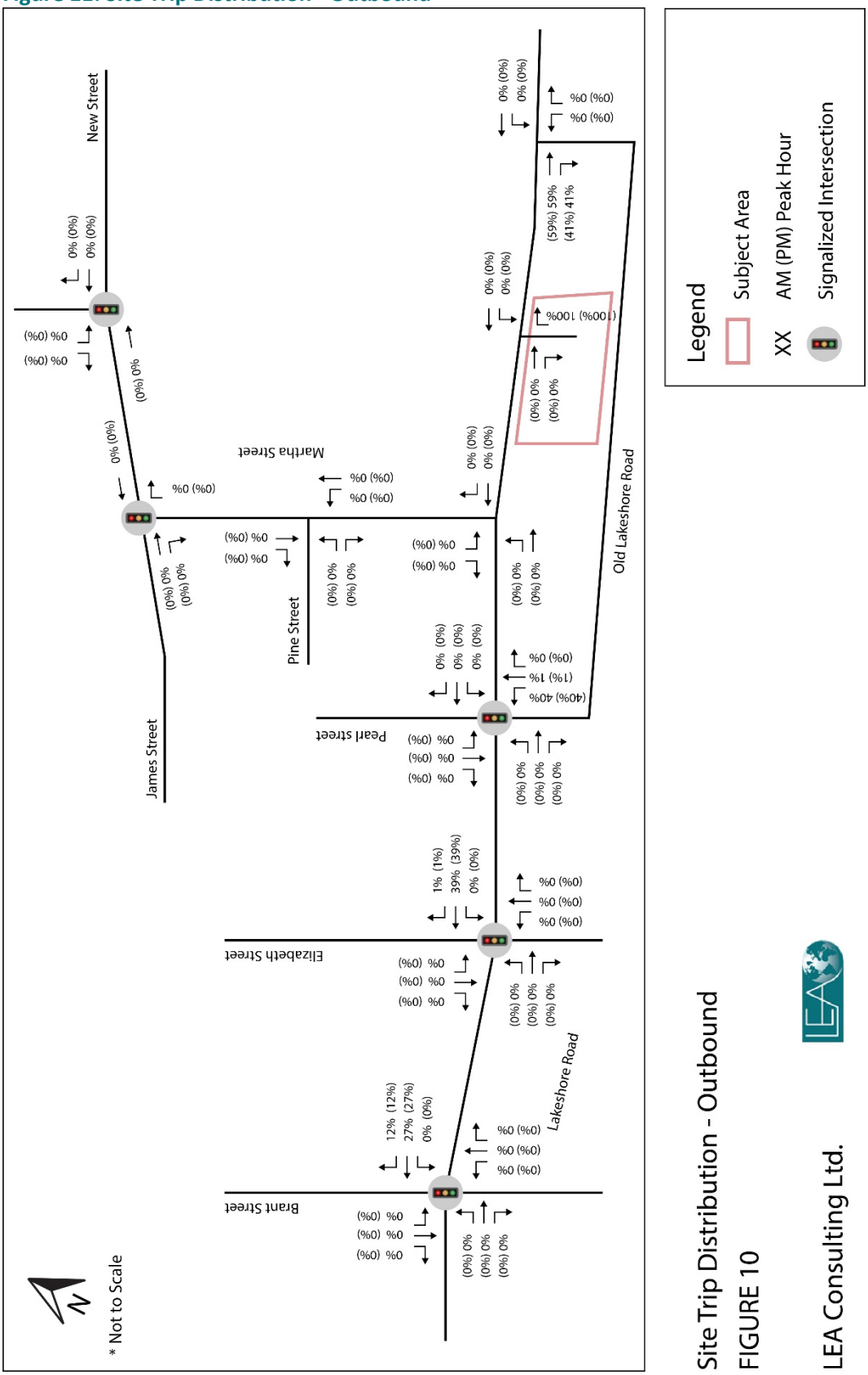
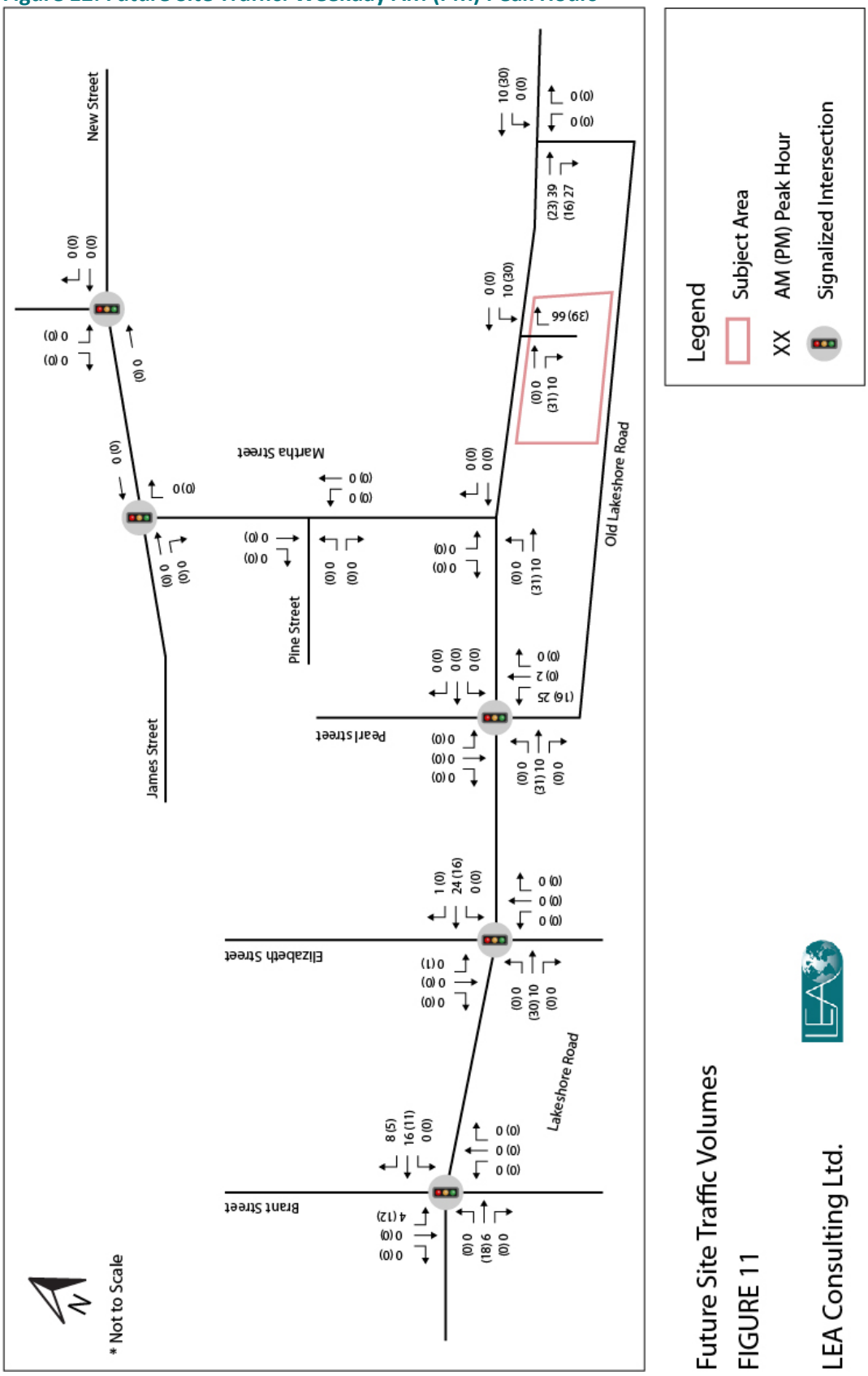


Figure 12: Future Site Traffic: Weekday AM (PM) Peak Hours



5 FUTURE TOTAL (2024) TRANSPORTATION CONDITIONS

5.1 ROAD NETWORK - INTERSECTION CAPACITY ANALYSIS

Future total traffic volumes were derived from combining the future site traffic volumes with the future background traffic volumes. **Figure 13** illustrates the future total traffic for the weekday AM and PM peak hours. The same analysis parameters utilized under the future background traffic analyses were applied for the future total traffic analysis. **Table 16** and **Table 17** summarize the results of the signalized intersection analysis for the AM and PM peak hours respectively.

Table 18 summarizes the results of the unsignalized intersection analysis for the AM and PM peak hours. Detailed analyses outputs can be found in **Appendix G**.

During the weekday AM peak hour under future total conditions signalized intersections continue to operate well with good LOS. No movements experience a decrease in LOS relative to future background conditions. East-west movements along Lakeshore Road continue to experience an LOS of A with minimal vehicle delay and no movements experience a V/C greater than 0.69. North-south movements along Lakeshore Road continue to experience an LOS of D at all signalized intersections; no changes are recommended given the limited volume of traffic making these turning movements.

Figure 13: Future Total Traffic: Weekday AM (PM) Peak Hours

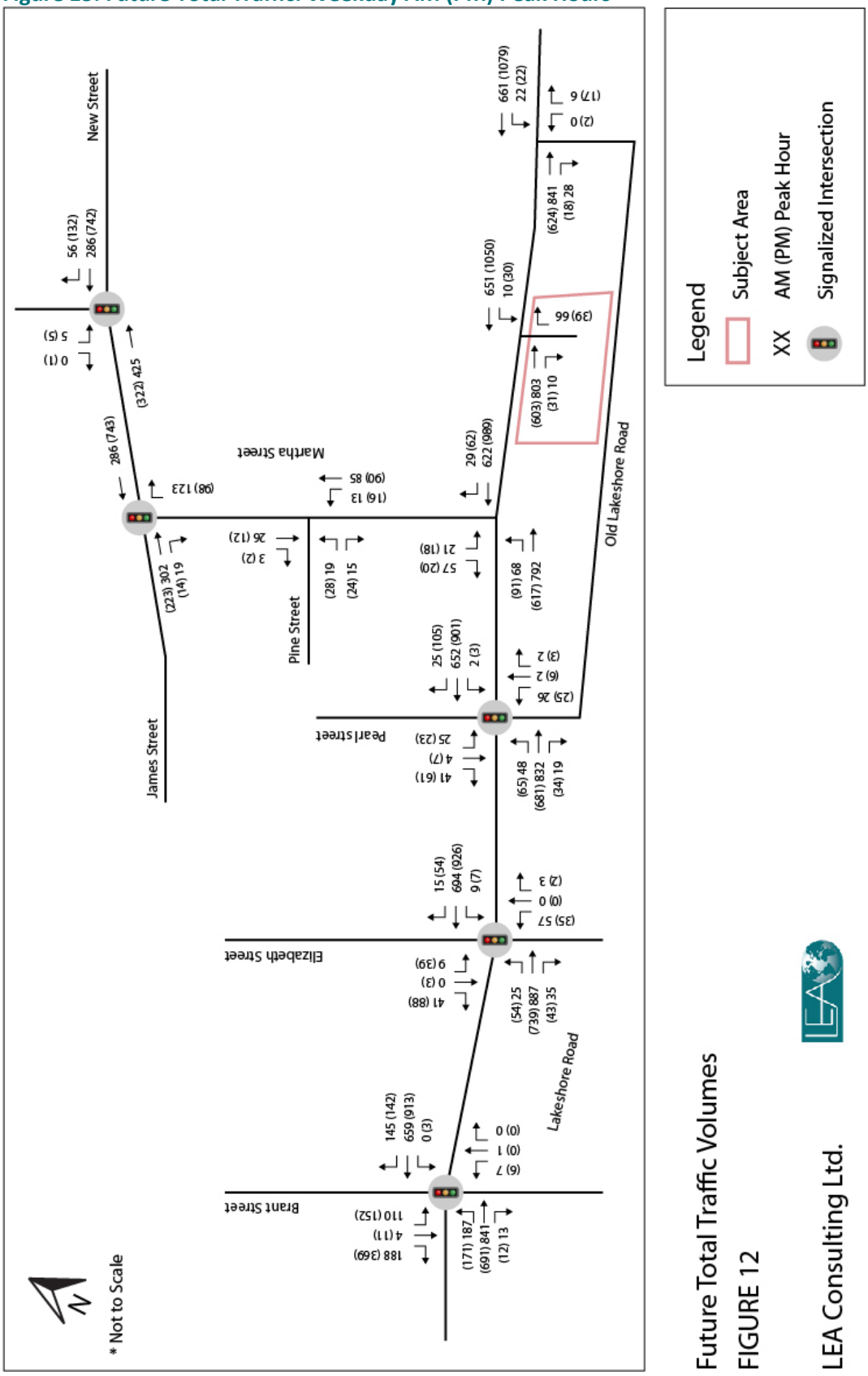


Table 16: Signalized Levels of Service – Future Total Traffic - Weekday AM Peak Hour

Intersection	AM Peak Hour								
	Overall			Movements of Interest					
	V/C	Delay (s)	LOS	Movement	V/C	Delay (s)	LOS	Queue (m)	
								50th	95th
Brant Street & Lakeshore Road	0.74	15.4	B	EBL	0.53	7.2	A	13.1	27.1
				EBT	0.75	13.3	B	111.6	237.6
				WBT	0.43	8.6	A	30.7	39.1
				NBT	0.04	37.4	D	1.7	5.4
				SBL	0.61	46.2	D	31.4	36.7
				SBT	0.17	38.5	D	1.0	9.0
Elizabeth Street& Lakeshore Road	0.68	9.6	A	EBL	0.08	2.8	A	2.2	1.2
				EBT	0.75	10.3	B	197.3	142.4
				EBR	0.04	1.3	A	0.8	0.3
				WBL	0.05	3.4	A	0.5	1.5
				WBT	0.31	4.0	A	39.5	22.6
				NBT	0.28	42.0	D	7.1	21.2
				SBL	0.07	39.9	D	2.1	6.2
				SBT	0.04	39.6	D	0.0	0.0
Pearl Street & Lakeshore Road	0.61	5.1	A	EBL	0.12	1.0	A	0.0	1.4
				EBT	0.65	2.3	A	11.6	17.4
				EBR	0.02	0.2	A	0.0	0.2
				WBL	0.01	2.0	A	0.1	0.9
				WBT	0.27	2.7	A	15.5	38.3
				NBT	0.22	42.9	D	5.7	10.8
				SBL	0.29	47.5	D	7.1	12.4
				SBT	0.06	45.3	D	0.9	11.8
James/New Street & Martha Street	0.30	2.7	A	EBT	0.33	2.8	A	0.0	56.9
				WBT	0.25	2.4	A	0.0	34.7
				WBR	0.05	1.7	A	0.0	3.3
				SBL	0.04	30.4	C	0.6	2.7

Under future total conditions during the weekday PM peak hour all signalized intersections are expected to continue operating well. With the exception of the signalized intersection at James/New Street and Martha Street, all intersections operate with a higher LOS and lower V/C compared to the weekday AM peak hour.

Table 17: Signalized Levels of Service – Future Total Traffic - Weekday PM Peak Hour

Intersection	PM Peak Hour								
	Overall			Movements of Interest					
	V/C	Delay (s)	LOS	Movement	V/C	Delay (s)	LOS	Queue (m)	
								50th	95th
Brant Street & Lakeshore Road	0.87	29.6	C	EBL	0.75	48.0	D	27.4	79.9
				EBT	0.64	12.5	B	102.6	162.9
				WBL	0.01	10.1	B	0.1	0.6
				WBT	0.92	28.9	C	175.4	333.4
				WBR	0.17	8.1	A	2.8	7.5
				NBT	0.10	38.6	D	1.2	4.8
				SBL	0.66	48.6	D	43.2	54.2
				SBT	0.80	58.3	E	53.6	58.0
Elizabeth Street & Lakeshore Road	0.64	8.0	A	EBL	0.19	3.2	A	2.0	3.8
				EBT	0.58	4.3	A	30.1	38.7
				EBR	0.03	1.7	A	0.2	0.7
				WBL	0.02	1.8	A	0.3	0.6
				WBT	0.66	4.0	A	29.4	42.1
				WBR	0.04	1.0	A	0.1	0.3
				NBT	0.04	49.3	D	0.2	10.7
				SBL	0.41	53.2	D	12.4	20.6
				SBT	0.09	49.7	D	0.7	17.3
Pearl Street & Lakeshore Road	0.61	8.5	A	EBL	0.27	3.2	A	2.6	3.2
				EBT	0.53	3.5	A	69.9	22.6
				EBR	0.03	0.7	A	0.3	0.2
				WBL	0.01	2.8	A	0.2	1.1
				WBT	0.68	8.5	A	128.7	180.6
				WBR	0.09	3.1	A	0.0	2.8
				NBT	0.17	43.5	D	6.5	15.0
				SBL	0.20	47.1	D	6.4	13.0
				SBT	0.08	45.9	D	1.4	15.7
James/New Street & Martha Street	0.56	2.7	A	EBT	0.23	1.4	A	0.0	19.8
				WBT	0.58	3.3	A	0.0	62.1
				WBR	0.12	1.2	A	0.0	4.5
				SBL	0.10	43.5	D	0.9	4.2

The future total capacity analysis for unsignalized intersections indicates that all movements are operating at levels similar to future background conditions. Southbound turning movements at the intersection of Lakeshore Road and Martha Street continue to experience a LOS of F during the weekday AM and PM peak hours, but no site traffic is assigned to make this movement. Westbound left turning movements accessing the site from Lakeshore Road experience a good LOS during both peak hours. Vehicles exiting the development onto Lakeshore Road are expected to experience a good LOS during both peak hours.

Table 18: Unsignalized Level of Service – Future Total Traffic

Intersection	Movement of Interest	AM Peak Hour					
		Flow Rate (vph)	Capacity (vph)	Control Delay (s)	95th Queue (m)	V/C	LOS
Lakeshore Road & Martha Street	EBL	76	874	9.5	2.3	0.09	A
	SBLR	104	144	77.1	33.8	0.72	F
Site Access & Lakeshore Road	WBL	10	627	10.8	0.4	0.02	B
	NBR	66	295	20.7	6.7	0.22	C
Old Lakeshore Road & Lakeshore Road	WBL	29	563	11.7	1.3	0.05	B
	NBLR	6	257	19.4	0.6	0.02	C
Martha Street & Pine Street	EBLR	45	903	9.2	1.3	0.05	A
	NBL	17	1531	1.2	0.3	0.01	A
Martha Street & James Street	NBR	137	703	11.4	5.8	0.19	B
Intersection	**Movement of Interest**	**PM Peak Hour**					
		Flow Rate (vph)	**Capacity (vph)**	**Control Delay (s)**	**95th Queue (m)**	**V/C**	**LOS**
Lakeshore Road & Martha Street	EBL	121	595	12.6	6.0	0.20	B
	SBLR	38	69	107.6	18.4	0.55	F
Site Access & Lakeshore Road	WBL	33	889	9.2	0.9	0.04	A
	NBR	41	483	13.1	2.2	0.08	B
Old Lakeshore Road & Lakeshore Road	WBL	29	882	9.2	0.8	0.03	A
	NBLR	25	275	19.4	2.4	0.09	C
Martha Street & Pine Street	EBLR	60	902	9.3	1.7	0.07	A
	NBL	21	1581	1.2	0.3	0.01	A
Martha Street & James Street	NBR	118	792	10.3	4.2	0.15	B

5.1.1 Future Total Intersection Capacity PM Sensitivity Analysis

The future total intersection capacity analysis for the sensitivity scenario indicate the trips generated by the proposed development will have insignificant to minor impact to the transportation network. The majority of movements see less than 1 second increase in delay, with the largest impact to the westbound though movement at Brant Street (an increase of 8.2 seconds of delay). However, this impact is due to the assumption that all outbound site trips traveling to the QEW will travel west via Lakeshore Road. There are alternative routes within the system with similar travel times, including northbound on Pearl Street and west on James Street and Ontario Street. Additionally, an adjustment of 4 seconds to the offset of green times between the intersections would show additional improvement, as seen in **Section 5.1.2**.

Table 19: Signalized Levels of Service – Future Total Sensitivity Analysis - Weekday PM Peak Hour

Intersection	PM Peak Hour								
	Overall			Movements of Interest					
	V/C	Delay (s)	LOS	Movement	V/C	Delay (s)	LOS	Queue (m)	
								50th	95th
Brant Street & Lakeshore Road	1.00	56.5	E	EBL	0.75	49.4	D	27.4	79.9
				EBT	0.64	12.5	B	102.6	162.9
				WBL	0.01	11.5	B	0.2	0.6
				WBT	1.13	89.5	F	349.2	441.4
				NBT	0.10	38.6	D	1.2	4.8
				SBL	0.66	48.6	D	43.2	54.2
				SBT	0.80	58.3	E	53.6	58.0
Elizabeth Street & Lakeshore Road	0.68	8.2	A	EBL	0.21	3.5	A	2.0	3.8
				EBT	0.58	4.3	A	30.1	38.7
				EBR	0.03	1.7	A	0.2	0.7
				WBL	0.02	2.1	A	0.3	0.6
				WBT	0.71	4.4	A	31.3	54.2
				NBT	0.04	49.3	D	0.2	10.7
				SBL	0.41	53.2	D	12.4	20.6
				SBT	0.09	49.7	D	0.7	17.3
Pearl Street & Lakeshore Road	0.70	10.6	B	EBL	0.38	5.7	A	2.9	3.2
				EBT	0.53	3.5	A	69.9	22.6
				EBR	0.03	0.7	A	0.3	0.2
				WBL	0.01	2.8	A	0.2	1.1
				WBT	0.79	11.7	B	177.6	263.1
				NBT	0.17	43.5	D	6.5	15.0
				SBL	0.20	47.1	D	6.4	13.0
				SBT	0.08	45.9	D	1.4	15.7
				WBT	0.58	3.3	A	0.0	62.1
				WBR	0.12	1.2	A	0.0	4.5
				SBL	0.10	43.5	D	0.9	4.2

5.1.2 Future Total Intersection Capacity PM Offset Sensitivity Analysis

It should be noted that while the queues in the westbound direction are noted to exceed the storage lengths, delay associated with the westbound movements are within acceptable levels. With slight modifications to the intersection offset timings, signal coordination can provide additional gaps for vehicles to travel through the intersection during the green light. This will also provide additional gaps for minor leg turning volumes at intersections with Lakeshore Road. At Pearl Street, the offset of green times for the intersection is recommended to be reduced by 4 seconds, which will coordinate to progression of trips westbound along Lakeshore.

Table 20 shows the results of this modification, which includes an improvement of 0.5 seconds for westbound volumes along Lakeshore Road.

Table 20: Signalized Levels of Service – Future Total Offset Sensitivity Analysis - Weekday PM Peak Hour

Intersection	PM Peak Hour								
	Overall			Movements of Interest					
	V/C	Delay (s)	LOS	Movement	V/C	Delay (s)	LOS	Queue (m)	
								50th	95th
Brant Street & Lakeshore Road	1.00	56.3	E	EBL	0.75	49.4	D	27.4	79.9
				EBT	0.64	12.5	B	102.6	162.9
				WBL	0.01	11.1	B	0.2	0.6
				WBT	1.13	89.1	F	349.1	441.5
				NBT	0.10	38.6	D	1.2	4.8
				SBL	0.66	48.6	D	43.2	54.2
				SBT	0.80	58.3	E	53.6	58.0
Elizabeth Street & Lakeshore Road	0.68	8.0	A	EBL	0.21	3.5	A	2.0	3.8
				EBT	0.58	4.3	A	30.1	38.7
				EBR	0.03	1.7	A	0.2	0.7
				WBL	0.02	1.7	A	0.2	0.4
				WBT	0.71	3.9	A	22.7	40.7
				NBT	0.04	49.3	D	0.2	10.7
				SBL	0.41	53.2	D	12.4	20.6
				SBT	0.09	49.7	D	0.7	17.3
Pearl Street & Lakeshore Road	0.70	10.4	B	EBL	0.38	5.3	A	2.9	3.5
				EBT	0.53	2.8	A	25.8	24.7
				EBR	0.03	0.6	A	0.0	0.2
				WBL	0.01	2.8	A	0.2	1.1
				WBT	0.79	11.7	B	177.6	263.1
				NBT	0.17	43.6	D	6.5	14.9
				SBL	0.20	47.1	D	6.4	13.0
				SBT	0.08	45.9	D	1.4	15.7
				WBT	0.58	3.3	A	0.0	62.1
				WBR	0.12	1.2	A	0.0	4.5
				SBL	0.10	43.5	D	0.9	4.2

6 PEDESTRIAN TRAVEL ASSESSMENT

6.1 PEDESTRIAN TRIP GENERATION

Pedestrian trip generation was calculated using the trip generation results detailed in **Table 13** and **Table 14**. Assuming an active transportation modal split of 8%, it is anticipated that a total of 8 and 11 active transportation trips will be generated during the AM and PM peak hour by the residential component, with the majority of these trips taken as a pedestrian. Given this volume of pedestrian traffic, it is not anticipated that there will be any capacity constraints with the existing sidewalk network.

The proposed development places a heavy emphasis on the public realm and streetscape through the addition of a spacious privately-owned public space on the western portion of the site. This open space will create a view corridor between Martha Street and Lake Ontario, in line with the precinct policies of the Official Plan. Through the provision of retail uses at grade fronting on to the new open space, there will be an opportunity for outdoor patios with associated restaurant uses that will help generate pedestrian activity and animate the surrounding public realm. The site design offers a high quality pedestrian environment that will further encourage both recreational and discretionary walking trips. A conceptual rendering of the pedestrian realm is provided in **Figure 14**.

Figure 14: Conceptual Rendering of Public Space (Image: Urban Strategies)



The City of Burlington Site Plan Guidelines recommends residential and commercial sidewalks have a minimum width of 1.2m and 1.8m respectively, as outlined in Subsection 5.1. Furthermore, the City of Burlington Accessibility Design Standards (2016) recommends a minimum width for accessible routes of 1.83m, as indicated in Subsection 4.1.4. The existing sidewalk widths on Lakeshore Road and Old Lakeshore Road adjacent to the subject site are 3.8m and 6.2m respectively. The proposed development will enhance the pedestrian environment on both roads, expanding the pedestrian zone on Lakeshore Road and Old Lakeshore Road to 11.0m and 14.2m respectively, as indicated in **Figure 15** and **Figure 16**.

Figure 15: Proposed Lakeshore Road Cross-Section (Image: Urban Strategies)

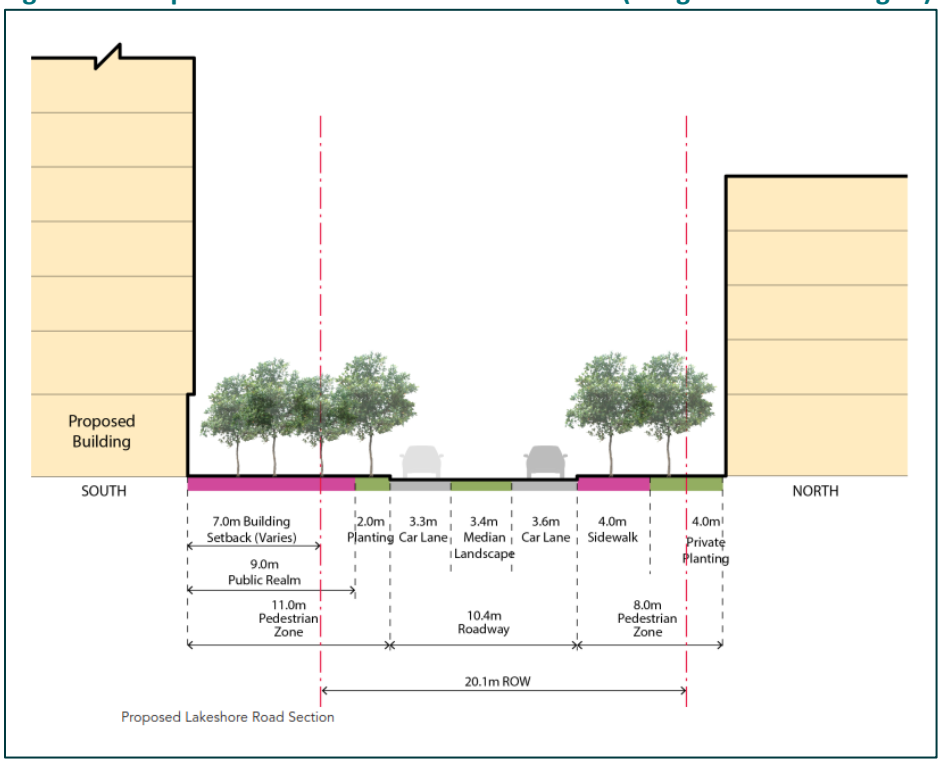
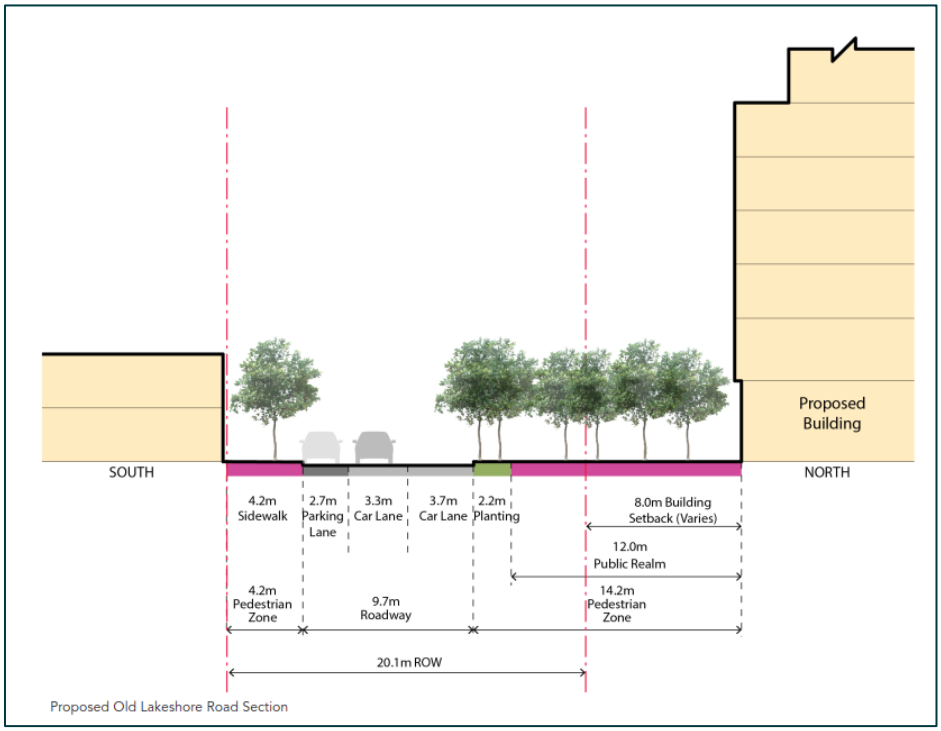


Figure 16: Proposed Old Lakeshore Road Cross-Section (Image: Urban Strategies)

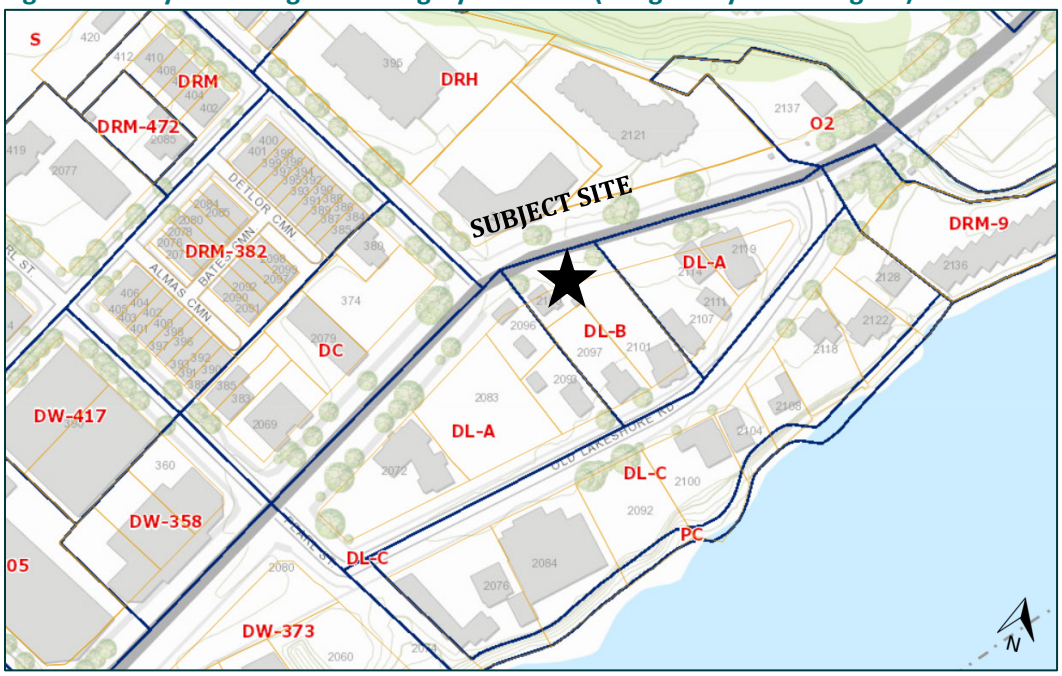


7 PARKING ASSESSMENT

7.1 BY-LAW REQUIREMENTS

The site is subject to the parking requirements of the City of Burlington Zoning By-law 2020. As indicated in **Figure 17**, the subject site is designated DL-B.

Figure 17: City of Burlington Zoning By-law 2020 (Image: City of Burlington)



The residential component of the proposed development is excluded from the parking requirements stipulated in Table 1.2.6 Off-Street Parking Standards. Subsection 4.7(a) states that, in the DL-B zone in which the subject site is located, parking for Apartment Buildings will instead be provided at a rate of 1.25 spaces per unit. In addition, Subsection 2.25.1 states that, for properties located within the "Downtown Parking Exemption Area", the by-law parking requirements shall only apply to residential uses. The subject site is located within the "Downtown Parking Exemption Area". The required minimum parking is summarized in **Table 21.**

Table 21: By-law Parking Requirements

Land Use	By-law Parking Rate	Units	Spaces Required
Apartment Building	1.25 spaces per unit	310	388

7.2 ACCESSIBLE PARKING

Table 1.2.7 of By-law 2020 states that a minimum of 3% of require parking must be designated accessible parking spaces if the required number of parking spaces is over 90 spaces. Parking spaces are required to abide by the standard by-law width requirement of 2.75m and must be adjacent to an accessible parking walkway with a minimum width of 2.0m.

The Accessibility for Ontarians with Disabilities Act (AODA) specifies a minimum number of accessible parking spaces that differs from the requirements outlined in the City of Burlington By-law. The parking standards review recommends that the City of Burlington harmonize their accessible parking requirements with the AODA requirements. Subsection 80.36 (1) states that a minimum of 2 + 2% of the total parking supply must be accessible parking spaces. Two types of accessible parking are specified: Type A (minimum width: 3.4m), and Type B (minimum width: 2.4m). Accessible parking should be evenly divided between Type A and Type B spaces, with the higher number allocated to Type B if an odd number of spaces is required. **Table 22** outlines the by-law and AODA accessible parking requirements. The proposed development will contain 5 Type A and 5 Type B accessible parking spaces, satisfying the AODA requirements.

Table 22: By-law Accessible Parking Requirements

Regulation	Parking Rate	Accessible Spaces Required
City of Burlington By-law	3% of Required Spaces	12
AODA	2 + 2% of Total Parking Supply	10 Total: 5 Type A (3.4m width) 5 Type B (2.4m width

7.3 CITY-WIDE PARKING STANDARDS REVIEW

The City of Burlington has conducted a City-Wide Parking Standards Review resulting in a set of recommended parking rates prepared by the retained consultant. The recommended parking rates are subject to public comment and have not been accepted by City Council. The requirements for intensification areas outlined in the final report are detailed in **Table 23**.

Table 23: Recommended Vehicle Parking Rates for Intensification Areas

Land Use	Recommended Minimum Rate	Units	Spaces Required
Apartment Building	Residential: 1.0 spaces per unit Visitor: 0.25 spaces per unit	310	310 Residential 78 Visitor

7.4 PROPOSED PARKING SUPPLY

The proposed development contains 298 residential (including 4 small car spaces) and 30 visitor parking spaces, as well as 4 car-share spaces. 1 car-share parking space is equivalent to 4 resident parking spaces, resulting in an effective parking supply of 16 additional parking spaces. Therefore, it is proposed to provide a total of 332 parking spaces over four levels of underground parking. The fourth level of parking will include a parking stacking system allowing all spaces to be accessed independently, providing two spaces for each parking spot. The proposed parking breakdown is in **Table 24**.

Table 24: Proposed Parking Spaces

Type	# of Units	Proposed Parking Supply		Zoning Equivalent	
		Parking Spaces	Parking Rate	Parking Spaces	Parking Rate
Residential	310 Units	294	0.95	294	0.95
Car-Share (1 = 4 Effective Resident Spaces)		4	0.01	16	0.05
Small Car Resident Spaces		4	0.01	4	0.01
Resident Spaces Total		**302**	**0.97**	**314**	**1.01**
Residential Visitor		30	0.10	30	0.10
Total		**332**	**1.07**	**344**	**1.11**

7.5 VISITOR PARKING JUSTIFICATION

A parking survey was conducted of adjacent residential buildings to identify an appropriate visitor parking rate. Four buildings were surveyed on Friday, January 18th, 2019 (6:00 PM – 11:00 PM) and Saturday, January 26th, 2019 (10:00 AM – 8:00 PM). The unit count and number of visitor parking spaces is provided in **Table 25**. The location of the existing buildings relative to the proposed development is indicated in **Figure 18**.

Table 25: Parking Survey Details

Address	Unit Count	Visitor Parking	Visitor Parking Supply Rate
2121 Lakeshore Road	38	11	0.29 spaces per unit
2160 Lakeshore Road	170	25	0.15 spaces per unit
2190 Lakeshore Road	62	21	0.34 spaces per unit
2210 Lakeshore Road	52	19	0.37 spaces per unit

Figure 18: Parking Survey Locations (Image: Google Maps)



Table 26 and **Table 27** outline the observed visitor parking demand rates on January 18th and January 26th respectively. Full details of the parking survey are provided in **Appendix H**.

Table 26: Observed Visitor Parking Demand – Friday, January 18th, 2019

Visitor Parking Demand - Friday, January 18th				
Time:	**18:00 – 23:00**			
Address	**2121 Lakeshore Road**	**2160 Lakeshore Road**	**2190 Lakeshore Road**	**2210 Lakeshore Road**
# of Units	38	170	62	52
# of Visitor Parking Spaces	11	25	21	19
Peak Visitor Parking Demand	3	10	2	3
Visitor Parking Demand Rate	0.08	0.06	0.03	0.06
% Occupied	27%	40%	10%	16%

Table 27: Observed Visitor Parking Demand – Saturday, January 26th, 2019

Visitor Parking Demand - Saturday, January 26th				
Time:	**10:00 – 20:00**			
Address	**2121 Lakeshore Road**	**2160 Lakeshore Road**	**2190 Lakeshore Road**	**2210 Lakeshore Road**
# of Units	38	170	62	52
# of Visitor Parking Spaces	11	25	21	19
Peak Visitor Parking Demand	3	15	5	4
Visitor Parking Demand Rate	0.08	0.09	0.08	0.08
% Occupied	27%	60%	24%	21%

As indicated in the above tables, visitor parking demand in the surrounding area typically ranges between 0.03 and 0.09 spaces per unit. The maximum observed visitor parking lot occupancy was 60% of available spaces. In keeping with the general trend of visitor parking spaces in the neighbourhood, the proposed development recommends 0.10 visitor spaces per unit.

In addition, it should be noted that the subject site is located in a transit-accessible area and is a 1-minute walk away from the nearest Burlington Transit bus stop. Aside from the nearest bus stop, visitors can easily access the site from other bus routes, as discussed previously in **Section 2.2**. The site can be assessed from the Burlington Bus Terminal with a 3-minute bus ride or a 6-minute walk to the subject site. Furthermore, the GO Burlington Station is a 20-minute bus ride from the proposed development.

Based on the survey findings detailed above and the transit access available to the subject site, we have concluded that the proposed visitor parking rate can be supported and will further encourage the use of sustainable travel alternatives. Providing excess visitor parking would further enable automobile usage, contrary to City's own policies and city-building objectives. By providing 0.10 spaces per unit, an appropriate balance will be established between the need to supply parking for visitors who will arrive using a vehicle and the desire to encourage transit and active transportation travel.

8 BICYCLE PARKING

The proposed short-term and long-term bicycle parking was evaluated against the minimum requirements in the City of Burlington Zoning By-law 2020. Subsection 2.26.10 outlines the by-law bicycle parking requirements. No requirements are specified for residential uses. Retail land uses are required to provide bicycle parking at a rate of 2 spaces + 1 space per 1000 m^2 GFA. **Table 28** outlines the by-law bicycle parking requirements.

Table 28: Bicycle Parking Requirements – By-law 2020

Land Use	By-law Parking Rate	GFA	Spaces Required
Commercial	2 + 1 per 1000 m^2 GFA	707.1 m^2	3
Total Bicycle Parking Spaces Required			**3**

The parking standards review recommends bicycle parking rates, including a new requirement for residential bicycle parking. The bicycle parking requirements are detailed in **Table 29**.

Table 29: Recommended Bicycle Parking Rates for Intensification Areas

Land Use	Short-Term Rate	Long-Term Rate	Short-Term Parking Recommended	Long-Term Parking Recommended
Residential	0.05 spaces per unit	0.5 spaces per unit	16	155
Retail	3 + 1 spaces per 1000 m^2 GFA	2 + 1 spaces per 1000 m^2 GFA	4	3
Total number of Bicycle Parking Spaces Recommended			20	158
Proposed number of Bicycle Parking Spaces Provided			24	156

The proposed development will provide 180 bicycle parking spaces on site, 24 and 156 short-term and long-term bicycle parking spaces respectively. This supply is in line with the recommended bicycle parking rates for intensification areas and significantly exceeding the requirements of By-law 2020. The short-term spaces will be available for both residential and commercial users.

9 LOADING AND SIGHT LINE ANALYSIS

Under City of Burlington Zoning By-law 2020, Subsection 2.25.3 requires at least one off-street loading space to be provided for every principal building. **Appendix I** contains vehicle maneuvering diagrams for the loading space. A swept path analysis was conducted, confirming the functionality of the proposed loading layout. In addition, a sight line analysis, provided in **Appendix J**, was undertaken to confirm that vehicles exiting the site have sufficient visibility given the geometric constraints, building design and the design speed of Lakeshore Road.

10 TRANSPORTATION DEMAND MANAGEMENT

The City's Official Plan promotes transit-oriented land use planning in order to reduce traffic congestion and parking demand. Transportation Demand Management (TDM) strategies offer innovative approaches that reduce parking demand and encourage the use of sustainable transportation modes. LEA recommends the adoption of the following TDM initiatives, as indicated in **Table 30**.

Table 30: Recommended TDM Measures

Recommended TDM Measure	Benefits
Bicycle Parking	• Increases the viability and convenience of cycling as a means of transportation
Transit Pass and Route Information	• Increase the convenience of using transit. • Introduce transit as a travel alternative to residents who do not currently use these services
On-Street Parking Restrictions	• Eliminate potential parking spillover on to adjacent residential streets and reduce resident vehicle ownership
Unbundled Parking	• Will avoid penalizing households without a vehicle by reducing the cost of home ownership • Eliminates the sunk cost associated with parking space ownership that encourages driving
Car-share Facilities	• Increases the convenience of living without a personal vehicle by enabling occasional discretionary auto trips

Bicycle Parking

In creating an environment that supports cycling activity, the proposed development will include 16 short- and 160 long-term bicycle parking spaces. The long-term bicycle parking spaces are reserved for residential use. Bicycle parking is located indoors, which will prevent the chances of bicycle theft. The provision of bicycle parking will enhance the viability of cycling as an alternative mode of transportation.

Transit Pass and Route Information

It is recommended that Presto Cards be provided for incoming residents of the proposed development. Pre-loaded Presto Cards will incentivize residents to continue or increase their use of transit services such as Burlington Transit and GO. In addition, it is recommended that a pamphlet detailing existing transit services be provided to all incoming residents to increase awareness. Furthermore, a display board should be placed in the condominium lobby with real-time transit information.

On-Street Parking Restrictions

It is proposed that future residents of the proposed development be excluded from obtain a residential parking permit on adjacent local streets. This will help alleviate any concerns regarding potential parking demand spillovers and will further encourage the use of more sustainable modes of transportation. It is recommended that this measure be included within the condominium agreement so that residents are made aware in advance of purchasing a unit that parking will be confined to the spaces available in the underground lot.

Unbundled Parking

While it is a common to incorporate the price of parking spaces into the rental or purchase of an dwelling unit, this can lead to the oversupply of residential parking. It is recognized that not every tenant will own vehicles, particularly households with one or two members. The proposed development will contain 172 one-bedroom units, representing 56% of all dwelling units. It is likely that not every tenant of the one-bedroom units will own a vehicle. By unbundling the parking, these tenants can purchase a unit at reduced cost and will not be paying the sunk cost of parking space ownership that further enables automobile usage.

Car-share Spaces

Car-sharing is an effective approach for reducing vehicle ownership in areas where multi-modal transportation alternatives are available. The Burlington City-Wide Parking Standards Report follows the City of Toronto car-share parking reduction recommendations, as shown in **Table 31**. The proposed development contains 310 residential units, which suggests that the development can implement up to 5 car-share spaces. This would allow for the reduction of up to 17 regular parking spaces. To encourage the use of car-sharing vehicles, it is recommended that the building management subsidize the cost of a car-share membership for residents.

Table 31: Car-share Parking Reduction Recommendations

Car-share Parking Reduction Recommendation		
Size of Development – (number of Residential Units)	**Maximum Allowable Reduction**	**Car-share Spaces Required to Achieve Reduction**
Less than 30	1	1
30-44	2	1
45-59	3	1
60-74	4	1
75-89	5	2
90-104	6	2
105-119	7	2
120-134	8	2
135-194	9	3
195-254	13	4
255-314	17	5
315-276	21	6
375+	25	7

11 CONCLUSIONS

- LEA Consulting Limited (LEA) was retained by Core FSC Lakeshore LP to prepare a transportation impact study (TIS) for a proposed mixed-use development located at 2100 Lakeshore Road in the City of Burlington, Ontario. The proposed development is a 27-storey building replacing five existing buildings and surface parking. The proposed development will contain 310 residential units, as well as 707.1 m^2 of retail GFA (at grade).

- Analysis results for the study area indicate that the signalized and unsignalized intersections are operating overall at acceptable levels of service during the weekday AM and PM peak hours. To provide additional calibration for PM peak hour volumes, an analysis modelling Lakeshore Road westbound lanes with reduced capacity was conducted. The results indicate that while westbound volumes along Lakeshore experience queuing constraints, the transportation network continues to operate with acceptable levels of delay and has available capacity during the peak hour.

- The future background capacity analysis shows similar levels of service as the existing conditions analysis, with the sensitivity analysis identifying some additional constraints to the westbound Lakeshore Road movements.

- Under future total traffic conditions, all intersections and movements are expected to operate at similar levels of service as in the future background conditions. The proposed site access, with a northbound right out only, at Lakeshore Road can effectively accommodate site traffic. There is expected to be capacity within the transportation network to accommodate the proposed development site trips, expected to be 85 and 100 peak hour trips in the AM and PM peak hours, respectively.

- The proposed development will provide 332 physical vehicle parking spaces on site, with 302 residential (298 spaces + 4 car-share) and 30 visitor spaces allocated. No parking will be provided for the retail component. Incorporating the equivalent effective parking spaces of the car-share (4 spaces for each car-share spaces), the zoning provision on site is 344 parking spaces. The proposed residential parking rate of 1.01 spaces per unit (1.00 excluding small car spaces) is in line with the rates recommended by the City-Wide Parking Standards Review. A parking justification was prepared in support of the proposed parking rate, consisting of a literature review, policy review, and supporting facilities assessment. A visitor parking survey was also conducted at adjacent residential buildings, confirming that the proposed visitor parking rate of 0.10 spaces per unit is considered to be appropriate for the building.

- The proposed development will provide 180 bicycle parking spaces, with 24 and 156 allocated for short and long-term parking respectively. The proposed bicycle parking supply is in line with the rates recommended by the City-Wide Parking Standards Review.

- A swept path analysis was conducted, confirming the functionality of the proposed parking and loading layout. A sight line analysis was also conducted, confirming that a sufficient sight line exists for northbound right traffic exiting the site.

- A Transportation Demand Management (TDM) has been prepared, detailing a number of initiatives that will be undertaken to reduce automobile travel demand: secure bicycle parking, complimentary transit passes and route information, on-street parking restrictions for residents, unbundled parking, and car-share facilities.

APPENDIX A

Terms of Reference

LEA Consulting Ltd.
425 University Avenue, Suite 400
Burlington, ON, M5G 1T6 Canada
T | 905 470 0015 F | 905 470 0030

12 December 2018 Our Ref.: 19275

Kaylan Edgcumbe
Manager, Transportation Planning & Parking
City of Burlington
426 Brant Street, PO Box 5013
Burlington, ON L7R 3Z6

Subject: Terms of Reference – Transportation Impact Study for 2100 Lakeshore Road, City of Burlington, Ontario

LEA Consulting Ltd. (LEA) has prepared the following letter outlining our proposed Terms of Reference for a Transportation Impact Study (TIS) for your review and approval. The TIS will be conducted for the proposed mixed-use development at 2100 Lakeshore Road, Burlington, Ontario. **Figure 1** shows the general study area with the subject site indicated in blue and the existing intersections in red.



Figure 1: Subject Site Location (Source: Google Maps)

1.0 EXISTING CONDITIONS

1.1 Proposed Development

A 26-story mixed use condominium is proposed for the subject site, containing a total of 260 residential units. In addition, a total of 1,020 sq. m. of retail GFA is proposed. The proposed parking supply has not yet been determined, as it is subject to discussion with City staff.

1.2 Study Area

The study area for the TIS will include the following intersections:

- Old Lakeshore Road and Lakeshore Road (unsignalized);
- Lakeshore Road and Martha Street (unsignalized);
- Lakeshore Road and Pearl Street (signalized);
- Lakeshore Road and Elizabeth Street (signalized);
- Lakeshore Road and Brant Street (signalized);
- Site Access and Lakeshore Road (unsignalized); and
- Site Access and Old Lakeshore Road (unsignalized).

These intersections were selected based on the anticipated direction of site generated trips. The area east of the intersection of Lakeshore Road and Old Lakeshore Road was not included because it is predominantly residential and does not contain any significant trip generators.

1.3 Data Collection

Turning movement counts for the above-noted intersections will be obtained for the weekday AM and PM peak period. LEA will conduct surveys if counts are not available for purchase from the City (or are older than 2 years).

2.0 FUTURE CONDITIONS

2.1 Future Background Growth and Horizon Years

The horizon year for the study will be five (5) years in 2024. LEA proposes to apply an annual growth rate of 1% to all traffic movements within the study area, subject to confirmation from City Staff. LEA will note any road network improvements identified within the study area and account for any traffic diversions associated with these improvements within our analysis. An initial review of the City of Burlington development application database identifies the developments in the study area listed in **Table 1**. City Staff will be consulted to identify any additional background developments which may be applicable.

#	Address of Development	Number of Units / Commercial GFA	Status
1	374 Martha Street	240 Residential Units 423 m^2 Commercial GFA	Approved by LPAT
2	2042-2054 Lakeshore Road	150 Residential Units 130 Hotel Units 2,775 m^2 Commercial GFA	Under Construction
3	2082-2090 James Street	153 Residential Units	Under Review
4	409 Brant Street	227 Residential Units 597 m^2 Commercial GFA	Appealed to LPAT
5	421-431 Brant Street	183 Residential Units 1,327 m^2 Office GFA 966 m^2 Commercial GFA	Approved
6	2030 Caroline Street 510 Elizabeth Street 2025 Maria Street	120 Residential Units 8,860 m^2 Office GFA 2,343 m^2 Commercial GFA	Under Construction

Table 1: Background Developments

Future background growth will be a combination of potential traffic demand from planned and approved developments in the area and the applied corridor growth.

2.2 Future Site Traffic – Trip Generation, Trip Distribution and Trip Assignment

Traffic generated by the proposed development will be calculated using the ITE Trip Generation Manual 10th Edition. Trip distribution will be determined using the 2016 Transportation Tomorrow Survey (TTS), with trip assignment based on the adjacent road connections and surrounding turning restrictions. Future total traffic will be a combination of the future background traffic and the projected site traffic.

3.0 INTERSECTION CAPACITY ANALYSIS

The intersection analysis for the signalized and unsignalized intersections will be undertaken using *Synchro Version 9 software* or later version adhering to analysis methodology outlined in the Highway Capacity Manual 2000. The Synchro traffic analysis software will be configured using the *Halton Region Transportation Impact Study Guidelines*.

This Terms of Reference letter outlines our proposed tasks of the requirements necessary for a TIS of the proposed development. Should you have any questions or comments please contact the undersigned at 905-470-0015 ext. 274 or rkeel@lea.ca.

Sincerely,

LEA CONSULTING LTD.



ROBERT KEEL
JUNIOR TRANSPORTATION PLANNER

cc: Andrew Brown, LEA Consulting Ltd.

From: Lucas, Steve <Steve.Lucas@burlington.ca>
Sent: Monday, December 17, 2018 2:45 PM
To: Robert Keel
Subject: RE: Terms of Reference - 2100 Lakeshore Road

Follow Up Flag: Follow up
Flag Status: Completed

Hello Robert,

Bellow are my comments with regards to this TOR:

Study Area

Please include the following intersections:

- James @ Martha
- Martha @ Pine

Data Collection

Please refrain from collecting TMC's during the summer months when school is not in session. Any counts performed during the summer break (June-August), will not be considered due to the large seasonal variation.

Future Background Growth

Staff agrees with the proposed growth rate of 1%, and the table of background developments has captured all relevant projects.

Parking

For relevant parking rates please refer to our recent *Burlington City-Wide Parking Standards Review* at the following link:
https://burlingtonpublishing.escribemeetings.com/filestream.ashx?DocumentId=14103

TDM

Our reduced parking rates outlined in the link above requires a strong TDM component to support these reductions. Please include a appropriate TDM plan to support this development.

If you have any further comments or concerns, please feel free to contact me.

Thank you,

Steve Lucas
City of Burlington | Transportation Planning Technologist
t: 905.335.7671 ext.7691 | e: steve.lucas@burlington.ca

APPENDIX B

Traffic Volume 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

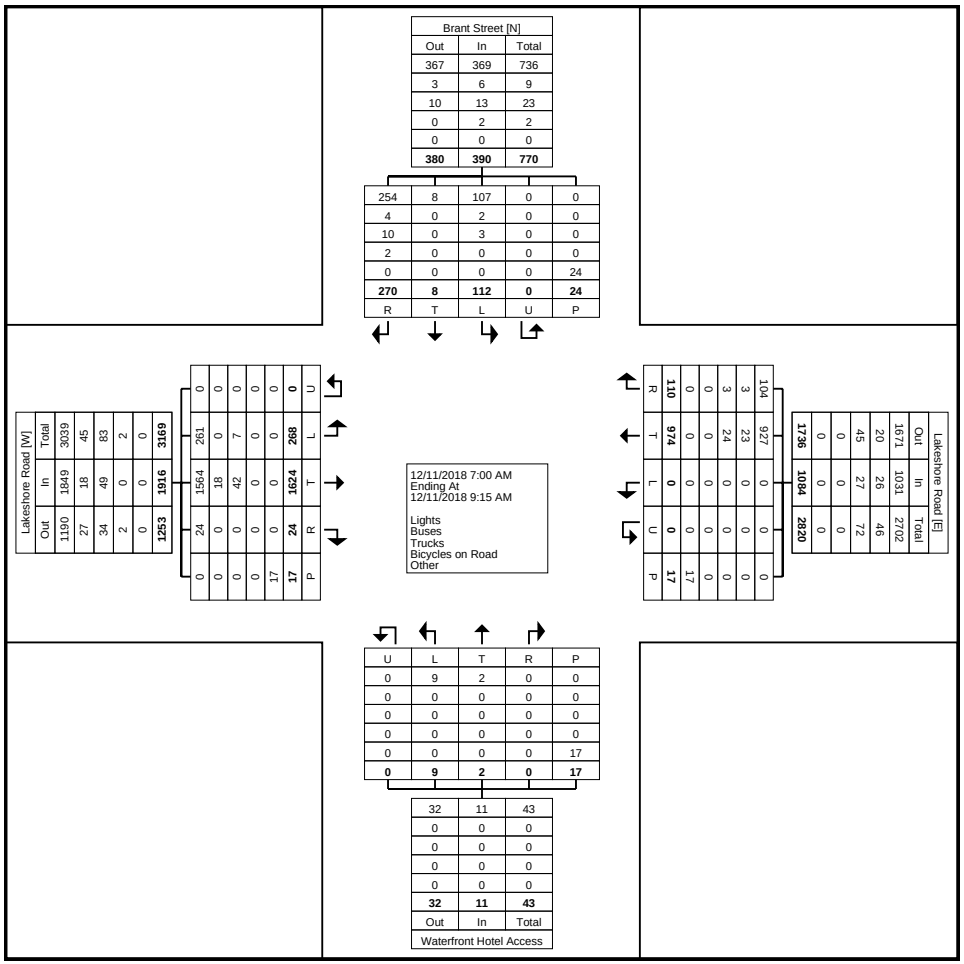
Turning Movement Data

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

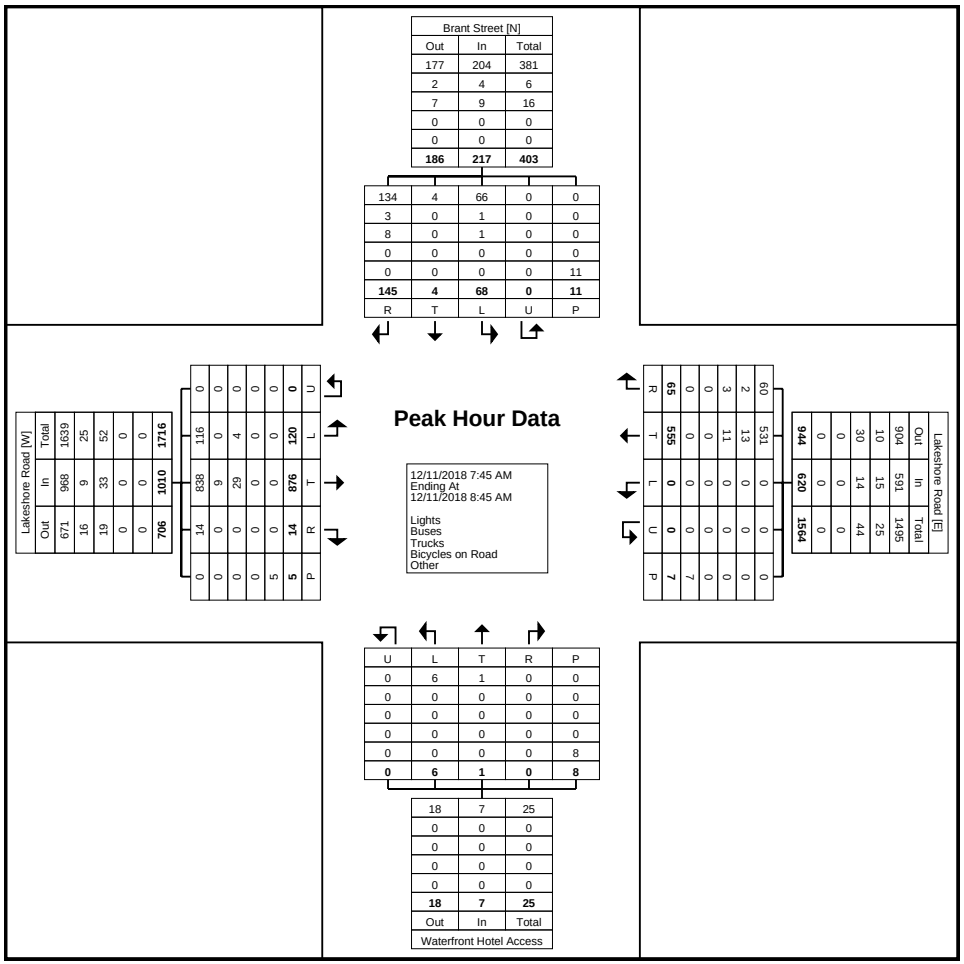
Count Name: 19275_BrantSt&LakeshoreRd-AM
Site Code: 19275
Start Date: 12/11/2018

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

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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

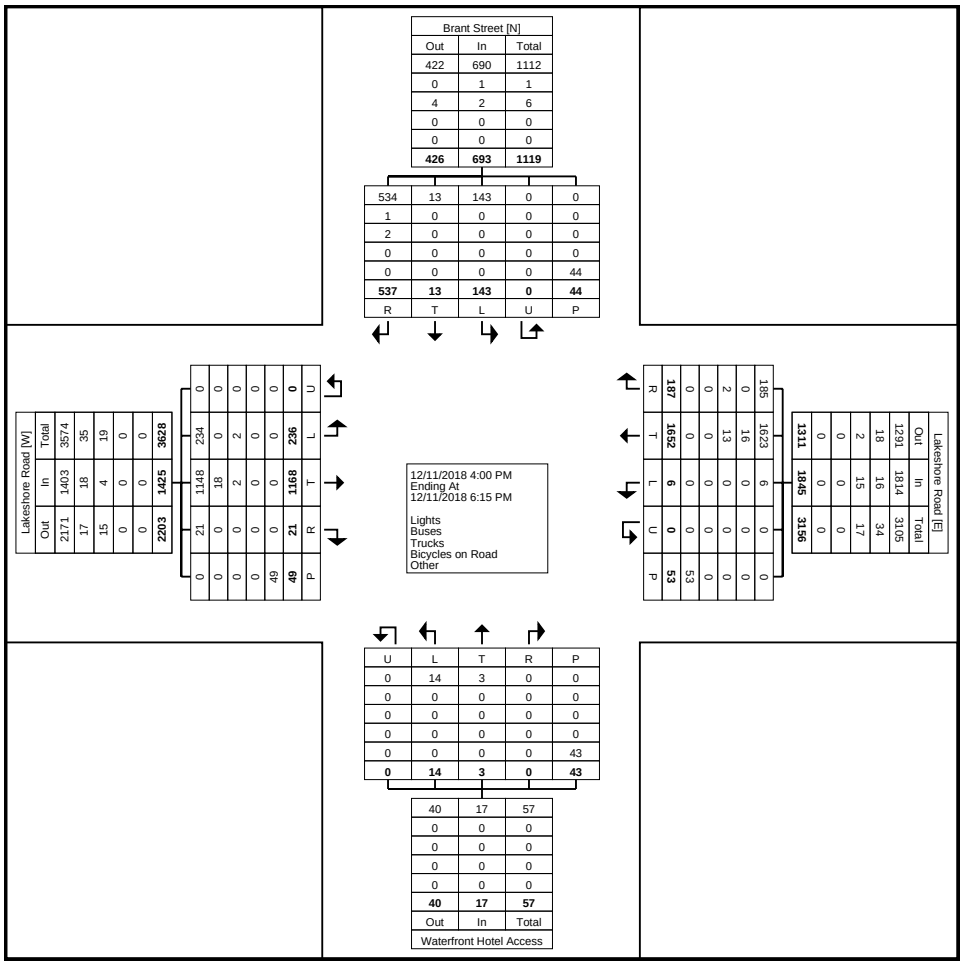
Turning Movement Data

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

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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
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Count Name: 19275_BrantSt&LakeshoreRd-PM
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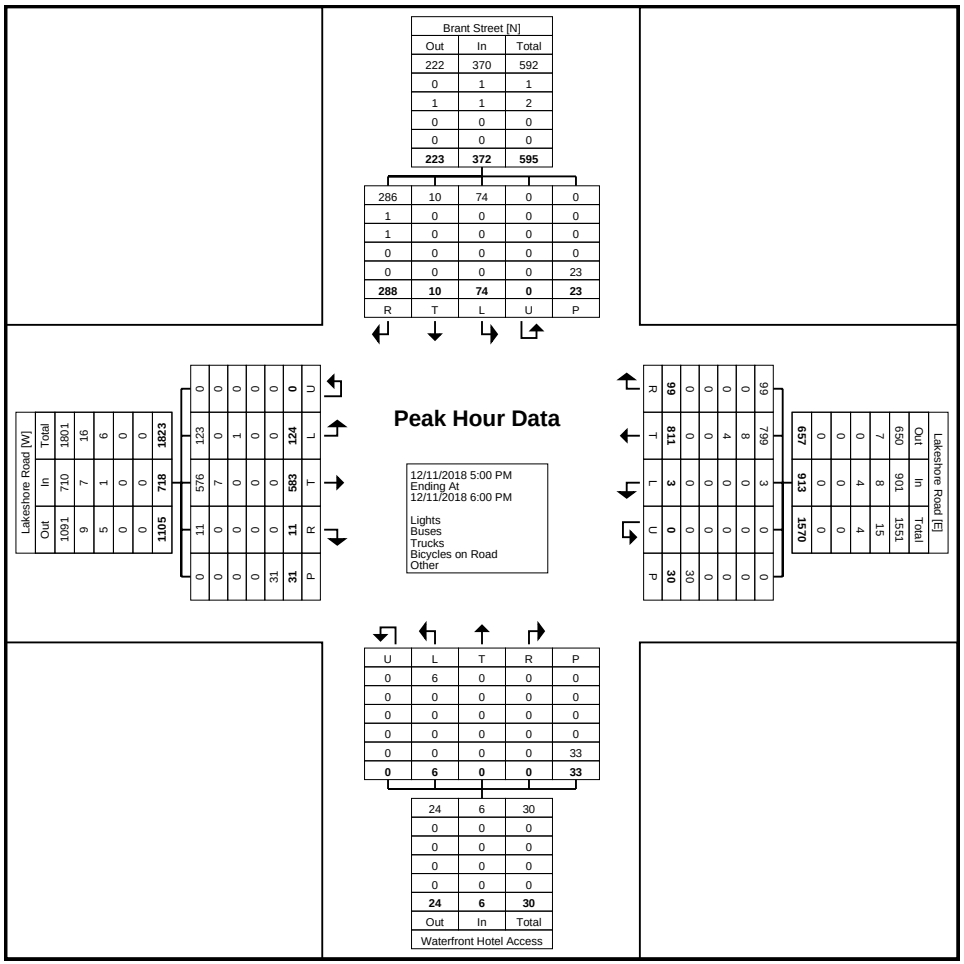
Turning Movement Peak Hour Data (5:00 PM)

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

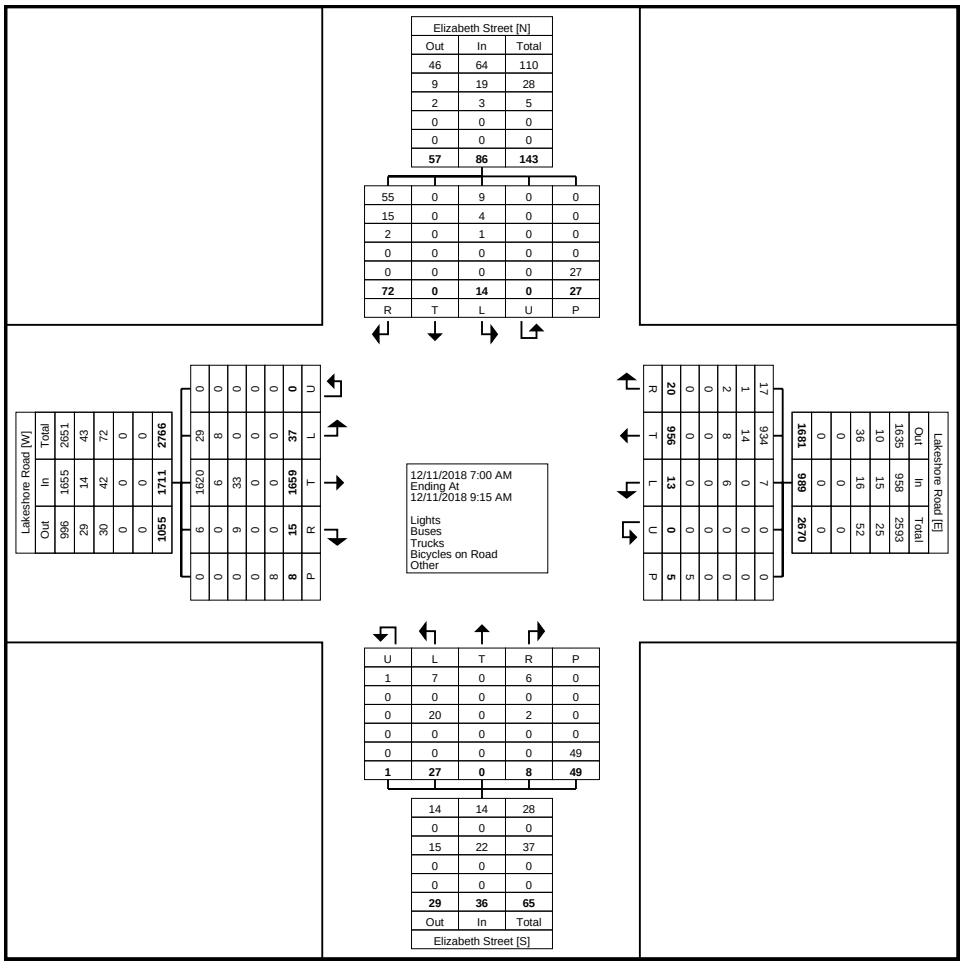
Turning Movement Data

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

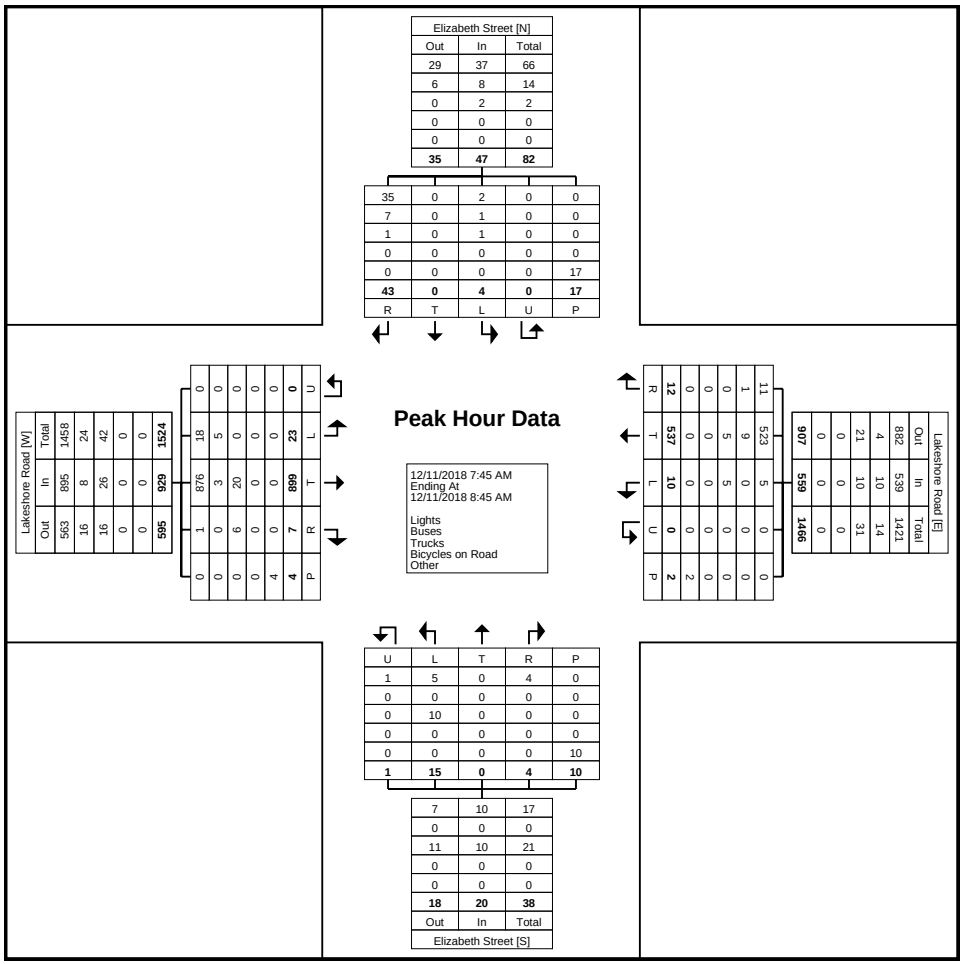
Turning Movement Peak Hour Data (7:45 AM)

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

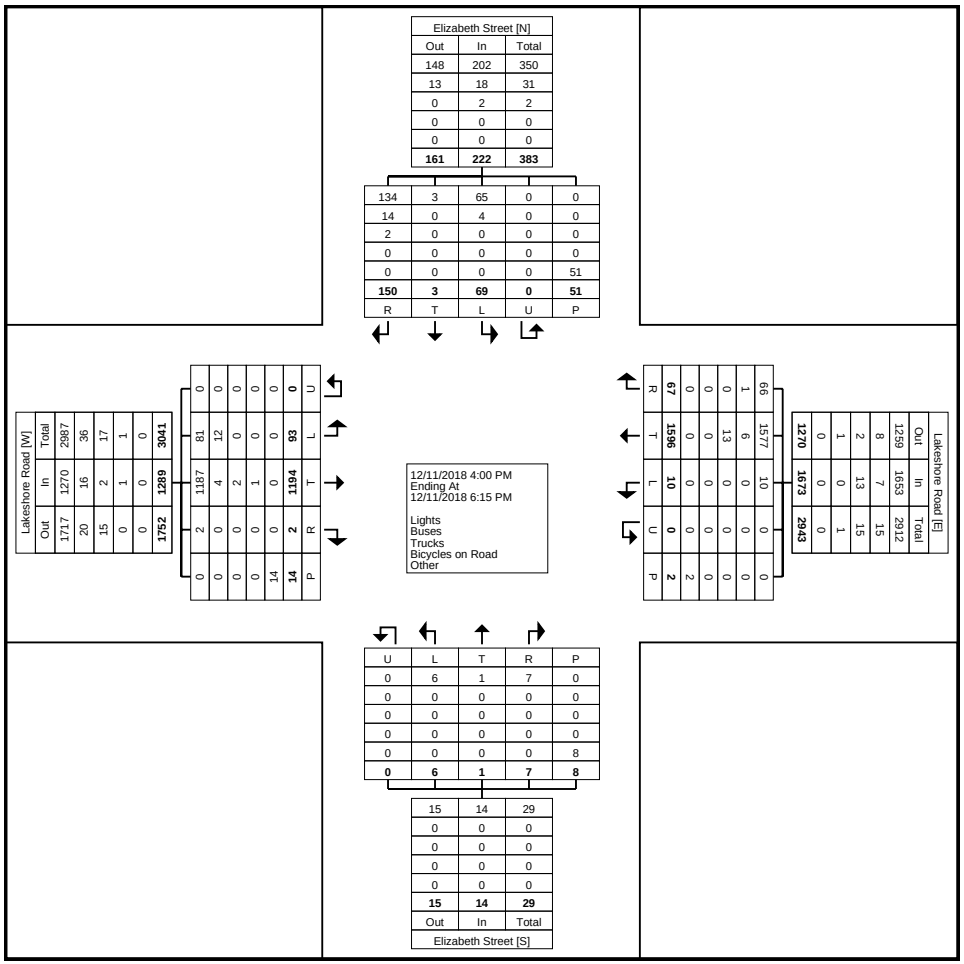
Turning Movement Data

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	-	-

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



Turning Movement Data Plot

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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

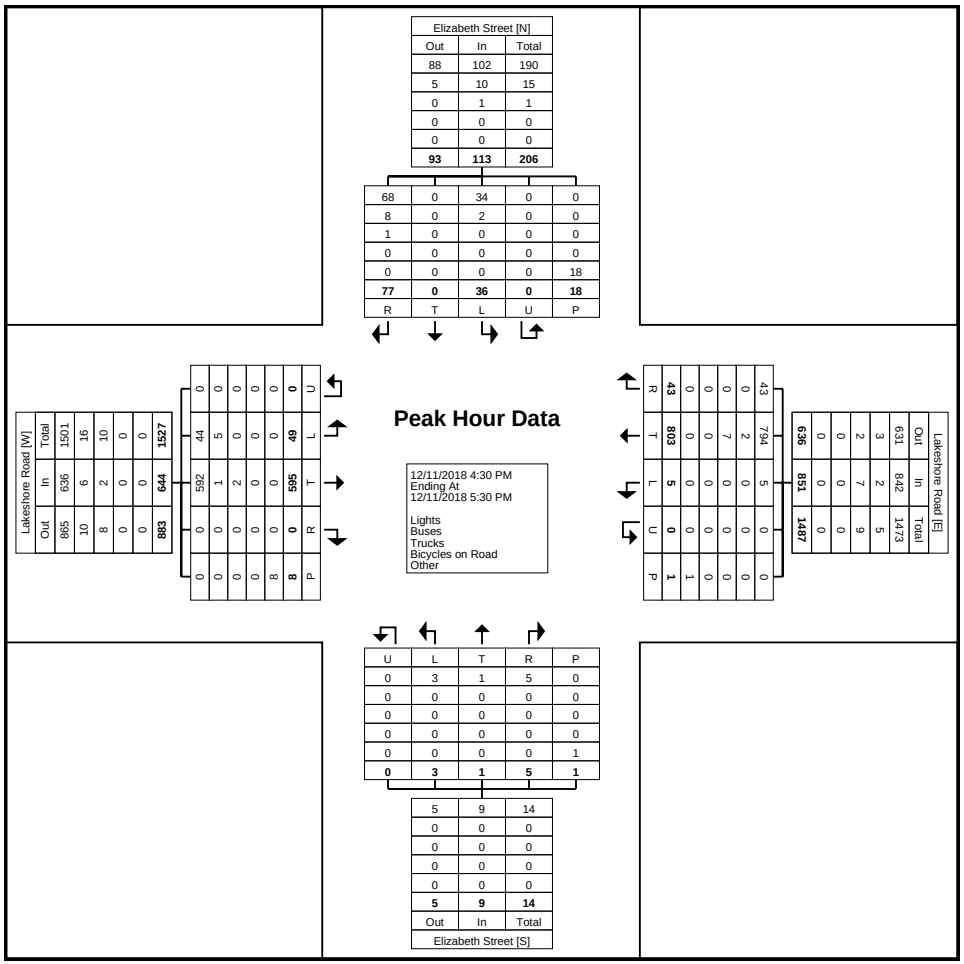
Turning Movement Peak Hour Data (4:30 PM)

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)

LEA CONSULTING LTD

625 Cochrane Drive 9th Floor
Markham, Ontario, L3R 9R9

Project No.: 19275
Location: Pearl St & Lakeshore Rd
Weather: Light Snow
Surveyor(s): Jeff Tang & Susan Cho

File Name : Pearl&Lakeshore-AM
Site Code : 19275028
Start Date : 12/11/2018
Page No : 1

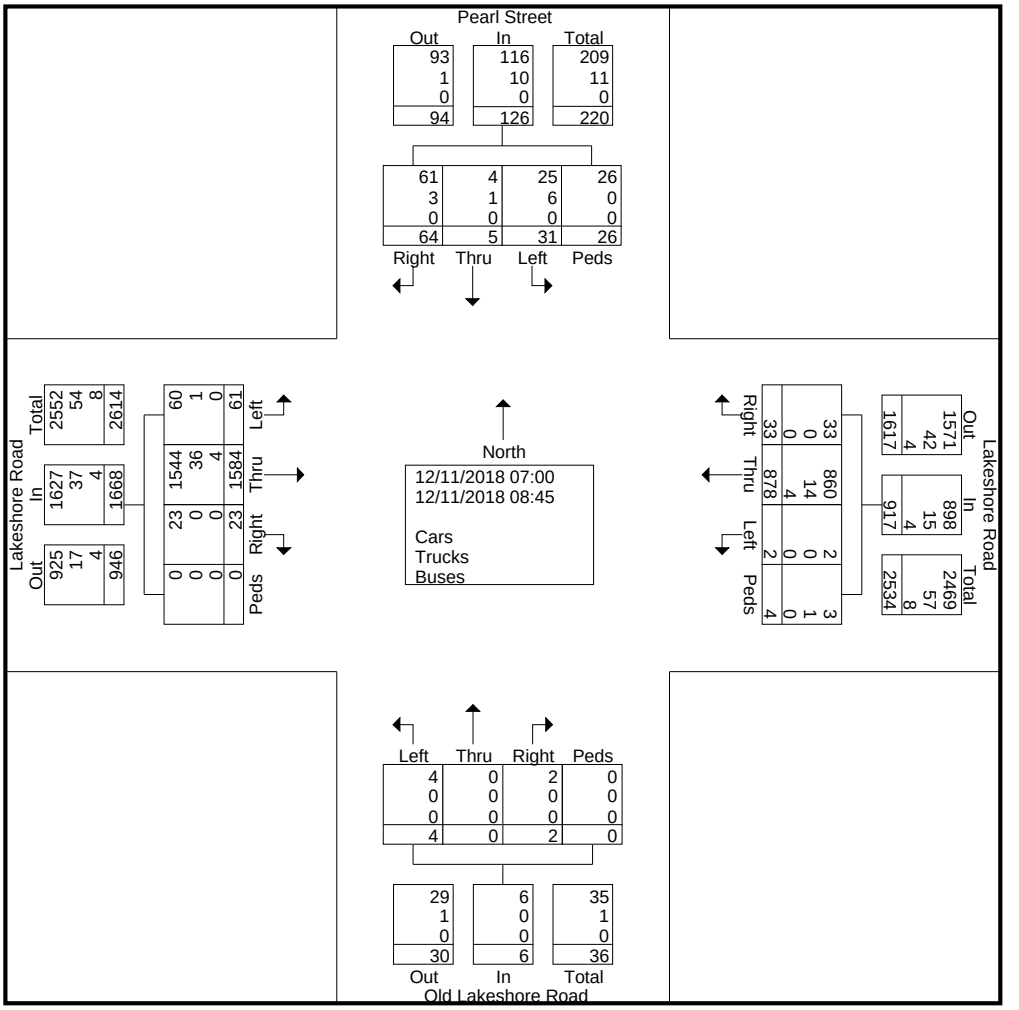
Groups Printed- Cars - Trucks - Buses

	Pearl Street Southbound					Lakeshore Road Westbound					Old Lakeshore Road Northbound					Lakeshore Road Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00	2	0	7	1	10	0	57	4	0	61	0	0	0	0	0	2	153	0	0	155	226
07:15	1	0	5	5	11	0	78	3	2	83	0	0	0	0	0	3	211	0	0	214	308
07:30	2	0	8	4	14	0	109	1	1	111	3	0	0	0	3	3	216	5	0	224	352
07:45	2	1	5	6	14	0	120	1	0	121	0	0	0	0	0	7	237	0	0	244	379
Total	7	1	25	16	49	0	364	9	3	376	3	0	0	0	3	15	817	5	0	837	1265
08:00	1	0	14	2	17	1	102	9	0	112	0	0	1	0	1	4	226	3	0	233	363
08:15	10	1	8	0	19	0	147	4	0	151	1	0	0	0	1	16	220	3	0	239	410
08:30	4	3	9	4	20	0	140	3	0	143	0	0	1	0	1	17	172	5	0	194	358
08:45	9	0	8	4	21	1	125	8	1	135	0	0	0	0	0	9	149	7	0	165	321
Total	24	4	39	10	77	2	514	24	1	541	1	0	2	0	3	46	767	18	0	831	1452
Grand Total	31	5	64	26	126	2	878	33	4	917	4	0	2	0	6	61	1584	23	0	1668	2717
Apprch %	24.6	4	50.8	20.6		0.2	95.7	3.6	0.4		66.7	0	33.3	0		3.7	95	1.4	0		
Total %	1.1	0.2	2.4	1	4.6	0.1	32.3	1.2	0.1	33.8	0.1	0	0.1	0	0.2	2.2	58.3	0.8	0	61.4	
Cars	25	4	61	26	116	2	860	33	3	898	4	0	2	0	6	60	1544	23	0	1627	2647
% Cars	80.6	80	95.3	100	92.1	100	97.9	100	75	97.9	100	0	100	0	100	98.4	97.5	100	0	97.5	97.4
Trucks	6	1	3	0	10	0	14	0	1	15	0	0	0	0	0	1	36	0	0	37	62
% Trucks	19.4	20	4.7	0	7.9	0	1.6	0	25	1.6	0	0	0	0	0	1.6	2.3	0	0	2.2	2.3
Buses	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	4	0	0	4	8
% Buses	0	0	0	0	0	0	0.5	0	0	0.4	0	0	0	0	0	0	0.3	0	0	0.2	0.3

LEA CONSULTING LTD

625 Cochrane Drive 9th Floor
Markham, Ontario, L3R 9R9

File Name : Pearl&Lakeshore-AM
Site Code : 19275028
Start Date : 12/11/2018
Page No : 2

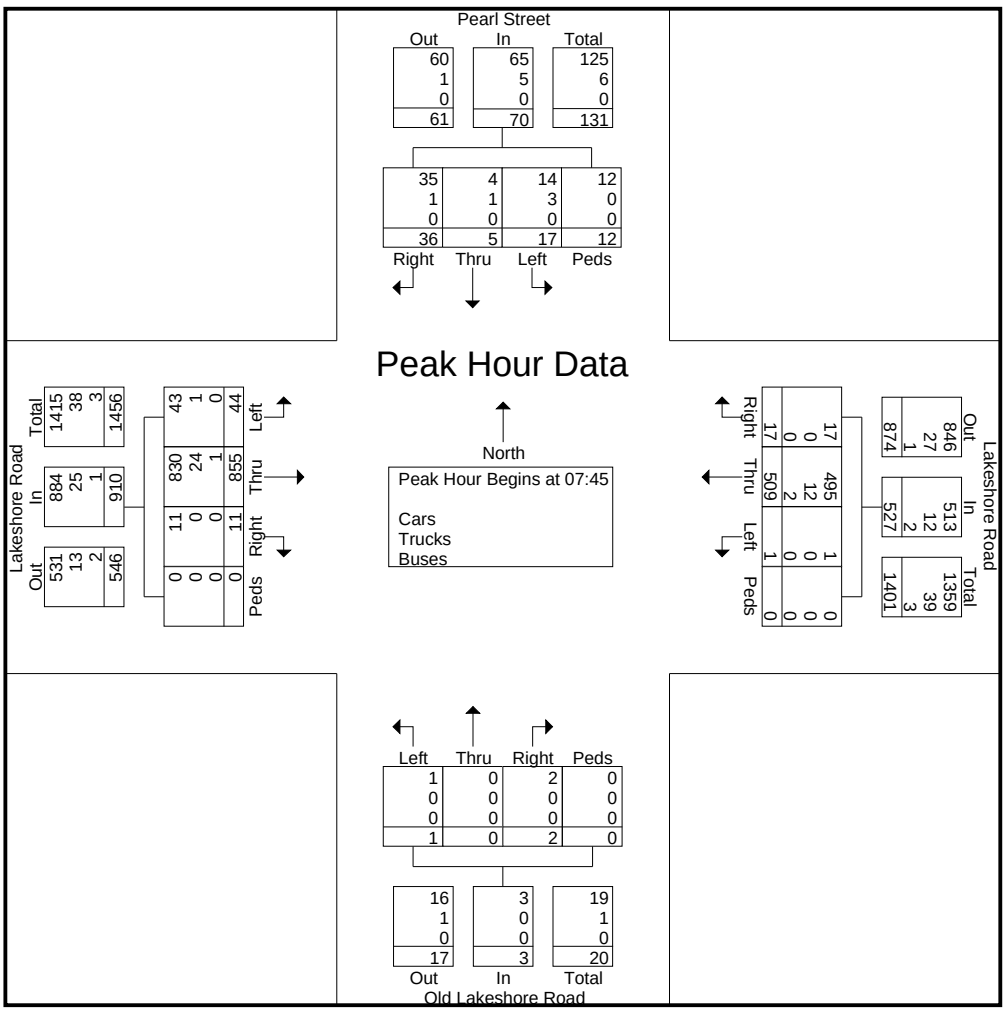


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625 Cochrane Drive 9th Floor
Markham, Ontario, L3R 9R9

File Name : Pearl&Lakeshore-AM
Site Code : 19275028
Start Date : 12/11/2018
Page No : 3

	Pearl Street Southbound					Lakeshore Road Westbound					Old Lakeshore Road Northbound					Lakeshore Road Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45																					
07:45	2	1	5	**6**	14	0	120	1	0	121	0	0	0	0	0	7	**237**	0	0	**244**	379
08:00	1	0	**14**	2	17	**1**	102	**9**	0	112	0	0	**1**	0	**1**	4	226	3	0	233	363
08:15	**10**	1	8	0	19	0	**147**	4	0	**151**	**1**	0	0	0	1	16	220	3	0	239	**410**
08:30	4	**3**	9	4	**20**	0	140	3	0	143	0	0	1	0	1	**17**	172	**5**	0	194	358
Total Volume	17	5	36	12	70	1	509	17	0	527	1	0	2	0	3	44	855	11	0	910	1510
% App. Total	24.3	7.1	51.4	17.1		0.2	96.6	3.2	0		33.3	0	66.7	0		4.8	94	1.2	0		
PHF	.425	.417	.643	.500	.875	.250	.866	.472	.000	.873	.250	.000	.500	.000	.750	.647	.902	.550	.000	.932	.921
Cars	14	4	35	12	65	1	495	17	0	513	1	0	2	0	3	43	830	11	0	884	1465
% Cars	82.4	80.0	97.2	100	92.9	100	97.2	100	0	97.3	100	0	100	0	100	97.7	97.1	100	0	97.1	97.0
Trucks	3	1	1	0	5	0	12	0	0	12	0	0	0	0	0	1	24	0	0	25	42
% Trucks	17.6	20.0	2.8	0	7.1	0	2.4	0	0	2.3	0	0	0	0	0	2.3	2.8	0	0	2.7	2.8
Buses	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	3
% Buses	0	0	0	0	0	0	0.4	0	0	0.4	0	0	0	0	0	0	0.1	0	0	0.1	0.2



LEA CONSULTING LTD

625 Cochrane Drive 9th Floor
Markham, Ontario, L3R 9R9

Project No.: 19275
Location: Pearl St & Lakeshore Rd
Weather: Light Snow
Surveyor(s): Jeff Tang & Susan Cho

File Name : Pearl&Lakeshore-PM
Site Code : 19275028
Start Date : 12/11/2018
Page No : 1

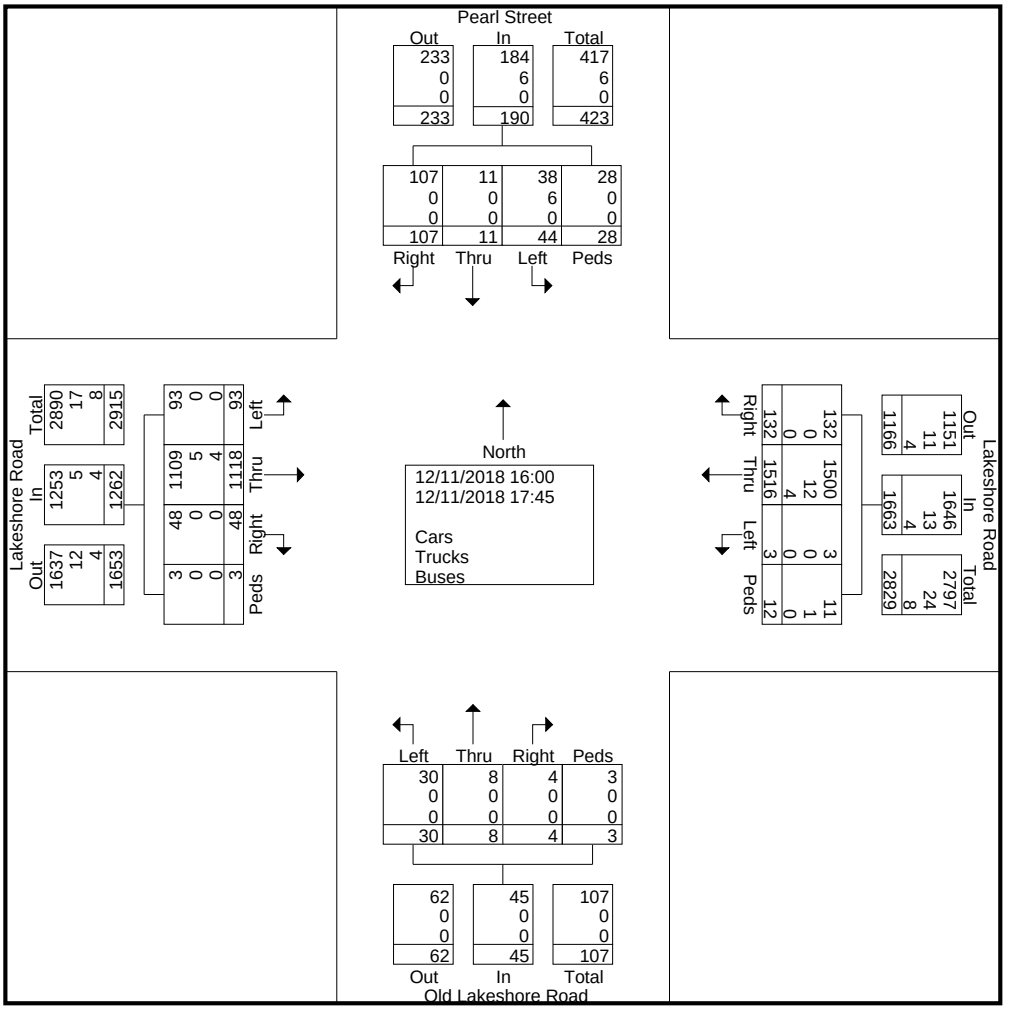
Groups Printed- Cars - Trucks - Buses

	Pearl Street Southbound					Lakeshore Road Westbound					Old Lakeshore Road Northbound					Lakeshore Road Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
16:00	5	1	11	7	24	0	161	6	0	167	5	1	1	1	8	6	131	1	0	138	337
16:15	4	2	14	3	23	0	202	9	2	213	7	1	0	1	9	8	164	7	1	180	425
16:30	7	0	14	7	28	0	210	7	1	218	5	0	0	0	5	6	123	4	0	133	384
16:45	6	1	10	1	18	0	215	10	1	226	4	0	0	0	4	11	158	4	1	174	422
Total	22	4	49	18	93	0	788	32	4	824	21	2	1	2	26	31	576	16	2	625	1568
17:00	4	3	7	2	16	1	203	8	2	214	4	0	0	0	4	9	123	3	0	135	369
17:15	6	2	18	5	31	0	200	8	2	210	2	5	1	0	8	17	156	5	0	178	427
17:30	2	2	19	3	26	2	194	7	0	203	3	1	1	1	6	14	122	9	0	145	380
17:45	10	0	14	0	24	0	131	77	4	212	0	0	1	0	1	22	141	15	1	179	416
Total	22	7	58	10	97	3	728	100	8	839	9	6	3	1	19	62	542	32	1	637	1592
Grand Total	44	11	107	28	190	3	1516	132	12	1663	30	8	4	3	45	93	1118	48	3	1262	3160
Apprch %	23.2	5.8	56.3	14.7		0.2	91.2	7.9	0.7		66.7	17.8	8.9	6.7		7.4	88.6	3.8	0.2		
Total %	1.4	0.3	3.4	0.9	6	0.1	48	4.2	0.4	52.6	0.9	0.3	0.1	0.1	1.4	2.9	35.4	1.5	0.1	39.9	
Cars	38	11	107	28	184	3	1500	132	11	1646	30	8	4	3	45	93	1109	48	3	1253	3128
% Cars	86.4	100	100	100	96.8	100	98.9	100	91.7	99	100	100	100	100	100	100	99.2	100	100	99.3	99
Trucks	6	0	0	0	6	0	12	0	1	13	0	0	0	0	0	0	5	0	0	5	24
% Trucks	13.6	0	0	0	3.2	0	0.8	0	8.3	0.8	0	0	0	0	0	0	0.4	0	0	0.4	0.8
Buses	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	4	0	0	4	8
% Buses	0	0	0	0	0	0	0.3	0	0	0.2	0	0	0	0	0	0	0.4	0	0	0.3	0.3

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625 Cochrane Drive 9th Floor
Markham, Ontario, L3R 9R9

File Name : Pearl&Lakeshore-PM
Site Code : 19275028
Start Date : 12/11/2018
Page No : 2

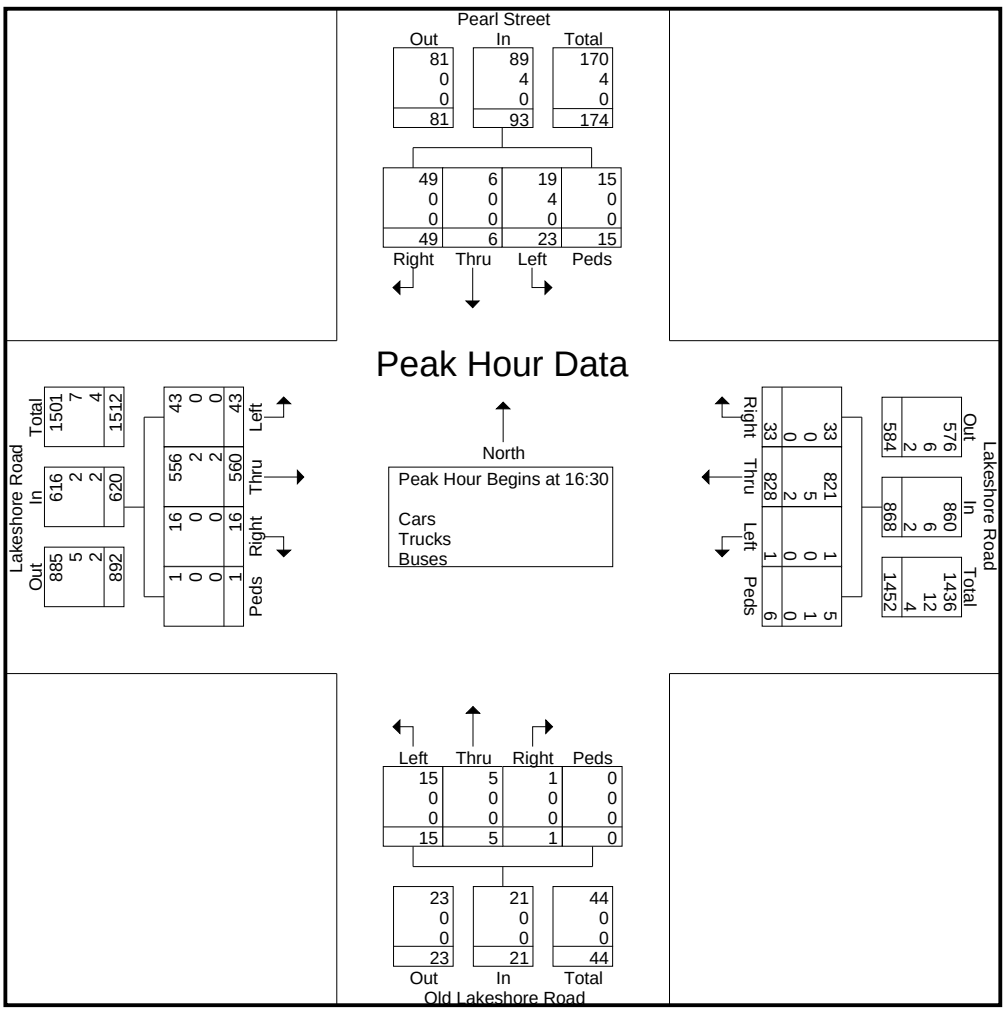


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625 Cochrane Drive 9th Floor
Markham, Ontario, L3R 9R9

File Name : Pearl&Lakeshore-PM
Site Code : 19275028
Start Date : 12/11/2018
Page No : 3

	Pearl Street Southbound					Lakeshore Road Westbound					Old Lakeshore Road Northbound					Lakeshore Road Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:30																					
16:30	**7**	0	14	**7**	28	0	210	7	1	218	**5**	0	0	0	5	6	123	4	0	133	384
16:45	6	1	10	1	18	0	**215**	**10**	1	**226**	4	0	0	0	4	11	**158**	4	**1**	174	422
17:00	4	**3**	7	2	16	**1**	203	8	**2**	214	4	0	0	0	4	9	123	3	0	135	369
17:15	6	2	**18**	5	**31**	0	200	8	2	210	2	**5**	**1**	0	**8**	**17**	156	**5**	0	**178**	**427**
Total Volume	23	6	49	15	93	1	828	33	6	868	15	5	1	0	21	43	560	16	1	620	1602
% App. Total	24.7	6.5	52.7	16.1		0.1	95.4	3.8	0.7		71.4	23.8	4.8	0		6.9	90.3	2.6	0.2		
PHF	.821	.500	.681	.536	.750	.250	.963	.825	.750	.960	.750	.250	.250	.000	.656	.632	.886	.800	.250	.871	.938
Cars	19	6	49	15	89	1	821	33	5	860	15	5	1	0	21	43	556	16	1	616	1586
% Cars	82.6	100	100	100	95.7	100	99.2	100	83.3	99.1	100	100	100	0	100	100	99.3	100	100	99.4	99.0
Trucks	4	0	0	0	4	0	5	0	1	6	0	0	0	0	0	0	2	0	0	2	12
% Trucks	17.4	0	0	0	4.3	0	0.6	0	16.7	0.7	0	0	0	0	0	0	0.4	0	0	0.3	0.7
Buses	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	4
% Buses	0	0	0	0	0	0	0.2	0	0	0.2	0	0	0	0	0	0	0.4	0	0	0.3	0.2



LEA CONSULTING LTD

625 Cochrane Drive 9th Floor
Markham, Ontario, L3R 9R9

Project No.: 19275
Location: Martha St & Lakeshore Rd
Weather: Light Snow
Surveyor(s): Natalie Law

File Name : Martha&Lakeshore-PM
Site Code : 19275022
Start Date : 12/11/2018
Page No : 1

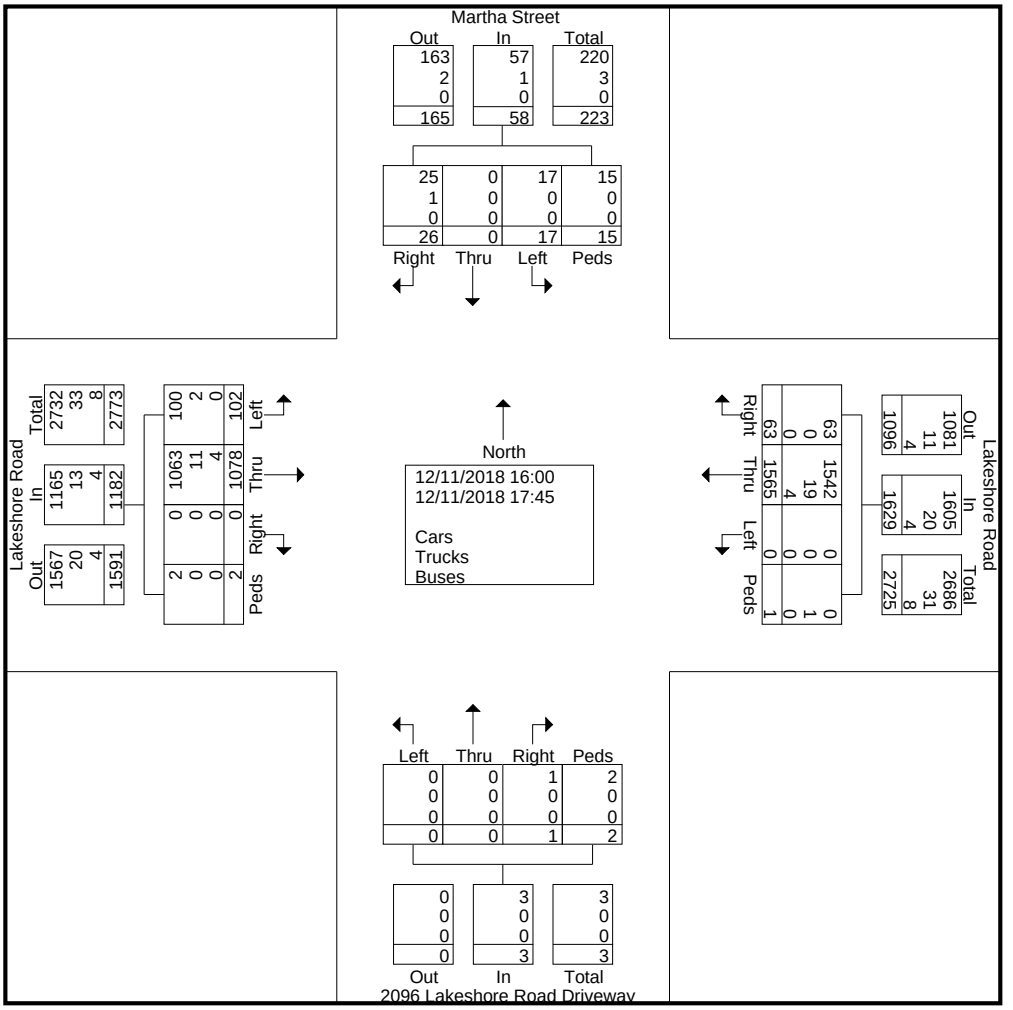
Groups Printed- Cars - Trucks - Buses

	Martha Street Southbound					Lakeshore Road Westbound					2096 Lakeshore Road Driveway Northbound					Lakeshore Road Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
16:00	2	0	5	4	11	0	165	7	0	172	0	0	0	1	1	13	129	0	0	142	326
16:15	2	0	9	6	17	0	201	8	0	209	0	0	0	0	0	22	154	0	1	177	403
16:30	1	0	1	2	4	0	203	13	0	216	0	0	0	0	0	13	117	0	0	130	350
16:45	3	0	4	1	8	0	213	5	1	219	0	0	0	1	1	11	152	0	0	163	391
Total	8	0	19	13	40	0	782	33	1	816	0	0	0	2	2	59	552	0	1	612	1470
17:00	4	0	1	0	5	0	215	13	0	228	0	0	0	0	0	6	126	0	1	133	366
17:15	2	0	1	1	4	0	189	10	0	199	0	0	1	0	1	12	147	0	0	159	363
17:30	1	0	2	1	4	0	186	3	0	189	0	0	0	0	0	16	113	0	0	129	322
17:45	2	0	3	0	5	0	193	4	0	197	0	0	0	0	0	9	140	0	0	149	351
Total	9	0	7	2	18	0	783	30	0	813	0	0	1	0	1	43	526	0	1	570	1402
Grand Total	17	0	26	15	58	0	1565	63	1	1629	0	0	1	2	3	102	1078	0	2	1182	2872
Apprch %	29.3	0	44.8	25.9		0	96.1	3.9	0.1		0	0	33.3	66.7		8.6	91.2	0	0.2		
Total %	0.6	0	0.9	0.5	2	0	54.5	2.2	0	56.7	0	0	0	0.1	0.1	3.6	37.5	0	0.1	41.2	
Cars	17	0	25	15	57	0	1542	63	0	1605	0	0	1	2	3	100	1063	0	2	1165	2830
% Cars	100	0	96.2	100	98.3	0	98.5	100	0	98.5	0	0	100	100	100	98	98.6	0	100	98.6	98.5
Trucks	0	0	1	0	1	0	19	0	1	20	0	0	0	0	0	2	11	0	0	13	34
% Trucks	0	0	3.8	0	1.7	0	1.2	0	100	1.2	0	0	0	0	0	2	1	0	0	1.1	1.2
Buses	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	4	0	0	4	8
% Buses	0	0	0	0	0	0	0.3	0	0	0.2	0	0	0	0	0	0	0.4	0	0	0.3	0.3

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625 Cochrane Drive 9th Floor
Markham, Ontario, L3R 9R9

File Name : Martha&Lakeshore-PM
Site Code : 19275022
Start Date : 12/11/2018
Page No : 2

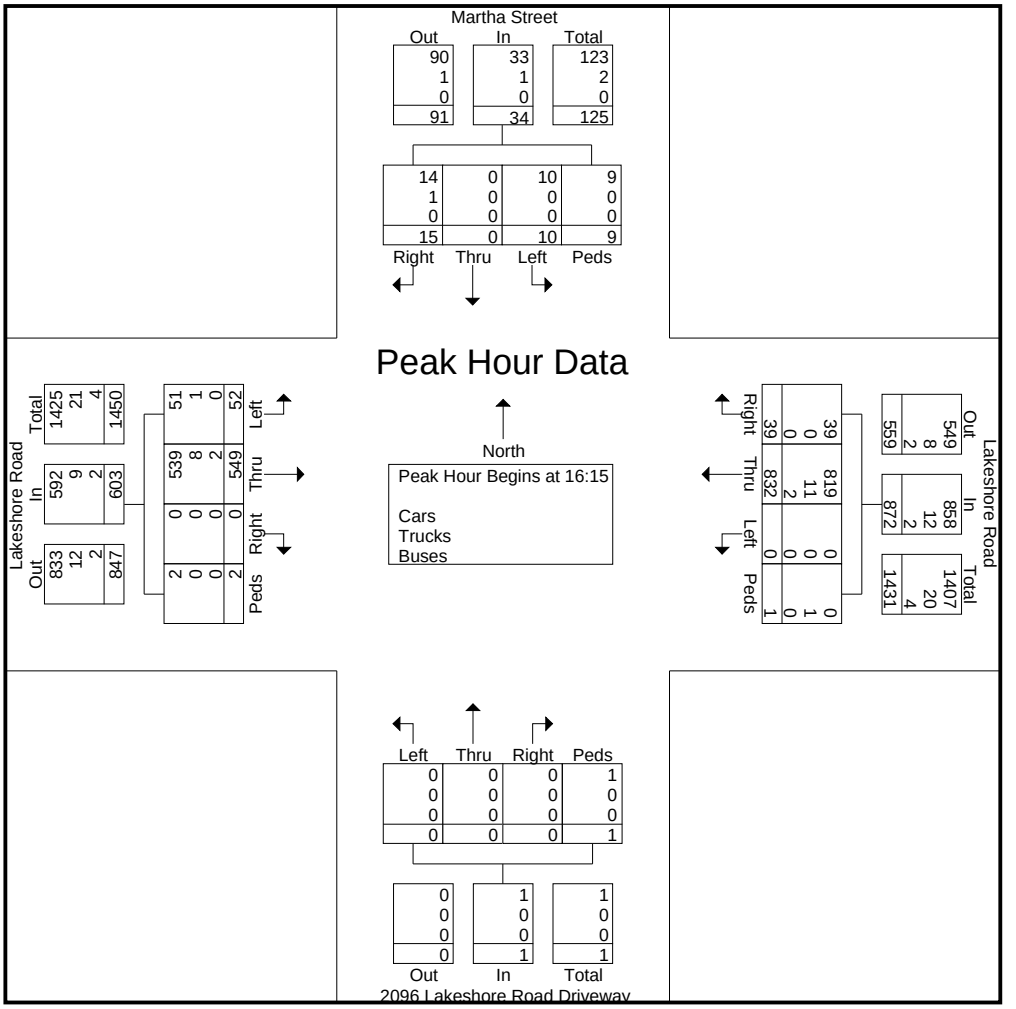


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625 Cochrane Drive 9th Floor
Markham, Ontario, L3R 9R9

File Name : Martha&Lakeshore-PM
Site Code : 19275022
Start Date : 12/11/2018
Page No : 3

	Martha Street Southbound					Lakeshore Road Westbound					2096 Lakeshore Road Driveway Northbound					Lakeshore Road Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:15																					
16:15	2	0	**9**	**6**	**17**	0	201	8	0	209	0	0	0	0	0	**22**	**154**	0	**1**	**177**	**403**
16:30	1	0	1	2	4	0	203	**13**	0	216	0	0	0	0	0	13	117	0	0	130	350
16:45	3	0	4	1	8	0	213	5	**1**	219	0	0	0	**1**	**1**	11	152	0	0	163	391
17:00	**4**	0	1	0	5	0	**215**	13	0	**228**	0	0	0	0	0	6	126	0	1	133	366
Total Volume	10	0	15	9	34	0	832	39	1	872	0	0	0	1	1	52	549	0	2	603	1510
% App. Total	29.4	0	44.1	26.5		0	95.4	4.5	0.1		0	0	0	100		8.6	91	0	0.3		
PHF	.625	.000	.417	.375	.500	.000	.967	.750	.250	.956	.000	.000	.000	.250	.250	.591	.891	.000	.500	.852	.937
Cars	10	0	14	9	33	0	819	39	0	858	0	0	0	1	1	51	539	0	2	592	1484
% Cars	100	0	93.3	100	97.1	0	98.4	100	0	98.4	0	0	0	100	100	98.1	98.2	0	100	98.2	98.3
Trucks	0	0	1	0	1	0	11	0	1	12	0	0	0	0	0	1	8	0	0	9	22
% Trucks	0	0	6.7	0	2.9	0	1.3	0	100	1.4	0	0	0	0	0	1.9	1.5	0	0	1.5	1.5
Buses	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	4
% Buses	0	0	0	0	0	0	0.2	0	0	0.2	0	0	0	0	0	0	0.4	0	0	0.3	0.3



LEA CONSULTING LTD

625 Cochrane Drive 9th Floor
Markham, Ontario, L3R 9R9

Project No.: 19275
Location: Martha St & Lakeshore Rd
Weather: Light Snow
Surveyor(s): Natalie Law

File Name : Martha&Lakeshore-AM
Site Code : 19275022
Start Date : 12/11/2018
Page No : 1

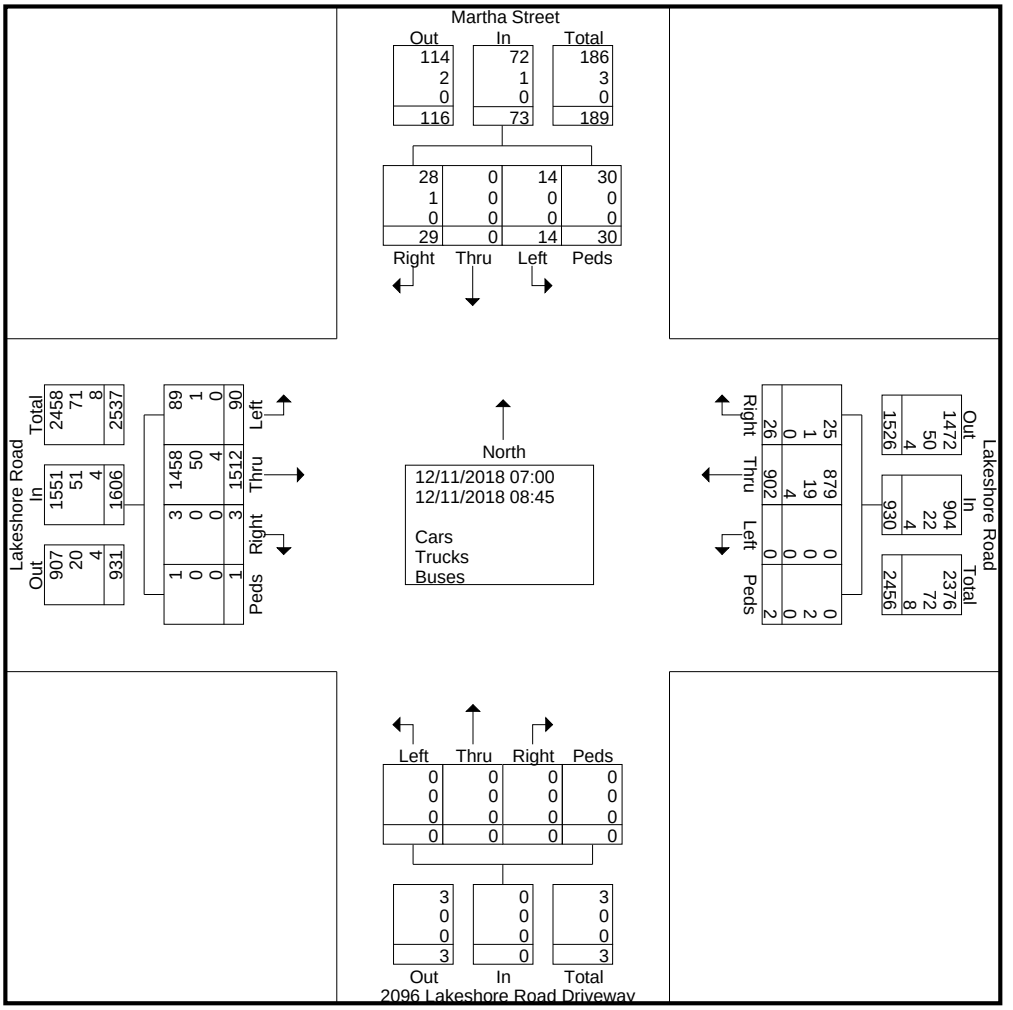
Groups Printed- Cars - Trucks - Buses

	Martha Street Southbound					Lakeshore Road Westbound					2096 Lakeshore Road Driveway Northbound					Lakeshore Road Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00	0	0	2	0	2	0	62	0	1	63	0	0	0	0	0	6	145	0	0	151	216
07:15	3	0	2	3	8	0	80	1	0	81	0	0	0	0	0	7	205	0	0	212	301
07:30	1	0	3	7	11	0	107	0	1	108	0	0	0	0	0	11	212	0	0	223	342
07:45	2	0	4	3	9	0	115	4	0	119	0	0	0	0	0	9	223	0	0	232	360
Total	6	0	11	13	30	0	364	5	2	371	0	0	0	0	0	33	785	0	0	818	1219
08:00	1	0	6	8	15	0	115	4	0	119	0	0	0	0	0	14	219	1	0	234	368
08:15	1	0	3	1	5	0	138	6	0	144	0	0	0	0	0	14	208	1	0	223	372
08:30	5	0	6	5	16	0	141	5	0	146	0	0	0	0	0	13	160	1	0	174	336
08:45	1	0	3	3	7	0	144	6	0	150	0	0	0	0	0	16	140	0	1	157	314
Total	8	0	18	17	43	0	538	21	0	559	0	0	0	0	0	57	727	3	1	788	1390
Grand Total	14	0	29	30	73	0	902	26	2	930	0	0	0	0	0	90	1512	3	1	1606	2609
Apprch %	19.2	0	39.7	41.1		0	97	2.8	0.2		0	0	0	0		5.6	94.1	0.2	0.1		
Total %	0.5	0	1.1	1.1	2.8	0	34.6	1	0.1	35.6	0	0	0	0	0	3.4	58	0.1	0	61.6	
Cars	14	0	28	30	72	0	879	25	0	904	0	0	0	0	0	89	1458	3	1	1551	2527
% Cars	100	0	96.6	100	98.6	0	97.5	96.2	0	97.2	0	0	0	0	0	98.9	96.4	100	100	96.6	96.9
Trucks	0	0	1	0	1	0	19	1	2	22	0	0	0	0	0	1	50	0	0	51	74
% Trucks	0	0	3.4	0	1.4	0	2.1	3.8	100	2.4	0	0	0	0	0	1.1	3.3	0	0	3.2	2.8
Buses	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	4	0	0	4	8
% Buses	0	0	0	0	0	0	0.4	0	0	0.4	0	0	0	0	0	0	0.3	0	0	0.2	0.3

LEA CONSULTING LTD

625 Cochrane Drive 9th Floor
Markham, Ontario, L3R 9R9

File Name : Martha&Lakeshore-AM
Site Code : 19275022
Start Date : 12/11/2018
Page No : 2

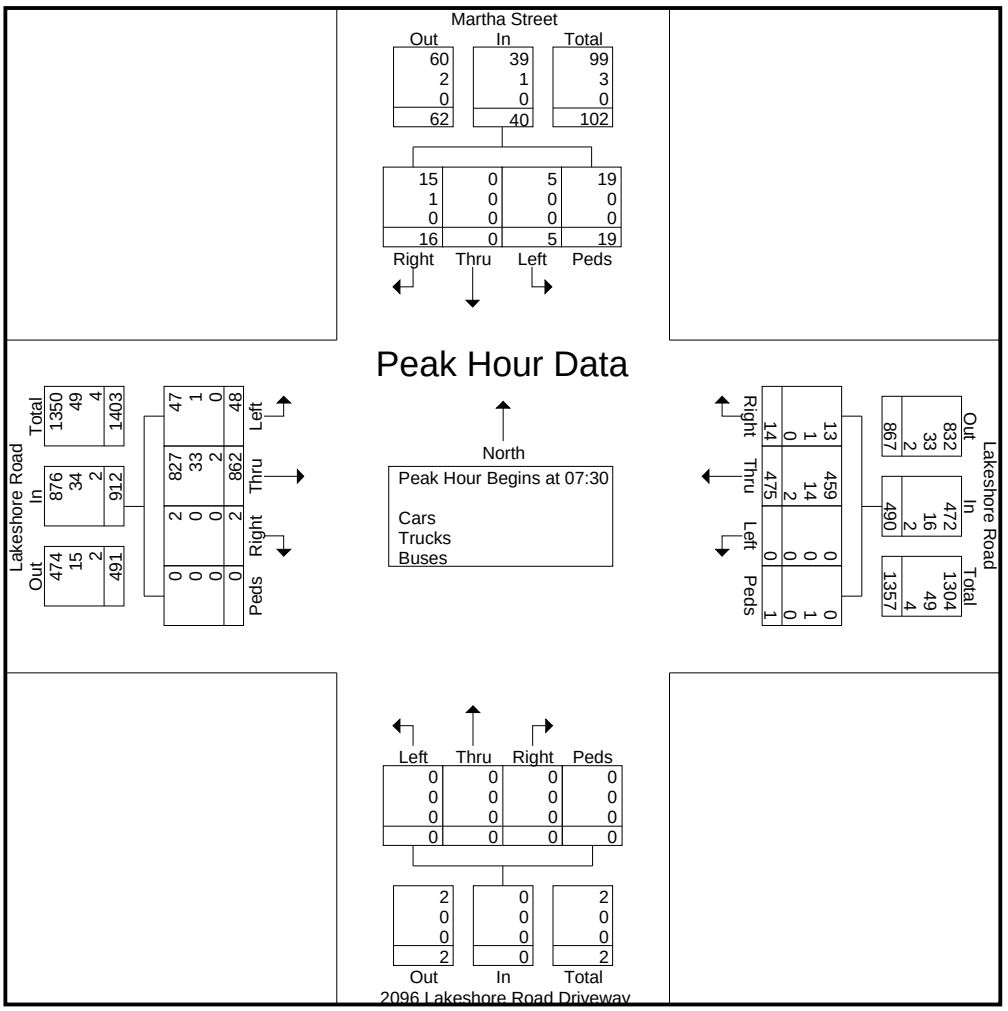


LEA CONSULTING LTD

625 Cochrane Drive 9th Floor
Markham, Ontario, L3R 9R9

File Name : Martha&Lakeshore-AM
Site Code : 19275022
Start Date : 12/11/2018
Page No : 3

	Martha Street Southbound					Lakeshore Road Westbound					2096 Lakeshore Road Driveway Northbound					Lakeshore Road Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30																					
07:30	1	0	3	7	11	0	107	0	**1**	108	0	0	0	0	0	11	212	0	0	223	342
07:45	**2**	0	4	3	9	0	115	4	0	119	0	0	0	0	0	9	**223**	0	0	232	360
08:00	1	0	**6**	**8**	**15**	0	115	4	0	119	0	0	0	0	0	**14**	219	**1**	0	**234**	368
08:15	1	0	3	1	5	0	**138**	**6**	0	**144**	0	0	0	0	0	14	208	1	0	223	**372**
Total Volume	5	0	16	19	40	0	475	14	1	490	0	0	0	0	0	48	862	2	0	912	1442
% App. Total	12.5	0	40	47.5		0	96.9	2.9	0.2		0	0	0	0		5.3	94.5	0.2	0		
PHF	.625	.000	.667	.594	.667	.000	.861	.583	.250	.851	.000	.000	.000	.000	.000	.857	.966	.500	.000	.974	.969
Cars	5	0	15	19	39	0	459	13	0	472	0	0	0	0	0	47	827	2	0	876	1387
% Cars	100	0	93.8	100	97.5	0	96.6	92.9	0	96.3	0	0	0	0	0	97.9	95.9	100	0	96.1	96.2
Trucks	0	0	1	0	1	0	14	1	1	16	0	0	0	0	0	1	33	0	0	34	51
% Trucks	0	0	6.3	0	2.5	0	2.9	7.1	100	3.3	0	0	0	0	0	2.1	3.8	0	0	3.7	3.5
Buses	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	4
% Buses	0	0	0	0	0	0	0.4	0	0	0.4	0	0	0	0	0	0	0.2	0	0	0.2	0.3



LEA CONSULTING LTD

625 Cochrane Drive 9th Floor
Markham, Ontario, L3R 9R9

Project No.: 19275
Location: Site Access & Lakeshore Road
Weather: Light Snow
Surveyor(s): Ken Lo

File Name : SiteAccess&Lakeshore-AM
Site Code : 19275016
Start Date : 12/11/2018
Page No : 1

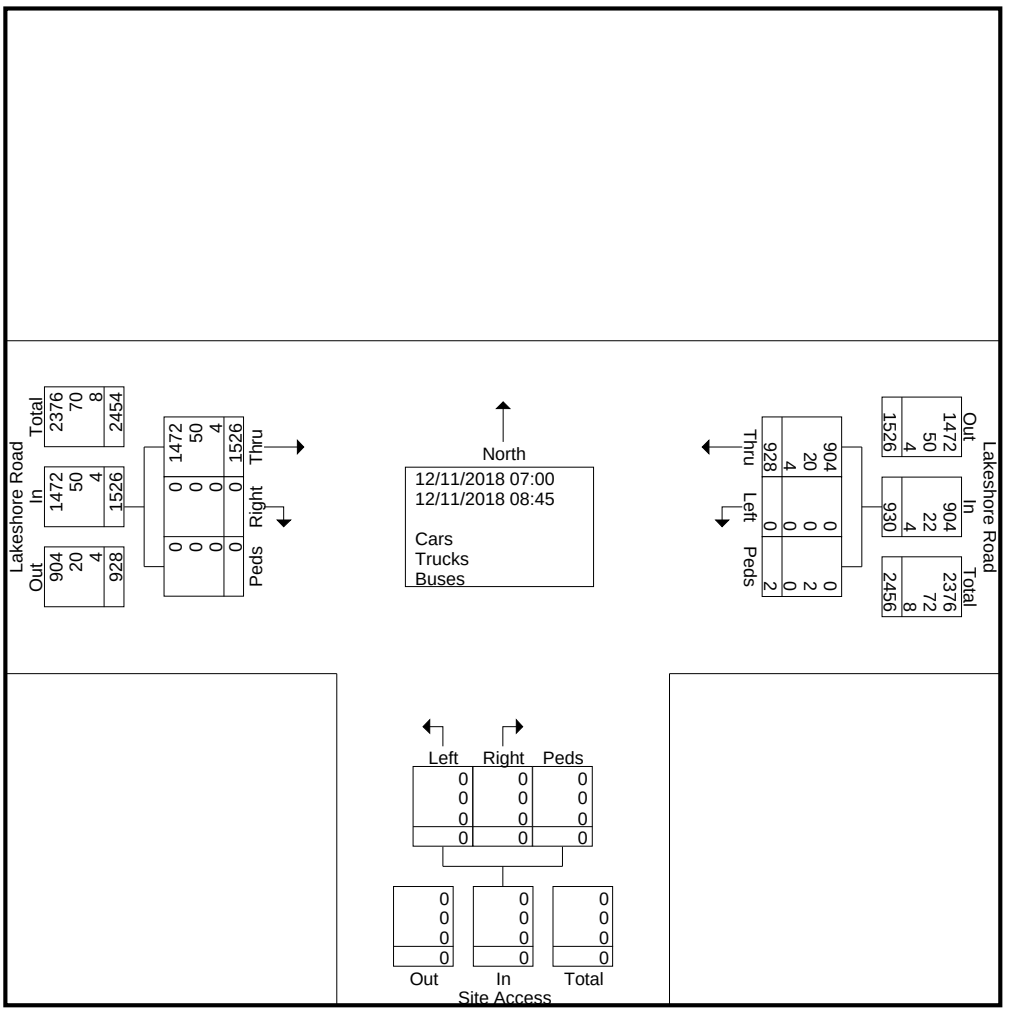
Groups Printed- Cars - Trucks - Buses

	Lakeshore Road Westbound				Site Access Northbound				Lakeshore Road Eastbound				
Start Time	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Int. Total
07:00	0	62	1	63	0	0	0	0	145	0	0	145	208
07:15	0	81	0	81	0	0	0	0	208	0	0	208	289
07:30	0	107	1	108	0	0	0	0	213	0	0	213	321
07:45	0	119	0	119	0	0	0	0	225	0	0	225	344
Total	0	369	2	371	0	0	0	0	791	0	0	791	1162
08:00	0	119	0	119	0	0	0	0	220	0	0	220	339
08:15	0	144	0	144	0	0	0	0	209	0	0	209	353
08:30	0	146	0	146	0	0	0	0	165	0	0	165	311
08:45	0	150	0	150	0	0	0	0	141	0	0	141	291
Total	0	559	0	559	0	0	0	0	735	0	0	735	1294
Grand Total	0	928	2	930	0	0	0	0	1526	0	0	1526	2456
Apprch %	0	99.8	0.2		0	0	0		100	0	0		
Total %	0	37.8	0.1	37.9	0	0	0	0	62.1	0	0	62.1	
Cars	0	904	0	904	0	0	0	0	1472	0	0	1472	2376
% Cars	0	97.4	0	97.2	0	0	0	0	96.5	0	0	96.5	96.7
Trucks	0	20	2	22	0	0	0	0	50	0	0	50	72
% Trucks	0	2.2	100	2.4	0	0	0	0	3.3	0	0	3.3	2.9
Buses	0	4	0	4	0	0	0	0	4	0	0	4	8
% Buses	0	0.4	0	0.4	0	0	0	0	0.3	0	0	0.3	0.3

LEA CONSULTING LTD

625 Cochrane Drive 9th Floor
Markham, Ontario, L3R 9R9

File Name : SiteAccess&Lakeshore-AM
Site Code : 19275016
Start Date : 12/11/2018
Page No : 2

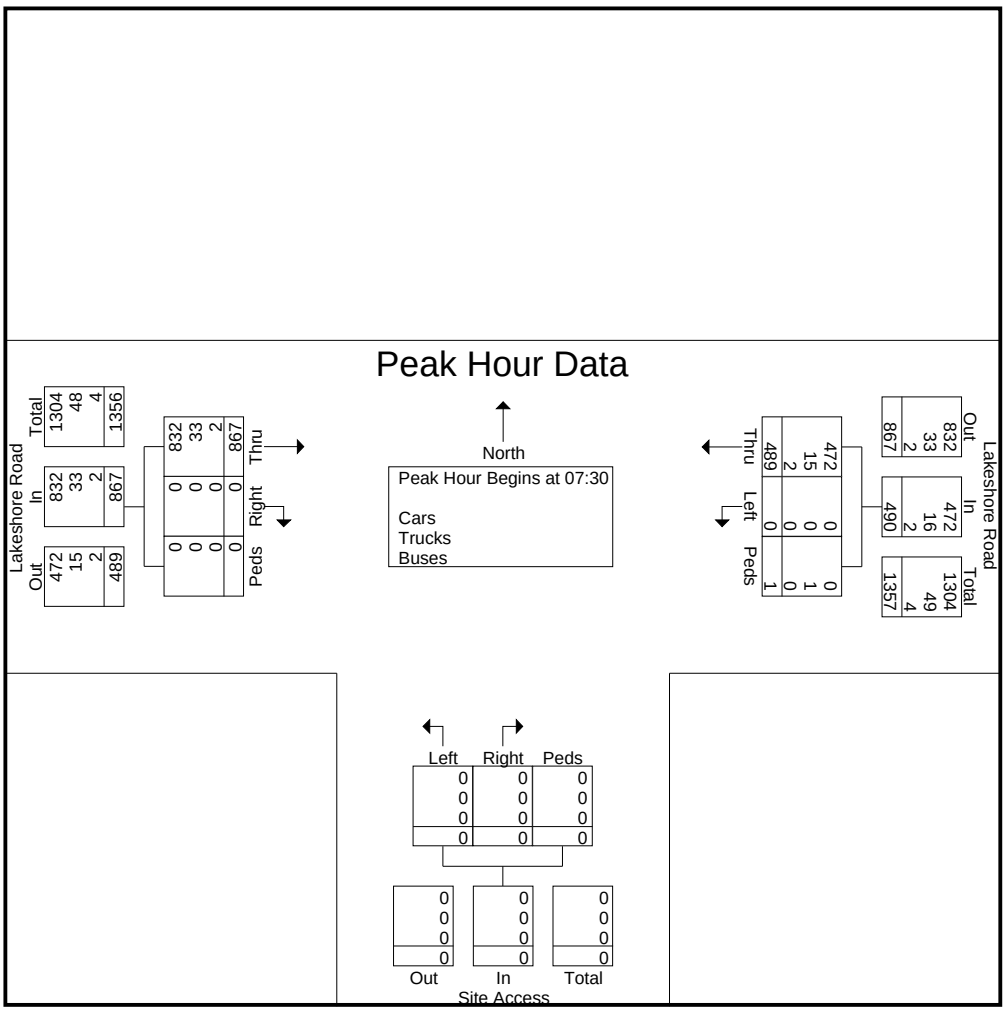


LEA CONSULTING LTD

625 Cochrane Drive 9th Floor
Markham, Ontario, L3R 9R9

File Name : SiteAccess&Lakeshore-AM
Site Code : 19275016
Start Date : 12/11/2018
Page No : 3

	Lakeshore Road Westbound				Site Access Northbound				Lakeshore Road Eastbound				
Start Time	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:30													
07:30	0	107	**1**	108	0	0	0	0	213	0	0	213	321
07:45	0	119	0	119	0	0	0	0	**225**	0	0	**225**	344
08:00	0	119	0	119	0	0	0	0	220	0	0	220	339
08:15	0	**144**	0	**144**	0	0	0	0	209	0	0	209	**353**
Total Volume	0	489	1	490	0	0	0	0	867	0	0	867	1357
% App. Total	0	99.8	0.2		0	0	0		100	0	0		
PHF	.000	.849	.250	.851	.000	.000	.000	.000	.963	.000	.000	.963	.961
Cars	0	472	0	472	0	0	0	0	832	0	0	832	1304
% Cars	0	96.5	0	96.3	0	0	0	0	96.0	0	0	96.0	96.1
Trucks	0	15	1	16	0	0	0	0	33	0	0	33	49
% Trucks	0	3.1	100	3.3	0	0	0	0	3.8	0	0	3.8	3.6
Buses	0	2	0	2	0	0	0	0	2	0	0	2	4
% Buses	0	0.4	0	0.4	0	0	0	0	0.2	0	0	0.2	0.3



LEA CONSULTING LTD

625 Cochrane Drive 9th Floor
Markham, Ontario, L3R 9R9

Project No.: 19275
Location: Site Access & Lakeshore Road
Weather: Light Snow
Surveyor(s): Ken Lo

File Name : SiteAccess&Lakeshore-PM
Site Code : 19275016
Start Date : 12/11/2018
Page No : 1

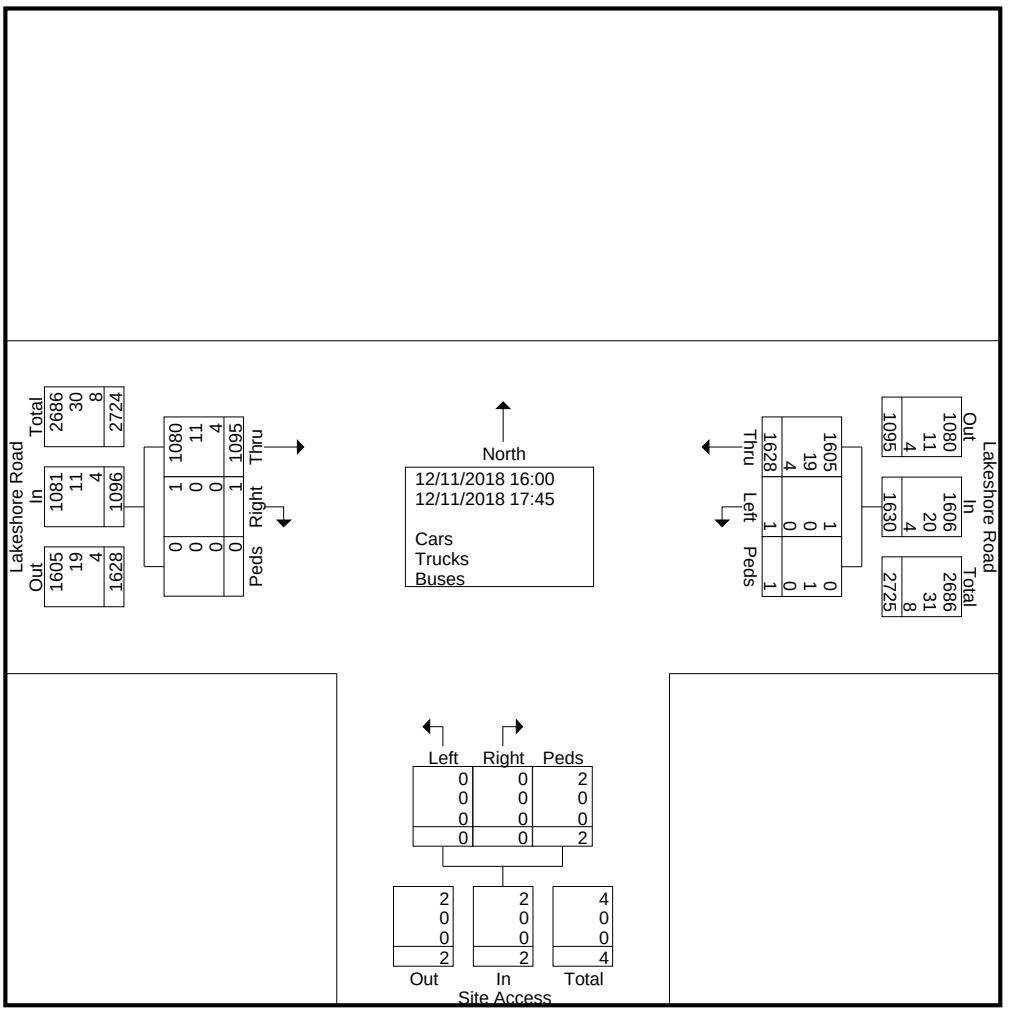
Groups Printed- Cars - Trucks - Buses

	Lakeshore Road Westbound				Site Access Northbound				Lakeshore Road Eastbound				
Start Time	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Int. Total
16:00	0	172	0	172	0	0	1	1	131	0	0	131	304
16:15	0	209	0	209	0	0	0	0	156	0	0	156	365
16:30	0	216	0	216	0	0	0	0	118	0	0	118	334
16:45	0	218	1	219	0	0	1	1	154	1	0	155	375
Total	0	815	1	816	0	0	2	2	559	1	0	560	1378
17:00	1	228	0	229	0	0	0	0	130	0	0	130	359
17:15	0	199	0	199	0	0	0	0	150	0	0	150	349
17:30	0	189	0	189	0	0	0	0	114	0	0	114	303
17:45	0	197	0	197	0	0	0	0	142	0	0	142	339
Total	1	813	0	814	0	0	0	0	536	0	0	536	1350
Grand Total	1	1628	1	1630	0	0	2	2	1095	1	0	1096	2728
Apprch %	0.1	99.9	0.1		0	0	100		99.9	0.1	0		
Total %	0	59.7	0	59.8	0	0	0.1	0.1	40.1	0	0	40.2	
Cars	1	1605	0	1606	0	0	2	2	1080	1	0	1081	2689
% Cars	100	98.6	0	98.5	0	0	100	100	98.6	100	0	98.6	98.6
Trucks	0	19	1	20	0	0	0	0	11	0	0	11	31
% Trucks	0	1.2	100	1.2	0	0	0	0	1	0	0	1	1.1
Buses	0	4	0	4	0	0	0	0	4	0	0	4	8
% Buses	0	0.2	0	0.2	0	0	0	0	0.4	0	0	0.4	0.3

LEA CONSULTING LTD

625 Cochrane Drive 9th Floor
Markham, Ontario, L3R 9R9

File Name : SiteAccess&Lakeshore-PM
Site Code : 19275016
Start Date : 12/11/2018
Page No : 2

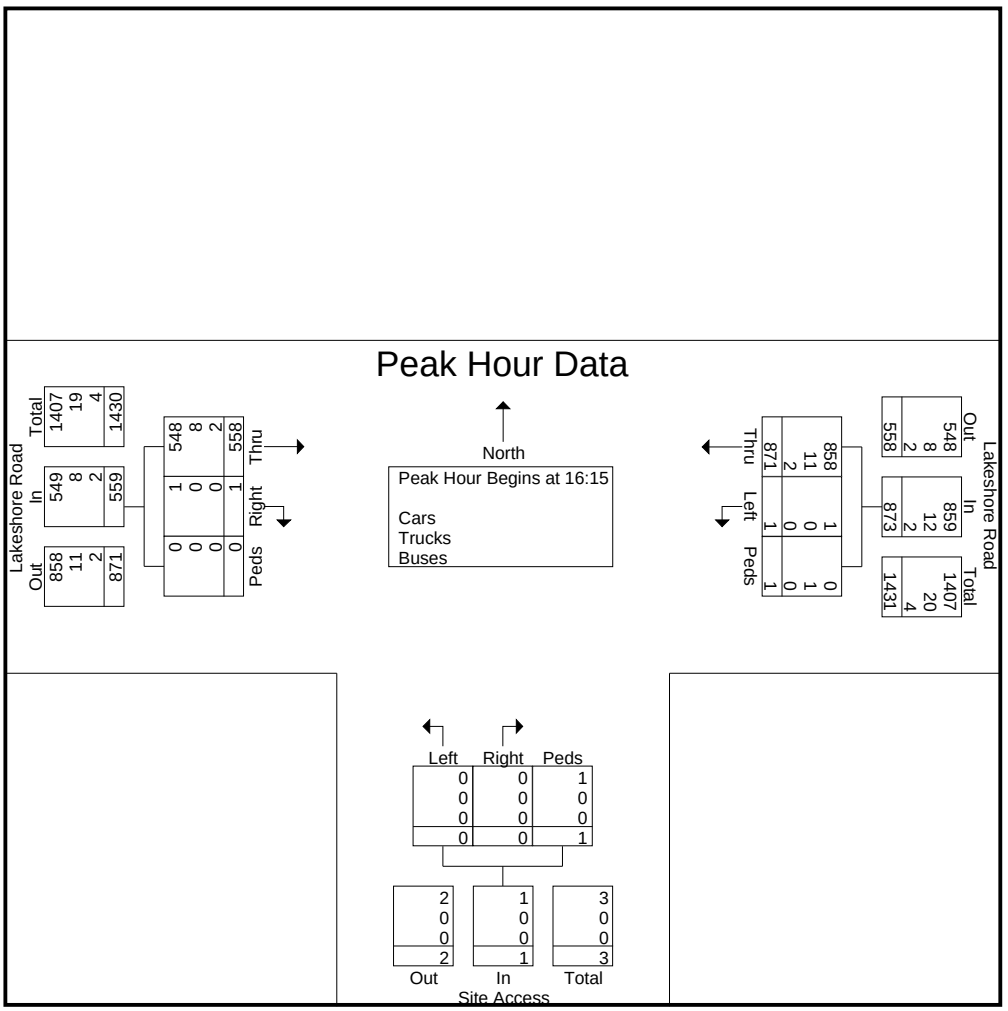


LEA CONSULTING LTD

625 Cochrane Drive 9th Floor
Markham, Ontario, L3R 9R9

File Name : SiteAccess&Lakeshore-PM
Site Code : 19275016
Start Date : 12/11/2018
Page No : 3

	Lakeshore Road Westbound				Site Access Northbound				Lakeshore Road Eastbound				
Start Time	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 16:15													
16:15	0	209	0	209	0	0	0	0	**156**	0	0	**156**	365
16:30	0	216	0	216	0	0	0	0	118	0	0	118	334
16:45	0	218	**1**	219	0	0	**1**	**1**	154	**1**	0	155	**375**
17:00	**1**	**228**	0	**229**	0	0	0	0	130	0	0	130	359
Total Volume	1	871	1	873	0	0	1	1	558	1	0	559	1433
% App. Total	0.1	99.8	0.1		0	0	100		99.8	0.2	0		
PHF	.250	.955	.250	.953	.000	.000	.250	.250	.894	.250	.000	.896	.955
Cars	1	858	0	859	0	0	1	1	548	1	0	549	1409
% Cars	100	98.5	0	98.4	0	0	100	100	98.2	100	0	98.2	98.3
Trucks	0	11	1	12	0	0	0	0	8	0	0	8	20
% Trucks	0	1.3	100	1.4	0	0	0	0	1.4	0	0	1.4	1.4
Buses	0	2	0	2	0	0	0	0	2	0	0	2	4
% Buses	0	0.2	0	0.2	0	0	0	0	0.4	0	0	0.4	0.3



LEA CONSULTING LTD

625 Cochrane Drive 9th Floor
Markham, Ontario, L3R 9R9

Project No.: 19275
Location: Site Access & Old Lakeshore Rd
Weather: Light Snow
Surveyor(s): Mile Mothibe

File Name : SiteAccess&OldLakeshore-AM
Site Code : 19275030
Start Date : 12/11/2018
Page No : 1

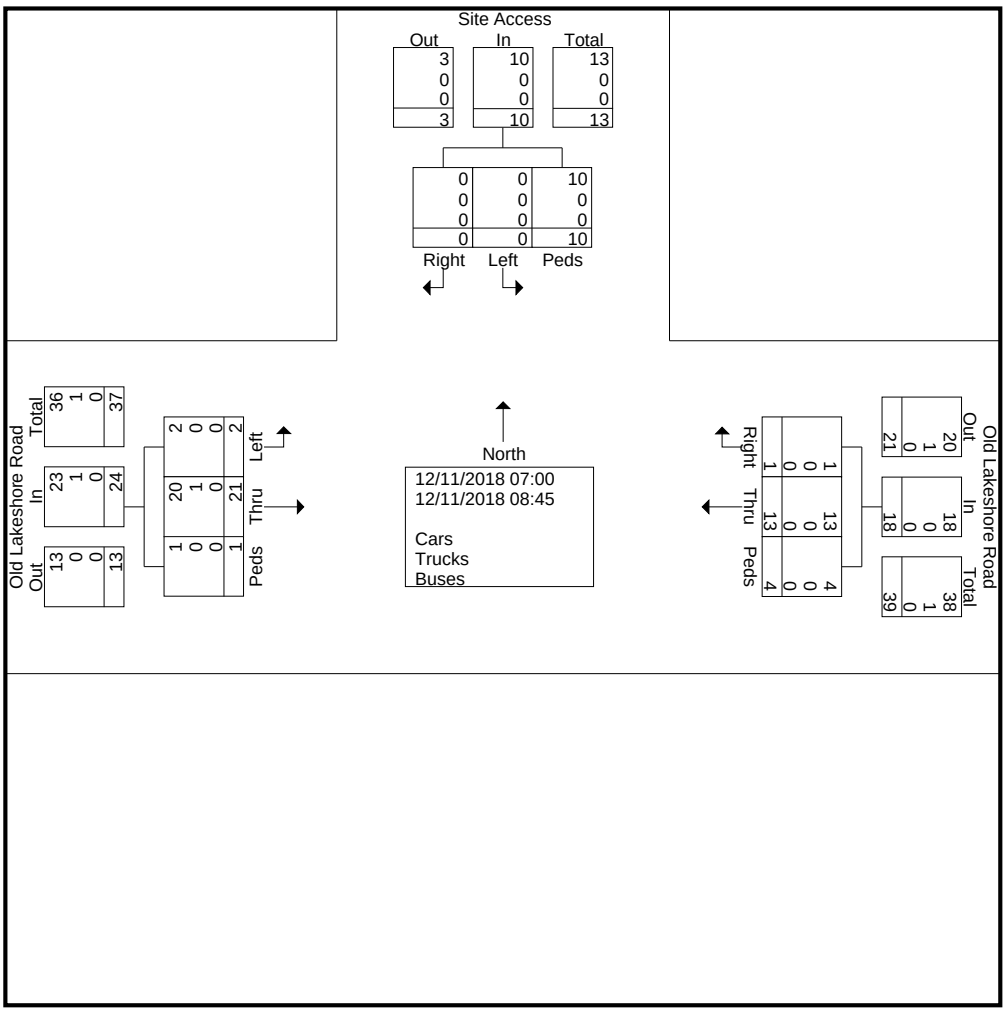
Groups Printed- Cars - Trucks - Buses

	Site Access Southbound				Old Lakeshore Road Westbound				Old Lakeshore Road Eastbound				
Start Time	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
07:00	0	0	2	2	0	0	0	0	0	0	0	0	2
07:15	0	0	0	0	0	0	0	0	0	1	0	1	1
07:30	0	0	2	2	3	0	4	7	0	3	0	3	12
07:45	0	0	1	1	1	0	0	1	0	0	0	0	2
Total	0	0	5	5	4	0	4	8	0	4	0	4	17
08:00	0	0	0	0	1	0	0	1	0	3	0	3	4
08:15	0	0	4	4	1	0	0	1	0	3	0	3	8
08:30	0	0	1	1	1	0	0	1	2	3	0	5	7
08:45	0	0	0	0	6	1	0	7	0	8	1	9	16
Total	0	0	5	5	9	1	0	10	2	17	1	20	35
Grand Total	0	0	10	10	13	1	4	18	2	21	1	24	52
Apprch %	0	0	100		72.2	5.6	22.2		8.3	87.5	4.2		
Total %	0	0	19.2	19.2	25	1.9	7.7	34.6	3.8	40.4	1.9	46.2	
Cars	0	0	10	10	13	1	4	18	2	20	1	23	51
% Cars	0	0	100	100	100	100	100	100	100	95.2	100	95.8	98.1
Trucks	0	0	0	0	0	0	0	0	0	1	0	1	1
% Trucks	0	0	0	0	0	0	0	0	0	4.8	0	4.2	1.9
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0

LEA CONSULTING LTD

625 Cochrane Drive 9th Floor
Markham, Ontario, L3R 9R9

File Name : SiteAccess&OldLakeshore-AM
Site Code : 19275030
Start Date : 12/11/2018
Page No : 2

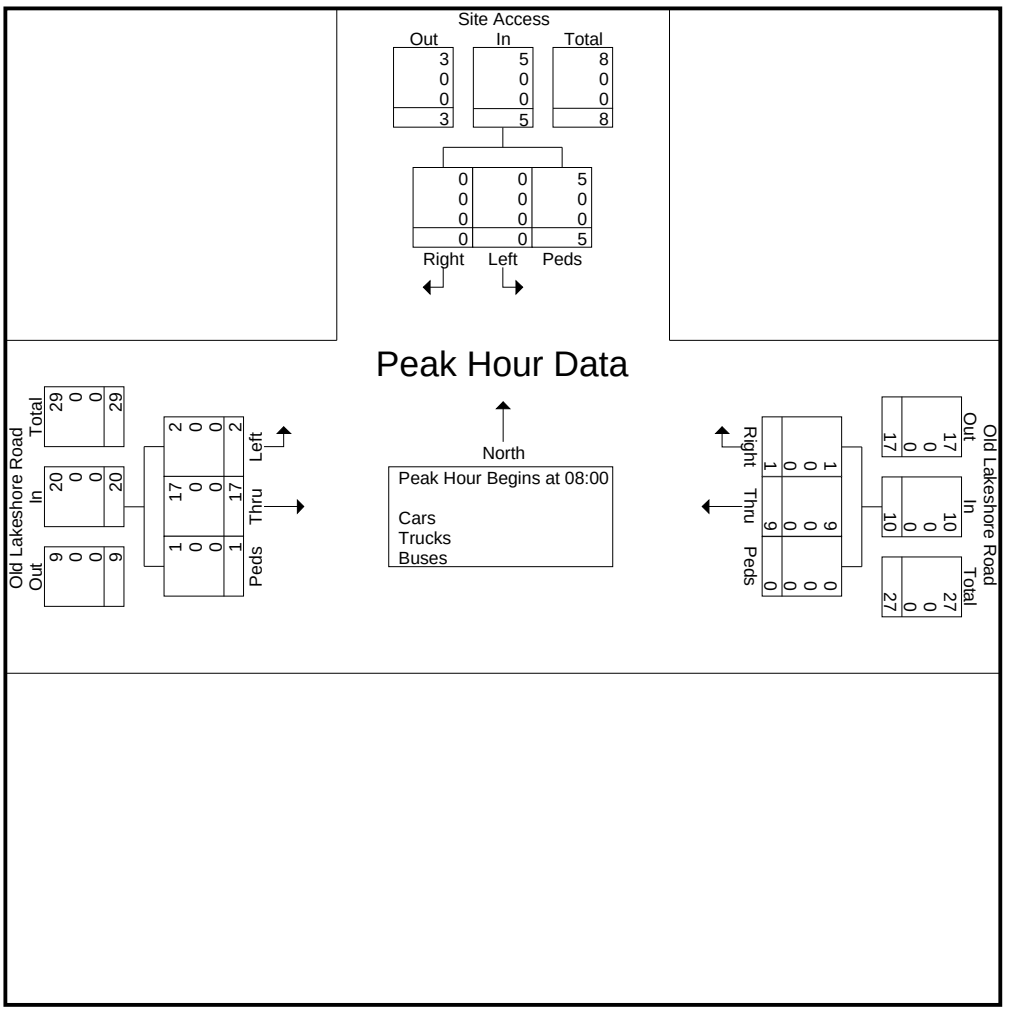


LEA CONSULTING LTD

625 Cochrane Drive 9th Floor
Markham, Ontario, L3R 9R9

File Name : SiteAccess&OldLakeshore-AM
Site Code : 19275030
Start Date : 12/11/2018
Page No : 3

	Site Access Southbound				Old Lakeshore Road Westbound				Old Lakeshore Road Eastbound				
Start Time	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 08:00													
08:00	0	0	0	0	1	0	0	1	0	3	0	3	4
08:15	0	0	**4**	**4**	1	0	0	1	0	3	0	3	8
08:30	0	0	1	1	1	0	0	1	**2**	3	0	5	7
08:45	0	0	0	0	**6**	**1**	0	**7**	0	**8**	**1**	**9**	**16**
Total Volume	0	0	5	5	9	1	0	10	2	17	1	20	35
% App. Total	0	0	100		90	10	0		10	85	5		
PHF	.000	.000	.313	.313	.375	.250	.000	.357	.250	.531	.250	.556	.547
Cars	0	0	5	5	9	1	0	10	2	17	1	20	35
% Cars	0	0	100	100	100	100	0	100	100	100	100	100	100
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0



LEA CONSULTING LTD

625 Cochrane Drive 9th Floor
Markham, Ontario, L3R 9R9

Project No.: 19275
Location: Site Access & Old Lakeshore Rd
Weather: Light Snow
Surveyor(s): Mile Mothibe

File Name : SiteAccess&OldLakeshore-PM
Site Code : 19275030
Start Date : 12/11/2018
Page No : 1

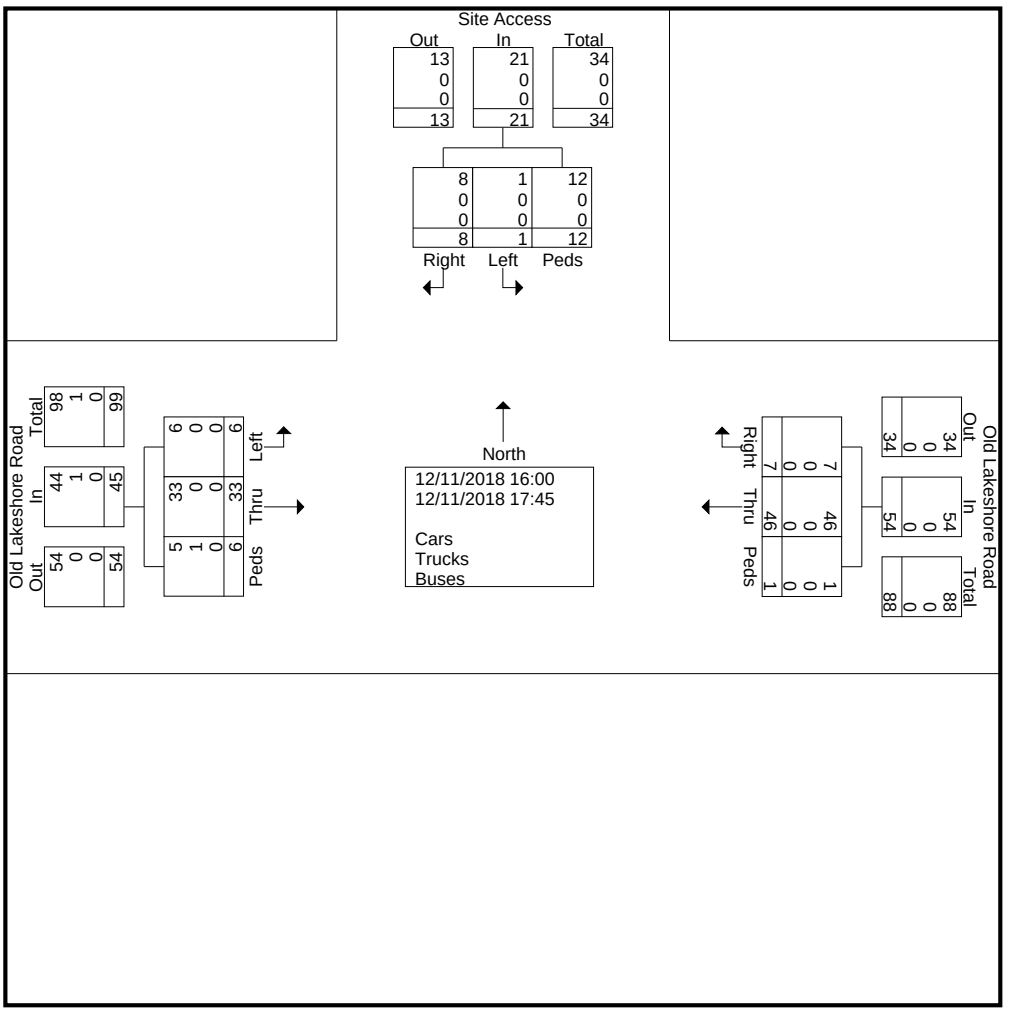
Groups Printed- Cars - Trucks - Buses

	Site Access Southbound				Old Lakeshore Road Westbound				Old Lakeshore Road Eastbound				
Start Time	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
16:00	0	2	2	4	6	1	0	7	1	2	0	3	14
16:15	0	1	0	1	5	0	0	5	2	3	0	5	11
16:30	0	0	0	0	9	1	0	10	1	3	0	4	14
16:45	0	2	4	6	2	0	1	3	0	6	0	6	15
Total	0	5	6	11	22	2	1	25	4	14	0	18	54
17:00	0	1	1	2	8	0	0	8	0	3	0	3	13
17:15	0	0	3	3	9	1	0	10	1	4	1	6	19
17:30	1	2	1	4	5	4	0	9	0	5	2	7	20
17:45	0	0	1	1	2	0	0	2	1	7	3	11	14
Total	1	3	6	10	24	5	0	29	2	19	6	27	66
Grand Total	1	8	12	21	46	7	1	54	6	33	6	45	120
Apprch %	4.8	38.1	57.1		85.2	13	1.9		13.3	73.3	13.3		
Total %	0.8	6.7	10	17.5	38.3	5.8	0.8	45	5	27.5	5	37.5	
Cars	1	8	12	21	46	7	1	54	6	33	5	44	119
% Cars	100	100	100	100	100	100	100	100	100	100	83.3	97.8	99.2
Trucks	0	0	0	0	0	0	0	0	0	0	1	1	1
% Trucks	0	0	0	0	0	0	0	0	0	0	16.7	2.2	0.8
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0

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625 Cochrane Drive 9th Floor
Markham, Ontario, L3R 9R9

File Name : SiteAccess&OldLakeshore-PM
Site Code : 19275030
Start Date : 12/11/2018
Page No : 2

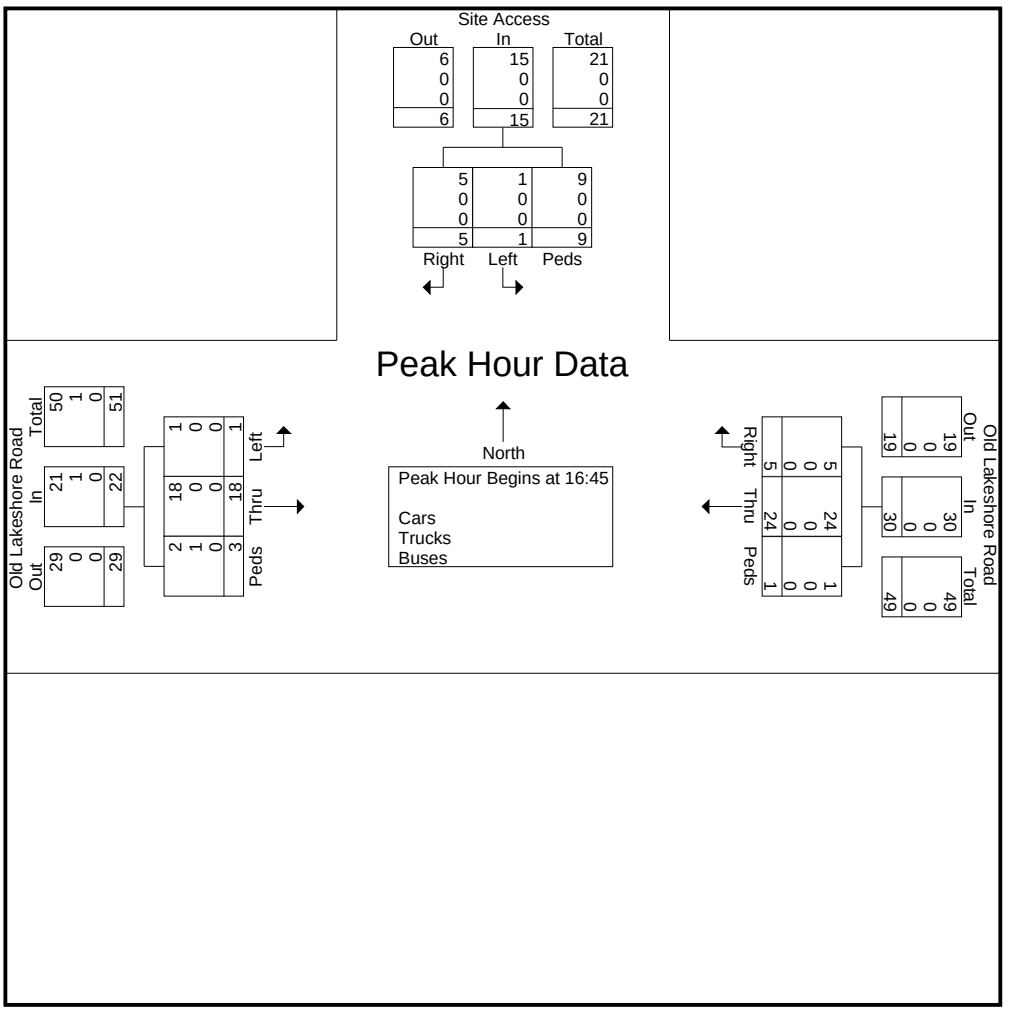


LEA CONSULTING LTD

625 Cochrane Drive 9th Floor
Markham, Ontario, L3R 9R9

File Name : SiteAccess&OldLakeshore-PM
Site Code : 19275030
Start Date : 12/11/2018
Page No : 3

	Site Access Southbound				Old Lakeshore Road Westbound				Old Lakeshore Road Eastbound				
Start Time	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 16:45													
16:45	0	**2**	**4**	**6**	2	0	**1**	3	0	**6**	0	6	15
17:00	0	1	1	2	8	0	0	8	0	3	0	3	13
17:15	0	0	3	3	**9**	1	0	**10**	**1**	4	1	6	19
17:30	**1**	2	1	4	5	**4**	0	9	0	5	**2**	**7**	**20**
Total Volume	1	5	9	15	24	5	1	30	1	18	3	22	67
% App. Total	6.7	33.3	60		80	16.7	3.3		4.5	81.8	13.6		
PHF	.250	.625	.563	.625	.667	.313	.250	.750	.250	.750	.375	.786	.838
Cars	1	5	9	15	24	5	1	30	1	18	2	21	66
% Cars	100	100	100	100	100	100	100	100	100	100	66.7	95.5	98.5
Trucks	0	0	0	0	0	0	0	0	0	0	1	1	1
% Trucks	0	0	0	0	0	0	0	0	0	0	33.3	4.5	1.5
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0



LEA CONSULTING LTD

625 Cochrane Drive 9th Floor
Markham, Ontario, L3R 9R9

Project No.: 19275
Location: Old Lakeshore Rd & Lakeshore R
Weather: Light Snow
Surveyor(s): Tevin Luu

File Name : OldLakeshore&Lakeshore-AM
Site Code : 19275016
Start Date : 12/11/2018
Page No : 1

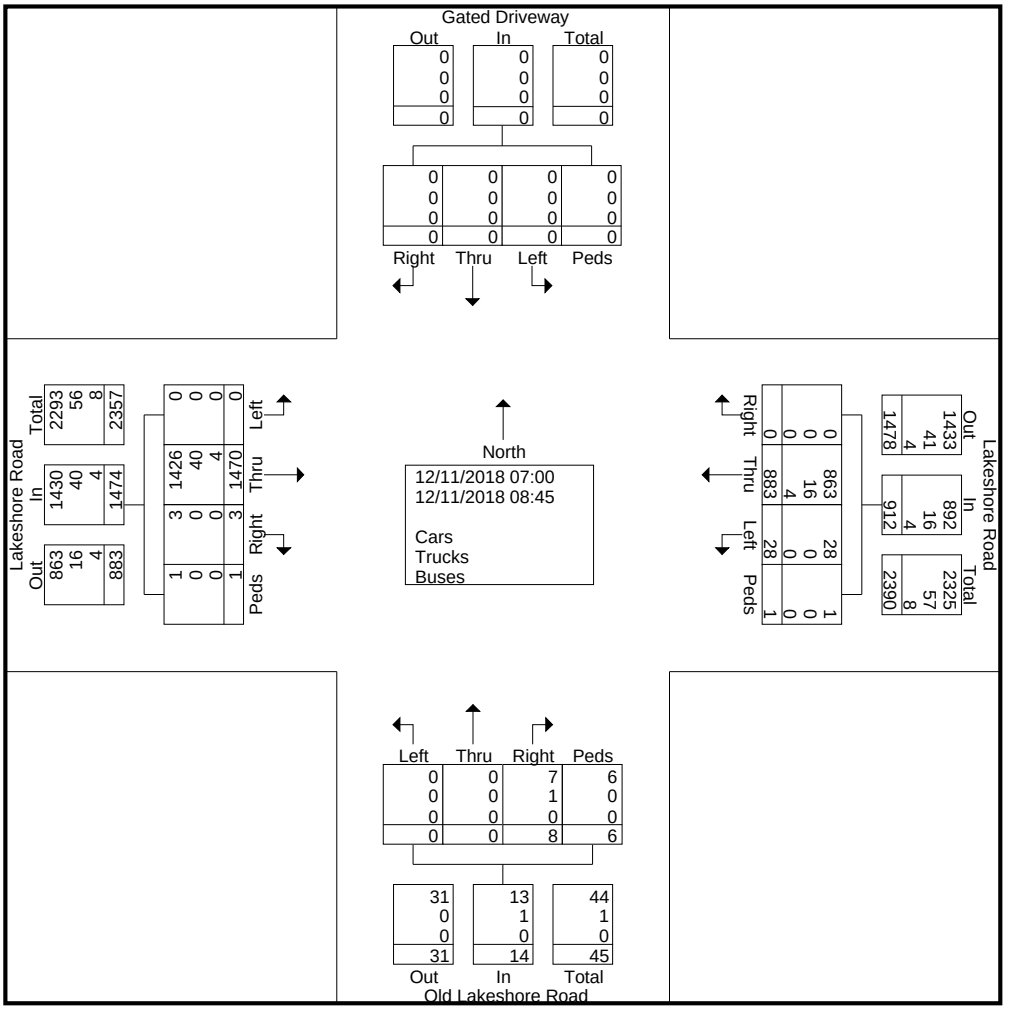
Groups Printed- Cars - Trucks - Buses

	Gated Driveway Southbound					Lakeshore Road Westbound					Old Lakeshore Road Northbound					Lakeshore Road Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00	0	0	0	0	0	0	63	0	0	63	0	0	0	2	2	0	139	0	0	139	204
07:15	0	0	0	0	0	2	72	0	0	74	0	0	2	0	2	0	210	1	0	211	287
07:30	0	0	0	0	0	3	103	0	0	106	0	0	0	2	2	0	186	0	0	186	294
07:45	0	0	0	0	0	2	116	0	0	118	0	0	0	0	0	0	220	1	0	221	339
Total	0	0	0	0	0	7	354	0	0	361	0	0	2	4	6	0	755	2	0	757	1124
08:00	0	0	0	0	0	4	108	0	1	113	0	0	2	2	4	0	217	0	1	218	335
08:15	0	0	0	0	0	3	139	0	0	142	0	0	1	0	1	0	197	0	0	197	340
08:30	0	0	0	0	0	4	139	0	0	143	0	0	0	0	0	0	164	0	0	164	307
08:45	0	0	0	0	0	10	143	0	0	153	0	0	3	0	3	0	137	1	0	138	294
Total	0	0	0	0	0	21	529	0	1	551	0	0	6	2	8	0	715	1	1	717	1276
Grand Total	0	0	0	0	0	28	883	0	1	912	0	0	8	6	14	0	1470	3	1	1474	2400
Apprch %	0	0	0	0		3.1	96.8	0	0.1		0	0	57.1	42.9		0	99.7	0.2	0.1		
Total %	0	0	0	0	0	1.2	36.8	0	0	38	0	0	0.3	0.2	0.6	0	61.2	0.1	0	61.4	
Cars	0	0	0	0	0	28	863	0	1	892	0	0	7	6	13	0	1426	3	1	1430	2335
% Cars	0	0	0	0	0	100	97.7	0	100	97.8	0	0	87.5	100	92.9	0	97	100	100	97	97.3
Trucks	0	0	0	0	0	0	16	0	0	16	0	0	1	0	1	0	40	0	0	40	57
% Trucks	0	0	0	0	0	0	1.8	0	0	1.8	0	0	12.5	0	7.1	0	2.7	0	0	2.7	2.4
Buses	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	4	0	0	4	8
% Buses	0	0	0	0	0	0	0.5	0	0	0.4	0	0	0	0	0	0	0.3	0	0	0.3	0.3

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625 Cochrane Drive 9th Floor
Markham, Ontario, L3R 9R9

File Name : OldLakeshore&Lakeshore-AM
Site Code : 19275016
Start Date : 12/11/2018
Page No : 2

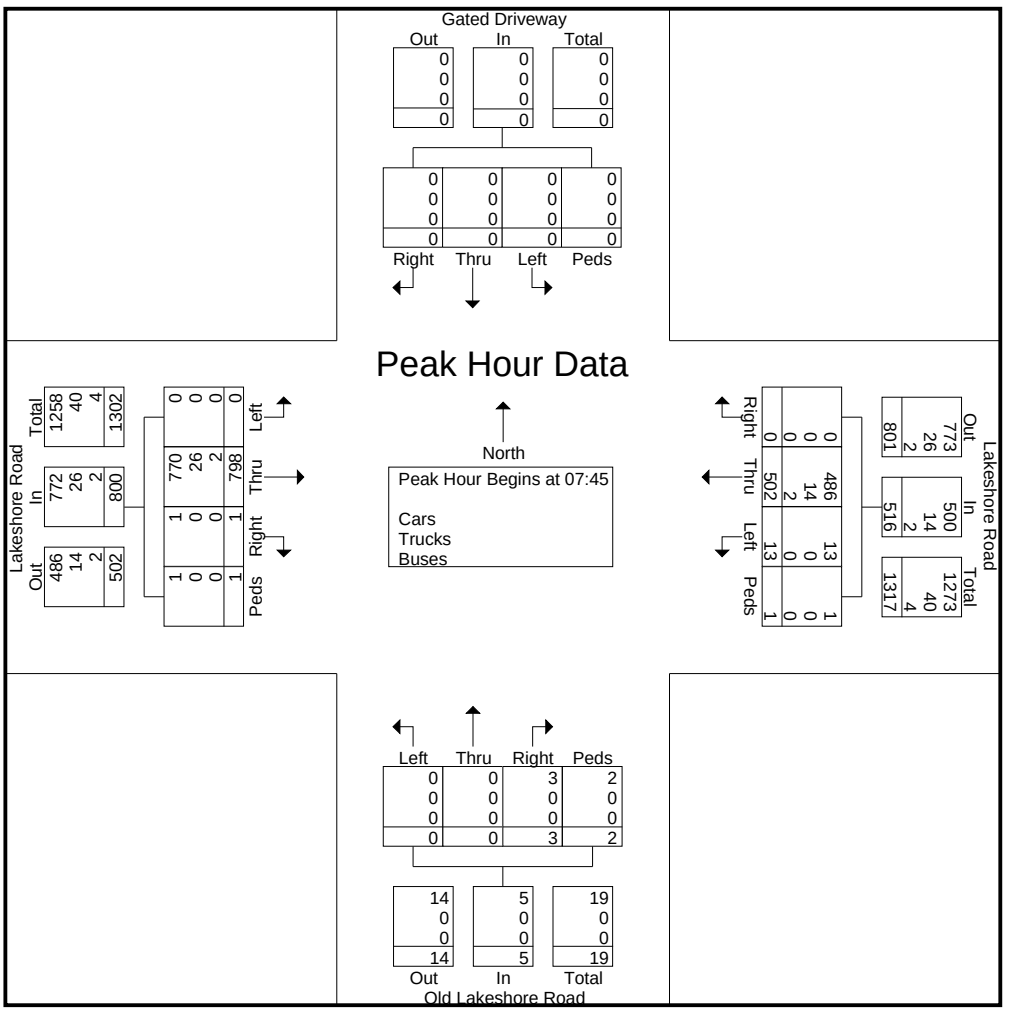


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625 Cochrane Drive 9th Floor
Markham, Ontario, L3R 9R9

File Name : OldLakeshore&Lakeshore-AM
Site Code : 19275016
Start Date : 12/11/2018
Page No : 3

	Gated Driveway Southbound					Lakeshore Road Westbound					Old Lakeshore Road Northbound					Lakeshore Road Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45																					
07:45	0	0	0	0	0	2	116	0	0	118	0	0	0	0	0	0	**220**	**1**	0	**221**	339
08:00	0	0	0	0	0	**4**	108	0	**1**	113	0	0	**2**	**2**	**4**	0	217	0	**1**	218	335
08:15	0	0	0	0	0	3	**139**	0	0	142	0	0	1	0	1	0	197	0	0	197	**340**
08:30	0	0	0	0	0	4	139	0	0	**143**	0	0	0	0	0	0	164	0	0	164	307
Total Volume	0	0	0	0	0	13	502	0	1	516	0	0	3	2	5	0	798	1	1	800	1321
% App. Total	0	0	0	0		2.5	97.3	0	0.2		0	0	60	40		0	99.8	0.1	0.1		
PHF	.000	.000	.000	.000	.000	.813	.903	.000	.250	.902	.000	.000	.375	.250	.313	.000	.907	.250	.250	.905	.971
Cars	0	0	0	0	0	13	486	0	1	500	0	0	3	2	5	0	770	1	1	772	1277
% Cars	0	0	0	0	0	100	96.8	0	100	96.9	0	0	100	100	100	0	96.5	100	100	96.5	96.7
Trucks	0	0	0	0	0	0	14	0	0	14	0	0	0	0	0	0	26	0	0	26	40
% Trucks	0	0	0	0	0	0	2.8	0	0	2.7	0	0	0	0	0	0	3.3	0	0	3.3	3.0
Buses	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	4
% Buses	0	0	0	0	0	0	0.4	0	0	0.4	0	0	0	0	0	0	0.3	0	0	0.3	0.3



LEA CONSULTING LTD

625 Cochrane Drive 9th Floor
Markham, Ontario, L3R 9R9

Project No.: 19275
Location: Old Lakeshore Rd & Lakeshore R
Weather: Light Snow
Surveyor(s): Tevin Luu

File Name : OldLakeshore&Lakeshore-PM
Site Code : 19275016
Start Date : 12/11/2018
Page No : 1

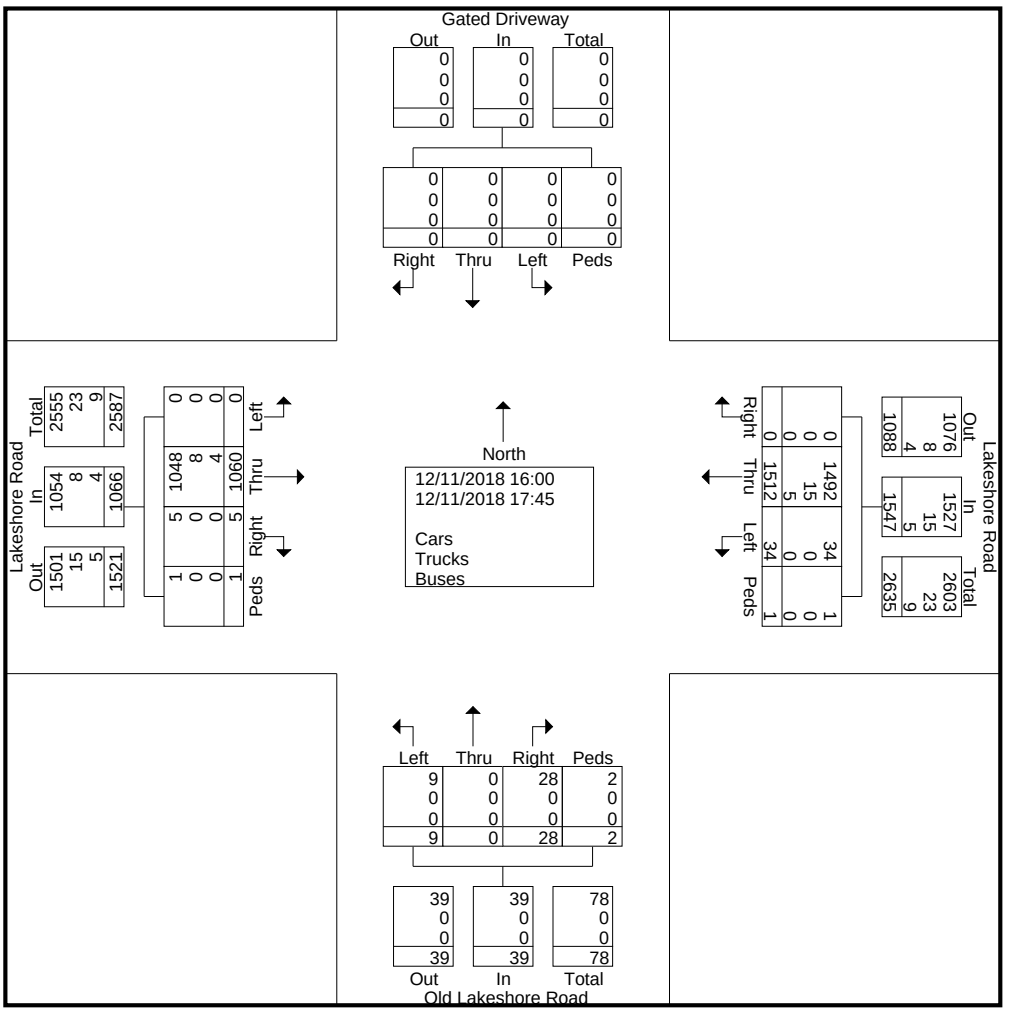
Groups Printed- Cars - Trucks - Buses

	Gated Driveway Southbound					Lakeshore Road Westbound					Old Lakeshore Road Northbound					Lakeshore Road Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
16:00	0	0	0	0	0	2	168	0	0	170	3	0	1	0	4	0	137	0	0	137	311
16:15	0	0	0	0	0	4	200	0	0	204	1	0	2	1	4	0	146	1	0	147	355
16:30	0	0	0	0	0	5	200	0	0	205	1	0	3	0	4	0	113	1	0	114	323
16:45	0	0	0	0	0	2	210	0	0	212	2	0	6	0	8	0	152	1	0	153	373
Total	0	0	0	0	0	13	778	0	0	791	7	0	12	1	20	0	548	3	0	551	1362
17:00	0	0	0	0	0	5	218	0	1	224	0	0	2	0	2	0	129	2	0	131	357
17:15	0	0	0	0	0	5	191	0	0	196	0	0	6	0	6	0	137	0	0	137	339
17:30	0	0	0	0	0	8	161	0	0	169	1	0	6	1	8	0	111	0	0	111	288
17:45	0	0	0	0	0	3	164	0	0	167	1	0	2	0	3	0	135	0	1	136	306
Total	0	0	0	0	0	21	734	0	1	756	2	0	16	1	19	0	512	2	1	515	1290
Grand Total	0	0	0	0	0	34	1512	0	1	1547	9	0	28	2	39	0	1060	5	1	1066	2652
Apprch %	0	0	0	0		2.2	97.7	0	0.1		23.1	0	71.8	5.1		0	99.4	0.5	0.1		
Total %	0	0	0	0	0	1.3	57	0	0	58.3	0.3	0	1.1	0.1	1.5	0	40	0.2	0	40.2	
Cars	0	0	0	0	0	34	1492	0	1	1527	9	0	28	2	39	0	1048	5	1	1054	2620
% Cars	0	0	0	0	0	100	98.7	0	100	98.7	100	0	100	100	100	0	98.9	100	100	98.9	98.8
Trucks	0	0	0	0	0	0	15	0	0	15	0	0	0	0	0	0	8	0	0	8	23
% Trucks	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0.8	0	0	0.8	0.9
Buses	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	4	0	0	4	9
% Buses	0	0	0	0	0	0	0.3	0	0	0.3	0	0	0	0	0	0	0.4	0	0	0.4	0.3

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625 Cochrane Drive 9th Floor
Markham, Ontario, L3R 9R9

File Name : OldLakeshore&Lakeshore-PM
Site Code : 19275016
Start Date : 12/11/2018
Page No : 2

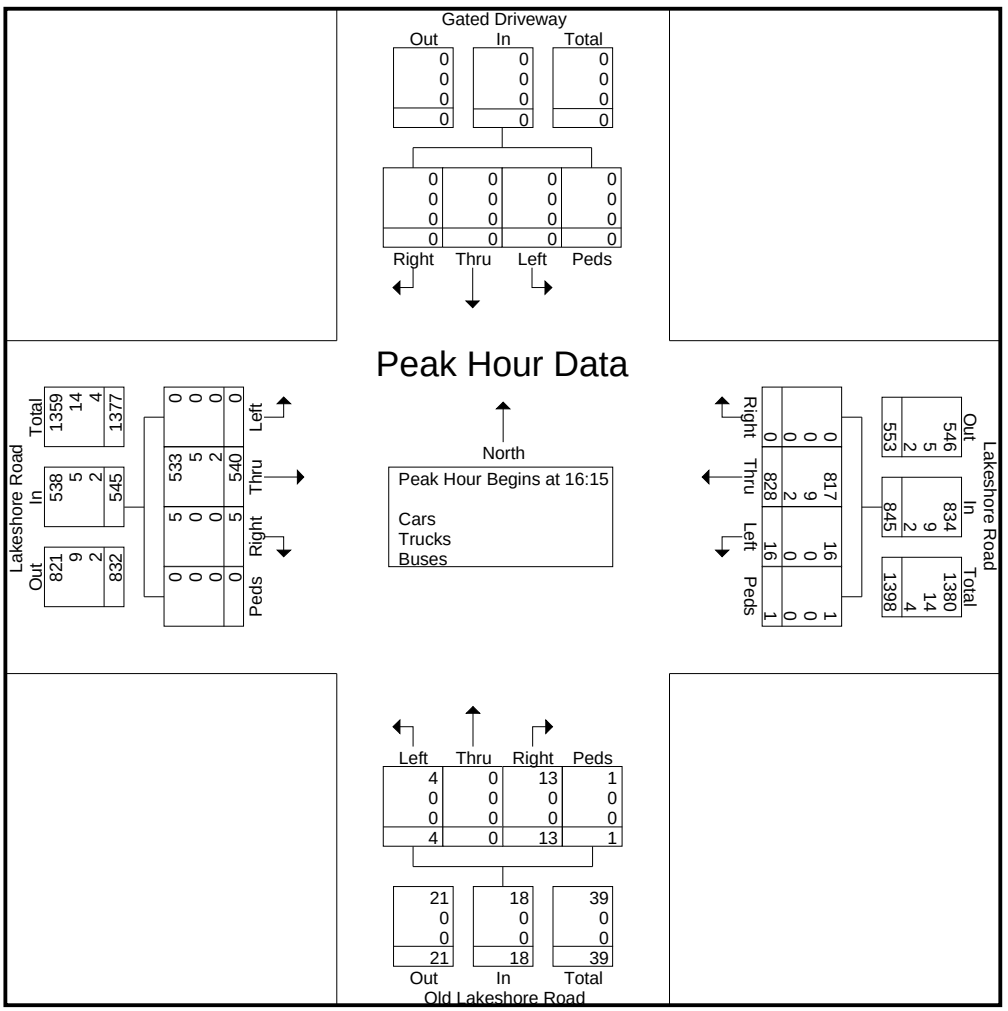


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625 Cochrane Drive 9th Floor
Markham, Ontario, L3R 9R9

File Name : OldLakeshore&Lakeshore-PM
Site Code : 19275016
Start Date : 12/11/2018
Page No : 3

	Gated Driveway Southbound					Lakeshore Road Westbound					Old Lakeshore Road Northbound					Lakeshore Road Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:15																					
16:15	0	0	0	0	0	4	200	0	0	204	1	0	2	**1**	4	0	146	1	0	147	355
16:30	0	0	0	0	0	**5**	200	0	0	205	1	0	3	0	4	0	113	1	0	114	323
16:45	0	0	0	0	0	2	210	0	0	212	**2**	0	**6**	0	**8**	0	**152**	1	0	**153**	**373**
17:00	0	0	0	0	0	5	**218**	0	**1**	**224**	0	0	2	0	2	0	129	**2**	0	131	357
Total Volume	0	0	0	0	0	16	828	0	1	845	4	0	13	1	18	0	540	5	0	545	1408
% App. Total	0	0	0	0		1.9	98	0	0.1		22.2	0	72.2	5.6		0	99.1	0.9	0		
PHF	.000	.000	.000	.000	.000	.800	.950	.000	.250	.943	.500	.000	.542	.250	.563	.000	.888	.625	.000	.891	.944
Cars	0	0	0	0	0	16	817	0	1	834	4	0	13	1	18	0	533	5	0	538	1390
% Cars	0	0	0	0	0	100	98.7	0	100	98.7	100	0	100	100	100	0	98.7	100	0	98.7	98.7
Trucks	0	0	0	0	0	0	9	0	0	9	0	0	0	0	0	0	5	0	0	5	14
% Trucks	0	0	0	0	0	0	1.1	0	0	1.1	0	0	0	0	0	0	0.9	0	0	0.9	1.0
Buses	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	4
% Buses	0	0	0	0	0	0	0.2	0	0	0.2	0	0	0	0	0	0	0.4	0	0	0.4	0.3



LEA CONSULTING LTD

625 Cochrane Drive 9th Floor
Markham, Ontario, L3R 9R9

Project No.: 19275
Location: Martha St & Pine St
Weather: Raining
Surveyor(s): Jerry Cheng

File Name : Martha&Pine-AM
Site Code : 19275129
Start Date : 2019-01-08
Page No : 1

Groups Printed- Cars - Trucks - Buses

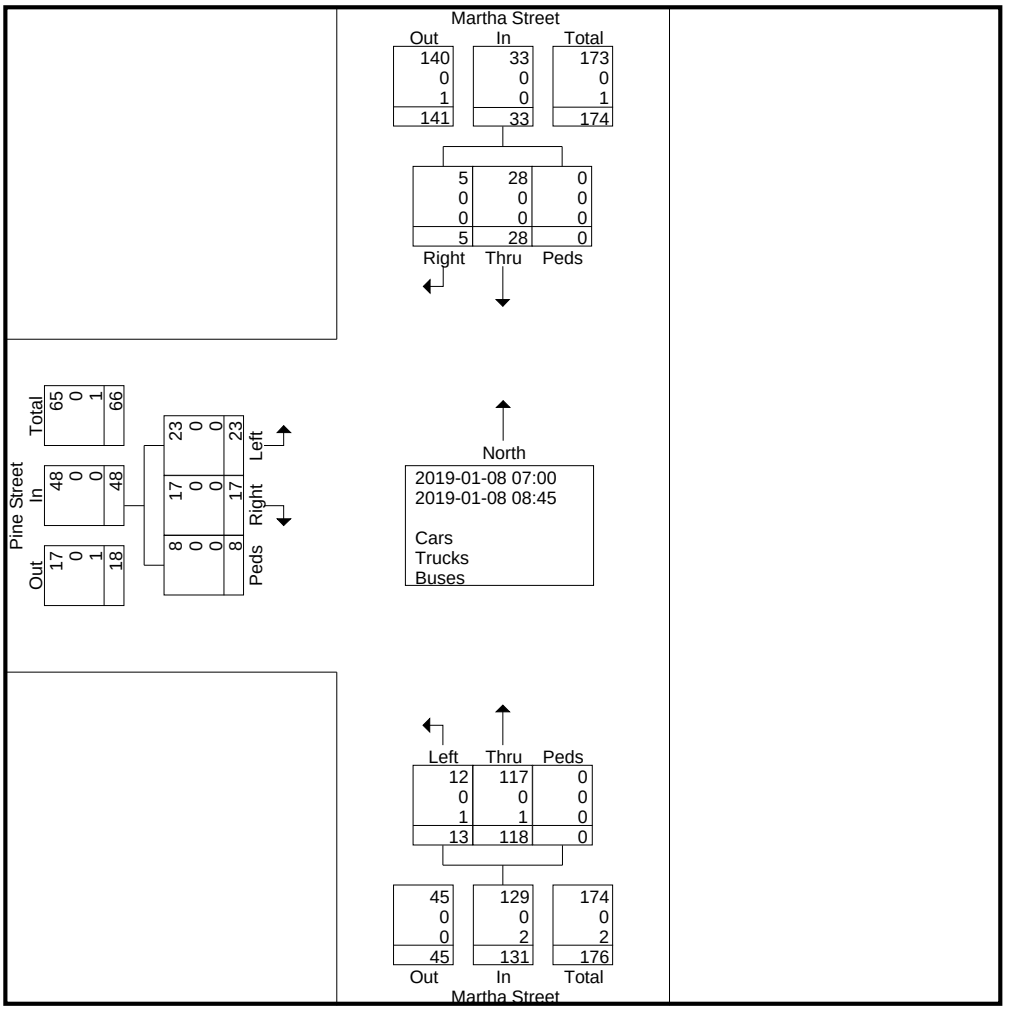
	Martha Street Southbound				Martha Street Northbound				Pine Street Eastbound				
Start Time	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
07:00	2	1	0	3	0	13	0	13	1	1	1	3	19
07:15	4	0	0	4	1	12	0	13	1	1	2	4	21
07:30	4	0	0	4	3	8	0	11	1	2	1	4	19
07:45	4	1	0	5	0	18	0	18	2	1	0	3	26
Total	14	2	0	16	4	51	0	55	5	5	4	14	85
08:00	2	1	0	3	2	15	0	17	3	2	1	6	26
08:15	4	1	0	5	0	14	0	14	9	4	1	14	33
08:30	4	0	0	4	2	19	0	21	3	4	0	7	32
08:45	4	1	0	5	5	19	0	24	3	2	2	7	36
Total	14	3	0	17	9	67	0	76	18	12	4	34	127
Grand Total	28	5	0	33	13	118	0	131	23	17	8	48	212
Apprch %	84.8	15.2	0		9.9	90.1	0		47.9	35.4	16.7		
Total %	13.2	2.4	0	15.6	6.1	55.7	0	61.8	10.8	8	3.8	22.6	
Cars	28	5	0	33	12	117	0	129	23	17	8	48	210
% Cars	100	100	0	100	92.3	99.2	0	98.5	100	100	100	100	99.1
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Buses	0	0	0	0	1	1	0	2	0	0	0	0	2
% Buses	0	0	0	0	7.7	0.8	0	1.5	0	0	0	0	0.9

LEA CONSULTING LTD

625 Cochrane Drive 9th Floor
Markham, Ontario, L3R 9R9

Project No.: 19275
Location: Martha St & Pine St
Weather: Raining
Surveyor(s): Jerry Cheng

File Name : Martha&Pine-AM
Site Code : 19275129
Start Date : 2019-01-08
Page No : 2



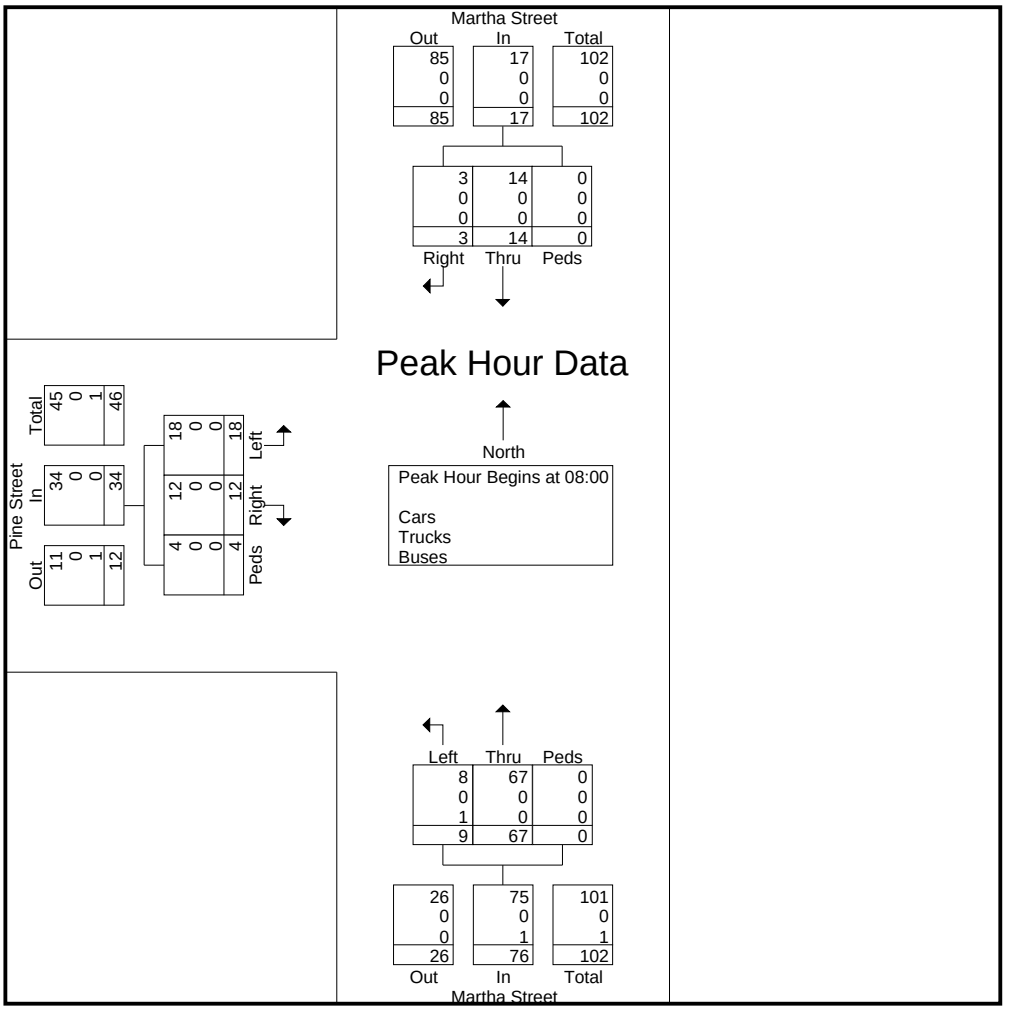
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625 Cochrane Drive 9th Floor
Markham, Ontario, L3R 9R9

Project No.: 19275
Location: Martha St & Pine St
Weather: Raining
Surveyor(s): Jerry Cheng

File Name : Martha&Pine-AM
Site Code : 19275129
Start Date : 2019-01-08
Page No : 3

	Martha Street Southbound				Martha Street Northbound				Pine Street Eastbound				
Start Time	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 08:00													
08:00	2	**1**	0	3	2	15	0	17	3	2	1	6	26
08:15	**4**	1	0	**5**	0	14	0	14	**9**	**4**	1	**14**	33
08:30	4	0	0	4	2	**19**	0	21	3	4	0	7	32
08:45	4	1	0	5	**5**	19	0	**24**	3	2	**2**	7	**36**
Total Volume	14	3	0	17	9	67	0	76	18	12	4	34	127
% App. Total	82.4	17.6	0		11.8	88.2	0		52.9	35.3	11.8		
PHF	.875	.750	.000	.850	.450	.882	.000	.792	.500	.750	.500	.607	.882
Cars	14	3	0	17	8	67	0	75	18	12	4	34	126
% Cars	100	100	0	100	88.9	100	0	98.7	100	100	100	100	99.2
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Buses	0	0	0	0	1	0	0	1	0	0	0	0	1
% Buses	0	0	0	0	11.1	0	0	1.3	0	0	0	0	0.8



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Groups Printed- Cars - Trucks - Buses

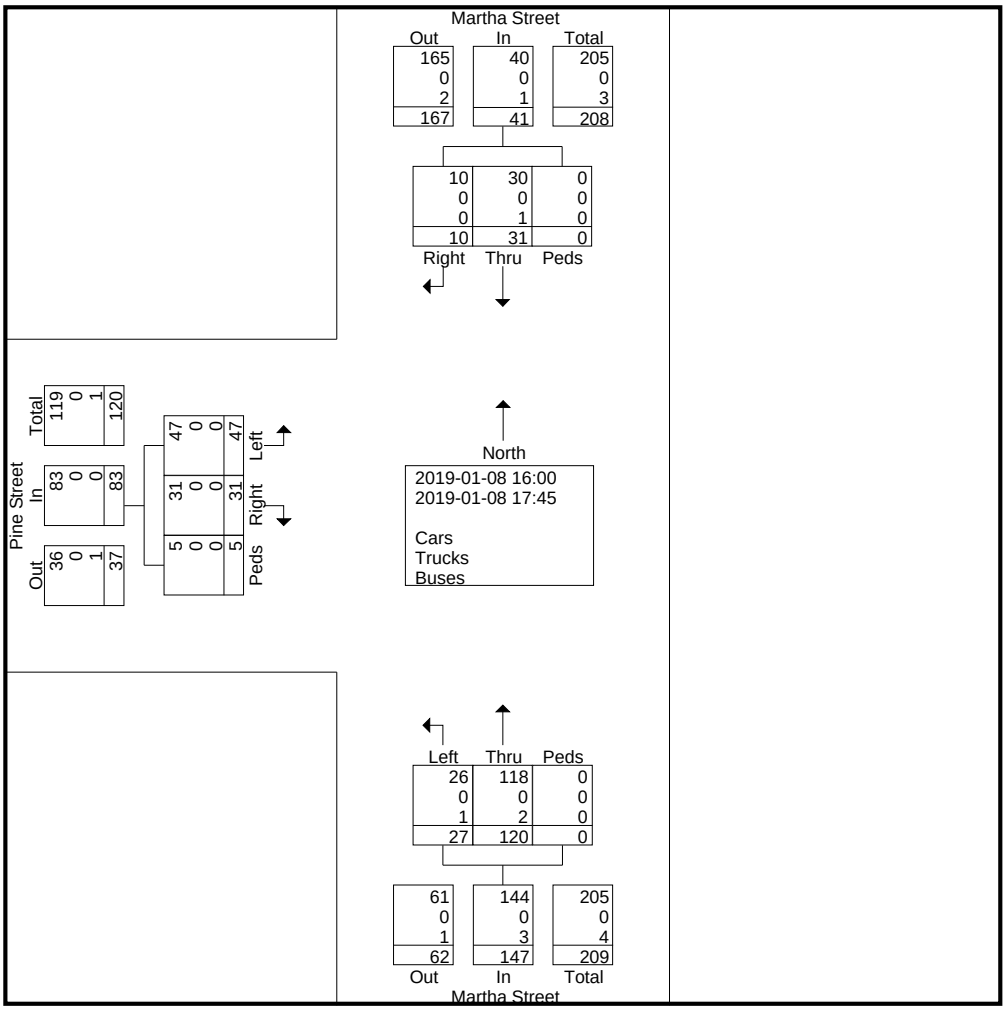
	Martha Street Southbound				Martha Street Northbound				Pine Street Eastbound				
Start Time	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
16:00	4	1	0	5	3	13	0	16	6	7	1	14	35
16:15	5	1	0	6	5	22	0	27	2	6	0	8	41
16:30	4	3	0	7	2	11	0	13	7	2	2	11	31
16:45	4	3	0	7	3	16	0	19	5	2	0	7	33
Total	17	8	0	25	13	62	0	75	20	17	3	40	140
17:00	2	0	0	2	3	16	0	19	5	3	2	10	31
17:15	2	1	0	3	3	19	0	22	6	4	0	10	35
17:30	5	0	0	5	3	11	0	14	8	3	0	11	30
17:45	5	1	0	6	5	12	0	17	8	4	0	12	35
Total	14	2	0	16	14	58	0	72	27	14	2	43	131
Grand Total	31	10	0	41	27	120	0	147	47	31	5	83	271
Apprch %	75.6	24.4	0		18.4	81.6	0		56.6	37.3	6		
Total %	11.4	3.7	0	15.1	10	44.3	0	54.2	17.3	11.4	1.8	30.6	
Cars	30	10	0	40	26	118	0	144	47	31	5	83	267
% Cars	96.8	100	0	97.6	96.3	98.3	0	98	100	100	100	100	98.5
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Buses	1	0	0	1	1	2	0	3	0	0	0	0	4
% Buses	3.2	0	0	2.4	3.7	1.7	0	2	0	0	0	0	1.5

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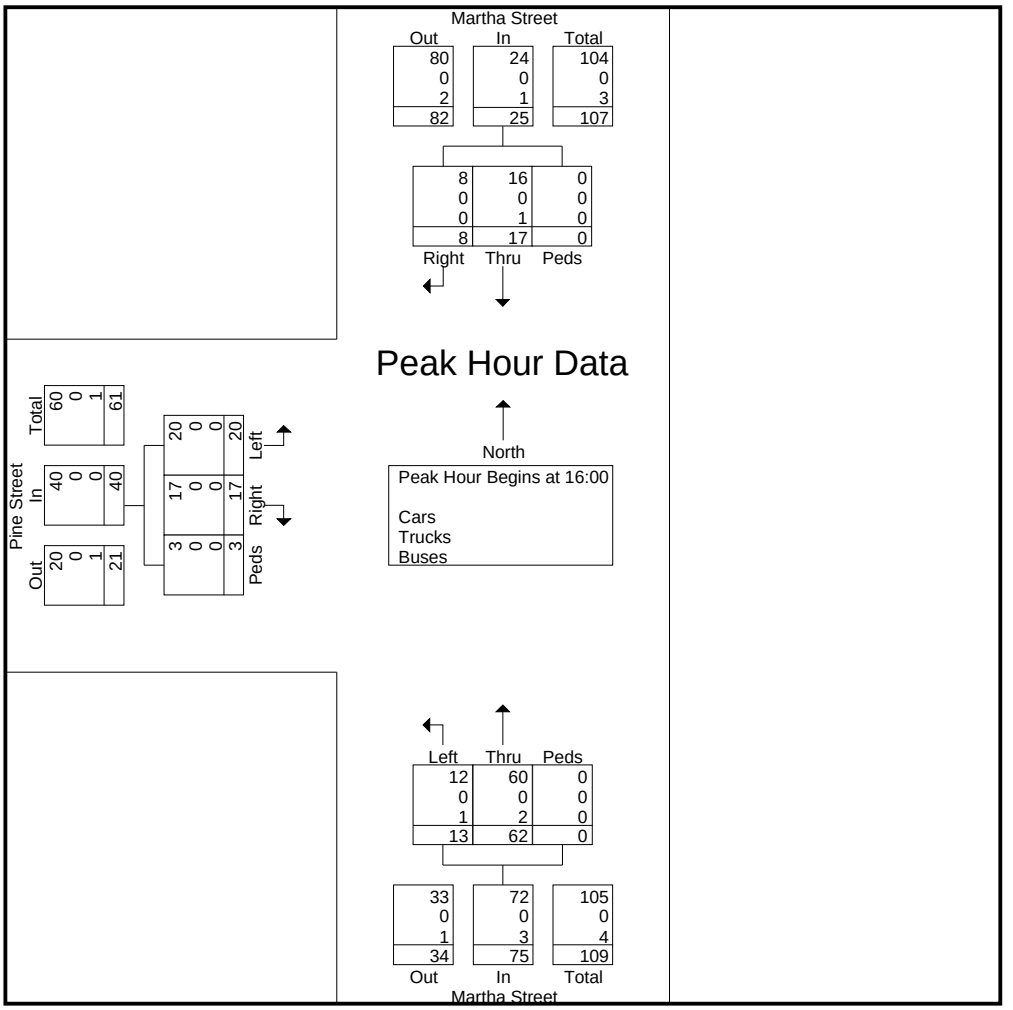
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Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 16:00													
16:00	4	1	0	5	3	13	0	16	6	**7**	1	**14**	35
16:15	**5**	1	0	6	**5**	**22**	0	**27**	2	6	0	8	**41**
16:30	4	**3**	0	**7**	2	11	0	13	**7**	2	**2**	11	31
16:45	4	3	0	7	3	16	0	19	5	2	0	7	33
Total Volume	17	8	0	25	13	62	0	75	20	17	3	40	140
% App. Total	68	32	0		17.3	82.7	0		50	42.5	7.5		
PHF	.850	.667	.000	.893	.650	.705	.000	.694	.714	.607	.375	.714	.854
Cars	16	8	0	24	12	60	0	72	20	17	3	40	136
% Cars	94.1	100	0	96.0	92.3	96.8	0	96.0	100	100	100	100	97.1
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Buses	1	0	0	1	1	2	0	3	0	0	0	0	4
% Buses	5.9	0	0	4.0	7.7	3.2	0	4.0	0	0	0	0	2.9



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Groups Printed- Cars - Trucks - Buses

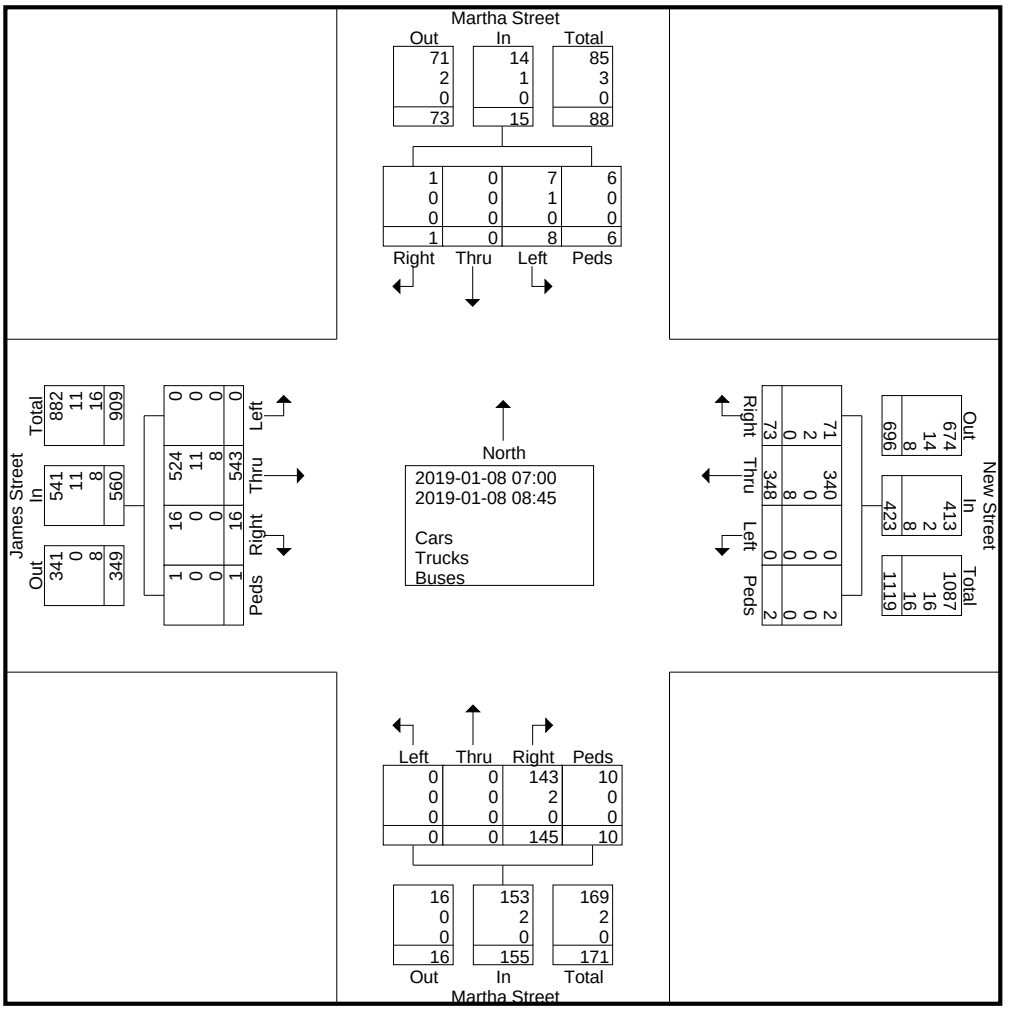
	Martha Street Southbound					New Street Westbound					Martha Street Northbound					James Street Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00	0	0	0	0	0	0	17	4	0	21	0	0	10	3	13	0	51	0	0	51	85
07:15	1	0	0	1	2	0	14	2	0	16	0	0	20	1	21	0	56	1	0	57	96
07:30	1	0	0	0	1	0	21	6	0	27	0	0	10	2	12	0	80	2	0	82	122
07:45	1	0	0	1	2	0	49	8	2	59	0	0	19	2	21	0	89	1	0	90	172
Total	3	0	0	2	5	0	101	20	2	123	0	0	59	8	67	0	276	4	0	280	475
08:00	4	0	0	1	5	0	49	18	0	67	0	0	17	0	17	0	72	2	0	74	163
08:15	0	0	0	0	0	0	66	12	0	78	0	0	24	2	26	0	69	2	0	71	175
08:30	0	0	1	3	4	0	76	8	0	84	0	0	23	0	23	0	74	3	0	77	188
08:45	1	0	0	0	1	0	56	15	0	71	0	0	22	0	22	0	52	5	1	58	152
Total	5	0	1	4	10	0	247	53	0	300	0	0	86	2	88	0	267	12	1	280	678
Grand Total	8	0	1	6	15	0	348	73	2	423	0	0	145	10	155	0	543	16	1	560	1153
Apprch %	53.3	0	6.7	40		0	82.3	17.3	0.5		0	0	93.5	6.5		0	97	2.9	0.2		
Total %	0.7	0	0.1	0.5	1.3	0	30.2	6.3	0.2	36.7	0	0	12.6	0.9	13.4	0	47.1	1.4	0.1	48.6	
Cars	7	0	1	6	14	0	340	71	2	413	0	0	143	10	153	0	524	16	1	541	1121
% Cars	87.5	0	100	100	93.3	0	97.7	97.3	100	97.6	0	0	98.6	100	98.7	0	96.5	100	100	96.6	97.2
Trucks	1	0	0	0	1	0	0	2	0	2	0	0	2	0	2	0	11	0	0	11	16
% Trucks	12.5	0	0	0	6.7	0	0	2.7	0	0.5	0	0	1.4	0	1.3	0	2	0	0	2	1.4
Buses	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	0	8	0	0	8	16
% Buses	0	0	0	0	0	0	2.3	0	0	1.9	0	0	0	0	0	0	1.5	0	0	1.4	1.4

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File Name : Martha&James-AM
Site Code : 19275122
Start Date : 2019-01-08
Page No : 2



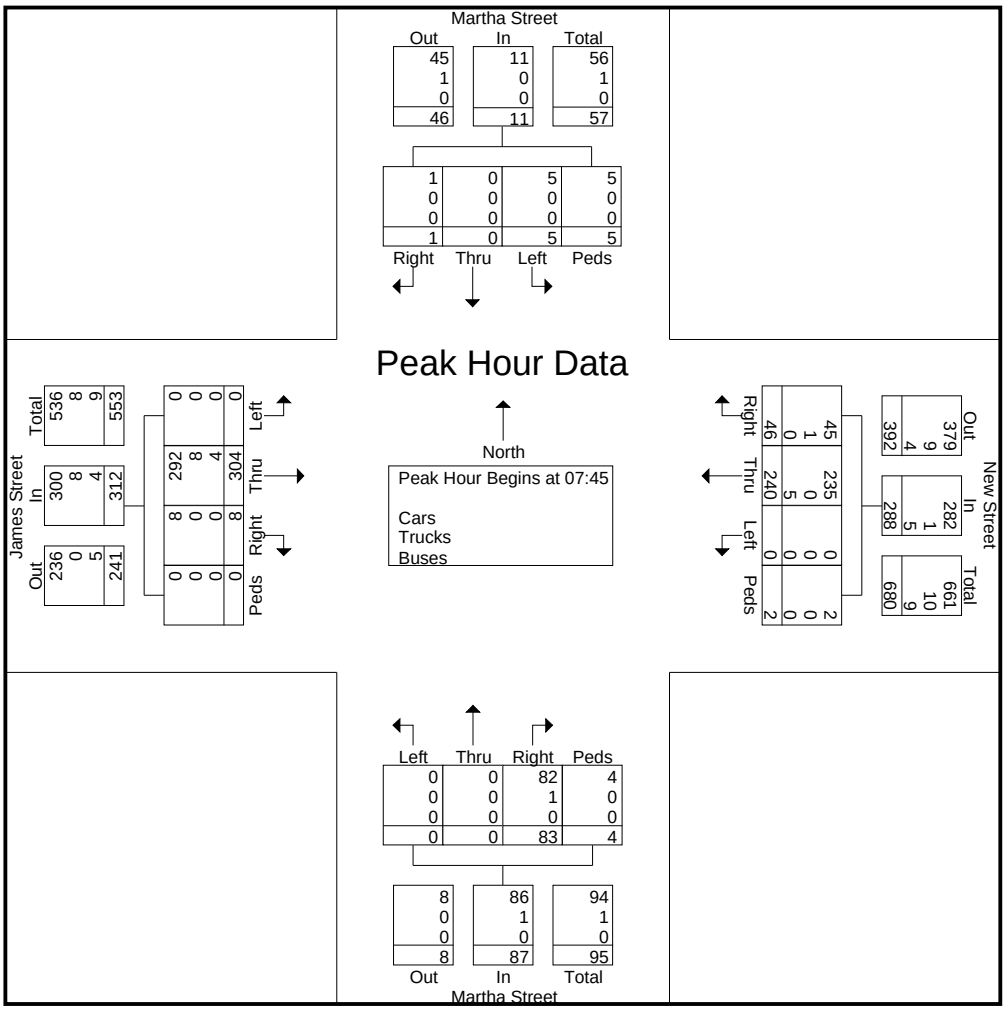
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Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45																					
07:45	1	0	0	1	2	0	49	8	**2**	59	0	0	19	**2**	21	0	**89**	1	0	**90**	172
08:00	**4**	0	0	1	**5**	0	49	**18**	0	67	0	0	17	0	17	0	72	2	0	74	163
08:15	0	0	0	0	0	0	66	12	0	78	0	0	**24**	2	**26**	0	69	2	0	71	175
08:30	0	0	**1**	**3**	4	0	**76**	8	0	**84**	0	0	23	0	23	0	74	**3**	0	77	**188**
Total Volume	5	0	1	5	11	0	240	46	2	288	0	0	83	4	87	0	304	8	0	312	698
% App. Total	45.5	0	9.1	45.5		0	83.3	16	0.7		0	0	95.4	4.6		0	97.4	2.6	0		
PHF	.313	.000	.250	.417	.550	.000	.789	.639	.250	.857	.000	.000	.865	.500	.837	.000	.854	.667	.000	.867	.928
Cars	5	0	1	5	11	0	235	45	2	282	0	0	82	4	86	0	292	8	0	300	679
% Cars	100	0	100	100	100	0	97.9	97.8	100	97.9	0	0	98.8	100	98.9	0	96.1	100	0	96.2	97.3
Trucks	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	0	8	0	0	8	10
% Trucks	0	0	0	0	0	0	0	2.2	0	0.3	0	0	1.2	0	1.1	0	2.6	0	0	2.6	1.4
Buses	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	4	0	0	4	9
% Buses	0	0	0	0	0	0	2.1	0	0	1.7	0	0	0	0	0	0	1.3	0	0	1.3	1.3



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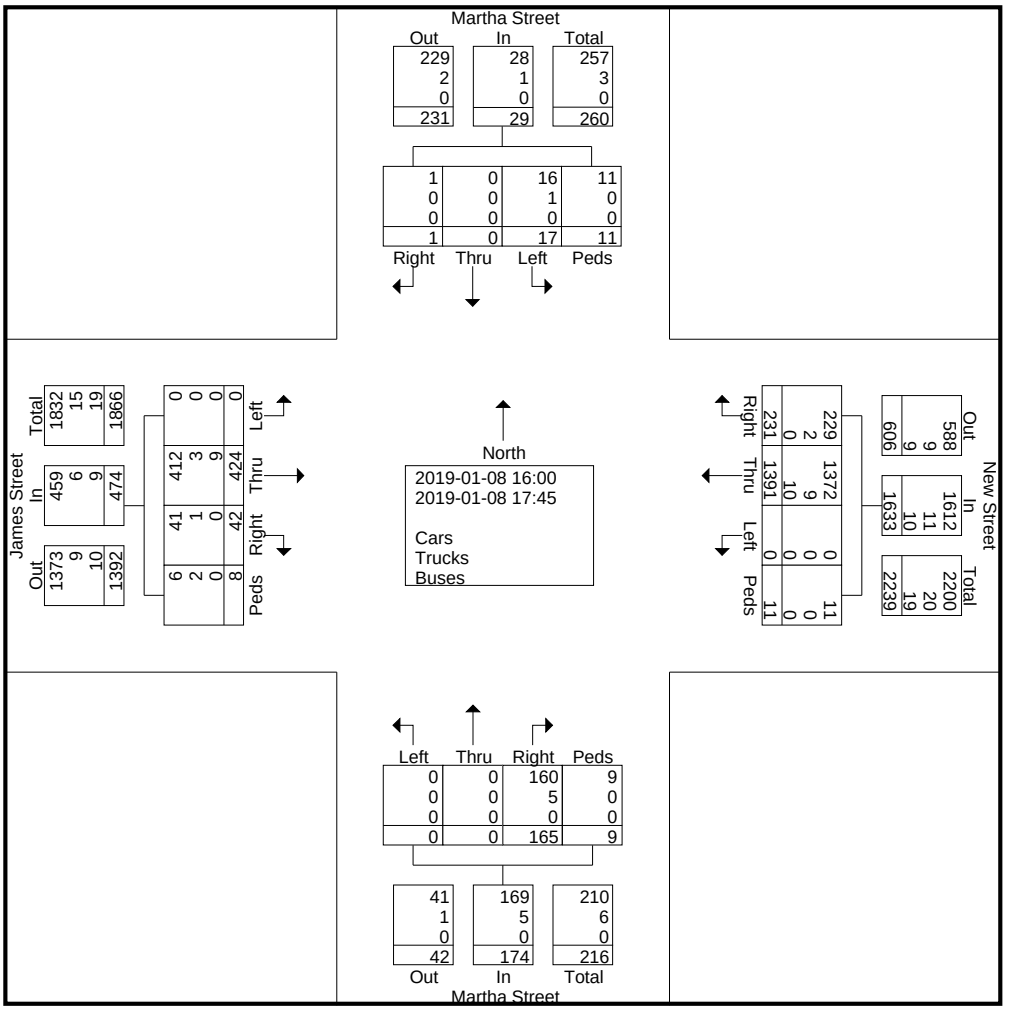
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Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
16:00	1	0	0	0	1	0	149	23	0	172	0	0	16	1	17	0	66	5	0	71	261
16:15	1	0	0	2	3	0	171	30	0	201	0	0	27	1	28	0	45	4	2	51	283
16:30	3	0	0	1	4	0	175	28	0	203	0	0	17	2	19	0	54	10	3	67	293
16:45	7	0	0	0	7	0	218	24	0	242	0	0	22	3	25	0	76	5	0	81	355
Total	12	0	0	3	15	0	713	105	0	818	0	0	82	7	89	0	241	24	5	270	1192
17:00	2	0	1	6	9	0	192	21	0	213	0	0	23	0	23	0	50	2	1	53	298
17:15	0	0	0	0	0	0	211	15	0	226	0	0	25	0	25	0	36	7	2	45	296
17:30	1	0	0	1	2	0	181	23	0	204	0	0	15	2	17	0	51	4	0	55	278
17:45	2	0	0	1	3	0	94	67	11	172	0	0	20	0	20	0	46	5	0	51	246
Total	5	0	1	8	14	0	678	126	11	815	0	0	83	2	85	0	183	18	3	204	1118
Grand Total	17	0	1	11	29	0	1391	231	11	1633	0	0	165	9	174	0	424	42	8	474	2310
Apprch %	58.6	0	3.4	37.9		0	85.2	14.1	0.7		0	0	94.8	5.2		0	89.5	8.9	1.7		
Total %	0.7	0	0	0.5	1.3	0	60.2	10	0.5	70.7	0	0	7.1	0.4	7.5	0	18.4	1.8	0.3	20.5	
Cars	16	0	1	11	28	0	1372	229	11	1612	0	0	160	9	169	0	412	41	6	459	2268
% Cars	94.1	0	100	100	96.6	0	98.6	99.1	100	98.7	0	0	97	100	97.1	0	97.2	97.6	75	96.8	98.2
Trucks	1	0	0	0	1	0	9	2	0	11	0	0	5	0	5	0	3	1	2	6	23
% Trucks	5.9	0	0	0	3.4	0	0.6	0.9	0	0.7	0	0	3	0	2.9	0	0.7	2.4	25	1.3	1
Buses	0	0	0	0	0	0	10	0	0	10	0	0	0	0	0	0	9	0	0	9	19
% Buses	0	0	0	0	0	0	0.7	0	0	0.6	0	0	0	0	0	0	2.1	0	0	1.9	0.8

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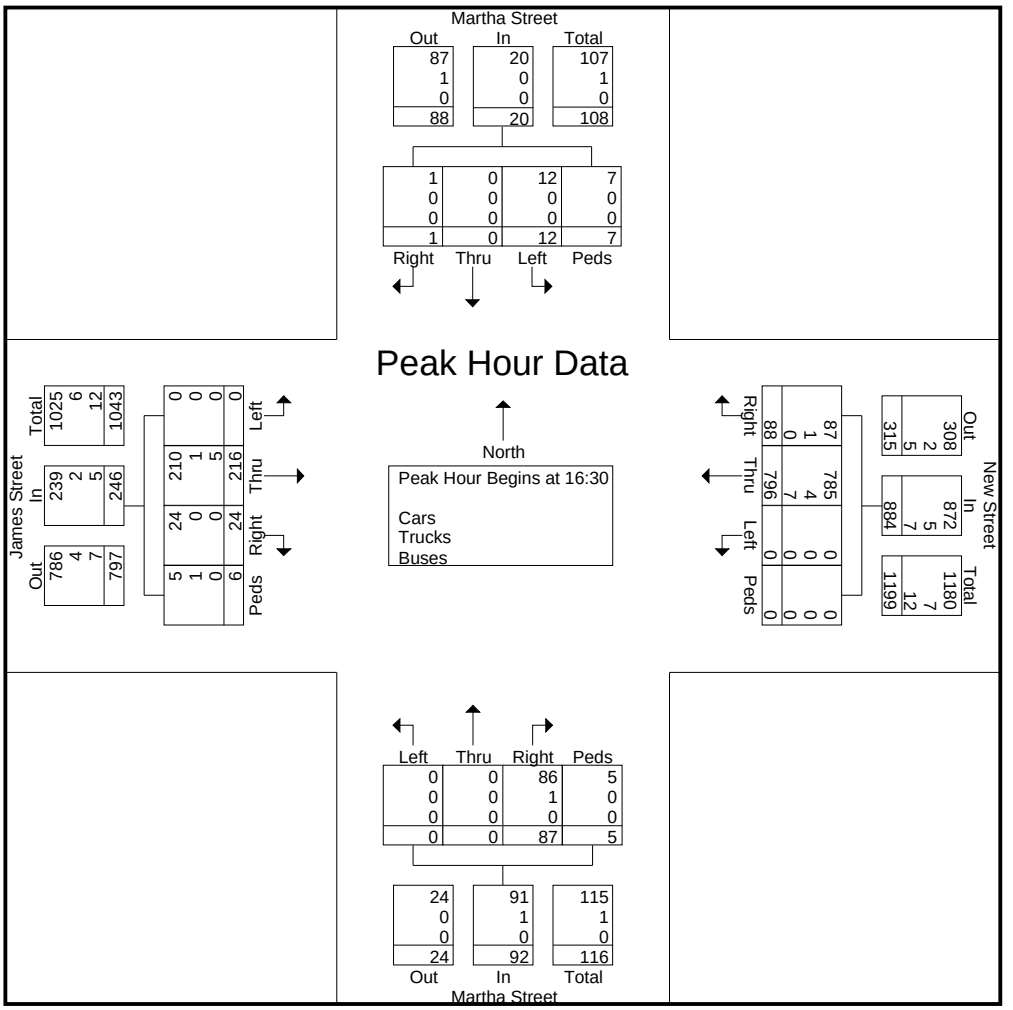
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Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:30																					
16:30	3	0	0	1	4	0	175	**28**	0	203	0	0	17	2	19	0	54	**10**	**3**	67	293
16:45	**7**	0	0	0	7	0	**218**	24	0	**242**	0	0	22	**3**	**25**	0	**76**	5	0	**81**	**355**
17:00	2	0	**1**	**6**	**9**	0	192	21	0	213	0	0	23	0	23	0	50	2	1	53	298
17:15	0	0	0	0	0	0	211	15	0	226	0	0	**25**	0	25	0	36	7	2	45	296
Total Volume	12	0	1	7	20	0	796	88	0	884	0	0	87	5	92	0	216	24	6	246	1242
% App. Total	60	0	5	35		0	90	10	0		0	0	94.6	5.4		0	87.8	9.8	2.4		
PHF	.429	.000	.250	.292	.556	.000	.913	.786	.000	.913	.000	.000	.870	.417	.920	.000	.711	.600	.500	.759	.875
Cars	12	0	1	7	20	0	785	87	0	872	0	0	86	5	91	0	210	24	5	239	1222
% Cars	100	0	100	100	100	0	98.6	98.9	0	98.6	0	0	98.9	100	98.9	0	97.2	100	83.3	97.2	98.4
Trucks	0	0	0	0	0	0	4	1	0	5	0	0	1	0	1	0	1	0	1	2	8
% Trucks	0	0	0	0	0	0	0.5	1.1	0	0.6	0	0	1.1	0	1.1	0	0.5	0	16.7	0.8	0.6
Buses	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	0	5	0	0	5	12
% Buses	0	0	0	0	0	0	0.9	0	0	0.8	0	0	0	0	0	0	2.3	0	0	2.0	1.0



APPENDIX C

Signal Timing Plans

Intersection Name:	TS ID:	Line No:	Model:	IP address:	Controller Make:
Lakeshore @ Brant St	210	2	ACS/3	172.22.41.2	Econolite

Type of Operation: 4 Phase Semi-Actuated

*-Start from Main Menu

No	Date			Description	Prepared by
	Y	M	D		EN
3	2018	10	29	Revert back to Original Timings	

PHASE DESCRIPTION

Ph1	EBLT - Lakeshore Road	Ph5	
Ph2	EB/WB - Lakeshore Road	Ph6	
Ph3		Ph7	
Ph4	NB/SB - Brant Street	Ph8	

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

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

CONTROLLER TIMING DATA - VEHICLE TIMING * - 2 - 1

Timing Plan: 1

	Phase: 1	2	3	4	5	6	7	8
Minimum Green	6	8		8				
Walk		11		12				
Ped. Clearance		16		19				
Pedestrian Carry Over								
Vehicle Extension	3	3		3				
MAX 1	10	35		25				
MAX 2	10	35		25				
Yellow Change	3	4		4				
Red Clearance		2		3				
Phase Minimum:	**10**	**34**	**1**	**39**	**1**	**1**	**1**	**1**

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

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

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

Coordinator Pattern (CP)	Cycle Length	Offset (sec)	Timing Plan	Split Pattern	Phases (sec)							
					1	2	3	4	5	6	7	8
1	110	47	1	1	11	58		41				
2	100	44	1	2	11	48		41				
3	120	51	1	3	11	68		41				
4	90	78	1	4	12	38		40				
10	0	0	1	10	0	0		0				

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

Day Plan	Sched. #	Action Plan	Time Period	Pattern	Timing Plan	
1	1	4	06:30	4	1	
1	1	1	07:00	1	1	Schedule 1 = Day Plan 1
1	1	2	09:00	2	1	Schedule 2 = Day Plan 2
1	1	3	15:30	3	1	Schedule 3 = Day Plan 3
1	1	4	19:00	4	1	
1	1	10	22:00	254	1	Day Plan 1 (Weekday)
2	2	1	07:00	1	1	Day Plan 2 (Saturday)
2	2	10	23:00	254	1	Day Plan 3 (Sunday, Holidays)
3	3	1	8:30	1	1	
3	3	10	22:00	254	1	Action Plan 10 = free (254)

Special Programming:

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

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

Intersection Name:	TS ID:	Line No:	Model:	IP address:	Controller Make:
Lakeshore Rd @ Elizabeth St	211	2	ACS/3	172.22.42.2	Econolite

Type of Operation: 8 Phase Semi-Actuated

*-Start from Main Menu

No	Date			Description	Prepared by
	Y	M	D		EN
6	2018	11	19	Revert back to original timings	

PHASE DESCRIPTION

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

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

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

CONTROLLER TIMING DATA - VEHICLE TIMING * - 2 - 1

Timing Plan: 1

	Phase: 1	2	3	4	5	6	7	8
Minimum Green		8		8		8		8
Walk		20		8		20		8
Ped. Clearance		14		16		14		16
Pedestrian Carry Over								
Vehicle Extension		3		3		3		3
MAX 1		35		25		35		25
MAX 2		35		25		34		25
Yellow Change		4		4		4		4
Red Clearance		3		3		3		3
Phase Minimum:	**1**	**42**	**1**	**32**	**1**	**42**	**1**	**32**

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

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

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

Coordinator Pattern (CP)	Cycle Length	Offset (sec)	Timing Plan	Split Pattern	Phases (sec)							
					1	2	3	4	5	6	7	8
1	110	49	1	1		75		35		75		35
2	100	46	1	2		64		36		64		36
3	120	56	1	3		84		36		84		36
4	90	84	1	4		49		41		49		41
10	0	0	1	10		0		0		0		0

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

Day Plan	Sched. #	Action Plan	Time Period	Pattern	Timing Plan	
1	1	4	06:30	4	1	
1	1	1	07:00	1	1	Schedule 1 = Day Plan 1
1	1	2	09:00	2	1	Schedule 2 = Day Plan 2
1	1	3	15:30	3	1	Schedule 3 = Day Plan 3
1	1	4	19:00	4	1	
1	1	10	20:30	254	1	Day Plan 1 (Weekday)
2	2	1	07:00	1	1	Day Plan 2 (Saturday)
2	2	10	20:30	254	1	Day Plan 3 (Sunday, Holidays)
3	3	1	8:30	1	1	
3	3	10	20:30	254	1	Action Plan 10 = free (254)

Special Programming:

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

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

Intersection Name:	TS ID:	Group No:	IP address:
Lakeshore Rd @ Pearl St	212		172.22.43.2

Controller Make:	Model:
Econolite	ACS/3

Type of Operation: 8 Phase Semi-Actuated

No	Date Y	Date M	Date D	Description	Prepared by
2	2015	10	14	Splits and offsets adjusted as part of corridor review	BP

*- Start from Main Manu

PHASE DESCRIPTION

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

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

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

CONTROLLER TIMING DATA - VEHICLE TIMING * - 2 - 1

Timing Plan: 1 / Phase:	1	2	3	4	5	6	7	8
Minimum Green :		8		8		8		8
Conditional Service Min. Green :								
Walk :		20		10		20		10
Ped. Clearance :		11		12		11		12
Pedestrian Carry Over :								
Vehicle Extension :		3		3		3		3
MAX 1 :		35		25		35		25
MAX 2 :		35		25		35		25
Yellow Change :		4		4		4		4
Red Clearance :		2		2		2		2

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

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

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

Coordinator Pattern (CP)	Cycle Length	Offset (sec)	Timing Plan	Split Pattern	Phases (sec) 1	2	3	4	5	6	7	8
1	110	49	1	1		79		31		79		31
2	100	44	1	2		69		31		69		31
3	120	51	1	3		89		31		89		31
4	90	88	1	4		57		33		57		33
10	0	0	1	10		0		0		0		0

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

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

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

X - select "." deselect

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

Day Plan	Sched. #	Action Plan	Time Period	Pattern	Timing Plan
1	1	4	06:30	4	1
1	1	1	07:00	1	1
1	1	2	09:00	2	1
1	1	3	15:30	3	1
1	1	4	19:00	4	1
1	1	10	22:00	254	1
2	2	1	07:00	1	1
2	2	10	23:00	254	1
3	3	1	8:30	1	1
3	3	10	22:00	254	1

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

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

Action Plan 10 = free (254)

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

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

Intersection Name:	TS ID:	Line No:	Model:	IP address:	Controller Make:
New St @ Martha St	214	2	ACS/3	172.22.157.1	Econolite

Type of Operation: 8 Phase Semi-Actuated

*-Start from Main Menu

No	Date			Description	Prepared by
	Y	M	D		BP
3	2016	9	20	Timings reverted back to orginial	

PHASE DESCRIPTION

Ph1		Ph5	
Ph2	EB - New Street	Ph6	WB - New Street
Ph3		Ph7	
Ph4		Ph8	SB - Martha Street

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

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

CONTROLLER TIMING DATA - VEHICLE TIMING * - 2 - 1

Timing Plan: 1

Phase:	1	2	3	4	5	6	7	8
Minimum Green		8				8		8
Walk		25				25		8
Ped. Clearance		7				7		12
Pedestrian Carry Over								
Vehicle Extension		3				3		3
MAX 1		35				35		25
MAX 2		35				35		25
Yellow Change		4				4		3
Red Clearance		2				2		2
Phase Minimum:	1	39	1	1	1	39	1	26

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

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

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

Coordinator Pattern (CP)	Cycle Length	Offset (sec)	Timing Plan	Split Pattern	Phases (sec)							
					1	2	3	4	5	6	7	8
1	70	41	1	1		40				40		30
2	70	41	1	2		40				40		30
3	90	42	1	3		60				60		30
4	70	58	1	4		40				40		30
10	0	0	1	10		0				0		0

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

Day Plan	Sched. #	Action Plan	Time Period	Pattern	Timing Plan	
1	1	4	06:00	4	1	
1	1	1	07:30	1	1	Schedule 1 = Day Plan 1
1	1	2	09:00	2	1	Schedule 2 = Day Plan 2
1	1	3	15:30	3	1	Schedule 3 = Day Plan 3
1	1	4	19:00	4	1	
1	1	10	21:00	254	1	Day Plan 1 (Weekday)
2	2	2	08:00	2	1	Day Plan 2 (Saturday)
2	2	10	21:00	254	1	Day Plan 3 (Sunday, Holidays)
3	3	4	08:00	4	1	
3	3	10	21:30	254	1	Action Plan 10 = free (254)

Special Programming:

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

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

APPENDIX D

Existing Traffic Capacity Analysis

Existing Traffic Capacity Analysis
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	1	6		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)	10.0	34.0		34.0	34.0		39.0	39.0		39.0	39.0	
Total Split (s)	11.0	69.0		58.0	58.0		41.0	41.0		41.0	41.0	
Total Split (%)	10.0%	62.7%		52.7%	52.7%		37.3%	37.3%		37.3%	37.3%	
Maximum Green (s)	8.0	63.0		52.0	52.0		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)	-1.0	-1.0		-1.0	-1.0			-1.0		-1.0	-1.0	
Total Lost Time (s)	2.0	5.0		5.0	5.0			6.0		6.0	6.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Max		C-Max	C-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)		7		7	7		12	12		12	12	
Act Effct Green (s)	85.3	82.3			71.2			16.7		16.7	16.7	
Actuated g/C Ratio	0.78	0.75			0.65			0.15		0.15	0.15	
v/c Ratio	0.27	0.65			0.31			0.04		0.47	0.49	
Control Delay	5.4	11.8			7.6			34.5		47.8	10.0	
Queue Delay	0.0	1.3			0.1			0.0		0.0	0.0	
Total Delay	5.4	13.1			7.7			34.5		47.8	10.0	
LOS	A	B			A			C		D	A	
Approach Delay		11.9			7.7			34.5			22.6	
Approach LOS		B			A			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 47 (43%), Referenced to phase 2:WBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 12.1		Intersection LOS: B	
Intersection Capacity Utilization 74.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Brant & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	123	761	12	0	532	80	7	1	0	71	4	153
Future Volume (vph)	123	761	12	0	532	80	7	1	0	71	4	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	54.0		0.0	24.0		0.0	0.0		0.0	0.0		24.0
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
Ped Bike Factor	1.00	1.00			1.00			1.00		0.99	0.98	
Frt		0.997			0.978						0.854	
Flt Protected	0.950							0.957		0.950		
Satd. Flow (prot)	1752	1821	0	1900	3346	0	0	1818	0	1719	1518	0
Flt Permitted	0.363							0.737		0.752		
Satd. Flow (perm)	667	1821	0	1900	3346	0	0	1393	0	1344	1518	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			24						184	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		99.8			134.4			31.0			59.8	
Travel Time (s)		7.2			9.7			2.2			4.3	
Confl. Peds. (#/hr)	7		12	12		7	7		7	7		7
Peak Hour Factor	0.75	0.87	0.75	1.00	0.93	0.83	0.88	1.00	1.00	0.75	0.75	0.83
Heavy Vehicles (%)	3%	4%	0%	0%	5%	5%	0%	0%	0%	5%	0%	5%
Bus Blockages (#/hr)	0	0	0	0	0	25	0	0	0	0	0	0
Adj. Flow (vph)	164	875	16	0	572	96	8	1	0	95	5	184
Shared Lane Traffic (%)												
Lane Group Flow (vph)	164	891	0	0	668	0	0	9	0	95	189	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	6			2			4			4	
Permitted Phases	6			2			4			4		

HCM Signalized Intersection Capacity Analysis
1: Brant & Lakeshore

Existing
Weekday AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	123	761	12	0	532	80	7	1	0	71	4	153
Future Volume (vph)	123	761	12	0	532	80	7	1	0	71	4	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	5.0			5.0			6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00			0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00			1.00			1.00		1.00	0.98	
Flpb, ped/bikes	1.00	1.00			1.00			1.00		0.99	1.00	
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)	1750	1822			3348			1811		1698	1518	
Flt Permitted	0.36	1.00			1.00			0.74		0.75	1.00	
Satd. Flow (perm)	668	1822			3348			1393		1344	1518	
Peak-hour factor, PHF	0.75	0.87	0.75	1.00	0.93	0.83	0.88	1.00	1.00	0.75	0.75	0.83
Adj. Flow (vph)	164	875	16	0	572	96	8	1	0	95	5	184
RTOR Reduction (vph)	0	0	0	0	8	0	0	0	0	0	156	0
Lane Group Flow (vph)	164	891	0	0	660	0	0	9	0	95	33	0
Confl. Peds. (#/hr)	7		12	12		7	7		7	7		7
Heavy Vehicles (%)	3%	4%	0%	0%	5%	5%	0%	0%	0%	5%	0%	5%
Bus Blockages (#/hr)	0	0	0	0	0	25	0	0	0	0	0	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2			4			4		
Actuated Green, G (s)	81.3	81.3			70.2			15.7		15.7	15.7	
Effective Green, g (s)	82.3	82.3			71.2			16.7		16.7	16.7	
Actuated g/C Ratio	0.75	0.75			0.65			0.15		0.15	0.15	
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)	589	1363			2167			211		204	230	
v/s Ratio Prot	0.02	c0.49			0.20						0.02	
v/s Ratio Perm	0.19							0.01		c0.07		
v/c Ratio	0.28	0.65			0.30			0.04		0.47	0.14	
Uniform Delay, d1	4.1	6.8			8.5			39.8		42.6	40.4	
Progression Factor	1.00	1.00			0.73			1.00		1.00	1.00	
Incremental Delay, d2	0.3	2.5			0.4			0.1		1.7	0.3	
Delay (s)	4.3	9.3			6.6			39.9		44.3	40.7	
Level of Service	A	A			A			D		D	D	
Approach Delay (s)		8.5			6.6			39.9			41.9	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	74.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Queues
1: Brant & Lakeshore

Existing
Weekday AM Peak Hour

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	123	761	532	7	1	71	4
Future Volume (vph)	123	761	532	7	1	71	4
Lane Group Flow (vph)	164	891	668	0	9	95	189
Turn Type	pm+pt	NA	NA	Perm	NA	Perm	NA
Protected Phases	1	6	2		4		4
Permitted Phases	6			4		4	
Detector Phase	1	6	2	4	4	4	4
Switch Phase							
Minimum Initial (s)	6.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	10.0	34.0	34.0	39.0	39.0	39.0	39.0
Total Split (s)	11.0	69.0	58.0	41.0	41.0	41.0	41.0
Total Split (%)	10.0%	62.7%	52.7%	37.3%	37.3%	37.3%	37.3%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	2.0	5.0	5.0		6.0	6.0	6.0
Lead/Lag	Lead		Lag				
Lead-Lag Optimize?	Yes		Yes				
Recall Mode	None	Max	C-Max	None	None	None	None
v/c Ratio	0.27	0.65	0.31		0.04	0.47	0.49
Control Delay	5.4	11.8	7.6		34.5	47.8	10.0
Queue Delay	0.0	1.3	0.1		0.0	0.0	0.0
Total Delay	5.4	13.1	7.7		34.5	47.8	10.0
Queue Length 50th (m)	6.5	74.1	21.2		1.8	20.4	1.0
Queue Length 95th (m)	18.4	190.6	27.4		5.4	25.0	9.2
Internal Link Dist (m)		75.8	110.4		7.0		35.8
Turn Bay Length (m)	54.0						
Base Capacity (vph)	613	1363	2174		443	427	608
Starvation Cap Reductn	0	0	535		0	0	0
Spillback Cap Reductn	0	266	0		0	0	0
Storage Cap Reductn	0	0	0		0	0	0
Reduced v/c Ratio	0.27	0.81	0.41		0.02	0.22	0.31

Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 47 (43%), Referenced to phase 2:WBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated

Splits and Phases: 1: Brant & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	2	2	2	6	6		4	4		8	4	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	42.0	42.0	42.0	42.0	42.0		32.0	32.0		32.0	32.0	
Total Split (s)	75.0	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%	68.2%		31.8%	31.8%		31.8%	31.8%	
Maximum Green (s)	68.0	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	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0			-1.0		-1.0	-1.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0			6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	Max	Max		None	None		None	None	
Walk Time (s)	20.0	20.0	20.0	20.0	20.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	14.0	14.0	14.0	14.0	14.0		16.0	16.0		16.0	16.0	
Pedestrian Calls (#/hr)	7	7	7	1	1		31	31		0	31	
Act Effct Green (s)	83.6	83.6	83.6	83.6	83.6			18.6		18.6	18.6	
Actuated g/C Ratio	0.76	0.76	0.76	0.76	0.76			0.17		0.17	0.17	
v/c Ratio	0.07	0.66	0.01	0.04	0.24			0.10		0.07	0.10	
Control Delay	3.9	10.5	0.0	4.9	4.2			5.7		34.8	0.4	
Queue Delay	0.0	0.5	0.0	0.0	0.1			0.0		0.0	0.0	
Total Delay	3.9	11.0	0.0	4.9	4.3			5.7		34.8	0.4	
LOS	A	B	A	A	A			A		C	A	
Approach Delay		10.6			4.3			5.7			7.8	
Approach LOS		B			A			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 49 (45%), Referenced to phase 2:EBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 8.1		Intersection LOS: A	
Intersection Capacity Utilization 61.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Elizabeth & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	800	8	9	558	13	15	0	3	9	0	39
Future Volume (vph)	24	800	8	9	558	13	15	0	3	9	0	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	80.0		30.0	44.0		0.0	0.0		0.0	30.0		0.0
Storage Lanes	1		1	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
Ped Bike Factor	0.99		0.96		1.00			0.99		0.99	0.98	
Frt			0.850		0.996			0.982			0.850	
Flt Protected	0.950			0.950				0.958		0.950		
Satd. Flow (prot)	1504	1863	1292	1641	3477	0	0	1425	0	1388	1322	0
Flt Permitted	0.407			0.222				0.764		0.742		
Satd. Flow (perm)	640	1863	1237	383	3477	0	0	1131	0	1075	1322	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			40		4			40			288	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		134.4			121.0			80.0			99.4	
Travel Time (s)		9.7			8.7			5.8			7.2	
Confl. Peds. (#/hr)	12		14	14		12	4		4	4		4
Peak Hour Factor	0.75	0.86	0.75	0.75	0.90	0.81	0.75	1.00	1.00	0.75	1.00	0.88
Heavy Vehicles (%)	20%	2%	25%	10%	3%	15%	25%	0%	25%	30%	0%	20%
Bus Blockages (#/hr)	0	0	0	0	0	15	0	0	0	0	0	0
Adj. Flow (vph)	32	930	11	12	620	16	20	0	3	12	0	44
Shared Lane Traffic (%)												
Lane Group Flow (vph)	32	930	11	12	636	0	0	23	0	12	44	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	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	0.0	
Detector 1 Position(m)	0.0	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	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	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	0.0	
Detector 1 Queue (s)	0.0	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	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	Perm	NA		Perm	NA		custom	NA	
Protected Phases		2			6			4			4	
Permitted Phases	2		2	6			4			8		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	800	8	9	558	13	15	0	3	9	0	39
Future Volume (vph)	24	800	8	9	558	13	15	0	3	9	0	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0			6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00			1.00		1.00	0.98	
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00			1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.98		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96		0.95	1.00	
Satd. Flow (prot)	1492	1863	1237	1634	3478			1419		1376	1322	
Flt Permitted	0.41	1.00	1.00	0.22	1.00			0.76		0.74	1.00	
Satd. Flow (perm)	640	1863	1237	383	3478			1131		1075	1322	
Peak-hour factor, PHF	0.75	0.86	0.75	0.75	0.90	0.81	0.75	1.00	1.00	0.75	1.00	0.88
Adj. Flow (vph)	32	930	11	12	620	16	20	0	3	12	0	44
RTOR Reduction (vph)	0	0	3	0	1	0	0	19	0	0	37	0
Lane Group Flow (vph)	32	930	8	12	635	0	0	4	0	12	7	0
Confl. Peds. (#/hr)	12		14	14		12	4		4	4		4
Heavy Vehicles (%)	20%	2%	25%	10%	3%	15%	25%	0%	25%	30%	0%	20%
Bus Blockages (#/hr)	0	0	0	0	0	15	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		custom	NA	
Protected Phases		2			6			4			4	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	80.0	80.0	80.0	80.0	80.0			16.0		16.0	16.0	
Effective Green, g (s)	81.0	81.0	81.0	81.0	81.0			17.0		17.0	17.0	
Actuated g/C Ratio	0.74	0.74	0.74	0.74	0.74			0.15		0.15	0.15	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0			7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	471	1371	910	282	2561			174		166	204	
v/s Ratio Prot		c0.50			0.18						0.01	
v/s Ratio Perm	0.05		0.01	0.03				0.00		c0.01		
v/c Ratio	0.07	0.68	0.01	0.04	0.25			0.02		0.07	0.03	
Uniform Delay, d1	4.0	7.6	3.8	3.9	4.7			39.4		39.8	39.5	
Progression Factor	0.58	0.84	1.00	0.70	0.70			1.00		1.00	1.00	
Incremental Delay, d2	0.2	2.2	0.0	0.3	0.2			0.0		0.2	0.1	
Delay (s)	2.6	8.6	3.9	3.0	3.5			39.5		39.9	39.6	
Level of Service	A	A	A	A	A			D		D	D	
Approach Delay (s)		8.3			3.5			39.5			39.7	
Approach LOS		A			A			D			D	

Intersection Summary				
HCM 2000 Control Delay	7.9	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.58			
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	61.4%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	24	800	8	9	558	15	0	9	0
Future Volume (vph)	24	800	8	9	558	15	0	9	0
Lane Group Flow (vph)	32	930	11	12	636	0	23	12	44
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	custom	NA
Protected Phases		2			6		4		4
Permitted Phases	2		2	6		4		8	
Detector Phase	2	2	2	6	6	4	4	8	4
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	42.0	42.0	42.0	42.0	42.0	32.0	32.0	32.0	32.0
Total Split (s)	75.0	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%	68.2%	31.8%	31.8%	31.8%	31.8%
Yellow Time (s)	4.0	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	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	Max	Max	None	None	None	None
v/c Ratio	0.07	0.66	0.01	0.04	0.24		0.10	0.07	0.10
Control Delay	3.9	10.5	0.0	4.9	4.2		5.7	34.8	0.4
Queue Delay	0.0	0.5	0.0	0.0	0.1		0.0	0.0	0.0
Total Delay	3.9	11.0	0.0	4.9	4.3		5.7	34.8	0.4
Queue Length 50th (m)	2.5	156.7	0.0	0.4	28.2		0.0	2.1	0.0
Queue Length 95th (m)	m0.9	39.3	m0.0	1.4	16.8		3.8	6.2	0.0
Internal Link Dist (m)		110.4			97.0		56.0		75.4
Turn Bay Length (m)	80.0		30.0	44.0				30.0	
Base Capacity (vph)	486	1416	949	291	2643		327	283	560
Starvation Cap Reductn	0	165	0	0	853		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	0.07	0.74	0.01	0.04	0.36		0.07	0.04	0.08

Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 49 (45%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Elizabeth & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0		29.0	29.0		29.0	29.0	
Total Split (s)	79.0	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%	71.8%		28.2%	28.2%		28.2%	28.2%	
Maximum Green (s)	73.0	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	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0			-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0			5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	Max	Max		None	None		None	None	
Walk Time (s)	20.0	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	11.0		12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	0	0	0	10	10		1	1		0	0	
Act Effct Green (s)	91.6	91.6	91.6	91.6	91.6			12.2		12.2	12.2	
Actuated g/C Ratio	0.83	0.83	0.83	0.83	0.83			0.11		0.11	0.11	
v/c Ratio	0.10	0.57	0.02	0.00	0.22			0.02		0.24	0.25	
Control Delay	1.2	2.1	0.1	4.0	3.1			0.0		46.6	15.2	
Queue Delay	0.0	0.1	0.0	0.0	0.0			0.0		0.0	0.0	
Total Delay	1.2	2.2	0.1	4.0	3.1			0.0		46.6	15.2	
LOS	A	A	A	A	A			A		D	B	
Approach Delay		2.0			3.1						26.6	
Approach LOS		A			A						C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 49 (45%), Referenced to phase 2:EBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay: 3.7		Intersection LOS: A	
Intersection Capacity Utilization 54.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Pearl & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	748	18	2	540	24	1	0	2	24	4	39
Future Volume (vph)	46	748	18	2	540	24	1	0	2	24	4	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		20.0	27.0		0.0	0.0		0.0	16.0		0.0
Storage Lanes	1		1	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
Ped Bike Factor	0.99				1.00			0.99		1.00		
Frt			0.850		0.993			0.910			0.861	
Flt Protected	0.950			0.950				0.984		0.950		
Satd. Flow (prot)	1770	1845	1615	1805	3511	0	0	1676	0	1530	1570	0
Flt Permitted	0.404			0.282				0.914		0.756		
Satd. Flow (perm)	747	1845	1615	536	3511	0	0	1557	0	1214	1570	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			30		10			30			52	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		121.0			123.9			37.3			112.8	
Travel Time (s)		8.7			8.9			2.7			8.1	
Confl. Peds. (#/hr)	10					10			1	1		
Peak Hour Factor	0.75	0.85	0.75	1.00	0.87	0.75	1.00	1.00	1.00	0.75	1.00	0.75
Heavy Vehicles (%)	2%	3%	0%	0%	2%	0%	0%	0%	0%	18%	20%	3%
Adj. Flow (vph)	61	880	24	2	621	32	1	0	2	32	4	52
Shared Lane Traffic (%)												
Lane Group Flow (vph)	61	880	24	2	653	0	0	3	0	32	56	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	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	0.0	
Detector 1 Position(m)	0.0	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	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	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	0.0	
Detector 1 Queue (s)	0.0	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	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	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6			4			8		
Detector Phase	2	2	2	6	6		4	4		8	8	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	748	18	2	540	24	1	0	2	24	4	39
Future Volume (vph)	46	748	18	2	540	24	1	0	2	24	4	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0			5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			0.99		1.00	1.00	
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99			0.91		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.98		0.95	1.00	
Satd. Flow (prot)	1757	1845	1615	1805	3510			1675		1526	1569	
Flt Permitted	0.40	1.00	1.00	0.28	1.00			0.91		0.76	1.00	
Satd. Flow (perm)	746	1845	1615	535	3510			1556		1214	1569	
Peak-hour factor, PHF	0.75	0.85	0.75	1.00	0.87	0.75	1.00	1.00	1.00	0.75	1.00	0.75
Adj. Flow (vph)	61	880	24	2	621	32	1	0	2	32	4	52
RTOR Reduction (vph)	0	0	4	0	2	0	0	3	0	0	47	0
Lane Group Flow (vph)	61	880	20	2	651	0	0	0	0	32	9	0
Confl. Peds. (#/hr)	10					10			1	1		
Heavy Vehicles (%)	2%	3%	0%	0%	2%	0%	0%	0%	0%	18%	20%	3%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	88.4	88.4	88.4	88.4	88.4			9.6		9.6	9.6	
Effective Green, g (s)	89.4	89.4	89.4	89.4	89.4			10.6		10.6	10.6	
Actuated g/C Ratio	0.81	0.81	0.81	0.81	0.81			0.10		0.10	0.10	
Clearance Time (s)	6.0	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	3.0	
Lane Grp Cap (vph)	606	1499	1312	434	2852			149		116	151	
v/s Ratio Prot		c0.48			0.19						0.01	
v/s Ratio Perm	0.08		0.01	0.00				0.00		c0.03		
v/c Ratio	0.10	0.59	0.01	0.00	0.23			0.00		0.28	0.06	
Uniform Delay, d1	2.1	3.7	2.0	1.9	2.4			44.9		46.1	45.2	
Progression Factor	0.28	0.17	0.01	1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.3	1.3	0.0	0.0	0.2			0.0		1.3	0.2	
Delay (s)	0.8	1.9	0.0	2.0	2.6			44.9		47.4	45.3	
Level of Service	A	A	A	A	A			D		D	D	
Approach Delay (s)		1.8			2.6			44.9			46.1	
Approach LOS		A			A			D			D	

Intersection Summary				
HCM 2000 Control Delay	4.5	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.55			
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	54.8%	ICU Level of Service	A	
Analysis Period (min)	15			

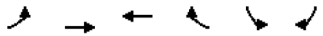
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	46	748	18	2	540	1	0	24	4
Future Volume (vph)	46	748	18	2	540	1	0	24	4
Lane Group Flow (vph)	61	880	24	2	653	0	3	32	56
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2			6		4		8
Permitted Phases	2		2	6		4		8	
Detector Phase	2	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	8.0
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0	29.0	29.0	29.0	29.0
Total Split (s)	79.0	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%	71.8%	28.2%	28.2%	28.2%	28.2%
Yellow Time (s)	4.0	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	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	Max	Max	None	None	None	None
v/c Ratio	0.10	0.57	0.02	0.00	0.22		0.02	0.24	0.25
Control Delay	1.2	2.1	0.1	4.0	3.1		0.0	46.6	15.2
Queue Delay	0.0	0.1	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	1.2	2.2	0.1	4.0	3.1		0.0	46.6	15.2
Queue Length 50th (m)	0.0	11.9	0.0	0.1	12.3		0.0	6.9	0.9
Queue Length 95th (m)	m0.0	10.0	m0.0	0.9	31.0		m0.0	12.2	11.4
Internal Link Dist (m)		97.0			99.9		13.3		88.8
Turn Bay Length (m)	55.0		20.0	27.0				16.0	
Base Capacity (vph)	621	1536	1349	446	2924		390	286	410
Starvation Cap Reductn	0	69	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.10	0.60	0.02	0.00	0.22		0.01	0.11	0.14

Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 49 (45%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Pearl & Lakeshore

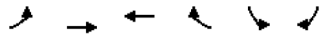




Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	57	717	548	21	8	18
Future Volume (Veh/h)	57	717	548	21	8	18
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.83	0.93	0.88	0.75	0.75
Hourly flow rate (vph)	64	864	589	24	11	24
Pedestrians		1			17	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		124				
pX, platoon unblocked					0.81	
vC, conflicting volume	630				1610	619
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	630				1636	619
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	93				87	95
cM capacity (veh/h)	944				83	479

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	64	864	613	35
Volume Left	64	0	0	11
Volume Right	0	0	24	24
cSH	944	1700	1700	192
Volume to Capacity	0.07	0.51	0.36	0.18
Queue Length 95th (m)	1.7	0.0	0.0	5.2
Control Delay (s)	9.1	0.0	0.0	27.8
Lane LOS	A			D
Approach Delay (s)	0.6		0.0	27.8
Approach LOS				D

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	48.1%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	57	717	548	21	8	18
Future Volume (vph)	57	717	548	21	8	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	36.0			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	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.995		0.907	
Flt Protected	0.950				0.985	
Satd. Flow (prot)	1787	1827	1852	0	1663	0
Flt Permitted	0.950				0.985	
Satd. Flow (perm)	1787	1827	1852	0	1663	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		123.9	42.7		116.9	
Travel Time (s)		8.9	3.1		8.4	
Confl. Peds. (#/hr)	17			17		1
Peak Hour Factor	0.89	0.83	0.93	0.88	0.75	0.75
Heavy Vehicles (%)	1%	4%	2%	4%	0%	3%
Bus Blockages (#/hr)	0	0	0	4	0	0
Adj. Flow (vph)	64	864	589	24	11	24
Shared Lane Traffic (%)						
Lane Group Flow (vph)	64	864	613	0	35	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	48.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	725	0	0	569	0	0
Future Volume (Veh/h)	725	0	0	569	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.84	1.00	1.00	0.93	1.00	1.00
Hourly flow rate (vph)	863	0	0	612	0	0
Pedestrians	2			2	2	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	167					
pX, platoon unblocked			0.81		0.81	0.81
vC, conflicting volume			865		1479	867
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			713		1474	716
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			722		113	349

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	863	0	612	0
Volume Left	0	0	0	0
Volume Right	0	0	0	0
cSH	1700	1700	1700	1700
Volume to Capacity	0.51	0.00	0.36	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	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		48.8%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	725	0	0	569	0	0
Future Volume (vph)	725	0	0	569	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	20.0		0.0	0.0
Storage Lanes		0	1		0	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt						
Flt Protected						
Satd. Flow (prot)	1827	0	1900	1845	0	1900
Flt Permitted						
Satd. Flow (perm)	1827	0	1900	1845	0	1900
Link Speed (k/h)	50			50	50	
Link Distance (m)	42.7			96.0	38.8	
Travel Time (s)	3.1			6.9	2.8	
Confl. Peds. (#/hr)		2	2		2	2
Peak Hour Factor	0.84	1.00	1.00	0.93	1.00	1.00
Heavy Vehicles (%)	4%	0%	0%	3%	0%	0%
Adj. Flow (vph)	863	0	0	612	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	863	0	0	612	0	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	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)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	48.8%		ICU Level of Service A
Analysis Period (min)	15		

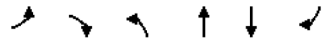
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	724	1	21	569	0	6
Future Volume (Veh/h)	724	1	21	569	0	6
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.82	1.00	0.75	0.92	1.00	1.00
Hourly flow rate (vph)	883	1	28	618	0	6
Pedestrians	1			1	2	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	263					
pX, platoon unblocked			0.80		0.80	0.80
vC, conflicting volume			886		1560	886
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			732		1576	733
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		100	98
cM capacity (veh/h)			704		93	338

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	884	28	618	6
Volume Left	0	28	0	0
Volume Right	1	0	0	6
cSH	1700	704	1700	338
Volume to Capacity	0.52	0.04	0.36	0.02
Queue Length 95th (m)	0.0	1.0	0.0	0.4
Control Delay (s)	0.0	10.3	0.0	15.8
Lane LOS		B		C
Approach Delay (s)	0.0	0.4		15.8
Approach LOS				C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	48.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	724	1	21	569	0	6
Future Volume (vph)	724	1	21	569	0	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	20.0		0.0	0.0
Storage Lanes		0	1		1	0
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt					0.865	
Flt Protected			0.950			
Satd. Flow (prot)	1815	0	1805	1833	1644	0
Flt Permitted			0.950			
Satd. Flow (perm)	1815	0	1805	1833	1644	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	96.0			85.5	39.5	
Travel Time (s)	6.9			6.2	2.8	
Confl. Peds. (#/hr)		2	2		1	1
Peak Hour Factor	0.82	1.00	0.75	0.92	1.00	1.00
Heavy Vehicles (%)	3%	0%	0%	2%	0%	0%
Bus Blockages (#/hr)	4	0	0	4	0	0
Adj. Flow (vph)	883	1	28	618	0	6
Shared Lane Traffic (%)						
Lane Group Flow (vph)	884	0	28	618	6	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	1.02	1.00	1.00	1.02	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

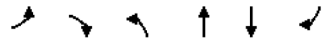
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	48.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	18	12	9	69	14	3
Future Volume (Veh/h)	18	12	9	69	14	3
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.75	0.88	0.88	1.00
Hourly flow rate (vph)	24	16	12	78	16	3
Pedestrians	4					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	124	22	23			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	124	22	23			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	97	98	99			
cM capacity (veh/h)	867	1058	1549			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	40	90	19
Volume Left	24	12	0
Volume Right	16	0	3
cSH	934	1549	1700
Volume to Capacity	0.04	0.01	0.01
Queue Length 95th (m)	1.1	0.2	0.0
Control Delay (s)	9.0	1.0	0.0
Lane LOS	A	A	
Approach Delay (s)	9.0	1.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay		3.0	
Intersection Capacity Utilization		20.8%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	18	12	9	69	14	3
Future Volume (vph)	18	12	9	69	14	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.946				0.979	
Flt Protected	0.971			0.993		
Satd. Flow (prot)	1745	0	0	1851	1860	0
Flt Permitted	0.971			0.993		
Satd. Flow (perm)	1745	0	0	1851	1860	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	105.7			116.9	176.8	
Travel Time (s)	7.6			8.4	12.7	
Confl. Peds. (#/hr)			4			4
Peak Hour Factor	0.75	0.75	0.75	0.88	0.88	1.00
Heavy Vehicles (%)	0%	0%	8%	1%	0%	0%
Adj. Flow (vph)	24	16	12	78	16	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	40	0	0	90	19	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 20.8%			ICU Level of Service A
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	267	17	0	247	0	87
Future Volume (Veh/h)	267	17	0	247	0	87
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	297	19	0	274	0	97
Pedestrians					2	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				56		
pX, platoon unblocked					0.97	
vC, conflicting volume			299		573	299
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			299		543	299
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	87
cM capacity (veh/h)			1260		484	739

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	297	19	274	97
Volume Left	0	0	0	0
Volume Right	0	19	0	97
cSH	1700	1700	1700	739
Volume to Capacity	0.17	0.01	0.16	0.13
Queue Length 95th (m)	0.0	0.0	0.0	3.6
Control Delay (s)	0.0	0.0	0.0	10.6
Lane LOS				B
Approach Delay (s)	0.0		0.0	10.6
Approach LOS				B

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	26.1%	ICU Level of Service	A
Analysis Period (min)	15		

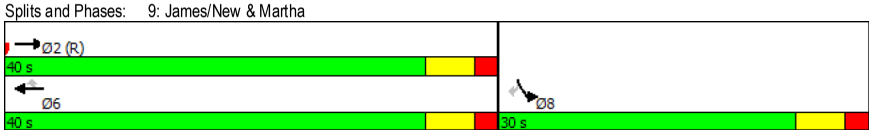
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	267	17	0	247	0	87
Future Volume (vph)	267	17	0	247	0	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.865
Flt Protected						
Satd. Flow (prot)	1863	1583	0	1863	0	1611
Flt Permitted						
Satd. Flow (perm)	1863	1583	0	1863	0	1611
Link Speed (k/h)	50			50	50	
Link Distance (m)	94.6			56.5	176.8	
Travel Time (s)	6.8			4.1	12.7	
Confl. Peds. (#/hr)		2				
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	297	19	0	274	0	97
Shared Lane Traffic (%)						
Lane Group Flow (vph)	297	19	0	274	0	97
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			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)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	26.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Switch Phase						
Minimum Initial (s)		8.0	8.0	8.0	8.0	8.0
Minimum Split (s)		39.0	39.0	39.0	26.0	26.0
Total Split (s)		40.0	40.0	40.0	30.0	30.0
Total Split (%)		57.1%	57.1%	57.1%	42.9%	42.9%
Maximum Green (s)		34.0	34.0	34.0	24.0	24.0
Yellow Time (s)		4.0	4.0	4.0	4.0	4.0
All-Red Time (s)		2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)		5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0
Recall Mode		C-Max	Max	Max	None	None
Walk Time (s)		25.0	25.0	25.0	8.0	8.0
Flash Dont Walk (s)		7.0	7.0	7.0	12.0	12.0
Pedestrian Calls (#/hr)		4	2	2	1	1
Act Effct Green (s)		63.8	63.8	63.8	11.4	
Actuated g/C Ratio		0.91	0.91	0.91	0.16	
v/c Ratio		0.24	0.18	0.05	0.02	
Control Delay		3.3	3.1	1.6	21.4	
Queue Delay		0.0	0.0	0.0	0.0	
Total Delay		3.3	3.1	1.6	21.4	
LOS		A	A	A	C	
Approach Delay		3.3	2.8		21.4	
Approach LOS		A	A		C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 41 (59%), Referenced to phase 2:EBT, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.24			
Intersection Signal Delay: 3.1		Intersection LOS: A	
Intersection Capacity Utilization 34.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 9: James/New & Martha



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	354	247	53	5	0
Future Volume (vph)	0	354	247	53	5	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			30.0	0.0	0.0
Storage Lanes	0			1	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850		
Flt Protected					0.950	
Satd. Flow (prot)	0	1827	1827	1583	1770	1863
Flt Permitted					0.950	
Satd. Flow (perm)	0	1827	1827	1583	1770	1863
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				71		
Link Speed (k/h)		50	50		50	
Link Distance (m)		56.5	80.2		40.9	
Travel Time (s)		4.1	5.8		2.9	
Confl. Peds. (#/hr)						1
Peak Hour Factor	0.90	0.90	0.81	0.75	1.00	1.00
Heavy Vehicles (%)	2%	4%	4%	2%	2%	2%
Adj. Flow (vph)	0	393	305	71	5	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	393	305	71	5	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	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2	1	1	1
Detector Template		Thru	Thru	Right	Left	Right
Leading Detector (m)		10.0	10.0	2.0	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)		0.6	0.6	2.0	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		NA	NA	Perm	Prot	Perm
Protected Phases		2	6		8	
Permitted Phases				6		8
Detector Phase		2	6	6	8	8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	354	247	53	5	0
Future Volume (vph)	0	354	247	53	5	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	1.00	1.00	
Frpb, ped/bikes		1.00	1.00	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	
Frt		1.00	1.00	0.85	1.00	
Flt Protected		1.00	1.00	1.00	0.95	
Satd. Flow (prot)		1827	1827	1583	1770	
Flt Permitted		1.00	1.00	1.00	0.95	
Satd. Flow (perm)		1827	1827	1583	1770	
Peak-hour factor, PHF	0.90	0.90	0.81	0.75	1.00	1.00
Adj. Flow (vph)	0	393	305	71	5	0
RTOR Reduction (vph)	0	0	0	15	0	0
Lane Group Flow (vph)	0	393	305	56	5	0
Confl. Peds. (#/hr)						1
Heavy Vehicles (%)	2%	4%	4%	2%	2%	2%
Turn Type		NA	NA	Perm	Prot	Perm
Protected Phases		2	6		8	
Permitted Phases				6		8
Actuated Green, G (s)		54.0	54.0	54.0	4.0	
Effective Green, g (s)		55.0	55.0	55.0	5.0	
Actuated g/C Ratio		0.79	0.79	0.79	0.07	
Clearance Time (s)		6.0	6.0	6.0	6.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		1435	1435	1243	126	
v/s Ratio Prot		c0.22	0.17		c0.00	
v/s Ratio Perm				0.04		
v/c Ratio		0.27	0.21	0.04	0.04	
Uniform Delay, d1		2.0	1.9	1.7	30.3	
Progression Factor		1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.5	0.3	0.1	0.1	
Delay (s)		2.5	2.3	1.7	30.4	
Level of Service		A	A	A	C	
Approach Delay (s)		2.5	2.2		30.4	
Approach LOS		A	A		C	

Intersection Summary			
HCM 2000 Control Delay	2.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	34.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	WBR	SBL
Lane Configurations				
Traffic Volume (vph)	354	247	53	5
Future Volume (vph)	354	247	53	5
Lane Group Flow (vph)	393	305	71	5
Turn Type	NA	NA	Perm	Prot
Protected Phases	2	6		8
Permitted Phases			6	
Detector Phase	2	6	6	8
Switch Phase				
Minimum Initial (s)	8.0	8.0	8.0	8.0
Minimum Split (s)	39.0	39.0	39.0	26.0
Total Split (s)	40.0	40.0	40.0	30.0
Total Split (%)	57.1%	57.1%	57.1%	42.9%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	Max	Max	None
v/c Ratio	0.24	0.18	0.05	0.02
Control Delay	3.3	3.1	1.6	21.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	3.3	3.1	1.6	21.4
Queue Length 50th (m)	0.0	0.0	0.0	0.6
Queue Length 95th (m)	45.4	29.8	3.3	2.7
Internal Link Dist (m)	32.5	56.2		16.9
Turn Bay Length (m)			30.0	
Base Capacity (vph)	1665	1665	1449	632
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.24	0.18	0.05	0.01

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 41 (59%), Referenced to phase 2:EBT, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 9: James/New & Martha



Existing Traffic Capacity Analysis
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	1	6		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	8.0	
Minimum Split (s)	10.0	34.0		34.0	34.0	34.0	39.0	39.0		39.0	39.0	
Total Split (s)	11.0	79.0		68.0	68.0	68.0	41.0	41.0		41.0	41.0	
Total Split (%)	9.2%	65.8%		56.7%	56.7%	56.7%	34.2%	34.2%		34.2%	34.2%	
Maximum Green (s)	8.0	73.0		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	4.0	
All-Red Time (s)	0.0	2.0		2.0	2.0	2.0	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	2.0	5.0		5.0	5.0	5.0		6.0		6.0	6.0	
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	3.0	
Recall Mode	None	Max		C-Max	C-Max	C-Max	None	None		None	None	
Walk Time (s)		11.0		11.0	11.0	11.0	12.0	12.0		12.0	12.0	
Flash Dont Walk (s)		16.0		16.0	16.0	16.0	19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)		0		0	0	0	0	0		0	0	
Act Effct Green (s)	95.0	92.0		79.9	79.9	79.9		17.0		17.0	17.0	
Actuated g/C Ratio	0.79	0.77		0.67	0.67	0.67		0.14		0.14	0.14	
v/c Ratio	0.33	0.47		0.01	0.70	0.14		0.10		0.49	0.80	
Control Delay	5.9	7.4		10.0	13.9	2.3		43.5		54.1	30.4	
Queue Delay	0.0	0.0		0.0	0.3	0.0		0.0		0.0	0.0	
Total Delay	5.9	7.4		10.0	14.1	2.3		43.5		54.1	30.4	
LOS	A	A		A	B	A		D		D	C	
Approach Delay		7.1			12.6			43.5			35.8	
Approach LOS		A			B			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 51 (43%), Referenced to phase 2:WBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 15.0		Intersection LOS: B	
Intersection Capacity Utilization 86.2%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 1: Brant & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	558	11	3	811	99	6	0	0	74	10	288
Future Volume (vph)	124	558	11	3	811	99	6	0	0	74	10	288
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	54.0		0.0	24.0		0.0	0.0		0.0	0.0		24.0
Storage Lanes	1		0	1		1	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		0.98		0.93		0.97		0.94	0.92	
Frt		0.997				0.850					0.856	
Flt Protected	0.950			0.950				0.950		0.950		
Satd. Flow (prot)	1787	1855	0	1805	1863	1497	0	1805	0	1805	1489	0
Flt Permitted	0.195			0.411				0.235		0.754		
Satd. Flow (perm)	367	1855	0	763	1863	1392	0	433	0	1350	1489	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				105					220	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		99.8			134.4			30.7			59.8	
Travel Time (s)		7.2			9.7			2.2			4.3	
Confl. Peds. (#/hr)	23		33	33		23	31		30	30		31
Peak Hour Factor	0.91	0.85	0.92	1.00	0.93	0.75	1.00	1.00	1.00	0.80	0.75	0.94
Heavy Vehicles (%)	1%	2%	0%	0%	2%	1%	0%	0%	0%	0%	0%	1%
Bus Blockages (#/hr)	0	0	0	0	0	16	0	0	0	0	0	0
Adj. Flow (vph)	136	656	12	3	872	132	6	0	0	93	13	306
Shared Lane Traffic (%)												
Lane Group Flow (vph)	136	668	0	3	872	132	0	6	0	93	319	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	1.00	1.00	1.00	1.00	1.00	1.09	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	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	0.0	
Detector 1 Position(m)	0.0	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	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	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	0.0	
Detector 1 Queue (s)	0.0	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	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	Perm	NA		Perm	NA	
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2		2	4			4		

HCM Signalized Intersection Capacity Analysis
1: Brant & Lakeshore

Existing
Weekday PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	558	11	3	811	99	6	0	0	74	10	288
Future Volume (vph)	124	558	11	3	811	99	6	0	0	74	10	288
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	5.0		5.0	5.0	5.0		6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.93		1.00		1.00	0.92	
Flpb, ped/bikes	1.00	1.00		0.97	1.00	1.00		0.97		0.94	1.00	
Frt	1.00	1.00		1.00	1.00	0.85		1.00		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.95		0.95	1.00	
Satd. Flow (prot)	1787	1855		1753	1863	1392		1754		1701	1489	
Flt Permitted	0.20	1.00		0.41	1.00	1.00		0.24		0.75	1.00	
Satd. Flow (perm)	367	1855		758	1863	1392		434		1350	1489	
Peak-hour factor, PHF	0.91	0.85	0.92	1.00	0.93	0.75	1.00	1.00	1.00	0.80	0.75	0.94
Adj. Flow (vph)	136	656	12	3	872	132	6	0	0	92	13	306
RTOR Reduction (vph)	0	0	0	0	0	35	0	0	0	0	189	0
Lane Group Flow (vph)	136	668	0	3	872	97	0	6	0	93	130	0
Confl. Peds. (#/hr)	23		33	33		23	31		30	30		31
Heavy Vehicles (%)	1%	2%	0%	0%	2%	1%	0%	0%	0%	0%	0%	1%
Bus Blockages (#/hr)	0	0	0	0	0	16	0	0	0	0	0	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2		2	4			4		
Actuated Green, G (s)	91.0	91.0		78.8	78.8	78.8		16.0		16.0	16.0	
Effective Green, g (s)	92.0	92.0		79.8	79.8	79.8		17.0		17.0	17.0	
Actuated g/C Ratio	0.77	0.77		0.66	0.66	0.66		0.14		0.14	0.14	
Clearance Time (s)	3.0	6.0		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	3.0	
Lane Grp Cap (vph)	402	1422		504	1238	925		61		191	210	
v/s Ratio Prot	0.03	c0.36			c0.47						c0.09	
v/s Ratio Perm	0.23			0.00		0.07		0.01		0.07		
v/c Ratio	0.34	0.47		0.01	0.70	0.10		0.10		0.49	0.62	
Uniform Delay, d1	9.9	5.1		6.8	12.7	7.2		44.8		47.5	48.5	
Progression Factor	1.00	1.00		0.91	0.67	0.62		1.00		1.00	1.00	
Incremental Delay, d2	0.5	1.1		0.0	2.9	0.2		0.7		2.0	5.4	
Delay (s)	10.4	6.2		6.2	11.4	4.6		45.5		49.4	53.8	
Level of Service	B	A		A	B	A		D		D	D	
Approach Delay (s)		6.9			10.5			45.5			52.8	
Approach LOS		A			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	17.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	86.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Queues
1: Brant & Lakeshore

Existing
Weekday PM Peak Hour

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	124	558	3	811	99	6	0	74	10
Future Volume (vph)	124	558	3	811	99	6	0	74	10
Lane Group Flow (vph)	136	668	3	872	132	0	6	93	319
Turn Type	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases	1	6		2			4		4
Permitted Phases	6		2		2	4		4	
Detector Phase	1	6	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	8.0
Minimum Split (s)	10.0	34.0	34.0	34.0	34.0	39.0	39.0	39.0	39.0
Total Split (s)	11.0	79.0	68.0	68.0	68.0	41.0	41.0	41.0	41.0
Total Split (%)	9.2%	65.8%	56.7%	56.7%	56.7%	34.2%	34.2%	34.2%	34.2%
Yellow Time (s)	3.0	4.0	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	2.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	2.0	5.0	5.0	5.0	5.0		6.0	6.0	6.0
Lead/Lag	Lead		Lag	Lag	Lag				
Lead-Lag Optimize?	Yes		Yes	Yes	Yes				
Recall Mode	None	Max	C-Max	C-Max	C-Max	None	None	None	None
v/c Ratio	0.33	0.47	0.01	0.70	0.14		0.10	0.49	0.80
Control Delay	5.9	7.4	10.0	13.9	2.3		43.5	54.1	30.4
Queue Delay	0.0	0.0	0.0	0.3	0.0		0.0	0.0	0.0
Total Delay	5.9	7.4	10.0	14.1	2.3		43.5	54.1	30.4
Queue Length 50th (m)	5.8	48.1	0.2	61.7	1.4		1.3	21.8	23.8
Queue Length 95th (m)	16.2	94.3	m0.4	#221.8	3.5		5.1	31.0	31.6
Internal Link Dist (m)		75.8		110.4			6.7		35.8
Turn Bay Length (m)	54.0		24.0						
Base Capacity (vph)	418	1422	507	1239	961		126	393	590
Starvation Cap Reductn	0	0	0	62	0		0	0	0
Spillback Cap Reductn	0	2	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.33	0.47	0.01	0.74	0.14		0.05	0.24	0.54

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 51 (43%), Referenced to phase 2:WBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Brant & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	2	2	2	6	6	6	4	4		8	4	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0		8.0	8.0	
Minimum Split (s)	42.0	42.0	42.0	42.0	42.0	42.0	32.0	32.0		32.0	32.0	
Total Split (s)	84.0	84.0	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%	70.0%	70.0%	30.0%	30.0%		30.0%	30.0%	
Maximum Green (s)	77.0	77.0	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		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	Max	Max	Max	None	None		None	None	
Walk Time (s)	20.0	20.0	20.0	20.0	20.0	20.0	8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	14.0	14.0	14.0	14.0	14.0	14.0	16.0	16.0		16.0	16.0	
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0		0	0	
Act Effct Green (s)	96.8	96.8	96.8	96.8	96.8	96.8		11.2		11.2	11.2	
Actuated g/C Ratio	0.81	0.81	0.81	0.81	0.81	0.81		0.09		0.09	0.09	
v/c Ratio	0.15	0.45	0.00	0.02	0.59	0.05		0.02		0.38	0.44	
Control Delay	2.4	3.8	0.0	2.0	3.6	0.3		0.2		59.2	17.0	
Queue Delay	0.0	0.2	0.0	0.0	0.1	0.0		0.0		0.0	0.0	
Total Delay	2.4	4.0	0.0	2.0	3.7	0.3		0.2		59.2	17.0	
LOS	A	A	A	A	A	A		A		E	B	
Approach Delay		3.9			3.5			0.3			30.9	
Approach LOS		A			A			A			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 56 (47%), Referenced to phase 2:EBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 5.8		Intersection LOS: A	
Intersection Capacity Utilization 63.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Elizabeth & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	580	1	7	827	51	2	0	2	36	3	84
Future Volume (vph)	51	580	1	7	827	51	2	0	2	36	3	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	80.0		30.0	44.0		0.0	0.0		0.0	38.0		0.0
Storage Lanes	1		1	1		1	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.98	1.00		0.93		0.98		1.00	0.98	
Frt			0.850			0.850		0.932			0.855	
Flt Protected	0.950			0.950				0.976		0.950		
Satd. Flow (prot)	1597	1881	1615	1805	1881	1539	0	1709	0	1703	1449	0
Flt Permitted	0.277			0.371				0.842		0.755		
Satd. Flow (perm)	466	1881	1580	705	1881	1426	0	1468	0	1350	1449	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			36			54		36			95	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		134.4			121.0			80.0			99.4	
Travel Time (s)		9.7			8.7			5.8			7.2	
Confl. Peds. (#/hr)	31		1	1		31	7		1	1		7
Peak Hour Factor	0.91	0.85	1.00	0.75	0.93	0.95	1.00	1.00	1.00	0.75	1.00	0.88
Heavy Vehicles (%)	13%	1%	0%	0%	1%	2%	0%	0%	0%	6%	0%	10%
Bus Blockages (#/hr)	0	0	0	0	0	7	0	0	0	0	0	0
Adj. Flow (vph)	56	682	1	9	889	54	2	0	2	48	3	95
Shared Lane Traffic (%)												
Lane Group Flow (vph)	56	682	1	9	889	54	0	4	0	48	98	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	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	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		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	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	2.0	0.6	2.0	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		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		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	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		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	Perm	NA	Perm	Perm	NA		custom	NA	
Protected Phases		2			6			4			4	
Permitted Phases	2		2	6		6	4			8		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	580	1	7	827	51	2	0	2	36	3	84
Future Volume (vph)	51	580	1	7	827	51	2	0	2	36	3	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0		6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.93		0.99		1.00	0.98	
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.93		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.98		0.95	1.00	
Satd. Flow (prot)	1578	1881	1580	1804	1881	1426		1701		1699	1448	
Flt Permitted	0.28	1.00	1.00	0.37	1.00	1.00		0.84		0.76	1.00	
Satd. Flow (perm)	460	1881	1580	705	1881	1426		1469		1350	1448	
Peak-hour factor, PHF	0.91	0.85	1.00	0.75	0.93	0.95	1.00	1.00	1.00	0.75	1.00	0.88
Adj. Flow (vph)	56	682	1	9	889	54	2	0	2	48	3	95
RTOR Reduction (vph)	0	0	0	0	0	10	0	4	0	0	86	0
Lane Group Flow (vph)	56	682	1	9	889	44	0	0	0	48	12	0
Confl. Peds. (#/hr)	31		1	1		31	7		1	1		7
Heavy Vehicles (%)	13%	1%	0%	0%	1%	2%	0%	0%	0%	6%	0%	10%
Bus Blockages (#/hr)	0	0	0	0	0	7	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		custom	NA	
Protected Phases		2			6			4			4	
Permitted Phases	2		2	6		6	4			8		
Actuated Green, G (s)	95.8	95.8	95.8	95.8	95.8	95.8		10.2		10.2	10.2	
Effective Green, g (s)	96.8	96.8	96.8	96.8	96.8	96.8		11.2		11.2	11.2	
Actuated g/C Ratio	0.81	0.81	0.81	0.81	0.81	0.81		0.09		0.09	0.09	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	7.0		7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	371	1517	1274	568	1517	1150		137		126	135	
v/s Ratio Prot		0.36			c0.47						0.01	
v/s Ratio Perm	0.12		0.00	0.01		0.03		0.00		c0.04		
v/c Ratio	0.15	0.45	0.00	0.02	0.59	0.04		0.00		0.38	0.09	
Uniform Delay, d1	2.6	3.5	2.2	2.3	4.3	2.3		49.3		51.1	49.7	
Progression Factor	0.52	0.75	1.00	0.69	0.46	0.33		1.00		1.00	1.00	
Incremental Delay, d2	0.8	0.9	0.0	0.0	1.4	0.1		0.0		1.9	0.3	
Delay (s)	2.1	3.5	2.2	1.6	3.4	0.8		49.3		53.1	50.0	
Level of Service	A	A	A	A	A	A		D		D	D	
Approach Delay (s)		3.4			3.2			49.3			51.0	
Approach LOS		A			A			D			D	

Intersection Summary				
HCM 2000 Control Delay	7.2	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.57			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	63.0%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	51	580	1	7	827	51	2	0	36	3
Future Volume (vph)	51	580	1	7	827	51	2	0	36	3
Lane Group Flow (vph)	56	682	1	9	889	54	0	4	48	98
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	custom	NA
Protected Phases		2			6			4		4
Permitted Phases	2		2	6		6	4		8	
Detector Phase	2	2	2	6	6	6	4	4	8	4
Switch Phase										
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	42.0	42.0	42.0	42.0	42.0	42.0	32.0	32.0	32.0	32.0
Total Split (s)	84.0	84.0	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%	70.0%	70.0%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	4.0	4.0	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	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	Max	Max	Max	None	None	None	None
v/c Ratio	0.15	0.45	0.00	0.02	0.59	0.05		0.02	0.38	0.44
Control Delay	2.4	3.8	0.0	2.0	3.6	0.3		0.2	59.2	17.0
Queue Delay	0.0	0.2	0.0	0.0	0.1	0.0		0.0	0.0	0.0
Total Delay	2.4	4.0	0.0	2.0	3.7	0.3		0.2	59.2	17.0
Queue Length 50th (m)	1.1	64.5	0.0	0.2	22.2	0.0		0.0	11.5	0.7
Queue Length 95th (m)	2.3	16.4	m0.0	m0.5	33.2	m0.3		0.0	19.5	16.9
Internal Link Dist (m)		110.4			97.0			56.0		75.4
Turn Bay Length (m)	80.0		30.0	44.0					38.0	
Base Capacity (vph)	376	1517	1281	568	1517	1160		394	337	433
Starvation Cap Reductn	0	271	0	0	100	0		0	0	0
Spillback Cap Reductn	0	1	0	0	48	0		0	0	9
Storage Cap Reductn	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.15	0.55	0.00	0.02	0.63	0.05		0.01	0.14	0.23

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 56 (47%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Elizabeth & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0		8.0	8.0	
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0	38.0	29.0	29.0		29.0	29.0	
Total Split (s)	89.0	89.0	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%	74.2%	74.2%	25.8%	25.8%		25.8%	25.8%	
Maximum Green (s)	83.0	83.0	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		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	Max	Max	Max	None	None		None	None	
Walk Time (s)	20.0	20.0	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	11.0	11.0	12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	3	3	3	11	11	11	3	3		28	28	
Act Effct Green (s)	96.4	96.4	96.4	96.4	96.4	96.4		17.4		17.4	17.4	
Actuated g/C Ratio	0.80	0.80	0.80	0.80	0.80	0.80		0.14		0.14	0.14	
v/c Ratio	0.21	0.40	0.03	0.00	0.60	0.10		0.08		0.16	0.28	
Control Delay	4.0	4.3	1.0	4.7	8.9	1.0		36.4		43.9	13.2	
Queue Delay	0.0	0.2	0.0	0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay	4.0	4.5	1.0	4.7	8.9	1.0		36.4		43.9	13.2	
LOS	A	A	A	A	A	A		D		D	B	
Approach Delay		4.2			7.9			36.4			21.1	
Approach LOS		A			A			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 51 (43%), Referenced to phase 2:EBTL, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 7.5		Intersection LOS: A	
Intersection Capacity Utilization 70.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Pearl & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	524	32	3	818	100	9	6	3	22	7	58
Future Volume (vph)	62	524	32	3	818	100	9	6	3	22	7	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		20.0	27.0		0.0	0.0		0.0	16.0		0.0
Storage Lanes	1		1	1		1	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.98	1.00		0.96		0.99		0.98	0.99	
Frt			0.850			0.850		0.977			0.863	
Flt Protected	0.950			0.950				0.976		0.950		
Satd. Flow (prot)	1805	1881	1615	1805	1881	1615	0	1799	0	1583	1619	0
Flt Permitted	0.254			0.400				0.861		0.746		
Satd. Flow (perm)	483	1881	1580	759	1881	1552	0	1586	0	1217	1619	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			27			133		3			76	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		121.0			123.9			37.3			112.8	
Travel Time (s)		8.7			8.9			2.7			8.1	
Confl. Peds. (#/hr)	10		1	1		10	1		8	8		1
Peak Hour Factor	0.75	0.87	0.75	1.00	0.90	0.75	1.00	1.00	1.00	0.75	1.00	0.76
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	14%	0%	0%
Adj. Flow (vph)	83	602	43	3	909	133	9	6	3	29	7	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	83	602	43	3	909	133	0	18	0	29	83	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	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		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	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	2.0	0.6	2.0	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		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		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	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		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	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6		6	4			8		
Detector Phase	2	2	2	6	6	6	4	4		8	8	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	524	32	3	818	100	9	6	3	22	7	58
Future Volume (vph)	62	524	32	3	818	100	9	6	3	22	7	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0		5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.96		0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		0.98	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.98		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.98		0.95	1.00	
Satd. Flow (prot)	1799	1881	1580	1804	1881	1552		1798		1550	1619	
Flt Permitted	0.25	1.00	1.00	0.40	1.00	1.00		0.86		0.75	1.00	
Satd. Flow (perm)	481	1881	1580	759	1881	1552		1587		1216	1619	
Peak-hour factor, PHF	0.75	0.87	0.75	1.00	0.90	0.75	1.00	1.00	1.00	0.75	1.00	0.76
Adj. Flow (vph)	83	602	43	3	909	133	9	6	3	29	7	76
RTOR Reduction (vph)	0	0	6	0	0	29	0	3	0	0	66	0
Lane Group Flow (vph)	83	602	37	3	909	104	0	15	0	29	17	0
Confl. Peds. (#/hr)	10		1	1		10	1		8	8		1
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	14%	0%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6		6	4			8		
Actuated Green, G (s)	93.2	93.2	93.2	93.2	93.2	93.2		14.8		14.8	14.8	
Effective Green, g (s)	94.2	94.2	94.2	94.2	94.2	94.2		15.8		15.8	15.8	
Actuated g/C Ratio	0.79	0.79	0.79	0.79	0.79	0.79		0.13		0.13	0.13	
Clearance Time (s)	6.0	6.0	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		3.0	3.0	
Lane Grp Cap (vph)	377	1476	1240	595	1476	1218		208		160	213	
v/s Ratio Prot		0.32			c0.48						0.01	
v/s Ratio Perm	0.17		0.02	0.00		0.07		0.01		c0.02		
v/c Ratio	0.22	0.41	0.03	0.01	0.62	0.09		0.07		0.18	0.08	
Uniform Delay, d1	3.4	4.1	2.8	2.8	5.4	3.0		45.7		46.3	45.7	
Progression Factor	0.55	0.68	0.38	1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	1.2	0.8	0.0	0.0	1.9	0.1		0.2		0.5	0.2	
Delay (s)	3.1	3.6	1.1	2.8	7.3	3.1		46.0		46.9	45.9	
Level of Service	A	A	A	A	A	A		D		D	D	
Approach Delay (s)		3.4			6.8			46.0			46.1	
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	0.55			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	70.1%	ICU Level of Service	C	
Analysis Period (min)	15			

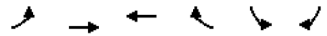
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	62	524	32	3	818	100	9	6	22	7
Future Volume (vph)	62	524	32	3	818	100	9	6	22	7
Lane Group Flow (vph)	83	602	43	3	909	133	0	18	29	83
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		2			6			4		8
Permitted Phases	2		2	6		6	4		8	
Detector Phase	2	2	2	6	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	8.0	8.0
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0	38.0	29.0	29.0	29.0	29.0
Total Split (s)	89.0	89.0	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%	74.2%	74.2%	25.8%	25.8%	25.8%	25.8%
Yellow Time (s)	4.0	4.0	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	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	Max	Max	Max	None	None	None	None
v/c Ratio	0.21	0.40	0.03	0.00	0.60	0.10		0.08	0.16	0.28
Control Delay	4.0	4.3	1.0	4.7	8.9	1.0		36.4	43.9	13.2
Queue Delay	0.0	0.2	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	4.0	4.5	1.0	4.7	8.9	1.0		36.4	43.9	13.2
Queue Length 50th (m)	3.2	64.9	0.0	0.2	105.8	0.0		3.1	6.0	1.4
Queue Length 95th (m)	3.6	21.0	0.3	1.0	146.6	2.8		m9.8	12.6	15.5
Internal Link Dist (m)		97.0			99.9			13.3		88.8
Turn Bay Length (m)	55.0		20.0	27.0					16.0	
Base Capacity (vph)	388	1511	1274	609	1511	1272		345	263	410
Starvation Cap Reductn	0	249	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.21	0.48	0.03	0.00	0.60	0.10		0.05	0.11	0.20

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 51 (43%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Pearl & Lakeshore

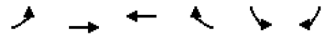




Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	43	506	914	30	9	7
Future Volume (Veh/h)	43	506	914	30	9	7
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.75	0.95	0.91	0.75	1.00	1.00
Hourly flow rate (vph)	57	533	1004	40	9	7
Pedestrians		1			2	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		124				
pX, platoon unblocked					0.91	
vC, conflicting volume	1046				1673	1027
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1046				1691	1027
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	91				89	98
cM capacity (veh/h)	664				86	281

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	57	533	1044	16
Volume Left	57	0	0	9
Volume Right	0	0	40	7
cSH	664	1700	1700	123
Volume to Capacity	0.09	0.31	0.61	0.13
Queue Length 95th (m)	2.2	0.0	0.0	3.5
Control Delay (s)	10.9	0.0	0.0	38.6
Lane LOS	B			E
Approach Delay (s)	1.1		0.0	38.6
Approach LOS				E

Intersection Summary			
Average Delay		0.8	
Intersection Capacity Utilization		60.3%	ICU Level of Service B
Analysis Period (min)		15	



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	43	506	914	30	9	7
Future Volume (vph)	43	506	914	30	9	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	36.0			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	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.995		0.941	
Flt Protected	0.950				0.973	
Satd. Flow (prot)	1770	1863	1855	0	1710	0
Flt Permitted	0.950				0.973	
Satd. Flow (perm)	1770	1863	1855	0	1710	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		123.9	42.7		116.9	
Travel Time (s)		8.9	3.1		8.4	
Confl. Peds. (#/hr)	2			2		1
Peak Hour Factor	0.75	0.95	0.91	0.75	1.00	1.00
Heavy Vehicles (%)	2%	2%	2%	0%	0%	4%
Bus Blockages (#/hr)	0	0	0	4	0	0
Adj. Flow (vph)	57	533	1004	40	9	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	57	533	1044	0	16	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 60.3%			ICU Level of Service B
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	514	1	1	944	0	0
Future Volume (Veh/h)	514	1	1	944	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.90	0.95	0.90	0.95
Hourly flow rate (vph)	541	1	1	994	0	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)	167					
pX, platoon unblocked			0.91		0.91	0.91
vC, conflicting volume			542		1538	542
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			445		1541	445
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1013		115	557

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	542	1	994	0
Volume Left	0	1	0	0
Volume Right	1	0	0	0
cSH	1700	1013	1700	1700
Volume to Capacity	0.32	0.00	0.58	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	8.6	0.0	0.0
Lane LOS		A		A
Approach Delay (s)	0.0	0.0		0.0
Approach LOS				A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	514	1	1	944	0	0
Future Volume (vph)	514	1	1	944	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	20.0		0.0	0.0
Storage Lanes		0	1		0	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected			0.950			
Satd. Flow (prot)	1863	0	1770	1863	0	1863
Flt Permitted			0.950			
Satd. Flow (perm)	1863	0	1770	1863	0	1863
Link Speed (k/h)	50			50	50	
Link Distance (m)	42.7			96.0	38.8	
Travel Time (s)	3.1			6.9	2.8	
Peak Hour Factor	0.95	0.95	0.90	0.95	0.90	0.95
Adj. Flow (vph)	541	1	1	994	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	542	0	1	994	0	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	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)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	512	2	21	943	2	16
Future Volume (Veh/h)	512	2	21	943	2	16
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	1.00	0.75	0.84	1.00	0.75
Hourly flow rate (vph)	551	2	28	1123	2	21
Pedestrians	1			1	1	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	263					
pX, platoon unblocked			0.92		0.92	0.92
vC, conflicting volume			554		1733	554
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			472		1753	472
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		98	96
cM capacity (veh/h)			1012		85	548

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	553	28	1123	23
Volume Left	0	28	0	2
Volume Right	2	0	0	21
cSH	1700	1012	1700	371
Volume to Capacity	0.33	0.03	0.66	0.06
Queue Length 95th (m)	0.0	0.7	0.0	1.6
Control Delay (s)	0.0	8.7	0.0	15.3
Lane LOS		A		C
Approach Delay (s)	0.0	0.2		15.3
Approach LOS				C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	60.0%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	512	2	21	943	2	16
Future Volume (vph)	512	2	21	943	2	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	20.0		0.0	0.0
Storage Lanes		0	1		1	0
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt					0.877	
Flt Protected			0.950		0.996	
Satd. Flow (prot)	1863	0	1805	1881	1660	0
Flt Permitted			0.950		0.996	
Satd. Flow (perm)	1863	0	1805	1881	1660	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	96.0			85.5	39.5	
Travel Time (s)	6.9			6.2	2.8	
Confl. Peds. (#/hr)		1	1		1	1
Peak Hour Factor	0.93	1.00	0.75	0.84	1.00	0.75
Heavy Vehicles (%)	2%	0%	0%	1%	0%	0%
Adj. Flow (vph)	551	2	28	1123	2	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	553	0	28	1123	23	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)		15	25		25	15
Sign Control	Free			Free	Stop	

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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	27	14	14	59	2	2
Future Volume (Veh/h)	27	14	14	59	2	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.88	0.75	0.76	0.75	1.00
Hourly flow rate (vph)	32	16	19	78	3	2
Pedestrians	2					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	122	6	7			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	122	6	7			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	99	99			
cM capacity (veh/h)	866	1081	1598			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	48	97	5
Volume Left	32	19	0
Volume Right	16	0	2
cSH	928	1598	1700
Volume to Capacity	0.05	0.01	0.00
Queue Length 95th (m)	1.3	0.3	0.0
Control Delay (s)	9.1	1.5	0.0
Lane LOS	A	A	
Approach Delay (s)	9.1	1.5	0.0
Approach LOS	A		

Intersection Summary			
Average Delay		3.9	
Intersection Capacity Utilization		20.5%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	27	14	14	59	2	2
Future Volume (vph)	27	14	14	59	2	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.955				0.946	
Flt Protected	0.968			0.990		
Satd. Flow (prot)	1756	0	0	1837	1766	0
Flt Permitted	0.968			0.990		
Satd. Flow (perm)	1756	0	0	1837	1766	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	105.7			116.9	176.8	
Travel Time (s)	7.6			8.4	12.7	
Confl. Peds. (#/hr)			2			2
Peak Hour Factor	0.85	0.88	0.75	0.76	0.75	1.00
Heavy Vehicles (%)	0%	0%	4%	2%	3%	0%
Adj. Flow (vph)	32	16	19	78	3	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	48	0	0	97	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			Free	Free	

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	183	4	0	679	0	86
Future Volume (Veh/h)	183	4	0	679	0	86
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.95	0.90	0.80	1.00	0.83
Hourly flow rate (vph)	203	4	0	849	0	104
Pedestrians					2	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				56		
pX, platoon unblocked					0.86	
vC, conflicting volume			205		1054	205
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			205		983	205
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	88
cM capacity (veh/h)			1370		240	839

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	203	4	849	104
Volume Left	0	0	0	0
Volume Right	0	4	0	104
cSH	1700	1700	1700	839
Volume to Capacity	0.12	0.00	0.50	0.12
Queue Length 95th (m)	0.0	0.0	0.0	3.4
Control Delay (s)	0.0	0.0	0.0	9.9
Lane LOS				A
Approach Delay (s)	0.0		0.0	9.9
Approach LOS				A

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	39.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	183	4	0	679	0	86
Future Volume (vph)	183	4	0	679	0	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.865
Flt Protected						
Satd. Flow (prot)	1845	1568	0	1881	0	1644
Flt Permitted						
Satd. Flow (perm)	1845	1568	0	1881	0	1644
Link Speed (k/h)	50			50	50	
Link Distance (m)	94.6			56.5	176.8	
Travel Time (s)	6.8			4.1	12.7	
Confl. Peds. (#/hr)		2				
Peak Hour Factor	0.90	0.95	0.90	0.80	1.00	0.83
Heavy Vehicles (%)	3%	3%	1%	1%	0%	0%
Adj. Flow (vph)	203	4	0	849	0	104
Shared Lane Traffic (%)						
Lane Group Flow (vph)	203	4	0	849	0	104
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			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)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	39.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Switch Phase						
Minimum Initial (s)		8.0	8.0	8.0	8.0	8.0
Minimum Split (s)		39.0	39.0	39.0	26.0	26.0
Total Split (s)		60.0	60.0	60.0	30.0	30.0
Total Split (%)		66.7%	66.7%	66.7%	33.3%	33.3%
Maximum Green (s)		54.0	54.0	54.0	24.0	24.0
Yellow Time (s)		4.0	4.0	4.0	4.0	4.0
All-Red Time (s)		2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)		5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0
Recall Mode		C-Max	Max	Max	None	None
Walk Time (s)		25.0	25.0	25.0	8.0	8.0
Flash Dont Walk (s)		7.0	7.0	7.0	12.0	12.0
Pedestrian Calls (#/hr)		0	0	0	0	0
Act Effct Green (s)		86.2	86.2	86.2	9.0	9.0
Actuated g/C Ratio		0.96	0.96	0.96	0.10	0.10
v/c Ratio		0.17	0.48	0.11	0.03	0.01
Control Delay		1.0	2.1	0.6	37.2	29.0
Queue Delay		0.0	0.0	0.0	0.0	0.0
Total Delay		1.0	2.1	0.6	37.2	29.0
LOS		A	A	A	D	C
Approach Delay		1.0	1.9		35.8	
Approach LOS		A	A		D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 42 (47%), Referenced to phase 2:EBT, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.48			
Intersection Signal Delay: 1.8		Intersection LOS: A	
Intersection Capacity Utilization 51.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 9: James/New & Martha



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	269	678	126	5	1
Future Volume (vph)	0	269	678	126	5	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			30.0	0.0	0.0
Storage Lanes	0			1	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						0.97
Frt				0.850		0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	1845	1863	1599	1703	1615
Flt Permitted					0.950	
Satd. Flow (perm)	0	1845	1863	1599	1703	1572
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				97		1
Link Speed (k/h)		50	50		50	
Link Distance (m)		56.5	80.2		40.9	
Travel Time (s)		4.1	5.8		2.9	
Confl. Peds. (#/hr)						3
Peak Hour Factor	1.00	0.90	0.80	0.75	1.00	1.00
Heavy Vehicles (%)	3%	3%	2%	1%	6%	0%
Adj. Flow (vph)	0	299	848	168	5	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	299	848	168	5	1
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	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2	1	1	1
Detector Template		Thru	Thru	Right	Left	Right
Leading Detector (m)		10.0	10.0	2.0	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)		0.6	0.6	2.0	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		NA	NA	Perm	Prot	Perm
Protected Phases		2	6		8	
Permitted Phases				6		8
Detector Phase		2	6	6	8	8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	269	678	126	5	1
Future Volume (vph)	0	269	678	126	5	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0	5.0
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes		1.00	1.00	1.00	1.00	0.97
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00
Frt		1.00	1.00	0.85	1.00	0.85
Flt Protected		1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)		1845	1863	1599	1703	1572
Flt Permitted		1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)		1845	1863	1599	1703	1572
Peak-hour factor, PHF	1.00	0.90	0.80	0.75	1.00	1.00
Adj. Flow (vph)	0	299	848	168	5	1
RTOR Reduction (vph)	0	0	0	14	0	1
Lane Group Flow (vph)	0	299	848	154	5	0
Confl. Peds. (#/hr)						3
Heavy Vehicles (%)	3%	3%	2%	1%	6%	0%
Turn Type		NA	NA	Perm	Prot	Perm
Protected Phases		2	6		8	
Permitted Phases				6		8
Actuated Green, G (s)		76.4	76.4	76.4	1.6	1.6
Effective Green, g (s)		77.4	77.4	77.4	2.6	2.6
Actuated g/C Ratio		0.86	0.86	0.86	0.03	0.03
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1586	1602	1375	49	45
v/s Ratio Prot		0.16	c0.46		c0.00	
v/s Ratio Perm				0.10		0.00
v/c Ratio		0.19	0.53	0.11	0.10	0.00
Uniform Delay, d1		1.1	1.6	1.0	42.6	42.4
Progression Factor		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.3	1.3	0.2	0.9	0.0
Delay (s)		1.3	2.9	1.1	43.5	42.4
Level of Service		A	A	A	D	D
Approach Delay (s)		1.3	2.6		43.3	
Approach LOS		A	A		D	

Intersection Summary			
HCM 2000 Control Delay	2.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	51.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	WBR	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	269	678	126	5	1
Future Volume (vph)	269	678	126	5	1
Lane Group Flow (vph)	299	848	168	5	1
Turn Type	NA	NA	Perm	Prot	Perm
Protected Phases	2	6		8	
Permitted Phases			6		8
Detector Phase	2	6	6	8	8
Switch Phase					
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	39.0	39.0	39.0	26.0	26.0
Total Split (s)	60.0	60.0	60.0	30.0	30.0
Total Split (%)	66.7%	66.7%	66.7%	33.3%	33.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	Max	Max	None	None
v/c Ratio	0.17	0.48	0.11	0.03	0.01
Control Delay	1.0	2.1	0.6	37.2	29.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	1.0	2.1	0.6	37.2	29.0
Queue Length 50th (m)	0.0	0.0	0.0	0.9	0.0
Queue Length 95th (m)	16.2	52.7	4.1	4.2	1.5
Internal Link Dist (m)	32.5	56.2		16.9	
Turn Bay Length (m)			30.0		
Base Capacity (vph)	1767	1784	1535	473	437
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.17	0.48	0.11	0.01	0.00

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 42 (47%), Referenced to phase 2:EBT, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 9: James/New & Martha



Existing Traffic Capacity - Sensitivity Analysis PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	1	6		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)	10.0	34.0		34.0	34.0		39.0	39.0		39.0	39.0	
Total Split (s)	11.0	79.0		68.0	68.0		41.0	41.0		41.0	41.0	
Total Split (%)	9.2%	65.8%		56.7%	56.7%		34.2%	34.2%		34.2%	34.2%	
Maximum Green (s)	8.0	73.0		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)	-1.0	-1.0		-1.0	-1.0			-1.0		-1.0	-1.0	
Total Lost Time (s)	2.0	5.0		5.0	5.0			6.0		6.0	6.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Max		C-Max	C-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)	95.0	92.0		79.0	79.0			17.0		17.0	17.0	
Actuated g/C Ratio	0.79	0.77		0.66	0.66			0.14		0.14	0.14	
v/c Ratio	0.42	0.47		0.01	0.84			0.10		0.49	0.80	
Control Delay	7.8	7.4		12.3	20.7			43.5		54.1	30.4	
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Delay	7.8	7.4		12.3	20.7			43.5		54.1	30.4	
LOS	A	A		B	C			D		D	C	
Approach Delay		7.4			20.7			43.5			35.8	
Approach LOS		A			C			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 51 (43%), Referenced to phase 2:WBTL, Start of Green			
Natural Cycle: 115			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 18.8		Intersection LOS: B	
Intersection Capacity Utilization 92.4%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 1: Brant & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	558	11	3	811	99	6	0	0	74	10	288
Future Volume (vph)	124	558	11	3	811	99	6	0	0	74	10	288
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	54.0		0.0	24.0		0.0	0.0		0.0	0.0		24.0
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		0.98	0.99			0.97		0.94	0.92	
Frt		0.997			0.980						0.856	
Flt Protected	0.950			0.950				0.950		0.950		
Satd. Flow (prot)	1787	1855	0	1805	1811	0	0	1805	0	1805	1489	0
Flt Permitted	0.120			0.411				0.235		0.754		
Satd. Flow (perm)	226	1855	0	763	1811	0	0	433	0	1350	1489	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			10						220	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		99.8			134.4			30.7			59.8	
Travel Time (s)		7.2			9.7			2.2			4.3	
Confl. Peds. (#/hr)	23		33	33		23	31		30	30		31
Peak Hour Factor	0.91	0.85	0.92	1.00	0.93	0.75	1.00	1.00	1.00	0.80	0.75	0.94
Heavy Vehicles (%)	1%	2%	0%	0%	2%	1%	0%	0%	0%	0%	0%	1%
Bus Blockages (#/hr)	0	0	0	0	0	16	0	0	0	0	0	0
Adj. Flow (vph)	136	656	12	3	872	132	6	0	0	93	13	306
Shared Lane Traffic (%)												
Lane Group Flow (vph)	136	668	0	3	1004	0	0	6	0	93	319	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	6			2			4			4	
Permitted Phases	6			2			4			4		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	558	11	3	811	99	6	0	0	74	10	288
Future Volume (vph)	124	558	11	3	811	99	6	0	0	74	10	288
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	5.0		5.0	5.0			6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99			1.00		1.00	0.92	
Flpb, ped/bikes	1.00	1.00		0.97	1.00			0.97		0.94	1.00	
Frt	1.00	1.00		1.00	0.98			1.00		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00			0.95		0.95	1.00	
Satd. Flow (prot)	1787	1855		1753	1812			1754		1701	1489	
Flt Permitted	0.12	1.00		0.41	1.00			0.24		0.75	1.00	
Satd. Flow (perm)	225	1855		758	1812			434		1350	1489	
Peak-hour factor, PHF	0.91	0.85	0.92	1.00	0.93	0.75	1.00	1.00	1.00	0.80	0.75	0.94
Adj. Flow (vph)	136	656	12	3	872	132	6	0	0	92	13	306
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	189	0
Lane Group Flow (vph)	136	668	0	3	1001	0	0	6	0	93	130	0
Confl. Peds. (#/hr)	23		33	33		23	31		30	30		31
Heavy Vehicles (%)	1%	2%	0%	0%	2%	1%	0%	0%	0%	0%	0%	1%
Bus Blockages (#/hr)	0	0	0	0	0	16	0	0	0	0	0	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2			4			4		
Actuated Green, G (s)	91.0	91.0		78.0	78.0			16.0		16.0	16.0	
Effective Green, g (s)	92.0	92.0		79.0	79.0			17.0		17.0	17.0	
Actuated g/C Ratio	0.77	0.77		0.66	0.66			0.14		0.14	0.14	
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)	315	1422		499	1192			61		191	210	
v/s Ratio Prot	0.04	c0.36			c0.55						c0.09	
v/s Ratio Perm	0.29			0.00				0.01		0.07		
v/c Ratio	0.43	0.47		0.01	0.84			0.10		0.49	0.62	
Uniform Delay, d1	16.6	5.1		7.0	15.7			44.8		47.5	48.5	
Progression Factor	1.00	1.00		1.09	0.74			1.00		1.00	1.00	
Incremental Delay, d2	1.0	1.1		0.0	6.0			0.7		2.0	5.4	
Delay (s)	17.5	6.2		7.7	17.5			45.5		49.4	53.8	
Level of Service	B	A		A	B			D		D	D	
Approach Delay (s)		8.1			17.5			45.5			52.8	
Approach LOS		A			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	20.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	92.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	124	558	3	811	6	0	74	10
Future Volume (vph)	124	558	3	811	6	0	74	10
Lane Group Flow (vph)	136	668	3	1004	0	6	93	319
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	1	6		2		4		4
Permitted Phases	6		2		4		4	
Detector Phase	1	6	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)	10.0	34.0	34.0	34.0	39.0	39.0	39.0	39.0
Total Split (s)	11.0	79.0	68.0	68.0	41.0	41.0	41.0	41.0
Total Split (%)	9.2%	65.8%	56.7%	56.7%	34.2%	34.2%	34.2%	34.2%
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)	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	2.0	5.0	5.0	5.0		6.0	6.0	6.0
Lead/Lag	Lead		Lag	Lag				
Lead-Lag Optimize?	Yes		Yes	Yes				
Recall Mode	None	Max	C-Max	C-Max	None	None	None	None
v/c Ratio	0.42	0.47	0.01	0.84		0.10	0.49	0.80
Control Delay	7.8	7.4	12.3	20.7		43.5	54.1	30.4
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	7.8	7.4	12.3	20.7		43.5	54.1	30.4
Queue Length 50th (m)	5.8	48.1	0.2	71.5		1.3	21.8	23.8
Queue Length 95th (m)	16.2	94.3	m0.4	#348.0		5.1	31.0	31.6
Internal Link Dist (m)		75.8		110.4		6.7		35.8
Turn Bay Length (m)	54.0		24.0					
Base Capacity (vph)	328	1422	502	1195		126	393	590
Starvation Cap Reductn	0	0	0	0		0	0	0
Spillback Cap Reductn	0	2	0	0		0	0	0
Storage Cap Reductn	0	0	0	0		0	0	0
Reduced v/c Ratio	0.41	0.47	0.01	0.84		0.05	0.24	0.54

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 51 (43%), Referenced to phase 2:WBTL, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Brant & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	2	2	2	6	6		4	4		8	4	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	42.0	42.0	42.0	42.0	42.0		32.0	32.0		32.0	32.0	
Total Split (s)	84.0	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%	70.0%		30.0%	30.0%		30.0%	30.0%	
Maximum Green (s)	77.0	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	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0			-1.0		-1.0	-1.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0			6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	Max	Max		None	None		None	None	
Walk Time (s)	20.0	20.0	20.0	20.0	20.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	14.0	14.0	14.0	14.0	14.0		16.0	16.0		16.0	16.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)	96.8	96.8	96.8	96.8	96.8			11.2		11.2	11.2	
Actuated g/C Ratio	0.81	0.81	0.81	0.81	0.81			0.09		0.09	0.09	
v/c Ratio	0.16	0.45	0.00	0.02	0.63			0.02		0.38	0.45	
Control Delay	2.6	3.8	0.0	2.0	3.8			0.2		59.2	17.2	
Queue Delay	0.0	0.2	0.0	0.0	0.4			0.0		0.0	0.4	
Total Delay	2.6	4.0	0.0	2.0	4.2			0.2		59.2	17.6	
LOS	A	A	A	A	A			A		E	B	
Approach Delay		3.9			4.1			0.3			31.3	
Approach LOS		A			A			A			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 56 (47%), Referenced to phase 2:EBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay: 6.2		Intersection LOS: A	
Intersection Capacity Utilization 66.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Elizabeth & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	580	1	7	827	51	2	0	2	36	3	84
Future Volume (vph)	51	580	1	7	827	51	2	0	2	36	3	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	80.0		30.0	44.0		0.0	0.0		0.0	38.0		0.0
Storage Lanes	1		1	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.98	1.00	1.00			0.98		1.00	0.96	
Frt			0.850		0.991			0.932			0.855	
Flt Protected	0.950			0.950				0.976		0.950		
Satd. Flow (prot)	1597	1881	1615	1805	1855	0	0	1709	0	1703	1428	0
Flt Permitted	0.254			0.371				0.842		0.755		
Satd. Flow (perm)	427	1881	1580	705	1855	0	0	1463	0	1350	1428	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			36		5			36			95	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		134.4			121.0			80.0			99.4	
Travel Time (s)		9.7			8.7			5.8			7.2	
Confl. Peds. (#/hr)	31		1	1		31	7		1	1		7
Peak Hour Factor	0.91	0.85	1.00	0.75	0.93	0.95	1.00	1.00	1.00	0.75	1.00	0.88
Heavy Vehicles (%)	13%	1%	0%	0%	1%	2%	0%	0%	0%	6%	0%	10%
Bus Blockages (#/hr)	0	0	0	0	0	7	0	0	0	0	0	0
Adj. Flow (vph)	56	682	1	9	889	54	2	0	2	48	3	95
Shared Lane Traffic (%)												
Lane Group Flow (vph)	56	682	1	9	943	0	0	4	0	48	98	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	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	0.0	
Detector 1 Position(m)	0.0	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	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	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	0.0	
Detector 1 Queue (s)	0.0	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	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	Perm	NA		Perm	NA		custom	NA	
Protected Phases		2			6			4			4	
Permitted Phases	2		2	6			4			8		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	580	1	7	827	51	2	0	2	36	3	84
Future Volume (vph)	51	580	1	7	827	51	2	0	2	36	3	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0			6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00			0.99		1.00	0.96	
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00			0.99		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99			0.93		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.98		0.95	1.00	
Satd. Flow (prot)	1581	1881	1580	1804	1856			1696		1699	1427	
Flt Permitted	0.25	1.00	1.00	0.37	1.00			0.84		0.76	1.00	
Satd. Flow (perm)	422	1881	1580	705	1856			1464		1350	1427	
Peak-hour factor, PHF	0.91	0.85	1.00	0.75	0.93	0.95	1.00	1.00	1.00	0.75	1.00	0.88
Adj. Flow (vph)	56	682	1	9	889	54	2	0	2	48	3	95
RTOR Reduction (vph)	0	0	0	0	1	0	0	4	0	0	86	0
Lane Group Flow (vph)	56	682	1	9	942	0	0	0	0	48	12	0
Confl. Peds. (#/hr)	31		1	1		31	7		1	1		7
Heavy Vehicles (%)	13%	1%	0%	0%	1%	2%	0%	0%	0%	6%	0%	10%
Bus Blockages (#/hr)	0	0	0	0	0	7	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		custom	NA	
Protected Phases		2			6			4			4	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	95.8	95.8	95.8	95.8	95.8			10.2		10.2	10.2	
Effective Green, g (s)	96.8	96.8	96.8	96.8	96.8			11.2		11.2	11.2	
Actuated g/C Ratio	0.81	0.81	0.81	0.81	0.81			0.09		0.09	0.09	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0			7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	340	1517	1274	568	1497			136		126	133	
v/s Ratio Prot		0.36			c0.51						0.01	
v/s Ratio Perm	0.13		0.00	0.01				0.00		c0.04		
v/c Ratio	0.16	0.45	0.00	0.02	0.63			0.00		0.38	0.09	
Uniform Delay, d1	2.6	3.5	2.2	2.3	4.6			49.3		51.1	49.7	
Progression Factor	0.52	0.75	1.00	0.69	0.44			1.00		1.00	1.00	
Incremental Delay, d2	1.0	0.9	0.0	0.0	1.5			0.0		1.9	0.3	
Delay (s)	2.3	3.5	2.2	1.6	3.5			49.3		53.1	50.0	
Level of Service	A	A	A	A	A			D		D	D	
Approach Delay (s)		3.4			3.5			49.3			51.0	
Approach LOS		A			A			D			D	

Intersection Summary				
HCM 2000 Control Delay	7.3	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.61			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	66.2%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	51	580	1	7	827	2	0	36	3
Future Volume (vph)	51	580	1	7	827	2	0	36	3
Lane Group Flow (vph)	56	682	1	9	943	0	4	48	98
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	custom	NA
Protected Phases		2			6		4		4
Permitted Phases	2		2	6		4		8	
Detector Phase	2	2	2	6	6	4	4	8	4
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	42.0	42.0	42.0	42.0	42.0	32.0	32.0	32.0	32.0
Total Split (s)	84.0	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%	70.0%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	4.0	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	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	Max	Max	None	None	None	None
v/c Ratio	0.16	0.45	0.00	0.02	0.63		0.02	0.38	0.45
Control Delay	2.6	3.8	0.0	2.0	3.8		0.2	59.2	17.2
Queue Delay	0.0	0.2	0.0	0.0	0.4		0.0	0.0	0.4
Total Delay	2.6	4.0	0.0	2.0	4.2		0.2	59.2	17.6
Queue Length 50th (m)	1.1	64.5	0.0	0.2	23.8		0.0	11.5	0.7
Queue Length 95th (m)	2.3	16.4	m0.0	m0.5	35.6		0.0	19.5	16.9
Internal Link Dist (m)		110.4			97.0		56.0		75.4
Turn Bay Length (m)	80.0		30.0	44.0				38.0	
Base Capacity (vph)	344	1517	1281	568	1497		392	337	428
Starvation Cap Reductn	0	271	0	0	177		0	0	0
Spillback Cap Reductn	0	1	0	0	132		0	0	111
Storage Cap Reductn	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.16	0.55	0.00	0.02	0.71		0.01	0.14	0.31

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 56 (47%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Elizabeth & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0		29.0	29.0		29.0	29.0	
Total Split (s)	89.0	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%	74.2%		25.8%	25.8%		25.8%	25.8%	
Maximum Green (s)	83.0	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	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0			-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0			5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	Max	Max		None	None		None	None	
Walk Time (s)	20.0	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	11.0		12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	3	3	3	11	11		3	3		28	28	
Act Effct Green (s)	96.4	96.4	96.4	96.4	96.4			17.4		17.4	17.4	
Actuated g/C Ratio	0.80	0.80	0.80	0.80	0.80			0.14		0.14	0.14	
v/c Ratio	0.28	0.40	0.03	0.00	0.70			0.08		0.16	0.28	
Control Delay	5.4	4.3	1.0	4.7	11.5			36.4		43.9	13.2	
Queue Delay	0.0	0.2	0.0	0.0	0.0			0.0		0.0	0.0	
Total Delay	5.4	4.5	1.0	4.7	11.5			36.4		43.9	13.2	
LOS	A	A	A	A	B			D		D	B	
Approach Delay		4.4			11.4			36.4			21.2	
Approach LOS		A			B			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 51 (43%), Referenced to phase 2:EBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 9.5		Intersection LOS: A	
Intersection Capacity Utilization 70.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Pearl & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	524	32	3	818	100	9	6	3	22	7	58
Future Volume (vph)	62	524	32	3	818	100	9	6	3	22	7	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		20.0	27.0		0.0	0.0		0.0	16.0		0.0
Storage Lanes	1		1	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.98	1.00	1.00			0.99		0.98	0.98	
Frt			0.850		0.981			0.977			0.863	
Flt Protected	0.950			0.950				0.976		0.950		
Satd. Flow (prot)	1805	1881	1615	1805	1839	0	0	1799	0	1583	1606	0
Flt Permitted	0.196			0.400				0.861		0.746		
Satd. Flow (perm)	372	1881	1580	759	1839	0	0	1585	0	1217	1606	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			27		15			3			76	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		121.0			123.9			37.3			112.8	
Travel Time (s)		8.7			8.9			2.7			8.1	
Confl. Peds. (#/hr)	10		1	1		10	1		8	8		1
Peak Hour Factor	0.75	0.87	0.75	1.00	0.90	0.75	1.00	1.00	1.00	0.75	1.00	0.76
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	14%	0%	0%
Adj. Flow (vph)	83	602	43	3	909	133	9	6	3	29	7	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	83	602	43	3	1042	0	0	18	0	29	83	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	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	0.0	
Detector 1 Position(m)	0.0	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	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	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	0.0	
Detector 1 Queue (s)	0.0	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	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	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6			4			8		
Detector Phase	2	2	2	6	6		4	4		8	8	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	524	32	3	818	100	9	6	3	22	7	58
Future Volume (vph)	62	524	32	3	818	100	9	6	3	22	7	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0			5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00			0.99		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00		0.98	1.00	
Frt	1.00	1.00	0.85	1.00	0.98			0.98		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.98		0.95	1.00	
Satd. Flow (prot)	1801	1881	1580	1804	1838			1797		1550	1605	
Flt Permitted	0.20	1.00	1.00	0.40	1.00			0.86		0.75	1.00	
Satd. Flow (perm)	371	1881	1580	759	1838			1587		1216	1605	
Peak-hour factor, PHF	0.75	0.87	0.75	1.00	0.90	0.75	1.00	1.00	1.00	0.75	1.00	0.76
Adj. Flow (vph)	83	602	43	3	909	133	9	6	3	29	7	76
RTOR Reduction (vph)	0	0	6	0	3	0	0	3	0	0	66	0
Lane Group Flow (vph)	83	602	37	3	1039	0	0	15	0	29	17	0
Confl. Peds. (#/hr)	10		1	1		10	1		8	8		1
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	14%	0%	0%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	93.2	93.2	93.2	93.2	93.2			14.8		14.8	14.8	
Effective Green, g (s)	94.2	94.2	94.2	94.2	94.2			15.8		15.8	15.8	
Actuated g/C Ratio	0.79	0.79	0.79	0.79	0.79			0.13		0.13	0.13	
Clearance Time (s)	6.0	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	3.0	
Lane Grp Cap (vph)	291	1476	1240	595	1442			208		160	211	
v/s Ratio Prot		0.32			c0.57						0.01	
v/s Ratio Perm	0.22		0.02	0.00				0.01		c0.02		
v/c Ratio	0.29	0.41	0.03	0.01	0.72			0.07		0.18	0.08	
Uniform Delay, d1	3.6	4.1	2.8	2.8	6.4			45.7		46.3	45.7	
Progression Factor	0.57	0.68	0.38	1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	2.3	0.8	0.0	0.0	3.1			0.2		0.5	0.2	
Delay (s)	4.3	3.6	1.1	2.8	9.5			46.0		46.9	45.9	
Level of Service	A	A	A	A	A			D		D	D	
Approach Delay (s)		3.5			9.5			46.0			46.1	
Approach LOS		A			A			D			D	

Intersection Summary				
HCM 2000 Control Delay	9.7	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.64			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	70.1%	ICU Level of Service	C	
Analysis Period (min)	15			

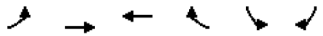
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	62	524	32	3	818	9	6	22	7
Future Volume (vph)	62	524	32	3	818	9	6	22	7
Lane Group Flow (vph)	83	602	43	3	1042	0	18	29	83
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2			6		4		8
Permitted Phases	2		2	6		4		8	
Detector Phase	2	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	8.0
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0	29.0	29.0	29.0	29.0
Total Split (s)	89.0	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%	74.2%	25.8%	25.8%	25.8%	25.8%
Yellow Time (s)	4.0	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	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	Max	Max	None	None	None	None
v/c Ratio	0.28	0.40	0.03	0.00	0.70		0.08	0.16	0.28
Control Delay	5.4	4.3	1.0	4.7	11.5		36.4	43.9	13.2
Queue Delay	0.0	0.2	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	5.4	4.5	1.0	4.7	11.5		36.4	43.9	13.2
Queue Length 50th (m)	3.7	64.9	0.0	0.2	142.1		3.1	6.0	1.4
Queue Length 95th (m)	3.6	21.0	0.3	1.0	204.4		m9.8	12.6	15.5
Internal Link Dist (m)		97.0			99.9		13.3		88.8
Turn Bay Length (m)	55.0		20.0	27.0				16.0	
Base Capacity (vph)	298	1511	1274	609	1480		345	263	407
Starvation Cap Reductn	0	249	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.28	0.48	0.03	0.00	0.70		0.05	0.11	0.20

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 51 (43%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Pearl & Lakeshore

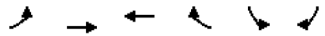




Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	43	506	914	30	9	7
Future Volume (Veh/h)	43	506	914	30	9	7
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.75	0.95	0.91	0.75	1.00	1.00
Hourly flow rate (vph)	57	533	1004	40	9	7
Pedestrians		1			2	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		124				
pX, platoon unblocked					0.91	
vC, conflicting volume	1046				1673	1027
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1046				1691	1027
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	91				89	98
cM capacity (veh/h)	664				86	281

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	57	533	1044	16
Volume Left	57	0	0	9
Volume Right	0	0	40	7
cSH	664	1700	1700	123
Volume to Capacity	0.09	0.31	0.61	0.13
Queue Length 95th (m)	2.2	0.0	0.0	3.5
Control Delay (s)	10.9	0.0	0.0	38.6
Lane LOS	B			E
Approach Delay (s)	1.1		0.0	38.6
Approach LOS				E

Intersection Summary			
Average Delay		0.8	
Intersection Capacity Utilization		60.3%	ICU Level of Service B
Analysis Period (min)		15	



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	43	506	914	30	9	7
Future Volume (vph)	43	506	914	30	9	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	36.0			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	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.995		0.941	
Flt Protected	0.950				0.973	
Satd. Flow (prot)	1770	1863	1855	0	1710	0
Flt Permitted	0.950				0.973	
Satd. Flow (perm)	1770	1863	1855	0	1710	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		123.9	42.7		116.9	
Travel Time (s)		8.9	3.1		8.4	
Confl. Peds. (#/hr)	2			2		1
Peak Hour Factor	0.75	0.95	0.91	0.75	1.00	1.00
Heavy Vehicles (%)	2%	2%	2%	0%	0%	4%
Bus Blockages (#/hr)	0	0	0	4	0	0
Adj. Flow (vph)	57	533	1004	40	9	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	57	533	1044	0	16	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 60.3%			ICU Level of Service B
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	514	1	1	944	0	0
Future Volume (Veh/h)	514	1	1	944	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.90	0.95	0.90	0.95
Hourly flow rate (vph)	541	1	1	994	0	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)	167					
pX, platoon unblocked			0.91		0.91	0.91
vC, conflicting volume			542		1538	542
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			445		1541	445
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1013		115	557

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	542	1	994	0
Volume Left	0	1	0	0
Volume Right	1	0	0	0
cSH	1700	1013	1700	1700
Volume to Capacity	0.32	0.00	0.58	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	8.6	0.0	0.0
Lane LOS		A		A
Approach Delay (s)	0.0	0.0		0.0
Approach LOS				A

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		53.0%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	514	1	1	944	0	0
Future Volume (vph)	514	1	1	944	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	20.0		0.0	0.0
Storage Lanes		0	1		0	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected			0.950			
Satd. Flow (prot)	1863	0	1770	1863	0	1863
Flt Permitted			0.950			
Satd. Flow (perm)	1863	0	1770	1863	0	1863
Link Speed (k/h)	50			50	50	
Link Distance (m)	42.7			96.0	38.8	
Travel Time (s)	3.1			6.9	2.8	
Peak Hour Factor	0.95	0.95	0.90	0.95	0.90	0.95
Adj. Flow (vph)	541	1	1	994	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	542	0	1	994	0	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	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)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	53.0%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	512	2	21	943	2	16
Future Volume (Veh/h)	512	2	21	943	2	16
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	1.00	0.75	0.84	1.00	0.75
Hourly flow rate (vph)	551	2	28	1123	2	21
Pedestrians	1			1	1	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	263					
pX, platoon unblocked			0.92		0.92	0.92
vC, conflicting volume			554		1733	554
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			472		1753	472
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		98	96
cM capacity (veh/h)			1012		85	548

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	553	28	1123	23
Volume Left	0	28	0	2
Volume Right	2	0	0	21
cSH	1700	1012	1700	371
Volume to Capacity	0.33	0.03	0.66	0.06
Queue Length 95th (m)	0.0	0.7	0.0	1.6
Control Delay (s)	0.0	8.7	0.0	15.3
Lane LOS		A		C
Approach Delay (s)	0.0	0.2		15.3
Approach LOS				C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	60.0%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	512	2	21	943	2	16
Future Volume (vph)	512	2	21	943	2	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	20.0		0.0	0.0
Storage Lanes		0	1		1	0
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt					0.877	
Flt Protected			0.950		0.996	
Satd. Flow (prot)	1863	0	1805	1881	1660	0
Flt Permitted			0.950		0.996	
Satd. Flow (perm)	1863	0	1805	1881	1660	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	96.0			85.5	39.5	
Travel Time (s)	6.9			6.2	2.8	
Confl. Peds. (#/hr)		1	1		1	1
Peak Hour Factor	0.93	1.00	0.75	0.84	1.00	0.75
Heavy Vehicles (%)	2%	0%	0%	1%	0%	0%
Adj. Flow (vph)	551	2	28	1123	2	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	553	0	28	1123	23	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)		15	25		25	15
Sign Control	Free			Free	Stop	

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

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	27	14	14	59	2	2
Future Volume (Veh/h)	27	14	14	59	2	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.88	0.75	0.76	0.75	1.00
Hourly flow rate (vph)	32	16	19	78	3	2
Pedestrians	2					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	122	6	7			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	122	6	7			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	99	99			
cM capacity (veh/h)	866	1081	1598			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	48	97	5
Volume Left	32	19	0
Volume Right	16	0	2
cSH	928	1598	1700
Volume to Capacity	0.05	0.01	0.00
Queue Length 95th (m)	1.3	0.3	0.0
Control Delay (s)	9.1	1.5	0.0
Lane LOS	A	A	
Approach Delay (s)	9.1	1.5	0.0
Approach LOS	A		

Intersection Summary			
Average Delay		3.9	
Intersection Capacity Utilization		20.5%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	27	14	14	59	2	2
Future Volume (vph)	27	14	14	59	2	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.955				0.946	
Flt Protected	0.968			0.990		
Satd. Flow (prot)	1756	0	0	1837	1766	0
Flt Permitted	0.968			0.990		
Satd. Flow (perm)	1756	0	0	1837	1766	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	105.7			116.9	176.8	
Travel Time (s)	7.6			8.4	12.7	
Confl. Peds. (#/hr)			2			2
Peak Hour Factor	0.85	0.88	0.75	0.76	0.75	1.00
Heavy Vehicles (%)	0%	0%	4%	2%	3%	0%
Adj. Flow (vph)	32	16	19	78	3	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	48	0	0	97	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			Free	Free	

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	183	4	0	679	0	86
Future Volume (Veh/h)	183	4	0	679	0	86
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.95	0.90	0.80	1.00	0.83
Hourly flow rate (vph)	203	4	0	849	0	104
Pedestrians					2	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				56		
pX, platoon unblocked					0.86	
vC, conflicting volume			205		1054	205
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			205		983	205
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	88
cM capacity (veh/h)			1370		240	839

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	203	4	849	104
Volume Left	0	0	0	0
Volume Right	0	4	0	104
cSH	1700	1700	1700	839
Volume to Capacity	0.12	0.00	0.50	0.12
Queue Length 95th (m)	0.0	0.0	0.0	3.4
Control Delay (s)	0.0	0.0	0.0	9.9
Lane LOS				A
Approach Delay (s)	0.0		0.0	9.9
Approach LOS				A

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	39.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	183	4	0	679	0	86
Future Volume (vph)	183	4	0	679	0	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.865
Flt Protected						
Satd. Flow (prot)	1845	1568	0	1881	0	1644
Flt Permitted						
Satd. Flow (perm)	1845	1568	0	1881	0	1644
Link Speed (k/h)	50			50	50	
Link Distance (m)	94.6			56.5	176.8	
Travel Time (s)	6.8			4.1	12.7	
Confl. Peds. (#/hr)		2				
Peak Hour Factor	0.90	0.95	0.90	0.80	1.00	0.83
Heavy Vehicles (%)	3%	3%	1%	1%	0%	0%
Adj. Flow (vph)	203	4	0	849	0	104
Shared Lane Traffic (%)						
Lane Group Flow (vph)	203	4	0	849	0	104
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			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)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	39.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Switch Phase						
Minimum Initial (s)		8.0	8.0	8.0	8.0	8.0
Minimum Split (s)		39.0	39.0	39.0	26.0	26.0
Total Split (s)		60.0	60.0	60.0	30.0	30.0
Total Split (%)		66.7%	66.7%	66.7%	33.3%	33.3%
Maximum Green (s)		54.0	54.0	54.0	24.0	24.0
Yellow Time (s)		4.0	4.0	4.0	4.0	4.0
All-Red Time (s)		2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)		5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0
Recall Mode		C-Max	Max	Max	None	None
Walk Time (s)		25.0	25.0	25.0	8.0	8.0
Flash Dont Walk (s)		7.0	7.0	7.0	12.0	12.0
Pedestrian Calls (#/hr)		0	0	0	0	0
Act Effct Green (s)		86.2	86.2	86.2	9.0	9.0
Actuated g/C Ratio		0.96	0.96	0.96	0.10	0.10
v/c Ratio		0.17	0.48	0.11	0.03	0.01
Control Delay		1.0	2.1	0.6	37.2	29.0
Queue Delay		0.0	0.0	0.0	0.0	0.0
Total Delay		1.0	2.1	0.6	37.2	29.0
LOS		A	A	A	D	C
Approach Delay		1.0	1.9		35.8	
Approach LOS		A	A		D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 42 (47%), Referenced to phase 2:EBT, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.48			
Intersection Signal Delay: 1.8		Intersection LOS: A	
Intersection Capacity Utilization 51.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 9: James/New & Martha



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	269	678	126	5	1
Future Volume (vph)	0	269	678	126	5	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			30.0	0.0	0.0
Storage Lanes	0			1	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						0.97
Frt				0.850		0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	1845	1863	1599	1703	1615
Flt Permitted					0.950	
Satd. Flow (perm)	0	1845	1863	1599	1703	1572
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				97		1
Link Speed (k/h)		50	50		50	
Link Distance (m)		56.5	80.2		40.9	
Travel Time (s)		4.1	5.8		2.9	
Confl. Peds. (#/hr)						3
Peak Hour Factor	1.00	0.90	0.80	0.75	1.00	1.00
Heavy Vehicles (%)	3%	3%	2%	1%	6%	0%
Adj. Flow (vph)	0	299	848	168	5	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	299	848	168	5	1
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	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2	1	1	1
Detector Template		Thru	Thru	Right	Left	Right
Leading Detector (m)		10.0	10.0	2.0	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)		0.6	0.6	2.0	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		NA	NA	Perm	Prot	Perm
Protected Phases		2	6		8	
Permitted Phases				6		8
Detector Phase		2	6	6	8	8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	269	678	126	5	1
Future Volume (vph)	0	269	678	126	5	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0	5.0
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes		1.00	1.00	1.00	1.00	0.97
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00
Frt		1.00	1.00	0.85	1.00	0.85
Flt Protected		1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)		1845	1863	1599	1703	1572
Flt Permitted		1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)		1845	1863	1599	1703	1572
Peak-hour factor, PHF	1.00	0.90	0.80	0.75	1.00	1.00
Adj. Flow (vph)	0	299	848	168	5	1
RTOR Reduction (vph)	0	0	0	14	0	1
Lane Group Flow (vph)	0	299	848	154	5	0
Confl. Peds. (#/hr)						3
Heavy Vehicles (%)	3%	3%	2%	1%	6%	0%
Turn Type		NA	NA	Perm	Prot	Perm
Protected Phases		2	6		8	
Permitted Phases				6		8
Actuated Green, G (s)		76.4	76.4	76.4	1.6	1.6
Effective Green, g (s)		77.4	77.4	77.4	2.6	2.6
Actuated g/C Ratio		0.86	0.86	0.86	0.03	0.03
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1586	1602	1375	49	45
v/s Ratio Prot		0.16	c0.46		c0.00	
v/s Ratio Perm				0.10		0.00
v/c Ratio		0.19	0.53	0.11	0.10	0.00
Uniform Delay, d1		1.1	1.6	1.0	42.6	42.4
Progression Factor		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.3	1.3	0.2	0.9	0.0
Delay (s)		1.3	2.9	1.1	43.5	42.4
Level of Service		A	A	A	D	D
Approach Delay (s)		1.3	2.6		43.3	
Approach LOS		A	A		D	

Intersection Summary			
HCM 2000 Control Delay	2.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	51.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	WBR	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	269	678	126	5	1
Future Volume (vph)	269	678	126	5	1
Lane Group Flow (vph)	299	848	168	5	1
Turn Type	NA	NA	Perm	Prot	Perm
Protected Phases	2	6		8	
Permitted Phases			6		8
Detector Phase	2	6	6	8	8
Switch Phase					
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	39.0	39.0	39.0	26.0	26.0
Total Split (s)	60.0	60.0	60.0	30.0	30.0
Total Split (%)	66.7%	66.7%	66.7%	33.3%	33.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	Max	Max	None	None
v/c Ratio	0.17	0.48	0.11	0.03	0.01
Control Delay	1.0	2.1	0.6	37.2	29.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	1.0	2.1	0.6	37.2	29.0
Queue Length 50th (m)	0.0	0.0	0.0	0.9	0.0
Queue Length 95th (m)	16.2	52.7	4.1	4.2	1.5
Internal Link Dist (m)	32.5	56.2		16.9	
Turn Bay Length (m)			30.0		
Base Capacity (vph)	1767	1784	1535	473	437
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.17	0.48	0.11	0.01	0.00

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 42 (47%), Referenced to phase 2:EBT, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 9: James/New & Martha



APPENDIX E

Future Background Capacity Analysis

Future Background Traffic Capacity Analysis
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	1	6		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)	10.0	34.0		34.0	34.0		39.0	39.0		39.0	39.0	
Total Split (s)	11.0	69.0		58.0	58.0		41.0	41.0		41.0	41.0	
Total Split (%)	10.0%	62.7%		52.7%	52.7%		37.3%	37.3%		37.3%	37.3%	
Maximum Green (s)	8.0	63.0		52.0	52.0		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)	-1.0	-1.0		-1.0	-1.0			-1.0		-1.0	-1.0	
Total Lost Time (s)	2.0	5.0		5.0	5.0			6.0		6.0	6.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Max		C-Max	C-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)		7		7	7		12	12		12	12	
Act Effct Green (s)	85.3	82.3			71.2			16.7		16.7	16.7	
Actuated g/C Ratio	0.78	0.75			0.65			0.15		0.15	0.15	
v/c Ratio	0.27	0.65			0.31			0.04		0.47	0.49	
Control Delay	5.4	11.8			7.6			34.5		47.8	10.0	
Queue Delay	0.0	1.3			0.1			0.0		0.0	0.0	
Total Delay	5.4	13.1			7.7			34.5		47.8	10.0	
LOS	A	B			A			C		D	A	
Approach Delay		11.9			7.7			34.5			22.6	
Approach LOS		B			A			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 47 (43%), Referenced to phase 2:WBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 12.1		Intersection LOS: B	
Intersection Capacity Utilization 74.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Brant & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	123	761	12	0	532	80	7	1	0	71	4	153
Future Volume (vph)	123	761	12	0	532	80	7	1	0	71	4	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	54.0		0.0	24.0		0.0	0.0		0.0	0.0		24.0
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
Ped Bike Factor	1.00	1.00			1.00			1.00		0.99	0.98	
Frt		0.997			0.978						0.854	
Flt Protected	0.950							0.957		0.950		
Satd. Flow (prot)	1752	1821	0	1900	3346	0	0	1818	0	1719	1518	0
Flt Permitted	0.363							0.737		0.752		
Satd. Flow (perm)	667	1821	0	1900	3346	0	0	1393	0	1344	1518	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			24						184	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		99.8			134.4			31.0			59.8	
Travel Time (s)		7.2			9.7			2.2			4.3	
Confl. Peds. (#/hr)	7		12	12		7	7		7	7		7
Peak Hour Factor	0.75	0.87	0.75	1.00	0.93	0.83	0.88	1.00	1.00	0.75	0.75	0.83
Heavy Vehicles (%)	3%	4%	0%	0%	5%	5%	0%	0%	0%	5%	0%	5%
Bus Blockages (#/hr)	0	0	0	0	0	25	0	0	0	0	0	0
Adj. Flow (vph)	164	875	16	0	572	96	8	1	0	95	5	184
Shared Lane Traffic (%)												
Lane Group Flow (vph)	164	891	0	0	668	0	0	9	0	95	189	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	6			2			4			4	
Permitted Phases	6			2			4			4		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	123	761	12	0	532	80	7	1	0	71	4	153
Future Volume (vph)	123	761	12	0	532	80	7	1	0	71	4	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	5.0			5.0			6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00			0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00			1.00			1.00		1.00	0.98	
Flpb, ped/bikes	1.00	1.00			1.00			1.00		0.99	1.00	
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)	1750	1822			3348			1811		1698	1518	
Flt Permitted	0.36	1.00			1.00			0.74		0.75	1.00	
Satd. Flow (perm)	668	1822			3348			1393		1344	1518	
Peak-hour factor, PHF	0.75	0.87	0.75	1.00	0.93	0.83	0.88	1.00	1.00	0.75	0.75	0.83
Adj. Flow (vph)	164	875	16	0	572	96	8	1	0	95	5	184
RTOR Reduction (vph)	0	0	0	0	8	0	0	0	0	0	156	0
Lane Group Flow (vph)	164	891	0	0	660	0	0	9	0	95	33	0
Confl. Peds. (#/hr)	7		12	12		7	7		7	7		7
Heavy Vehicles (%)	3%	4%	0%	0%	5%	5%	0%	0%	0%	5%	0%	5%
Bus Blockages (#/hr)	0	0	0	0	0	25	0	0	0	0	0	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2			4			4		
Actuated Green, G (s)	81.3	81.3			70.2			15.7		15.7	15.7	
Effective Green, g (s)	82.3	82.3			71.2			16.7		16.7	16.7	
Actuated g/C Ratio	0.75	0.75			0.65			0.15		0.15	0.15	
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)	589	1363			2167			211		204	230	
v/s Ratio Prot	0.02	c0.49			0.20						0.02	
v/s Ratio Perm	0.19							0.01		c0.07		
v/c Ratio	0.28	0.65			0.30			0.04		0.47	0.14	
Uniform Delay, d1	4.1	6.8			8.5			39.8		42.6	40.4	
Progression Factor	1.00	1.00			0.73			1.00		1.00	1.00	
Incremental Delay, d2	0.3	2.5			0.4			0.1		1.7	0.3	
Delay (s)	4.3	9.3			6.6			39.9		44.3	40.7	
Level of Service	A	A			A			D		D	D	
Approach Delay (s)		8.5			6.6			39.9			41.9	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	74.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	123	761	532	7	1	71	4
Future Volume (vph)	123	761	532	7	1	71	4
Lane Group Flow (vph)	164	891	668	0	9	95	189
Turn Type	pm+pt	NA	NA	Perm	NA	Perm	NA
Protected Phases	1	6	2		4		4
Permitted Phases	6			4		4	
Detector Phase	1	6	2	4	4	4	4
Switch Phase							
Minimum Initial (s)	6.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	10.0	34.0	34.0	39.0	39.0	39.0	39.0
Total Split (s)	11.0	69.0	58.0	41.0	41.0	41.0	41.0
Total Split (%)	10.0%	62.7%	52.7%	37.3%	37.3%	37.3%	37.3%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	2.0	5.0	5.0		6.0	6.0	6.0
Lead/Lag	Lead		Lag				
Lead-Lag Optimize?	Yes		Yes				
Recall Mode	None	Max	C-Max	None	None	None	None
v/c Ratio	0.27	0.65	0.31		0.04	0.47	0.49
Control Delay	5.4	11.8	7.6		34.5	47.8	10.0
Queue Delay	0.0	1.3	0.1		0.0	0.0	0.0
Total Delay	5.4	13.1	7.7		34.5	47.8	10.0
Queue Length 50th (m)	6.5	74.1	21.2		1.8	20.4	1.0
Queue Length 95th (m)	18.4	190.6	27.4		5.4	25.0	9.2
Internal Link Dist (m)		75.8	110.4		7.0		35.8
Turn Bay Length (m)	54.0						
Base Capacity (vph)	613	1363	2174		443	427	608
Starvation Cap Reductn	0	0	535		0	0	0
Spillback Cap Reductn	0	266	0		0	0	0
Storage Cap Reductn	0	0	0		0	0	0
Reduced v/c Ratio	0.27	0.81	0.41		0.02	0.22	0.31

Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 47 (43%), Referenced to phase 2:WBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated

Splits and Phases: 1: Brant & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	2	2	2	6	6		4	4		8	4	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	42.0	42.0	42.0	42.0	42.0		32.0	32.0		32.0	32.0	
Total Split (s)	75.0	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%	68.2%		31.8%	31.8%		31.8%	31.8%	
Maximum Green (s)	68.0	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	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0			-1.0		-1.0	-1.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0			6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	Max	Max		None	None		None	None	
Walk Time (s)	20.0	20.0	20.0	20.0	20.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	14.0	14.0	14.0	14.0	14.0		16.0	16.0		16.0	16.0	
Pedestrian Calls (#/hr)	7	7	7	1	1		31	31		0	31	
Act Effct Green (s)	83.6	83.6	83.6	83.6	83.6			18.6		18.6	18.6	
Actuated g/C Ratio	0.76	0.76	0.76	0.76	0.76			0.17		0.17	0.17	
v/c Ratio	0.07	0.66	0.01	0.04	0.24			0.10		0.07	0.10	
Control Delay	3.9	10.5	0.0	4.9	4.2			5.7		34.8	0.4	
Queue Delay	0.0	0.5	0.0	0.0	0.1			0.0		0.0	0.0	
Total Delay	3.9	11.0	0.0	4.9	4.3			5.7		34.8	0.4	
LOS	A	B	A	A	A			A		C	A	
Approach Delay		10.6			4.3			5.7			7.8	
Approach LOS		B			A			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 49 (45%), Referenced to phase 2:EBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 8.1		Intersection LOS: A	
Intersection Capacity Utilization 61.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Elizabeth & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	800	8	9	558	13	15	0	3	9	0	39
Future Volume (vph)	24	800	8	9	558	13	15	0	3	9	0	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	80.0		30.0	44.0		0.0	0.0		0.0	30.0		0.0
Storage Lanes	1		1	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
Ped Bike Factor	0.99		0.96		1.00			0.99		0.99	0.98	
Frt			0.850		0.996			0.982			0.850	
Flt Protected	0.950			0.950				0.958		0.950		
Satd. Flow (prot)	1504	1863	1292	1641	3477	0	0	1425	0	1388	1322	0
Flt Permitted	0.407			0.222				0.764		0.742		
Satd. Flow (perm)	640	1863	1237	383	3477	0	0	1131	0	1075	1322	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			40		4			40			288	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		134.4			121.0			80.0			99.4	
Travel Time (s)		9.7			8.7			5.8			7.2	
Confl. Peds. (#/hr)	12		14	14		12	4		4	4		4
Peak Hour Factor	0.75	0.86	0.75	0.75	0.90	0.81	0.75	1.00	1.00	0.75	1.00	0.88
Heavy Vehicles (%)	20%	2%	25%	10%	3%	15%	25%	0%	25%	30%	0%	20%
Bus Blockages (#/hr)	0	0	0	0	0	15	0	0	0	0	0	0
Adj. Flow (vph)	32	930	11	12	620	16	20	0	3	12	0	44
Shared Lane Traffic (%)												
Lane Group Flow (vph)	32	930	11	12	636	0	0	23	0	12	44	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	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	0.0	
Detector 1 Position(m)	0.0	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	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	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	0.0	
Detector 1 Queue (s)	0.0	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	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	Perm	NA		Perm	NA		custom	NA	
Protected Phases		2			6			4			4	
Permitted Phases	2		2	6			4			8		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	800	8	9	558	13	15	0	3	9	0	39
Future Volume (vph)	24	800	8	9	558	13	15	0	3	9	0	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0			6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00			1.00		1.00	0.98	
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00			1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.98		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96		0.95	1.00	
Satd. Flow (prot)	1492	1863	1237	1634	3478			1419		1376	1322	
Flt Permitted	0.41	1.00	1.00	0.22	1.00			0.76		0.74	1.00	
Satd. Flow (perm)	640	1863	1237	383	3478			1131		1075	1322	
Peak-hour factor, PHF	0.75	0.86	0.75	0.75	0.90	0.81	0.75	1.00	1.00	0.75	1.00	0.88
Adj. Flow (vph)	32	930	11	12	620	16	20	0	3	12	0	44
RTOR Reduction (vph)	0	0	3	0	1	0	0	19	0	0	37	0
Lane Group Flow (vph)	32	930	8	12	635	0	0	4	0	12	7	0
Confl. Peds. (#/hr)	12		14	14		12	4		4	4		4
Heavy Vehicles (%)	20%	2%	25%	10%	3%	15%	25%	0%	25%	30%	0%	20%
Bus Blockages (#/hr)	0	0	0	0	0	15	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		custom	NA	
Protected Phases		2			6			4			4	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	80.0	80.0	80.0	80.0	80.0			16.0		16.0	16.0	
Effective Green, g (s)	81.0	81.0	81.0	81.0	81.0			17.0		17.0	17.0	
Actuated g/C Ratio	0.74	0.74	0.74	0.74	0.74			0.15		0.15	0.15	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0			7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	471	1371	910	282	2561			174		166	204	
v/s Ratio Prot		c0.50			0.18						0.01	
v/s Ratio Perm	0.05		0.01	0.03				0.00		c0.01		
v/c Ratio	0.07	0.68	0.01	0.04	0.25			0.02		0.07	0.03	
Uniform Delay, d1	4.0	7.6	3.8	3.9	4.7			39.4		39.8	39.5	
Progression Factor	0.58	0.84	1.00	0.70	0.70			1.00		1.00	1.00	
Incremental Delay, d2	0.2	2.2	0.0	0.3	0.2			0.0		0.2	0.1	
Delay (s)	2.6	8.6	3.9	3.0	3.5			39.5		39.9	39.6	
Level of Service	A	A	A	A	A			D		D	D	
Approach Delay (s)		8.3			3.5			39.5			39.7	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	7.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	61.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	24	800	8	9	558	15	0	9	0
Future Volume (vph)	24	800	8	9	558	15	0	9	0
Lane Group Flow (vph)	32	930	11	12	636	0	23	12	44
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	custom	NA
Protected Phases		2			6		4		4
Permitted Phases	2		2	6		4		8	
Detector Phase	2	2	2	6	6	4	4	8	4
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	42.0	42.0	42.0	42.0	42.0	32.0	32.0	32.0	32.0
Total Split (s)	75.0	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%	68.2%	31.8%	31.8%	31.8%	31.8%
Yellow Time (s)	4.0	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	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	Max	Max	None	None	None	None
v/c Ratio	0.07	0.66	0.01	0.04	0.24		0.10	0.07	0.10
Control Delay	3.9	10.5	0.0	4.9	4.2		5.7	34.8	0.4
Queue Delay	0.0	0.5	0.0	0.0	0.1		0.0	0.0	0.0
Total Delay	3.9	11.0	0.0	4.9	4.3		5.7	34.8	0.4
Queue Length 50th (m)	2.5	156.7	0.0	0.4	28.2		0.0	2.1	0.0
Queue Length 95th (m)	m0.9	39.3	m0.0	1.4	16.8		3.8	6.2	0.0
Internal Link Dist (m)		110.4			97.0		56.0		75.4
Turn Bay Length (m)	80.0		30.0	44.0				30.0	
Base Capacity (vph)	486	1416	949	291	2643		327	283	560
Starvation Cap Reductn	0	165	0	0	853		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	0.07	0.74	0.01	0.04	0.36		0.07	0.04	0.08

Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 49 (45%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Elizabeth & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0		29.0	29.0		29.0	29.0	
Total Split (s)	79.0	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%	71.8%		28.2%	28.2%		28.2%	28.2%	
Maximum Green (s)	73.0	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	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0			-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0			5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	Max	Max		None	None		None	None	
Walk Time (s)	20.0	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	11.0		12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	0	0	0	10	10		1	1		0	0	
Act Effct Green (s)	91.6	91.6	91.6	91.6	91.6			12.2		12.2	12.2	
Actuated g/C Ratio	0.83	0.83	0.83	0.83	0.83			0.11		0.11	0.11	
v/c Ratio	0.10	0.57	0.02	0.00	0.22			0.02		0.24	0.25	
Control Delay	1.2	2.1	0.1	4.0	3.1			0.0		46.6	15.2	
Queue Delay	0.0	0.1	0.0	0.0	0.0			0.0		0.0	0.0	
Total Delay	1.2	2.2	0.1	4.0	3.1			0.0		46.6	15.2	
LOS	A	A	A	A	A			A		D	B	
Approach Delay		2.0			3.1						26.6	
Approach LOS		A			A						C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 49 (45%), Referenced to phase 2:EBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay: 3.7		Intersection LOS: A	
Intersection Capacity Utilization 54.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Pearl & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	748	18	2	540	24	1	0	2	24	4	39
Future Volume (vph)	46	748	18	2	540	24	1	0	2	24	4	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		20.0	27.0		0.0	0.0		0.0	16.0		0.0
Storage Lanes	1		1	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
Ped Bike Factor	0.99				1.00			0.99		1.00		
Frt			0.850		0.993			0.910			0.861	
Flt Protected	0.950			0.950				0.984		0.950		
Satd. Flow (prot)	1770	1845	1615	1805	3511	0	0	1676	0	1530	1570	0
Flt Permitted	0.404			0.282				0.914		0.756		
Satd. Flow (perm)	747	1845	1615	536	3511	0	0	1557	0	1214	1570	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			30		10			30			52	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		121.0			123.9			37.3			112.8	
Travel Time (s)		8.7			8.9			2.7			8.1	
Confl. Peds. (#/hr)	10					10			1	1		
Peak Hour Factor	0.75	0.85	0.75	1.00	0.87	0.75	1.00	1.00	1.00	0.75	1.00	0.75
Heavy Vehicles (%)	2%	3%	0%	0%	2%	0%	0%	0%	0%	18%	20%	3%
Adj. Flow (vph)	61	880	24	2	621	32	1	0	2	32	4	52
Shared Lane Traffic (%)												
Lane Group Flow (vph)	61	880	24	2	653	0	0	3	0	32	56	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	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	0.0	
Detector 1 Position(m)	0.0	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	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	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	0.0	
Detector 1 Queue (s)	0.0	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	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	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6			4			8		
Detector Phase	2	2	2	6	6		4	4		8	8	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	748	18	2	540	24	1	0	2	24	4	39
Future Volume (vph)	46	748	18	2	540	24	1	0	2	24	4	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0			5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			0.99		1.00	1.00	
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99			0.91		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.98		0.95	1.00	
Satd. Flow (prot)	1757	1845	1615	1805	3510			1675		1526	1569	
Flt Permitted	0.40	1.00	1.00	0.28	1.00			0.91		0.76	1.00	
Satd. Flow (perm)	746	1845	1615	535	3510			1556		1214	1569	
Peak-hour factor, PHF	0.75	0.85	0.75	1.00	0.87	0.75	1.00	1.00	1.00	0.75	1.00	0.75
Adj. Flow (vph)	61	880	24	2	621	32	1	0	2	32	4	52
RTOR Reduction (vph)	0	0	4	0	2	0	0	3	0	0	47	0
Lane Group Flow (vph)	61	880	20	2	651	0	0	0	0	32	9	0
Confl. Peds. (#/hr)	10					10			1	1		
Heavy Vehicles (%)	2%	3%	0%	0%	2%	0%	0%	0%	0%	18%	20%	3%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	88.4	88.4	88.4	88.4	88.4			9.6		9.6	9.6	
Effective Green, g (s)	89.4	89.4	89.4	89.4	89.4			10.6		10.6	10.6	
Actuated g/C Ratio	0.81	0.81	0.81	0.81	0.81			0.10		0.10	0.10	
Clearance Time (s)	6.0	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	3.0	
Lane Grp Cap (vph)	606	1499	1312	434	2852			149		116	151	
v/s Ratio Prot		c0.48			0.19						0.01	
v/s Ratio Perm	0.08		0.01	0.00				0.00		c0.03		
v/c Ratio	0.10	0.59	0.01	0.00	0.23			0.00		0.28	0.06	
Uniform Delay, d1	2.1	3.7	2.0	1.9	2.4			44.9		46.1	45.2	
Progression Factor	0.28	0.17	0.01	1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.3	1.3	0.0	0.0	0.2			0.0		1.3	0.2	
Delay (s)	0.8	1.9	0.0	2.0	2.6			44.9		47.4	45.3	
Level of Service	A	A	A	A	A			D		D	D	
Approach Delay (s)		1.8			2.6			44.9			46.1	
Approach LOS		A			A			D			D	

Intersection Summary				
HCM 2000 Control Delay	4.5	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.55			
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	54.8%	ICU Level of Service	A	
Analysis Period (min)	15			

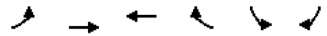
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	46	748	18	2	540	1	0	24	4
Future Volume (vph)	46	748	18	2	540	1	0	24	4
Lane Group Flow (vph)	61	880	24	2	653	0	3	32	56
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2			6		4		8
Permitted Phases	2		2	6		4		8	
Detector Phase	2	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	8.0
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0	29.0	29.0	29.0	29.0
Total Split (s)	79.0	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%	71.8%	28.2%	28.2%	28.2%	28.2%
Yellow Time (s)	4.0	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	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	Max	Max	None	None	None	None
v/c Ratio	0.10	0.57	0.02	0.00	0.22		0.02	0.24	0.25
Control Delay	1.2	2.1	0.1	4.0	3.1		0.0	46.6	15.2
Queue Delay	0.0	0.1	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	1.2	2.2	0.1	4.0	3.1		0.0	46.6	15.2
Queue Length 50th (m)	0.0	11.9	0.0	0.1	12.3		0.0	6.9	0.9
Queue Length 95th (m)	m0.0	10.0	m0.0	0.9	31.0		m0.0	12.2	11.4
Internal Link Dist (m)		97.0			99.9		13.3		88.8
Turn Bay Length (m)	55.0		20.0	27.0				16.0	
Base Capacity (vph)	621	1536	1349	446	2924		390	286	410
Starvation Cap Reductn	0	69	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.10	0.60	0.02	0.00	0.22		0.01	0.11	0.14

Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 49 (45%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Pearl & Lakeshore

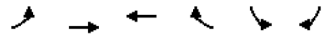




Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	57	717	548	21	8	18
Future Volume (Veh/h)	57	717	548	21	8	18
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.83	0.93	0.88	0.75	0.75
Hourly flow rate (vph)	64	864	589	24	11	24
Pedestrians		1			17	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		124				
pX, platoon unblocked					0.81	
vC, conflicting volume	630				1610	619
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	630				1636	619
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	93				87	95
cM capacity (veh/h)	944				83	479

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	64	864	613	35
Volume Left	64	0	0	11
Volume Right	0	0	24	24
cSH	944	1700	1700	192
Volume to Capacity	0.07	0.51	0.36	0.18
Queue Length 95th (m)	1.7	0.0	0.0	5.2
Control Delay (s)	9.1	0.0	0.0	27.8
Lane LOS	A			D
Approach Delay (s)	0.6		0.0	27.8
Approach LOS				D

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	48.1%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	57	717	548	21	8	18
Future Volume (vph)	57	717	548	21	8	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	36.0			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	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.995		0.907	
Flt Protected	0.950				0.985	
Satd. Flow (prot)	1787	1827	1852	0	1663	0
Flt Permitted	0.950				0.985	
Satd. Flow (perm)	1787	1827	1852	0	1663	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		123.9	42.7		116.9	
Travel Time (s)		8.9	3.1		8.4	
Confl. Peds. (#/hr)	17			17		1
Peak Hour Factor	0.89	0.83	0.93	0.88	0.75	0.75
Heavy Vehicles (%)	1%	4%	2%	4%	0%	3%
Bus Blockages (#/hr)	0	0	0	4	0	0
Adj. Flow (vph)	64	864	589	24	11	24
Shared Lane Traffic (%)						
Lane Group Flow (vph)	64	864	613	0	35	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	48.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	725	0	0	569	0	0
Future Volume (Veh/h)	725	0	0	569	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.84	1.00	1.00	0.93	1.00	1.00
Hourly flow rate (vph)	863	0	0	612	0	0
Pedestrians	2			2	2	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	167					
pX, platoon unblocked			0.81		0.81	0.81
vC, conflicting volume			865		1479	867
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			713		1474	716
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			722		113	349

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	863	0	612	0
Volume Left	0	0	0	0
Volume Right	0	0	0	0
cSH	1700	1700	1700	1700
Volume to Capacity	0.51	0.00	0.36	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	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		48.8%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	725	0	0	569	0	0
Future Volume (vph)	725	0	0	569	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	20.0		0.0	0.0
Storage Lanes		0	1		0	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt						
Flt Protected						
Satd. Flow (prot)	1827	0	1900	1845	0	1900
Flt Permitted						
Satd. Flow (perm)	1827	0	1900	1845	0	1900
Link Speed (k/h)	50			50	50	
Link Distance (m)	42.7			96.0	38.8	
Travel Time (s)	3.1			6.9	2.8	
Confl. Peds. (#/hr)		2	2		2	2
Peak Hour Factor	0.84	1.00	1.00	0.93	1.00	1.00
Heavy Vehicles (%)	4%	0%	0%	3%	0%	0%
Adj. Flow (vph)	863	0	0	612	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	863	0	0	612	0	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	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)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	48.8%		ICU Level of Service A
Analysis Period (min)	15		

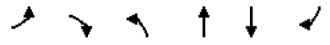
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	724	1	21	569	0	6
Future Volume (Veh/h)	724	1	21	569	0	6
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.82	1.00	0.75	0.92	1.00	1.00
Hourly flow rate (vph)	883	1	28	618	0	6
Pedestrians	1			1	2	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	263					
pX, platoon unblocked			0.80		0.80	0.80
vC, conflicting volume			886		1560	886
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			732		1576	733
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		100	98
cM capacity (veh/h)			704		93	338

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	884	28	618	6
Volume Left	0	28	0	0
Volume Right	1	0	0	6
cSH	1700	704	1700	338
Volume to Capacity	0.52	0.04	0.36	0.02
Queue Length 95th (m)	0.0	1.0	0.0	0.4
Control Delay (s)	0.0	10.3	0.0	15.8
Lane LOS		B		C
Approach Delay (s)	0.0	0.4		15.8
Approach LOS				C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	48.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	724	1	21	569	0	6
Future Volume (vph)	724	1	21	569	0	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	20.0		0.0	0.0
Storage Lanes		0	1		1	0
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt					0.865	
Flt Protected			0.950			
Satd. Flow (prot)	1815	0	1805	1833	1644	0
Flt Permitted			0.950			
Satd. Flow (perm)	1815	0	1805	1833	1644	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	96.0			85.5	39.5	
Travel Time (s)	6.9			6.2	2.8	
Confl. Peds. (#/hr)		2	2		1	1
Peak Hour Factor	0.82	1.00	0.75	0.92	1.00	1.00
Heavy Vehicles (%)	3%	0%	0%	2%	0%	0%
Bus Blockages (#/hr)	4	0	0	4	0	0
Adj. Flow (vph)	883	1	28	618	0	6
Shared Lane Traffic (%)						
Lane Group Flow (vph)	884	0	28	618	6	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	1.02	1.00	1.00	1.02	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

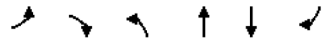
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	48.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	18	12	9	69	14	3
Future Volume (Veh/h)	18	12	9	69	14	3
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.75	0.88	0.88	1.00
Hourly flow rate (vph)	24	16	12	78	16	3
Pedestrians	4					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	124	22	23			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	124	22	23			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	97	98	99			
cM capacity (veh/h)	867	1058	1549			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	40	90	19
Volume Left	24	12	0
Volume Right	16	0	3
cSH	934	1549	1700
Volume to Capacity	0.04	0.01	0.01
Queue Length 95th (m)	1.1	0.2	0.0
Control Delay (s)	9.0	1.0	0.0
Lane LOS	A	A	
Approach Delay (s)	9.0	1.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay		3.0	
Intersection Capacity Utilization		20.8%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	18	12	9	69	14	3
Future Volume (vph)	18	12	9	69	14	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.946				0.979	
Flt Protected	0.971			0.993		
Satd. Flow (prot)	1745	0	0	1851	1860	0
Flt Permitted	0.971			0.993		
Satd. Flow (perm)	1745	0	0	1851	1860	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	105.7			116.9	176.8	
Travel Time (s)	7.6			8.4	12.7	
Confl. Peds. (#/hr)			4			4
Peak Hour Factor	0.75	0.75	0.75	0.88	0.88	1.00
Heavy Vehicles (%)	0%	0%	8%	1%	0%	0%
Adj. Flow (vph)	24	16	12	78	16	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	40	0	0	90	19	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 20.8%			ICU Level of Service A
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	267	17	0	247	0	87
Future Volume (Veh/h)	267	17	0	247	0	87
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	297	19	0	274	0	97
Pedestrians					2	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				56		
pX, platoon unblocked					0.97	
vC, conflicting volume			299		573	299
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			299		543	299
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	87
cM capacity (veh/h)			1260		484	739

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	297	19	274	97
Volume Left	0	0	0	0
Volume Right	0	19	0	97
cSH	1700	1700	1700	739
Volume to Capacity	0.17	0.01	0.16	0.13
Queue Length 95th (m)	0.0	0.0	0.0	3.6
Control Delay (s)	0.0	0.0	0.0	10.6
Lane LOS				B
Approach Delay (s)	0.0		0.0	10.6
Approach LOS				B

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	26.1%	ICU Level of Service	A
Analysis Period (min)	15		

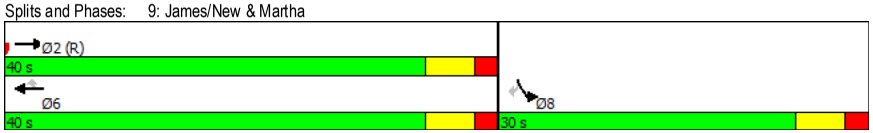
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	267	17	0	247	0	87
Future Volume (vph)	267	17	0	247	0	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.865
Flt Protected						
Satd. Flow (prot)	1863	1583	0	1863	0	1611
Flt Permitted						
Satd. Flow (perm)	1863	1583	0	1863	0	1611
Link Speed (k/h)	50			50	50	
Link Distance (m)	94.6			56.5	176.8	
Travel Time (s)	6.8			4.1	12.7	
Confl. Peds. (#/hr)		2				
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	297	19	0	274	0	97
Shared Lane Traffic (%)						
Lane Group Flow (vph)	297	19	0	274	0	97
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			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)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	26.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Switch Phase						
Minimum Initial (s)		8.0	8.0	8.0	8.0	8.0
Minimum Split (s)		39.0	39.0	39.0	26.0	26.0
Total Split (s)		40.0	40.0	40.0	30.0	30.0
Total Split (%)		57.1%	57.1%	57.1%	42.9%	42.9%
Maximum Green (s)		34.0	34.0	34.0	24.0	24.0
Yellow Time (s)		4.0	4.0	4.0	4.0	4.0
All-Red Time (s)		2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)		5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0
Recall Mode		C-Max	Max	Max	None	None
Walk Time (s)		25.0	25.0	25.0	8.0	8.0
Flash Dont Walk (s)		7.0	7.0	7.0	12.0	12.0
Pedestrian Calls (#/hr)		4	2	2	1	1
Act Effct Green (s)		63.8	63.8	63.8	11.4	
Actuated g/C Ratio		0.91	0.91	0.91	0.16	
v/c Ratio		0.24	0.18	0.05	0.02	
Control Delay		3.3	3.1	1.6	21.4	
Queue Delay		0.0	0.0	0.0	0.0	
Total Delay		3.3	3.1	1.6	21.4	
LOS		A	A	A	C	
Approach Delay		3.3	2.8		21.4	
Approach LOS		A	A		C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 41 (59%), Referenced to phase 2:EBT, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.24			
Intersection Signal Delay: 3.1		Intersection LOS: A	
Intersection Capacity Utilization 34.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 9: James/New & Martha



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	354	247	53	5	0
Future Volume (vph)	0	354	247	53	5	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			30.0	0.0	0.0
Storage Lanes	0			1	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850		
Flt Protected					0.950	
Satd. Flow (prot)	0	1827	1827	1583	1770	1863
Flt Permitted					0.950	
Satd. Flow (perm)	0	1827	1827	1583	1770	1863
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				71		
Link Speed (k/h)		50	50		50	
Link Distance (m)		56.5	80.2		40.9	
Travel Time (s)		4.1	5.8		2.9	
Confl. Peds. (#/hr)						1
Peak Hour Factor	0.90	0.90	0.81	0.75	1.00	1.00
Heavy Vehicles (%)	2%	4%	4%	2%	2%	2%
Adj. Flow (vph)	0	393	305	71	5	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	393	305	71	5	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	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2	1	1	1
Detector Template		Thru	Thru	Right	Left	Right
Leading Detector (m)		10.0	10.0	2.0	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)		0.6	0.6	2.0	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		NA	NA	Perm	Prot	Perm
Protected Phases		2	6		8	
Permitted Phases				6		8
Detector Phase		2	6	6	8	8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	354	247	53	5	0
Future Volume (vph)	0	354	247	53	5	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	1.00	1.00	
Frpb, ped/bikes		1.00	1.00	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	
Frt		1.00	1.00	0.85	1.00	
Flt Protected		1.00	1.00	1.00	0.95	
Satd. Flow (prot)		1827	1827	1583	1770	
Flt Permitted		1.00	1.00	1.00	0.95	
Satd. Flow (perm)		1827	1827	1583	1770	
Peak-hour factor, PHF	0.90	0.90	0.81	0.75	1.00	1.00
Adj. Flow (vph)	0	393	305	71	5	0
RTOR Reduction (vph)	0	0	0	15	0	0
Lane Group Flow (vph)	0	393	305	56	5	0
Confl. Peds. (#/hr)						1
Heavy Vehicles (%)	2%	4%	4%	2%	2%	2%
Turn Type		NA	NA	Perm	Prot	Perm
Protected Phases		2	6		8	
Permitted Phases				6		8
Actuated Green, G (s)		54.0	54.0	54.0	4.0	
Effective Green, g (s)		55.0	55.0	55.0	5.0	
Actuated g/C Ratio		0.79	0.79	0.79	0.07	
Clearance Time (s)		6.0	6.0	6.0	6.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		1435	1435	1243	126	
v/s Ratio Prot		c0.22	0.17		c0.00	
v/s Ratio Perm				0.04		
v/c Ratio		0.27	0.21	0.04	0.04	
Uniform Delay, d1		2.0	1.9	1.7	30.3	
Progression Factor		1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.5	0.3	0.1	0.1	
Delay (s)		2.5	2.3	1.7	30.4	
Level of Service		A	A	A	C	
Approach Delay (s)		2.5	2.2		30.4	
Approach LOS		A	A		C	

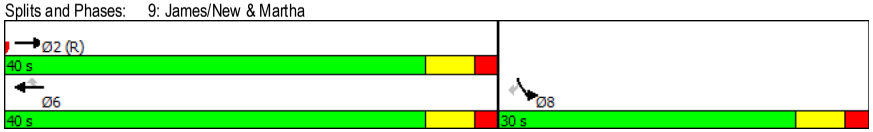
Intersection Summary				
HCM 2000 Control Delay	2.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	34.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	WBR	SBL
Lane Configurations				
Traffic Volume (vph)	354	247	53	5
Future Volume (vph)	354	247	53	5
Lane Group Flow (vph)	393	305	71	5
Turn Type	NA	NA	Perm	Prot
Protected Phases	2	6		8
Permitted Phases			6	
Detector Phase	2	6	6	8
Switch Phase				
Minimum Initial (s)	8.0	8.0	8.0	8.0
Minimum Split (s)	39.0	39.0	39.0	26.0
Total Split (s)	40.0	40.0	40.0	30.0
Total Split (%)	57.1%	57.1%	57.1%	42.9%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	Max	Max	None
v/c Ratio	0.24	0.18	0.05	0.02
Control Delay	3.3	3.1	1.6	21.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	3.3	3.1	1.6	21.4
Queue Length 50th (m)	0.0	0.0	0.0	0.6
Queue Length 95th (m)	45.4	29.8	3.3	2.7
Internal Link Dist (m)	32.5	56.2		16.9
Turn Bay Length (m)			30.0	
Base Capacity (vph)	1665	1665	1449	632
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.24	0.18	0.05	0.01

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 41 (59%), Referenced to phase 2:EBT, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 9: James/New & Martha



Future Background Traffic Capacity Analysis
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	1	6		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	8.0	
Minimum Split (s)	10.0	34.0		34.0	34.0	34.0	39.0	39.0		39.0	39.0	
Total Split (s)	11.0	79.0		68.0	68.0	68.0	41.0	41.0		41.0	41.0	
Total Split (%)	9.2%	65.8%		56.7%	56.7%	56.7%	34.2%	34.2%		34.2%	34.2%	
Maximum Green (s)	8.0	73.0		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	4.0	
All-Red Time (s)	0.0	2.0		2.0	2.0	2.0	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	2.0	5.0		5.0	5.0	5.0		6.0		6.0	6.0	
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	3.0	
Recall Mode	None	Max		C-Max	C-Max	C-Max	None	None		None	None	
Walk Time (s)		11.0		11.0	11.0	11.0	12.0	12.0		12.0	12.0	
Flash Dont Walk (s)		16.0		16.0	16.0	16.0	19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)		0		0	0	0	0	0		0	0	
Act Effct Green (s)	86.6	83.6		70.1	70.1	70.1		25.4		25.4	25.4	
Actuated g/C Ratio	0.72	0.70		0.58	0.58	0.58		0.21		0.21	0.21	
v/c Ratio	0.73	0.62		0.01	0.89	0.21		0.10		0.61	0.87	
Control Delay	38.9	14.0		13.3	28.2	3.7		37.0		50.8	41.2	
Queue Delay	0.0	0.0		0.0	2.8	0.0		0.0		0.0	0.0	
Total Delay	38.9	14.0		13.3	31.0	3.7		37.0		50.8	41.2	
LOS	D	B		B	C	A		D		D	D	
Approach Delay		18.7			26.7			37.0			44.1	
Approach LOS		B			C			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 51 (43%), Referenced to phase 2:WBTL, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 27.5		Intersection LOS: C	
Intersection Capacity Utilization 95.6%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 1: Brant & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	171	673	12	3	902	137	6	0	0	140	11	369
Future Volume (vph)	171	673	12	3	902	137	6	0	0	140	11	369
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	54.0		0.0	24.0		0.0	0.0		0.0	0.0		24.0
Storage Lanes	1		0	1		1	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		0.99		0.93		0.97		0.94	0.92	
Frt		0.998				0.850					0.856	
Flt Protected	0.950			0.950				0.950		0.950		
Satd. Flow (prot)	1787	1857	0	1805	1863	1497	0	1805	0	1805	1489	0
Flt Permitted	0.072			0.305				0.157		0.754		
Satd. Flow (perm)	135	1857	0	571	1863	1392	0	289	0	1350	1489	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				131					198	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		99.8			134.4			30.7			59.8	
Travel Time (s)		7.2			9.7			2.2			4.3	
Confl. Peds. (#/hr)	23		33	33		23	31		30	30		31
Peak Hour Factor	0.91	0.85	0.92	1.00	0.93	0.75	1.00	1.00	1.00	0.80	0.75	0.94
Heavy Vehicles (%)	1%	2%	0%	0%	2%	1%	0%	0%	0%	0%	0%	1%
Bus Blockages (#/hr)	0	0	0	0	0	16	0	0	0	0	0	0
Adj. Flow (vph)	188	792	13	3	970	183	6	0	0	175	15	393
Shared Lane Traffic (%)												
Lane Group Flow (vph)	188	805	0	3	970	183	0	6	0	175	408	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	1.00	1.00	1.00	1.00	1.00	1.09	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	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	0.0	
Detector 1 Position(m)	0.0	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	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	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	0.0	
Detector 1 Queue (s)	0.0	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	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	Perm	NA		Perm	NA	
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2		2	4			4		

HCM Signalized Intersection Capacity Analysis
1: Brant & Lakeshore

Future Background
Weekday PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	171	673	12	3	902	137	6	0	0	140	11	369
Future Volume (vph)	171	673	12	3	902	137	6	0	0	140	11	369
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	5.0		5.0	5.0	5.0		6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.93		1.00		1.00	0.92	
Flpb, ped/bikes	1.00	1.00		0.98	1.00	1.00		0.98		0.94	1.00	
Frt	1.00	1.00		1.00	1.00	0.85		1.00		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.95		0.95	1.00	
Satd. Flow (prot)	1787	1856		1771	1863	1392		1765		1701	1488	
Flt Permitted	0.07	1.00		0.31	1.00	1.00		0.16		0.75	1.00	
Satd. Flow (perm)	136	1856		569	1863	1392		293		1350	1488	
Peak-hour factor, PHF	0.91	0.85	0.92	1.00	0.93	0.75	1.00	1.00	1.00	0.80	0.75	0.94
Adj. Flow (vph)	188	792	13	3	970	183	6	0	0	175	15	393
RTOR Reduction (vph)	0	0	0	0	0	54	0	0	0	0	156	0
Lane Group Flow (vph)	188	805	0	3	970	129	0	6	0	175	252	0
Confl. Peds. (#/hr)	23		33	33		23	31		30	30		31
Heavy Vehicles (%)	1%	2%	0%	0%	2%	1%	0%	0%	0%	0%	0%	1%
Bus Blockages (#/hr)	0	0	0	0	0	16	0	0	0	0	0	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2		2	4			4		
Actuated Green, G (s)	82.6	82.6		69.1	69.1	69.1		24.4		24.4	24.4	
Effective Green, g (s)	83.6	83.6		70.1	70.1	70.1		25.4		25.4	25.4	
Actuated g/C Ratio	0.70	0.70		0.58	0.58	0.58		0.21		0.21	0.21	
Clearance Time (s)	3.0	6.0		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	3.0	
Lane Grp Cap (vph)	252	1293		332	1088	813		62		285	314	
v/s Ratio Prot	c0.07	0.43			c0.52						c0.17	
v/s Ratio Perm	0.45			0.01		0.09		0.02		0.13		
v/c Ratio	0.75	0.62		0.01	0.89	0.16		0.10		0.61	0.80	
Uniform Delay, d1	31.2	9.7		10.4	21.7	11.4		38.1		42.9	44.9	
Progression Factor	1.00	1.00		0.97	0.73	0.69		1.00		1.00	1.00	
Incremental Delay, d2	11.4	2.3		0.0	9.4	0.3		0.7		3.9	13.7	
Delay (s)	42.6	12.0		10.2	25.2	8.2		38.8		46.8	58.6	
Level of Service	D	B		B	C	A		D		D	E	
Approach Delay (s)		17.8			22.5			38.8			55.1	
Approach LOS		B			C			D			E	

Intersection Summary			
HCM 2000 Control Delay	27.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	95.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Queues
1: Brant & Lakeshore

Future Background
Weekday PM Peak Hour

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	171	673	3	902	137	6	0	140	11
Future Volume (vph)	171	673	3	902	137	6	0	140	11
Lane Group Flow (vph)	188	805	3	970	183	0	6	175	408
Turn Type	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases	1	6		2			4		4
Permitted Phases	6		2		2	4		4	
Detector Phase	1	6	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	8.0
Minimum Split (s)	10.0	34.0	34.0	34.0	34.0	39.0	39.0	39.0	39.0
Total Split (s)	11.0	79.0	68.0	68.0	68.0	41.0	41.0	41.0	41.0
Total Split (%)	9.2%	65.8%	56.7%	56.7%	56.7%	34.2%	34.2%	34.2%	34.2%
Yellow Time (s)	3.0	4.0	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	2.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	2.0	5.0	5.0	5.0	5.0		6.0	6.0	6.0
Lead/Lag	Lead		Lag	Lag	Lag				
Lead-Lag Optimize?	Yes		Yes	Yes	Yes				
Recall Mode	None	Max	C-Max	C-Max	C-Max	None	None	None	None
v/c Ratio	0.73	0.62	0.01	0.89	0.21		0.10	0.61	0.87
Control Delay	38.9	14.0	13.3	28.2	3.7		37.0	50.8	41.2
Queue Delay	0.0	0.0	0.0	2.8	0.0		0.0	0.0	0.0
Total Delay	38.9	14.0	13.3	31.0	3.7		37.0	50.8	41.2
Queue Length 50th (m)	22.4	97.5	0.2	101.4	2.9		1.2	39.4	53.0
Queue Length 95th (m)	#70.9	155.8	m0.6	#327.2	7.7		4.8	50.0	57.6
Internal Link Dist (m)		75.8		110.4			6.7		35.8
Turn Bay Length (m)	54.0		24.0						
Base Capacity (vph)	256	1294	333	1088	867		84	393	574
Starvation Cap Reductn	0	0	0	56	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	0.73	0.62	0.01	0.94	0.21		0.07	0.45	0.71

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 51 (43%), Referenced to phase 2:WBTL, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Brant & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	2	2	2	6	6	6	4	4		8	4	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0		8.0	8.0	
Minimum Split (s)	42.0	42.0	42.0	42.0	42.0	42.0	32.0	32.0		32.0	32.0	
Total Split (s)	84.0	84.0	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%	70.0%	70.0%	30.0%	30.0%		30.0%	30.0%	
Maximum Green (s)	77.0	77.0	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		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	Max	Max	Max	None	None		None	None	
Walk Time (s)	20.0	20.0	20.0	20.0	20.0	20.0	8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	14.0	14.0	14.0	14.0	14.0	14.0	16.0	16.0		16.0	16.0	
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0		0	0	
Act Effct Green (s)	96.5	96.5	96.5	96.5	96.5	96.5		11.5		11.5	11.5	
Actuated g/C Ratio	0.80	0.80	0.80	0.80	0.80	0.80		0.10		0.10	0.10	
v/c Ratio	0.18	0.55	0.03	0.02	0.65	0.05		0.26		0.41	0.45	
Control Delay	3.5	4.2	0.8	2.1	4.0	0.3		19.9		59.9	16.5	
Queue Delay	0.0	0.4	0.0	0.0	0.2	0.0		0.1		0.0	0.1	
Total Delay	3.5	4.6	0.8	2.1	4.2	0.3		20.0		59.9	16.6	
LOS	A	A	A	A	A	A		B		E	B	
Approach Delay		4.4			3.9			20.0			31.0	
Approach LOS		A			A			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 56 (47%), Referenced to phase 2:EBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 6.3		Intersection LOS: A	
Intersection Capacity Utilization 67.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Elizabeth & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	709	43	7	910	54	35	0	2	38	3	88
Future Volume (vph)	54	709	43	7	910	54	35	0	2	38	3	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	80.0		30.0	44.0		0.0	0.0		0.0	38.0		0.0
Storage Lanes	1		1	1		1	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.98	1.00		0.93		0.99		1.00	0.98	
Frt			0.850			0.850		0.993			0.854	
Flt Protected	0.950			0.950				0.955		0.950		
Satd. Flow (prot)	1597	1881	1615	1805	1881	1539	0	1800	0	1703	1447	0
Flt Permitted	0.238			0.300				0.630		0.733		
Satd. Flow (perm)	400	1881	1580	570	1881	1426	0	1177	0	1311	1447	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			36			55		36			100	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		134.4			121.0			80.0			99.4	
Travel Time (s)		9.7			8.7			5.8			7.2	
Confl. Peds. (#/hr)	31		1	1		31	7		1	1		7
Peak Hour Factor	0.91	0.85	1.00	0.75	0.93	0.95	1.00	1.00	1.00	0.75	1.00	0.88
Heavy Vehicles (%)	13%	1%	0%	0%	1%	2%	0%	0%	0%	6%	0%	10%
Bus Blockages (#/hr)	0	0	0	0	0	7	0	0	0	0	0	0
Adj. Flow (vph)	59	834	43	9	978	57	35	0	2	51	3	100
Shared Lane Traffic (%)												
Lane Group Flow (vph)	59	834	43	9	978	57	0	37	0	51	103	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	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	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		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	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	2.0	0.6	2.0	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		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		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	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		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	Perm	NA	Perm	Perm	NA		custom	NA	
Protected Phases		2			6			4			4	
Permitted Phases	2		2	6		6	4			8		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	709	43	7	910	54	35	0	2	38	3	88
Future Volume (vph)	54	709	43	7	910	54	35	0	2	38	3	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0		6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.93		1.00		1.00	0.98	
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00	1.00		0.99		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.99		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95		0.95	1.00	
Satd. Flow (prot)	1582	1881	1580	1804	1881	1426		1783		1699	1448	
Flt Permitted	0.24	1.00	1.00	0.30	1.00	1.00		0.63		0.73	1.00	
Satd. Flow (perm)	396	1881	1580	570	1881	1426		1177		1311	1448	
Peak-hour factor, PHF	0.91	0.85	1.00	0.75	0.93	0.95	1.00	1.00	1.00	0.75	1.00	0.88
Adj. Flow (vph)	59	834	43	9	978	57	35	0	2	51	3	100
RTOR Reduction (vph)	0	0	7	0	0	11	0	33	0	0	90	0
Lane Group Flow (vph)	59	834	36	9	978	46	0	4	0	51	13	0
Confl. Peds. (#/hr)	31		1	1		31	7		1	1		7
Heavy Vehicles (%)	13%	1%	0%	0%	1%	2%	0%	0%	0%	6%	0%	10%
Bus Blockages (#/hr)	0	0	0	0	0	7	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		custom	NA	
Protected Phases		2			6			4			4	
Permitted Phases	2		2	6		6	4			8		
Actuated Green, G (s)	95.5	95.5	95.5	95.5	95.5	95.5		10.5		10.5	10.5	
Effective Green, g (s)	96.5	96.5	96.5	96.5	96.5	96.5		11.5		11.5	11.5	
Actuated g/C Ratio	0.80	0.80	0.80	0.80	0.80	0.80		0.10		0.10	0.10	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	7.0		7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	318	1512	1270	458	1512	1146		112		125	138	
v/s Ratio Prot		0.44			c0.52						0.01	
v/s Ratio Perm	0.15		0.02	0.02		0.03		0.00		c0.04		
v/c Ratio	0.19	0.55	0.03	0.02	0.65	0.04		0.04		0.41	0.09	
Uniform Delay, d1	2.7	4.1	2.4	2.3	4.8	2.4		49.2		51.0	49.5	
Progression Factor	0.73	0.65	0.64	0.70	0.42	0.31		1.00		1.00	1.00	
Incremental Delay, d2	1.0	1.2	0.0	0.1	1.7	0.1		0.1		2.2	0.3	
Delay (s)	3.0	3.9	1.5	1.7	3.7	0.8		49.4		53.2	49.8	
Level of Service	A	A	A	A	A	A		D		D	D	
Approach Delay (s)		3.7			3.5			49.4			50.9	
Approach LOS		A			A			D			D	

Intersection Summary				
HCM 2000 Control Delay	7.7	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.63			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	67.3%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	54	709	43	7	910	54	35	0	38	3
Future Volume (vph)	54	709	43	7	910	54	35	0	38	3
Lane Group Flow (vph)	59	834	43	9	978	57	0	37	51	103
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	custom	NA
Protected Phases		2			6			4		4
Permitted Phases	2		2	6		6	4		8	
Detector Phase	2	2	2	6	6	6	4	4	8	4
Switch Phase										
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	42.0	42.0	42.0	42.0	42.0	42.0	32.0	32.0	32.0	32.0
Total Split (s)	84.0	84.0	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%	70.0%	70.0%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	4.0	4.0	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	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	Max	Max	Max	None	None	None	None
v/c Ratio	0.18	0.55	0.03	0.02	0.65	0.05		0.26	0.41	0.45
Control Delay	3.5	4.2	0.8	2.1	4.0	0.3		19.9	59.9	16.5
Queue Delay	0.0	0.4	0.0	0.0	0.2	0.0		0.1	0.0	0.1
Total Delay	3.5	4.6	0.8	2.1	4.2	0.3		20.0	59.9	16.6
Queue Length 50th (m)	1.9	26.7	0.2	0.2	24.4	0.0		0.2	12.2	0.7
Queue Length 95th (m)	m3.6	35.0	m0.7	m0.4	35.8	m0.3		10.7	20.1	17.3
Internal Link Dist (m)		110.4			97.0			56.0		75.4
Turn Bay Length (m)	80.0		30.0	44.0					38.0	
Base Capacity (vph)	321	1512	1277	458	1512	1157		321	327	436
Starvation Cap Reductn	0	268	0	0	93	0		0	0	0
Spillback Cap Reductn	0	48	0	0	93	0		41	0	53
Storage Cap Reductn	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.18	0.67	0.03	0.02	0.69	0.05		0.13	0.16	0.27

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 56 (47%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Elizabeth & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0		8.0	8.0	
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0	38.0	29.0	29.0		29.0	29.0	
Total Split (s)	89.0	89.0	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%	74.2%	74.2%	25.8%	25.8%		25.8%	25.8%	
Maximum Green (s)	83.0	83.0	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		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	Max	Max	Max	None	None		None	None	
Walk Time (s)	20.0	20.0	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	11.0	11.0	12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	3	3	3	11	11	11	3	3		28	28	
Act Effct Green (s)	96.4	96.4	96.4	96.4	96.4	96.4		17.4		17.4	17.4	
Actuated g/C Ratio	0.80	0.80	0.80	0.80	0.80	0.80		0.14		0.14	0.14	
v/c Ratio	0.27	0.49	0.04	0.01	0.66	0.11		0.08		0.18	0.29	
Control Delay	4.1	4.0	0.6	4.7	10.3	1.0		36.4		44.2	13.0	
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay	4.1	4.1	0.6	4.7	10.3	1.0		36.4		44.2	13.0	
LOS	A	A	A	A	B	A		D		D	B	
Approach Delay		3.9			9.1			36.4			21.2	
Approach LOS		A			A			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 51 (43%), Referenced to phase 2:EBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 7.9		Intersection LOS: A	
Intersection Capacity Utilization 72.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Pearl & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	650	34	3	901	105	9	6	3	23	7	61
Future Volume (vph)	65	650	34	3	901	105	9	6	3	23	7	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		20.0	27.0		0.0	0.0		0.0	16.0		0.0
Storage Lanes	1		1	1		1	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.98	1.00		0.96		0.99		0.98	0.99	
Frt			0.850			0.850		0.977			0.862	
Flt Protected	0.950			0.950				0.976		0.950		
Satd. Flow (prot)	1805	1881	1615	1805	1881	1615	0	1799	0	1583	1617	0
Flt Permitted	0.214			0.328				0.860		0.746		
Satd. Flow (perm)	407	1881	1580	623	1881	1552	0	1584	0	1217	1617	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			27			140		3			80	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		121.0			123.9			37.3			112.8	
Travel Time (s)		8.7			8.9			2.7			8.1	
Confl. Peds. (#/hr)	10		1	1		10	1		8	8		1
Peak Hour Factor	0.75	0.87	0.75	1.00	0.90	0.75	1.00	1.00	1.00	0.75	1.00	0.76
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	14%	0%	0%
Adj. Flow (vph)	87	747	45	3	1001	140	9	6	3	31	7	80
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	747	45	3	1001	140	0	18	0	31	87	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	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		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	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	2.0	0.6	2.0	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		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		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	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		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	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6		6	4			8		
Detector Phase	2	2	2	6	6	6	4	4		8	8	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	650	34	3	901	105	9	6	3	23	7	61
Future Volume (vph)	65	650	34	3	901	105	9	6	3	23	7	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0		5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.96		0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		0.98	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.98		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.98		0.95	1.00	
Satd. Flow (prot)	1800	1881	1580	1804	1881	1552		1798		1550	1617	
Flt Permitted	0.21	1.00	1.00	0.33	1.00	1.00		0.86		0.75	1.00	
Satd. Flow (perm)	405	1881	1580	623	1881	1552		1585		1216	1617	
Peak-hour factor, PHF	0.75	0.87	0.75	1.00	0.90	0.75	1.00	1.00	1.00	0.75	1.00	0.76
Adj. Flow (vph)	87	747	45	3	1001	140	9	6	3	31	7	80
RTOR Reduction (vph)	0	0	6	0	0	30	0	3	0	0	69	0
Lane Group Flow (vph)	87	747	39	3	1001	110	0	15	0	31	18	0
Confl. Peds. (#/hr)	10		1	1		10	1		8	8		1
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	14%	0%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6		6	4			8		
Actuated Green, G (s)	93.2	93.2	93.2	93.2	93.2	93.2		14.8		14.8	14.8	
Effective Green, g (s)	94.2	94.2	94.2	94.2	94.2	94.2		15.8		15.8	15.8	
Actuated g/C Ratio	0.79	0.79	0.79	0.79	0.79	0.79		0.13		0.13	0.13	
Clearance Time (s)	6.0	6.0	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		3.0	3.0	
Lane Grp Cap (vph)	317	1476	1240	489	1476	1218		208		160	212	
v/s Ratio Prot		0.40			c0.53						0.01	
v/s Ratio Perm	0.21		0.02	0.00		0.07		0.01		c0.03		
v/c Ratio	0.27	0.51	0.03	0.01	0.68	0.09		0.07		0.19	0.08	
Uniform Delay, d1	3.5	4.6	2.8	2.8	5.9	3.0		45.7		46.4	45.7	
Progression Factor	0.42	0.50	0.24	1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	1.8	1.1	0.0	0.0	2.5	0.1		0.2		0.6	0.2	
Delay (s)	3.3	3.4	0.7	2.8	8.5	3.1		45.9		47.0	45.9	
Level of Service	A	A	A	A	A	A		D		D	D	
Approach Delay (s)		3.2			7.8			45.9			46.2	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	8.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	72.6%	ICU Level of Service	C
Analysis Period (min)	15		

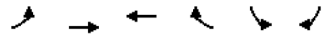
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	65	650	34	3	901	105	9	6	23	7
Future Volume (vph)	65	650	34	3	901	105	9	6	23	7
Lane Group Flow (vph)	87	747	45	3	1001	140	0	18	31	87
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		2			6			4		8
Permitted Phases	2		2	6		6	4		8	
Detector Phase	2	2	2	6	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	8.0	8.0
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0	38.0	29.0	29.0	29.0	29.0
Total Split (s)	89.0	89.0	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%	74.2%	74.2%	25.8%	25.8%	25.8%	25.8%
Yellow Time (s)	4.0	4.0	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	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	Max	Max	Max	None	None	None	None
v/c Ratio	0.27	0.49	0.04	0.01	0.66	0.11		0.08	0.18	0.29
Control Delay	4.1	4.0	0.6	4.7	10.3	1.0		36.4	44.2	13.0
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	4.1	4.1	0.6	4.7	10.3	1.0		36.4	44.2	13.0
Queue Length 50th (m)	2.7	67.2	0.0	0.2	128.7	0.0		3.1	6.4	1.4
Queue Length 95th (m)	3.3	22.3	0.3	1.1	180.6	2.8		m9.5	13.0	15.7
Internal Link Dist (m)		97.0			99.9			13.3		88.8
Turn Bay Length (m)	55.0		20.0	27.0					16.0	
Base Capacity (vph)	327	1511	1274	500	1511	1274		345	263	413
Starvation Cap Reductn	0	155	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.27	0.55	0.04	0.01	0.66	0.11		0.05	0.12	0.21

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 51 (43%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Pearl & Lakeshore

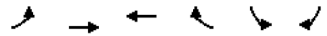




Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	91	586	989	62	18	20
Future Volume (Veh/h)	91	586	989	62	18	20
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.75	0.95	0.91	0.75	1.00	1.00
Hourly flow rate (vph)	121	617	1087	83	18	20
Pedestrians		1			2	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		124				
pX, platoon unblocked					0.87	
vC, conflicting volume	1172				1990	1132
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1172				2065	1132
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	80				57	92
cM capacity (veh/h)	595				42	244

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	121	617	1170	38
Volume Left	121	0	0	18
Volume Right	0	0	83	20
cSH	595	1700	1700	74
Volume to Capacity	0.20	0.36	0.69	0.51
Queue Length 95th (m)	6.0	0.0	0.0	17.1
Control Delay (s)	12.6	0.0	0.0	96.0
Lane LOS	B			F
Approach Delay (s)	2.1		0.0	96.0
Approach LOS				F

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	91	586	989	62	18	20
Future Volume (vph)	91	586	989	62	18	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	36.0			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	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.990		0.929	
Flt Protected	0.950				0.977	
Satd. Flow (prot)	1770	1863	1847	0	1689	0
Flt Permitted	0.950				0.977	
Satd. Flow (perm)	1770	1863	1847	0	1689	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		123.9	42.7		116.9	
Travel Time (s)		8.9	3.1		8.4	
Confl. Peds. (#/hr)	2			2		1
Peak Hour Factor	0.75	0.95	0.91	0.75	1.00	1.00
Heavy Vehicles (%)	2%	2%	2%	0%	0%	4%
Bus Blockages (#/hr)	0	0	0	4	0	0
Adj. Flow (vph)	121	617	1087	83	18	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	121	617	1170	0	38	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	74.5%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	603	1	1	1050	0	0
Future Volume (Veh/h)	603	1	1	1050	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.90	0.95	0.90	0.95
Hourly flow rate (vph)	635	1	1	1105	0	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)	167					
pX, platoon unblocked			0.87		0.87	0.87
vC, conflicting volume			636		1742	636
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			507		1779	506
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			920		79	493

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	636	1	1105	0
Volume Left	0	1	0	0
Volume Right	1	0	0	0
cSH	1700	920	1700	1700
Volume to Capacity	0.37	0.00	0.65	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	8.9	0.0	0.0
Lane LOS		A		A
Approach Delay (s)	0.0	0.0		0.0
Approach LOS				A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	58.6%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	603	1	1	1050	0	0
Future Volume (vph)	603	1	1	1050	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	20.0		0.0	0.0
Storage Lanes		0	1		0	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected			0.950			
Satd. Flow (prot)	1863	0	1770	1863	0	1863
Flt Permitted			0.950			
Satd. Flow (perm)	1863	0	1770	1863	0	1863
Link Speed (k/h)	50			50	50	
Link Distance (m)	42.7			96.0	38.8	
Travel Time (s)	3.1			6.9	2.8	
Peak Hour Factor	0.95	0.95	0.90	0.95	0.90	0.95
Adj. Flow (vph)	635	1	1	1105	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	636	0	1	1105	0	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	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)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	58.6%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	601	2	22	1049	2	17
Future Volume (Veh/h)	601	2	22	1049	2	17
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	1.00	0.75	0.84	1.00	0.75
Hourly flow rate (vph)	646	2	29	1249	2	23
Pedestrians	1			1	1	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	263					
pX, platoon unblocked			0.88		0.88	0.88
vC, conflicting volume			649		1956	649
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			533		2018	533
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		96	95
cM capacity (veh/h)			919		55	484

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	648	29	1249	25
Volume Left	0	29	0	2
Volume Right	2	0	0	23
cSH	1700	919	1700	299
Volume to Capacity	0.38	0.03	0.73	0.08
Queue Length 95th (m)	0.0	0.8	0.0	2.2
Control Delay (s)	0.0	9.0	0.0	18.2
Lane LOS		A		C
Approach Delay (s)	0.0	0.2		18.2
Approach LOS				C

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	65.5%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	601	2	22	1049	2	17
Future Volume (vph)	601	2	22	1049	2	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	20.0		0.0	0.0
Storage Lanes		0	1		1	0
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt					0.876	
Flt Protected			0.950		0.996	
Satd. Flow (prot)	1863	0	1805	1881	1658	0
Flt Permitted			0.950		0.996	
Satd. Flow (perm)	1863	0	1805	1881	1658	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	96.0			85.5	39.5	
Travel Time (s)	6.9			6.2	2.8	
Confl. Peds. (#/hr)		1	1		1	1
Peak Hour Factor	0.93	1.00	0.75	0.84	1.00	0.75
Heavy Vehicles (%)	2%	0%	0%	1%	0%	0%
Adj. Flow (vph)	646	2	29	1249	2	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	648	0	29	1249	25	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)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	65.5%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	28	24	16	90	12	2
Future Volume (Veh/h)	28	24	16	90	12	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.88	0.75	0.76	0.75	1.00
Hourly flow rate (vph)	33	27	21	118	16	2
Pedestrians	2					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	179	19	20			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	179	19	20			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	97	99			
cM capacity (veh/h)	803	1063	1581			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	60	139	18
Volume Left	33	21	0
Volume Right	27	0	2
cSH	902	1581	1700
Volume to Capacity	0.07	0.01	0.01
Queue Length 95th (m)	1.7	0.3	0.0
Control Delay (s)	9.3	1.2	0.0
Lane LOS	A	A	
Approach Delay (s)	9.3	1.2	0.0
Approach LOS	A		

Intersection Summary			
Average Delay		3.3	
Intersection Capacity Utilization		22.3%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	28	24	16	90	12	2
Future Volume (vph)	28	24	16	90	12	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.939				0.985	
Flt Protected	0.973			0.993		
Satd. Flow (prot)	1736	0	0	1844	1823	0
Flt Permitted	0.973			0.993		
Satd. Flow (perm)	1736	0	0	1844	1823	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	105.7			116.9	176.8	
Travel Time (s)	7.6			8.4	12.7	
Confl. Peds. (#/hr)			2			2
Peak Hour Factor	0.85	0.88	0.75	0.76	0.75	1.00
Heavy Vehicles (%)	0%	0%	4%	2%	3%	0%
Adj. Flow (vph)	33	27	21	118	16	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	60	0	0	139	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			Free	Free	

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	223	14	0	743	0	98
Future Volume (Veh/h)	223	14	0	743	0	98
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.95	0.90	0.80	1.00	0.83
Hourly flow rate (vph)	248	15	0	929	0	118
Pedestrians					2	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				56		
pX, platoon unblocked					0.83	
vC, conflicting volume			250		1179	250
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			250		1113	250
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	85
cM capacity (veh/h)			1319		193	792

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	248	15	929	118
Volume Left	0	0	0	0
Volume Right	0	15	0	118
cSH	1700	1700	1700	792
Volume to Capacity	0.15	0.01	0.55	0.15
Queue Length 95th (m)	0.0	0.0	0.0	4.2
Control Delay (s)	0.0	0.0	0.0	10.3
Lane LOS				B
Approach Delay (s)	0.0		0.0	10.3
Approach LOS				B

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	223	14	0	743	0	98
Future Volume (vph)	223	14	0	743	0	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.865
Flt Protected						
Satd. Flow (prot)	1845	1568	0	1881	0	1644
Flt Permitted						
Satd. Flow (perm)	1845	1568	0	1881	0	1644
Link Speed (k/h)	50			50	50	
Link Distance (m)	94.6			56.5	176.8	
Travel Time (s)	6.8			4.1	12.7	
Confl. Peds. (#/hr)		2				
Peak Hour Factor	0.90	0.95	0.90	0.80	1.00	0.83
Heavy Vehicles (%)	3%	3%	1%	1%	0%	0%
Adj. Flow (vph)	248	15	0	929	0	118
Shared Lane Traffic (%)						
Lane Group Flow (vph)	248	15	0	929	0	118
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			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)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Switch Phase						
Minimum Initial (s)		8.0	8.0	8.0	8.0	8.0
Minimum Split (s)		39.0	39.0	39.0	26.0	26.0
Total Split (s)		60.0	60.0	60.0	30.0	30.0
Total Split (%)		66.7%	66.7%	66.7%	33.3%	33.3%
Maximum Green (s)		54.0	54.0	54.0	24.0	24.0
Yellow Time (s)		4.0	4.0	4.0	4.0	4.0
All-Red Time (s)		2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)		5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0
Recall Mode		C-Max	Max	Max	None	None
Walk Time (s)		25.0	25.0	25.0	8.0	8.0
Flash Dont Walk (s)		7.0	7.0	7.0	12.0	12.0
Pedestrian Calls (#/hr)		0	0	0	0	0
Act Effct Green (s)		86.2	86.2	86.2	9.0	9.0
Actuated g/C Ratio		0.96	0.96	0.96	0.10	0.10
v/c Ratio		0.20	0.52	0.11	0.03	0.01
Control Delay		1.0	2.5	0.7	37.2	29.0
Queue Delay		0.0	0.0	0.0	0.0	0.0
Total Delay		1.0	2.5	0.7	37.2	29.0
LOS		A	A	A	D	C
Approach Delay		1.0	2.2		35.8	
Approach LOS		A	A		D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 42 (47%), Referenced to phase 2:EBT, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.52			
Intersection Signal Delay: 2.0		Intersection LOS: A	
Intersection Capacity Utilization 55.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 9: James/New & Martha



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	322	742	132	5	1
Future Volume (vph)	0	322	742	132	5	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			30.0	0.0	0.0
Storage Lanes	0			1	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						0.97
Frt				0.850		0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	1845	1863	1599	1703	1615
Flt Permitted					0.950	
Satd. Flow (perm)	0	1845	1863	1599	1703	1572
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				93		1
Link Speed (k/h)		50	50		50	
Link Distance (m)		56.5	80.2		40.9	
Travel Time (s)		4.1	5.8		2.9	
Confl. Peds. (#/hr)						3
Peak Hour Factor	1.00	0.90	0.80	0.75	1.00	1.00
Heavy Vehicles (%)	3%	3%	2%	1%	6%	0%
Adj. Flow (vph)	0	358	928	176	5	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	358	928	176	5	1
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	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2	1	1	1
Detector Template		Thru	Thru	Right	Left	Right
Leading Detector (m)		10.0	10.0	2.0	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)		0.6	0.6	2.0	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		NA	NA	Perm	Prot	Perm
Protected Phases		2	6		8	
Permitted Phases				6		8
Detector Phase		2	6	6	8	8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	322	742	132	5	1
Future Volume (vph)	0	322	742	132	5	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0	5.0
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes		1.00	1.00	1.00	1.00	0.97
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00
Frt		1.00	1.00	0.85	1.00	0.85
Flt Protected		1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)		1845	1863	1599	1703	1572
Flt Permitted		1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)		1845	1863	1599	1703	1572
Peak-hour factor, PHF	1.00	0.90	0.80	0.75	1.00	1.00
Adj. Flow (vph)	0	358	928	176	5	1
RTOR Reduction (vph)	0	0	0	13	0	1
Lane Group Flow (vph)	0	358	928	163	5	0
Confl. Peds. (#/hr)						3
Heavy Vehicles (%)	3%	3%	2%	1%	6%	0%
Turn Type		NA	NA	Perm	Prot	Perm
Protected Phases		2	6		8	
Permitted Phases				6		8
Actuated Green, G (s)		76.4	76.4	76.4	1.6	1.6
Effective Green, g (s)		77.4	77.4	77.4	2.6	2.6
Actuated g/C Ratio		0.86	0.86	0.86	0.03	0.03
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1586	1602	1375	49	45
v/s Ratio Prot		0.19	c0.50		c0.00	
v/s Ratio Perm				0.10		0.00
v/c Ratio		0.23	0.58	0.12	0.10	0.00
Uniform Delay, d1		1.1	1.8	1.0	42.6	42.4
Progression Factor		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.3	1.5	0.2	0.9	0.0
Delay (s)		1.4	3.3	1.2	43.5	42.4
Level of Service		A	A	A	D	D
Approach Delay (s)		1.4	3.0		43.3	
Approach LOS		A	A		D	

Intersection Summary			
HCM 2000 Control Delay	2.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	55.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	WBR	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	322	742	132	5	1
Future Volume (vph)	322	742	132	5	1
Lane Group Flow (vph)	358	928	176	5	1
Turn Type	NA	NA	Perm	Prot	Perm
Protected Phases	2	6		8	
Permitted Phases			6		8
Detector Phase	2	6	6	8	8
Switch Phase					
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	39.0	39.0	39.0	26.0	26.0
Total Split (s)	60.0	60.0	60.0	30.0	30.0
Total Split (%)	66.7%	66.7%	66.7%	33.3%	33.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	Max	Max	None	None
v/c Ratio	0.20	0.52	0.11	0.03	0.01
Control Delay	1.0	2.5	0.7	37.2	29.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	1.0	2.5	0.7	37.2	29.0
Queue Length 50th (m)	0.0	0.0	0.0	0.9	0.0
Queue Length 95th (m)	19.8	62.1	4.5	4.2	1.5
Internal Link Dist (m)	32.5	56.2		16.9	
Turn Bay Length (m)			30.0		
Base Capacity (vph)	1767	1784	1535	473	437
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.20	0.52	0.11	0.01	0.00

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 42 (47%), Referenced to phase 2:EBT, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 9: James/New & Martha



Future Background Traffic Capacity - Sensitivity Analysis
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	1	6		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)	10.0	34.0		34.0	34.0		39.0	39.0		39.0	39.0	
Total Split (s)	11.0	79.0		68.0	68.0		41.0	41.0		41.0	41.0	
Total Split (%)	9.2%	65.8%		56.7%	56.7%		34.2%	34.2%		34.2%	34.2%	
Maximum Green (s)	8.0	73.0		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)	-1.0	-1.0		-1.0	-1.0			-1.0		-1.0	-1.0	
Total Lost Time (s)	2.0	5.0		5.0	5.0			6.0		6.0	6.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Max		C-Max	C-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)	86.6	83.6		69.0	69.0			25.4		25.4	25.4	
Actuated g/C Ratio	0.72	0.70		0.58	0.58			0.21		0.21	0.21	
v/c Ratio	0.75	0.62		0.01	1.11			0.10		0.61	0.87	
Control Delay	45.8	14.0		15.0	83.4			37.0		50.8	41.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Delay	45.8	14.0		15.0	83.4			37.0		50.8	41.2	
LOS	D	B		B	F			D		D	D	
Approach Delay		20.0			83.2			37.0			44.1	
Approach LOS		C			F			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 51 (43%), Referenced to phase 2:WBTL, Start of Green			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.11			
Intersection Signal Delay: 51.9		Intersection LOS: D	
Intersection Capacity Utilization 104.2%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 1: Brant & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	171	673	12	3	902	137	6	0	0	140	11	369
Future Volume (vph)	171	673	12	3	902	137	6	0	0	140	11	369
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	54.0		0.0	24.0		0.0	0.0		0.0	0.0		24.0
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		0.99	0.99			0.97		0.94	0.92	
Frt		0.998			0.976						0.856	
Flt Protected	0.950			0.950				0.950		0.950		
Satd. Flow (prot)	1787	1857	0	1805	1801	0	0	1805	0	1805	1489	0
Flt Permitted	0.056			0.310				0.157		0.754		
Satd. Flow (perm)	105	1857	0	580	1801	0	0	289	0	1350	1489	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			12						198	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		99.8			134.4			30.7			59.8	
Travel Time (s)		7.2			9.7			2.2			4.3	
Confl. Peds. (#/hr)	23		33	33		23	31		30	30		31
Peak Hour Factor	0.91	0.85	0.92	1.00	0.93	0.75	1.00	1.00	1.00	0.80	0.75	0.94
Heavy Vehicles (%)	1%	2%	0%	0%	2%	1%	0%	0%	0%	0%	0%	1%
Bus Blockages (#/hr)	0	0	0	0	0	16	0	0	0	0	0	0
Adj. Flow (vph)	188	792	13	3	970	183	6	0	0	175	15	393
Shared Lane Traffic (%)												
Lane Group Flow (vph)	188	805	0	3	1153	0	0	6	0	175	408	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	6			2			4			4	
Permitted Phases	6			2			4			4		

HCM Signalized Intersection Capacity Analysis
1: Brant & Lakeshore

Future Background - Sensitivity
Weekday PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	171	673	12	3	902	137	6	0	0	140	11	369
Future Volume (vph)	171	673	12	3	902	137	6	0	0	140	11	369
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	5.0		5.0	5.0			6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99			1.00		1.00	0.92	
Flpb, ped/bikes	1.00	1.00		0.98	1.00			0.98		0.94	1.00	
Frt	1.00	1.00		1.00	0.98			1.00		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00			0.95		0.95	1.00	
Satd. Flow (prot)	1787	1856		1770	1801			1765		1701	1488	
Flt Permitted	0.06	1.00		0.31	1.00			0.16		0.75	1.00	
Satd. Flow (perm)	106	1856		578	1801			293		1350	1488	
Peak-hour factor, PHF	0.91	0.85	0.92	1.00	0.93	0.75	1.00	1.00	1.00	0.80	0.75	0.94
Adj. Flow (vph)	188	792	13	3	970	183	6	0	0	175	15	393
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	0	0	156	0
Lane Group Flow (vph)	188	805	0	3	1148	0	0	6	0	175	252	0
Confl. Peds. (#/hr)	23		33	33		23	31		30	30		31
Heavy Vehicles (%)	1%	2%	0%	0%	2%	1%	0%	0%	0%	0%	0%	1%
Bus Blockages (#/hr)	0	0	0	0	0	16	0	0	0	0	0	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2			4			4		
Actuated Green, G (s)	82.6	82.6		68.0	68.0			24.4		24.4	24.4	
Effective Green, g (s)	83.6	83.6		69.0	69.0			25.4		25.4	25.4	
Actuated g/C Ratio	0.70	0.70		0.58	0.58			0.21		0.21	0.21	
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)	250	1293		332	1035			62		285	314	
v/s Ratio Prot	c0.08	0.43			c0.64						c0.17	
v/s Ratio Perm	0.44			0.01				0.02		0.13		
v/c Ratio	0.75	0.62		0.01	1.11			0.10		0.61	0.80	
Uniform Delay, d1	37.5	9.7		10.9	25.5			38.1		42.9	44.9	
Progression Factor	1.00	1.00		1.08	0.82			1.00		1.00	1.00	
Incremental Delay, d2	12.0	2.3		0.0	60.5			0.7		3.9	13.7	
Delay (s)	49.5	12.0		11.8	81.3			38.8		46.8	58.6	
Level of Service	D	B		B	F			D		D	E	
Approach Delay (s)		19.1			81.1			38.8			55.1	
Approach LOS		B			F			D			E	

Intersection Summary			
HCM 2000 Control Delay	53.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	104.2%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Queues
1: Brant & Lakeshore

Future Background - Sensitivity
Weekday PM Peak Hour

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	171	673	3	902	6	0	140	11
Future Volume (vph)	171	673	3	902	6	0	140	11
Lane Group Flow (vph)	188	805	3	1153	0	6	175	408
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	1	6		2		4		4
Permitted Phases	6		2		4		4	
Detector Phase	1	6	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)	10.0	34.0	34.0	34.0	39.0	39.0	39.0	39.0
Total Split (s)	11.0	79.0	68.0	68.0	41.0	41.0	41.0	41.0
Total Split (%)	9.2%	65.8%	56.7%	56.7%	34.2%	34.2%	34.2%	34.2%
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)	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	2.0	5.0	5.0	5.0		6.0	6.0	6.0
Lead/Lag	Lead		Lag	Lag				
Lead-Lag Optimize?	Yes		Yes	Yes				
Recall Mode	None	Max	C-Max	C-Max	None	None	None	None
v/c Ratio	0.75	0.62	0.01	1.11		0.10	0.61	0.87
Control Delay	45.8	14.0	15.0	83.4		37.0	50.8	41.2
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	45.8	14.0	15.0	83.4		37.0	50.8	41.2
Queue Length 50th (m)	27.4	97.5	0.2	~338.9		1.2	39.4	53.0
Queue Length 95th (m)	#79.9	155.8	m0.6	#432.1		4.8	50.0	57.6
Internal Link Dist (m)		75.8		110.4		6.7		35.8
Turn Bay Length (m)	54.0		24.0					
Base Capacity (vph)	252	1294	333	1040		84	393	574
Starvation Cap Reductn	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0		0	0	0
Reduced v/c Ratio	0.75	0.62	0.01	1.11		0.07	0.45	0.71

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 51 (43%), Referenced to phase 2:WBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
~ 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Brant & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	2	2	2	6	6		4	4		8	4	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	42.0	42.0	42.0	42.0	42.0		32.0	32.0		32.0	32.0	
Total Split (s)	84.0	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%	70.0%		30.0%	30.0%		30.0%	30.0%	
Maximum Green (s)	77.0	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	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0			-1.0		-1.0	-1.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0			6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	Max	Max		None	None		None	None	
Walk Time (s)	20.0	20.0	20.0	20.0	20.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	14.0	14.0	14.0	14.0	14.0		16.0	16.0		16.0	16.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)	96.5	96.5	96.5	96.5	96.5			11.5		11.5	11.5	
Actuated g/C Ratio	0.80	0.80	0.80	0.80	0.80			0.10		0.10	0.10	
v/c Ratio	0.20	0.55	0.03	0.02	0.69			0.26		0.41	0.45	
Control Delay	3.8	4.2	0.8	2.4	4.4			20.0		59.9	16.7	
Queue Delay	0.0	0.4	0.0	0.0	6.3			0.8		0.0	1.7	
Total Delay	3.8	4.6	0.8	2.4	10.7			20.8		59.9	18.3	
LOS	A	A	A	A	B			C		E	B	
Approach Delay		4.4			10.6			20.8			32.1	
Approach LOS		A			B			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 56 (47%), Referenced to phase 2:EBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 9.6		Intersection LOS: A	
Intersection Capacity Utilization 70.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Elizabeth & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	709	43	7	910	54	35	0	2	38	3	88
Future Volume (vph)	54	709	43	7	910	54	35	0	2	38	3	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	80.0		30.0	44.0		0.0	0.0		0.0	38.0		0.0
Storage Lanes	1		1	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.98	1.00	1.00			0.98		1.00	0.96	
Frt			0.850		0.992			0.993			0.854	
Flt Protected	0.950			0.950				0.955		0.950		
Satd. Flow (prot)	1597	1881	1615	1805	1858	0	0	1800	0	1703	1426	0
Flt Permitted	0.214			0.300				0.630		0.733		
Satd. Flow (perm)	360	1881	1580	570	1858	0	0	1170	0	1311	1426	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			36		5			36			100	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		134.4			121.0			80.0			99.4	
Travel Time (s)		9.7			8.7			5.8			7.2	
Confl. Peds. (#/hr)	31		1	1		31	7		1	1		7
Peak Hour Factor	0.91	0.85	1.00	0.75	0.93	0.95	1.00	1.00	1.00	0.75	1.00	0.88
Heavy Vehicles (%)	13%	1%	0%	0%	1%	2%	0%	0%	0%	6%	0%	10%
Bus Blockages (#/hr)	0	0	0	0	0	7	0	0	0	0	0	0
Adj. Flow (vph)	59	834	43	9	978	57	35	0	2	51	3	100
Shared Lane Traffic (%)												
Lane Group Flow (vph)	59	834	43	9	1035	0	0	37	0	51	103	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	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	0.0	
Detector 1 Position(m)	0.0	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	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	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	0.0	
Detector 1 Queue (s)	0.0	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	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	Perm	NA		Perm	NA		custom	NA	
Protected Phases		2			6			4			4	
Permitted Phases	2		2	6			4			8		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	709	43	7	910	54	35	0	2	38	3	88
Future Volume (vph)	54	709	43	7	910	54	35	0	2	38	3	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0			6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00			1.00		1.00	0.96	
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00			0.99		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99			0.99		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95		0.95	1.00	
Satd. Flow (prot)	1584	1881	1580	1804	1857			1773		1699	1426	
Flt Permitted	0.21	1.00	1.00	0.30	1.00			0.63		0.73	1.00	
Satd. Flow (perm)	356	1881	1580	570	1857			1171		1311	1426	
Peak-hour factor, PHF	0.91	0.85	1.00	0.75	0.93	0.95	1.00	1.00	1.00	0.75	1.00	0.88
Adj. Flow (vph)	59	834	43	9	978	57	35	0	2	51	3	100
RTOR Reduction (vph)	0	0	7	0	1	0	0	33	0	0	90	0
Lane Group Flow (vph)	59	834	36	9	1034	0	0	4	0	51	13	0
Confl. Peds. (#/hr)	31		1	1		31	7		1	1		7
Heavy Vehicles (%)	13%	1%	0%	0%	1%	2%	0%	0%	0%	6%	0%	10%
Bus Blockages (#/hr)	0	0	0	0	0	7	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		custom	NA	
Protected Phases		2			6			4			4	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	95.5	95.5	95.5	95.5	95.5			10.5		10.5	10.5	
Effective Green, g (s)	96.5	96.5	96.5	96.5	96.5			11.5		11.5	11.5	
Actuated g/C Ratio	0.80	0.80	0.80	0.80	0.80			0.10		0.10	0.10	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0			7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	286	1512	1270	458	1493			112		125	136	
v/s Ratio Prot		0.44			c0.56						0.01	
v/s Ratio Perm	0.17		0.02	0.02				0.00		c0.04		
v/c Ratio	0.21	0.55	0.03	0.02	0.69			0.04		0.41	0.09	
Uniform Delay, d1	2.8	4.1	2.4	2.3	5.2			49.2		51.0	49.5	
Progression Factor	0.71	0.65	0.64	0.80	0.43			1.00		1.00	1.00	
Incremental Delay, d2	1.3	1.2	0.0	0.1	1.8			0.1		2.2	0.3	
Delay (s)	3.3	3.9	1.5	1.9	4.0			49.4		53.2	49.8	
Level of Service	A	A	A	A	A			D		D	D	
Approach Delay (s)		3.7			4.0			49.4			50.9	
Approach LOS		A			A			D			D	

Intersection Summary				
HCM 2000 Control Delay	8.0	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.67			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	70.8%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	54	709	43	7	910	35	0	38	3
Future Volume (vph)	54	709	43	7	910	35	0	38	3
Lane Group Flow (vph)	59	834	43	9	1035	0	37	51	103
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	custom	NA
Protected Phases		2			6		4		4
Permitted Phases	2		2	6		4		8	
Detector Phase	2	2	2	6	6	4	4	8	4
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	42.0	42.0	42.0	42.0	42.0	32.0	32.0	32.0	32.0
Total Split (s)	84.0	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%	70.0%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	4.0	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	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	Max	Max	None	None	None	None
v/c Ratio	0.20	0.55	0.03	0.02	0.69		0.26	0.41	0.45
Control Delay	3.8	4.2	0.8	2.4	4.4		20.0	59.9	16.7
Queue Delay	0.0	0.4	0.0	0.0	6.3		0.8	0.0	1.7
Total Delay	3.8	4.6	0.8	2.4	10.7		20.8	59.9	18.3
Queue Length 50th (m)	1.9	26.7	0.2	0.2	26.1		0.2	12.2	0.7
Queue Length 95th (m)	m3.6	35.0	m0.7	m0.5	47.6		10.7	20.1	17.3
Internal Link Dist (m)		110.4			97.0		56.0		75.4
Turn Bay Length (m)	80.0		30.0	44.0				38.0	
Base Capacity (vph)	289	1512	1277	458	1494		319	327	431
Starvation Cap Reductn	0	268	0	0	169		0	0	0
Spillback Cap Reductn	0	48	0	0	404		163	0	208
Storage Cap Reductn	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.20	0.67	0.03	0.02	0.95		0.24	0.16	0.46

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 56 (47%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Elizabeth & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0		29.0	29.0		29.0	29.0	
Total Split (s)	89.0	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%	74.2%		25.8%	25.8%		25.8%	25.8%	
Maximum Green (s)	83.0	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	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0			-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0			5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	Max	Max		None	None		None	None	
Walk Time (s)	20.0	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	11.0		12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	3	3	3	11	11		3	3		28	28	
Act Effct Green (s)	96.4	96.4	96.4	96.4	96.4			17.4		17.4	17.4	
Actuated g/C Ratio	0.80	0.80	0.80	0.80	0.80			0.14		0.14	0.14	
v/c Ratio	0.37	0.49	0.04	0.01	0.77			0.08		0.18	0.29	
Control Delay	6.8	4.0	0.6	4.7	14.1			36.4		44.2	13.0	
Queue Delay	0.0	0.1	0.0	0.0	0.0			0.0		0.0	0.0	
Total Delay	6.8	4.1	0.6	4.7	14.1			36.4		44.2	13.0	
LOS	A	A	A	A	B			D		D	B	
Approach Delay		4.2			14.1			36.4			21.2	
Approach LOS		A			B			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 51 (43%), Referenced to phase 2:EBTL, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 10.6		Intersection LOS: B	
Intersection Capacity Utilization 72.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Pearl & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	650	34	3	901	105	9	6	3	23	7	61
Future Volume (vph)	65	650	34	3	901	105	9	6	3	23	7	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		20.0	27.0		0.0	0.0		0.0	16.0		0.0
Storage Lanes	1		1	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.98	1.00	1.00			0.99		0.98	0.98	
Frt			0.850		0.982			0.977			0.862	
Flt Protected	0.950			0.950				0.976		0.950		
Satd. Flow (prot)	1805	1881	1615	1805	1841	0	0	1799	0	1583	1604	0
Flt Permitted	0.153			0.328				0.860		0.746		
Satd. Flow (perm)	291	1881	1580	623	1841	0	0	1583	0	1217	1604	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			27		14			3			80	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		121.0			123.9			37.3			112.8	
Travel Time (s)		8.7			8.9			2.7			8.1	
Confl. Peds. (#/hr)	10		1	1		10	1		8	8		1
Peak Hour Factor	0.75	0.87	0.75	1.00	0.90	0.75	1.00	1.00	1.00	0.75	1.00	0.76
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	14%	0%	0%
Adj. Flow (vph)	87	747	45	3	1001	140	9	6	3	31	7	80
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	747	45	3	1141	0	0	18	0	31	87	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	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	0.0	
Detector 1 Position(m)	0.0	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	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	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	0.0	
Detector 1 Queue (s)	0.0	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	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	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6			4			8		
Detector Phase	2	2	2	6	6		4	4		8	8	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	650	34	3	901	105	9	6	3	23	7	61
Future Volume (vph)	65	650	34	3	901	105	9	6	3	23	7	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0			5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00			0.99		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00		0.98	1.00	
Frt	1.00	1.00	0.85	1.00	0.98			0.98		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.98		0.95	1.00	
Satd. Flow (prot)	1805	1881	1580	1804	1840			1797		1550	1604	
Flt Permitted	0.15	1.00	1.00	0.33	1.00			0.86		0.75	1.00	
Satd. Flow (perm)	290	1881	1580	623	1840			1584		1216	1604	
Peak-hour factor, PHF	0.75	0.87	0.75	1.00	0.90	0.75	1.00	1.00	1.00	0.75	1.00	0.76
Adj. Flow (vph)	87	747	45	3	1001	140	9	6	3	31	7	80
RTOR Reduction (vph)	0	0	6	0	3	0	0	3	0	0	69	0
Lane Group Flow (vph)	87	747	39	3	1138	0	0	15	0	31	18	0
Confl. Peds. (#/hr)	10		1	1		10	1		8	8		1
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	14%	0%	0%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	93.2	93.2	93.2	93.2	93.2			14.8		14.8	14.8	
Effective Green, g (s)	94.2	94.2	94.2	94.2	94.2			15.8		15.8	15.8	
Actuated g/C Ratio	0.79	0.79	0.79	0.79	0.79			0.13		0.13	0.13	
Clearance Time (s)	6.0	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	3.0	
Lane Grp Cap (vph)	227	1476	1240	489	1444			208		160	211	
v/s Ratio Prot		0.40			c0.62						0.01	
v/s Ratio Perm	0.30		0.02	0.00				0.01		c0.03		
v/c Ratio	0.38	0.51	0.03	0.01	0.79			0.07		0.19	0.08	
Uniform Delay, d1	4.0	4.6	2.8	2.8	7.3			45.7		46.4	45.7	
Progression Factor	0.43	0.50	0.24	1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	4.2	1.1	0.0	0.0	4.4			0.2		0.6	0.2	
Delay (s)	5.9	3.4	0.7	2.8	11.7			45.9		47.0	45.9	
Level of Service	A	A	A	A	B			D		D	D	
Approach Delay (s)		3.5			11.7			45.9			46.2	
Approach LOS		A			B			D			D	

Intersection Summary				
HCM 2000 Control Delay	10.5	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.70			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	72.6%	ICU Level of Service	C	
Analysis Period (min)	15			

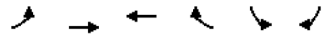
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	65	650	34	3	901	9	6	23	7
Future Volume (vph)	65	650	34	3	901	9	6	23	7
Lane Group Flow (vph)	87	747	45	3	1141	0	18	31	87
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2			6		4		8
Permitted Phases	2		2	6		4		8	
Detector Phase	2	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	8.0
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0	29.0	29.0	29.0	29.0
Total Split (s)	89.0	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%	74.2%	25.8%	25.8%	25.8%	25.8%
Yellow Time (s)	4.0	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	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	Max	Max	None	None	None	None
v/c Ratio	0.37	0.49	0.04	0.01	0.77		0.08	0.18	0.29
Control Delay	6.8	4.0	0.6	4.7	14.1		36.4	44.2	13.0
Queue Delay	0.0	0.1	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	6.8	4.1	0.6	4.7	14.1		36.4	44.2	13.0
Queue Length 50th (m)	3.3	67.2	0.0	0.2	177.6		3.1	6.4	1.4
Queue Length 95th (m)	3.3	22.3	0.3	1.1	263.1		m9.5	13.0	15.7
Internal Link Dist (m)		97.0			99.9		13.3		88.8
Turn Bay Length (m)	55.0		20.0	27.0				16.0	
Base Capacity (vph)	233	1511	1274	500	1481		345	263	410
Starvation Cap Reductn	0	155	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.37	0.55	0.04	0.01	0.77		0.05	0.12	0.21

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 51 (43%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Pearl & Lakeshore

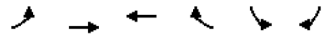




Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	91	586	989	62	18	20
Future Volume (Veh/h)	91	586	989	62	18	20
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.75	0.95	0.91	0.75	1.00	1.00
Hourly flow rate (vph)	121	617	1087	83	18	20
Pedestrians		1			2	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		124				
pX, platoon unblocked					0.87	
vC, conflicting volume	1172				1990	1132
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1172				2065	1132
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	80				57	92
cM capacity (veh/h)	595				42	244

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	121	617	1170	38
Volume Left	121	0	0	18
Volume Right	0	0	83	20
cSH	595	1700	1700	74
Volume to Capacity	0.20	0.36	0.69	0.51
Queue Length 95th (m)	6.0	0.0	0.0	17.1
Control Delay (s)	12.6	0.0	0.0	96.0
Lane LOS	B			F
Approach Delay (s)	2.1		0.0	96.0
Approach LOS				F

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	91	586	989	62	18	20
Future Volume (vph)	91	586	989	62	18	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	36.0			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	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.990		0.929	
Flt Protected	0.950				0.977	
Satd. Flow (prot)	1770	1863	1847	0	1689	0
Flt Permitted	0.950				0.977	
Satd. Flow (perm)	1770	1863	1847	0	1689	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		123.9	42.7		116.9	
Travel Time (s)		8.9	3.1		8.4	
Confl. Peds. (#/hr)	2			2		1
Peak Hour Factor	0.75	0.95	0.91	0.75	1.00	1.00
Heavy Vehicles (%)	2%	2%	2%	0%	0%	4%
Bus Blockages (#/hr)	0	0	0	4	0	0
Adj. Flow (vph)	121	617	1087	83	18	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	121	617	1170	0	38	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	74.5%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	603	1	1	1050	0	0
Future Volume (Veh/h)	603	1	1	1050	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.90	0.95	0.90	0.95
Hourly flow rate (vph)	635	1	1	1105	0	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)	167					
pX, platoon unblocked			0.87		0.87	0.87
vC, conflicting volume			636		1742	636
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			507		1779	506
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			920		79	493

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	636	1	1105	0
Volume Left	0	1	0	0
Volume Right	1	0	0	0
cSH	1700	920	1700	1700
Volume to Capacity	0.37	0.00	0.65	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	8.9	0.0	0.0
Lane LOS		A		A
Approach Delay (s)	0.0	0.0		0.0
Approach LOS				A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	58.6%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	603	1	1	1050	0	0
Future Volume (vph)	603	1	1	1050	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	20.0		0.0	0.0
Storage Lanes		0	1		0	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected			0.950			
Satd. Flow (prot)	1863	0	1770	1863	0	1863
Flt Permitted			0.950			
Satd. Flow (perm)	1863	0	1770	1863	0	1863
Link Speed (k/h)	50			50	50	
Link Distance (m)	42.7			96.0	38.8	
Travel Time (s)	3.1			6.9	2.8	
Peak Hour Factor	0.95	0.95	0.90	0.95	0.90	0.95
Adj. Flow (vph)	635	1	1	1105	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	636	0	1	1105	0	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	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)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	58.6%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	601	2	22	1049	2	17
Future Volume (Veh/h)	601	2	22	1049	2	17
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	1.00	0.75	0.84	1.00	0.75
Hourly flow rate (vph)	646	2	29	1249	2	23
Pedestrians	1			1	1	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	263					
pX, platoon unblocked			0.88		0.88	0.88
vC, conflicting volume			649		1956	649
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			533		2018	533
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		96	95
cM capacity (veh/h)			919		55	484

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	648	29	1249	25
Volume Left	0	29	0	2
Volume Right	2	0	0	23
cSH	1700	919	1700	299
Volume to Capacity	0.38	0.03	0.73	0.08
Queue Length 95th (m)	0.0	0.8	0.0	2.2
Control Delay (s)	0.0	9.0	0.0	18.2
Lane LOS		A		C
Approach Delay (s)	0.0	0.2		18.2
Approach LOS				C

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	65.5%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	601	2	22	1049	2	17
Future Volume (vph)	601	2	22	1049	2	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	20.0		0.0	0.0
Storage Lanes		0	1		1	0
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt					0.876	
Flt Protected			0.950		0.996	
Satd. Flow (prot)	1863	0	1805	1881	1658	0
Flt Permitted			0.950		0.996	
Satd. Flow (perm)	1863	0	1805	1881	1658	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	96.0			85.5	39.5	
Travel Time (s)	6.9			6.2	2.8	
Confl. Peds. (#/hr)		1	1		1	1
Peak Hour Factor	0.93	1.00	0.75	0.84	1.00	0.75
Heavy Vehicles (%)	2%	0%	0%	1%	0%	0%
Adj. Flow (vph)	646	2	29	1249	2	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	648	0	29	1249	25	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)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	65.5%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	28	24	16	90	12	2
Future Volume (Veh/h)	28	24	16	90	12	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.88	0.75	0.76	0.75	1.00
Hourly flow rate (vph)	33	27	21	118	16	2
Pedestrians	2					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	179	19	20			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	179	19	20			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	97	99			
cM capacity (veh/h)	803	1063	1581			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	60	139	18
Volume Left	33	21	0
Volume Right	27	0	2
cSH	902	1581	1700
Volume to Capacity	0.07	0.01	0.01
Queue Length 95th (m)	1.7	0.3	0.0
Control Delay (s)	9.3	1.2	0.0
Lane LOS	A	A	
Approach Delay (s)	9.3	1.2	0.0
Approach LOS	A		

Intersection Summary			
Average Delay		3.3	
Intersection Capacity Utilization		22.3%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	28	24	16	90	12	2
Future Volume (vph)	28	24	16	90	12	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.939				0.985	
Flt Protected	0.973			0.993		
Satd. Flow (prot)	1736	0	0	1844	1823	0
Flt Permitted	0.973			0.993		
Satd. Flow (perm)	1736	0	0	1844	1823	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	105.7			116.9	176.8	
Travel Time (s)	7.6			8.4	12.7	
Confl. Peds. (#/hr)			2			2
Peak Hour Factor	0.85	0.88	0.75	0.76	0.75	1.00
Heavy Vehicles (%)	0%	0%	4%	2%	3%	0%
Adj. Flow (vph)	33	27	21	118	16	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	60	0	0	139	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			Free	Free	

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	223	14	0	743	0	98
Future Volume (Veh/h)	223	14	0	743	0	98
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.95	0.90	0.80	1.00	0.83
Hourly flow rate (vph)	248	15	0	929	0	118
Pedestrians					2	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				56		
pX, platoon unblocked					0.83	
vC, conflicting volume			250		1179	250
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			250		1113	250
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	85
cM capacity (veh/h)			1319		193	792

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	248	15	929	118
Volume Left	0	0	0	0
Volume Right	0	15	0	118
cSH	1700	1700	1700	792
Volume to Capacity	0.15	0.01	0.55	0.15
Queue Length 95th (m)	0.0	0.0	0.0	4.2
Control Delay (s)	0.0	0.0	0.0	10.3
Lane LOS				B
Approach Delay (s)	0.0		0.0	10.3
Approach LOS				B

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	223	14	0	743	0	98
Future Volume (vph)	223	14	0	743	0	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.865
Flt Protected						
Satd. Flow (prot)	1845	1568	0	1881	0	1644
Flt Permitted						
Satd. Flow (perm)	1845	1568	0	1881	0	1644
Link Speed (k/h)	50			50	50	
Link Distance (m)	94.6			56.5	176.8	
Travel Time (s)	6.8			4.1	12.7	
Confl. Peds. (#/hr)		2				
Peak Hour Factor	0.90	0.95	0.90	0.80	1.00	0.83
Heavy Vehicles (%)	3%	3%	1%	1%	0%	0%
Adj. Flow (vph)	248	15	0	929	0	118
Shared Lane Traffic (%)						
Lane Group Flow (vph)	248	15	0	929	0	118
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			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)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Switch Phase						
Minimum Initial (s)		8.0	8.0	8.0	8.0	8.0
Minimum Split (s)		39.0	39.0	39.0	26.0	26.0
Total Split (s)		60.0	60.0	60.0	30.0	30.0
Total Split (%)		66.7%	66.7%	66.7%	33.3%	33.3%
Maximum Green (s)		54.0	54.0	54.0	24.0	24.0
Yellow Time (s)		4.0	4.0	4.0	4.0	4.0
All-Red Time (s)		2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)		5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0
Recall Mode		C-Max	Max	Max	None	None
Walk Time (s)		25.0	25.0	25.0	8.0	8.0
Flash Dont Walk (s)		7.0	7.0	7.0	12.0	12.0
Pedestrian Calls (#/hr)		0	0	0	0	0
Act Effct Green (s)		86.2	86.2	86.2	9.0	9.0
Actuated g/C Ratio		0.96	0.96	0.96	0.10	0.10
v/c Ratio		0.20	0.52	0.11	0.03	0.01
Control Delay		1.0	2.5	0.7	37.2	29.0
Queue Delay		0.0	0.0	0.0	0.0	0.0
Total Delay		1.0	2.5	0.7	37.2	29.0
LOS		A	A	A	D	C
Approach Delay		1.0	2.2		35.8	
Approach LOS		A	A		D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 42 (47%), Referenced to phase 2:EBT, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.52			
Intersection Signal Delay: 2.0		Intersection LOS: A	
Intersection Capacity Utilization 55.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 9: James/New & Martha



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	322	742	132	5	1
Future Volume (vph)	0	322	742	132	5	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			30.0	0.0	0.0
Storage Lanes	0			1	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						0.97
Frt				0.850		0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	1845	1863	1599	1703	1615
Flt Permitted					0.950	
Satd. Flow (perm)	0	1845	1863	1599	1703	1572
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				93		1
Link Speed (k/h)		50	50		50	
Link Distance (m)		56.5	80.2		40.9	
Travel Time (s)		4.1	5.8		2.9	
Confl. Peds. (#/hr)						3
Peak Hour Factor	1.00	0.90	0.80	0.75	1.00	1.00
Heavy Vehicles (%)	3%	3%	2%	1%	6%	0%
Adj. Flow (vph)	0	358	928	176	5	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	358	928	176	5	1
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	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2	1	1	1
Detector Template		Thru	Thru	Right	Left	Right
Leading Detector (m)		10.0	10.0	2.0	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)		0.6	0.6	2.0	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		NA	NA	Perm	Prot	Perm
Protected Phases		2	6		8	
Permitted Phases				6		8
Detector Phase		2	6	6	8	8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	322	742	132	5	1
Future Volume (vph)	0	322	742	132	5	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0	5.0
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes		1.00	1.00	1.00	1.00	0.97
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00
Frt		1.00	1.00	0.85	1.00	0.85
Flt Protected		1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)		1845	1863	1599	1703	1572
Flt Permitted		1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)		1845	1863	1599	1703	1572
Peak-hour factor, PHF	1.00	0.90	0.80	0.75	1.00	1.00
Adj. Flow (vph)	0	358	928	176	5	1
RTOR Reduction (vph)	0	0	0	13	0	1
Lane Group Flow (vph)	0	358	928	163	5	0
Confl. Peds. (#/hr)						3
Heavy Vehicles (%)	3%	3%	2%	1%	6%	0%
Turn Type		NA	NA	Perm	Prot	Perm
Protected Phases		2	6		8	
Permitted Phases				6		8
Actuated Green, G (s)		76.4	76.4	76.4	1.6	1.6
Effective Green, g (s)		77.4	77.4	77.4	2.6	2.6
Actuated g/C Ratio		0.86	0.86	0.86	0.03	0.03
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1586	1602	1375	49	45
v/s Ratio Prot		0.19	c0.50		c0.00	
v/s Ratio Perm				0.10		0.00
v/c Ratio		0.23	0.58	0.12	0.10	0.00
Uniform Delay, d1		1.1	1.8	1.0	42.6	42.4
Progression Factor		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.3	1.5	0.2	0.9	0.0
Delay (s)		1.4	3.3	1.2	43.5	42.4
Level of Service		A	A	A	D	D
Approach Delay (s)		1.4	3.0		43.3	
Approach LOS		A	A		D	

Intersection Summary			
HCM 2000 Control Delay	2.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	55.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	WBR	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	322	742	132	5	1
Future Volume (vph)	322	742	132	5	1
Lane Group Flow (vph)	358	928	176	5	1
Turn Type	NA	NA	Perm	Prot	Perm
Protected Phases	2	6		8	
Permitted Phases			6		8
Detector Phase	2	6	6	8	8
Switch Phase					
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	39.0	39.0	39.0	26.0	26.0
Total Split (s)	60.0	60.0	60.0	30.0	30.0
Total Split (%)	66.7%	66.7%	66.7%	33.3%	33.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	Max	Max	None	None
v/c Ratio	0.20	0.52	0.11	0.03	0.01
Control Delay	1.0	2.5	0.7	37.2	29.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	1.0	2.5	0.7	37.2	29.0
Queue Length 50th (m)	0.0	0.0	0.0	0.9	0.0
Queue Length 95th (m)	19.8	62.1	4.5	4.2	1.5
Internal Link Dist (m)	32.5	56.2		16.9	
Turn Bay Length (m)			30.0		
Base Capacity (vph)	1767	1784	1535	473	437
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.20	0.52	0.11	0.01	0.00

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 42 (47%), Referenced to phase 2:EBT, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 9: James/New & Martha



APPENDIX F

Trip Generation and Distribution

Proposed Development Statistics

Land Use	Unit/GFA	
Residential	312	units
Retail	7,611	sq. ft.

Land Use			Weekday AM Peak Hour				Weekday PM Peak Hour				
			Rate	In	Out	Total	Rate	In	Out	Total	
Residential	312	Average Rate	0.31	24	77	101	0.36	71	46	116.7	Weekday
ITE Code (222)											Peak Hour of Adjacent
Setting: General Urban/Suburban		Total Person Trips		24	77	101		71	46	117	7-9AM
Trip Type: Vehicle		Inbound/Outbound		24%	76%			61%	39%		4-6PM
		Total External Person Trips		24	77	101	Total External Person Trips	71	46	117	
		Total Vehicle Trips		20	66	86	Total Vehicle Trips	61	39	100	

AM (7:00-9:00)

	Auto driver	Auto passenger	Transit excluding GO rail	Joint GO rail and local transit	GO rail only	Walk	Cycle	Other	Taxi passenger	Total
Home-Based Work	4957	259	63	12	49	261	204	0	0	5805
	85%	4%	1%	0%	1%	4%	4%	0%	0%	100%
Home-based Discretionary	5232	1473	213	8	0	84	164	30	36	7240
	72%	20%	3%	0%	0%	1%	2%	0%	0%	100%

PM (16:00-19:00)

	Auto driver	Auto passenger	Transit excluding GO rail	Joint GO rail and local transit	GO rail only	Walk	Cycle	Other	Taxi passenger	Total
Home-Based Work	4560	191	104	24	85	247	140	0	0	5351
	85%	4%	2%	0%	2%	5%	3%	0%	0%	100%
Home-based Discretionary	6639	1986	229	8	0	84	137	30	71	9184
	72%	22%	2%	0%	0%	1%	1%	0%	1%	100%

AM (7:00-9:00)

Trip Type	Auto Driver %	Transit %	Active Transportation %	Other %
Home-Based Work	85%	2%	8%	4%
Home-based Discretionary	73%	3%	3%	21%

PM (16:00-19:00) 8.08 9.36

Trip Type	Auto Driver %	Transit %	Active Transportation %	Other %
Home-Based Work	85%	4%	7%	4%
Home-based Discretionary	73%	3%	2%	22%

			Lakeshore & Brant		Lakeshore & Elizabeth	Lakeshore & Pearl	James & Martha	Lakeshore & Old	Lakeshore
2006 GTA Zone	Vehicle Trips	Percentage	EBT	SBL	SBL	SBL	EBR	WBT	
4059	245	7.5%		100%					
4061	160	4.9%							100%
4088	124	3.8%		100%					
4063	100	3.1%							100%
4076	100	3.1%							100%
4089	99	3.0%		100%					
4082	98	3.0%							100%
4075	96	2.9%							100%
4055	92	2.8%	100%						
4084	91	2.8%							100%
4060	85	2.6%		50%	25%		25%		
4057	77	2.4%	50%	50%					
3199	71	2.2%							100%
4077	67	2.0%							100%
5143	61	1.9%	100%						
4052	49	1.5%	100%						
5181	49	1.5%	100%						
5163	46	1.4%	100%						
4189	44	1.3%	100%						
4011	43	1.3%							100%
4127	42	1.3%	100%						
5193	42	1.3%	100%						
4080	40	1.2%							100%
5176	40	1.2%	100%						
4053	39	1.2%							100%
5142	39	1.2%	100%						
5219	39	1.2%	100%						
4068	38	1.2%							100%
4029	38	1.2%							100%
9065	35	1.1%	100%						
4069	34	1.0%							100%
4051	34	1.0%	100%						
4079	33	1.0%							100%
7005	33	1.0%	100%						
4022	32	1.0%							100%
4186	32	1.0%							100%
5180	31	0.9%	100%						
4008	30	0.9%							100%
6019	30	0.9%	100%						
4004	29	0.9%							100%
4014	29	0.9%							100%
4078	28	0.9%							100%
5251	28	0.9%	100%						
4086	27	0.8%		100%					
4190	26	0.8%							100%
3722	26	0.8%							100%
4074	26	0.8%							100%
52	25	0.8%							100%
3605	24	0.7%							100%
4081	24	0.7%							100%
4012	22	0.7%							100%
4058	22	0.7%		100%					
6015	22	0.7%	100%						
66	21	0.6%							100%
4087	20	0.6%		100%					
5202	20	0.6%	100%						

Inbound

Lakeshore & Brant		Lakeshore	Lakeshore	New & Ma	Lakeshore & Old	Lake
EBT	SBL	SBL	SBL	EBR	WBT	Total
30%	19%	1%	1%	0%	49%	100.0%

	4070	19	0.6%		100%
	4024	18	0.6%		100%
	4065	18	0.6%		100%
	6136	18	0.6%	100%	
	90	18	0.6%		100%
	3633	18	0.6%		100%
	3721	18	0.6%		100%
	4054	18	0.6%	100%	
	4067	17	0.5%		100%
	5170	17	0.5%	100%	
	5195	17	0.5%	100%	
	4092	15	0.5%	100%	
	5197	15	0.5%	100%	
	4025	14	0.4%		100%
	4020	13	0.4%		100%
	4056	13	0.4%	100%	
	5158	13	0.4%	100%	
	5172	12	0.4%	100%	
	5192	12	0.4%	100%	
	4037	11	0.3%		100%
	4185	11	0.3%		100%
	8960	11	0.3%	100%	
	7254	10	0.3%	100%	
	8121	10	0.3%	100%	
	3653	9	0.3%		100%
	4030	9	0.3%		100%
Total		3271	100.0%		

			Lakeshore & Brant		Lakeshore & Elizabeth	Lakeshore & Pearl	New & Martha	Lakeshore & Old Lakeshore
2006 GTA Zone	Vehicle Trips	Percentage	WBT	WBR	WBR	NBT	EBT	EBT
4059	89	6%		100%				
4024	75	5%						100%
4007	74	5%	100%					
4077	67	5%						100%
4060	63	4%		50%	25%	25%		
5127	55	4%	100%					
4056	52	4%	100%					
4064	49	3%						100%
4068	45	3%						100%
4078	44	3%						100%
5142	39	3%	100%					
3608	38	3%						100%
4061	37	3%						100%
4063	37	3%						100%
4098	35	2%	100%					
4053	33	2%						100%
4022	32	2%						100%
4186	32	2%						100%
4080	31	2%						100%
4082	31	2%						100%
4190	30	2%						100%
4004	29	2%						100%
4011	29	2%						100%
4119	29	2%						100%
4069	28	2%						100%
4091	28	2%		100%				
5251	28	2%	100%					
3699	25	2%						100%
4057	25	2%	50%	50%				
3605	24	2%						100%
4081	24	2%						100%
50	19	1%						100%
4065	18	1%						100%
5183	18	1%	100%					
6136	18	1%	100%					
4084	17	1%						100%
5195	17	1%	100%					
156	16	1%						100%
5197	15	1%	100%					
4020	13	1%						100%
5162	13	1%	100%					
4019	12	1%						100%
5172	12	1%	100%					
5192	12	1%	100%					
3815	11	1%						100%
4093	11	1%		100%				
Total	1479	100%						

Outbound

	Lakeshore & Brant		Lakeshore & Elizabeth	Lakeshore & Pearl	New & Martha	Lakeshore & Old Lakeshore	
WBT	WBR	WBR	NBT	EBT	EBT		Total
27.1%	11.6%	1.1%	1.1%	0.0%	59.2%		100.0%

APPENDIX G

Future Total Capacity Analysis

Future Total Traffic Capacity Analysis
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	1	6		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)	10.0	34.0		34.0	34.0		39.0	39.0		39.0	39.0	
Total Split (s)	11.0	69.0		58.0	58.0		41.0	41.0		41.0	41.0	
Total Split (%)	10.0%	62.7%		52.7%	52.7%		37.3%	37.3%		37.3%	37.3%	
Maximum Green (s)	8.0	63.0		52.0	52.0		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)	-1.0	-1.0		-1.0	-1.0			-1.0		-1.0	-1.0	
Total Lost Time (s)	2.0	5.0		5.0	5.0			6.0		6.0	6.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Max		C-Max	C-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)		7		7	7		12	12		12	12	
Act Effct Green (s)	82.3	79.3			66.7			19.7		19.7	19.7	
Actuated g/C Ratio	0.75	0.72			0.61			0.18		0.18	0.18	
v/c Ratio	0.51	0.75			0.44			0.04		0.61	0.51	
Control Delay	9.0	16.1			9.4			32.5		51.1	8.8	
Queue Delay	0.0	5.5			0.1			0.0		0.0	0.0	
Total Delay	9.0	21.6			9.5			32.5		51.1	8.8	
LOS	A	C			A			C		D	A	
Approach Delay		19.0			9.5			32.5			25.2	
Approach LOS		B			A			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 47 (43%), Referenced to phase 2:WBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 16.7		Intersection LOS: B	
Intersection Capacity Utilization 80.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Brant & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	187	841	13	0	659	145	7	1	0	110	4	188
Future Volume (vph)	187	841	13	0	659	145	7	1	0	110	4	188
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	54.0		0.0	24.0		0.0	0.0		0.0	0.0		24.0
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
Ped Bike Factor	1.00	1.00			0.99			1.00		0.99	0.98	
Frt		0.997			0.970						0.853	
Flt Protected	0.950							0.957		0.950		
Satd. Flow (prot)	1752	1821	0	1900	3313	0	0	1818	0	1719	1516	0
Flt Permitted	0.265							0.736		0.752		
Satd. Flow (perm)	487	1821	0	1900	3313	0	0	1392	0	1344	1516	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			38						227	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		99.8			134.4			31.0			59.8	
Travel Time (s)		7.2			9.7			2.2			4.3	
Confl. Peds. (#/hr)	7		12	12		7	7		7	7		7
Peak Hour Factor	0.75	0.87	0.75	1.00	0.93	0.83	0.88	1.00	1.00	0.75	0.75	0.83
Heavy Vehicles (%)	3%	4%	0%	0%	5%	5%	0%	0%	0%	5%	0%	5%
Bus Blockages (#/hr)	0	0	0	0	0	25	0	0	0	0	0	0
Adj. Flow (vph)	249	967	17	0	709	175	8	1	0	147	5	227
Shared Lane Traffic (%)												
Lane Group Flow (vph)	249	984	0	0	884	0	0	9	0	147	232	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	6			2			4			4	
Permitted Phases	6			2			4			4		

HCM Signalized Intersection Capacity Analysis
1: Brant & Lakeshore

Future Total
Weekday AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	187	841	13	0	659	145	7	1	0	110	4	188
Future Volume (vph)	187	841	13	0	659	145	7	1	0	110	4	188
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	5.0			5.0			6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00			0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00			0.99			1.00		1.00	0.98	
Flpb, ped/bikes	1.00	1.00			1.00			1.00		0.99	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)	1751	1822			3314			1811		1698	1516	
Flt Permitted	0.26	1.00			1.00			0.74		0.75	1.00	
Satd. Flow (perm)	488	1822			3314			1393		1344	1516	
Peak-hour factor, PHF	0.75	0.87	0.75	1.00	0.93	0.83	0.88	1.00	1.00	0.75	0.75	0.83
Adj. Flow (vph)	249	967	17	0	709	175	8	1	0	147	5	227
RTOR Reduction (vph)	0	0	0	0	15	0	0	0	0	0	186	0
Lane Group Flow (vph)	249	984	0	0	869	0	0	9	0	147	46	0
Confl. Peds. (#/hr)	7		12	12		7	7		7	7		7
Heavy Vehicles (%)	3%	4%	0%	0%	5%	5%	0%	0%	0%	5%	0%	5%
Bus Blockages (#/hr)	0	0	0	0	0	25	0	0	0	0	0	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2			4			4		
Actuated Green, G (s)	78.3	78.3			65.7			18.7		18.7	18.7	
Effective Green, g (s)	79.3	79.3			66.7			19.7		19.7	19.7	
Actuated g/C Ratio	0.72	0.72			0.61			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)	473	1313			2009			249		240	271	
v/s Ratio Prot	0.05	c0.54			0.26						0.03	
v/s Ratio Perm	0.33							0.01		c0.11		
v/c Ratio	0.53	0.75			0.43			0.04		0.61	0.17	
Uniform Delay, d1	6.1	9.3			11.6			37.3		41.6	38.2	
Progression Factor	1.00	1.00			0.69			1.00		1.00	1.00	
Incremental Delay, d2	1.1	4.0			0.7			0.1		4.6	0.3	
Delay (s)	7.2	13.3			8.6			37.4		46.2	38.5	
Level of Service	A	B			A			D		D	D	
Approach Delay (s)		12.0			8.6			37.4			41.5	
Approach LOS		B			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Queues
1: Brant & Lakeshore

Future Total
Weekday AM Peak Hour

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	187	841	659	7	1	110	4
Future Volume (vph)	187	841	659	7	1	110	4
Lane Group Flow (vph)	249	984	884	0	9	147	232
Turn Type	pm+pt	NA	NA	Perm	NA	Perm	NA
Protected Phases	1	6	2		4		4
Permitted Phases	6			4		4	
Detector Phase	1	6	2	4	4	4	4
Switch Phase							
Minimum Initial (s)	6.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	10.0	34.0	34.0	39.0	39.0	39.0	39.0
Total Split (s)	11.0	69.0	58.0	41.0	41.0	41.0	41.0
Total Split (%)	10.0%	62.7%	52.7%	37.3%	37.3%	37.3%	37.3%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	2.0	5.0	5.0		6.0	6.0	6.0
Lead/Lag	Lead		Lag				
Lead-Lag Optimize?	Yes		Yes				
Recall Mode	None	Max	C-Max	None	None	None	None
v/c Ratio	0.51	0.75	0.44		0.04	0.61	0.51
Control Delay	9.0	16.1	9.4		32.5	51.1	8.8
Queue Delay	0.0	5.5	0.1		0.0	0.0	0.0
Total Delay	9.0	21.6	9.5		32.5	51.1	8.8
Queue Length 50th (m)	13.1	111.6	30.7		1.7	31.4	1.0
Queue Length 95th (m)	27.1	#237.6	39.1		5.4	36.7	9.0
Internal Link Dist (m)		75.8	110.4		7.0		35.8
Turn Bay Length (m)	54.0						
Base Capacity (vph)	488	1313	2023		442	427	637
Starvation Cap Reductn	0	0	302		0	0	0
Spillback Cap Reductn	0	269	0		0	0	0
Storage Cap Reductn	0	0	0		0	0	0
Reduced v/c Ratio	0.51	0.94	0.51		0.02	0.34	0.36

Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 47 (43%), Referenced to phase 2:WBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Brant & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	2	2	2	6	6		4	4		8	4	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	42.0	42.0	42.0	42.0	42.0		32.0	32.0		32.0	32.0	
Total Split (s)	75.0	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%	68.2%		31.8%	31.8%		31.8%	31.8%	
Maximum Green (s)	68.0	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	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0			-1.0		-1.0	-1.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0			6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	Max	Max		None	None		None	None	
Walk Time (s)	20.0	20.0	20.0	20.0	20.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	14.0	14.0	14.0	14.0	14.0		16.0	16.0		16.0	16.0	
Pedestrian Calls (#/hr)	7	7	7	1	1		31	31		0	31	
Act Effct Green (s)	83.6	83.6	83.6	83.6	83.6			18.6		18.6	18.6	
Actuated g/C Ratio	0.76	0.76	0.76	0.76	0.76			0.17		0.17	0.17	
v/c Ratio	0.08	0.73	0.05	0.05	0.30			0.37		0.07	0.12	
Control Delay	4.3	12.8	0.8	5.3	4.8			25.3		34.8	0.6	
Queue Delay	0.0	1.2	0.0	0.0	0.1			0.0		0.0	0.0	
Total Delay	4.3	14.0	0.8	5.3	4.9			25.3		34.8	0.6	
LOS	A	B	A	A	A			C		C	A	
Approach Delay		13.1			4.9			25.3			7.6	
Approach LOS		B			A			C			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 49 (45%), Referenced to phase 2:EBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 10.2		Intersection LOS: B	
Intersection Capacity Utilization 68.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Elizabeth & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	887	35	9	694	15	57	0	3	9	0	41
Future Volume (vph)	25	887	35	9	694	15	57	0	3	9	0	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	80.0		30.0	44.0		0.0	0.0		0.0	30.0		0.0
Storage Lanes	1		1	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
Ped Bike Factor	0.99		0.96		1.00			0.99		0.99	0.98	
Frt			0.850		0.996			0.995			0.850	
Flt Protected	0.950			0.950				0.954		0.950		
Satd. Flow (prot)	1504	1863	1292	1641	3478	0	0	1441	0	1388	1322	0
Flt Permitted	0.341			0.174				0.700		0.741		
Satd. Flow (perm)	537	1863	1237	301	3478	0	0	1052	0	1074	1322	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			40		4			40			208	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		134.4			121.0			80.0			99.4	
Travel Time (s)		9.7			8.7			5.8			7.2	
Confl. Peds. (#/hr)	12		14	14		12	4		4	4		4
Peak Hour Factor	0.75	0.86	0.75	0.75	0.90	0.81	0.75	1.00	1.00	0.75	1.00	0.88
Heavy Vehicles (%)	20%	2%	25%	10%	3%	15%	25%	0%	25%	30%	0%	20%
Bus Blockages (#/hr)	0	0	0	0	0	15	0	0	0	0	0	0
Adj. Flow (vph)	33	1031	47	12	771	19	76	0	3	12	0	47
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	1031	47	12	790	0	0	79	0	12	47	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	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	0.0	
Detector 1 Position(m)	0.0	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	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	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	0.0	
Detector 1 Queue (s)	0.0	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	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	Perm	NA		Perm	NA		custom	NA	
Protected Phases		2			6			4			4	
Permitted Phases	2		2	6			4			8		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	887	35	9	694	15	57	0	3	9	0	41
Future Volume (vph)	25	887	35	9	694	15	57	0	3	9	0	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0			6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00			1.00		1.00	0.98	
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00			1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.99		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95		0.95	1.00	
Satd. Flow (prot)	1495	1863	1237	1636	3479			1434		1378	1322	
Flt Permitted	0.34	1.00	1.00	0.17	1.00			0.70		0.74	1.00	
Satd. Flow (perm)	537	1863	1237	299	3479			1052		1075	1322	
Peak-hour factor, PHF	0.75	0.86	0.75	0.75	0.90	0.81	0.75	1.00	1.00	0.75	1.00	0.88
Adj. Flow (vph)	33	1031	47	12	771	19	76	0	3	12	0	47
RTOR Reduction (vph)	0	0	11	0	1	0	0	34	0	0	40	0
Lane Group Flow (vph)	33	1031	36	12	789	0	0	45	0	12	7	0
Confl. Peds. (#/hr)	12		14	14		12	4		4	4		4
Heavy Vehicles (%)	20%	2%	25%	10%	3%	15%	25%	0%	25%	30%	0%	20%
Bus Blockages (#/hr)	0	0	0	0	0	15	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		custom	NA	
Protected Phases		2			6			4			4	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	80.0	80.0	80.0	80.0	80.0			16.0		16.0	16.0	
Effective Green, g (s)	81.0	81.0	81.0	81.0	81.0			17.0		17.0	17.0	
Actuated g/C Ratio	0.74	0.74	0.74	0.74	0.74			0.15		0.15	0.15	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0			7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	395	1371	910	220	2561			162		166	204	
v/s Ratio Prot		c0.55			0.23						0.01	
v/s Ratio Perm	0.06		0.03	0.04				c0.04		0.01		
v/c Ratio	0.08	0.75	0.04	0.05	0.31			0.28		0.07	0.04	
Uniform Delay, d1	4.1	8.6	3.9	4.0	4.9			41.1		39.8	39.5	
Progression Factor	0.61	0.89	0.31	0.73	0.74			1.00		1.00	1.00	
Incremental Delay, d2	0.3	2.7	0.1	0.5	0.3			0.9		0.2	0.1	
Delay (s)	2.8	10.3	1.3	3.4	4.0			42.0		39.9	39.6	
Level of Service	A	B	A	A	A			D		D	D	
Approach Delay (s)		9.7			4.0			42.0			39.7	
Approach LOS		A			A			D			D	

Intersection Summary				
HCM 2000 Control Delay	9.6	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.68			
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	68.0%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	25	887	35	9	694	57	0	9	0
Future Volume (vph)	25	887	35	9	694	57	0	9	0
Lane Group Flow (vph)	33	1031	47	12	790	0	79	12	47
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	custom	NA
Protected Phases		2			6		4		4
Permitted Phases	2		2	6		4		8	
Detector Phase	2	2	2	6	6	4	4	8	4
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	42.0	42.0	42.0	42.0	42.0	32.0	32.0	32.0	32.0
Total Split (s)	75.0	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%	68.2%	31.8%	31.8%	31.8%	31.8%
Yellow Time (s)	4.0	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	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	Max	Max	None	None	None	None
v/c Ratio	0.08	0.73	0.05	0.05	0.30		0.37	0.07	0.12
Control Delay	4.3	12.8	0.8	5.3	4.8		25.3	34.8	0.6
Queue Delay	0.0	1.2	0.0	0.0	0.1		0.0	0.0	0.0
Total Delay	4.3	14.0	0.8	5.3	4.9		25.3	34.8	0.6
Queue Length 50th (m)	2.2	197.3	0.8	0.5	39.5		7.1	2.1	0.0
Queue Length 95th (m)	m1.2	142.4	m0.3	1.5	22.6		21.2	6.2	0.0
Internal Link Dist (m)		110.4			97.0		56.0		75.4
Turn Bay Length (m)	80.0		30.0	44.0				30.0	
Base Capacity (vph)	408	1416	949	228	2644		306	283	501
Starvation Cap Reductn	0	184	0	0	711		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	0.84	0.05	0.05	0.41		0.26	0.04	0.09

Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 49 (45%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Elizabeth & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0		29.0	29.0		29.0	29.0	
Total Split (s)	79.0	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%	71.8%		28.2%	28.2%		28.2%	28.2%	
Maximum Green (s)	73.0	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	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0			-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0			5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	Max	Max		None	None		None	None	
Walk Time (s)	20.0	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	11.0		12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	0	0	0	10	10		1	1		0	0	
Act Effct Green (s)	91.5	91.5	91.5	91.5	91.5			12.3		12.3	12.3	
Actuated g/C Ratio	0.83	0.83	0.83	0.83	0.83			0.11		0.11	0.11	
v/c Ratio	0.12	0.64	0.02	0.01	0.27			0.20		0.25	0.26	
Control Delay	1.5	2.4	0.1	4.0	3.3			39.4		47.0	14.9	
Queue Delay	0.0	0.1	0.0	0.0	0.0			0.0		0.0	0.0	
Total Delay	1.5	2.5	0.1	4.0	3.3			39.4		47.0	14.9	
LOS	A	A	A	A	A			D		D	B	
Approach Delay		2.4			3.3			39.4			26.4	
Approach LOS		A			A			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 49 (45%), Referenced to phase 2:EBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 4.5		Intersection LOS: A	
Intersection Capacity Utilization 60.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 3: Pearl & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	832	19	2	652	25	26	2	2	25	4	41
Future Volume (vph)	48	832	19	2	652	25	26	2	2	25	4	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		20.0	27.0		0.0	0.0		0.0	16.0		0.0
Storage Lanes	1		1	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
Ped Bike Factor	0.99				1.00			1.00		1.00		
Frt			0.850		0.994			0.991			0.860	
Flt Protected	0.950			0.950				0.958		0.950		
Satd. Flow (prot)	1770	1845	1615	1805	3515	0	0	1801	0	1530	1569	0
Flt Permitted	0.351			0.239				0.713		0.738		
Satd. Flow (perm)	650	1845	1615	454	3515	0	0	1340	0	1185	1569	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			30		9			2			55	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		121.0			123.9			37.3			112.8	
Travel Time (s)		8.7			8.9			2.7			8.1	
Confl. Peds. (#/hr)	10					10			1	1		
Peak Hour Factor	0.75	0.85	0.75	1.00	0.87	0.75	1.00	1.00	1.00	0.75	1.00	0.75
Heavy Vehicles (%)	2%	3%	0%	0%	2%	0%	0%	0%	0%	18%	20%	3%
Adj. Flow (vph)	64	979	25	2	749	33	26	2	2	33	4	55
Shared Lane Traffic (%)												
Lane Group Flow (vph)	64	979	25	2	782	0	0	30	0	33	59	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	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	0.0	
Detector 1 Position(m)	0.0	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	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	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	0.0	
Detector 1 Queue (s)	0.0	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	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	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6			4			8		
Detector Phase	2	2	2	6	6		4	4		8	8	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	832	19	2	652	25	26	2	2	25	4	41
Future Volume (vph)	48	832	19	2	652	25	26	2	2	25	4	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0			5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99			0.99		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96		0.95	1.00	
Satd. Flow (prot)	1759	1845	1615	1805	3514			1802		1526	1569	
Flt Permitted	0.35	1.00	1.00	0.24	1.00			0.71		0.74	1.00	
Satd. Flow (perm)	650	1845	1615	455	3514			1340		1185	1569	
Peak-hour factor, PHF	0.75	0.85	0.75	1.00	0.87	0.75	1.00	1.00	1.00	0.75	1.00	0.75
Adj. Flow (vph)	64	979	25	2	749	33	26	2	2	33	4	55
RTOR Reduction (vph)	0	0	5	0	2	0	0	2	0	0	50	0
Lane Group Flow (vph)	64	979	20	2	780	0	0	28	0	33	9	0
Confl. Peds. (#/hr)	10					10			1	1		
Heavy Vehicles (%)	2%	3%	0%	0%	2%	0%	0%	0%	0%	18%	20%	3%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	88.3	88.3	88.3	88.3	88.3			9.7		9.7	9.7	
Effective Green, g (s)	89.3	89.3	89.3	89.3	89.3			10.7		10.7	10.7	
Actuated g/C Ratio	0.81	0.81	0.81	0.81	0.81			0.10		0.10	0.10	
Clearance Time (s)	6.0	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	3.0	
Lane Grp Cap (vph)	527	1497	1311	369	2852			130		115	152	
v/s Ratio Prot		c0.53			0.22						0.01	
v/s Ratio Perm	0.10		0.01	0.00				0.02		c0.03		
v/c Ratio	0.12	0.65	0.02	0.01	0.27			0.22		0.29	0.06	
Uniform Delay, d1	2.2	4.2	2.0	2.0	2.5			45.8		46.1	45.1	
Progression Factor	0.33	0.17	0.07	1.00	1.00			0.92		1.00	1.00	
Incremental Delay, d2	0.3	1.6	0.0	0.0	0.2			0.8		1.4	0.2	
Delay (s)	1.0	2.3	0.2	2.0	2.7			42.9		47.5	45.3	
Level of Service	A	A	A	A	A			D		D	D	
Approach Delay (s)		2.2			2.7			42.9			46.1	
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	0.61			
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	60.8%	ICU Level of Service	B	
Analysis Period (min)	15			

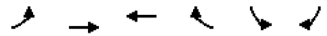
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	48	832	19	2	652	26	2	25	4
Future Volume (vph)	48	832	19	2	652	26	2	25	4
Lane Group Flow (vph)	64	979	25	2	782	0	30	33	59
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2			6		4		8
Permitted Phases	2		2	6		4		8	
Detector Phase	2	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	8.0
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0	29.0	29.0	29.0	29.0
Total Split (s)	79.0	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%	71.8%	28.2%	28.2%	28.2%	28.2%
Yellow Time (s)	4.0	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	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	Max	Max	None	None	None	None
v/c Ratio	0.12	0.64	0.02	0.01	0.27		0.20	0.25	0.26
Control Delay	1.5	2.4	0.1	4.0	3.3		39.4	47.0	14.9
Queue Delay	0.0	0.1	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	1.5	2.5	0.1	4.0	3.3		39.4	47.0	14.9
Queue Length 50th (m)	0.0	11.6	0.0	0.1	15.5		5.7	7.1	0.9
Queue Length 95th (m)	m1.4	17.4	m0.2	0.9	38.3		m10.8	12.4	11.8
Internal Link Dist (m)		97.0			99.9		13.3		88.8
Turn Bay Length (m)	55.0		20.0	27.0				16.0	
Base Capacity (vph)	540	1535	1348	377	2926		318	280	412
Starvation Cap Reductn	0	63	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.12	0.67	0.02	0.01	0.27		0.09	0.12	0.14

Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 49 (45%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Pearl & Lakeshore

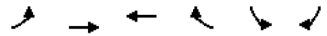




Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	68	792	622	29	21	57
Future Volume (Veh/h)	68	792	622	29	21	57
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.83	0.93	0.88	0.75	0.75
Hourly flow rate (vph)	76	954	669	33	28	76
Pedestrians		1			17	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		124				
pX, platoon unblocked					0.75	
vC, conflicting volume	719				1808	704
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	719				1910	704
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	91				46	82
cM capacity (veh/h)	874				51	429

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	76	954	702	104
Volume Left	76	0	0	28
Volume Right	0	0	33	76
cSH	874	1700	1700	144
Volume to Capacity	0.09	0.56	0.41	0.72
Queue Length 95th (m)	2.3	0.0	0.0	33.8
Control Delay (s)	9.5	0.0	0.0	77.1
Lane LOS	A			F
Approach Delay (s)	0.7		0.0	77.1
Approach LOS				F

Intersection Summary			
Average Delay	4.8		
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	68	792	622	29	21	57
Future Volume (vph)	68	792	622	29	21	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	36.0			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	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.994		0.901	
Flt Protected	0.950				0.987	
Satd. Flow (prot)	1787	1827	1850	0	1653	0
Flt Permitted	0.950				0.987	
Satd. Flow (perm)	1787	1827	1850	0	1653	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		123.9	42.7		116.9	
Travel Time (s)		8.9	3.1		8.4	
Confl. Peds. (#/hr)	17			17		1
Peak Hour Factor	0.89	0.83	0.93	0.88	0.75	0.75
Heavy Vehicles (%)	1%	4%	2%	4%	0%	3%
Bus Blockages (#/hr)	0	0	0	4	0	0
Adj. Flow (vph)	76	954	669	33	28	76
Shared Lane Traffic (%)						
Lane Group Flow (vph)	76	954	702	0	104	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	53.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	803	10	10	651	0	66
Future Volume (Veh/h)	803	10	10	651	0	66
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.84	1.00	1.00	0.93	1.00	1.00
Hourly flow rate (vph)	956	10	10	700	0	66
Pedestrians	2			2	2	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	167					
pX, platoon unblocked			0.75		0.75	0.75
vC, conflicting volume			968		1685	965
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			790		1747	786
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		100	78
cM capacity (veh/h)			627		70	295

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	966	10	700	66
Volume Left	0	10	0	0
Volume Right	10	0	0	66
cSH	1700	627	1700	295
Volume to Capacity	0.57	0.02	0.41	0.22
Queue Length 95th (m)	0.0	0.4	0.0	6.7
Control Delay (s)	0.0	10.8	0.0	20.7
Lane LOS		B		C
Approach Delay (s)	0.0	0.2		20.7
Approach LOS				C

Intersection Summary			
Average Delay		0.8	
Intersection Capacity Utilization		54.4%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	803	10	10	651	0	66
Future Volume (vph)	803	10	10	651	0	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	20.0		0.0	0.0
Storage Lanes		0	1		0	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.999					0.865
Flt Protected			0.950			
Satd. Flow (prot)	1826	0	1805	1845	0	1644
Flt Permitted			0.950			
Satd. Flow (perm)	1826	0	1805	1845	0	1644
Link Speed (k/h)	50			50	50	
Link Distance (m)	42.7			96.0	38.8	
Travel Time (s)	3.1			6.9	2.8	
Confl. Peds. (#/hr)		2	2		2	2
Peak Hour Factor	0.84	1.00	1.00	0.93	1.00	1.00
Heavy Vehicles (%)	4%	0%	0%	3%	0%	0%
Adj. Flow (vph)	956	10	10	700	0	66
Shared Lane Traffic (%)						
Lane Group Flow (vph)	966	0	10	700	0	66
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	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)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	54.4%		ICU Level of Service A
Analysis Period (min)	15		

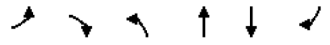
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	841	28	22	661	0	6
Future Volume (Veh/h)	841	28	22	661	0	6
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.82	1.00	0.75	0.92	1.00	1.00
Hourly flow rate (vph)	1026	28	29	718	0	6
Pedestrians	1			1	2	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	263					
pX, platoon unblocked			0.74		0.74	0.74
vC, conflicting volume			1056		1819	1043
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			898		1933	880
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			95		100	98
cM capacity (veh/h)			563		51	257

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	1054	29	718	6
Volume Left	0	29	0	0
Volume Right	28	0	0	6
cSH	1700	563	1700	257
Volume to Capacity	0.62	0.05	0.42	0.02
Queue Length 95th (m)	0.0	1.3	0.0	0.6
Control Delay (s)	0.0	11.7	0.0	19.4
Lane LOS		B		C
Approach Delay (s)	0.0	0.5		19.4
Approach LOS				C

Intersection Summary			
Average Delay		0.3	
Intersection Capacity Utilization		56.3%	ICU Level of Service B
Analysis Period (min)		15	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	841	28	22	661	0	6
Future Volume (vph)	841	28	22	661	0	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	20.0		0.0	0.0
Storage Lanes		0	1		1	0
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.996				0.865	
Flt Protected			0.950			
Satd. Flow (prot)	1809	0	1805	1833	1644	0
Flt Permitted			0.950			
Satd. Flow (perm)	1809	0	1805	1833	1644	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	96.0			85.5	39.5	
Travel Time (s)	6.9			6.2	2.8	
Confl. Peds. (#/hr)		2	2		1	1
Peak Hour Factor	0.82	1.00	0.75	0.92	1.00	1.00
Heavy Vehicles (%)	3%	0%	0%	2%	0%	0%
Bus Blockages (#/hr)	4	0	0	4	0	0
Adj. Flow (vph)	1026	28	29	718	0	6
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1054	0	29	718	6	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	1.02	1.00	1.00	1.02	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

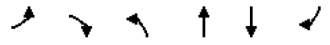
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	56.3%	ICU Level of Service B	
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	19	15	13	85	26	3
Future Volume (Veh/h)	19	15	13	85	26	3
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.75	0.88	0.88	1.00
Hourly flow rate (vph)	25	20	17	97	30	3
Pedestrians	4					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	166	36	37			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	166	36	37			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	97	98	99			
cM capacity (veh/h)	817	1040	1531			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	45	114	33
Volume Left	25	17	0
Volume Right	20	0	3
cSH	903	1531	1700
Volume to Capacity	0.05	0.01	0.02
Queue Length 95th (m)	1.3	0.3	0.0
Control Delay (s)	9.2	1.2	0.0
Lane LOS	A	A	
Approach Delay (s)	9.2	1.2	0.0
Approach LOS	A		

Intersection Summary			
Average Delay		2.9	
Intersection Capacity Utilization		21.9%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	19	15	13	85	26	3
Future Volume (vph)	19	15	13	85	26	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.940				0.988	
Flt Protected	0.973			0.993		
Satd. Flow (prot)	1738	0	0	1849	1877	0
Flt Permitted	0.973			0.993		
Satd. Flow (perm)	1738	0	0	1849	1877	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	105.7			116.9	176.8	
Travel Time (s)	7.6			8.4	12.7	
Confl. Peds. (#/hr)			4			4
Peak Hour Factor	0.75	0.75	0.75	0.88	0.88	1.00
Heavy Vehicles (%)	0%	0%	8%	1%	0%	0%
Adj. Flow (vph)	25	20	17	97	30	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	45	0	0	114	33	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	21.9%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	302	19	0	286	0	123
Future Volume (Veh/h)	302	19	0	286	0	123
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	336	21	0	318	0	137
Pedestrians					2	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				56		
pX, platoon unblocked					0.96	
vC, conflicting volume			338		656	338
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			338		619	338
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	81
cM capacity (veh/h)			1219		432	703

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	336	21	318	137
Volume Left	0	0	0	0
Volume Right	0	21	0	137
cSH	1700	1700	1700	703
Volume to Capacity	0.20	0.01	0.19	0.19
Queue Length 95th (m)	0.0	0.0	0.0	5.8
Control Delay (s)	0.0	0.0	0.0	11.4
Lane LOS				B
Approach Delay (s)	0.0		0.0	11.4
Approach LOS				B

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	30.2%	ICU Level of Service	A
Analysis Period (min)	15		

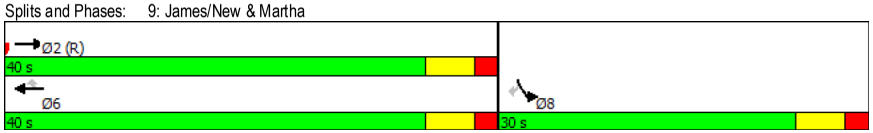
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	302	19	0	286	0	123
Future Volume (vph)	302	19	0	286	0	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.865
Flt Protected						
Satd. Flow (prot)	1863	1583	0	1863	0	1611
Flt Permitted						
Satd. Flow (perm)	1863	1583	0	1863	0	1611
Link Speed (k/h)	50			50	50	
Link Distance (m)	94.6			56.5	176.8	
Travel Time (s)	6.8			4.1	12.7	
Confl. Peds. (#/hr)		2				
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	336	21	0	318	0	137
Shared Lane Traffic (%)						
Lane Group Flow (vph)	336	21	0	318	0	137
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			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)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	30.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Switch Phase						
Minimum Initial (s)		8.0	8.0	8.0	8.0	8.0
Minimum Split (s)		39.0	39.0	39.0	26.0	26.0
Total Split (s)		40.0	40.0	40.0	30.0	30.0
Total Split (%)		57.1%	57.1%	57.1%	42.9%	42.9%
Maximum Green (s)		34.0	34.0	34.0	24.0	24.0
Yellow Time (s)		4.0	4.0	4.0	4.0	4.0
All-Red Time (s)		2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)		5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0
Recall Mode		C-Max	Max	Max	None	None
Walk Time (s)		25.0	25.0	25.0	8.0	8.0
Flash Dont Walk (s)		7.0	7.0	7.0	12.0	12.0
Pedestrian Calls (#/hr)		4	2	2	1	1
Act Effct Green (s)		63.8	63.8	63.8	11.4	
Actuated g/C Ratio		0.91	0.91	0.91	0.16	
v/c Ratio		0.28	0.21	0.05	0.02	
Control Delay		3.5	3.2	1.6	21.4	
Queue Delay		0.0	0.0	0.0	0.0	
Total Delay		3.5	3.2	1.6	21.4	
LOS		A	A	A	C	
Approach Delay		3.5	2.9		21.4	
Approach LOS		A	A		C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 41 (59%), Referenced to phase 2:EBT, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.28			
Intersection Signal Delay: 3.3		Intersection LOS: A	
Intersection Capacity Utilization 37.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 9: James/New & Martha



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	425	286	56	5	0
Future Volume (vph)	0	425	286	56	5	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			30.0	0.0	0.0
Storage Lanes	0			1	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850		
Flt Protected					0.950	
Satd. Flow (prot)	0	1827	1827	1583	1770	1863
Flt Permitted					0.950	
Satd. Flow (perm)	0	1827	1827	1583	1770	1863
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				75		
Link Speed (k/h)		50	50		50	
Link Distance (m)		56.5	80.2		40.9	
Travel Time (s)		4.1	5.8		2.9	
Confl. Peds. (#/hr)						1
Peak Hour Factor	0.90	0.90	0.81	0.75	1.00	1.00
Heavy Vehicles (%)	2%	4%	4%	2%	2%	2%
Adj. Flow (vph)	0	472	353	75	5	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	472	353	75	5	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	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2	1	1	1
Detector Template		Thru	Thru	Right	Left	Right
Leading Detector (m)		10.0	10.0	2.0	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)		0.6	0.6	2.0	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		NA	NA	Perm	Prot	Perm
Protected Phases		2	6		8	
Permitted Phases				6		8
Detector Phase		2	6	6	8	8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	425	286	56	5	0
Future Volume (vph)	0	425	286	56	5	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	1.00	1.00	
Frpb, ped/bikes		1.00	1.00	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	
Frt		1.00	1.00	0.85	1.00	
Flt Protected		1.00	1.00	1.00	0.95	
Satd. Flow (prot)		1827	1827	1583	1770	
Flt Permitted		1.00	1.00	1.00	0.95	
Satd. Flow (perm)		1827	1827	1583	1770	
Peak-hour factor, PHF	0.90	0.90	0.81	0.75	1.00	1.00
Adj. Flow (vph)	0	472	353	75	5	0
RTOR Reduction (vph)	0	0	0	16	0	0
Lane Group Flow (vph)	0	472	353	59	5	0
Confl. Peds. (#/hr)						1
Heavy Vehicles (%)	2%	4%	4%	2%	2%	2%
Turn Type		NA	NA	Perm	Prot	Perm
Protected Phases		2	6		8	
Permitted Phases				6		8
Actuated Green, G (s)		54.0	54.0	54.0	4.0	
Effective Green, g (s)		55.0	55.0	55.0	5.0	
Actuated g/C Ratio		0.79	0.79	0.79	0.07	
Clearance Time (s)		6.0	6.0	6.0	6.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		1435	1435	1243	126	
v/s Ratio Prot		c0.26	0.19		c0.00	
v/s Ratio Perm				0.04		
v/c Ratio		0.33	0.25	0.05	0.04	
Uniform Delay, d1		2.2	2.0	1.7	30.3	
Progression Factor		1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.6	0.4	0.1	0.1	
Delay (s)		2.8	2.4	1.7	30.4	
Level of Service		A	A	A	C	
Approach Delay (s)		2.8	2.3		30.4	
Approach LOS		A	A		C	

Intersection Summary			
HCM 2000 Control Delay	2.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	37.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	WBR	SBL
Lane Configurations				
Traffic Volume (vph)	425	286	56	5
Future Volume (vph)	425	286	56	5
Lane Group Flow (vph)	472	353	75	5
Turn Type	NA	NA	Perm	Prot
Protected Phases	2	6		8
Permitted Phases			6	
Detector Phase	2	6	6	8
Switch Phase				
Minimum Initial (s)	8.0	8.0	8.0	8.0
Minimum Split (s)	39.0	39.0	39.0	26.0
Total Split (s)	40.0	40.0	40.0	30.0
Total Split (%)	57.1%	57.1%	57.1%	42.9%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	Max	Max	None
v/c Ratio	0.28	0.21	0.05	0.02
Control Delay	3.5	3.2	1.6	21.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	3.5	3.2	1.6	21.4
Queue Length 50th (m)	0.0	0.0	0.0	0.6
Queue Length 95th (m)	56.9	34.7	3.3	2.7
Internal Link Dist (m)	32.5	56.2		16.9
Turn Bay Length (m)			30.0	
Base Capacity (vph)	1665	1665	1449	632
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.28	0.21	0.05	0.01

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 41 (59%), Referenced to phase 2:EBT, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 9: James/New & Martha



Future Total Traffic Capacity Analysis
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	1	6		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	8.0	
Minimum Split (s)	10.0	34.0		34.0	34.0	34.0	39.0	39.0		39.0	39.0	
Total Split (s)	11.0	79.0		68.0	68.0	68.0	41.0	41.0		41.0	41.0	
Total Split (%)	9.2%	65.8%		56.7%	56.7%	56.7%	34.2%	34.2%		34.2%	34.2%	
Maximum Green (s)	8.0	73.0		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	4.0	
All-Red Time (s)	0.0	2.0		2.0	2.0	2.0	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	2.0	5.0		5.0	5.0	5.0		6.0		6.0	6.0	
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	3.0	
Recall Mode	None	Max		C-Max	C-Max	C-Max	None	None		None	None	
Walk Time (s)		11.0		11.0	11.0	11.0	12.0	12.0		12.0	12.0	
Flash Dont Walk (s)		16.0		16.0	16.0	16.0	19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)		0		0	0	0	0	0		0	0	
Act Effct Green (s)	86.4	83.4		68.7	68.7	68.7		25.6		25.6	25.6	
Actuated g/C Ratio	0.72	0.70		0.57	0.57	0.57		0.21		0.21	0.21	
v/c Ratio	0.75	0.64		0.01	0.92	0.22		0.10		0.66	0.86	
Control Delay	45.9	14.6		12.7	31.9	3.6		36.8		53.0	41.0	
Queue Delay	0.0	0.0		0.0	5.0	0.0		0.0		0.0	0.0	
Total Delay	45.9	14.6		12.7	37.0	3.6		36.8		53.0	41.0	
LOS	D	B		B	D	A		D		D	D	
Approach Delay		20.4			31.5			36.8			44.8	
Approach LOS		C			C			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 51 (43%), Referenced to phase 2:WBTL, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 30.3		Intersection LOS: C	
Intersection Capacity Utilization 96.1%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 1: Brant & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	171	691	12	3	913	142	6	0	0	152	11	369
Future Volume (vph)	171	691	12	3	913	142	6	0	0	152	11	369
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	54.0		0.0	24.0		0.0	0.0		0.0	0.0		24.0
Storage Lanes	1		0	1		1	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		0.99		0.93		0.98		0.94	0.92	
Frt		0.998				0.850					0.856	
Flt Protected	0.950			0.950				0.950		0.950		
Satd. Flow (prot)	1787	1857	0	1805	1863	1497	0	1805	0	1805	1489	0
Flt Permitted	0.056			0.296				0.156		0.754		
Satd. Flow (perm)	105	1857	0	555	1863	1392	0	289	0	1350	1489	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				134					196	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		99.8			134.4			30.7			59.8	
Travel Time (s)		7.2			9.7			2.2			4.3	
Confl. Peds. (#/hr)	23		33	33		23	31		30	30		31
Peak Hour Factor	0.91	0.85	0.92	1.00	0.93	0.75	1.00	1.00	1.00	0.80	0.75	0.94
Heavy Vehicles (%)	1%	2%	0%	0%	2%	1%	0%	0%	0%	0%	0%	1%
Bus Blockages (#/hr)	0	0	0	0	0	16	0	0	0	0	0	0
Adj. Flow (vph)	188	813	13	3	982	189	6	0	0	190	15	393
Shared Lane Traffic (%)												
Lane Group Flow (vph)	188	826	0	3	982	189	0	6	0	190	408	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	1.00	1.00	1.00	1.00	1.00	1.09	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	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	0.0	
Detector 1 Position(m)	0.0	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	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	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	0.0	
Detector 1 Queue (s)	0.0	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	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	Perm	NA		Perm	NA	
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2		2	4			4		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	171	691	12	3	913	142	6	0	0	152	11	369
Future Volume (vph)	171	691	12	3	913	142	6	0	0	152	11	369
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	5.0		5.0	5.0	5.0		6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.93		1.00		1.00	0.92	
Flpb, ped/bikes	1.00	1.00		0.98	1.00	1.00		0.98		0.94	1.00	
Frt	1.00	1.00		1.00	1.00	0.85		1.00		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.95		0.95	1.00	
Satd. Flow (prot)	1787	1856		1772	1863	1392		1765		1701	1488	
Flt Permitted	0.06	1.00		0.30	1.00	1.00		0.16		0.75	1.00	
Satd. Flow (perm)	106	1856		552	1863	1392		290		1350	1488	
Peak-hour factor, PHF	0.91	0.85	0.92	1.00	0.93	0.75	1.00	1.00	1.00	0.80	0.75	0.94
Adj. Flow (vph)	188	813	13	3	982	189	6	0	0	190	15	393
RTOR Reduction (vph)	0	0	0	0	0	57	0	0	0	0	154	0
Lane Group Flow (vph)	188	826	0	3	982	132	0	6	0	190	254	0
Confl. Peds. (#/hr)	23		33	33		23	31		30	30		31
Heavy Vehicles (%)	1%	2%	0%	0%	2%	1%	0%	0%	0%	0%	0%	1%
Bus Blockages (#/hr)	0	0	0	0	0	16	0	0	0	0	0	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2		2	4			4		
Actuated Green, G (s)	82.4	82.4		67.8	67.8	67.8		24.6		24.6	24.6	
Effective Green, g (s)	83.4	83.4		68.8	68.8	68.8		25.6		25.6	25.6	
Actuated g/C Ratio	0.70	0.70		0.57	0.57	0.57		0.21		0.21	0.21	
Clearance Time (s)	3.0	6.0		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	3.0	
Lane Grp Cap (vph)	250	1289		316	1068	798		61		288	317	
v/s Ratio Prot	c0.08	0.44			c0.53						c0.17	
v/s Ratio Perm	0.44			0.01		0.09		0.02		0.14		
v/c Ratio	0.75	0.64		0.01	0.92	0.17		0.10		0.66	0.80	
Uniform Delay, d1	36.0	10.1		11.0	23.1	12.1		37.9		43.2	44.8	
Progression Factor	1.00	1.00		0.92	0.74	0.64		1.00		1.00	1.00	
Incremental Delay, d2	12.0	2.5		0.0	11.9	0.4		0.7		5.4	13.5	
Delay (s)	48.0	12.5		10.1	28.9	8.1		38.6		48.6	58.3	
Level of Service	D	B		B	C	A		D		D	E	
Approach Delay (s)		19.1			25.5			38.6			55.2	
Approach LOS		B			C			D			E	

Intersection Summary			
HCM 2000 Control Delay	29.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	96.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	171	691	3	913	142	6	0	152	11
Future Volume (vph)	171	691	3	913	142	6	0	152	11
Lane Group Flow (vph)	188	826	3	982	189	0	6	190	408
Turn Type	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases	1	6		2			4		4
Permitted Phases	6		2		2	4		4	
Detector Phase	1	6	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	8.0
Minimum Split (s)	10.0	34.0	34.0	34.0	34.0	39.0	39.0	39.0	39.0
Total Split (s)	11.0	79.0	68.0	68.0	68.0	41.0	41.0	41.0	41.0
Total Split (%)	9.2%	65.8%	56.7%	56.7%	56.7%	34.2%	34.2%	34.2%	34.2%
Yellow Time (s)	3.0	4.0	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	2.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	2.0	5.0	5.0	5.0	5.0		6.0	6.0	6.0
Lead/Lag	Lead		Lag	Lag	Lag				
Lead-Lag Optimize?	Yes		Yes	Yes	Yes				
Recall Mode	None	Max	C-Max	C-Max	C-Max	None	None	None	None
v/c Ratio	0.75	0.64	0.01	0.92	0.22		0.10	0.66	0.86
Control Delay	45.9	14.6	12.7	31.9	3.6		36.8	53.0	41.0
Queue Delay	0.0	0.0	0.0	5.0	0.0		0.0	0.0	0.0
Total Delay	45.9	14.6	12.7	37.0	3.6		36.8	53.0	41.0
Queue Length 50th (m)	27.4	102.6	0.1	175.4	2.8		1.2	43.2	53.6
Queue Length 95th (m)	#79.9	162.9	m0.6	#333.4	7.5		4.8	54.2	58.0
Internal Link Dist (m)		75.8		110.4			6.7		35.8
Turn Bay Length (m)	54.0		24.0						
Base Capacity (vph)	252	1290	317	1067	854		84	393	573
Starvation Cap Reductn	0	0	0	56	0		0	0	0
Spillback Cap Reductn	0	2	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.75	0.64	0.01	0.97	0.22		0.07	0.48	0.71

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 51 (43%), Referenced to phase 2:WBTL, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Brant & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	2	2	2	6	6	6	4	4		8	4	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0		8.0	8.0	
Minimum Split (s)	42.0	42.0	42.0	42.0	42.0	42.0	32.0	32.0		32.0	32.0	
Total Split (s)	84.0	84.0	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%	70.0%	70.0%	30.0%	30.0%		30.0%	30.0%	
Maximum Green (s)	77.0	77.0	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		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	Max	Max	Max	None	None		None	None	
Walk Time (s)	20.0	20.0	20.0	20.0	20.0	20.0	8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	14.0	14.0	14.0	14.0	14.0	14.0	16.0	16.0		16.0	16.0	
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0		0	0	
Act Effct Green (s)	96.4	96.4	96.4	96.4	96.4	96.4		11.6		11.6	11.6	
Actuated g/C Ratio	0.80	0.80	0.80	0.80	0.80	0.80		0.10		0.10	0.10	
v/c Ratio	0.19	0.58	0.03	0.02	0.66	0.05		0.25		0.41	0.45	
Control Delay	3.7	4.7	0.9	2.3	4.3	0.4		19.8		59.9	16.4	
Queue Delay	0.0	0.5	0.0	0.0	0.3	0.0		0.1		0.0	0.1	
Total Delay	3.7	5.2	0.9	2.3	4.6	0.4		19.9		59.9	16.5	
LOS	A	A	A	A	A	A		B		E	B	
Approach Delay		4.9			4.3			19.9			31.1	
Approach LOS		A			A			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 56 (47%), Referenced to phase 2:EBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 6.7		Intersection LOS: A	
Intersection Capacity Utilization 68.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Elizabeth & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	739	43	7	926	54	35	0	2	39	3	88
Future Volume (vph)	54	739	43	7	926	54	35	0	2	39	3	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	80.0		30.0	44.0		0.0	0.0		0.0	38.0		0.0
Storage Lanes	1		1	1		1	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.98	1.00		0.93		0.99		1.00	0.98	
Frt			0.850			0.850		0.993			0.854	
Flt Protected	0.950			0.950				0.955		0.950		
Satd. Flow (prot)	1597	1881	1615	1805	1881	1539	0	1800	0	1703	1447	0
Flt Permitted	0.229			0.284				0.631		0.733		
Satd. Flow (perm)	385	1881	1580	539	1881	1426	0	1179	0	1311	1447	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			36			54		36			100	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		134.4			121.0			80.0			99.4	
Travel Time (s)		9.7			8.7			5.8			7.2	
Confl. Peds. (#/hr)	31		1	1		31	7		1	1		7
Peak Hour Factor	0.91	0.85	1.00	0.75	0.93	0.95	1.00	1.00	1.00	0.75	1.00	0.88
Heavy Vehicles (%)	13%	1%	0%	0%	1%	2%	0%	0%	0%	6%	0%	10%
Bus Blockages (#/hr)	0	0	0	0	0	7	0	0	0	0	0	0
Adj. Flow (vph)	59	869	43	9	996	57	35	0	2	52	3	100
Shared Lane Traffic (%)												
Lane Group Flow (vph)	59	869	43	9	996	57	0	37	0	52	103	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	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	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		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	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	2.0	0.6	2.0	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		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		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	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		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	Perm	NA	Perm	Perm	NA		custom	NA	
Protected Phases		2			6			4			4	
Permitted Phases	2		2	6		6	4			8		

HCM Signalized Intersection Capacity Analysis
2: Elizabeth & Lakeshore

Future Total
Weekday PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	739	43	7	926	54	35	0	2	39	3	88
Future Volume (vph)	54	739	43	7	926	54	35	0	2	39	3	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0		6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.93		1.00		1.00	0.98	
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00	1.00		0.99		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.99		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95		0.95	1.00	
Satd. Flow (prot)	1583	1881	1580	1804	1881	1426		1783		1699	1448	
Flt Permitted	0.23	1.00	1.00	0.28	1.00	1.00		0.63		0.73	1.00	
Satd. Flow (perm)	382	1881	1580	539	1881	1426		1178		1311	1448	
Peak-hour factor, PHF	0.91	0.85	1.00	0.75	0.93	0.95	1.00	1.00	1.00	0.75	1.00	0.88
Adj. Flow (vph)	59	869	43	9	996	57	35	0	2	52	3	100
RTOR Reduction (vph)	0	0	7	0	0	11	0	33	0	0	90	0
Lane Group Flow (vph)	59	869	36	9	996	46	0	4	0	52	13	0
Confl. Peds. (#/hr)	31		1	1		31	7		1	1		7
Heavy Vehicles (%)	13%	1%	0%	0%	1%	2%	0%	0%	0%	6%	0%	10%
Bus Blockages (#/hr)	0	0	0	0	0	7	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		custom	NA	
Protected Phases		2			6			4			4	
Permitted Phases	2		2	6		6	4			8		
Actuated Green, G (s)	95.4	95.4	95.4	95.4	95.4	95.4		10.6		10.6	10.6	
Effective Green, g (s)	96.4	96.4	96.4	96.4	96.4	96.4		11.6		11.6	11.6	
Actuated g/C Ratio	0.80	0.80	0.80	0.80	0.80	0.80		0.10		0.10	0.10	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	7.0		7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	306	1511	1269	432	1511	1145		113		126	139	
v/s Ratio Prot		0.46			c0.53						0.01	
v/s Ratio Perm	0.15		0.02	0.02		0.03		0.00		c0.04		
v/c Ratio	0.19	0.58	0.03	0.02	0.66	0.04		0.04		0.41	0.09	
Uniform Delay, d1	2.7	4.3	2.4	2.4	4.9	2.4		49.1		51.0	49.4	
Progression Factor	0.75	0.70	0.71	0.74	0.44	0.39		1.00		1.00	1.00	
Incremental Delay, d2	1.1	1.3	0.0	0.1	1.8	0.1		0.1		2.2	0.3	
Delay (s)	3.2	4.3	1.7	1.8	4.0	1.0		49.3		53.2	49.7	
Level of Service	A	A	A	A	A	A		D		D	D	
Approach Delay (s)		4.1			3.8			49.3			50.9	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	8.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Queues
2: Elizabeth & Lakeshore

Future Total
Weekday PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	54	739	43	7	926	54	35	0	39	3
Future Volume (vph)	54	739	43	7	926	54	35	0	39	3
Lane Group Flow (vph)	59	869	43	9	996	57	0	37	52	103
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	custom	NA
Protected Phases		2			6			4		4
Permitted Phases	2		2	6		6	4		8	
Detector Phase	2	2	2	6	6	6	4	4	8	4
Switch Phase										
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	42.0	42.0	42.0	42.0	42.0	42.0	32.0	32.0	32.0	32.0
Total Split (s)	84.0	84.0	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%	70.0%	70.0%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	4.0	4.0	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	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	Max	Max	Max	None	None	None	None
v/c Ratio	0.19	0.58	0.03	0.02	0.66	0.05		0.25	0.41	0.45
Control Delay	3.7	4.7	0.9	2.3	4.3	0.4		19.8	59.9	16.4
Queue Delay	0.0	0.5	0.0	0.0	0.3	0.0		0.1	0.0	0.1
Total Delay	3.7	5.2	0.9	2.3	4.6	0.4		19.9	59.9	16.5
Queue Length 50th (m)	2.0	30.1	0.2	0.3	29.4	0.1		0.2	12.4	0.7
Queue Length 95th (m)	m3.8	38.7	m0.7	m0.6	42.1	m0.3		10.7	20.6	17.3
Internal Link Dist (m)		110.4			97.0			56.0		75.4
Turn Bay Length (m)	80.0		30.0	44.0					38.0	
Base Capacity (vph)	308	1510	1276	432	1510	1155		321	327	436
Starvation Cap Reductn	0	263	0	0	95	0		0	0	0
Spillback Cap Reductn	0	53	0	0	120	0		41	0	54
Storage Cap Reductn	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.19	0.70	0.03	0.02	0.72	0.05		0.13	0.16	0.27

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 56 (47%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Elizabeth & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0		8.0	8.0	
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0	38.0	29.0	29.0		29.0	29.0	
Total Split (s)	89.0	89.0	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%	74.2%	74.2%	25.8%	25.8%		25.8%	25.8%	
Maximum Green (s)	83.0	83.0	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		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	Max	Max	Max	None	None		None	None	
Walk Time (s)	20.0	20.0	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	11.0	11.0	12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	3	3	3	11	11	11	3	3		28	28	
Act Effct Green (s)	96.4	96.4	96.4	96.4	96.4	96.4		17.4		17.4	17.4	
Actuated g/C Ratio	0.80	0.80	0.80	0.80	0.80	0.80		0.14		0.14	0.14	
v/c Ratio	0.27	0.52	0.04	0.01	0.66	0.11		0.16		0.18	0.29	
Control Delay	3.9	4.1	0.6	4.7	10.3	1.0		37.9		44.3	13.0	
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay	3.9	4.2	0.6	4.7	10.3	1.0		37.9		44.3	13.0	
LOS	A	A	A	A	B	A		D		D	B	
Approach Delay		4.0			9.1			37.9			21.2	
Approach LOS		A			A			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 51 (43%), Referenced to phase 2:EBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 8.1		Intersection LOS: A	
Intersection Capacity Utilization 73.2%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Pearl & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	681	34	3	901	105	25	6	3	23	7	61
Future Volume (vph)	65	681	34	3	901	105	25	6	3	23	7	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		20.0	27.0		0.0	0.0		0.0	16.0		0.0
Storage Lanes	1		1	1		1	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.98	1.00		0.96		1.00		0.98	0.99	
Frt			0.850			0.850		0.988			0.862	
Flt Protected	0.950			0.950				0.965		0.950		
Satd. Flow (prot)	1805	1881	1615	1805	1881	1615	0	1805	0	1583	1617	0
Flt Permitted	0.214			0.311				0.760		0.735		
Satd. Flow (perm)	407	1881	1580	591	1881	1552	0	1420	0	1200	1617	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			27			140		3			80	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		121.0			123.9			37.3			112.8	
Travel Time (s)		8.7			8.9			2.7			8.1	
Confl. Peds. (#/hr)	10		1	1		10	1		8	8		1
Peak Hour Factor	0.75	0.87	0.75	1.00	0.90	0.75	1.00	1.00	1.00	0.75	1.00	0.76
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	14%	0%	0%
Adj. Flow (vph)	87	783	45	3	1001	140	25	6	3	31	7	80
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	783	45	3	1001	140	0	34	0	31	87	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	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		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	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	2.0	0.6	2.0	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		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		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	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		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	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6		6	4			8		
Detector Phase	2	2	2	6	6	6	4	4		8	8	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	681	34	3	901	105	25	6	3	23	7	61
Future Volume (vph)	65	681	34	3	901	105	25	6	3	23	7	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0		5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.96		1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		0.98	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.99		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96		0.95	1.00	
Satd. Flow (prot)	1800	1881	1580	1804	1881	1552		1802		1550	1617	
Flt Permitted	0.21	1.00	1.00	0.31	1.00	1.00		0.76		0.73	1.00	
Satd. Flow (perm)	405	1881	1580	591	1881	1552		1420		1199	1617	
Peak-hour factor, PHF	0.75	0.87	0.75	1.00	0.90	0.75	1.00	1.00	1.00	0.75	1.00	0.76
Adj. Flow (vph)	87	783	45	3	1001	140	25	6	3	31	7	80
RTOR Reduction (vph)	0	0	6	0	0	30	0	3	0	0	69	0
Lane Group Flow (vph)	87	783	39	3	1001	110	0	31	0	31	18	0
Confl. Peds. (#/hr)	10		1	1		10	1		8	8		1
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	14%	0%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6		6	4			8		
Actuated Green, G (s)	93.2	93.2	93.2	93.2	93.2	93.2		14.8		14.8	14.8	
Effective Green, g (s)	94.2	94.2	94.2	94.2	94.2	94.2		15.8		15.8	15.8	
Actuated g/C Ratio	0.79	0.79	0.79	0.79	0.79	0.79		0.13		0.13	0.13	
Clearance Time (s)	6.0	6.0	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		3.0	3.0	
Lane Grp Cap (vph)	317	1476	1240	463	1476	1218		186		157	212	
v/s Ratio Prot		0.42			c0.53						0.01	
v/s Ratio Perm	0.21		0.02	0.01		0.07		0.02		c0.03		
v/c Ratio	0.27	0.53	0.03	0.01	0.68	0.09		0.17		0.20	0.08	
Uniform Delay, d1	3.5	4.8	2.8	2.8	5.9	3.0		46.3		46.4	45.7	
Progression Factor	0.40	0.48	0.22	1.00	1.00	1.00		0.93		1.00	1.00	
Incremental Delay, d2	1.8	1.2	0.0	0.0	2.5	0.1		0.4		0.6	0.2	
Delay (s)	3.2	3.5	0.7	2.8	8.5	3.1		43.5		47.1	45.9	
Level of Service	A	A	A	A	A	A		D		D	D	
Approach Delay (s)		3.3			7.8			43.5			46.2	
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	0.61			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	73.2%	ICU Level of Service	D	
Analysis Period (min)	15			

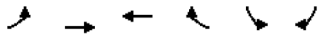
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	65	681	34	3	901	105	25	6	23	7
Future Volume (vph)	65	681	34	3	901	105	25	6	23	7
Lane Group Flow (vph)	87	783	45	3	1001	140	0	34	31	87
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		2			6			4		8
Permitted Phases	2		2	6		6	4		8	
Detector Phase	2	2	2	6	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	8.0	8.0
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0	38.0	29.0	29.0	29.0	29.0
Total Split (s)	89.0	89.0	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%	74.2%	74.2%	25.8%	25.8%	25.8%	25.8%
Yellow Time (s)	4.0	4.0	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	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	Max	Max	Max	None	None	None	None
v/c Ratio	0.27	0.52	0.04	0.01	0.66	0.11		0.16	0.18	0.29
Control Delay	3.9	4.1	0.6	4.7	10.3	1.0		37.9	44.3	13.0
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	3.9	4.2	0.6	4.7	10.3	1.0		37.9	44.3	13.0
Queue Length 50th (m)	2.6	69.9	0.3	0.2	128.7	0.0		6.5	6.4	1.4
Queue Length 95th (m)	3.2	22.6	m0.2	1.1	180.6	2.8		m15.0	13.0	15.7
Internal Link Dist (m)		97.0			99.9			13.3		88.8
Turn Bay Length (m)	55.0		20.0	27.0					16.0	
Base Capacity (vph)	327	1511	1274	474	1511	1274		310	260	413
Starvation Cap Reductn	0	148	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.27	0.57	0.04	0.01	0.66	0.11		0.11	0.12	0.21

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 51 (43%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Pearl & Lakeshore

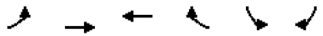




Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	91	617	989	62	18	20
Future Volume (Veh/h)	91	617	989	62	18	20
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.75	0.95	0.91	0.75	1.00	1.00
Hourly flow rate (vph)	121	649	1087	83	18	20
Pedestrians		1			2	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		124				
pX, platoon unblocked					0.85	
vC, conflicting volume	1172				2022	1132
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1172				2111	1132
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	80				53	92
cM capacity (veh/h)	595				39	244

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	121	649	1170	38
Volume Left	121	0	0	18
Volume Right	0	0	83	20
cSH	595	1700	1700	69
Volume to Capacity	0.20	0.38	0.69	0.55
Queue Length 95th (m)	6.0	0.0	0.0	18.4
Control Delay (s)	12.6	0.0	0.0	107.6
Lane LOS	B			F
Approach Delay (s)	2.0		0.0	107.6
Approach LOS				F

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	91	617	989	62	18	20
Future Volume (vph)	91	617	989	62	18	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	36.0			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	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.990		0.929	
Flt Protected	0.950				0.977	
Satd. Flow (prot)	1770	1863	1847	0	1689	0
Flt Permitted	0.950				0.977	
Satd. Flow (perm)	1770	1863	1847	0	1689	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		123.9	42.7		116.9	
Travel Time (s)		8.9	3.1		8.4	
Confl. Peds. (#/hr)	2			2		1
Peak Hour Factor	0.75	0.95	0.91	0.75	1.00	1.00
Heavy Vehicles (%)	2%	2%	2%	0%	0%	4%
Bus Blockages (#/hr)	0	0	0	4	0	0
Adj. Flow (vph)	121	649	1087	83	18	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	121	649	1170	0	38	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	74.5%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	603	31	30	1050	0	39
Future Volume (Veh/h)	603	31	30	1050	0	39
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.90	0.95	0.90	0.95
Hourly flow rate (vph)	635	33	33	1105	0	41
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	167					
pX, platoon unblocked			0.86		0.86	0.86
vC, conflicting volume			668		1822	652
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			528		1877	509
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		100	92
cM capacity (veh/h)			889		65	483

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	668	33	1105	41
Volume Left	0	33	0	0
Volume Right	33	0	0	41
cSH	1700	889	1700	483
Volume to Capacity	0.39	0.04	0.65	0.08
Queue Length 95th (m)	0.0	0.9	0.0	2.2
Control Delay (s)	0.0	9.2	0.0	13.1
Lane LOS		A		B
Approach Delay (s)	0.0	0.3		13.1
Approach LOS				B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	58.6%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	603	31	30	1050	0	39
Future Volume (vph)	603	31	30	1050	0	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	20.0		0.0	0.0
Storage Lanes		0	1		0	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.993					0.865
Flt Protected			0.950			
Satd. Flow (prot)	1850	0	1770	1863	0	1611
Flt Permitted			0.950			
Satd. Flow (perm)	1850	0	1770	1863	0	1611
Link Speed (k/h)	50			50	50	
Link Distance (m)	42.7			96.0	38.8	
Travel Time (s)	3.1			6.9	2.8	
Peak Hour Factor	0.95	0.95	0.90	0.95	0.90	0.95
Adj. Flow (vph)	635	33	33	1105	0	41
Shared Lane Traffic (%)						
Lane Group Flow (vph)	668	0	33	1105	0	41
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	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)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	58.6%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	624	18	22	1079	2	17
Future Volume (Veh/h)	624	18	22	1079	2	17
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	1.00	0.75	0.84	1.00	0.75
Hourly flow rate (vph)	671	18	29	1285	2	23
Pedestrians	1			1	1	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	263					
pX, platoon unblocked			0.88		0.88	0.88
vC, conflicting volume			690		2025	682
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			575		2100	566
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		96	95
cM capacity (veh/h)			882		49	461

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	689	29	1285	25
Volume Left	0	29	0	2
Volume Right	18	0	0	23
cSH	1700	882	1700	275
Volume to Capacity	0.41	0.03	0.76	0.09
Queue Length 95th (m)	0.0	0.8	0.0	2.4
Control Delay (s)	0.0	9.2	0.0	19.4
Lane LOS		A		C
Approach Delay (s)	0.0	0.2		19.4
Approach LOS				C

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	67.1%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	624	18	22	1079	2	17
Future Volume (vph)	624	18	22	1079	2	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	20.0		0.0	0.0
Storage Lanes		0	1		1	0
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.996				0.876	
Flt Protected			0.950		0.996	
Satd. Flow (prot)	1856	0	1805	1881	1658	0
Flt Permitted			0.950		0.996	
Satd. Flow (perm)	1856	0	1805	1881	1658	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	96.0			85.5	39.5	
Travel Time (s)	6.9			6.2	2.8	
Confl. Peds. (#/hr)		1	1		1	1
Peak Hour Factor	0.93	1.00	0.75	0.84	1.00	0.75
Heavy Vehicles (%)	2%	0%	0%	1%	0%	0%
Adj. Flow (vph)	671	18	29	1285	2	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	689	0	29	1285	25	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)		15	25		25	15
Sign Control	Free			Free	Stop	

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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	28	24	16	90	12	2
Future Volume (Veh/h)	28	24	16	90	12	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.88	0.75	0.76	0.75	1.00
Hourly flow rate (vph)	33	27	21	118	16	2
Pedestrians	2					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	179	19	20			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	179	19	20			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	97	99			
cM capacity (veh/h)	803	1063	1581			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	60	139	18
Volume Left	33	21	0
Volume Right	27	0	2
cSH	902	1581	1700
Volume to Capacity	0.07	0.01	0.01
Queue Length 95th (m)	1.7	0.3	0.0
Control Delay (s)	9.3	1.2	0.0
Lane LOS	A	A	
Approach Delay (s)	9.3	1.2	0.0
Approach LOS	A		

Intersection Summary			
Average Delay		3.3	
Intersection Capacity Utilization		22.3%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	28	24	16	90	12	2
Future Volume (vph)	28	24	16	90	12	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.939				0.985	
Flt Protected	0.973			0.993		
Satd. Flow (prot)	1736	0	0	1844	1823	0
Flt Permitted	0.973			0.993		
Satd. Flow (perm)	1736	0	0	1844	1823	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	105.7			116.9	176.8	
Travel Time (s)	7.6			8.4	12.7	
Confl. Peds. (#/hr)			2			2
Peak Hour Factor	0.85	0.88	0.75	0.76	0.75	1.00
Heavy Vehicles (%)	0%	0%	4%	2%	3%	0%
Adj. Flow (vph)	33	27	21	118	16	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	60	0	0	139	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			Free	Free	

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	223	14	0	743	0	98
Future Volume (Veh/h)	223	14	0	743	0	98
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.95	0.90	0.80	1.00	0.83
Hourly flow rate (vph)	248	15	0	929	0	118
Pedestrians					2	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				56		
pX, platoon unblocked					0.83	
vC, conflicting volume			250		1179	250
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			250		1113	250
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	85
cM capacity (veh/h)			1319		193	792

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	248	15	929	118
Volume Left	0	0	0	0
Volume Right	0	15	0	118
cSH	1700	1700	1700	792
Volume to Capacity	0.15	0.01	0.55	0.15
Queue Length 95th (m)	0.0	0.0	0.0	4.2
Control Delay (s)	0.0	0.0	0.0	10.3
Lane LOS				B
Approach Delay (s)	0.0		0.0	10.3
Approach LOS				B

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	223	14	0	743	0	98
Future Volume (vph)	223	14	0	743	0	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.865
Flt Protected						
Satd. Flow (prot)	1845	1568	0	1881	0	1644
Flt Permitted						
Satd. Flow (perm)	1845	1568	0	1881	0	1644
Link Speed (k/h)	50			50	50	
Link Distance (m)	94.6			56.5	176.8	
Travel Time (s)	6.8			4.1	12.7	
Confl. Peds. (#/hr)		2				
Peak Hour Factor	0.90	0.95	0.90	0.80	1.00	0.83
Heavy Vehicles (%)	3%	3%	1%	1%	0%	0%
Adj. Flow (vph)	248	15	0	929	0	118
Shared Lane Traffic (%)						
Lane Group Flow (vph)	248	15	0	929	0	118
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			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)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Switch Phase						
Minimum Initial (s)		8.0	8.0	8.0	8.0	8.0
Minimum Split (s)		39.0	39.0	39.0	26.0	26.0
Total Split (s)		60.0	60.0	60.0	30.0	30.0
Total Split (%)		66.7%	66.7%	66.7%	33.3%	33.3%
Maximum Green (s)		54.0	54.0	54.0	24.0	24.0
Yellow Time (s)		4.0	4.0	4.0	4.0	4.0
All-Red Time (s)		2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)		5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0
Recall Mode		C-Max	Max	Max	None	None
Walk Time (s)		25.0	25.0	25.0	8.0	8.0
Flash Dont Walk (s)		7.0	7.0	7.0	12.0	12.0
Pedestrian Calls (#/hr)		0	0	0	0	0
Act Effct Green (s)		86.2	86.2	86.2	9.0	9.0
Actuated g/C Ratio		0.96	0.96	0.96	0.10	0.10
v/c Ratio		0.20	0.52	0.11	0.03	0.01
Control Delay		1.0	2.5	0.7	37.2	29.0
Queue Delay		0.0	0.0	0.0	0.0	0.0
Total Delay		1.0	2.5	0.7	37.2	29.0
LOS		A	A	A	D	C
Approach Delay		1.0	2.2		35.8	
Approach LOS		A	A		D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 42 (47%), Referenced to phase 2:EBT, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.52			
Intersection Signal Delay: 2.0		Intersection LOS: A	
Intersection Capacity Utilization 55.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 9: James/New & Martha



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	322	742	132	5	1
Future Volume (vph)	0	322	742	132	5	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			30.0	0.0	0.0
Storage Lanes	0			1	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						0.97
Frt				0.850		0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	1845	1863	1599	1703	1615
Flt Permitted					0.950	
Satd. Flow (perm)	0	1845	1863	1599	1703	1572
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				93		1
Link Speed (k/h)		50	50		50	
Link Distance (m)		56.5	80.2		40.9	
Travel Time (s)		4.1	5.8		2.9	
Confl. Peds. (#/hr)						3
Peak Hour Factor	1.00	0.90	0.80	0.75	1.00	1.00
Heavy Vehicles (%)	3%	3%	2%	1%	6%	0%
Adj. Flow (vph)	0	358	928	176	5	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	358	928	176	5	1
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	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2	1	1	1
Detector Template		Thru	Thru	Right	Left	Right
Leading Detector (m)		10.0	10.0	2.0	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)		0.6	0.6	2.0	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		NA	NA	Perm	Prot	Perm
Protected Phases		2	6		8	
Permitted Phases				6		8
Detector Phase		2	6	6	8	8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	322	742	132	5	1
Future Volume (vph)	0	322	742	132	5	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0	5.0
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes		1.00	1.00	1.00	1.00	0.97
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00
Frt		1.00	1.00	0.85	1.00	0.85
Flt Protected		1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)		1845	1863	1599	1703	1572
Flt Permitted		1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)		1845	1863	1599	1703	1572
Peak-hour factor, PHF	1.00	0.90	0.80	0.75	1.00	1.00
Adj. Flow (vph)	0	358	928	176	5	1
RTOR Reduction (vph)	0	0	0	13	0	1
Lane Group Flow (vph)	0	358	928	163	5	0
Confl. Peds. (#/hr)						3
Heavy Vehicles (%)	3%	3%	2%	1%	6%	0%
Turn Type		NA	NA	Perm	Prot	Perm
Protected Phases		2	6		8	
Permitted Phases				6		8
Actuated Green, G (s)		76.4	76.4	76.4	1.6	1.6
Effective Green, g (s)		77.4	77.4	77.4	2.6	2.6
Actuated g/C Ratio		0.86	0.86	0.86	0.03	0.03
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1586	1602	1375	49	45
v/s Ratio Prot		0.19	c0.50		c0.00	
v/s Ratio Perm				0.10		0.00
v/c Ratio		0.23	0.58	0.12	0.10	0.00
Uniform Delay, d1		1.1	1.8	1.0	42.6	42.4
Progression Factor		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.3	1.5	0.2	0.9	0.0
Delay (s)		1.4	3.3	1.2	43.5	42.4
Level of Service		A	A	A	D	D
Approach Delay (s)		1.4	3.0		43.3	
Approach LOS		A	A		D	

Intersection Summary			
HCM 2000 Control Delay	2.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	55.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	WBR	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	322	742	132	5	1
Future Volume (vph)	322	742	132	5	1
Lane Group Flow (vph)	358	928	176	5	1
Turn Type	NA	NA	Perm	Prot	Perm
Protected Phases	2	6		8	
Permitted Phases			6		8
Detector Phase	2	6	6	8	8
Switch Phase					
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	39.0	39.0	39.0	26.0	26.0
Total Split (s)	60.0	60.0	60.0	30.0	30.0
Total Split (%)	66.7%	66.7%	66.7%	33.3%	33.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	Max	Max	None	None
v/c Ratio	0.20	0.52	0.11	0.03	0.01
Control Delay	1.0	2.5	0.7	37.2	29.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	1.0	2.5	0.7	37.2	29.0
Queue Length 50th (m)	0.0	0.0	0.0	0.9	0.0
Queue Length 95th (m)	19.8	62.1	4.5	4.2	1.5
Internal Link Dist (m)	32.5	56.2		16.9	
Turn Bay Length (m)			30.0		
Base Capacity (vph)	1767	1784	1535	473	437
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.20	0.52	0.11	0.01	0.00

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 42 (47%), Referenced to phase 2:EBT, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 9: James/New & Martha



Future Total Traffic Capacity - Sensitivity Analysis
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	1	6		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)	10.0	34.0		34.0	34.0		39.0	39.0		39.0	39.0	
Total Split (s)	11.0	79.0		68.0	68.0		41.0	41.0		41.0	41.0	
Total Split (%)	9.2%	65.8%		56.7%	56.7%		34.2%	34.2%		34.2%	34.2%	
Maximum Green (s)	8.0	73.0		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)	-1.0	-1.0		-1.0	-1.0			-1.0		-1.0	-1.0	
Total Lost Time (s)	2.0	5.0		5.0	5.0			6.0		6.0	6.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Max		C-Max	C-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)	86.4	83.4		68.7	68.7			25.6		25.6	25.6	
Actuated g/C Ratio	0.72	0.70		0.57	0.57			0.21		0.21	0.21	
v/c Ratio	0.75	0.64		0.01	1.13			0.10		0.66	0.86	
Control Delay	45.9	14.6		14.3	92.2			36.8		53.0	41.0	
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Delay	45.9	14.6		14.3	92.2			36.8		53.0	41.0	
LOS	D	B		B	F			D		D	D	
Approach Delay		20.4			92.0			36.8			44.8	
Approach LOS		C			F			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 51 (43%), Referenced to phase 2:WBTL, Start of Green			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.13			
Intersection Signal Delay: 55.8		Intersection LOS: E	
Intersection Capacity Utilization 105.0%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 1: Brant & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	171	691	12	3	913	142	6	0	0	152	11	369
Future Volume (vph)	171	691	12	3	913	142	6	0	0	152	11	369
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	54.0		0.0	24.0		0.0	0.0		0.0	0.0		24.0
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		0.99	0.99			0.98		0.94	0.92	
Frt		0.998			0.976						0.856	
Flt Protected	0.950			0.950				0.950		0.950		
Satd. Flow (prot)	1787	1857	0	1805	1800	0	0	1805	0	1805	1489	0
Flt Permitted	0.056			0.296				0.156		0.754		
Satd. Flow (perm)	105	1857	0	555	1800	0	0	289	0	1350	1489	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			12						196	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		99.8			134.4			30.7			59.8	
Travel Time (s)		7.2			9.7			2.2			4.3	
Confl. Peds. (#/hr)	23		33	33		23	31		30	30		31
Peak Hour Factor	0.91	0.85	0.92	1.00	0.93	0.75	1.00	1.00	1.00	0.80	0.75	0.94
Heavy Vehicles (%)	1%	2%	0%	0%	2%	1%	0%	0%	0%	0%	0%	1%
Bus Blockages (#/hr)	0	0	0	0	0	16	0	0	0	0	0	0
Adj. Flow (vph)	188	813	13	3	982	189	6	0	0	190	15	393
Shared Lane Traffic (%)												
Lane Group Flow (vph)	188	826	0	3	1171	0	0	6	0	190	408	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	6			2			4			4	
Permitted Phases	6			2			4			4		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	171	691	12	3	913	142	6	0	0	152	11	369
Future Volume (vph)	171	691	12	3	913	142	6	0	0	152	11	369
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	5.0		5.0	5.0			6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99			1.00		1.00	0.92	
Flpb, ped/bikes	1.00	1.00		0.98	1.00			0.98		0.94	1.00	
Frt	1.00	1.00		1.00	0.98			1.00		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00			0.95		0.95	1.00	
Satd. Flow (prot)	1787	1856		1772	1800			1765		1701	1488	
Flt Permitted	0.06	1.00		0.30	1.00			0.16		0.75	1.00	
Satd. Flow (perm)	106	1856		552	1800			290		1350	1488	
Peak-hour factor, PHF	0.91	0.85	0.92	1.00	0.93	0.75	1.00	1.00	1.00	0.80	0.75	0.94
Adj. Flow (vph)	188	813	13	3	982	189	6	0	0	190	15	393
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	0	0	154	0
Lane Group Flow (vph)	188	826	0	3	1166	0	0	6	0	190	254	0
Confl. Peds. (#/hr)	23		33	33		23	31		30	30		31
Heavy Vehicles (%)	1%	2%	0%	0%	2%	1%	0%	0%	0%	0%	0%	1%
Bus Blockages (#/hr)	0	0	0	0	0	16	0	0	0	0	0	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2			4			4		
Actuated Green, G (s)	82.4	82.4		67.8	67.8			24.6		24.6	24.6	
Effective Green, g (s)	83.4	83.4		68.8	68.8			25.6		25.6	25.6	
Actuated g/C Ratio	0.70	0.70		0.57	0.57			0.21		0.21	0.21	
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)	250	1289		316	1032			61		288	317	
v/s Ratio Prot	c0.08	0.44			c0.65						c0.17	
v/s Ratio Perm	0.44			0.01				0.02		0.14		
v/c Ratio	0.75	0.64		0.01	1.13			0.10		0.66	0.80	
Uniform Delay, d1	37.4	10.1		11.0	25.6			37.9		43.2	44.8	
Progression Factor	1.00	1.00		1.04	0.82			1.00		1.00	1.00	
Incremental Delay, d2	12.0	2.5		0.0	68.5			0.7		5.4	13.5	
Delay (s)	49.4	12.5		11.5	89.5			38.6		48.6	58.3	
Level of Service	D	B		B	F			D		D	E	
Approach Delay (s)		19.4			89.3			38.6			55.2	
Approach LOS		B			F			D			E	

Intersection Summary			
HCM 2000 Control Delay	56.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	105.0%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	171	691	3	913	6	0	152	11
Future Volume (vph)	171	691	3	913	6	0	152	11
Lane Group Flow (vph)	188	826	3	1171	0	6	190	408
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	1	6		2		4		4
Permitted Phases	6		2		4		4	
Detector Phase	1	6	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)	10.0	34.0	34.0	34.0	39.0	39.0	39.0	39.0
Total Split (s)	11.0	79.0	68.0	68.0	41.0	41.0	41.0	41.0
Total Split (%)	9.2%	65.8%	56.7%	56.7%	34.2%	34.2%	34.2%	34.2%
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)	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	2.0	5.0	5.0	5.0		6.0	6.0	6.0
Lead/Lag	Lead		Lag	Lag				
Lead-Lag Optimize?	Yes		Yes	Yes				
Recall Mode	None	Max	C-Max	C-Max	None	None	None	None
v/c Ratio	0.75	0.64	0.01	1.13		0.10	0.66	0.86
Control Delay	45.9	14.6	14.3	92.2		36.8	53.0	41.0
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	45.9	14.6	14.3	92.2		36.8	53.0	41.0
Queue Length 50th (m)	27.4	102.6	0.2	~349.2		1.2	43.2	53.6
Queue Length 95th (m)	#79.9	162.9	m0.6	#441.4		4.8	54.2	58.0
Internal Link Dist (m)		75.8		110.4		6.7		35.8
Turn Bay Length (m)	54.0		24.0					
Base Capacity (vph)	252	1290	317	1036		84	393	573
Starvation Cap Reductn	0	0	0	0		0	0	0
Spillback Cap Reductn	0	2	0	0		0	0	0
Storage Cap Reductn	0	0	0	0		0	0	0
Reduced v/c Ratio	0.75	0.64	0.01	1.13		0.07	0.48	0.71

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 51 (43%), Referenced to phase 2:WBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
~ 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Brant & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	2	2	2	6	6		4	4		8	4	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	42.0	42.0	42.0	42.0	42.0		32.0	32.0		32.0	32.0	
Total Split (s)	84.0	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%	70.0%		30.0%	30.0%		30.0%	30.0%	
Maximum Green (s)	77.0	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	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0			-1.0		-1.0	-1.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0			6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	Max	Max		None	None		None	None	
Walk Time (s)	20.0	20.0	20.0	20.0	20.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	14.0	14.0	14.0	14.0	14.0		16.0	16.0		16.0	16.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)	96.4	96.4	96.4	96.4	96.4			11.6		11.6	11.6	
Actuated g/C Ratio	0.80	0.80	0.80	0.80	0.80			0.10		0.10	0.10	
v/c Ratio	0.21	0.58	0.03	0.02	0.71			0.25		0.41	0.45	
Control Delay	4.0	4.7	0.9	2.6	4.8			19.8		59.9	16.6	
Queue Delay	0.0	0.5	0.0	0.0	7.9			0.8		0.0	1.6	
Total Delay	4.0	5.2	0.9	2.6	12.7			20.6		59.9	18.2	
LOS	A	A	A	A	B			C		E	B	
Approach Delay		4.9			12.6			20.6			32.2	
Approach LOS		A			B			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 56 (47%), Referenced to phase 2:EBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 10.7		Intersection LOS: B	
Intersection Capacity Utilization 71.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Elizabeth & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	739	43	7	926	54	35	0	2	39	3	88
Future Volume (vph)	54	739	43	7	926	54	35	0	2	39	3	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	80.0		30.0	44.0		0.0	0.0		0.0	38.0		0.0
Storage Lanes	1		1	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.98	1.00	1.00			0.98		1.00	0.96	
Frt			0.850		0.992			0.993			0.854	
Flt Protected	0.950			0.950				0.955		0.950		
Satd. Flow (prot)	1597	1881	1615	1805	1858	0	0	1800	0	1703	1426	0
Flt Permitted	0.205			0.284				0.631		0.733		
Satd. Flow (perm)	345	1881	1580	539	1858	0	0	1172	0	1311	1426	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			36		5			36			100	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		134.4			121.0			80.0			99.4	
Travel Time (s)		9.7			8.7			5.8			7.2	
Confl. Peds. (#/hr)	31		1	1		31	7		1	1		7
Peak Hour Factor	0.91	0.85	1.00	0.75	0.93	0.95	1.00	1.00	1.00	0.75	1.00	0.88
Heavy Vehicles (%)	13%	1%	0%	0%	1%	2%	0%	0%	0%	6%	0%	10%
Bus Blockages (#/hr)	0	0	0	0	0	7	0	0	0	0	0	0
Adj. Flow (vph)	59	869	43	9	996	57	35	0	2	52	3	100
Shared Lane Traffic (%)												
Lane Group Flow (vph)	59	869	43	9	1053	0	0	37	0	52	103	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	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	0.0	
Detector 1 Position(m)	0.0	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	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	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	0.0	
Detector 1 Queue (s)	0.0	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	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	Perm	NA		Perm	NA		custom	NA	
Protected Phases		2			6			4			4	
Permitted Phases	2		2	6			4			8		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	739	43	7	926	54	35	0	2	39	3	88
Future Volume (vph)	54	739	43	7	926	54	35	0	2	39	3	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0			6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00			1.00		1.00	0.96	
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00			0.99		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99			0.99		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95		0.95	1.00	
Satd. Flow (prot)	1585	1881	1580	1804	1857			1773		1699	1426	
Flt Permitted	0.21	1.00	1.00	0.28	1.00			0.63		0.73	1.00	
Satd. Flow (perm)	343	1881	1580	539	1857			1172		1311	1426	
Peak-hour factor, PHF	0.91	0.85	1.00	0.75	0.93	0.95	1.00	1.00	1.00	0.75	1.00	0.88
Adj. Flow (vph)	59	869	43	9	996	57	35	0	2	52	3	100
RTOR Reduction (vph)	0	0	7	0	1	0	0	33	0	0	90	0
Lane Group Flow (vph)	59	869	36	9	1052	0	0	4	0	52	13	0
Confl. Peds. (#/hr)	31		1	1		31	7		1	1		7
Heavy Vehicles (%)	13%	1%	0%	0%	1%	2%	0%	0%	0%	6%	0%	10%
Bus Blockages (#/hr)	0	0	0	0	0	7	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		custom	NA	
Protected Phases		2			6			4			4	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	95.4	95.4	95.4	95.4	95.4			10.6		10.6	10.6	
Effective Green, g (s)	96.4	96.4	96.4	96.4	96.4			11.6		11.6	11.6	
Actuated g/C Ratio	0.80	0.80	0.80	0.80	0.80			0.10		0.10	0.10	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0			7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	275	1511	1269	432	1491			113		126	137	
v/s Ratio Prot		0.46			c0.57						0.01	
v/s Ratio Perm	0.17		0.02	0.02				0.00		c0.04		
v/c Ratio	0.21	0.58	0.03	0.02	0.71			0.04		0.41	0.09	
Uniform Delay, d1	2.8	4.3	2.4	2.4	5.4			49.1		51.0	49.4	
Progression Factor	0.73	0.70	0.71	0.86	0.45			1.00		1.00	1.00	
Incremental Delay, d2	1.4	1.3	0.0	0.1	2.0			0.1		2.2	0.3	
Delay (s)	3.5	4.3	1.7	2.1	4.4			49.3		53.2	49.7	
Level of Service	A	A	A	A	A			D		D	D	
Approach Delay (s)		4.1			4.4			49.3			50.9	
Approach LOS		A			A			D			D	

Intersection Summary				
HCM 2000 Control Delay	8.2	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.68			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	71.6%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	54	739	43	7	926	35	0	39	3
Future Volume (vph)	54	739	43	7	926	35	0	39	3
Lane Group Flow (vph)	59	869	43	9	1053	0	37	52	103
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	custom	NA
Protected Phases		2			6		4		4
Permitted Phases	2		2	6		4		8	
Detector Phase	2	2	2	6	6	4	4	8	4
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	42.0	42.0	42.0	42.0	42.0	32.0	32.0	32.0	32.0
Total Split (s)	84.0	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%	70.0%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	4.0	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	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	Max	Max	None	None	None	None
v/c Ratio	0.21	0.58	0.03	0.02	0.71		0.25	0.41	0.45
Control Delay	4.0	4.7	0.9	2.6	4.8		19.8	59.9	16.6
Queue Delay	0.0	0.5	0.0	0.0	7.9		0.8	0.0	1.6
Total Delay	4.0	5.2	0.9	2.6	12.7		20.6	59.9	18.2
Queue Length 50th (m)	2.0	30.1	0.2	0.3	31.3		0.2	12.4	0.7
Queue Length 95th (m)	m3.8	38.7	m0.7	m0.6	54.2		10.7	20.6	17.3
Internal Link Dist (m)		110.4			97.0		56.0		75.4
Turn Bay Length (m)	80.0		30.0	44.0				38.0	
Base Capacity (vph)	277	1510	1276	432	1493		320	327	431
Starvation Cap Reductn	0	263	0	0	172		0	0	0
Spillback Cap Reductn	0	53	0	0	402		163	0	207
Storage Cap Reductn	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.21	0.70	0.03	0.02	0.97		0.24	0.16	0.46

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 56 (47%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Elizabeth & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0		29.0	29.0		29.0	29.0	
Total Split (s)	89.0	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%	74.2%		25.8%	25.8%		25.8%	25.8%	
Maximum Green (s)	83.0	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	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0			-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0			5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	Max	Max		None	None		None	None	
Walk Time (s)	20.0	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	11.0		12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	3	3	3	11	11		3	3		28	28	
Act Effct Green (s)	96.4	96.4	96.4	96.4	96.4			17.4		17.4	17.4	
Actuated g/C Ratio	0.80	0.80	0.80	0.80	0.80			0.14		0.14	0.14	
v/c Ratio	0.37	0.52	0.04	0.01	0.77			0.16		0.18	0.29	
Control Delay	6.6	4.1	0.6	4.7	14.1			37.9		44.3	13.0	
Queue Delay	0.0	0.1	0.0	0.0	0.0			0.0		0.0	0.0	
Total Delay	6.6	4.2	0.6	4.7	14.1			37.9		44.3	13.0	
LOS	A	A	A	A	B			D		D	B	
Approach Delay		4.3			14.1			37.9			21.2	
Approach LOS		A			B			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 51 (43%), Referenced to phase 2:EBTL, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 10.8		Intersection LOS: B	
Intersection Capacity Utilization 73.2%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Pearl & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	681	34	3	901	105	25	6	3	23	7	61
Future Volume (vph)	65	681	34	3	901	105	25	6	3	23	7	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		20.0	27.0		0.0	0.0		0.0	16.0		0.0
Storage Lanes	1		1	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.98	1.00	1.00			0.99		0.98	0.98	
Frt			0.850		0.982			0.988			0.862	
Flt Protected	0.950			0.950				0.965		0.950		
Satd. Flow (prot)	1805	1881	1615	1805	1841	0	0	1805	0	1583	1604	0
Flt Permitted	0.153			0.311				0.760		0.735		
Satd. Flow (perm)	291	1881	1580	591	1841	0	0	1419	0	1200	1604	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			27		14			3			80	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		121.0			123.9			37.3			112.8	
Travel Time (s)		8.7			8.9			2.7			8.1	
Confl. Peds. (#/hr)	10		1	1		10	1		8	8		1
Peak Hour Factor	0.75	0.87	0.75	1.00	0.90	0.75	1.00	1.00	1.00	0.75	1.00	0.76
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	14%	0%	0%
Adj. Flow (vph)	87	783	45	3	1001	140	25	6	3	31	7	80
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	783	45	3	1141	0	0	34	0	31	87	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	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	0.0	
Detector 1 Position(m)	0.0	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	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	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	0.0	
Detector 1 Queue (s)	0.0	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	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	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6			4			8		
Detector Phase	2	2	2	6	6		4	4		8	8	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	681	34	3	901	105	25	6	3	23	7	61
Future Volume (vph)	65	681	34	3	901	105	25	6	3	23	7	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0			5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00			1.00		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00		0.98	1.00	
Frt	1.00	1.00	0.85	1.00	0.98			0.99		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96		0.95	1.00	
Satd. Flow (prot)	1805	1881	1580	1804	1840			1801		1550	1604	
Flt Permitted	0.15	1.00	1.00	0.31	1.00			0.76		0.73	1.00	
Satd. Flow (perm)	290	1881	1580	591	1840			1419		1199	1604	
Peak-hour factor, PHF	0.75	0.87	0.75	1.00	0.90	0.75	1.00	1.00	1.00	0.75	1.00	0.76
Adj. Flow (vph)	87	783	45	3	1001	140	25	6	3	31	7	80
RTOR Reduction (vph)	0	0	6	0	3	0	0	3	0	0	69	0
Lane Group Flow (vph)	87	783	39	3	1138	0	0	31	0	31	18	0
Confl. Peds. (#/hr)	10		1	1		10	1		8	8		1
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	14%	0%	0%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	93.2	93.2	93.2	93.2	93.2			14.8		14.8	14.8	
Effective Green, g (s)	94.2	94.2	94.2	94.2	94.2			15.8		15.8	15.8	
Actuated g/C Ratio	0.79	0.79	0.79	0.79	0.79			0.13		0.13	0.13	
Clearance Time (s)	6.0	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	3.0	
Lane Grp Cap (vph)	227	1476	1240	463	1444			186		157	211	
v/s Ratio Prot		0.42			c0.62						0.01	
v/s Ratio Perm	0.30		0.02	0.01				0.02		c0.03		
v/c Ratio	0.38	0.53	0.03	0.01	0.79			0.17		0.20	0.08	
Uniform Delay, d1	4.0	4.8	2.8	2.8	7.3			46.3		46.4	45.7	
Progression Factor	0.40	0.48	0.22	1.00	1.00			0.93		1.00	1.00	
Incremental Delay, d2	4.1	1.2	0.0	0.0	4.4			0.4		0.6	0.2	
Delay (s)	5.7	3.5	0.7	2.8	11.7			43.5		47.1	45.9	
Level of Service	A	A	A	A	B			D		D	D	
Approach Delay (s)		3.5			11.7			43.5			46.2	
Approach LOS		A			B			D			D	

Intersection Summary				
HCM 2000 Control Delay	10.6	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.70			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	73.2%	ICU Level of Service	D	
Analysis Period (min)	15			

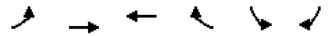
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	65	681	34	3	901	25	6	23	7
Future Volume (vph)	65	681	34	3	901	25	6	23	7
Lane Group Flow (vph)	87	783	45	3	1141	0	34	31	87
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2			6		4		8
Permitted Phases	2		2	6		4		8	
Detector Phase	2	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	8.0
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0	29.0	29.0	29.0	29.0
Total Split (s)	89.0	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%	74.2%	25.8%	25.8%	25.8%	25.8%
Yellow Time (s)	4.0	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	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	Max	Max	None	None	None	None
v/c Ratio	0.37	0.52	0.04	0.01	0.77		0.16	0.18	0.29
Control Delay	6.6	4.1	0.6	4.7	14.1		37.9	44.3	13.0
Queue Delay	0.0	0.1	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	6.6	4.2	0.6	4.7	14.1		37.9	44.3	13.0
Queue Length 50th (m)	2.9	69.9	0.3	0.2	177.6		6.5	6.4	1.4
Queue Length 95th (m)	3.2	22.6	m0.2	1.1	263.1		m15.0	13.0	15.7
Internal Link Dist (m)		97.0			99.9		13.3		88.8
Turn Bay Length (m)	55.0		20.0	27.0				16.0	
Base Capacity (vph)	233	1511	1274	474	1481		309	260	410
Starvation Cap Reductn	0	148	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.37	0.57	0.04	0.01	0.77		0.11	0.12	0.21

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 51 (43%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Pearl & Lakeshore

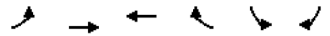




Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	91	617	989	62	18	20
Future Volume (Veh/h)	91	617	989	62	18	20
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.75	0.95	0.91	0.75	1.00	1.00
Hourly flow rate (vph)	121	649	1087	83	18	20
Pedestrians		1			2	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		124				
pX, platoon unblocked					0.85	
vC, conflicting volume	1172				2022	1132
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1172				2111	1132
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	80				53	92
cM capacity (veh/h)	595				39	244

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	121	649	1170	38
Volume Left	121	0	0	18
Volume Right	0	0	83	20
cSH	595	1700	1700	69
Volume to Capacity	0.20	0.38	0.69	0.55
Queue Length 95th (m)	6.0	0.0	0.0	18.4
Control Delay (s)	12.6	0.0	0.0	107.6
Lane LOS	B			F
Approach Delay (s)	2.0		0.0	107.6
Approach LOS				F

Intersection Summary			
Average Delay		2.8	
Intersection Capacity Utilization		74.5%	ICU Level of Service D
Analysis Period (min)		15	



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	91	617	989	62	18	20
Future Volume (vph)	91	617	989	62	18	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	36.0			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	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.990		0.929	
Flt Protected	0.950				0.977	
Satd. Flow (prot)	1770	1863	1847	0	1689	0
Flt Permitted	0.950				0.977	
Satd. Flow (perm)	1770	1863	1847	0	1689	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		123.9	42.7		116.9	
Travel Time (s)		8.9	3.1		8.4	
Confl. Peds. (#/hr)	2			2		1
Peak Hour Factor	0.75	0.95	0.91	0.75	1.00	1.00
Heavy Vehicles (%)	2%	2%	2%	0%	0%	4%
Bus Blockages (#/hr)	0	0	0	4	0	0
Adj. Flow (vph)	121	649	1087	83	18	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	121	649	1170	0	38	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 74.5%			ICU Level of Service D
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	603	31	30	1050	0	39
Future Volume (Veh/h)	603	31	30	1050	0	39
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.90	0.95	0.90	0.95
Hourly flow rate (vph)	635	33	33	1105	0	41
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	167					
pX, platoon unblocked			0.86		0.86	0.86
vC, conflicting volume			668		1822	652
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			528		1877	509
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		100	92
cM capacity (veh/h)			889		65	483

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	668	33	1105	41
Volume Left	0	33	0	0
Volume Right	33	0	0	41
cSH	1700	889	1700	483
Volume to Capacity	0.39	0.04	0.65	0.08
Queue Length 95th (m)	0.0	0.9	0.0	2.2
Control Delay (s)	0.0	9.2	0.0	13.1
Lane LOS		A		B
Approach Delay (s)	0.0	0.3		13.1
Approach LOS				B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	58.6%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	603	31	30	1050	0	39
Future Volume (vph)	603	31	30	1050	0	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	20.0		0.0	0.0
Storage Lanes		0	1		0	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.993					0.865
Flt Protected			0.950			
Satd. Flow (prot)	1850	0	1770	1863	0	1611
Flt Permitted			0.950			
Satd. Flow (perm)	1850	0	1770	1863	0	1611
Link Speed (k/h)	50			50	50	
Link Distance (m)	42.7			96.0	38.8	
Travel Time (s)	3.1			6.9	2.8	
Peak Hour Factor	0.95	0.95	0.90	0.95	0.90	0.95
Adj. Flow (vph)	635	33	33	1105	0	41
Shared Lane Traffic (%)						
Lane Group Flow (vph)	668	0	33	1105	0	41
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	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)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	58.6%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	624	18	22	1079	2	17
Future Volume (Veh/h)	624	18	22	1079	2	17
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	1.00	0.75	0.84	1.00	0.75
Hourly flow rate (vph)	671	18	29	1285	2	23
Pedestrians	1			1	1	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	263					
pX, platoon unblocked			0.88		0.88	0.88
vC, conflicting volume			690		2025	682
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			575		2100	566
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		96	95
cM capacity (veh/h)			882		49	461

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	689	29	1285	25
Volume Left	0	29	0	2
Volume Right	18	0	0	23
cSH	1700	882	1700	275
Volume to Capacity	0.41	0.03	0.76	0.09
Queue Length 95th (m)	0.0	0.8	0.0	2.4
Control Delay (s)	0.0	9.2	0.0	19.4
Lane LOS		A		C
Approach Delay (s)	0.0	0.2		19.4
Approach LOS				C

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	67.1%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	624	18	22	1079	2	17
Future Volume (vph)	624	18	22	1079	2	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	20.0		0.0	0.0
Storage Lanes		0	1		1	0
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.996				0.876	
Flt Protected			0.950		0.996	
Satd. Flow (prot)	1856	0	1805	1881	1658	0
Flt Permitted			0.950		0.996	
Satd. Flow (perm)	1856	0	1805	1881	1658	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	96.0			85.5	39.5	
Travel Time (s)	6.9			6.2	2.8	
Confl. Peds. (#/hr)		1	1		1	1
Peak Hour Factor	0.93	1.00	0.75	0.84	1.00	0.75
Heavy Vehicles (%)	2%	0%	0%	1%	0%	0%
Adj. Flow (vph)	671	18	29	1285	2	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	689	0	29	1285	25	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)		15	25		25	15
Sign Control	Free			Free	Stop	

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

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	28	24	16	90	12	2
Future Volume (Veh/h)	28	24	16	90	12	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.88	0.75	0.76	0.75	1.00
Hourly flow rate (vph)	33	27	21	118	16	2
Pedestrians	2					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	179	19	20			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	179	19	20			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	97	99			
cM capacity (veh/h)	803	1063	1581			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	60	139	18
Volume Left	33	21	0
Volume Right	27	0	2
cSH	902	1581	1700
Volume to Capacity	0.07	0.01	0.01
Queue Length 95th (m)	1.7	0.3	0.0
Control Delay (s)	9.3	1.2	0.0
Lane LOS	A	A	
Approach Delay (s)	9.3	1.2	0.0
Approach LOS	A		

Intersection Summary			
Average Delay		3.3	
Intersection Capacity Utilization		22.3%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	28	24	16	90	12	2
Future Volume (vph)	28	24	16	90	12	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.939				0.985	
Flt Protected	0.973			0.993		
Satd. Flow (prot)	1736	0	0	1844	1823	0
Flt Permitted	0.973			0.993		
Satd. Flow (perm)	1736	0	0	1844	1823	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	105.7			116.9	176.8	
Travel Time (s)	7.6			8.4	12.7	
Confl. Peds. (#/hr)			2			2
Peak Hour Factor	0.85	0.88	0.75	0.76	0.75	1.00
Heavy Vehicles (%)	0%	0%	4%	2%	3%	0%
Adj. Flow (vph)	33	27	21	118	16	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	60	0	0	139	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			Free	Free	

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	223	14	0	743	0	98
Future Volume (Veh/h)	223	14	0	743	0	98
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.95	0.90	0.80	1.00	0.83
Hourly flow rate (vph)	248	15	0	929	0	118
Pedestrians					2	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				56		
pX, platoon unblocked					0.83	
vC, conflicting volume			250		1179	250
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			250		1113	250
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	85
cM capacity (veh/h)			1319		193	792

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	248	15	929	118
Volume Left	0	0	0	0
Volume Right	0	15	0	118
cSH	1700	1700	1700	792
Volume to Capacity	0.15	0.01	0.55	0.15
Queue Length 95th (m)	0.0	0.0	0.0	4.2
Control Delay (s)	0.0	0.0	0.0	10.3
Lane LOS				B
Approach Delay (s)	0.0		0.0	10.3
Approach LOS				B

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	223	14	0	743	0	98
Future Volume (vph)	223	14	0	743	0	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.865
Flt Protected						
Satd. Flow (prot)	1845	1568	0	1881	0	1644
Flt Permitted						
Satd. Flow (perm)	1845	1568	0	1881	0	1644
Link Speed (k/h)	50			50	50	
Link Distance (m)	94.6			56.5	176.8	
Travel Time (s)	6.8			4.1	12.7	
Confl. Peds. (#/hr)		2				
Peak Hour Factor	0.90	0.95	0.90	0.80	1.00	0.83
Heavy Vehicles (%)	3%	3%	1%	1%	0%	0%
Adj. Flow (vph)	248	15	0	929	0	118
Shared Lane Traffic (%)						
Lane Group Flow (vph)	248	15	0	929	0	118
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			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)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Switch Phase						
Minimum Initial (s)		8.0	8.0	8.0	8.0	8.0
Minimum Split (s)		39.0	39.0	39.0	26.0	26.0
Total Split (s)		60.0	60.0	60.0	30.0	30.0
Total Split (%)		66.7%	66.7%	66.7%	33.3%	33.3%
Maximum Green (s)		54.0	54.0	54.0	24.0	24.0
Yellow Time (s)		4.0	4.0	4.0	4.0	4.0
All-Red Time (s)		2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)		5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0
Recall Mode		C-Max	Max	Max	None	None
Walk Time (s)		25.0	25.0	25.0	8.0	8.0
Flash Dont Walk (s)		7.0	7.0	7.0	12.0	12.0
Pedestrian Calls (#/hr)		0	0	0	0	0
Act Effct Green (s)		86.2	86.2	86.2	9.0	9.0
Actuated g/C Ratio		0.96	0.96	0.96	0.10	0.10
v/c Ratio		0.20	0.52	0.11	0.03	0.01
Control Delay		1.0	2.5	0.7	37.2	29.0
Queue Delay		0.0	0.0	0.0	0.0	0.0
Total Delay		1.0	2.5	0.7	37.2	29.0
LOS		A	A	A	D	C
Approach Delay		1.0	2.2		35.8	
Approach LOS		A	A		D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 42 (47%), Referenced to phase 2:EBT, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.52			
Intersection Signal Delay: 2.0		Intersection LOS: A	
Intersection Capacity Utilization 55.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 9: James/New & Martha



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	322	742	132	5	1
Future Volume (vph)	0	322	742	132	5	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			30.0	0.0	0.0
Storage Lanes	0			1	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						0.97
Frt				0.850		0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	1845	1863	1599	1703	1615
Flt Permitted					0.950	
Satd. Flow (perm)	0	1845	1863	1599	1703	1572
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				93		1
Link Speed (k/h)		50	50		50	
Link Distance (m)		56.5	80.2		40.9	
Travel Time (s)		4.1	5.8		2.9	
Confl. Peds. (#/hr)						3
Peak Hour Factor	1.00	0.90	0.80	0.75	1.00	1.00
Heavy Vehicles (%)	3%	3%	2%	1%	6%	0%
Adj. Flow (vph)	0	358	928	176	5	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	358	928	176	5	1
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	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2	1	1	1
Detector Template		Thru	Thru	Right	Left	Right
Leading Detector (m)		10.0	10.0	2.0	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)		0.6	0.6	2.0	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		NA	NA	Perm	Prot	Perm
Protected Phases		2	6		8	
Permitted Phases				6		8
Detector Phase		2	6	6	8	8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	322	742	132	5	1
Future Volume (vph)	0	322	742	132	5	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0	5.0
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes		1.00	1.00	1.00	1.00	0.97
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00
Frt		1.00	1.00	0.85	1.00	0.85
Flt Protected		1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)		1845	1863	1599	1703	1572
Flt Permitted		1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)		1845	1863	1599	1703	1572
Peak-hour factor, PHF	1.00	0.90	0.80	0.75	1.00	1.00
Adj. Flow (vph)	0	358	928	176	5	1
RTOR Reduction (vph)	0	0	0	13	0	1
Lane Group Flow (vph)	0	358	928	163	5	0
Confl. Peds. (#/hr)						3
Heavy Vehicles (%)	3%	3%	2%	1%	6%	0%
Turn Type		NA	NA	Perm	Prot	Perm
Protected Phases		2	6		8	
Permitted Phases				6		8
Actuated Green, G (s)		76.4	76.4	76.4	1.6	1.6
Effective Green, g (s)		77.4	77.4	77.4	2.6	2.6
Actuated g/C Ratio		0.86	0.86	0.86	0.03	0.03
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1586	1602	1375	49	45
v/s Ratio Prot		0.19	c0.50		c0.00	
v/s Ratio Perm				0.10		0.00
v/c Ratio		0.23	0.58	0.12	0.10	0.00
Uniform Delay, d1		1.1	1.8	1.0	42.6	42.4
Progression Factor		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.3	1.5	0.2	0.9	0.0
Delay (s)		1.4	3.3	1.2	43.5	42.4
Level of Service		A	A	A	D	D
Approach Delay (s)		1.4	3.0		43.3	
Approach LOS		A	A		D	

Intersection Summary			
HCM 2000 Control Delay	2.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	55.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	WBR	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	322	742	132	5	1
Future Volume (vph)	322	742	132	5	1
Lane Group Flow (vph)	358	928	176	5	1
Turn Type	NA	NA	Perm	Prot	Perm
Protected Phases	2	6		8	
Permitted Phases			6		8
Detector Phase	2	6	6	8	8
Switch Phase					
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	39.0	39.0	39.0	26.0	26.0
Total Split (s)	60.0	60.0	60.0	30.0	30.0
Total Split (%)	66.7%	66.7%	66.7%	33.3%	33.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	Max	Max	None	None
v/c Ratio	0.20	0.52	0.11	0.03	0.01
Control Delay	1.0	2.5	0.7	37.2	29.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	1.0	2.5	0.7	37.2	29.0
Queue Length 50th (m)	0.0	0.0	0.0	0.9	0.0
Queue Length 95th (m)	19.8	62.1	4.5	4.2	1.5
Internal Link Dist (m)	32.5	56.2		16.9	
Turn Bay Length (m)			30.0		
Base Capacity (vph)	1767	1784	1535	473	437
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.20	0.52	0.11	0.01	0.00

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 42 (47%), Referenced to phase 2:EBT, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 9: James/New & Martha



Future Total Traffic Capacity - Sensitivity Analysis
PM Peak Hour
Offset Adjustment

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	1	6		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)	10.0	34.0		34.0	34.0		39.0	39.0		39.0	39.0	
Total Split (s)	11.0	79.0		68.0	68.0		41.0	41.0		41.0	41.0	
Total Split (%)	9.2%	65.8%		56.7%	56.7%		34.2%	34.2%		34.2%	34.2%	
Maximum Green (s)	8.0	73.0		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)	-1.0	-1.0		-1.0	-1.0			-1.0		-1.0	-1.0	
Total Lost Time (s)	2.0	5.0		5.0	5.0			6.0		6.0	6.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Max		C-Max	C-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)	86.4	83.4		68.7	68.7			25.6		25.6	25.6	
Actuated g/C Ratio	0.72	0.70		0.57	0.57			0.21		0.21	0.21	
v/c Ratio	0.75	0.64		0.01	1.13			0.10		0.66	0.86	
Control Delay	45.9	14.6		14.0	92.0			36.8		53.0	41.0	
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Delay	45.9	14.6		14.0	92.0			36.8		53.0	41.0	
LOS	D	B		B	F			D		D	D	
Approach Delay		20.4			91.8			36.8			44.8	
Approach LOS		C			F			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 51 (43%), Referenced to phase 2:WBTL, Start of Green			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.13			
Intersection Signal Delay: 55.7		Intersection LOS: E	
Intersection Capacity Utilization 105.0%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 1: Brant & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	171	691	12	3	913	142	6	0	0	152	11	369
Future Volume (vph)	171	691	12	3	913	142	6	0	0	152	11	369
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	54.0		0.0	24.0		0.0	0.0		0.0	0.0		24.0
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		0.99	0.99			0.98		0.94	0.92	
Frt		0.998			0.976						0.856	
Flt Protected	0.950			0.950				0.950		0.950		
Satd. Flow (prot)	1787	1857	0	1805	1800	0	0	1805	0	1805	1489	0
Flt Permitted	0.056			0.296				0.156		0.754		
Satd. Flow (perm)	105	1857	0	555	1800	0	0	289	0	1350	1489	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			12						196	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		99.8			134.4			30.7			59.8	
Travel Time (s)		7.2			9.7			2.2			4.3	
Confl. Peds. (#/hr)	23		33	33		23	31		30	30		31
Peak Hour Factor	0.91	0.85	0.92	1.00	0.93	0.75	1.00	1.00	1.00	0.80	0.75	0.94
Heavy Vehicles (%)	1%	2%	0%	0%	2%	1%	0%	0%	0%	0%	0%	1%
Bus Blockages (#/hr)	0	0	0	0	0	16	0	0	0	0	0	0
Adj. Flow (vph)	188	813	13	3	982	189	6	0	0	190	15	393
Shared Lane Traffic (%)												
Lane Group Flow (vph)	188	826	0	3	1171	0	0	6	0	190	408	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	6			2			4			4	
Permitted Phases	6			2			4			4		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	171	691	12	3	913	142	6	0	0	152	11	369
Future Volume (vph)	171	691	12	3	913	142	6	0	0	152	11	369
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	5.0		5.0	5.0			6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99			1.00		1.00	0.92	
Flpb, ped/bikes	1.00	1.00		0.98	1.00			0.98		0.94	1.00	
Frt	1.00	1.00		1.00	0.98			1.00		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00			0.95		0.95	1.00	
Satd. Flow (prot)	1787	1856		1772	1800			1765		1701	1488	
Flt Permitted	0.06	1.00		0.30	1.00			0.16		0.75	1.00	
Satd. Flow (perm)	106	1856		552	1800			290		1350	1488	
Peak-hour factor, PHF	0.91	0.85	0.92	1.00	0.93	0.75	1.00	1.00	1.00	0.80	0.75	0.94
Adj. Flow (vph)	188	813	13	3	982	189	6	0	0	190	15	393
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	0	0	154	0
Lane Group Flow (vph)	188	826	0	3	1166	0	0	6	0	190	254	0
Confl. Peds. (#/hr)	23		33	33		23	31		30	30		31
Heavy Vehicles (%)	1%	2%	0%	0%	2%	1%	0%	0%	0%	0%	0%	1%
Bus Blockages (#/hr)	0	0	0	0	0	16	0	0	0	0	0	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2			4			4		
Actuated Green, G (s)	82.4	82.4		67.8	67.8			24.6		24.6	24.6	
Effective Green, g (s)	83.4	83.4		68.8	68.8			25.6		25.6	25.6	
Actuated g/C Ratio	0.70	0.70		0.57	0.57			0.21		0.21	0.21	
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)	250	1289		316	1032			61		288	317	
v/s Ratio Prot	c0.08	0.44			c0.65						c0.17	
v/s Ratio Perm	0.44			0.01				0.02		0.14		
v/c Ratio	0.75	0.64		0.01	1.13			0.10		0.66	0.80	
Uniform Delay, d1	37.4	10.1		11.0	25.6			37.9		43.2	44.8	
Progression Factor	1.00	1.00		1.01	0.80			1.00		1.00	1.00	
Incremental Delay, d2	12.0	2.5		0.0	68.5			0.7		5.4	13.5	
Delay (s)	49.4	12.5		11.1	89.1			38.6		48.6	58.3	
Level of Service	D	B		B	F			D		D	E	
Approach Delay (s)		19.4			88.9			38.6			55.2	
Approach LOS		B			F			D			E	

Intersection Summary			
HCM 2000 Control Delay	56.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	105.0%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	171	691	3	913	6	0	152	11
Future Volume (vph)	171	691	3	913	6	0	152	11
Lane Group Flow (vph)	188	826	3	1171	0	6	190	408
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	1	6		2		4		4
Permitted Phases	6		2		4		4	
Detector Phase	1	6	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)	10.0	34.0	34.0	34.0	39.0	39.0	39.0	39.0
Total Split (s)	11.0	79.0	68.0	68.0	41.0	41.0	41.0	41.0
Total Split (%)	9.2%	65.8%	56.7%	56.7%	34.2%	34.2%	34.2%	34.2%
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)	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	2.0	5.0	5.0	5.0		6.0	6.0	6.0
Lead/Lag	Lead		Lag	Lag				
Lead-Lag Optimize?	Yes		Yes	Yes				
Recall Mode	None	Max	C-Max	C-Max	None	None	None	None
v/c Ratio	0.75	0.64	0.01	1.13		0.10	0.66	0.86
Control Delay	45.9	14.6	14.0	92.0		36.8	53.0	41.0
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	45.9	14.6	14.0	92.0		36.8	53.0	41.0
Queue Length 50th (m)	27.4	102.6	0.2	~349.1		1.2	43.2	53.6
Queue Length 95th (m)	#79.9	162.9	m0.6	#441.5		4.8	54.2	58.0
Internal Link Dist (m)		75.8		110.4		6.7		35.8
Turn Bay Length (m)	54.0		24.0					
Base Capacity (vph)	252	1290	317	1036		84	393	573
Starvation Cap Reductn	0	0	0	0		0	0	0
Spillback Cap Reductn	0	2	0	0		0	0	0
Storage Cap Reductn	0	0	0	0		0	0	0
Reduced v/c Ratio	0.75	0.64	0.01	1.13		0.07	0.48	0.71

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 51 (43%), Referenced to phase 2:WBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
~ 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Brant & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	2	2	2	6	6		4	4		8	4	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	42.0	42.0	42.0	42.0	42.0		32.0	32.0		32.0	32.0	
Total Split (s)	84.0	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%	70.0%		30.0%	30.0%		30.0%	30.0%	
Maximum Green (s)	77.0	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	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0			-1.0		-1.0	-1.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0			6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	Max	Max		None	None		None	None	
Walk Time (s)	20.0	20.0	20.0	20.0	20.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	14.0	14.0	14.0	14.0	14.0		16.0	16.0		16.0	16.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)	96.4	96.4	96.4	96.4	96.4			11.6		11.6	11.6	
Actuated g/C Ratio	0.80	0.80	0.80	0.80	0.80			0.10		0.10	0.10	
v/c Ratio	0.21	0.58	0.03	0.02	0.71			0.25		0.41	0.45	
Control Delay	4.0	4.7	0.9	2.1	4.2			19.8		59.9	16.6	
Queue Delay	0.0	0.5	0.0	0.0	6.8			0.7		0.0	1.4	
Total Delay	4.0	5.2	0.9	2.1	10.9			20.5		59.9	18.0	
LOS	A	A	A	A	B			C		E	B	
Approach Delay		4.9			10.9			20.5			32.0	
Approach LOS		A			B			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 56 (47%), Referenced to phase 2:EBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 9.9		Intersection LOS: A	
Intersection Capacity Utilization 71.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Elizabeth & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	739	43	7	926	54	35	0	2	39	3	88
Future Volume (vph)	54	739	43	7	926	54	35	0	2	39	3	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	80.0		30.0	44.0		0.0	0.0		0.0	38.0		0.0
Storage Lanes	1		1	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.98	1.00	1.00			0.98		1.00	0.96	
Frt			0.850		0.992			0.993			0.854	
Flt Protected	0.950			0.950				0.955		0.950		
Satd. Flow (prot)	1597	1881	1615	1805	1858	0	0	1800	0	1703	1426	0
Flt Permitted	0.205			0.284				0.631		0.733		
Satd. Flow (perm)	345	1881	1580	539	1858	0	0	1172	0	1311	1426	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			36		5			36			100	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		134.4			121.0			80.0			99.4	
Travel Time (s)		9.7			8.7			5.8			7.2	
Confl. Peds. (#/hr)	31		1	1		31	7		1	1		7
Peak Hour Factor	0.91	0.85	1.00	0.75	0.93	0.95	1.00	1.00	1.00	0.75	1.00	0.88
Heavy Vehicles (%)	13%	1%	0%	0%	1%	2%	0%	0%	0%	6%	0%	10%
Bus Blockages (#/hr)	0	0	0	0	0	7	0	0	0	0	0	0
Adj. Flow (vph)	59	869	43	9	996	57	35	0	2	52	3	100
Shared Lane Traffic (%)												
Lane Group Flow (vph)	59	869	43	9	1053	0	0	37	0	52	103	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	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	0.0	
Detector 1 Position(m)	0.0	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	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	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	0.0	
Detector 1 Queue (s)	0.0	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	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	Perm	NA		Perm	NA		custom	NA	
Protected Phases		2			6			4			4	
Permitted Phases	2		2	6			4			8		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	739	43	7	926	54	35	0	2	39	3	88
Future Volume (vph)	54	739	43	7	926	54	35	0	2	39	3	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0			6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00			1.00		1.00	0.96	
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00			0.99		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99			0.99		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95		0.95	1.00	
Satd. Flow (prot)	1585	1881	1580	1804	1857			1773		1699	1426	
Flt Permitted	0.21	1.00	1.00	0.28	1.00			0.63		0.73	1.00	
Satd. Flow (perm)	343	1881	1580	539	1857			1172		1311	1426	
Peak-hour factor, PHF	0.91	0.85	1.00	0.75	0.93	0.95	1.00	1.00	1.00	0.75	1.00	0.88
Adj. Flow (vph)	59	869	43	9	996	57	35	0	2	52	3	100
RTOR Reduction (vph)	0	0	7	0	1	0	0	33	0	0	90	0
Lane Group Flow (vph)	59	869	36	9	1052	0	0	4	0	52	13	0
Confl. Peds. (#/hr)	31		1	1		31	7		1	1		7
Heavy Vehicles (%)	13%	1%	0%	0%	1%	2%	0%	0%	0%	6%	0%	10%
Bus Blockages (#/hr)	0	0	0	0	0	7	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		custom	NA	
Protected Phases		2			6			4			4	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	95.4	95.4	95.4	95.4	95.4			10.6		10.6	10.6	
Effective Green, g (s)	96.4	96.4	96.4	96.4	96.4			11.6		11.6	11.6	
Actuated g/C Ratio	0.80	0.80	0.80	0.80	0.80			0.10		0.10	0.10	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0			7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	275	1511	1269	432	1491			113		126	137	
v/s Ratio Prot		0.46			c0.57						0.01	
v/s Ratio Perm	0.17		0.02	0.02				0.00		c0.04		
v/c Ratio	0.21	0.58	0.03	0.02	0.71			0.04		0.41	0.09	
Uniform Delay, d1	2.8	4.3	2.4	2.4	5.4			49.1		51.0	49.4	
Progression Factor	0.73	0.70	0.71	0.68	0.36			1.00		1.00	1.00	
Incremental Delay, d2	1.4	1.3	0.0	0.1	2.0			0.1		2.2	0.3	
Delay (s)	3.5	4.3	1.7	1.7	3.9			49.3		53.2	49.7	
Level of Service	A	A	A	A	A			D		D	D	
Approach Delay (s)		4.1			3.9			49.3			50.9	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	8.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	54	739	43	7	926	35	0	39	3
Future Volume (vph)	54	739	43	7	926	35	0	39	3
Lane Group Flow (vph)	59	869	43	9	1053	0	37	52	103
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	custom	NA
Protected Phases		2			6		4		4
Permitted Phases	2		2	6		4		8	
Detector Phase	2	2	2	6	6	4	4	8	4
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	42.0	42.0	42.0	42.0	42.0	32.0	32.0	32.0	32.0
Total Split (s)	84.0	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%	70.0%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	4.0	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	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	Max	Max	None	None	None	None
v/c Ratio	0.21	0.58	0.03	0.02	0.71		0.25	0.41	0.45
Control Delay	4.0	4.7	0.9	2.1	4.2		19.8	59.9	16.6
Queue Delay	0.0	0.5	0.0	0.0	6.8		0.7	0.0	1.4
Total Delay	4.0	5.2	0.9	2.1	10.9		20.5	59.9	18.0
Queue Length 50th (m)	2.0	30.1	0.2	0.2	22.7		0.2	12.4	0.7
Queue Length 95th (m)	m3.8	38.7	m0.7	m0.4	40.7		10.7	20.6	17.3
Internal Link Dist (m)		110.4			97.0		56.0		75.4
Turn Bay Length (m)	80.0		30.0	44.0				38.0	
Base Capacity (vph)	277	1510	1276	432	1493		320	327	431
Starvation Cap Reductn	0	263	0	0	172		0	0	0
Spillback Cap Reductn	0	14	0	0	391		156	0	198
Storage Cap Reductn	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.21	0.70	0.03	0.02	0.96		0.23	0.16	0.44

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 56 (47%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Elizabeth & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0		29.0	29.0		29.0	29.0	
Total Split (s)	89.0	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%	74.2%		25.8%	25.8%		25.8%	25.8%	
Maximum Green (s)	83.0	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	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0			-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0			5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	Max	Max		None	None		None	None	
Walk Time (s)	20.0	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	11.0		12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	3	3	3	11	11		3	3		28	28	
Act Effct Green (s)	96.4	96.4	96.4	96.4	96.4			17.4		17.4	17.4	
Actuated g/C Ratio	0.80	0.80	0.80	0.80	0.80			0.14		0.14	0.14	
v/c Ratio	0.37	0.52	0.04	0.01	0.77			0.16		0.18	0.29	
Control Delay	5.9	3.2	0.6	4.7	14.1			38.0		44.3	13.0	
Queue Delay	0.0	0.1	0.0	0.0	0.0			0.0		0.0	0.0	
Total Delay	5.9	3.4	0.6	4.7	14.1			38.0		44.3	13.0	
LOS	A	A	A	A	B			D		D	B	
Approach Delay		3.5			14.1			38.0			21.2	
Approach LOS		A			B			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 47 (39%), Referenced to phase 2:EBTL, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 10.4		Intersection LOS: B	
Intersection Capacity Utilization 73.2%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Pearl & Lakeshore



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	681	34	3	901	105	25	6	3	23	7	61
Future Volume (vph)	65	681	34	3	901	105	25	6	3	23	7	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		20.0	27.0		0.0	0.0		0.0	16.0		0.0
Storage Lanes	1		1	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.98	1.00	1.00			0.99		0.98	0.98	
Frt			0.850		0.982			0.988			0.862	
Flt Protected	0.950			0.950				0.965		0.950		
Satd. Flow (prot)	1805	1881	1615	1805	1841	0	0	1805	0	1583	1604	0
Flt Permitted	0.153			0.311				0.760		0.735		
Satd. Flow (perm)	291	1881	1580	591	1841	0	0	1419	0	1200	1604	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			27		14			3			80	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		121.0			123.9			37.3			112.8	
Travel Time (s)		8.7			8.9			2.7			8.1	
Confl. Peds. (#/hr)	10		1	1		10	1		8	8		1
Peak Hour Factor	0.75	0.87	0.75	1.00	0.90	0.75	1.00	1.00	1.00	0.75	1.00	0.76
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	14%	0%	0%
Adj. Flow (vph)	87	783	45	3	1001	140	25	6	3	31	7	80
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	783	45	3	1141	0	0	34	0	31	87	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	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	0.0	
Detector 1 Position(m)	0.0	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	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	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	0.0	
Detector 1 Queue (s)	0.0	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	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	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6			4			8		
Detector Phase	2	2	2	6	6		4	4		8	8	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	681	34	3	901	105	25	6	3	23	7	61
Future Volume (vph)	65	681	34	3	901	105	25	6	3	23	7	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0			5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00			1.00		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00		0.98	1.00	
Frt	1.00	1.00	0.85	1.00	0.98			0.99		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96		0.95	1.00	
Satd. Flow (prot)	1805	1881	1580	1804	1840			1801		1550	1604	
Flt Permitted	0.15	1.00	1.00	0.31	1.00			0.76		0.73	1.00	
Satd. Flow (perm)	290	1881	1580	591	1840			1419		1199	1604	
Peak-hour factor, PHF	0.75	0.87	0.75	1.00	0.90	0.75	1.00	1.00	1.00	0.75	1.00	0.76
Adj. Flow (vph)	87	783	45	3	1001	140	25	6	3	31	7	80
RTOR Reduction (vph)	0	0	6	0	3	0	0	3	0	0	69	0
Lane Group Flow (vph)	87	783	39	3	1138	0	0	31	0	31	18	0
Confl. Peds. (#/hr)	10		1	1		10	1		8	8		1
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	14%	0%	0%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	93.2	93.2	93.2	93.2	93.2			14.8		14.8	14.8	
Effective Green, g (s)	94.2	94.2	94.2	94.2	94.2			15.8		15.8	15.8	
Actuated g/C Ratio	0.79	0.79	0.79	0.79	0.79			0.13		0.13	0.13	
Clearance Time (s)	6.0	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	3.0	
Lane Grp Cap (vph)	227	1476	1240	463	1444			186		157	211	
v/s Ratio Prot		0.42			c0.62						0.01	
v/s Ratio Perm	0.30		0.02	0.01				0.02		c0.03		
v/c Ratio	0.38	0.53	0.03	0.01	0.79			0.17		0.20	0.08	
Uniform Delay, d1	4.0	4.8	2.8	2.8	7.3			46.3		46.4	45.7	
Progression Factor	0.31	0.34	0.20	1.00	1.00			0.93		1.00	1.00	
Incremental Delay, d2	4.1	1.2	0.0	0.0	4.4			0.4		0.6	0.2	
Delay (s)	5.3	2.8	0.6	2.8	11.7			43.6		47.1	45.9	
Level of Service	A	A	A	A	B			D		D	D	
Approach Delay (s)		2.9			11.7			43.6			46.2	
Approach LOS		A			B			D			D	

Intersection Summary				
HCM 2000 Control Delay	10.4	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.70			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	73.2%	ICU Level of Service	D	
Analysis Period (min)	15			

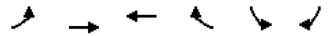
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	65	681	34	3	901	25	6	23	7
Future Volume (vph)	65	681	34	3	901	25	6	23	7
Lane Group Flow (vph)	87	783	45	3	1141	0	34	31	87
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2			6		4		8
Permitted Phases	2		2	6		4		8	
Detector Phase	2	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	8.0
Minimum Split (s)	38.0	38.0	38.0	38.0	38.0	29.0	29.0	29.0	29.0
Total Split (s)	89.0	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%	74.2%	25.8%	25.8%	25.8%	25.8%
Yellow Time (s)	4.0	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	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	Max	Max	None	None	None	None
v/c Ratio	0.37	0.52	0.04	0.01	0.77		0.16	0.18	0.29
Control Delay	5.9	3.2	0.6	4.7	14.1		38.0	44.3	13.0
Queue Delay	0.0	0.1	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	5.9	3.4	0.6	4.7	14.1		38.0	44.3	13.0
Queue Length 50th (m)	2.9	25.8	0.0	0.2	177.6		6.5	6.4	1.4
Queue Length 95th (m)	3.5	24.7	m0.2	1.1	263.1		m14.9	13.0	15.7
Internal Link Dist (m)		97.0			99.9		13.3		88.8
Turn Bay Length (m)	55.0		20.0	27.0				16.0	
Base Capacity (vph)	233	1511	1274	474	1481		309	260	410
Starvation Cap Reductn	0	148	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.37	0.57	0.04	0.01	0.77		0.11	0.12	0.21

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 47 (39%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Pearl & Lakeshore

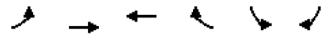




Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	91	617	989	62	18	20
Future Volume (Veh/h)	91	617	989	62	18	20
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.75	0.95	0.91	0.75	1.00	1.00
Hourly flow rate (vph)	121	649	1087	83	18	20
Pedestrians		1			2	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		124				
pX, platoon unblocked					0.85	
vC, conflicting volume	1172				2022	1132
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1172				2111	1132
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	80				53	92
cM capacity (veh/h)	595				39	244

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	121	649	1170	38
Volume Left	121	0	0	18
Volume Right	0	0	83	20
cSH	595	1700	1700	69
Volume to Capacity	0.20	0.38	0.69	0.55
Queue Length 95th (m)	6.0	0.0	0.0	18.4
Control Delay (s)	12.6	0.0	0.0	107.6
Lane LOS	B			F
Approach Delay (s)	2.0		0.0	107.6
Approach LOS				F

Intersection Summary			
Average Delay		2.8	
Intersection Capacity Utilization		74.5%	ICU Level of Service D
Analysis Period (min)		15	



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	91	617	989	62	18	20
Future Volume (vph)	91	617	989	62	18	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	36.0			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	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.990		0.929	
Flt Protected	0.950				0.977	
Satd. Flow (prot)	1770	1863	1847	0	1689	0
Flt Permitted	0.950				0.977	
Satd. Flow (perm)	1770	1863	1847	0	1689	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		123.9	42.7		116.9	
Travel Time (s)		8.9	3.1		8.4	
Confl. Peds. (#/hr)	2			2		1
Peak Hour Factor	0.75	0.95	0.91	0.75	1.00	1.00
Heavy Vehicles (%)	2%	2%	2%	0%	0%	4%
Bus Blockages (#/hr)	0	0	0	4	0	0
Adj. Flow (vph)	121	649	1087	83	18	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	121	649	1170	0	38	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 74.5%			ICU Level of Service D
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	603	31	30	1050	0	39
Future Volume (Veh/h)	603	31	30	1050	0	39
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.90	0.95	0.90	0.95
Hourly flow rate (vph)	635	33	33	1105	0	41
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	167					
pX, platoon unblocked			0.86		0.86	0.86
vC, conflicting volume			668		1822	652
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			528		1877	509
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		100	92
cM capacity (veh/h)			889		65	483

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	668	33	1105	41
Volume Left	0	33	0	0
Volume Right	33	0	0	41
cSH	1700	889	1700	483
Volume to Capacity	0.39	0.04	0.65	0.08
Queue Length 95th (m)	0.0	0.9	0.0	2.2
Control Delay (s)	0.0	9.2	0.0	13.1
Lane LOS		A		B
Approach Delay (s)	0.0	0.3		13.1
Approach LOS				B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	58.6%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	603	31	30	1050	0	39
Future Volume (vph)	603	31	30	1050	0	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	20.0		0.0	0.0
Storage Lanes		0	1		0	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.993					0.865
Flt Protected			0.950			
Satd. Flow (prot)	1850	0	1770	1863	0	1611
Flt Permitted			0.950			
Satd. Flow (perm)	1850	0	1770	1863	0	1611
Link Speed (k/h)	50			50	50	
Link Distance (m)	42.7			96.0	38.8	
Travel Time (s)	3.1			6.9	2.8	
Peak Hour Factor	0.95	0.95	0.90	0.95	0.90	0.95
Adj. Flow (vph)	635	33	33	1105	0	41
Shared Lane Traffic (%)						
Lane Group Flow (vph)	668	0	33	1105	0	41
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	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)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	58.6%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	624	18	22	1079	2	17
Future Volume (Veh/h)	624	18	22	1079	2	17
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	1.00	0.75	0.84	1.00	0.75
Hourly flow rate (vph)	671	18	29	1285	2	23
Pedestrians	1			1	1	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	263					
pX, platoon unblocked			0.88		0.88	0.88
vC, conflicting volume			690		2025	682
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			575		2100	566
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		96	95
cM capacity (veh/h)			882		49	461

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	689	29	1285	25
Volume Left	0	29	0	2
Volume Right	18	0	0	23
cSH	1700	882	1700	275
Volume to Capacity	0.41	0.03	0.76	0.09
Queue Length 95th (m)	0.0	0.8	0.0	2.4
Control Delay (s)	0.0	9.2	0.0	19.4
Lane LOS		A		C
Approach Delay (s)	0.0	0.2		19.4
Approach LOS				C

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	67.1%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	624	18	22	1079	2	17
Future Volume (vph)	624	18	22	1079	2	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	20.0		0.0	0.0
Storage Lanes		0	1		1	0
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.996				0.876	
Flt Protected			0.950		0.996	
Satd. Flow (prot)	1856	0	1805	1881	1658	0
Flt Permitted			0.950		0.996	
Satd. Flow (perm)	1856	0	1805	1881	1658	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	96.0			85.5	39.5	
Travel Time (s)	6.9			6.2	2.8	
Confl. Peds. (#/hr)		1	1		1	1
Peak Hour Factor	0.93	1.00	0.75	0.84	1.00	0.75
Heavy Vehicles (%)	2%	0%	0%	1%	0%	0%
Adj. Flow (vph)	671	18	29	1285	2	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	689	0	29	1285	25	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)		15	25		25	15
Sign Control	Free			Free	Stop	

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

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	28	24	16	90	12	2
Future Volume (Veh/h)	28	24	16	90	12	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.88	0.75	0.76	0.75	1.00
Hourly flow rate (vph)	33	27	21	118	16	2
Pedestrians	2					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	179	19	20			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	179	19	20			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	97	99			
cM capacity (veh/h)	803	1063	1581			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	60	139	18
Volume Left	33	21	0
Volume Right	27	0	2
cSH	902	1581	1700
Volume to Capacity	0.07	0.01	0.01
Queue Length 95th (m)	1.7	0.3	0.0
Control Delay (s)	9.3	1.2	0.0
Lane LOS	A	A	
Approach Delay (s)	9.3	1.2	0.0
Approach LOS	A		

Intersection Summary			
Average Delay		3.3	
Intersection Capacity Utilization		22.3%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	28	24	16	90	12	2
Future Volume (vph)	28	24	16	90	12	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.939				0.985	
Flt Protected	0.973			0.993		
Satd. Flow (prot)	1736	0	0	1844	1823	0
Flt Permitted	0.973			0.993		
Satd. Flow (perm)	1736	0	0	1844	1823	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	105.7			116.9	176.8	
Travel Time (s)	7.6			8.4	12.7	
Confl. Peds. (#/hr)			2			2
Peak Hour Factor	0.85	0.88	0.75	0.76	0.75	1.00
Heavy Vehicles (%)	0%	0%	4%	2%	3%	0%
Adj. Flow (vph)	33	27	21	118	16	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	60	0	0	139	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			Free	Free	

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	223	14	0	743	0	98
Future Volume (Veh/h)	223	14	0	743	0	98
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.95	0.90	0.80	1.00	0.83
Hourly flow rate (vph)	248	15	0	929	0	118
Pedestrians					2	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				56		
pX, platoon unblocked					0.83	
vC, conflicting volume			250		1179	250
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			250		1113	250
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	85
cM capacity (veh/h)			1319		193	792

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	248	15	929	118
Volume Left	0	0	0	0
Volume Right	0	15	0	118
cSH	1700	1700	1700	792
Volume to Capacity	0.15	0.01	0.55	0.15
Queue Length 95th (m)	0.0	0.0	0.0	4.2
Control Delay (s)	0.0	0.0	0.0	10.3
Lane LOS				B
Approach Delay (s)	0.0		0.0	10.3
Approach LOS				B

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	223	14	0	743	0	98
Future Volume (vph)	223	14	0	743	0	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.865
Flt Protected						
Satd. Flow (prot)	1845	1568	0	1881	0	1644
Flt Permitted						
Satd. Flow (perm)	1845	1568	0	1881	0	1644
Link Speed (k/h)	50			50	50	
Link Distance (m)	94.6			56.5	176.8	
Travel Time (s)	6.8			4.1	12.7	
Confl. Peds. (#/hr)		2				
Peak Hour Factor	0.90	0.95	0.90	0.80	1.00	0.83
Heavy Vehicles (%)	3%	3%	1%	1%	0%	0%
Adj. Flow (vph)	248	15	0	929	0	118
Shared Lane Traffic (%)						
Lane Group Flow (vph)	248	15	0	929	0	118
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			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)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Switch Phase						
Minimum Initial (s)		8.0	8.0	8.0	8.0	8.0
Minimum Split (s)		39.0	39.0	39.0	26.0	26.0
Total Split (s)		60.0	60.0	60.0	30.0	30.0
Total Split (%)		66.7%	66.7%	66.7%	33.3%	33.3%
Maximum Green (s)		54.0	54.0	54.0	24.0	24.0
Yellow Time (s)		4.0	4.0	4.0	4.0	4.0
All-Red Time (s)		2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)		5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0
Recall Mode		C-Max	Max	Max	None	None
Walk Time (s)		25.0	25.0	25.0	8.0	8.0
Flash Dont Walk (s)		7.0	7.0	7.0	12.0	12.0
Pedestrian Calls (#/hr)		0	0	0	0	0
Act Effct Green (s)		86.2	86.2	86.2	9.0	9.0
Actuated g/C Ratio		0.96	0.96	0.96	0.10	0.10
v/c Ratio		0.20	0.52	0.11	0.03	0.01
Control Delay		1.0	2.5	0.7	37.2	29.0
Queue Delay		0.0	0.0	0.0	0.0	0.0
Total Delay		1.0	2.5	0.7	37.2	29.0
LOS		A	A	A	D	C
Approach Delay		1.0	2.2		35.8	
Approach LOS		A	A		D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 42 (47%), Referenced to phase 2:EBT, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.52			
Intersection Signal Delay: 2.0		Intersection LOS: A	
Intersection Capacity Utilization 55.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 9: James/New & Martha



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	322	742	132	5	1
Future Volume (vph)	0	322	742	132	5	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			30.0	0.0	0.0
Storage Lanes	0			1	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						0.97
Frt				0.850		0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	1845	1863	1599	1703	1615
Flt Permitted					0.950	
Satd. Flow (perm)	0	1845	1863	1599	1703	1572
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				93		1
Link Speed (k/h)		50	50		50	
Link Distance (m)		56.5	80.2		40.9	
Travel Time (s)		4.1	5.8		2.9	
Confl. Peds. (#/hr)						3
Peak Hour Factor	1.00	0.90	0.80	0.75	1.00	1.00
Heavy Vehicles (%)	3%	3%	2%	1%	6%	0%
Adj. Flow (vph)	0	358	928	176	5	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	358	928	176	5	1
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	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2	1	1	1
Detector Template		Thru	Thru	Right	Left	Right
Leading Detector (m)		10.0	10.0	2.0	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)		0.6	0.6	2.0	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		NA	NA	Perm	Prot	Perm
Protected Phases		2	6		8	
Permitted Phases				6		8
Detector Phase		2	6	6	8	8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	322	742	132	5	1
Future Volume (vph)	0	322	742	132	5	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0	5.0
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes		1.00	1.00	1.00	1.00	0.97
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00
Frt		1.00	1.00	0.85	1.00	0.85
Flt Protected		1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)		1845	1863	1599	1703	1572
Flt Permitted		1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)		1845	1863	1599	1703	1572
Peak-hour factor, PHF	1.00	0.90	0.80	0.75	1.00	1.00
Adj. Flow (vph)	0	358	928	176	5	1
RTOR Reduction (vph)	0	0	0	13	0	1
Lane Group Flow (vph)	0	358	928	163	5	0
Confl. Peds. (#/hr)						3
Heavy Vehicles (%)	3%	3%	2%	1%	6%	0%
Turn Type		NA	NA	Perm	Prot	Perm
Protected Phases		2	6		8	
Permitted Phases				6		8
Actuated Green, G (s)		76.4	76.4	76.4	1.6	1.6
Effective Green, g (s)		77.4	77.4	77.4	2.6	2.6
Actuated g/C Ratio		0.86	0.86	0.86	0.03	0.03
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1586	1602	1375	49	45
v/s Ratio Prot		0.19	c0.50		c0.00	
v/s Ratio Perm				0.10		0.00
v/c Ratio		0.23	0.58	0.12	0.10	0.00
Uniform Delay, d1		1.1	1.8	1.0	42.6	42.4
Progression Factor		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.3	1.5	0.2	0.9	0.0
Delay (s)		1.4	3.3	1.2	43.5	42.4
Level of Service		A	A	A	D	D
Approach Delay (s)		1.4	3.0		43.3	
Approach LOS		A	A		D	

Intersection Summary			
HCM 2000 Control Delay	2.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	55.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	WBR	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	322	742	132	5	1
Future Volume (vph)	322	742	132	5	1
Lane Group Flow (vph)	358	928	176	5	1
Turn Type	NA	NA	Perm	Prot	Perm
Protected Phases	2	6		8	
Permitted Phases			6		8
Detector Phase	2	6	6	8	8
Switch Phase					
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	39.0	39.0	39.0	26.0	26.0
Total Split (s)	60.0	60.0	60.0	30.0	30.0
Total Split (%)	66.7%	66.7%	66.7%	33.3%	33.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	Max	Max	None	None
v/c Ratio	0.20	0.52	0.11	0.03	0.01
Control Delay	1.0	2.5	0.7	37.2	29.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	1.0	2.5	0.7	37.2	29.0
Queue Length 50th (m)	0.0	0.0	0.0	0.9	0.0
Queue Length 95th (m)	19.8	62.1	4.5	4.2	1.5
Internal Link Dist (m)	32.5	56.2		16.9	
Turn Bay Length (m)			30.0		
Base Capacity (vph)	1767	1784	1535	473	437
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.20	0.52	0.11	0.01	0.00

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 42 (47%), Referenced to phase 2:EBT, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 9: James/New & Martha



APPENDIX H

Parking Survey Data

VISITOR PARKING SURVEY - 2100 LAKESHORE RD

PROJECT NO.: 19275.200
DATE: Saturday January 26, 2019
SURVEYOR: Tim Sheng
WEATHER: SUNNY -13°C

Supply	10+1 Dis 11	24+1 Disa 25	21 ✓	16+2 Dis 19	11 ✓
Time	2121 Lakeshore Rd	2160 Lakeshore Rd	2190 Lakeshore Rd	2210 Lakeshore Rd	2220 Lakeshore Rd
10:00	0	8	3	0	1
10:30	0	8	3	1	1
11:00	0	8	5	1	1
11:30	0	10	4	1	0
12:00	1	10	4	2	0
12:30	0	9	3	2	0
13:00	0	11	4	2	0
13:30	1	11	4	2	0
14:00	2	11	4	3	0
14:30	2	10	4	3	0

15:00	2	11	4	3	0

VISITOR PARKING SURVEY - 2100 LAKESHORE RD

PROJECT NO.: 19275.200
DATE: Saturday January 26, 2019
SURVEYOR: Tim Sheng
WEATHER: Sunny -13°C

Supply	11	25	21	19	11
Time	2121 Lakeshore Rd	2160 Lakeshore Rd	2190 Lakeshore Rd	2210 Lakeshore Rd	2220 Lakeshore Rd
15:30	2	10	5	3	1
16:00	3	8	5	3	1
16:30	3	8	4	4	1
17:00	3	8	4	3	0
17:30	1	11	3	2	0
18:00	1	14	1	2	1
18:30	1	14	1	3	1
19:00	2	14	0	4	1
19:30	1	15	0	4	1
20:00	0	11	0	4	2

APPENDIX I

Loading Movement Diagrams

LAKESHORE ROAD

PROPERTY LINE

R=11.5m

COMMERCIAL 1
172.1 m2

VEST.

CACF

BULK MAIL

MAIL

RESIDENTIAL LOBBY
122.5 m2

HIGH VOLTAGE ELEC RM (MECH MEZZ. ABOVE)

GAS METER

INDOOR AMENITY
120.5 m2

LOW VOLTAGE ELEC RM (MECH MEZZ. ABOVE)

LOADING TURNAROUND

15%

7.5%

PARKING RAMP DN

RESIDENTIAL GARBAGE
105.1 m2
(GENERATOR MEZZ. ABOVE)

RES. BULK GARBAGE

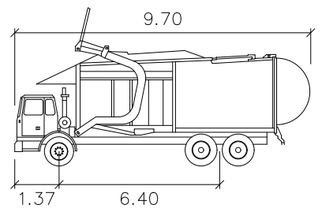
COMMERCIAL 2
178.2 m2

COMMERCIAL 3
277.9 m2

COMMERCIAL GARBAGE
42.1 m2

PROPERTY LINE

PROPERTY LINE



GARBAGE HALTON
meters

Width	: 2.70
Track	: 2.70
Lock to Lock Time	: 6.0
Steering Angle	: 33.8

DRAWN BY: D.C. PLOT DATE: August 20, 2019

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Project No.
19275

Date
AUG. 19, 2019

2093–2101 OLD LAKESHORE RD
BURLINGTON ONTARIO

3 0 3 6 9m
1:300

GROUND FLOOR PLAN
GARBAGE TRUCK
ENTRY SWEPT PATH ANALYSIS

Drawing No.
SK01

DRAWING NAME: F:\19275\Drafting\19275WF09.dwg

LAKESHORE ROAD

PROPERTY LINE

PROPERTY LINE

PROPERTY LINE

COMMERCIAL 1
172.1 m2

BULK MAIL

CACF

MAIL

RESIDENTIAL LOBBY
122.5 m2

VEST.

HIGH VOLTAGE ELEC RM (MECH MEZZ. ABOVE)

GAS METER

INDOOR AMENITY
120.5 m2

LOW VOLTAGE ELEC RM (MECH MEZZ. ABOVE)

LOADING TURNAROUND

15%

7.5%

PARKING DN

RESIDENTIAL GARBAGE
105.1 m2
(GENERATOR MEZZ. ABOVE)

RES. BULK GARBAGE

COMMERCIAL 2
178.2 m2

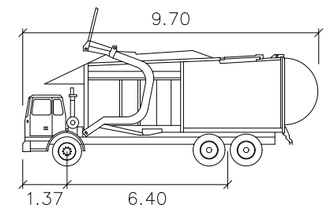
COMMERCIAL 3
277.9 m2

COMMERCIAL GARBAGE
42.1 m2

R=11.5m

R=11.5m

R=11.5m



GARBAGE HALTON
meters

Width	: 2.70
Track	: 2.70
Lock to Lock Time	: 6.0
Steering Angle	: 33.8

DRAWN BY: D.C. PLOT DATE: August 20, 2019

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Project No.
19275

Date
AUG. 19, 2019

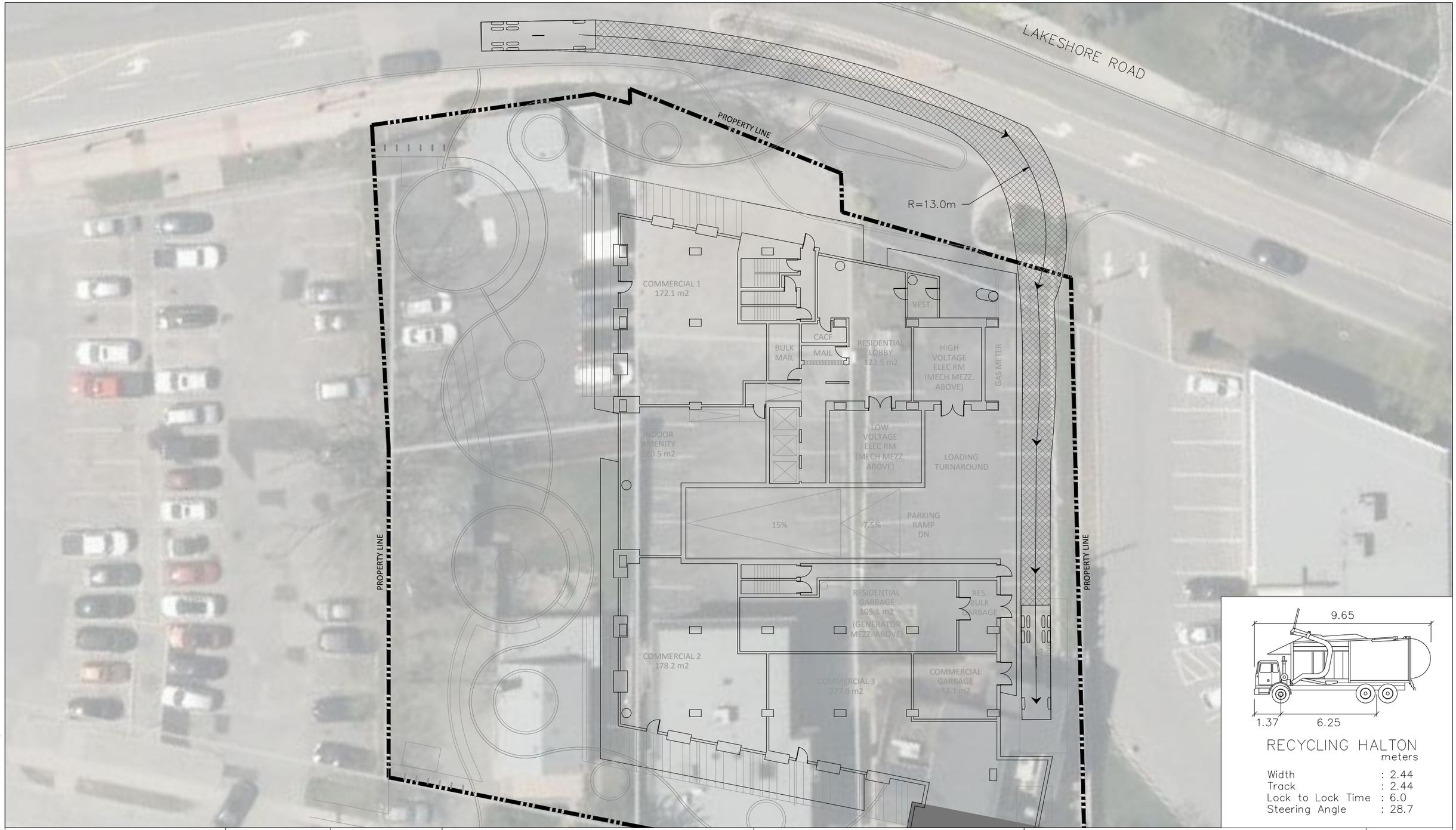
2093–2101 OLD LAKESHORE RD
BURLINGTON ONTARIO

3 0 3 6 9m
1:300

GROUND FLOOR PLAN
GARBAGE TRUCK
EXIT SWEPT PATH ANALYSIS

Drawing No.
SK02

DRAWING NAME: F:\19275\Drafting\19275WF09.dwg



RECYCLING HALTON
meters

Width	: 2.44
Track	: 2.44
Lock to Lock Time	: 6.0
Steering Angle	: 28.7

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BURLINGTON ONTARIO

3 0 3 6 9m
1:300

GROUND FLOOR PLAN
RECYCLING TRUCK
ENTRY SWEPT PATH ANALYSIS

Drawing No. SK03

DRAWING NAME: F:\19275\Drafting\19275WF09.dwg

LAKESHORE ROAD

PROPERTY LINE

R=13.0m

R=13.0m

R=13.0m

PROPERTY LINE

PROPERTY LINE

COMMERCIAL 1
172.1 m2

BULK MAIL

CACF

MAIL

RESIDENTIAL LOBBY
122.5 m2

VEST.

HIGH VOLTAGE ELEC RM (MECH MEZZ. ABOVE)

GAS METER

INDOOR AMENITY
120.5 m2

LOW VOLTAGE ELEC RM (MECH MEZZ. ABOVE)

LOADING

TURNAROUND

15%

7.5%

RAMP DN

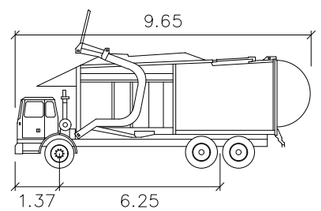
RESIDENTIAL GARBAGE
105.1 m2
(GENERATOR MEZZ. ABOVE)

RES. BULK GARBAGE

COMMERCIAL 2
178.2 m2

COMMERCIAL 3
277.9 m2

COMMERCIAL GARBAGE
42.1 m2



RECYCLING HALTON
meters

Width	: 2.44
Track	: 2.44
Lock to Lock Time	: 6.0
Steering Angle	: 28.7

DRAWN BY: D.C. PLOT DATE: August 20, 2019

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BURLINGTON ONTARIO

3 0 3 6 9m
1:300

GROUND FLOOR PLAN
RECYCLING TRUCK
EXIT SWEPT PATH ANALYSIS

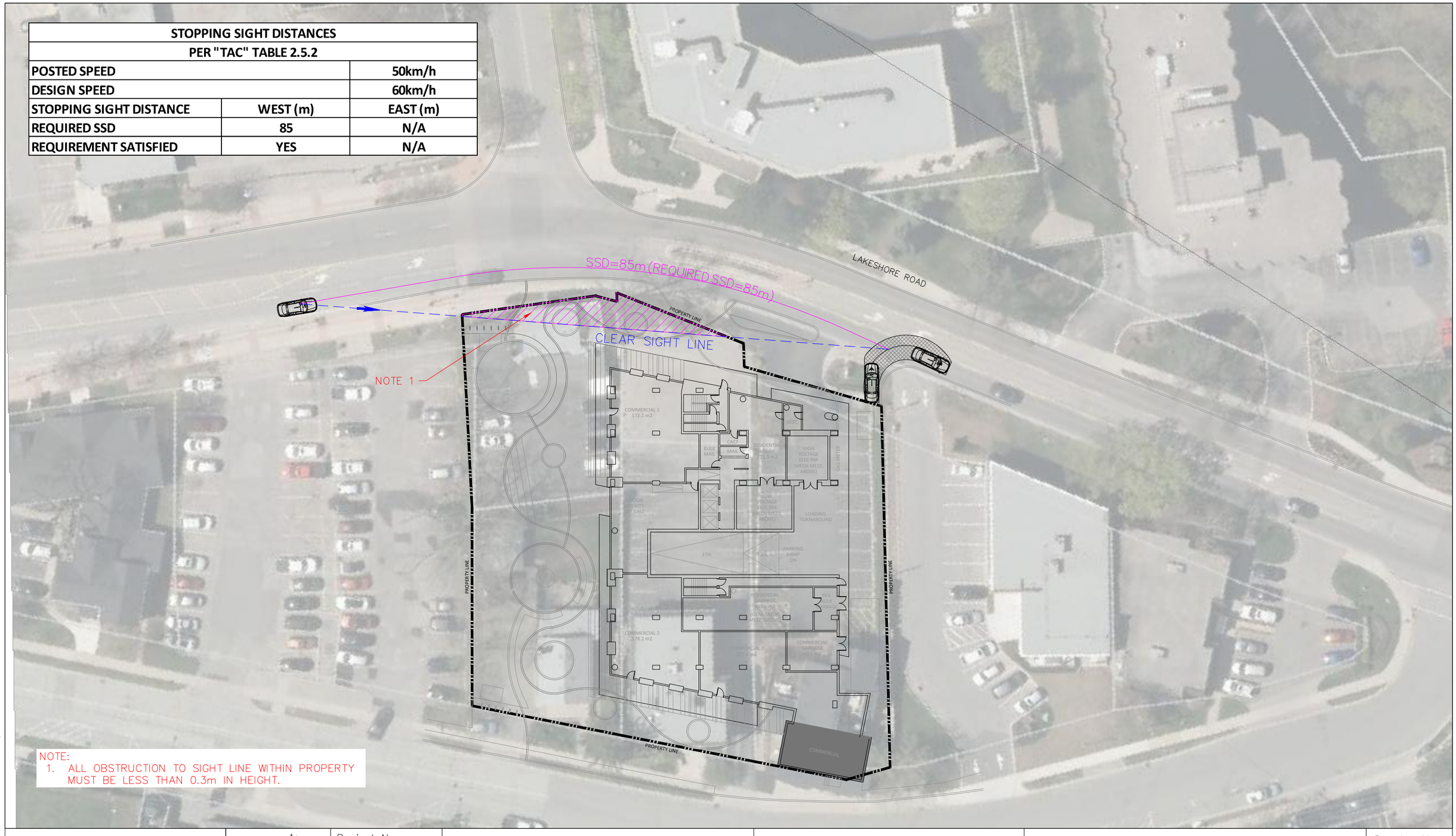
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SK04

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APPENDIX J

Site Access Sight Line Analysis

STOPPING SIGHT DISTANCES		
PER "TAC" TABLE 2.5.2		
POSTED SPEED		50km/h
DESIGN SPEED		60km/h
STOPPING SIGHT DISTANCE	WEST (m)	EAST (m)
REQUIRED SSD	85	N/A
REQUIREMENT SATISFIED	YES	N/A



NOTE:
1. ALL OBSTRUCTION TO SIGHT LINE WITHIN PROPERTY MUST BE LESS THAN 0.3m IN HEIGHT.

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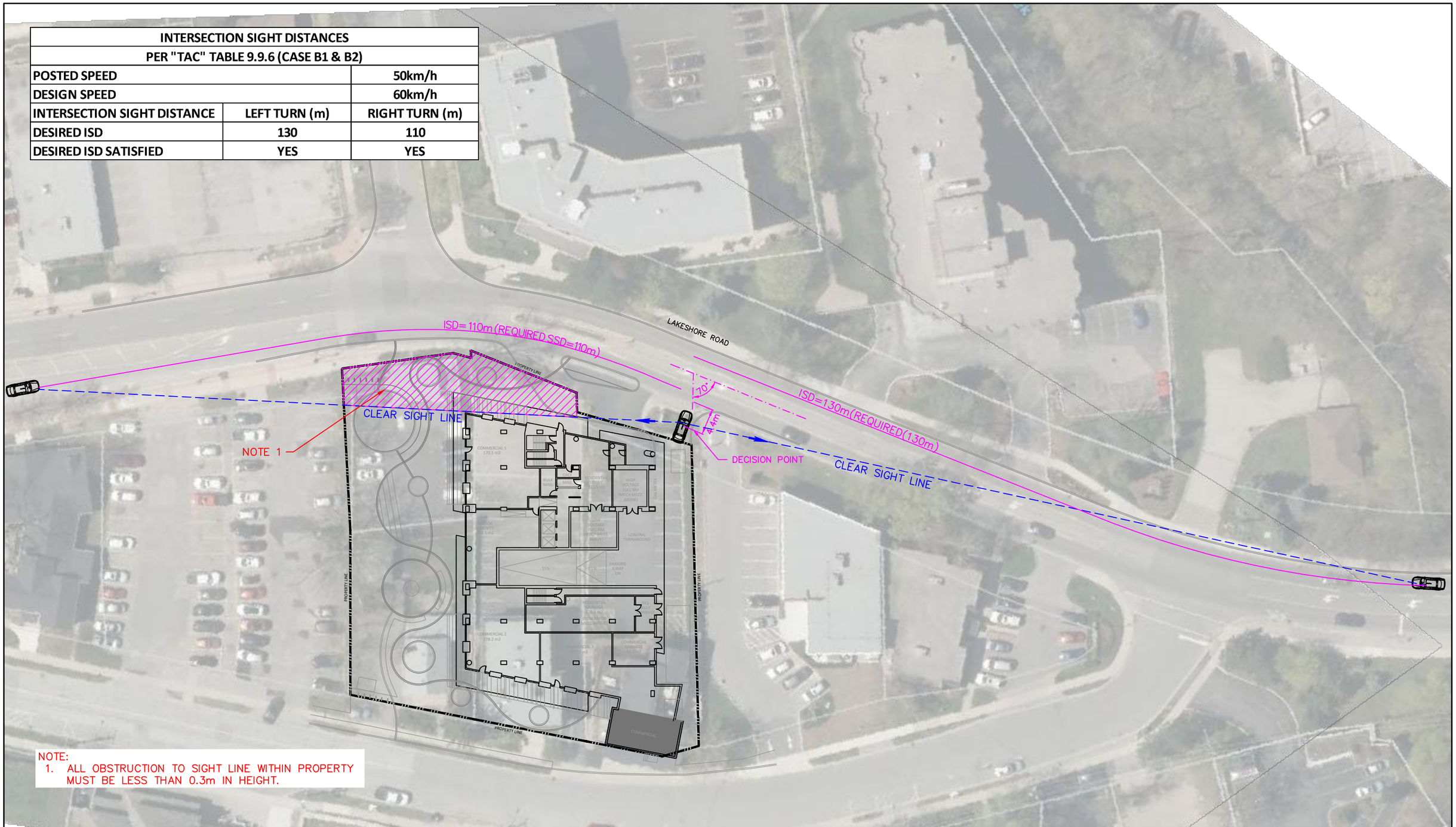
5 0 5 10 15m
1:500

SIGHT LINE ANALYSIS
STOPPING SIGHT DISTANCE

Drawing No. SK05

DRAWING NAME: F:\19275\Drafting\19275WF09.dwg

INTERSECTION SIGHT DISTANCES		
PER "TAC" TABLE 9.9.6 (CASE B1 & B2)		
POSTED SPEED		50km/h
DESIGN SPEED		60km/h
INTERSECTION SIGHT DISTANCE	LEFT TURN (m)	RIGHT TURN (m)
DESIRED ISD	130	110
DESIRED ISD SATISFIED	YES	YES



NOTE:
1. ALL OBSTRUCTION TO SIGHT LINE WITHIN PROPERTY MUST BE LESS THAN 0.3m IN HEIGHT.

DRAWN BY: D.C. PLOT DATE: August 20, 2019

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Project No. 19275

Date AUG.19, 2019

2093–2101 OLD LAKESHORE RD
BURLINGTON ONTARIO

6 0 6 12 18m
1:600

SIGHT LINE ANALYSIS
INTERSECTION SIGHT DISTANCE

Drawing No. SK06

DRAWING NAME: F:\19275\Drafting\19275WF09.dwg