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August 25, 2023

Reference Number: 23129

Alvand Mohtashami
Format Lakeshore LP
5050 Dufferin St., Suite 120
Toronto, Ontario
M3H 5T5

RE: Transportation Impact Study
Proposed Mixed-Use Development
42 Lakeshore Road West, Town of Oakville

Dear Mr. Mohtashami,

LEA Consulting Ltd. (LEA) is pleased to present the findings of our Transportation Impact Study (TIS) for the proposed mixed-use development located at 42 Lakeshore Road West in the Town of Oakville. This report provides an analysis of the existing and future traffic conditions of the site, a review of parking and loading provisions, a Traffic Demand Management Plan, and a functional design review with swept path diagrams demonstrating the site's vehicular and loading functionality. This report concludes that the traffic associated with the proposed development will have an acceptable impact on the surrounding road network. Similarly, the parking supply and swept path analysis for the site are considered appropriate.

Should you have any questions regarding this Transportation Impact Study, please do not hesitate to contact the undersigned.

Yours truly,

LEA CONSULTING LTD.

Debang Chen, P.Eng., M.Eng.,
Project Manager, Transportation

Encl. Transportation Impact Study – 42 Lakeshore Road West, Town of Oakville, Proposed Mixed-Use Development.

Format Lakeshore LP

TRANSPORTATION IMPACT STUDY

Proposed Mixed-Use Development

42 Lakeshore Road West,
Town of Oakville

August 2023

23129

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1 INTRODUCTION

LEA Consulting Ltd. (LEA) has been retained by *Format Lakeshore LP* to undertake a Transportation Impact Study (TIS) for the proposed development located at 42 Lakeshore Road West in the Town of Oakville (herein referred to as the "subject site"). The subject site is located southwest corner of the Lakeshore Road West and Chisholm Street intersection, as illustrated in **Figure 1-1.**

Figure 1-1: Subject Site

Source: Google Maps, 2022

The subject site is currently vacant, with a former commercial use located at the west end of the site. The subject site is located adjacent to residential homes along Chisholm Street and commercial and retail uses along Lakeshore Road West. Within the broader surrounding area is a mixture of residential, retail, commercial, restaurant, and institutional uses.

The purpose of this study is to assess the proposed development from a transportation perspective, to determine the traffic impacts to the adjacent road network over a five-year horizon to the year 2027, and to identify any required mitigation measures. Furthermore, the study provides Transportation Demand Management (TDM) measures to be considered to encourage alternative modes of travel. The study was conducted in accordance with the *Halton Region Transportation Impact Study Guidelines*, dated January 2015.

1.1 PROPOSED DEVELOPMENT

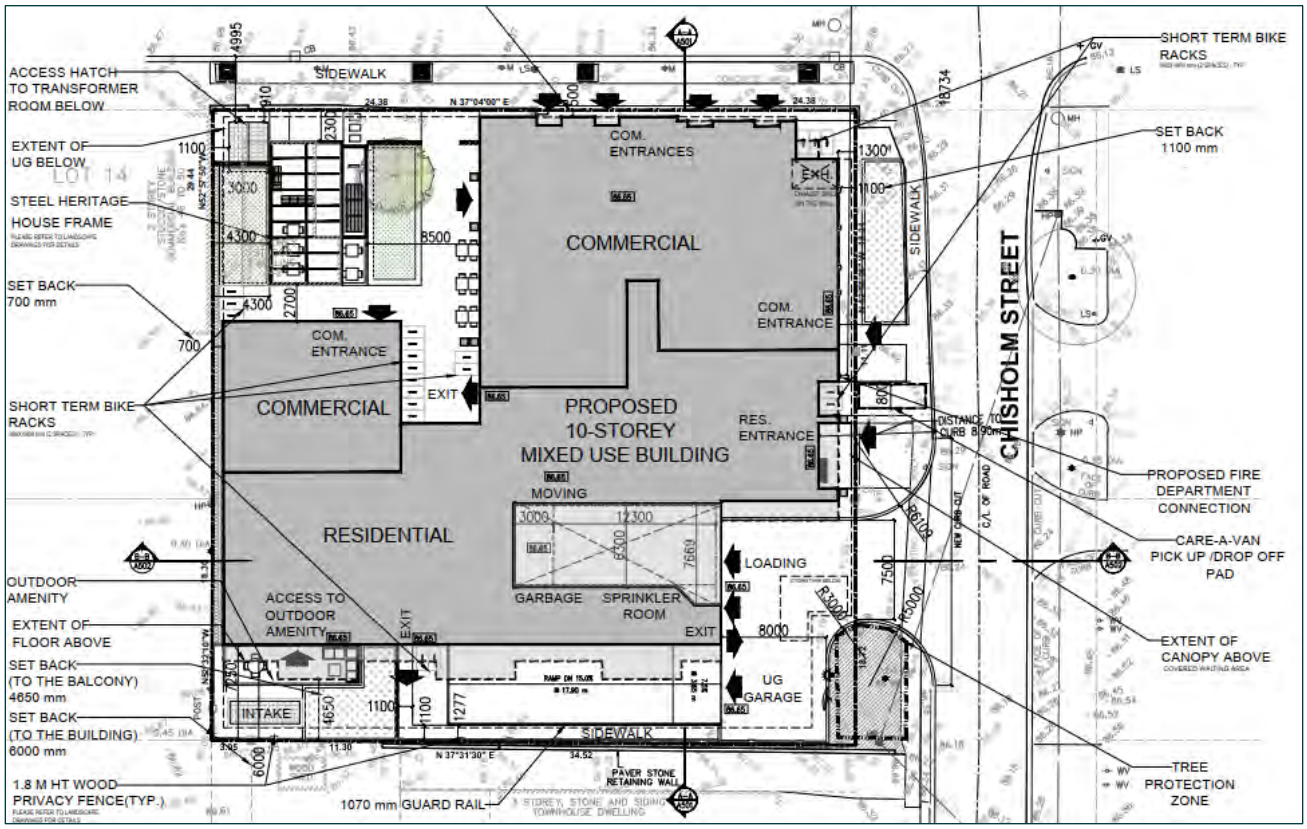
The development proposal includes a 10-storey mixed-use building, comprised of 152 residential units and 630 m^2 of commercial space on the ground floor. A total of 183 parking spaces is proposed across 4 underground levels. The unit breakdown and preliminary site statistics are provided in **Table 1-1.**

Table 1-1: Proposed Mixed-Use Development

Use	Unit Count/NFA
Residential	152 Units
Existing Commercial Retail (Currently Vacant)	108.7 m^2
Proposed Commercial Retail	630 m^2

Vehicle access to the development is proposed via one (1) full movement driveway off Chisholm Street, which provides access to the ground floor loading area and underground parking garage. The proposed ground floor plan is illustrated in **Figure 1-2.**

Figure 1-2: Proposed Ground Floor Plan



Source: ICON Architects Inc., July 28 2023

2 EXISTING TRANSPORTATION NETWORKS

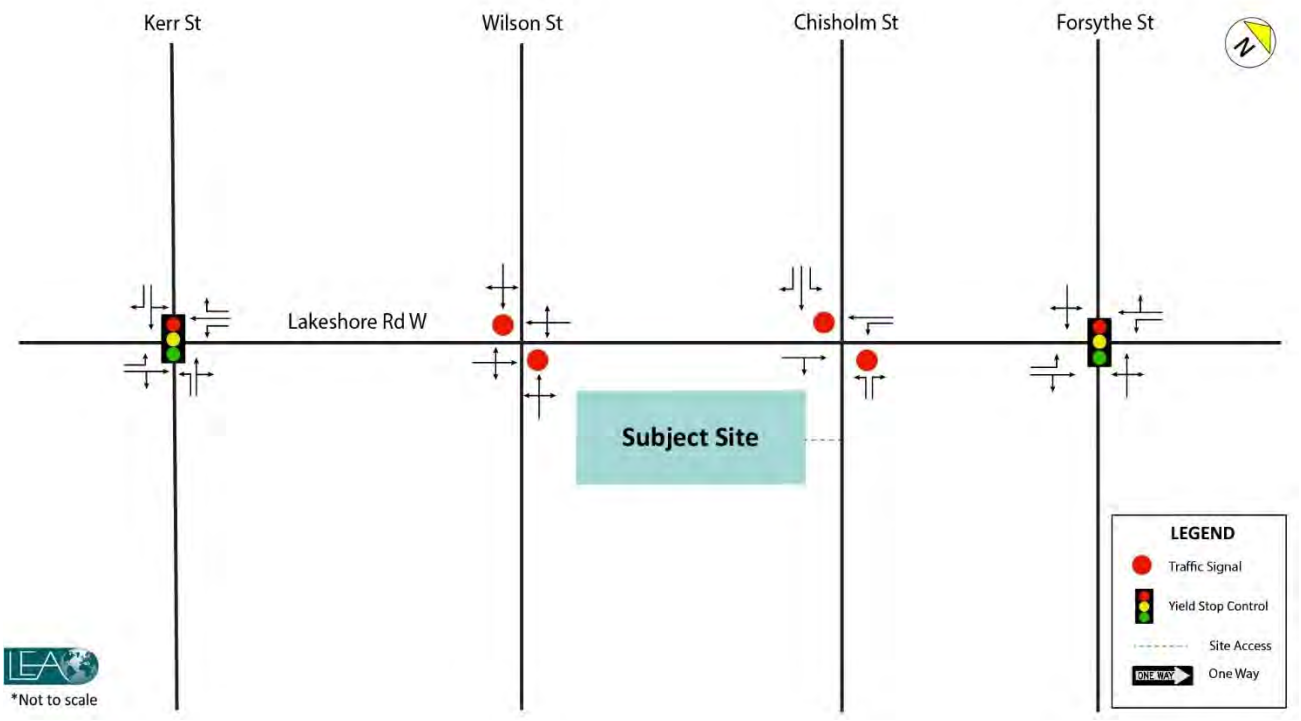
This section identifies and assesses the existing transportation conditions present in the study area, including the road, transit, cyclist, and pedestrian networks. The study area was determined by assessing the size of the proposed development and its anticipated transportation impact, and through consultation with Town and Region staff as seen in **Appendix A**. The following intersections are examined:

- Lakeshore Road West and Forsythe Street (Signalized);
- Lakeshore Road West and Chisholm Street (Unsignalized);
- Lakeshore Road West and Wilson Street (Unsignalized); and
- Lakeshore Road West and Kerr Street (Signalized).

2.1 EXISTING ROAD NETWORK

The following section provides a description and classification of the roadways within the study area**. Figure 2-1** illustrates the existing lane configuration.

Figure 2-1: Existing Study Area Lane Configuration and Restrictions



Lakeshore Road West is an east-west minor arterial road that operates with a two-lane cross section (one lane per direction) within the study area. Within Oakville, Lakeshore Road West operates between Southdown Road in the City of Mississauga to 2 kilometres south of Maple Avenue in the City of Burlington. As no speed limit is posted, the roadway operates with an assumed speed limit of 50 km/h within the study area.

Kerr Street is generally a north-south minor collector road within the study area that operates with a two-lane cross section (one lane per direction) within the study area. Kerr Street operates between the Queen Elizabeth's Way (QEW) to 400 metres south of Lakeshore Road West in the Town of Oakville. As no speed limit is posted, the roadway operates with an assumed speed limit of 50 km/h within the study area.

Wilson Street is generally a north-south local road that operates with a two-lane cross section (one lane per direction) within the study area. Wilson Street operates between Bond Street to 200 metres south of Burnet Street in the Town of Oakville. As no speed limit is posted, the roadway operates with an assumed speed limit of 50 km/h within the study area.

Chisholm Street is generally a north-south local road that operates with a two-lane cross section (one lane per direction) within the study area. Chisholm Street operates between Bond Street to 70 metres south of Anderson Street in the Town of Oakville. As no speed limit is posted, the roadway operates with an assumed speed limit of 50 km/h within the study area.

Forsythe Street is generally a north-south local road that operates with a two-lane cross section (one lane per direction) within the study area. Forsythe Street operates from Bond Street to Anderson Street in the Town of Oakville. As no speed limit is posted, the roadway operates with an assumed speed limit of 50 km/h within the study area.

2.2 EXISTING TRANSIT NETWORK

The subject site is serviced by the Oakville Transit network, with the nearest routes operating along Rebecca Street/Randall Avenue to the north of the site. The nearest GO Station, Oakville GO Station, is an approximate 35-minute walk, 15-minute connecting bus ride, 10-minute bike ride, or less than 10-minute drive from the subject site and facilitates regional transit connections.

Figure 2-2: Existing Transit Network

Source: Town of Oakville, 2022

Oakville Transit Route 14/14A – Lakeshore West is a bus route that operates generally in the east-west direction between Oakville GO in the Town of Oakville and Appleby GO in the City of Burlington. The route operates seven days a week, with headways of 20 minutes, and provides a direct connection to/from Oakville GO Station.

Access Location: Route 14/14A is accessible in the study area at the intersections of Rebecca Street at Kerr Street and Rebecca Street at Chisholm Street (both within 350 m or a 5-minute walk from the subject site).

Lakeshore West Line – Oakville GO is a regional rail route that operates generally in the east-west direction between Niagara Falls GO Station to Union Station in downtown Toronto, with further connections available east to Oshawa GO Station. The Oakville GO operates during Monday to Friday, from 6:00 AM to 8:00 PM; weekends from 6:30AM to 8:00PM.

Access Location: The Lakeshore West Line is accessible in the study area at the intersections of Cross Avenue at Argus Road (within 3 km or a 10-15-minute connecting bus ride from the subject site).

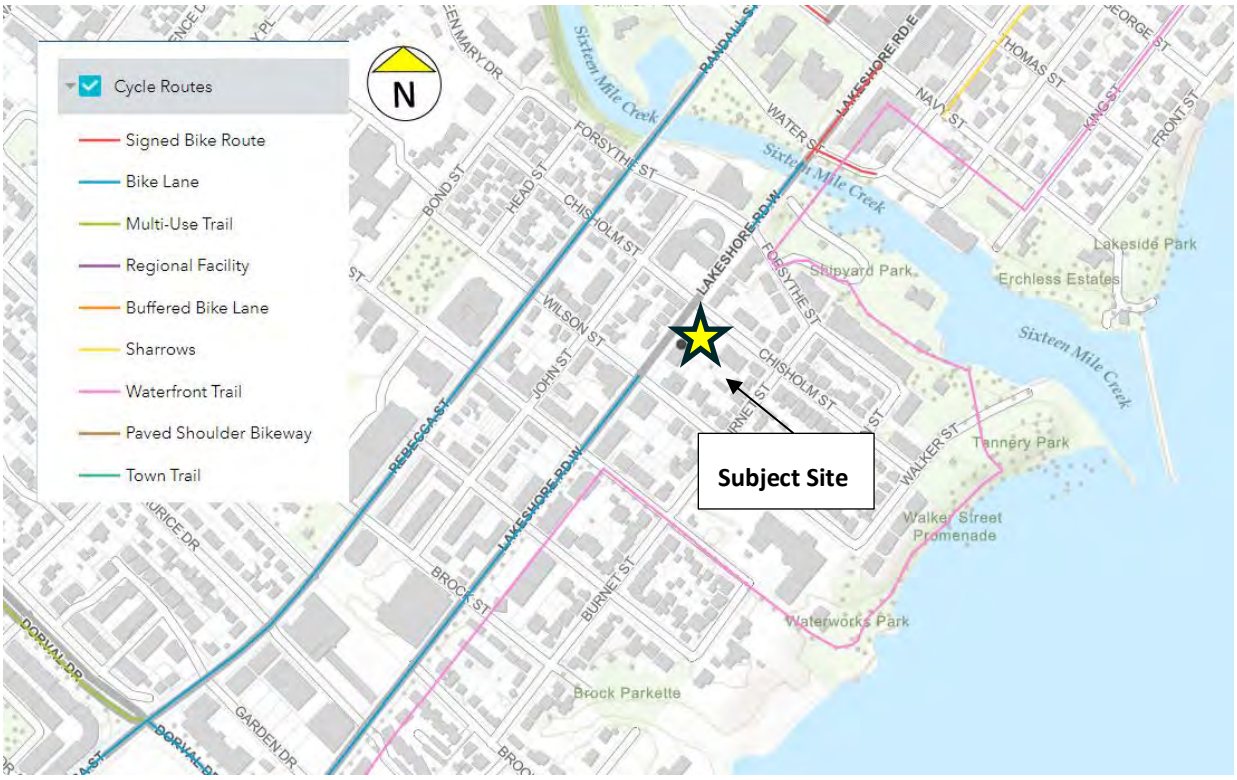
2.3 EXISTING CYCLING NETWORK

The area immediately surrounding the subject site has limited cycling facilities, but the subject site is still serviced by existing infrastructure.

Bike lanes are provided along Lakeshore Road West, from Dorval Drive to Wilson Street, and from Forsythe Street to Navy Street. Rebecca Street also has continuous and extensive cycling infrastructure, and there are connections which act as linkages to other routes throughout the city, such as signed bike routes along Lakeshore Road East.

The waterfront trail is accessible from Forsythe Street, or at Kerr Street. The existing cycling network surrounding the subject site is illustrated in **Figure 2-3.**

Figure 2-3: Existing Cycling Network



Source: Town of Oakville, April 2023

2.4 EXISTING PEDESTRIAN NETWORK

Continuous sidewalks are provided on both sides of Lakeshore Road West and Rebecca Street, from Forsythe Street to Kerr Street. Pedestrian sidewalks are provided on the east side of Chisholm Street south of its intersection with Lakeshore Road, and on both sides of Chisholm Street north of the Lakeshore intersection.

A generally connected sidewalk connection is provided along John Street within the subject area, with sidewalks on both sides of the street from Chisholm Street to Kerr Street. A waterfront trail is provided adjacent to Forsythe Street, south of south of Lakeshore Road West. Moreover, the existing pedestrian network permits movement to nearby restaurants, convenience stores, retail stores and other mixed-uses areas, and is generally well serviced.

2.5 TRAFFIC DATA COLLECTION

Turning movement counts (TMCs) were used as the source of traffic data in the intersection capacity analysis. Traffic counts for weekday AM and PM peak periods were collected by LEA Consulting for the intersections of Lakeshore Road West and Chisholm Street and Lakeshore Road West and Wilson Street. For the other study area intersections, TMCs were obtained from the Town of Oakville.

Signal timing plans were also obtained from the Town of Oakville for the signalized intersections in the study area. Detailed survey data and signal timing plans are available in **Appendix B**. A summary of the TMC data collected is outlined in **Table 2-1.**

Table 2-1: Summary of Traffic Data

Intersection	TMC Date	Source
Forsythe St & Lakeshore Rd W	Thursday June 2, 2022	Town of Oakville
Kerr St & Lakeshore Rd W	Tuesday May 2, 2022	
Wilson St & Lakeshore Rd W	Monday September 12, 2022	LEA
Chisholm St & Lakeshore Rd W		

2.5.1 Turning Movement Count Comparison

Where possible, the most recent TMCs available from the Town were used. No TMCs for the Lakeshore Road West and Wilson Street intersection were available.

For the intersection of Lakeshore Road West and Chisholm Street, the most recent TMCs collected by the Town were undertaken on October 5, 2021. These counts were obtained and compared to the counts collected by LEA in September 2022 to identify whether the 2022 TMC volumes are representative of current travel trends. The following **Table 2-2** shows the 2021 and 2022 count data by turning movement for this intersection.

Table 2-2: 2021 and 2022 Turning Movement Count Data

Movement	Mon. Sept 12, 2022 (LEA)		Tues. Oct. 5, 2021 (Town)		Net Change		Percent Change	
	AM	PM	AM	PM	AM	PM	AM	PM
NBL	7	8	11	8	-4	+0	-57%	+0%
NBT	-	-	-	-	-	-	-	-
NBR	11	25	19	25	-8	+0	-73%	+0%
SBL	6	11	4	14	+2	-3	+33%	-27%
SBT	3	7	9	2	-6	+5	-200%	+71%
SBR	45	37	34	37	+11	+0	+24%	+0%
EBL	-	-	-	-	-	-	-	-

Movement	Mon. Sept 12, 2022 (LEA)		Tues. Oct. 5, 2021 (Town)		Net Change		Percent Change	
	AM	PM	AM	PM	AM	PM	AM	PM
EBT	421	292	362	348	+59	-56	+14%	-19%
EBR	8	11	13	19	-5	-8	-63%	-73%
WBL	8	14	8	15	0	-1	+0%	-7%
WBT	321	440	284	455	+37	-15	+12%	-3%
WBR	-	-	-	-	-	-	-	-
Total Overall	*830*	*845*	*744*	*923*	*+86*	*-78*	*+10%*	*-9%*

The intersection volumes generally remain consistent between the 2021 and 2022 datasets. The 2022 data was 10% higher for the AM peak hour and 9% lower for the PM peak hour for the intersection overall. These differences can be associated with people returning to a normal schedule following the easing of Covid-19-related restrictions.

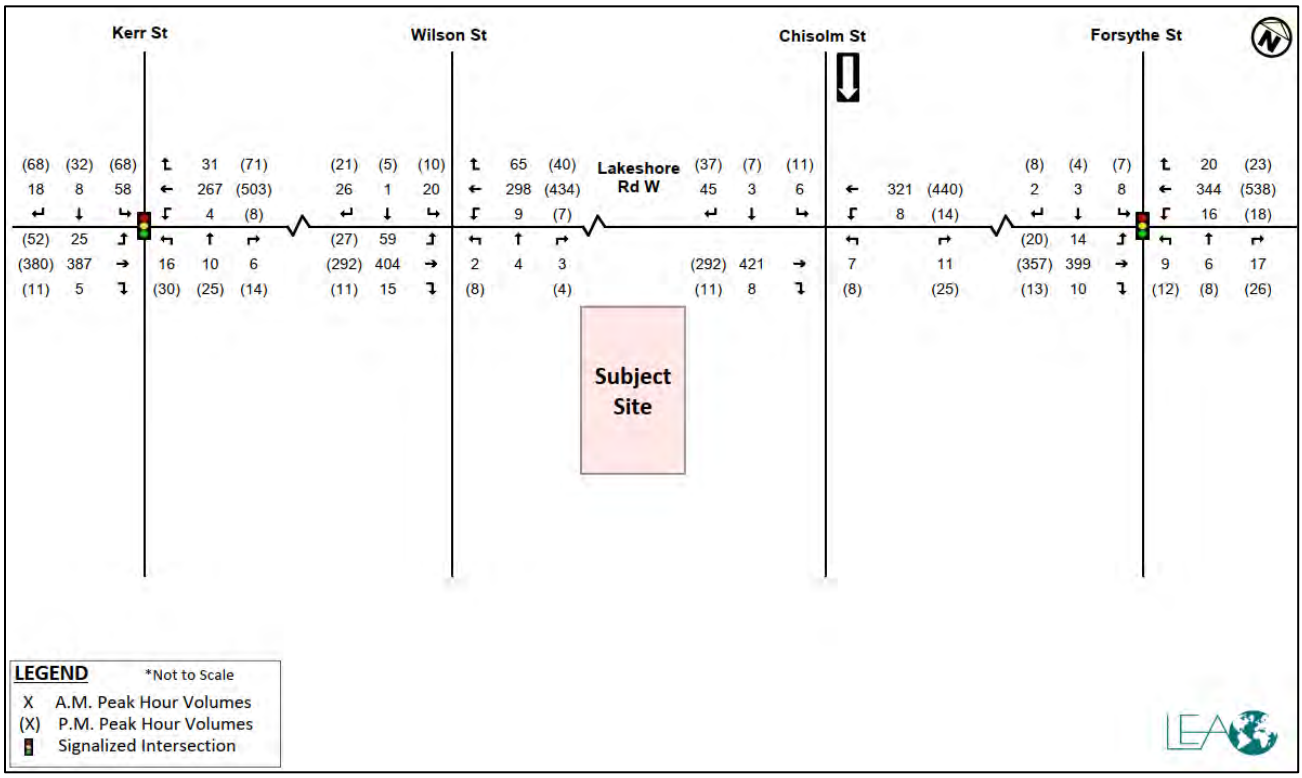
For the PM peak hour, the difference may be associated with individuals adopting a less busy schedule when compared to pre-Covid-19 conditions. Alternatively, fewer or variable work hours could be a contributing factor. In general, the intersection volumes remained consistent overall, and 2022 TMC data was used for the purposes of this study.

2.6 EXISTING TRAFFIC VOLUMES

The existing traffic volumes in the study area during the weekday AM and PM peak hours are illustrated in Volumes **were balanced to reflect the highest east-west volumes along Lake Shore Road West.**

Figure 2-4**.** Volumes were balanced to reflect the highest east-west volumes along Lake Shore Road West.

Figure 2-4: Existing Weekday Peak Hour Traffic Volumes



3 FUTURE BACKGROUND TRANSPORTATION CONDITIONS

For the analysis of future background traffic conditions, this study considers a 5-year horizon to the year 2027. The following sections discuss the anticipated and planned changes to the transportation network as well as the background developments and corridor growth assumptions within the study area and development horizon.

3.1 FUTURE TRANSPORTATION NETWORK

No planned changes to the existing study area transportation network were identified within the study horizon year. Future background conditions assume the same road network will be in place as currently exist within the study area.

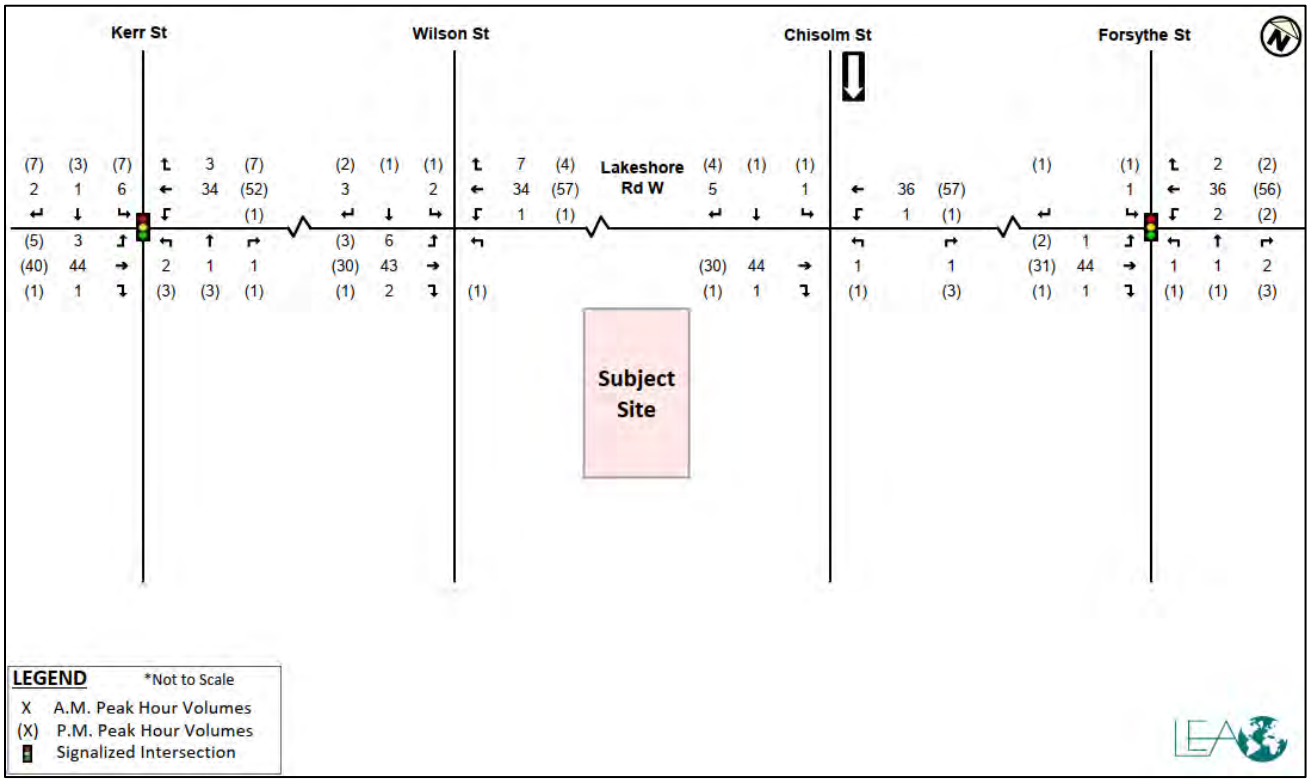
3.2 BACKGROUND DEVELOPMENTS

Through a review of the study area and Town's TOR response, no background developments were identified within the study area during the study horizon**.**

3.3 CORRIDOR GROWTH

Corridor growth rates were determined according to the instructions prescribed by the Town of Oakville in their TOR response. To be conservative, a 2% growth rate for all movements within the study area for the AM and PM peak hours was applied. **Figure 3-1** depicts the corridor growth traffic volumes for the study area.

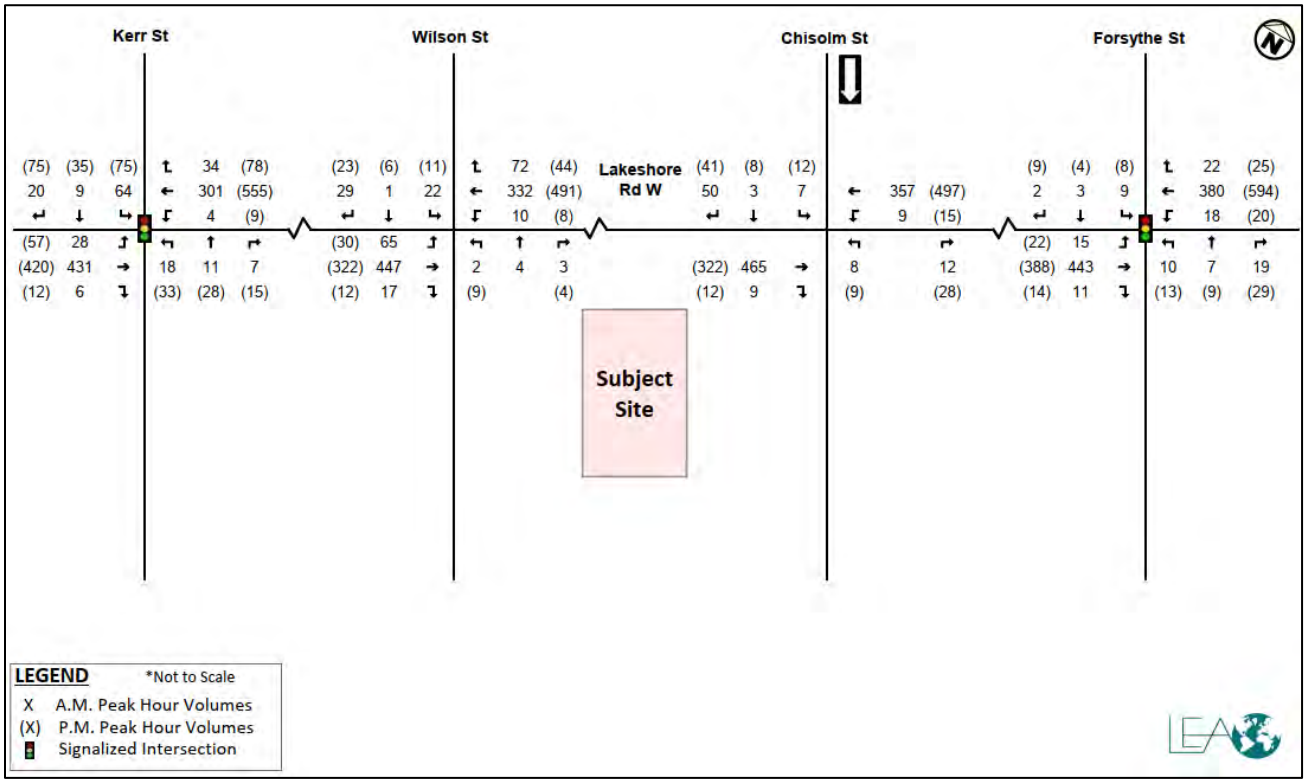
Figure 3-1: Corridor Growth Weekday Peak Hour Traffic Volumes



3.4 FUTURE BACKGROUND TRAFFIC VOLUMES

The future background traffic conditions were determined by adding the calculated corridor growth volumes to the existing weekday peak hour traffic volumes. The anticipated future background volumes are illustrated in **Figure 3-2.**

Figure 3-2: Future Background Weekday Peak Hour Traffic Volumes



4 SITE GENERATED TRIPS

The proposed development consists of a 10-storey mixed-use building containing 152 residential units and 630 m^2 total retail NFA. A total of four (4) levels of underground parking is proposed and will accommodate a total of 183 parking spaces. The following subsections will outline the trip generation calculations undertaken for the proposed development.

4.1 TRIP GENERATION

Trip generation was estimated using baseline trip rates from the Institute of Transportation Engineers (ITE) *Trip Generation Manual 11th Edition*. Specifically, ITE Land Use Code (LUC) 221 for Multi-family Mid-Rise, Not Close to Rail Transit, Dense Multi-Use Urban, Person Trips was used for the residential trips. For the proposed retail trips, LUC 822 was applied using the Not Close to Rail Transit, Dense Multi-Use Urban, Vehicle trip rates, which were subsequently adjusted to person trips.

A summary of the vehicle site trip generation is provided in **Table 4-1.** For the purposes of trip generation, the proposed retail use was rounded up to the nearest 1,000th ft^2 for a conservative assessment. Detailed calculations are seen in **Appendix C.**

Table 4-1: Subject Site Vehicle Trip Generation

Land Use	Description	Weekday AM Peak Hour			Weekday PM Peak Hour		
		In	Out	Total	In	Out	Total
Residential (LUC221) 152 Units	Person Trip Rate (/Unit)	0.11	0.46	0.57	0.33	0.23	0.56
	Total Person Trips	17	70	87	50	35	85
	Gross Auto Trips (100%)	17	70	87	50	35	85
	Site Interaction	0	-1	-1	-7	-3	-10
	Total External Person Trips	**17**	**69**	**86**	**63**	**32**	**75**
	Non-Auto Mode Split Reduction (36% AM, 19% PM)	**-6**	**-25**	**-31**	**-15**	**-12**	**-27**
	External Auto Trips	**11**	**44**	**55**	**28**	**20**	**46**
Retail (LUC822) 7,000 ft^2	Auto Trip Rate (/1000 ft^2)	1.42	0.94	2.36	3.30	3.30	6.59
	Total Auto Trips	10	7	17	23	23	46
	Adjusted Person Trips	12	9	21	29	29	58
	Site Interaction	-1	0	-1	-3	-8	-11
	Total External Auto Trips	11	9	20	26	21	47
	Non-Auto Mode Split Reduction (36% AM, 19% PM)	-2	-2	-4	-5	-4	-9
	External Auto Trips	9	7	16	21	17	38
	Pass-By (Commercial 0% AM 34% PM)	0	0	0	7	6	13
	Primary External Auto Trips	**9**	**7**	**16**	**14**	**11**	**25**
Net Site Total Auto Trips		**20**	**51**	**71**	**41**	**31**	**72**
Net Site Total with Pass-by		**20**	**51**	**71**	**48**	**37**	**85**

Accounting for pass-by trips, the site is expected to generate 71 two-way auto trips (20 inbound and 51 outbound) during AM peak hours and 85 two-way auto trips (48 inbound and 37 outbound) during PM peak hours.

4.2 MODAL SPLIT

Multi-modal trip generation was determined for the residential trips by applying the local mode split to the external person trips generated by the residential component. The local mode split was derived based on Transportation Tomorrow Survey (TTS) 2016 data for traffic analysis zones 4000-4016. The mode split for the residential and retail trips are shown in **Table 4-2**, while the multi-modal trip generation for the subject development is summarized in **Table 4-3**. Detailed TTS calculations are provided in **Appendix D.**

Table 4-2: Study Area Mode Split

Travel Mode	Residential	Retail
Auto	64%	81%
Auto passenger	13%	14%
Transit	16%	0%
Cycling	2%	0%
Walk	5%	5%
Other	0%	0%
Total	100%	100%

Table 4-3: Subject Site Multi-Modal Trip Generation

Land Use	Description	Weekday AM Peak Hour			Weekday PM Peak Hour		
		In	Out	Total	In	Out	Total
All	External Person Trips	26	76	102	65	50	115
	Auto Driver Trips	18	50	68	46	35	81
	Passenger Trip	3	10	13	9	6	15
	Transit Trips	3	11	14	7	5	12
	Walking Trips	2	3	5	3	3	6
	Cycling Trips	0	2	2	0	1	1

As indicated above in **Table 4-3**, the new two-way site trips estimated for transit, walking and cycling modes are as follows:

- **Transit:** 14 in AM, 12 in PM
- **Walking**: 5 in AM, 6 in PM
- **Cycling:** 2 in AM, 1 in PM

The site is split primarily towards vehicle trips, with the majority of trips being auto driver and auto passenger trips during weekday AM and PM peak hours. The Transportation Demand Management (TDM) plan for the subject site (see **Section 8**) includes strategies to support and encourage users to travel by alternative modes to the personal automobile.

4.3 TRIP DISTRIBUTION AND ASSIGNMENT

The trip distribution of site vehicle traffic was also estimated using TTS 2016 data. While the subject site falls within traffic analysis zone 4011, data for distribution were reviewed for traffic zones 4006, 4007, 4010-4013 and 4016 to provide a more comprehensive understanding of anticipated trip distribution for the proposed development.

Trip distribution was determined based on apartment dwelling and retail trip distributions during AM and PM peak hours. Trip assignment was based on the local road network, turn restrictions, changes in future network (i.e., assumed none for this analysis), logical routing and type of access proposed for the site.

The distribution of residential and retail site trips is summarized in **Table 4-4**. Detailed TTS calculations are provided in **Appendix D.**

Table 4-4: Subject Site Trip Distribution

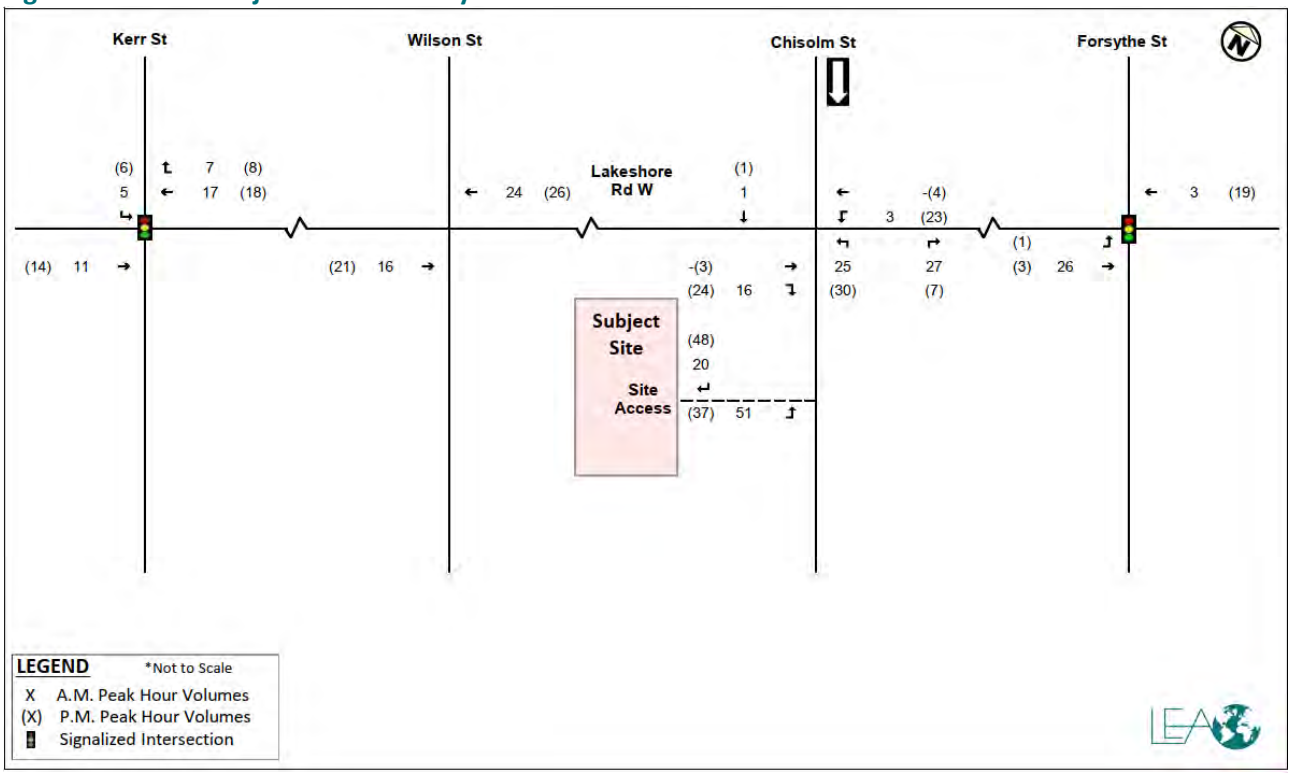
Path	Residential				Retail			
	AM		PM		AM		PM	
	In	Out	In	Out	In	Out	In	Out
Kerr North	27%	14%	14%	27%	26%	21%	21%	26%
Kerr South	0%	0%	0%	0%	1%	0%	0%	1%
Chisolm North	0%	0%	0%	0%	0%	0%	0%	0%
Chisolm South	0%	0%	0%	0%	0%	3%	3%	0%
Forsythe North	2%	0%	0%	2%	6%	3%	3%	6%
Lakeshore West	56%	31%	31%	56%	55%	40%	40%	55%
Lakeshore East	15%	55%	55%	15%	12%	33%	33%	12%
Total	100%	100%	100%	100%	100%	100%	100%	100%

4.3.1 Subject Site Traffic Volumes and Access Assumptions

The subject development will introduce a new site access that will intersect with Chisolm Street. The site access will facilitate one lane of traffic in each direction and will be a full-moves access accommodate left- and right-turns into and out of the site.

The total site-generated traffic volumes for the weekday AM and PM peak hours on the study area road network, including the proposed site access, are illustrated in **Figure 4-1.**

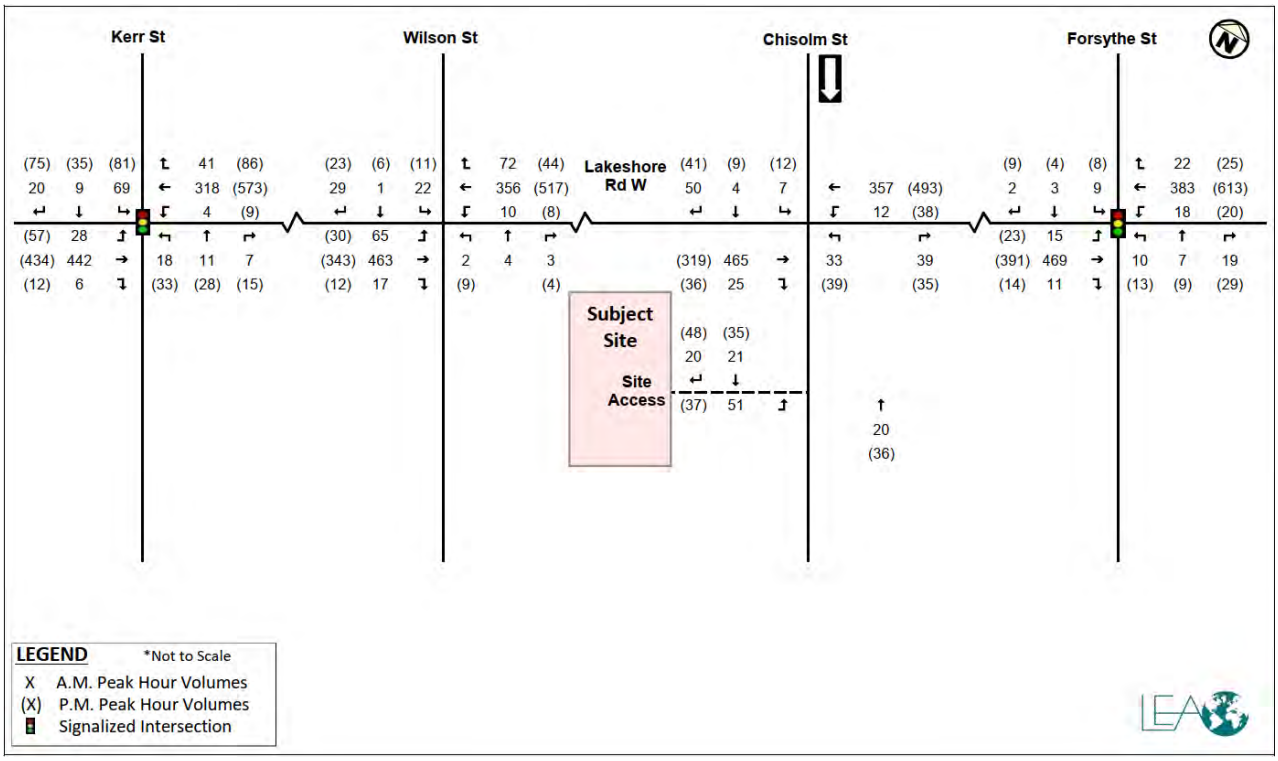
Figure 4-1: Total Subject Site Weekday Peak Hour Traffic Volumes



4.4 FUTURE TOTAL TRAFFIC VOLUMES

The total site-generated traffic volumes for weekday AM and PM peak hours were added to the future background volumes to determine the future total traffic volumes, which are illustrated in **Figure 4-2.**

Figure 4-2: Future Total Weekday Peak Hour Traffic Volumes



5 INTERSECTION CAPACITY ANALYSIS

Intersection capacity analysis for the intersections in the study area was undertaken using Synchro version 11.0, which is based on the Highway Capacity Manual 2000 methodology. The Synchro was modelled based on the *Halton Region Transportation Impact Study Guidelines (January 2015).* Key movements of interest are defined as those with level-of-service (LOS) E or worse or volume-to-capacity (v/c) ratio greater than 0.85 for through and right movements and v/c greater than 0.90 for left turn movements. The following sections provide an analysis of the intersection operations under existing, future background, and future total scenarios. Detailed Synchro results of the intersection capacity analysis are provided in **Appendix E.**

5.1 SIGNALIZED INTERSECTIONS

The results of the signalized intersection capacity analysis are summarized in **Table 5-1** and **Table 5-2.**

Table 5-1: Lakeshore Rd W & Kerr St Capacity Analysis Results

AM PEAK HOUR	Mvmt	Existing				Future Background 2027				Future Total 2027			
		Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
Kerr St & Lakeshore Rd W	**Overall**	-	-	**8**	**A**	-	-	**9**	**A**	-	-	**9**	**A**
	EBL	25		5	A	28	0.05	5	A	28	0.05	5	A
	EBT	387	0.00	0	A	431	0.00	0	A	442	0.00	0	A
	EBR	5	0.37	5	A	6	0.42	5	A	6	0.43	5	A
	WBL	4	0.01	6	A	4	0.01	7	A	4	0.01	7	A
	WBT	267	0.31	8	A	301	0.35	8	A	318	0.37	8	A
	WBR	31	0.04	6	A	34	0.05	7	A	41	0.06	7	A
	NBL	16	0.07	23	C	18	0.08	24	C	18	0.08	24	C
	NBT	10	0.00	0	A	11	0.00	0	A	11	0.00	0	A
	NBR	6	0.07	21	C	7	0.08	21	C	7	0.08	21	C
	SBL	58	0.22	22	C	64	0.25	22	C	69	0.26	22	C
	SBT	8	0.00	0	A	9	0.00	0	A	9	0.00	0	A
	SBR	18	0.10	21	C	20	0.12	21	C	20	0.11	21	C
PM PEAK HOUR	**Mvmt**	**Existing**				**Future Background 2027**				**Future Total 2027**			
		Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
Kerr St & Lakeshore Rd W	**Overall**	-	-	**11**	**B**	-	-	**11**	**B**	-	-	**11**	**B**
	EBL	52	0.10	6	A	57	0.11	6	A	57	0.12	7	A
	EBT	380	0.00	0	A	420	0.00	0	A	434	0.00	0	A
	EBR	11	0.32	5	A	12	0.35	5	A	12	0.36	5	A
	WBL	8	0.01	7	A	9	0.01	7	A	9	0.01	7	A
	WBT	503	0.52	10	B	555	0.58	11	B	573	0.59	11	B
	WBR	71	0.09	8	A	78	0.10	8	A	86	0.11	8	A
	NBL	30	0.11	24	C	33	0.13	25	C	33	0.13	25	C
	NBT	25	0.00	0	A	28	0.00	0	A	28	0.00	0	A
	NBR	14	0.13	21	C	15	0.15	21	C	15	0.15	21	C
	SBL	68	0.28	23	C	75	0.31	23	C	81	0.33	23	C
	SBT	32	0.00	0	A	35	0.00	0	A	35	0.00	0	A
	SBR	68	0.26	22	C	75	0.29	23	C	75	0.29	23	C

At the intersection of Kerr Street and Lakeshore Road, good levels of service occur at each peak hour for existing, future background and future total conditions. All movements operate without any issues, including following the addition of site traffic in the future total condition.

Table 5-2: Lakeshore Rd W & Forsythe St Capacity Analysis Results

AM PEAK HOUR	Mvmt	Existing				Future Background 2027				Future Total 2027			
		Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
Forsythe St & Lakeshore Rd W	Overall	-	-	7	A	-	-	8	A	-	-	8	A
	EBL	14	0.02	5	A	15	0.02	5	A	15	0.02	5	A
	EBT	399	0.34	7	A	443	0.38	7	A	469	0.40	7	A
	EBR	10	0.01	5	A	11	0.01	5	A	11	0.01	5	A
	WBL	16	0.03	4	A	18	0.03	4	A	18	0.03	4	A
	WBT	344	0.00	0	A	380	0.00	0	A	383	0.00	0	A
	WBR	20	0.28	4	A	22	0.31	4	A	22	0.32	4	A
	NBL	9	0.16	43	D	10	0.18	43	D	10	0.18	43	D
	NBT	6	0.00	0	A	7	0.00	0	A	7	0.00	0	A
	NBR	17	0.00	0	A	19	0.00	0	A	19	0.00	0	A
	SBL	8	0.06	42	D	9	0.07	42	D	9	0.07	42	D
	SBT	3	0.00	0	A	3	0.00	0	A	3	0.00	0	A
	SBR	2	0.00	0	A	2	0.00	0	A	2	0.00	0	A
PM PEAK HOUR	Mvmt	Existing				Future Background 2027				Future Total 2027			
		Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
Forsythe St & Lakeshore Rd W	Overall	-	-	7	A	-	-	7	A	-	-	7	A
	EBL	20	0.03	4	A	22	0.03	5	A	23	0.04	5	A
	EBT	357	0.26	5	A	388	0.29	5	A	391	0.29	5	A
	EBR	13	0.01	4	A	14	0.01	4	A	14	0.01	4	A
	WBL	18	0.02	3	A	20	0.03	3	A	20	0.03	3	A
	WBT	538	0.00	0	A	594	0.00	0	A	613	0.00	0	A
	WBR	23	0.38	4	A	25	0.42	4	A	25	0.44	4	A
	NBL	12	0.28	47	D	13	0.31	47	D	13	0.31	47	D
	NBT	8	0.00	0	A	9	0.00	0	A	9	0.00	0	A
	NBR	26	0.00	0	A	29	0.00	0	A	29	0.00	0	A
	SBL	7	0.11	45	D	8	0.11	45	D	8	0.11	45	D
	SBT	4	0.00	0	A	4	0.00	0	A	4	0.00	0	A
	SBR	8	0.00	0	A	9	0.00	0	A	9	0.00	0	A

Good levels of service occur for both peak hours under existing, future background and future total conditions. All movements operate within acceptable levels of capacity with a v/c of less than 1.0. The northbound and southbound left-turn movements have a LOS of 'D' with a delay time of between 42 and 43 seconds during the AM peak hour and 45-47 seconds during the PM peak hour, consistent across each scenario. Given the v/c ratio values of 0.25, the movement still operates within acceptable parameters and with significant residual capacity.

Additionally, there are minimal changes to the operations and no increase to the level of delay across scenarios, indicating the anticipated site traffic is not expected to have a significant impact on these movements.

5.2 UNSIGNALIZED INTERSECTIONS

The results of the unsignalized intersection capacity analysis are summarized in **Table 5-3**, **Table 5-4**, and **Table 5-5**.

Table 5-3: Lakeshore Rd W & Wilson St Capacity Analysis Results

AM Peak Hour	Existing Traffic					Future Background 2027					Future Total 2027				
Mvmt	Vol	V/C	Delay (s)	LOS	95th Queue	Vol	V/C	Delay (s)	LOS	95th Queue	Vol	V/C	Delay (s)	LOS	95th Queue
EBL	59	0.06	8	A	0	65	0.07	9	A	0	65	0.07	9	A	0
WBL	9	0.01	8	A	0	10	0.01	9	A	0	10	0.01	9	A	0
NBLTR	9	0.05	21	C	0	9	0.05	24	C	0	9	0.06	26	D	0
SBLTR	47	0.17	18	C	1	52	0.21	21	C	1	52	0.23	22	C	1
PM Peak Hour	Existing Traffic					Future Background 2027					Future Total 2027				
Mvmt	Vol	V/C	Delay (s)	LOS	95th Queue	Vol	V/C	Delay (s)	LOS	95th Queue	Vol	V/C	Delay (s)	LOS	95th Queue
EBL	27	0.03	8	A	0	30	0.03	9	A	0	30	0.03	9	A	0
WBL	7	0.01	8	A	0	8	0.01	8	A	0	8	0.01	8	A	0
NBLTR	12	0.04	16	C	0	13	0.05	18	C	0	13	0.05	19	C	0
SBLTR	36	0.08	14	B	0	40	0.11	16	C	0	40	0.11	16	C	0

All movements operate under good levels of service in both the AM and PM peak hours under existing, future background, and future total conditions. There are no issues observed for any movement, including following the addition of site traffic.

Table 5-4: Lakeshore Rd W & Chisholm St Capacity Analysis Results

AM PEAK HOUR	Existing Traffic					Future Background 2027					Future Total 2027				
Mvmt	Vol	V/C	Delay (s)	LOS	95th Queue	Vol	V/C	Delay (s)	LOS	95th Queue	Vol	V/C	Delay (s)	LOS	95th Queue
WBL	8	0.009	8	A	0	9	0.01	9	A	0	12	0.01	9	A	0
NBLTR	18	0.059	16	C	0.2	20	0.08	18	C	0	72	0.30	23	C	1
SBL	6	0.028	20	C	0.1	7	0.04	22	C	0	7	0.04	25	C	0
SBT	3	0.013	18	C	0	3	0.02	20	C	0	4	0.02	21	C	0
SBR	45	0.08	11	B	0	50	0.09	11	B	0	50	0.09	11	B	0
PM PEAK HOUR	Existing Traffic					Future Background 2027					Future Total 2027				
Mvmt	Vol	V/C	Delay (s)	LOS	95th Queue	Vol	V/C	Delay (s)	LOS	95th Queue	Vol	V/C	Delay (s)	LOS	95th Queue
WBL	14	0.01	8	A	0	15	0.01	8	A	0	38	0.03	8	A	0
NBLTR	33	0.06	12	B	0	37	0.08	13	B	0	74	0.23	19	C	1
SBL	11	0.04	18	C	0	12	0.05	20	C	0	12	0.05	22	C	0
SBT	7	0.02	17	C	0	8	0.03	18	C	0	9	0.04	20	C	0
SBR	37	0.06	11	B	0.2	41	0.07	12	B	0	41	0.07	12	B	0

All movements operate under good levels of service in both the AM and PM peak hours under existing, future background, and future total conditions. There are no issues observed for any movement, including following the addition of site traffic.

Table 5-5: Chisholm St & Site Driveway Capacity Analysis Results

AM PEAK HOUR	Existing Traffic					Future Background 2027					Future Total 2027				
Mvmt	Vol	V/C	Delay (s)	LOS	95th Queue	Vol	V/C	Delay (s)	LOS	95th Queue	Vol	V/C	Delay (s)	LOS	95th Queue
EBLR	-	-	-	-	-	-	-	-	-	-	51	0.05	9	A	0
PM PEAK HOUR	Existing Traffic					Future Background 2027					Future Total 2027				
Mvmt	Vol	V/C	Delay (s)	LOS	95th Queue	Vol	V/C	Delay (s)	LOS	95th Queue	Vol	V/C	Delay (s)	LOS	95th Queue
EBLR	-	-	-	-	-	-	-	-	-	-	37	0.04	9	A	0

All movements operate under good levels of service in both the AM and PM peak hours under future total conditions.

Overall, the proposed development does not create any notable impacts on traffic operations in the study area and can be accommodated by the local road network without issues.

6 MULTI-MODAL TRANSPORTATION ASSESSMENT

An analysis of the existing road network within the study area was completed to determine if transit and active transportation activities could be supported. This was done by evaluating the existing road network using criteria outlined in the *City of Ottawa's Multi-Modal Level of Service (MMLOS)* guidelines which generates LOS in order to define convenience and comfort levels for active transportation within a study area. The results from the MMLOS are measured on a scale of A to F where A represents preferred conditions and F represents least preferred conditions. It should be noted that LOS is not always the desired target for all modes, as each mode is considered independently, and the minimum LOS targets depend on the context of the street and surrounding area.

As per Halton Region's guidelines, a multimodal level of service analysis was conducted. This analysis provides a review of the infrastructure available to transit, pedestrian and bicycle modes in the study area. It reflects the convenience and comfort experienced by each travel mode and factors in various elements including exposure to street traffic, operating speed, facility widths, and general road network elements.

A summary of the calculations and lookup tables from the MMLOS Guidelines are provided in **Appendix F**.

6.1 TRANSIT LEVEL OF SERVICE (TLOS)

There are no transit services operated along Lakeshore Road West nor any of the other study area road segments assessed. As a result, a transit level of service was not undertaken for the study area intersections.

The nearest Route 14 services are available on Rebecca Street, approximately a 3-minute walk from the subject site. No changes to transit infrastructure are anticipated from existing to future conditions within the study area. The projected new transit ridership is 14 two-way trips during the AM peak hour and 12 two-way trips during the PM peak hour.

6.2 BICYCLE LEVEL OF SERVICE (BLOS)

To assess the existing level of service for cyclists in the study area, a bicycle level of service (BLOS) was identified for each study area roadway segment evaluated in accordance with the City of Ottawa MMLOS Guidelines, based on the following parameters:

- Type of cycling facility (dedicated bike lane vs. mixed traffic);
- Number of travel lanes;
- Vehicle operating speed;
- Width of bike lane (if present); and,
- Parking lane width (if present).

The results are categorized on a scale of A to F. The BLOS for the study area is summarized in **Table 6-1.** No changes to the study area cycling network are anticipated. The area generally requires cyclists to travel alongside vehicles in mixed traffic.

Bike lanes are available along Lakeshore Road West, situated outside the limits of this study area (i.e. east of Forsythe Street and west of Kerr Street). LOS of 'A" is assessed for the section with a bicycle lane. Otherwise, all other road segments are LOS of "D".

Projected two-way cycling trips generated by the proposed development are expected to be minimal at 1-2 trips per peak hour.

Table 6-1: Bicycle Level of Service Evaluation

Segment	From	To	Side	Type	No. of Lanes	BLOS
Forsythe St	Francis St	Lakeshore Rd W	East	Mixed	1 per direction	D
			West			D
	Lakeshore Rd W	John St	East			D
			West			D
Chisholm St	Burnet St	Lakeshore Rd W	East	Mixed	1 per direction	D
			West			D
	Lakeshore Rd W	John St	East	-	-	-
			West	Mixed	3	D
Wilson St	Burnet St	Lakeshore Rd W	East	Mixed	1 per direction	D
			West			D
	Lakeshore Rd W	John St	East			D
			West			D
Kerr St	Burnet St	Lakeshore Rd W	East	Mixed	1 per direction	D
			West			D
	Lakeshore Rd W	John St	East			D
			West			D
Lakeshore Rd W	Navy St	Forsythe St	North	Bike Lane (no buffer)	1 per direction (LOS=" A")	A
			South			A
	Forsythe St	Chisholm St	North	Mixed	1 per direction	D
			South			D
	Chisholm St	Wilson St	North	Mixed	1 per direction	D
			South			D
	Wilson St	Kerr St	North	Mixed	1 per direction	D
			South			D
	Kerr St	Brant St	North	Bike Lane (no buffer)	1 per direction (LOS=" A")	A
			South			A

6.3 PEDESTRIAN LEVEL OF SERVICE (PLOS)

The pedestrian level of service (PLOS) along each roadway segment has been evaluated in accordance with the City of Ottawa MMLOS Guidelines, based on the following parameters:

- Vehicle operating speed;
- Sidewalk width;
- Boulevard width;
- Motor vehicle volume (AADT/lane); and,
- Presence of on-street parking.

The results are categorized on a scale of A to F. The PLOS for each study area roadway segment is summarized in **Table 6-2**.

No changes to pedestrian infrastructure are anticipated. Sidewalks are generally available on both sides of the street except for Forsythe Street, Chisholm Street and Wilson Street south of Lakeshore Road West.

Some road portions lack a boulevard space from the road, leading to LOS of 'F'. In general, only a few sections provide good sidewalk infrastructure, allowing adequate separation from street traffic. Levels of service is no better than LOS of 'C" except for the north side of Lakeshore Road West, between Forsythe Street and Chisholm Street with an LOS of 'B'.

Projected two-way pedestrian trips generated by the proposed development are expected to be minimal at 5-6 trips per peak hour.

Table 6-2: Pedestrian Level of Service Evaluation

Segment	From	To	Side	Sidewalk width (m)	Blvd Width (m)	AADT per lane	Parking	Speed (km/h)	Segment PLOS
Forsythe St	Francis St	Lakeshore Rd W	East	-	-	<3000	-	50	F
			West	1.17			Yes		F
	Lakeshore Rd W	John St	East	2.11			No		C
			West	-			-		F
Chisholm St	Burnet St	Lakeshore Rd W	East	-	-	<3000	-	50	F
			West	1.23	-		Yes		F
	Lakeshore Rd W	John St	East	0.76	0.64		-		F
			West	1.7	1.12		No		C
Wilson St	Burnet St	Lakeshore Rd W	East	1.33	-	<3000	-	50	F
			West	-	-		-		F
	Lakeshore Rd W	John St	East	1.64	1.5		Yes		C
			West	1.56	-		No		E
Kerr St	Burney St	Lakeshore Rd W	East	1.54	2.13	<3000	No	50	D
			West	1.70	-				E
	Lakeshore Rd W	John St	East	1.70	2.02		Yes		D
			West	1.66	1.57		No		C
Lakeshore Rd W	Navy St	Forsythe St	South	2.01	-	>3000	No	50	F
			North	1.96	-				D
	Forsythe St	Chisholm St	South	2.25	1.42		Yes		B
			North	1.71	1.56				E
	Chisholm St	Wilson St	South	1.78	1.48		Yes		E
			North	1.91	1.19				C
	Wilson St	Kerr St	South	1.60	-		Yes		E
			North	1.87	1.10				C
	Kerr St	Brant St	South	1.47	1.08		No		F
			North	1.45	1.31		Yes		F

7 PARKING AND LOADING REVIEW

The following sections will review the vehicular and bicycle parking requirements applicable to the subject site as well as the proposed supply. The applicable loadings standards and proposed supply will also be reviewed.

7.1 VEHICLE PARKING REQUIREMENTS

The vehicle parking requirements for the proposed land uses have been determined based on the parking rates prescribed by the Town of Oakville By-law 2014-014. It should be noted that the subject site is located within the Kerr Village area and is designated as a "Central Business District" zone. As a result, the subject site is subject to parking requirements specific to mixed-use zones under By-law 2014-014.

The parking requirements applicable to mixed-use zones as well as the proposed supply is summarized in **Table 7-1.**

Table 7-1: By-law 2014-014– Mixed-Use Parking Requirements (Kerr Village)

Use	Units/NFA	Town of Oakville By-law 2014-014		Proposed Parking
		Minimum Parking Rate	Required Parking	
Residential (< 75 m^2)	127	0.8 sp./unit	102	152 (1 sp./unit)
Residential (> 75 m^2)	25	1.05 sp./unit	26	
		Residential Sub-Total	*128*	*152*
Visitor Parking	152	5 parking sp. minimum, 0.2 sp./unit	31	31
New Commercial	630 m^2	1.0 sp/40 m^2	16	
		Non-Residential Sub-Total	*47*	*31*
		TOTAL	175	183

As per the Town of Oakville By-law 2014-014, a total of 128 residential, 31 visitor, and 16 non-residential parking spaces are required. The proposed parking supply consists of 152 residential and 31 visitor spaces, which meet and exceed the minimum residential and visitor parking requirements for the site.

Due to the nature of the proposed commercial uses, dedicated commercial parking is not proposed on-site. To provide justification in support of the proposed non-residential parking strategy for the subject development, a review of the site's location and multi-modal transportation context, as well as available public parking in the area, has been undertaken.

7.2 PARKING JUSTIFICATION

7.2.1 Subject Site Location in Kerr Village

The development is located in Kerr Village, a designated mixed-use zone and growth area for the city as designated under the Livable Oakville Official Plan (2021), By-law 2014-014, and By-law 2017-119 to adopt Official Plan Amendment (OPA) 19: Kerr Village. The development will not propose any commercial parking in order to promote active and public transit, accommodate intensification, and encourage alternative modes of transportation through compact urban form in accordance with the Livable Oakville Official Plan (2021) and By-law 2017-119 OPA 19, recognizing a shift in parking demand due to societal and other external changes.

The development proposes an active frontage along Lakeshore Road West and seeks to reduce the commercial parking supply and demand based on the subject site's location and use. The site is well-serviced by existing pedestrian, cycling, and transit infrastructure as described in **Section 2**, and benefits from being

adjacent to an active pedestrian boulevard along Lakeshore Road West, which promotes the site's walkability and alternative transportation options.

The subject development will contribute to a compact, urban form and active street frontage along Lakeshore Road West by adding residential density and additional commercial units to a segment of Lakeshore Road West that is currently vacant. This will add to the densification and activation of the block, which currently has a mixture of commercial and retail uses adjacent to and across from the subject site.

Nearby transit service along the parallel Rebecca/Randall Street will facilitate transit trips to and from the subject site, with stops located within an approximate 3-minute walk of the subject development as detailed in **Section 2.** The subject development will fill a gap in the existing mixed-use corridor of Lakeshore Road and downtown Oakville to the east, and Kerr Village along Kerr Road to the northwest. Potential visitors to the retail component of the proposed development will be able to walk, cycle, or take transit to the subject site.

7.2.2 Availability of Public Parking

In addition to the site's multi-modal connectivity and location within the designated Kerr Village and adjacent downtown Oakville mixed-use areas, potential visitors can also be accommodated by existing on-street parking available along the length of Lakeshore Road West, Kerr Street, and John Street from the intersection of Kerr to Wilson. Parking is also provided north of the site approximately 350 meters from the subject site within a 5-minute walk. This parking supply is depicted in **Figure 7-1**.

Figure 7-1: On-Street Parking Availability

Source: Google Earth, April 2023

A total of 64 2-hour on-street paid parking spaces, 56 9-hour paid parking spaces, 18 on-street weekday parking spaces, and 61 parking garage spaces are available within a 5-minute walk of the subject site.

7.3 BICYCLE PARKING REQUIREMENTS

By-law 2014-014 was also reviewed to identify the bicycle parking requirements for the subject development. As detailed in **Table 7-2**, a total of 30 bicycle parking spaces are required as per the Town of Oakville's Zoning By-law 2014-014 Section 5.4.1 b): *"In no circumstance shall the number of minimum bicycle parking spaces required on a lot be greater than 30*".

Table 7-2: Town of Oakville By-law 2014-014– Bicycle Parking Requirements

Land Use	Zoning By-law 2014-014 Bicycle Requirements	Unit Count/NFA	Minimum Required Supply	Proposed Supply
Residential	0.75 spaces/dwelling	152	30	154
Visitor	0.25 spaces/dwelling			
New Commercial	Greater of 2 or 1.0 spaces/1,000 m² NFA	630 m²		
		Total	**30**	**154**

The subject development proposes to provide a bicycle storage area that can accommodate a total of 154 bicycle parking spaces on-site. This surplus in bicycle parking will support individuals to travel by bicycle to and from the subject site.

7.4 LOADING REQUIREMENTS AND FUNCTIONAL DESIGN REVIEW

According to Zoning By-Law 2014-014, there is no minimum number of loading spaces required. One (1) loading space is provided on site for the residential and retail uses in accordance with the dimensions required under By-law 2014-014. A full swept path diagram and functional design review of the site will be provided in **Appendix G,** which confirms the functionality of the proposed, site plan, loading space, and underground parking proposed.

8 TRANSPORTATION DEMAND MANAGEMENT

Transportation Demand Management (TDM) is a set of strategies that strive towards a more efficient transportation network by influencing travel behaviour. Effective TDM measures can reduce vehicle usage and encourage residents to engage in more sustainable methods of travel. There are various opportunities to incorporate TDM measures that support alternative modes of transportation. The recommendations should enhance non-single occupant auto vehicle trips for future residents of the subject development.

These TDM strategies are critical in achieving a balanced multi-modal transportation system in the Town of Oakville and supporting goals towards sustainable development as identified by the *Sustainable Building Design Procedure* to achieve net zero greenhouse gas emissions.

following multimodal infrastructure strategies and TDM measures are recommended for consideration to support the subject site's parking strategy and role in transforming the surrounding neighbourhood. As the development moves through the development process, the TDM plan will undergo further refinement.

8.1 PARKING-BASED STRATEGIES

REPLACEMENT OF VACANT LAND WITH A MIXED-USE DEVELOPMENT THAT INCLUDES ON-SITE AMENITIES AND WILL ACTIVATE THE STREET FRONTAGE.

- The proposed development is representative of a shift away from an auto-oriented site context that currently exists at the subject site towards a development that supports active transportation at-grade. The nature of the proposed development will encourage pedestrian activity at-grade, including for individuals connecting to transit or travelling by bike to nearby facilities.

8.2 CYCLING AND PEDESTRIAN-BASED STRATEGIES

ON-SITE BICYCLE PARKING AND MAINTENANCE FACILITIES.

- The proposed development will provide bicycle parking facilities to support and encourage active transportation. A surplus of bicycle parking compared to by-law requirements is currently proposed for the subject site, which will support individuals to travel by bike to and from the site via dedicated cycling infrastructure located in the surrounding area along Lakeshore Road and Rebecca/Randall Street.
- The proposed bike storage facilities located on the first underground level of the building will accommodate resident bike parking in a manner that is safe, secure, and convenient. Cyclists can be assured that the proposed bicycle parking will be securely and conveniently located.
- It is recommended that as the development and overall site plan design progresses, consideration be given to providing additional bicycle amenities on-site, such as additional short-term parking and/or bike repair stations, to further support residential cycling as a primary travel mode.

PROMOTE AND INCREASE CYCLING AWARENESS AND MULTI-MODAL TRANSPORT.

- It is recommended that information packages be provided to residents of the proposed development to help encourage active transportation and increase awareness of different travel alternatives. The package should include information regarding the environmental and health benefits of cycling, rules of the road, as well as maps of active transportation infrastructure available in the surrounding area.

BUILDING ENTRANCES ORIENTED CLOSE TO THE STREET WITH DIRECT CONNECTIONS TO THE PEDESTRIAN PATHWAYS AND CONSISTENT STREET FRONTAGES.

- The proposed pedestrian entrances front onto Lakeshore Road West and Chisholm Street. Both roadways provide convenient access for pedestrians, transit users and cyclists via continuous sidewalks to provide an overall comfortable and convenient pedestrian environment.
- It is recommended that as the site plan develops, consideration be given to providing an enhanced pedestrian environment along Lakeshore Road West through securing public realm improvements such as landscape buffers and short-term bike parking.

MIXED-USE AREA AND DENSITY THAT CONTRIBUTES TO THE STREETSCAPE AND SUPPORTS LOCAL ACTIVITY.

- As discussed in **Section 2**, the subject site is located in an area that is somewhat bikeable, with retail and commercial uses, within convenient walking distance. The proposed development will increase density along the corridor and support the development of the corridor. The proposed site design includes active street frontages and will promote local walking and biking to, from, and between the uses on-site.

8.3 TRANSIT-BASED STRATEGIES

TRANSIT INCENTIVE PROGRAM.

- As PRESTO becomes a dominant form of payment for transit throughout the Greater Toronto and Hamilton Area (GTHA), it is recommended that pre-loaded PRESTO cards be offered to units in their welcome package. This incentive, coupled with the site's proximity to transit, provides an opportunity for residents to experience the benefits of using adjacent transit facilities.

PROMOTION OF SIGNIFICANT TRANSIT INVESTMENT.

- As discussed in **Section 2** and **Section 3**, the site will be near the intersection of existing Oakville Transit bus routes in and will be within cycling or connecting transit-ride distance of the Oakville GO Station. The site's proximity to transit will help to encourage residents to utilize alternative modes to the personal vehicle to undertake daily activities.
- It is recommended that the subject site's context and proximity to transit be heavily featured in promotional materials. Additionally, the proposed parking supply and additional TDM measures provide support for transit use by encouraging households without a vehicle to utilize alternative travel modes.

9 CONCLUSIONS AND RECOMMENDATIONS

- The proposed development consists of a 10-storey residential building providing a total of 152 residential units and 630 m^2 of ground floor commercial space. All parking spaces will be provided across 4 levels of underground parking, to accommodate a total of 183 parking spaces.
- The subject site is located in an area that will be accessible to transit operated by the Town of Oakville via surface bus routes, as well as the Oakville GO Station providing a regional rail connection within a reasonable connecting bus-ride distance from the subject site.

  The subject site is also within walking and cycling distance of many destinations. Cycling features along along Lakeshore Road West, from Dorval Drive to Wilson Street, and along Rebecca Street, provide connections to the Town's cycling network within close proximity of the subject site. The subject site is also located within an increasingly walkable neighbourhood with many existing mixed-use residential developments, retail stores and restaurants, within a 10-15-minute walk.
- Under existing conditions, all intersections operate at within capacity for northbound and southbound movements during both AM and PM peak hours. Under future background conditions, all intersections are expected to continue to operate under capacity and at acceptable levels of service during each peak hour.
- The site is expected to generate 71 two-way primary auto trips (20 inbound and 51 outbound) during AM peak hours and 85 two-way primary auto trips (48 inbound and 37 outbound) during the weekday PM peak hour.
- Under future total conditions, all studied intersections are expected to operate similar to future background conditions, with minimal impact to traffic operations anticipated. Overall, the proposed development does not present any significant impact to future traffic conditions in the study area and can be accommodated by the existing study area road network.
- The proposed parking provision consists of 183 total parking spaces, across 4 underground parking garages, to accommodate 31 visitor, 152 residential, and no commercial parking spaces. The proposed parking supply will meet by-law requirements for residents and visitors. No commercial parking is proposed on-site given the small-scale of each commercial unit proposed, the site's location within the mixed-use growth area of Kerr Village, its proximity to existing commercial uses already generating parking in the area, and the availability of public parking to accommodate new retail trips. Given the site's existing and future transportation context, daily activities can be readily accomplished without the use of a private vehicle. The proposed parking strategy will help to reduce single-occupant vehicle (SOV) trips, consistent with transportation and sustainability objectives.
- The proposed bicycle parking supply satisfies and exceeds the Town of Oakville Zoning By-law 2014-014 requirements.
- Several TDM measures have been recommended to support the site's parking strategy. TDM recommendations include the provision of additional bicycle parking and amenities and consideration towards securing transit incentives. Additional details and refinement to the TDM strategy will be undertaken as the development progresses through the development application process.
- One (1) loading space will be provided on-site to accommodate waste collection and deliveries.

APPENDIX A

Terms of Reference

LEA Consulting Ltd.
625 Cochrane Drive, 9th Floor
Markham, ON, L3R 9R9 Canada
T | 905 470 0015 F | 905 470 0030
WWW.LEA.CA

August 22nd, 2022

Reference Number: 23129

Mr. Matt Krusto
Supervisor, Transportation Development Review
Halton Region
Via Email: matt.krusto@halton.ca

Mr. Syed Rizvi
Transportation Engineer
Town of Oakville
Via Email: syed.rizvi@oakville.ca

RE: Terms of Reference – Transportation Impact Study
Proposed Mixed Use Development
42 Lakeshore Road West, Town of Oakville

Dear Mr. Krusto and Mr. Rizvi,

We wish to confirm the following work plan for a Transportation Impact Study (TIS) for the proposed mid-rise mixed use development located at 42 Lakeshore Road West (herein referred to as the "subject site") in the Town of Oakville. The subject site is currently vacant, as illustrated in **Figure 1.**

Figure 1: Site Location (Image: Google Maps)

The development proposal consists of a 5-storey mixed use building containing approximately 50 residential units and 410 m^2 of commercial GFA. The proposed parking supply has not yet been finalized. Site access will be provided via a driveway connection to Chisholm Street.

The TIS for the proposed development will be conducted following the Halton Region Transportation Impact Study Guidelines, dated January 2015. The following outlines the proposed Terms of Reference for the study.

STUDY AREA & TRAFFIC DATA

The proposed study area will include the analysis of the following intersections:

- Lakeshore Road West and Forsythe Street (Signalized);
- Lakeshore Road West and Chisolm Street (Unsignalized);
- Lakeshore Road West and Wilson Street (Unsignalized); and
- Lakeshore Road West and Kerr Street (Signalized).

LEA proposes to utilize historical TMC data (where available and collected within the last two years) and survey any remaining intersections.

TRAFFIC ASSESSMENT & STUDY HORIZON YEAR

The study will focus on weekday AM and PM peak hour traffic operations. Synchro version 11.0 will be used to assess intersection operations during the weekday peak hours. A five (5) year horizon will be assessed for the year 2027.

BACKGROUND TRAFFIC

General Corridor Growth Rate – LEA is requesting that the Town/Region provide the corridor growth rate to be assumed for Lakeshore Road West and Kerr Street. Alternatively, LEA can review AADT data to determine an appropriate growth rate for both corridors.

Background Development Traffic – LEA is requesting that the Region/Town provide any relevant background developments for inclusion within our study. Our initial review does not indicate any active development applications within the study area.

TRIP GENERATION, DISTRIBUTION, & ASSIGNMENT

Trip generation associated with the proposed development will be forecast using the Institute of Transportation Engineers (ITE) Trip Generation Manual 11th Edition.

The general trip distribution and assignment of site traffic will be based on the latest Transportation Tomorrow Survey (TTS) data and existing traffic patterns. Trip assignment will reflect the configuration of site accesses, turning restrictions, and logical routings.

FUTURE TRAFFIC SCENARIOS

Future background and future total analyses for the aforementioned intersections within the study area will be over a five (5) year horizon for the year 2027.

REMEDIAL MEASURES

Any movements at the studied intersections that exceed a V/C ratio of 0.85 under future total conditions will be identified. If remedial actions such as signal optimization are unsuccessful this will also be identified. If remedial measures are to be employed, a scenario will be provided demonstrating the change in intersection operations.

PARKING

LEA proposes to conduct a parking study to determine the applicability of the enforcing by-law to the present local transportation context. A review of proposed and approved parking rates at nearby developments will inform what has been deemed appropriate for the study area.

TRANSPORTATION DEMAND MANAGEMENT

A Transportation Demand Management (TDM) Plan will be provided to promote alternate modes of travel.

FUNCTIONAL DESIGN REVIEW

A swept path analysis will also be conducted to confirm that all servicing vehicles can be accommodated in an acceptable manner.

Should you have any questions or concerns regarding these terms of reference, please do not hesitate to contact me by email at rkeel@lea.ca.

Yours truly,

LEA CONSULTING LTD.

Robert Keel, M.Sc.Pl., MCIP, RPP
Project Manager

From: Syed Rizvi <syed.rizvi@oakville.ca>
Sent: August 27, 2022 10:03 PM
To: Robert Keel
Cc: Krusto, Matt
Subject: RE: TIS Terms of Reference - 42 Lakeshore Road West

Follow Up Flag: Follow up
Flag Status: Flagged

External Sender

Hi Robert,

Hope all is well. Town comments on the proposed site TIS Terms of Reference are:

TMC Data – The traffic data for the proposed study area intersections should be collected after September, 10th, 2022 for traffic analysis. TMC data comparison of current year to year 2019 TMC should be included under a section in TIS report for staff review and comments.
Growth Rate – A 2% growth rate should be applied to all movements of the study area intersections volumes.
Parking - Required parking spaces as per the Town of Oakville zoning by-law 2014-14 should be provide on-site for the residential or retail component of the land use.

Let me know if you have any questions.

Thanks,
Syed

Syed Rizvi, M.Sc., P. Eng
Transportation Engineer
Transportation and Engineering
Town of Oakville | 905-845-6601, ext.3981 | www.oakville.ca

From: Robert Keel <rkeel@lea.ca>
Sent: Monday, August 22, 2022 6:59 PM
To: Krusto, Matt <Matt.Krusto@halton.ca>; Syed Rizvi <syed.rizvi@oakville.ca>
Subject: TIS Terms of Reference - 42 Lakeshore Road West

Hi Matt and Syed,

Hope you are both doing well and having an enjoyable summer. I've attached a TIS terms of reference for a proposed development at 42 Lakeshore Road West in Oakville, please advise your comments and any questions you may have.

Regards,

Robert Keel, MSc. PI, MCIP, RPP
Project Manager
Transportation Group

LEA Consulting Ltd.
425 University Suite 400 | Toronto, ON | M5G 1T6
T: 905-470-0015 Ext. 274 | C: 647-562-6117 | E: rkeel@lea.ca
www.LEA.ca

From: Krusto, Matt <Matt.Krusto@halton.ca>
Sent: August 22, 2022 7:05 PM
To: Robert Keel; Syed Rizvi
Subject: Re: TIS Terms of Reference - 42 Lakeshore Road West

Follow Up Flag: Follow up
Flag Status: Flagged

External Sender

Hi Rob,

No Regional transportation comments, as the site is not on or near a Regipnal road.

Thanks for circulating.

Matt

Sent via BlackBerry Hub+ Inbox for Android

From: rkeel@lea.ca
Sent: August 22, 2022 6:59 p.m.
To: Matt.Krusto@halton.ca; syed.rizvi@oakville.ca
Subject: TIS Terms of Reference - 42 Lakeshore Road West

Hi Matt and Syed,

Hope you are both doing well and having an enjoyable summer. I've attached a TIS terms of reference for a proposed development at 42 Lakeshore Road West in Oakville, please advise your comments and any questions you may have.

Regards,

Robert Keel, MSc. PI, MCIP, RPP
Project Manager
Transportation Group

LEA Consulting Ltd.
425 University Suite 400 | Toronto, ON | M5G 1T6
T: 905-470-0015 Ext. 274 | C: 647-562-6117 | E: rkeel@lea.ca
www.LEA.ca

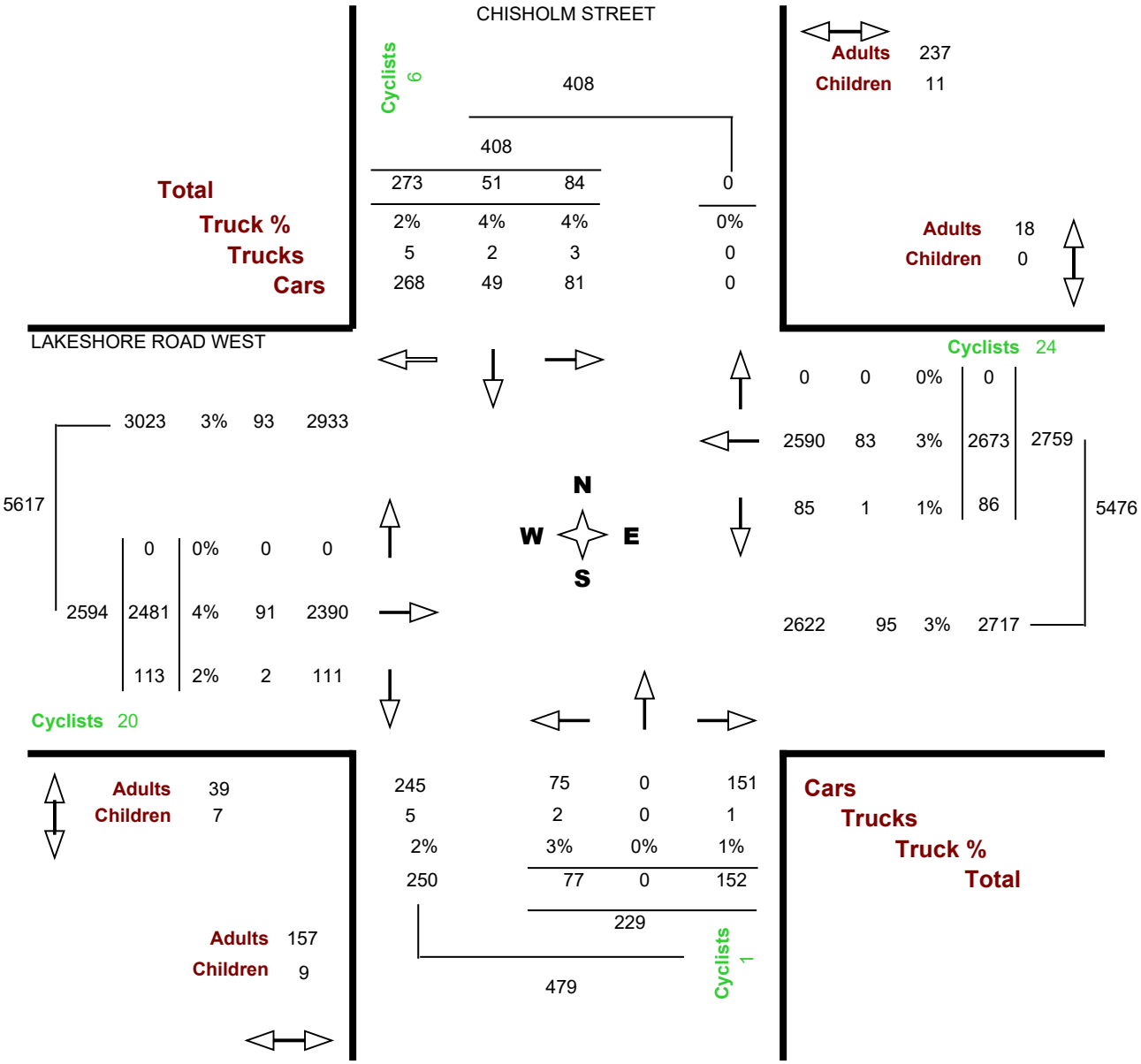
Matt Krusto
Supervisor, Transportation Development Review
Infrastructure Planning & Policy
Public Works
Halton Region
905-825-6000, ext. 7225 | 1-866-442-5866

APPENDIX B

Existing Traffic Data & Signal Timing Plans

Turning Movements Count - Full Study Report

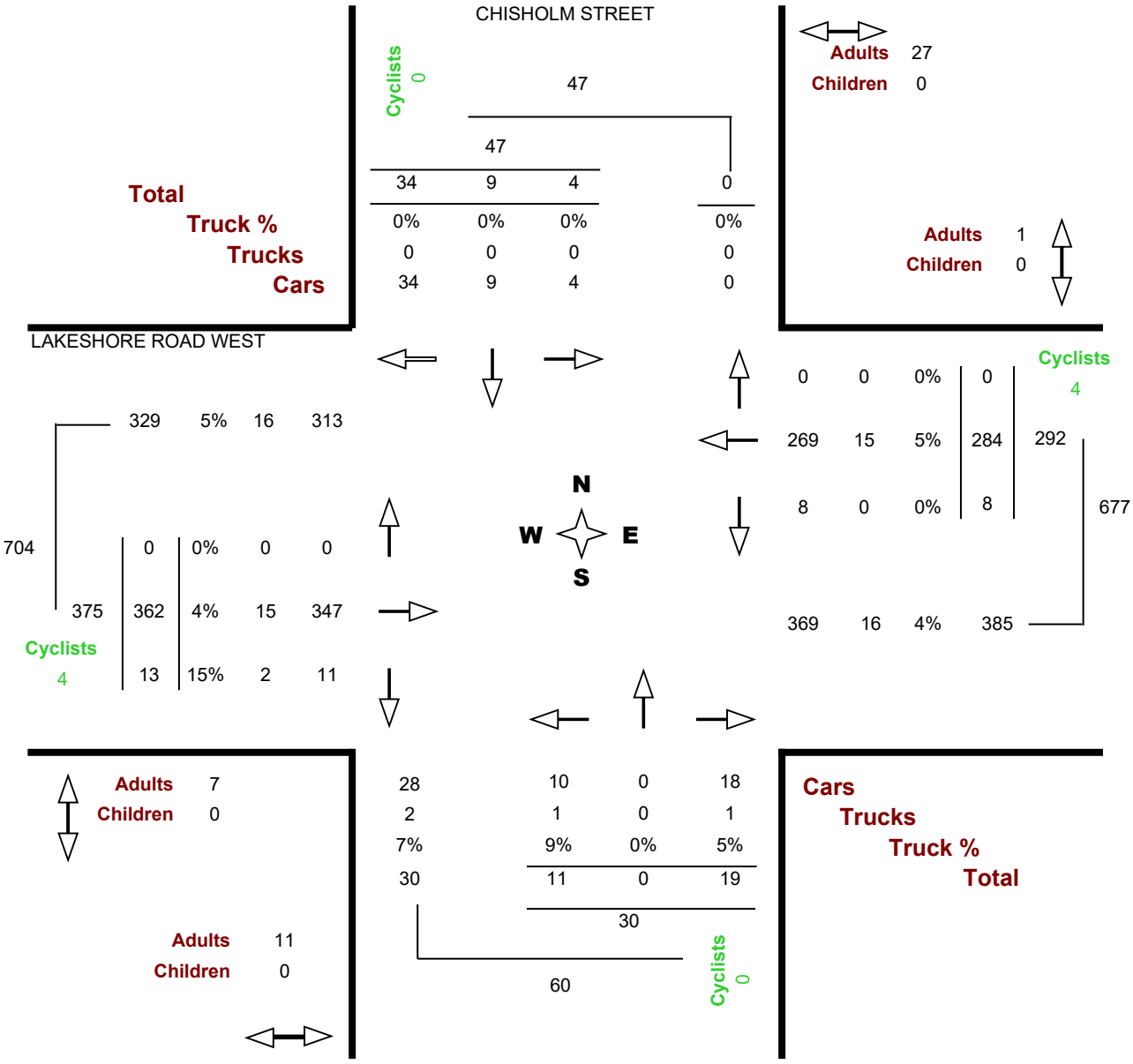
Location..... LAKESHORE ROAD WEST @ CHISHOLM STREET
Municipality..... OAKVILLE
GeoID..... 30082101
Count Date..... Tuesday, 05 October, 2021



In all counts dated before 2018 - Adult pedestrian numbers include seniors, and the senior count = 0

Turning Movements Report - AM Period

Location..... LAKESHORE ROAD WEST @ CHISHOLM STREET
Municipality..... OAKVILLE
GeoID..... 30082101
Count Date..... Tuesday, 05 October, 2021 **Peak Hour.....** 08:00 AM — 09:00 AM

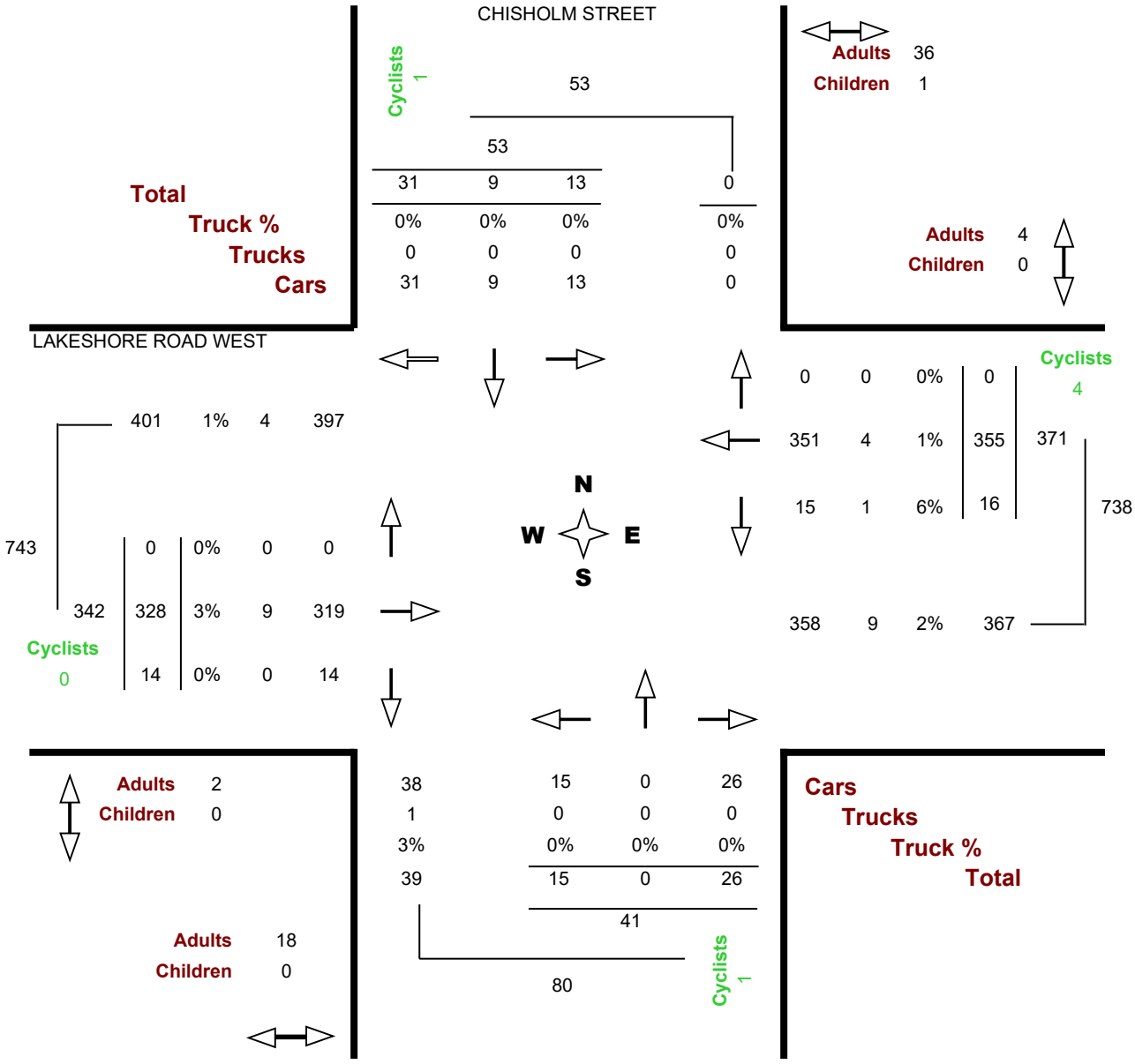


THIS INFORMATIONN IS SUPPLIED FROM OUR RECORDS AND IS NOT GUARANTEED TO BE CORRECT. WE RECOMMEND FIELD CHECKING TO VERIFY THE INFORMATION SHOWN.

In all counts dated before 2018 - Adult pedestrian numbers include seniors, and the senior count = 0

Turning Movements Report - MD Period

Location..... LAKESHORE ROAD WEST @ CHISHOLM STREET
Municipality..... OAKVILLE
GeoID..... 30082101
Count Date..... Tuesday, 05 October, 2021 **Peak Hour.....** 01:00 PM — 02:00 PM



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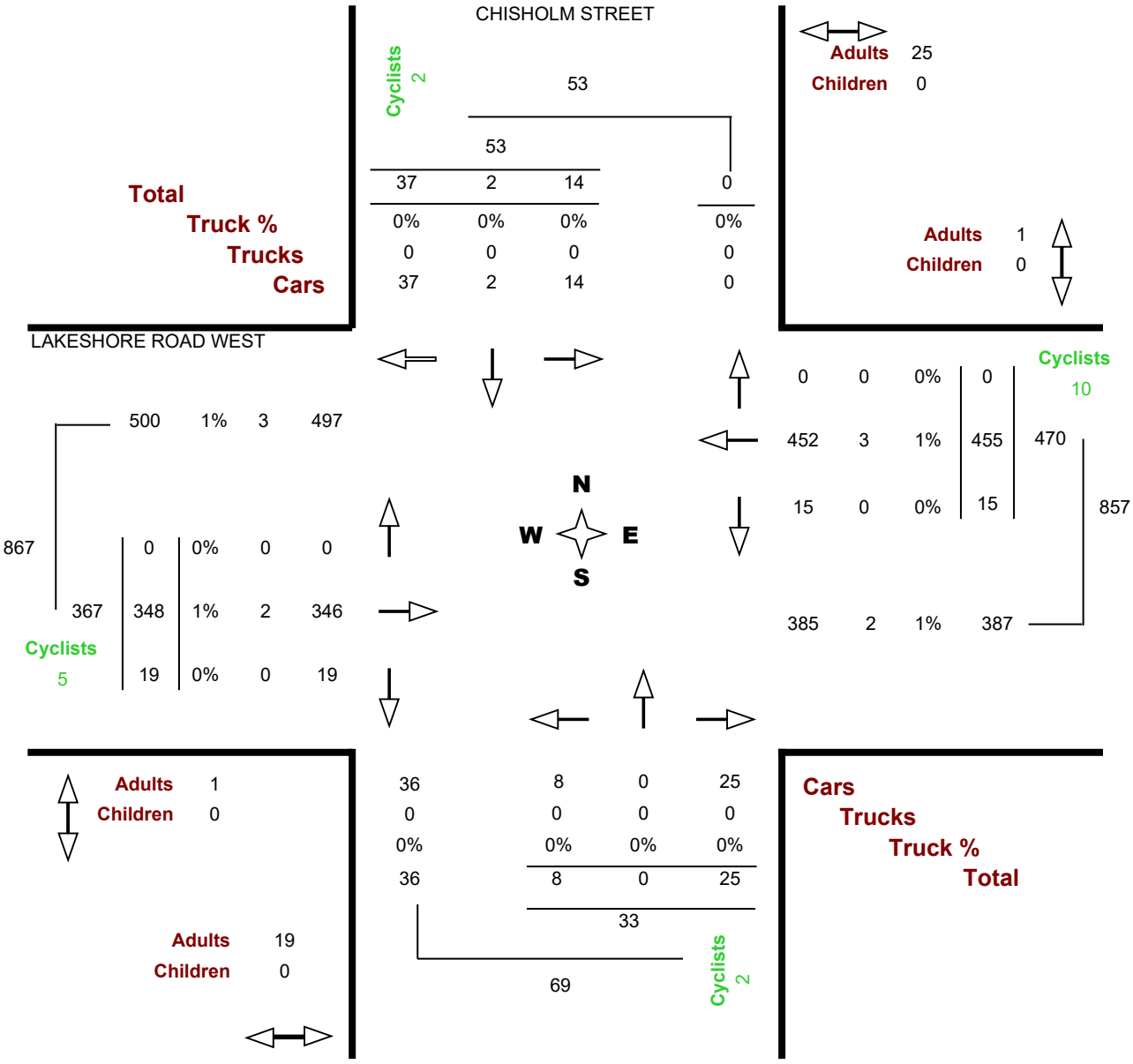
Turning Movements Report - PM Period

Location..... LAKESHORE ROAD WEST @ CHISHOLM STREET
Municipality..... OAKVILLE
GeoID..... 30082101
Count Date..... Tuesday, 05 October, 2021 **Peak Hour.....** 04:45 PM — 05:45 PM



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In all counts dated before 2018 - Adult pedestrian numbers include seniors, and the senior count = 0

Turning Movement Count - Details Report

Location..... LAKESHORE ROAD WEST @ CHISHOLM STREET

Municipality..... OAKVILLE

Count Date..... Tuesday, October 05, 2021

		CHISHOLM STREET										LAKESHORE ROAD WEST									
		North Approach					South Approach					East Approach					West Approach				
Time Period		LT	TH	RT	Cyclists	Ped	LT	TH	RT	Cyclists	Ped	LT	TH	RT	Cyclists	Ped	LT	TH	RT	Cyclists	Ped
07:00	07:15	4	0	3	0	3	3	0	1	0	1	0	10	0	0	0	0	26	0	0	1
07:15	07:30	0	0	5	0	3	0	0	2	0	5	0	24	0	0	0	0	41	2	0	1
07:30	07:45	1	0	8	0	5	0	0	0	0	5	1	24	0	0	0	0	55	1	1	1
07:45	08:00	1	1	6	0	1	1	0	3	0	2	0	50	0	1	0	0	78	1	0	1
Hourly Total		6	1	22	0	12	4	0	6	0	13	1	108	0	1	0	0	200	4	1	4
08:00	08:15	0	2	5	0	9	6	0	5	0	2	2	49	0	2	0	0	87	1	0	2
08:15	08:30	0	1	13	0	6	3	0	7	0	3	0	85	0	1	0	0	108	6	3	2
08:30	08:45	3	2	8	0	8	0	0	1	0	3	6	76	0	0	1	0	72	1	1	1
08:45	09:00	1	4	8	0	4	2	0	6	0	3	0	74	0	1	0	0	95	5	0	2
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11:45	12:00	4	1	5	0	6	2	0	4	0	4	1	92	0	0	0	0	81	1	0	4
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12:45	13:00	0	0	10	0	6	3	0	7	0	8	4	73	0	0	0	0	80	3	2	2
Hourly Total		9	9	45	0	37	10	0	17	0	23	15	304	0	0	5	0	288	14	4	5
13:00	13:15	6	0	10	1	11	4	0	9	0	1	4	85	0	0	0	0	83	4	0	0
13:15	13:30	4	7	8	0	9	4	0	5	0	1	0	78	0	1	2	0	67	5	0	0
13:30	13:45	2	1	4	0	6	4	0	2	0	11	10	96	0	2	0	0	83	3	0	1
13:45	14:00	1	1	9	0	11	3	0	10	0	5	2	96	0	1	2	0	95	2	0	1
Hourly Total		13	9	31	1	37	15	0	26	0	18	16	355	0	4	4	0	328	14	0	2
15:00	15:15	4	2	12	0	8	1	0	3	0	6	0	83	0	0	0	0	76	1	0	2
15:15	15:30	1	1	12	2	8	1	0	3	1	7	1	136	0	0	0	0	86	1	0	0
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Hourly Total		13	7	40	2	33	2	0	15	1	29	6	446	0	0	0	0	310	13	3	7
16:00	16:15	4	3	10	0	11	0	0	7	0	4	3	103	0	1	0	0	97	5	0	5
16:15	16:30	1	3	6	0	7	5	0	6	0	10	3	105	0	0	1	0	97	6	2	3
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16:45	17:00	7	0	11	0	5	1	0	8	0	2	7	120	0	4	1	0	90	4	0	1
Hourly Total		13	7	33	0	34	11	0	26	0	19	15	432	0	6	3	0	346	17	2	9
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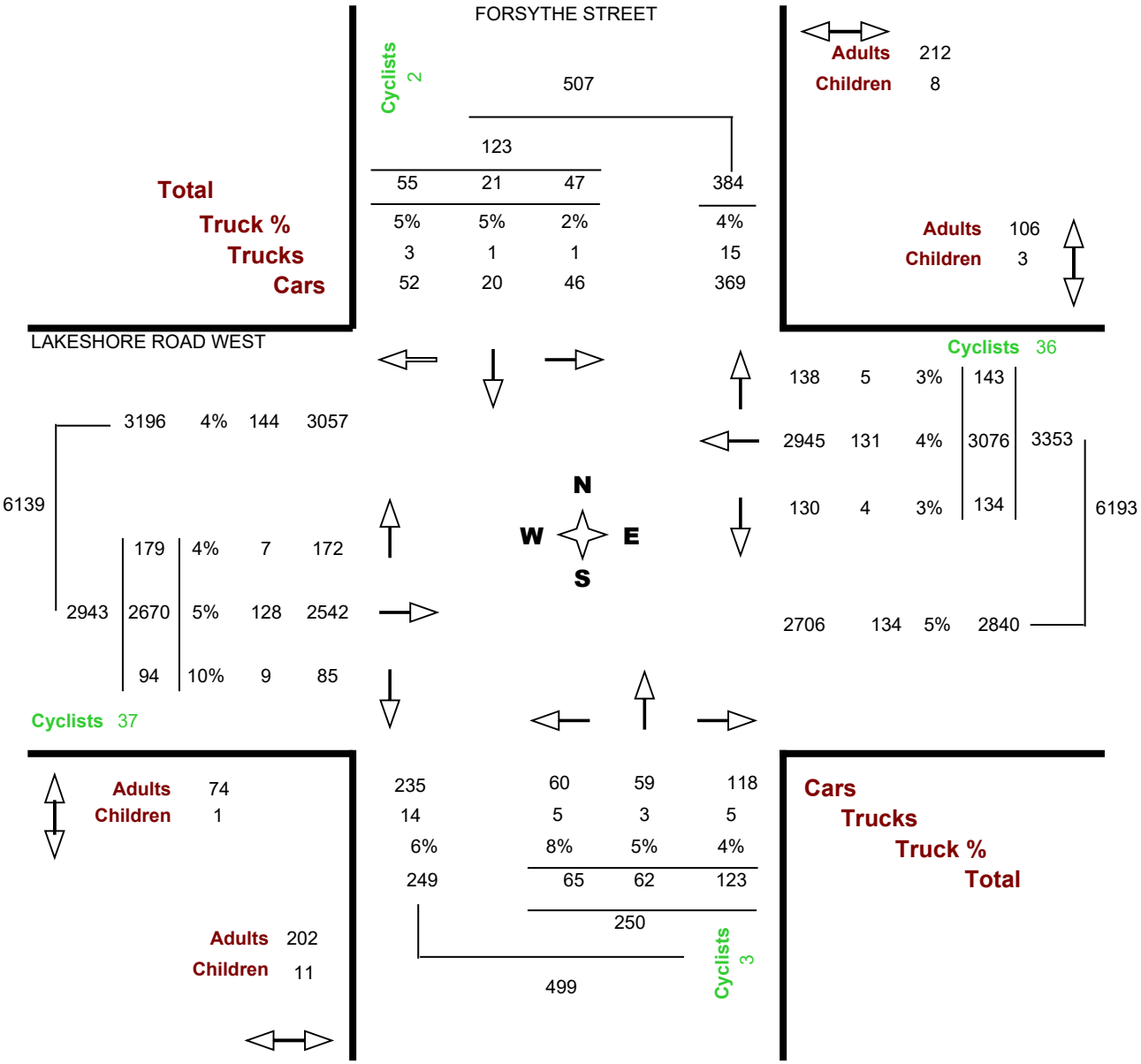
17:15	17:30	3	1	10	2	9	1	0	3	0	8	3	107	0	3	0	0	94	6	1	0
17:30	17:45	2	0	10	0	7	4	0	12	0	2	4	95	0	3	0	0	83	5	4	0
17:45	18:00	3	2	3	1	7	3	0	7	0	15	3	83	0	1	0	0	73	6	0	5
Hourly Total		10	4	29	3	27	10	0	24	0	32	11	418	0	7	0	0	331	21	5	5
Grand Total		84	51	273	6	248	77	0	152	1	166	86	2673	0	24	18	0	2481	113	20	46
Truck %		4%	4%	2%			3%	0%	1%			1%	3%	0%			0%	4%	2%		

Turning Movements Count - Full Study Report

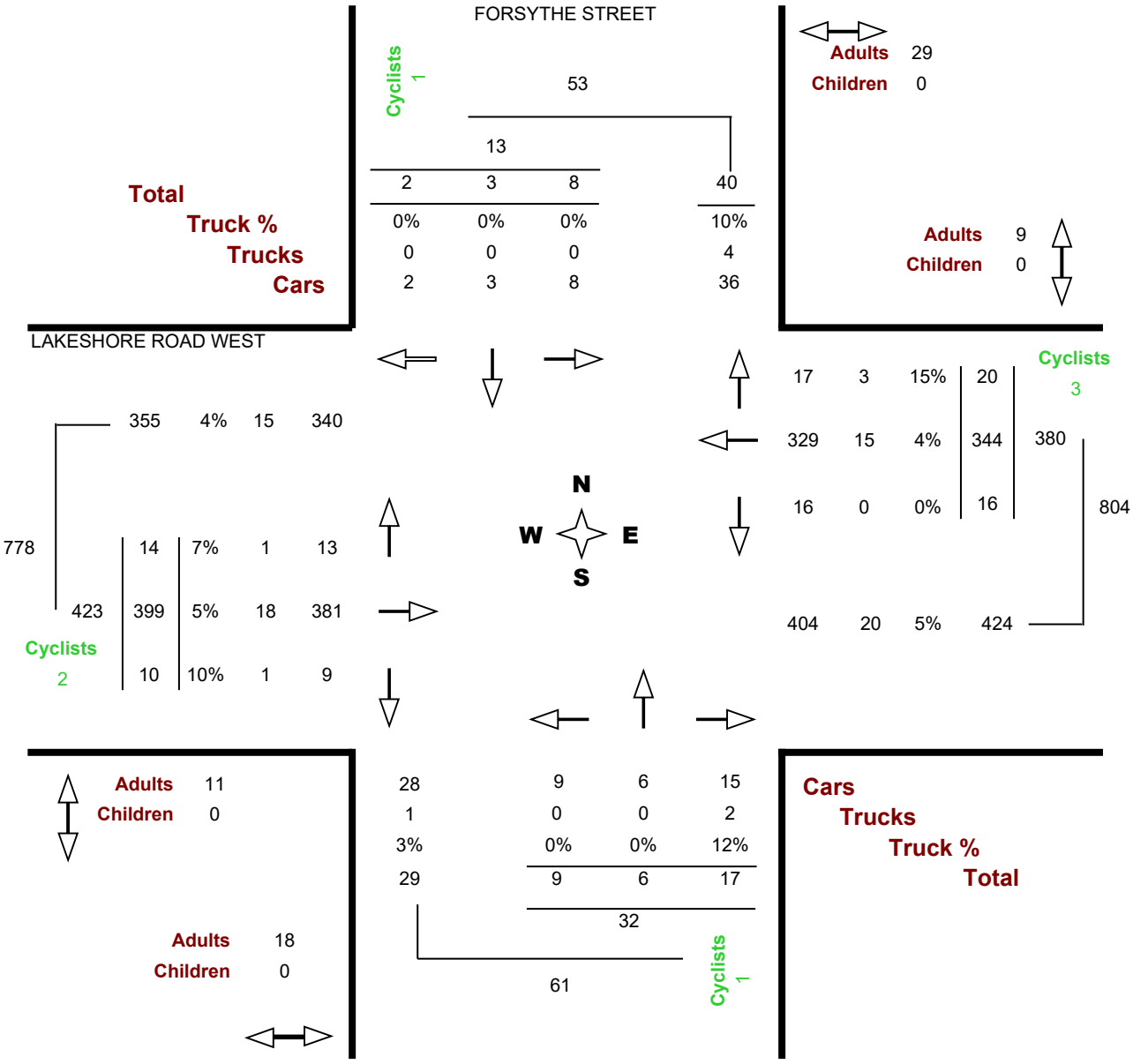
Location..... LAKESHORE ROAD WEST @ FORSYTHE STREET
Municipality..... OAKVILLE
GeoID..... 30082201
Count Date..... Thursday, 02 June, 2022



In all counts dated before 2018 - Adult pedestrian numbers include seniors, and the senior count = 0

Turning Movements Report - AM Period

Location..... LAKESHORE ROAD WEST @ FORSYTHE STREET
Municipality..... OAKVILLE
GeoID..... 30082201
Count Date..... Thursday, 02 June, 2022 **Peak Hour.....** 08:00 AM — 09:00 AM



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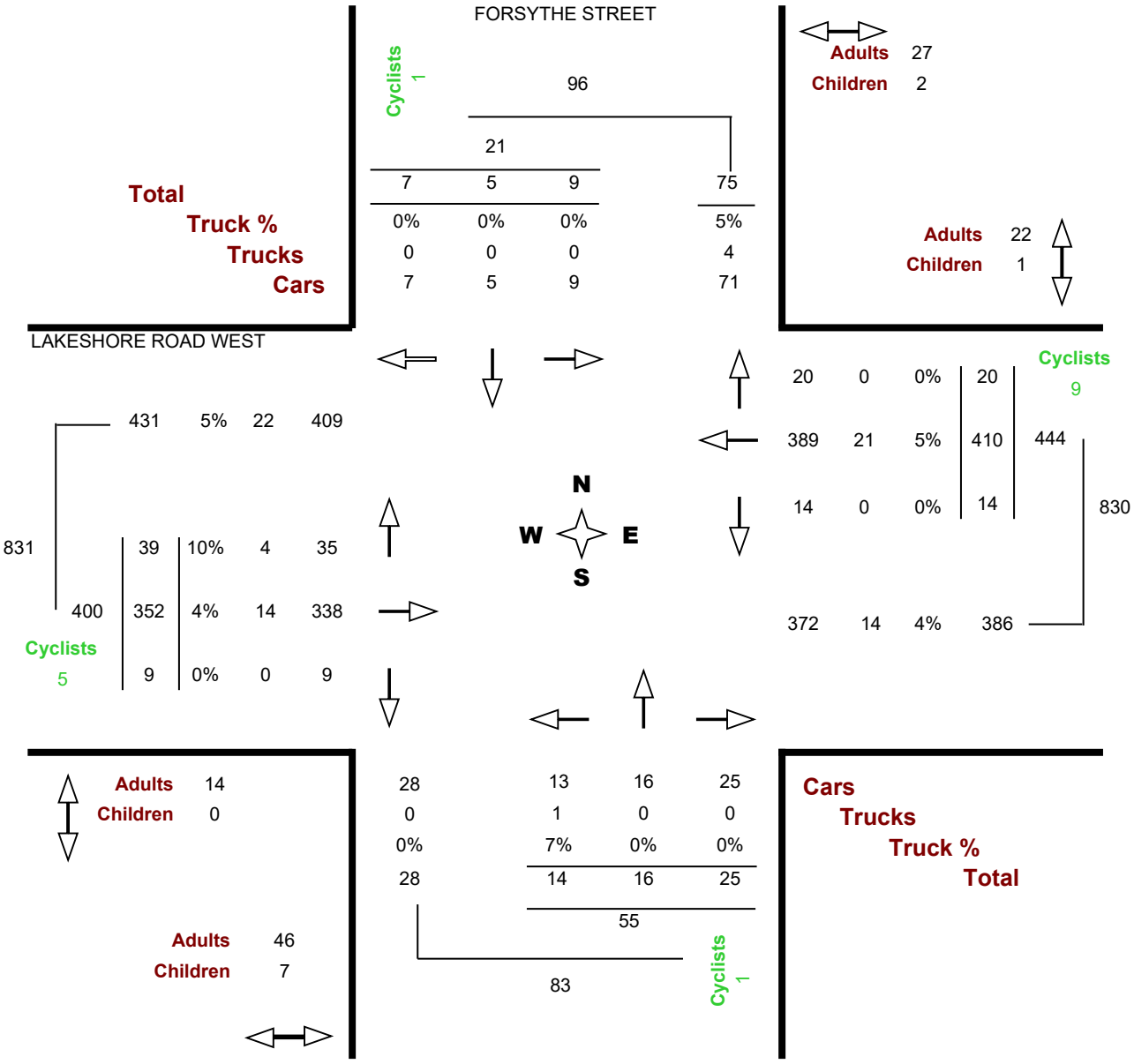
In all counts dated before 2018 - Adult pedestrian numbers include seniors, and the senior count = 0

Turning Movements Report - MD Period

Location..... LAKESHORE ROAD WEST @ FORSYTHE STREET
Municipality..... OAKVILLE
GeoID..... 30082201
Count Date..... Thursday, 02 June, 2022 **Peak Hour.....** 12:30 PM — 01:30 PM



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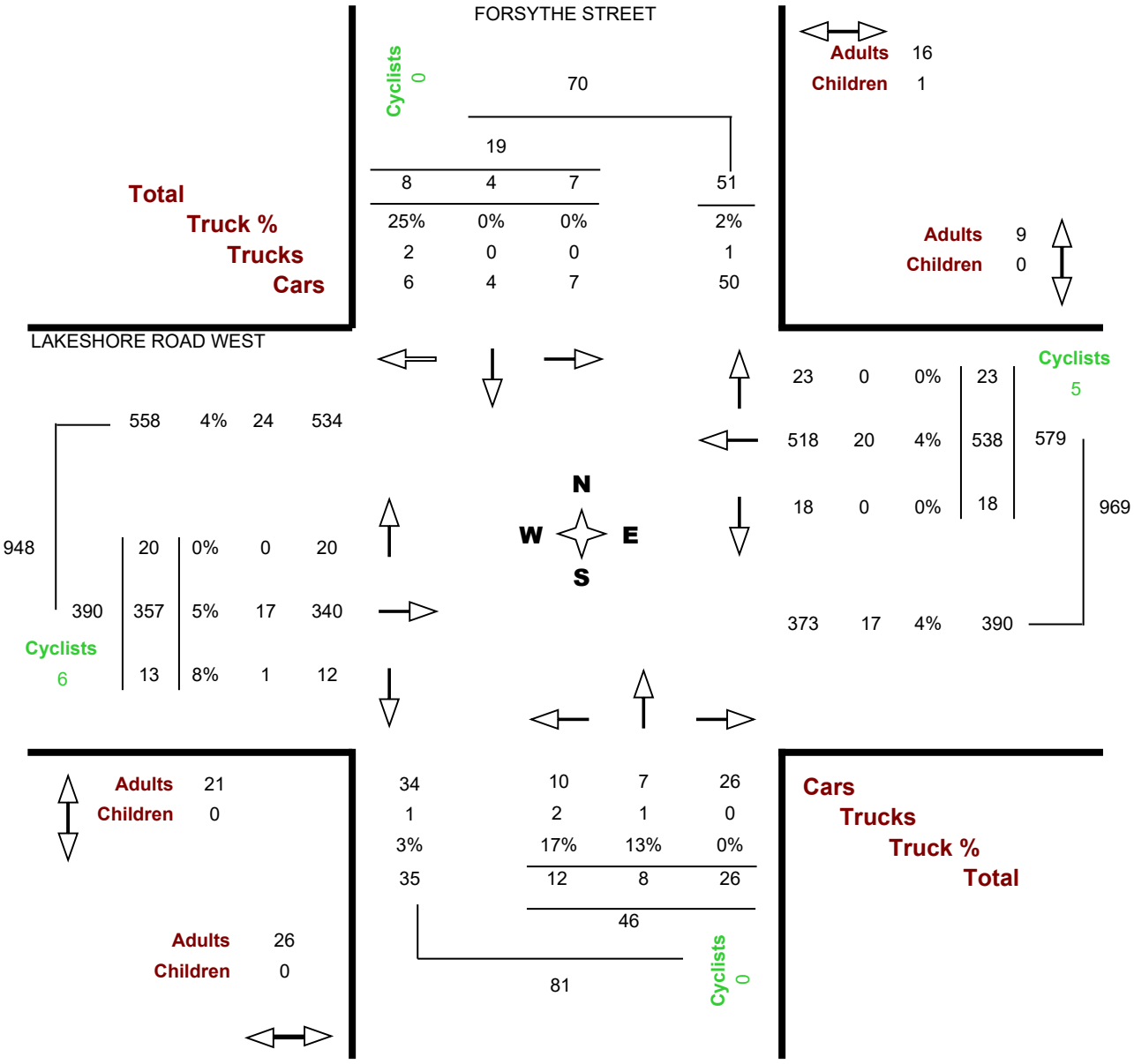
Turning Movements Report - PM Period

Location..... LAKESHORE ROAD WEST @ FORSYTHE STREET
Municipality..... OAKVILLE
GeoID..... 30082201
Count Date..... Thursday, 02 June, 2022 **Peak Hour.....** 03:00 PM — 04:00 PM



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In all counts dated before 2018 - Adult pedestrian numbers include seniors, and the senior count = 0

Turning Movement Count - Details Report

Location..... LAKESHORE ROAD WEST @ FORSYTHE STREET

Municipality..... OAKVILLE

Count Date..... Thursday, June 02, 2022

		FORSYTHE STREET										LAKESHORE ROAD WEST									
		North Approach					South Approach					East Approach					West Approach				
Time Period		LT	TH	RT	Cyclists	Ped	LT	TH	RT	Cyclists	Ped	LT	TH	RT	Cyclists	Ped	LT	TH	RT	Cyclists	Ped
07:00	07:15	1	0	0	0	3	2	1	1	0	7	0	15	1	0	5	1	33	0	1	0
07:15	07:30	1	0	2	0	7	0	1	1	0	5	1	31	4	3	1	1	50	2	4	1
07:30	07:45	1	0	3	0	3	1	1	1	0	4	1	35	7	1	8	2	56	2	4	1
07:45	08:00	2	2	0	0	13	2	2	2	0	10	0	46	2	1	2	5	81	2	3	3
Hourly Total		5	2	5	0	26	5	5	5	0	26	2	127	14	5	16	9	220	6	12	5
08:00	08:15	2	0	1	1	5	0	2	3	0	3	5	61	4	2	0	2	71	1	0	0
08:15	08:30	0	1	0	0	6	2	1	7	0	3	3	95	6	0	4	3	110	3	0	6
08:30	08:45	5	2	1	0	8	4	2	5	1	8	3	98	8	1	2	2	101	2	2	3
08:45	09:00	1	0	0	0	10	3	1	2	0	4	5	90	2	0	3	7	117	4	0	2
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Hourly Total		2	1	3	0	12	4	5	13	0	17	15	347	18	1	7	19	305	2	0	0
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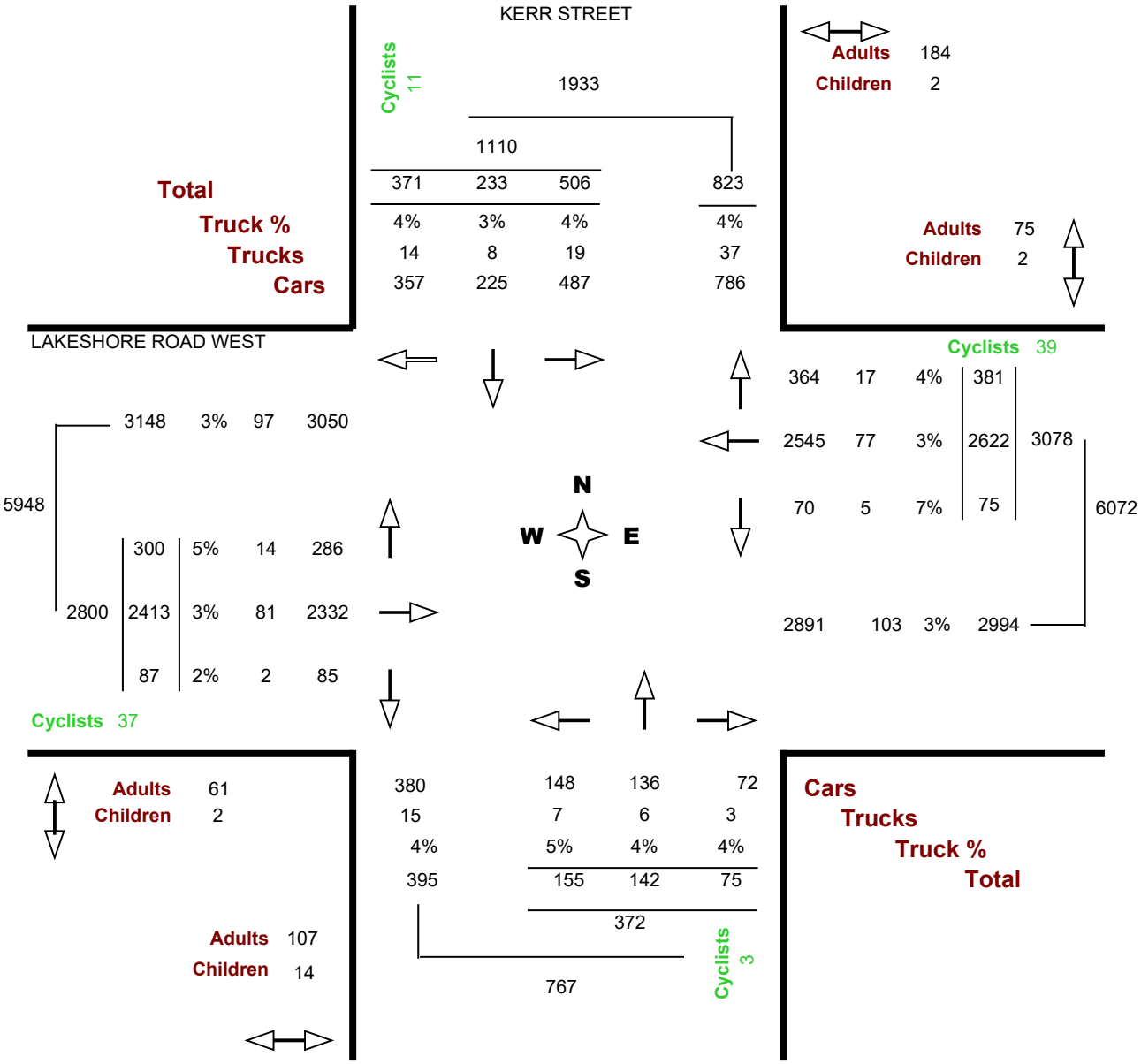
13:45	14:00	1	1	5	0	7	2	2	4	0	4	7	99	2	1	0	11	87	2	0	3
Hourly Total		2	5	17	0	25	9	13	17	1	31	20	417	18	7	8	40	339	10	4	9
15:00	15:15	2	1	0	0	5	2	3	8	0	3	6	126	6	3	4	6	78	2	2	2
15:15	15:30	3	1	0	0	1	3	2	3	0	3	4	112	4	0	1	2	97	7	2	10
15:30	15:45	1	1	2	0	3	4	2	9	0	9	3	151	8	0	4	4	103	3	1	4
15:45	16:00	1	1	6	0	8	3	1	6	0	11	5	149	5	2	0	8	79	1	1	5
Hourly Total		7	4	8	0	17	12	8	26	0	26	18	538	23	5	9	20	357	13	6	21
16:00	16:15	0	0	2	0	11	2	0	2	0	3	3	137	5	0	0	5	80	0	3	3
16:15	16:30	3	0	0	0	3	0	2	2	0	0	3	125	3	1	5	4	75	1	1	0
16:30	16:45	0	1	2	0	5	3	4	3	0	1	4	109	5	0	0	6	84	2	1	1
16:45	17:00	3	0	0	0	7	0	1	2	1	13	7	104	5	0	3	9	93	8	0	3
Hourly Total		6	1	4	0	26	5	7	9	1	17	17	475	18	1	8	24	332	11	5	7
17:00	17:15	0	1	2	0	9	5	2	4	0	7	9	109	4	2	3	3	93	4	2	7
17:15	17:30	0	0	2	0	10	1	2	2	0	5	8	118	3	2	6	6	100	12	0	0
17:30	17:45	2	1	2	0	13	1	0	3	0	8	5	123	5	3	5	9	74	7	0	0
17:45	18:00	1	1	1	0	18	2	1	1	0	10	7	96	2	1	9	6	89	8	1	2
Hourly Total		3	3	7	0	50	9	5	10	0	30	29	446	14	8	23	24	356	31	3	9
Grand Total		47	21	55	2	220	65	62	123	3	213	134	3076	143	36	109	179	2670	94	37	75
Truck %		2%	5%	5%			8%	5%	4%			3%	4%	3%			4%	5%	10%		

Turning Movements Count - Full Study Report

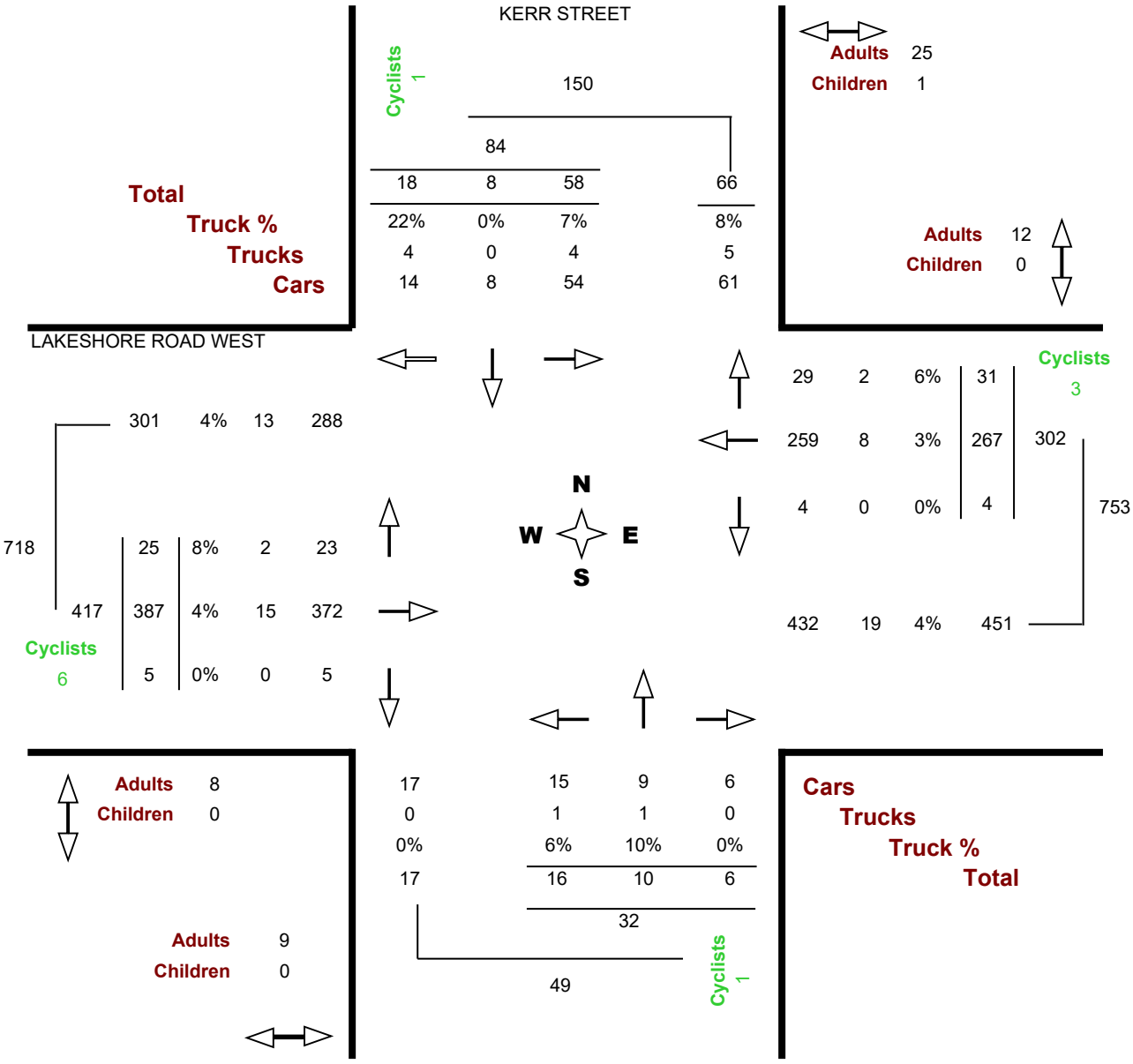
Location..... LAKESHORE ROAD WEST @ KERR STREET
Municipality..... OAKVILLE
GeoID..... 30081901
Count Date..... Tuesday, 31 May, 2022



In all counts dated before 2018 - Adult pedestrian numbers include seniors, and the senior count = 0

Turning Movements Report - AM Period

Location..... LAKESHORE ROAD WEST @ KERR STREET
Municipality..... OAKVILLE
GeoID..... 30081901
Count Date..... Tuesday, 31 May, 2022 **Peak Hour.....** 08:00 AM — 09:00 AM

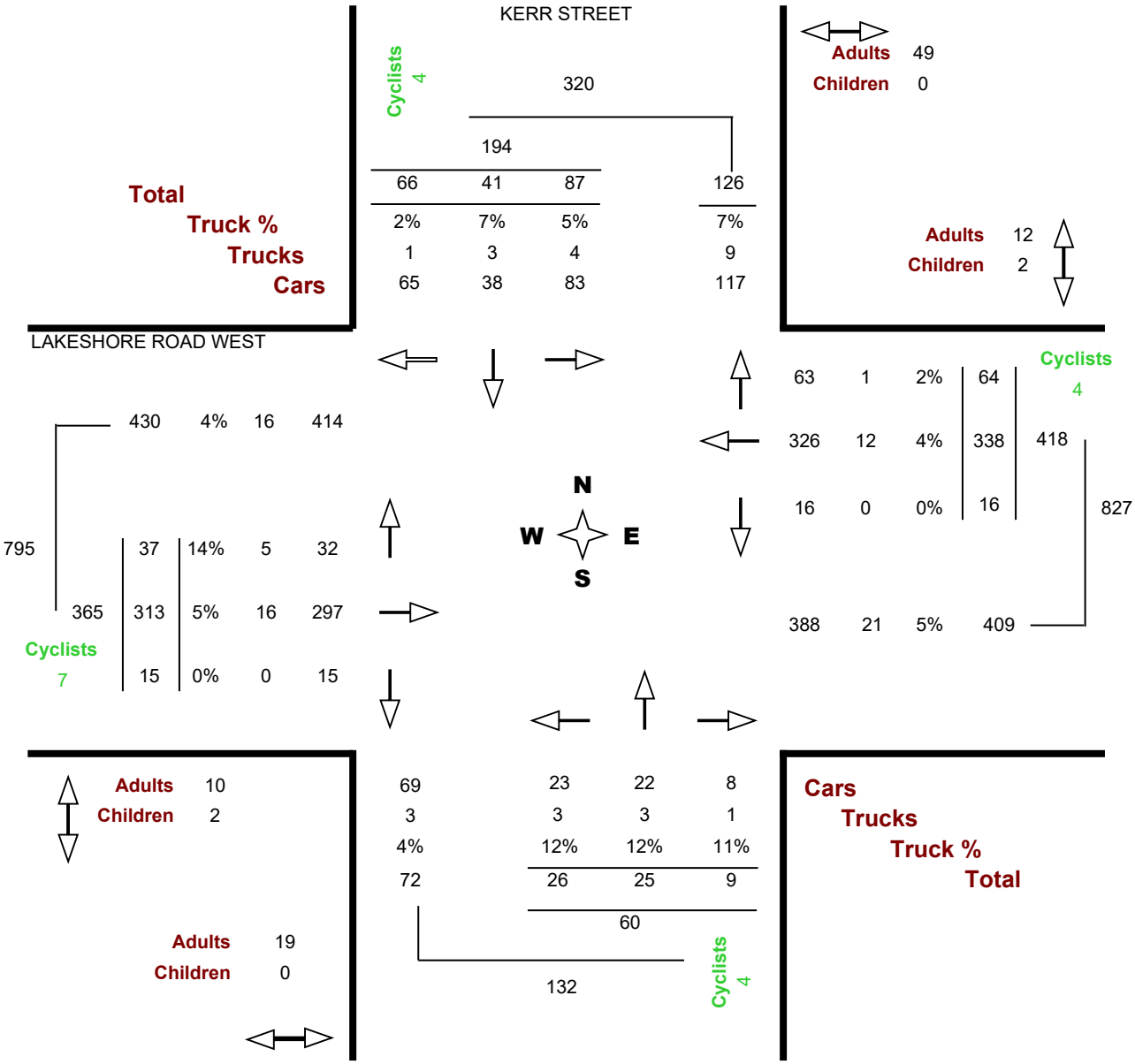


THIS INFORMATIONN IS SUPPLIED FROM OUR RECORDS AND IS NOT GUARANTEED TO BE CORRECT. WE RECOMMEND FIELD CHECKING TO VERIFY THE INFORMATION SHOWN.

In all counts dated before 2018 - Adult pedestrian numbers include seniors, and the senior count = 0

Turning Movements Report - MD Period

Location..... LAKESHORE ROAD WEST @ KERR STREET
Municipality..... OAKVILLE
GeoID..... 30081901
Count Date..... Tuesday, 31 May, 2022 **Peak Hour.....** 12:15 PM — 01:15 PM

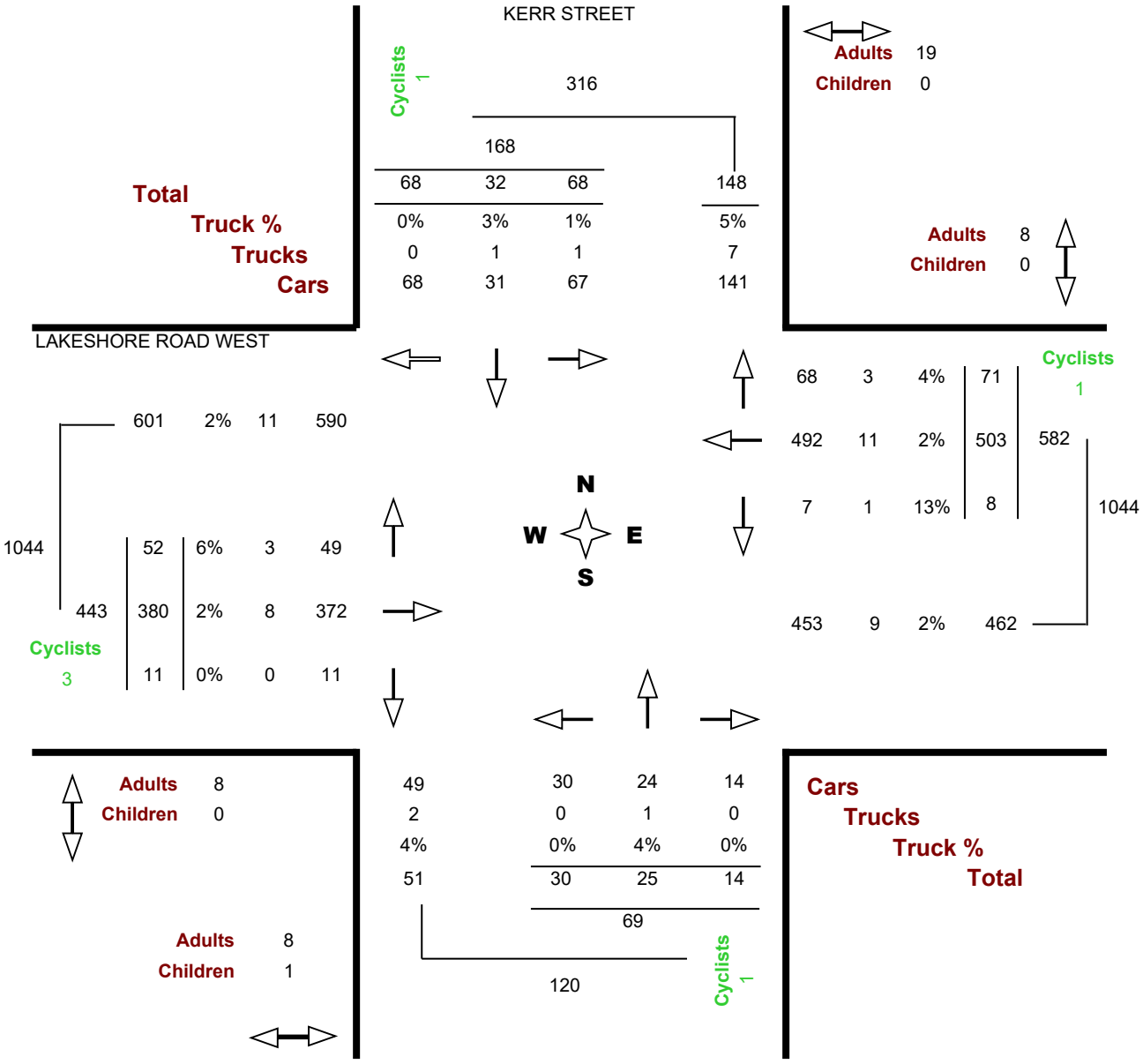


THIS INFORMATIONN IS SUPPLIED FROM OUR RECORDS AND IS NOT GUARANTEED TO BE CORRECT. WE RECOMMEND FIELD CHECKING TO VERIFY THE INFORMATION SHOWN.

In all counts dated before 2018 - Adult pedestrian numbers include seniors, and the senior count = 0

Turning Movements Report - PM Period

Location..... LAKESHORE ROAD WEST @ KERR STREET
Municipality..... OAKVILLE
GeoID..... 30081901
Count Date..... Tuesday, 31 May, 2022 **Peak Hour.....** 03:30 PM — 04:30 PM



THIS INFORMATIONN IS SUPPLIED FROM OUR RECORDS AND IS NOT GUARANTEED TO BE CORRECT. WE RECOMMEND FIELD CHECKING TO VERIFY THE INFORMATION SHOWN.

In all counts dated before 2018 - Adult pedestrian numbers include seniors, and the senior count = 0

Turning Movement Count - Details Report

Location..... LAKESHORE ROAD WEST @ KERR STREET

Municipality..... OAKVILLE

Count Date..... Tuesday, May 31, 2022

		KERR STREET										LAKESHORE ROAD WEST									
		North Approach					South Approach					East Approach					West Approach				
Time Period		LT	TH	RT	Cyclists	Ped	LT	TH	RT	Cyclists	Ped	LT	TH	RT	Cyclists	Ped	LT	TH	RT	Cyclists	Ped
07:00	07:15	3	3	0	0	3	1	0	1	0	2	1	14	3	5	1	4	26	1	1	0
07:15	07:30	10	1	3	0	2	2	1	1	0	4	0	15	1	1	1	8	40	0	1	1
07:30	07:45	9	5	2	0	5	0	3	0	0	4	1	26	4	0	2	7	53	3	0	5
07:45	08:00	8	2	2	0	3	5	3	1	0	3	3	28	6	0	2	6	84	1	0	3
Hourly Total		30	11	7	0	13	8	7	3	0	13	5	83	14	6	6	25	203	5	2	9
08:00	08:15	9	1	3	0	7	2	5	2	0	3	2	55	9	1	1	4	77	0	1	0
08:15	08:30	16	1	6	0	5	7	3	1	0	2	1	87	6	1	2	5	89	1	2	1
08:30	08:45	14	1	5	0	8	2	0	3	0	3	0	78	8	0	8	8	116	2	1	2
08:45	09:00	19	5	4	1	6	5	2	0	0	1	1	47	8	1	1	8	105	2	2	5
Hourly Total		58	8	18	1	26	16	10	6	0	9	4	267	31	3	12	25	387	5	6	8
11:00	11:15	18	5	11	0	3	5	10	4	0	4	2	71	15	2	5	8	58	2	0	2
11:15	11:30	18	12	14	1	14	2	8	3	0	5	1	66	10	3	6	10	58	1	2	3
11:30	11:45	10	9	17	0	18	2	1	3	0	6	2	70	8	0	2	8	66	3	1	3
11:45	12:00	23	8	10	0	3	4	3	2	1	16	1	61	12	0	6	8	71	4	0	0
Hourly Total		69	34	52	1	38	13	22	12	1	31	6	268	45	5	19	34	253	10	3	8
12:00	12:15	20	8	13	1	4	7	2	1	0	7	1	78	15	1	3	12	68	3	2	2
12:15	12:30	21	12	17	0	13	4	5	1	0	3	3	88	16	2	1	10	81	4	0	2
12:30	12:45	21	9	15	0	18	2	6	2	0	4	2	92	17	0	2	7	77	5	1	6
12:45	13:00	19	9	12	2	11	7	6	2	0	6	4	67	18	1	4	11	77	5	3	1
Hourly Total		81	38	57	3	46	20	19	6	0	20	10	325	66	4	10	40	303	17	6	11
13:00	13:15	26	11	22	2	7	13	8	4	1	6	7	91	13	1	7	9	78	1	3	3
13:15	13:30	20	7	11	0	2	2	4	4	0	3	3	82	17	2	1	11	84	0	3	3
13:30	13:45	21	10	11	0	5	5	9	0	0	3	3	67	11	1	0	11	68	5	1	4
13:45	14:00	24	9	13	0	1	8	9	3	1	2	0	93	17	4	4	16	72	4	2	4
Hourly Total		91	37	57	2	15	28	30	11	2	14	13	333	58	8	12	47	302	10	9	14
15:00	15:15	6	8	6	0	0	1	2	3	0	4	2	99	4	0	0	11	47	4	0	0
15:15	15:30	20	13	19	0	3	2	5	2	0	0	5	120	16	0	0	8	83	3	5	1
15:30	15:45	15	5	18	0	2	6	7	3	0	0	1	126	16	1	4	11	91	1	1	2
15:45	16:00	20	11	14	0	6	9	8	3	0	1	4	129	14	0	1	14	90	3	0	0
Hourly Total		61	37	57	0	11	18	22	11	0	5	12	474	50	1	5	44	311	11	6	3
16:00	16:15	17	6	22	1	7	8	6	4	0	0	0	131	18	0	1	13	111	4	1	4
16:15	16:30	16	10	14	0	4	7	4	4	0	8	3	117	23	0	2	14	88	3	1	2
16:30	16:45	16	9	15	0	4	8	3	6	0	6	3	102	19	3	1	3	68	6	2	3
16:45	17:00	10	12	14	0	3	9	5	0	0	3	0	120	5	3	2	15	79	1	0	0
Hourly Total		59	37	65	1	18	32	18	14	0	17	6	470	65	6	6	45	346	14	4	9
17:00	17:15	14	11	12	1	3	4	3	2	0	0	2	114	17	3	1	12	83	3	0	0
17:15	17:30	18	6	14	2	2	7	8	1	0	5	4	109	12	0	0	6	70	4	0	0
17:30	17:45	12	7	16	0	9	5	3	5	0	4	8	98	14	0	4	12	76	5	0	0
17:45	18:00	13	7	16	0	5	4	0	4	0	3	5	81	9	3	2	10	79	3	1	1
Hourly Total		57	31	58	3	19	20	14	12	0	12	19	402	52	6	7	40	308	15	1	1
Grand Total		506	233	371	11	186	155	142	75	3	121	75	2622	381	39	77	300	2413	87	37	63
Truck %		4%	3%	4%			5%	4%	4%			7%	3%	4%			5%	3%	2%		

SIGNAL TIMING & PHASING

PROJECT #: 23129

INTERSECTION: Forsythe + Lakeshore

TIME: 803 - 815

ANALYST: AVIC

DATE: Sept 12, 2022

LOOKING: ~~NE~~ SW

VIDEO NAME: Standard_SCU954_2022-09-22_700.002.mp4

	N S	E W	N S	E W	N S	E W	N S	E W	
Adv									
Amber									81455
"All Red"									
Green		80353	80408		80741	80809	81221	81236	81438
Flashing Don't Walk			80416 14			80816 80830		81243 81258	
Amber	80348	80403	80430	80734	80802	81214	81230	81432	81449
All Red	80350	80406		80738	80806	81218	81234	81436	81453

TIME: 1500 - 1505

DATE: Sept 12, 2022

LOOKING: NE

VIDEO NAME: Standard_SCU954_2022-09-22_1500.001.mp4

	~~N S~~	~~E W~~	~~N S~~	E W	~~N S~~	~~E W~~	~~N S~~	E W	
Adv	Ehw	N/S	E/W	N/S	E/W	N/S	E/W	N/S	
Amber									
"All Red"									
Green		150101	150117	150204	150232	150311	150338	150414	150430
Flashing Don't Walk	15:00 08 15:00 24	#	150124 150140	150211	150238 150254		150345 150400		
Amber	150055	150111	150158	150226	150304	150332	150408	150424	
All Red	150059	150115	150202	150229	150308	150336	150412	150428	

SIGNAL TIMING & PHASING

PROJECT #: 23129

INTERSECTION: Kerr & Lakeshore

TIME: 800-80400 800

ANALYST: AMK

DATE: Sept 12, 2022

LOOKING: ~~SW~~ NE

VIDEO NAME: Standard_SCUAAv_2022-09-12_~~700~~1500.002.mp4

	N S	E W	N S	E W	N S	E W	N S	E W
Adv								
Amber								
"All Red"								
Green		~~80047~~	80043	80059	80219	80234	80336	~~80400~~
Flashing Don't Walk								
Amber	~~80002~~	80037	80053	80213	80229	80331	80354	
All Red	~~80005~~	80041	80056	80217	80232	80334	80357	

TIME: 1500 –

DATE: Sept 12, 2022

LOOKING: SW

VIDEO NAME: Standard_SCUAAv_2022-09-12_1500.001.mp4

	N S	E W	N S	E W	N S	E W	N S	E W
Adv				150046				
Amber								
"All Red"				150055				
Green			150030		150134	150149	150225	150248
Flashing Don't Walk				~~150100~~				
Amber		~~13~~150025	150040	150129	150144	150220	150238	
All Red		150028	150043	150132	150147	150223	150241	

1500

Town of Oakville

ECONOLITE

MOVING TRAFFIC FORWARD

OAK03 - Lakeshore Rd @ Forsythe St - Econolite Type - ASC/3

Controller Timing Plan (MM) 2-1

Plan 1

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Direction	WBLT	EB		NB		WB		SB								
Min Green	7	30	5	10	5	30	5	10	5	5	5	5	5	5	5	5
Bk Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CS Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Delay Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk	0	7	0	7	0	7	0	7	0	10	0	10	0	10	0	10
Walk2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear	0	15	0	15	0	15	0	15	0	16	0	16	0	16	0	16
Ped Clear 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped CO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Ext	2.5	6.0	0.0	4.0	0.0	6.0	0.0	4.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Ext 2	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
Max1	15	60	0	30	0	60	0	30	35	35	35	35	35	35	35	35
Max2	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
Max3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DYM Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dym Step	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
Yellow	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Red Clear	1.0	2.0	1.0	2.0	1.0	2.0	1.0	2.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Red Max	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
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Act B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sec/Act	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
Max Int	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cars Wt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STPTDuc	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
TTReduc	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Gap	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

Town of Oakville

ECONOLITE

MOVING TRAFFIC FORWARD

OAK03 - Lakeshore Rd @ Forsythe St - Econolite Type - ASC/3

Coordination Options

Options (MM) 3-1

Manual Pattern	Auto	ECPI Coord	Yes
System Source	TBC	System Format	STD
Splits In	Percent	Offsets In	Percent
Transition	Smooth	Max Select	MAXINH
Dwell / Add Time	0		
Delay Coord Wk-LZ	No	Force Off	Float
Offset Reference	Lead	Use Ped Time	Yes
Ped Recall	Yes	Ped Reservice	Yes
Local Zero Override	No	FO Added Ini Green	No
Re-sync Count	3	Multisync	No

Auto Perm Minimum Green (Seconds) (MM) 3-4

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Minimum Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Split Demand (MM) 3-5

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Demand 1																
Demand 2																

Demand	1	2
Detector	0	0
Call Time (Sec)	0	0
Cycle Count	0	0

Town of Oakville

ECONOLITE

MOVING TRAFFIC FORWARD

OAK03 - Lakeshore Rd @ Forsythe St - Econolite Type - ASC/3

Coordination Pattern Data
Coordinator Pattern Data (MM) 3-2

Town of Oakville

ECONOLITE

MOVING TRAFFIC FORWARD

OAK03 - Lakeshore Rd @ Forsythe St - Econolite Type - ASC/3

Time Base Clock/Calendar

Clock/Calendar Data (MM) 5-1

Manual Action Plan:	0
SYNC Reference Time:	03:15
SYNC Reference:	Reference Time
Day Light Savings:	USDLS
Time Reset Input Set Time:	3:30:00
Standard Time From GMT:	-5

Town of Oakville

ECONOLITE

MOVING TRAFFIC FORWARD

OAK03 - Lakeshore Rd @ Forsythe St - Econolite Type - ASC/3

Time Base Action Plan
Action Plan (MM) 5-2

Town of Oakville

ECONOLITE

MOVING TRAFFIC FORWARD

OAK03 - Lakeshore Rd @ Forsythe St - Econolite Type - ASC/3

Time Base Day Plan/Schedule
Day Plan (MM) 5-3

Schedule (MM) 5-4

Town of Oakville

ECONOLITE

MOVING TRAFFIC FORWARD

OAK02 - Lakeshore Rd @ Kerr St - Econolite Type - Cobalt

Controller Timing Plan (MM) 2-1

Plan 1 - ""

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Direction	N	E-T	E	N-T	E-L	W-T	W	S-T	N	N	N	N	N	N	N	N
Min Green	0	30	0	10	7	30	0	10	5	5	5	5	5	5	5	5
Bk Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CS Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Delay Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk	0	10	0	10	0	10	0	10	0	10	0	10	0	10	0	10
Walk2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear	0	12	0	24	0	12	0	24	0	16	0	16	0	16	0	16
Ped Clear 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped CO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Ext	5.0	4.5	0.0	4.5	2.5	4.5	0.0	4.5	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Ext 2	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
Max1	0	40	0	30	15	40	0	30	35	35	35	35	35	35	35	35
Max2	0	55	0	45	20	55	0	45	40	40	40	40	40	40	40	40
Max3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DYM Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dym Step	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
Yellow	3.3	3.3	3.0	3.3	3.0	3.3	3.0	3.3	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Red Clear	1.0	2.1	1.0	2.3	1.0	2.1	1.0	2.3	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Red Max	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
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Act B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sec/Act	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
Max Int	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cars Wt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STPTDuc	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
TTReduc	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Gap	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

Town of Oakville

ECONOLITE

MOVING TRAFFIC FORWARD

OAK02 - Lakeshore Rd @ Kerr St - Econolite Type - Cobalt

Coordination Pattern Data
Coordinator Pattern Data (MM) 3-2

Town of Oakville

ECONOLITE

MOVING TRAFFIC FORWARD

OAK02 - Lakeshore Rd @ Kerr St - Econolite Type - Cobalt

Time Base Clock/Calendar

Clock/Calendar Data (MM) 5-1

Manual Action Plan:	0
SYNC Reference Time:	03:15
SYNC Reference:	Reference Time
Day Light Savings:	USDLS
Time Reset Input Set Time:	3:30:00
Standard Time From GMT:	-5

Town of Oakville

ECONOLITE

MOVING TRAFFIC FORWARD

OAK02 - Lakeshore Rd @ Kerr St - Econolite Type - Cobalt

Time Base Action Plan
Action Plan (MM) 5-2

Town of Oakville

ECONOLITE

MOVING TRAFFIC FORWARD

OAK02 - Lakeshore Rd @ Kerr St - Econolite Type - Cobalt

Time Base Day Plan/Schedule
Day Plan (MM) 5-3

Schedule (MM) 5-4

APPENDIX C

Trip Generation Details

Proposed Development Statistics

Land Use #2 - Proposed
Residential (Mid-Rise) — 152 Units
ITE LUC 221 - Multifamily Housing (Mid-Rise)

Fitted Curve Formula
ITE Person Trips

	0.11	0.46	0.57	0.33	0.23	0.56
ITE LUC 221 - Multifamily Housing (Mid-Rise)	In	Out	Total	In	Out	Total
ITE Distribution (Person)	20%	80%	100%	59%	41%	100%
ITE Person Trips	17	70	87	50	35	85
Auto Split	100%	100%		100%	100%	
Avg Veh Occupancy	1.00	1.00		1.00	1.00	
Conversion to Person Trips	17	70	87	50	35	85
Interaction Trip Reduction	0	-1	-1	-8	-3	-11
Total External Person Trips	17	69	86	42	32	74
Non-Auto Mode Split Reduction	-6	-25	-31	-15	-12	-27
Proposed Residential - External Auto Trips	11	44	55	27	20	47

Land Use #4 - Proposed
Retail — 7,000 ft²
ITE LUC 822 - Strip Retail Plaza (<40k)
Weekday, Peak Hour of Adjacent Street Traffic; General Urban/Suburban

Average Rates
ITE Vehicle Trips

ITE LUC 822 - Strip Retail Plaza (<40k)	In	Out	Total	In	Out	Total
ITE Distribution (Vehicle)	60%	40%	100%	50%	50%	100%
ITE Trip Rates	1.42	0.94	2.36	3.30	3.30	6.59
Baseline Auto Trips	10	7	17	23	23	46
Auto Split	95%	95%		95%	95%	
Avg Veh Occupancy	1.17	1.16		1.21	1.18	
Conversion to Person Trips	12	9	21	29	29	58
Interaction Trip Reduction	-1	0	-1	-3	-8	-11
Total External Person Trips	11	9	20	26	21	47
Non-Auto Mode Split Reduction	-2	-2	-4	-5	-4	-9
Proposed Retail - External Auto Trips	9	7	16	21	17	38
Passby Percentage	0%	0%		34%	34%	
Passby Trips	0	0	0	7	6	13
Proposed Retail - Primary External Auto Trips	9	7	16	14	11	25

APPENDIX D

TTS 2016 Data

RESIDENTIAL MODAL SPLIT CALCULATIONS

AM OUTBOUND

Subject site lies in TTS zone 4011

Thu Aug 11 2022 11:21:33 GMT-0400 (Eastern Daylight Time) - Run Time: 2565ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: Primary travel mode of trip - mode_prime

Filters:
(2006 GTA zone of origin - gta06_orig In 4006, 4007, 4010, 4011, 4012, 4013, 4016, and
Start time of trip - start_time In 600-900, and
Primary travel mode of trip - mode_prime In B,C,D,G,J,M,O,P,S,T,U,W, and
Trip purpose of origin - purp_orig In H,)

Trip 2016
ROW : gta06_orig
COLUMN : mode_prime

gta06_orig	mode_prime	total
4006	C	57
4006	D	545
4006	G	110
4006	P	79
4006	S	48
4006	W	57
4007	C	19
4007	D	1938
4007	G	119
4007	P	417
4007	S	26
4007	W	101
4010	B	52
4010	C	35
4010	D	449
4010	G	42
4010	J	50
4010	P	74
4010	W	35
4011	B	90
4011	C	24
4011	D	1225
4011	G	115
4011	J	25
4011	M	23
4011	P	232
4011	S	72
4011	U	26
4011	W	159
4012	B	114
4012	D	1232
4012	G	64
4012	J	111
4012	M	6
4012	P	316
4012	S	178
4012	W	153
4013	C	21
4013	D	384
4013	G	56
4013	J	22
4013	P	34
4013	S	137
4013	W	21
4016	D	253
4016	G	60
4016	P	20
4016	S	20

Raw Data

Zone of Origin	Mode	Total
4006	C	57
4006	D	545
4006	G	110
4006	P	79
4006	S	48
4006	W	57
4007	C	19
4007	D	1,938
4007	G	119
4007	P	417
4007	S	26
4007	W	101
4010	B	52
4010	C	35
4010	D	449
4010	G	42
4010	J	50
4010	P	74
4010	W	35
4011	B	90
4011	C	24
4011	D	1,225
4011	G	115
4011	J	25
4011	M	23
4011	P	232
4011	S	72
4011	U	26
4011	W	159
4012	B	114
4012	D	1,232
4012	G	64
4012	J	111
4012	M	6
4012	P	316
4012	S	178
4012	W	153
4013	C	21
4013	D	384
4013	G	56
4013	J	22
4013	P	34
4013	S	137
4013	W	21
4016	D	253
4016	G	60
4016	P	20
4016	S	20
Total		9,446

Sorted

Zone of Origin	Mode	Total
4010	B	52
4011	B	90
4012	B	114
4006	C	57
4007	C	19
4010	C	35
4011	C	24
4013	C	21
4006	D	545
4007	D	1,938
4010	D	449
4011	D	1,225
4012	D	1,232
4013	D	384
4016	D	253
4006	G	110
4007	G	119
4010	G	42
4011	G	115
4012	G	64
4013	G	56
4016	G	60
4010	J	50
4011	J	25
4012	J	111
4013	J	22
4011	M	23
4012	M	6
4006	P	79
4007	P	417
4010	P	74
4011	P	232
4012	P	316
4013	P	34
4016	P	20
4006	S	48
4007	S	26
4011	S	72
4012	S	178
4013	S	137
4016	S	20
4011	U	26
4006	W	57
4007	W	101
4010	W	35
4011	W	159
4012	W	153
4013	W	21
Total		9,446

Summary

Travel Mode	TTS Code	Value	Percent
Auto Driver	D+M	6,055	64%
Auto Passenger	P+T+U	1,198	13%
Transit	B+G+J+S	1,511	16%
Cycle	C	156	2%
Walk	W	526	5%
Other	O	0	0%
	Total	9,446	100%

RETAIL MODAL SPLIT CALCULATIONS

PM OUTBOUND

Subject site lies in TTS zone 4011

Thu Aug 11 2022 11:16:55 GMT-0400 (Eastern Daylight Time) - Run Time: 2316ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: Primary travel mode of trip - mode_prime

Filters:
(2006 GTA zone of origin - gta06_orig In 4006, 4007, 4008, 4009, 4010, 4011, 4012, 4013, 4015, 4016, and
Start time of trip - start_time In 1600-1900, and
Primary travel mode of trip - mode_prime In B,C,D,G,J,M,O,P,S,T,U,W, and
Trip purpose of destination - purp_dest In M,)

Trip 2016
ROW : gta06_orig
COLUMN : mode_prime

gta06_orig	mode_prime	total
4006	D	99
4006	P	14
4006	W	26
4007	D	85
4007	P	10
4008	D	22
4009	D	105
4009	P	24
4010	D	93
4010	P	10
4011	D	200
4011	P	45
4012	D	360
4012	P	57
4012	W	7
4013	D	4
4015	D	57
4015	P	14
4015	W	34
4016	D	136
4016	P	27

Raw Data

Zone of Origin	Mode	Total
4006	D	99
4006	P	14
4006	W	26
4007	D	85
4007	P	10
4008	D	22
4009	D	105
4009	P	24
4010	D	93
4010	P	10
4011	D	200
4011	P	45
4012	D	360
4012	P	57
4012	W	7
4013	D	4
4015	D	57
4015	P	14
4015	W	34
4016	D	136
4016	P	27
Total		1,429

Sorted

Zone of Origin	Mode	Total
4006	D	99
4007	D	85
4008	D	22
4009	D	105
4010	D	93
4011	D	200
4012	D	360
4013	D	4
4015	D	57
4016	D	136
4006	P	14
4007	P	10
4009	P	24
4010	P	10
4011	P	45
4012	P	57
4015	P	14
4016	P	27
4006	W	26
4012	W	7
4015	W	34
Total		1,429

Summary

Travel Mode	TTS Code	Value	Percent
Auto Driver	D+M	1,161	81%
Auto Passenger	P+T+U	201	14%
Transit	B+G+J+S	0	0%
Cycle	C	0	0%
Walk	W	67	5%
Other	O	0	0%
	Total	1,429	100%

RESIDENTIAL DISTRIBUTION CALCULATION

AM OUTBOUND

Subject site lies in TTS zone 4011

Thu Aug 11 2022 11:23:49 GMT-0400 (Eastern Daylight Time) - Run Time: 2823ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: 2006 GTA zone of destination - gta06_dest

Filters:
(2006 GTA zone of origin - gta06_orig In 4006, 4007, 4010, 4011, 4012, 4013, 4016, and
Start time of trip - start_time In 600-900, and
Primary travel mode of trip - mode_prime In D,M, and
Trip purpose of origin - purp_orig In H, and
Type of dwelling unit - dwell_type In 2, and
2006 GTA zone of destination - gta06_dest In 1-9016)

Trip 2016

ROW : gta06_orig

COLUMN : gta06_dest

gta06_orig	gta06_dest	total
4011	68	18
4011	3426	10
4011	3635	21
4011	3663	15
4011	3710	15
4011	4009	12
4011	4012	18
4011	4016	28
4011	4027	14
4011	4029	18
4011	4040	32
4011	4057	20
4011	4084	27
4012	38	54
4012	157	34
4012	3614	37
4012	3633	54
4012	3662	54
4012	3836	19
4012	3842	21
4012	4001	22
4012	4008	61
4012	4009	4
4012	4011	60
4012	4012	19
4012	4024	39
4012	4025	8
4012	4029	52
4012	4030	14
4012	4034	18
4012	4040	21
4012	4076	5
4012	4082	54
4012	4182	14
4012	4192	11
4012	5097	22
4012	5135	8
4012	5228	52
4012	8059	4
4013	395	34
4013	3649	21
4013	3662	8
4013	3671	92
4013	3699	5
4013	4042	6
4013	5198	6
4016	21	16
4016	3605	15
4016	3634	10
4016	3639	12
4016	4009	27
4016	4011	17
4016	4012	16
4016	4021	19
4016	4063	19
4016	4186	11

Zone			General Direction	Path: Kerr St		Path: Chisolm St		Path: Forsythe St	Path: Lakeshore Rd W		Value: Kerr St		Value: Chisolm St		Value: Forsythe St	Value: Lakeshore Rd W	
From	To	Municpality		North	South	North	South	North	West	East	North	South	North	South	North	West	East
4011	68	Toronto	East							100%	0	0	0	0	0	0	18
4011	3426	W Brampton	North							100%	0	0	0	0	0	0	10
4011	3635	S Mississauga W	East							100%	0	0	0	0	0	0	21
4011	3663	S Mississauga W	East							100%	0	0	0	0	0	0	15
4011	3710	NE Mississauga	Northeast							100%	0	0	0	0	0	0	15
4011	4009	Oakville	North						100%		0	0	0	0	0	12	0
4011	4012	Oakville	North	100%							18	0	0	0	0	0	0
4011	4016	Oakville	East							100%	0	0	0	0	0	0	28
4011	4027	Oakville	Northeast							100%	0	0	0	0	0	0	14
4011	4029	Oakville	NNE							100%	0	0	0	0	0	0	18
4011	4040	Oakville	NNW						100%		0	0	0	0	0	32	0
4011	4057	W Burlington	West						100%		0	0	0	0	0	20	0
4011	4084	Burlington	West	25%					75%		7	0	0	0	0	20	0
4012	38	Toronto	East							100%	0	0	0	0	0	0	54
4012	157	Toronto	East							100%	0	0	0	0	0	0	34
4012	3614	S Mississauga SW	East							100%	0	0	0	0	0	0	37
4012	3633	S Mississauga SW	East							100%	0	0	0	0	0	0	54
4012	3662	S Mississauga W	East							100%	0	0	0	0	0	0	54
4012	3836	N Mississauga W	Northeast							100%	0	0	0	0	0	0	19
4012	3842	Mississauga DT	East							100%	0	0	0	0	0	0	21
4012	4001	Oakville SW	West						100%		0	0	0	0	0	22	0
4012	4008	Oakville	West	100%							61	0	0	0	0	0	0
4012	4009	Oakville	North						100%		0	0	0	0	0	4	0
4012	4011	Oakville	NSEW						100%		0	0	0	0	0	60	0
4012	4012	Oakville	North	100%							19	0	0	0	0	0	0
4012	4024	Oakville NE	Northeast							100%	0	0	0	0	0	0	39
4012	4025	Oakville NE	Northeast							100%	0	0	0	0	0	0	8
4012	4029	Oakville	NNE							100%	0	0	0	0	0	0	52
4012	4030	Oakville	North	100%							14	0	0	0	0	0	0
4012	4034	Oakville	North	100%							18	0	0	0	0	0	0
4012	4040	Oakville	NNW						100%		0	0	0	0	0	21	0
4012	4076	Burlington	West						100%		0	0	0	0	0	5	0
4012	4082	Burlington	West						100%		0	0	0	0	0	54	0
4012	4182	Oakville	North	100%							14	0	0	0	0	0	0
4012	4192	Milton	North	75%					25%		8	0	0	0	0	3	0
4012	5097	Hamilton	Southwest						100%		0	0	0	0	0	22	0
4012	5135	Hamilton	Southwest						100%		0	0	0	0	0	8	0
4012	5228	Hamilton	Southwest						100%		0	0	0	0	0	52	0
4012	8059	Guelph	West						100%		0	0	0	0	0	4	0
4013	395	Toronto	East							100%	0	0	0	0	0	0	34
4013	3649	S Mississauga E	East							100%	0	0	0	0	0	0	21
4013	3662	S Mississauga W	East							100%	0	0	0	0	0	0	8
4013	3671	Mississauga DT	Northeast							100%	0	0	0	0	0	0	92
4013	3699	Smississauga NE	East							100%	0	0	0	0	0	0	5
4013	4042	Oakville	West	50%					50%		3	0	0	0	0	3	0
4013	5198	Hamilton	Southwest						100%		0	0	0	0	0	6	0
4016	21	Toronto	East							100%	0	0	0	0	0	0	16
4016	3605	N Mississauga E	Northeast							100%	0	0	0	0	0	0	15
4016	3634	S Mississauga NW	Northeast							100%	0	0	0	0	0	0	10
4016	3639	S Mississuga SW	East							100%	0	0	0	0	0	0	12
4016	4009	Oakville	North						100%	0%	0	0	0	0	0	27	0
4016	4011	Oakville	NSEW						100%	0%	0	0	0	0	0	17	0
4016	4012	Oakville	North	100%						0%	16	0	0	0	0	0	0
4016	4021	Oakville	East							100%	0	0	0	0	0	0	19
4016	4063	Burlington	West	25%					75%		5	0	0	0	0	14	0
4016	4186	Oakville	Northwest	33%					67%		4	0	0	0	0	7	0
											187	0	0	0	0	413	743
											14%	0%	0%	0%	0%	31%	55%

PM OUTBOUND

Subject site lies in TTS zone 4011

Wed Sep 14 2022 12:19:30 GMT-0400 (Eastern Daylight Time) - Run Time: 2916ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: 2006 GTA zone of destination - gta06_dest

Filters:
(2006 GTA zone of origin - gta06_orig In 4006, 4007, 4010, 4011, 4012, 4013, 4016, and
Start time of trip - start_time In 1500-1900, and
Primary travel mode of trip - mode_prime In D, M, and
Trip purpose of origin - purp_orig In H, and
2006 GTA zone of destination - gta06_dest In 1-9016)

Trip 2016

ROW : gta06_orig

COLUMN : gta06_dest

gta06_orig	gta06_dest	total
4006	3634	14
4006	4002	10
4006	4005	16
4006	4006	56
4006	4008	18
4006	4011	48
4006	4025	65
4006	4039	11
4006	4063	57
4006	4068	57
4007	313	9
4007	4003	54
4007	4005	53
4007	4006	42
4007	4007	88
4007	4008	21
4007	4011	15
4007	4025	12
4007	4027	11
4007	4039	79
4007	4041	54
4007	4060	62
4007	4069	38
4007	4075	12
4007	4087	61
4007	4189	37
4007	8583	14
4010	3634	15
4010	3639	15
4010	4005	27
4010	4007	10
4010	4008	11
4010	4010	17
4010	4011	38
4010	4012	10
4010	4040	27
4010	4045	17
4010	4057	19
4010	4152	21
4011	4009	77
4011	4011	81
4011	4012	20
4011	4014	71
4011	4016	11
4011	4017	89
4011	4019	4
4011	4027	14
4011	4037	4
4011	4038	7
4011	4040	12
4011	4060	14
4011	4069	9
4011	4082	10
4011	4084	27
4011	4123	11
4011	4194	23
4012	3616	4
4012	3655	52
4012	4006	12
4012	4008	15
4012	4011	135
4012	4012	50
4012	4014	121
4012	4018	20
4012	4022	36
4012	4030	14
4012	4035	15
4012	4040	84
4012	4186	4
4012	6210	37
4013	4005	21
4013	4008	40

Zone			Value	General Direction	Path: Kerr St		Path: Chisolm St		Path: Forsythe St	Path: Lakeshore Rd W		Value: Kerr St		Value: Chisolm St		Value: Forsythe St	Value: Lakeshore Rd W	
From	To	Municpality			North	South	North	South	North	West	East	North	South	North	South	North	West	East
4006	3634	S Mississauga NW	14	Northeast							100%	0	0	0	0	0	0	14
	4002	Oakville W	10	West						100%		0	0	0	0	0	10	0
	4005	Oakville SW	16	West						100%		0	0	0	0	0	16	0
	4006	Oakville	56	West						100%		0	0	0	0	0	56	0
	4008	Oakville	18	West	100%							18	0	0	0	0	0	0
	4011	Oakville	48	NSEW						100%		0	0	0	0	0	48	0
	4025	Oakville NE	65	Northeast							100%	0	0	0	0	0	0	65
	4039	Oakville NW	11	Northwest	100%							11	0	0	0	0	0	0
	4063	Burlington	57	West	25%					75%		14	0	0	0	0	43	0
	4068	Burlington	57	West						100%		0	0	0	0	0	57	0
	313	Toronto	9	East							0%	100%	0	0	0	0	0	9
4007	4003	West	54							100%		0	0	0	0	0	54	0
	4005	Oakville SW	53	West						100%		0	0	0	0	0	53	0
	4006	Oakville	42	West						100%		0	0	0	0	0	42	0
	4007	Oakville	88	Northwest						100%		0	0	0	0	0	88	0
	4008	Oakville	21	West	100%							21	0	0	0	0	0	0
	4011	Oakville	15	NSEW						100%		0	0	0	0	0	15	0
	4025	Oakville NE	12	Northeast							100%	0	0	0	0	0	0	12
	4027	Oakville	11	Northeast							100%	0	0	0	0	0	0	11
	4039	Oakville NW	79	Northwest	100%							79	0	0	0	0	0	0
	4041	Oakville	54	NNW	67%						33%	36	0	0	0	0	18	0
	4060	Burlington	62	West						100%		0	0	0	0	0	62	0
	4069	Burlington	38	West						100%		0	0	0	0	0	38	0
	4075	Burlington	12	West						100%		0	0	0	0	0	12	0
	4087	Burlington	61	West						100%		0	0	0	0	0	61	0
	4189	Burlington N	37	Northwest	100%							37	0	0	0	0	0	0
	8583	Severn	14	Northeast							100%	0	0	0	0	0	0	14
4010	3634	S Mississauga NW	15	Northeast							100%	0	0	0	0	0	0	15
	3639	S Mississuga SW	15	East							100%	0	0	0	0	0	0	15
	4005	Oakville SW	27	West						100%		0	0	0	0	0	27	0
	4007	Oakville	10	Northwest						100%		0	0	0	0	0	10	0
	4008	Oakville	11	West	100%					0%		11	0	0	0	0	0	0
	4010	Oakville	17	Northwest	67%				33%	0%		11	0	0	0	6	0	0
	4011	Oakville	38	NSEW						100%		0	0	0	0	0	38	0
	4012	Oakville	10	North	100%					0%		10	0	0	0	0	0	0
	4040	Oakville	27	NNW						100%		0	0	0	0	0	27	0
	4045	Oakville NW	17	North						100%		0	0	0	0	0	17	0
	4057	W Burlington	19	West						100%		0	0	0	0	0	19	0
	4152	Halton Hills	21	North	100%							21	0	0	0	0	0	0
4011	4009	Oakville	77	North						100%		0	0	0	0	0	77	0
	4011	Oakville	81	NSEW						100%		0	0	0	0	0	81	0
	4012	Oakville	20	North	100%							20	0	0	0	0	0	0
	4014	Oakville	71	Northeast	100%							71	0	0	0	0	0	0
	4016	Oakville	11	East							100%	0	0	0	0	0	0	11
	4017	Oakville	89	East							100%	0	0	0	0	0	0	89
	4019	Oakville	4	Northeast							100%	0	0	0	0	0	0	4
	4027	Oakville	14	Northeast							100%	0	0	0	0	0	0	14
	4037	Oakville N	4	North	100%							4	0	0	0	0	0	0
	4038	Oakville	7	North	100%							7	0	0	0	0	0	0
	4040	Oakville	12	NNW						100%		0	0	0	0	0	12	0
	4060	Burlington	14	West						100%		0	0	0	0	0	14	0
	4069	Burlington	9	West						100%		0	0	0	0	0	9	0
	4082	Burlington	10	West						100%		0	0	0	0	0	10	0
	4084	Burlington	27	West	25%					75%		7	0	0	0	0	20	0
	4123	Milton	11	North						100%		0	0	0	0	0	11	0
	4194	Halton Hills	23	North							100%	0	0	0	0	0	0	23
4012	3616	Mississauga NW	4	Northeast						100%		0	0	0	0	4	0	0
	3655	Mississauga S	52	East							100%	0	0	0	0	0	0	52
	4006	Oakville	12	West	0%	0%	0%	0%	0%	100%	0%	0	0	0	0	0	12	0
	4008	Oakville	15	West	100%	0%	0%	0%	0%	0%	0%	15	0	0	0	0	0	0
	4011	Oakville	135	NSEW	0%	0%	0%	0%	0%	100%	0%	0	0	0	0	0	135	0
	4012	Oakville	50	North	100%	0%	0%	0%	0%	0%	0%	50	0	0	0	0	0	0
	4014	Oakville	121	Northeast	100%	0%	0%	0%	0%	0%	0%	121	0	0	0	0	0	0
	4018	Oakville	20	East	0%	0%	0%	0%	0%	0%	100%	0	0	0	0	0	0	20
	4022	Oakville	36	Northeast						100%		0	0	0	0	36	0	0
	4030	Oakville	14	North	100%	0%	0%	0%	0%	0%	0%	14	0	0	0	0	0	0
	4035	Oakville	15	North	100%	0%	0%	0%	0%	0%	0%	15	0	0	0	0	0	0
	4040	Oakville	84	NNW	0%	0%	0%	0%	0%	100%	0%	0	0	0	0	0	84	0
	4186	Oakville	4	Northwest	33%	0%	0%	0%	0%	67%	0%	1	0	0	0	0	3	0
	6210	St. Catharines	37	Southwest						100%		0	0	0	0	0	37	0
4013	4005	Oakville SW	21	West	0%	0%	0%	0%	0%	100%	0%	0	0	0	0	0	21	0
	4008	Oakville	40	West	100%	0%	0%	0%	0%	0%	0%	40	0	0	0	0	0	0
			2,371									634	0	0	0	46	1,337	354
												27%	0%	0%	0%	2%	56%	15%

RETAIL DISTRIBUTION CALCULATION

AM OUTBOUND

Subject site lies in TTS zone 4011

Thu Aug 11 2022 11:48:09 GMT-0400 (Eastern Daylight Time) - Run Time: 3054ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: 2006 GTA zone of destination - gta06_dest

Filters:
(2006 GTA zone of origin - gta06_orig In 4004, 4005, 4006, 4007, 4010, 4011, 4012, 4013, 4016, and
Start time of trip - start_time In 600-1000, and
Primary travel mode of trip - mode_prime In D,M, and
Trip purpose of destination - purp_dest In M, and
2006 GTA zone of destination - gta06_dest In 1-9016)

Trip 2016

ROW : gta06_orig

COLUMN : gta06_dest

gta06_orig	gta06_dest	total
4004	4002	51
4004	4007	17
4005	3639	9
4005	4002	41
4005	4005	23
4005	4007	8
4005	4014	14
4005	4016	12
4005	4027	11
4005	4035	26
4005	4040	14
4005	4041	10
4005	4063	8
4005	4071	14
4005	4076	14
4005	4082	9
4005	4152	20
4006	4007	10
4006	4016	57
4006	4035	26
4007	3634	51
4007	4007	12
4007	4008	13
4007	4012	10
4007	4076	12
4007	4181	11
4010	4007	22
4010	4008	17
4010	4011	15
4010	4040	10
4011	3650	99
4011	4007	7
4011	4011	128
4011	4012	23
4011	4016	105
4011	4040	77
4012	3650	18
4012	4007	19
4012	4009	13
4012	4011	47
4012	4012	19
4012	4014	12
4012	4025	19
4016	3685	24
4016	4009	27
4016	4014	20

Zone			General Direction	Path: Kerr St		Path: Chisolm St		Path: Forsythe St	Path: Lakeshore Rd W		Value: Kerr St		Value: Chisolm St		Value: Forsythe St	Value: Lakeshore Rd W	
From	To	Municpality		North	South	North	South	North	West	East	North	South	North	South	North	West	East
4004	4002	Oakville W	West						100%		0	0	0	0	0	51	0
	4007	Oakville	Northwest						100%		0	0	0	0	0	17	0
4005	3639	S Mississuga SW	East							100%	0	0	0	0	0	0	9
	4002	Oakville W	West						100%		0	0	0	0	0	41	0
	4005	Oakville SW	West						100%		0	0	0	0	0	23	0
	4007	Oakville	Northwest						100%		0	0	0	0	0	8	0
	4014	Oakville	Northeast	100%							14	0	0	0	0	0	0
	4016	Oakville	East							100%	0	0	0	0	0	0	12
	4027	Oakville	Northeast							100%	0	0	0	0	0	0	11
	4035	Oakville	North	100%							26	0	0	0	0	0	0
	4040	Oakville	NNW						100%		0	0	0	0	0	14	0
	4041	Oakville	NNW	67%					33%		7	0	0	0	0	3	0
	4063	Burlington	West	25%					75%		2	0	0	0	0	6	0
	4071	Burlington	West						100%		0	0	0	0	0	14	0
	4076	Burlington	West						100%		0	0	0	0	0	14	0
	4082	Burlington	West						100%		0	0	0	0	0	9	0
	4152	Halton Hills	North	100%							20	0	0	0	0	0	0
4006	4007	Oakville	Northwest						100%		0	0	0	0	0	10	0
	4016	Oakville	East							100%	0	0	0	0	0	0	57
	4035	Oakville	North	100%							26	0	0	0	0	0	0
4007	3634	S Mississauga NW	Northeast							100%	0	0	0	0	0	0	51
	4007	Oakville	Northwest						100%		0	0	0	0	0	12	0
	4008	Oakville	West	100%							13	0	0	0	0	0	0
	4012	Oakville	North	100%							10	0	0	0	0	0	0
	4076	Burlington	West						100%		0	0	0	0	0	12	0
	4181	Oakville	North	100%							11	0	0	0	0	0	0
4010	4007	Oakville	Northwest						100%		0	0	0	0	0	22	0
	4008	Oakville	West	100%							17	0	0	0	0	0	0
	4011	Oakville	NSEW						100%		0	0	0	0	0	15	0
	4040	Oakville	NNW						100%		0	0	0	0	0	10	0
4011	3650	S Mississauga W	Northeast							100%	0	0	0	0	0	0	99
	4007	Oakville	Northwest						100%		0	0	0	0	0	7	0
	4011	Oakville	NSEW	25%		25%	25%	25%			32	0	0	32	32	32	0
	4012	Oakville	North	100%							23	0	0	0	0	0	0
	4016	Oakville	East	0%						100%	0	0	0	0	0	0	105
	4040	Oakville	NNW	0%					100%		0	0	0	0	0	77	0
4012	3650	S Mississauga W	Northeast	0%						100%	0	0	0	0	0	0	18
	4007	Oakville	Northwest	0%					100%		0	0	0	0	0	19	0
	4009	Oakville	North	0%					100%		0	0	0	0	0	13	0
	4011	Oakville	NSEW	0%					100%		0	0	0	0	0	47	0
	4012	Oakville	North	100%							19	0	0	0	0	0	0
	4014	Oakville	Northeast	100%							12	0	0	0	0	0	0
	4025	Oakville NE	Northeast							100%	0	0	0	0	0	0	19
4016	3685	S Mississauga N	Northeast							100%	0	0	0	0	0	0	24
	4009	Oakville	North						100%		0	0	0	0	0	27	0
	4014	Oakville	Northeast	100%							20	0	0	0	0	0	0
											252	0	0	32	32	503	405
											21%	0%	0%	3%	3%	40%	33%

PM OUTBOUND

Subject site lies in TTS zone 4011

Wed Sep 14 2022 12:24:14 GMT-0400 (Eastern Daylight Time) - Run Time: 2949ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: 2006 GTA zone of destination - gta06_dest

Filters:
(2006 GTA zone of origin - gta06_orig In 4006, 4007, 4010, 4011, 4012, 4013, 4016, and
Start time of trip - start_time In 1500-1900, and
Trip purpose of origin - purp_orig In M, and
Primary travel mode of trip - mode_prime In D,M, and
2006 GTA zone of destination - gta06_dest In 1-9016)

Trip 2016

ROW : gta06_orig

COLUMN : gta06_dest

gta06_orig	gta06_dest	total
4006	3358	12
4007	4001	37
4007	4003	10
4007	4004	65
4007	4005	150
4007	4006	10
4007	4007	47
4007	4010	10
4007	4026	10
4007	4045	24
4007	4069	27
4007	4079	12
4007	5143	7
4011	4005	23
4011	4006	11
4011	4011	56
4011	4012	42
4011	4013	12
4011	4014	7
4011	4016	13
4011	4020	16
4011	4030	52
4011	4080	5
4011	4157	8
4011	4186	11
4012	3644	8
4012	3662	11
4012	4001	16
4012	4004	42
4012	4007	24
4012	4010	10
4012	4011	31
4012	4012	126
4012	4014	24
4012	4016	21
4012	4027	19
4012	4028	19
4012	4039	8
4012	4040	26
4012	4042	18
4012	4060	11
4016	3639	14
4016	3640	8
4016	3645	12
4016	4007	30
4016	4015	10
4016	4186	14
4016	8377	6

Zone			Value	General Direction	Path: Kerr St		Path: Chisolm St		Path: Forsythe St	Path: Lakeshore Rd W		Value: Kerr St		Value: Chisolm St		Value: Forsythe St	Value: Lakeshore Rd W	
From	To	Municpality			North	South	North	South	North	West	East	North	South	North	South	North	West	East
4006	3358	Brampton	12	Northeast							100%	0	0	0	0	0	0	12
4007	4001	Oakville SW	37	West	0%				100%			0	0	0	0	37	0	0
	4003	Oakville W	10	West	100%							10	0	0	0	0	0	0
	4004	Oakville SW	65	West						100%		0	0	0	0	0	65	0
	4005	Oakville SW	150	West						100%		0	0	0	0	0	150	0
	4006	Oakville	10	West						100%		0	0	0	0	0	10	0
	4007	Oakville	47	Northwest						100%		0	0	0	0	0	47	0
	4010	Oakville	10	Northwest	67%				33%			7	0	0	0	3	0	0
	4026	Oakville	10	North							100%	0	0	0	0	0	0	10
	4045	Oakville NW	24	North						100%		0	0	0	0	0	24	0
	4069	Burlington	27	West						100%		0	0	0	0	0	27	0
	4079	Burlington	12	Northwest						100%		0	0	0	0	0	12	0
	5143	Hamilton	7	Southwest						100%		0	0	0	0	0	7	0
	4005	Oakville SW	23	West						100%		0	0	0	0	0	23	0
	4006	Oakville	11	West						100%		0	0	0	0	0	11	0
	4011	Oakville	56	NSEW						100%		0	0	0	0	0	56	0
	4012	Oakville	42	North	100%							42	0	0	0	0	0	0
	4013	Oakville	12	Northeast					100%			0	0	0	0	12	0	0
	4014	Oakville	7	Northeast	100%							7	0	0	0	0	0	0
	4016	Oakville	13	East							100%	0	0	0	0	0	0	13
	4020	Oakville	16	East							100%	0	0	0	0	0	0	16
	4030	Oakville	52	North	100%							52	0	0	0	0	0	0
	4080	Burlington	5	Northwest						100%		0	0	0	0	0	5	0
	4157	Halton Hills	8	North	100%							8	0	0	0	0	0	0
	4186	Oakville	11	Northwest	33%					67%		4	0	0	0	0	7	0
	3644	Mississauga SW	8	East							100%	0	0	0	0	0	0	8
	3662	Mississauga	11	Northeast					100%			0	0	0	0	11	0	0
	4001	Oakville SW	16	West						100%		0	0	0	0	0	16	0
	4004	Oakville SW	42	West						100%		0	0	0	0	0	42	0
	4007	Oakville	24	Northwest						100%		0	0	0	0	0	24	0
	4010	Oakville	10	Northwest	67%				33%			7	0	0	0	3	0	0
	4011	Oakville	31	NSEW						100%		0	0	0	0	0	31	0
	4012	Oakville	126	North	100%							126	0	0	0	0	0	0
	4014	Oakville	24	Northeast	100%							24	0	0	0	0	0	0
	4016	Oakville	21	East							100%	0	0	0	0	0	0	21
	4027	Oakville	19	Northeast							100%	0	0	0	0	0	0	19
	4028	Oakville	19	North							100%	0	0	0	0	0	0	19
	4039	Oakville NW	8	Northwest	100%							8	0	0	0	0	0	0
	4040	Oakville	26	NNW						100%		0	0	0	0	0	26	0
	4042	Oakville	18	West	33%					67%		6	0	0	0	0	12	0
	4060	Burlington	11	West						100%		0	0	0	0	0	11	0
	3639	S Mississuga SW	14	East							100%	0	0	0	0	0	0	14
	3640	Mississauga SW	8	East					100%			0	0	0	0	8	0	0
	3645	Mississauga SW	12	East							100%	0	0	0	0	0	0	12
	4007	Oakville	30	Northwest						100%		0	0	0	0	0	30	0
	4015	Oakville	10	East						100%		0	0	0	0	0	10	0
	4186	Oakville	14	Northwest	100%							14	0	0	0	0	0	0
	8377	Guelph	6	Northwest						100%		0	0	0	0	0	6	0
			1,185									315	0	0	0	74	652	144
												26%	1%	0%	0%	6%	55%	12%

APPENDIX E

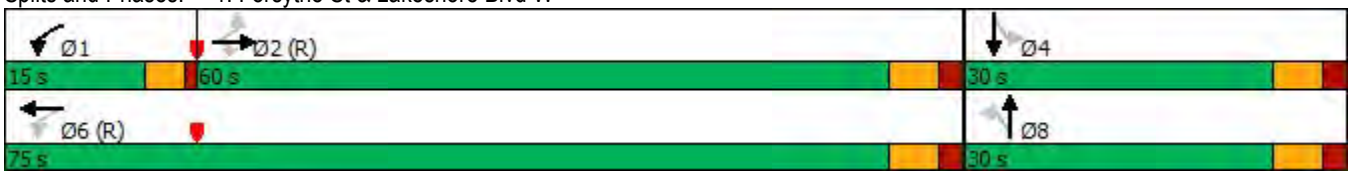
Intersection Capacity Results

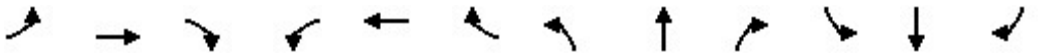
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	14	399	10	16	344	9	6	8	3
Future Volume (vph)	14	399	10	16	344	9	6	8	3
Lane Group Flow (vph)	15	438	11	18	400	0	36	0	14
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases		2		1	6		8		4
Permitted Phases	2		2	6		8		4	
Detector Phase	2	2	2	1	6	8	8	4	4
Switch Phase									
Minimum Initial (s)	30.0	30.0	30.0	7.0	30.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.0	36.0	36.0	11.5	36.0	28.0	28.0	28.0	28.0
Total Split (s)	60.0	60.0	60.0	15.0	75.0	30.0	30.0	30.0	30.0
Total Split (%)	57.1%	57.1%	57.1%	14.3%	71.4%	28.6%	28.6%	28.6%	28.6%
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	6.0	6.0	6.0	4.0	6.0		6.0		6.0
Lead/Lag	Lag	Lag	Lag	Lead					
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	None	None	None	None
v/c Ratio	0.02	0.29	0.01	0.02	0.26		0.23		0.10
Control Delay	4.9	4.9	0.0	1.9	2.6		30.0		40.9
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	4.9	4.9	0.0	1.9	2.6		30.0		40.9
Queue Length 50th (m)	0.5	20.6	0.0	0.6	18.0		3.4		2.4
Queue Length 95th (m)	3.1	51.8	0.0	1.8	27.6		13.6		8.7
Internal Link Dist (m)		87.9			235.1		120.1		23.2
Turn Bay Length (m)	15.0		7.0	60.0					
Base Capacity (vph)	720	1504	1143	834	1566		346		328
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	0.02	0.29	0.01	0.02	0.26		0.10		0.04

Intersection Summary

Cycle Length: 105
Actuated Cycle Length: 105
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 1: Forsythe St & Lakeshore Blvd W





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	399	10	16	344	20	9	6	17	8	3	2
Future Volume (veh/h)	14	399	10	16	344	20	9	6	17	8	3	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.96	1.00		0.96	0.95		0.93	0.96		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1826	1752	1900	1841	1678	1900	1900	1722	1900	1900	1900
Adj Flow Rate, veh/h	15	438	11	18	378	22	10	7	19	9	3	2
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	7	5	10	0	4	15	0	0	12	0	0	0
Cap, veh/h	731	1295	1010	706	1331	77	73	53	92	153	49	24
Arrive On Green	0.71	0.71	0.71	0.03	0.77	0.77	0.11	0.11	0.11	0.11	0.11	0.11
Sat Flow, veh/h	935	1826	1424	1810	1718	100	262	481	830	865	437	217
Grp Volume(v), veh/h	15	438	11	18	0	400	36	0	0	14	0	0
Grp Sat Flow(s),veh/h/ln	935	1826	1424	1810	0	1818	1572	0	0	1520	0	0
Q Serve(g_s), s	0.5	9.6	0.2	0.3	0.0	6.7	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.5	9.6	0.2	0.3	0.0	6.7	2.1	0.0	0.0	0.7	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.05	0.28		0.53	0.64		0.14
Lane Grp Cap(c), veh/h	731	1295	1010	706	0	1408	219	0	0	225	0	0
V/C Ratio(X)	0.02	0.34	0.01	0.03	0.00	0.28	0.16	0.00	0.00	0.06	0.00	0.00
Avail Cap(c_a), veh/h	731	1295	1010	846	0	1408	397	0	0	396	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	4.5	5.8	4.5	3.8	0.0	3.4	42.4	0.0	0.0	41.8	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.7	0.0	0.0	0.0	0.5	0.5	0.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	2.6	0.1	0.1	0.0	1.3	0.8	0.0	0.0	0.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	4.6	6.5	4.5	3.8	0.0	3.9	42.9	0.0	0.0	42.0	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D	A	A	D	A	A
Approach Vol, veh/h		464			418			36			14	
Approach Delay, s/veh		6.4			3.9			42.9			42.0	
Approach LOS		A			A			D			D	

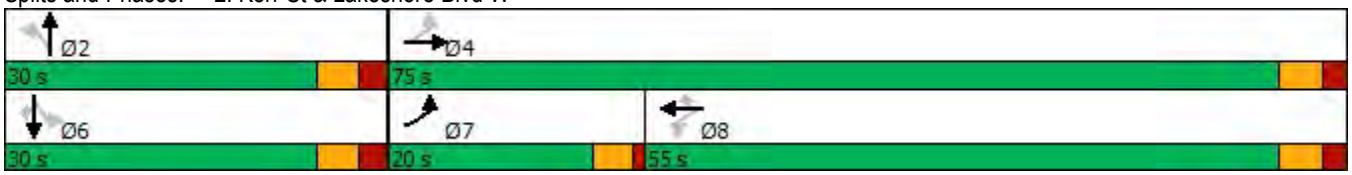
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	6.9	80.5		17.7		87.3		17.7				
Change Period (Y+Rc), s	4.0	6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s	11.0	54.0		24.0		69.0		24.0				
Max Q Clear Time (g_c+I1), s	2.3	11.6		2.7		8.7		4.1				
Green Ext Time (p_c), s	0.0	9.7		0.0		8.8		0.2				

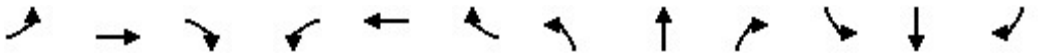
Intersection Summary			
HCM 6th Ctrl Delay		7.3	
HCM 6th LOS		A	

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	25	387	4	267	31	16	10	58	8	18
Future Volume (vph)	25	387	4	267	31	16	10	58	8	18
Lane Group Flow (vph)	28	446	5	303	35	18	18	0	75	20
Turn Type	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	7	4		8			2		6	
Permitted Phases	4		8		8	2		6		6
Detector Phase	7	4	8	8	8	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	7.0	30.0	30.0	30.0	30.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	15.0	40.0	40.0	40.0	40.0	30.0	30.0	30.0	30.0	30.0
Total Split (s)	20.0	75.0	55.0	55.0	55.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	19.0%	71.4%	52.4%	52.4%	52.4%	28.6%	28.6%	28.6%	28.6%	28.6%
Yellow Time (s)	3.0	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	1.0	2.1	2.1	2.1	2.1	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	5.4	5.4	5.4	5.4	5.6	5.6		5.6	5.6
Lead/Lag	Lead		Lag	Lag	Lag					
Lead-Lag Optimize?										
Recall Mode	None	Min	Min	Min	Min	None	None	None	None	None
v/c Ratio	0.04	0.32	0.01	0.23	0.04	0.07	0.05		0.28	0.06
Control Delay	4.0	5.2	9.0	8.4	1.2	21.4	17.1		23.5	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	4.0	5.2	9.0	8.4	1.2	21.4	17.1		23.5	0.4
Queue Length 50th (m)	0.9	20.0	0.2	12.4	0.0	1.4	0.9		6.2	0.0
Queue Length 95th (m)	3.3	38.6	1.9	39.4	1.7	6.7	5.8		18.5	0.0
Internal Link Dist (m)		90.9		95.7			117.4		59.3	
Turn Bay Length (m)	25.0		15.0		15.0	20.0				22.0
Base Capacity (vph)	874	1823	823	1656	1250	572	787		611	630
Starvation Cap Reductn	0	0	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	0.03	0.24	0.01	0.18	0.03	0.03	0.02		0.12	0.03

Intersection Summary
Cycle Length: 105
Actuated Cycle Length: 53.6
Natural Cycle: 85
Control Type: Actuated-Uncoordinated

Splits and Phases: 2: Kerr St & Lakeshore Blvd W





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	387	5	4	267	31	16	10	6	58	8	18
Future Volume (veh/h)	25	387	5	4	267	31	16	10	6	58	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.96	0.99		0.96	0.97		0.94	0.96		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1781	1841	1900	1900	1856	1811	1811	1752	1900	1796	1900	1574
Adj Flow Rate, veh/h	28	440	6	5	303	35	18	11	7	66	9	20
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	8	4	0	0	3	6	6	10	0	7	0	22
Cap, veh/h	638	1175	16	634	991	783	263	151	96	301	34	195
Arrive On Green	0.04	0.65	0.65	0.53	0.53	0.53	0.15	0.15	0.15	0.15	0.15	0.15
Sat Flow, veh/h	1697	1810	25	947	1856	1466	1296	976	621	1166	219	1260
Grp Volume(v), veh/h	28	0	446	5	303	35	18	0	18	75	0	20
Grp Sat Flow(s),veh/h/ln	1697	0	1835	947	1856	1466	1296	0	1597	1384	0	1260
Q Serve(g_s), s	0.4	0.0	6.3	0.1	5.1	0.6	0.7	0.0	0.5	2.3	0.0	0.8
Cycle Q Clear(g_c), s	0.4	0.0	6.3	0.1	5.1	0.6	3.6	0.0	0.5	2.8	0.0	0.8
Prop In Lane	1.00		0.01	1.00		1.00	1.00		0.39	0.88		1.00
Lane Grp Cap(c), veh/h	638	0	1191	634	991	783	263	0	247	335	0	195
V/C Ratio(X)	0.04	0.00	0.37	0.01	0.31	0.04	0.07	0.00	0.07	0.22	0.00	0.10
Avail Cap(c_a), veh/h	1047	0	2273	964	1638	1294	625	0	694	730	0	547
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	4.7	0.0	4.6	6.1	7.3	6.3	22.9	0.0	20.3	21.3	0.0	20.4
Incr Delay (d2), s/veh	0.0	0.0	0.3	0.0	0.3	0.0	0.2	0.0	0.2	0.6	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.7	0.0	1.1	0.1	0.2	0.0	0.2	0.7	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	4.7	0.0	4.9	6.1	7.6	6.3	23.0	0.0	20.5	21.9	0.0	20.8
LnGrp LOS	A	A	A	A	A	A	C	A	C	C	A	C
Approach Vol, veh/h		474			343			36			95	
Approach Delay, s/veh		4.9			7.4			21.8			21.7	
Approach LOS		A			A			C			C	

Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		14.3		41.9		14.3	6.5	35.4				
Change Period (Y+Rc), s		5.6		* 5.4		5.6	4.0	* 5.4				
Max Green Setting (Gmax), s		24.4		* 70		24.4	16.0	* 50				
Max Q Clear Time (g_c+I1), s		5.6		8.3		4.8	2.4	7.1				
Green Ext Time (p_c), s		0.2		6.7		0.7	0.0	4.4				

Intersection Summary		
HCM 6th Ctrl Delay	8.1	
HCM 6th LOS	A	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	59	404	15	9	298	65	2	4	3	20	1	26
Future Vol, veh/h	59	404	15	9	298	65	2	4	3	20	1	26
Conflicting Peds, #/hr	17	0	9	9	0	17	3	0	2	2	0	3
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	20	-	7	15	-	7	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	0	1	0	0	1	0	50	0	0	0	0	0
Mvmt Flow	69	470	17	10	347	76	2	5	3	23	1	30

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	440	0	0	496	0	0	1041	1077	481	1007	1018	367
Stage 1	-	-	-	-	-	-	617	617	-	384	384	-
Stage 2	-	-	-	-	-	-	424	460	-	623	634	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.6	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.6	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.6	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.95	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1131	-	-	1078	-	-	170	221	589	221	239	683
Stage 1	-	-	-	-	-	-	405	484	-	643	615	-
Stage 2	-	-	-	-	-	-	524	569	-	477	476	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1115	-	-	1070	-	-	151	201	584	201	217	671
Mov Cap-2 Maneuver	-	-	-	-	-	-	151	201	-	201	217	-
Stage 1	-	-	-	-	-	-	377	450	-	595	601	-
Stage 2	-	-	-	-	-	-	493	556	-	439	443	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	0.2	21	18.1
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	235	1115	-	-	1070	-	-	329
HCM Lane V/C Ratio	0.045	0.062	-	-	0.01	-	-	0.166
HCM Control Delay (s)	21	8.4	-	-	8.4	-	-	18.1
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.1	0.2	-	-	0	-	-	0.6

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱	↰	↑			✣		↰	↑	↱
Traffic Vol, veh/h	0	421	8	8	321	0	7	0	11	6	3	45
Future Vol, veh/h	0	421	8	8	321	0	7	0	11	6	3	45
Conflicting Peds, #/hr	16	0	7	7	0	16	2	0	1	1	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	7	15	-	-	-	-	-	15	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	2
Mvmt Flow	0	495	9	9	378	0	8	0	13	7	4	53

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	511	0	0	929	898	503	903	907	380
Stage 1	-	-	-	-	-	-	502	502	-	396	396	-
Stage 2	-	-	-	-	-	-	427	396	-	507	511	-
Critical Hdwy	-	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	-	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.318
Pot Cap-1 Maneuver	0	-	-	1065	-	0	250	281	573	260	278	667
Stage 1	0	-	-	-	-	0	555	545	-	633	607	-
Stage 2	0	-	-	-	-	0	610	607	-	552	540	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1059	-	-	225	277	569	252	274	666
Mov Cap-2 Maneuver	-	-	-	-	-	-	225	277	-	252	274	-
Stage 1	-	-	-	-	-	-	555	542	-	633	602	-
Stage 2	-	-	-	-	-	-	553	602	-	539	537	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	15.7	12.3
HCM LOS			C	B

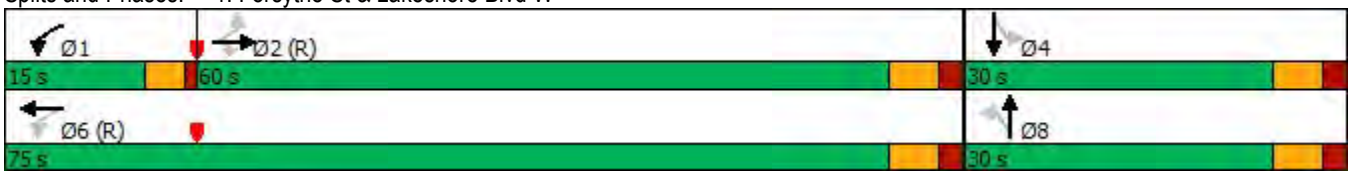
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	357	-	-	1059	-	252	274	666
HCM Lane V/C Ratio	0.059	-	-	0.009	-	0.028	0.013	0.079
HCM Control Delay (s)	15.7	-	-	8.4	-	19.7	18.3	10.9
HCM Lane LOS	C	-	-	A	-	C	C	B
HCM 95th %tile Q(veh)	0.2	-	-	0	-	0.1	0	0.3

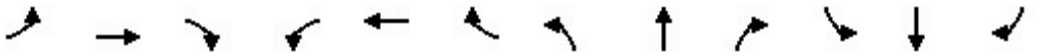
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	20	357	13	18	538	12	8	7	4
Future Volume (vph)	20	357	13	18	538	12	8	7	4
Lane Group Flow (vph)	20	357	13	18	561	0	46	0	19
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases		2		1	6		8		4
Permitted Phases	2		2	6		8		4	
Detector Phase	2	2	2	1	6	8	8	4	4
Switch Phase									
Minimum Initial (s)	30.0	30.0	30.0	7.0	30.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.0	36.0	36.0	11.5	36.0	28.0	28.0	28.0	28.0
Total Split (s)	60.0	60.0	60.0	15.0	75.0	30.0	30.0	30.0	30.0
Total Split (%)	57.1%	57.1%	57.1%	14.3%	71.4%	28.6%	28.6%	28.6%	28.6%
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	6.0	6.0	6.0	4.0	6.0		6.0		6.0
Lead/Lag	Lag	Lag	Lag	Lead					
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	None	None	None	None
v/c Ratio	0.03	0.24	0.01	0.02	0.35		0.27		0.13
Control Delay	4.9	4.7	0.0	2.0	3.2		28.7		33.4
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	4.9	4.7	0.0	2.0	3.2		28.7		33.4
Queue Length 50th (m)	0.7	15.8	0.0	0.6	28.7		4.0		2.2
Queue Length 95th (m)	3.8	41.6	0.0	1.9	44.2		15.2		9.5
Internal Link Dist (m)		87.9			235.1		120.1		23.2
Turn Bay Length (m)	15.0		7.0	60.0					
Base Capacity (vph)	692	1502	1210	911	1585		360		324
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	0.03	0.24	0.01	0.02	0.35		0.13		0.06

Intersection Summary

Cycle Length: 105
Actuated Cycle Length: 105
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 1: Forsythe St & Lakeshore Blvd W





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	357	13	18	538	23	12	8	26	7	4	8
Future Volume (veh/h)	20	357	13	18	538	23	12	8	26	7	4	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1826	1781	1900	1841	1900	1648	1707	1900	1900	1900	1530
Adj Flow Rate, veh/h	20	357	13	18	538	23	12	8	26	7	4	8
Peak Hour 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
Percent Heavy Veh, %	0	5	8	0	4	0	17	13	0	0	0	25
Cap, veh/h	688	1350	1091	813	1409	60	61	34	68	78	46	56
Arrive On Green	0.74	0.74	0.74	0.03	0.80	0.80	0.08	0.08	0.08	0.08	0.08	0.08
Sat Flow, veh/h	862	1826	1475	1810	1750	75	223	422	838	379	570	690
Grp Volume(v), veh/h	20	357	13	18	0	561	46	0	0	19	0	0
Grp Sat Flow(s),veh/h/ln	862	1826	1475	1810	0	1825	1482	0	0	1640	0	0
Q Serve(g_s), s	0.7	6.6	0.2	0.2	0.0	9.1	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.9	6.6	0.2	0.2	0.0	9.1	3.0	0.0	0.0	1.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.04	0.26		0.57	0.37		0.42
Lane Grp Cap(c), veh/h	688	1350	1091	813	0	1469	163	0	0	180	0	0
V/C Ratio(X)	0.03	0.26	0.01	0.02	0.00	0.38	0.28	0.00	0.00	0.11	0.00	0.00
Avail Cap(c_a), veh/h	688	1350	1091	953	0	1469	375	0	0	412	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	4.3	4.4	3.6	2.8	0.0	2.9	45.7	0.0	0.0	44.8	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.5	0.0	0.0	0.0	0.8	1.3	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	1.6	0.0	0.0	0.0	1.3	1.1	0.0	0.0	0.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	4.3	4.9	3.6	2.8	0.0	3.6	47.0	0.0	0.0	45.2	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D	A	A	D	A	A
Approach Vol, veh/h		390			579			46			19	
Approach Delay, s/veh		4.8			3.6			47.0			45.2	
Approach LOS		A			A			D			D	

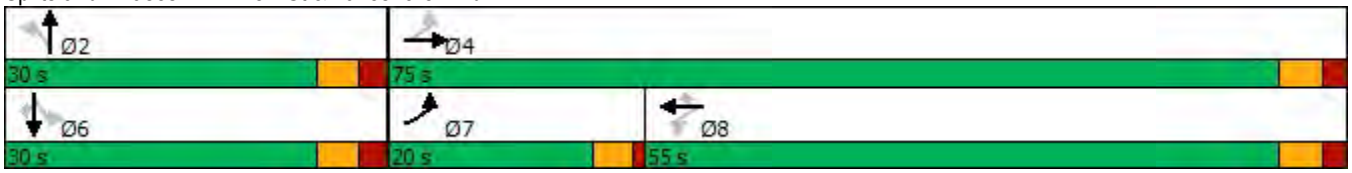
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	6.9	83.6		14.5		90.5		14.5				
Change Period (Y+Rc), s	4.0	6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s	11.0	54.0		24.0		69.0		24.0				
Max Q Clear Time (g_c+I1), s	2.2	8.6		3.0		11.1		5.0				
Green Ext Time (p_c), s	0.0	7.9		0.1		14.0		0.2				

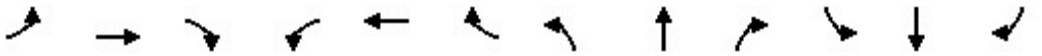
Intersection Summary												
HCM 6th Ctrl Delay			6.8									
HCM 6th LOS			A									

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	52	380	8	503	71	30	25	68	32	68
Future Volume (vph)	52	380	8	503	71	30	25	68	32	68
Lane Group Flow (vph)	52	391	8	503	71	30	39	0	100	68
Turn Type	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	7	4		8			2		6	
Permitted Phases	4		8		8	2		6		6
Detector Phase	7	4	8	8	8	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	7.0	30.0	30.0	30.0	30.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	15.0	40.0	40.0	40.0	40.0	30.0	30.0	30.0	30.0	30.0
Total Split (s)	20.0	75.0	55.0	55.0	55.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	19.0%	71.4%	52.4%	52.4%	52.4%	28.6%	28.6%	28.6%	28.6%	28.6%
Yellow Time (s)	3.0	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	1.0	2.1	2.1	2.1	2.1	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	5.4	5.4	5.4	5.4	5.6	5.6		5.6	5.6
Lead/Lag	Lead		Lag	Lag	Lag					
Lead-Lag Optimize?										
Recall Mode	None	Min	Min	Min	Min	None	None	None	None	None
v/c Ratio	0.09	0.30	0.01	0.45	0.07	0.12	0.11		0.35	0.19
Control Delay	4.5	5.9	10.2	12.7	3.6	23.5	17.4		26.7	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	4.5	5.9	10.2	12.7	3.6	23.5	17.4		26.7	8.2
Queue Length 50th (m)	1.7	17.4	0.5	41.1	0.1	3.1	2.6		11.0	0.0
Queue Length 95th (m)	5.7	36.8	2.9	79.8	6.4	10.2	10.3		25.3	9.4
Internal Link Dist (m)		90.9		95.7			117.4		59.3	
Turn Bay Length (m)	25.0		15.0		15.0	20.0				22.0
Base Capacity (vph)	739	1859	775	1580	1301	524	731		597	684
Starvation Cap Reductn	0	0	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	0.07	0.21	0.01	0.32	0.05	0.06	0.05		0.17	0.10

Intersection Summary
Cycle Length: 105
Actuated Cycle Length: 60.4
Natural Cycle: 85
Control Type: Actuated-Uncoordinated

Splits and Phases: 2: Kerr St & Lakeshore Blvd W





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	380	11	8	503	71	30	25	14	68	32	68
Future Volume (veh/h)	52	380	11	8	503	71	30	25	14	68	32	68
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	52	380	11	8	503	71	30	25	14	68	32	68
Peak Hour 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
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	530	1187	34	637	969	792	266	189	106	256	102	262
Arrive On Green	0.07	0.65	0.65	0.51	0.51	0.51	0.17	0.17	0.17	0.17	0.17	0.17
Sat Flow, veh/h	1810	1836	53	1009	1900	1552	1315	1134	635	917	614	1574
Grp Volume(v), veh/h	52	0	391	8	503	71	30	0	39	100	0	68
Grp Sat Flow(s),veh/h/ln	1810	0	1889	1009	1900	1552	1315	0	1769	1531	0	1574
Q Serve(g_s), s	0.7	0.0	5.4	0.2	10.4	1.4	1.2	0.0	1.1	2.3	0.0	2.2
Cycle Q Clear(g_c), s	0.7	0.0	5.4	0.2	10.4	1.4	4.6	0.0	1.1	3.4	0.0	2.2
Prop In Lane	1.00		0.03	1.00		1.00	1.00		0.36	0.68		1.00
Lane Grp Cap(c), veh/h	530	0	1221	637	969	792	266	0	295	358	0	262
V/C Ratio(X)	0.10	0.00	0.32	0.01	0.52	0.09	0.11	0.00	0.13	0.28	0.00	0.26
Avail Cap(c_a), veh/h	899	0	2236	973	1603	1309	593	0	734	736	0	653
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.9	0.0	4.6	7.1	9.6	7.4	23.9	0.0	20.9	21.8	0.0	21.3
Incr Delay (d2), s/veh	0.1	0.0	0.3	0.0	0.7	0.1	0.3	0.0	0.3	0.7	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.7	0.0	2.6	0.3	0.3	0.0	0.4	1.1	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.0	0.0	4.9	7.1	10.3	7.5	24.2	0.0	21.2	22.5	0.0	22.2
LnGrp LOS	A	A	A	A	B	A	C	A	C	C	A	C
Approach Vol, veh/h		443			582			69			168	
Approach Delay, s/veh		5.0			9.9			22.5			22.4	
Approach LOS		A			A			C			C	

Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		15.4		43.4		15.4	8.0	35.4				
Change Period (Y+Rc), s		5.6		* 5.4		5.6	4.0	* 5.4				
Max Green Setting (Gmax), s		24.4		* 70		24.4	16.0	* 50				
Max Q Clear Time (g_c+I1), s		6.6		7.4		5.4	2.7	12.4				
Green Ext Time (p_c), s		0.4		5.7		1.4	0.1	8.2				

Intersection Summary		
HCM 6th Ctrl Delay		10.6
HCM 6th LOS		B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	27	292	11	7	434	40	8	0	4	10	5	21
Future Vol, veh/h	27	292	11	7	434	40	8	0	4	10	5	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	20	-	7	15	-	7	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	2	0	0	0	0	0	0	25	0	0	0
Mvmt Flow	27	292	11	7	434	40	8	0	4	10	5	21

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	474	0	0	303	0	0	827	834	292	802	805	434
Stage 1	-	-	-	-	-	-	346	346	-	448	448	-
Stage 2	-	-	-	-	-	-	481	488	-	354	357	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.45	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.525	3.5	4	3.3
Pot Cap-1 Maneuver	1099	-	-	1269	-	-	293	306	696	305	318	626
Stage 1	-	-	-	-	-	-	674	639	-	594	576	-
Stage 2	-	-	-	-	-	-	570	553	-	667	632	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1099	-	-	1269	-	-	273	297	696	296	308	626
Mov Cap-2 Maneuver	-	-	-	-	-	-	273	297	-	296	308	-
Stage 1	-	-	-	-	-	-	657	623	-	579	573	-
Stage 2	-	-	-	-	-	-	543	550	-	647	616	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0.1	15.9	14.1
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	342	1099	-	-	1269	-	-	431
HCM Lane V/C Ratio	0.035	0.025	-	-	0.006	-	-	0.084
HCM Control Delay (s)	15.9	8.4	-	-	7.9	-	-	14.1
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.3

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱	↰	↑			✣		↰	↑	↱
Traffic Vol, veh/h	0	292	11	14	440	0	8	0	25	11	7	37
Future Vol, veh/h	0	292	11	14	440	0	8	0	25	11	7	37
Conflicting Peds, #/hr	2	0	11	11	0	2	2	0	12	12	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	7	15	-	-	-	-	-	15	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	3
Mvmt Flow	0	292	11	14	440	0	8	0	25	11	7	37

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	314	0	0	795	771	315	790	782	442
Stage 1	-	-	-	-	-	-	303	303	-	468	468	-
Stage 2	-	-	-	-	-	-	492	468	-	322	314	-
Critical Hdwy	-	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	-	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.327
Pot Cap-1 Maneuver	0	-	-	1258	-	0	308	333	730	310	328	613
Stage 1	0	-	-	-	-	0	711	667	-	579	565	-
Stage 2	0	-	-	-	-	0	562	565	-	694	660	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1246	-	-	279	326	716	294	321	612
Mov Cap-2 Maneuver	-	-	-	-	-	-	279	326	-	294	321	-
Stage 1	-	-	-	-	-	-	711	661	-	579	559	-
Stage 2	-	-	-	-	-	-	515	559	-	663	654	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	12.4	13.2
HCM LOS			B	B

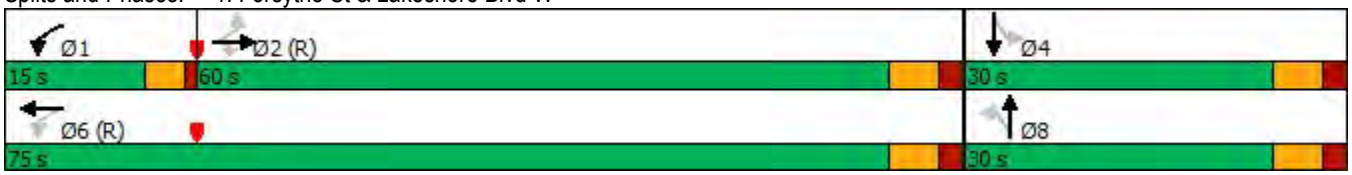
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	519	-	-	1246	-	294	321	612
HCM Lane V/C Ratio	0.064	-	-	0.011	-	0.037	0.022	0.06
HCM Control Delay (s)	12.4	-	-	7.9	-	17.7	16.5	11.3
HCM Lane LOS	B	-	-	A	-	C	C	B
HCM 95th %tile Q(veh)	0.2	-	-	0	-	0.1	0.1	0.2

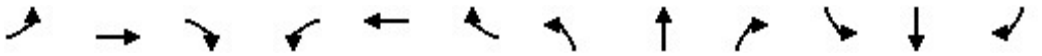
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	15	443	11	18	380	10	7	9	3
Future Volume (vph)	15	443	11	18	380	10	7	9	3
Lane Group Flow (vph)	16	487	12	20	442	0	40	0	15
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases		2		1	6		8		4
Permitted Phases	2		2	6		8		4	
Detector Phase	2	2	2	1	6	8	8	4	4
Switch Phase									
Minimum Initial (s)	30.0	30.0	30.0	7.0	30.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.0	36.0	36.0	11.5	36.0	28.0	28.0	28.0	28.0
Total Split (s)	60.0	60.0	60.0	15.0	75.0	30.0	30.0	30.0	30.0
Total Split (%)	57.1%	57.1%	57.1%	14.3%	71.4%	28.6%	28.6%	28.6%	28.6%
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	6.0	6.0	6.0	4.0	6.0		6.0		6.0
Lead/Lag	Lag	Lag	Lag	Lead					
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	None	None	None	None
v/c Ratio	0.02	0.32	0.01	0.03	0.28		0.25		0.11
Control Delay	4.9	5.2	0.0	2.0	2.8		29.9		41.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	4.9	5.2	0.0	2.0	2.8		29.9		41.1
Queue Length 50th (m)	0.6	23.7	0.0	0.6	20.5		3.8		2.6
Queue Length 95th (m)	3.3	59.9	0.0	2.0	31.9		14.4		9.1
Internal Link Dist (m)		87.9			235.1		120.1		23.2
Turn Bay Length (m)	15.0		7.0	60.0					
Base Capacity (vph)	696	1503	1142	797	1565		348		325
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	0.02	0.32	0.01	0.03	0.28		0.11		0.05

Intersection Summary

Cycle Length: 105
Actuated Cycle Length: 105
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 1: Forsythe St & Lakeshore Blvd W





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	443	11	18	380	22	10	7	19	9	3	2
Future Volume (veh/h)	15	443	11	18	380	22	10	7	19	9	3	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.96	1.00		0.96	0.95		0.93	0.96		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1826	1752	1900	1841	1678	1900	1900	1722	1900	1900	1900
Adj Flow Rate, veh/h	16	487	12	20	418	24	11	8	21	10	3	2
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	7	5	10	0	4	15	0	0	12	0	0	0
Cap, veh/h	698	1287	1003	666	1328	76	73	55	94	160	46	23
Arrive On Green	0.70	0.70	0.70	0.03	0.77	0.77	0.11	0.11	0.11	0.11	0.11	0.11
Sat Flow, veh/h	900	1826	1423	1810	1719	99	260	488	827	909	406	202
Grp Volume(v), veh/h	16	487	12	20	0	442	40	0	0	15	0	0
Grp Sat Flow(s),veh/h/ln	900	1826	1423	1810	0	1818	1575	0	0	1517	0	0
Q Serve(g_s), s	0.6	11.3	0.3	0.3	0.0	7.7	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.2	11.3	0.3	0.3	0.0	7.7	2.3	0.0	0.0	0.8	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.05	0.27		0.52	0.67		0.13
Lane Grp Cap(c), veh/h	698	1287	1003	666	0	1404	222	0	0	229	0	0
V/C Ratio(X)	0.02	0.38	0.01	0.03	0.00	0.31	0.18	0.00	0.00	0.07	0.00	0.00
Avail Cap(c_a), veh/h	698	1287	1003	802	0	1404	398	0	0	396	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	4.8	6.2	4.6	4.1	0.0	3.6	42.3	0.0	0.0	41.6	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.8	0.0	0.0	0.0	0.6	0.5	0.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	3.1	0.1	0.1	0.0	1.5	0.9	0.0	0.0	0.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	4.9	7.1	4.6	4.1	0.0	4.2	42.8	0.0	0.0	41.8	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D	A	A	D	A	A
Approach Vol, veh/h		515			462			40			15	
Approach Delay, s/veh		7.0			4.2			42.8			41.8	
Approach LOS		A			A			D			D	

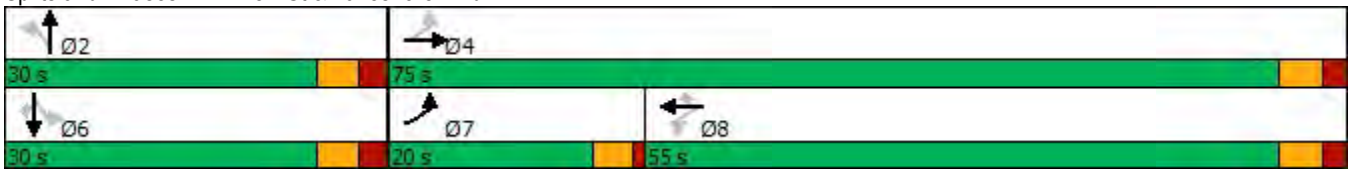
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	7.1	80.0		17.9		87.1		17.9				
Change Period (Y+Rc), s	4.0	6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s	11.0	54.0		24.0		69.0		24.0				
Max Q Clear Time (g_c+I1), s	2.3	13.3		2.8		9.7		4.3				
Green Ext Time (p_c), s	0.0	10.9		0.0		10.1		0.2				

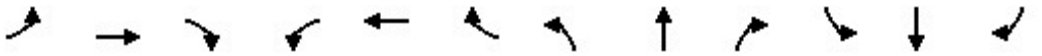
Intersection Summary												
HCM 6th Ctrl Delay			7.6									
HCM 6th LOS			A									

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	28	431	4	301	34	18	11	64	9	20
Future Volume (vph)	28	431	4	301	34	18	11	64	9	20
Lane Group Flow (vph)	32	497	5	342	39	20	21	0	83	23
Turn Type	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	7	4		8			2		6	
Permitted Phases	4		8		8	2		6		6
Detector Phase	7	4	8	8	8	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	7.0	30.0	30.0	30.0	30.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	15.0	40.0	40.0	40.0	40.0	30.0	30.0	30.0	30.0	30.0
Total Split (s)	20.0	75.0	55.0	55.0	55.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	19.0%	71.4%	52.4%	52.4%	52.4%	28.6%	28.6%	28.6%	28.6%	28.6%
Yellow Time (s)	3.0	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	1.0	2.1	2.1	2.1	2.1	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	5.4	5.4	5.4	5.4	5.6	5.6		5.6	5.6
Lead/Lag	Lead		Lag	Lag	Lag					
Lead-Lag Optimize?										
Recall Mode	None	Min	Min	Min	Min	None	None	None	None	None
v/c Ratio	0.05	0.40	0.01	0.30	0.04	0.08	0.06		0.32	0.08
Control Delay	4.3	6.8	9.2	9.7	1.5	21.5	16.9		24.8	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	4.3	6.8	9.2	9.7	1.5	21.5	16.9		24.8	0.8
Queue Length 50th (m)	1.0	23.9	0.2	14.7	0.0	1.6	1.0		6.9	0.0
Queue Length 95th (m)	3.7	45.6	1.9	45.8	2.2	7.0	6.4		20.2	0.5
Internal Link Dist (m)		90.9		95.7			117.4		59.3	
Turn Bay Length (m)	25.0		15.0		15.0	20.0				22.0
Base Capacity (vph)	786	1823	776	1638	1237	523	728		563	587
Starvation Cap Reductn	0	0	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	0.04	0.27	0.01	0.21	0.03	0.04	0.03		0.15	0.04

Intersection Summary
Cycle Length: 105
Actuated Cycle Length: 56.6
Natural Cycle: 85
Control Type: Actuated-Uncoordinated

Splits and Phases: 2: Kerr St & Lakeshore Blvd W





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	431	6	4	301	34	18	11	7	64	9	20
Future Volume (veh/h)	28	431	6	4	301	34	18	11	7	64	9	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.96	0.99		0.95	0.97		0.94	0.96		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1781	1841	1900	1900	1856	1811	1811	1752	1900	1796	1900	1574
Adj Flow Rate, veh/h	32	490	7	5	342	39	20	12	8	73	10	23
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	8	4	0	0	3	6	6	10	0	7	0	22
Cap, veh/h	609	1172	17	594	980	774	258	152	101	303	34	200
Arrive On Green	0.05	0.65	0.65	0.53	0.53	0.53	0.16	0.16	0.16	0.16	0.16	0.16
Sat Flow, veh/h	1697	1809	26	904	1856	1465	1293	956	637	1158	216	1260
Grp Volume(v), veh/h	32	0	497	5	342	39	20	0	20	83	0	23
Grp Sat Flow(s),veh/h/ln	1697	0	1835	904	1856	1465	1293	0	1593	1374	0	1260
Q Serve(g_s), s	0.4	0.0	7.4	0.2	6.0	0.7	0.8	0.0	0.6	2.6	0.0	0.9
Cycle Q Clear(g_c), s	0.4	0.0	7.4	0.8	6.0	0.7	4.0	0.0	0.6	3.2	0.0	0.9
Prop In Lane	1.00		0.01	1.00		1.00	1.00		0.40	0.88		1.00
Lane Grp Cap(c), veh/h	609	0	1188	594	980	774	258	0	253	337	0	200
V/C Ratio(X)	0.05	0.00	0.42	0.01	0.35	0.05	0.08	0.00	0.08	0.25	0.00	0.12
Avail Cap(c_a), veh/h	1004	0	2249	906	1621	1280	609	0	685	720	0	541
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	4.9	0.0	4.8	6.7	7.7	6.5	23.3	0.0	20.4	21.5	0.0	20.5
Incr Delay (d2), s/veh	0.0	0.0	0.4	0.0	0.4	0.0	0.2	0.0	0.2	0.6	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.9	0.0	1.4	0.1	0.2	0.0	0.2	0.8	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.0	0.0	5.2	6.7	8.1	6.5	23.5	0.0	20.6	22.2	0.0	20.9
LnGrp LOS	A	A	A	A	A	A	C	A	C	C	A	C
Approach Vol, veh/h		529			386			40			106	
Approach Delay, s/veh		5.2			7.9			22.0			21.9	
Approach LOS		A			A			C			C	

Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		14.6		42.2		14.6	6.8	35.4				
Change Period (Y+Rc), s		5.6		* 5.4		5.6	4.0	* 5.4				
Max Green Setting (Gmax), s		24.4		* 70		24.4	16.0	* 50				
Max Q Clear Time (g_c+I1), s		6.0		9.4		5.2	2.4	8.0				
Green Ext Time (p_c), s		0.2		7.8		0.8	0.0	5.1				

Intersection Summary		
HCM 6th Ctrl Delay	8.5	
HCM 6th LOS	A	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	65	447	17	10	332	72	2	4	3	22	1	29
Future Vol, veh/h	65	447	17	10	332	72	2	4	3	22	1	29
Conflicting Peds, #/hr	17	0	9	9	0	17	3	0	2	2	0	3
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	20	-	7	15	-	7	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	0	1	0	0	1	0	50	0	0	0	0	0
Mvmt Flow	76	520	20	12	386	84	2	5	3	26	1	34

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	487	0	0	549	0	0	1154	1192	531	1115	1128	406
Stage 1	-	-	-	-	-	-	681	681	-	427	427	-
Stage 2	-	-	-	-	-	-	473	511	-	688	701	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.6	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.6	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.6	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.95	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1086	-	-	1031	-	-	141	189	552	187	206	649
Stage 1	-	-	-	-	-	-	371	453	-	610	589	-
Stage 2	-	-	-	-	-	-	491	540	-	440	444	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1070	-	-	1023	-	-	123	170	547	168	185	638
Mov Cap-2 Maneuver	-	-	-	-	-	-	123	170	-	168	185	-
Stage 1	-	-	-	-	-	-	342	418	-	559	574	-
Stage 2	-	-	-	-	-	-	457	526	-	401	409	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	0.2	24.1	20.9
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	199	1070	-	-	1023	-	-	286
HCM Lane V/C Ratio	0.053	0.071	-	-	0.011	-	-	0.211
HCM Control Delay (s)	24.1	8.6	-	-	8.6	-	-	20.9
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.2	0.2	-	-	0	-	-	0.8

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱	↰	↑			✣		↰	↑	↱
Traffic Vol, veh/h	0	465	9	9	357	0	8	0	12	7	3	50
Future Vol, veh/h	0	465	9	9	357	0	8	0	12	7	3	50
Conflicting Peds, #/hr	16	0	7	7	0	16	2	0	1	1	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	7	15	-	-	-	-	-	15	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	2
Mvmt Flow	0	547	11	11	420	0	9	0	14	8	4	59

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	565	0	0	1030	996	555	1003	1007	422
Stage 1	-	-	-	-	-	-	554	554	-	442	442	-
Stage 2	-	-	-	-	-	-	476	442	-	561	565	-
Critical Hdwy	-	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	-	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.318
Pot Cap-1 Maneuver	0	-	-	1017	-	0	214	246	535	223	243	632
Stage 1	0	-	-	-	-	0	520	517	-	598	580	-
Stage 2	0	-	-	-	-	0	574	580	-	516	511	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1011	-	-	189	242	531	215	239	631
Mov Cap-2 Maneuver	-	-	-	-	-	-	189	242	-	215	239	-
Stage 1	-	-	-	-	-	-	520	514	-	598	574	-
Stage 2	-	-	-	-	-	-	511	574	-	502	508	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	17.7	13
HCM LOS			C	B

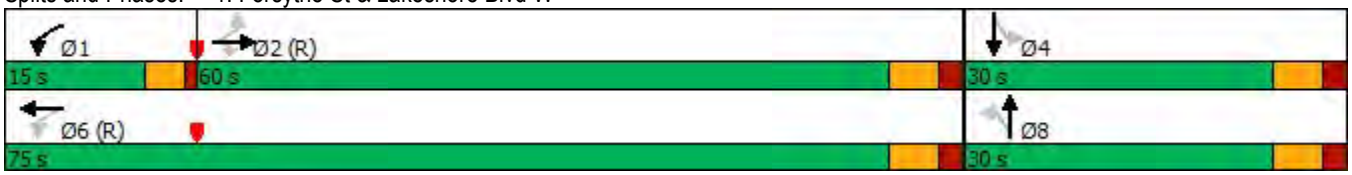
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	308	-	-	1011	-	215	239	631
HCM Lane V/C Ratio	0.076	-	-	0.01	-	0.038	0.015	0.093
HCM Control Delay (s)	17.7	-	-	8.6	-	22.4	20.3	11.3
HCM Lane LOS	C	-	-	A	-	C	C	B
HCM 95th %tile Q(veh)	0.2	-	-	0	-	0.1	0	0.3

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	22	388	14	20	594	13	9	8	4
Future Volume (vph)	22	388	14	20	594	13	9	8	4
Lane Group Flow (vph)	22	388	14	20	619	0	51	0	21
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases		2		1	6		8		4
Permitted Phases	2		2	6		8		4	
Detector Phase	2	2	2	1	6	8	8	4	4
Switch Phase									
Minimum Initial (s)	30.0	30.0	30.0	7.0	30.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.0	36.0	36.0	11.5	36.0	28.0	28.0	28.0	28.0
Total Split (s)	60.0	60.0	60.0	15.0	75.0	30.0	30.0	30.0	30.0
Total Split (%)	57.1%	57.1%	57.1%	14.3%	71.4%	28.6%	28.6%	28.6%	28.6%
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	6.0	6.0	6.0	4.0	6.0		6.0		6.0
Lead/Lag	Lag	Lag	Lag	Lead					
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	None	None	None	None
v/c Ratio	0.04	0.27	0.01	0.02	0.41		0.30		0.14
Control Delay	5.1	5.3	0.0	2.1	4.1		28.5		33.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	5.1	5.3	0.0	2.1	4.1		28.5		33.0
Queue Length 50th (m)	0.8	17.7	0.0	0.6	33.0		4.4		2.4
Queue Length 95th (m)	4.1	46.3	0.0	2.0	52.1		16.2		10.1
Internal Link Dist (m)		87.9			235.1		120.1		23.2
Turn Bay Length (m)	15.0		7.0	60.0					
Base Capacity (vph)	622	1425	1151	851	1508		362		326
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	0.04	0.27	0.01	0.02	0.41		0.14		0.06

Intersection Summary

Cycle Length: 105
Actuated Cycle Length: 105
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 1: Forsythe St & Lakeshore Blvd W



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	388	14	20	594	25	13	9	29	8	4	9
Future Volume (veh/h)	22	388	14	20	594	25	13	9	29	8	4	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1826	1781	1900	1841	1900	1648	1707	1900	1900	1900	1530
Adj Flow Rate, veh/h	22	388	14	20	594	25	13	9	29	8	4	9
Peak Hour 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
Percent Heavy Veh, %	0	5	8	0	4	0	17	13	0	0	0	25
Cap, veh/h	641	1341	1083	784	1405	59	61	35	70	81	44	59
Arrive On Green	0.73	0.73	0.73	0.03	0.80	0.80	0.08	0.08	0.08	0.08	0.08	0.08
Sat Flow, veh/h	817	1826	1475	1810	1752	74	220	419	843	407	531	704
Grp Volume(v), veh/h	22	388	14	20	0	619	51	0	0	21	0	0
Grp Sat Flow(s),veh/h/ln	817	1826	1475	1810	0	1825	1482	0	0	1642	0	0
Q Serve(g_s), s	0.9	7.5	0.3	0.3	0.0	10.7	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	4.4	7.5	0.3	0.3	0.0	10.7	3.3	0.0	0.0	1.2	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.04	0.25		0.57	0.38		0.43
Lane Grp Cap(c), veh/h	641	1341	1083	784	0	1464	167	0	0	185	0	0
V/C Ratio(X)	0.03	0.29	0.01	0.03	0.00	0.42	0.31	0.00	0.00	0.11	0.00	0.00
Avail Cap(c_a), veh/h	641	1341	1083	920	0	1464	375	0	0	411	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	4.8	4.7	3.7	2.9	0.0	3.1	45.6	0.0	0.0	44.6	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.5	0.0	0.0	0.0	0.9	1.5	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	1.8	0.1	0.0	0.0	1.6	1.2	0.0	0.0	0.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	4.9	5.2	3.8	2.9	0.0	4.0	47.0	0.0	0.0	45.0	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D	A	A	D	A	A
Approach Vol, veh/h		424			639			51			21	
Approach Delay, s/veh		5.2			4.0			47.0			45.0	
Approach LOS		A			A			D			D	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	7.1	83.1		14.8		90.2		14.8				
Change Period (Y+Rc), s	4.0	6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s	11.0	54.0		24.0		69.0		24.0				
Max Q Clear Time (g_c+I1), s	2.3	9.5		3.2		12.7		5.3				
Green Ext Time (p_c), s	0.0	8.7		0.1		16.1		0.3				

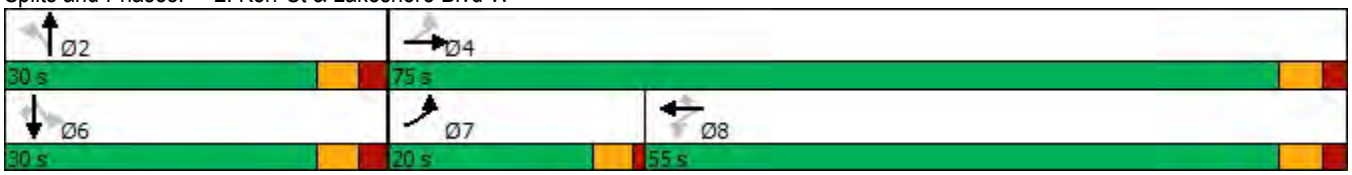
Intersection Summary			
HCM 6th Ctrl Delay		7.1	
HCM 6th LOS		A	

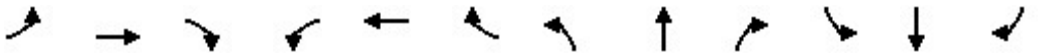
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	57	420	9	555	78	33	28	75	35	75
Future Volume (vph)	57	420	9	555	78	33	28	75	35	75
Lane Group Flow (vph)	57	432	9	555	78	33	43	0	110	75
Turn Type	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	7	4		8			2		6	
Permitted Phases	4		8		8	2		6		6
Detector Phase	7	4	8	8	8	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	7.0	30.0	30.0	30.0	30.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	15.0	40.0	40.0	40.0	40.0	30.0	30.0	30.0	30.0	30.0
Total Split (s)	20.0	75.0	55.0	55.0	55.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	19.0%	71.4%	52.4%	52.4%	52.4%	28.6%	28.6%	28.6%	28.6%	28.6%
Yellow Time (s)	3.0	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	1.0	2.1	2.1	2.1	2.1	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	5.4	5.4	5.4	5.4	5.6	5.6		5.6	5.6
Lead/Lag	Lead		Lag	Lag	Lag					
Lead-Lag Optimize?										
Recall Mode	None	Min	Min	Min	Min	None	None	None	None	None
v/c Ratio	0.10	0.33	0.02	0.49	0.08	0.13	0.12		0.38	0.20
Control Delay	4.8	6.3	10.7	13.7	4.1	24.4	17.9		27.9	8.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	4.8	6.3	10.7	13.7	4.1	24.4	17.9		27.9	8.3
Queue Length 50th (m)	2.0	20.6	0.6	48.3	0.6	3.5	2.9		12.2	0.0
Queue Length 95th (m)	6.5	43.6	3.2	95.2	7.5	11.6	11.7		29.3	10.3
Internal Link Dist (m)		90.9		95.7			117.4		59.3	
Turn Bay Length (m)	25.0		15.0		15.0	20.0				22.0
Base Capacity (vph)	705	1830	732	1551	1278	510	721		584	677
Starvation Cap Reductn	0	0	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	0.08	0.24	0.01	0.36	0.06	0.06	0.06		0.19	0.11

Intersection Summary

Cycle Length: 105
Actuated Cycle Length: 62
Natural Cycle: 85
Control Type: Actuated-Uncoordinated

Splits and Phases: 2: Kerr St & Lakeshore Blvd W





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	420	12	9	555	78	33	28	15	75	35	75
Future Volume (veh/h)	57	420	12	9	555	78	33	28	15	75	35	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	57	420	12	9	555	78	33	28	15	75	35	75
Peak Hour 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
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	497	1189	34	615	964	787	253	193	103	253	100	263
Arrive On Green	0.07	0.65	0.65	0.51	0.51	0.51	0.17	0.17	0.17	0.17	0.17	0.17
Sat Flow, veh/h	1810	1837	52	971	1900	1552	1304	1154	618	905	602	1574
Grp Volume(v), veh/h	57	0	432	9	555	78	33	0	43	110	0	75
Grp Sat Flow(s),veh/h/ln	1810	0	1889	971	1900	1552	1304	0	1772	1507	0	1574
Q Serve(g_s), s	0.7	0.0	6.2	0.3	12.0	1.5	1.4	0.0	1.2	2.7	0.0	2.5
Cycle Q Clear(g_c), s	0.7	0.0	6.2	0.3	12.0	1.5	5.3	0.0	1.2	3.9	0.0	2.5
Prop In Lane	1.00		0.03	1.00		1.00	1.00		0.35	0.68		1.00
Lane Grp Cap(c), veh/h	497	0	1222	615	964	787	253	0	296	354	0	263
V/C Ratio(X)	0.11	0.00	0.35	0.01	0.58	0.10	0.13	0.00	0.15	0.31	0.00	0.29
Avail Cap(c_a), veh/h	857	0	2224	937	1594	1302	573	0	731	727	0	650
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.4	0.0	4.8	7.2	10.1	7.6	24.5	0.0	21.0	22.1	0.0	21.5
Incr Delay (d2), s/veh	0.1	0.0	0.3	0.0	0.9	0.1	0.4	0.0	0.4	0.8	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.9	0.0	3.1	0.3	0.4	0.0	0.4	1.2	0.0	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.4	0.0	5.1	7.3	11.1	7.6	24.9	0.0	21.4	23.0	0.0	22.6
LnGrp LOS	A	A	A	A	B	A	C	A	C	C	A	C
Approach Vol, veh/h		489			642			76			185	
Approach Delay, s/veh		5.2			10.6			22.9			22.8	
Approach LOS		A			B			C			C	

Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		15.5		43.7		15.5	8.3	35.4				
Change Period (Y+Rc), s		5.6		* 5.4		5.6	4.0	* 5.4				
Max Green Setting (Gmax), s		24.4		* 70		24.4	16.0	* 50				
Max Q Clear Time (g_c+I1), s		7.3		8.2		5.9	2.7	14.0				
Green Ext Time (p_c), s		0.4		6.5		1.5	0.1	9.2				

Intersection Summary		
HCM 6th Ctrl Delay		11.0
HCM 6th LOS		B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	322	12	8	491	44	9	0	4	11	6	23
Future Vol, veh/h	30	322	12	8	491	44	9	0	4	11	6	23
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	20	-	7	15	-	7	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	2	0	0	0	0	0	0	25	0	0	0
Mvmt Flow	30	322	12	8	491	44	9	0	4	11	6	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	535	0	0	334	0	0	926	933	322	897	901	491
Stage 1	-	-	-	-	-	-	382	382	-	507	507	-
Stage 2	-	-	-	-	-	-	544	551	-	390	394	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.45	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.525	3.5	4	3.3
Pot Cap-1 Maneuver	1043	-	-	1237	-	-	251	268	669	263	280	582
Stage 1	-	-	-	-	-	-	645	616	-	552	543	-
Stage 2	-	-	-	-	-	-	527	519	-	638	609	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1043	-	-	1237	-	-	231	259	669	254	270	582
Mov Cap-2 Maneuver	-	-	-	-	-	-	231	259	-	254	270	-
Stage 1	-	-	-	-	-	-	626	598	-	536	540	-
Stage 2	-	-	-	-	-	-	497	516	-	616	591	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0.1	18	15.6
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	289	1043	-	-	1237	-	-	381
HCM Lane V/C Ratio	0.045	0.029	-	-	0.006	-	-	0.105
HCM Control Delay (s)	18	8.6	-	-	7.9	-	-	15.6
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.3

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱	↰	↑			✣		↰	↑	↱
Traffic Vol, veh/h	0	322	12	15	497	0	9	0	28	12	8	41
Future Vol, veh/h	0	322	12	15	497	0	9	0	28	12	8	41
Conflicting Peds, #/hr	2	0	11	11	0	2	2	0	12	12	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	7	15	-	-	-	-	-	15	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	3
Mvmt Flow	0	322	12	15	497	0	9	0	28	12	8	41

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	345	0	0	887	860	345	881	872	499
Stage 1	-	-	-	-	-	-	333	333	-	527	527	-
Stage 2	-	-	-	-	-	-	554	527	-	354	345	-
Critical Hdwy	-	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	-	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.327
Pot Cap-1 Maneuver	0	-	-	1225	-	0	267	296	702	269	291	570
Stage 1	0	-	-	-	-	0	685	647	-	538	532	-
Stage 2	0	-	-	-	-	0	520	532	-	667	640	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1214	-	-	238	290	688	253	285	569
Mov Cap-2 Maneuver	-	-	-	-	-	-	238	290	-	253	285	-
Stage 1	-	-	-	-	-	-	685	641	-	538	526	-
Stage 2	-	-	-	-	-	-	469	526	-	633	634	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	13.3	14.2
HCM LOS			B	B

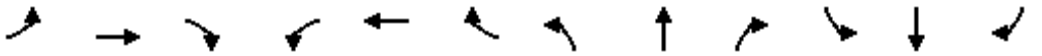
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	471	-	-	1214	-	253	285	569
HCM Lane V/C Ratio	0.079	-	-	0.012	-	0.047	0.028	0.072
HCM Control Delay (s)	13.3	-	-	8	-	19.9	18	11.8
HCM Lane LOS	B	-	-	A	-	C	C	B
HCM 95th %tile Q(veh)	0.3	-	-	0	-	0.1	0.1	0.2

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	15	469	11	18	383	10	7	9	3
Future Volume (vph)	15	469	11	18	383	10	7	9	3
Lane Group Flow (vph)	16	515	12	20	445	0	40	0	15
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases		2		1	6		8		4
Permitted Phases	2		2	6		8		4	
Detector Phase	2	2	2	1	6	8	8	4	4
Switch Phase									
Minimum Initial (s)	30.0	30.0	30.0	7.0	30.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.0	36.0	36.0	11.5	36.0	28.0	28.0	28.0	28.0
Total Split (s)	60.0	60.0	60.0	15.0	75.0	30.0	30.0	30.0	30.0
Total Split (%)	57.1%	57.1%	57.1%	14.3%	71.4%	28.6%	28.6%	28.6%	28.6%
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	6.0	6.0	6.0	4.0	6.0		6.0		6.0
Lead/Lag	Lag	Lag	Lag	Lead					
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	None	None	None	None
v/c Ratio	0.02	0.34	0.01	0.03	0.28		0.25		0.11
Control Delay	4.9	5.3	0.0	2.0	2.8		29.9		41.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	4.9	5.3	0.0	2.0	2.8		29.9		41.1
Queue Length 50th (m)	0.6	25.7	0.0	0.6	20.7		3.8		2.6
Queue Length 95th (m)	3.3	64.7	0.0	2.0	32.0		14.4		9.1
Internal Link Dist (m)		87.9			235.1		120.1		23.2
Turn Bay Length (m)	15.0		7.0	60.0					
Base Capacity (vph)	693	1503	1142	776	1565		348		325
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	0.02	0.34	0.01	0.03	0.28		0.11		0.05

Intersection Summary

Cycle Length: 105
Actuated Cycle Length: 105
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 1: Forsythe St & Lakeshore Blvd W



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	469	11	18	383	22	10	7	19	9	3	2
Future Volume (veh/h)	15	469	11	18	383	22	10	7	19	9	3	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.96	1.00		0.96	0.95		0.93	0.96		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1826	1752	1900	1841	1678	1900	1900	1722	1900	1900	1900
Adj Flow Rate, veh/h	16	515	12	20	421	24	11	8	21	10	3	2
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	7	5	10	0	4	15	0	0	12	0	0	0
Cap, veh/h	696	1287	1003	644	1329	76	73	55	94	160	46	23
Arrive On Green	0.70	0.70	0.70	0.03	0.77	0.77	0.11	0.11	0.11	0.11	0.11	0.11
Sat Flow, veh/h	898	1826	1423	1810	1720	98	260	488	827	909	406	202
Grp Volume(v), veh/h	16	515	12	20	0	445	40	0	0	15	0	0
Grp Sat Flow(s),veh/h/ln	898	1826	1423	1810	0	1818	1575	0	0	1517	0	0
Q Serve(g_s), s	0.6	12.2	0.3	0.3	0.0	7.7	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.2	12.2	0.3	0.3	0.0	7.7	2.3	0.0	0.0	0.8	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.05	0.27		0.52	0.67		0.13
Lane Grp Cap(c), veh/h	696	1287	1003	644	0	1404	222	0	0	229	0	0
V/C Ratio(X)	0.02	0.40	0.01	0.03	0.00	0.32	0.18	0.00	0.00	0.07	0.00	0.00
Avail Cap(c_a), veh/h	696	1287	1003	781	0	1404	398	0	0	396	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	4.9	6.4	4.6	4.2	0.0	3.6	42.3	0.0	0.0	41.6	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.9	0.0	0.0	0.0	0.6	0.5	0.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	3.3	0.1	0.1	0.0	1.5	0.9	0.0	0.0	0.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	4.9	7.3	4.6	4.2	0.0	4.2	42.8	0.0	0.0	41.8	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D	A	A	D	A	A
Approach Vol, veh/h		543			465			40			15	
Approach Delay, s/veh		7.2			4.2			42.8			41.8	
Approach LOS		A			A			D			D	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	7.1	80.0		17.9		87.1		17.9				
Change Period (Y+Rc), s	4.0	6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s	11.0	54.0		24.0		69.0		24.0				
Max Q Clear Time (g_c+I1), s	2.3	14.2		2.8		9.7		4.3				
Green Ext Time (p_c), s	0.0	11.7		0.0		10.2		0.2				

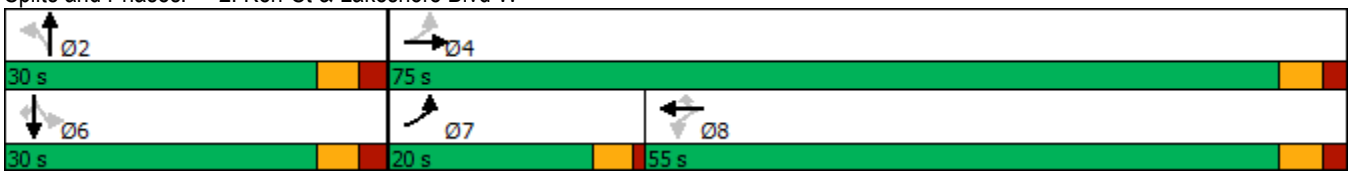
Intersection Summary												
HCM 6th Ctrl Delay			7.7									
HCM 6th LOS			A									

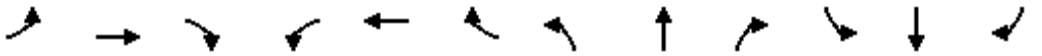
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	28	442	4	318	41	18	11	69	9	20
Future Volume (vph)	28	442	4	318	41	18	11	69	9	20
Lane Group Flow (vph)	32	509	5	361	47	20	21	0	88	23
Turn Type	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	7	4		8			2		6	
Permitted Phases	4		8		8	2		6		6
Detector Phase	7	4	8	8	8	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	7.0	30.0	30.0	30.0	30.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	15.0	40.0	40.0	40.0	40.0	30.0	30.0	30.0	30.0	30.0
Total Split (s)	20.0	75.0	55.0	55.0	55.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	19.0%	71.4%	52.4%	52.4%	52.4%	28.6%	28.6%	28.6%	28.6%	28.6%
Yellow Time (s)	3.0	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	1.0	2.1	2.1	2.1	2.1	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	5.4	5.4	5.4	5.4	5.6	5.6		5.6	5.6
Lead/Lag	Lead		Lag	Lag	Lag					
Lead-Lag Optimize?										
Recall Mode	None	Min	Min	Min	Min	None	None	None	None	None
v/c Ratio	0.05	0.41	0.01	0.32	0.05	0.08	0.06		0.34	0.07
Control Delay	4.4	7.0	9.5	10.0	2.1	21.3	16.7		25.0	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	4.4	7.0	9.5	10.0	2.1	21.3	16.7		25.0	0.8
Queue Length 50th (m)	1.1	24.9	0.2	15.9	0.0	1.6	1.0		7.4	0.0
Queue Length 95th (m)	3.8	48.0	2.0	49.3	3.2	7.0	6.3		21.0	0.5
Internal Link Dist (m)		90.9		95.7			117.4		59.3	
Turn Bay Length (m)	25.0		15.0		15.0	20.0				22.0
Base Capacity (vph)	773	1823	766	1633	1234	520	726		560	585
Starvation Cap Reductn	0	0	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	0.04	0.28	0.01	0.22	0.04	0.04	0.03		0.16	0.04

Intersection Summary

Cycle Length: 105
Actuated Cycle Length: 56.9
Natural Cycle: 85
Control Type: Actuated-Uncoordinated

Splits and Phases: 2: Kerr St & Lakeshore Blvd W





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	442	6	4	318	41	18	11	7	69	9	20
Future Volume (veh/h)	28	442	6	4	318	41	18	11	7	69	9	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.96	0.99		0.95	0.97		0.94	0.96		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1781	1841	1900	1900	1856	1811	1811	1752	1900	1796	1900	1574
Adj Flow Rate, veh/h	32	502	7	5	361	47	20	12	8	78	10	23
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	8	4	0	0	3	6	6	10	0	7	0	22
Cap, veh/h	591	1171	16	584	979	773	254	153	102	306	32	201
Arrive On Green	0.05	0.65	0.65	0.53	0.53	0.53	0.16	0.16	0.16	0.16	0.16	0.16
Sat Flow, veh/h	1697	1810	25	895	1856	1465	1294	956	637	1166	203	1260
Grp Volume(v), veh/h	32	0	509	5	361	47	20	0	20	88	0	23
Grp Sat Flow(s),veh/h/ln	1697	0	1835	895	1856	1465	1294	0	1593	1369	0	1260
Q Serve(g_s), s	0.4	0.0	7.7	0.2	6.5	0.9	0.8	0.0	0.6	2.9	0.0	0.9
Cycle Q Clear(g_c), s	0.4	0.0	7.7	1.1	6.5	0.9	4.3	0.0	0.6	3.5	0.0	0.9
Prop In Lane	1.00		0.01	1.00		1.00	1.00		0.40	0.89		1.00
Lane Grp Cap(c), veh/h	591	0	1187	584	979	773	254	0	254	338	0	201
V/C Ratio(X)	0.05	0.00	0.43	0.01	0.37	0.06	0.08	0.00	0.08	0.26	0.00	0.11
Avail Cap(c_a), veh/h	986	0	2246	892	1619	1278	603	0	684	718	0	541
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.0	0.0	4.9	6.8	7.9	6.6	23.5	0.0	20.3	21.6	0.0	20.4
Incr Delay (d2), s/veh	0.0	0.0	0.4	0.0	0.4	0.1	0.2	0.0	0.2	0.7	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.9	0.0	1.5	0.2	0.2	0.0	0.2	0.9	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.1	0.0	5.3	6.8	8.3	6.6	23.7	0.0	20.6	22.3	0.0	20.9
LnGrp LOS	A	A	A	A	A	A	C	A	C	C	A	C
Approach Vol, veh/h		541			413			40			111	
Approach Delay, s/veh		5.3			8.1			22.1			22.0	
Approach LOS		A			A			C			C	

Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		14.7		42.2		14.7	6.8	35.4				
Change Period (Y+Rc), s		5.6		* 5.4		5.6	4.0	* 5.4				
Max Green Setting (Gmax), s		24.4		* 70		24.4	16.0	* 50				
Max Q Clear Time (g_c+I1), s		6.3		9.7		5.5	2.4	8.5				
Green Ext Time (p_c), s		0.2		8.0		0.9	0.0	5.4				

Intersection Summary		
HCM 6th Ctrl Delay		8.6
HCM 6th LOS		A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	65	463	17	10	356	72	2	4	3	22	1	29
Future Vol, veh/h	65	463	17	10	356	72	2	4	3	22	1	29
Conflicting Peds, #/hr	17	0	9	9	0	17	3	0	2	2	0	3
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	20	-	7	15	-	7	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	0	1	0	0	1	0	50	0	0	0	0	0
Mvmt Flow	76	538	20	12	414	84	2	5	3	26	1	34

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	515	0	0	567	0	0	1200	1238	549	1161	1174	434
Stage 1	-	-	-	-	-	-	699	699	-	455	455	-
Stage 2	-	-	-	-	-	-	501	539	-	706	719	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.6	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.6	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.6	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.95	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1061	-	-	1015	-	-	130	177	539	174	193	626
Stage 1	-	-	-	-	-	-	362	445	-	589	572	-
Stage 2	-	-	-	-	-	-	473	525	-	430	436	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1046	-	-	1007	-	-	113	159	534	156	173	615
Mov Cap-2 Maneuver	-	-	-	-	-	-	113	159	-	156	173	-
Stage 1	-	-	-	-	-	-	333	409	-	538	557	-
Stage 2	-	-	-	-	-	-	440	511	-	391	401	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	0.2	25.5	22.3
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	186	1046	-	-	1007	-	-	268
HCM Lane V/C Ratio	0.056	0.072	-	-	0.012	-	-	0.226
HCM Control Delay (s)	25.5	8.7	-	-	8.6	-	-	22.3
HCM Lane LOS	D	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.2	0.2	-	-	0	-	-	0.8

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱	↰	↑			✣		↰	↑	↱
Traffic Vol, veh/h	0	465	25	12	357	0	33	0	39	7	4	50
Future Vol, veh/h	0	465	25	12	357	0	33	0	39	7	4	50
Conflicting Peds, #/hr	16	0	7	7	0	16	2	0	1	1	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	7	15	-	-	-	-	-	15	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	2
Mvmt Flow	0	547	29	14	420	0	39	0	46	8	5	59

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	583	0	0	1036	1002	555	1034	1031	422
Stage 1	-	-	-	-	-	-	554	554	-	448	448	-
Stage 2	-	-	-	-	-	-	482	448	-	586	583	-
Critical Hdwy	-	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	-	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.318
Pot Cap-1 Maneuver	0	-	-	1001	-	0	212	244	535	212	235	632
Stage 1	0	-	-	-	-	0	520	517	-	594	576	-
Stage 2	0	-	-	-	-	0	569	576	-	500	502	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	995	-	-	186	239	531	191	230	631
Mov Cap-2 Maneuver	-	-	-	-	-	-	186	239	-	191	230	-
Stage 1	-	-	-	-	-	-	520	514	-	594	568	-
Stage 2	-	-	-	-	-	-	504	568	-	456	499	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.3	22.7	13.5
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	287	-	-	995	-	191	230	631
HCM Lane V/C Ratio	0.295	-	-	0.014	-	0.043	0.02	0.093
HCM Control Delay (s)	22.7	-	-	8.7	-	24.7	21	11.3
HCM Lane LOS	C	-	-	A	-	C	C	B
HCM 95th %tile Q(veh)	1.2	-	-	0	-	0.1	0.1	0.3

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	51	0	0	20	21	20
Future Vol, veh/h	51	0	0	20	21	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	51	0	0	20	21	20

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	51	31	41	0	-	0
Stage 1	31	-	-	-	-	-
Stage 2	20	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	963	1049	1581	-	-	-
Stage 1	997	-	-	-	-	-
Stage 2	1008	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	963	1049	1581	-	-	-
Mov Cap-2 Maneuver	963	-	-	-	-	-
Stage 1	997	-	-	-	-	-
Stage 2	1008	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.9	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1581	-	963	-	-
HCM Lane V/C Ratio	-	-	0.053	-	-
HCM Control Delay (s)	0	-	8.9	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	23	391	14	20	613	13	9	8	4
Future Volume (vph)	23	391	14	20	613	13	9	8	4
Lane Group Flow (vph)	23	391	14	20	638	0	51	0	21
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases		2		1	6		8		4
Permitted Phases	2		2	6		8		4	
Detector Phase	2	2	2	1	6	8	8	4	4
Switch Phase									
Minimum Initial (s)	30.0	30.0	30.0	7.0	30.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.0	36.0	36.0	11.5	36.0	28.0	28.0	28.0	28.0
Total Split (s)	60.0	60.0	60.0	15.0	75.0	30.0	30.0	30.0	30.0
Total Split (%)	57.1%	57.1%	57.1%	14.3%	71.4%	28.6%	28.6%	28.6%	28.6%
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	6.0	6.0	6.0	4.0	6.0		6.0		6.0
Lead/Lag	Lag	Lag	Lag	Lead					
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	None	None	None	None
v/c Ratio	0.04	0.27	0.01	0.02	0.42		0.30		0.14
Control Delay	5.1	5.4	0.0	2.1	4.2		28.5		33.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	5.1	5.4	0.0	2.1	4.2		28.5		33.0
Queue Length 50th (m)	0.8	17.8	0.0	0.6	34.8		4.4		2.4
Queue Length 95th (m)	4.3	46.7	0.0	2.0	54.5		16.2		10.1
Internal Link Dist (m)		87.9			235.1		120.1		23.2
Turn Bay Length (m)	15.0		7.0	60.0					
Base Capacity (vph)	612	1425	1151	848	1508		362		326
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	0.04	0.27	0.01	0.02	0.42		0.14		0.06

Intersection Summary

Cycle Length: 105
Actuated Cycle Length: 105
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 1: Forsythe St & Lakeshore Blvd W

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	391	14	20	613	25	13	9	29	8	4	9
Future Volume (veh/h)	23	391	14	20	613	25	13	9	29	8	4	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1826	1781	1900	1841	1900	1648	1707	1900	1900	1900	1530
Adj Flow Rate, veh/h	23	391	14	20	613	25	13	9	29	8	4	9
Peak Hour 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
Percent Heavy Veh, %	0	5	8	0	4	0	17	13	0	0	0	25
Cap, veh/h	627	1341	1083	781	1407	57	61	35	70	81	44	59
Arrive On Green	0.73	0.73	0.73	0.03	0.80	0.80	0.08	0.08	0.08	0.08	0.08	0.08
Sat Flow, veh/h	803	1826	1475	1810	1754	72	220	419	843	407	531	704
Grp Volume(v), veh/h	23	391	14	20	0	638	51	0	0	21	0	0
Grp Sat Flow(s),veh/h/ln	803	1826	1475	1810	0	1826	1482	0	0	1642	0	0
Q Serve(g_s), s	0.9	7.6	0.3	0.3	0.0	11.2	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	5.0	7.6	0.3	0.3	0.0	11.2	3.3	0.0	0.0	1.2	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.04	0.25		0.57	0.38		0.43
Lane Grp Cap(c), veh/h	627	1341	1083	781	0	1465	167	0	0	185	0	0
V/C Ratio(X)	0.04	0.29	0.01	0.03	0.00	0.44	0.31	0.00	0.00	0.11	0.00	0.00
Avail Cap(c_a), veh/h	627	1341	1083	918	0	1465	375	0	0	411	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.0	4.7	3.7	2.9	0.0	3.2	45.6	0.0	0.0	44.6	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.6	0.0	0.0	0.0	0.9	1.5	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	1.8	0.1	0.0	0.0	1.7	1.2	0.0	0.0	0.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.1	5.3	3.8	3.0	0.0	4.1	47.0	0.0	0.0	45.0	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D	A	A	D	A	A
Approach Vol, veh/h		428			658			51			21	
Approach Delay, s/veh		5.2			4.1			47.0			45.0	
Approach LOS		A			A			D			D	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	7.1	83.1		14.8		90.2		14.8				
Change Period (Y+Rc), s	4.0	6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s	11.0	54.0		24.0		69.0		24.0				
Max Q Clear Time (g_c+I1), s	2.3	9.6		3.2		13.2		5.3				
Green Ext Time (p_c), s	0.0	8.8		0.1		16.8		0.3				

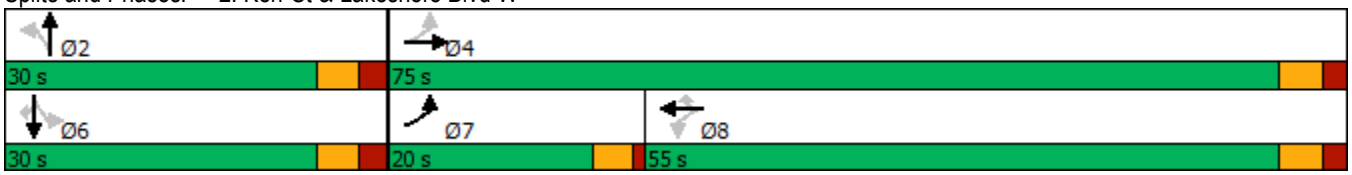
Intersection Summary		
HCM 6th Ctrl Delay		7.1
HCM 6th LOS		A

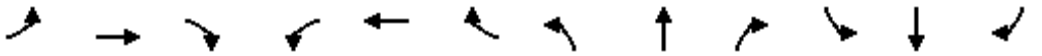
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	57	434	9	573	86	33	28	81	35	75
Future Volume (vph)	57	434	9	573	86	33	28	81	35	75
Lane Group Flow (vph)	57	446	9	573	86	33	43	0	116	75
Turn Type	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	7	4		8			2		6	
Permitted Phases	4		8		8	2		6		6
Detector Phase	7	4	8	8	8	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	7.0	30.0	30.0	30.0	30.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	15.0	40.0	40.0	40.0	40.0	30.0	30.0	30.0	30.0	30.0
Total Split (s)	20.0	75.0	55.0	55.0	55.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	19.0%	71.4%	52.4%	52.4%	52.4%	28.6%	28.6%	28.6%	28.6%	28.6%
Yellow Time (s)	3.0	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	1.0	2.1	2.1	2.1	2.1	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	5.4	5.4	5.4	5.4	5.6	5.6		5.6	5.6
Lead/Lag	Lead		Lag	Lag	Lag					
Lead-Lag Optimize?										
Recall Mode	None	Min	Min	Min	Min	None	None	None	None	None
v/c Ratio	0.12	0.37	0.02	0.57	0.10	0.14	0.12		0.41	0.20
Control Delay	5.1	7.1	10.8	15.2	4.6	25.0	18.3		29.2	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	5.1	7.1	10.8	15.2	4.6	25.0	18.3		29.2	8.4
Queue Length 50th (m)	2.1	22.1	0.6	51.4	1.1	3.5	2.9		12.9	0.0
Queue Length 95th (m)	6.6	47.1	3.2	102.0	8.6	12.1	12.2		32.1	10.5
Internal Link Dist (m)		90.9		95.7			117.4		59.3	
Turn Bay Length (m)	25.0		15.0		15.0	20.0				22.0
Base Capacity (vph)	635	1812	672	1442	1193	471	671		540	635
Starvation Cap Reductn	0	0	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	0.09	0.25	0.01	0.40	0.07	0.07	0.06		0.21	0.12

Intersection Summary

Cycle Length: 105
Actuated Cycle Length: 66.4
Natural Cycle: 85
Control Type: Actuated-Uncoordinated

Splits and Phases: 2: Kerr St & Lakeshore Blvd W





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	434	12	9	573	86	33	28	15	81	35	75
Future Volume (veh/h)	57	434	12	9	573	86	33	28	15	81	35	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	57	434	12	9	573	86	33	28	15	81	35	75
Peak Hour 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
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	484	1190	33	608	964	787	246	193	103	257	94	263
Arrive On Green	0.07	0.65	0.65	0.51	0.51	0.51	0.17	0.17	0.17	0.17	0.17	0.17
Sat Flow, veh/h	1810	1839	51	959	1900	1552	1304	1154	618	923	565	1574
Grp Volume(v), veh/h	57	0	446	9	573	86	33	0	43	116	0	75
Grp Sat Flow(s),veh/h/ln	1810	0	1890	959	1900	1552	1304	0	1772	1487	0	1574
Q Serve(g_s), s	0.7	0.0	6.4	0.3	12.6	1.7	1.4	0.0	1.2	3.0	0.0	2.5
Cycle Q Clear(g_c), s	0.7	0.0	6.4	0.3	12.6	1.7	5.6	0.0	1.2	4.3	0.0	2.5
Prop In Lane	1.00		0.03	1.00		1.00	1.00		0.35	0.70		1.00
Lane Grp Cap(c), veh/h	484	0	1222	608	964	787	246	0	296	352	0	263
V/C Ratio(X)	0.12	0.00	0.36	0.01	0.59	0.11	0.13	0.00	0.15	0.33	0.00	0.29
Avail Cap(c_a), veh/h	843	0	2224	926	1594	1301	566	0	731	722	0	650
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.5	0.0	4.8	7.2	10.3	7.6	24.8	0.0	21.0	22.3	0.0	21.5
Incr Delay (d2), s/veh	0.1	0.0	0.3	0.0	1.0	0.1	0.4	0.0	0.4	0.9	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.9	0.0	3.3	0.4	0.4	0.0	0.4	1.3	0.0	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.6	0.0	5.1	7.3	11.3	7.7	25.3	0.0	21.4	23.2	0.0	22.6
LnGrp LOS	A	A	A	A	B	A	C	A	C	C	A	C
Approach Vol, veh/h		503			668			76			191	
Approach Delay, s/veh		5.3			10.8			23.1			23.0	
Approach LOS		A			B			C			C	

Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		15.5		43.7		15.5	8.3	35.4				
Change Period (Y+Rc), s		5.6		* 5.4		5.6	4.0	* 5.4				
Max Green Setting (Gmax), s		24.4		* 70		24.4	16.0	* 50				
Max Q Clear Time (g_c+I1), s		7.6		8.4		6.3	2.7	14.6				
Green Ext Time (p_c), s		0.4		6.8		1.6	0.1	9.7				

Intersection Summary		
HCM 6th Ctrl Delay		11.1
HCM 6th LOS		B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	343	12	8	517	44	9	0	4	11	6	23
Future Vol, veh/h	30	343	12	8	517	44	9	0	4	11	6	23
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	20	-	7	15	-	7	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	2	0	0	0	0	0	0	25	0	0	0
Mvmt Flow	30	343	12	8	517	44	9	0	4	11	6	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	561	0	0	355	0	0	973	980	343	944	948	517
Stage 1	-	-	-	-	-	-	403	403	-	533	533	-
Stage 2	-	-	-	-	-	-	570	577	-	411	415	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.45	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.525	3.5	4	3.3
Pot Cap-1 Maneuver	1020	-	-	1215	-	-	233	252	650	244	263	562
Stage 1	-	-	-	-	-	-	628	603	-	534	528	-
Stage 2	-	-	-	-	-	-	510	505	-	622	596	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1020	-	-	1215	-	-	213	243	650	236	254	562
Mov Cap-2 Maneuver	-	-	-	-	-	-	213	243	-	236	254	-
Stage 1	-	-	-	-	-	-	610	586	-	519	524	-
Stage 2	-	-	-	-	-	-	480	501	-	600	579	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0.1	19.1	16.2
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	269	1020	-	-	1215	-	-	360
HCM Lane V/C Ratio	0.048	0.029	-	-	0.007	-	-	0.111
HCM Control Delay (s)	19.1	8.6	-	-	8	-	-	16.2
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	0.4

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱	↰	↑			✣		↰	↑	↱
Traffic Vol, veh/h	0	319	36	38	493	0	39	0	35	12	9	41
Future Vol, veh/h	0	319	36	38	493	0	39	0	35	12	9	41
Conflicting Peds, #/hr	2	0	11	11	0	2	2	0	12	12	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	7	15	-	-	-	-	-	15	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	3
Mvmt Flow	0	319	36	38	493	0	39	0	35	12	9	41

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	366	0	0	926	899	342	936	935	495
Stage 1	-	-	-	-	-	-	330	330	-	569	569	-
Stage 2	-	-	-	-	-	-	596	569	-	367	366	-
Critical Hdwy	-	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	-	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.327
Pot Cap-1 Maneuver	0	-	-	1204	-	0	251	281	705	247	267	573
Stage 1	0	-	-	-	-	0	687	649	-	511	509	-
Stage 2	0	-	-	-	-	0	494	509	-	657	626	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1193	-	-	219	269	691	226	256	572
Mov Cap-2 Maneuver	-	-	-	-	-	-	219	269	-	226	256	-
Stage 1	-	-	-	-	-	-	687	643	-	511	493	-
Stage 2	-	-	-	-	-	-	435	493	-	617	620	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.6	19.4	14.9
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	324	-	-	1193	-	226	256	572
HCM Lane V/C Ratio	0.228	-	-	0.032	-	0.053	0.035	0.072
HCM Control Delay (s)	19.4	-	-	8.1	-	21.8	19.6	11.8
HCM Lane LOS	C	-	-	A	-	C	C	B
HCM 95th %tile Q(veh)	0.9	-	-	0.1	-	0.2	0.1	0.2

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	37	0	0	36	35	48
Future Vol, veh/h	37	0	0	36	35	48
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	37	0	0	36	35	48

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	95	59	83	0	-	0
Stage 1	59	-	-	-	-	-
Stage 2	36	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	909	1012	1527	-	-	-
Stage 1	969	-	-	-	-	-
Stage 2	992	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	909	1012	1527	-	-	-
Mov Cap-2 Maneuver	909	-	-	-	-	-
Stage 1	969	-	-	-	-	-
Stage 2	992	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.1	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1527	-	909	-	-
HCM Lane V/C Ratio	-	-	0.041	-	-
HCM Control Delay (s)	0	-	9.1	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

APPENDIX F

MMLOS Guidelines and Calculations

Exhibit 4 – PLOS Segment Evaluation Table

Sidewalk Width (m)	Boulevard Width (m)	Motor Vehicle Traffic Volume (AADT)	Presence of On-street Parking	Segment PLOS			
				Operating Speed (km/h)			
				≤30	>30 or 50	>50 or 60	>60 [1]
2.0 or more	> 2	≤ 3000	N/A	A	A	A	B
		> 3000	Yes	A	B	B	N/A
			No	A	B	C	D
	0.5 to 2	≤ 3000	N/A	A	A	A	B
		> 3000	Yes	A	B	C	N/A
			No	A	C	D	E
	0	≤ 3000	NA	A	B	C	D
		> 3000	Yes	B	B	D	N/A
			No	B	C	E	F
1.8	> 2	≤ 3000	N/A	A	A	A	B
		> 3000	Yes	A	B	C	N/A
			No	A	C	D	E
	0.5 to 2	≤ 3000	N/A	A	B	B	D
		> 3000	Yes	A	C	C	N/A
			No	B	C	E	E
	0	≤ 3000	N/A	A	B	C	D
		> 3000	Yes	B	C	D	N/A
			No	C	D	F	F
1.5	> 2	≤ 3000	N/A	C	C	C	C
		> 3000	Yes	C	C	D	N/A
			No	C	D	E	E
	0.5 to 2	≤ 3000	N/A	C	C	C	D
		> 3000	Yes	C	C	D	N/A
			No	D	E	E	E
	0	N/A		D	E	F [2]	F [2]
<1.5	N/A			F [3]	F [3]	F [3]	F [3]
No sidewalk	N/A			C [4]	F [3]	F [3]	F [3]

Notes:
1. On-street parking not provided on roadways with posted speed of 70 km/h or more
2. Sidewalk must be 1.8 m wide if no separation is provided (curb-face sidewalk) where speeds are high
3. Sidewalk must be 1.5 m wide to meet Provincial accessiblity standards
4. Ottawa Pedestrian Plan, 2014: “all new and reconstructed urban local roads where pedestrian facilities are required in accordance with these policies but no dedicated pedestrian facility is provided, require that roads be designed for a speed of 30 km/h or lower (pending development of a new 30 km/h roadway design standard).” Where a roadway is specifically designed as 'shared space', with appropriate design controls and features, it can achieve LOS A.
5. Where a multi-use path is provided in lieu of sidewalks, the MUP can be evaluated using the same methodology.

Exhibit 11 – BLOS Segment Evaluation Table

Type of Bikeway		LOS
Physically Separated Bikeway (cycle tracks, protected bike lanes and multi-use paths). Physical separation refers to, but is not limited to, curbs, raised medians, bollards and parking lanes (adjacent to the bike lane along the travelled way i.e. not curbside).		A
Bike Lanes Not Adjacent Parking Lane - Select Worst Scoring Criteria		
No. of Travel Lanes	1 travel lane in each direction	A
	2 travel lanes in each direction separated by a raised median	B
	2 travel lanes in each direction without a separating median	C
	More than 2 travel lanes in each direction	D
Bike Lane Width	≥ 1.8 m wide bike lane (includes marked buffer and paved gutter width)	A
	≥1.5 m to <1.8 m wide bike lane (includes marked buffer and paved gutter width)	B
	≥1.2 m to <1.5 m wide bike lane (includes marked buffer and paved gutter width)	C
Operating Speed	≤ 50 km/h operating speed	A
	60 km/h operating speed	C
	≥ 70 km/h operating speed	E
Bike lane blockage (commercial areas)	Rare	A
	Frequent	C
Bike Lanes Adjacent to curbside Parking Lane - Select Worst Scoring Criteria		
No. of Travel Lanes	1 travel lane in each direction	A
	2 or more travel lanes in each direction	C
Bike Lane and Parking Lane Width	4.5 m wide bike lane plus parking lane (includes marked buffer and paved gutter width)	A
	4.25 m wide bike lane plus parking lane (includes marked buffer and paved gutter width)	B
	≤ 4.0 m wide bike lane plus parking lane (includes marked buffer and paved gutter width)	C
Operating Speed	≤ 40 km/h operating speed	A
	50 km/h operating speed	B
	60 km/h operating speed	D
	≥ 70 km/h operating speed	F
Bike lane blockage (commercial areas)	Rare	A
	Frequent	C
Mixed Traffic		
No. of Travel Lanes and Operating Speed	2 travel lanes; ≤ 40 km/h; no marked centerline or classified as residential	A
	2 to 3 travel lanes; ≤ 40 km/h	B
	2 travel lanes; 50 km/h; no marked centerline or classified as residential	B
	2 to 3 travel lanes; 50 km/h	D
	4 to 5 travel lanes; ≤ 40 km/h	D
	4 to 5 travel lanes; ≥ 50 km/h	E
	6 or more travel lanes; ≤ 40 km/h	E
	≥ 60 km/h	F
Unsignalized Crossing along Route: no median refuge		
No. of Travel Lanes on Side Street and Operating Speed	3 or less lanes being crossed; ≤ 40 km/h	A
	4 to 5 lanes being crossed; ≤ 40 km/h	B
	3 or less lanes being crossed; 50 km/h	B
	4 to 5 lanes being crossed; 50 km/h	C
	3 or less lanes being crossed; 60 km/h	C
	4 to 5 lanes being crossed; 60 km/h	D
	6 or more lanes being crossed; ≤ 40 km/h	E
	3 or less lanes being crossed; ≥ 65 km/h	E
	6 or more lanes being crossed; ≥ 50 km/h	F
	4 to 5 lanes being crossed; ≥ 65 km/h	F
Unsignalized Crossing along Route: with median refuge (≥ 1.8 m wide)		
No. of Travel Lanes on Side Street and Operating Speed	5 or less lanes being crossed; ≤ 40 km/h	A
	3 or less lanes being crossed; 50 km/h	A
	6 or more lanes being crossed; ≤ 40 km/h	B
	4 to 5 lanes being crossed; 50 km/h	B
	3 or less lanes being crossed; 60 km/h	B
	6 or more lanes being crossed; 50 km/h	C
	4 to 5 lanes being crossed; 60 km/h	C
	3 or less lanes being crossed; ≥ 65 km/h	D
	6 or more lanes being crossed; 60 km/h	E
	4 to 5 lanes being crossed; ≥ 65 km/h	E
	6 or more lanes being crossed; ≥ 65 km/h	F

Exhibit 16 – TLOS Signalized Intersection Evaluation Table

Delay	Typical Location	LOS
0	Grade Separation	A
≤10 sec	High Level TSP	B
≤20 sec		C
≤30 sec		D
≤40 sec	TSP & long cycle length	E
>40 sec	No TSP & long cycle length	F

Note: Delay includes travel time from end of queue to entering the intersection

5 Truck Level of Service (TkLOS)

5.1 Intent

Motor vehicle LOS accounts for trucks by considering the percent of trucks and buses in the traffic volume. However, some elements of roadway segments and intersections clearly affect the ability of trucks to operate with ease. The intent of the truck level of service (TkLOS) is to complement motor vehicle LOS by considering the physical space available for trucks to negotiate corners quickly and easily, and to operate safely within travelled lanes.

The objective of evaluating TkLOS is to facilitate goods movement within the City of Ottawa – however, unlike other modes, the TkLOS need only be applied along truck routes, arterial roads and key delivery access routes, since trucks are not intended to operate on every street. An exception would be within employment or enterprise areas where targets are set for trucks on all streets in these areas, as laid out in Section 7.

Care should be taken when considering the trade-offs between truck level of service and pedestrian/bicycle level of service with respect to the corner radii and turning speed. There is potential for trucks to encroach on pedestrian and cycling facilities if trucks are not accommodated appropriately, which can put vulnerable users at risk. As mentioned in Section 1.2, the MMLOS guidelines do not replace safety or geometric guidance.

5.2 Data Requirements

A summary of the data required to evaluate the truck level of service is provided in Exhibit 17.

Exhibit 17 - Data Requirements for Truck Level of Service

SEGMENTS	SIGNALIZED INTERSECTIONS
» Street width (number of through lanes per direction) » Curb lane width (m)	» Effective radius » Number of receiving lanes on departing leg

Note that effective radius is the same as corner radius where trucks must turn from the curbside lane into a departing curbside lane, however where parking lanes or on-street parking lanes are provided adjacent to the travel / turn lanes the effective radius can be determined by placing a simple or compound radius between the edge of the travel lane on the approach and departing legs – refer to Exhibit 18 below.

Bicycle Segment BLOS

EXISTING

Segment	From	To	10	Type	No. of Lanes	Bike Lane Width (m)	Operating Speed	Bike Lane Blockage	Segment BLOS
Forsythe St	Francis St	Lakeshore Rd W	East	Mixed	1 per direction	-	50	-	D
			West						D
	Lakeshore Rd W	John St	East	Mixed	1 per direction	-	50	-	D
			West						D
Chisolm St	Burnet St	Lakeshore Rd W	East	Mixed	1 per direction	-	50	-	D
			West						D
	Lakeshore Rd W	John St	East	-	-	-	-	-	-
			West	Mixed	3	-	50	-	D
Wilson St	Burnet St	Lakeshore Rd W	East	Mixed	1 per direction	-	50	-	D
			West						D
	Lakeshore Rd W	John St	East	Mixed	1 per direction	-	50	-	D
			West						D
Kerr St	Burnet St	Lakeshore Rd W	East	Mixed	1 per direction	-	50	-	D
			West						D
	Lakeshore Rd W	John St	East	Mixed	1 per direction	-	50	-	D
			West						D
Lakeshore Rd W	Navy St	Forsythe St	North	Bike Lane (no buffer)	1 per direction (LOS="A")	1.88 (LOS="A")	50 (LOS="C")	Rare (LOS="A")	A
			South			2.3 (LOS="A")			A
	Forsythe St	Chisolm St	North	Mixed	1 per direction	-	50	-	D
			South						D
	Chisolm St	Wilson St	North	Mixed	1 per direction	-	50	-	D
			South						D
	Wilson St	Kerr St	North	Mixed	1 per direction	-	50	-	D
			South						D
	Kerr St	Brant St	North	Bike Lane (no buffer)	1 per direction (LOS="A")	1.8 (LOS="A")	50 (LOS="C")	Rare (LOS="A")	A
			South			1.6 (LOS="B")			A

Notes:
- Cycling infrastructure is generally mixed with the occasional bicycle lane without any buffer from street traffic.
*based on worst section of segment

*No changes assumed for future

Pedestrian Segment PLOS

Lakeshore Rd W is modelled as an E-W Street. All intersecting roads to Lakeshore Rd W are considered N-S Streets.

EXISTING

Segment	From	To	Side	Sidewalk width (m)	Blvd Width (m)	AADT per lane	Parking?	Speed (km/h)	Segment PLOS
Forsythe St	Francis St	Lakeshore Rd W	East	-	-	<3000	-	50	F
			West	1.17	-		Yes		F
	Lakeshore Rd W	John St	East	2.11	-	<3000	No	50	C
			West	-	-		-		F
Chisolm St	Burnet St	Lakeshore Rd W	East	-	-	<3000	-	50	F
			West	1.23	-		Yes		F
	Lakeshore Rd W	John St	East	0.76	0.64	<3000	-	50	F
			West	1.70	1.12		No		C
Wilson St	Burnet St	Lakeshore Rd W	East	1.33	-	<3000	-	50	F
			West	-	-		-		F
	Lakeshore Rd W	John St	East	1.64	1.5	<3000	Yes	50	C
			West	1.56	-		No		E
Kerr St	Burnet St	Lakeshore Rd W	East	1.54	2.13	<3000	No	50	D
			West	1.70	-		No		E
	Lakeshore Rd W	John St	East	1.70	2.02	<3000	Yes	50	D
			West	1.66	1.57		No		C
Lakeshore Rd W	Navy St	Forsythe St	South	2.01	-	>3000	No	50	F
			North	1.96	-				D
	Forsythe St	Chisolm St	South	2.25	1.42	>3000	Yes	50	B
			North	1.71	1.56				E
	Chisolm St	Wilson St	South	1.78	1.48	>3000	Yes	50	E
			North	1.91	1.19				C
	Wilson St	Kerr St	South	1.60	-	>3000	Yes	50	E
			North	1.87	1.10				C
	Kerr St	Brant St	South	1.47	1.08	>3000	No	50	F
			North	1.45	1.31		Yes		F

Notes:

-Sidewalk infrastructure on both sides of each segment except Forsythe and Chisolm Sts and Wilson St south of Lakeshore Rd W.

* Analysis on worst section of road segment

Signalized intersection TLOS

Signalized Intersection	Side of Intersection	Transit Route(s)	EXISTING				FUTURE BACKGROUND				FUTURE TOTAL			
			AM Delay (sec)	PM Delay (sec)	Worst Delay (sec)	TLOS	AM Delay (sec)	PM Delay (sec)	Worst Delay (sec)	TLOS	AM Delay (sec)	PM Delay (sec)	Worst Delay (sec)	TLOS
Kerr St & Lakeshore Rd W	North (no transit stop)	-	-	-	-	-	-	-	-	-	-	-	-	-
	South (no transit stop)	-	-	-	-	-	-	-	-	-	-	-	-	-
	East (no transit stop)	-	-	-	-	-	-	-	-	-	-	-	-	-
	West (no transit stop)	-	-	-	-	-	-	-	-	-	-	-	-	-

No transit service is available on Lakeshroe Rd West.

APPENDIX G

Functional Design Review

LAKESHORE ROAD WEST

C/L OF ROAD

LOT 14

PLEASE REFER TO LANDSCAPE DRAWINGS FOR DETAILS

2 STOREY STUCCO/STONE COMMERCIAL BUILDING No's 46 TO 50

29.44 N52°57'50"W

24.38 N 37°04'00" E 24.38

SIDEWALK

CURB CUT

18734

900X1800 mm (2 SPACES) - TYP.

SIGN

MH

LS

HP

0.30 DIA

0.35 DIA

FACE OF CURB

CB

SAN MH

WWMH

WV

GV

CONCRETE WALK

COM. ENTRANCE 86.65

EXHAUST

EXHAUST GRILLS ON EXTERIOR WALLS

PLANTER (TYP.)

COMMERCIAL

477.0 m2

5135.0 ft2

LANDSCAPED

SEE LANDSCAPE DRAWINGS

COMMERCIAL

153.0 m2

1647.2 ft2

EXIT 86.65

PARCEL ROOM

CONCIERGE

MANAGEMENT

C.A.C.F ROOM

VEST.

RESIDENTIAL LOBBY

JANITOR

LOUNGE 16.0 m2 172.4 ft2

UNIVERSAL WASHROOM

LOUNGE 37.5 m2 403.3 ft2

MOVING

MAIL ROOM

MAIL MAN ACCESS

INDOOR AMENITY

147.7 m2

1590.4 ft2

OPEN ABOVE

CLEAR HEAD ROOM 7.50m

PLUMBING DRAIN - DUCKBOARD

LOADING SPACE

12.0(L)x3.5(W)x4.2(H)

OVERHEAD DOOR

OVERHEAD DOOR CONTROL

LOADING 86.65

GARBAGE ROOM

96.3 m2

1036.4 ft2

BULK WASTE 10.0 M²

12.00m SPRINKLER ROOM

STORM TANK BELOW

ACCESS TO OUTDOOR AMENITY

EXIT

UG GARAGE

RAMP DN 15.0%

17.90 m

7.25% 3.65 m

INTAKE

71.6 m2 770.5 ft2

POST N52°32'10"W

WOOD SHED

N 37°31'30" E 34.52

PAVER STONE RETAINING WALL

3 STOREY, STONE AND SIDING TOWNHOUSE DWELLING

N 52°26'05" W 18.31

11.11

18.72

R6.11m

7.50m

R5.00m

CHISHOLM STREET

ROAD

C/L

NOTES:

AS PER THE TOWN OF OAKVILLE DRIVEWAY ENTRANCE CRITERIA STD.10–2

1. ENTRANCE WIDTH AT PROPERTY LINE FOR A MINOR ROAD TYPE IS 7.5m
2. CURB RADIUS SHOULD BE BETWEEN 4.5M TO 6.0M

DRAWN BY: H.S. PLOT DATE: March 13, 2023

LEA Consulting Ltd.
Consulting Engineers and Planners
www.LEA.ca

Project No. 23129

Date AUG 24, 2023

42 LAKESHORE ROAD W
OAKVILLE ONTARIO

3 0 3 6 9m
1:300

ACCESS DESIGN REVIEW

Drawing No. 000

DRAWING NAME: F:\23129\Drafting\23129WF004.dwg

LAKESHORE ROAD WEST

C/L OF ROAD

LOT 14

PLEASE REFER TO LANDSCAPE DRAWINGS FOR DETAILS

2 STOREY STUCCO/STONE COMMERCIAL BUILDING No's 46 TO 50

29.44 N52°57'50"W

SIDEWALK

CONCRETE WALK

CURB CUT

24.38 N 37°04'00" E 24.38

18734

SAN MH

MH

WWMH

WV

SIGN

CB

M

LS

GV

900X1800 mm (2 SPACES) - TYP.

HP

0.30 DIA

0.35 DIA

FACE OF CURB

CHISHOLM STREET

C/L OF ROAD

COM. ENTRANCE 86.65

COMMERCIAL

477.0 m2
5135.0 ft2

EXHAUST

EXHAUST GRILLS ON EXTERIOR WALLS

PLANTER (TYP.)

4300

8500

8500

2700

LANDSCAPED

SEE LANDSCAPE DRAWINGS

COMMERCIAL

153.0 m2
1647.2 ft2

EXIT 86.65

PARCEL ROOM

CONCIERGE

MANAGEMENT

C.A.C.F ROOM

RESIDENTIAL LOBBY

VEST.

MAIL ROOM

MAIL MAN ACCESS

8.86m

JANITOR

LOUNGE 16.0 m2 172.4 ft2

UNIVERSAL WASHROOM

MOVING

LOUNGE 37.5 m2 403.3 ft2

INDOOR AMENITY

147.7 m2
1590.4 ft2

700

18.30

3000

12300

OPEN ABOVE
CLEAR HEAD ROOM 7.50m

LOADING SPACE
12.0(L)x3.5(W)x4.2(H)

LOADING 86.65

7669

7500

GARBAGE ROOM

BULK WASTE 10.0 M²

12.00m SPRINKLER ROOM

STORM TANK BELOW

8000

EXIT

UG GARAGE

RAMP DN 15.0%
17.90 m

7.36 m

1277

7250

INTAKE

ACCESS TO OUTDOOR AMENITY

71.6 m2 770.5 ft2

POST N52°32'10"W

3.05 11.30 N 37°31'30" E 34.52

WOOD SHED

PAVER STONE RETAINING WALL

3 STOREY, STONE AND SIDING TOWNHOUSE DWELLING

NOTES:

AS PER THE ONTARIO BUILDING CODE 3.2.5

1. 5.1 LOCATION OF ACCESS ROUTES – ACCESS ROUTES SHALL BE LOCATED SO THAT THE PRINCIPAL ENTRANCE AND EVERY ACCESS OPENING ARE LOCATED NOT LESS THAN 3m AND NOT MORE THAN 15m FROM THE CLOSEST PORTION OF THE ACCESS ROUTE
2. 6.1 ACCESS ROUTE DESIGN – A PORTION OF A ROADWAY PROVIDED AS A REQUIRED ACCESS ROUTE FOR FIRE DEPARTMENT USE SHALL:
   (i) 6.1.a HAVE A CLEAR WIDTH NOT LESS THAN 6m,
   (ii) 6.1.b HAVE A CENTRELINE RADIUS NOT LESS THAN 12m
   (iii) 6.1.c HAVE AN OH CLEARANCE OF NOT LESS THAN 5m
   (iv) 6.1.g BE CONNECTED WITH A PUBLIC THOROUGHFARE

DRAWN BY: H.S. PLOT DATE: March 13, 2023

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Project No. 23129

Date AUG 24, 2023

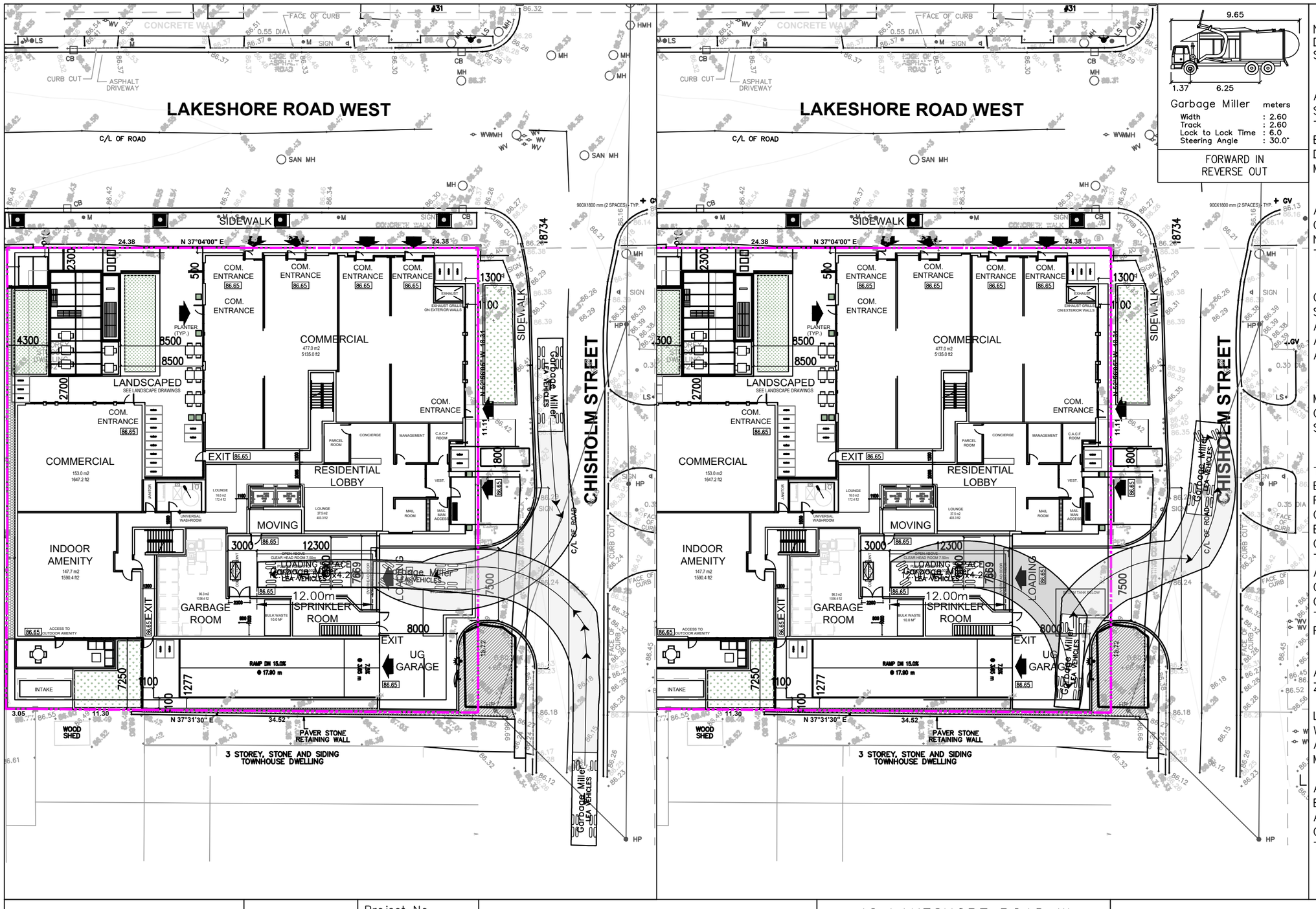
42 LAKESHORE ROAD W
OAKVILLE ONTARIO

3 0 3 6 9m
1: 300

FIRE ROUTE REVIEW

Drawing No. 001

DRAWING NAME: F:\23129\Drafting\23129WF004.dwg



Garbage Miller meters

Width	: 2.60
Track	: 2.60
Lock to Lock Time	: 6.0
Steering Angle	: 30.0°

FORWARD IN
REVERSE OUT

NOTES: AS PER HALTON REGION DEVELOPMENT GUIDELINES FOR SOURCE SEPARATION OF SOLID WASTE:

1.10.1.1. PRIVATE ROADS LAYOUTS SHALL ALLOW FOR DIRECT, CONSISTENT AND SAFE ACCESS FROM A MUNICIPAL ROAD TO THE WASTE COLLECTION POINT AND BACK TO THE MUNICIPAL ROAD WITHOUT DELAYS OR REVERSING ONTO THE MUNICIPAL ROAD.

1.10.1.2. PRIVATE ROAD LAYOUTS SHALL ALLOW FOR THE CONTINUOUS FORWARD COLLECTION OF WASTE WITHOUT THE NEED FOR WASTE COLLECTION VEHICLES TO REVERSE.

1.10.1.3. ALL PRIVATE ROADS SHALL BE CONSTRUCTED WITH A HARD SURFACE, SUCH AS ASPHALT, CONCRETE, OR ANOTHER SUITABLE MATERIAL ACCEPTABLE TO THE REGION, AND HAVE A MINIMUM WIDTH OF 6 METRES.

1.10.1.4. ALL TURNS SHALL HAVE A MINIMUM TURNING RADIUS FROM THE CENTRE LINE OF 13 METRES TO THE SATISFACTION OF THE REGION.

1.10.1.5. OVERHEAD CLEARANCE THROUGHOUT THE PRIVATE ROAD MUST BE A MINIMUM OF 7.5 METRES AND BE FREE FROM OBSTRUCTIONS SUCH AS OVERHANGS, AWNINGS, UTILITY WIRES, BALCONIES, AND MUST BE KEPT CLEAR OF TREE BRANCHES, ETC. 1.10.2: T–TURNAROUND MAY BE PERMITTED IN ACCORDANCE WITH SPECIFICATIONS OUTLINED IN APPENDIX 3. WASTE COLLECTION VEHICLES ARE NOT EXPECTED TO BACK UP MORE THAN 18M (FROM FRONT WHEEL TO FRONT WHEEL)

AS PER THE THE TOWN OF OAKVILLE, ZONING BYLAW 2014–014 :

1. THE MINIMUM DIMENSIONS OF A LOADING SPACE ARE 3.5 METRES IN WIDTH AND 12.0 METRES IN LENGTH, WITH A MINIMUM VERTICAL CLEARANCE OF 4.2 METRES.
2. FLASHING WARNING LIGHT TO BE ACTIVATED WHEN TRUCKS ENTER AND EXIT THE SITE. THE SYSTEM TO REMAIN ACTIVATED DURING THE CITY GARBAGE COLLECTION ACTIVITY AND UNTIL THE TRUCK EXITS THE SITE.

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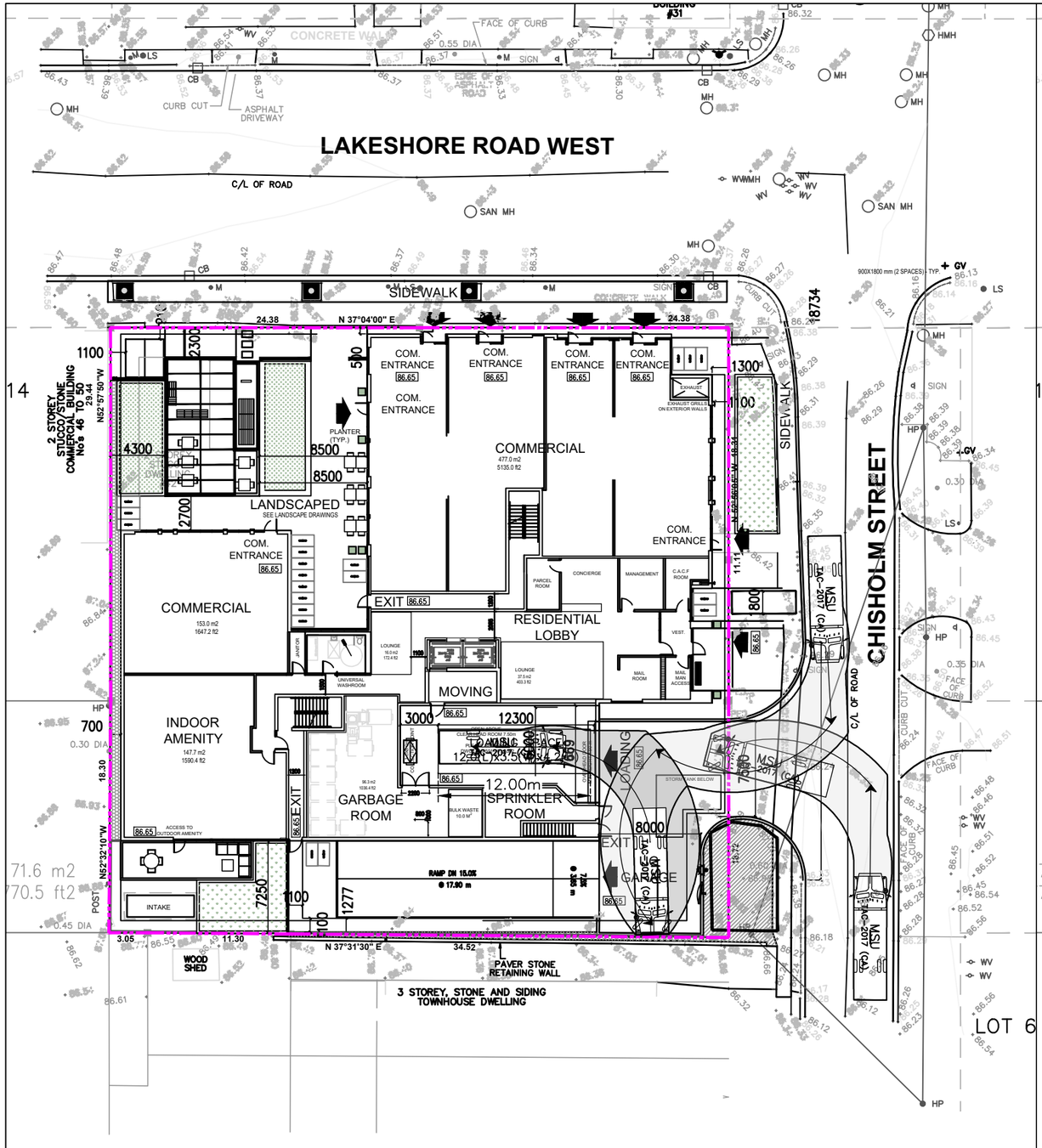
42 LAKESHORE ROAD W
OAKVILLE **ONTARIO**

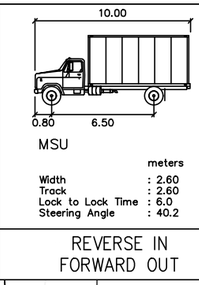
4 0 4 8 12m
1:400

LOADING REVIEW
PRIVATE PICKUP (MILLER)
ENTRY AND EXIT PATH

Drawing No. 002

DRAWING NAME: F:\23129\Drafting\23129WF004.dwg





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Project No. 23129

Date AUG 24, 2023

42 LAKESHORE ROAD W
OAKVILLE **ONTARIO**

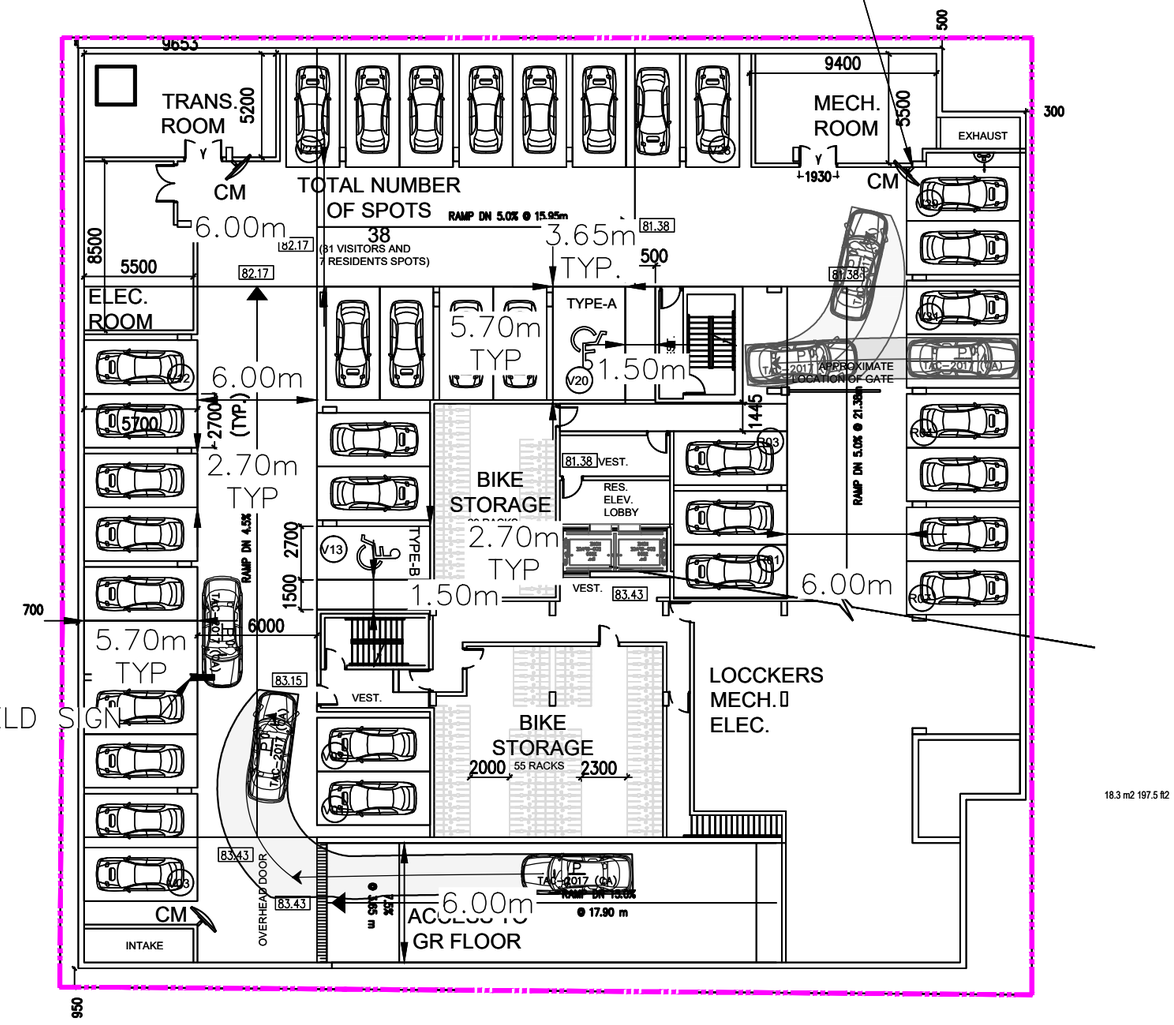
4 0 4 8 12m
1:400

LOADING REVIEW
MOVING / DELIVERY TRUCK (MSU)
ENTRY AND EXIT PATH

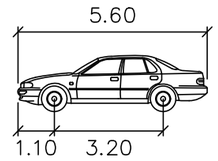
Drawing No. 003

DRAWING NAME: F:\23129\Drafting\23129WF004.dwg

COLUMN/WALL-MOUNTED
CONVEX MIRROR (TYP.)



COLUMN-MOUNTED YIELD SIGN



P

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

NOTES: TOWN OF OAKVILLE ZONING BY-LAW 2014-014:

1. IF THE CENTRELINE OF A PARKING SPACE IS AT AN INTERIOR ANGLE OF 70 TO 90 DEGREES TO THE CENTRELINE OF THE DRIVE AISLE PROVIDING VEHICLE ACCESS, THE MINIMUM WIDTH FOR THAT ONE OR TWO LANE DRIVE AISLE IS 6.0 METRES.
2. A PARKING SPACE MUST HAVE THE FOLLOWING MINIMUM DIMENSIONS:
   (i) LENGTH OF 5.7 METRES;
   (II) WIDTH OF 2.7 METRES; AND
   (III) THE MINIMUM WIDTH IN (II) MUST BE INCREASED BY 0.3 METRES FOR EACH SIDE OF THE PARKING SPACE THAT IS OBSTRUCTED.
2. AN ACCESSIBLE PARKING SPACE MUST HAVE THE FOLLOWING MINIMUM DIMENSIONS:

TYPE A:
   (i) LENGTH OF 5.7 METRES;
   (II) WIDTH OF 3.65 METRES; AND
   (III) BARRIER-FREE PATH OF 1.5 METRES IN WIDTH.

TYPE B:
   (i) LENGTH OF 5.7 METRES;
   (II) WIDTH OF 2.7 METRES; AND
   (III) BARRIER-FREE PATH OF 1.5 METRES IN WIDTH.

3. THE SIDE OF A PARKING SPACE IS OBSTRUCTED IF ANY PART OF A FIXED OBJECT SUCH AS A WALL, COLUMN, BOLLARD, FENCE OR PIPE IS SITUATED:
   (I) WITHIN 0.3 METRES OF THE SIDE OF THE PARKING SPACE, MEASURED AT RIGHT ANGLES, AND
   (II) MORE THAN 1.15 METRE FROM THE FRONT OR REAR OF THE PARKING SPACE PROVIDED THE OBSTRUCTION PROJECTS NO MORE THAN 0.15M INTO THE PARKING SPACE

DRAWN BY: H.S. PLOT DATE: March 13, 2023

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Project No. 23129

Date AUG 24, 2023

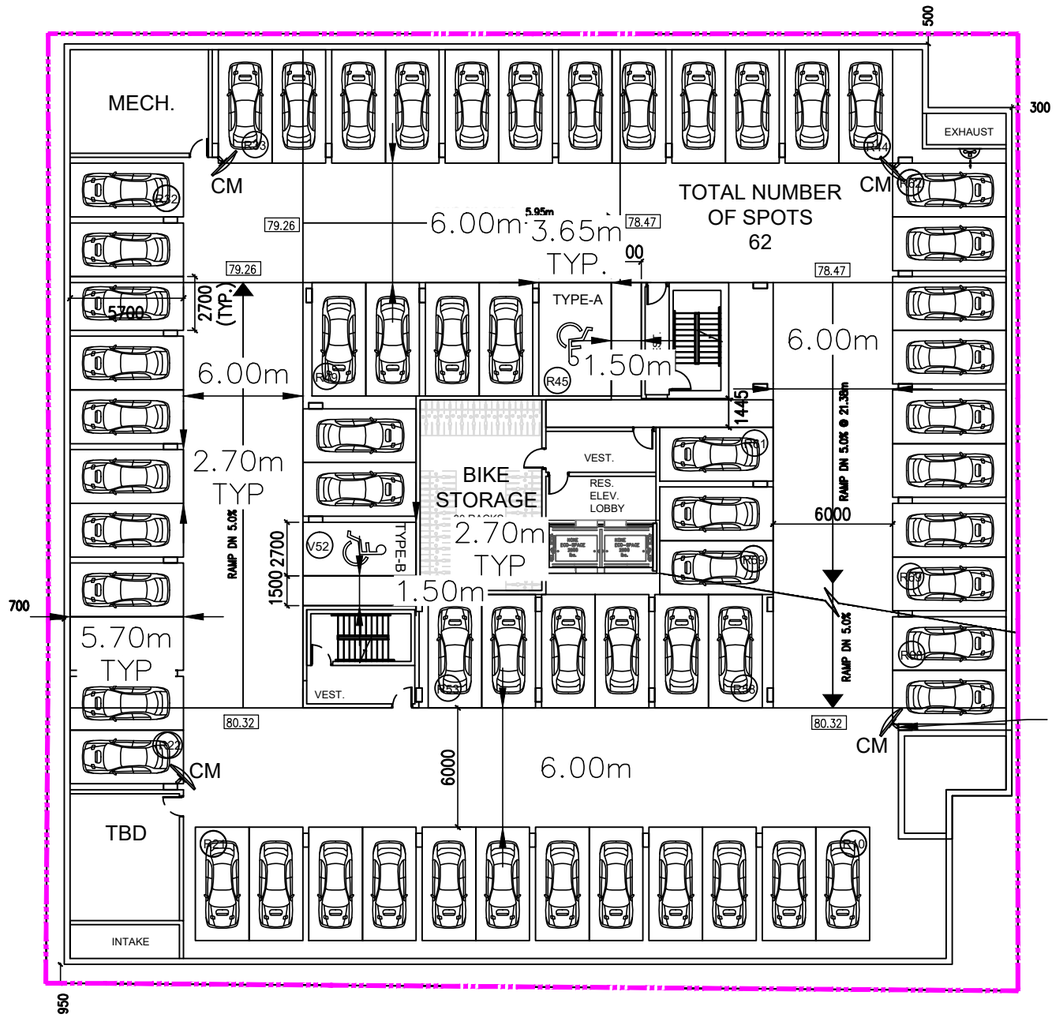
42 LAKESHORE ROAD W
OAKVILLE ONTARIO

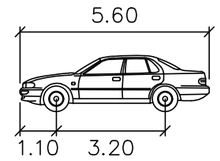
3 0 3 6 9m
1:300

PARKING REVIEW
LEVEL P1
SWEPT PATHS

Drawing No. 004

DRAWING NAME: F:\23129\Drafting\23129WF004.dwg





P

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

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Project No. 23129

Date AUG 24, 2023

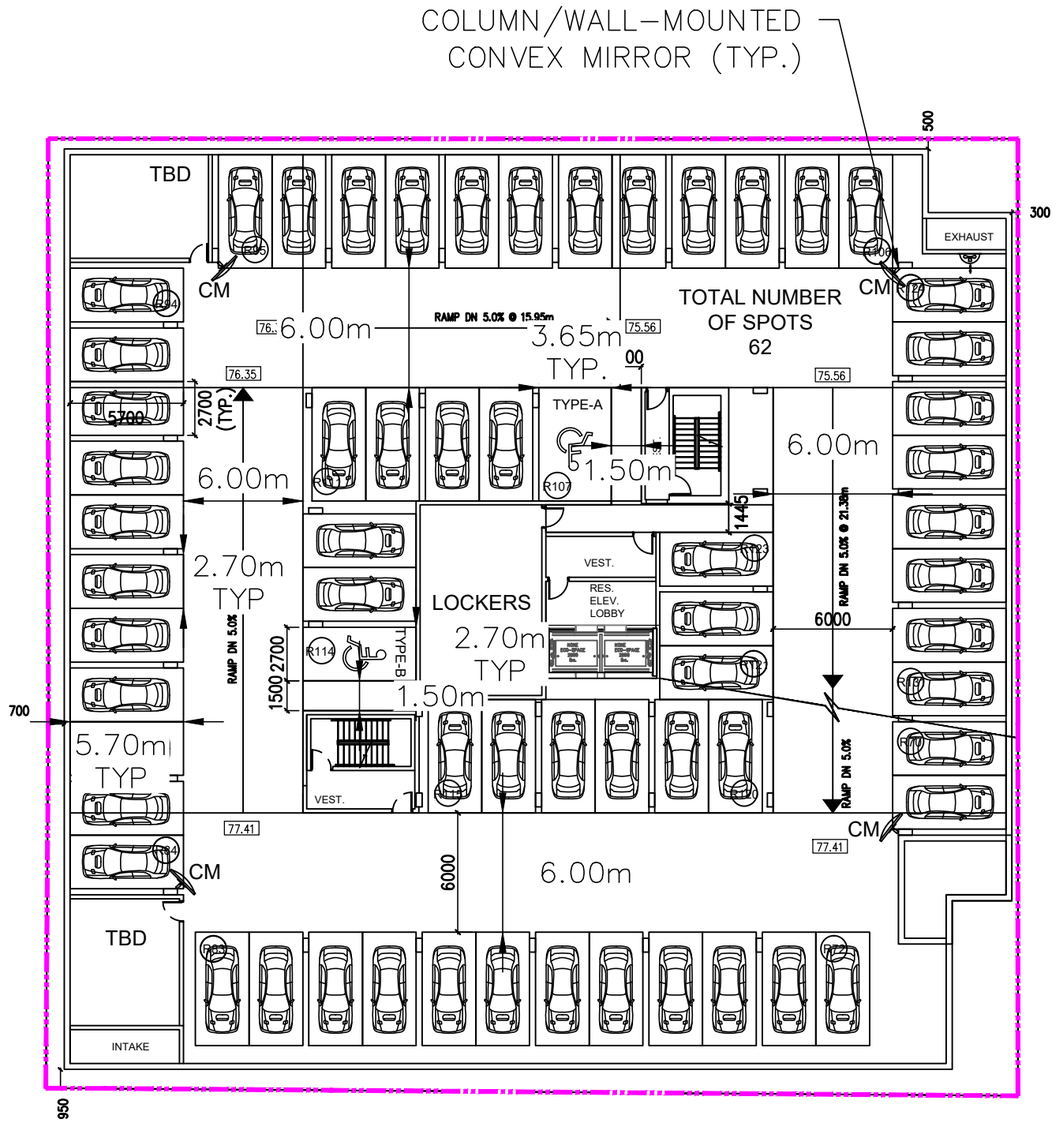
42 LAKESHORE ROAD W
OAKVILLE **ONTARIO**

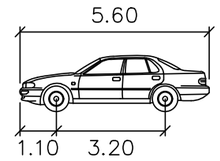
3 0 3 6 9m
1:300

PARKING REVIEW
LEVEL P2
SWEPT PATHS

Drawing No. 005

DRAWING NAME: F:\23129\Drafting\23129WF004.dwg





P

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

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Date AUG 24, 2023

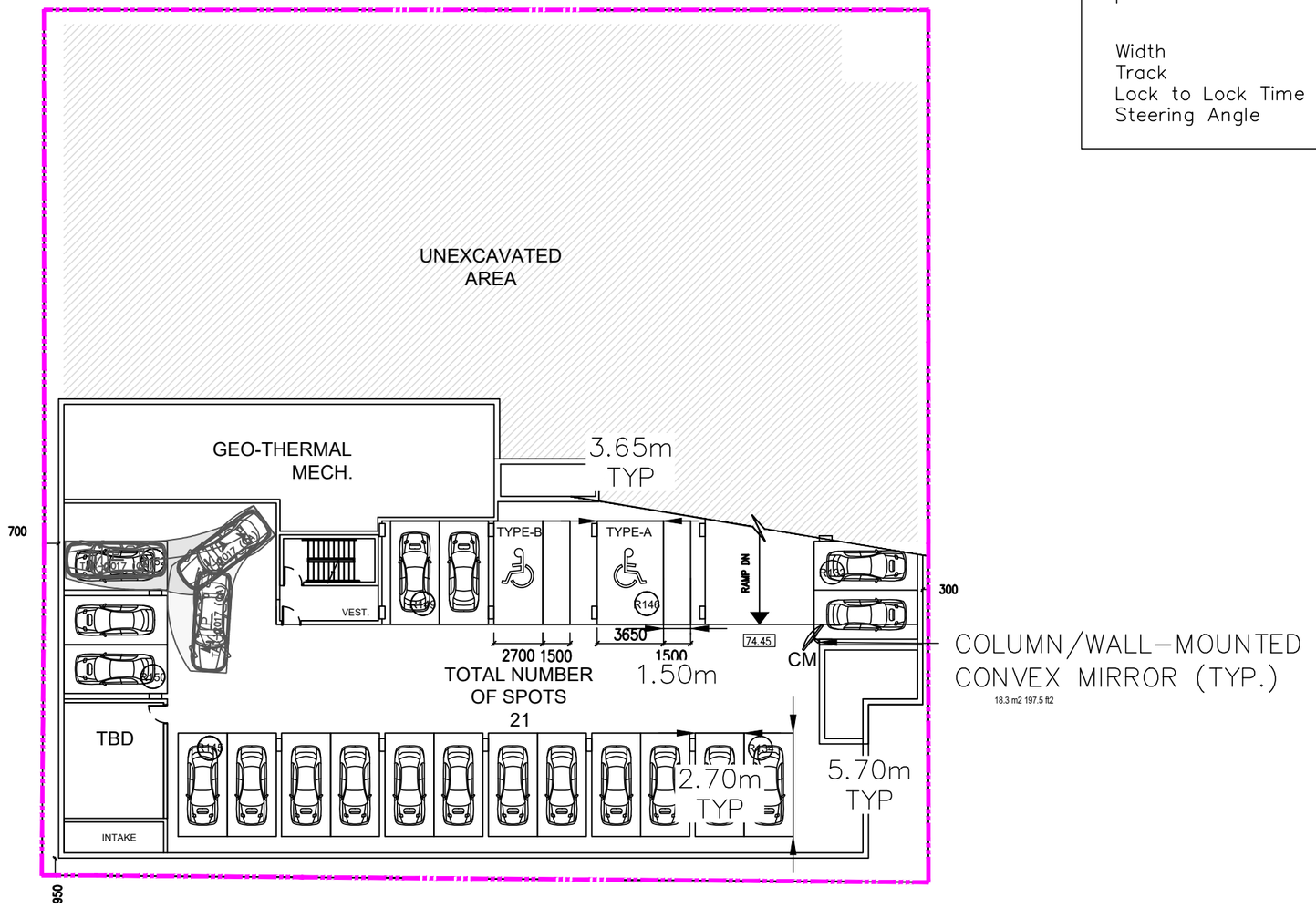
42 LAKESHORE ROAD W
OAKVILLE **ONTARIO**

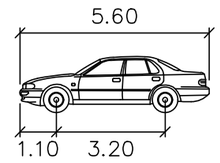
3 0 3 6 9m
1:300

PARKING REVIEW
LEVEL P3
SWEPT PATHS

Drawing No. 006

DRAWING NAME: F:\23129\Drafting\23129WF004.dwg





P

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

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42 LAKESHORE ROAD W
OAKVILLE **ONTARIO**

3 0 3 6 9m
1:300

PARKING REVIEW
LEVEL P4
SWEPT PATHS

Drawing No. 007

DRAWING NAME: F:\23129\Drafting\23129WF004.dwg