Edenshaw Fairview Developments Ltd.

TRANSPORTATION IMPACT STUDY

PROPOSED MIXED-USE DEVELOPMENT

1 FAIRVIEW ROAD EAST, CITY OF MISSISSAUGA

December 2019

20287/200

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

December 20th, 2019 **Reference Number:** 20287/200

Mr. Andrew Konev
Edenshaw Developments Limited
Suite 201, 2nd Floor
129 Lakeshore Road East
Mississauga, ON
L5G 1E5

Dear Mr. Konev:

RE: Transportation Impact Study
Proposed Mixed-Use Development
1 Fairview Road East, City of Mississauga

LEA Consulting Ltd. is pleased to present the findings of our Transportation Impact Study (TIS) for the proposed mixed-use development at 1 Fairview Road East in the City of Mississauga. This report concluded that the traffic associated with the proposed development will have minimum traffic impact to the immediate roadways. Vehicular traffic is also able to circulate the site in an acceptable manner.

Should you have any comments with our assumptions or have any concerns, please contact the undersigned.

Yours truly,

LEA CONSULTING LTD.

Nixon Chan, M.A.Sc., P.Eng., PTOE, PMP
Manager, Transportation Engineering

Timothy Chin, MSc(Eng), RSP, EIT
Intermediate Transportation Analyst

Encl.

DISCLAIMER

This Report represents the work of LEA Consulting Ltd ("LEA"). This Report may not be relied upon for detailed implementation or any other purpose not specifically identified within this Report. This Document is confidential and prepared solely for the use of Edenshaw Fairview Developments Ltd. Neither LEA, its sub-consultants nor their respective employees assume any liability for any reason, including, but not limited to, negligence, to any party other than Edenshaw Fairview Developments Ltd. for any information or representation herein.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

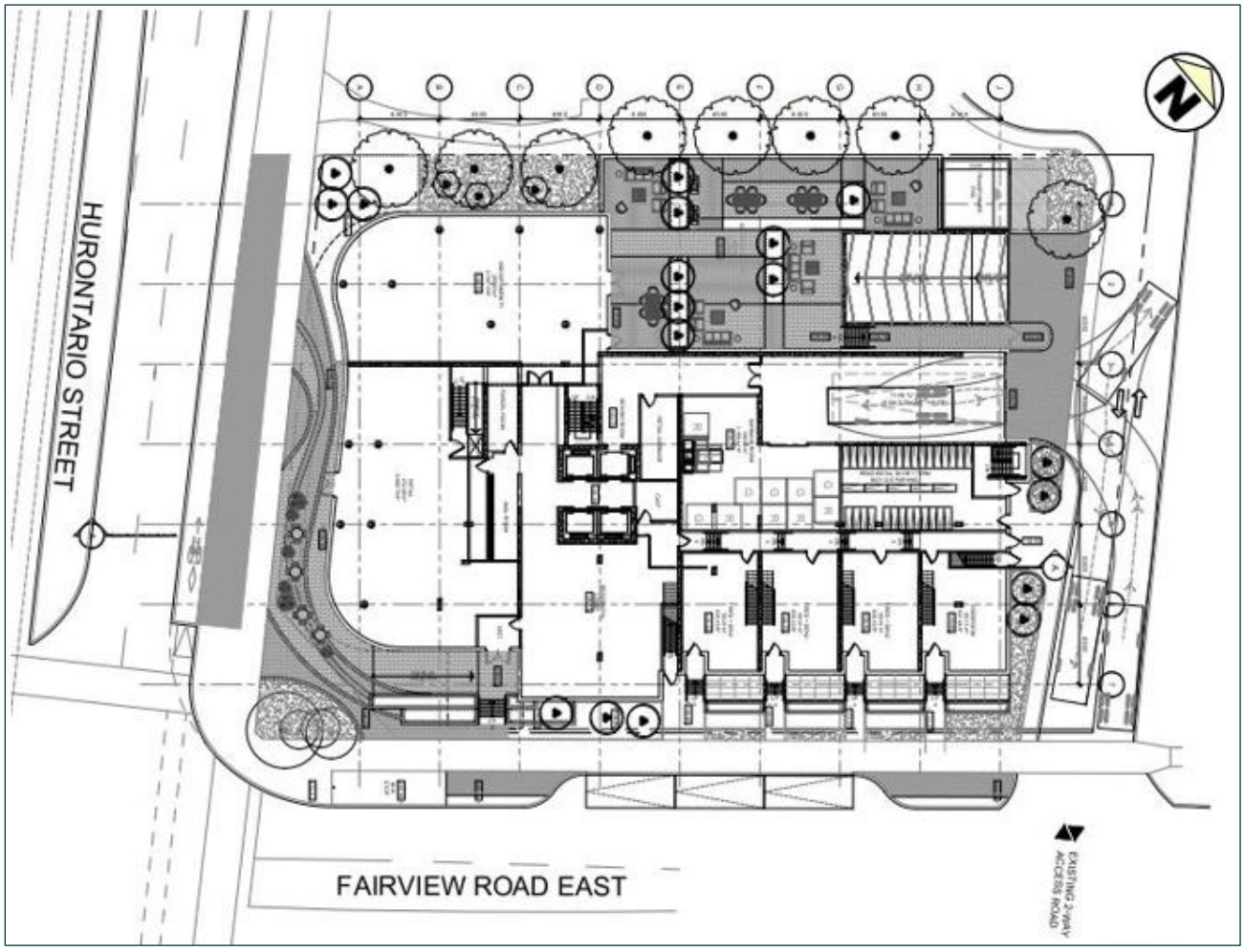
1 INTRODUCITION

LEA Consulting Ltd. (LEA) was retained by Edenshaw Fairview Developments Ltd. to undertake a Transportation Impact Study (TIS) for the proposed mixed-use development located at 1 Fairview Road East (herein referred to as the "subject site") in the City of Mississauga. The subject site is currently vacant and is located at southeast corner of Hurontario St and Fairview Rd as illustrated in **Figure 1.1**.

Figure 1.1: Site Location

The development proposal consists of a 36-storey residential tower with about 270 m^2 ground floor retail, 460 units, and multi-level parking. Based on the preliminary site plan, as illustrated in **Figure 1.2**, the site will be accessed from Fairview Road East.

Figure 1.2: Preliminary Site Plan



Source: CORE Architects

2 EXISTING TRAFFIC CONDITIONS

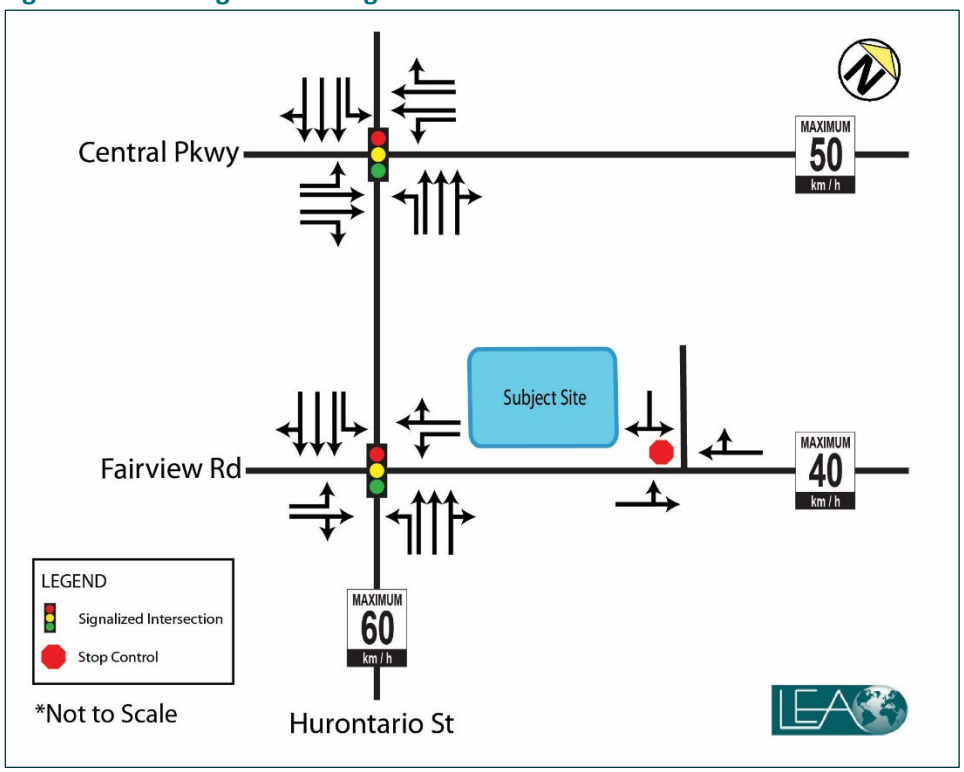
2.1 ROAD NETWORK

The Terms of Reference have been confirmed with the City of Mississauga's staff and the following existing intersections have been included in this study. Correspondence for Terms of Reference is enclosed in **Appendix A.**

- Hurontario Street & Central Parkway (Signalized);
- Hurontario Street & Fairview Road (Signalized); and
- Fairview Road & Access Driveway (Unsignalized).

Figure 2.1 illustrates the intersections and lane configurations contained within the study area.

Figure 2.1: Existing Lane Configuration



The detailed description of the existing roadways is provided below:

Hurontario Street is a north-south arterial road that operates with a six-lane cross-section (three lanes per direction) in the vicinity of the subject site. The roadway operates with a posted speed limit of 60 km/h in the study area. There are continuous sidewalks along both sites of the street as well as pedestrian crosswalks at all major intersections within the study area.

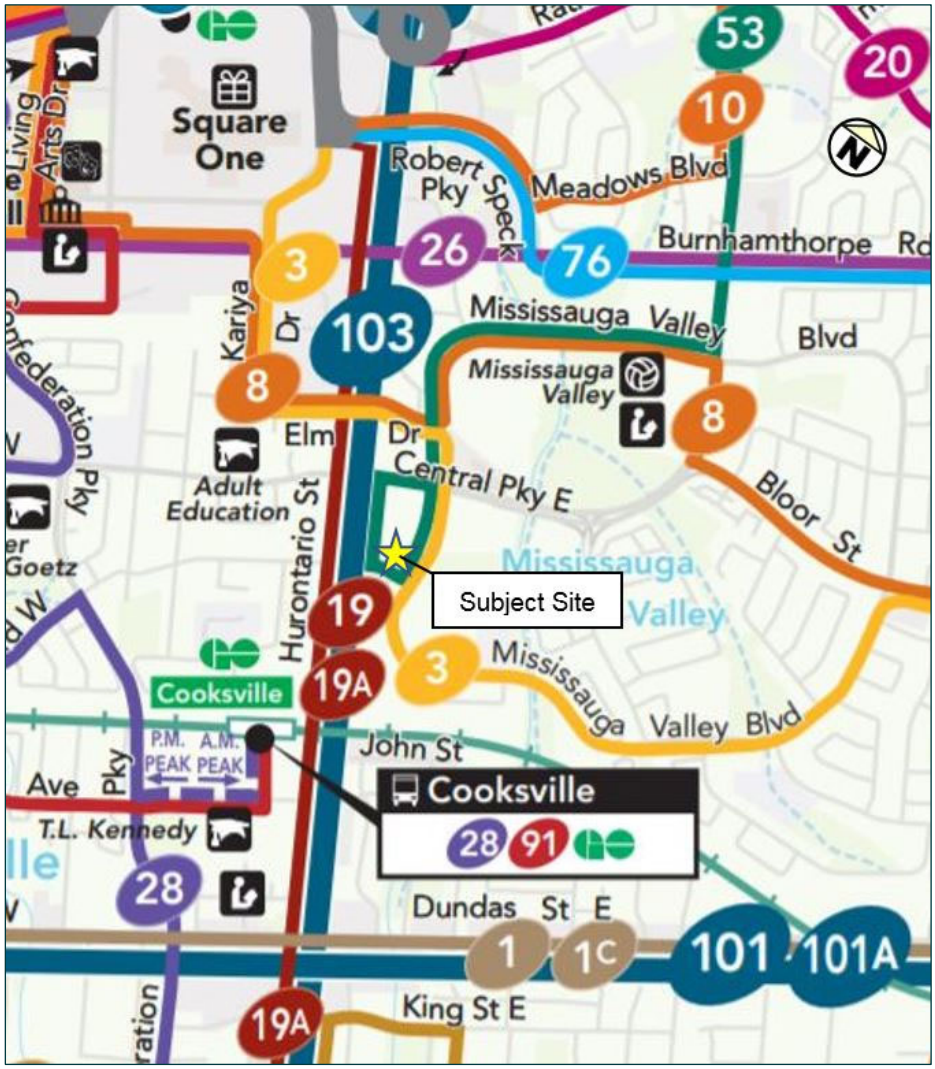
Central Parkway is an east-west major collector road that operates with a four-lane cross-section (two lanes per direction) in the vicinity of the subject site. The roadway operates with a posted speed limit of 60 km/h in the study area. There are continuous sidewalks along both sites of the street as well as pedestrian crosswalks at all major intersections within the study area.

Fairview Road is an east-west minor collector road that operates with a two-lane cross-section (one lane per direction) in the vicinity of the subject site. There is no posted speed; the assume speed limit is 40km/h in the study area. There are continuous sidewalks along both sites of the street.

2.2 TRANSIT NETWORK

The proposed development is located within an area that is well served by multiple transit services including rail and buses. The Cooksville GO Station is located about 750 m (about 10 minutes walk) south of the proposed development. GO Transit and MiWay routes within the study area are described below and illustrated in **Figure 2.2**.

Figure 2.2: Existing Transit Network



GO Rail - Milton Line – The east-west line providing service to and from Union Station and has an average headway of 15 minutes on weekdays. As mentioned, the Cooksville GO Station is located about 750 m (about 10 minutes of walk) south of the proposed development. A new station structure is being constructed for Cooksville GO Station include multi-level parking structures, improved pedestrian access and connections to the future Hurontario LRT.

MiWay Bus Route 19 - Hurontario - is a bus route offers four services during the week (Route 19, 19A, 19B and 19C) that are accessible at the Hurontario Street & Fairview Road Intersection. Route 19 operates all day, seven days a week; Routes 19A and 19B operate all day during weekdays, and Route 19C only operates on Saturdays. The north-south route mainly operates between the Port Credit GO Station and the Park & Ride at Highway 407/Hurontario Street, while the branch routes operate from Trillium Health Centre towards Britannia Road West. It operates with approximately 10- to 15-minute headways throughout the day.

MiWay Bus Route 53 - Kennedy - is a bus route that operates between Fairview Road East and Park & Ride at Highway 407/Hurontario Street. It operates Monday to Friday, with approximately 20-minute frequency. The nearest bus stop from the subject site is located at the Hurontario Street & Fairview Road intersection.

MiWay Bus Route 103 – Hurontario Express - is an express bus route that operates between Port Credit GO Station and Brampton Gateway Terminal. It operates seven days a week, with approximately 10-minute frequency. The nearest bus stop from the subject site is located at the Hurontario Street & Central Parkway intersection.

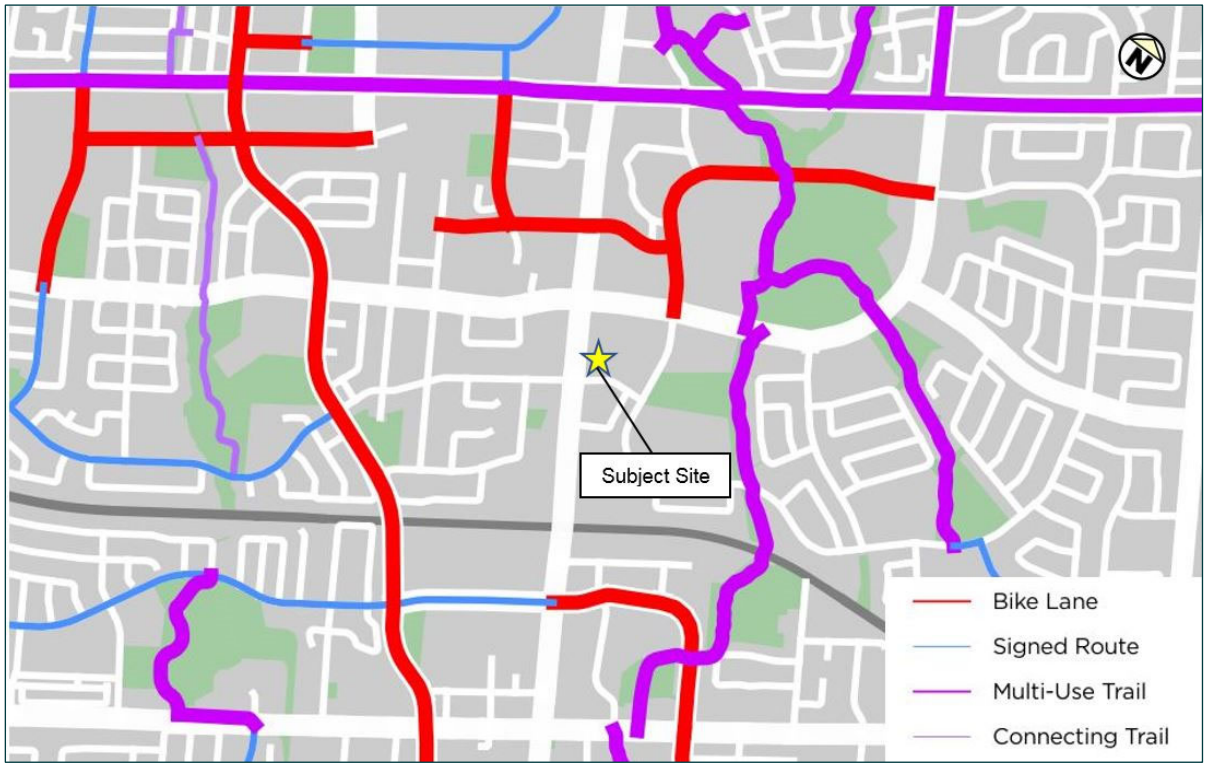
2.3 PEDESTRIAN NETWORK

In the area immediately surrounding the subject site, continuous sidewalk is available along both side of Hurontario Street and Fairview Road, with crosswalks available at all the signalized intersections. The existing pedestrian network provides good connections between the residential and commercial uses in the area as well as the nearby bus stops.

2.4 CYCLING NETWORK

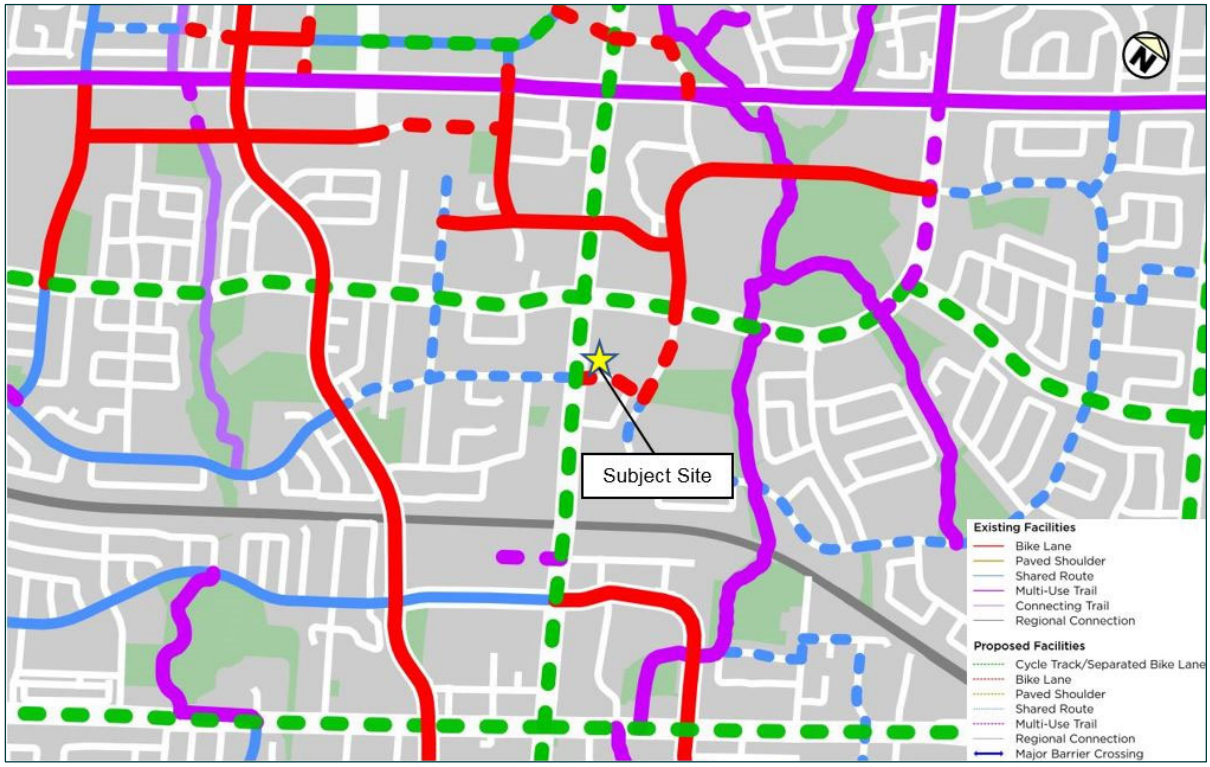
The existing cycling network surrounding the site is illustrated in **Figure 2.3**. Currently, the cycling network connectivity near the subject site is limited. The nearest bike lane is available at Mississauga Valley Boulevard (north of Central Parkway) and mutli-use trail in the Stonebrook Park. The proposed cycling network in the Mississauga Cycling Master Plan 2018 is illustrated in **Figure 2.4**. The proposed cycling network in the vicinity of the site includes cycle track/separated bike lane along Hurontario Street, bike Lane at Fairview Road East and Mississauga Valley Boulevard, and share route at Fairview Road West. The master plan does not specify an implementation timeline but contemplates overall completion within twenty years. When implemented, the site will have safer and better cycling connectivity to surrounding neighbourhoods.

Figure 2.3: Existing Cycling Network



Source: Mississauga Cycling Master Plan 2018

Figure 2.4: Future Cycling Network



Source: Mississauga Cycling Master Plan 2018

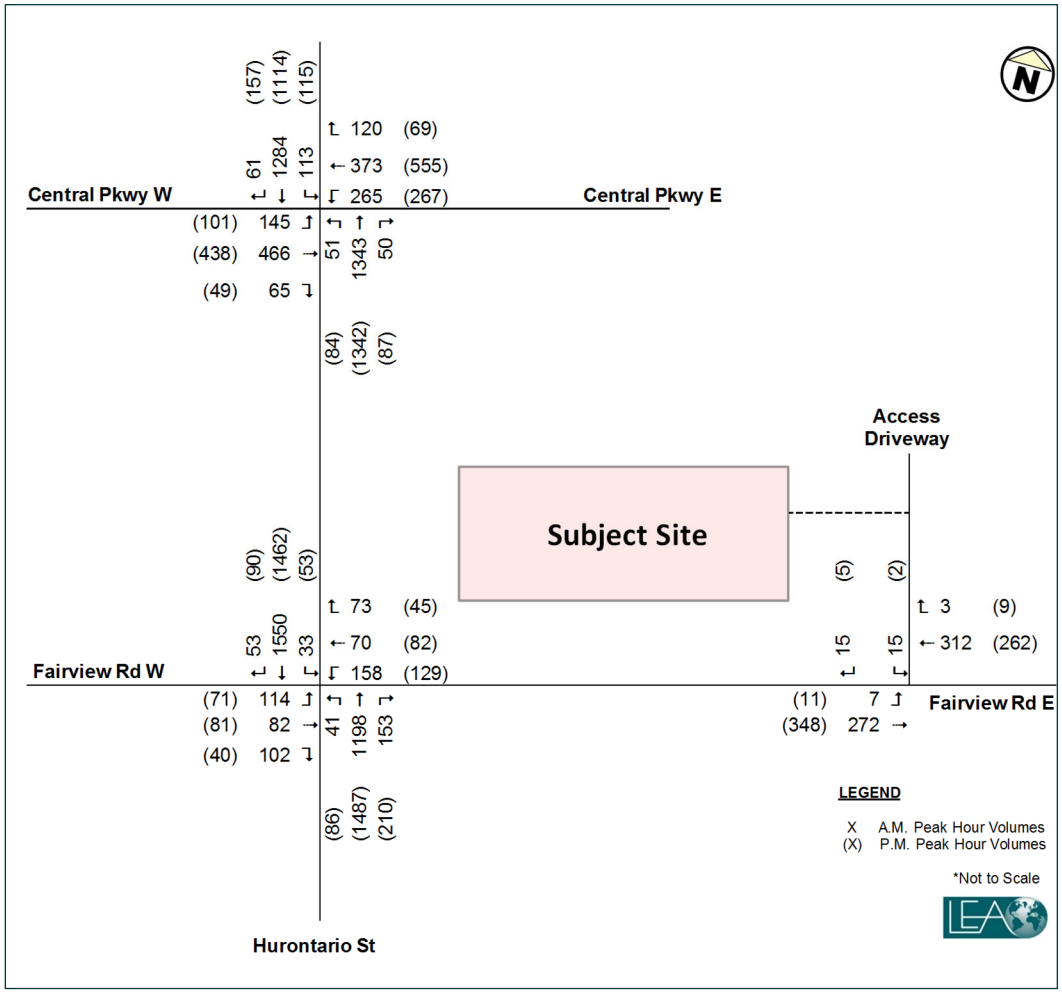
2.5 DATA COLLECTION

Traffic data was obtained through Turning Movement Count (TMC) surveys conducted by LEA. The TMCs for intersections noted in Section 2.1 were performed on Tuesday, November 19, 2019 at 6:30-9:00 AM and 4:00-7:00 PM. The signal timing plans were obtained from the City of Mississauga. Detailed TMCs and signal timing plans are included in **Appendix B**.

2.6 EXISTING INTERSECTION CAPACITY ANALYSIS

The existing traffic volumes for the AM and PM peak hours are illustrated in **Figure 2.5.**

Figure 2.5: Existing Traffic Volumes



The existing intersection capacity analysis was performed using Synchro 9.1 which incorporates to the Highway Capacity Manual (HCM) 2000 methodology, and adhering to the City of Mississauga Traffic Impact Study Guidelines. The existing conditions were calibrated based on field observations. These included the application of a lost-time adjustment factor of "-3" to the westbound left movement as it was observed that left-turning vehicles were entering the intersection during the intergreen period to complete their turns. Existing intersection capacity analysis results are summarized in **Table 2-1** and **Table 2-2**. Detailed Synchro reports are provided in **Appendix C**.

Table 2-1: Existing Intersection Capacity Analysis (Signalized)

Intersection	Movement	AM Peak Hour								PM Peak Hour							
		Overall			Movements					Overall			Movements				
		V/C	Delay (s)	LOS	V/C	Delay (s)	LOS	Queue (m)		V/C	Delay (s)	LOS	V/C	Delay (s)	LOS	Queue (m)	
								50th	95th							50th	95th
Hurontario St & Central Pkwy	EBL	0.77	38	D	0.83	84	F	52	76	0.62	39	D	0.78	86	F	35	55
	EBT				0.70	62	E	85	98				0.73	66	E	80	91
	EBR				0.05	73	E	0	10				0.03	73	E	0	1
	WBL				0.87	61	E	71	#89				1.01	108	F	78	#115
	WBT				0.32	37	D	52	59				0.60	51	D	92	101
	WBR				0.09	33	C	0	13				0.05	42	D	0	12
	NBL				0.35	20	B	6	11				0.36	19	B	14	28
	NBT				0.68	27	C	160	189				0.54	29	C	134	186
	SBL				0.66	32	C	19	#51				0.54	17	B	14	28
	SBTR				0.63	32	C	135	177				0.48	21	C	91	130
Hurontario St & Fairview Rd	EBL	0.69	20	C	0.57	58	E	39	55	0.53	17	B	0.50	66	E	23	38
	EBTR				0.50	55	D	50	67				0.44	64	E	34	53
	WBL				0.98	122	F	61	84				0.86	102	F	44	67
	WBTR				0.37	53	D	37	52				0.46	64	E	35	55
	NBL				0.30	13	B	4.4	11				0.35	7	A	6	13
	NBTR				0.47	12	B	83	114				0.46	7	A	65	95
	SBL				0.24	9	A	2	m4				0.33	16	B	5	m21
	SBTR				0.60	8	A	46	49				0.44	11	B	58	m135

Notes:
– 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
m – Volume for 95th percentile queue is metered by upstream signal

As shown **Table 2-1**, all the signalized intersections are operating within capacity and with acceptable overall Level of Service (LOS). The WBL at Hurontario & Central Pkwy intersection is slightly over its capacity with v/c ratio of 1.01 and LOS F during PM peak hour. However, the overall intersection operates with residual capacity and acceptable delays. As shown in **Table 2-2**, all the unsignalized intersections are operating within capacity and with acceptable overall Level of Service (LOS).

Table 2-2: Existing Intersection Capacity Analysis (Unsignalized)

Intersection	Movement	AM Peak Hour				PM Peak Hour			
		Delay (s)	95th Queue (m)	V/C	LOS	Delay (s)	95th Queue (m)	V/C	LOS
Fairview Rd & Access Driveway	EBLT	0	0	0.01	A	0	0	0.01	A
	SBLR	12	2	0.07	B	11	0	0.01	B

2.7 QUEUING ISSUES AT FAIRVIEW ROAD EAST

The Pre-Submission Public Engagement (PPE) Meeting was held on December 4, 2019. One of the residents' major concerns is the existing westbound queue which spillback blocking Burdock Place. To verify the queue issues, videos recorded during the TMC survey on Tuesday, November 19, 2019 were reviewed. Courtesy of the video recording, LEA was able to observe the westbound left turn queue which extended beyond the Fairview Road & Access Driveway at Fairview Road East during AM peak hour. Observations of the maximum left turn queue lengths were comparable to what was assessed in the capacity analysis. **Table 2-3** outlines the queuing identified in the Synchro capacity analysis for existing conditions with the queues as observed. **Figure 2.6** illustrated the available storage length and

observed maximum queue during AM peak hour. **Figure 2.7** captured the two occasions when the maximum queue happened during AM Peak hour.

Table 2-3: Comparison of Existing Westbound Queue at Fairview Road East

Peak Hour	Lane	Synchro(1)		Observed		Available Storage (m)
		50th Percentile (m)	95th Percentile (m)	Maximum Queue at Onset Red (m)	Maximum Queue at Onset Green (m)	
Weekday AM	WBL	61	84	0	84	45

Note: (1) – Assuming approximate 7.5 m length per vehicle

Figure 2.6: Available Storage Length and Observed Maximum Queue

Figure 2.7: Captions of Maximum Queue during AM Peak Hour

2.8 PROPOSED MINOR ROAD IMPROVEMENT AT FAIRIVEW ROAD EAST

To cater the queueing issue, an advanced left-turn phase is proposed for the Hurontario & Fairview intersection during the AM Peak hour and the pavement marking is recommended to be restriped for extending the left-turn storage length to 70 m (**Figure 2.8**). Please note that this improvement requirement do not require any physical geometry construction. This proposed minor road improvement will be carried forward to the future traffic conditions. **Table 2-4** summarizes the intersection capacity analysis result under the proposed minor road improvement.

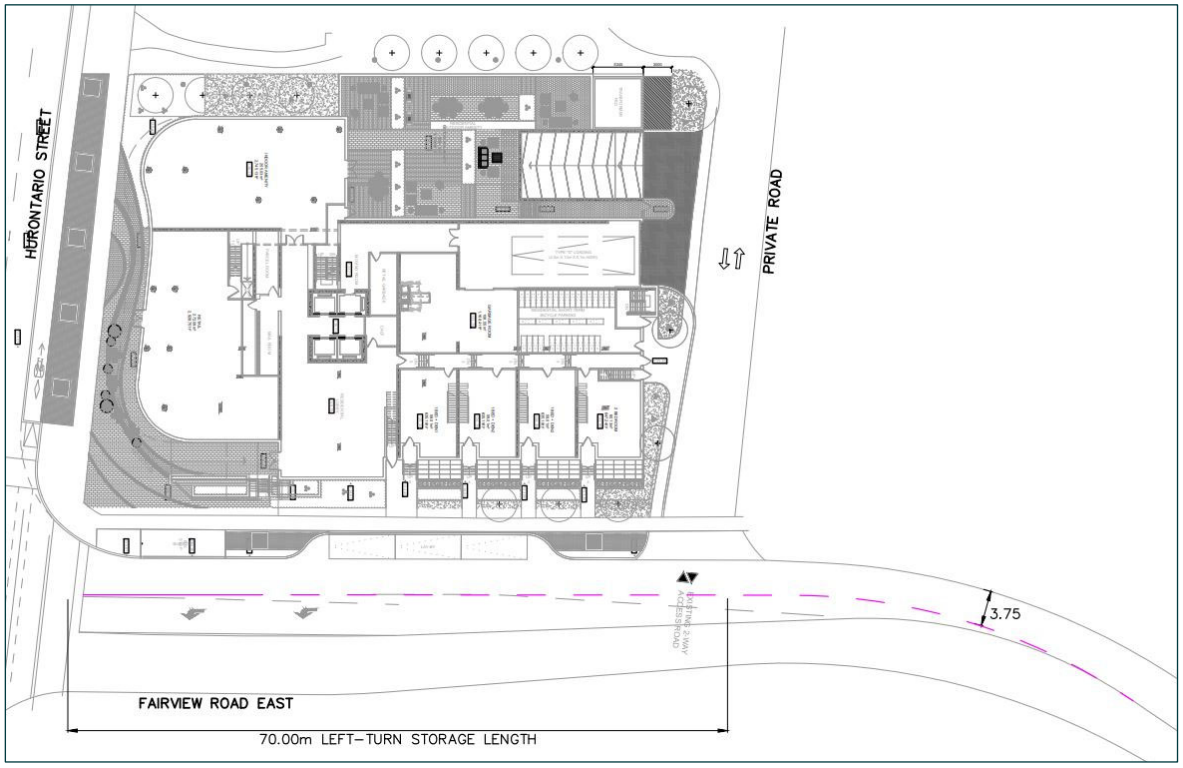
Table 2-4: Existing Intersection Capacity Analysis (Minor Road Improvement)

Intersection	Movement	AM Peak Hour							
		Overall			Movements				
		V/C	Delay (s)	LOS	V/C	Delay (s)	LOS	Queue (m)	
								50th	95th
Hurontario St & Fairview Rd	EBL	0.69	21	C	0.77	84	F	43	62
	EBT				0.78	81	F	58	80
	WBL				0.80	69	E	50	66
	WBT				0.33	48	D	35	52
	NBL				0.32	16	B	5	11
	NBT				0.49	15	B	91	115
	SBL				0.26	10	B	3	m4
	SBT				0.63	9	A	47	49

Notes:
m – Volume for 95th percentile queue is metered by upstream signal

As shown in **Table 2-4**, the 50th queue (50 m) and 95th queue (66 m) are expected to reduce and within the extended storage length (70 m). Detailed Synchro reports are provided in **Appendix C**.

Figure 2.8: Proposed Minor Road Improvement at Fairview Road East



3 FUTURE BACKGROUND TRAFFIC CONDITIONS

For the analysis of future background traffic conditions, this study considers a five-year horizon (2024). Other background assumptions were also confirmed with the agencies, as per the Terms of Reference for included in **Appendix A**.

3.1 CORRIDOR GROWTH

Corridor growth rates applicable to Hurontario Street were confirmed with the City and are summarized in **Table 3-1**. The City staff has advised that the analysis has assumed the Hurontario Light Rail Transit (LRT) operation by 2024 which includes the removal of one general purpose lanes in each direction along Hurontario Street.

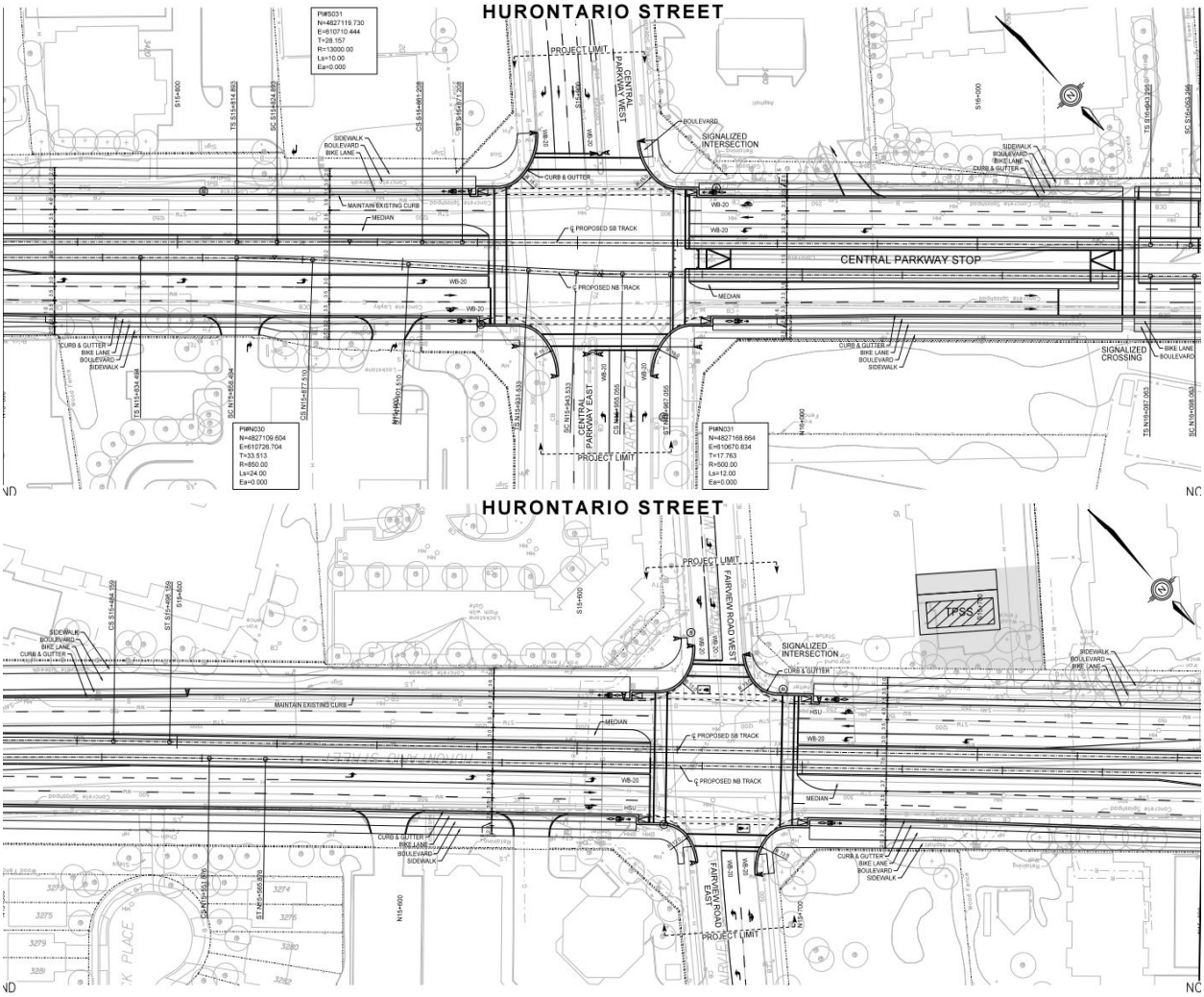
Table 3-1: Corridor Growth Rates

Corridor	Directions	Growth from Existing to 2024	
		AM Peak Hour	PM Peak Hour
Hurontario Street	Northbound	-25% (-1.90% per year)	-26% (1.92% per year)
	Southbound	-29% (-1.96% per year)	-20% (1.82% per year)

3.2 FUTURE ROAD NETWORK CHANGES

By the horizon year of 2024, the Hurontario Light Rail Transit (HLRT) project is expected to be completed. Network changes include lane reductions on Hurontario Street to accommodate the LRT system. Hurontario Street will reduce from its current six-lane general cross-section to a four-lane general lane cross-section plus two LTR-lanes in centre of the roadway. Bicycle lanes will also be added to both sides of Hurontario Street. With the addition of the HLRT, the left turns on Hurontario Street are assumed to be operating as fully-protected phase. These changes have been accounted for in the future traffic analysis. A segment of the infrastructure designs along Hurontario Street is illustrated in **Figure 3.1**.

Figure 3.1: Proposed Lane Configuration for Hurontario St at Central Pkwy and Fairview Road for HLRT



Source: Hurontario/Main Street LRT Preliminary Engineering & TRAP – Preferred Alignment (June 2014)

3.3 BACKGROUND DEVELOPMENTS

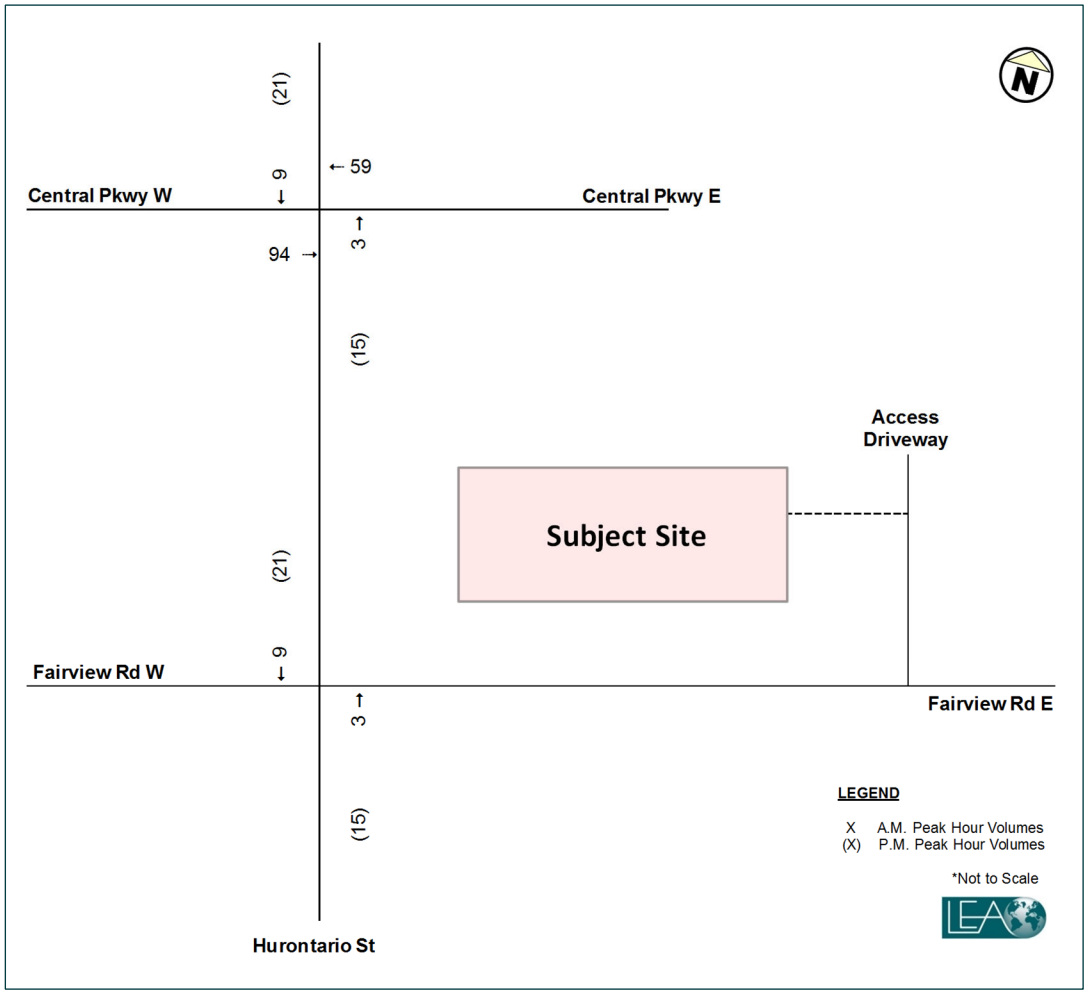
As confirmed with the City, the following two background developments within the vicinity of the subject site have been considered in the study. Details regarding the background developments are summarized in **Table 3-2**.

Table 3-2: Summary of Background Developments

#	Address of Development	Description	Sources (Date)
1	185 Enfield Place	353 residential units	BA (August 2018)
2	100 Elm Drive W	New Elm Drive Public School	AECOM (January 2019)

The Traffic Impact Studies (TIS) for each development were obtained from the City to extract the forecasted site traffic volumes. The related traffic traveling through the study area road network have been assigned. The background development traffic volumes are illustrated in **Figure 3.2**Figure 3.2.

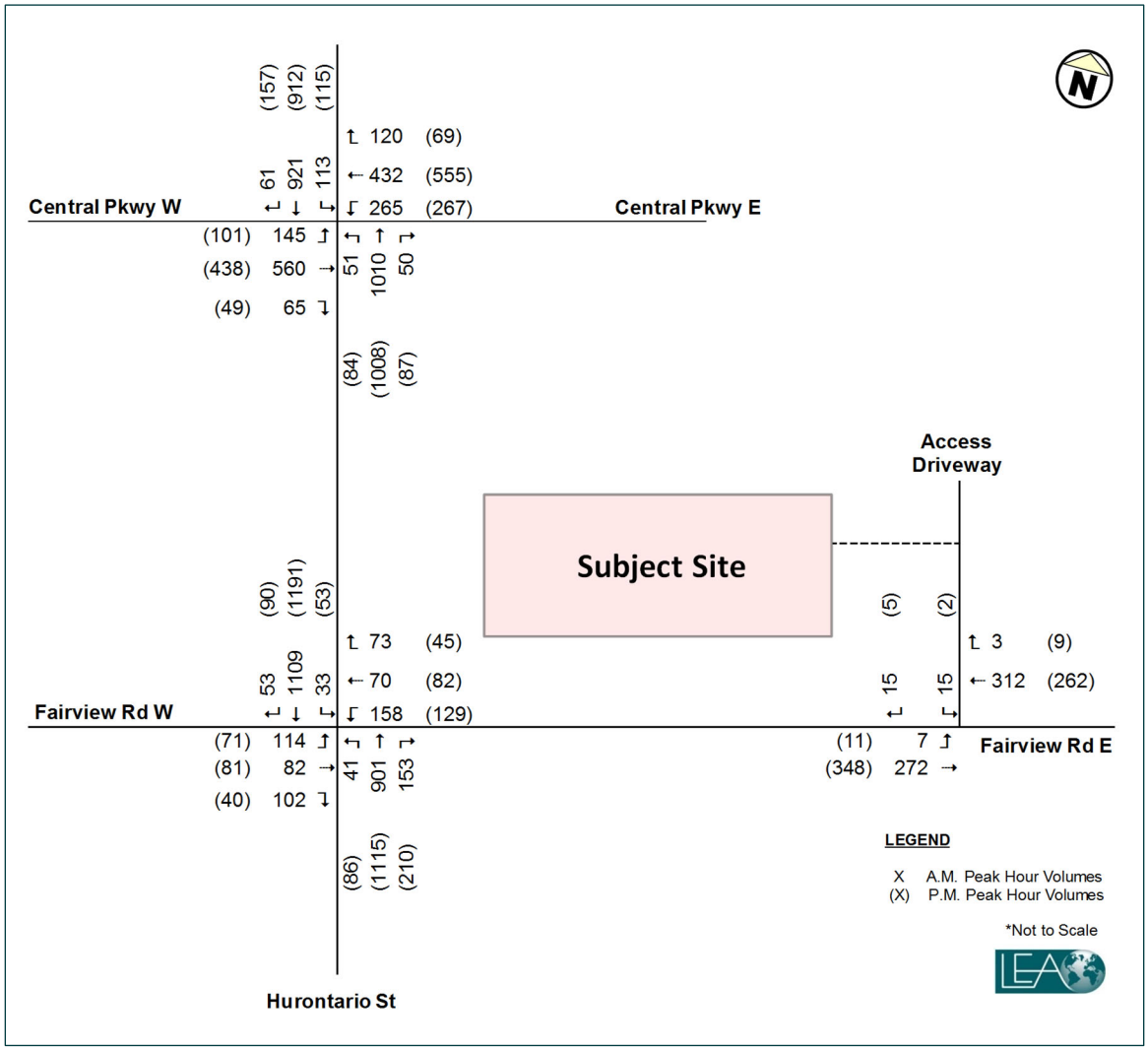
Figure 3.2: Background Development Traffic Volumes



3.4 FUTURE BACKGROUND INTERSECTION CAPACITY ANALYSIS

The future background traffic volumes were derived by applying the corridor growth rates (as mentioned in Section 3.1) on the existing traffic volumes and adding the background development traffic volumes (**Figure 3.2**). The future background traffic volumes are illustrated in **Figure 3.3**.

Figure 3.3: Future Background Traffic Volumes



The future background intersection capacity analysis is summarized in **Table 3-3** and **Table 3-4**. The signal timing plans were optimized and left turns on Hurontario Street are assumed to be operating as fully-protected phase to reflect the infrastructure changes occurring within the study horizon while maintaining the cycle length. These were carried forward to future total traffic conditions. Detailed Synchro reports are provided in **Appendix D**.

Table 3-3: Future Background Intersection Capacity Analysis (Signalized)

Intersection	Movement	AM Peak Hour								PM Peak Hour							
		Overall			Movements			Queue (m)		Overall			Movements			Queue (m)	
		V/C	Delay (s)	LOS	V/C	Delay (s)	LOS	50th	95th	V/C	Delay (s)	LOS	V/C	Delay (s)	LOS	50th	95th
Hurontario St & Central Pkwy	EBL	0.87	47	D	0.82	82	F	52	78	0.76	46	D	0.77	85	F	35	56
	EBT				0.79	64	E	105	119				0.75	68	E	80	94
	EBR				0.05	72	E	0	10				0.03	69	E	0	1
	WBL				0.93	71	E	70	#114				0.92	78	E	74	#99
	WBT				0.36	36	D	60	69				0.52	45	D	85	95
	WBR				0.09	32	C	0	13				0.05	38	D	0	11
	NBL				0.61	92	F	20	m33				0.68	73	E	29	46
	NBT				0.84	35	C	171	146				0.69	32	C	171	230
	SBL				0.69	77	E	41	#96				0.76	88	F	40	#67
	SBTR				0.70	37	D	153	199				0.66	32	C	147	198
Hurontario St & Fairview Rd	EBL	0.71	30	C	0.77	84	F	43	62	0.63	28	C	0.49	66	E	23	38
	EBTR				0.78	81	F	58	80				0.44	64	E	34	53
	WBL				0.80	69	E	50	66				0.85	99	F	44	66
	WBTR				0.33	48	D	35	52				0.46	64	E	36	55
	NBL				0.53	80	F	16	29				0.60	77	E	29	48
	NBTR				0.62	23	C	136	178				0.57	14	B	115	173
	SBL				0.47	93	F	13	m19				0.54	66	E	18	m27
	SBTR				0.67	12	B	60	66				0.56	21	C	135	208

Notes:
– 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
m – Volume for 95th percentile queue is metered by upstream signal

As shown in **Table 3-3**, with the increase in background development traffic and corridor growth, all the signalized intersections are expected to operate within capacity and with acceptable overall Level of Service (LOS) under the future background traffic conditions.

Table 3-4: Future Background Intersection Capacity Analysis (Unsignalized)

Intersection	Movement	AM Peak Hour				PM Peak Hour			
		Delay (s)	95th Queue (m)	V/C	LOS	Delay (s)	95th Queue (m)	V/C	LOS
Fairview Rd & Access Driveway	EBLT	0	0	0.01	A	0	0	0.01	A
	SBLR	12	2	0.07	B	11	0	0.01	B

As shown in **Table 3-4**, all the unsignalized intersections are expected to operate within capacity and with acceptable overall Level of Service (LOS) under the future background traffic conditions.

4 SITE GENERATED TRAFFIC

4.1 MODAL SPLIT ASSUMPTION

The Hurontario LRT is expected to be completed by 2024. Although some modal shift from auto to transit would be expected by 2024, for conservative approach, the 2016 Transportation Tomorrow Survey (TTS) modal split has been adopted for the 2024 horizon. The TTS 2016 modal split was reviewed for home-based trips originating from the 2006 Traffic Zones 3723, 3724, 3863 and 3864. The modal split is summarized in **Table 4-1**.

Table 4-1: Existing Modal Split

Transportation Mode	AM Peak[1]		PM Peak[1]	
	Person Trips	Percentage (%)	Person Trips	Percentage (%)
Auto Driver	4,120	47%	3,767	53%
Auto Passenger	1,566	18%	923	13%
Transit	1,904	22%	1,821	25%
Walk	1,131	13%	641	9%
Other	38	0%	10	0%
Total	**8,759**	**100%**	**7,162**	**100%**

Note: 1 – Based on peak direction

Currently, about 65%-66% of trips are made by personal vehicles (auto driver or passenger), 34-35% of trips are made by transit while 9-13% trips are made by either walking or other transportation mode during weekday AM and PM peak hours.

4.2 TRIP GENERATION

Trip generation for the development was based on the ITE Trip Generation Manual 10th Edition. Given the proposed uses, LUC 222 Multifamily Housing (High-Rise) was used for the development, and is summarized in **Table 4-2**. It is recognized that the ITE trip generation rates also captures some Non-Auto trips. As such, a conservation reduction of 35% is assumed for the analysis.

Table 4-2: Trip Generation of the Subject Site

Land Use		Weekday AM Peak			Weekday PM Peak		
		In	Out	Total	In	Out	Total
Residential (460 Units)	Trip Rate	0.07	0.27	0.34	0.24	0.15	0.39
	In/Out Distribution	21%	79%	100%	62%	38%	100%
Total Site Trips		**33**	**124**	**157**	**111**	**68**	**179**
Modal Split Reduction (35%)		*-12*	*-43*	*-55*	*-39*	*-24*	*-63*
Total Auto Trips		*21*	*81*	*102*	*72*	*44*	*116*

Notes: The site traffic volumes figures might have slightly different numbers from the trip generation as shown in Table 4.1 due to rounding.

As shown in **Table 4-2**, the proposed development is expected to generate only 102 and 116 two-way trips in the AM and PM peak hour, respectively.

4.3 TRIP DISTRIBUTION AND ASSIGNMENT

Directional trip distribution of site traffic was derived using Transportation Tomorrow Survey (TTS) 2016 data. The estimated auto trip distribution is outlined in **Table 4-3**.

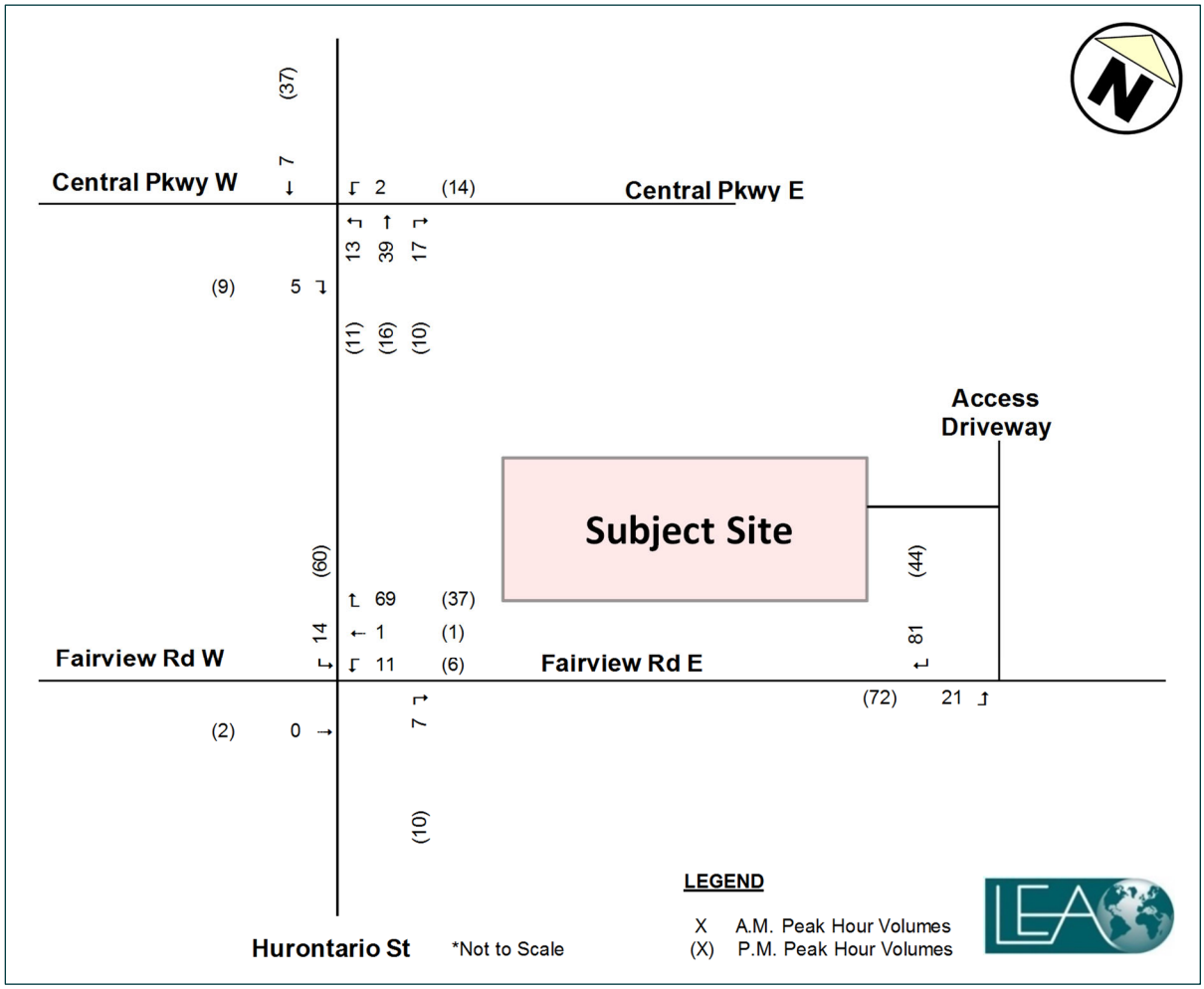
Table 4-3: Auto Trip Distribution

Gateway No.	Locations	AM Peak Hour		PM Peak Hour	
		In	Out	In	Out
1	Hurontario St (N of Central Pkway)	33%	49%	51%	37%
2	Hurontario St (S of Fairview Rd)	34%	13%	14%	13%
3	Central Pkwy W	22%	15%	13%	26%
4	Central Pkwy E	11%	21%	20%	22%
5	Fairview Rd W	1%	2%	3%	2%
	Total	**100%**	**100%**	**100%**	**100%**

Note - Trip distribution of respective peak hour direction was adopted.

The site traffic was assigned to the road network based on trip patterns in the study area, location and configuration of the site accesses, and logical routing. As mentioned in Section 1, the site will be accessed from Fairview Rd E. Site traffic volumes are illustrated in **Figure 4.1**.

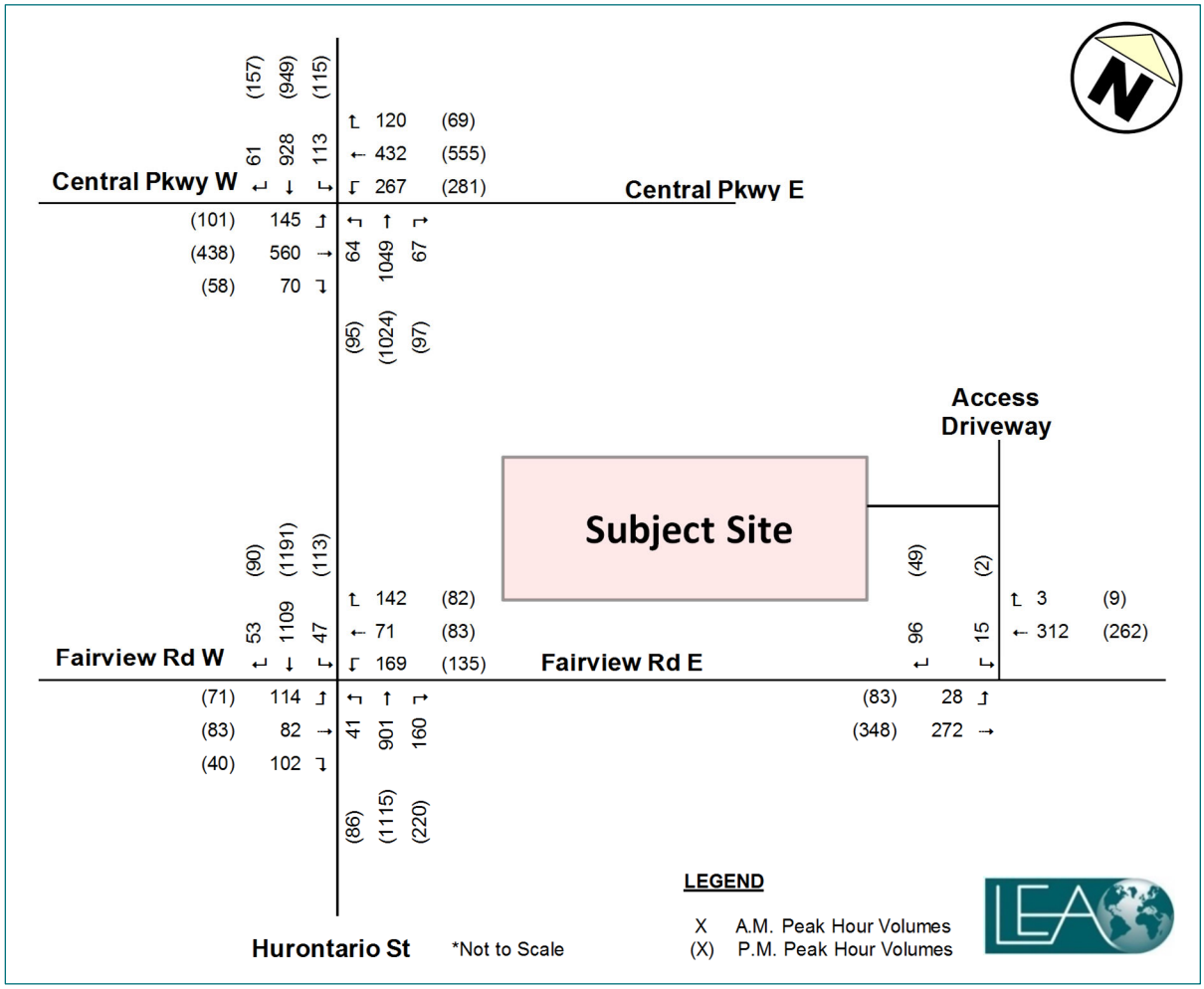
Figure 4.1: Site Traffic Volumes



5 FUTURE TOTAL TRAFFIC CONDITIONS

The site traffic volumes (**Figure 4.1**) were added onto the future background traffic volumes (**Figure 3.3**) to generate the respective future total traffic volumes. The future total traffic volumes are illustrated in **Figure 5.1**.

Figure 5.1: Future Total Traffic Volumes



The future total intersection capacity analysis for signalized and unsignalized intersections are summarized in **Table 5-1** and **Table 5-2** respectively. Detailed Synchro reports are provided in **Appendix E**.

Table 5-1: Future Total Intersection Capacity Analysis (Signalized)

Intersection	Movement	AM Peak Hour								PM Peak Hour							
		Overall			Movements					Overall			Movements				
		V/C	Delay (s)	LOS	V/C	Delay (s)	LOS	Queue (m)		V/C	Delay (s)	LOS	V/C	Delay (s)	LOS	Queue (m)	
								50th	95th							50th	95th
Hurontario St & Central Pkwy	EBL	0.90	48	D	0.82	82	F	52	78	0.79	46	D	0.77	85	F	35	56
	EBT				0.79	64	E	105	119				0.75	68	E	80	94
	EBR				0.05	71	E	0	12				0.04	68	E	0	5
	WBL				0.94	73	E	71	#116				0.95	85	F	79	#106
	WBT				0.36	36	D	60	69				0.51	44	D	85	95
	WBR				0.09	32	C	0	13				0.05	37	D	0	11
	NBL				0.66	92	F	24	m#44				0.72	77	E	30	#54
	NBT				0.88	39	D	186	#199				0.71	30	C	178	234
	SBL				0.69	77	E	41	#96				0.76	88	F	40	#67
	SBTR				0.71	39	D	158	201				0.69	34	C	157	209
Hurontario St & Fairview Rd	EBL	0.72	31	C	0.79	88	F	43	62	0.65	31	C	0.58	70	E	23	39
	EBTR				0.75	77	E	58	79				0.43	63	E	35	54
	WBL				0.78	65	E	52	68				0.85	97	F	46	69
	WBTR				0.48	51	D	52	71				0.57	66	E	44	67
	NBL				0.55	81	F	16	29				0.60	77	E	29	48
	NBTR				0.63	24	C	142	180				0.62	18	B	133	200
	SBL				0.61	98	F	19	m26				0.66	66	E	39	m53
	SBTR				0.67	12	B	60	67				0.56	23	C	143	209

Notes:
– 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
m – Volume for 95th percentile queue is metered by upstream signal

As shown in **Table 5-1**, with the increase in site traffic, all the signalized intersections are expected to operate within capacity and with acceptable overall Level of Service (LOS) under the future total traffic conditions.

Table 5-2: Future Total Intersection Capacity Analysis (Unsignalized)

Intersection	Movement	AM Peak Hour				PM Peak Hour			
		Delay (s)	95th Queue (m)	V/C	LOS	Delay (s)	95th Queue (m)	V/C	LOS
Fairview Rd & Access Driveway	EBLT	1	1	0.03	A	2	2	0.07	A
	SBLR	12	6	0.20	B	11	2	0.08	B

As shown in **Table 5-2**, all the unsignalized intersections are expected to operate within capacity and with acceptable overall Level of Service (LOS) under the future total traffic conditions.

Based on the above-noted and our comparison in traffic operations between future background and total traffic conditions, it is concluded that the proposed development will have minimal traffic impact on the study area intersections.

6 PARKING AND LOADING

6.1 PARKING

The subject site is governed by the City of Mississauga's Comprehensive Zoning By-law 0225-2007. As such, the minimum vehicular parking requirements for the proposed development are evaluated using applicable parking standards from the aforementioned By-law. **Table 6.1** summarizes the parking requirements and proposed parking supply.

Table 6.1: Comparison of Required and Proposed Parking Supply

Land Use		# of units /GFA	Minimum Parking Requirement	Parking Spaces Required	Proposed Parking Supply
Condominium Apartment	1-bdrm	315	1.25 sp/unit	394	312
	2-bdrm	145	1.40 sp/unit	203	
Visitors		460	0.20 sp/unit	92	47
Retail		272 m^2	5.4 sp/100 m^2	15	-
Total		**460**		**704**	**359**

A total of 704 parking spaces is required for the proposed development. A parking supply of 359 spaces is proposed, which represents a shortfall of 345 spaces compared to the minimum parking requirement.

Since a limited amount of ground floor retail (272 m^2) is proposed, it is anticipated that the retail component of the proposed development will be of ancillary nature for residents of the subject site and immediate surrounding area.

While parking, as proposed, is lower than what is outlined in the Zoning By-law, the rates proposed are representative of a desire to provide Transit Oriented Development (TOD) reflecting the evolution of the corridor with the forthcoming Hurontario LRT. As stated on page 173 of the Hurontario Master Plan Report

> *"Mixed-use, compact, intensified TOD is directed along the corridor, customized to suit the varying and distinct nature of each existing community and sensitive to the presence of adjacent stable neighbourhoods."; and*
>
> *"The corridor will transition from being auto-dominated to one that promotes active transportation and transit use, while balancing the unique characteristics and purposes served in different areas."*

While no specific target for reduced parking is outlined in the Hurontario Master Plan Report, reduced parking is strongly linked to reduced auto modal splits and increase use of transit and active transportation. Contemporary understandings of parking supply recognize the induced demand effects of requiring excess supply, which lowers or hides the true costs of vehicle use[1]. Studies have suggested the idea that providing free and ample residential off-street parking dramatically affects commuting

[1] Shoup, Donald. "The High Cost of Free Parking." University of California Transportation Center - eScholarship, 1997: 22.

behaviour. When parking is available only for a fee, vehicle commuting and ownership will be reduced, and more so when residential parking is simply not available[2].

It is anticipated that future residents will be self-selective and those who choose to live without owning a vehicle can do so without having the additional burden of the cost of owning or renting a parking space. If a potential future resident requires a car they will choose to live elsewhere if no parking is available. For those who choose to live without a vehicle their choice will be supported by the transit accessibility provided by the future Hurontario LRT, Cooksville GO Station (~800 m or 10 minute walk), future bicycle lanes on Hurontoario, and various Transportation Demand Management (TDM) measures as outlined in Section 7 including providing improved pedestrian connections along Hurontatio Street and Fairview Road East. **Figure 6.1** illustrates the site location context relative to transit access and services within close proximity that would allow a resident to live without a car. These are all factors into the site having a walkscore of 78[3], or very walkable.

Figure 6.1: Site Context

[2] Weinberger, Rachel, Mark Seaman, and Carolyn Johnson. "Residential Off-Street Parking Impacts on Car Ownership, Vehicle Miles Traveled,and Related Carbon Emissions. New York City Case Study." Transportation Research Record: Journal of the Transportation Research Board, 2009: 24-30.

[3] https://www.walkscore.com/score/3383-hurontario-st-mississauga-on-canada

Upon completion of the Hurontario LRT (est. fall 2024) the subject site will be within a convenient walking distance of a higher-order transit facilitiy. The Hurontario LRT will facilitate access to the high number of jobs and amenities available along the Hurontario corridor between Port Credit and the Brampton Gateway Terminal, as well as connections to the Mississauga Transitway and Brampton Transit/Züm. In addition, Miiway bus service will continue to provide access to destinations not accessible using the LRT or GO. The proposed development will be marketed to prospective residents who are looking to live in a walkable transit-oriented community where a vehicle is not required for commuting and discretionary trips. As the limited number of vehicle parking spaces will be explicitly noted in promotional material, the target audience for this development will be households who frequently use transit and active transportation.

Comparable Developments

The City of Missisauga has approved the development at the southwest corner of Hurontario and Elm Street with a parking provision of 0.9 spaces per unit for 1 bedroom units, 1.0 spaces per unit for 2 bedroom units, and 0.15 spaces per unit for visitors. The proposed development is 500 metres further south, and therefore 500 metres closer to the Cooksville GO station, bringing it from a 16 minute walk to a 10 minute walk. LEA has reviewed development activity along the GO network. There have been five major developments next to the Mimico GO station. The developments are located within the Mimico-Judson Secondary Plan area.

The Mimico-Judson neighbourhood has no existing or proposed rapid transit connections other than GO RER, and has access to fewer amenities within a typical walking distance than the subject site (the Walk Score for these developments ranges from 69 to 77, less than the subject site).

A transportation and parking study was prepared for the developments contemplated within the Mimico-Judson area. The study is provided in **Appendix F**. The proposed residential and visitor parking supply is provided in **Table 6.2**. Note: a unit breakdown was not available for any of the developments.

Table 6.2: Mimico-Judson Parking Rates

Developments	Units	Residential Parking Rate	Residential Parking Supply	Visitor Parking Rate	Visitor Parking Supply
Freed Lands (8 Newcastle)	1263	0.70	884	0.10	126
Rietz (25 Audley)	458		321		46
Vandyk 23 Buckingham)	725		508		73
Dunpar (39 Newcastle)	833		583		83
Dezen (21 Windsor)	756		529		76
Total	**4035**		**2825**		**404**

As detailed above, developments in the Mimico-Judson area will be providing residential and visitor parking at a rate of 0.70 and 0.10 spaces per unit respectively. As such, the proposed parking rate of 0.68/unit for residents and 0.1/unit for visitors is reasonable for the proposed development.

6.2 LOADING

As per the City of Mississauga's Comprehensive Zoning By-law 0225-2007, one loading space is required per apartment building containing a minimum of 30 dwelling units. One loading space that meets the minimum dimensional requirements is proposed for the one residential building proposed at the subject site. The minimum loading requirement is met as a result.

7 FUNCTIONAL DESIGN REVIEW

A functional design review was completed using AutoTURN 9.1 software package to ensure adequate maneuverability through the site for garbage trucks and delivery vehicles. The swept path diagrams are provided in **Appendix G**. Based on the swept path diagrams, the garbage trucks and delivery vehicles are able to effectively access, circulate and complete required activities on-site.

8 SIGHTLINE REVIEW

As per the Terms of Reference, a sightline assessment was completed to ensure the sight line visibility with regard to ingress and egress. It should be noted that the proposed development will not alter the location of the existing access driveway.

The required stopping sight distance (SSD) is determined based on Transportation Association of Canada (TAC) *Geometric Design Guide for Canadian Roads*. **Table 8.1** summarizes required SSD for a roadway with the assumed posted speed of 40 km/h (design speed of 50 km/h). Details of the sightline review, conducted in accordance to the TAC Guidelines can be found in **Appendix H**.

Table 8.1: Required SSD for Proposed Development

	Stopping Sight Distance		
	Layby	Access Driveway	
		Left-Turn	Right-Turn
Required	65 m	65 m	65 m
Satisfied?	Yes	Yes	Yes

Based on our review, the layby and access driveway meet the minimum SSD requirements of 65 m for a roadway with a posted speed limit of 40 km/h (equivalent to a design speed of 50 km/h).

9 TRANSPORTATION DEMAND MANAGEMENT (TDM) PLAN

Transportation Demand Management (referred to as TDM) is a set of initiatives and polices to reduce traffic demand by influencing travel behavior. Effective TDM measures can reduce vehicle usage and encourage people to engage in more sustainable transportation mode including public transit, shared rides as well as active transportation, such as walking and cycling. The TDM opportunities and proposed TDM measures are described in the following sections.

9.1 PEDESTRIAN-BASED INITIATIVES

Pedestrian connections to the existing pedestrian network on Fairview Road is proposed, which can be used to access the transit stops on Hurontario Street.

9.2 PUBLIC TRANSIT

As mentioned in Section 2.2, the subject site is well served by multiple transit service including rail and buses. The nearest bus stop from the subject site is located at the Hurontario & Fairview intersection and Cooksville GO Station is located about 750 m (approximately 10-minute walk).

Multiple transit options from MiWay and GO Transit are available to the subject site. The HLRT will be in operation along Hurontario St upon its expected completion in 2024. The proposed station at Hurontario & Central Pkwy intersection will be the closest rapid transit station to the subject site, located approximately 240 m from the subject site. The presence of rapid transit within a reasonable walking distance increases the attractiveness of using transit for everyday commuting by residents.

9.3 CYCLING-BASED INTIATIVES

Bicycle lanes are planned along Hurontario Street as part of the implementation of the HLRT. The improvement of cycling network within vicinity of the subject site increases the likelihood of commuting to the subject site by bicycles. Long-term and short-term bicycle spaces are proposed on the subject site to accommodate future cycling trips to and from the subject site by residents and visitors.

9.4 PROGRAMMING

A well-managed and coordinated program can significantly alter the travel patterns of the residents. An information display is recommended to be provided at a centralized location, such as the front lobby of the residential building, to provide information on sustainable travel modes. This information can include location of transit stops, transit route schedules, pedestrian/cycling maps, and other information to help members of public and employees become aware of travel mode alternatives. It is also recommended that a real-time display be provided near the main entrance of the residential building that provides updates for next bus/transit arrival.

10 CONCLUSIONS & RECOMMENDATIONS

The subject site, 1 Fairview Road East, is a proposed mixed-use development consisting of approximately 460 residential units and 270 m^2 of ground-floor retail. A parking supply of 360 spaces and one loading space are proposed.

The following is a summary and conclusions of the study:

- Under existing traffic conditions, all the signalized intersections are operating within capacity and with acceptable overall Level of Service (LOS). The WBL at Hurontario & Central Pkwy intersection is slightly over its capacity with v/c ratio of 1.01 and LOS F during PM peak hour. However, the overall signalized intersection operates with residual capacity and acceptable delays. All the unsignalized intersections are operating within capacity and with acceptable overall Level of Service (LOS).
- Under future background traffic conditions, all the signalized and unsignalized intersections are expected to operate within capacity and with acceptable overall Level of Service (LOS).
- Under future total traffic conditions, similar to future background traffic conditions, all the signalized and unsignalized intersections are expected to operate within capacity and with acceptable overall Level of Service (LOS).
- The proposed development is expected to generate 102 and 116 two-way vehicle trips during AM and PM peak hour respectively. Based on our comparison in traffic operations between future background and total traffic conditions, it is concluded that the proposed development will have minimal traffic impact on the study area intersections.
- To cater the queueing issue noted from the local residents in the Pre-Submission Public Engagement Meeting, an advanced left-turn phase is proposed for Hurontario & Fairview intersection during AM Peak hour and the pavement marking will be restriped for extending the left-turn storage length to 70 m.
- A total of 704 parking spaces is required for the proposed development. A parking supply of 359 spaces is proposed, which represents a shortfall of 345 spaces compared to the minimum parking requirement as per City of Mississauga's Comprehensive Zoning By-law 0225-2007.
- Based on our review on the comparable developments in the area and our previous experience in Mimico-Judson neighbourhood where the Mimico GO station is located, the proposed parking supply of 312 residential spaces (0.68 spaces/unit) and 47 visitor spaces (0.1 spaces/unit) is reasonable for the proposed development.
- The subject site will provide one loading spaces which will meet the minimum dimensional requirements as per City of Mississauga's Comprehensive Zoning By-law 0225-2007.
- A functional design review was completed to ensure adequate maneuverability through the site for trucks. Based on the swept path diagrams, the garbage trucks and delivery vehicles are able to effectively access, circulate and complete required activities on-site.
- Transportation Demand Management (TDM) opportunities and measures have been recommended to reduce vehicle usage and encourage people to engage in more sustainable transportation mode. They consist of pedestrian-based initiatives, public transit, cycling-based initiatives and programming.

APPENDIX A

Correspondence of Terms of Reference

Timothy Chin

From: Timothy Chin
Sent: December-18-19 4:38 PM
To: Timothy Chin
Subject: FW: Terms of Reference for Proposed Mixed Use Development at 3383 Hurontario Street, City of Mississauga

---

From: Tyler Xuereb [mailto:Tyler.Xuereb@mississauga.ca]
Sent: November 22, 2019 10:57 AM
To: Anatole Kung <AKung@lea.ca>
Subject: RE: Terms of Reference for Proposed Mixed Use Development at 3383 Hurontario Street, City of Mississauga

Good Morning Anatole,

Using the City's Travel Demand Model and supporting traffic count data, the city's Transportation Planning section has determined the projected growth on Hurontario Street to be used as part of your study. The recommended projected growth is shown below:

Hurontario Street

	Growth from existing to 2024	
	NB	SB
Time		
AM Peak Hour	-25.0%	-29.0%
PM Peak Hour	-26.0%	-20.0%

Note:

-The above numbers for Hurontario Street represent a one-time total change from existing to 2024
-The analysis has assumed LRT operation by 2024 which includes the removal of one general purpose lanes in each direction along Hurontario Street.
-This analysis does not include the loop in the downtown core, the loop is not considered until the 2031 scenario.

If you have any questions regarding the information provided please let me know.

Regards,

Tyler

From: Anatole Kung [mailto:AKung@lea.ca]
Sent: 2019/11/20 11:37 AM

To: Tyler Xuereb
Subject: FW: Terms of Reference for Proposed Mixed Use Development at 3383 Hurontario Street, City of Mississauga

Hello Tyler.

As per email below from Greg, you are the contact to retrieve traffic growth rate in the traffic area near the proposed development. The study period is a 5 year horizon, and likely be ready for occupation after the Hurontario LRT is complete.

Can you please forward the growth rates anticipated on Hurontario Street and Fairview Road? And to be conservative, can you forward the values with and without the HLRT?

Thank you.

Anatole V. Kung, B.A.
Senior Transportation Analyst
LEA Consulting Ltd.
625 Cochrane Drive, 9th Floor | Markham, ON | L3R 9R9
T: 905-470-0015 ext. 240 **E:** akung@LEA.ca **W:** www.LEA.ca

---

From: Greg Borys [mailto:Gregory.Borys@mississauga.ca]
Sent: November 20, 2019 8:51 AM
To: Anatole Kung <AKung@lea.ca>
Cc: Nixon Chan <NChan@lea.ca>
Subject: RE: Terms of Reference for Proposed Mixed Use Development at 3383 Hurontario Street, City of Mississauga

Good morning Anatole,

Thank you for providing the Terms of Reference for the proposed development at 3383 Hurontario Street, please find some additional comments below:

- Please used latest Transportation Tomorrow Survey (TTS) data;
- Internal Road System Driveway Locations - Please include the truck turning templates;
- Safety & Operational Analysis required under the TIS, site line analysis to be included;
  - pedestrian and vehicular sight line visibility with regard to ingress and egress;
  - detailed turning movements for the most constrained vehicles expected (e.g. access, dead end drive aisle, etc.);
  - gaps and queuing;
  - intersection capacity and level of service

Additional Information:

- The historical AADT data and Turning Movement Count can be obtained from William Wright (William.Wright@mississauga.ca, Ext. 3221). If the data is older than 2 years, than consultant is responsible to conduct the latest counts;
- Please contact Tyler Xuereb tyler.xuereb@mississauga.ca Ext. 4783) to confirm growth rates;
- Please use the following link to gather information of any development proposed in the neighbouring lands for background traffic: http://www.mississauga.ca/portal/residents/developmentinformation ;
- The signal timing plan for signalized intersections can be obtained from Jim Kartsomaniz (Jim.Kartsomanis@mississauga.ca, Ext. 3964);

- The Hurontario-Main Light Rail Transit System Project is scheduled to start construction in 2019. This project will impact right-of-way requirements, property accesses, allowed turning movements and will result in the permanent removal of a general purpose traffic lane in each direction for many segments of the corridor. Further information is available at www.hurontario-main.ca

---

From: Anatole Kung [mailto:AKung@lea.ca]
Sent: 2019/11/18 4:31 PM
To: Greg Borys
Cc: Nixon Chan
Subject: Terms of Reference for Proposed Mixed Use Development at 3383 Hurontario Street, City of Mississauga

Hi Gregory.

I was forward your contact as a source for confirming work plans in conducting a Traffic Impact Study (TIS). We wish to confirm the following work plan for the proposed residential development at 3383 Hurontario Street in the City of Mississauga. The subject site is located northeast corner of Hurontario Street at Fairview Road East. The development proposal is a thirty-five storey building with underground parking. **Figure 1** below illustrates the subject site location.

The TIA will be conducted following the ***Mississauga Traffic Impact Study Guidelines***. The following outlines the proposed Terms of Reference for the TIA.

Proposed Development

It is our understanding that the proposed development is a thirty-six storey residential building with approximately 470 residential units and some ground floor retail space. The proposed site includes a shared access driveway with the adjacent building at 15 Fairview Road East with a road connection to Fairview Road East.

Study Area & Traffic Data

The TIA will assess the weekday a.m. and p.m. peak periods (7:00-9:00 a.m. and 4:00-6:00 p.m.). The proposed study area will include the analysis of the following intersections:

- Hurontario Street at Central Parkway (Signalized);
- Hurontario Street at Fairview Road East (Signalized); and
- Future Site Driveway & Ringwood Drive (Unsignalized).

Turning movement counts at the above intersections will be within the last 2 years.

Traffic Assessment and Study Horizon Year

The study will focus on weekday AM and PM peak hour traffic operations. Synchro version 9.0 will be used to assess intersection operations during the peak hours. The horizon year of 2025 will be assessed in this TIA for a 5-year horizon.

Background Traffic

General Corridor Growth Rate – LEA will obtain historical TMC data in the area from the Region to determine an appropriate growth rate.

Road Network Improvements – LEA will investigate and account for any anticipated road improvement (e.g. road widening) in the study area within the five (5) year study horizon. LEA is currently unaware of any ongoing studies in this area and as such the current lane configuration with full-moves will be assumed in the 2025 analysis.

Background Development Traffic – LEA will consult with the City on any background developments in the study area.

Trip Generation, Distribution and Assignment

The trip generation of the proposed development will be calculated based on Institute of Transportation Engineering (ITE) Trip Generation Manual 10th Edition.

The general trip distribution utilized will be based on the existing distribution observed at the Ringwood Drive at Main Street intersection.

Traffic Operation Analysis

The traffic operation analysis for signalized and unsignalized intersections will be undertaken using Synchro Version 9.0 software, utilizing the methodology of the 2010 Highway Capacity Manual and input parameter values as suggested with the Regional Guidelines for Using Synchro Version 7.73 Rev 8 – December 2010.

Future Traffic Scenarios

Future background and future total analysis for the aforementioned intersections within the study area will be over the horizon year of 2025.

Since the planned build-out year for the potential linkages are not specified in the planning documents, please advise on the timing of the above-mentioned road network developments. The potential road improvements will not be included in the future background road network if they are not going to be constructed in the next 5 years.

Parking Study

The preliminary By-law calculation finds that the proposed supply will be below the requirement. As such, a parking study will be prepared to address the shortfall.

Transportation Demand Management (TDM) Plan

A Transportation Demand Management (TDM) Plan will be developed to reduce the dependency of single-occupancy vehicular trips to and from the subject site. The TDM plan will review pedestrian, cyclist, and transit infrastructure and recommend key programming to encourage alternative modes of travel for the subject site.

Should you have any comments with our assumptions or have any concerns, please do not hesitate to contact me.

Thanks

Anatole V. Kung, B.A.
Senior Transportation Analyst
LEA Consulting Ltd.
625 Cochrane Drive, 9th Floor | Markham, ON | L3R 9R9
T: 905-470-0015 ext. 240 **E:** akung@LEA.ca **W:** www.LEA.ca

Timothy Chin

From: Greg Borys <Gregory.Borys@mississauga.ca>
Sent: November-29-19 11:27 AM
To: Anatole Kung
Cc: Nixon Chan; Timothy Chin
Subject: RE: Terms of Reference for Proposed Mixed Use Development at 3383 Hurontario Street, City of Mississauga
Attachments: 100 Elm.pdf; 20191129112531.pdf

Good afternoon Anatole,

Based on the distance of some of the applications and their status please include the following developments as part of the TIS:

185 Enfield Place; and
100 Elm Dr. W

Please find attached the Traffic Impact Studies for the above mentioned, if you have any questions or concerns please feel free to contact me.

Regards,

Gregory Borys, C.E.T.
Transportation Planning Technologist, Transportation & Works
T 905-615-3200 ext.3597
gregory.borys@mississauga.ca

City of Mississauga | Transportation & Works Department
Transportation and Infrastructure Planning Division

From: Anatole Kung [mailto:AKung@lea.ca]
Sent: Thursday, November 28, 2019 10:53 AM
To: Greg Borys
Cc: Nixon Chan; Timothy Chin
Subject: RE: Terms of Reference for Proposed Mixed Use Development at 3383 Hurontario Street, City of Mississauga

Hi Greg.

Just checking to see if you've had a chance to review my email last week as shown below. Thanks.

Anatole V. Kung, B.A.
Senior Transportation Analyst
LEA Consulting Ltd.
625 Cochrane Drive, 9th Floor | Markham, ON | L3R 9R9
T: 905-470-0015 ext. 240 **E:** akung@LEA.ca **W:** www.LEA.ca

APPENDIX B

Turning Movement Counts (TMCs) and Signal Timing Plan

LEA Consulting Ltd.
625 Cochrane Drive

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

Count Name: 20287_HurontarioSt&CentralPkwy-AM
Site Code: 20287
Start Date: 11/19/2019

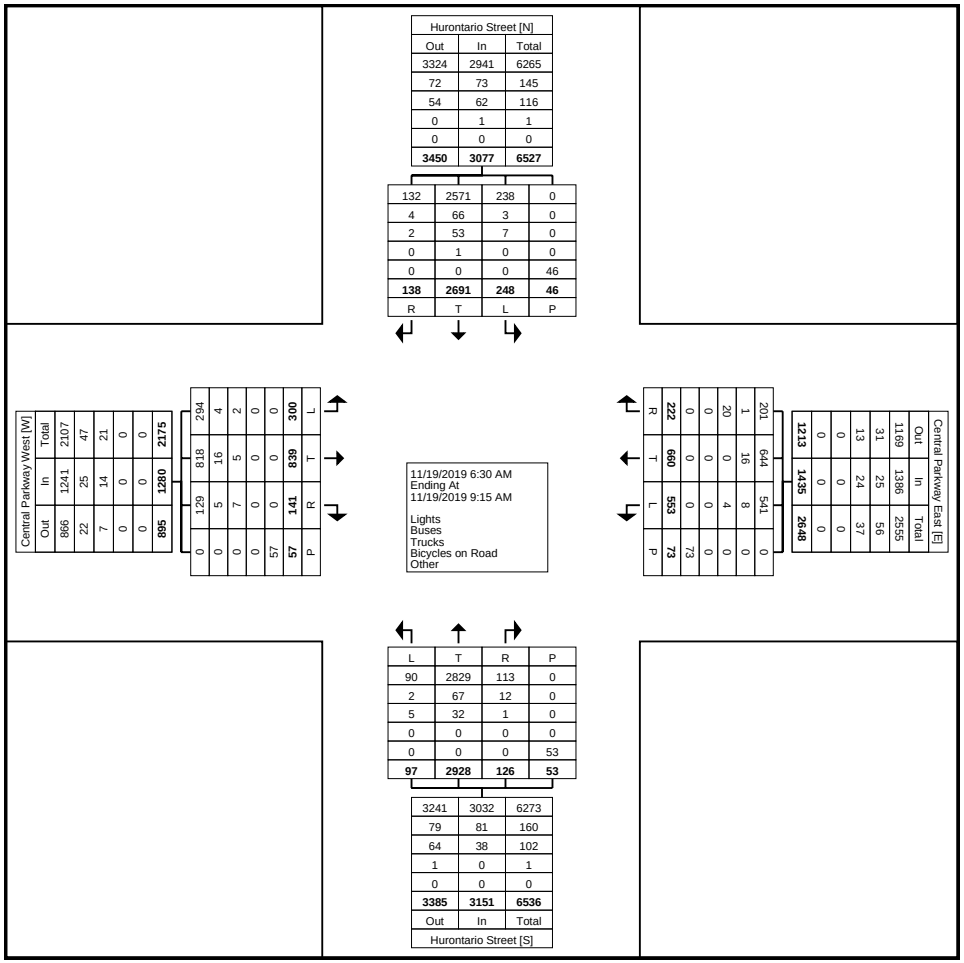
Turning Movement Data

Start Time	Hurontario Street Southbound					Central Parkway East Westbound					Hurontario Street Northbound					Central Parkway West Eastbound					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
6:30 AM	19	166	11	0	196	46	31	13	1	90	3	219	8	1	230	24	31	9	0	64	580
6:45 AM	23	213	12	1	248	34	27	19	7	80	6	216	13	2	235	14	32	11	3	57	620
Hourly Total	42	379	23	1	444	80	58	32	8	170	9	435	21	3	465	38	63	20	3	121	1200
7:00 AM	20	206	8	3	234	38	32	20	6	90	5	212	9	1	226	15	53	6	1	74	624
7:15 AM	19	244	10	6	273	60	53	12	9	125	10	279	17	3	306	28	56	6	4	90	794
7:30 AM	29	315	16	4	360	64	58	12	5	134	5	312	14	13	331	35	98	18	8	151	976
7:45 AM	29	350	12	12	391	60	118	24	13	202	8	321	18	7	347	25	119	15	6	159	1099
Hourly Total	97	1115	46	25	1258	222	261	68	33	551	28	1124	58	24	1210	103	326	45	19	474	3493
8:00 AM	36	404	18	3	458	76	84	33	15	193	12	350	7	10	369	37	123	21	13	181	1201
8:15 AM	28	274	7	6	309	79	67	30	7	176	11	307	8	6	326	50	140	18	5	208	1019
8:30 AM	20	256	24	6	300	50	104	33	4	187	20	365	17	5	402	33	84	11	10	128	1017
8:45 AM	25	263	20	5	308	46	86	26	6	158	17	346	15	5	378	39	103	26	7	168	1012
Hourly Total	109	1197	69	20	1375	251	341	122	32	714	60	1368	47	26	1475	159	450	76	35	685	4249
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Grand Total	248	2691	138	46	3077	553	660	222	73	1435	97	2928	126	53	3151	300	839	141	57	1280	8943
Approach %	8.1	87.5	4.5	-	-	38.5	46.0	15.5	-	-	3.1	92.9	4.0	-	-	23.4	65.5	11.0	-	-	-
Total %	2.8	30.1	1.5	-	34.4	6.2	7.4	2.5	-	16.0	1.1	32.7	1.4	-	35.2	3.4	9.4	1.6	-	14.3	-
Lights	238	2571	132	-	2941	541	644	201	-	1386	90	2829	113	-	3032	294	818	129	-	1241	8600
% Lights	96.0	95.5	95.7	-	95.6	97.8	97.6	90.5	-	96.6	92.8	96.6	89.7	-	96.2	98.0	97.5	91.5	-	97.0	96.2
Buses	3	66	4	-	73	8	16	1	-	25	2	67	12	-	81	4	16	5	-	25	204
% Buses	1.2	2.5	2.9	-	2.4	1.4	2.4	0.5	-	1.7	2.1	2.3	9.5	-	2.6	1.3	1.9	3.5	-	2.0	2.3
Trucks	7	53	2	-	62	4	0	20	-	24	5	32	1	-	38	2	5	7	-	14	138
% Trucks	2.8	2.0	1.4	-	2.0	0.7	0.0	9.0	-	1.7	5.2	1.1	0.8	-	1.2	0.7	0.6	5.0	-	1.1	1.5
Bicycles on Road	0	1	0	-	1	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	1.9	-	-	-	-	1.8	-	-
Pedestrians	-	-	-	46	-	-	-	-	73	-	-	-	-	52	-	-	-	-	56	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	98.1	-	-	-	-	98.2	-	-

LEA Consulting Ltd.
625 Cochrane Drive

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

Count Name:
20287_HurontarioSt&CentralPkwy-AM
Site Code: 20287
Start Date: 11/19/2019
Page No: 2



Turning Movement Data Plot

LEA Consulting Ltd.
625 Cochrane Drive

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

Count Name:
20287_HurontarioSt&CentralPkwy-AM
Site Code: 20287
Start Date: 11/19/2019

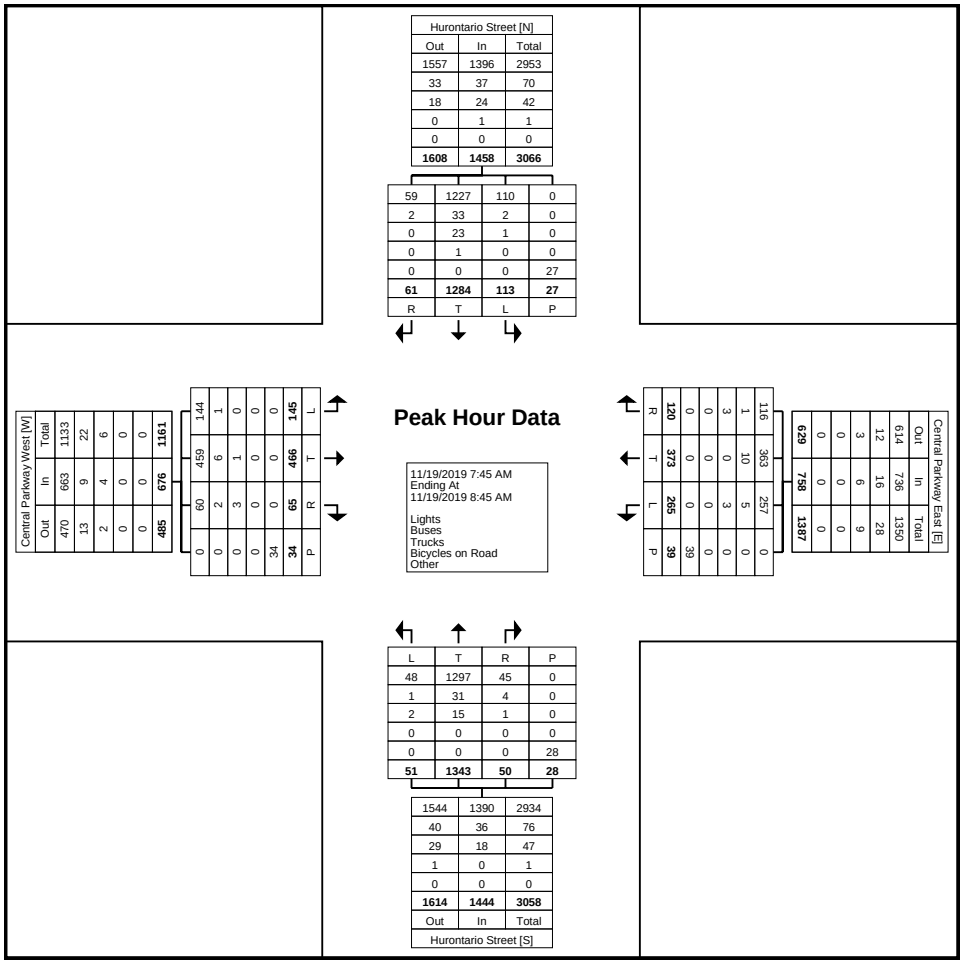
Turning Movement Peak Hour Data (7:45 AM)

Start Time	Hurontario Street Southbound					Central Parkway East Westbound					Hurontario Street Northbound					Central Parkway West Eastbound					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
7:45 AM	29	350	12	12	391	60	118	24	13	202	8	321	18	7	347	25	119	15	6	159	1099
8:00 AM	36	404	18	3	458	76	84	33	15	193	12	350	7	10	369	37	123	21	13	181	1201
8:15 AM	28	274	7	6	309	79	67	30	7	176	11	307	8	6	326	50	140	18	5	208	1019
8:30 AM	20	256	24	6	300	50	104	33	4	187	20	365	17	5	402	33	84	11	10	128	1017
Total	113	1284	61	27	1458	265	373	120	39	758	51	1343	50	28	1444	145	466	65	34	676	4336
Approach %	7.8	88.1	4.2	-	-	35.0	49.2	15.8	-	-	3.5	93.0	3.5	-	-	21.4	68.9	9.6	-	-	-
Total %	2.6	29.6	1.4	-	33.6	6.1	8.6	2.8	-	17.5	1.2	31.0	1.2	-	33.3	3.3	10.7	1.5	-	15.6	-
PHF	0.785	0.795	0.635	-	0.796	0.839	0.790	0.909	-	0.938	0.638	0.920	0.694	-	0.898	0.725	0.832	0.774	-	0.813	0.903
Lights	110	1227	59	-	1396	257	363	116	-	736	48	1297	45	-	1390	144	459	60	-	663	4185
% Lights	97.3	95.6	96.7	-	95.7	97.0	97.3	96.7	-	97.1	94.1	96.6	90.0	-	96.3	99.3	98.5	92.3	-	98.1	96.5
Buses	2	33	2	-	37	5	10	1	-	16	1	31	4	-	36	1	6	2	-	9	98
% Buses	1.8	2.6	3.3	-	2.5	1.9	2.7	0.8	-	2.1	2.0	2.3	8.0	-	2.5	0.7	1.3	3.1	-	1.3	2.3
Trucks	1	23	0	-	24	3	0	3	-	6	2	15	1	-	18	0	1	3	-	4	52
% Trucks	0.9	1.8	0.0	-	1.6	1.1	0.0	2.5	-	0.8	3.9	1.1	2.0	-	1.2	0.0	0.2	4.6	-	0.6	1.2
Bicycles on Road	0	1	0	-	1	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.1	0.0	-	0.1	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	3.6	-	-	-	-	2.9	-	-
Pedestrians	-	-	-	27	-	-	-	-	39	-	-	-	-	27	-	-	-	-	33	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	96.4	-	-	-	-	97.1	-	-

LEA Consulting Ltd.
625 Cochrane Drive

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

Count Name:
20287_HurontarioSt&CentralPkwy-AM
Site Code: 20287
Start Date: 11/19/2019
Page No: 4



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

LEA Consulting Ltd.
625 Cochrane Drive

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

Count Name: 20287_HurontarioSt&CentralPkwy-PM
Site Code: 20287
Start Date: 11/19/2019

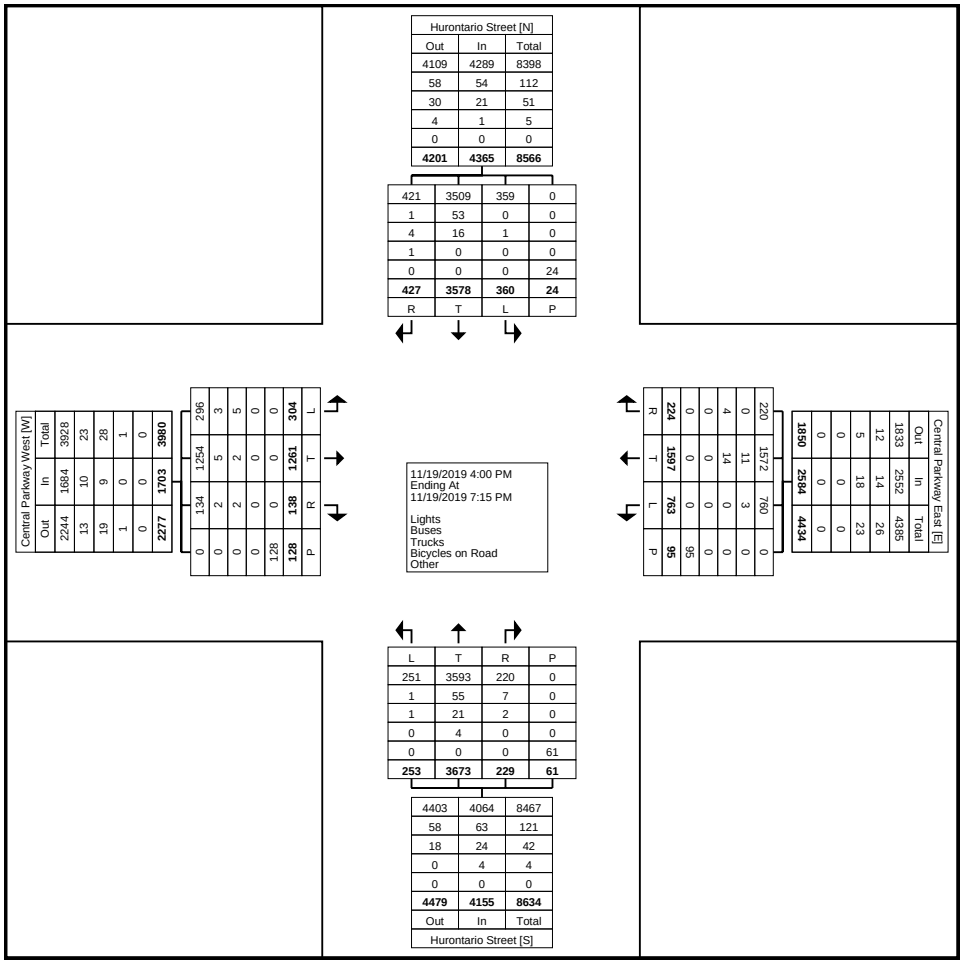
Turning Movement Data

Start Time	Hurontario Street Southbound					Central Parkway East Westbound					Hurontario Street Northbound					Central Parkway West Eastbound					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
4:00 PM	30	301	20	2	351	63	127	17	8	207	26	258	23	7	307	21	125	9	8	155	1020
4:15 PM	22	336	39	0	397	57	124	22	10	203	25	316	24	6	365	25	82	8	11	115	1080
4:30 PM	26	349	31	4	406	57	134	22	14	213	18	281	16	11	315	28	94	13	12	135	1069
4:45 PM	32	289	36	0	357	64	182	24	9	270	18	309	25	3	352	26	116	10	4	152	1131
Hourly Total	110	1275	126	6	1511	241	567	85	41	893	87	1164	88	27	1339	100	417	40	35	557	4300
5:00 PM	27	353	30	2	410	61	114	5	4	180	24	316	10	3	350	24	85	13	13	122	1062
5:15 PM	37	295	44	0	376	80	137	16	5	233	14	281	21	5	316	26	126	10	7	162	1087
5:30 PM	22	274	51	1	347	58	128	8	12	194	16	357	24	4	397	24	124	7	14	155	1093
5:45 PM	38	202	33	1	273	75	102	8	7	185	29	314	20	6	363	27	112	10	10	149	970
Hourly Total	124	1124	158	4	1406	274	481	37	28	792	83	1268	75	18	1426	101	447	40	44	588	4212
6:00 PM	31	297	34	5	362	72	198	33	7	303	21	304	16	3	341	27	120	16	11	163	1169
6:15 PM	24	341	39	5	404	62	127	20	5	209	18	367	27	4	412	23	82	16	18	121	1146
6:30 PM	42	296	34	3	372	65	118	23	8	206	19	315	16	3	350	31	115	12	9	158	1086
6:45 PM	29	245	36	1	310	49	106	26	6	181	25	255	7	6	287	22	80	14	10	116	894
Hourly Total	126	1179	143	14	1448	248	549	102	26	899	83	1241	66	16	1390	103	397	58	48	558	4295
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Grand Total	360	3578	427	24	4365	763	1597	224	95	2584	253	3673	229	61	4155	304	1261	138	128	1703	12807
Approach %	8.2	82.0	9.8	-	-	29.5	61.8	8.7	-	-	6.1	88.4	5.5	-	-	17.9	74.0	8.1	-	-	-
Total %	2.8	27.9	3.3	-	34.1	6.0	12.5	1.7	-	20.2	2.0	28.7	1.8	-	32.4	2.4	9.8	1.1	-	13.3	-
Lights	359	3509	421	-	4289	760	1572	220	-	2552	251	3593	220	-	4064	296	1254	134	-	1684	12589
% Lights	99.7	98.1	98.6	-	98.3	99.6	98.4	98.2	-	98.8	99.2	97.8	96.1	-	97.8	97.4	99.4	97.1	-	98.9	98.3
Buses	0	53	1	-	54	3	11	0	-	14	1	55	7	-	63	3	5	2	-	10	141
% Buses	0.0	1.5	0.2	-	1.2	0.4	0.7	0.0	-	0.5	0.4	1.5	3.1	-	1.5	1.0	0.4	1.4	-	0.6	1.1
Trucks	1	16	4	-	21	0	14	4	-	18	1	21	2	-	24	5	2	2	-	9	72
% Trucks	0.3	0.4	0.9	-	0.5	0.0	0.9	1.8	-	0.7	0.4	0.6	0.9	-	0.6	1.6	0.2	1.4	-	0.5	0.6
Bicycles on Road	0	0	1	-	1	0	0	0	-	0	0	4	0	-	4	0	0	0	-	0	5
% Bicycles on Road	0.0	0.0	0.2	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.1	0.0	-	0.1	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	1.6	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	24	-	-	-	-	95	-	-	-	-	60	-	-	-	-	128	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	98.4	-	-	-	-	100.0	-	-

LEA Consulting Ltd.
625 Cochrane Drive

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

Count Name:
20287_HurontarioSt&CentralPkwy-PM
Site Code: 20287
Start Date: 11/19/2019
Page No: 2



Turning Movement Data Plot

LEA Consulting Ltd.
625 Cochrane Drive

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

Count Name: 20287_HurontarioSt&CentralPkwy-PM
Site Code: 20287
Start Date: 11/19/2019

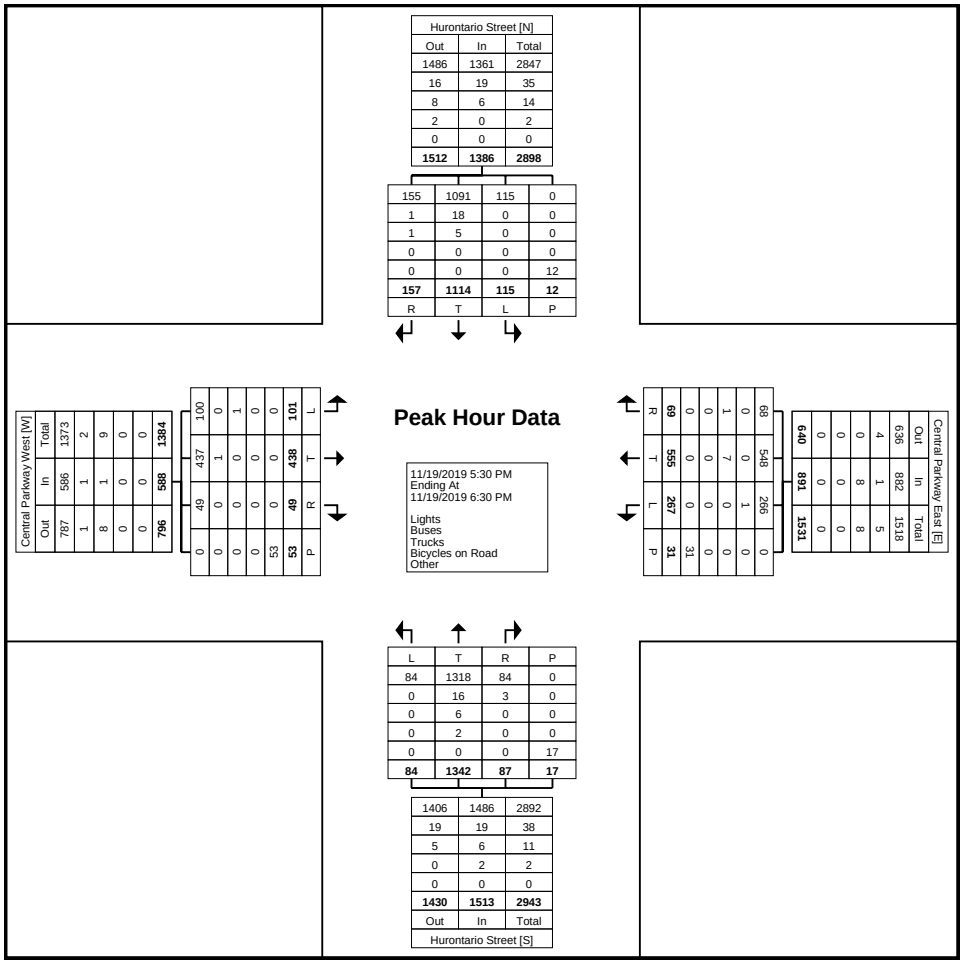
Turning Movement Peak Hour Data (5:30 PM)

Start Time	Hurontario Street Southbound					Central Parkway East Westbound					Hurontario Street Northbound					Central Parkway West Eastbound					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
5:30 PM	22	274	51	1	347	58	128	8	12	194	16	357	24	4	397	24	124	7	14	155	1093
5:45 PM	38	202	33	1	273	75	102	8	7	185	29	314	20	6	363	27	112	10	10	149	970
6:00 PM	31	297	34	5	362	72	198	33	7	303	21	304	16	3	341	27	120	16	11	163	1169
6:15 PM	24	341	39	5	404	62	127	20	5	209	18	367	27	4	412	23	82	16	18	121	1146
Total	115	1114	157	12	1386	267	555	69	31	891	84	1342	87	17	1513	101	438	49	53	588	4378
Approach %	8.3	80.4	11.3	-	-	30.0	62.3	7.7	-	-	5.6	88.7	5.8	-	-	17.2	74.5	8.3	-	-	-
Total %	2.6	25.4	3.6	-	31.7	6.1	12.7	1.6	-	20.4	1.9	30.7	2.0	-	34.6	2.3	10.0	1.1	-	13.4	-
PHF	0.757	0.817	0.770	-	0.858	0.890	0.701	0.523	-	0.735	0.724	0.914	0.806	-	0.918	0.935	0.883	0.766	-	0.902	0.936
Lights	115	1091	155	-	1361	266	548	68	-	882	84	1318	84	-	1486	100	437	49	-	586	4315
% Lights	100.0	97.9	98.7	-	98.2	99.6	98.7	98.6	-	99.0	100.0	98.2	96.6	-	98.2	99.0	99.8	100.0	-	99.7	98.6
Buses	0	18	1	-	19	1	0	0	-	1	0	16	3	-	19	0	1	0	-	1	40
% Buses	0.0	1.6	0.6	-	1.4	0.4	0.0	0.0	-	0.1	0.0	1.2	3.4	-	1.3	0.0	0.2	0.0	-	0.2	0.9
Trucks	0	5	1	-	6	0	7	1	-	8	0	6	0	-	6	1	0	0	-	1	21
% Trucks	0.0	0.4	0.6	-	0.4	0.0	1.3	1.4	-	0.9	0.0	0.4	0.0	-	0.4	1.0	0.0	0.0	-	0.2	0.5
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	2	0	-	2	0	0	0	-	0	2
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.1	0.0	-	0.1	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	5.9	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	12	-	-	-	-	31	-	-	-	-	16	-	-	-	-	53	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	94.1	-	-	-	-	100.0	-	-

LEA Consulting Ltd.
625 Cochrane Drive

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

Count Name:
20287_HurontarioSt&CentralPkwy-PM
Site Code: 20287
Start Date: 11/19/2019



Turning Movement Peak Hour Data Plot (5:30 PM)

LEA Consulting Ltd.
625 Cochrane Drive

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

Count Name: 20287_HurontarioSt&FairviewRd-AM
Site Code: 20287
Start Date: 11/19/2019

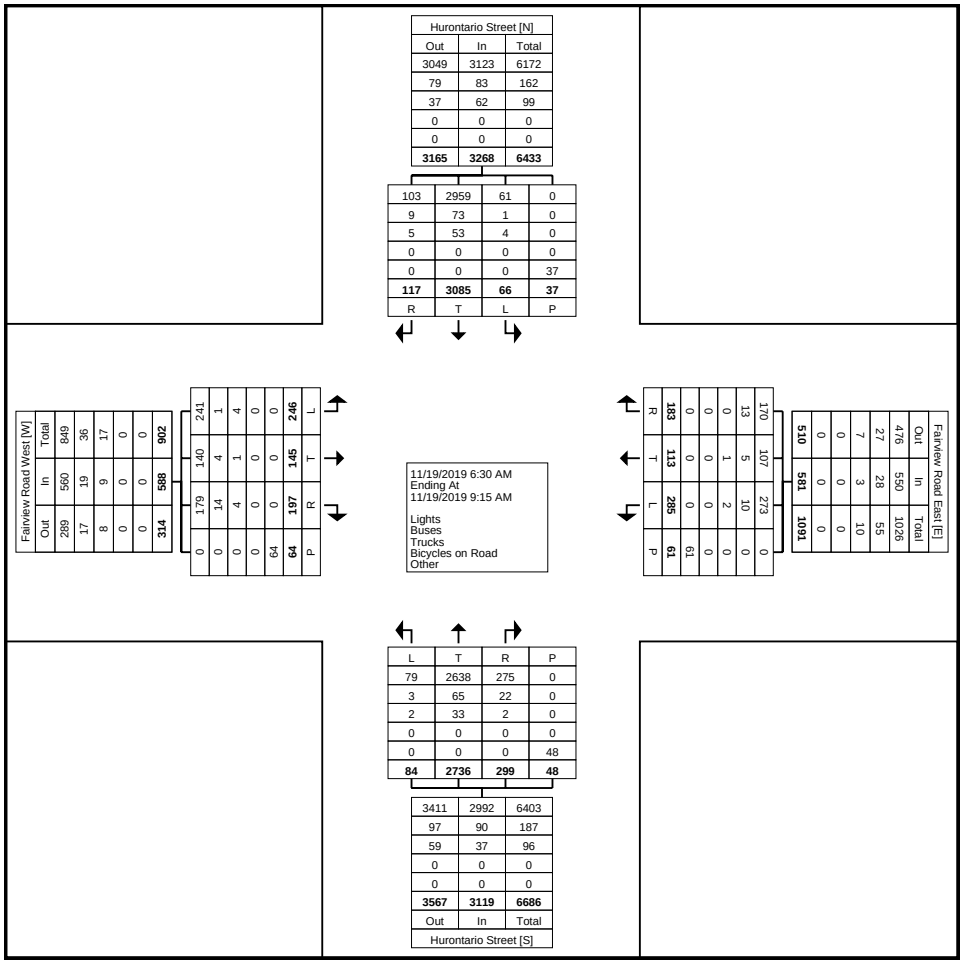
Turning Movement Data

Start Time	Hurontario Street Southbound					Fairview Road East Westbound					Hurontario Street Northbound					Fairview Road West Eastbound					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
6:30 AM	1	199	4	0	204	14	5	20	5	39	5	190	13	3	208	17	9	10	2	36	487
6:45 AM	2	245	10	1	257	21	1	10	3	32	4	204	13	1	221	13	4	11	4	28	538
Hourly Total	3	444	14	1	461	35	6	30	8	71	9	394	26	4	429	30	13	21	6	64	1025
7:00 AM	4	207	8	5	219	13	5	13	6	31	4	177	26	2	207	26	14	18	6	58	515
7:15 AM	6	291	15	2	312	21	2	18	12	41	5	273	27	6	305	22	12	19	7	53	711
7:30 AM	4	358	7	4	369	36	6	15	9	57	11	282	29	8	322	41	14	15	6	70	818
7:45 AM	8	401	14	9	423	29	20	23	9	72	3	295	31	11	329	28	23	20	5	71	895
Hourly Total	22	1257	44	20	1323	99	33	69	36	201	23	1027	113	27	1163	117	63	72	24	252	2939
8:00 AM	11	457	20	4	488	43	28	19	7	90	14	319	48	5	381	24	17	37	10	78	1037
8:15 AM	10	334	12	7	356	50	16	16	2	82	13	302	45	4	360	21	28	30	4	79	877
8:30 AM	6	258	12	2	276	35	17	31	2	83	15	330	28	2	373	30	15	23	6	68	800
8:45 AM	14	335	15	3	364	23	13	18	6	54	10	364	39	6	413	24	9	13	14	46	877
Hourly Total	41	1384	59	16	1484	151	74	84	17	309	52	1315	160	17	1527	99	69	103	34	271	3591
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Grand Total	66	3085	117	37	3268	285	113	183	61	581	84	2736	299	48	3119	246	145	197	64	588	7556
Approach %	2.0	94.4	3.6	-	-	49.1	19.4	31.5	-	-	2.7	87.7	9.6	-	-	41.8	24.7	33.5	-	-	-
Total %	0.9	40.8	1.5	-	43.3	3.8	1.5	2.4	-	7.7	1.1	36.2	4.0	-	41.3	3.3	1.9	2.6	-	7.8	-
Lights	61	2959	103	-	3123	273	107	170	-	550	79	2638	275	-	2992	241	140	179	-	560	7225
% Lights	92.4	95.9	88.0	-	95.6	95.8	94.7	92.9	-	94.7	94.0	96.4	92.0	-	95.9	98.0	96.6	90.9	-	95.2	95.6
Buses	1	73	9	-	83	10	5	13	-	28	3	65	22	-	90	1	4	14	-	19	220
% Buses	1.5	2.4	7.7	-	2.5	3.5	4.4	7.1	-	4.8	3.6	2.4	7.4	-	2.9	0.4	2.8	7.1	-	3.2	2.9
Trucks	4	53	5	-	62	2	1	0	-	3	2	33	2	-	37	4	1	4	-	9	111
% Trucks	6.1	1.7	4.3	-	1.9	0.7	0.9	0.0	-	0.5	2.4	1.2	0.7	-	1.2	1.6	0.7	2.0	-	1.5	1.5
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	37	-	-	-	-	61	-	-	-	-	48	-	-	-	-	64	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-

LEA Consulting Ltd.
625 Cochrane Drive

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

Count Name: 20287_HurontarioSt&FairviewRd-AM
Site Code: 20287
Start Date: 11/19/2019



Turning Movement Data Plot

LEA Consulting Ltd.
625 Cochrane Drive

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

Count Name: 20287_HurontarioSt&FairviewRd-AM
Site Code: 20287
Start Date: 11/19/2019

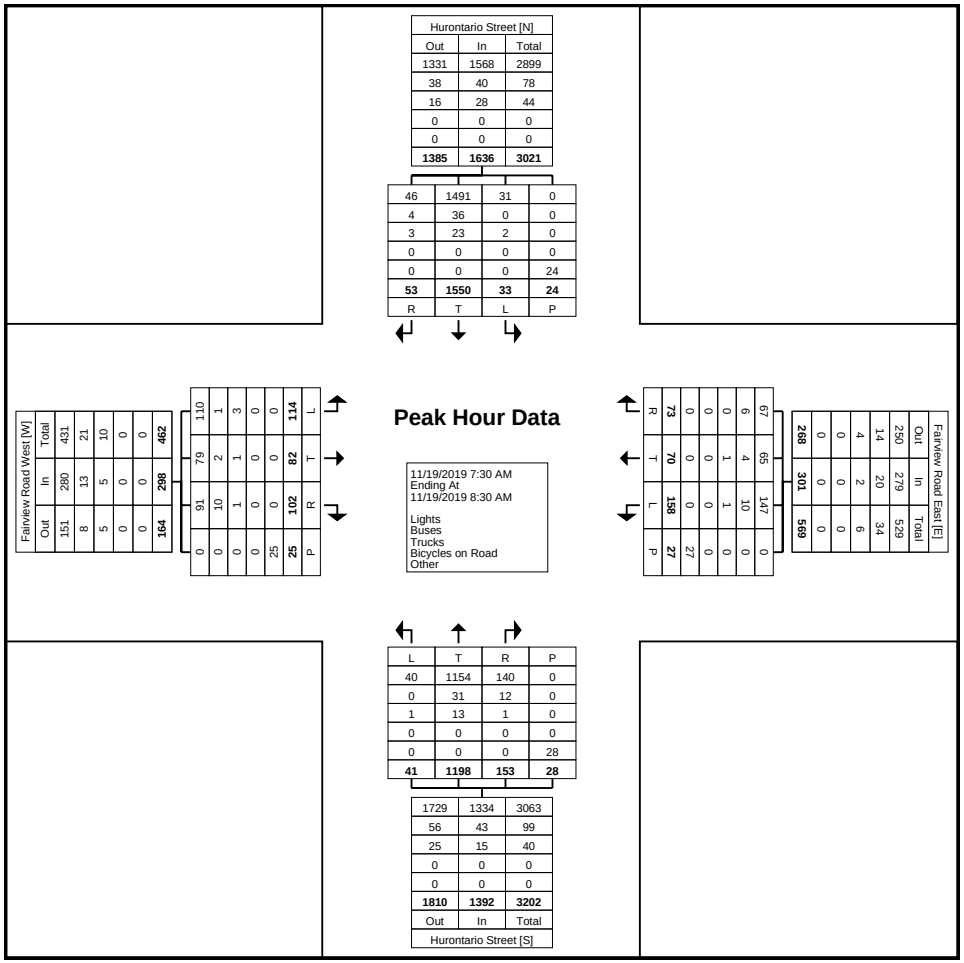
Turning Movement Peak Hour Data (7:30 AM)

Start Time	Hurontario Street Southbound					Fairview Road East Westbound					Hurontario Street Northbound					Fairview Road West Eastbound					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
7:30 AM	4	358	7	4	369	36	6	15	9	57	11	282	29	8	322	41	14	15	6	70	818
7:45 AM	8	401	14	9	423	29	20	23	9	72	3	295	31	11	329	28	23	20	5	71	895
8:00 AM	11	457	20	4	488	43	28	19	7	90	14	319	48	5	381	24	17	37	10	78	1037
8:15 AM	10	334	12	7	356	50	16	16	2	82	13	302	45	4	360	21	28	30	4	79	877
Total	33	1550	53	24	1636	158	70	73	27	301	41	1198	153	28	1392	114	82	102	25	298	3627
Approach %	2.0	94.7	3.2	-	-	52.5	23.3	24.3	-	-	2.9	86.1	11.0	-	-	38.3	27.5	34.2	-	-	-
Total %	0.9	42.7	1.5	-	45.1	4.4	1.9	2.0	-	8.3	1.1	33.0	4.2	-	38.4	3.1	2.3	2.8	-	8.2	-
PHF	0.750	0.848	0.663	-	0.838	0.790	0.625	0.793	-	0.836	0.732	0.939	0.797	-	0.913	0.695	0.732	0.689	-	0.943	0.874
Lights	31	1491	46	-	1568	147	65	67	-	279	40	1154	140	-	1334	110	79	91	-	280	3461
% Lights	93.9	96.2	86.8	-	95.8	93.0	92.9	91.8	-	92.7	97.6	96.3	91.5	-	95.8	96.5	96.3	89.2	-	94.0	95.4
Buses	0	36	4	-	40	10	4	6	-	20	0	31	12	-	43	1	2	10	-	13	116
% Buses	0.0	2.3	7.5	-	2.4	6.3	5.7	8.2	-	6.6	0.0	2.6	7.8	-	3.1	0.9	2.4	9.8	-	4.4	3.2
Trucks	2	23	3	-	28	1	1	0	-	2	1	13	1	-	15	3	1	1	-	5	50
% Trucks	6.1	1.5	5.7	-	1.7	0.6	1.4	0.0	-	0.7	2.4	1.1	0.7	-	1.1	2.6	1.2	1.0	-	1.7	1.4
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	24	-	-	-	-	27	-	-	-	-	28	-	-	-	-	25	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-

LEA Consulting Ltd.
625 Cochrane Drive

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

Count Name: 20287_HurontarioSt&FairviewRd-AM
Site Code: 20287
Start Date: 11/19/2019



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

LEA Consulting Ltd.
625 Cochrane Drive

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

Count Name: 20287_HurontarioSt&FairviewRd-PM
Site Code: 20287
Start Date: 11/19/2019

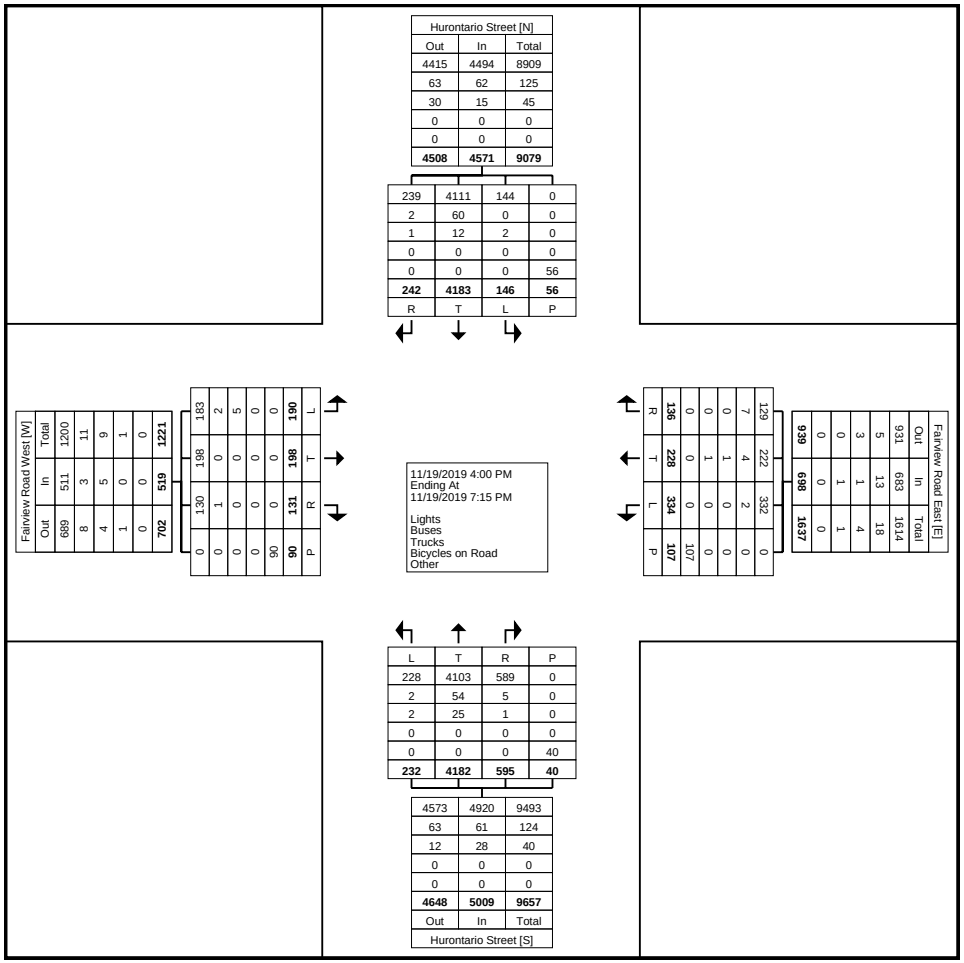
Turning Movement Data

Start Time	Hurontario Street Southbound					Fairview Road East Westbound					Hurontario Street Northbound					Fairview Road West Eastbound					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
4:00 PM	17	347	23	7	387	25	20	11	5	56	23	287	47	4	357	13	13	14	6	40	840
4:15 PM	12	342	17	2	371	30	17	11	9	58	22	359	57	2	438	10	11	9	6	30	897
4:30 PM	13	374	16	6	403	28	16	10	8	54	17	322	45	2	384	21	16	14	12	51	892
4:45 PM	11	328	13	6	352	30	21	9	11	60	23	361	55	3	439	18	21	7	8	46	897
Hourly Total	53	1391	69	21	1513	113	74	41	33	228	85	1329	204	11	1618	62	61	44	32	167	3526
5:00 PM	13	411	28	4	452	28	16	7	3	51	23	359	41	5	423	17	10	9	8	36	962
5:15 PM	14	362	22	4	398	37	23	12	12	72	19	372	58	5	449	15	20	8	6	43	962
5:30 PM	14	338	18	7	370	32	17	10	12	59	27	408	52	7	487	22	29	12	3	63	979
5:45 PM	12	351	22	1	385	32	26	16	8	74	17	348	59	3	424	17	22	11	6	50	933
Hourly Total	53	1462	90	16	1605	129	82	45	35	256	86	1487	210	20	1783	71	81	40	23	192	3836
6:00 PM	14	342	25	7	381	34	22	8	16	64	18	364	53	5	435	18	11	18	12	47	927
6:15 PM	7	376	17	5	400	14	18	16	13	48	20	397	54	4	471	13	18	6	11	37	956
6:30 PM	12	316	24	6	352	21	19	12	9	52	11	343	38	0	392	13	15	12	6	40	836
6:45 PM	7	296	17	1	320	23	13	14	1	50	12	261	36	0	309	13	12	11	6	36	715
Hourly Total	40	1330	83	19	1453	92	72	50	39	214	61	1365	181	9	1607	57	56	47	35	160	3434
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Grand Total	146	4183	242	56	4571	334	228	136	107	698	232	4182	595	40	5009	190	198	131	90	519	10797
Approach %	3.2	91.5	5.3	-	-	47.9	32.7	19.5	-	-	4.6	83.5	11.9	-	-	36.6	38.2	25.2	-	-	-
Total %	1.4	38.7	2.2	-	42.3	3.1	2.1	1.3	-	6.5	2.1	38.7	5.5	-	46.4	1.8	1.8	1.2	-	4.8	-
Lights	144	4111	239	-	4494	332	222	129	-	683	228	4103	589	-	4920	183	198	130	-	511	10608
% Lights	98.6	98.3	98.8	-	98.3	99.4	97.4	94.9	-	97.9	98.3	98.1	99.0	-	98.2	96.3	100.0	99.2	-	98.5	98.2
Buses	0	60	2	-	62	2	4	7	-	13	2	54	5	-	61	2	0	1	-	3	139
% Buses	0.0	1.4	0.8	-	1.4	0.6	1.8	5.1	-	1.9	0.9	1.3	0.8	-	1.2	1.1	0.0	0.8	-	0.6	1.3
Trucks	2	12	1	-	15	0	1	0	-	1	2	25	1	-	28	5	0	0	-	5	49
% Trucks	1.4	0.3	0.4	-	0.3	0.0	0.4	0.0	-	0.1	0.9	0.6	0.2	-	0.6	2.6	0.0	0.0	-	1.0	0.5
Bicycles on Road	0	0	0	-	0	0	1	0	-	1	0	0	0	-	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	0.4	0.0	-	0.1	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	3	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	2.8	-	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	56	-	-	-	-	104	-	-	-	-	40	-	-	-	-	90	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	97.2	-	-	-	-	100.0	-	-	-	-	100.0	-	-

LEA Consulting Ltd.
625 Cochrane Drive

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

Count Name: 20287_HurontarioSt&FairviewRd-PM
Site Code: 20287
Start Date: 11/19/2019



Turning Movement Data Plot

LEA Consulting Ltd.
625 Cochrane Drive

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

Count Name: 20287_HurontarioSt&FairviewRd-PM
Site Code: 20287
Start Date: 11/19/2019

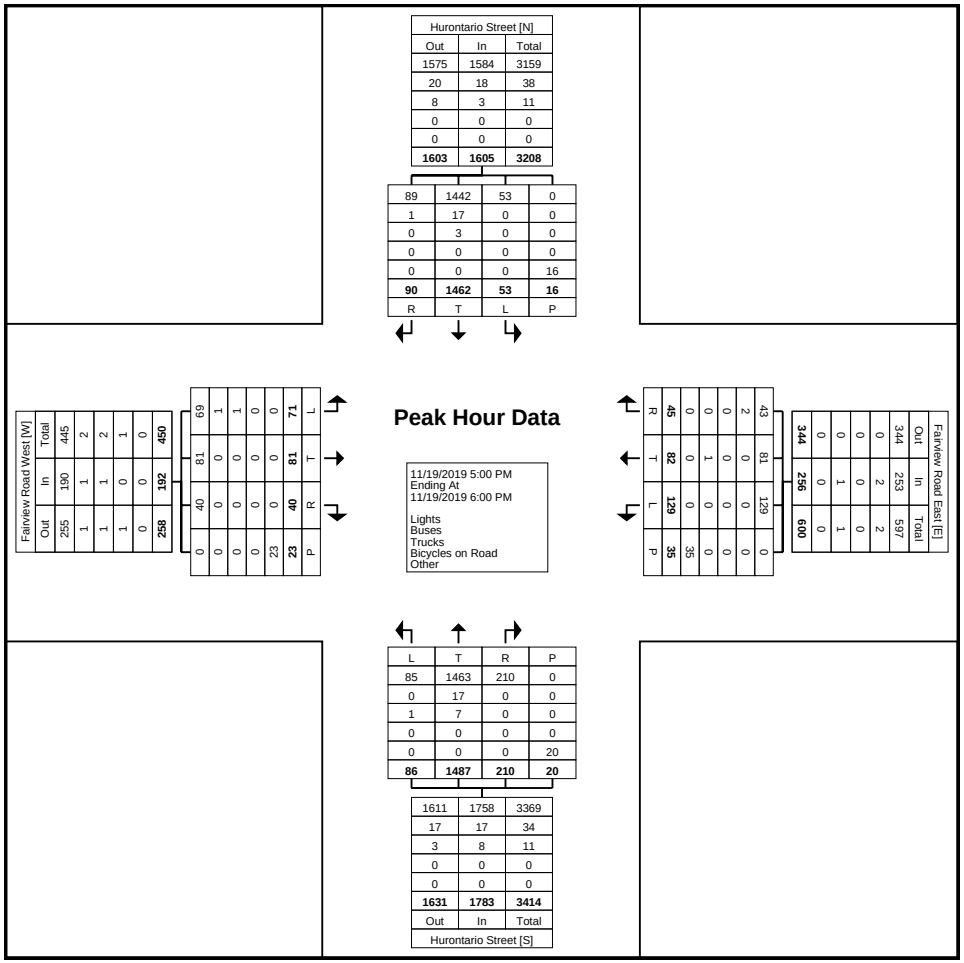
Turning Movement Peak Hour Data (5:00 PM)

Start Time	Hurontario Street Southbound					Fairview Road East Westbound					Hurontario Street Northbound					Fairview Road West Eastbound					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
5:00 PM	13	411	28	4	452	28	16	7	3	51	23	359	41	5	423	17	10	9	8	36	962
5:15 PM	14	362	22	4	398	37	23	12	12	72	19	372	58	5	449	15	20	8	6	43	962
5:30 PM	14	338	18	7	370	32	17	10	12	59	27	408	52	7	487	22	29	12	3	63	979
5:45 PM	12	351	22	1	385	32	26	16	8	74	17	348	59	3	424	17	22	11	6	50	933
Total	53	1462	90	16	1605	129	82	45	35	256	86	1487	210	20	1783	71	81	40	23	192	3836
Approach %	3.3	91.1	5.6	-	-	50.4	32.0	17.6	-	-	4.8	83.4	11.8	-	-	37.0	42.2	20.8	-	-	-
Total %	1.4	38.1	2.3	-	41.8	3.4	2.1	1.2	-	6.7	2.2	38.8	5.5	-	46.5	1.9	2.1	1.0	-	5.0	-
PHF	0.946	0.889	0.804	-	0.888	0.872	0.788	0.703	-	0.865	0.796	0.911	0.890	-	0.915	0.807	0.698	0.833	-	0.762	0.980
Lights	53	1442	89	-	1584	129	81	43	-	253	85	1463	210	-	1758	69	81	40	-	190	3785
% Lights	100.0	98.6	98.9	-	98.7	100.0	98.8	95.6	-	98.8	98.8	98.4	100.0	-	98.6	97.2	100.0	100.0	-	99.0	98.7
Buses	0	17	1	-	18	0	0	2	-	2	0	17	0	-	17	1	0	0	-	1	38
% Buses	0.0	1.2	1.1	-	1.1	0.0	0.0	4.4	-	0.8	0.0	1.1	0.0	-	1.0	1.4	0.0	0.0	-	0.5	1.0
Trucks	0	3	0	-	3	0	0	0	-	0	1	7	0	-	8	1	0	0	-	1	12
% Trucks	0.0	0.2	0.0	-	0.2	0.0	0.0	0.0	-	0.0	1.2	0.5	0.0	-	0.4	1.4	0.0	0.0	-	0.5	0.3
Bicycles on Road	0	0	0	-	0	0	1	0	-	1	0	0	0	-	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	1.2	0.0	-	0.4	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	2	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	5.7	-	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	16	-	-	-	-	33	-	-	-	-	20	-	-	-	-	23	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	94.3	-	-	-	-	100.0	-	-	-	-	100.0	-	-

LEA Consulting Ltd.
625 Cochrane Drive

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

Count Name: 20287_HurontarioSt&FairviewRd-PM
Site Code: 20287
Start Date: 11/19/2019



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

LEA CONSULTING LTD

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

Project No.: 20287
Location: Site Access & Fairview Rd E
Weather: Light Rain
Surveyor: KL

File Name : SiteAccess&FairviewRdE-AM
Site Code : 02028706
Start Date : 2019-11-19
Page No : 1

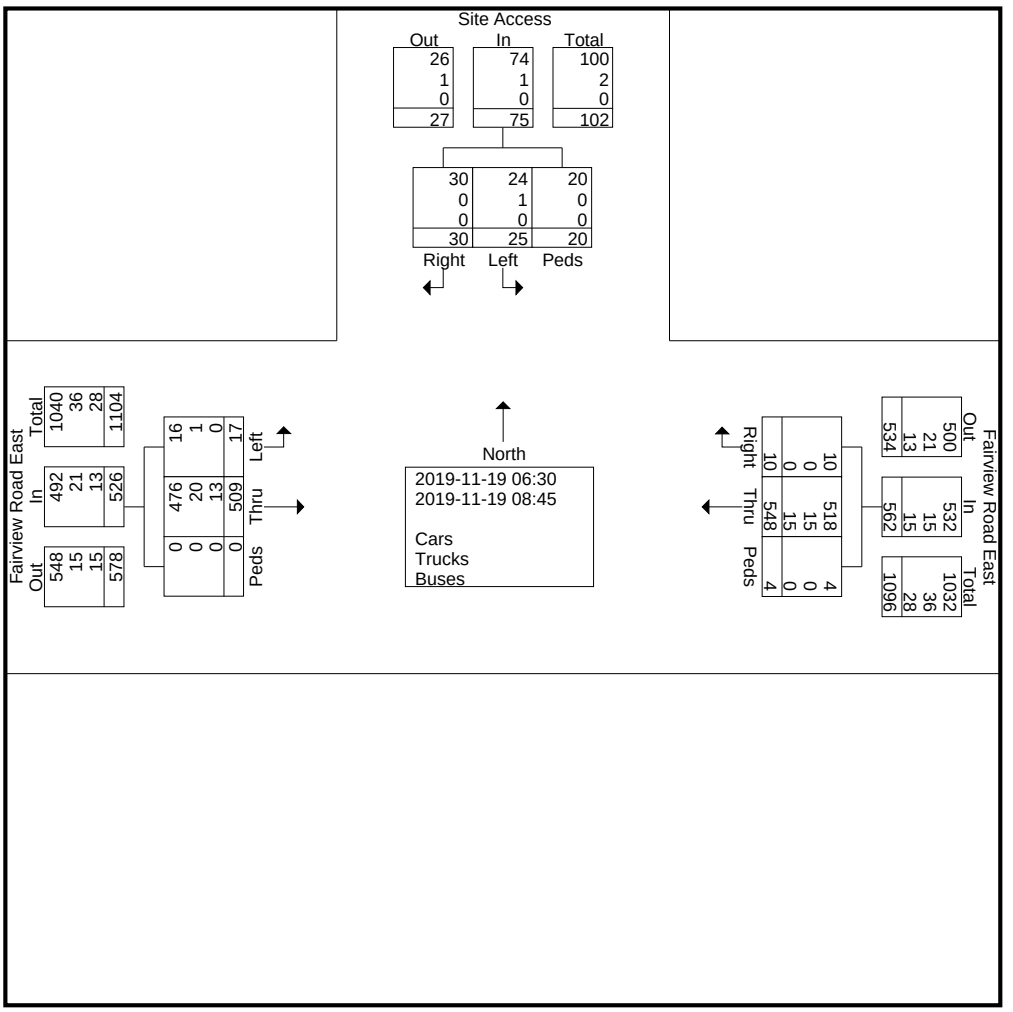
Groups Printed- Cars - Trucks - Buses

	Site Access Southbound				Fairview Road East Westbound				Fairview Road East Eastbound				
Start Time	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
06:30	0	3	1	4	36	0	0	36	0	23	0	23	63
06:45	1	1	1	3	31	1	0	32	3	17	0	20	55
Total	1	4	2	7	67	1	0	68	3	40	0	43	118
07:00	3	1	0	4	29	1	0	30	4	41	0	45	79
07:15	3	4	4	11	36	0	1	37	2	44	0	46	94
07:30	0	1	6	7	55	0	3	58	0	49	0	49	114
07:45	1	6	2	9	66	0	0	66	0	63	0	63	138
Total	7	12	12	31	186	1	4	191	6	197	0	203	425
08:00	4	5	2	11	85	1	0	86	4	73	0	77	174
08:15	4	2	3	9	80	1	0	81	2	84	0	86	176
08:30	6	2	0	8	81	1	0	82	1	52	0	53	143
08:45	3	5	1	9	49	5	0	54	1	63	0	64	127
Total	17	14	6	37	295	8	0	303	8	272	0	280	620
Grand Total	25	30	20	75	548	10	4	562	17	509	0	526	1163
Apprch %	33.3	40	26.7		97.5	1.8	0.7		3.2	96.8	0		
Total %	2.1	2.6	1.7	6.4	47.1	0.9	0.3	48.3	1.5	43.8	0	45.2	
Cars	24	30	20	74	518	10	4	532	16	476	0	492	1098
% Cars	96	100	100	98.7	94.5	100	100	94.7	94.1	93.5	0	93.5	94.4
Trucks	1	0	0	1	15	0	0	15	1	20	0	21	37
% Trucks	4	0	0	1.3	2.7	0	0	2.7	5.9	3.9	0	4	3.2
Buses	0	0	0	0	15	0	0	15	0	13	0	13	28
% Buses	0	0	0	0	2.7	0	0	2.7	0	2.6	0	2.5	2.4

LEA CONSULTING LTD

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

File Name : SiteAccess&FairviewRdE-AM
Site Code : 02028706
Start Date : 2019-11-19
Page No : 2

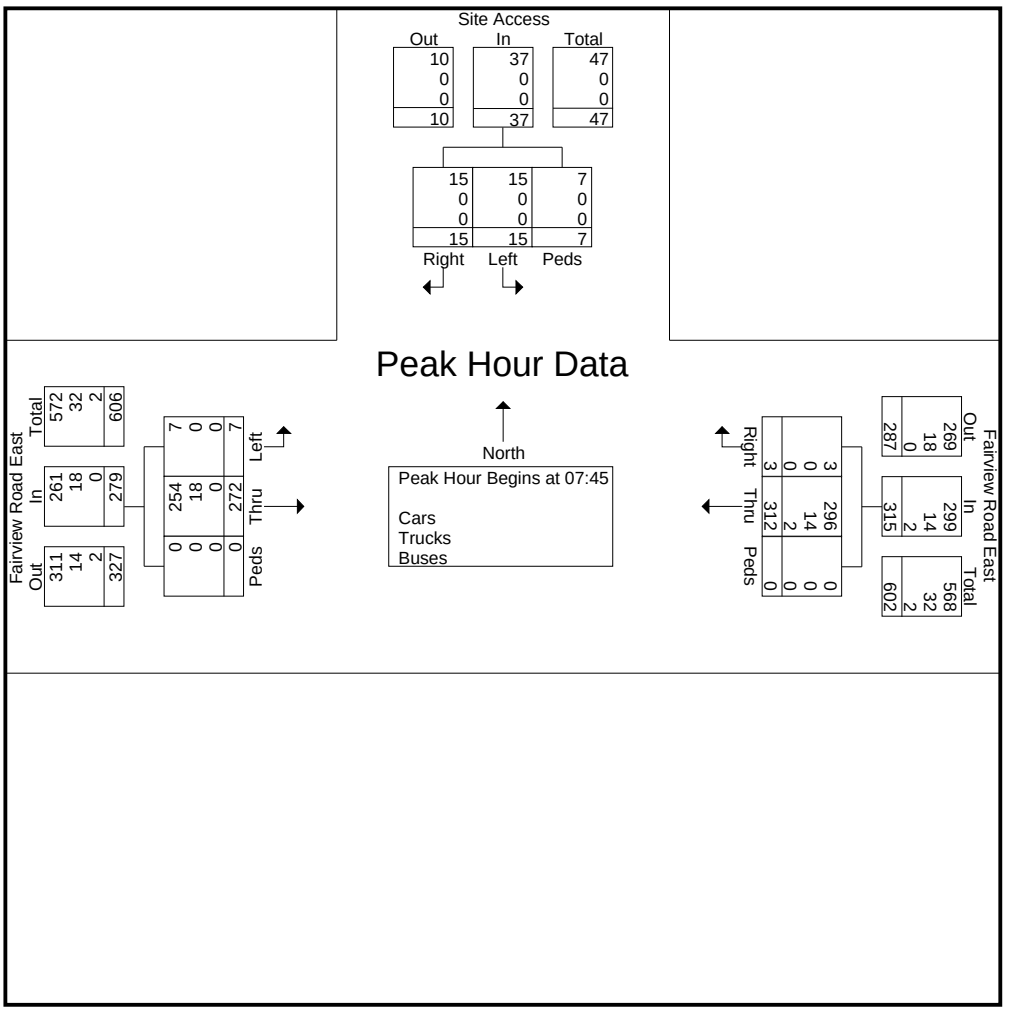


LEA CONSULTING LTD

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

File Name : SiteAccess&FairviewRdE-AM
Site Code : 02028706
Start Date : 2019-11-19
Page No : 3

	Site Access Southbound				Fairview Road East Westbound				Fairview Road East Eastbound				
Start Time	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:30 to 08:45 - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:45													
07:45	1	**6**	2	9	66	0	0	66	0	63	0	63	138
08:00	4	5	2	**11**	**85**	**1**	0	**86**	**4**	73	0	77	174
08:15	4	2	**3**	9	80	1	0	81	2	**84**	0	**86**	**176**
08:30	**6**	2	0	8	81	1	0	82	1	52	0	53	143
Total Volume	15	15	7	37	312	3	0	315	7	272	0	279	631
% App. Total	40.5	40.5	18.9		99	1	0		2.5	97.5	0		
PHF	.625	.625	.583	.841	.918	.750	.000	.916	.438	.810	.000	.811	.896
Cars	15	15	7	37	296	3	0	299	7	254	0	261	597
% Cars	100	100	100	100	94.9	100	0	94.9	100	93.4	0	93.5	94.6
Trucks	0	0	0	0	14	0	0	14	0	18	0	18	32
% Trucks	0	0	0	0	4.5	0	0	4.4	0	6.6	0	6.5	5.1
Buses	0	0	0	0	2	0	0	2	0	0	0	0	2
% Buses	0	0	0	0	0.6	0	0	0.6	0	0	0	0	0.3



LEA CONSULTING LTD

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

Project No.: 20287
Location: Site Access & Fairview Rd E
Weather: Light Rain
Surveyor: KL

File Name : SiteAccess&FairviewRdE-PM
Site Code : 02028706
Start Date : 2019-11-19
Page No : 1

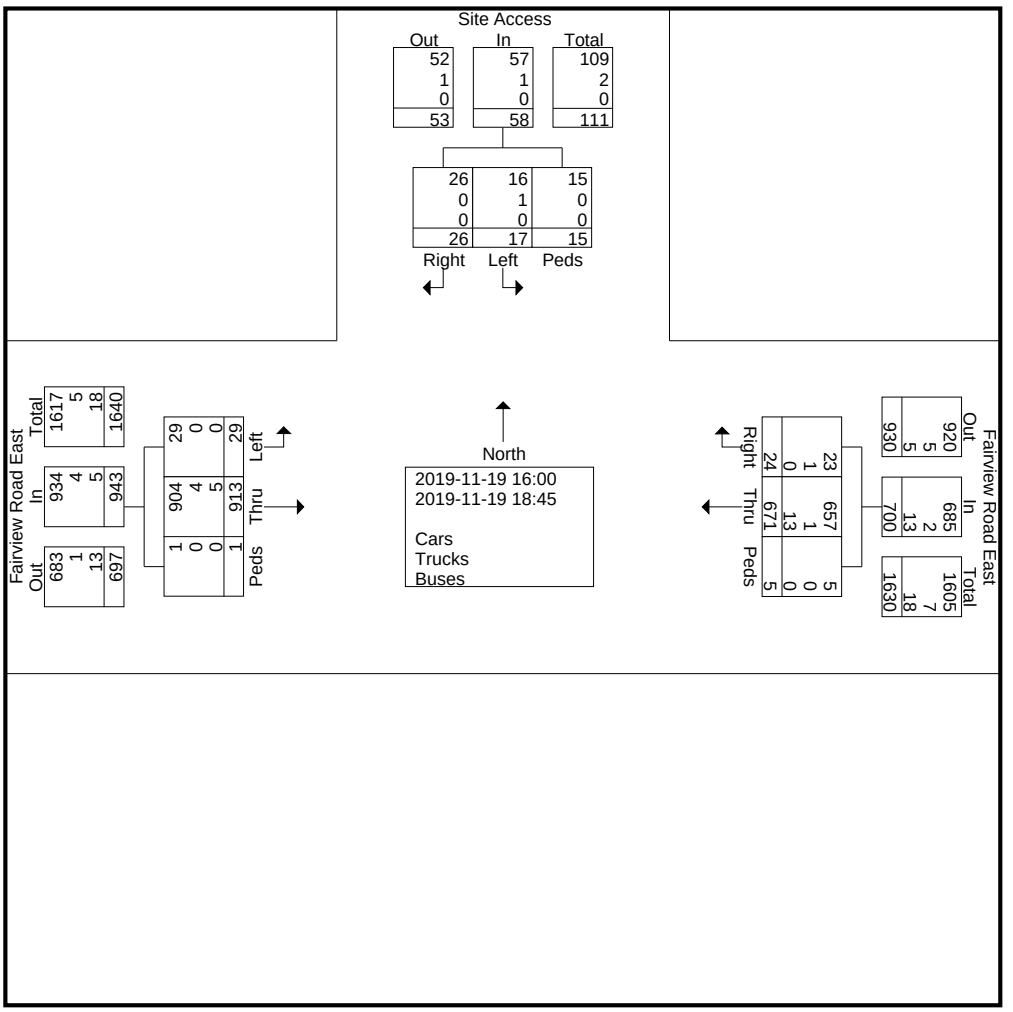
Groups Printed- Cars - Trucks - Buses

	Site Access Southbound				Fairview Road East Westbound				Fairview Road East Eastbound				
Start Time	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
16:00	4	2	1	7	53	3	0	56	1	75	0	76	139
16:15	2	1	0	3	55	2	0	57	5	76	0	81	141
16:30	2	0	1	3	55	1	0	56	1	72	0	73	132
16:45	2	2	2	6	58	2	0	60	3	86	0	89	155
Total	10	5	4	19	221	8	0	229	10	309	0	319	567
17:00	1	2	2	5	49	2	2	53	3	61	0	64	122
17:15	1	3	2	6	68	4	2	74	3	89	0	92	172
17:30	1	3	2	6	59	1	1	61	2	96	1	99	166
17:45	0	1	0	1	72	2	0	74	5	88	0	93	168
Total	3	9	6	18	248	9	5	262	13	334	1	348	628
18:00	0	1	1	2	63	2	0	65	1	75	0	76	143
18:15	2	2	2	6	46	0	0	46	2	80	0	82	134
18:30	0	2	2	4	50	1	0	51	2	62	0	64	119
18:45	2	7	0	9	43	4	0	47	1	53	0	54	110
Total	4	12	5	21	202	7	0	209	6	270	0	276	506
Grand Total	17	26	15	58	671	24	5	700	29	913	1	943	1701
Apprch %	29.3	44.8	25.9		95.9	3.4	0.7		3.1	96.8	0.1		
Total %	1	1.5	0.9	3.4	39.4	1.4	0.3	41.2	1.7	53.7	0.1	55.4	
Cars	16	26	15	57	657	23	5	685	29	904	1	934	1676
% Cars	94.1	100	100	98.3	97.9	95.8	100	97.9	100	99	100	99	98.5
Trucks	1	0	0	1	1	1	0	2	0	4	0	4	7
% Trucks	5.9	0	0	1.7	0.1	4.2	0	0.3	0	0.4	0	0.4	0.4
Buses	0	0	0	0	13	0	0	13	0	5	0	5	18
% Buses	0	0	0	0	1.9	0	0	1.9	0	0.5	0	0.5	1.1

LEA CONSULTING LTD

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

File Name : SiteAccess&FairviewRdE-PM
Site Code : 02028706
Start Date : 2019-11-19
Page No : 2

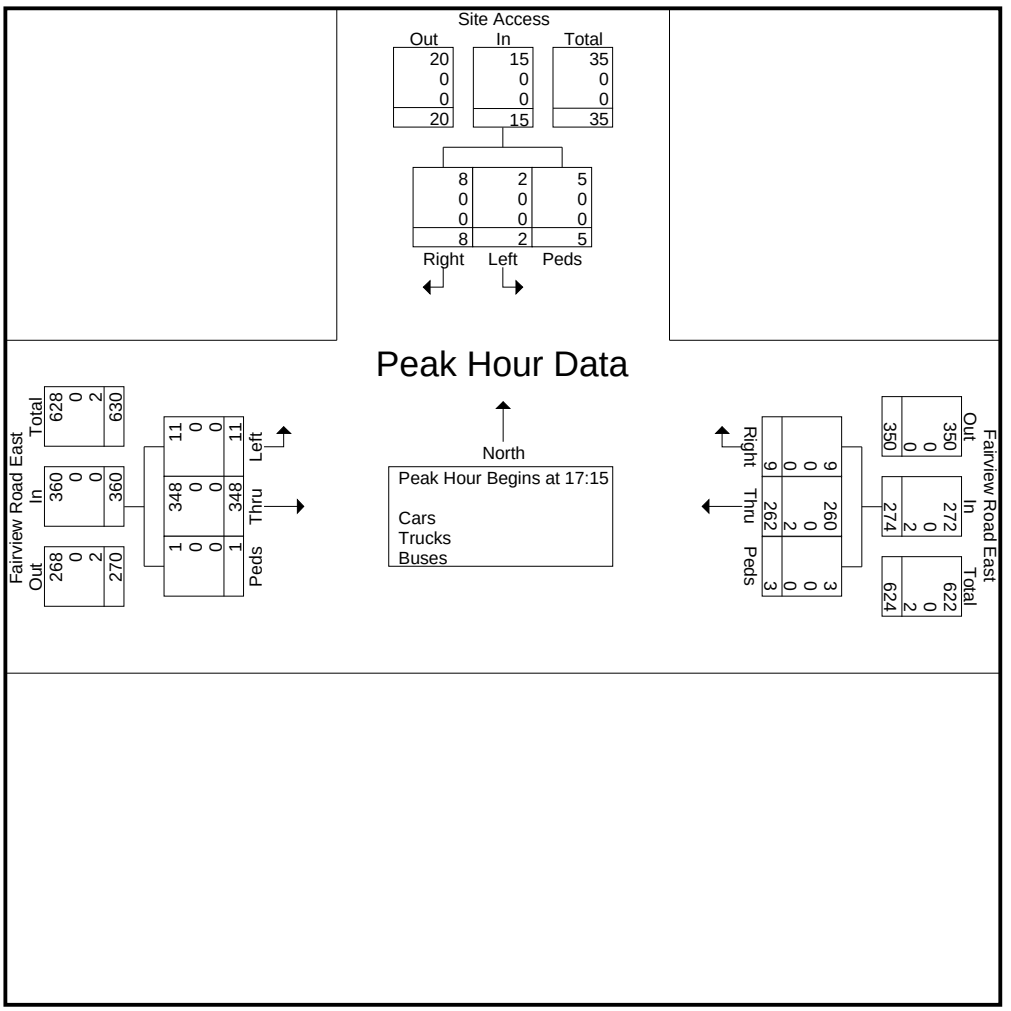


LEA CONSULTING LTD

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

File Name : SiteAccess&FairviewRdE-PM
Site Code : 02028706
Start Date : 2019-11-19
Page No : 3

	Site Access Southbound				Fairview Road East Westbound				Fairview Road East Eastbound				
Start Time	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 18:45 - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 17:15													
17:15	**1**	**3**	**2**	**6**	68	**4**	**2**	**74**	3	89	0	92	**172**
17:30	1	3	2	6	59	1	1	61	2	**96**	**1**	**99**	166
17:45	0	1	0	1	**72**	2	0	74	**5**	88	0	93	168
18:00	0	1	1	2	63	2	0	65	1	75	0	76	143
Total Volume	2	8	5	15	262	9	3	274	11	348	1	360	649
% App. Total	13.3	53.3	33.3		95.6	3.3	1.1		3.1	96.7	0.3		
PHF	.500	.667	.625	.625	.910	.563	.375	.926	.550	.906	.250	.909	.943
Cars	2	8	5	15	260	9	3	272	11	348	1	360	647
% Cars	100	100	100	100	99.2	100	100	99.3	100	100	100	100	99.7
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Buses	0	0	0	0	2	0	0	2	0	0	0	0	2
% Buses	0	0	0	0	0.8	0	0	0.7	0	0	0	0	0.3



MISSISSAUGA

File: CA.13.SIG
Signal Timing Request
RT.07.2109
RT.07.2114

November 21, 2019

LEA Consulting Ltd.
625 Cochrane Drive, 9th floor
Markham, ON L3R 9R9

Dear Anatole Kung:

Re: Traffic Signal Timing

Please find the attached traffic signal timing for the intersections of:

Hurontario Street at Central Parkway
Hurontario Street at Fairview Road

The side street phases (4, 8) are actuated; meaning a vehicle or pedestrian must be present on the side street before the side street is given a green indication. Vehicle presence on the side street would result in a possible green time of between the minimum and maximum time noted, depending on demand. Similarly, phases (1, 5, 7) are also actuated. Pedestrian "Walk" and flashing "Don't Walk" time on the side street, as noted, would be used in the event that the pedestrian push button is activated. During the side street pedestrian indications, the side street vehicle green is concurrently displayed. Should there be no demand on the actuated phases, the signals would result in a green indication on the major street (2, 6).

Note: All times recorded in seconds, based on full demand.

The time of day plan is used for system control operation. In the event that the coordination pattern has a cycle length, offset and split value identified, the cycle length split and offset values, as noted, would be used. However, when the time of day plan is programed using 'Action' 8, the mode is 'Free', meaning no cycle length, split and offset values are given and the intersection operates using the phase timings provided in the report.

Should you require further information, please contact Ken Moore, at 905-615-3200 ext. 4054.

Sincerely,

Ken Moore
Coordinator, Traffic Systems and ITS
Traffic Signals and Street Lighting
Transportation and Works Department
City of Mississauga
905-615-3200 ext. 4054
ken.moore@mississauga.ca

c: Javed Khan, Manager, Traffic Signals and Street Lighting
Jim Kartsomanis, Supervisor, Traffic Systems and ITS

Signal Timing Report

Runtime: 2019-11-20 13:01:59

Device: 2109

Region: Mississauga **Signal ID:** 2109 **Location:** HURONTARIO STREET N at Central Parkway

Phase	Units	1	2	3	4	5	6	7	8
Walk	Sec	0	14	0	14	0	14	0	14
Ped Clear	Sec	0	19	0	20	0	19	0	20
Min Green	Sec	5	8	0	8	5	8	5	8
Passage	Sec	2.0	3.0	0.0	3.0	2.0	3.0	2.0	3.0
Maximum 1	Sec	10	31	0	30	10	31	10	30
Maximum 2	Sec	10	31	0	30	10	31	10	30
Yellow Change	Sec	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
Red Clearance	Sec	0.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0
Red Revert	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Added Initial	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Initial	Sec	0	0	0	0	0	0	0	0
Time Before	Sec	0	0	0	0	0	0	0	0
Cars Before	Veh	0	0	0	0	0	0	0	0
Time To Reduce	Sec	0	0	0	0	0	0	0	0
Reduce By	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min Gap	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dynamic Max Limit	Sec	0	0	0	0	0	0	0	0
Dynamic Max Step	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
[P2] Start Up	Enum	phaseNotOn	redClear	other	phaseNotOn	phaseNotOn	redClear	phaseNotOn	phaseNotOn
[P2] Options	Bit	Enabled Non Lock Det	Enabled Non-Actuated 1 Max Veh Recall Ped Recall Dual Entry Act Rest In Walk	0	Enabled Non Lock Det Dual Entry	Enabled Non Lock Det	Enabled Non-Actuated 1 Max Veh Recall Ped Recall Dual Entry Act Rest In Walk	Enabled Non Lock Det	Enabled Non Lock Det Dual Entry
[P2] Ring	Ring	1	1	0	1	2	2	2	2
[P2] Concurrency	Phase (,)	(5,6)	(5,6)	()	(7,8)	(1,2)	(1,2)	(4)	(4)

Coord Pattern	Units	1	2	3	4	5	6	7	8
Cycle Time	Sec	160	160	160	0	0	0	0	0
Offset	Sec	38	26	110	0	0	0	0	0
Split	Split	1	2	3	4	5	6	7	8
Sequence	Sequence	1	1	1	1	1	1	1	1

Coord Split	Units	1	2	3	4	5	6	7	8
Split 1 - Mode	Enum	none	none	none	none	phaseOmitted	none	none	none
Split 1 - Time	Sec	13	70	0	77	0	83	26	51
Split 1 - Coord	Enum	false	true	false	false	false	true	false	false
Split 2 - Mode	Enum	none	none	none	none	phaseOmitted	none	none	none
Split 2 - Time	Sec	14	72	0	74	0	86	15	59
Split 2 - Coord	Enum	false	true	false	false	false	true	false	false
Split 3 - Mode	Enum	none	none	none	none	none	none	none	none
Split 3 - Time	Sec	16	77	0	67	13	80	16	51
Split 3 - Coord	Enum	false	true	false	false	false	true	false	false

TB Schedule	Units	1	2	3	4	5	6	7	8
Month	Bit	JFMAMJJASOND	JFMAMJJASOND	JFMAMJJASOND	J----------	-F---------	---A-------	----M------	------J-----
Day of Week	Bit	-MTWTF-	S------	------S	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS
Day of Month	Bit	123456789012345678901234567890 1	123456789012345678901234567890 1	123456789012345678901234567890 1	1---------- ------	----------8------ ------	----------9---- -------	----------0----- -----	1---------- -----
Day Plan	Number	1	3	2	3	3	3	3	3

TB Schedule	Units	9	10	11	12	13	14	15	16
Month	Bit	-------A----	--------S---	---------O--	----------D	----------D	----------D	0	0
Day of Week	Bit	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS
Day of Month	Bit	----5---------- ------	-2---------- ------	----------4---------- ------	---------- 5------	---------- 6-----	---------- 4-------	0	0
Day Plan	Number	3	3	3	3	3	3	0	0

TB Dayplan	Units	1	2	3	4	5	6	7	8
Plan 1 Hour	Hour	0	6	9	15	19	3	0	0
Plan 1 Minute	Min	0	0	30	0	30	0	0	0
Plan 1 Action	Number	8	1	2	3	2	7	0	0
Plan 2 Hour	Hour	0	7	3	0	0	0	0	0
Plan 2 Minute	Min	0	0	0	0	0	0	0	0
Plan 2 Action	Number	8	2	7	0	0	0	0	0
Plan 3 Hour	Hour	0	8	23	3	0	0	0	0
Plan 3 Minute	Min	0	0	0	0	0	0	0	0
Plan 3 Action	Number	8	2	8	7	0	0	0	0

TB Action	Units	1	2	3	4	5	6	7	8
Pattern	Enum	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 6	Free	Free
Aux. Functions	Bit	0	0	0	0	0	0	0	0
Spec. Functions	Bit	0	0	0	0	0	0	0	Special Func 3

Signal Timing Report

Runtime: 2019-11-20 13:05:56

Device: 2114

Region: Mississauga **Signal ID:** 2114 **Location:** HURONTARIO STREET N at Fairview Road E

Phase	Units	1	2	3	4	5	6	7	8
Walk	Sec	0	9	0	14	0	9	0	14
Ped Clear	Sec	0	13	0	19	0	13	0	19
Min Green	Sec	5	8	0	8	0	8	5	8
Passage	Sec	2.0	3.0	0.0	3.0	0.0	3.0	2.0	3.0
Maximum 1	Sec	12	39	0	30	0	39	10	30
Maximum 2	Sec	12	39	0	30	0	39	10	30
Yellow Change	Sec	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
Red Clearance	Sec	0.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0
Red Revert	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Added Initial	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Initial	Sec	0	0	0	0	0	0	0	0
Time Before	Sec	0	0	0	0	0	0	0	0
Cars Before	Veh	0	0	0	0	0	0	0	0
Time To Reduce	Sec	0	0	0	0	0	0	0	0
Reduce By	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min Gap	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dynamic Max Limit	Sec	0	0	0	0	0	0	0	0
Dynamic Max Step	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
[P2] Start Up	Enum	phaseNotOn	redClear	other	phaseNotOn	other	redClear	phaseNotOn	phaseNotOn
[P2] Options	Bit	Enabled Non Lock Det	Enabled Non-Actuated 1 Max Veh Recall Ped Recall Dual Entry Act Rest In Walk	0	Enabled Non Lock Det Dual Entry	0	Enabled Non-Actuated 1 Max Veh Recall Ped Recall Dual Entry Act Rest In Walk	Enabled	Enabled Non Lock Det Dual Entry
[P2] Ring	Ring	1	1	0	1	0	2	2	2
[P2] Concurrency	Phase (,)	(6)	(6)	()	(7,8)	()	(1,2)	(4)	(4)

Coord Pattern	Units	1	2	3	4	5	6	7	8
Cycle Time	Sec	160	160	160	0	0	0	0	0
Offset	Sec	35	18	106	0	0	0	0	0
Split	Split	1	2	3	4	5	6	7	8
Sequence	Sequence	1	1	1	1	1	1	1	1

Coord Split	Units	1	2	3	4	5	6	7	8
Split 1 - Mode	Enum	none	none	none	none	none	none	none	none
Split 1 - Time	Sec	13	88	0	59	0	101	0	59
Split 1 - Coord	Enum	false	true	false	false	false	true	false	false
Split 2 - Mode	Enum	none	none	none	none	none	none	none	none
Split 2 - Time	Sec	14	90	0	56	0	104	0	56
Split 2 - Coord	Enum	false	true	false	false	false	true	false	false
Split 3 - Mode	Enum	none	none	none	none	none	none	none	none
Split 3 - Time	Sec	16	91	0	53	0	107	0	53
Split 3 - Coord	Enum	false	true	false	false	false	true	false	false

TB Schedule	Units	1	2	3	4	5	6	7	8
Month	Bit	JFMAMJJASOND	JFMAMJJASOND	JFMAMJJASOND	J----------	-F---------	---A-------	----M------	------J-----
Day of Week	Bit	-MTWTF-	S------	------S	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS
Day of Month	Bit	123456789012345678901234567890 1	123456789012345678901234567890 1	123456789012345678901234567890 1	1---------- ------	----------8------ ------	----------9---- -------	----------0----- -----	1---------- -----
Day Plan	Number	1	3	2	3	3	3	3	3

TB Schedule	Units	9	10	11	12	13	14	15	16
Month	Bit	-------A----	--------S---	---------O--	----------D	----------D	----------D	0	0
Day of Week	Bit	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS
Day of Month	Bit	----5---------- ------	-2---------- ------	----------4---------- ------	---------- 5------	---------- 6-----	---------- 4-------	0	0
Day Plan	Number	3	3	3	3	3	3	0	0

TB Dayplan	Units	1	2	3	4	5	6	7	8
Plan 1 Hour	Hour	0	6	9	15	19	3	0	0
Plan 1 Minute	Min	0	0	30	0	30	0	0	0
Plan 1 Action	Number	8	1	2	3	2	7	0	0
Plan 2 Hour	Hour	0	7	3	0	0	0	0	0
Plan 2 Minute	Min	0	0	0	0	0	0	0	0
Plan 2 Action	Number	8	2	7	0	0	0	0	0
Plan 3 Hour	Hour	0	8	23	3	0	0	0	0
Plan 3 Minute	Min	0	0	0	0	0	0	0	0
Plan 3 Action	Number	8	2	8	7	0	0	0	0

TB Action	Units	1	2	3	4	5	6	7	8
Pattern	Enum	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 6	Free	Free
Aux. Functions	Bit	0	0	0	0	0	0	0	0
Spec. Functions	Bit	0	0	0	0	0	0	0	0

APPENDIX C

Existing Intersection Capacity Analysis

Queues

1: Hurontario St & Central Pkwy W/Central Pkwy E

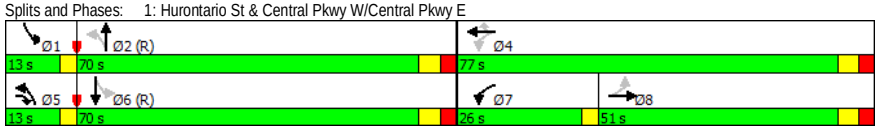
12-13-2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	145	466	65	265	373	120	51	1343	113	1284
Future Volume (vph)	145	466	65	265	373	120	51	1343	113	1284
Lane Group Flow (vph)	161	518	72	294	414	133	57	1548	126	1495
Turn Type	Perm	NA	Over	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		8	5	7	4		5	2	1	6
Permitted Phases	8			4		4	2		6	
Detector Phase	8	8	5	7	4	4	5	2	1	6
Switch Phase										
Minimum Initial (s)	8.0	8.0	5.0	5.0	8.0	8.0	5.0	8.0	5.0	8.0
Minimum Split (s)	41.0	41.0	10.0	10.0	41.0	41.0	10.0	40.0	10.0	40.0
Total Split (s)	51.0	51.0	13.0	26.0	77.0	77.0	13.0	70.0	13.0	70.0
Total Split (%)	31.9%	31.9%	8.1%	16.3%	48.1%	48.1%	8.1%	43.8%	8.1%	43.8%
Yellow Time (s)	4.0	4.0	3.0	3.0	4.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	3.0	3.0	7.0	7.0	3.0	7.0	3.0	7.0
Lead/Lag	Lag	Lag	Lead	Lead			Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	C-Max
v/c Ratio	0.83	0.70	0.46	0.85	0.32	0.21	0.34	0.68	0.65	0.63
Control Delay	90.7	63.3	15.2	56.7	36.1	4.8	20.1	28.8	37.6	33.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	90.7	63.3	15.2	56.7	36.1	4.8	20.1	28.8	37.6	33.7
Queue Length 50th (m)	52.0	85.3	0.0	70.9	51.7	0.0	6.1	159.9	19.2	134.9
Queue Length 95th (m)	76.3	97.8	9.5	#89.0	59.4	13.3	11.1	189.1	#51.4	176.7
Internal Link Dist (m)		137.7			337.1			286.1		132.4
Turn Bay Length (m)	90.0		50.0	90.0		90.0	140.0		70.0	
Base Capacity (vph)	257	973	182	353	1533	727	198	2292	199	2387
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.53	0.40	0.83	0.27	0.18	0.29	0.68	0.63	0.63

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Hurontario St & Central Pkwy W/Central Pkwy E



HCM Signalized Intersection Capacity Analysis

1: Hurontario St & Central Pkwy W/Central Pkwy E

12-13-2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	466	65	265	373	120	51	1343	50	113	1284	61
Future Volume (vph)	145	466	65	265	373	120	51	1343	50	113	1284	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	3.0	3.0	7.0	7.0	3.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.98	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1749	3539	1495	1748	3505	1491	1702	4984		1752	4942	
Flt Permitted	0.51	1.00	1.00	0.23	1.00	1.00	0.11	1.00		0.08	1.00	
Satd. Flow (perm)	938	3539	1495	414	3505	1491	191	4984		151	4942	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	161	518	72	294	414	133	57	1492	56	126	1427	68
RTOR Reduction (vph)	0	0	69	0	0	84	0	2	0	0	3	0
Lane Group Flow (vph)	161	518	3	294	414	49	57	1546	0	126	1492	0
Confl. Peds. (#/hr)	27		28	28		27	34		39	39		34
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	1%	2%	8%	3%	3%	3%	6%	3%	10%	3%	4%	3%
Turn Type	Perm	NA	Over	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		8	5	7	4		5	2		1	6	
Permitted Phases	8			4		4	2			6		
Actuated Green, G (s)	33.4	33.4	7.1	58.7	58.7	58.7	80.6	73.5		87.3	77.2	
Effective Green, g (s)	33.4	33.4	7.1	58.7	58.7	58.7	80.6	73.5		87.3	77.2	
Actuated g/C Ratio	0.21	0.21	0.04	0.37	0.37	0.37	0.50	0.46		0.55	0.48	
Clearance Time (s)	7.0	7.0	3.0	3.0	7.0	7.0	3.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0	2.0	0.2	3.0	3.0	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	195	738	66	337	1285	547	163	2289		190	2384	
v/s Ratio Prot		0.15	0.00	c0.12	0.12		0.02	0.31		c0.04	0.30	
v/s Ratio Perm	0.17			c0.20		0.03	0.16			c0.32		
v/c Ratio	0.83	0.70	0.05	0.87	0.32	0.09	0.35	0.68		0.66	0.63	
Uniform Delay, d1	60.5	58.7	73.2	40.2	36.4	33.2	22.9	33.9		25.0	30.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.83	0.77		1.00	1.00	
Incremental Delay, d2	23.9	3.0	0.1	20.6	0.1	0.1	0.4	1.5		6.6	1.3	
Delay (s)	84.4	61.7	73.3	60.8	36.5	33.2	19.5	27.4		31.6	32.0	
Level of Service	F	E	E	E	D	C	B	C		C	C	
Approach Delay (s)		67.7			44.5			27.1			31.9	
Approach LOS		E			D			C			C	

Intersection Summary

HCM 2000 Control Delay	38.1	HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio	0.77				
Actuated Cycle Length (s)	160.0	Sum of lost time (s)		20.0	
Intersection Capacity Utilization	89.0%	ICU Level of Service		E	
Analysis Period (min)	15				

c Critical Lane Group

Queues
2: Hurontario St & Fairview Rd W/Fairview Rd E

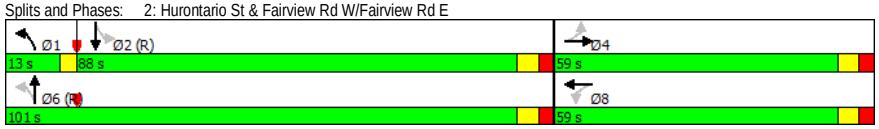
12-13-2019

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	114	82	158	70	41	1198	33	1550
Future Volume (vph)	114	82	158	70	41	1198	33	1550
Lane Group Flow (vph)	131	211	182	164	47	1553	38	1843
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	NA
Protected Phases		4		8	1	6		2
Permitted Phases	4		8		6		2	
Detector Phase	4	4	8	8	1	6	2	2
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	5.0	8.0	8.0	8.0
Minimum Split (s)	40.0	40.0	40.0	40.0	12.0	39.0	39.0	39.0
Total Split (s)	59.0	59.0	59.0	59.0	13.0	101.0	88.0	88.0
Total Split (%)	36.9%	36.9%	36.9%	36.9%	8.1%	63.1%	55.0%	55.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	3.0	7.0	7.0	7.0
Lead/Lag					Lead		Lag	Lag
Lead-Lag Optimize?					Yes		Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max
v/c Ratio	0.57	0.54	0.98	0.42	0.27	0.47	0.24	0.59
Control Delay	62.8	46.5	121.5	42.0	13.0	13.3	11.1	8.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.8	46.5	121.5	42.0	13.0	13.3	11.1	8.3
Queue Length 50th (m)	39.2	50.4	61.1	36.8	4.4	82.7	2.4	45.5
Queue Length 95th (m)	54.5	67.1	83.5	52.0	11.1	113.7	m4.2	49.0
Internal Link Dist (m)		119.7		82.8		116.9		286.1
Turn Bay Length (m)	90.0		60.0		165.0		70.0	
Base Capacity (vph)	322	537	262	541	203	3293	159	3114
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.39	0.69	0.30	0.23	0.47	0.24	0.59

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Hurontario St & Fairview Rd W/Fairview Rd E



HCM Signalized Intersection Capacity Analysis
2: Hurontario St & Fairview Rd W/Fairview Rd E

12-13-2019

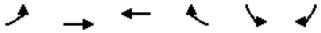
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	114	82	102	158	70	73	41	1198	153	33	1550	53
Future Volume (vph)	114	82	102	158	70	73	41	1198	153	33	1550	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		3.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.97		1.00	0.98		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	0.97	1.00		0.97	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.92		1.00	0.92		1.00	0.98		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1691	1568		1643	1593		1770	4817		1687	4931	
Flt Permitted	0.56	1.00		0.47	1.00		0.08	1.00		0.14	1.00	
Satd. Flow (perm)	994	1568		807	1593		145	4817		251	4931	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	131	94	117	182	80	84	47	1377	176	38	1782	61
RTOR Reduction (vph)	0	32	0	0	27	0	0	8	0	0	2	0
Lane Group Flow (vph)	131	179	0	182	137	0	47	1545	0	38	1841	0
Confl. Peds. (#/hr)	24		28	28		24	25		27	27		25
Heavy Vehicles (%)	4%	4%	11%	7%	7%	8%	2%	4%	8%	6%	4%	13%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		1	6			2	
Permitted Phases	4			8			6			2		
Actuated Green, G (s)	36.8	36.8		36.8	36.8		109.2	109.2		100.4	100.4	
Effective Green, g (s)	36.8	36.8		36.8	36.8		109.2	109.2		100.4	100.4	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.68	0.68		0.63	0.63	
Clearance Time (s)	7.0	7.0		7.0	7.0		3.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	228	360		185	366		157	3287		157	3094	
v/s Ratio Prot		0.11			0.09		0.01	c0.32			c0.37	
v/s Ratio Perm	0.13			c0.23			0.19			0.15		
v/c Ratio	0.57	0.50		0.98	0.37		0.30	0.47		0.24	0.60	
Uniform Delay, d1	54.7	53.6		61.3	51.9		12.4	11.9		13.1	17.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.43	0.39	
Incremental Delay, d2	3.5	1.1		61.0	0.6		1.1	0.5		2.8	0.7	
Delay (s)	58.1	54.7		122.3	52.5		13.4	12.4		8.5	7.6	
Level of Service	E	D		F	D		B	B		A	A	
Approach Delay (s)		56.0			89.3			12.4			7.6	
Approach LOS		E			F			B			A	

Intersection Summary

HCM 2000 Control Delay	20.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	81.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
3: Fairview Rd E & Access Driveway 12-13-2019



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	7	272	312	3	15	15
Future Volume (Veh/h)	7	272	312	3	15	15
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	8	302	347	3	17	17
Pedestrians					7	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		107				
pX, platoon unblocked						
vC, conflicting volume	357				674	356
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	357				674	356
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				96	98
cM capacity (veh/h)	1206				418	689

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	310	350	34
Volume Left	8	0	17
Volume Right	0	3	17
cSH	1206	1700	520
Volume to Capacity	0.01	0.21	0.07
Queue Length 95th (m)	0.2	0.0	1.7
Control Delay (s)	0.3	0.0	12.4
Lane LOS	A		B
Approach Delay (s)	0.3	0.0	12.4
Approach LOS			B

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	29.9%	ICU Level of Service	A
Analysis Period (min)	15		

Queues

1: Hurontario St & Central Pkwy W/Central Pkwy E

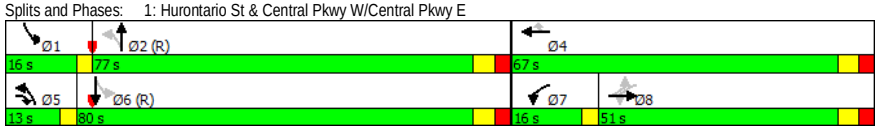
12-13-2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	101	438	49	267	555	69	84	1342	115	1114
Future Volume (vph)	101	438	49	267	555	69	84	1342	115	1114
Lane Group Flow (vph)	107	466	52	284	590	73	89	1521	122	1352
Turn Type	Perm	NA	Over	D.P+P	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		8	5	7	4		5	2	1	6
Permitted Phases	8			8		4	2		6	
Detector Phase	8	8	5	7	4	4	5	2	1	6
Switch Phase										
Minimum Initial (s)	8.0	8.0	5.0	5.0	8.0	8.0	5.0	8.0	5.0	8.0
Minimum Split (s)	41.0	41.0	10.0	10.0	41.0	41.0	10.0	40.0	10.0	40.0
Total Split (s)	51.0	51.0	13.0	16.0	67.0	67.0	13.0	77.0	16.0	80.0
Total Split (%)	31.9%	31.9%	8.1%	10.0%	41.9%	41.9%	8.1%	48.1%	10.0%	50.0%
Yellow Time (s)	4.0	4.0	3.0	3.0	4.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	-3.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	3.0	0.0	7.0	7.0	3.0	7.0	3.0	7.0
Lead/Lag	Lag	Lag	Lead	Lead			Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	C-Max
v/c Ratio	0.78	0.73	0.32	0.97	0.60	0.15	0.35	0.54	0.52	0.48
Control Delay	95.9	68.4	5.2	90.7	52.0	8.0	17.7	30.6	19.4	21.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	95.9	68.4	5.2	90.7	52.0	8.0	17.7	30.6	19.4	21.8
Queue Length 50th (m)	35.1	79.7	0.0	78.2	92.1	0.0	13.9	134.1	13.6	90.5
Queue Length 95th (m)	54.9	90.7	0.6	#114.6	100.5	12.0	27.9	186.4	27.6	129.5
Internal Link Dist (m)		137.7			337.1			286.1		132.4
Turn Bay Length (m)	90.0		50.0	90.0		90.0	140.0		70.0	
Base Capacity (vph)	214	992	190	293	1340	628	280	2798	272	2823
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.47	0.27	0.97	0.44	0.12	0.32	0.54	0.45	0.48

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Hurontario St & Central Pkwy W/Central Pkwy E



HCM Signalized Intersection Capacity Analysis

1: Hurontario St & Central Pkwy W/Central Pkwy E

12-13-2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	438	49	267	555	69	84	1342	87	115	1114	157
Future Volume (vph)	101	438	49	267	555	69	84	1342	87	115	1114	157
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	3.0	0.0	7.0	7.0	3.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1792	3610	1615	1801	3574	1553	1803	5018		1805	4943	
Flt Permitted	0.41	1.00	1.00	0.27	1.00	1.00	0.15	1.00		0.11	1.00	
Satd. Flow (perm)	778	3610	1615	516	3574	1553	291	5018		213	4943	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	107	466	52	284	590	73	89	1428	93	122	1185	167
RTOR Reduction (vph)	0	0	50	0	0	53	0	4	0	0	9	0
Lane Group Flow (vph)	107	466	2	284	590	20	89	1517	0	122	1343	0
Confl. Peds. (#/hr)	12		17	17		12	53		31	31		53
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	0%	0%	0%	0%	1%	1%	0%	2%	3%	0%	2%	1%
Turn Type	Perm	NA	Over	D.P+P	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		8	5	7	4		5	2		1	6	
Permitted Phases	8			8		4	2			6		
Actuated Green, G (s)	28.4	28.4	7.5	41.4	44.4	44.4	96.6	89.1		100.6	91.1	
Effective Green, g (s)	28.4	28.4	7.5	47.4	44.4	44.4	96.6	89.1		100.6	91.1	
Actuated g/C Ratio	0.18	0.18	0.05	0.30	0.28	0.28	0.60	0.56		0.63	0.57	
Clearance Time (s)	7.0	7.0	3.0	3.0	7.0	7.0	3.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0	2.0	0.2	3.0	3.0	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	138	640	75	281	991	430	246	2794		228	2814	
v/s Ratio Prot		0.13	0.00	c0.10	0.17		0.02	0.30		c0.03	0.27	
v/s Ratio Perm	c0.14			0.20		0.01	0.20			c0.30		
v/c Ratio	0.78	0.73	0.03	1.01	0.60	0.05	0.36	0.54		0.54	0.48	
Uniform Delay, d1	62.8	62.2	72.8	51.6	50.0	42.3	14.4	22.5		15.6	20.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.26	1.25		1.00	1.00	
Incremental Delay, d2	23.3	4.1	0.1	56.4	1.0	0.0	0.3	0.7		1.2	0.6	
Delay (s)	86.1	66.3	72.9	108.0	51.0	42.4	18.5	28.9		16.8	21.0	
Level of Service	F	E	E	F	D	D	B	C		B	C	
Approach Delay (s)		70.2			67.4			28.3			20.6	
Approach LOS		E			E			C			C	

Intersection Summary

HCM 2000 Control Delay	39.4	HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio	0.62				
Actuated Cycle Length (s)	160.0	Sum of lost time (s)		17.0	
Intersection Capacity Utilization	86.7%	ICU Level of Service		E	
Analysis Period (min)	15				

c Critical Lane Group

Queues
2: Hurontario St & Fairview Rd W/Fairview Rd E

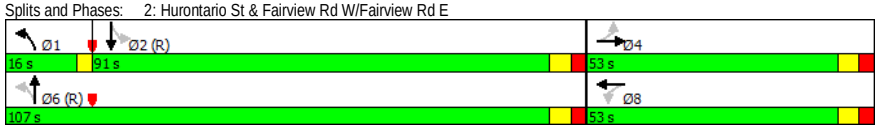
12-13-2019

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	71	81	129	82	86	1487	53	1462
Future Volume (vph)	71	81	129	82	86	1487	53	1462
Lane Group Flow (vph)	72	124	132	130	88	1731	54	1584
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	NA
Protected Phases		4		8	1	6		2
Permitted Phases	4		8		6		2	
Detector Phase	4	4	8	8	1	6	2	2
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	5.0	8.0	8.0	8.0
Minimum Split (s)	40.0	40.0	40.0	40.0	12.0	30.0	30.0	30.0
Total Split (s)	53.0	53.0	53.0	53.0	16.0	107.0	91.0	91.0
Total Split (%)	33.1%	33.1%	33.1%	33.1%	10.0%	66.9%	56.9%	56.9%
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	3.0	7.0	7.0	7.0
Lead/Lag					Lead		Lag	Lag
Lead-Lag Optimize?					Yes		Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max
v/c Ratio	0.50	0.46	0.86	0.49	0.34	0.46	0.33	0.44
Control Delay	73.1	58.7	108.2	59.6	7.9	7.4	20.4	12.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.1	58.7	108.2	59.6	7.9	7.4	20.4	12.1
Queue Length 50th (m)	22.6	33.6	43.8	35.4	5.5	65.4	5.1	58.4
Queue Length 95th (m)	38.2	52.5	66.5	54.7	12.7	94.9	m20.8	m134.6
Internal Link Dist (m)		119.7		82.8		116.9		286.1
Turn Bay Length (m)	90.0		60.0		165.0		70.0	
Base Capacity (vph)	294	523	311	515	312	3787	164	3571
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.24	0.42	0.25	0.28	0.46	0.33	0.44

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 106 (66%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Hurontario St & Fairview Rd W/Fairview Rd E



HCM Signalized Intersection Capacity Analysis
2: Hurontario St & Fairview Rd W/Fairview Rd E

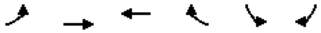
12-13-2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	81	40	129	82	45	86	1487	210	53	1462	90
Future Volume (vph)	71	81	40	129	82	45	86	1487	210	53	1462	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		3.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	0.98	1.00		0.98	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.95		1.00	0.95		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1720	1782		1763	1751		1786	4914		1786	5061	
Flt Permitted	0.56	1.00		0.58	1.00		0.12	1.00		0.12	1.00	
Satd. Flow (perm)	1023	1782		1083	1751		235	4914		232	5061	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	72	83	41	132	84	46	88	1517	214	54	1492	92
RTOR Reduction (vph)	0	14	0	0	15	0	0	7	0	0	3	0
Lane Group Flow (vph)	72	110	0	132	115	0	88	1724	0	54	1581	0
Confl. Peds. (#/hr)	16		20	20		16	23		35	35		23
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	3%	0%	0%	0%	0%	4%	1%	2%	0%	0%	1%	1%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		1	6			2	
Permitted Phases	4			8			6			2		
Actuated Green, G (s)	22.8	22.8		22.8	22.8		123.2	123.2		112.9	112.9	
Effective Green, g (s)	22.8	22.8		22.8	22.8		123.2	123.2		112.9	112.9	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.77	0.77		0.71	0.71	
Clearance Time (s)	7.0	7.0		7.0	7.0		3.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	145	253		154	249		251	3783		163	3571	
v/s Ratio Prot		0.06			0.07		0.02	c0.35			0.31	
v/s Ratio Perm	0.07			c0.12			0.25			0.23		
v/c Ratio	0.50	0.44		0.86	0.46		0.35	0.46		0.33	0.44	
Uniform Delay, d1	63.3	62.7		67.0	63.0		6.0	6.5		9.0	10.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.23	1.09	
Incremental Delay, d2	2.7	1.2		34.6	1.4		0.8	0.4		4.7	0.3	
Delay (s)	66.0	63.9		101.6	64.4		6.8	6.9		15.8	11.3	
Level of Service	E	E		F	E		A	A		B	B	
Approach Delay (s)		64.7			83.1			6.9			11.4	
Approach LOS		E			F			A			B	

Intersection Summary

HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.53			
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	17.0	
Intersection Capacity Utilization	88.1%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	11	348	262	9	2	5
Future Volume (Veh/h)	11	348	262	9	2	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	12	370	279	10	2	5
Pedestrians					7	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		107				
pX, platoon unblocked					0.96	
vC, conflicting volume	296				685	291
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	296				654	291
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				100	99
cM capacity (veh/h)	1269				412	749

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	382	289	7
Volume Left	12	0	2
Volume Right	0	10	5
cSH	1269	1700	607
Volume to Capacity	0.01	0.17	0.01
Queue Length 95th (m)	0.2	0.0	0.3
Control Delay (s)	0.3	0.0	11.0
Lane LOS	A		B
Approach Delay (s)	0.3	0.0	11.0
Approach LOS			B

Intersection Summary				
Average Delay	0.3			
Intersection Capacity Utilization	37.2%	ICU Level of Service		A
Analysis Period (min)	15			

Queues
2: Hurontario St & Fairview Rd W/Fairview Rd E

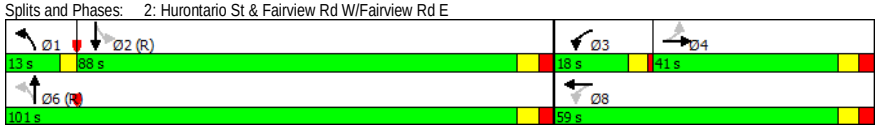
12-18-2019

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	114	82	158	70	41	1198	33	1550
Future Volume (vph)	114	82	158	70	41	1198	33	1550
Lane Group Flow (vph)	131	211	182	164	47	1553	38	1843
Turn Type	Perm	NA	pm+pt	NA	pm+pt	NA	Perm	NA
Protected Phases		4	3	8	1	6		2
Permitted Phases	4		8		6		2	
Detector Phase	4	4	3	8	1	6	2	2
Switch Phase								
Minimum Initial (s)	8.0	8.0	5.0	8.0	5.0	8.0	8.0	8.0
Minimum Split (s)	40.0	40.0	9.5	40.0	12.0	39.0	39.0	39.0
Total Split (s)	41.0	41.0	18.0	59.0	13.0	101.0	88.0	88.0
Total Split (%)	25.6%	25.6%	11.3%	36.9%	8.1%	63.1%	55.0%	55.0%
Yellow Time (s)	4.0	4.0	3.5	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	1.0	3.0	0.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	4.5	7.0	3.0	7.0	7.0	7.0
Lead/Lag	Lag	Lag	Lead		Lead		Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes		Yes		Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max
v/c Ratio	0.77	0.81	0.78	0.37	0.29	0.49	0.26	0.62
Control Delay	92.2	76.5	69.4	39.0	14.4	15.3	12.2	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	92.2	76.5	69.4	39.0	14.4	15.3	12.2	9.3
Queue Length 50th (m)	42.8	58.0	49.8	35.4	4.9	91.0	2.5	47.4
Queue Length 95th (m)	61.6	80.3	65.8	51.8	11.1	114.5	m4.2	49.1
Internal Link Dist (m)		119.7		82.8		116.9		286.1
Turn Bay Length (m)	90.0		60.0		165.0		70.0	
Base Capacity (vph)	246	361	234	541	194	3152	147	2965
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.58	0.78	0.30	0.24	0.49	0.26	0.62

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Hurontario St & Fairview Rd W/Fairview Rd E



HCM Signalized Intersection Capacity Analysis
2: Hurontario St & Fairview Rd W/Fairview Rd E

12-18-2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	114	82	102	158	70	73	41	1198	153	33	1550	53
Future Volume (vph)	114	82	102	158	70	73	41	1198	153	33	1550	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		4.5	7.0		3.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.97		1.00	0.98		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	0.97	1.00		0.99	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.92		1.00	0.92		1.00	0.98		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1687	1568		1678	1593		1770	4817		1688	4931	
Flt Permitted	0.65	1.00		0.28	1.00		0.07	1.00		0.14	1.00	
Satd. Flow (perm)	1160	1568		491	1593		135	4817		244	4931	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	131	94	117	182	80	84	47	1377	176	38	1782	61
RTOR Reduction (vph)	0	31	0	0	26	0	0	8	0	0	2	0
Lane Group Flow (vph)	131	180	0	182	138	0	47	1545	0	38	1841	0
Confl. Peds. (#/hr)	24		28	28		24	25		27	27		25
Heavy Vehicles (%)	4%	4%	11%	7%	7%	8%	2%	4%	8%	6%	4%	13%
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases		4		3	8		1	6			2	
Permitted Phases	4			8			6			2		
Actuated Green, G (s)	23.6	23.6		41.6	41.6		104.4	104.4		95.5	95.5	
Effective Green, g (s)	23.6	23.6		41.6	41.6		104.4	104.4		95.5	95.5	
Actuated g/C Ratio	0.15	0.15		0.26	0.26		0.65	0.65		0.60	0.60	
Clearance Time (s)	7.0	7.0		4.5	7.0		3.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	171	231		227	414		148	3143		145	2943	
v/s Ratio Prot		0.11		c0.07	0.09		0.01	c0.32			c0.37	
v/s Ratio Perm	0.11			c0.14			0.19			0.16		
v/c Ratio	0.77	0.78		0.80	0.33		0.32	0.49		0.26	0.63	
Uniform Delay, d1	65.5	65.7		50.9	48.0		14.8	14.2		15.4	20.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.43	0.39	
Incremental Delay, d2	18.3	15.6		18.1	0.5		1.2	0.6		3.4	0.8	
Delay (s)	83.9	81.3		69.1	48.4		16.0	14.8		10.0	8.8	
Level of Service	F	F		E	D		B	B		B	A	
Approach Delay (s)		82.3			59.3			14.8			8.9	
Approach LOS		F			E			B			A	

Intersection Summary

HCM 2000 Control Delay	21.4	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.69			
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	21.5	
Intersection Capacity Utilization	79.6%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

APPENDIX D

Future Background Intersection Capacity Analysis

Queues
1: Hurontario St & Central Pkwy W/Central Pkwy E

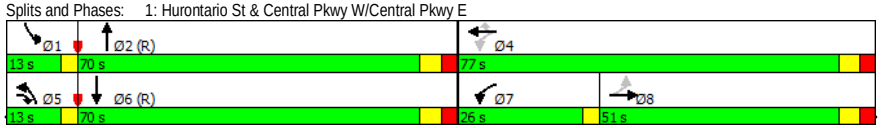
12-13-2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	145	560	65	265	432	120	51	1010	113	921
Future Volume (vph)	145	560	65	265	432	120	51	1010	113	921
Lane Group Flow (vph)	161	622	72	294	480	133	57	1178	126	1091
Turn Type	Perm	NA	Over	pm+pt	NA	Perm	Prot	NA	Prot	NA
Protected Phases		8	5	7	4		5	2	1	6
Permitted Phases	8			4		4				
Detector Phase	8	8	5	7	4	4	5	2	1	6
Switch Phase										
Minimum Initial (s)	8.0	8.0	5.0	5.0	8.0	8.0	5.0	8.0	5.0	8.0
Minimum Split (s)	41.0	41.0	10.0	10.0	41.0	41.0	10.0	40.0	10.0	40.0
Total Split (s)	51.0	51.0	13.0	26.0	77.0	77.0	13.0	70.0	13.0	70.0
Total Split (%)	31.9%	31.9%	8.1%	16.3%	48.1%	48.1%	8.1%	43.8%	8.1%	43.8%
Yellow Time (s)	4.0	4.0	3.0	3.0	4.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	3.0	3.0	7.0	7.0	3.0	7.0	3.0	7.0
Lead/Lag	Lag	Lag	Lead	Lead			Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	C-Max
v/c Ratio	0.82	0.79	0.42	0.91	0.36	0.20	0.60	0.84	0.69	0.70
Control Delay	88.8	65.8	13.0	68.0	35.5	4.7	106.7	35.2	87.1	39.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	88.8	65.8	13.0	68.0	35.5	4.7	106.7	35.2	87.1	39.1
Queue Length 50th (m)	51.9	104.6	0.0	69.6	60.2	0.0	19.6	171.1	40.8	152.9
Queue Length 95th (m)	77.8	119.3	9.5	#114.0	69.1	13.3	m33.4	146.0	#95.9	199.1
Internal Link Dist (m)		137.7			337.1			286.1		132.4
Turn Bay Length (m)	90.0		50.0	90.0		90.0	140.0		150.0	
Base Capacity (vph)	242	973	185	329	1533	727	109	1410	183	1566
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.64	0.39	0.89	0.31	0.18	0.52	0.84	0.69	0.70

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Hurontario St & Central Pkwy W/Central Pkwy E



HCM Signalized Intersection Capacity Analysis
1: Hurontario St & Central Pkwy W/Central Pkwy E

12-13-2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	560	65	265	432	120	51	1010	50	113	921	61
Future Volume (vph)	145	560	65	265	432	120	51	1010	50	113	921	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	3.0	3.0	7.0	7.0	3.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.98	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1752	3539	1495	1750	3505	1491	1703	3458		1752	3428	
Flt Permitted	0.48	1.00	1.00	0.16	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	881	3539	1495	298	3505	1491	1703	3458		1752	3428	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	161	622	72	294	480	133	57	1122	56	126	1023	68
RTOR Reduction (vph)	0	0	68	0	0	82	0	2	0	0	3	0
Lane Group Flow (vph)	161	622	4	294	480	51	57	1176	0	126	1088	0
Confl. Peds. (#/hr)	27		28	28		27	34		39	39		34
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	1%	2%	8%	3%	3%	3%	6%	3%	10%	3%	4%	3%
Turn Type	Perm	NA	Over	pm+pt	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		8	5	7	4		5	2		1	6	
Permitted Phases	8			4		4						
Actuated Green, G (s)	35.7	35.7	8.9	61.1	61.1	61.1	8.9	65.1		16.8	73.0	
Effective Green, g (s)	35.7	35.7	8.9	61.1	61.1	61.1	8.9	65.1		16.8	73.0	
Actuated g/C Ratio	0.22	0.22	0.06	0.38	0.38	0.38	0.06	0.41		0.11	0.46	
Clearance Time (s)	7.0	7.0	3.0	3.0	7.0	7.0	3.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0	2.0	0.2	3.0	3.0	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	196	789	83	317	1338	569	94	1406		183	1564	
v/s Ratio Prot		0.18	0.00	c0.13	0.14		0.03	c0.34		c0.07	0.32	
v/s Ratio Perm	0.18			c0.22		0.03						
v/c Ratio	0.82	0.79	0.05	0.93	0.36	0.09	0.61	0.84		0.69	0.70	
Uniform Delay, d1	59.1	58.6	71.5	39.6	35.4	31.6	73.8	42.7		69.1	34.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.17	0.70		1.00	1.00	
Incremental Delay, d2	23.3	5.3	0.1	31.6	0.2	0.1	6.0	5.0		8.3	2.6	
Delay (s)	82.4	63.8	71.6	71.2	35.6	31.7	92.1	34.7		77.4	37.2	
Level of Service	F	E	E	E	D	C	F	C		E	D	
Approach Delay (s)		68.0			46.5			37.4			41.4	
Approach LOS		E			D			D			D	

Intersection Summary

HCM 2000 Control Delay	46.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	92.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Queues
2: Hurontario St & Fairview Rd W/Fairview Rd E

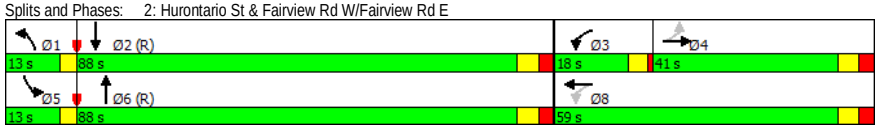
12-13-2019

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	114	82	158	70	41	901	33	1109
Future Volume (vph)	114	82	158	70	41	901	33	1109
Lane Group Flow (vph)	131	211	182	164	47	1212	38	1336
Turn Type	Perm	NA	pm+pt	NA	Prot	NA	Prot	NA
Protected Phases		4	3	8	1	6	5	2
Permitted Phases	4		8					
Detector Phase	4	4	3	8	1	6	5	2
Switch Phase								
Minimum Initial (s)	8.0	8.0	5.0	8.0	5.0	8.0	5.0	8.0
Minimum Split (s)	40.0	40.0	9.5	40.0	12.0	39.0	12.0	39.0
Total Split (s)	41.0	41.0	18.0	59.0	13.0	88.0	13.0	88.0
Total Split (%)	25.6%	25.6%	11.3%	36.9%	8.1%	55.0%	8.1%	55.0%
Yellow Time (s)	4.0	4.0	3.5	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	1.0	3.0	0.0	3.0	0.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	4.5	7.0	3.0	7.0	3.0	7.0
Lead/Lag	Lag	Lag	Lead		Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
v/c Ratio	0.77	0.81	0.78	0.37	0.47	0.62	0.41	0.67
Control Delay	92.2	76.5	69.4	39.0	87.0	24.4	96.5	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	92.2	76.5	69.4	39.0	87.0	24.4	96.5	12.6
Queue Length 50th (m)	42.8	58.0	49.8	35.4	15.5	135.5	13.3	60.0
Queue Length 95th (m)	61.6	80.3	65.8	51.8	29.0	177.8	m18.5	65.6
Internal Link Dist (m)		119.7		82.8		116.9		286.1
Turn Bay Length (m)	90.0		60.0		165.0		70.0	
Base Capacity (vph)	246	361	234	541	115	1965	109	2008
Starvation Cap Reductn	0	0	0	0	0	0	0	24
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.58	0.78	0.30	0.41	0.62	0.35	0.67

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Hurontario St & Fairview Rd W/Fairview Rd E



HCM Signalized Intersection Capacity Analysis
2: Hurontario St & Fairview Rd W/Fairview Rd E

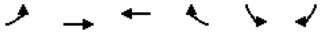
12-13-2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	114	82	102	158	70	73	41	901	153	33	1109	53
Future Volume (vph)	114	82	102	158	70	73	41	901	153	33	1109	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		4.5	7.0		3.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.97		1.00	0.98		1.00	0.98		1.00	1.00	
Flpb, ped/bikes	0.97	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	0.92		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1687	1568		1678	1593		1770	3320		1703	3417	
Flt Permitted	0.65	1.00		0.28	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1160	1568		491	1593		1770	3320		1703	3417	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	131	94	117	182	80	84	47	1036	176	38	1275	61
RTOR Reduction (vph)	0	31	0	0	26	0	0	7	0	0	2	0
Lane Group Flow (vph)	131	180	0	182	138	0	47	1205	0	38	1334	0
Confl. Peds. (#/hr)	24		28	28		24	25		27	27		25
Heavy Vehicles (%)	4%	4%	11%	7%	7%	8%	2%	4%	8%	6%	4%	13%
Turn Type	Perm	NA		pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases		4		3	8		1	6		5	2	
Permitted Phases	4			8								
Actuated Green, G (s)	23.6	23.6		41.6	41.6		8.0	93.8		7.6	93.4	
Effective Green, g (s)	23.6	23.6		41.6	41.6		8.0	93.8		7.6	93.4	
Actuated g/C Ratio	0.15	0.15		0.26	0.26		0.05	0.59		0.05	0.58	
Clearance Time (s)	7.0	7.0		4.5	7.0		3.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	171	231		227	414		88	1946		80	1994	
v/s Ratio Prot		0.11		c0.07	0.09		c0.03	0.36		0.02	c0.39	
v/s Ratio Perm	0.11			c0.14								
v/c Ratio	0.77	0.78		0.80	0.33		0.53	0.62		0.47	0.67	
Uniform Delay, d1	65.5	65.7		50.9	48.0		74.2	21.5		74.3	22.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.21	0.47	
Incremental Delay, d2	18.3	15.6		18.1	0.5		6.1	1.5		3.0	1.2	
Delay (s)	83.9	81.3		69.1	48.4		80.3	23.0		92.7	11.8	
Level of Service	F	F		E	D		F	C		F	B	
Approach Delay (s)		82.3			59.3			25.1			14.0	
Approach LOS		F			E			C			B	

Intersection Summary

HCM 2000 Control Delay	30.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	21.5
Intersection Capacity Utilization	79.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	7	272	312	3	15	15
Future Volume (Veh/h)	7	272	312	3	15	15
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	8	302	347	3	17	17
Pedestrians					7	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		107				
pX, platoon unblocked						
vC, conflicting volume	357				674	356
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	357				674	356
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				96	98
cM capacity (veh/h)	1206				418	689

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	310	350	34
Volume Left	8	0	17
Volume Right	0	3	17
cSH	1206	1700	520
Volume to Capacity	0.01	0.21	0.07
Queue Length 95th (m)	0.2	0.0	1.7
Control Delay (s)	0.3	0.0	12.4
Lane LOS	A		B
Approach Delay (s)	0.3	0.0	12.4
Approach LOS			B

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	29.9%	ICU Level of Service	A
Analysis Period (min)	15		

Queues

1: Hurontario St & Central Pkwy W/Central Pkwy E

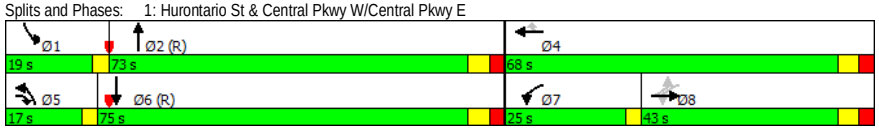
12-13-2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	101	438	49	267	555	69	84	1008	115	912
Future Volume (vph)	101	438	49	267	555	69	84	1008	115	912
Lane Group Flow (vph)	107	466	52	284	590	73	89	1165	122	1137
Turn Type	Perm	NA	Over	D.P+P	NA	Perm	Prot	NA	Prot	NA
Protected Phases		8	5	7	4		5	2	1	6
Permitted Phases	8			8		4				
Detector Phase	8	8	5	7	4	4	5	2	1	6
Switch Phase										
Minimum Initial (s)	8.0	8.0	5.0	5.0	8.0	8.0	5.0	8.0	5.0	8.0
Minimum Split (s)	41.0	41.0	10.0	10.0	41.0	41.0	10.0	40.0	10.0	40.0
Total Split (s)	43.0	43.0	17.0	25.0	68.0	68.0	17.0	73.0	19.0	75.0
Total Split (%)	26.9%	26.9%	10.6%	15.6%	42.5%	42.5%	10.6%	45.6%	11.9%	46.9%
Yellow Time (s)	4.0	4.0	3.0	3.0	4.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	3.0	3.0	7.0	7.0	3.0	7.0	3.0	7.0
Lead/Lag	Lag	Lag	Lead	Lead			Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	C-Max
v/c Ratio	0.77	0.75	0.25	0.89	0.52	0.13	0.68	0.69	0.76	0.66
Control Delay	95.5	70.4	3.2	68.8	45.3	7.0	84.7	33.5	98.6	33.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	95.5	70.4	3.2	68.8	45.3	7.0	84.7	33.5	98.6	33.3
Queue Length 50th (m)	34.9	79.7	0.0	73.8	84.7	0.0	29.3	171.4	40.3	146.6
Queue Length 95th (m)	56.0	93.5	0.6	#98.7	94.9	11.4	46.4	229.8	#67.1	198.1
Internal Link Dist (m)		137.7			337.1			286.1		132.4
Turn Bay Length (m)	90.0		50.0	90.0		90.0	140.0		150.0	
Base Capacity (vph)	182	812	228	336	1362	637	158	1690	184	1725
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.57	0.23	0.85	0.43	0.11	0.56	0.69	0.66	0.66

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Hurontario St & Central Pkwy W/Central Pkwy E



HCM Signalized Intersection Capacity Analysis

1: Hurontario St & Central Pkwy W/Central Pkwy E

12-13-2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	438	49	267	555	69	84	1008	87	115	912	157
Future Volume (vph)	101	438	49	267	555	69	84	1008	87	115	912	157
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	3.0	3.0	7.0	7.0	3.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1792	3610	1615	1801	3574	1553	1805	3478		1805	3421	
Flt Permitted	0.43	1.00	1.00	0.24	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	810	3610	1615	456	3574	1553	1805	3478		1805	3421	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	107	466	52	284	590	73	89	1072	93	122	970	167
RTOR Reduction (vph)	0	0	48	0	0	50	0	4	0	0	7	0
Lane Group Flow (vph)	107	466	4	284	590	23	89	1161	0	122	1130	0
Confl. Peds. (#/hr)	12		17	17		12	53		31	31		53
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	0%	0%	0%	0%	1%	1%	0%	2%	3%	0%	2%	1%
Turn Type	Perm	NA	Over	D.P+P	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		8	5	7	4		5	2		1	6	
Permitted Phases	8			8		4						
Actuated Green, G (s)	27.6	27.6	11.6	48.1	51.1	51.1	11.6	77.6		14.3	80.3	
Effective Green, g (s)	27.6	27.6	11.6	48.1	51.1	51.1	11.6	77.6		14.3	80.3	
Actuated g/C Ratio	0.17	0.17	0.07	0.30	0.32	0.32	0.07	0.48		0.09	0.50	
Clearance Time (s)	7.0	7.0	3.0	3.0	7.0	7.0	3.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0	2.0	0.2	3.0	3.0	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	139	622	117	309	1141	495	130	1686		161	1716	
v/s Ratio Prot		0.13	0.00	c0.12	0.17		0.05	c0.33		c0.07	c0.33	
v/s Ratio Perm	0.13			c0.16		0.02						
v/c Ratio	0.77	0.75	0.03	0.92	0.52	0.05	0.68	0.69		0.76	0.66	
Uniform Delay, d1	63.2	62.9	69.0	47.6	44.4	37.6	72.4	31.9		71.2	29.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.87	0.93		1.00	1.00	
Incremental Delay, d2	22.2	4.9	0.0	30.3	0.4	0.0	9.6	2.0		16.4	2.0	
Delay (s)	85.4	67.8	69.0	77.9	44.8	37.7	72.9	31.7		87.6	31.6	
Level of Service	F	E	E	E	D	D	E	C		F	C	
Approach Delay (s)		71.0			54.2			34.6			37.1	
Approach LOS		E			D			C			D	

Intersection Summary

HCM 2000 Control Delay	45.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	89.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Queues
2: Hurontario St & Fairview Rd W/Fairview Rd E

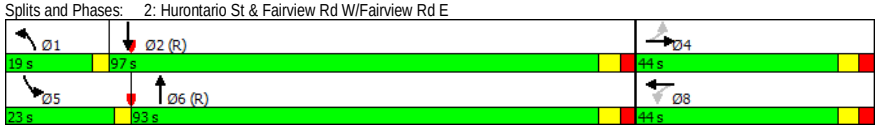
12-13-2019

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	71	81	129	82	86	1115	53	1191
Future Volume (vph)	71	81	129	82	86	1115	53	1191
Lane Group Flow (vph)	72	124	132	130	88	1352	54	1307
Turn Type	Perm	NA	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4		8	1	6	5	2
Permitted Phases	4		8					
Detector Phase	4	4	8	8	1	6	5	2
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	5.0	8.0	5.0	8.0
Minimum Split (s)	40.0	40.0	40.0	40.0	12.0	30.0	12.0	30.0
Total Split (s)	44.0	44.0	44.0	44.0	19.0	93.0	23.0	97.0
Total Split (%)	27.5%	27.5%	27.5%	27.5%	11.9%	58.1%	14.4%	60.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	3.0	7.0	3.0	7.0
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
v/c Ratio	0.49	0.46	0.84	0.49	0.60	0.57	0.47	0.56
Control Delay	72.1	59.4	104.9	59.8	86.8	14.9	70.0	23.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.1	59.4	104.9	59.8	86.8	14.9	70.0	23.4
Queue Length 50th (m)	22.5	34.2	43.7	35.6	29.0	114.7	18.2	135.2
Queue Length 95th (m)	38.1	53.1	66.2	54.9	47.7	173.1	m27.1	208.4
Internal Link Dist (m)		119.7		82.8		116.9		286.1
Turn Bay Length (m)	90.0		60.0		165.0		70.0	
Base Capacity (vph)	237	422	251	417	183	2367	225	2343
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.29	0.53	0.31	0.48	0.57	0.24	0.56

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 106 (66%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Hurontario St & Fairview Rd W/Fairview Rd E



HCM Signalized Intersection Capacity Analysis
2: Hurontario St & Fairview Rd W/Fairview Rd E

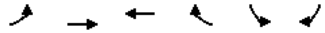
12-13-2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	81	40	129	82	45	86	1115	210	53	1191	90
Future Volume (vph)	71	81	40	129	82	45	86	1115	210	53	1191	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		3.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	0.98	1.00		0.98	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	0.95		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1720	1782		1763	1751		1787	3387		1805	3511	
Flt Permitted	0.57	1.00		0.59	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1027	1782		1087	1751		1787	3387		1805	3511	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	72	83	41	132	84	46	88	1138	214	54	1215	92
RTOR Reduction (vph)	0	12	0	0	14	0	0	6	0	0	3	0
Lane Group Flow (vph)	72	112	0	132	116	0	88	1346	0	54	1304	0
Confl. Peds. (#/hr)	16		20	20		16	23		35	35		23
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	3%	0%	0%	0%	0%	4%	1%	2%	0%	0%	1%	1%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8								
Actuated Green, G (s)	23.1	23.1		23.1	23.1		13.2	111.0		8.9	106.7	
Effective Green, g (s)	23.1	23.1		23.1	23.1		13.2	111.0		8.9	106.7	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.08	0.69		0.06	0.67	
Clearance Time (s)	7.0	7.0		7.0	7.0		3.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	148	257		156	252		147	2349		100	2341	
v/s Ratio Prot		0.06			0.07		c0.05	c0.40		0.03	0.37	
v/s Ratio Perm	0.07			c0.12								
v/c Ratio	0.49	0.44		0.85	0.46		0.60	0.57		0.54	0.56	
Uniform Delay, d1	63.0	62.5		66.7	62.7		70.8	12.5		73.6	14.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.84	1.45	
Incremental Delay, d2	2.5	1.2		32.2	1.3		6.4	1.0		4.4	0.7	
Delay (s)	65.5	63.7		98.9	64.1		77.3	13.5		65.9	21.2	
Level of Service	E	E		F	E		E	B		E	C	
Approach Delay (s)		64.4			81.6			17.4			23.0	
Approach LOS		E			F			B			C	

Intersection Summary

HCM 2000 Control Delay	27.7	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.63			
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	17.0	
Intersection Capacity Utilization	87.3%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	11	348	262	9	2	5
Future Volume (Veh/h)	11	348	262	9	2	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	12	370	279	10	2	5
Pedestrians					7	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		107				
pX, platoon unblocked					0.96	
vC, conflicting volume	296				685	291
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	296				654	291
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				100	99
cM capacity (veh/h)	1269				412	749

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	382	289	7
Volume Left	12	0	2
Volume Right	0	10	5
cSH	1269	1700	607
Volume to Capacity	0.01	0.17	0.01
Queue Length 95th (m)	0.2	0.0	0.3
Control Delay (s)	0.3	0.0	11.0
Lane LOS	A		B
Approach Delay (s)	0.3	0.0	11.0
Approach LOS			B

Intersection Summary				
Average Delay		0.3		
Intersection Capacity Utilization		37.2%	ICU Level of Service	A
Analysis Period (min)		15		

APPENDIX E

Future Total Intersection Capacity Analysis

Queues
1: Hurontario St & Central Pkwy W/Central Pkwy E

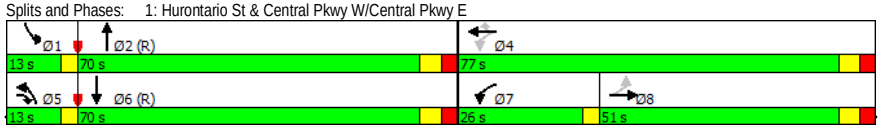
12-13-2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	145	560	70	267	432	120	64	1049	113	928
Future Volume (vph)	145	560	70	267	432	120	64	1049	113	928
Lane Group Flow (vph)	161	622	78	297	480	133	71	1240	126	1099
Turn Type	Perm	NA	Over	pm+pt	NA	Perm	Prot	NA	Prot	NA
Protected Phases		8	5	7	4		5	2	1	6
Permitted Phases	8			4		4				
Detector Phase	8	8	5	7	4	4	5	2	1	6
Switch Phase										
Minimum Initial (s)	8.0	8.0	5.0	5.0	8.0	8.0	5.0	8.0	5.0	8.0
Minimum Split (s)	41.0	41.0	10.0	10.0	41.0	41.0	10.0	40.0	10.0	40.0
Total Split (s)	51.0	51.0	13.0	26.0	77.0	77.0	13.0	70.0	13.0	70.0
Total Split (%)	31.9%	31.9%	8.1%	16.3%	48.1%	48.1%	8.1%	43.8%	8.1%	43.8%
Yellow Time (s)	4.0	4.0	3.0	3.0	4.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	3.0	3.0	7.0	7.0	3.0	7.0	3.0	7.0
Lead/Lag	Lag	Lag	Lead	Lead			Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	C-Max
v/c Ratio	0.82	0.79	0.43	0.92	0.36	0.20	0.66	0.88	0.69	0.71
Control Delay	88.8	65.8	14.8	69.3	35.4	4.7	104.2	39.5	87.1	40.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	88.8	65.8	14.8	69.3	35.4	4.7	104.2	39.5	87.1	40.4
Queue Length 50th (m)	51.9	104.6	0.0	70.6	60.2	0.0	24.3	185.8	40.8	157.7
Queue Length 95th (m)	77.8	119.3	12.2	#116.1	69.1	13.3	m#43.9	#198.5	#95.9	201.1
Internal Link Dist (m)		137.7			337.1			286.1		132.4
Turn Bay Length (m)	90.0		50.0	90.0		90.0	140.0		150.0	
Base Capacity (vph)	242	973	190	329	1533	727	116	1404	183	1540
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.64	0.41	0.90	0.31	0.18	0.61	0.88	0.69	0.71

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Hurontario St & Central Pkwy W/Central Pkwy E



HCM Signalized Intersection Capacity Analysis
1: Hurontario St & Central Pkwy W/Central Pkwy E

12-13-2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	560	70	267	432	120	64	1049	67	113	928	61
Future Volume (vph)	145	560	70	267	432	120	64	1049	67	113	928	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	3.0	3.0	7.0	7.0	3.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.98	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1752	3539	1495	1750	3505	1491	1703	3445		1752	3428	
Flt Permitted	0.48	1.00	1.00	0.16	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	881	3539	1495	298	3505	1491	1703	3445		1752	3428	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	161	622	78	297	480	133	71	1166	74	126	1031	68
RTOR Reduction (vph)	0	0	73	0	0	82	0	3	0	0	3	0
Lane Group Flow (vph)	161	622	5	297	480	51	71	1237	0	126	1096	0
Confl. Peds. (#/hr)	27		28	28		27	34		39	39		34
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	1%	2%	8%	3%	3%	3%	6%	3%	10%	3%	4%	3%
Turn Type	Perm	NA	Over	pm+pt	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		8	5	7	4		5	2		1	6	
Permitted Phases	8			4		4						
Actuated Green, G (s)	35.7	35.7	10.1	61.1	61.1	61.1	10.1	65.1		16.8	71.8	
Effective Green, g (s)	35.7	35.7	10.1	61.1	61.1	61.1	10.1	65.1		16.8	71.8	
Actuated g/C Ratio	0.22	0.22	0.06	0.38	0.38	0.38	0.06	0.41		0.11	0.45	
Clearance Time (s)	7.0	7.0	3.0	3.0	7.0	7.0	3.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0	2.0	0.2	3.0	3.0	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	196	789	94	317	1338	569	107	1401		183	1538	
v/s Ratio Prot		0.18	0.00	c0.13	0.14		0.04	c0.36		c0.07	0.32	
v/s Ratio Perm	0.18			c0.23		0.03						
v/c Ratio	0.82	0.79	0.05	0.94	0.36	0.09	0.66	0.88		0.69	0.71	
Uniform Delay, d1	59.1	58.6	70.5	39.7	35.4	31.6	73.3	43.9		69.1	35.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.13	0.73		1.00	1.00	
Incremental Delay, d2	23.3	5.3	0.1	33.7	0.2	0.1	9.2	6.9		8.3	2.8	
Delay (s)	82.4	63.8	70.5	73.4	35.6	31.7	92.1	38.9		77.4	38.6	
Level of Service	F	E	E	E	D	C	F	D		E	D	
Approach Delay (s)		67.9			47.3			41.8			42.6	
Approach LOS		E			D			D			D	

Intersection Summary

HCM 2000 Control Delay	48.4	HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio	0.90				
Actuated Cycle Length (s)	160.0	Sum of lost time (s)		20.0	
Intersection Capacity Utilization	94.0%	ICU Level of Service		F	
Analysis Period (min)	15				

c Critical Lane Group

Queues
2: Hurontario St & Fairview Rd W/Fairview Rd E

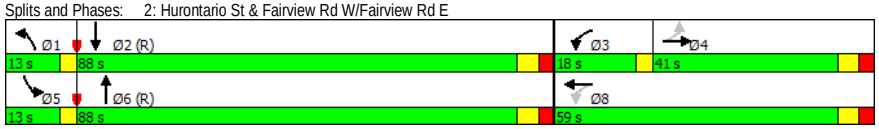
12-13-2019

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	114	82	169	71	41	901	47	1109
Future Volume (vph)	114	82	169	71	41	901	47	1109
Lane Group Flow (vph)	131	211	194	245	47	1220	54	1336
Turn Type	Perm	NA	pm+pt	NA	Prot	NA	Prot	NA
Protected Phases		4	3	8	1	6	5	2
Permitted Phases	4		8					
Detector Phase	4	4	3	8	1	6	5	2
Switch Phase								
Minimum Initial (s)	8.0	8.0	5.0	8.0	5.0	8.0	5.0	8.0
Minimum Split (s)	40.0	40.0	12.0	40.0	12.0	39.0	12.0	39.0
Total Split (s)	41.0	41.0	18.0	59.0	13.0	88.0	13.0	88.0
Total Split (%)	25.6%	25.6%	11.3%	36.9%	8.1%	55.0%	8.1%	55.0%
Yellow Time (s)	4.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	3.0	7.0	3.0	7.0	3.0	7.0
Lead/Lag	Lag	Lag	Lead		Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
v/c Ratio	0.79	0.78	0.74	0.54	0.48	0.63	0.53	0.67
Control Delay	95.7	72.6	62.7	39.6	88.8	25.6	101.1	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	95.7	72.6	62.7	39.6	88.8	25.6	101.1	12.8
Queue Length 50th (m)	42.8	57.6	52.3	51.7	15.5	142.4	18.9	60.3
Queue Length 95th (m)	61.9	79.4	68.1	71.2	29.3	179.8	m25.6	66.5
Internal Link Dist (m)		119.7		82.8		116.9		286.1
Turn Bay Length (m)	90.0		60.0		165.0		70.0	
Base Capacity (vph)	229	361	262	544	112	1933	111	1998
Starvation Cap Reductn	0	0	0	0	0	0	0	25
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.58	0.74	0.45	0.42	0.63	0.49	0.68

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Hurontario St & Fairview Rd W/Fairview Rd E



HCM Signalized Intersection Capacity Analysis
2: Hurontario St & Fairview Rd W/Fairview Rd E

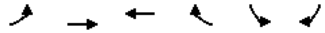
12-13-2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	114	82	102	169	71	142	41	901	160	47	1109	53
Future Volume (vph)	114	82	102	169	71	142	41	901	160	47	1109	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		3.0	7.0		3.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.97		1.00	0.97		1.00	0.98		1.00	1.00	
Flpb, ped/bikes	0.98	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	0.90		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1692	1568		1676	1540		1770	3314		1703	3417	
Flt Permitted	0.61	1.00		0.31	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1081	1568		542	1540		1770	3314		1703	3417	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	131	94	117	194	82	163	47	1036	184	54	1275	61
RTOR Reduction (vph)	0	30	0	0	49	0	0	8	0	0	2	0
Lane Group Flow (vph)	131	181	0	194	196	0	47	1212	0	54	1334	0
Confl. Peds. (#/hr)	24		28	28		24	25		27	27		25
Heavy Vehicles (%)	4%	4%	11%	7%	7%	8%	2%	4%	8%	6%	4%	13%
Turn Type	Perm	NA		pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases		4		3	8		1	6		5	2	
Permitted Phases	4			8								
Actuated Green, G (s)	24.5	24.5		42.3	42.3		7.8	92.4		8.3	92.9	
Effective Green, g (s)	24.5	24.5		42.3	42.3		7.8	92.4		8.3	92.9	
Actuated g/C Ratio	0.15	0.15		0.26	0.26		0.05	0.58		0.05	0.58	
Clearance Time (s)	7.0	7.0		3.0	7.0		3.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	165	240		248	407		86	1913		88	1983	
v/s Ratio Prot		0.12		c0.07	0.13		0.03	0.37		c0.03	c0.39	
v/s Ratio Perm	0.12			c0.13								
v/c Ratio	0.79	0.75		0.78	0.48		0.55	0.63		0.61	0.67	
Uniform Delay, d1	65.3	64.8		50.2	49.6		74.4	22.5		74.3	23.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.21	0.46	
Incremental Delay, d2	22.5	12.5		14.8	0.9		6.9	1.6		8.1	1.2	
Delay (s)	87.8	77.3		65.0	50.5		81.3	24.1		98.0	11.9	
Level of Service	F	E		E	D		F	C		F	B	
Approach Delay (s)		81.4			56.9			26.3			15.3	
Approach LOS		F			E			C			B	

Intersection Summary

HCM 2000 Control Delay	31.2	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.72			
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	84.8%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	28	272	312	3	15	96
Future Volume (Veh/h)	28	272	312	3	15	96
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	31	302	347	3	17	107
Pedestrians					7	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		107				
pX, platoon unblocked						
vC, conflicting volume	357				720	356
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	357				720	356
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				96	84
cM capacity (veh/h)	1206				385	689

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	333	350	124
Volume Left	31	0	17
Volume Right	0	3	107
cSH	1206	1700	622
Volume to Capacity	0.03	0.21	0.20
Queue Length 95th (m)	0.6	0.0	5.9
Control Delay (s)	1.0	0.0	12.2
Lane LOS	A		B
Approach Delay (s)	1.0	0.0	12.2
Approach LOS			B

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		

Queues

1: Hurontario St & Central Pkwy W/Central Pkwy E

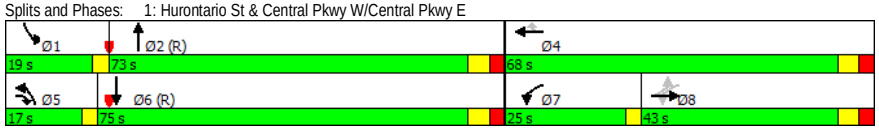
12-13-2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	101	438	58	281	555	69	95	1024	115	949
Future Volume (vph)	101	438	58	281	555	69	95	1024	115	949
Lane Group Flow (vph)	107	466	62	299	590	73	101	1192	122	1177
Turn Type	Perm	NA	Over	D.P+P	NA	Perm	Prot	NA	Prot	NA
Protected Phases		8	5	7	4		5	2	1	6
Permitted Phases	8			8		4				
Detector Phase	8	8	5	7	4	4	5	2	1	6
Switch Phase										
Minimum Initial (s)	8.0	8.0	5.0	5.0	8.0	8.0	5.0	8.0	5.0	8.0
Minimum Split (s)	41.0	41.0	10.0	10.0	41.0	41.0	10.0	40.0	10.0	40.0
Total Split (s)	43.0	43.0	17.0	25.0	68.0	68.0	17.0	73.0	19.0	75.0
Total Split (%)	26.9%	26.9%	10.6%	15.6%	42.5%	42.5%	10.6%	45.6%	11.9%	46.9%
Yellow Time (s)	4.0	4.0	3.0	3.0	4.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	3.0	3.0	7.0	7.0	3.0	7.0	3.0	7.0
Lead/Lag	Lag	Lag	Lead	Lead			Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	C-Max
v/c Ratio	0.77	0.75	0.29	0.92	0.51	0.13	0.72	0.71	0.76	0.69
Control Delay	95.5	70.4	6.7	74.0	45.0	7.0	88.5	31.5	98.6	35.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	95.5	70.4	6.7	74.0	45.0	7.0	88.5	31.5	98.6	35.1
Queue Length 50th (m)	34.9	79.7	0.0	78.5	84.7	0.0	30.1	178.4	40.3	157.1
Queue Length 95th (m)	56.0	93.5	5.0	#105.6	94.9	11.4	#54.1	234.2	#67.1	208.7
Internal Link Dist (m)		137.7			337.1			286.1		132.4
Turn Bay Length (m)	90.0		50.0	90.0		90.0	140.0		150.0	
Base Capacity (vph)	182	812	231	336	1362	637	161	1679	184	1699
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.57	0.27	0.89	0.43	0.11	0.63	0.71	0.66	0.69

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Hurontario St & Central Pkwy W/Central Pkwy E



HCM Signalized Intersection Capacity Analysis

1: Hurontario St & Central Pkwy W/Central Pkwy E

12-13-2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	438	58	281	555	69	95	1024	97	115	949	157
Future Volume (vph)	101	438	58	281	555	69	95	1024	97	115	949	157
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	3.0	3.0	7.0	7.0	3.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1792	3610	1615	1801	3574	1553	1805	3473		1805	3425	
Flt Permitted	0.43	1.00	1.00	0.24	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	810	3610	1615	456	3574	1553	1805	3473		1805	3425	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	107	466	62	299	590	73	101	1089	103	122	1010	167
RTOR Reduction (vph)	0	0	57	0	0	49	0	4	0	0	7	0
Lane Group Flow (vph)	107	466	5	299	590	24	101	1188	0	122	1170	0
Confl. Peds. (#/hr)	12		17	17		12	53		31	31		53
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	0%	0%	0%	0%	1%	1%	0%	2%	3%	0%	2%	1%
Turn Type	Perm	NA	Over	D.P+P	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		8	5	7	4		5	2		1	6	
Permitted Phases	8			8		4						
Actuated Green, G (s)	27.6	27.6	12.5	48.6	51.6	51.6	12.5	77.1		14.3	78.9	
Effective Green, g (s)	27.6	27.6	12.5	48.6	51.6	51.6	12.5	77.1		14.3	78.9	
Actuated g/C Ratio	0.17	0.17	0.08	0.30	0.32	0.32	0.08	0.48		0.09	0.49	
Clearance Time (s)	7.0	7.0	3.0	3.0	7.0	7.0	3.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0	2.0	0.2	3.0	3.0	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	139	622	126	315	1152	500	141	1673		161	1688	
v/s Ratio Prot		0.13	0.00	c0.12	0.17		0.06	c0.34		c0.07	0.34	
v/s Ratio Perm	0.13			c0.16		0.02						
v/c Ratio	0.77	0.75	0.04	0.95	0.51	0.05	0.72	0.71		0.76	0.69	
Uniform Delay, d1	63.2	62.9	68.2	48.2	44.0	37.3	72.0	32.6		71.2	31.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.92	0.85		1.00	1.00	
Incremental Delay, d2	22.2	4.9	0.0	36.6	0.4	0.0	11.0	2.1		16.4	2.4	
Delay (s)	85.4	67.8	68.2	84.8	44.4	37.3	77.0	30.0		87.6	33.6	
Level of Service	F	E	E	F	D	D	E	C		F	C	
Approach Delay (s)		70.8			56.4			33.6			38.7	
Approach LOS		E			E			C			D	

Intersection Summary

HCM 2000 Control Delay	46.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	91.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Queues
2: Hurontario St & Fairview Rd W/Fairview Rd E

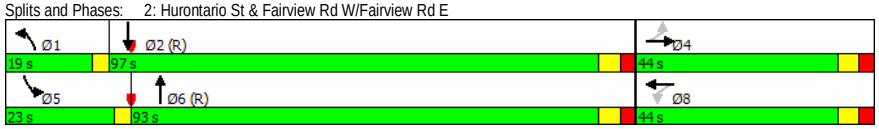
12-13-2019

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	71	83	135	83	86	1115	113	1191
Future Volume (vph)	71	83	135	83	86	1115	113	1191
Lane Group Flow (vph)	72	126	138	169	88	1362	115	1307
Turn Type	Perm	NA	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4		8	1	6	5	2
Permitted Phases	4		8					
Detector Phase	4	4	8	8	1	6	5	2
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	5.0	8.0	5.0	8.0
Minimum Split (s)	40.0	40.0	40.0	40.0	12.0	30.0	12.0	30.0
Total Split (s)	44.0	44.0	44.0	44.0	19.0	93.0	23.0	97.0
Total Split (%)	27.5%	27.5%	27.5%	27.5%	11.9%	58.1%	14.4%	60.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	3.0	7.0	3.0	7.0
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
v/c Ratio	0.58	0.45	0.85	0.61	0.60	0.62	0.66	0.56
Control Delay	79.6	58.4	104.1	60.5	86.8	19.6	72.1	25.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	79.6	58.4	104.1	60.5	86.8	19.6	72.1	25.0
Queue Length 50th (m)	22.7	34.6	45.6	44.4	29.0	132.7	38.7	142.7
Queue Length 95th (m)	39.0	53.6	68.5	66.5	47.7	200.0	m52.8	209.3
Internal Link Dist (m)		119.7		82.8		116.9		286.1
Turn Bay Length (m)	90.0		60.0		165.0		70.0	
Base Capacity (vph)	192	423	251	413	183	2193	228	2322
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.30	0.55	0.41	0.48	0.62	0.50	0.56

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 106 (66%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Hurontario St & Fairview Rd W/Fairview Rd E



HCM Signalized Intersection Capacity Analysis
2: Hurontario St & Fairview Rd W/Fairview Rd E

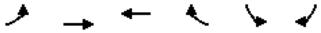
12-13-2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	83	40	135	83	82	86	1115	220	113	1191	90
Future Volume (vph)	71	83	40	135	83	82	86	1115	220	113	1191	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		3.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	0.98	1.00		0.98	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	0.93		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1724	1783		1763	1693		1787	3381		1805	3511	
Flt Permitted	0.46	1.00		0.59	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	833	1783		1087	1693		1787	3381		1805	3511	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	72	85	41	138	85	84	88	1138	224	115	1215	92
RTOR Reduction (vph)	0	12	0	0	25	0	0	8	0	0	3	0
Lane Group Flow (vph)	72	114	0	138	144	0	88	1354	0	115	1304	0
Confl. Peds. (#/hr)	16		20	20		16	23		35	35		23
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	3%	0%	0%	0%	0%	4%	1%	2%	0%	0%	1%	1%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8								
Actuated Green, G (s)	24.1	24.1		24.1	24.1		13.2	103.4		15.5	105.7	
Effective Green, g (s)	24.1	24.1		24.1	24.1		13.2	103.4		15.5	105.7	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.08	0.65		0.10	0.66	
Clearance Time (s)	7.0	7.0		7.0	7.0		3.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	125	268		163	255		147	2184		174	2319	
v/s Ratio Prot		0.06			0.09		0.05	c0.40		c0.06	0.37	
v/s Ratio Perm	0.09			c0.13								
v/c Ratio	0.58	0.43		0.85	0.57		0.60	0.62		0.66	0.56	
Uniform Delay, d1	63.2	61.7		66.2	63.1		70.8	16.7		69.7	14.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.85	1.50	
Incremental Delay, d2	6.3	1.1		31.2	2.9		6.4	1.3		6.6	0.7	
Delay (s)	69.5	62.8		97.4	66.0		77.3	18.0		66.1	22.7	
Level of Service	E	E		F	E		E	B		E	C	
Approach Delay (s)		65.2			80.1			21.6			26.2	
Approach LOS		E			F			C			C	

Intersection Summary

HCM 2000 Control Delay	31.4	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.65			
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	17.0	
Intersection Capacity Utilization	90.1%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	83	348	262	9	2	49
Future Volume (Veh/h)	83	348	262	9	2	49
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	88	370	279	10	2	52
Pedestrians					7	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		107				
pX, platoon unblocked					0.96	
vC, conflicting volume	296				837	291
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	296				811	291
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	93				99	93
cM capacity (veh/h)	1269				313	749

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	458	289	54
Volume Left	88	0	2
Volume Right	0	10	52
cSH	1269	1700	712
Volume to Capacity	0.07	0.17	0.08
Queue Length 95th (m)	1.8	0.0	2.0
Control Delay (s)	2.1	0.0	10.5
Lane LOS	A		B
Approach Delay (s)	2.1	0.0	10.5
Approach LOS			B

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	50.6%	ICU Level of Service	A
Analysis Period (min)	15		

APPENDIX F

Previous Study

Mimico-Judson Secondary Plan

City of Toronto

TRANSPORTATION IMPACT STUDY

Mimico-Judson Secondary Plan Update

9873/200 March 2019

1 INTRODUCTION

The landowners within the "Mimico Triangle" of the Mimico-Judson Secondary Plan have been requested to provide a consolidated and update transportation study for the various proposed and contemplated developments. The locations of the various developments are shown in **Figure 1-1**. This Transportation Study will serve as the consolidated and updated study for the landowners.

This Transportation Study will firstly outline the developments in the "Triangle Lands". The existing transportation networks will then be detailed and inventoried followed by framing the background conditions within this study's planning horizon of 2026. A 10-year planning horizon has been set to reflect a more mature state of development given the large scale of development proposed in the area. This study presents a conservative analysis by assuming a 10-year horizon, and including a number of background developments. Subsequently, transportation analyses will be conducted of the existing, background, and future conditions. A significant component to this study will also be a review of active transportation considerations, and conducting transit analysis under existing, background, and future conditions.

1.1 SITE CONTEXT

The subject site location is illustrated in **Figure 1-1**.

Figure 1-1: Subject Site and Adjacent Lands Location

1.2 STUDY AREA

The study area for the Transportation Study has been determined by evaluating the size and scope of the contemplated developments, as well as in discussion with City of Toronto Staff. The intersections studied include:

- Royal York Road & Evans Avenue;
- Royal York Road & Judson Street;
- Royal York Road & The Queensway;
- Royal York Road & Mimico Avenue;
- Royal York Road & Cavell Avenue;
- Royal York Road & Hay Avenue;
- Portland Street & Audley Street;
- Portland Street & Buckingham Street;
- Portland Street & Windsor Road;
- Portland Street & Royal York Road;
- Newcastle Street & Buckingham Street;
- Newcastle Street & Windsor Road;
- Newcastle Street & Royal York Road;
- Grand Avenue & Manitoba Street;
- Grand Avenue & The Queensway;
- Islington Avenue & Evans Avenue;
- Islington Avenue & Judson Street; and,
- EB Gardiner Off-Ramp & Legion Road North.

1.3 MIMICO TRIANGLE DEVELOPMENTS

Table 1-1 below summarizes the number of residential units and/or the commercial GFA proposed and evaluated for each proposed development.

Development	Residential Units	Office GFA (ft²)	Retail GFA (ft²)	Daycare GFA (ft²)
Freed Lands	1,263	16,146 ft²	13,638 ft²	8,611 ft²
Rietz	458	-	26,705ft²	-
Vandyk	725	32,378 ft²	25,467 ft²	-
Dunpar	833	0	27,749 ft²	-
DeZen	756	27,265 ft²	32,744 ft²	-

Table 1-1: Development Site Statistics

8 PARKING

As the "Triangle Lands" develop, and the policies and vision of the Secondary Plan are realized, it is anticipated that the area will become increasingly reliant upon transit for mobility, and usage and ownership of the personal automobile will decrease. The "Triangle Lands" are currently in a unique situation, where a regional transit node, being Mimico GO Station, provides regional transit services to low-rise and low-density development. In other words, the existing land uses do not fully capitalize on the presence of the regional transit infrastructure.

As a result of the area's current character, the City-wide parking standards from the City's Zoning By-Law apply that currently apply require significant vehicular parking that would not capitalize on the presence of regional transit infrastructure and will encourage greater auto ownership and rates of driving than the Secondary Plan and the Official Plan envision for this area. As the area immediately surrounding Mimico GO Station is targeted and contemplated to receive intense mixed-use development that would be appropriate to bolster Mimico GO Station and capitalize on the direct access to regional transit services, an appropriate supply of parking should be provided that encourages future residents and employees to primarily use transit.

The sections below will outline the current parking requirements that apply to the contemplated developments within the "Triangle Lands" and will further discuss the surrounding policy context that identifies how the "Triangle Lands" is a prime candidate for a reduced parking supply to be provided.

8.1 CAR PARKING

8.1.1 Car Parking Standards

Currently, the "Triangle Lands" is dominantly zoned under City of Toronto Zoning By-Law 569-2013, with a small portion zoned under General Etobicoke Zoning Code V131. For the purposes of discussing parking, the parking standards of City of Toronto Zoning By-Law 569-2013 will be considered for the entire area. No Policy Areas are applicable to the subject site, and therefore, the parking standards applied are for "All Other Areas". However, it is understood that the City may be willing to accept the parking standards of Policy Area 4 (PA4), and therefore the PA4 requirements have been determined as well.

As an example of the application of the City's parking standards, the abovementioned parking standards have been applied to the Freed Lands and are summarized below in **Table 8-1** and **Table 8-2**.

Zoning By-Law 569-2013 Car Parking Standards (All Other Areas)									
Land Use	**GFA/Units**	**Minimum Parking Rate**	**Parking Standard**	**AM**	**PM**	**EVE**	**AM**	**PM**	**EVE**
Residential	1,263	-	-	100%	100%	100%	-	-	-
Bachelor	91	0.8 spaces/unit	72						
1-Bedroom	731	0.9 spaces/unit	657						
2-Bedroom	314	1.0 spaces/unit	314						
3-Bedroom	127	1.2 spaces/unit	152						
Residential Parking Spaces Sub-Total			1,195	100%	100%	100%	**1,195**	**1,195**	**1,195**
Visitor	-	0.2 spaces/unit	252	20%	100%	100%	25	88	252
Retail	1,267 m²	1.5 spaces/100m²	19	100%	60%	0%	3	19	19
Office	1,500 m²	1.5 spaces/100m²	22	20%	100%	100%	22	13	0
Daycare	800 m²	1.0 spaces/100m²	8	100%	100%	50%	8	8	4
Commercial Parking Spaces Sub-Total			301	-	-	-	58	128	275
						TOTAL	**1,254**	**1,327**	**1,474**

Table 8-1: Zoning By-Law 569-2013 Car Parking Standards (All Other Areas)

Applying the City-wide parking standards to the Freed Lands along will require 1,195 resident parking spaces for the 1,263 units proposed, returning a parking supply rate of 0.95 spaces per unit. In addition, when considering the sharing provisions for commercial parking, at most 275 commercial parking spaces are required.

Zoning By-Law 569-2013 Car Parking Standards (PA4)									
Land Use	**GFA/Units**	**Minimum Parking Rate**	**Parking Standard**	**AM**	**PM**	**EVE**	**AM**	**PM**	**EVE**
Residential	1,263	-	-	100%	100%	100%	-	-	-
Bachelor	91	0.7 spaces/unit	63						
1-Bedroom	731	0.8 spaces/unit	584						
2-Bedroom	314	0.9 spaces/unit	282						
3-Bedroom	127	1.0 spaces/unit	139						
Residential Sub-Total			1,068	100%	100%	100%	**1,068**	**1,068**	**1,068**
Visitor	-	0.2 spaces/unit	189	20%	100%	100%	18	66	189
Retail	1,267 m²	1.5 spaces/100m²	12	100%	60%	0%	2	12	12
Office	1,500 m²	1.5 spaces/100m²	15	20%	100%	100%	15	9	0
Daycare	800 m²	1.0 spaces/100m²	3	100%	100%	50%	3	3	1
Commercial Sub-Total			219	-	-	-	38	90	202
						TOTAL	**1,106**	**1,158**	**1,270**

Table 8-2: Zoning By-Law 569-2013 Car Parking Standards (PA4)

Applying the PA4 parking standards will require 1,068 resident parking spaces for the 1,263 units proposed, returning a parking supply rate of 0.85 spaces per unit. In addition, when considering the sharing provisions for commercial parking, at most 202 commercial parking spaces are required.

8.1.2 Car Parking Proposed

Targeted for the Freed Lands, Rietz and Vandyk is a residential parking supply rate of 0.70 spaces/unit, which is reduced from the PA4 requirements and the City-wide requirements of Zoning By-Law 569-2013. Furthermore, visitor parking is proposed at a rate of 0.10 spaces/unit, with additional commercial parking provided to accommodate the parking demand of the other proposed

commercial uses. It is expected that the supply of visitor parking will be shared with the other proposed commercial uses throughout the day. As outlined above, the contemplated developments are unique as they are anticipated to receive significant intensified mixed-use development on the doorstep of a regional transit node. Such development with a comparable transportation context does not yet exist. **Table 8-3** below summarizes the resident and commercial parking proposed when applied to the Freed lands.

Land Use	Units/GFA	Proposed Parking Rate	Parking Proposed
Residential	1,263	0.70 spaces/unit	884
Visitor	-	0.10 spaces/unit	126
Retail	1,267	-	31
Office	1,500		
Daycare	800		
		TOTAL	**1,041**

Table 8-3: Parking Proposed

As discussed below, the contemplated developments will aptly provide resident and visitor parking considering the future context of the Mimico-Judson Secondary Plan. Additional commercial parking is also proposed to accommodate the parking demand and Zoning By-Law requirements for the commercial land uses.

8.1.3 Projected Parking Demand

To quantify the anticipated parking demand to be exhibited by the contemplated developments in the "Triangle Lands", parking demand data of proxy sites located nearby TTC subway stations on Line 2 – Bloor/Danforth and Line 1 – Yonge/University/Spadina have been investigated. Proxy site survey data selected for this review are of Line 1/2 Subway Stations located in considerable distance from the Downtown core and the transfer points to TTC Line 1/2. These proxy sites therefore demonstrate parking demand that can be expected in significant distance of the Downtown core along a rapid transit route. Considering the initiatives of Metrolinx/GO Transit and the RER program, it can be expected that the Lakeshore West GO line will more closely reflect the service and operation of a localized rapid transit route to/from Downtown Toronto.

Prior to presenting the parking proxy data, it must first be demonstrated that the areas investigated for resident parking demand are appropriate applications to the "Triangle Lands". The areas investigated include those nearby:

- St. Clair West Station – TTC Line 1
- Ossington Station – TTC Line 2
- High Park Station – TTC Line 2

Each of these areas involves higher-density development being embedded within predominantly low-density neighbourhoods concentrated nearby TTC Subway Stations. This is similar in nature to the contemplated developments of the "Triangle Lands", which will be high-density developments embedded into a predominantly low-density neighbourhood concentrated nearby Mimico GO Station. **Table 8-4** below summarizes the transportation context of each studied proxy area demonstrating that the more auto-oriented behaviours exhibited by the lower-density households greatly contrast the multi-modal behaviours of the higher-density households. TTS 2016 data were

APPENDIX G

Vehicle Swept Path Diagrams

TYPICAL FIRE ROUTE RADII:

R=15m
R=12m
R=9m

HURONTARIO STREET

PRIVATE ROAD

FAIRVIEW ROAD EAST

PROPERTY LINE

5345
3000

TRANSFORMER PAD

RESIDENTIAL OUTDOOR AMENITY

OUTDOOR AMENITY
3,513.98ft²
326.43m²

INDOOR AMENITY
2,745.13ft²
255.06m²

RAMP DOWN
24.0m @ 15.0%

RAMP DOWN
4.0m @ 7.5%

TYPE "G" LOADING
(4.0m X 19m X 6.1m HIGH)

RETAIL
27,222.44ft²
2,528.73m²

PARCEL ROOM

MAIL ROOM

MOVING ROOM

RETAIL GARBAGE

GARBAGE ROOM
108.55m²
1,168.41ft²

RESIDENTIAL SHORT-TERM BICYCLE PARKING

RESIDENTIAL LOBBY

1 BED + DEN1
59.01m²
635.19ft²

1 BED + DEN2
59.01m²
635.19ft²

1 BED + DEN2
59.01m²
635.19ft²

2 BEDROOM
60.13m²
647.24ft²

SLOPE UP
9.1m @ 4.4%

RAMP UP
4m @ 8.3%

10.65

LAY-BY

EXISTING 2-WAY ACCESS ROAD

R=9 m
R=12 m
R=15 m

LEA Consulting Ltd. Consulting Engineers and Planners **www.LEA.ca**	N	Project No. 20287 Date DEC. 20, 2019		1 FAIRVIEW ROAD EAST MISSISSAUGA ONTARIO 3 0 3 6 9m 1:300	GROUND FLOOR FIRE ROUTE REVIEW	Drawing No. 001

DRAWING NAME: C:\Users\DTat\appdata\local\temp\AcPublish_19444\20287WF004.dwg

NOTES:

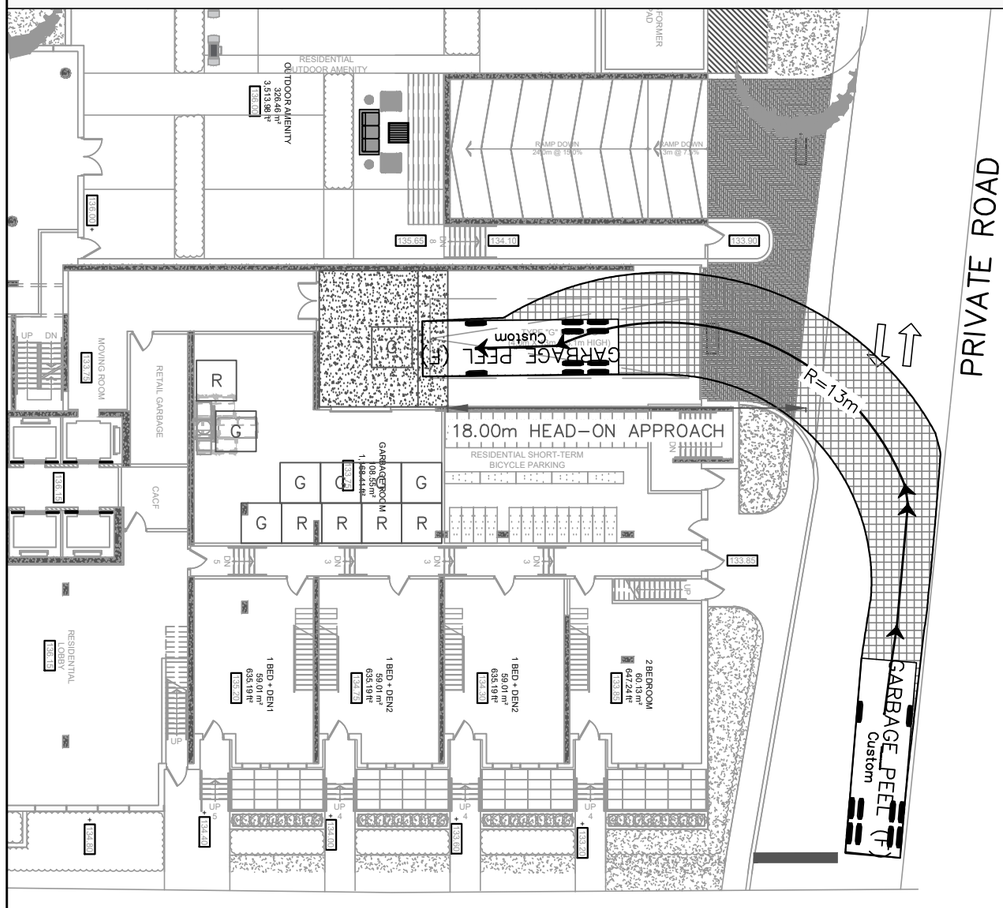
1. NUMBER OF RECYCLING/GARBAGE BINS SHOWN IN STORAGE ROOM AND STAGING AREA IS MEANT TO DENOTE THAT BOTH SPACES CAN ACCOMMODATE THE NECESSARY NUMBER OF RESIDENTIAL COLLECTION BINS AS PER REGION OF PEEL WASTE COLLECTION DESIGN MANUAL 4.1.1

2. TRAINED ON-SITE PERSONNEL MUST MANEUVER COLLECTION BINS IN FRONT OF COLLECTION VEHICLE DURING COLLECTION DAY

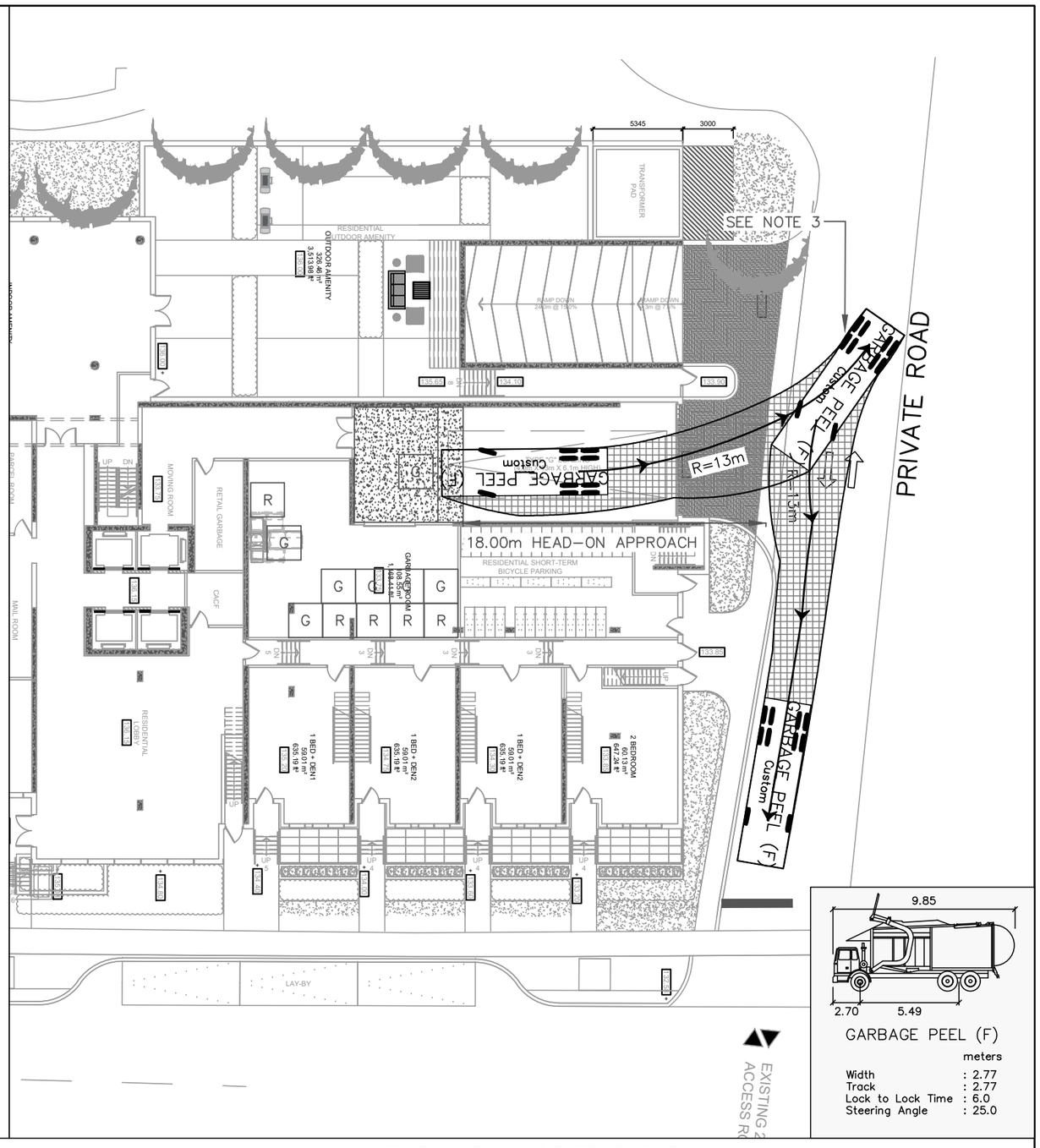
3. TRAINED ON-SITE PERSONNEL MUST ASSIST THE COLLECTION VEHICLE IN REVERSING OUT OF THE LOADING SPACE ON COLLECTION DAY

4. A MINIMUM CLEAR HEIGHT OF 7.5m FROM THE CONCRETE PAD MUST BE PROVIDED AT THE COLLECTION POINT. THE CLEAR HEIGHT OF 7.5m MUST BE FREE OF OBSTRUCTION SUCH AS SPRINKLER SYSTEMS, DUCTS, BALCONIES, WIRES AND TREES.

5. OUTSIDE OF THE COLLECTION POINT, A CLEAR HEIGHT OF 4.4m FROM THE TOP OF THE ACCESS ROAD MUST BE PROVIDED ALONG THE WASTE COLLECTION VEHICLE ACCESS AND EGRESS ROUTE. THE CLEAR HEIGHT OF 4.4m MUST BE FREE OF OBSTRUCTIONS SUCH AS SPRINKLER SYSTEMS, DUCTS, BALCONIES, WIRES AND TREES.



ENTRY PATH – FORWARD IN



EXIT PATH – REVERSE OUT

GARBAGE PEEL (F)

	meters
Width	: 2.77
Track	: 2.77
Lock to Lock Time	: 6.0
Steering Angle	: 25.0

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

Project No. 20287

Date DEC. 20, 2019

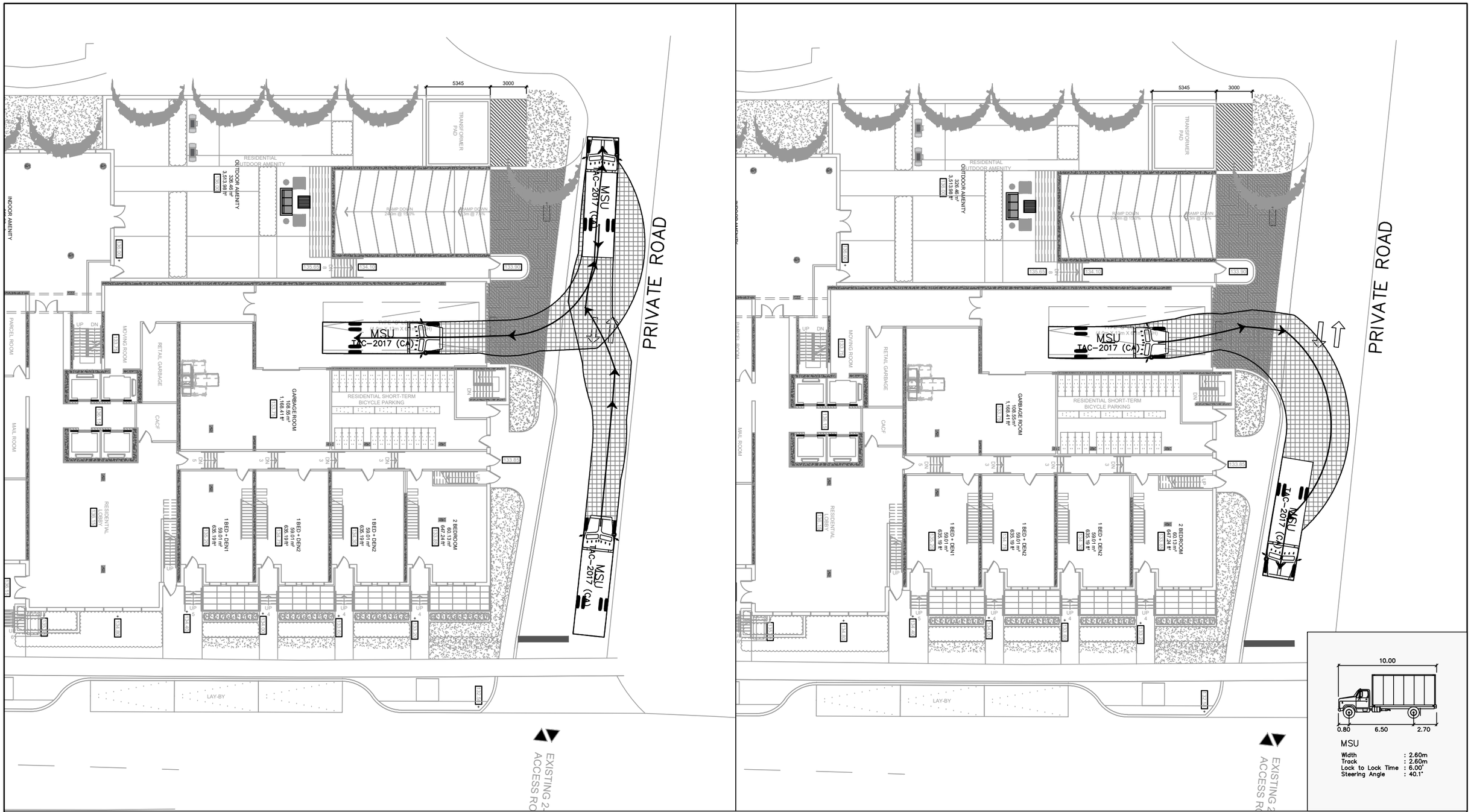
1 FAIRVIEW ROAD EAST
MISSISSAUGA ONTARIO

3 0 3 6 9m
1:300

FUNCTIONAL REVIEW (LOADING)
CITY GARBAGE TRUCK
ENTRY/EXIT PATHS

Drawing No. 002

DRAWING NAME: C:\Users\DTat\appdata\local\temp\AcPublish_19444\20287WF004.dwg



ENTRY PATH – REVERSE IN

EXIT PATH – FORWARD OUT

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

Project No. 20287

Date DEC. 20, 2019

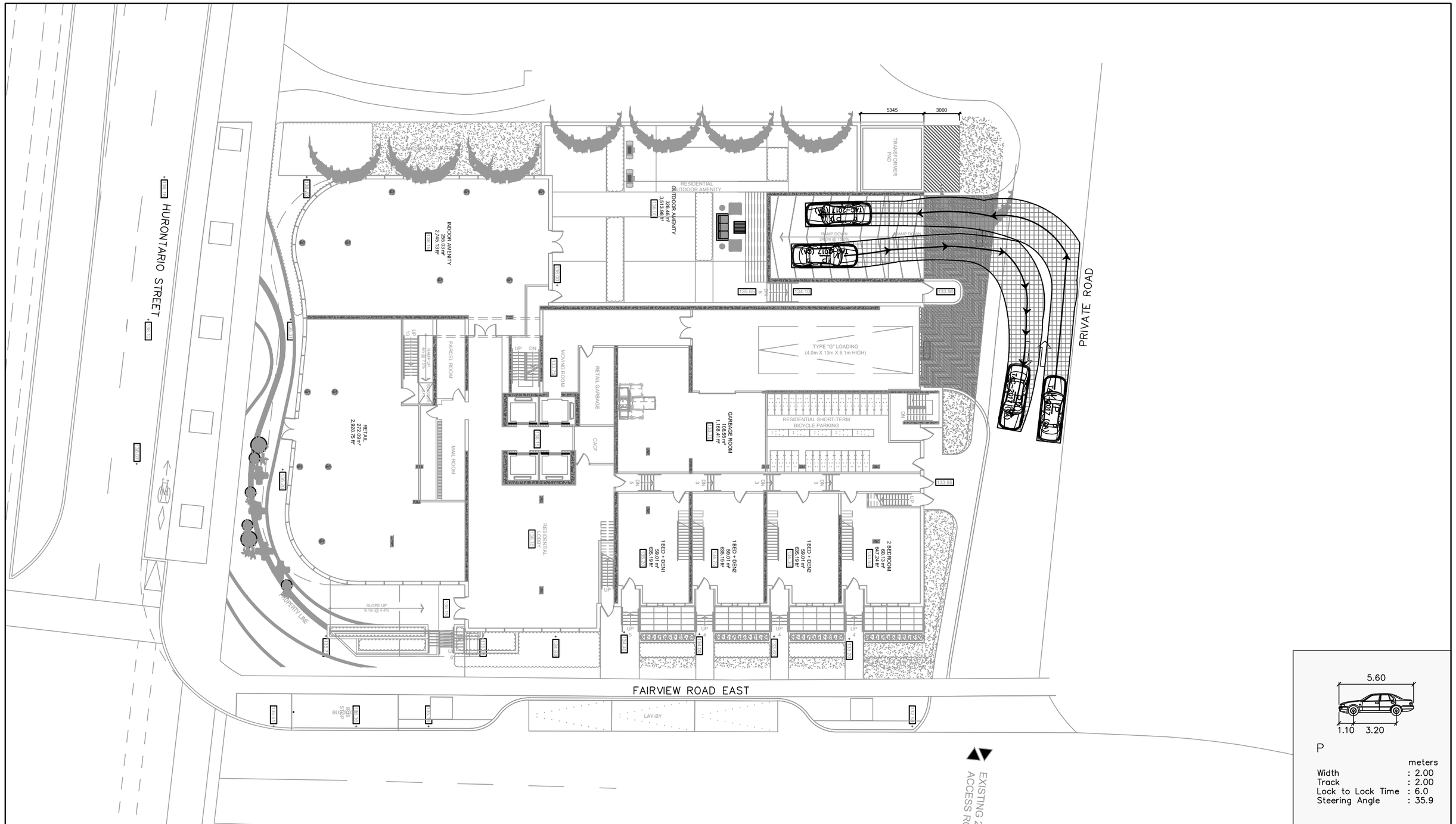
1 FAIRVIEW ROAD EAST
MISSISSAUGA ONTARIO

3 0 3 6 9m
1:300

FUNCTIONAL REVIEW (LOADING)
MSU
ENTRY/EXIT PATHS

Drawing No. 003

DRAWING NAME: C:\Users\DTat\appdata\local\temp\AcPublish_19444\20287WF004.dwg



5.60

1.10 3.20

P

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

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

Project No. 20287

Date DEC. 20, 2019

1 FAIRVIEW ROAD EAST
MISSISSAUGA ONTARIO

3 0 3 6 9m
1: 300

FUNCTIONAL REVIEW (GROUND FLOOR)
PTAC
ENTRY/EXIT

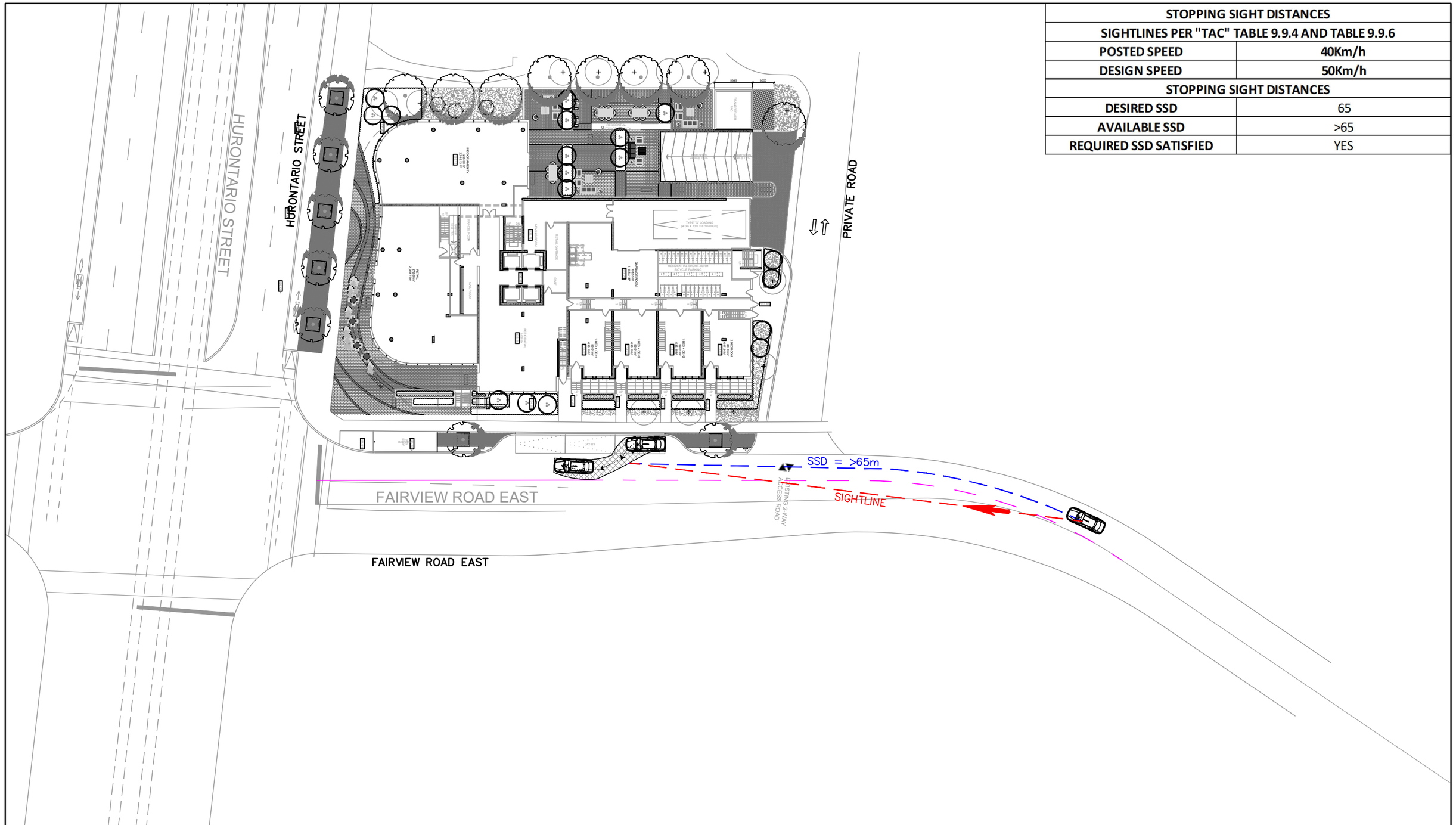
Drawing No. 004

DRAWING NAME: C:\Users\DTat\appdata\local\temp\AcPublish_19444\20287WF004.dwg

APPENDIX H

Sightline Review

STOPPING SIGHT DISTANCES	
SIGHTLINES PER "TAC" TABLE 9.9.4 AND TABLE 9.9.6	
POSTED SPEED	40Km/h
DESIGN SPEED	50Km/h
STOPPING SIGHT DISTANCES	
DESIRED SSD	65
AVAILABLE SSD	>65
REQUIRED SSD SATISFIED	YES



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

Project No.
20287-220

Date
DEC. 20, 2019

1 FAIRVIEW ROAD EAST
MISSISSAUGA ONTARIO

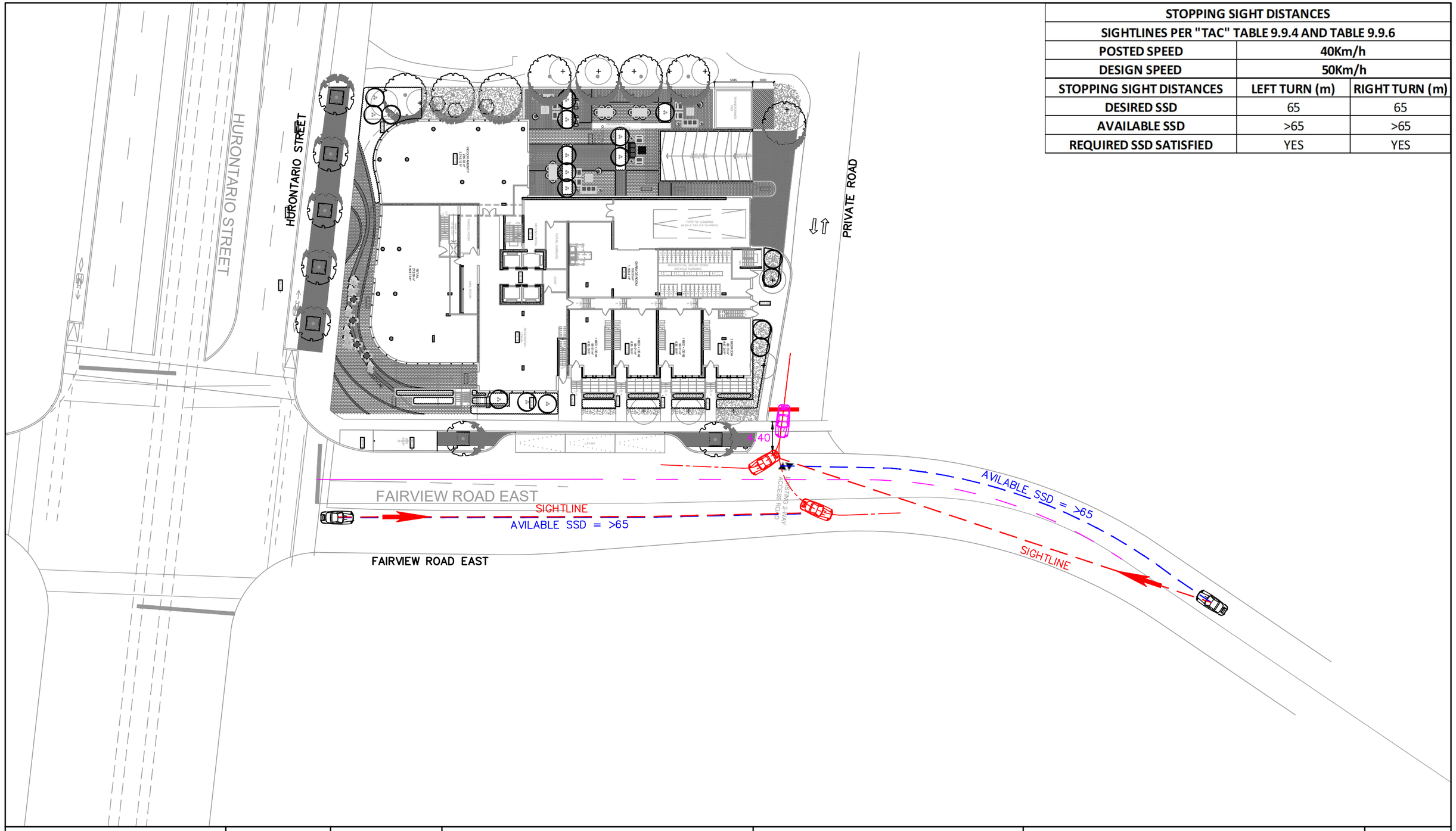
5 0 5 10 15m
1:500

FAIRVIEW ROAD LAYBY
STOPPING SIGHT DISTANCE
SIGHTLINE ANALYSIS

Drawing No.
SK01

DRAWING NAME: C:\Users\DTat\appdata\local\temp\AcPublis

STOPPING SIGHT DISTANCES		
SIGHTLINES PER "TAC" TABLE 9.9.4 AND TABLE 9.9.6		
POSTED SPEED	40Km/h	
DESIGN SPEED	50Km/h	
STOPPING SIGHT DISTANCES	LEFT TURN (m)	RIGHT TURN (m)
DESIRED SSD	65	65
AVAILABLE SSD	>65	>65
REQUIRED SSD SATISFIED	YES	YES



LEA Consulting Ltd. Consulting Engineers and Planners www.LEA.ca	N	Project No. 20287-220 Date DEC. 20, 2019		1 FAIRVIEW ROAD EAST MISSISSAUGA ONTARIO 5 0 5 10 15m 1:500	FAIRVIEW ROAD ACCESS STOPPING SIGHT DISTANCE SIGHTLINE ANALYSIS	Drawing No. SK02

DRAWING NAME: C:\Users\DTat\appdata\local\temp\AcPublis