



DVB Real Estate Investments Inc.

3016-3032 KIRWIN
AVENUE

Transportation Impact Study Update

December 2022
21111

Disclaimer

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December 11, 2021

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Sent to:

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RE: Transportation Impact Study for the Stacked Townhouse Condominium Development at 3016-3032 Kirwin Avenue, Mississauga, Ontario

LEA Consulting Ltd. is pleased to present the updated Transportation Impact Study for the proposed 8-storey rental apartment development at 3016-3032 Kirwin Avenue in the City of Mississauga, Ontario.

Should you have any questions regarding this Transportation Impact Study, please feel free to contact Kelsey Waugh at 416-572-1793.

Yours truly,

LEA CONSULTING LTD.

Kelsey Waugh, P.Eng., RSP1
Transportation Engineer

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1 INTRODUCTION

LEA Consulting Ltd. (LEA) was retained by DVB Real Estate Investments Inc. to update the previously submitted Transportation Impact Study (TIS) for the proposed residential development at 3016, 3020, 3026, 3032 Kirwin Avenue & 3031 Little John Lane in the City of Mississauga (herein referred to as the “subject site” or “3016 Kirwin Ave”).

1.1 COMMENT RESPONSES

Comments were provided from the City of Mississauga and are addressed in this report. The comments are summarized with relevant response locations below for ease of review.

Traffic Impact Study

- (i) Existing Transportation Conditions. Under study area please include the ~~road~~ of Kirwin Ave and Little John Lane.

Response: Based on the latest trip generation, the site is anticipated to generate 54 two-way trips in the AM peak hour and 59 two-way trips in the PM peak hour. Based on the forecasted trip distribution, the site trips that will travel north on Kirwin Avenue are 18 two-way trips in the AM peak hour (or 3% of the overall 590 trips on Kirwin Avenue) and 21 two-way trips in the PM peak hour (or 2% of the overall 876 trips on Kirwin Avenue). Given these trips represent a minimal change to the daily traffic flows on Kirwin Avenue, it is anticipated that there will be little to no impact on the intersection of Kirwin Avenue and Little John Lane.

- (ii) 3-1: Corridor Growth Rates. As confirmed with Transportation Planning Section the growth rates should be as follow: AM Peak - EB 0.5%; WB 1.0% and PM Peak - EB 1.0%; WB 0.5%.

Response: Corridor growth adjusted accordingly, see section 3.1.

- (iii) 3-2. Background Development. Please include 21T-M 21 2, 0 King Street East/0 Camilla Road, and 2487Camilla Road.

Response: Noted. The requested background development has been added to the future background scenario and is further discussed in Section 3.2.

- (iv) Please include the rationale for adjusting Total Lost Time.

Response: The Total Lost Time was not adjusted in the previous report or this revised analysis. No change has been made.

- (v) The TIS shall include a section in the report to address Community Impacts. This section shall include summary statements outlining the resulting traffic increases to the ~~city~~ streets, movements and intersections. Comments or concerns from the community through future public meetings and engagements that are related to traffic shall also be addressed in this section.

Response: The summary statements of the resulting impacts are outlined in Sections 5.2 and the conclusions listed in Section 9.

Internal Site Circulation

(a) Confirmation from Fire and Emergency Services that the internal road is acceptable from an emergency response perspective.

(b) Confirmation from the Region of Peel that the internal road is acceptable from a waste collection perspective.

Response: The Site Plan complies with City of Mississauga Fire Route requirements, including:

- *Overhead clearance is greater than 5.0m*
- *The principal entrance is located less than 15m from Kirwin Avenue*
- *The access is greater than 6m in width*
- *Centreline radius of 12m is provided*

Parking

Staff advise that there are discrepancies between the submitted Site Plan, dated March 10, 2021, and the draft Zoning By-law Amendment. The discrepancies should be addressed, and staff recommend that the submitted draft Zoning By-law Amendment be amended as follows:

Minimum number of resident parking spaces per one-bedroom rental apartment dwelling unit: 0.9

Minimum number of resident parking spaces per two-bedroom rental apartment dwelling unit: 1.0

Minimum number of resident parking spaces per three-bedroom rental apartment dwelling unit: 1.3

Minimum number of visitor parking spaces per rental apartment dwelling unit: 0.15

The survey methodology and submitted proxy site data is limited. However, staff undertook their own analysis because the proposed rental apartment development that is deemed desirable within the Downtown Cooksville Character Area and aligns with the City's broader goals to provide a variety of housing options and encourage transit oriented development. Staff agree that parking reductions are appropriate for the proposed development given its location along the Hurontario LRT Corridor in Downtown Cooksville that is well serviced by MiWay transit and has access to higher order transit. Historical research and survey data supports that rental apartment generally have a lower parking demand than condominium apartments, therefore staff can recommend that the interim LRT parking rates be applied to the proposed development in support of parking reductions for a rental apartment building. See Table 2 for staff supported parking rates. Staff can support a total of 160 parking spaces for the proposed development, consisting of 138 residential rental apartment and 22 visitor parking spaces, which is less than the 178 parking spaces proposed by the applicant.

Response: The parking supply is consistent with the proposed rates, and section 6 has been updated to reflect staff's comments.

Site Access

(a) The proposed access shall be relocated to align with the opposing access to the plaza

Response: Given the configuration of the site, realigning the access would create significant impacts to the built form, specifically as the access is currently located within required setbacks and is an efficient use of

the at-grade area. As the proposed location provides more distance from the intersection at Dundas, this location is considered to be appropriate. The access review is discussed in further detail in Section 7.

Transportation Demand Management

The owner agrees to incorporate the following TDM measures as part of their proposed development:

- (i) Provide a supply of 115 bicycle parking spaces (14 short-term, 101 long-term).

Response: 115 bicycle parking spaces have been provided.

- (ii) Recommends to provide unbundled parking, meaning that parking spaces will be sold separately from the unit.

Response: Parking spaces will be rented separately unbundled from the rental of the residential units.

- (iii) Provide information packages to residents to encourage active transportation and different travel demand management programs.

Response: Information packages will be provided to new tenants upon and available in the building lobby.

- (iv) Building entrances are to be oriented close to the street with direct connections to the pedestrian pathways.

Response: The primary lobby and building entrance has been located with direct access to Kirwin Avenue and with fully paved access to the Kirwin Avenue sidewalk.

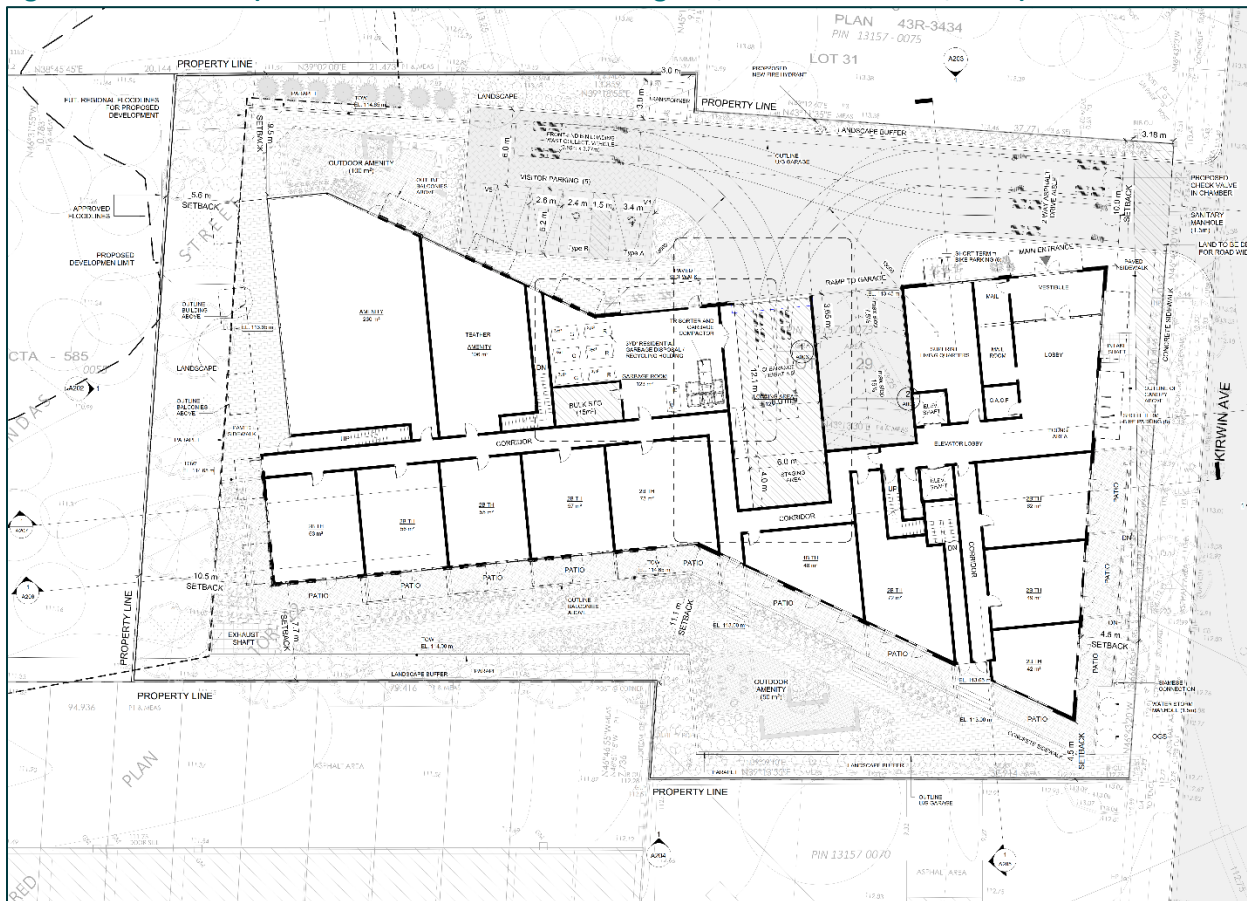
1.2 UPDATED DEVELOPMENT PROPOSAL

Based on the latest site plan provided to LEA, the proposed development site statistics have not changed from the previous submission. The proposal consists of an eight (8)-storey rental apartment building abutting Kirwin Avenue containing 148 residential units, with a mix of one-, two-, and three-bedroom units. A vehicle parking supply of 172 spaces is proposed, with 151 residential spaces within two levels of underground parking and 21 visitor spaces (located at-grade and on the P1 parking level). In addition, a total of 115 bicycle parking spaces are proposed, with 14 short-term spaces at-grade and 101 long-term spaces on the P1 parking level. Vehicle access will be provided via Kirwin Avenue on the northeast corner of the subject site and pedestrian access via Kirwin Avenue along the east side. The unit breakdown and preliminary site statistics are outlined in **Table 1-1** with the proposed site plan illustrated in **Figure 1-1**.

Table 1-1: Preliminary Site Statistics

Land Use	Unit Count	Unit Mix
Residential		
1-Bedroom	113	76%
2-Bedroom	32	22%
3-Bedroom	3	2%
Residential Total	148	100%
Proposed Number of Parking and Loading Spaces On-Site		
Residential Parking	151	
Visitor Parking	21	
Bicycle Parking	115	
Loading Space	1	

Figure 1-1: Site Plan (Source: KFA Architects + Planning Inc., dated October 11, 2022)



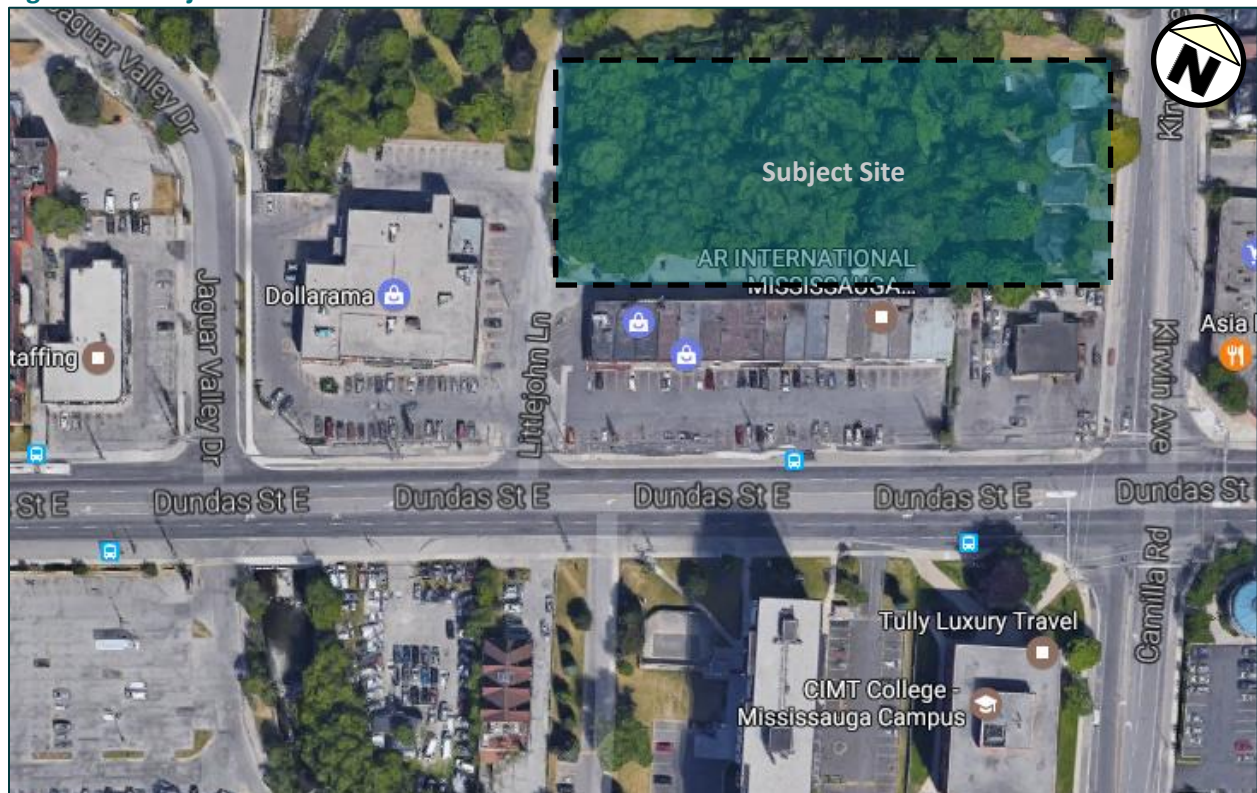
2 EXISTING TRANSPORTATION CONDITIONS

This section identifies and assesses the existing transportation conditions in the study area with regards to the road, transit, pedestrian, and cycling networks. The study area was determined based on the magnitude of the development and its anticipated transportation impact. The study area includes the following intersections:

- ▶ Dundas Street East and Kirwin Avenue /Camila Road (Signalized);
- ▶ Kirwin Avenue and Plaza Access on the east side of Kirwin Avenue (Unsignalized); and
- ▶ Kirwin Avenue and Proposed Site Access (Unsignalized);

For the purposes of this report, Dundas Street East will be referred to as an east-west road. Subsequently all other intersecting roads will be referred to as north-south roads. **Figure 2-1** illustrates the location of the subject site, which is currently green space bordered by an existing commercial building to the south.

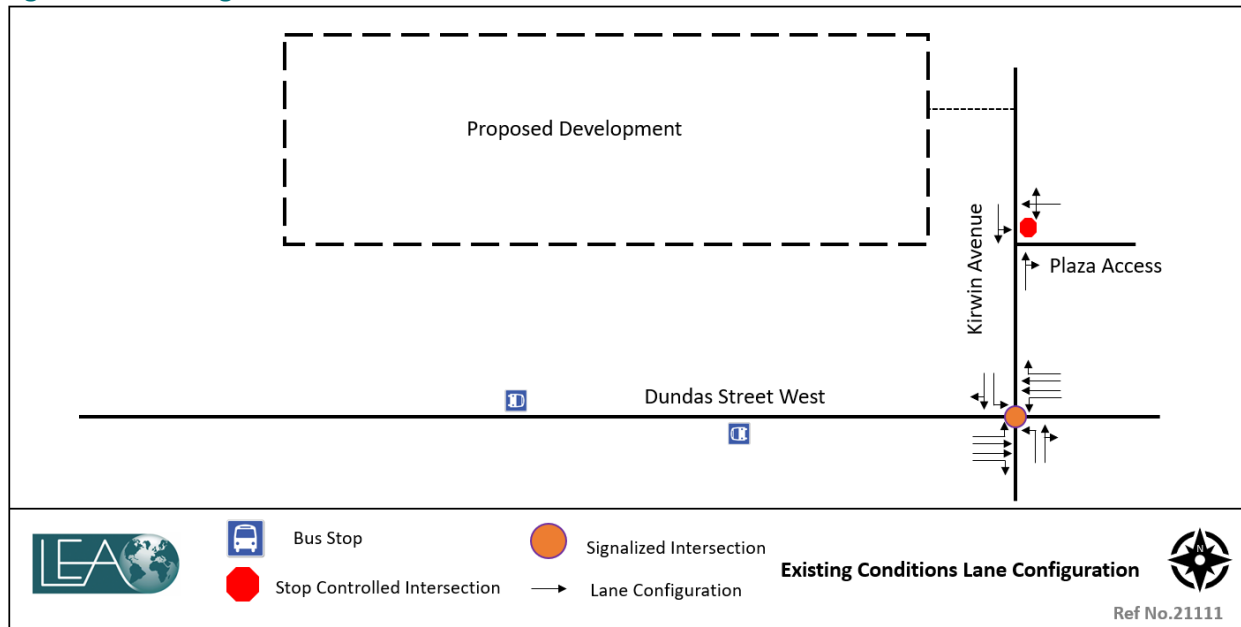
Figure 2-1: Subject Site Location



2.1 EXISTING ROAD NETWORK

The existing lane configurations and intersection control for the study area are shown in **Figure 2-2**, followed by a summary of the surrounding road network.

Figure 2-2: Existing Road Network



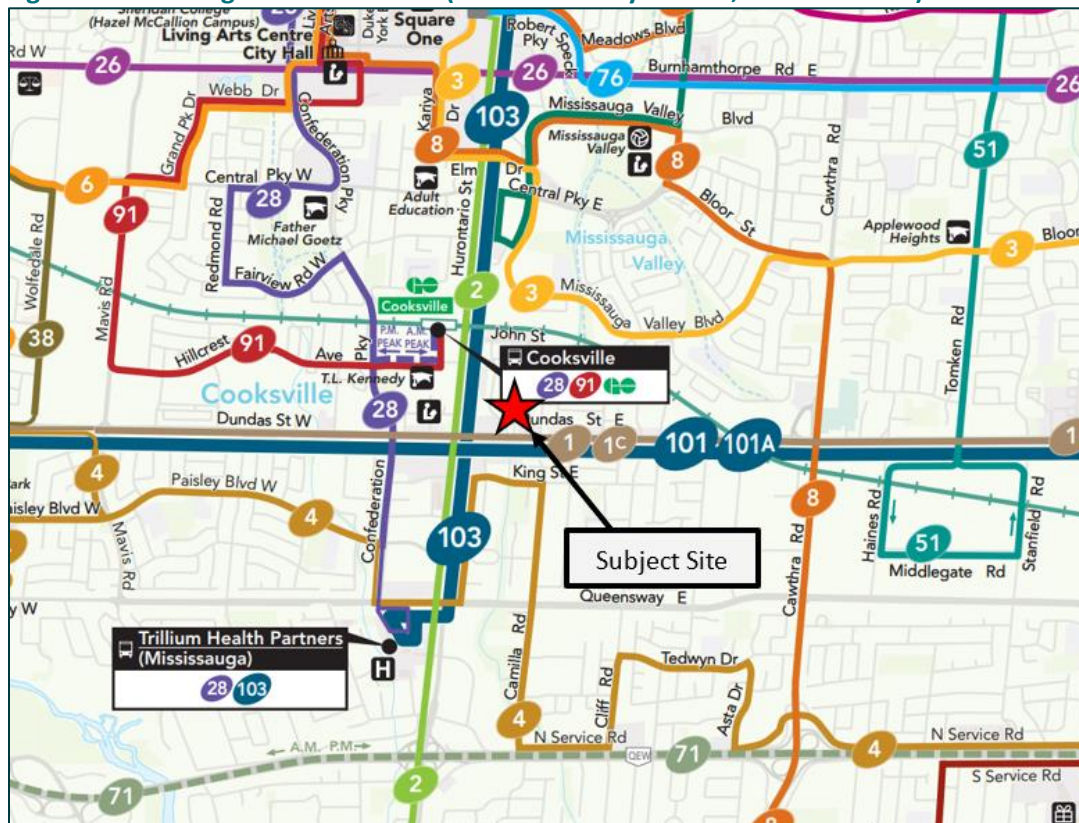
Dundas Street is an east-west major arterial road with a four-lane cross section (two lanes per direction) that runs from Highway 427 and Ninth Line, respectively and is under the jurisdiction of the City of Mississauga within the study area. At the intersection of Kirwin Avenue, it provides one exclusive left-turn lane and one exclusive right-turn lane in both the eastbound and westbound direction. Dundas Street East has an assumed speed limit of 50 km/h within the study area as no speed limit is posted.

Kirwin Avenue/Camilla Road is generally a north-south collector road with a two-lane cross section (one lane per direction) as well as bike lanes running west from Hurontario Street and turning north-south to the intersection of Dundas Street East, at which point it becomes Camilla Road. Kirwin Avenue operates with a posted speed limit of 50 km/hr and is under the jurisdiction of the City of Mississauga. Camilla Road runs south of Dundas Street East and terminates at North Service Road. It operates with a posted speed limit of 50km/hr and is under the jurisdiction of the City of Mississauga.

2.2 EXISTING TRANSIT SERVICE

The subject site is well serviced by Mississauga's public transit system MiWay. The subject site is located within short walking distance to bus transit services, providing for good accessibility to the transit network. The Cooksville GO Station is located about 950m (about 15-minute walk) north of the proposed development. GO Transit and MiWay routes within the study area are described below and illustrated in **Figure 2-3**.

Figure 2-3: Existing Transit Network (Source: MiWay Transit, Pre-Pandemic)



MiWay Bus Route 101, 101A, 101B, 101D, 101E – Dundas Express operates generally in an east-west direction along Dundas Street East/West from Islington Subway Station. The routes run a north-south loop on Mississauga Road and Erin Mills Parkway stopping first at the University of Toronto Mississauga campus and second at the South Common Mall bus terminal. The variants to the 101 (i.e., 101A, B, D, E) follow the same east-west and loop pattern. This route operates seven days a week, with approximately 10–15-minute headways during peak periods.

Access Location: Route 101 is accessible at the intersection of Hurontario Street and Dundas Street East

MiWay Bus Route 1 and 1C – Dundas operates in an east-west direction along Dundas Street East/West from Islington Subway Station. Route 1 Dundas runs east-west to the Laird Road/Ridgeway Drive loop. The 1C Dundas route keeps east-west along Dundas Street East/West, until Mississauga Road where it runs north/south and loops through the University of Toronto before continuing to South Common Mall Bus Terminal. This route operates seven days a week, with approximately 10–15-minute headways during peak periods.

Access Location: Route 1 is accessible at the intersection of Camilla Road and Dundas Street East

MiWay Bus Route 2 – Hurontario operates generally in a north-south direction along Hurontario Street. The route runs from Port Credit GO Station in the south to the City Centre Transit Terminal in the north. The bus route provides service to the Lakeshore West GO line via Port Credit Station. This route operates seven days a week, with approximately 10-minute headways during peak periods.

Access Location: Route 2 is accessible at the intersection of Hurontario Street and Dundas Street East

MiWay Bus Route 103 – Hurontario Express operates generally in a north-south direction along Hurontario Street. The route runs from Queensway at Trillium Hospital in the south to Brampton’s Gateway Terminal in the north. This route operates seven days a week, with approximately 20-minute headways during peak periods.

Access Location: Route 103 is accessible at the intersection of Hurontario Street and Dundas Street East

GO Rail – Milton Line is the east-west GO service 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 950m (about 15-minute walk) north of the proposed development. A new station structure is being constructed for Cooksville GO Station which include multi-level parking structures, improved pedestrian access and connections to the future Hurontario LRT. Additionally, the station also features a bus loop providing regional and local buses operated by GO Transit and MiWay Transit.

2.3 CYCLING NETWORK

Cycling facilities are available within the study area with bike lanes along both sides of Kirwin Avenue providing north-south connections to and from the site. Signed routes are available along Hillcrest Avenue with a multi-use trail in the Stonebrook Park, located north of the subject site. Overall, cycling facilities surrounding the subject site are fair and provides connectivity to various parks and trails. The existing cycling network around the subject site is shown in **Figure 2-4**.

Figure 2-4: Existing Cycling Network (Source: City of Mississauga, 2018)

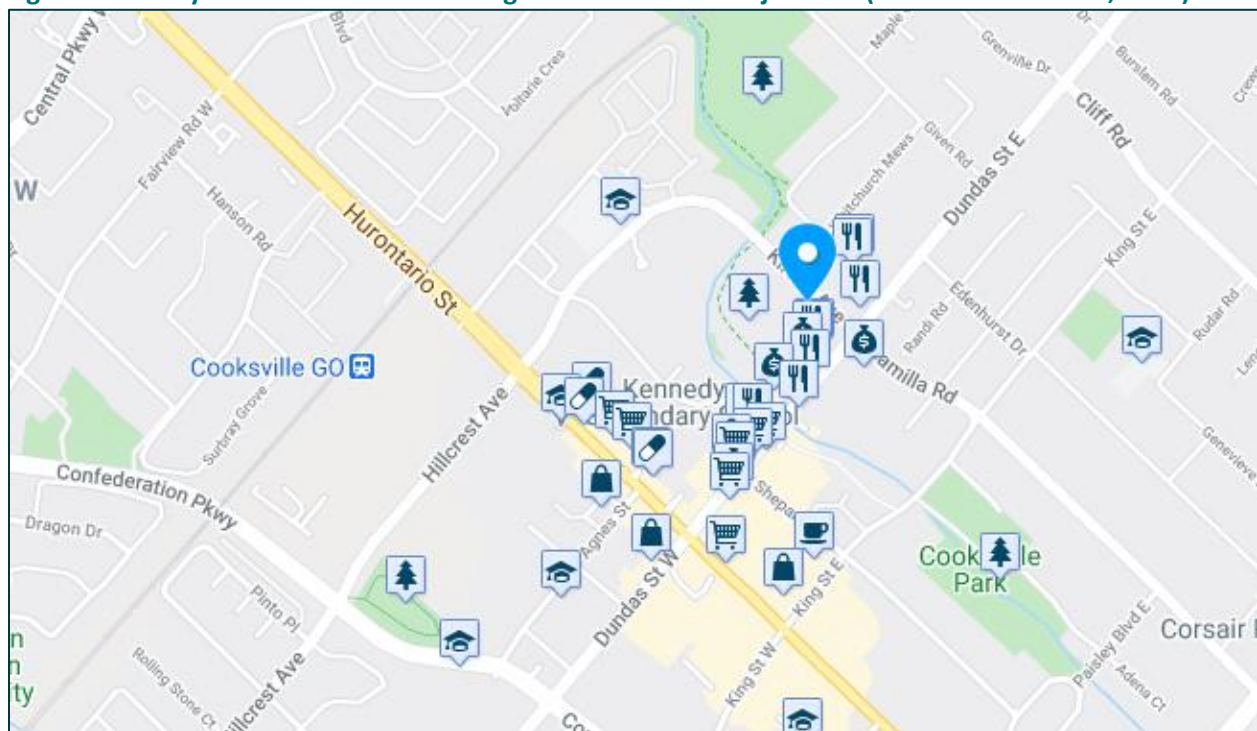


2.4 PEDESTRIAN NETWORK

In the area immediately surrounding the subject site, sidewalks are available along both sides of Kirwin Avenue and Dundas Street East. Crosswalks are available at all signalized intersections. To verify the land uses that support the area’s walkability, the address of the subject site was examined in the Walk Score web application. The subject site location receives a Walk Score of 79/100 – Very Walkable, which indicates that most errands can be accomplished on foot.

A 10-minute walk from the site could permit an individual to reach Cooksville Park in the south, Mississauga Valley Boulevard in the north, Hurontario Street to the west and Cliff Road to the east. Within this area are many amenities and services such as schools, public parks, restaurants, grocery stores, banks, pharmacies, and culture & entertainment use. **Figure 2-5** below displays a range of amenities and daily needs that are within a walkable distance from the subject site.

Figure 2-5: Daily Amenities within walking Distance of the Subject Site (Source: Walk Score, 2021)



2.5 TRAFFIC DATA COLLECTION

Given that no surveys can be conducted at this time due to the ongoing COVID-19 pandemic, LEA utilized turning movement counts (TMCs) collected in 2017 and adjusted them with historical growth rates (as outlined in **Section 3.1**) to reflect 2021 traffic conditions. The adjusted traffic volumes were then balanced between intersections along Dundas Street East and along Kirwin Avenue.

As shown in **Table 2-1**, the TMC surveys were conducted by LEA at the study area intersections on Tuesday, May 30th, 2017 and Thursday, June 8th, 2017 from 7:00 AM – 9:00 AM and 4:00 PM – 6:00 PM. TMC survey data is provided in **Appendix A**.

Table 2-1: Traffic Data Sources

Intersection	Date of Survey	Source
Dundas Street East and Kirwin Avenue/Camilla Road	Tuesday, May 30 th , 2017	LEA Consulting Ltd.
Kirwin Avenue and Plaza Access	Thursday, June 8 th , 2017	LEA Consulting Ltd.

The existing balanced traffic volumes for the weekday AM and PM peak hours are shown in **Figure 2-6**.

Figure 2-6: Existing Balanced Traffic Volumes, Weekday AM (PM) Peak Hour



2.6 EXISTING INTERSECTION CAPACITY ANALYSIS

Intersection capacity analysis was conducted for the existing traffic conditions using Synchro Version 9.0, which is based on the Highway Capacity Manual (2000) methodology and adhering to Region of Peel's *Regional Guidelines for using Synchro* (December 2010). The intersection capacity was conducted for the weekday AM and PM peak hours. Peak hour factors (PHFs) for all movements were inputted as 1.00. The analysis incorporates signal timing plans obtained from the City of Mississauga in 2017 for the intersection of Dundas Street East and Kirwin Avenue/Camilla Road, which are provided in **Appendix B**.

The existing intersection capacity analysis for the weekday AM and PM peak hours is summarized in **Table 2-2** and **Table 2-3** for signalized and unsignalized intersections, respectively. Detailed capacity results can be found in **Appendix C**.

Table 2-2: Existing Signalized Intersection Capacity Analysis

Intersection	AM Peak Hour								
	Overall			Movements of Interest					
	V/C	Delay (s)	LOS	Movement	V/C	Delay (s)	LOS	Queue (m)	
								50th	95th
Dundas Street East and Kirwin Avenue / Camilla Road	0.69	34.8	C	EBL	0.02	25.1	C	1.4	4.7
				EBT	0.87	44.4	D	166.1	197.2
				EBR	0.09	25.9	C	4.9	16.1
				WBL	0.26	28.5	C	4.6	10.0
				WBT	0.37	24.5	C	55.8	69.0
				WBR	0.07	20.9	C	0.0	9.7
				NBL	0.13	32.5	C	10.7	23.8
				NBT	0.24	33.9	C	28.3	52.3
				SBL	0.51	29.1	C	50.7	84.0
SBT	0.12	24.5	C	15.1	31.0				
Intersection	PM Peak Hour								
	Overall			Movements of Interest					
	V/C	Delay (s)	LOS	Movement	V/C	Delay (s)	LOS	Queue (m)	
								50th	95th
Dundas Street East and Kirwin Avenue / Camilla Road	0.56	34.0	C	EBL	0.49	40.0	D	8.2	21.2
				EBT	0.80	44.1	D	111.3	134.7
				EBR	0.04	30.1	C	0.0	6.4
				WBL	0.50	29.1	C	14.5	25.0
				WBT	0.77	34.8	C	128.3	152.1
				WBR	0.26	25.0	C	0.0	16.9
				NBL	0.12	25.9	C	9.3	21.9
				NBT	0.29	28.0	C	33.7	62.2
				SBL	0.34	20.0	B	24.7	47.3
SBT	0.14	19.0	B	16.1	33.8				

The City of Mississauga *Traffic Impact Study* Guidelines define any through movements or shared through/turning movements at a v/c ratio of 0.85 or above and exclusive turning movements at a v/c ratio of 0.90 or above as critical movements, which are indicated in red. As shown in **Table 2-2**, under existing conditions, the signalized intersection of Dundas Street East and Kirwin Avenue/Camilla Road is currently operating well with an overall level of service (LOS) of ‘C’ during both weekday AM and PM peak hours. During the AM peak hour, the eastbound through movement is approaching capacity with a v/c ratio of 0.87. All other individual movements are operating with acceptable delays and ample residual capacity during both peak periods. No further constraints have been identified for the signalized intersection under existing conditions.

Table 2-3: Existing Unsignalized Intersection Capacity Analysis

Intersection	Movement	AM Peak Hour					
		Flow Rate (vph)	Capacity (vph)	Control Delay (s)	95th Queue (m)	V/C	LOS
Kirwin Avenue and Plaza Access	WBLR	5	568	11.4	0.2	0.01	B
	SBL	4	1326	0.1	0.1	0.00	A
Intersection	Movement	PM Peak Hour					
		Flow Rate (vph)	Capacity (vph)	Control Delay (s)	95th Queue (m)	V/C	LOS
Kirwin Avenue and Plaza Access	WBLR	46	365	16.3	3.3	0.13	C
	SBL	7	974	0.3	0.2	0.01	A

The City of Mississauga *Traffic Impact Study Guidelines* indicate that the analysis must include identification of unsignalized intersections where the level of service, based on average delay per vehicle or on individual movements is LOS “E” or greater. As shown in **Table 2-3**, under existing conditions, the unsignalized intersections generally operate with acceptable levels of service. No constraints were identified, and residual capacity is present for all movements.

3 FUTURE BACKGROUND TRANSPORTATION CONDITIONS

This TIS considers a five-year horizon period up to the year 2026 for the future traffic conditions. The following sections detail assumptions made for the future background traffic conditions, including general traffic growth on corridors, additional site traffic as generated by other developments in the area, and proposed road improvements. This section will also detail current and expected service improvements to the existing MiWay transit network.

3.1 CORRIDOR GROWTH RATES

The five-year corridor growth rates to be applied to Dundas Street East have been revised per comments provided by City of Mississauga Transportation Planning Section staff. The recommended projected growth rates are shown in **Table 3-1**.

Table 3-1: Corridor Growth Rates

Compound Annual Growth for Dundas Street East		
Peak Hour	Eastbound	Westbound
AM	0.5%	1.0%
PM	1.0%	0.5%

3.2 BACKGROUND DEVELOPMENTS

Based on a review of the City of Mississauga’s development application database, two (1) background developments have been identified. The trip generation and distribution from these background developments were obtained from the Traffic Impact obtained. Detailed background development information can be found in **Appendix D**.

Table 3-2: Background Development Near Study Area, City of Mississauga Development Applications

Address	Description	Status
86-90 Dundas Street East	334 residential units, 324 m ² commercial	Application in Progress
0 King Street East, 0 & 2487 Camilla Road	22 residential units	Application in Progress

3.3 FUTURE BACKGROUND TRANSIT SERVICE IMPROVEMENTS

The City of Mississauga MiWay Transit has budgeted several service improvements relevant to the subject site in the next five years according to the **Mississauga MiWay 2017-2020 Business Plan and 2017 Budget**.

The Hurontario Light Rail Transit Project (LRT) is a 20 km Regional LRT spanning from Port Credit GO to the South and the Brampton Gateway Terminal to the North. As it relates to the subject site, the LRT has a proposed stop at Hurontario Street and Dundas Street East, as indicated in **Figure 3-1**. Construction for the Hurontario LRT began in Spring 2020, with the expected completion to be in fall 2024. Through most of its segment, the Hurontario LRT tracks will occupy the two inner road lands of the six-lane arterial and operate segregated from other traffic expect at intersections. The completion year of the Hurontario LRT is expected to be before the five-year time horizon of this TIS. However, to provide a conservative trip generation estimate, the modal split was still assumed to be 100% auto trips.

Figure 3-1: Hurontario LRT Route Map

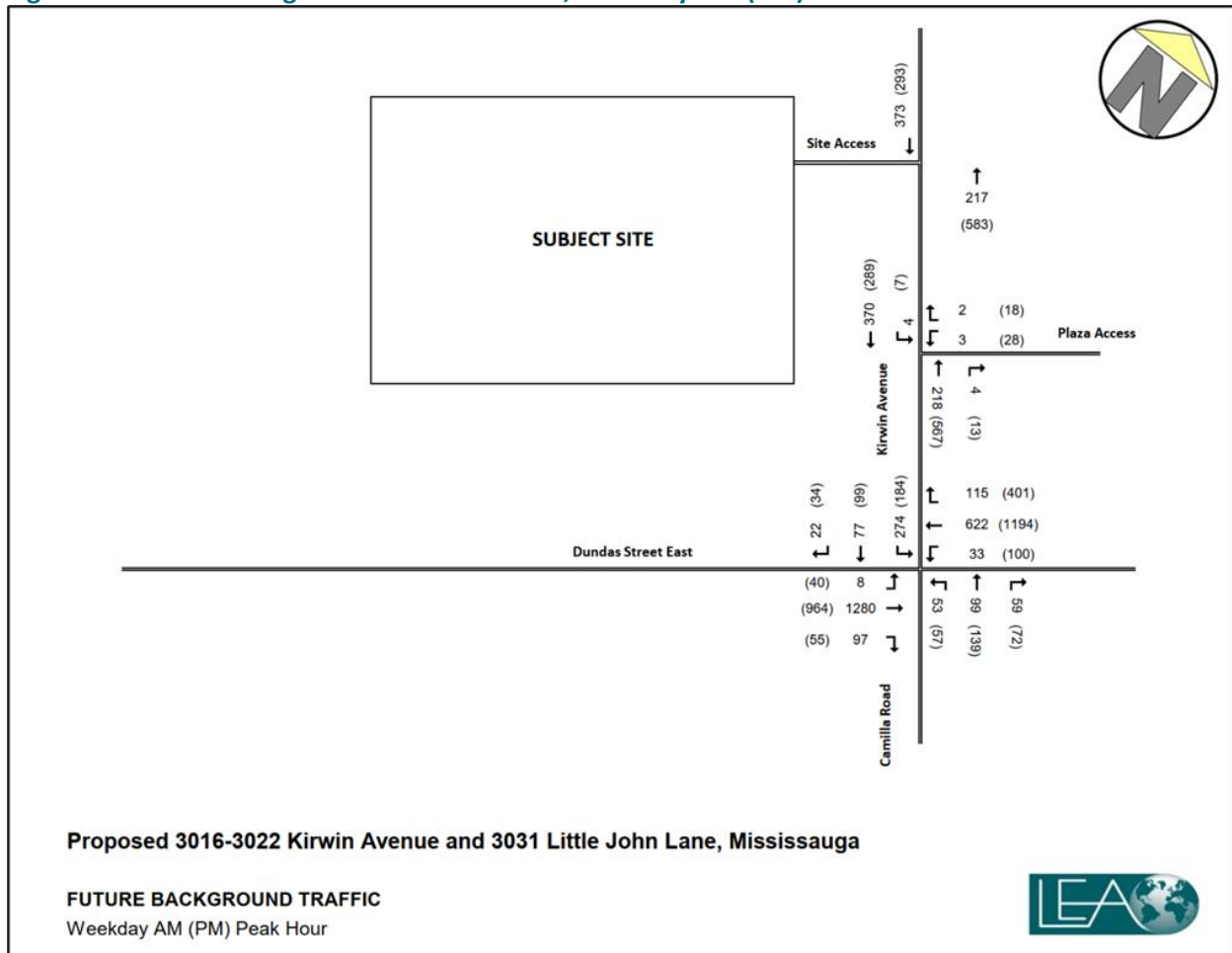


As identified in **Section 2.2** of this TIS, the site is serviced by the 101 Dundas Express bus routes and the 1 and 1C Dundas routes. The City of Mississauga has proposed improvements to the 101 and its variants as part of its *2020 High Frequency Network Strategy*. By 2020 the City envisions frequency improvements of approximately five minutes during peak hours. The City has proposed the same improvement for the existing Hurontario bus routes. In conclusion, the expected transit service improvements identified in this section could reasonably reduce the number of auto trips in and out of the subject site. However, the potential modal split from these projects was not included in the future background and site trip generation to provide a more conservative forecast of traffic volumes.

3.4 FUTURE BACKGROUND TRAFFIC VOLUMES

Future background traffic volumes were derived by combining the existing balanced traffic volumes with the volumes associated with future background corridor growth and future background developments. The future background traffic volumes for the weekday AM and PM peak hours are shown in **Figure 3-2**.

Figure 3-2: Future Background Traffic Volumes, Weekday AM (PM) Peak Hour



3.5 FUTURE BACKGROUND INTERSECTION CAPACITY ANALYSIS

Intersection capacity analysis for future background traffic conditions was conducted with the same parameters as the existing traffic analysis. The future background intersection capacity analysis for the weekday AM and PM peak hours is summarized in **Table 3-3** and **Table 3-4** for signalized and unsignalized intersections, respectively. Detailed capacity results are found in **Appendix E**.

Table 3-3: Future Background Signalized Intersection Capacity Analysis

Intersection	AM Peak Hour								
	Overall			Movements of Interest					
	V/C	Delay (s)	LOS	Movement	V/C	Delay (s)	LOS	Queue (m)	
								50th	95th
Dundas Street East and Kirwin Avenue / Camilla Road	0.71	35.5	D	EBL	0.02	24.6	C	1.4	4.8
				EBT	0.88	45.0	D	178.4	211.4
				EBR	0.09	25.3	C	4.9	16.1
				WBL	0.28	29.3	C	4.6	10.0
				WBT	0.38	24.1	C	58.2	71.7
				WBR	0.07	20.4	C	0.0	9.7
				NBL	0.13	34.0	C	11.2	23.8
				NBT	0.25	35.5	D	30.7	53.4
				SBL	0.53	31.2	C	53.8	84.0
				SBT	0.13	25.9	C	16.4	31.4
Intersection	PM Peak Hour								
	Overall			Movements of Interest					
	V/C	Delay (s)	LOS	Movement	V/C	Delay (s)	LOS	Queue (m)	
								50th	95th
Dundas Street East and Kirwin Avenue / Camilla Road	0.58	34.4	C	EBL	0.53	41.8	D	8.3	22.1
				EBT	0.81	44.2	D	119.7	143.6
				EBR	0.04	29.6	C	0.0	6.4
				WBL	0.52	29.8	C	14.5	24.6
				WBT	0.78	35.0	D	136.8	161.0
				WBR	0.26	24.6	C	0.0	16.8
				NBL	0.12	27.1	C	9.6	22.9
				NBT	0.30	29.3	C	35.2	66.0
				SBL	0.35	21.2	C	25.7	50.4
				SBT	0.15	20.2	C	17.4	36.7

As shown in **Table 3-3**, under future background conditions, the signalized intersection continues to operate acceptable during the weekday AM and PM peak hours, with overall LOS of 'C'. All individual movements are expected to operate similarly to existing conditions with residual capacity and acceptable delays.

Table 3-4: Future Background Unsignalized Intersection Capacity Analysis

Intersection	Movement	AM Peak Hour					
		Flow Rate (vph)	Capacity (vph)	Control Delay (s)	95th Queue (m)	V/C	LOS
Kirwin Avenue and Plaza Access	WBLR	5	566	11.4	0.2	0.01	B
	SBL	4	1324	0.1	0.1	0.00	A
Intersection	Movement	PM Peak Hour					
		Flow Rate (vph)	Capacity (vph)	Control Delay (s)	95th Queue (m)	V/C	LOS
Kirwin Avenue and Plaza Access	WBLR	46	362	16.4	3.3	0.13	C
	SBL	7	972	0.3	0.2	0.01	A

As shown in **Table 3-4**, under future background conditions, the unsignalized intersections are generally expected to operate with acceptable levels of service, similar to the existing conditions. There were no other constraints identified, and residual capacity is present for all movements.

4 SITE GENERATED TRAFFIC

4.1 SITE TRIP GENERATION

The current site plan provided by DVB Real Estate Investments Inc. contains a total of 148 residential units in an eight (8) storey mid-rise rental apartment building. Trip generation rates for the residential component have been updated using the latest available ITE Trip Generation Manual 11th Edition rates for the land-use code 221 (Multifamily Housing – Mid-Rise). The number of units was rounded up to 150 units for a conservative estimate.

The proposed development is expected to generate 54 trips in the AM peak hour (12 inbound, 42 outbound) and 59 trips in the PM peak hour (36 inbound, 23 outbound). The residential trip generation calculations for the proposed development, and the development located within the site area can be found in **Table 4-1**.

Table 4-1: Site Trip Generation

Land Use		Weekday AM Peak Hour			Weekday PM Peak Hour		
		In	Out	Total	In	Out	Total
150 Units - Residential (ITE Code 221)	Fitted Curve Equation	T = 0.44 (X) - 11.61			T = 0.39 (X) + 0.34		
	Directional Distribution	23%	77%	100%	61%	39%	100%
	Trips Generated for Units	12	42	54	36	23	59

4.2 SITE TRIP DISTRIBUTION AND ASSIGNMENT

Trip distribution of site traffic for the residential development was estimated using the 2016 Transportation Tomorrow Survey (TTS) data. It is expected that most auto trips originating from the subject site will be traveling to the destination of work during the weekday AM peak hour. For the weekday PM peak hour, most residential auto trips will be traveling from the place of work to the subject

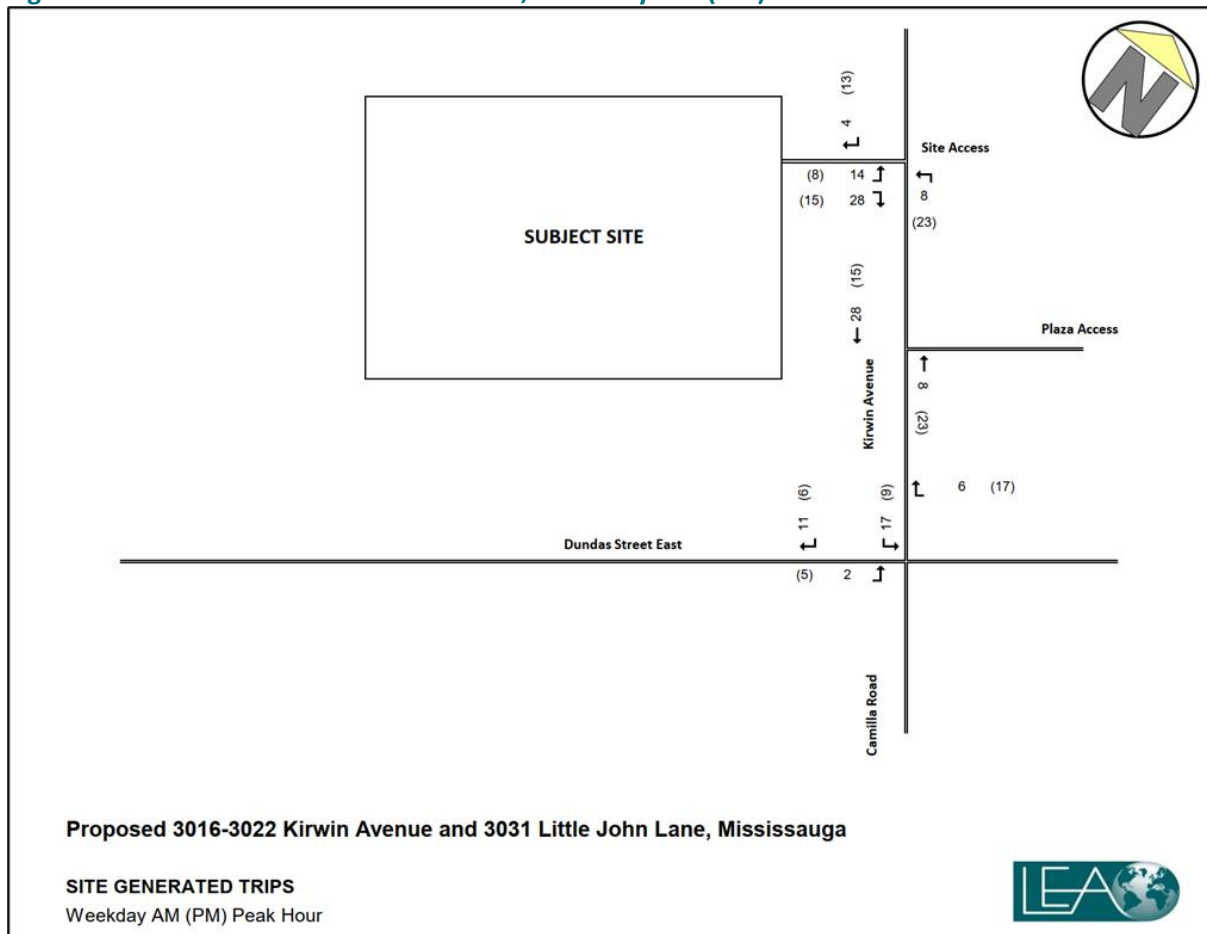
site. Therefore, the trip distribution for the residential trips was calculated based on TTS data for home-based work trips.

Results of the TTS data extraction indicate that the general distribution of residential site traffic will be similar for the weekday AM and PM peak hours. **Table 4-2** below summarizes the general directional distribution of the site traffic with traffic shown in **Figure 4-1**.

Table 4-2: Site Trip Generation

To/From	Inbound Distribution	Outbound Distribution
North	68%	57%
South	4%	5%
East	14%	12%
West	14%	26%
Total	100%	100%

Figure 4-1: Site Generated Traffic Volumes, Weekday AM (PM) Peak Hour



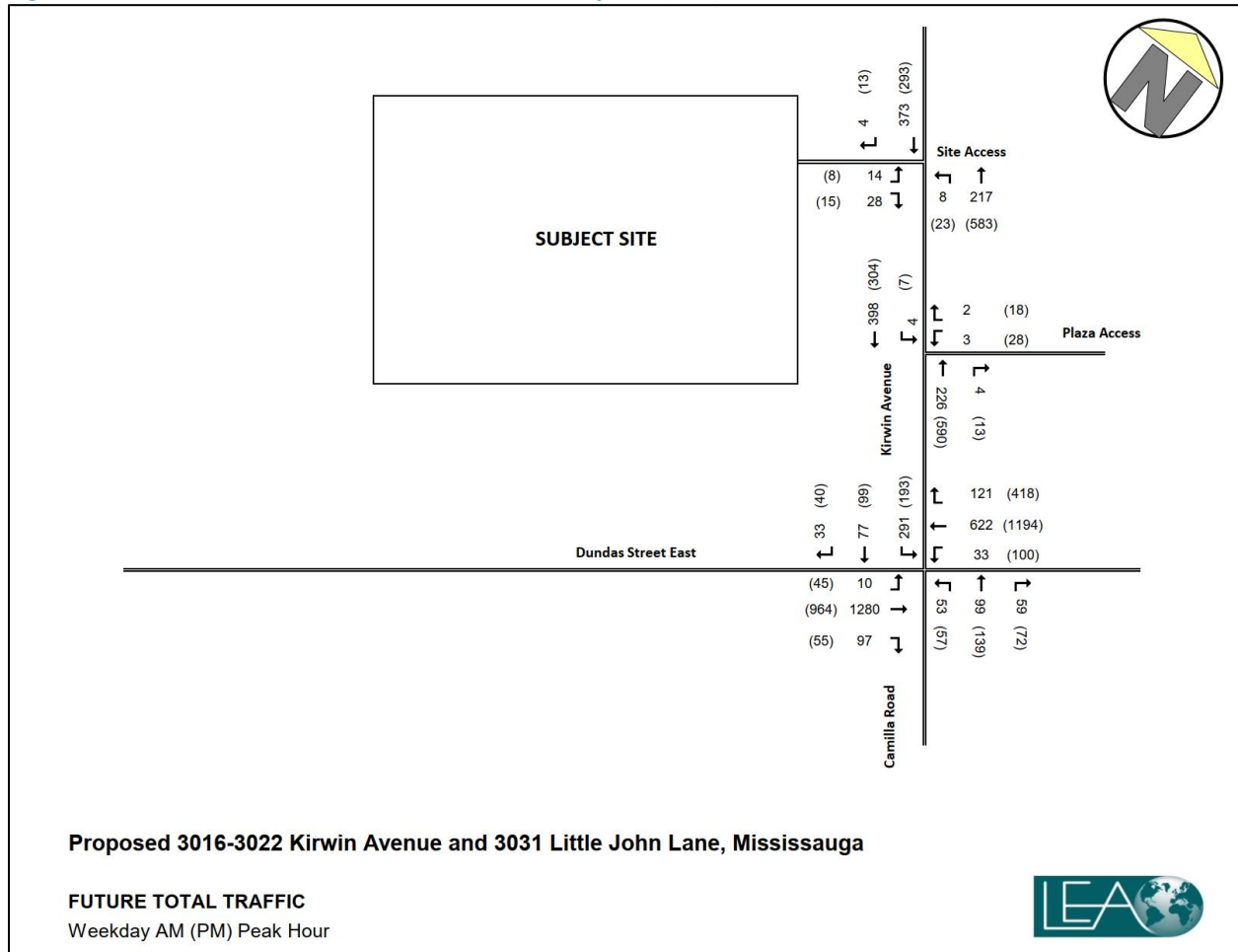
5 FUTURE TOTAL TRANSPORTATION CONDITIONS

5.1 FUTURE TOTAL TRAFFIC VOLUMES

Future total traffic volumes were derived by combining the future background traffic volumes with the site generated traffic volumes.

The future background traffic volumes for the weekday AM and PM peak hours are shown in **Figure 5-1**.

Figure 5-1: Future Total Traffic Volumes, Weekday AM (PM) Peak Hour



5.2 FUTURE TOTAL INTERSECTION CAPACITY ANALYSIS

Intersection capacity analysis for future total traffic conditions was conducted with the same parameters as the future background analysis. The future total intersection capacity analysis for the weekday AM and PM peak hours is summarized in **Table 5-1** and **Table 5-2** for signalized and unsignalized intersections, respectively. Detailed results are provided in **Appendix F**.

Table 5-1: Future Total Signalized Intersection Capacity Analysis

Intersection	AM Peak Hour								
	Overall			Movements of Interest					
	V/C	Delay (s)	LOS	Movement	V/C	Delay (s)	LOS	Queue (m)	
								50th	95th
Dundas Street East and Kirwin Avenue / Camilla Road	0.72	35.5	D	EBL	0.02	24.6	C	1.4	4.8
				EBT	0.88	45.0	D	178.4	211.4
				EBR	0.09	25.3	C	4.9	16.1
				WBL	0.28	29.3	C	4.6	10.0
				WBT	0.38	24.1	C	58.2	71.7
				WBR	0.07	20.4	C	0.0	9.7
				NBL	0.13	34.0	C	11.2	23.8
				NBT	0.25	35.5	D	30.7	53.4
				SBL	0.53	31.2	C	53.8	84.0
SBT	0.13	25.9	C	16.4	31.4				
Intersection	PM Peak Hour								
	Overall			Movements of Interest					
	V/C	Delay (s)	LOS	Movement	V/C	Delay (s)	LOS	Queue (m)	
								50th	95th
Dundas Street East and Kirwin Avenue / Camilla Road	0.59	34.3	C	EBL	0.58	47.0	D	9.7	25.2
				EBT	0.81	44.0	D	119.7	143.6
				EBR	0.04	29.5	C	0.0	6.4
				WBL	0.52	29.8	C	14.5	24.6
				WBT	0.78	34.9	C	136.8	161.0
				WBR	0.27	24.7	C	0.0	16.9
				NBL	0.12	27.3	C	9.6	22.9
				NBT	0.30	29.5	C	35.2	66.0
				SBL	0.36	21.4	C	27.2	52.6
SBT	0.15	20.4	C	17.8	37.8				

As shown in **Table 5-1**, under future total conditions, the signalized intersection is expected to operate with overall LOS 'C' during both peak hours. All individual movements are expected to operate within the roadway capacity and with acceptable delays.

Table 5-2: Future Total Unsignalized Intersection Capacity Analysis

Intersection	Movement	AM Peak Hour					
		Flow Rate (vph)	Capacity (vph)	Control Delay (s)	95th Queue (m)	V/C	LOS
Kirwin Avenue and Plaza Access	WBLR	5	544	11.7	0.2	0.01	B
	SBL	4	1315	0.1	0.1	0.00	A
Kirwin Avenue and Site Access	EBLR	45	550	12.1	2.0	0.08	B
	NBTL	9	1150	0.4	0.2	0.01	A
Intersection	Movement	PM Peak Hour					
		Flow Rate (vph)	Capacity (vph)	Control Delay (s)	95th Queue (m)	V/C	LOS
Kirwin Avenue and Plaza Access	WBLR	46	345	17.0	3.5	0.13	C
	SBL	7	951	0.3	0.2	0.01	A
Kirwin Avenue and Site Access	EBLR	25	436	13.8	1.4	0.06	B
	NBTL	25	1227	0.6	0.5	0.02	A

As shown in **Table 5-2**, under future total conditions, the unsignalized intersections are generally expected to operate with acceptable levels of service, similar to the future background conditions. The results demonstrate minimal delays and queuing for the site access. No constraints were identified, and residual capacity is present for all movements.

Overall, the proposed development is expected to have minimal traffic impact to the intersections in the study area. All intersections and the proposed site access operate within the roadway capacity and within acceptable delays. Based on the above analysis, it can be concluded that site-generated traffic can readily be accommodated by the surrounding road network without the need for any improvements.

6 PARKING REVIEW

This section will review the vehicular parking standards in accordance with the rates identified in staff's comments.

6.1 VEHICULAR ZONING BY-LAW REQUIREMENTS

The updated parking requirements and the proposed supply is summarized in **Table 6-1** below.

Table 6-1: Vehicle Parking Requirements and Proposed Supply

Type	No. of Units or GFA	City of Mississauga Zoning By-law 0225-2007, Table 3.1.2.1, Rental Apartment		Proposed Development		
		Min Parking Rate	Min Parking Spaces	Parking Rate	Parking Spaces	Surplus (+) or Deficiency (-)
Residential						
1 bedroom	113	0.9 spaces/unit	102	1.02	151	+13
2 bedrooms	32	1.0 spaces/unit	32			
3+ bedroom	3	1.3 spaces/unit	4			
Resident Sub-Total			138			
Visitors	148	0.15 spaces/unit	22	0.14	21	-1
Total Parking			160	-	172	+12

According to the rates recommended by staff for the site-specific Zoning By-law, the subject site is required to provide a total of 160 parking spaces consisting of 138 resident parking spaces and 22 visitor

parking spaces. The development is proposing a total of 172 parking spaces in two (2) levels of underground parking, which is 12 spaces above the minimum outlined in the staff rates.

The proposed accessible parking spaces were also reviewed against the City of Mississauga’s Zoning By-law 0025-2007. **Table 6-2** summarizes the accessible parking requirements and the proposed supply for the proposed development.

Table 6-2: Accessible Spaces for Vehicle Parking Requirements and Proposed Supply

Type	Required Total	City of Mississauga Zoning By-law 0225-2007, Table 3.1.3.1		Proposed Development	
		Min Accessible Spaces		Accessible Spaces	Surplus (+) or Deficiency (-)
Residential Visitor	22	Between 13-100: 4% of the total	2 (1 Type A, 1 Type B)	2 Type A, 3 Type B	-
Total			2	5	+3

According to the Zoning By-law, the subject site is required to provide a total of 2 accessible parking spaces consisting of 1 Type A and 1 Type B parking space. The development is proposing a total of 5 accessible parking spaces consisting of 2 Type A and 3 Type B, which exceeds the By-law requirement.

6.2 BICYCLE PARKING

Staff comments indicated they are supportive of bicycle parking be provided in line with the City of Mississauga Cycling Master Plan rates. The bicycle parking requirements are summarized in **Table 6-3**.

Table 6-3: Bicycle Parking Summary

Proposed Land Use	No. of Units or GFA	Min Parking Rate	Required Bike Parking Spaces	Proposed Development	
				Parking Spaces	Surplus (+) or Deficiency (-) from By-Law
Residential	148 units	Long-Term: 0.70 spaces/unit	104	Long-term: 101	-2
		Short-Term: 0.08 spaces/unit	11	Short-Term: 14	+2
Total			115	115	0

The proposed development’s provision of 115 bicycle parking spaces satisfies the recommended bicycle parking requirements.

7 LOADING

The loading requirements for the subject site were reviewed based on the City of Mississauga Zoning By-Law 0225-2007. The loading space requirements for the proposed development are summarized in **Table 7-1**.

Table 7-1: Loading Requirements and Proposed Supply

Proposed Land Use	No. of Units or GFA	City of Mississauga Zoning By-law 0225-2007, Part 3.1.4.5	Proposed Development
		Min Loading Space	Loading Supply
Residential	148 units	Min of 30 units: 1 loading space	1 loading space for garbage collection

The Zoning By-Law dictates that for residential buildings with more than 30 dwelling units, one (1) loading space is required per residential building. The subject site will provide one (1) loading space, thereby satisfying the Zoning By-Law Requirements.

The swept path diagrams demonstrating loading functionality are found in **Appendix G**.

8 ACCESS

City staff have provided the comment to realign the proposed site access in line with the opposing commercial plaza access. The current proposed site access is located at approximately 80m from the southbound stopbar at Dundas Street East, while the commercial plaza is located approximately 65m from the stopbar. Therefore, the two accesses are offset approximately 15m apart.

Both accesses are considered to be low volume driveways (<60 vehicles in the peak hour) and traffic between the site and plaza is expected to be low. Per TAC guidelines (Chapter 8.9.9), the special relationship between driveways is not necessarily a concern on low volume local or collector roads, in particular if the volumes of one or both of the driveways are low. As Kirwin Avenue is a two-lane roadway and the roadway between the two intersections is straight with clear sightlines, it is not anticipated for the two intersections to have significant conflicts.

Additionally, the proposed access location is located at the north property line and furthest from the functional area of the Dundas Street East intersection. If the access were moved to realign with the opposing plaza, it would be further located within the southbound left turn storage lane. Given the configuration of the site, realigning the access would create significant impacts to the built form, specifically as the access is currently located within required setbacks and is an efficient use of the at-grade area. As the proposed location provides the greatest distance from the intersection at Dundas Street East, this location is considered to be appropriate.

9 TRANSPORTATION DEMAND MANAGEMENT

Transportation Demand Management (TDM) is a set of strategies which strive towards a more efficient transportation network by influencing travel behaviour. Effective TDM measures can reduce vehicle usage and encourage residents to engage in more sustainable methods of travel. There are various opportunities to incorporate TDM measures that support alternative modes of transportation. The recommendations should enhance non-single occupant auto vehicle trips for the future residents of the subject development. These TDM strategies are critical in achieving a balanced multi-modal transportation system in the City of Mississauga. A variety of multimodal infrastructure strategies and TDM measures for the residential development have been detailed below.

9.1 PEDESTRIAN BASED STRATEGIES

Building entrances are to be oriented close to the street with direct connections to the pedestrian pathways.

The proposed entrances to the building fronts onto the laneway, which is directly connected to Kirwin Avenue, which provides convenient access for pedestrians, transit users and cyclists. This entrance provides residents connectivity to the neighbourhood's pedestrian network, as well as the wealth of nearby amenities. Therefore, this provides convenient linkages for pedestrians and cyclists to access the building.

The pedestrian network should be provided with an enhanced landscape that would encourage walking.

The pedestrian connection along the laneway and Kirwin Avenue should provide a pleasant and safe pedestrian experience through enhanced landscaping. This can be achieved by means of benches, cover, planting, lighting, and other landscaping elements. The pedestrian network in the vicinity of the subject site will provide a variety of amenities for a safe and enjoyable pedestrian environment, which will encourage the use of active transportation modes.

Walking distance to nearby amenities

The subject development is conveniently located from a pedestrian perspective. The area provides excellent access to schools, public parks, restaurants, retail stores, pharmacies, and banks. All of these uses can be accessed within a 10-minute walking distance.

9.2 CYCLING-BASED STRATEGIES

Provision of bicycle parking supply.

The proposed development is providing bicycle parking facilities to support and encourage active transportation. A supply of 115 bicycle parking spaces (14 short-term, 101 long-term) satisfies the recommended requirement. The short-term spaces should be located in highly visible and convenient areas close to the building entrances for visitors. Long-term bicycle parking should be provided in secured and weather-protected locations, including storage rooms, bicycle lockers and underground parking areas.

Promote and increase cycling awareness and multi-modal transport.

Information packages should be provided to residents to encourage active transportation and different travel demand management programs. This should include educating residents on the health and environmental benefits of cycling, as well as providing pedestrian, cycling and transit maps of the available infrastructure in the surrounding area.

9.3 TRANSIT-BASED STRATEGIES

Connection to transit network

As noted, the proposed development will provide excellent connections to MiWay surface transit as well as the future Hurontario LRT. Bus stops are available at the intersection of Dundas Street East and Camilla Road/Kirwin Avenue, where residents will have access to various MiWay transit routes. Additionally, a future LRT station stop has been proposed at the intersection of Dundas and Hurontario Street. Therefore, the proposed development is ideally placed from a transit access perspective.

Communication strategy & transit incentive program

In order for residents to take advantage of the transit services surrounding the subject site, it is recommended that the owners provide information packages and communications to increase transit awareness and multi-modal transport by encouraging active transportations and different travel demand management programs. The information packages should contain public transit information such as route maps and schedule timetables.

9.4 PARKING-DEMAND MANAGEMENT STRAGIES

Provide reduced parking provision on the subject site

The proposed development will provide on-site parking in line with City supported reduced rates, to encourage use of nearby transit and walkable amenities. Given the subject site's convenient location within a well-connected transit system and walkable neighbourhood surrounded by many amenities and services, most daily activities are not expected to require driving from the proposed redevelopment. By providing reduced parking on site, the proposed redevelopment will deter residents from driving and promote the use of public transit and active transportation.

Unbundled parking

It is recommended that the proposed development provide unbundled parking, meaning that parking spaces will be sold separately from the unit. It is anticipated that parking spaces will be rented at a price point determined based on market conditions. This will encourage residents to shift to other travel alternatives and reduce auto-dependency.

10 CONCLUSIONS AND RECOMMENDATIONS

- ▶ The proposed development will consist of an eight (8)-storey rental apartment building with a total of 148 residential units and two levels of underground parking consisting of 172 total parking spaces. The site will be accessible via a vehicular access along Kirwin Avenue.
- ▶ The subject site is located in an area that is well-served by the MiWay transit network. The subject site is within walkable distance of bus stops at Dundas Street East and Kirwin Avenue/Camilla Road, as well as future access to the Hurontario LRT which will be accessible at the intersection of Dundas and Hurontario Street.
- ▶ Under existing conditions, all intersections in the study area are operating with residual capacity and acceptable LOS during both weekday AM and PM peak hours.
- ▶ Under future background conditions, the signalized intersections continue to operate within the roadway capacity and minimal delays during the weekday AM and PM peak hours.
- ▶ The proposed development is anticipated to generate 54 two-way trips (12 inbound, 42 outbound) during the weekday AM peak hour, and 59 two-way trips (36 inbound, 23 outbound) during the weekday PM peak hour.
- ▶ Under future total conditions, all studied intersections operate similarly to future background conditions. No capacity constraints are anticipated for the proposed site access.
- ▶ Overall, the proposed development is expected to have minimal traffic impact to the intersections in the study area. All intersections and the proposed site access operate within the roadway capacity and within acceptable delays. Based on the above analysis, it can be concluded that site-generated traffic can readily be accommodated by the surrounding road network without the need for any improvements.
- ▶ The proposed parking provisions consist of 172 total spaces, which is in line with the City Staff recommended rates for the subject site, and in excess of the minimum 160 spaces supported.
- ▶ Daily activities are expected to be achievable conveniently from the subject site by transit or active transportation modes. A review of nearby recently pursued residential developments with reduced parking rates indicate that there is a housing demand from individuals who seek to lead a car-free lifestyle within the neighbourhood. By providing a right-sized parking supply, the proposed development is expected to attract a population that is not car-dependent and will rely on alternative modes of travel for their daily needs.
- ▶ A comprehensive TDM plan is recommended to reduce single occupant vehicle trips and encourage alternative modes of travel including secured bicycle parking and direct and convenient access to transit stops.

APPENDIX A

Existing Traffic Data

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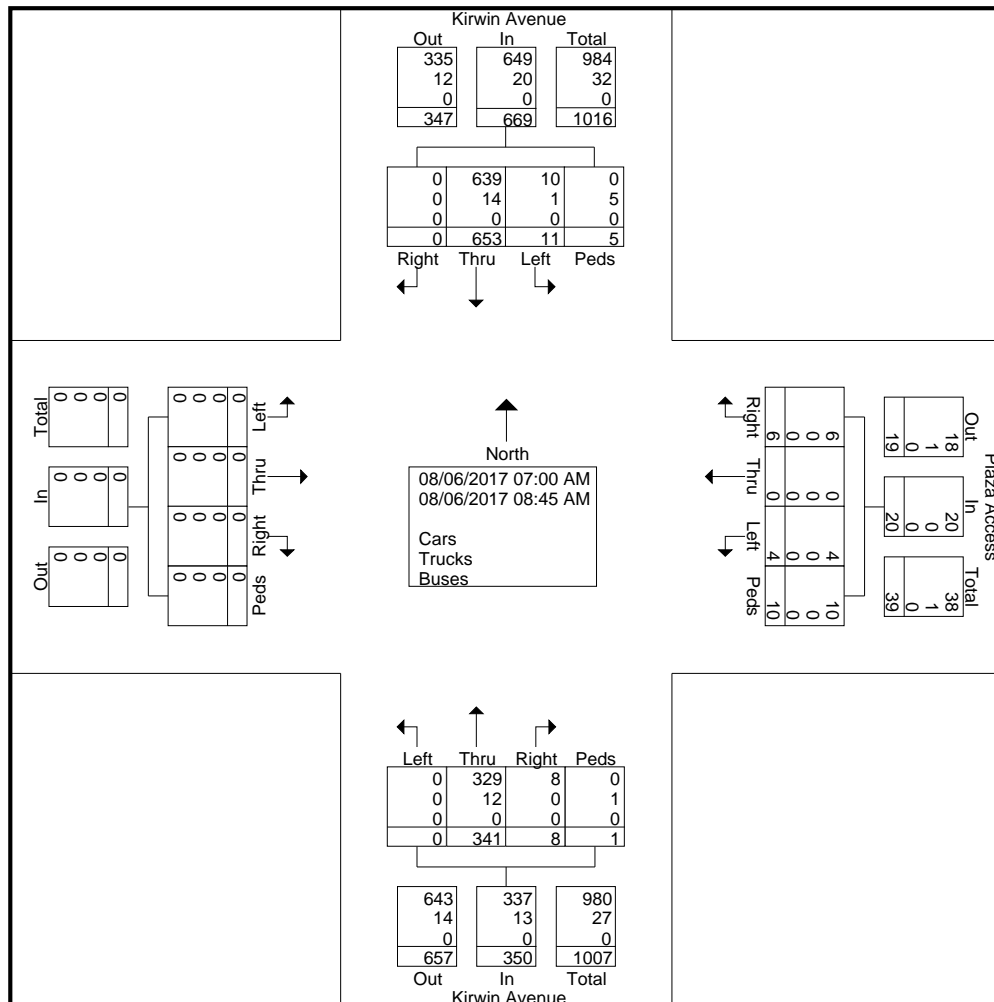
625 Cochrane Drive 9th Floor
Markham, Ontario, L3R 9R9

Project No.: 17360
Location: Kirwin Ave / Plaza Access
Weather: Sunny
Surveyor(s): KL

File Name : Kirwin&PlazaAccess-AM
Site Code : 17360127
Start Date : 08/06/2017
Page No : 1

Groups Printed- Cars - Trucks - Buses

Start Time	Kirwin Avenue Southbound					Plaza Access Westbound					Kirwin Avenue Northbound					Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
07:00 AM	3	56	0	0	59	0	0	0	0	0	0	21	0	0	21	0	0	0	0	0	0
07:15 AM	2	63	0	0	65	0	0	3	2	5	0	25	2	0	27	0	0	0	0	0	0
07:30 AM	0	81	0	1	82	1	0	0	2	3	0	35	1	0	36	0	0	0	0	0	0
07:45 AM	2	84	0	0	86	0	0	1	2	3	0	45	1	0	46	0	0	0	0	0	0
Total	7	284	0	1	292	1	0	4	6	11	0	126	4	0	130	0	0	0	0	0	433
08:00 AM	1	86	0	1	88	0	0	1	1	2	0	47	0	0	47	0	0	0	0	0	0
08:15 AM	0	101	0	2	103	1	0	0	0	1	0	53	3	0	56	0	0	0	0	0	0
08:30 AM	0	83	0	0	83	1	0	1	1	3	0	65	0	1	66	0	0	0	0	0	0
08:45 AM	3	99	0	1	103	1	0	0	2	3	0	50	1	0	51	0	0	0	0	0	0
Total	4	369	0	4	377	3	0	2	4	9	0	215	4	1	220	0	0	0	0	0	606
Grand Total	11	653	0	5	669	4	0	6	10	20	0	341	8	1	350	0	0	0	0	0	1039
Apprch %	1.6	97.6	0	0.7		20	0	30	50		0	97.4	2.3	0.3		0	0	0	0		
Total %	1.1	62.8	0	0.5	64.4	0.4	0	0.6	1	1.9	0	32.8	0.8	0.1	33.7	0	0	0	0	0	
Cars	10	639	0	0	649	4	0	6	10	20	0	329	8	0	337	0	0	0	0	0	1006
% Cars	90.9	97.9	0	0	97	100	0	100	100	100	0	96.5	100	0	96.3	0	0	0	0	0	96.8
Trucks	1	14	0	5	20	0	0	0	0	0	0	12	0	1	13	0	0	0	0	0	33
% Trucks	9.1	2.1	0	100	3	0	0	0	0	0	0	3.5	0	100	3.7	0	0	0	0	0	3.2
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



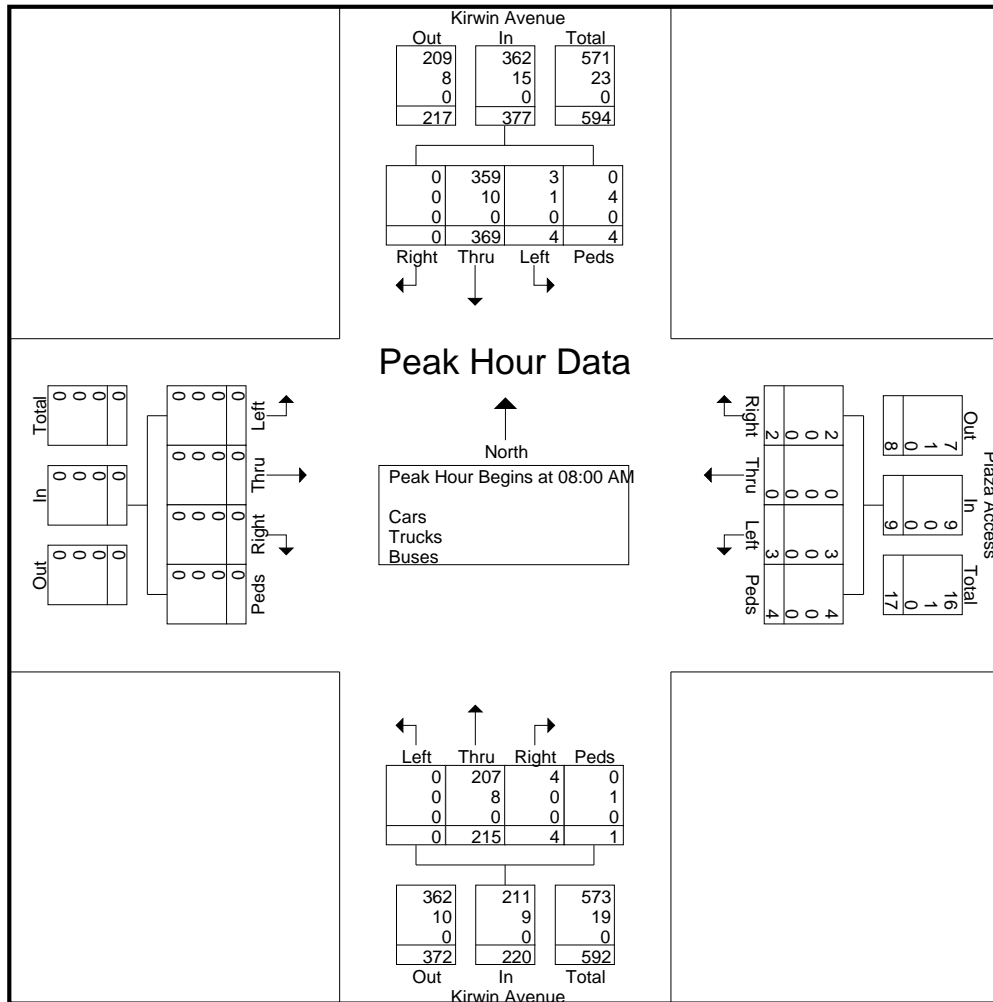
LEA CONSULTING LTD

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

Project No.: 17360
Location: Kirwin Ave / Plaza Access
Weather: Sunny
Surveyor(s): KL

File Name : Kirwin&PlazaAccess-AM
Site Code : 17360127
Start Date : 08/06/2017
Page No : 2

Start Time	Kirwin Avenue Southbound					Plaza Access Westbound					Kirwin Avenue Northbound					Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	1	86	0	1	88	0	0	1	1	2	0	47	0	0	47	0	0	0	0	0	137
08:15 AM	0	101	0	2	103	1	0	0	0	1	0	53	3	0	56	0	0	0	0	0	160
08:30 AM	0	83	0	0	83	1	0	1	1	3	0	65	0	1	66	0	0	0	0	0	152
08:45 AM	3	99	0	1	103	1	0	0	2	3	0	50	1	0	51	0	0	0	0	0	157
Total Volume	4	369	0	4	377	3	0	2	4	9	0	215	4	1	220	0	0	0	0	0	606
% App. Total	1.1	97.9	0	1.1		33.3	0	22.2	44.4		0	97.7	1.8	0.5		0	0	0	0		
PHF	.333	.913	.000	.500	.915	.750	.000	.500	.500	.750	.000	.827	.333	.250	.833	.000	.000	.000	.000	.000	.947
Cars	3	359	0	0	362	3	0	2	4	9	0	207	4	0	211	0	0	0	0	0	582
% Cars	75.0	97.3	0	0	96.0	100	0	100	100	100	0	96.3	100	0	95.9	0	0	0	0	0	96.0
Trucks	1	10	0	4	15	0	0	0	0	0	0	8	0	1	9	0	0	0	0	0	24
% Trucks	25.0	2.7	0	100	4.0	0	0	0	0	0	0	3.7	0	100	4.1	0	0	0	0	0	4.0
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



LEA CONSULTING LTD

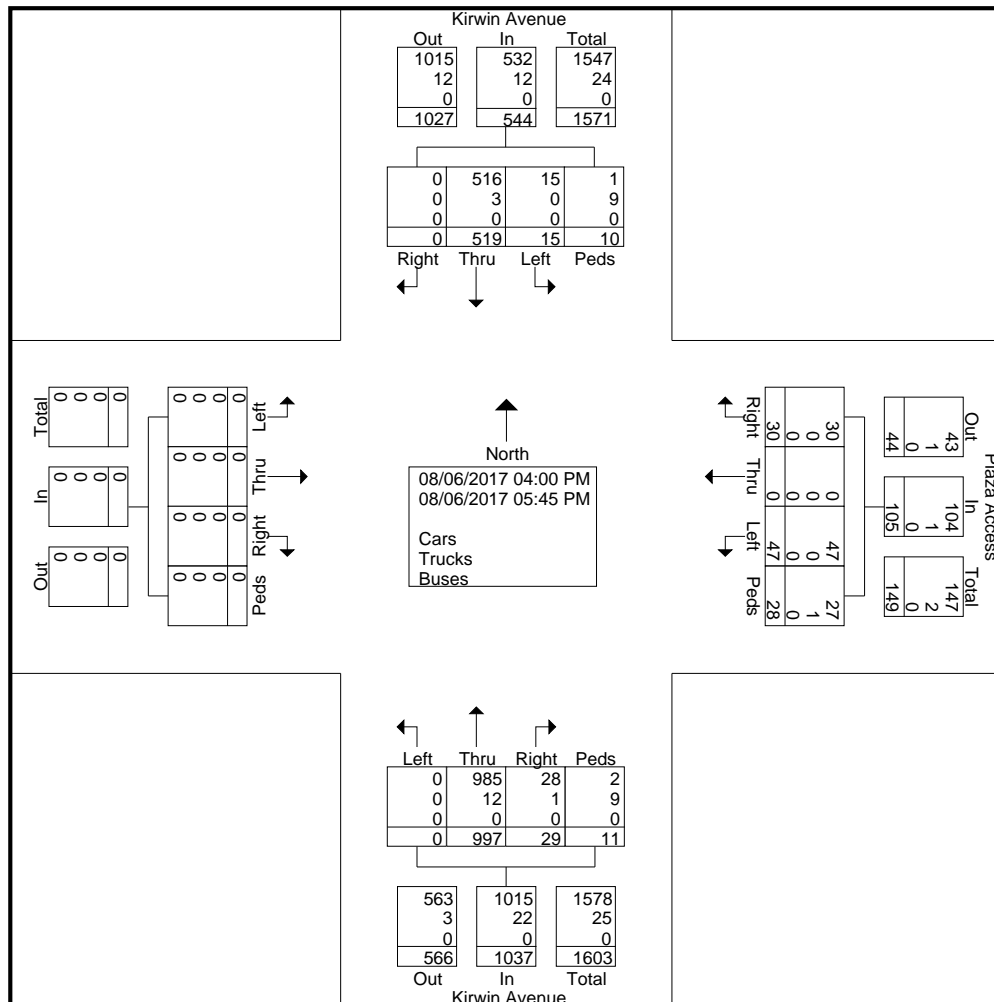
625 Cochrane Drive 9th Floor
Markham, Ontario, L3R 9R9

Project No.: 17360
Location: Kirwin Ave / Plaza Access
Weather: Sunny
Surveyor(s): Michael Loo

File Name : Kirwin&PlazaAccess-PM
Site Code : 17360127
Start Date : 08/06/2017
Page No : 1

Groups Printed- Cars - Trucks - Buses

Start Time	Kirwin Avenue Southbound					Plaza Access Westbound					Kirwin Avenue Northbound					Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
04:00 PM	0	61	0	1	62	7	0	4	1	12	0	133	5	0	138	0	0	0	0	0	212
04:15 PM	1	65	0	5	71	2	0	5	7	14	0	100	2	2	104	0	0	0	0	0	189
04:30 PM	3	51	0	1	55	4	0	3	7	14	0	111	2	3	116	0	0	0	0	0	185
04:45 PM	2	81	0	0	83	5	0	3	4	12	0	135	0	3	138	0	0	0	0	0	233
Total	6	258	0	7	271	18	0	15	19	52	0	479	9	8	496	0	0	0	0	0	819
05:00 PM	3	63	0	3	69	6	0	4	1	11	0	142	7	2	151	0	0	0	0	0	231
05:15 PM	1	65	0	0	66	10	0	6	4	20	0	139	3	0	142	0	0	0	0	0	228
05:30 PM	1	60	0	0	61	7	0	5	2	14	0	123	3	0	126	0	0	0	0	0	201
05:45 PM	4	73	0	0	77	6	0	0	2	8	0	114	7	1	122	0	0	0	0	0	207
Total	9	261	0	3	273	29	0	15	9	53	0	518	20	3	541	0	0	0	0	0	867
Grand Total	15	519	0	10	544	47	0	30	28	105	0	997	29	11	1037	0	0	0	0	0	1686
Apprch %	2.8	95.4	0	1.8		44.8	0	28.6	26.7		0	96.1	2.8	1.1		0	0	0	0		
Total %	0.9	30.8	0	0.6	32.3	2.8	0	1.8	1.7	6.2	0	59.1	1.7	0.7	61.5	0	0	0	0	0	
Cars	15	516	0	1	532	47	0	30	27	104	0	985	28	2	1015	0	0	0	0	0	1651
% Cars	100	99.4	0	10	97.8	100	0	100	96.4	99	0	98.8	96.6	18.2	97.9	0	0	0	0	0	97.9
Trucks	0	3	0	9	12	0	0	0	1	1	0	12	1	9	22	0	0	0	0	0	35
% Trucks	0	0.6	0	90	2.2	0	0	0	3.6	1	0	1.2	3.4	81.8	2.1	0	0	0	0	0	2.1
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



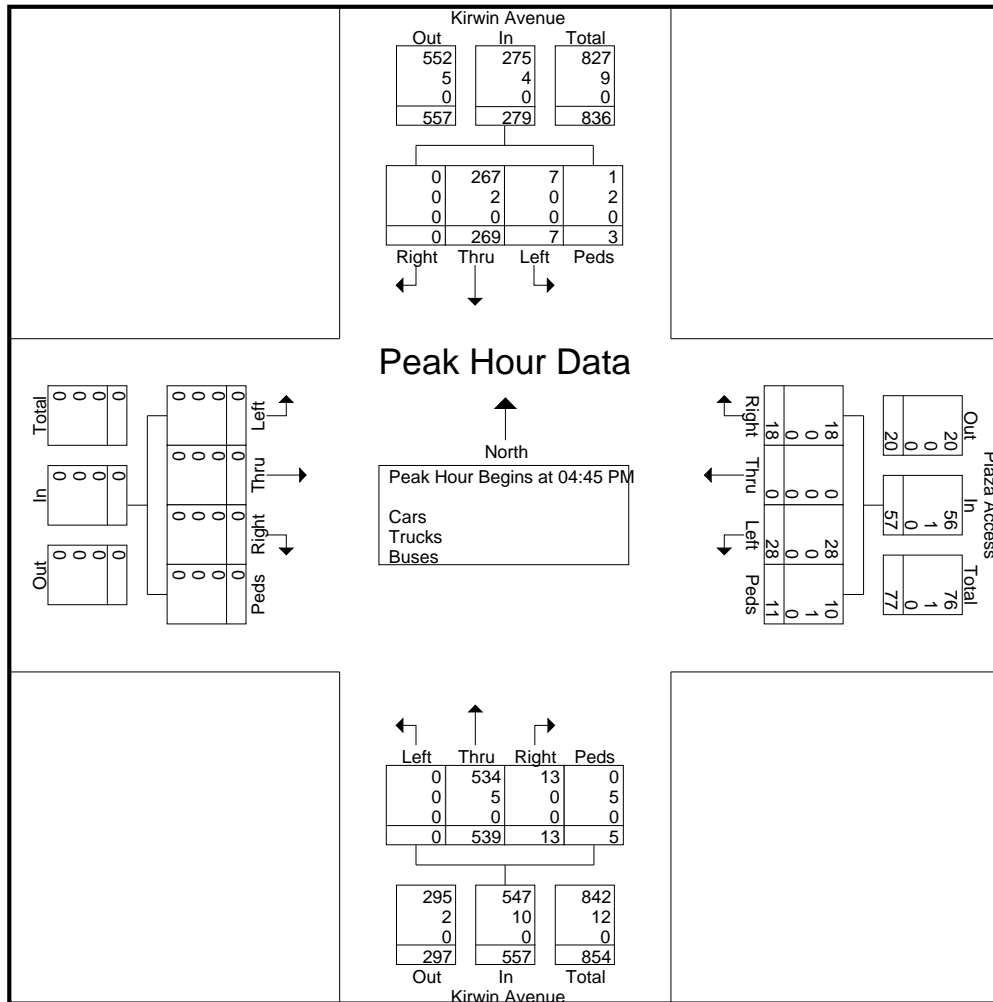
LEA CONSULTING LTD

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

Project No.: 17360
Location: Kirwin Ave / Plaza Access
Weather: Sunny
Surveyor(s): Michael Loo

File Name : Kirwin&PlazaAccess-PM
Site Code : 17360127
Start Date : 08/06/2017
Page No : 2

Start Time	Kirwin Avenue Southbound					Plaza Access Westbound					Kirwin Avenue Northbound					Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	2	81	0	0	83	5	0	3	4	12	0	135	0	3	138	0	0	0	0	0	233
05:00 PM	3	63	0	3	69	6	0	4	1	11	0	142	7	2	151	0	0	0	0	0	231
05:15 PM	1	65	0	0	66	10	0	6	4	20	0	139	3	0	142	0	0	0	0	0	228
05:30 PM	1	60	0	0	61	7	0	5	2	14	0	123	3	0	126	0	0	0	0	0	201
Total Volume	7	269	0	3	279	28	0	18	11	57	0	539	13	5	557	0	0	0	0	0	893
% App. Total	2.5	96.4	0	1.1		49.1	0	31.6	19.3		0	96.8	2.3	0.9		0	0	0	0		
PHF	.583	.830	.000	.250	.840	.700	.000	.750	.688	.713	.000	.949	.464	.417	.922	.000	.000	.000	.000	.000	.958
Cars	7	267	0	1	275	28	0	18	10	56	0	534	13	0	547	0	0	0	0	0	878
% Cars	100	99.3	0	33.3	98.6	100	0	100	90.9	98.2	0	99.1	100	0	98.2	0	0	0	0	0	98.3
Trucks	0	2	0	2	4	0	0	0	1	1	0	5	0	5	10	0	0	0	0	0	15
% Trucks	0	0.7	0	66.7	1.4	0	0	0	9.1	1.8	0	0.9	0	100	1.8	0	0	0	0	0	1.7
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



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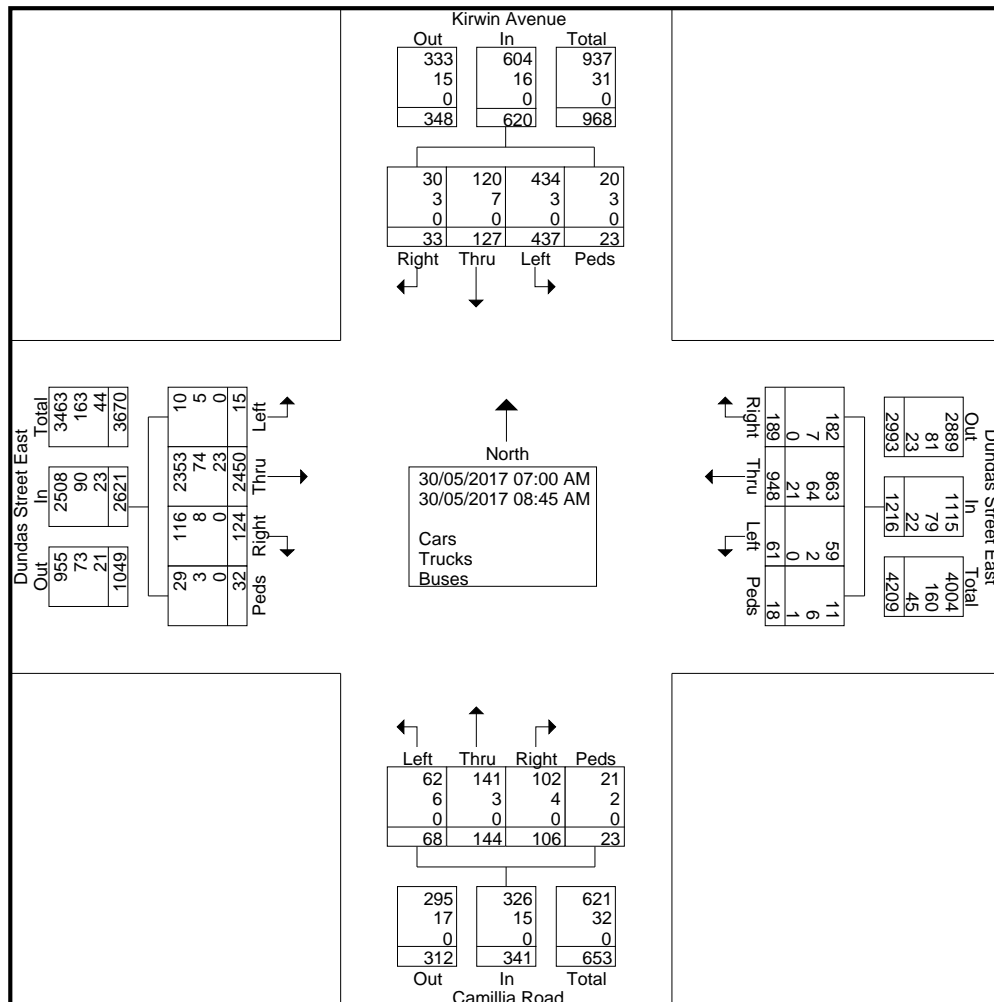
625 Cochrane Drive 9th Floor
Markham, Ontario, L3R 9R9

Project No.: 17360
Location: Kirwin Ave / Dundas St E
Weather: Cloudy / Rain
Surveyor(s): Belinda Wong & May Yue

File Name : Kirwin&Dundas-MERGED-AM
Site Code : 17360025
Start Date : 30/05/2017
Page No : 1

Groups Printed- Cars - Trucks - Buses

Start Time	Kirwin Avenue Southbound					Dundas Street East Westbound					Camillia Road Northbound					Dundas Street East Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
07:00 AM	47	10	2	2	61	4	91	19	2	116	4	7	9	0	20	3	234	3	2	242	439
07:15 AM	37	11	3	3	54	6	99	14	3	122	3	8	12	0	23	2	301	12	3	318	517
07:30 AM	54	9	1	2	66	5	94	17	5	121	3	13	11	2	29	0	342	7	5	354	570
07:45 AM	61	21	5	3	90	13	98	26	3	140	5	20	15	4	44	2	350	5	4	361	635
Total	199	51	11	10	271	28	382	76	13	499	15	48	47	6	116	7	1227	27	14	1275	2161
08:00 AM	49	23	5	1	78	3	137	32	1	173	13	23	9	5	50	1	339	24	4	368	669
08:15 AM	49	23	5	3	80	10	123	19	1	153	14	30	17	5	66	2	289	26	6	323	622
08:30 AM	78	8	6	2	94	7	147	28	1	183	13	23	17	5	58	4	319	20	0	343	678
08:45 AM	62	22	6	7	97	13	159	34	2	208	13	20	16	2	51	1	276	27	8	312	668
Total	238	76	22	13	349	33	566	113	5	717	53	96	59	17	225	8	1223	97	18	1346	2637
Grand Total	437	127	33	23	620	61	948	189	18	1216	68	144	106	23	341	15	2450	124	32	2621	4798
Apprch %	70.5	20.5	5.3	3.7		5	78	15.5	1.5		19.9	42.2	31.1	6.7		0.6	93.5	4.7	1.2		
Total %	9.1	2.6	0.7	0.5	12.9	1.3	19.8	3.9	0.4	25.3	1.4	3	2.2	0.5	7.1	0.3	51.1	2.6	0.7	54.6	
Cars	434	120	30	20	604	59	863	182	11	1115	62	141	102	21	326	10	2353	116	29	2508	4553
% Cars	99.3	94.5	90.9	87	97.4	96.7	91	96.3	61.1	91.7	91.2	97.9	96.2	91.3	95.6	66.7	96	93.5	90.6	95.7	94.9
Trucks	3	7	3	3	16	2	64	7	6	79	6	3	4	2	15	5	74	8	3	90	200
% Trucks	0.7	5.5	9.1	13	2.6	3.3	6.8	3.7	33.3	6.5	8.8	2.1	3.8	8.7	4.4	33.3	3	6.5	9.4	3.4	4.2
Buses	0	0	0	0	0	0	21	0	1	22	0	0	0	0	0	0	23	0	0	23	45
% Buses	0	0	0	0	0	0	2.2	0	5.6	1.8	0	0	0	0	0	0	0.9	0	0	0.9	0.9



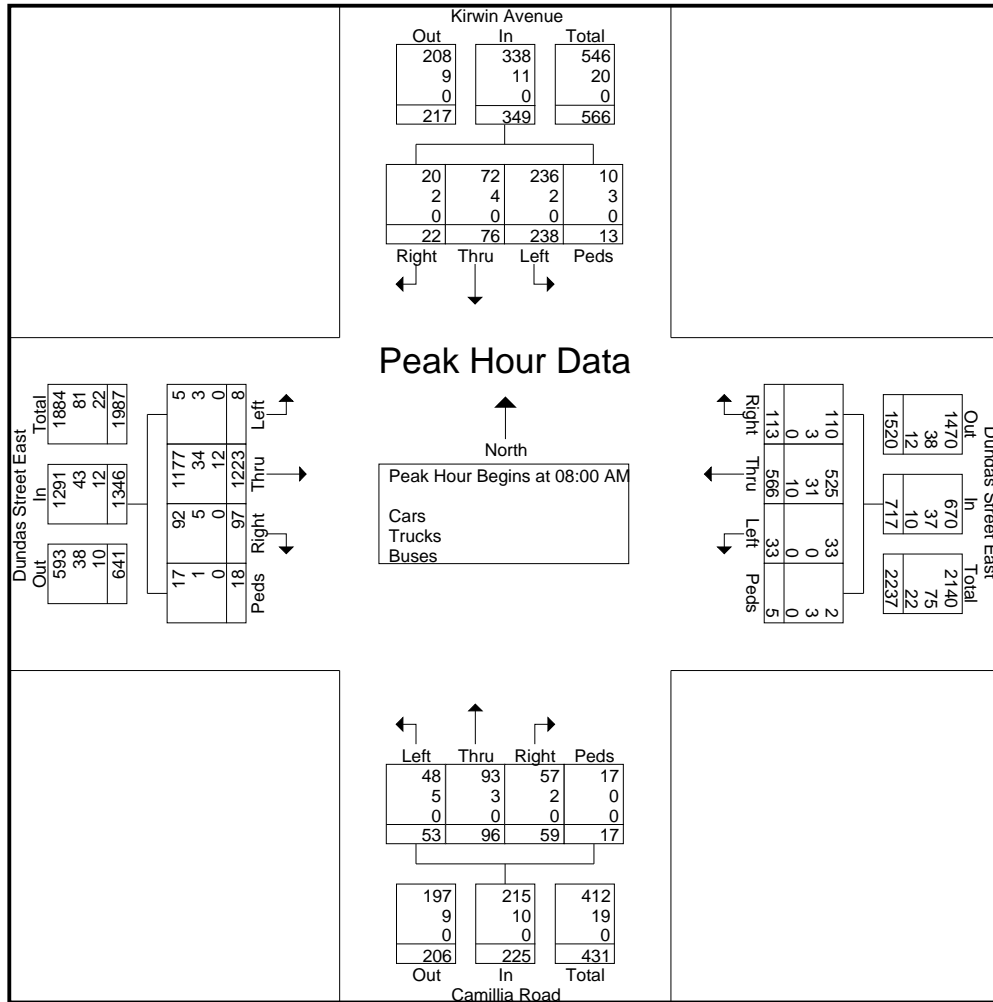
LEA CONSULTING LTD

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

Project No.: 17360
Location: Kirwin Ave / Dundas St E
Weather: Cloudy / Rain
Surveyor(s): Belinda Wong & May Yue

File Name : Kirwin&Dundas-MERGED-AM
Site Code : 17360025
Start Date : 30/05/2017
Page No : 2

Start Time	Kirwin Avenue Southbound					Dundas Street East Westbound					Camillia Road Northbound					Dundas Street East Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	49	23	5	1	78	3	137	32	1	173	13	23	9	5	50	1	339	24	4	368	669
08:15 AM	49	23	5	3	80	10	123	19	1	153	14	30	17	5	66	2	289	26	6	323	622
08:30 AM	78	8	6	2	94	7	147	28	1	183	13	23	17	5	58	4	319	20	0	343	678
08:45 AM	62	22	6	7	97	13	159	34	2	208	13	20	16	2	51	1	276	27	8	312	668
Total Volume	238	76	22	13	349	33	566	113	5	717	53	96	59	17	225	8	1223	97	18	1346	2637
% App. Total	68.2	21.8	6.3	3.7		4.6	78.9	15.8	0.7		23.6	42.7	26.2	7.6		0.6	90.9	7.2	1.3		
PHF	.763	.826	.917	.464	.899	.635	.890	.831	.625	.862	.946	.800	.868	.850	.852	.500	.902	.898	.563	.914	.972
Cars	236	72	20	10	338	33	525	110	2	670	48	93	57	17	215	5	1177				
% Cars	99.2	94.7	90.9	76.9	96.8	100	92.8	97.3	40.0	93.4	90.6	96.9	96.6	100	95.6	62.5	96.2	94.8	94.4	95.9	95.3
Trucks	2	4	2	3	11	0	31	3	3	37	5	3	2	0	10	3	34	5	1	43	101
% Trucks	0.8	5.3	9.1	23.1	3.2	0	5.5	2.7	60.0	5.2	9.4	3.1	3.4	0	4.4	37.5	2.8	5.2	5.6	3.2	3.8
Buses	0	0	0	0	0	0	10	0	0	10	0	0	0	0	0	0	12	0	0	12	22
% Buses	0	0	0	0	0	0	1.8	0	0	1.4	0	0	0	0	0	0	1.0	0	0	0.9	0.8



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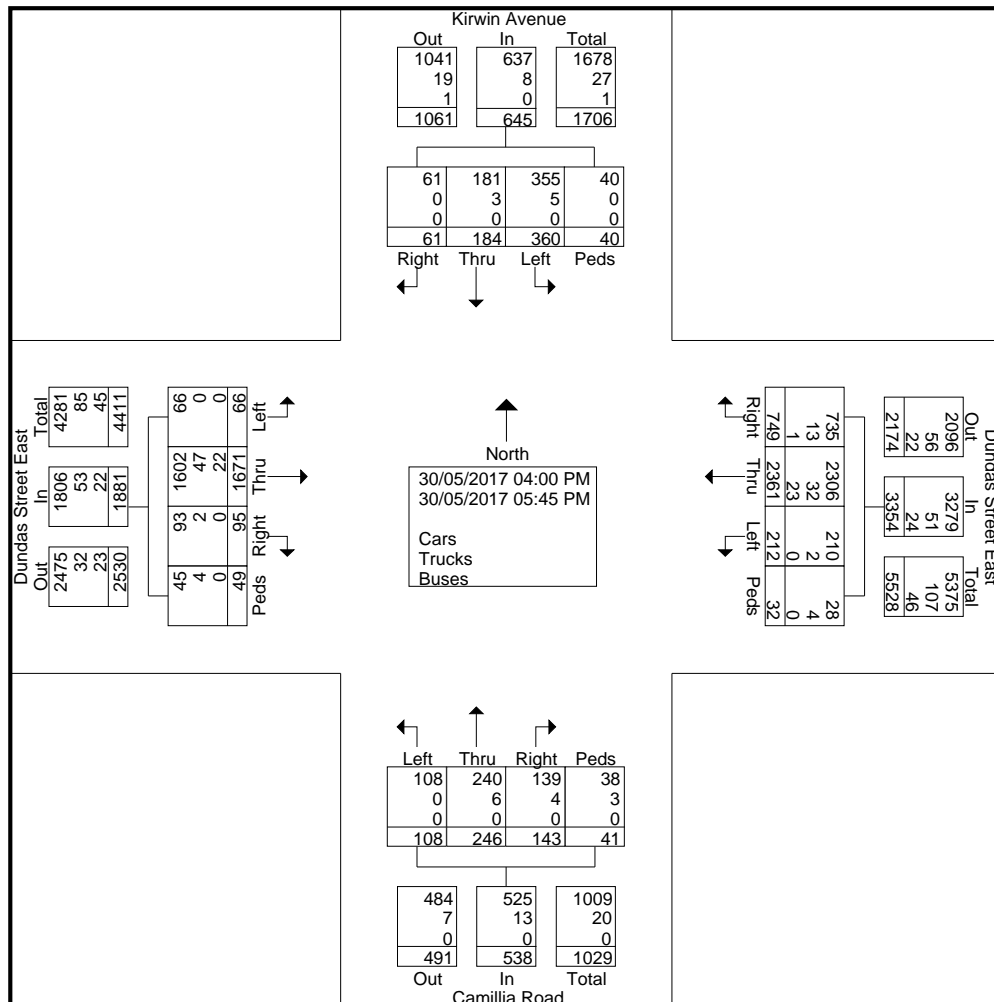
625 Cochrane Drive 9th Floor
Markham, Ontario, L3R 9R9

Project No.: 17360
Location: Kirwin Ave / Dundas St E
Weather: Cloudy / Rain
Surveyor(s): Belinda Wong & May Yue

File Name : Kirwin&Dundas-MERGED-PM
Site Code : 17360025
Start Date : 30/05/2017
Page No : 1

Groups Printed- Cars - Trucks - Buses

Start Time	Kirwin Avenue Southbound					Dundas Street East Westbound					Camillia Road Northbound					Dundas Street East Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
04:00 PM	45	26	4	6	81	28	299	70	3	400	15	22	25	7	69	4	212	9	7	232	782
04:15 PM	36	17	10	5	68	26	304	91	6	427	9	29	13	4	55	5	194	12	3	214	764
04:30 PM	41	21	7	8	77	28	307	97	1	433	15	23	18	5	61	11	184	11	5	211	782
04:45 PM	54	24	6	5	89	30	315	90	7	442	12	35	15	8	70	6	208	8	7	229	830
Total	176	88	27	24	315	112	1225	348	17	1702	51	109	71	24	255	26	798	40	22	886	3158
05:00 PM	49	16	4	8	77	28	243	106	7	384	18	39	18	2	77	8	197	12	11	228	766
05:15 PM	43	24	10	0	77	21	294	90	0	405	11	25	15	1	52	11	228	11	3	253	787
05:30 PM	45	25	5	2	77	19	318	97	2	436	16	49	18	5	88	11	233	15	7	266	867
05:45 PM	47	31	15	6	99	32	281	108	6	427	12	24	21	9	66	10	215	17	6	248	840
Total	184	96	34	16	330	100	1136	401	15	1652	57	137	72	17	283	40	873	55	27	995	3260
Grand Total	360	184	61	40	645	212	2361	749	32	3354	108	246	143	41	538	66	1671	95	49	1881	6418
Apprch %	55.8	28.5	9.5	6.2		6.3	70.4	22.3	1		20.1	45.7	26.6	7.6		3.5	88.8	5.1	2.6		
Total %	5.6	2.9	1	0.6	10	3.3	36.8	11.7	0.5	52.3	1.7	3.8	2.2	0.6	8.4	1	26	1.5	0.8	29.3	
Cars	355	181	61	40	637	210	2306	735	28	3279	108	240	139	38	525	66	1602	93	45	1806	6247
% Cars	98.6	98.4	100	100	98.8	99.1	97.7	98.1	87.5	97.8	100	97.6	97.2	92.7	97.6	100	95.9	97.9	91.8	96	97.3
Trucks	5	3	0	0	8	2	32	13	4	51	0	6	4	3	13	0	47	2	4	53	125
% Trucks	1.4	1.6	0	0	1.2	0.9	1.4	1.7	12.5	1.5	0	2.4	2.8	7.3	2.4	0	2.8	2.1	8.2	2.8	1.9
Buses	0	0	0	0	0	0	23	1	0	24	0	0	0	0	0	0	22	0	0	22	46
% Buses	0	0	0	0	0	0	1	0.1	0	0.7	0	0	0	0	0	0	1.3	0	0	1.2	0.7



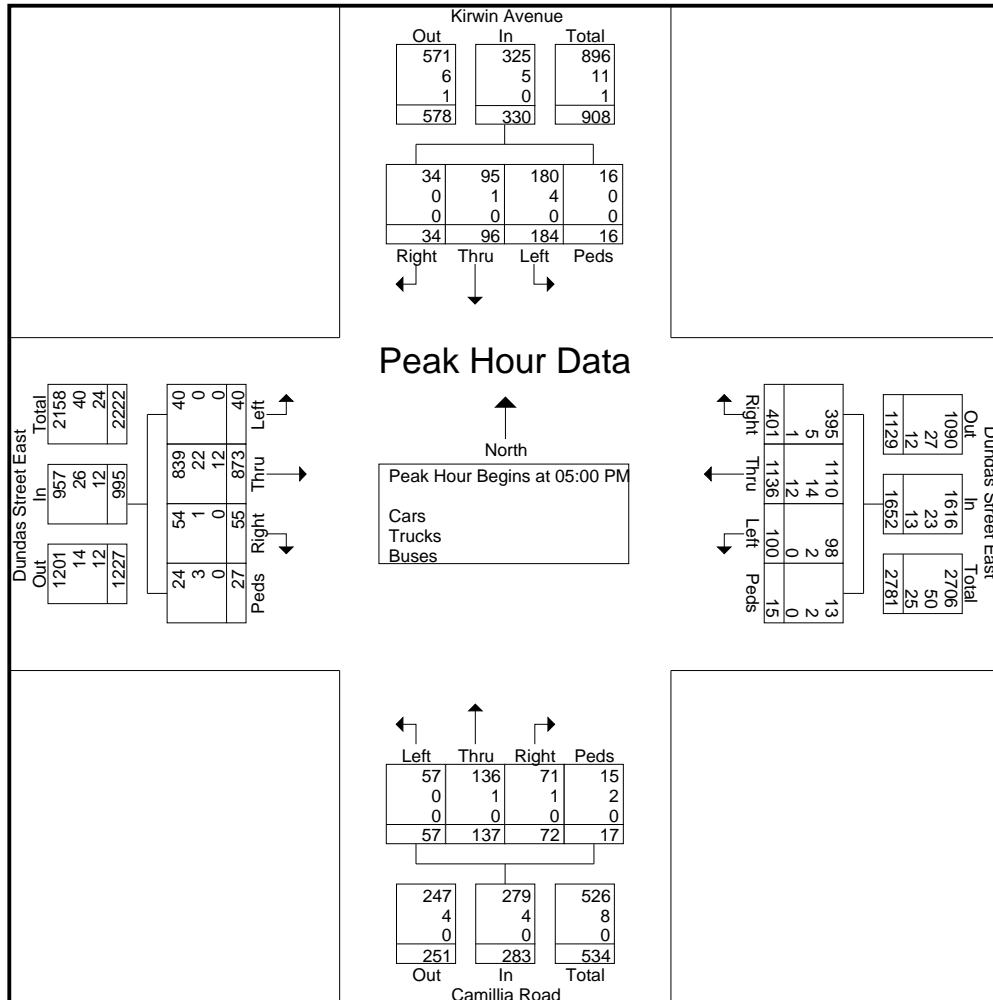
LEA CONSULTING LTD

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

Project No.: 17360
Location: Kirwin Ave / Dundas St E
Weather: Cloudy / Rain
Surveyor(s): Belinda Wong & May Yue

File Name : Kirwin&Dundas-MERGED-PM
Site Code : 17360025
Start Date : 30/05/2017
Page No : 2

Start Time	Kirwin Avenue Southbound					Dundas Street East Westbound					Camillia Road Northbound					Dundas Street East Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	49	16	4	8	77	28	243	106	7	384	18	39	18	2	77	8	197	12	11	228	766
05:15 PM	43	24	10	0	77	21	294	90	0	405	11	25	15	1	52	11	228	11	3	253	787
05:30 PM	45	25	5	2	77	19	318	97	2	436	16	49	18	5	88	11	233	15	7	266	867
05:45 PM	47	31	15	6	99	32	281	108	6	427	12	24	21	9	66	10	215	17	6	248	840
Total Volume	184	96	34	16	330	100	1136	401	15	1652	57	137	72	17	283	40	873	55	27	995	3260
% App. Total	55.8	29.1	10.3	4.8		6.1	68.8	24.3	0.9		20.1	48.4	25.4	6		4	87.7	5.5	2.7		
PHF	.939	.774	.567	.500	.833	.781	.893	.928	.536	.947	.792	.699	.857	.472	.804	.909	.937	.809	.614	.935	.940
Cars	180	95	34	16	325	98	1110														
% Cars	97.8	99.0	100	100	98.5	98.0	97.7	98.5	86.7	97.8	100	99.3	98.6	88.2	98.6	100	96.1	98.2	88.9	96.2	97.5
Trucks	4	1	0	0	5	2	14	5	2	23	0	1	1	2	4	0	22	1	3	26	58
% Trucks	2.2	1.0	0	0	1.5	2.0	1.2	1.2	13.3	1.4	0	0.7	1.4	11.8	1.4	0	2.5	1.8	11.1	2.6	1.8
Buses	0	0	0	0	0	0	12	1	0	13	0	0	0	0	0	0	12	0	0	12	25
% Buses	0	0	0	0	0	0	1.1	0.2	0	0.8	0	0	0	0	0	0	1.4	0	0	1.2	0.8



APPENDIX B

Signal Timing Plans

?? SHOW TIMING REPORT,ACT1-3,I282

SCHEDULED DATA

INT	TIME	MODE	SELECTION PLANS			IN USE		ALTERNATES				
			CYC	OFF	SPLT	SPEC	DUP	MODE	CYC	OFF	SPLT	SPEC
DUP												
			LEN	NO.	NO.	FUNC	ISEC	LEN	NO.	NO.	FUNC	
ISEC												
	282 00:00	/	/	/	/	/	/	LO	101	2	2	2
	282 06:00	1/1	/	/	/	1/1	/	CC	160	1	1	1

1047

LOCATION: DUNDA@CAMILLA/KIRWIN INTERSECTION NO.: 282
 DATE: 27-JUN-2017 TIME: 06:00
 SCHEDULE: 1 SPEC. FUNC.: 1 - Y 2 - N 3
 - N

MAIN ST.: DUNDAS ST CONTROLLER TYPE: D
 NO. OF PH: 5 CONTROL MODE: CC

Ring 1

- 2. EB DUNDAS ST
 - Walk = 71 seconds
 - FL. Don't Walk = 19 seconds
 - Amber = 4 seconds
 - All Red = 3 seconds
- 3. SBL KIRWIN AVE
 - Minimum green = 5 seconds
 - Maximum green = 15 seconds
 - Clearance = 3 seconds
- 4. NB CAMILLA RD
 - Walk = 11 seconds
 - FL. Don't Walk = 18 seconds
 - Sd. Don't Walk = 9 seconds
 - Maximum = 38 seconds
 - Amber = 4 seconds
 - All Red = 3 seconds

Total Cycle Length (Ring 1) = 160 seconds

Ring 2

- 6. WB DUNDAS ST
 - Walk = 71 seconds
 - FL. Don't Walk = 19 seconds
 - Amber = 4 seconds
 - All Red = 3 seconds
- 8. SB KIRWIN AVE
 - Walk = 11 seconds
 - FL. Don't Walk = 18 seconds
 - Sd. Don't Walk = 27 seconds
 - Maximum = 56 seconds
 - Amber = 4 seconds
 - All Red = 3 seconds

Total Cycle Length (Ring 2) = 160 seconds

SCHEDULED DATA
 INT TIME SELECTION PLANS IN USE ALTERNATES
 MODE CYC OFF SPLT SPEC DUP MODE CYC OFF SPLT SPEC
 DUP
 LEN NO. NO. FUNC ISEC LEN NO. NO. FUNC
 ISEC
 282 09:30 1/1 / / / 1/1 / CC 160 2 2 2
 1047

LOCATION: DUNDA@CAMILLA/KIRWIN INTERSECTION NO.: 282
 DATE: 27-JUN-2017 TIME: 09:30
 SCHEDULE: 1 SPEC. FUNC.: 1 - N 2 - N 3
 - N

MAIN ST.: DUNDAS ST CONTROLLER TYPE: D
 NO. OF PH: 6 CONTROL MODE: CC

Ring 1

- 1. WBL - Minimum green = 5 seconds
 DUNDAS ST - Maximum green = 13 seconds
 - Clearance = 3 seconds

- 2. EB - Walk = 49 seconds
 DUNDAS ST - FL. Don't Walk = 19 seconds
 - Amber = 4 seconds
 - All Red = 3 seconds

- 3. SBL - Minimum green = 5 seconds
 KIRWIN AVE - Maximum green = 13 seconds
 - Clearance = 3 seconds

- 4. NB - Walk = 11 seconds
 CAMILLA RD - FL. Don't Walk = 18 seconds
 - Sd. Don't Walk = 17 seconds
 - Maximum = 46 seconds
 - Amber = 4 seconds
 - All Red = 3 seconds

Total Cycle Length (Ring 1) = 160 seconds

Ring 2

- 6. WB - Walk = 66 seconds
 DUNDAS ST - FL. Don't Walk = 19 seconds
 - Amber = 4 seconds
 - All Red = 3 seconds

- 8. SB - Walk = 11 seconds
 KIRWIN AVE - FL. Don't Walk = 18 seconds
 - Sd. Don't Walk = 32 seconds
 - Maximum = 61 seconds
 - Amber = 4 seconds

- All Red = 3 seconds

Total Cycle Length (Ring 2) = 160 seconds

SCHEDULED DATA												
INT	TIME	MODE	SELECTION PLANS			IN USE		ALTERNATES				
			CYC	OFF	SPLT	SPEC	DUP	MODE	CYC	OFF	SPLT	SPEC
DUP			LEN	NO.	NO.	FUNC	ISEC		LEN	NO.	NO.	FUNC
1047	282 15:00	1/1	/	/	/	1/1	/	CC	160	3	3	3

LOCATION: DUNDA@CAMILLA/KIRWIN INTERSECTION NO.: 282
 DATE: 27-JUN-2017 TIME: 15:00
 SCHEDULE: 1 SPEC. FUNC.: 1 - N 2 - N 3
 - N

MAIN ST.: DUNDAS ST CONTROLLER TYPE: D
 NO. OF PH: 6 CONTROL MODE: CC

Ring 1

- 1. WBL DUNDAS ST
 - Minimum green = 5 seconds
 - Maximum green = 15 seconds
 - Clearance = 3 seconds
- 2. EB DUNDAS ST
 - Walk = 58 seconds
 - FL. Don't Walk = 19 seconds
 - Amber = 4 seconds
 - All Red = 3 seconds
- 3. SBL KIRWIN AVE
 - Minimum green = 5 seconds
 - Maximum green = 10 seconds
 - Clearance = 3 seconds
- 4. NB CAMILLA RD
 - Walk = 11 seconds
 - FL. Don't Walk = 18 seconds
 - Sd. Don't Walk = 9 seconds
 - Maximum = 38 seconds
 - Amber = 4 seconds
 - All Red = 3 seconds

Total Cycle Length (Ring 1) = 160 seconds

Ring 2

- 6. WB DUNDAS ST
 - Walk = 76 seconds
 - FL. Don't Walk = 19 seconds
 - Amber = 4 seconds
 - All Red = 3 seconds
- 8. SB KIRWIN AVE
 - Walk = 11 seconds
 - FL. Don't Walk = 18 seconds

- Sd. Don't Walk = 22 seconds
- Maximum = 51 seconds
- Amber = 4 seconds
- All Red = 3 seconds

Total Cycle Length (Ring 2) = 160 seconds

SCHEDULED DATA												
INT	TIME	MODE	SELECTION PLANS			IN USE		ALTERNATES				
			CYC	OFF	SPLT	SPEC	DUP	MODE	CYC	OFF	SPLT	SPEC
DUP												
			LEN	NO.	NO.	FUNC	ISEC		LEN	NO.	NO.	FUNC
ISEC	282 19:30	1/1	/	/	/	1/1	/	CC	160	2	2	2
	1047											

LOCATION: DUNDA@CAMILLA/KIRWIN INTERSECTION NO.: 282
 DATE: 27-JUN-2017 TIME: 19:30
 SCHEDULE: 1 SPEC. FUNC.: 1 - N 2 - N 3
 - N

MAIN ST.: DUNDAS ST CONTROLLER TYPE: D
 NO. OF PH: 6 CONTROL MODE: CC

Ring 1

1. WBL DUNDAS ST
 - Minimum green = 5 seconds
 - Maximum green = 13 seconds
 - Clearance = 3 seconds
2. EB DUNDAS ST
 - Walk = 49 seconds
 - FL. Don't Walk = 19 seconds
 - Amber = 4 seconds
 - All Red = 3 seconds
3. SBL KIRWIN AVE
 - Minimum green = 5 seconds
 - Maximum green = 13 seconds
 - Clearance = 3 seconds
4. NB CAMILLA RD
 - Walk = 11 seconds
 - FL. Don't Walk = 18 seconds
 - Sd. Don't Walk = 17 seconds
 - Maximum = 46 seconds
 - Amber = 4 seconds
 - All Red = 3 seconds

Total Cycle Length (Ring 1) = 160 seconds

Ring 2

6. WB DUNDAS ST
 - Walk = 66 seconds
 - FL. Don't Walk = 19 seconds
 - Amber = 4 seconds
 - All Red = 3 seconds

8. SB - Walk = 11 seconds
 KIRWIN AVE - FL. Don't Walk = 18 seconds
 - Sd. Don't Walk = 32 seconds
 - Maximum = 61 seconds
 - Amber = 4 seconds
 - All Red = 3 seconds

Total Cycle Length (Ring 2) = 160 seconds

SCHEDULED DATA

INT	TIME	MODE	SELECTION PLANS			IN USE		ALTERNATES				
			CYC	OFF	SPLT	SPEC	DUP	MODE	CYC	OFF	SPLT	SPEC
DUP												
			LEN	NO.	NO.	FUNC	ISEC	LEN	NO.	NO.	FUNC	
ISEC	282 00:00	/	/	/	/	/	/	LO	101	2	2	2
	282 07:00	1/1	/	/	/	1/1	/	CC	160	2	2	2

1047

LOCATION: DUNDA@CAMILLA/KIRWIN INTERSECTION NO.: 282
 DATE: 27-JUN-2017 TIME: 07:00
 SCHEDULE: 2 SPEC. FUNC.: 1 - N 2 - N 3
 - N

MAIN ST.: DUNDAS ST CONTROLLER TYPE: D
 NO. OF PH: 6 CONTROL MODE: CC

Ring 1

1. WBL - Minimum green = 5 seconds
 DUNDAS ST - Maximum green = 13 seconds
 - Clearance = 3 seconds

2. EB - Walk = 49 seconds
 DUNDAS ST - FL. Don't Walk = 19 seconds
 - Amber = 4 seconds
 - All Red = 3 seconds

3. SBL - Minimum green = 5 seconds
 KIRWIN AVE - Maximum green = 13 seconds
 - Clearance = 3 seconds

4. NB - Walk = 11 seconds
 CAMILLA RD - FL. Don't Walk = 18 seconds
 - Sd. Don't Walk = 17 seconds
 - Maximum = 46 seconds
 - Amber = 4 seconds
 - All Red = 3 seconds

Total Cycle Length (Ring 1) = 160 seconds

Ring 2

6.	WB DUNDAS ST	- Walk = 66 seconds - FL. Don't Walk = 19 seconds - Amber = 4 seconds - All Red = 3 seconds
8.	SB KIRWIN AVE	- Walk = 11 seconds - FL. Don't Walk = 18 seconds - Sd. Don't Walk = 32 seconds - Maximum = 61 seconds - Amber = 4 seconds - All Red = 3 seconds

Total Cycle Length (Ring 2) = 160 seconds

SCHEDULED DATA												
INT	TIME	MODE	SELECTION PLANS			IN USE		ALTERNATES				
DUP			CYC	OFF	SPLT	SPEC	DUP	MODE	CYC	OFF	SPLT	SPEC
			LEN	NO.	NO.	FUNC	ISEC		LEN	NO.	NO.	FUNC
	282 00:00	/	/	/	/	/	/	LO	101	2	2	2
	282 08:00	1/1	/	/	/	1/1	/	CC	160	2	2	2

1047

LOCATION:	DUNDA@CAMILLA/KIRWIN	INTERSECTION NO.:	282
DATE:	27-JUN-2017	TIME:	08:00
SCHEDULE:	3	SPEC. FUNC.:	1 - N 2 - N 3

- N

MAIN ST.:	DUNDAS ST	CONTROLLER TYPE:	D
NO. OF PH:	6	CONTROL MODE:	CC

Ring 1

1.	WBL DUNDAS ST	- Minimum green = 5 seconds - Maximum green = 13 seconds - Clearance = 3 seconds
2.	EB DUNDAS ST	- Walk = 49 seconds - FL. Don't Walk = 19 seconds - Amber = 4 seconds - All Red = 3 seconds
3.	SBL KIRWIN AVE	- Minimum green = 5 seconds - Maximum green = 13 seconds - Clearance = 3 seconds
4.	NB CAMILLA RD	- Walk = 11 seconds - FL. Don't Walk = 18 seconds - Sd. Don't Walk = 17 seconds - Maximum = 46 seconds - Amber = 4 seconds - All Red = 3 seconds

282 19:30 1/1 / / / 1/1 / CC 160 2 2 2
 1047

DAILY INTERSECTION REPORT FOR ACT SCH 2 (SAT)

282 00:00 / / / / / / LO 101 2 2 2
 282 07:00 1/1 / / / 1/1 / CC 160 2 2 2

1047

DAILY INTERSECTION REPORT FOR ACT SCH 3 (SUN HOL)

282 00:00 / / / / / / LO 101 2 2 2
 282 08:00 1/1 / / / 1/1 / CC 160 2 2 2

1047

282 23:00 / / / / / / LO 101 2 2 2

?? SHOW SPL1-3,I282

SPLIT TABLE

INTERSECTION 282		DUNDA@CAMILLA/KIRWIN															
TABLE	(SPLIT) PHASE NUMBER								(MAX SPLIT) PHASE NUMBER								
NO.	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	
	WBL	EB	SBL	NB	EBL	WB	NBL	SB									
1	0	61	11	28		61		39	0	0	0	0		0		0	
2	10	47	10	33		57		43	14	0	0	0		0		0	
3	11	53	8	28		64		36	18	0	0	0		0		0	

?? SHOW OFF1-3,I282

OFFSET TABLE

INTERSECTION 282		DUNDA@CAMILLA/KIRWIN															
OFFSET #	OFFSET %																
1	24																
2	97																
3	16																

?? SHOW SPF1-3,I282

SPECIAL FUNCTIONS

INTERSECTION 282		DUNDA@CAMILLA/KIRWIN															
SPECIAL FUNCTION #	IN(Y)/OUT(N)																
	1	2	3														
	WBL	NA	CAL	PHASE	OMIT												
1	Y	N	N														
2	N	N	N														
3	N	N	N														

??

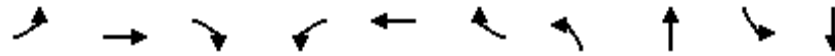
APPENDIX C

Intersection Capacity Analysis – Existing Conditions

Queues

1: Camilla Rd/Kirwin Ave & Dundas St E

12/09/2020

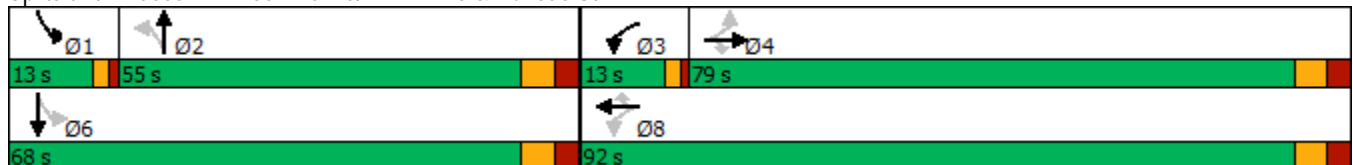


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↘	↑↑	↗	↘	↑↑	↗	↘	↗	↘	↗
Traffic Volume (vph)	8	1223	97	33	601	115	53	96	274	76
Future Volume (vph)	8	1223	97	33	601	115	53	96	274	76
Lane Group Flow (vph)	8	1223	97	33	601	115	53	155	274	98
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4		3	8			2	1	6
Permitted Phases	4		4	8		8	2		6	
Detector Phase	4	4	4	3	8	8	2	2	1	6
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	75.0	75.0	75.0	13.0	92.0	92.0	53.0	53.0	13.0	68.0
Total Split (s)	79.0	79.0	79.0	13.0	92.0	92.0	55.0	55.0	13.0	68.0
Total Split (%)	49.4%	49.4%	49.4%	8.1%	57.5%	57.5%	34.4%	34.4%	8.1%	42.5%
Yellow Time (s)	4.0	4.0	4.0	2.0	4.0	4.0	4.0	4.0	2.0	4.0
All-Red Time (s)	3.0	3.0	3.0	1.0	3.0	3.0	3.0	3.0	1.0	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	7.0	3.0	7.0	7.0	7.0	7.0	3.0	7.0
Lead/Lag	Lag	Lag	Lag	Lead			Lag	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes	Yes	
Recall Mode	Min	Min	Min	None	None	None	Min	Min	None	Max
v/c Ratio	0.02	0.86	0.15	0.23	0.37	0.15	0.13	0.25	0.48	0.13
Control Delay	24.5	45.3	9.7	20.7	24.5	3.5	38.2	33.5	31.0	25.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.5	45.3	9.7	20.7	24.5	3.5	38.2	33.5	31.0	25.2
Queue Length 50th (m)	1.4	166.1	4.9	4.6	55.8	0.0	10.7	28.3	50.7	15.1
Queue Length 95th (m)	4.7	197.2	16.1	10.0	69.0	9.7	23.8	52.3	84.0	31.0
Internal Link Dist (m)		146.0			239.6			263.0		56.0
Turn Bay Length (m)	40.0		45.0	40.0		110.0	70.0		95.0	
Base Capacity (vph)	410	1766	797	185	2085	977	408	610	572	760
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	0.02	0.69	0.12	0.18	0.29	0.12	0.13	0.25	0.48	0.13

Intersection Summary

Cycle Length: 160
 Actuated Cycle Length: 142
 Natural Cycle: 160
 Control Type: Semi Act-Uncoord

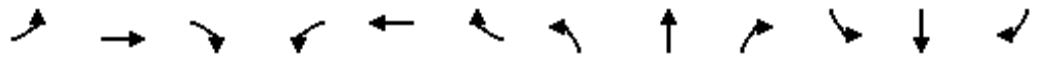
Splits and Phases: 1: Camilla Rd/Kirwin Ave & Dundas St E



HCM Signalized Intersection Capacity Analysis

1: Camilla Rd/Kirwin Ave & Dundas St E

12/09/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	1223	97	33	601	115	53	96	59	274	76	22
Future Volume (vph)	8	1223	97	33	601	115	53	96	59	274	76	22
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	3.0	7.0	7.0	7.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.97	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.98	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	0.97	
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)	1818	3444	1493	1825	3444	1541	1638	1748		1805	1738	
Flt Permitted	0.42	1.00	1.00	0.07	1.00	1.00	0.69	1.00		0.60	1.00	
Satd. Flow (perm)	803	3444	1493	133	3444	1541	1196	1748		1134	1738	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	8	1223	97	33	601	115	53	96	59	274	76	22
RTOR Reduction (vph)	0	0	40	0	0	61	0	13	0	0	6	0
Lane Group Flow (vph)	8	1223	57	33	601	54	53	142	0	274	92	0
Confl. Peds. (#/hr)	10		17	17		10	17		2	2		17
Confl. Bikes (#/hr)			3						1			3
Heavy Vehicles (%)	0%	6%	5%	0%	6%	3%	9%	3%	3%	1%	5%	9%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	58.4	58.4	58.4	66.8	66.8	66.8	48.6	48.6		61.7	61.7	
Effective Green, g (s)	58.4	58.4	58.4	66.8	66.8	66.8	48.6	48.6		61.7	61.7	
Actuated g/C Ratio	0.41	0.41	0.41	0.47	0.47	0.47	0.34	0.34		0.43	0.43	
Clearance Time (s)	7.0	7.0	7.0	3.0	7.0	7.0	7.0	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		3.0	3.0	
Lane Grp Cap (vph)	329	1411	611	126	1614	722	407	596		538	752	
v/s Ratio Prot		c0.36		0.01	c0.17			0.08		c0.04	0.05	
v/s Ratio Perm	0.01		0.04	0.11		0.03	0.04			c0.18		
v/c Ratio	0.02	0.87	0.09	0.26	0.37	0.07	0.13	0.24		0.51	0.12	
Uniform Delay, d1	25.1	38.5	25.8	27.4	24.4	20.8	32.4	33.7		28.4	24.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	5.9	0.1	1.1	0.1	0.0	0.1	0.2		0.8	0.3	
Delay (s)	25.1	44.4	25.9	28.5	24.5	20.9	32.5	33.9		29.1	24.5	
Level of Service	C	D	C	C	C	C	C	C		C	C	
Approach Delay (s)		42.9			24.1			33.5			27.9	
Approach LOS		D			C			C			C	

Intersection Summary

HCM 2000 Control Delay	34.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	142.5	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			

HCM Unsignalized Intersection Capacity Analysis

2: 100 Dundas St E Driveway/Little John Ln & Dundas St E

12/09/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	1297	8	11	660	5	10	0	26	5	0	4
Future Volume (Veh/h)	6	1297	8	11	660	5	10	0	26	5	0	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	6	1297	8	11	660	5	10	0	26	5	0	4
Pedestrians		10			2			50			10	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			0			5			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)					170							
pX, platoon unblocked	0.89						0.89	0.89		0.89	0.89	0.89
vC, conflicting volume	675			1355			1729	2060	704	1383	2062	352
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	395			1355			1576	1947	704	1188	1948	33
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			83	100	93	96	100	100
cM capacity (veh/h)	1038			479			58	52	360	112	53	909
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	6	865	440	11	440	225	36	9				
Volume Left	6	0	0	11	0	0	10	5				
Volume Right	0	0	8	0	0	5	26	4				
cSH	1038	1700	1700	479	1700	1700	147	183				
Volume to Capacity	0.01	0.51	0.26	0.02	0.26	0.13	0.25	0.05				
Queue Length 95th (m)	0.1	0.0	0.0	0.5	0.0	0.0	6.9	1.2				
Control Delay (s)	8.5	0.0	0.0	12.7	0.0	0.0	37.3	25.7				
Lane LOS	A			B			E	D				
Approach Delay (s)	0.0			0.2			37.3	25.7				
Approach LOS							E	D				
Intersection Summary												
Average Delay			0.9									
Intersection Capacity Utilization			49.0%	ICU Level of Service	A							
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

3: Kirwin Ave & Plaza Access

12/09/2020



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	3	2	215	4	4	369
Future Volume (Veh/h)	3	2	215	4	4	369
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	3	2	215	4	4	369
Pedestrians	4					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)			80			
pX, platoon unblocked	0.97	0.97			0.97	
vC, conflicting volume	598	221			223	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	574	187			189	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	468	835			1326	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	5	219	373			
Volume Left	3	0	4			
Volume Right	2	4	0			
cSH	568	1700	1326			
Volume to Capacity	0.01	0.13	0.00			
Queue Length 95th (m)	0.2	0.0	0.1			
Control Delay (s)	11.4	0.0	0.1			
Lane LOS	B		A			
Approach Delay (s)	11.4	0.0	0.1			
Approach LOS	B					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			32.6%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

4: Site Access and Kirwin Avenue

12/09/2020

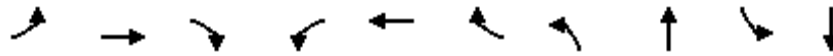


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	217	373	0
Future Volume (Veh/h)	0	0	0	217	373	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	236	405	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				114		
pX, platoon unblocked	0.99					
vC, conflicting volume	641	405	405			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	635	405	405			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	440	646	1154			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	0	236	405			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1154	1700			
Volume to Capacity	0.00	0.00	0.24			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization		23.0%		ICU Level of Service		A
Analysis Period (min)			15			

Queues

1: Camilla Rd/Kirwin Ave & Dundas St E

12/09/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	40	913	55	100	1144	401	57	137	184	96
Future Volume (vph)	40	913	55	100	1144	401	57	137	184	96
Lane Group Flow (vph)	40	913	55	100	1144	401	57	209	184	130
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4		3	8			2	1	6
Permitted Phases	4		4	8		8	2		6	
Detector Phase	4	4	4	3	8	8	2	2	1	6
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	75.0	75.0	75.0	13.0	92.0	92.0	53.0	53.0	13.0	68.0
Total Split (s)	79.0	79.0	79.0	13.0	92.0	92.0	55.0	55.0	13.0	68.0
Total Split (%)	49.4%	49.4%	49.4%	8.1%	57.5%	57.5%	34.4%	34.4%	8.1%	42.5%
Yellow Time (s)	4.0	4.0	4.0	2.0	4.0	4.0	4.0	4.0	2.0	4.0
All-Red Time (s)	3.0	3.0	3.0	1.0	3.0	3.0	3.0	3.0	1.0	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	7.0	3.0	7.0	7.0	7.0	7.0	3.0	7.0
Lead/Lag	Lag	Lag	Lag	Lead			Lag	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes	Yes	
Recall Mode	Min	Min	Min	None	None	None	Min	Min	None	Max
v/c Ratio	0.49	0.80	0.10	0.49	0.77	0.46	0.12	0.31	0.32	0.15
Control Delay	57.4	45.9	4.8	28.5	36.0	3.8	30.1	29.0	20.7	19.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.4	45.9	4.8	28.5	36.0	3.8	30.1	29.0	20.7	19.3
Queue Length 50th (m)	8.2	111.3	0.0	14.5	128.3	0.0	9.3	33.7	24.7	16.1
Queue Length 95th (m)	21.2	134.7	6.4	25.0	152.1	16.9	21.9	62.2	47.3	33.8
Internal Link Dist (m)		146.0			239.6			263.0		56.0
Turn Bay Length (m)	40.0		45.0	40.0		110.0	70.0		95.0	
Base Capacity (vph)	145	2021	888	217	2409	1172	479	684	579	874
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	0.28	0.45	0.06	0.46	0.47	0.34	0.12	0.31	0.32	0.15

Intersection Summary

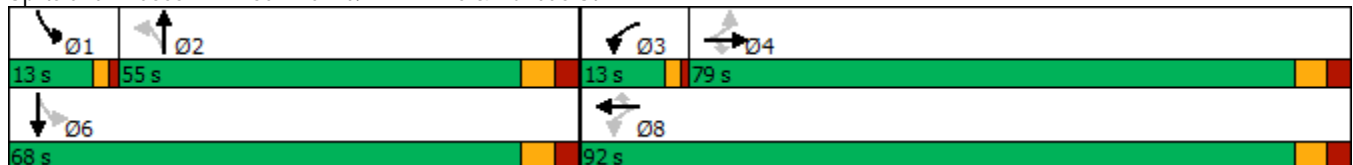
Cycle Length: 160

Actuated Cycle Length: 128.2

Natural Cycle: 160

Control Type: Semi Act-Uncoord

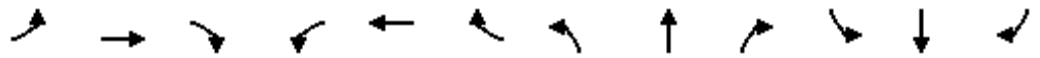
Splits and Phases: 1: Camilla Rd/Kirwin Ave & Dundas St E



HCM Signalized Intersection Capacity Analysis

1: Camilla Rd/Kirwin Ave & Dundas St E

12/09/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	913	55	100	1144	401	57	137	72	184	96	34
Future Volume (vph)	40	913	55	100	1144	401	57	137	72	184	96	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	3.0	7.0	7.0	7.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.97	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.98	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95		1.00	0.96	
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)	1821	3579	1528	1789	3614	1562	1793	1783		1777	1816	
Flt Permitted	0.13	1.00	1.00	0.11	1.00	1.00	0.67	1.00		0.55	1.00	
Satd. Flow (perm)	256	3579	1528	215	3614	1562	1271	1783		1026	1816	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	40	913	55	100	1144	401	57	137	72	184	96	34
RTOR Reduction (vph)	0	0	37	0	0	236	0	11	0	0	7	0
Lane Group Flow (vph)	40	913	18	100	1144	165	57	198	0	184	123	0
Confl. Peds. (#/hr)	16		24	24		16	16		15	15		16
Confl. Bikes (#/hr)			3			2			3			2
Heavy Vehicles (%)	0%	2%	2%	2%	1%	1%	0%	1%	1%	2%	1%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	40.8	40.8	40.8	52.8	52.8	52.8	48.6	48.6		61.3	61.3	
Effective Green, g (s)	40.8	40.8	40.8	52.8	52.8	52.8	48.6	48.6		61.3	61.3	
Actuated g/C Ratio	0.32	0.32	0.32	0.41	0.41	0.41	0.38	0.38		0.48	0.48	
Clearance Time (s)	7.0	7.0	7.0	3.0	7.0	7.0	7.0	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		3.0	3.0	
Lane Grp Cap (vph)	81	1139	486	199	1489	643	482	676		547	869	
v/s Ratio Prot		0.26		0.04	c0.32			0.11		c0.03	0.07	
v/s Ratio Perm	0.16		0.01	0.17		0.11	0.04			c0.14		
v/c Ratio	0.49	0.80	0.04	0.50	0.77	0.26	0.12	0.29		0.34	0.14	
Uniform Delay, d1	35.3	39.9	30.1	27.1	32.4	24.8	25.8	27.8		19.6	18.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.7	4.1	0.0	2.0	2.4	0.2	0.1	0.2		0.4	0.3	
Delay (s)	40.0	44.1	30.1	29.1	34.8	25.0	25.9	28.0		20.0	19.0	
Level of Service	D	D	C	C	C	C	C	C		B	B	
Approach Delay (s)		43.2			32.1			27.6			19.6	
Approach LOS		D			C			C			B	

Intersection Summary

HCM 2000 Control Delay	34.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	128.1	Sum of lost time (s)	20.0
Intersection Capacity Utilization	103.7%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis

2: 100 Dundas St E Driveway/Little John Ln & Dundas St E

12/09/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	36	985	10	12	1207	16	3	0	6	17	1	53
Future Volume (Veh/h)	36	985	10	12	1207	16	3	0	6	17	1	53
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	36	985	10	12	1207	16	3	0	6	17	1	53
Pedestrians		10			2			32			16	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			0			3			2	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)					170							
pX, platoon unblocked	0.72						0.72	0.72		0.72	0.72	0.72
vC, conflicting volume	1239			1027			1785	2357	532	1828	2354	638
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	562			1027			1318	2110	532	1377	2106	0
tC, single (s)	4.2			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			98			95	100	99	75	97	93
cM capacity (veh/h)	710			663			66	32	476	68	33	768
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	36	657	338	12	805	418	9	71				
Volume Left	36	0	0	12	0	0	3	17				
Volume Right	0	0	10	0	0	16	6	53				
cSH	710	1700	1700	663	1700	1700	156	203				
Volume to Capacity	0.05	0.39	0.20	0.02	0.47	0.25	0.06	0.35				
Queue Length 95th (m)	1.2	0.0	0.0	0.4	0.0	0.0	1.4	11.2				
Control Delay (s)	10.3	0.0	0.0	10.5	0.0	0.0	29.5	31.9				
Lane LOS	B			B			D	D				
Approach Delay (s)	0.4			0.1			29.5	31.9				
Approach LOS							D	D				
Intersection Summary												
Average Delay			1.3									
Intersection Capacity Utilization			48.5%		ICU Level of Service			A				
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

3: Kirwin Ave & Plaza Access

12/09/2020



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	28	18	565	13	7	286
Future Volume (Veh/h)	28	18	565	13	7	286
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	28	18	565	13	7	286
Pedestrians	11		5			3
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.1		1.1			1.1
Percent Blockage	1		0			0
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)			80			
pX, platoon unblocked	0.94	0.94			0.94	
vC, conflicting volume	888	586			589	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	851	532			535	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	91	96			99	
cM capacity (veh/h)	307	514			974	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	46	578	293
Volume Left	28	0	7
Volume Right	18	13	0
cSH	365	1700	974
Volume to Capacity	0.13	0.34	0.01
Queue Length 95th (m)	3.3	0.0	0.2
Control Delay (s)	16.3	0.0	0.3
Lane LOS	C		A
Approach Delay (s)	16.3	0.0	0.3
Approach LOS	C		

Intersection Summary			
Average Delay		0.9	
Intersection Capacity Utilization		41.5%	ICU Level of Service
Analysis Period (min)		15	A

HCM Unsignalized Intersection Capacity Analysis

4: Site Access and Kirwin Avenue

12/09/2020



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	583	293	0
Future Volume (Veh/h)	0	0	0	583	293	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	634	318	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				114		
pX, platoon unblocked	0.96					
vC, conflicting volume	952	318	318			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	930	318	318			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	285	723	1242			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	0	634	318			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1242	1700			
Volume to Capacity	0.00	0.00	0.19			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay	0.0					
Intersection Capacity Utilization	34.0%		ICU Level of Service	A		
Analysis Period (min)	15					

APPENDIX D

Background Development Information

Please be informed of a proposed development in your neighbourhood

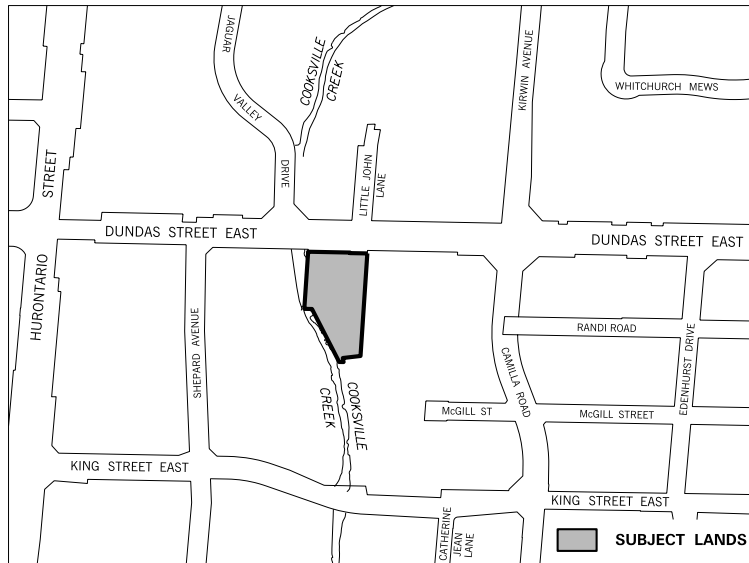


86-90 Dundas Street East

South side of Dundas Street East, east of Hurontario Street

File: OZ 16/008 W7

Location of the Proposal



Applicant's Rendering



Applicant's Proposal:

- To revise the official plan and zoning to permit a 29-storey apartment building with 300 residential units and commercial uses on the ground floor.

If you would like to provide input on the proposed development or you wish to be notified of any upcoming meetings:

Contact the Planning and Building Department:

- Mail: 300 City Centre Drive, 6th floor, Mississauga ON L5B 3C1
- Fax: 905-896-5553
- Email: application.info@mississauga.ca

? For detailed information contact:
City Planner Michael Hynes at 905-615-3200 ext. 5525
Michael.Hynes@mississauga.ca

Planning documents and background material are available for inspection at the Planning and Building Department, Planning Services Centre, 3rd floor, Mississauga Civic Centre between 8:30 a.m. and 4:30 p.m.

Lesley Pavan, Director
Development and Design Division
Planning and Building Department

If you are a landlord, please post a copy of this notice where your tenants can see it. We want to make sure they have a chance to take part.

See other side of notice for additional information and for legal requirements

The following studies/information were submitted in support of the applications:

- Survey
- Site Plan and Statistics
- Floor Plans
- Building Elevations
- Site Servicing Plan
- Site Grading Plan
- Utility Plan
- Streetscape and Landscape Drawings
- Tree Preservation and Removals Plan
- Arborist Report
- Green Standards
- Planning Justification Report
- Urban Design Brief
- Slope Stability Assessment
- Sun/Shadow Study
- Detailed Noise Control Study
- Pedestrian Wind Study
- Traffic Impact Study
- Functional Servicing Report
- Geotechnical Investigation
- Scoped Environmental Impact Study
- Phase I Environmental Site Assessment
- Stage 1-2 Archaeological Assessment
- Restrictions on Title
- Draft Official Plan Amendment
- Draft Zoning By-law

Planning Act Requirements:

The City will be processing the applications in accordance with the Provincial *Planning Act* which requires that all complete applications be processed.

The applications are now being circulated to City Departments and Agencies for technical review.

Once the technical review has been completed, a report summarizing the development and the comments received will be prepared by Planning staff and presented at a Public Meeting.

Notice of the Public Meeting will be given in accordance with the *Planning Act* requirements.

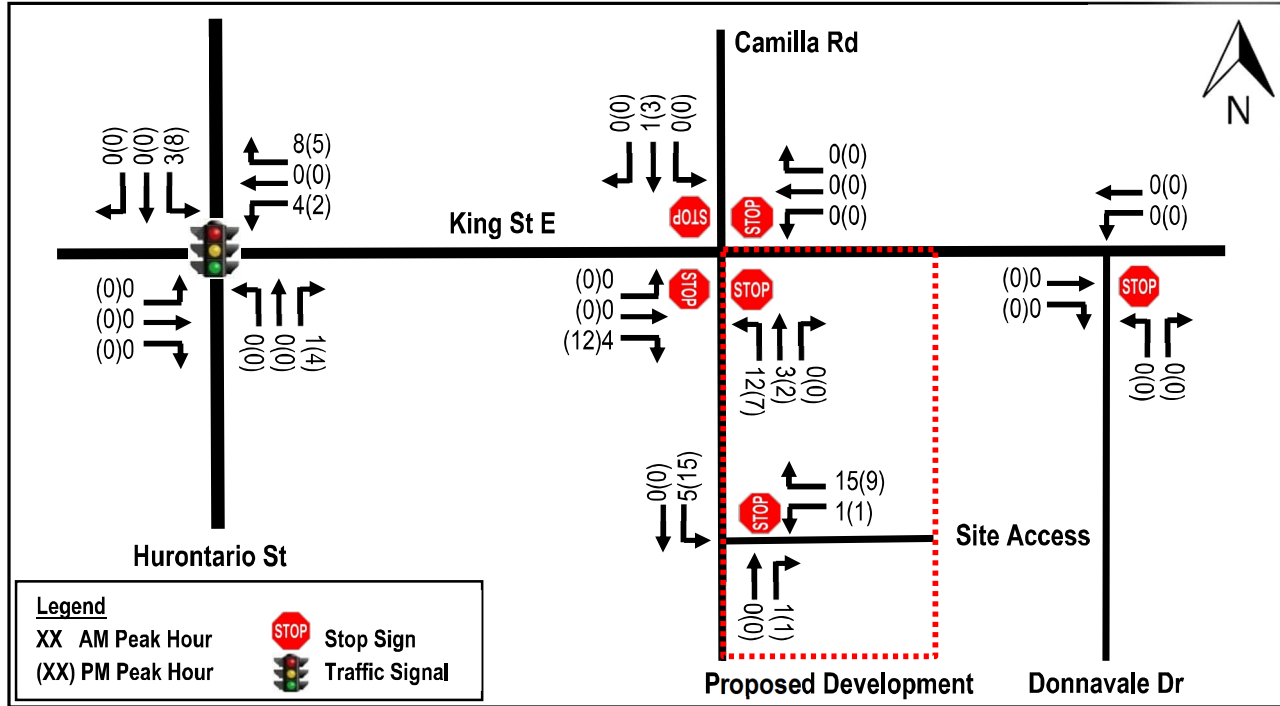
A recommendation on the applications will not be presented until after the Public Meeting and all technical comments have been received.

Personal Information:

The personal information related to the consideration of any planning matter (including consideration of applications; comments and correspondence provided, whether written or verbal in relation to an application; comments and correspondence provided at, before or after a public or statutory meeting or a Committee or Council meeting) is collected under the authority of the *Municipal Act, 2001*, and the *Planning Act*. The City collects this information to enable it to make an informed decision on the relevant issue(s). Individuals who submit correspondence (as noted above) should be aware that any personal information in their communication will become part of the public record, unless the individual expressly requests the City to remove the personal information. Questions about the collection of this information may be directed to application.info@mississauga.ca or in writing to the Planning and Building Department at 300 City Centre Drive, Mississauga ON L5B 3C1.

Date of Notice: October 14, 2016

Figure 11 – Site Traffic Volumes

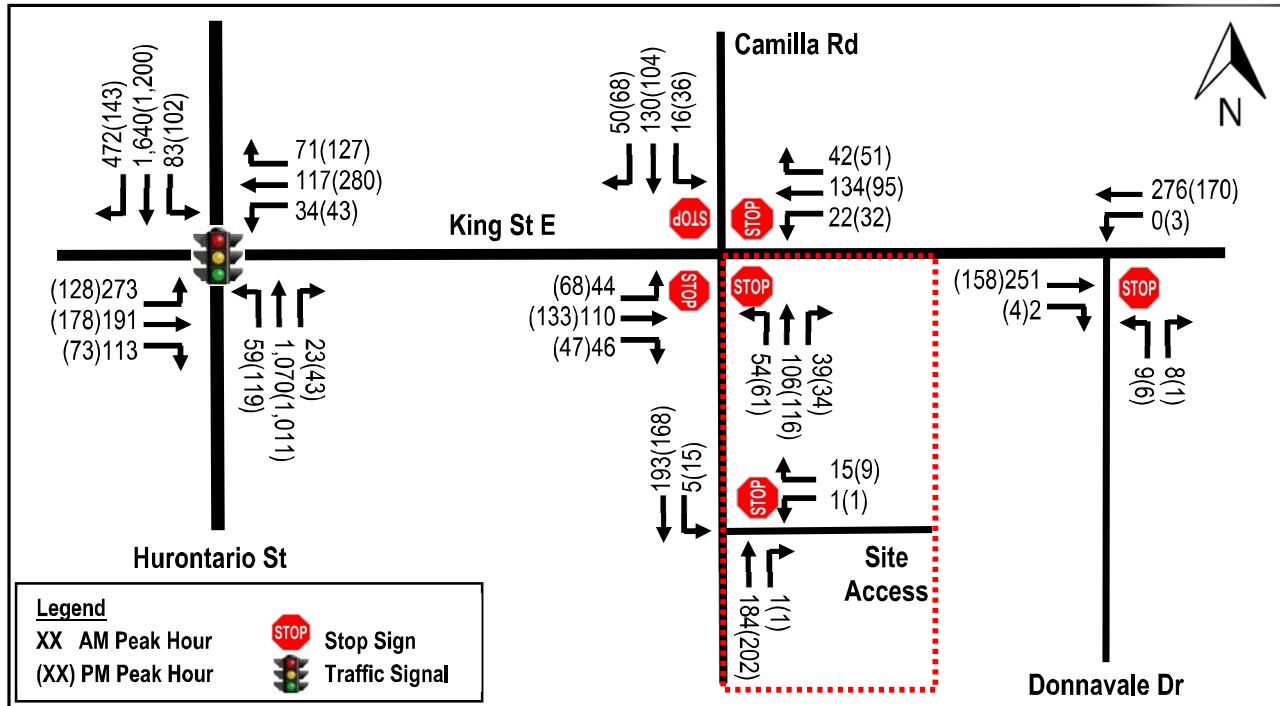


6.0 FUTURE TOTAL TRAFFIC CONDITIONS

6.1. Future Total Traffic Assessment for Auto Mode

The estimated 2026 future total traffic volumes (future background traffic volumes plus site generated traffic volumes) are illustrated in **Figure 12**, and were analyzed using Synchro Version 10 software. The detailed calculations are provided in **Appendix G** and summarized in **Table 10**.

Figure 12 – 2028 Future Total Traffic Volumes



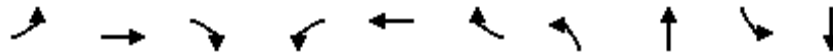
APPENDIX E

Intersection Capacity Analysis – Future Background Conditions

Queues

1: Camilla Rd/Kirwin Ave & Dundas St E

12-08-2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↘
Traffic Volume (vph)	8	1280	97	33	622	115	53	99	274	77
Future Volume (vph)	8	1280	97	33	622	115	53	99	274	77
Lane Group Flow (vph)	8	1280	97	33	622	115	53	158	274	99
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4		3	8			2	1	6
Permitted Phases	4		4	8		8	2		6	
Detector Phase	4	4	4	3	8	8	2	2	1	6
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	75.0	75.0	75.0	13.0	92.0	92.0	53.0	53.0	13.0	68.0
Total Split (s)	79.0	79.0	79.0	13.0	92.0	92.0	55.0	55.0	13.0	68.0
Total Split (%)	49.4%	49.4%	49.4%	8.1%	57.5%	57.5%	34.4%	34.4%	8.1%	42.5%
Yellow Time (s)	4.0	4.0	4.0	2.0	4.0	4.0	4.0	4.0	2.0	4.0
All-Red Time (s)	3.0	3.0	3.0	1.0	3.0	3.0	3.0	3.0	1.0	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	7.0	3.0	7.0	7.0	7.0	7.0	3.0	7.0
Lead/Lag	Lag	Lag	Lag	Lead			Lag	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes	Yes	
Recall Mode	Min	Min	Min	None	None	None	Min	Min	None	Max
v/c Ratio	0.02	0.88	0.14	0.24	0.38	0.14	0.13	0.26	0.50	0.13
Control Delay	24.1	46.0	9.5	20.7	24.2	3.4	39.5	35.2	32.8	26.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.1	46.0	9.5	20.7	24.2	3.4	39.5	35.2	32.8	26.6
Queue Length 50th (m)	1.4	178.4	4.9	4.6	58.2	0.0	11.2	30.7	53.8	16.4
Queue Length 95th (m)	4.8	211.4	16.1	10.0	71.7	9.7	23.8	53.4	84.0	31.4
Internal Link Dist (m)		146.0			239.6			263.0		56.0
Turn Bay Length (m)	40.0		45.0	40.0		110.0	70.0		95.0	
Base Capacity (vph)	389	1726	781	178	2038	958	398	597	553	744
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	0.02	0.74	0.12	0.19	0.31	0.12	0.13	0.26	0.50	0.13

Intersection Summary

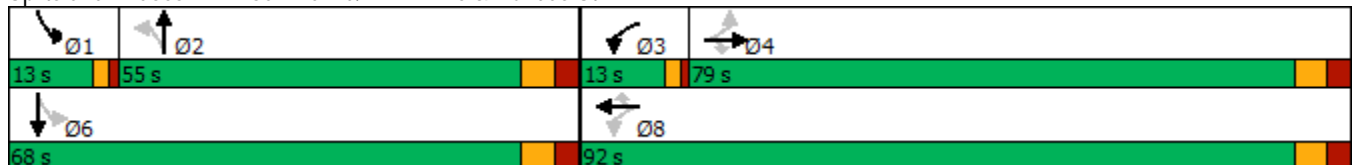
Cycle Length: 160

Actuated Cycle Length: 145.2

Natural Cycle: 160

Control Type: Semi Act-Uncoord

Splits and Phases: 1: Camilla Rd/Kirwin Ave & Dundas St E



HCM Signalized Intersection Capacity Analysis

1: Camilla Rd/Kirwin Ave & Dundas St E

12-08-2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	1280	97	33	622	115	53	99	59	274	77	22
Future Volume (vph)	8	1280	97	33	622	115	53	99	59	274	77	22
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	3.0	7.0	7.0	7.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.97	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.98	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	0.97	
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)	1819	3444	1492	1825	3444	1540	1637	1750		1805	1739	
Flt Permitted	0.41	1.00	1.00	0.06	1.00	1.00	0.69	1.00		0.59	1.00	
Satd. Flow (perm)	778	3444	1492	119	3444	1540	1194	1750		1119	1739	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	8	1280	97	33	622	115	53	99	59	274	77	22
RTOR Reduction (vph)	0	0	39	0	0	60	0	13	0	0	6	0
Lane Group Flow (vph)	8	1280	58	33	622	55	53	145	0	274	93	0
Confl. Peds. (#/hr)	10		17	17		10	17		2	2		17
Confl. Bikes (#/hr)			3						1			3
Heavy Vehicles (%)	0%	6%	5%	0%	6%	3%	9%	3%	3%	1%	5%	9%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	61.6	61.6	61.6	70.0	70.0	70.0	48.6	48.6		61.7	61.7	
Effective Green, g (s)	61.6	61.6	61.6	70.0	70.0	70.0	48.6	48.6		61.7	61.7	
Actuated g/C Ratio	0.42	0.42	0.42	0.48	0.48	0.48	0.33	0.33		0.42	0.42	
Clearance Time (s)	7.0	7.0	7.0	3.0	7.0	7.0	7.0	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		3.0	3.0	
Lane Grp Cap (vph)	328	1456	630	120	1654	739	398	583		521	736	
v/s Ratio Prot		c0.37		0.01	c0.18			0.08		c0.04	0.05	
v/s Ratio Perm	0.01		0.04	0.12		0.04	0.04			c0.19		
v/c Ratio	0.02	0.88	0.09	0.28	0.38	0.07	0.13	0.25		0.53	0.13	
Uniform Delay, d1	24.5	38.6	25.3	28.0	24.0	20.4	33.9	35.3		30.2	25.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	6.4	0.1	1.2	0.1	0.0	0.2	0.2		1.0	0.4	
Delay (s)	24.6	45.0	25.3	29.3	24.1	20.4	34.0	35.5		31.2	25.9	
Level of Service	C	D	C	C	C	C	C	D		C	C	
Approach Delay (s)		43.5			23.8			35.1			29.8	
Approach LOS		D			C			D			C	

Intersection Summary

HCM 2000 Control Delay	35.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	145.7	Sum of lost time (s)	20.0
Intersection Capacity Utilization	90.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis

2: 100 Dundas St E Driveway/Little John Ln & Dundas St E

12-08-2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	1330	19	19	676	5	42	0	52	5	0	4
Future Volume (Veh/h)	6	1330	19	19	676	5	42	0	52	5	0	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	6	1330	19	19	676	5	42	0	52	5	0	4
Pedestrians		10			2			50			10	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			0			5			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)					170							
pX, platoon unblocked	0.89						0.89	0.89		0.89	0.89	0.89
vC, conflicting volume	691			1399			1792	2130	726	1458	2138	360
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	407			1399			1643	2024	726	1268	2032	36
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			96			17	100	85	94	100	100
cM capacity (veh/h)	1025			461			51	46	348	88	46	904
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	6	887	462	19	451	230	94	9				
Volume Left	6	0	0	19	0	0	42	5				
Volume Right	0	0	19	0	0	5	52	4				
cSH	1025	1700	1700	461	1700	1700	96	147				
Volume to Capacity	0.01	0.52	0.27	0.04	0.27	0.14	0.98	0.06				
Queue Length 95th (m)	0.1	0.0	0.0	1.0	0.0	0.0	44.2	1.5				
Control Delay (s)	8.5	0.0	0.0	13.2	0.0	0.0	166.2	31.1				
Lane LOS	A			B			F	D				
Approach Delay (s)	0.0			0.4			166.2	31.1				
Approach LOS							F	D				
Intersection Summary												
Average Delay			7.5									
Intersection Capacity Utilization			51.0%		ICU Level of Service			A				
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

3: Kirwin Ave & Plaza Access

12-08-2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	3	2	218	4	4	370
Future Volume (Veh/h)	3	2	218	4	4	370
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	3	2	218	4	4	370
Pedestrians	4					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)	80					
pX, platoon unblocked	0.97	0.97			0.97	
vC, conflicting volume	602	224			226	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	573	183			185	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	466	834			1324	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	5	222	374			
Volume Left	3	0	4			
Volume Right	2	4	0			
cSH	566	1700	1324			
Volume to Capacity	0.01	0.13	0.00			
Queue Length 95th (m)	0.2	0.0	0.1			
Control Delay (s)	11.4	0.0	0.1			
Lane LOS	B		A			
Approach Delay (s)	11.4	0.0	0.1			
Approach LOS	B					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			32.7%		ICU Level of Service	
Analysis Period (min)			15			
			A			

HCM Unsignalized Intersection Capacity Analysis

4: Site Access and Kirwin Avenue

12-08-2022

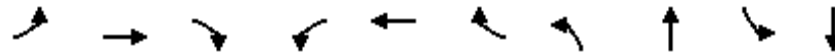


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	217	373	0
Future Volume (Veh/h)	0	0	0	217	373	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	236	405	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				114		
pX, platoon unblocked	0.99					
vC, conflicting volume	641	405	405			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	628	405	405			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	440	646	1154			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	0	236	405			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1154	1700			
Volume to Capacity	0.00	0.00	0.24			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay	0.0					
Intersection Capacity Utilization	23.0%		ICU Level of Service	A		
Analysis Period (min)	15					

Queues

1: Camilla Rd/Kirwin Ave & Dundas St E

12-08-2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↗
Traffic Volume (vph)	40	964	55	100	1194	401	57	139	184	99
Future Volume (vph)	40	964	55	100	1194	401	57	139	184	99
Lane Group Flow (vph)	40	964	55	100	1194	401	57	211	184	133
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4		3	8			2	1	6
Permitted Phases	4		4	8		8	2		6	
Detector Phase	4	4	4	3	8	8	2	2	1	6
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	75.0	75.0	75.0	13.0	92.0	92.0	53.0	53.0	13.0	68.0
Total Split (s)	79.0	79.0	79.0	13.0	92.0	92.0	55.0	55.0	13.0	68.0
Total Split (%)	49.4%	49.4%	49.4%	8.1%	57.5%	57.5%	34.4%	34.4%	8.1%	42.5%
Yellow Time (s)	4.0	4.0	4.0	2.0	4.0	4.0	4.0	4.0	2.0	4.0
All-Red Time (s)	3.0	3.0	3.0	1.0	3.0	3.0	3.0	3.0	1.0	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	7.0	3.0	7.0	7.0	7.0	7.0	3.0	7.0
Lead/Lag	Lag	Lag	Lag	Lead			Lag	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes	Yes	
Recall Mode	Min	Min	Min	None	None	None	Min	Min	None	Max
v/c Ratio	0.53	0.81	0.10	0.51	0.78	0.45	0.12	0.31	0.33	0.16
Control Delay	61.7	45.8	4.5	28.9	36.1	3.6	31.7	30.6	22.3	20.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.7	45.8	4.5	28.9	36.1	3.6	31.7	30.6	22.3	20.8
Queue Length 50th (m)	8.3	119.7	0.0	14.5	136.8	0.0	9.6	35.2	25.7	17.4
Queue Length 95th (m)	22.1	143.6	6.4	24.6	161.0	16.8	22.9	66.0	50.4	36.7
Internal Link Dist (m)		146.0			239.6			263.0		56.0
Turn Bay Length (m)	40.0		45.0	40.0		110.0	70.0		95.0	
Base Capacity (vph)	127	1979	871	210	2359	1156	468	671	562	857
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	0.31	0.49	0.06	0.48	0.51	0.35	0.12	0.31	0.33	0.16

Intersection Summary

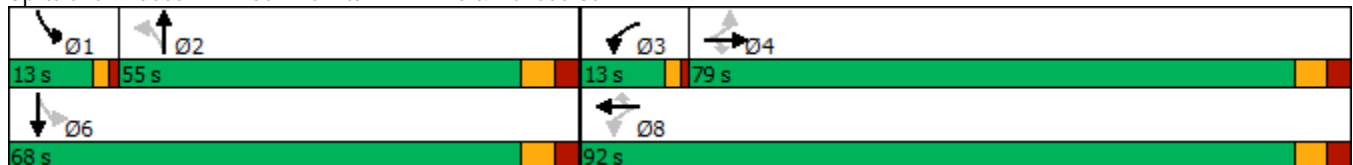
Cycle Length: 160

Actuated Cycle Length: 131

Natural Cycle: 160

Control Type: Semi Act-Uncoord























Splits and Phases: 1: Camilla Rd/Kirwin Ave & Dundas St E



HCM Signalized Intersection Capacity Analysis

1: Camilla Rd/Kirwin Ave & Dundas St E

12-08-2022

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	40	964	55	100	1194	401	57	139	72	184	99	34	
Future Volume (vph)	40	964	55	100	1194	401	57	139	72	184	99	34	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	7.0	7.0	7.0	3.0	7.0	7.0	7.0	7.0		3.0	7.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00		
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.97	1.00	0.99		1.00	0.99		
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.98	1.00		0.99	1.00		
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95		1.00	0.96		
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)	1821	3579	1527	1789	3614	1562	1792	1784		1777	1818		
Flt Permitted	0.12	1.00	1.00	0.10	1.00	1.00	0.67	1.00		0.54	1.00		
Satd. Flow (perm)	230	3579	1527	195	3614	1562	1268	1784		1014	1818		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	40	964	55	100	1194	401	57	139	72	184	99	34	
RTOR Reduction (vph)	0	0	37	0	0	231	0	11	0	0	6	0	
Lane Group Flow (vph)	40	964	18	100	1194	170	57	200	0	184	127	0	
Confl. Peds. (#/hr)	16		24	24		16	16		15	15		16	
Confl. Bikes (#/hr)			3			2			3			2	
Heavy Vehicles (%)	0%	2%	2%	2%	1%	1%	0%	1%	1%	2%	1%	0%	
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		pm+pt	NA		
Protected Phases		4		3	8			2		1	6		
Permitted Phases	4		4	8		8	2			6			
Actuated Green, G (s)	43.5	43.5	43.5	55.5	55.5	55.5	48.7	48.7		61.4	61.4		
Effective Green, g (s)	43.5	43.5	43.5	55.5	55.5	55.5	48.7	48.7		61.4	61.4		
Actuated g/C Ratio	0.33	0.33	0.33	0.42	0.42	0.42	0.37	0.37		0.47	0.47		
Clearance Time (s)	7.0	7.0	7.0	3.0	7.0	7.0	7.0	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		3.0	3.0		
Lane Grp Cap (vph)	76	1189	507	192	1532	662	471	663		532	852		
v/s Ratio Prot		0.27		0.04	c0.33			0.11		c0.03	0.07		
v/s Ratio Perm	0.17		0.01	0.18		0.11	0.04			c0.14			
v/c Ratio	0.53	0.81	0.04	0.52	0.78	0.26	0.12	0.30		0.35	0.15		
Uniform Delay, d1	35.4	39.9	29.5	27.3	32.4	24.4	27.0	29.1		20.8	19.8		
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	6.4	4.3	0.0	2.5	2.6	0.2	0.1	0.3		0.4	0.4		
Delay (s)	41.8	44.2	29.6	29.8	35.0	24.6	27.1	29.3		21.2	20.2		
Level of Service	D	D	C	C	D	C	C	C		C	C		
Approach Delay (s)		43.4			32.2			28.9			20.8		
Approach LOS		D			C			C			C		
Intersection Summary													
HCM 2000 Control Delay			34.4									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.58										
Actuated Cycle Length (s)			130.9									Sum of lost time (s)	20.0
Intersection Capacity Utilization			104.5%									ICU Level of Service	G
Analysis Period (min)			15										
c Critical Lane Group													

HCM Unsignalized Intersection Capacity Analysis

2: 100 Dundas St E Driveway/Little John Ln & Dundas St E

12-08-2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	36	1022	59	33	1238	16	39	0	24	17	1	53
Future Volume (Veh/h)	36	1022	59	33	1238	16	39	0	24	17	1	53
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	36	1022	59	33	1238	16	39	0	24	17	1	53
Pedestrians		10			2			32			16	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			0			3			2	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)					170							
pX, platoon unblocked	0.71						0.71	0.71		0.71	0.71	0.71
vC, conflicting volume	1270			1113			1904	2492	574	1937	2513	653
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	567			1113			1459	2285	574	1505	2315	0
tC, single (s)	4.2			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			95			21	100	95	66	96	93
cM capacity (veh/h)	696			615			49	24	446	50	23	756
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	36	681	400	33	825	429	63	71				
Volume Left	36	0	0	33	0	0	39	17				
Volume Right	0	0	59	0	0	16	24	53				
cSH	696	1700	1700	615	1700	1700	75	157				
Volume to Capacity	0.05	0.40	0.24	0.05	0.49	0.25	0.84	0.45				
Queue Length 95th (m)	1.2	0.0	0.0	1.3	0.0	0.0	31.8	15.8				
Control Delay (s)	10.5	0.0	0.0	11.2	0.0	0.0	157.8	45.7				
Lane LOS	B			B			F	E				
Approach Delay (s)	0.3			0.3			157.8	45.7				
Approach LOS							F	E				
Intersection Summary												
Average Delay			5.5									
Intersection Capacity Utilization			50.0%		ICU Level of Service			A				
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

3: Kirwin Ave & Plaza Access

12-08-2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	28	18	567	13	7	289
Future Volume (Veh/h)	28	18	567	13	7	289
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	28	18	567	13	7	289
Pedestrians	11		5			3
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.1		1.1			1.1
Percent Blockage	1		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)			80			
pX, platoon unblocked	0.94	0.94			0.94	
vC, conflicting volume	892	588			591	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	855	531			534	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	91	96			99	
cM capacity (veh/h)	305	513			972	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	46	580	296			
Volume Left	28	0	7			
Volume Right	18	13	0			
cSH	362	1700	972			
Volume to Capacity	0.13	0.34	0.01			
Queue Length 95th (m)	3.3	0.0	0.2			
Control Delay (s)	16.4	0.0	0.3			
Lane LOS	C		A			
Approach Delay (s)	16.4	0.0	0.3			
Approach LOS	C					
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization			41.6%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

4: Site Access and Kirwin Avenue

12-08-2022



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	583	293	0
Future Volume (Veh/h)	0	0	0	583	293	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	634	318	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				114		
pX, platoon unblocked	0.96					
vC, conflicting volume	952	318	318			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	928	318	318			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	285	723	1242			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	0	634	318			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1242	1700			
Volume to Capacity	0.00	0.00	0.19			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			34.0%	ICU Level of Service		A
Analysis Period (min)			15			

APPENDIX F

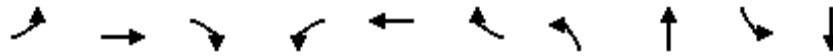
Intersection Capacity Analysis – Future Total Conditions



Queues

1: Camilla Rd/Kirwin Ave & Dundas St E

12-08-2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↘
Traffic Volume (vph)	10	1280	97	33	622	121	53	99	291	77
Future Volume (vph)	10	1280	97	33	622	121	53	99	291	77
Lane Group Flow (vph)	10	1280	97	33	622	121	53	158	291	110
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4		3	8			2	1	6
Permitted Phases	4		4	8		8	2		6	
Detector Phase	4	4	4	3	8	8	2	2	1	6
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	75.0	75.0	75.0	13.0	92.0	92.0	53.0	53.0	13.0	68.0
Total Split (s)	79.0	79.0	79.0	13.0	92.0	92.0	55.0	55.0	13.0	68.0
Total Split (%)	49.4%	49.4%	49.4%	8.1%	57.5%	57.5%	34.4%	34.4%	8.1%	42.5%
Yellow Time (s)	4.0	4.0	4.0	2.0	4.0	4.0	4.0	4.0	2.0	4.0
All-Red Time (s)	3.0	3.0	3.0	1.0	3.0	3.0	3.0	3.0	1.0	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	7.0	3.0	7.0	7.0	7.0	7.0	3.0	7.0
Lead/Lag	Lag	Lag	Lag	Lead			Lag	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes	Yes	
Recall Mode	Min	Min	Min	None	None	None	Min	Min	None	Max
v/c Ratio	0.03	0.88	0.14	0.24	0.38	0.15	0.13	0.26	0.53	0.15
Control Delay	24.3	46.0	9.5	20.7	24.2	3.4	39.5	35.2	33.7	25.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.3	46.0	9.5	20.7	24.2	3.4	39.5	35.2	33.7	25.5
Queue Length 50th (m)	1.7	178.4	4.9	4.6	58.2	0.0	11.2	30.7	57.8	17.4
Queue Length 95th (m)	5.7	211.4	16.1	10.0	71.7	9.9	23.8	53.4	89.5	33.4
Internal Link Dist (m)		146.0			239.6			263.0		56.0
Turn Bay Length (m)	40.0		45.0	40.0		110.0	70.0		95.0	
Base Capacity (vph)	389	1726	781	178	2038	960	394	597	553	733
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	0.03	0.74	0.12	0.19	0.31	0.13	0.13	0.26	0.53	0.15

Intersection Summary

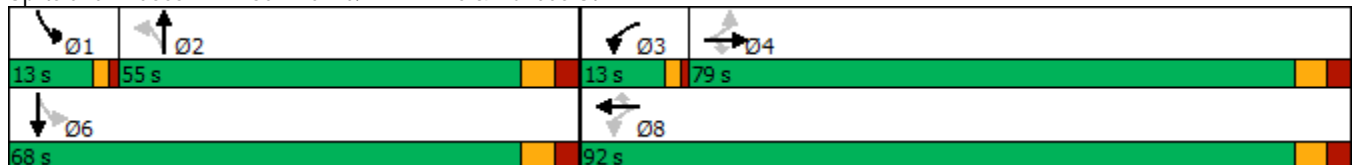
Cycle Length: 160

Actuated Cycle Length: 145.2

Natural Cycle: 160

Control Type: Semi Act-Uncoord

Splits and Phases: 1: Camilla Rd/Kirwin Ave & Dundas St E



HCM Signalized Intersection Capacity Analysis

1: Camilla Rd/Kirwin Ave & Dundas St E

12-08-2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	1280	97	33	622	121	53	99	59	291	77	33
Future Volume (vph)	10	1280	97	33	622	121	53	99	59	291	77	33
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	3.0	7.0	7.0	7.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.97	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.98	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	0.95	
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)	1819	3444	1492	1825	3444	1540	1638	1750		1805	1708	
Flt Permitted	0.41	1.00	1.00	0.06	1.00	1.00	0.69	1.00		0.59	1.00	
Satd. Flow (perm)	778	3444	1492	119	3444	1540	1183	1750		1119	1708	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	10	1280	97	33	622	121	53	99	59	291	77	33
RTOR Reduction (vph)	0	0	39	0	0	63	0	13	0	0	9	0
Lane Group Flow (vph)	10	1280	58	33	622	58	53	145	0	291	101	0
Confl. Peds. (#/hr)	10		17	17		10	17		2	2		17
Confl. Bikes (#/hr)			3						1			3
Heavy Vehicles (%)	0%	6%	5%	0%	6%	3%	9%	3%	3%	1%	5%	9%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	61.6	61.6	61.6	70.0	70.0	70.0	48.6	48.6		61.7	61.7	
Effective Green, g (s)	61.6	61.6	61.6	70.0	70.0	70.0	48.6	48.6		61.7	61.7	
Actuated g/C Ratio	0.42	0.42	0.42	0.48	0.48	0.48	0.33	0.33		0.42	0.42	
Clearance Time (s)	7.0	7.0	7.0	3.0	7.0	7.0	7.0	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		3.0	3.0	
Lane Grp Cap (vph)	328	1456	630	120	1654	739	394	583		521	723	
v/s Ratio Prot		c0.37		0.01	c0.18			0.08		c0.04	0.06	
v/s Ratio Perm	0.01		0.04	0.12		0.04	0.04			c0.20		
v/c Ratio	0.03	0.88	0.09	0.28	0.38	0.08	0.13	0.25		0.56	0.14	
Uniform Delay, d1	24.6	38.6	25.3	28.0	24.0	20.4	33.9	35.3		30.9	25.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	6.4	0.1	1.2	0.1	0.0	0.2	0.2		1.3	0.4	
Delay (s)	24.6	45.0	25.3	29.3	24.1	20.5	34.0	35.5		32.2	26.1	
Level of Service	C	D	C	C	C	C	C	D		C	C	
Approach Delay (s)		43.5			23.8			35.1			30.5	
Approach LOS		D			C			D			C	

Intersection Summary

HCM 2000 Control Delay	35.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	145.7	Sum of lost time (s)	20.0
Intersection Capacity Utilization	90.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis

2: 100 Dundas St E Driveway/Little John Ln & Dundas St E

12-08-2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	6	1332	19	19	687	5	42	0	52	5	0	4	
Future Volume (Veh/h)	6	1332	19	19	687	5	42	0	52	5	0	4	
Sign Control		Free			Free			Stop			Stop		
Grade		0%			0%			0%			0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly flow rate (vph)	6	1332	19	19	687	5	42	0	52	5	0	4	
Pedestrians		10			2			50			10		
Lane Width (m)		3.7			3.7			3.7			3.7		
Walking Speed (m/s)		1.1			1.1			1.1			1.1		
Percent Blockage		1			0			5			1		
Right turn flare (veh)													
Median type		None			None								
Median storage (veh)													
Upstream signal (m)					170								
pX, platoon unblocked	0.89							0.89	0.89		0.89	0.89	0.89
vC, conflicting volume	702				1401			1799	2144	728	1470	2150	366
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	420				1401			1651	2038	728	1281	2046	42
tC, single (s)	4.1				4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)													
tF (s)	2.2				2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99				96			16	100	85	94	100	100
cM capacity (veh/h)	1014				460			50	45	348	86	45	896

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	6	888	463	19	458	234	94	9
Volume Left	6	0	0	19	0	0	42	5
Volume Right	0	0	19	0	0	5	52	4
cSH	1014	1700	1700	460	1700	1700	95	144
Volume to Capacity	0.01	0.52	0.27	0.04	0.27	0.14	0.99	0.06
Queue Length 95th (m)	0.1	0.0	0.0	1.0	0.0	0.0	44.7	1.5
Control Delay (s)	8.6	0.0	0.0	13.2	0.0	0.0	171.1	31.7
Lane LOS	A			B			F	D
Approach Delay (s)	0.0			0.4			171.1	31.7
Approach LOS							F	D

Intersection Summary

Average Delay	7.7
Intersection Capacity Utilization	51.0%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis

3: Kirwin Ave & Plaza Access

12-08-2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	3	2	226	4	4	398
Future Volume (Veh/h)	3	2	226	4	4	398
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	3	2	226	4	4	398
Pedestrians	4					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	80					
pX, platoon unblocked	0.97	0.97			0.97	
vC, conflicting volume	638	232			234	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	610	191			193	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	443	826			1315	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	5	230	402			
Volume Left	3	0	4			
Volume Right	2	4	0			
cSH	544	1700	1315			
Volume to Capacity	0.01	0.14	0.00			
Queue Length 95th (m)	0.2	0.0	0.1			
Control Delay (s)	11.7	0.0	0.1			
Lane LOS	B		A			
Approach Delay (s)	11.7	0.0	0.1			
Approach LOS	B					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			34.1%	ICU Level of Service		A
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis

4: Site Access and Kirwin Avenue

12-08-2022

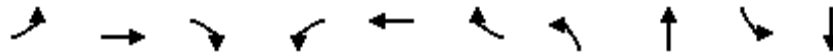


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	14	28	8	217	373	4
Future Volume (Veh/h)	14	28	8	217	373	4
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	15	30	9	236	405	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				114		
pX, platoon unblocked	0.99					
vC, conflicting volume	661	407	409			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	649	407	409			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	95	99			
cM capacity (veh/h)	425	644	1150			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	45	245	409			
Volume Left	15	9	0			
Volume Right	30	0	4			
cSH	550	1150	1700			
Volume to Capacity	0.08	0.01	0.24			
Queue Length 95th (m)	2.0	0.2	0.0			
Control Delay (s)	12.1	0.4	0.0			
Lane LOS	B	A				
Approach Delay (s)	12.1	0.4	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization			29.9%	ICU Level of Service	A	
Analysis Period (min)			15			

Queues

1: Camilla Rd/Kirwin Ave & Dundas St E

12-08-2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↘	↑↑	↗	↘	↑↑	↗	↘	↗	↘	↗
Traffic Volume (vph)	45	964	55	100	1194	418	57	139	193	99
Future Volume (vph)	45	964	55	100	1194	418	57	139	193	99
Lane Group Flow (vph)	45	964	55	100	1194	418	57	211	193	139
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4		3	8			2	1	6
Permitted Phases	4		4	8		8	2		6	
Detector Phase	4	4	4	3	8	8	2	2	1	6
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	75.0	75.0	75.0	13.0	92.0	92.0	53.0	53.0	13.0	68.0
Total Split (s)	79.0	79.0	79.0	13.0	92.0	92.0	55.0	55.0	13.0	68.0
Total Split (%)	49.4%	49.4%	49.4%	8.1%	57.5%	57.5%	34.4%	34.4%	8.1%	42.5%
Yellow Time (s)	4.0	4.0	4.0	2.0	4.0	4.0	4.0	4.0	2.0	4.0
All-Red Time (s)	3.0	3.0	3.0	1.0	3.0	3.0	3.0	3.0	1.0	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	7.0	3.0	7.0	7.0	7.0	7.0	3.0	7.0
Lead/Lag	Lag	Lag	Lag	Lead			Lag	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes	Yes	
Recall Mode	Min	Min	Min	None	None	None	Min	Min	None	Max
v/c Ratio	0.59	0.81	0.10	0.51	0.78	0.46	0.12	0.32	0.34	0.16
Control Delay	68.7	45.6	4.5	28.8	36.0	3.6	31.9	30.7	22.6	20.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.7	45.6	4.5	28.8	36.0	3.6	31.9	30.7	22.6	20.6
Queue Length 50th (m)	9.7	119.7	0.0	14.5	136.8	0.0	9.6	35.2	27.2	17.8
Queue Length 95th (m)	25.2	143.6	6.4	24.6	161.0	16.9	22.9	66.0	52.6	37.8
Internal Link Dist (m)		146.0			239.6			263.0		56.0
Turn Bay Length (m)	40.0		45.0	40.0		110.0	70.0		95.0	
Base Capacity (vph)	127	1976	870	211	2356	1161	464	669	561	852
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	0.35	0.49	0.06	0.47	0.51	0.36	0.12	0.32	0.34	0.16

Intersection Summary

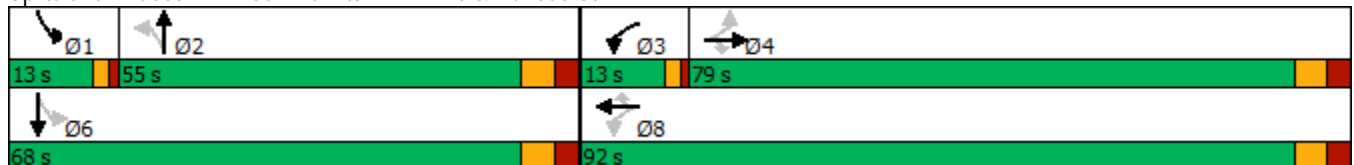
Cycle Length: 160

Actuated Cycle Length: 131.2

Natural Cycle: 160

Control Type: Semi Act-Uncoord























Splits and Phases: 1: Camilla Rd/Kirwin Ave & Dundas St E



HCM Signalized Intersection Capacity Analysis

1: Camilla Rd/Kirwin Ave & Dundas St E

12-08-2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	964	55	100	1194	418	57	139	72	193	99	40
Future Volume (vph)	45	964	55	100	1194	418	57	139	72	193	99	40
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	3.0	7.0	7.0	7.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.97	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.98	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95		1.00	0.96	
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)	1821	3579	1527	1789	3614	1562	1792	1784		1777	1807	
Flt Permitted	0.12	1.00	1.00	0.10	1.00	1.00	0.67	1.00		0.54	1.00	
Satd. Flow (perm)	231	3579	1527	196	3614	1562	1261	1784		1013	1807	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	45	964	55	100	1194	418	57	139	72	193	99	40
RTOR Reduction (vph)	0	0	37	0	0	240	0	11	0	0	8	0
Lane Group Flow (vph)	45	964	18	100	1194	178	57	200	0	193	131	0
Confl. Peds. (#/hr)	16		24	24		16	16		15	15		16
Confl. Bikes (#/hr)			3			2			3			2
Heavy Vehicles (%)	0%	2%	2%	2%	1%	1%	0%	1%	1%	2%	1%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	43.7	43.7	43.7	55.7	55.7	55.7	48.6	48.6		61.4	61.4	
Effective Green, g (s)	43.7	43.7	43.7	55.7	55.7	55.7	48.6	48.6		61.4	61.4	
Actuated g/C Ratio	0.33	0.33	0.33	0.42	0.42	0.42	0.37	0.37		0.47	0.47	
Clearance Time (s)	7.0	7.0	7.0	3.0	7.0	7.0	7.0	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		3.0	3.0	
Lane Grp Cap (vph)	77	1193	509	192	1535	663	467	661		531	846	
v/s Ratio Prot		0.27		0.04	c0.33			0.11		c0.03	0.07	
v/s Ratio Perm	0.20		0.01	0.18		0.11	0.05			c0.14		
v/c Ratio	0.58	0.81	0.04	0.52	0.78	0.27	0.12	0.30		0.36	0.15	
Uniform Delay, d1	36.2	39.9	29.5	27.2	32.4	24.5	27.2	29.2		21.0	20.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	10.8	4.1	0.0	2.5	2.6	0.2	0.1	0.3		0.4	0.4	
Delay (s)	47.0	44.0	29.5	29.8	34.9	24.7	27.3	29.5		21.4	20.4	
Level of Service	D	D	C	C	C	C	C	C		C	C	
Approach Delay (s)		43.4			32.1			29.0			21.0	
Approach LOS		D			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			34.3									C
HCM 2000 Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			131.1						20.0			
Intersection Capacity Utilization			104.5%									G
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

2: 100 Dundas St E Driveway/Little John Ln & Dundas St E

12-08-2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	36	1027	59	33	1244	16	39	0	24	17	1	53
Future Volume (Veh/h)	36	1027	59	33	1244	16	39	0	24	17	1	53
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	36	1027	59	33	1244	16	39	0	24	17	1	53
Pedestrians		10			2			32			16	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			0			3			2	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)					170							
pX, platoon unblocked	0.71						0.71	0.71		0.71	0.71	0.71
vC, conflicting volume	1276			1118			1912	2502	577	1946	2524	656
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	577			1118			1471	2301	577	1518	2331	0
tC, single (s)	4.2			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			95			19	100	95	65	96	93
cM capacity (veh/h)	690			612			48	23	444	49	23	757
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	36	685	401	33	829	431	63	71				
Volume Left	36	0	0	33	0	0	39	17				
Volume Right	0	0	59	0	0	16	24	53				
cSH	690	1700	1700	612	1700	1700	73	154				
Volume to Capacity	0.05	0.40	0.24	0.05	0.49	0.25	0.86	0.46				
Queue Length 95th (m)	1.3	0.0	0.0	1.3	0.0	0.0	32.4	16.2				
Control Delay (s)	10.5	0.0	0.0	11.2	0.0	0.0	164.4	47.0				
Lane LOS	B			B			F	E				
Approach Delay (s)	0.3			0.3			164.4	47.0				
Approach LOS							F	E				
Intersection Summary												
Average Delay			5.7									
Intersection Capacity Utilization			50.1%		ICU Level of Service			A				
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

3: Kirwin Ave & Plaza Access

12-08-2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	28	18	590	13	7	304
Future Volume (Veh/h)	28	18	590	13	7	304
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	28	18	590	13	7	304
Pedestrians	11		5		3	
Lane Width (m)	3.7		3.7		3.7	
Walking Speed (m/s)	1.1		1.1		1.1	
Percent Blockage	1		0		0	
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	80					
pX, platoon unblocked	0.94	0.94			0.94	
vC, conflicting volume	930	610			614	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	893	552			555	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	90	96			99	
cM capacity (veh/h)	288	497			951	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	46	603	311			
Volume Left	28	0	7			
Volume Right	18	13	0			
cSH	345	1700	951			
Volume to Capacity	0.13	0.35	0.01			
Queue Length 95th (m)	3.5	0.0	0.2			
Control Delay (s)	17.0	0.0	0.3			
Lane LOS	C		A			
Approach Delay (s)	17.0	0.0	0.3			
Approach LOS	C					
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization			42.8%	ICU Level of Service	A	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis

4: Site Access and Kirwin Avenue

12-08-2022



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	8	15	23	583	293	13
Future Volume (Veh/h)	8	15	23	583	293	13
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	16	25	634	318	14
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				114		
pX, platoon unblocked	0.96					
vC, conflicting volume	1009	325	332			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	987	325	332			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	98	98			
cM capacity (veh/h)	257	716	1227			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	25	659	332			
Volume Left	9	25	0			
Volume Right	16	0	14			
cSH	436	1227	1700			
Volume to Capacity	0.06	0.02	0.20			
Queue Length 95th (m)	1.4	0.5	0.0			
Control Delay (s)	13.8	0.6	0.0			
Lane LOS	B	A				
Approach Delay (s)	13.8	0.6	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization		59.3%		ICU Level of Service		B
Analysis Period (min)			15			

APPENDIX G

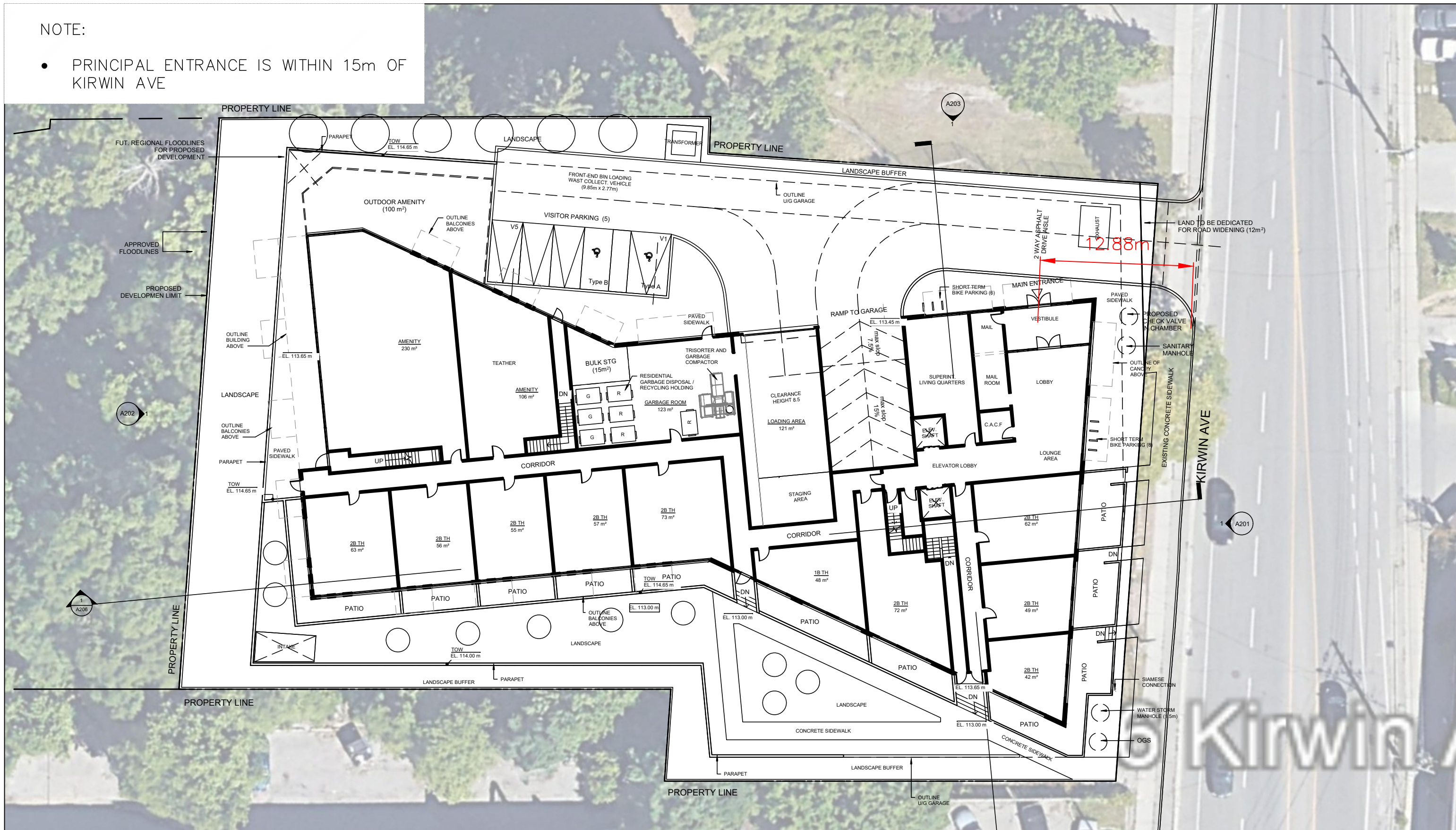
Loading Swept Path Diagrams



CANADA | INDIA | AFRICA | MIDDLE EAST

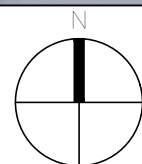
NOTE:

- PRINCIPAL ENTRANCE IS WITHIN 15m OF KIRWIN AVE



DRAWN BY: D.T. PLOT DATE: February 17, 2021

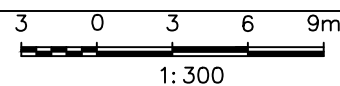
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21111
Date
FEB. 17, 2020

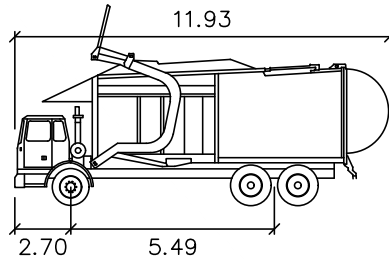
DRAFT
FOR DISCUSSION

3016 KIRWIN AVE
MISSISSAUGA ONTARIO



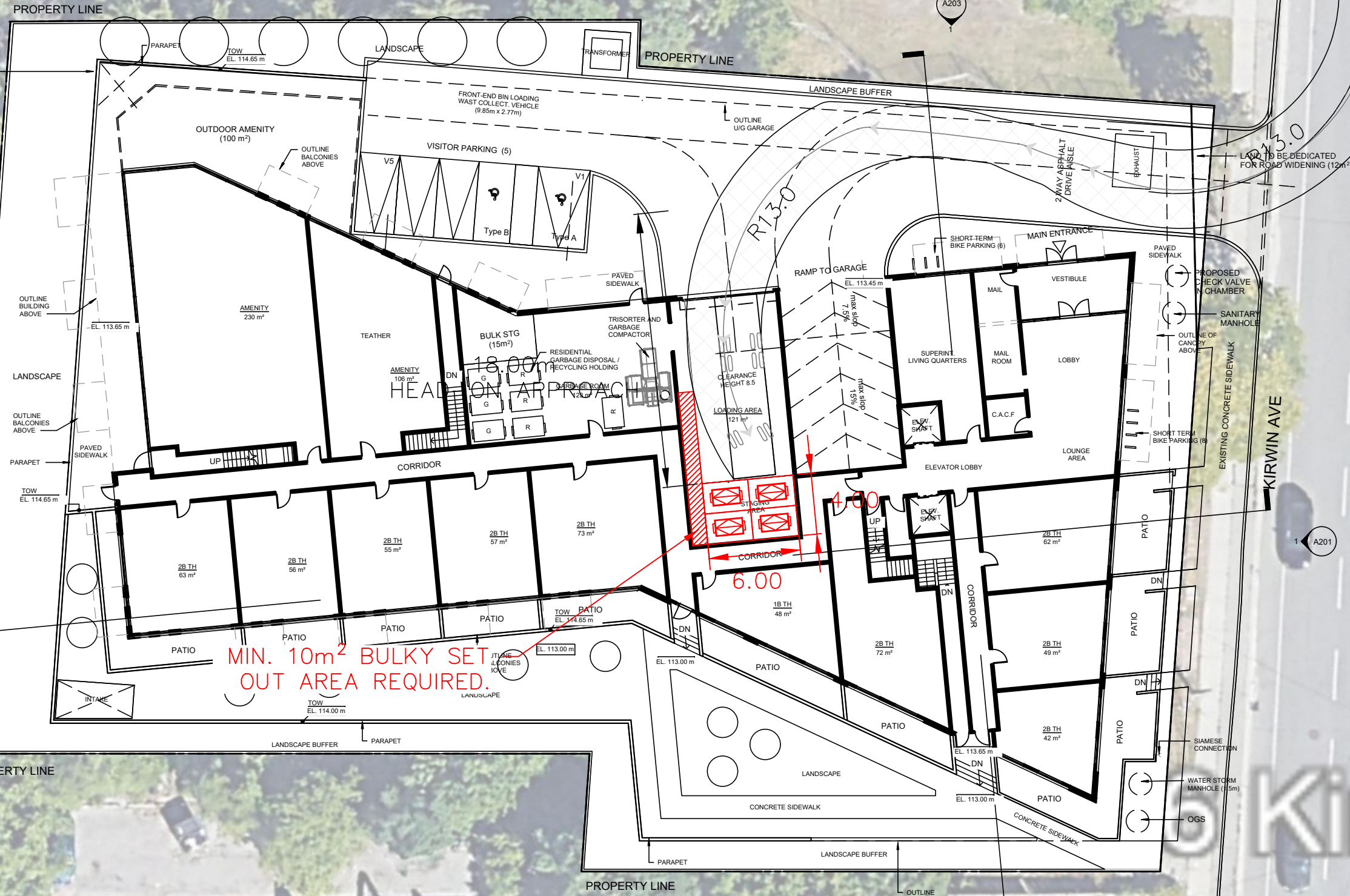
GROUND FLOOR
FIRE ROUTE

Drawing No.
001



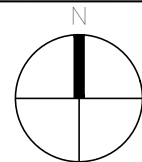
Garbage Peel meters
 Width : 2.77
 Track : 2.77
 Lock to Lock Time : 6.0
 Steering Angle : 25.0

APPROVED FLOODLINES
 PROPOSED DEVELOPMENT LIMIT



DRAWN BY: D.T. PLOT DATE: February 17, 2021

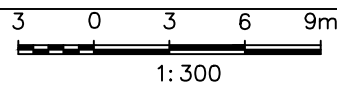
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21111
 Date
FEB. 17, 2020

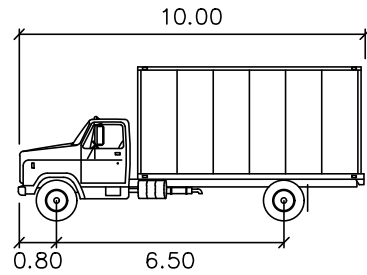
DRAFT
 FOR DISCUSSION

3016 KIRWIN AVE
 MISSISSAUGA ONTARIO



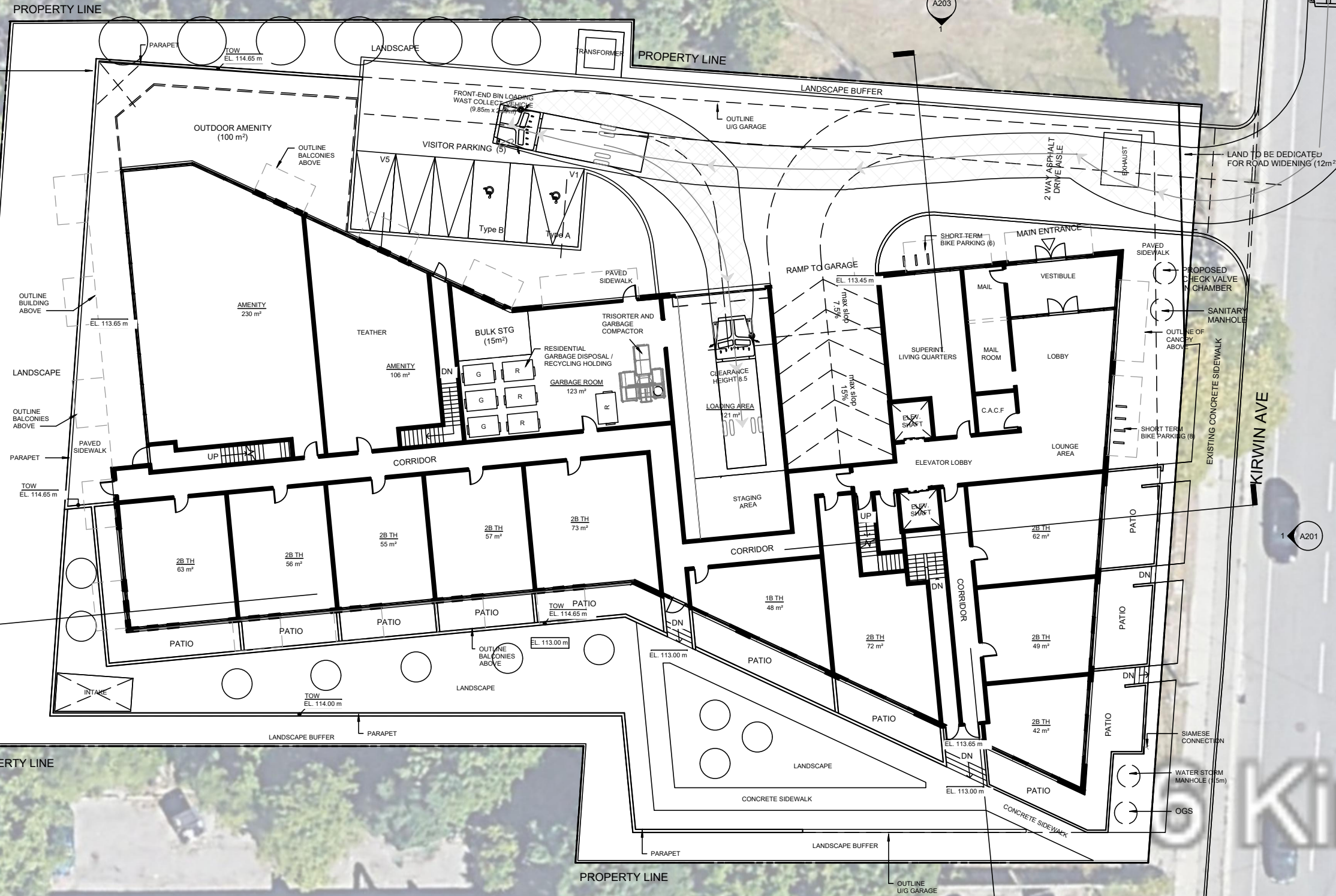
GROUND FLOOR
 PEEL REGION GARBAGE TRUCK
 ENTRY PATH

Drawing No.
002



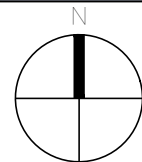
MSU

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



DRAWN BY: D.T. PLOT DATE: February 17, 2021

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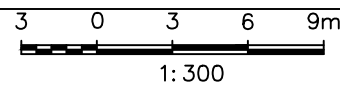


Project No.
21111

Date
FEB. 17, 2020

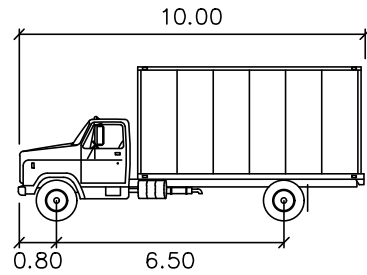
DRAFT
FOR DISCUSSION

3016 KIRWIN AVE
 MISSISSAUGA ONTARIO

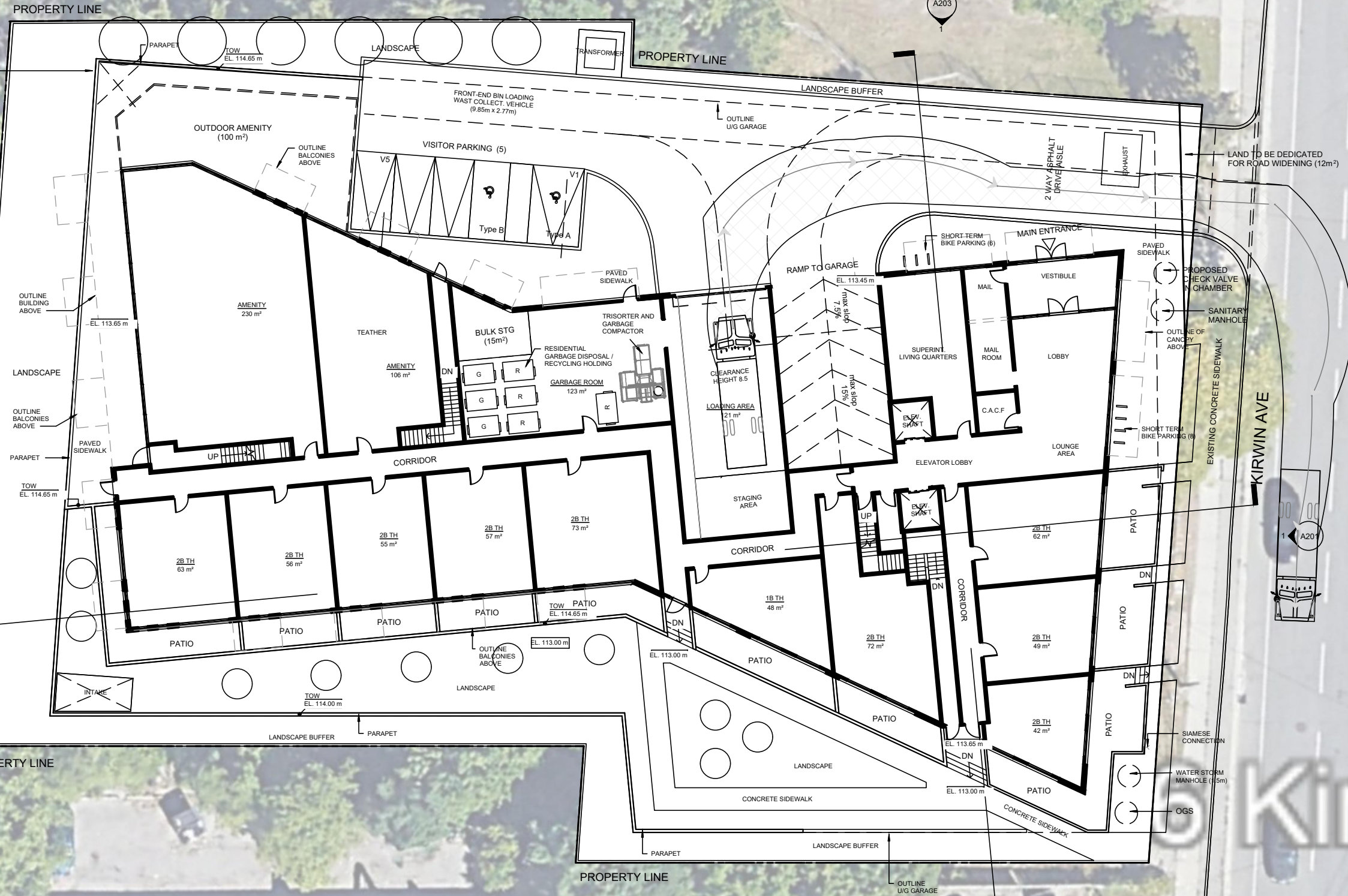


GROUND FLOOR
 MSU – MOVING/DELIVERY TRUCK
 ENTRY PATH

Drawing No.
004

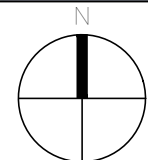


MSU
 meters
 Width : 2.60
 Track : 2.60
 Lock to Lock Time : 6.0
 Steering Angle : 40.2



DRAWN BY: D.T. PLOT DATE: February 17, 2021

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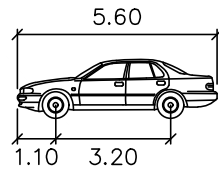
Project No.
 21111
 Date
 FEB. 17, 2020

DRAFT
 FOR DISCUSSION

3016 KIRWIN AVE
 MISSISSAUGA ONTARIO
 3 0 3 6 9m
 1: 300

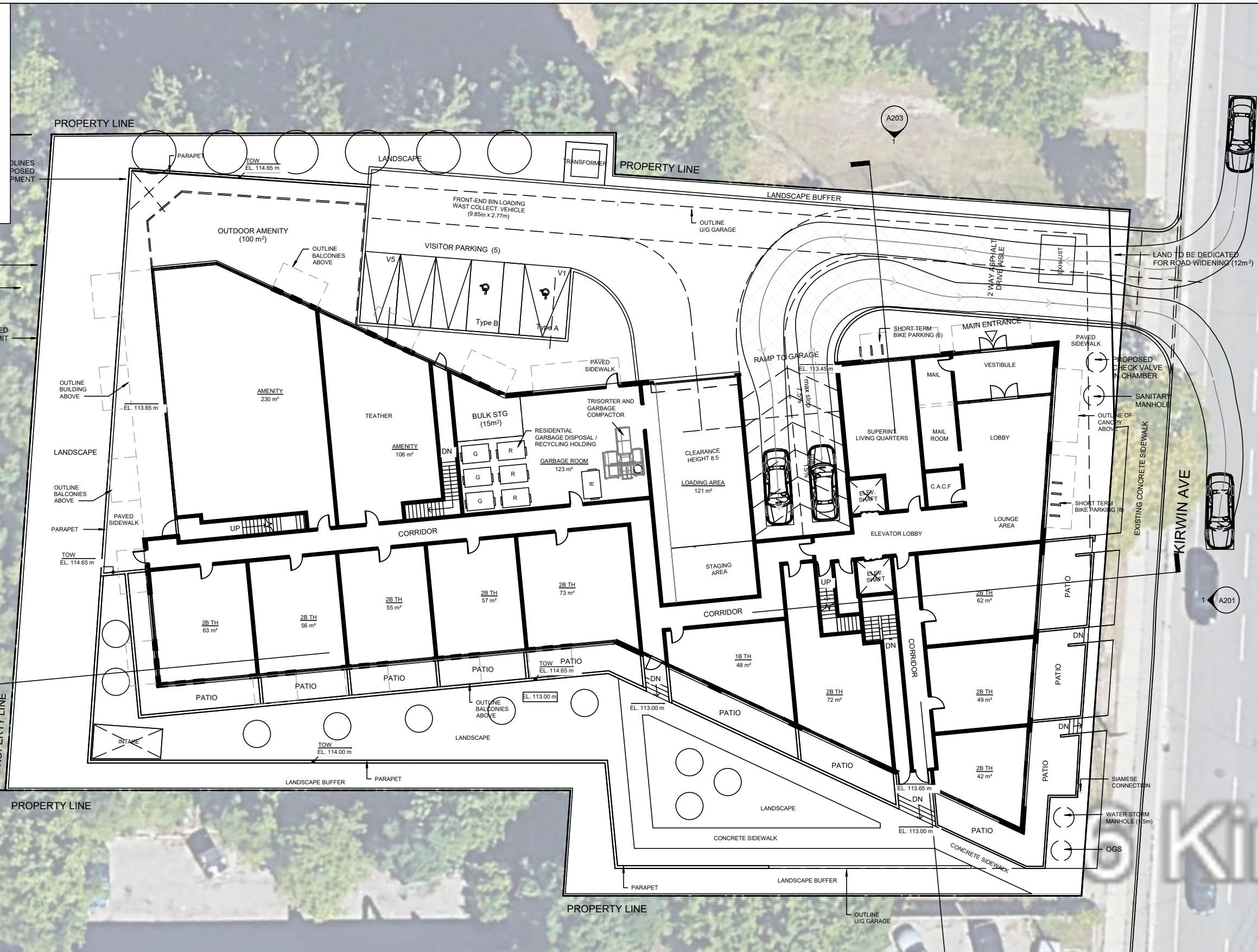
GROUND FLOOR
 MSU – MOVING/DELIVERY TRUCK
 EXIT PATH

Drawing No.
 005



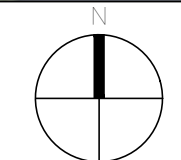
P
 Width : 2.00 meters
 Track : 2.00
 Lock to Lock Time : 6.0
 Steering Angle : 35.9

APPROVED FLOODLINES
 PROPOSED DEVELOPMENT LIMIT



DRAWN BY: D.T. PLOT DATE: February 17, 2021

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Project No. 21111
 Date FEB. 17, 2020

DRAFT
 FOR DISCUSSION

3016 KIRWIN AVE
 MISSISSAUGA ONTARIO
 3 0 3 6 9m
 1:300

GROUND FLOOR
 PASSENGER VEHICLE
 ENTRY & EXIT PATHS

Drawing No. 006

