Ontario Line

Thorncliffe Park Station

Transit Oriented Communities - Transportation Impact Study

Station Location:
26 Overlea Blvd, East York,
Ontario M4H 1A4, Canada

Contract RFS-2019-NAFC-110

PO 214244

HDR Project 10206938

Ontario Line Technical Advisor

TORONTO, ONTARIO

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1. Introduction

HDR Corporation was retained by Metrolinx to undertake a Transportation Impact Study for the proposed Transit-Oriented Community (TOC) development to accompany Thorncliffe Ontario Line Station. The subject property currently resides retail and commercial land uses in the Thorncliffe Park area of the City of Toronto, east of the CP railway tracks, north of Overlea Boulevard, and west of Beth Nealson Drive.

Figure 1 shows the location of the proposed development, which will occur in two distinct parcels on the east and west side of Thorncliffe Park Drive West, north of the station. The two sites are herein referred to as Site E (west of Thorncliffe Park Drive West), and Site D (east of Thorncliffe Park Drive West). Site E is comprised of block E1, E3, E4/E5 and site D is comprised of block D and D1. The locations of each site is outlined below:

- Block E1: 1 Thorncliffe Park Dr
- Block E3: 14-16 Overlea Blvd
- Block E4/E5: 4-8 Overlea Blvd
- Block D: 36 Overlea Blvd
- Block D1: 2-6 Thorncliffe Park Dr

Site E is proposed to have a driveway directly onto Thorncliffe Park Drive West. Site D is proposed to have a driveway directly onto the bus loop exit driveway. As of June 2023, the bus loop is proposed to be located on the northeast corner of Overlea Boulevard and Thorncliffe Park Drive W. Access to the bus loop will only be via the north leg of the intersection.

The purpose of this report is to assess the impacts of the proposed TOC on the surrounding transportation infrastructure from a multi-modal perspective and to identify mitigation in the form of geometric improvements, wayfinding, or signal timing adjustments. The study has assessed the level of service of pedestrian and cyclists' infrastructure based on the forecast person-trips generated by the TOC.

This study report serves to support the Transit Oriented Communities process. The traffic impact study report includes documentation of the following components:

- Existing Conditions
- Background Conditions
- Proposed TOC Trip Generation
- Future Total Conditions with TOC
- Parking Assessment
- Loading Assessment
- Transportation Demand Management
- Preliminary Findings and Next Steps

2. Scope of Work

The scope of work has been prepared in accordance with the **City of Toronto Guidelines for the Preparation of Transportation Impact Studies** (2013), and is as follows:

Study Area	For pedestrian analysis: A single intersection (Overlea Boulevard and Thorncliffe Park Dr W) will be analyzed in detail, and the transportation network will be reviewed at a high level up to Don Mills Road to the east, Millwood Road/Laird Dr to the west, and Eglinton Ave E to the north. For general traffic operations analysis: All signalized intersections along Overlea Boulevard, between Millwood Rd and Don Mills Rd
Analysis Scenarios	• Existing 2020 Conditions • Future 2041 Background Conditions (20-year Horizon) *Includes 0.5% annual vehicle traffic background growth, and 1% annual active transportation background growth, plus other new development traffic in the vicinity of the site* • Future 2041 Total Conditions (20-year Horizon) *Includes future background traffic volumes plus trips generated by the proposed TOC*
Analysis Time Periods	The following time periods are proposed to be analyzed as they represent the peak trip generation times for the stations and the background pedestrian and cycling demand: • Weekday AM peak hour between 7:00am and 9:00am • Weekday PM peak hour between 3:00pm and 6:00pm
Trip Generation	• This will be based on ITE Trip Generation Rates, and will be broken down into walking, cycling and transit trips.
Study Area and Intersections	The following intersections were analyzed for capacity, level of service, and delays: • Overlea Blvd & Millwood Rd • Overlea Blvd & Leaside Park Rd • Overlea Blvd & Thorncliffe Park Dr W • Overlea Blvd & Costco/York Town Center Entrance • Overlea Blvd & Thorncliffe Park Dr E/Beth Nealson Dr • Overlea Blvd & William Morgan Dr • Overlea Blvd & Don Mills Rd • Site Accesses
Analysis Time Periods	The following time periods are proposed to be analyzed as they represent the peak trip generation times for the stations and the background pedestrian and cycling demand: • Weekday AM peak hour between 7:00am and 9:00am • Weekday PM peak hour between 3:00pm and 6:00pm

2.1. Intersection Operations and Analysis Methodology

2.1.1. Active Transportation

Active transportation was assessed using three different methodologies. The existing walking and cycling infrastructure were assessed using the City of Ottawa's Multi-Modal Level of Service Guideline. The Ottawa Method assesses pedestrian and cycling infrastructure based on physical geometry as well as other inputs such as signal timings and operating speeds.

Pedestrian operations at the study intersection (crosswalks and corner waiting areas) were also assessed using HCM 2010 methodology which is integrated within Synchro traffic analysis software.

Sidewalks and surface transit stops within the immediate surroundings of the station were assessed using Fruin's level of service methodology based on pedestrian density when walking on sidewalks and queued/waiting at the transit stops. Table 1 shows the levels of pedestrian density that equate to each level of service value.

Table 1: Fruin Pedestrian LOS for Sidewalks and Surface Transit Stops

Level of Service (LOS)	Pedestrian Density (people per m^2)		Description
	Walkway	Queued	
A	0	0	Ideal
B	0.308	0.826	Acceptable
C	0.431	1.075	Acceptable
D	0.800	1.540	Somewhat undesirable
E	1.076	3.571	Undesirable
F	2.153	5.556	Unacceptable

2.1.2. Traffic Analysis

Intersection operations were assessed using Synchro Traffic Software Version 11. The intersection analysis considers three separate measures of performance:

- The capacity of all intersection movements, represented by the volume to capacity (v/c) ratio;
- the level of service (LOS) for all intersection turning movements as well as for the overall intersection. The overall intersection LOS is based on the average control delay per vehicle (weighted) for the various movements through the intersection; and
- the forecasted queue lengths (95^{th} percentile queue length) and storage requirements.

LOS is an indicator of how long a vehicle must wait to complete a movement and is represented by a letter between 'A' and 'F', with 'F' being the longest delay. The volume to capacity (v/c) ratio is a measure of the degree of capacity utilized at an intersection. HCM definitions are summarized in **Table 2**.

Table 2: Highway Capacity Manual Level of Service Definitions

Level of Service (LOS)	Signalized Control Delay per Vehicle (s)	Unsignalized Control Delay per Vehicle (s)	Description
A	≤ 10	≤ 10	Ideal
B	> 10 and ≤ 20	> 10 and ≤ 15	Acceptable
C	> 20 and ≤ 35	> 15 and ≤ 25	Acceptable
D	> 35 and ≤ 55	> 25 and ≤ 35	Somewhat undesirable
E	> 55 and ≤ 80	> 35 and ≤ 50	Undesirable
F	> 80	> 50	Unacceptable

The analysis undertaken in this study also follows the City of Toronto Guidelines for Using Synchro 11 (Including Sim Traffic 11[1]) (January 15, 2021), City of Toronto' Guidelines for the Preparation of Transportation Impact Studies[2]', and City of Toronto' Traffic Signal Operations Policies and Strategies' (May 2015)[3].

[1] https://www.toronto.ca/wp-content/uploads/2021/01/964c-TSSignal-OptimizationSynchro-11-Guidelines.pdf

[2] http://arris.ca/~arris2/ARCHIVE/traffic-impact-study-guidelines.pdf

[3] https://www.toronto.ca/wp-content/uploads/2017/11/91d6-0_2015-11-13_Traffic-Signal-Operations-Policies-and-Strategies_Final-a.pdf

3. Existing Conditions

3.1. Site Context

As shown in **Figure 1**, the TOC blocks are located on both sides of Thorncliffe Park Drive West, north of Overlea Boulevard.

The location of the sites are situated in an area with good surface transit service on Overlea Boulevard. Currently, the closest existing subway stations are Pape Station, approximately 3.2 kilometers to the south. There will also be LRT facilities on the Eglinton Ave E about 3 km to the north and will be served by the future Ontario Line's Thorncliffe Park Station to the immediate south of the site. The development site is currently occupied by grocery and retail stores and restaurants. Site E consists of blocks E1, E3, and E4/E5. Site D consists of blocks D and D1.

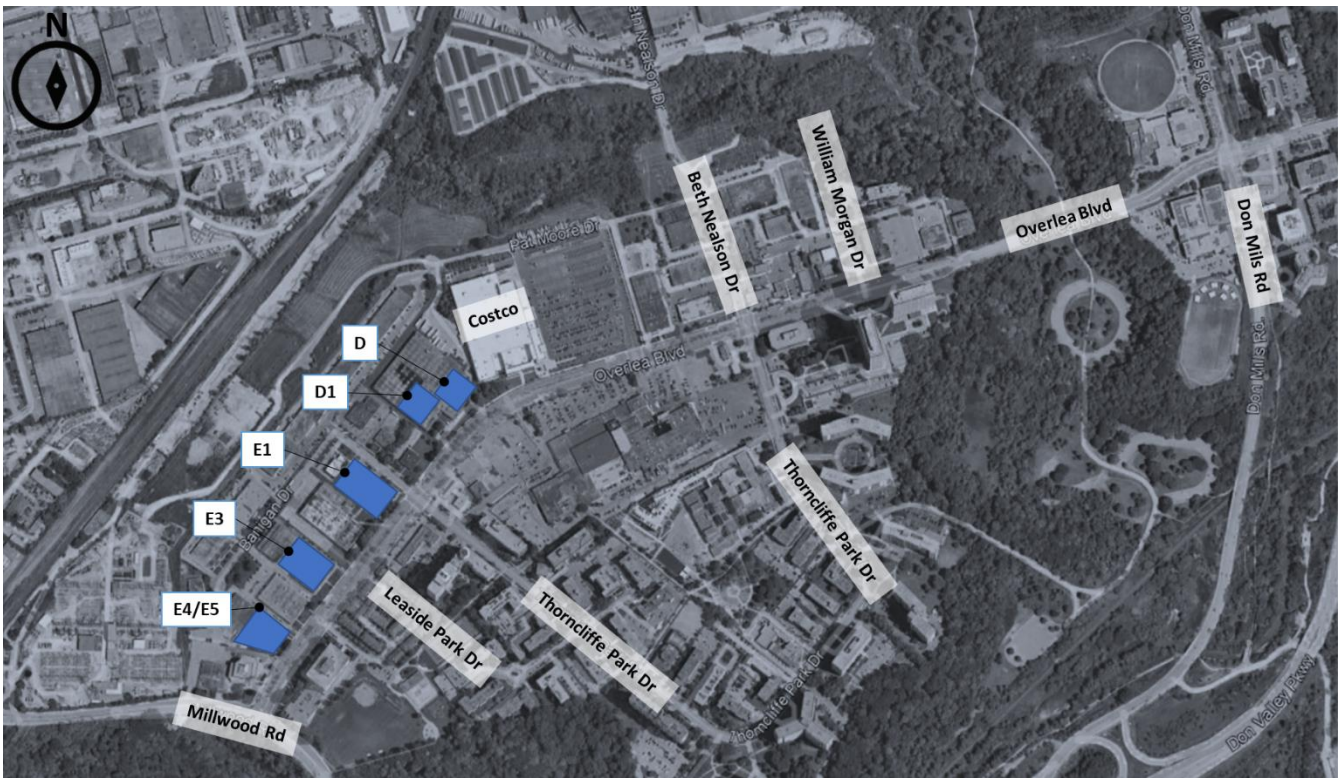


Figure 1 – Sites (E and D)

3.2. Existing Road Network

The existing road / transportation network is shown in **Figure 2,** including existing traffic controls and lane configurations. All study roadways are under the jurisdiction of the City of Toronto. The existing road network is described below:

Millwood Road	Millwood Road is a north-south "major arterial" road with a 4-lane cross-section north of Overlea Boulevard and a 6-lane cross-section south of Overlea Boulevard. Millwood Road has a posted speed limit of 50 km/h.
Overlea Boulevard	Overlea Boulevard is an east-west "major arterial" road consisting of two lanes a 4-lane cross-section and raised center median. The curb lanes are designated HOV lanes. Overlea Boulevard has a speed limit of 50 km/h.
Beth Nealson Drive	Beth Nealson Drive is a north-south collector road with a speed limit of 50 kilometers per hour speed limit and a typical 2-lane urban cross section. Between Overlea Boulevard and Par Moore Drive, there is a two-way left turn lane.
Don Mills Road	Don Mills Road is a major arterial road with a six-lane cross-section, with two general purpose lanes and one High-Occupancy Vehicle lane per direction. Opposing traffic streams are separated by a concrete median, while exclusive turning lanes are provided at key intersections. On-street parking and stopping are restricted on both sides of Don Mills Road. Don Mills Road has a speed limit of 50 kilometers per hour.
Thorncliffe Park Dr	Thorncliffe Park Drive is a two-lane “collector” ring road, with the exception of the section that extends from Overlea Boulevard to Banigan Drive, and from Banigan Drive to Beth Nealson Drive, where it is classified as a local road. Thorncliffe Park has a speed limit of 40 km/h.

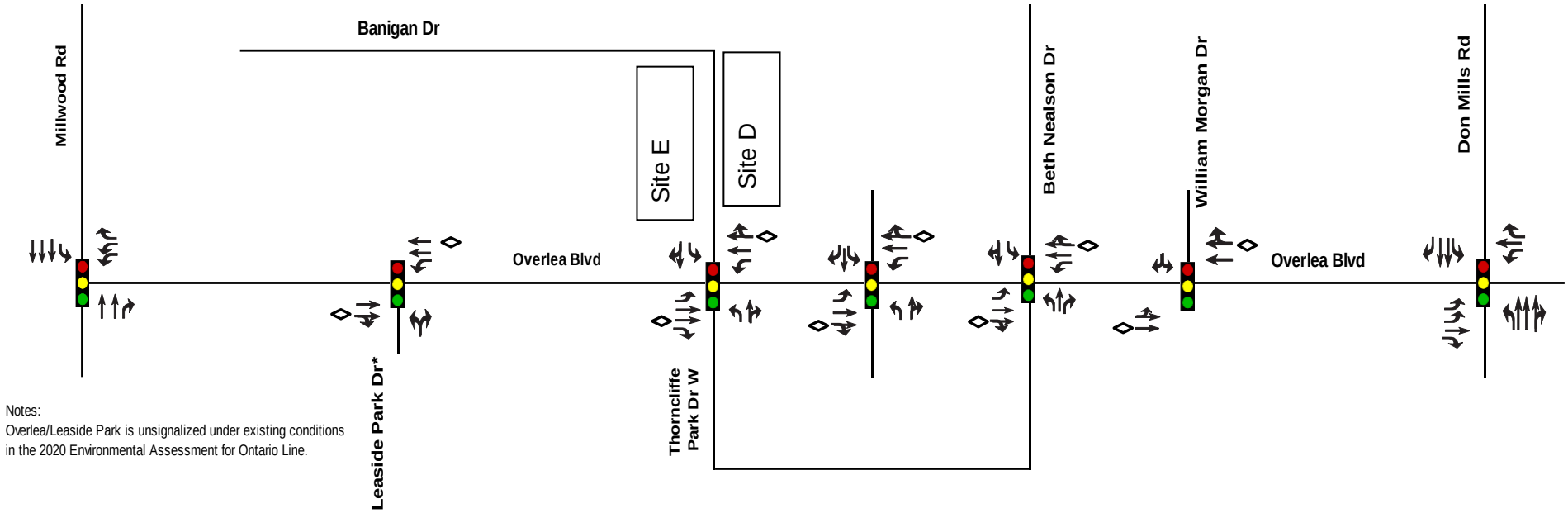


Figure 2: Existing Lane Configurations

3.3. Existing Transit Services

The Toronto Transit Commission (TTC) operates bus services along all study streets. The surface transit routes provide connections to downtown and to the Toronto Subway System, Line 2. It is important to note that the east-west transit stops are near-sided and within less than 10 m from the intersection, while the northbound and southbound transit stops are located 68 m and 100 m south of the intersection, respectively. Existing transit services are summarized in **Table 3**.

An excerpt from the TTC system map[4] is shown in **Figure 3.**

Overall, there is good transit network availability in the broader study area. Overlea Boulevard has the most transit service.

Table 3: Transit Service Summary

Route		Weekday Service Hours	Headway (min)				
#	Name		AM Peak	Mid-day	PM Peak	Evening*	Saturday Mid-day
25/925	Don Mills	5 am – 2 am	12	10	6	10	8
34	Eglinton East	5 am – 4 am	6	6	6	6	8
51	Leslie	5 am – 1 am	15	30	20	20	30
54	Lawrence East	5 am – 4 am	6	7	6	8	8
56	Leaside	6 am – 1 am	12	20	12	15	20
81	Thorncliffe Park	5 am – 1 am	8	12	8	12	8
88	South Leaside	2 am – 5 am	14	40	20	35	30
334	Eglinton East	2 am – 5 am	-	-	-	30	-
354	Lawrence East	2 am – 5 am	-	-	-	30	-
403	South Don Mills Community Bus	10 am – 4 pm	-	60	-	-	-

[4] TTC System Map for November 2020, https://www.ttc.ca/PDF/Maps/TTC_SystemMap.pdf

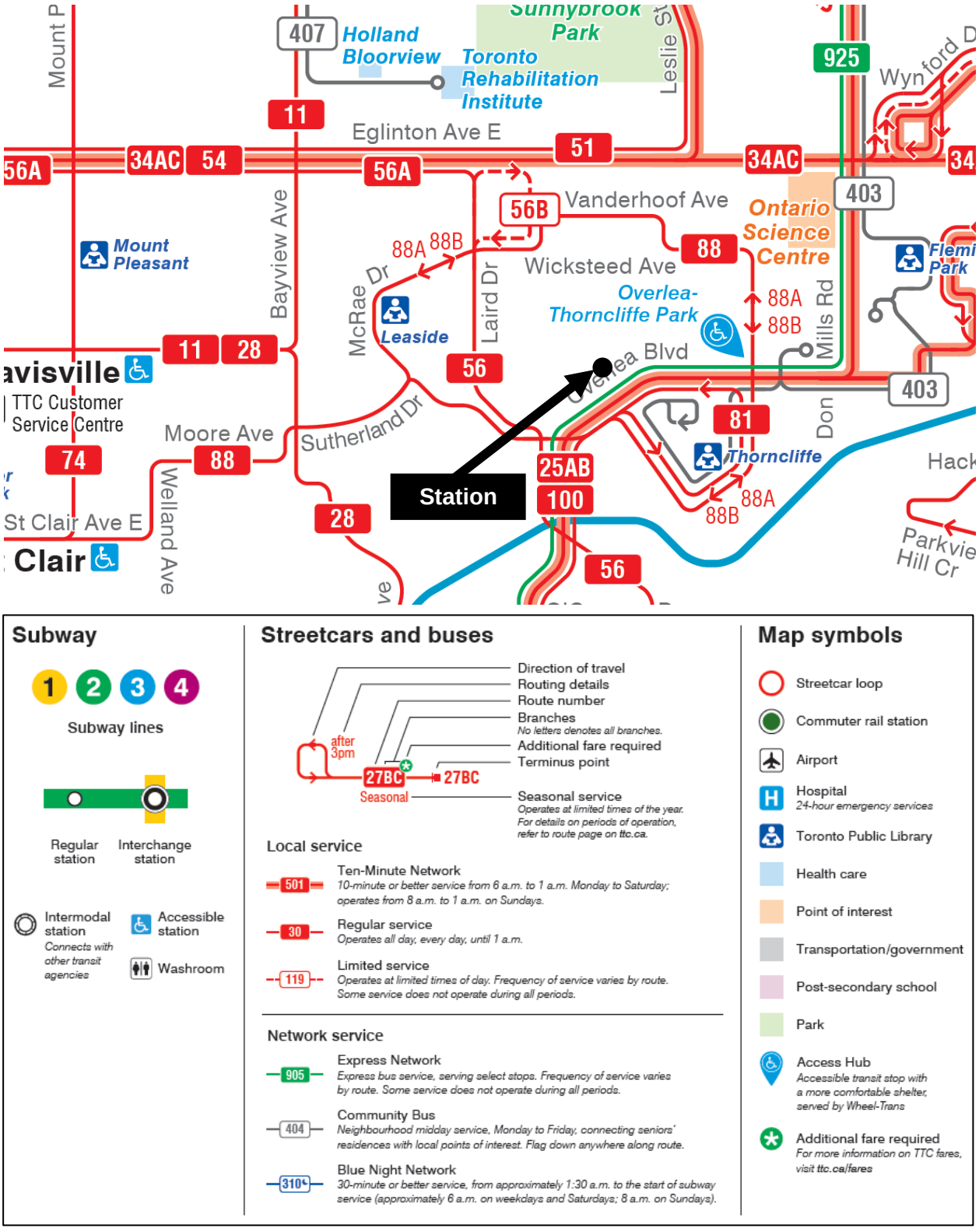


Figure 3: Existing Transit Service

3.4. Existing Cycling and Pedestrian Facilities

Pedestrian connectivity within the study area is good in terms of sidewalks, paths, and pedestrian crossings. Sidewalks are available along both sides of most of the major arterial streets but are missing in some sections, including on some minor roads. When provided, sidewalks are generally 1.5 meters wide, with boulevard separated facilities as shown in **Figure 4**. There are some multi-use pathways and trails provided, including through ET Seton Park and south of Overlea Boulevard near Thorncliffe Drive. Notable gaps in the pedestrian network include missing sidewalks on portions of Banigan Drive, Pat Moore Drive and William Morgan Drive.

Cyclists are accommodated in the study area through exclusive cycling facilities, on-street bike lanes, and shared lanes; however, designated cycling facilities are sparsely provided and only available on select links and for limited distances. Wicksteed Avenue has been suggested as a future east-west on-street route. Cyclists travelling in the northbound and southbound direction are accommodated through on-street bicycle lanes on Millwood Road, south of Overlea Boulevard, and a major multi-use pathway running north-south east of Don Mills Road as shown in **Figure 5.**

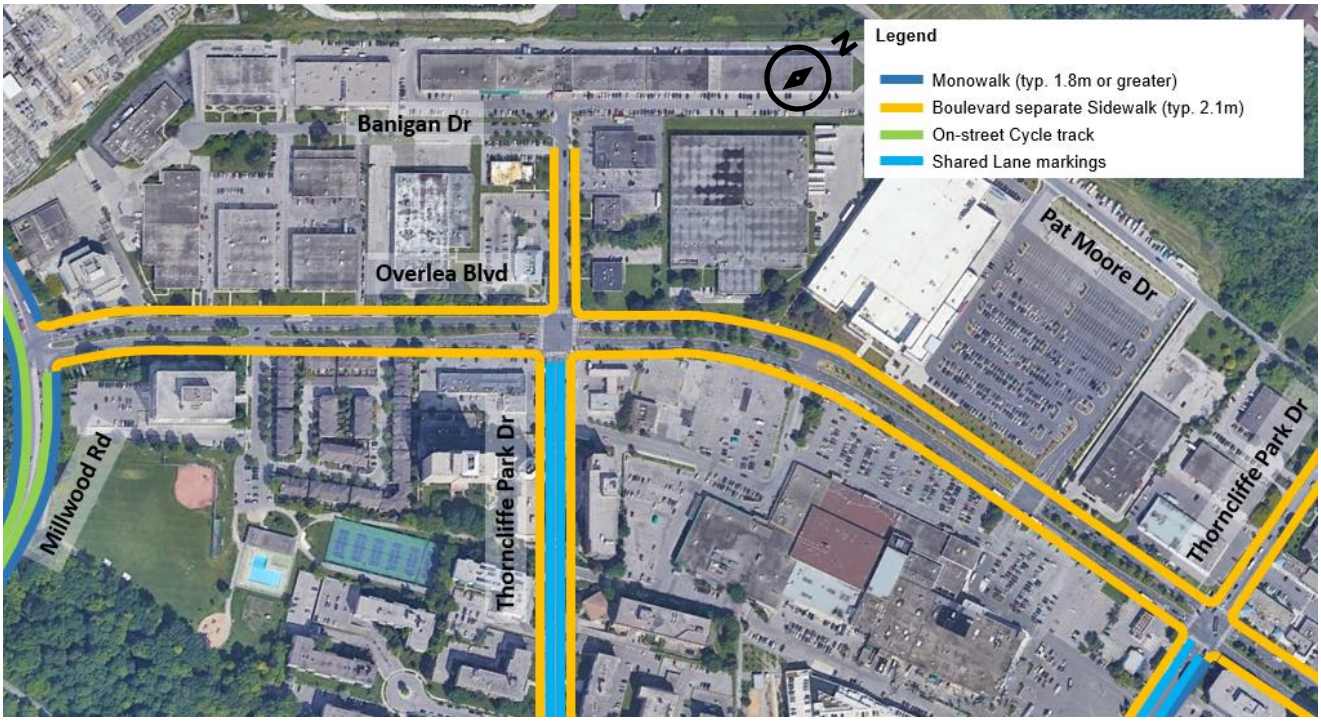


Figure 4: Major Arterial Crosswalks – Millwood Rd to Thorncliffe Dr E

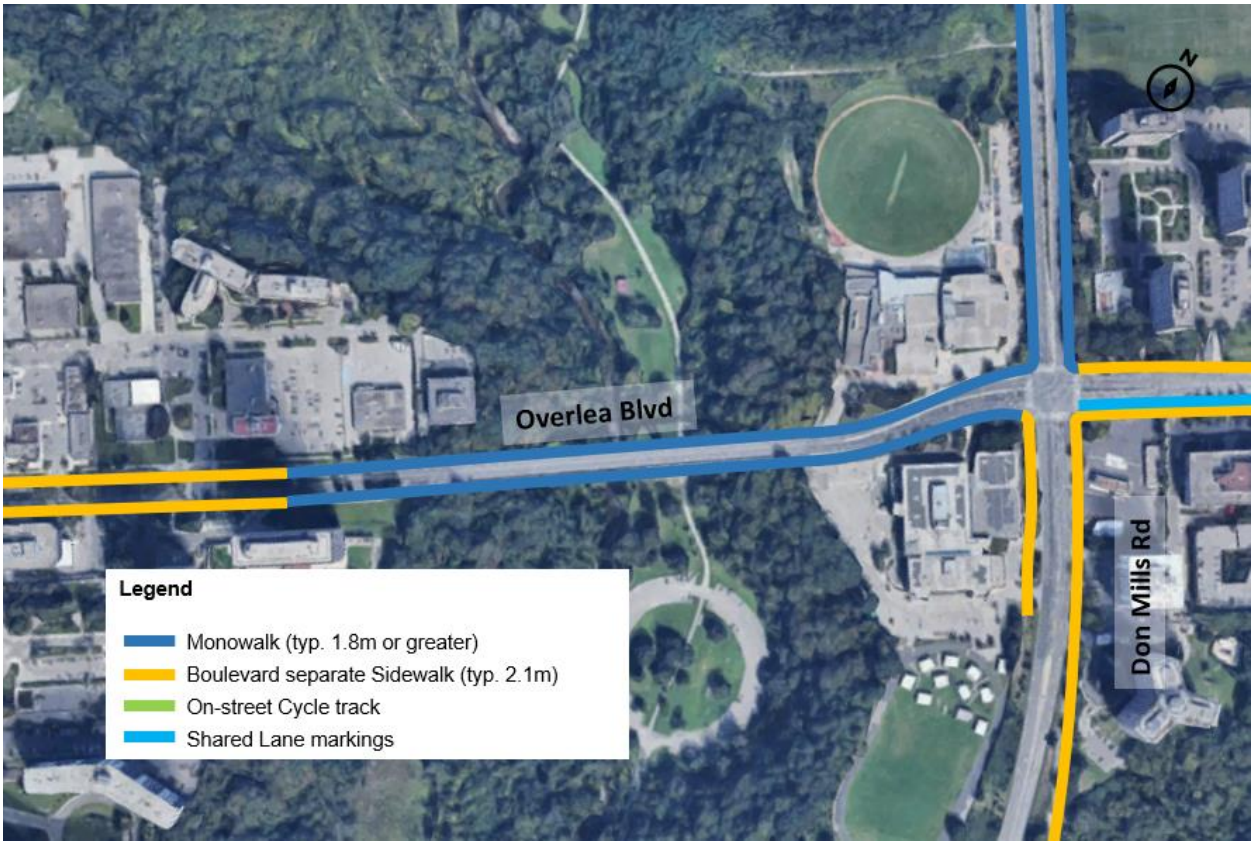


Figure 5: Major Arterial Crosswalks - Thorncliffe Dr E to Don Mills Rd

The boulevard sidewalks in the study area vary from 1.5 m to 2 m. Sidewalks are kept clear of any obstructions, however the sidewalks with widths of 1.5 m are narrower than the typical boulevard separate sidewalk width of 2.1 m. The intersection of southbound Thorncliffe Park Dr and westbound Overlea Blvd is shown in **Figure 6**.

Figure 6: Intersection of Southbound Thorncliffe Park Dr and Westbound Overlea Blvd

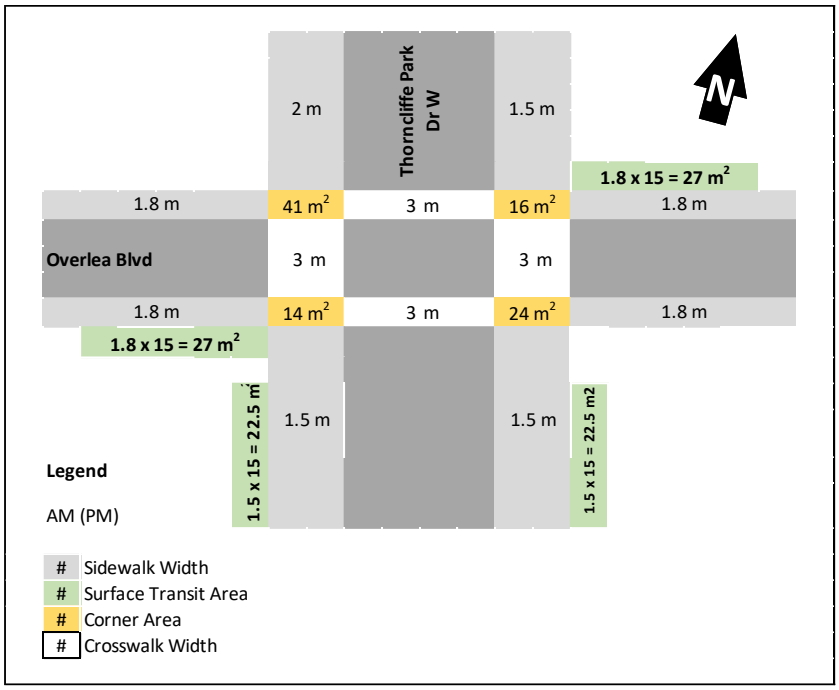


Figure 7: Intersection Sidewalk Dimensions

Figure 7 shows the pedestrian dimensions for sidewalks, bus stops, intersection corner areas, and crosswalks at the intersection of Overlea Boulevard with Thorncliffe Park Drive W. The dimensions have been estimated to reflect the effective available travel and queueing areas, taking into account obstructions, and are meant to be representative of the "typical" dimensions of the pedestrian area or width for each segment. Widths for surface transit queuing areas have been subtracted from available sidewalk widths for sidewalk sections that include both, and the length used to calculate the surface transit queueing area is based on the vehicle type, with 15 m used for buses and 25 m used for vehicles. These dimensions are used for the HCM 2010 and Fruin pedestrian analysis.

3.5. Existing Traffic Volumes

Available turning movement count (TMC) data at intersections within the Study Area were provided from a variety of sources as listed in **Table 4**. In general, the latest available count was used as the basis for existing traffic conditions. The count dates range from 2018 to 2020, which represent typical pre-pandemic traffic volumes / conditions. These existing volumes are described as being 2020 in order to relate them to the future horizon year (2041). This is a conservative approach based on a comparison between 2018 and 2020 traffic volumes in the area (where 2020 traffic counts were available) as 2018 volumes were higher than 2020. No additional growth rates were applied to these 2018 counts as no additional developments took place within the study area during the time period between 2018 and 2020.

Table 4 - TMC Data

TCS #	Intersection	Count Date	Source
620	Don Mills Road/Overlea Boulevard	February 13, 2020	City of Toronto
1800	Overlea Boulevard/William Morgan Drive	September 12, 2018	City of Toronto
679	Overlea Boulevard/Thorncliffe Park Drive East (Beth Nealson)	September 12, 2018	City of Toronto
1834	Overlea Boulevard/East York Town Centre/Costco	May 15, 2019	City of Toronto
680	Overlea Boulevard/Thorncliffe Park Drive West	September 12, 2018	City of Toronto
687	Millwood Road/Overlea Boulevard	September 12, 2018	City of Toronto
2490	Overlea Boulevard/Leaside Park Drive	September 12, 2018	City of Toronto

Figure 8 shows the pedestrian volumes on the sidewalks around the intersection of Overlea Boulevard/Thorncliffe Park Drive West. **Figure 9** and **Figure 10** shows the existing volumes (vehicles, pedestrians, bicycles) for all the study intersections. TMC's and signal timing plans are provided in **Appendix A.**

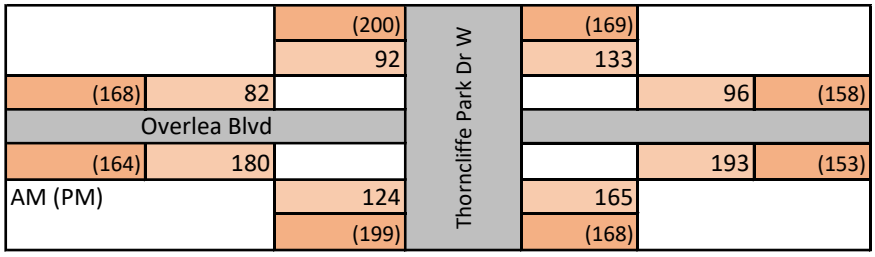


Figure 8: Existing Sidewalk Volumes

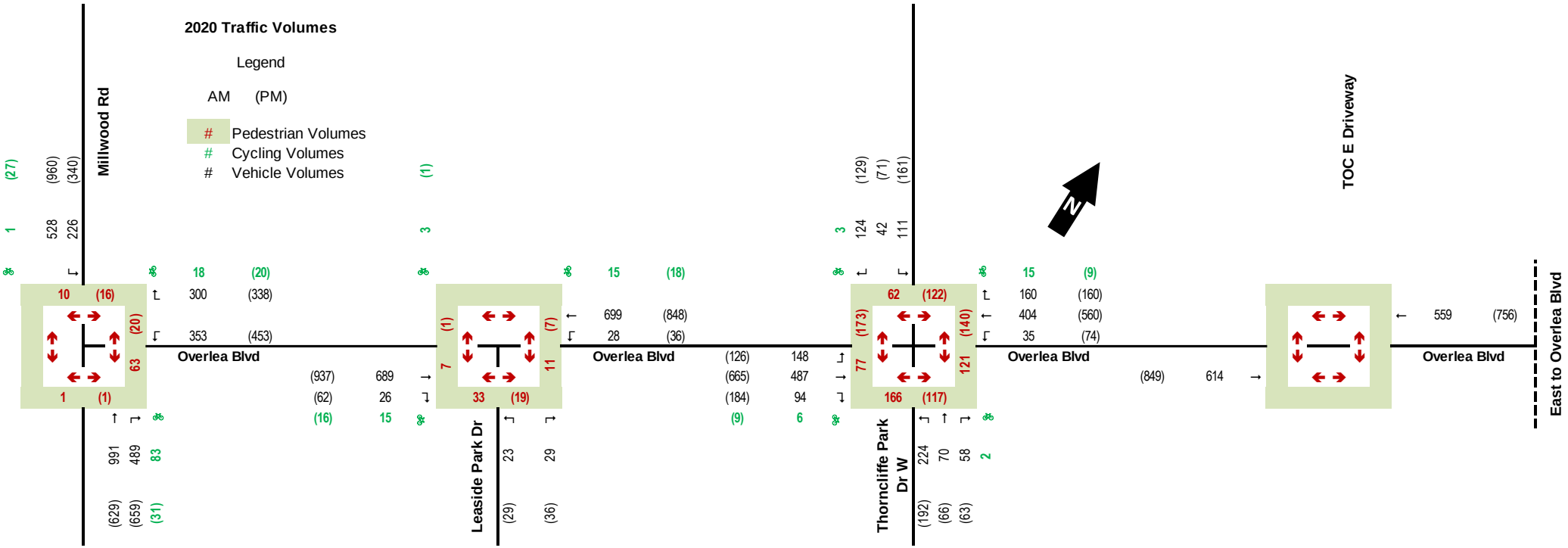


Figure 9: Existing Volumes (2020) – Millwood Rd to TOC E DW

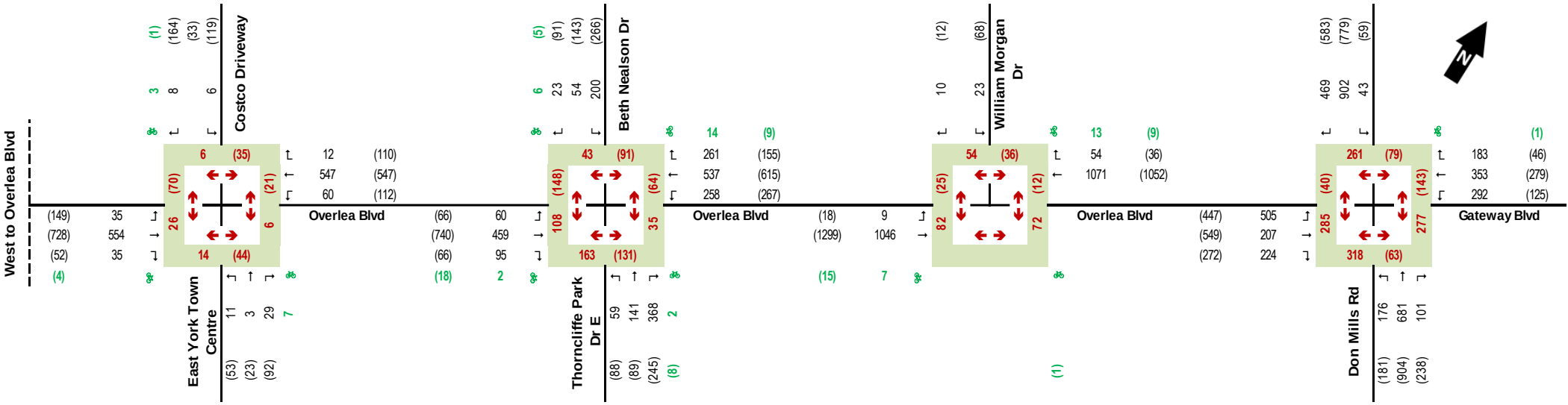


Figure 10: Existing Volumes (2020) – TOC E DW to Don Mills Rd

3.6. Existing Traffic Operations

Table 5 summarizes the level-of-service (LOS) and volume/capacity ratio (v/c ratio) for each movement under existing conditions. Detailed Synchro results and reports for the study area intersection are provided in **Appendix A.**

Where HOV lanes are present, a lane utilization factor of 0.61-0.67 was used in the synchro analysis to mimic these lane restrictions.

The Lane Utilization Factor (LUF) used to model the practical usage of the HOV lane is based on a separate analysis completed within OL project scope, using a combination of existing counts (2014-2022) and 2016 TTS survey data on Don Mills Road south of Eglinton Avenue to estimate HOV lane usage % and then adapting the calculated factors for analytical use on Overlea Boulevard. This factor has been used consistently across both Don Mills Road and Overlea Boulevard traffic deliverables, including other traffic analysis as part of the Station traffic impact studies (including Thorncliffe Park Drive), the Advanced Works traffic management memos, and the North (Pape + Thorncliffe) Segment TTMP. All of these have been submitted and have been reviewed by City; given no correction or pushback on the factor used, we are understanding that to be acceptance of the factor.

At the intersection of Overlea Boulevard and Thorncliffe Park Drive West, all movements operate at an acceptable level of service 'D' or better and within capacity in both the AM and PM peak hours.

At the Don Mills Road and Overlea Boulevard intersection, the northbound left is operating at capacity during both the AM and PM peak hours. This is likely due to the high volumes of traffic travelling to and from the Don Valley Parkway immediately to the south, with the northbound left movement comprising partially of traffic from the highway, as well as from East York. Particularly during the AM peak, the northbound left traffic competes for green time with the southbound through movement.

Along Overlea Boulevard, the east-west through movements only operate at capacity at William Morgan Drive. The remaining intersections operate with residual capacity along Overlea. The High-Occupancy Vehicle lane reduces capacity by almost half for general through-traffic, and high volumes (over 1000 vehicles each direction). Furthermore, green time given to traffic travelling along Overlea Boulevard is limited by the high volumes of pedestrians activating the north-south phase and the addition of the LPI phase in each direction.

The southbound left movement at the Millwood Road/Overlea Boulevard intersection operates overcapacity during both peak periods, due to high demand for this movement, as well as the high volumes on the conflicting northbound through movement.

Table 5: Existing Traffic Conditions – Summary

Intersection / Movement	Storage length	AM Peak Hour			PM Peak Hour		
		LOS	v/c Ratio	95th Percentile Queue (m)	LOS	v/c Ratio	95th Percentile Queue (m)
Overlea Boulevard/ William Morgan Drive (Signalized)		***C***	***1.01***	**-**	***F***	***1.26***	**-**
EBL	10	D	0.12	4.0	C	0.31	9.3
EBT	165.4	D	**1.00**	**244.7**	**F**	**1.26**	**344.5**
WBTR	588.9	D	**1.01**	262.5	E	**1.02**	261.3
SBLR	90.1	D	0.06	10.0	C	0.16	23.6
Overlea Boulevard/Beth Nealson Drive (Signalized)		***C***	***0.68***	**-**	***C***	***0.83***	**-**
EBL	30	C	0.44	24.0	D	0.50	**32.5**
EBTR	158.9	C	0.69	106.0	D	0.91	**220.2**
WBL	40	C	0.73	**45.5**	E	0.94	**93.8**
WBTR	165.4	C	0.71	130.3	C	0.68	142.7
NBL	30	C	0.16	19.3	C	0.33	26.6
NBT	218.3	C	0.25	38.6	C	0.15	23.4
NBR	80	C	0.35	40.4	C	0.18	15.1
SBL	60	C	0.56	**61.2**	C	0.67	**73.9**
SBTR	673.7	C	0.12	19.2	C	0.39	51.4
Overlea Boulevard/East York Town Centre/Costco (Signalized)		***B***	***0.37***	**-**	***B***	***0.61***	**-**
EBL	90	A	0.10	4.2	A	0.49	17.1
EBTR	177.6	B	0.51	117.2	B	0.72	171.6
WBL	40	A	0.18	11.1	B	0.46	18.0
WBT	158.9	B	0.47	94.0	B	0.59	114.8
NBL	59	C	0.04	5.3	C	0.17	16.3
NBTR	59	C	0.03	6.8	C	0.12	14.9
SBL	68.9	C	0.02	3.9	C	0.41	32.8
SBT	68.9	A	0.00	0.0	C	0.07	11.1
SBR	68.9	C	0.01	0.0	C	0.12	13.6
Overlea Boulevard/Thorncliffe Park Drive West (Signalized)		***C***	***0.59***	**-**	***C***	***0.61***	**-**
EBL	40	D	0.69	**50.6**	C	0.64	9.6
EBT	202.4	B	0.55	32.8	B	0.53	35.8
EBR	20	B	0.12	4.2	B	0.22	5.5
WBL	40	B	0.20	14.6	C	0.42	23.8
WBTR	182.3	C	0.62	108.2	C	0.64	130.8
NBL	191.7	B	0.45	42.2	C	0.58	55.4
NBTR	191.7	B	0.14	19.2	C	0.18	24.2
SBL	30	C	0.22	23.9	C	0.39	**40.1**
SBTR	166.5	C	0.15	18.9	C	0.25	31.4

Intersection / Movement	Storage length	AM Peak Hour			PM Peak Hour		
		LOS	v/c Ratio	95th Percentile Queue (m)	LOS	v/c Ratio	95th Percentile Queue (m)
Millwood Road/Overlea Boulevard (Signalized)		***C***	***1.01***	***-***	***C***	***0.90***	***-***
WBL	125	B	0.35	33.5	B	0.38	50.3
WBR	167.2	C	0.43	73.0	C	0.39	44.8
NBT	602.2	C	0.80	87.0	B	0.39	44.4
NBR	602.2	A	0.56	3.2	A	0.68	30.9
SBL	75	**F**	**1.30**	**96.9**	**F**	**1.05**	**130.3**
SBT	145.4	B	0.22	43.1	B	0.38	66.3
Don Mills Road/Overlea Boulevard (Signalized)		***E***	***1.02***	***-***	***E***	***0.99***	***-***
EBL	90	E	0.82	87.9	E	0.71	75.1
EBT	588.9	C	0.29	57.9	D	0.68	168.1
EBR	588.9	C	0.34	36.8	C	0.28	37.0
WBL	130	E	0.85	121.0	C	0.44	27.8
WBT	228.1	E	0.75	158.7	D	0.52	110.2
WBR	130	D	0.19	13.5	D	0.04	0.0
NBL	65	**F**	**1.16**	**97.5**	**F**	**1.26**	56.1
NBTR	206.1	D	0.56	86.1	E	0.92	121.8
SBL	45	D	0.25	16.9	D	0.51	12.1
SBT	491.1	E	0.96	187.2	E	0.92	122.2
SBR	-	D	0.77	100.7	D	0.84	127.1
Leaside Park Drive/Overlea Boulevard (Signalized)		***B***	***0.39***	***-***	***A***	***0.50***	***-***
EBTR	165	B	0.53	74.9	A	0.69	96.0
WBL	50	A	0.12	3.9	B	0.30	4.5
WBT	200	A	0.55	53.7	A	0.63	67.1
NBLR	95	C	0.06	11.9	C	0.08	13.8

Note: LOS = level of service; v/c = volume to capacity ratio; 95th Q = 95th Percentile Queue using HCM 2000, and Pedestrian Crosswalk LOS using HCM 2010. Critical movements are highlighted in **red** as defined by the City's TIS Guidelines. Queues exceeding available storage lengths are highlighted in **blue**.

Figure 11 summarizes the pedestrian performance at the study area intersection.

Based on the HCM 2010 Crosswalk pedestrian methodology, the "right corner quality of service" and "crosswalk circulation code" are shown, with the former indicating the sufficiency for the right corner sidewalk area at each intersection corner, and the other indicating the capacity of the crosswalk across each respective approach.

Sidewalk and surface transit stop performance were also analyzed based on the Fruin methodology. Existing surface transit boarding and alighting at the transit stops were estimated to be 20% of total transit vehicle capacity (51 for buses).

All pedestrian measures are at LOS 'C' or better, and there are no areas operating beyond standard capacity thresholds.

It is noted that the HCM 2010 Pedestrian analysis does not work for vehicle speeds below 40 km/h, and so a speed limit of 41 km/h was used for the analysis on Thorncliffe Park Drive. This is not anticipated to significantly affect the vehicle capacity analysis.

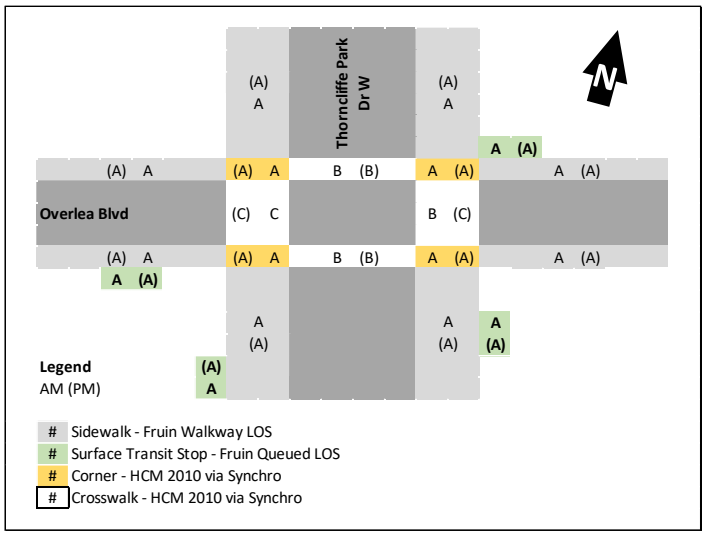


Figure 11: Existing Pedestrian Operations

4. Background Traffic Conditions

Under future background conditions, a portion of existing commercial properties around Thorncliffe Park Drive West and Banigan Drive will be demolished and replaced by the Ontario Line Maintenance and Storage Facility (MSF). The access to the MSF site will be only from the intersection of Millwood Road and Village Station Road. There will be no direct vehicular access to the MSF site from Overlea Boulevard, Thorncliffe Park Drive, or Beth Nealson Drive.

The proposed MSF, along with the Ontario Line guideway and Thorncliffe Park Station, will result in the following road network changes in the study area:

- With the MSF, approximately 125m of Banigan Drive west of Thorncliffe Park Drive will be closed, and Thorncliffe Park Drive connecting to Banigan Drive will also be closed approximately 95m north of Overlea Boulevard. Both roads will have with a cul-de-sac / turnaround implemented.
- To provide access to the remaining businesses and properties on Banigan Drive, a new north-south public road will be constructed as a normalized north-leg of the Overlea/Leaside Park Drive intersection. It is assumed to be built before the closure of Thorncliffe Park Drive.

In order to compensate for the loss of the local mosque as a result of the above demolitions, a new mosque and community center will open at 20 Overlea Blvd.

Finally, the station will be constructed on the north side of Overlea Boulevard across Thorncliffe Park Drive West. The station will also include a bus loop facility on the northeast corner of Overlea Blvd/Thorncliffe Park Drive West and will result in a change in the local bus service. Dedicated PUDO facilities will not be provided.

Future Background 2041 traffic volumes were forecasted by considering the following updated list of traffic components to account for the above changes, as well as other unrelated future changes:

- The removal of traffic associated with commercial properties slated for demolition within the footprint of the MSF;
- The removal of existing transit bus service, which would be replaced by new bus transit service in a future step.
- A general (background) annual compound growth rate of 0.5% was applied, representing a conservative estimate of growth from external factors outside of the specific changes to facilities in the study area. This growth rate was applied after the removal of traffic associated with properties slated for demolition and existing transit buses, in order to avoid growing these known traffic components.
- The reassignment of traffic associated with the remaining commercial properties along Banigan Drive to use the new northerly extension of the Leaside Park Drive that forms the north leg of Overlea Blvd/Leaside Park Drive, due to the closure of the Thorncliffe Park/Banigan Drive intersection.

- The addition of traffic associated with the new expanded mosque/community center to be located at 20 Overlea Blvd;
- The addition of traffic associated with the Laird In Focus development site traffic;
- The addition of traffic associated with the Jamatkhana Community Centre at William Morgan Drive;
- The addition of traffic associated with the MSF after its completion;
- The addition of traffic associated with the new Thorncliffe Park Ontario Line Station;
- The addition of the new transit bus service brought about by the new Ontario Line, which replaces the existing transit bus service; and
- The addition of traffic associated with the transit-oriented developments around other Ontario Line stations (traffic associated with other Ontario Line Stations are assumed to appear only within the immediate catchment area of each station and therefore do not appear in the Thorncliffe Park Station study area).

Traffic associated with the transit-oriented development immediately around the new Thorncliffe Park Station is not included under 2041 Future Background.

4.1. Traffic Associated with Businesses Slated for Demolition

A map of all properties slated for demolition due to the construction of the MSF is shown in **Figure 12**. To determine the amount of vehicle trips associated with these properties, driveway counts were conducted on Thursday August 11, 2022 from 6:30 to 19:30. The AM and PM peak hour volumes were determined for each driveway and are shown in **Table 6**.

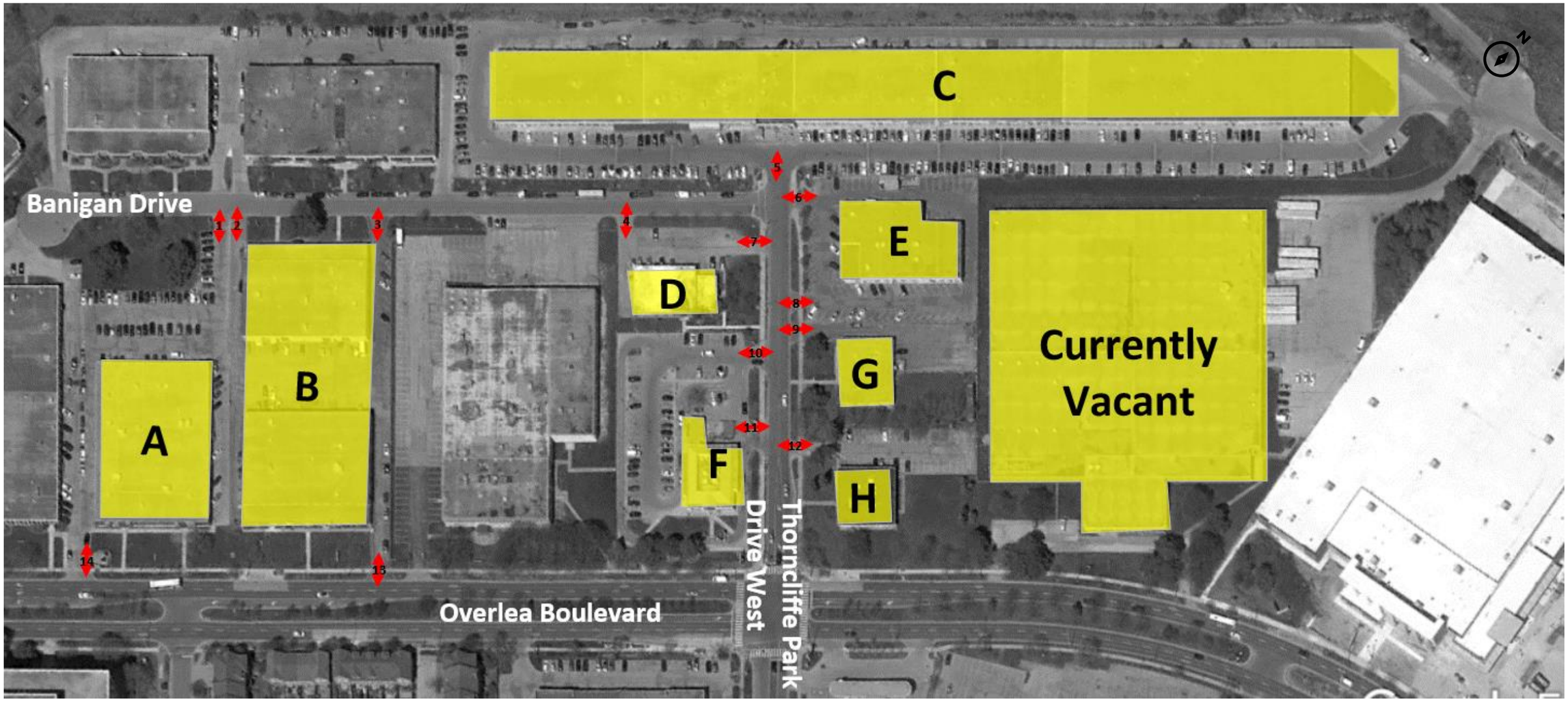


Figure 12 - Properties Slated for Demolition

Table 6 - Trips Associated with Properties Slated for Demolition

Property	Driveway ID	AM% to subtract*	AM (IN)	AM(OUT)	PM% to subtract*	PM (IN)	PM (OUT)
A	1	100%	7	22	100%	12	31
B	2	100%	0	3	100%	0	4
B	3	100%	27	1	100%	33	1
D	5	100%	2	1	100%	3	2
C	6	100%	46	51	100%	121	133
E	7	100%	18	0	100%	10	1
D	8	100%	8	0	100%	3	7
E	9	100%	0	7	100%	8	54
G	10	100%	0	0	100%	5	8
F	11	50%	125	48	50%	97	46
F	12	50%	1	89	50%	8	62
H	13	100%	4	1	100%	3	7
B	15	100%	3	21	100%	1	27
A	16	100%	25	3	100%	10	8
Total trips to subtract		AM ->	266	247	PM ->	314	391

**Percentage to subtract accounts for trips that show up in the road network whether or not the commercial property exists, such as pass by-trips to drive-thru restaurants. Pass by rate assumed to be 50% for the Wendy's in order to facilitate subtraction from existing volumes.*

4.1.1. Trip Distribution and Assignment

The existing trip assignment of these commercial properties was estimated by assuming that the turning volume for these properties follows the same proportion as the existing TMC's at each intersection, only for turning movements leading to and from these properties. Pass by trips associated with the fast food land use were also accounted for, by distributing the pass by trips equally over the eastbound and westbound approaches to the intersection of Overlea Boulevard/Thorncliffe Park Drive West.

Trip generation for traffic associated with businesses that would remain with the MSF was estimated as the total southbound approach volumes and northbound departure volumes to and from Overlea Boulevard/Thorncliffe Park Drive West, after the traffic associated with the businesses slated for demolition have been removed. Their trip distribution is assumed to be identical to that of traffic associated with commercial properties to be demolished.

4.2. Existing Transit Bus Volumes

The transit bus volumes were calculated based on existing transit routes and frequencies. To account for the change in bus service, the existing bus turning movement counts were subtracted from the 2020 existing volumes.

4.3. General Traffic Growth

Growth rates were derived by comparing existing and total future volumes documented in the Laird In Focus and Don Mills Crossing studies. A summary of growth rates is shown in **Table 7**.

For the screen lines “Eglinton East of Leslie” and “Don Mills South of Gateway Boulevard N”, Scenario C in the Don Mills Crossing Study **Appendix L** (**Table 4**) was assumed. For the screen lines “Laird at Eglinton” and “Laird at McRae”, the Synchro models conducted for the “Laird In Focus” study provided the link volumes for the existing 2018 and future 2041 conditions.

Table 7: Growth Rates from Background Studies

Years	Location	AM Volumes		PM Volumes	
		AM Peak	Mid-day	Evening*	Saturday Mid-day
Existing (2018)	Laird south of Eglinton	667	875	1049	830
	Laird south of McRae	711	531	786	747
	Eglinton East of Leslie	2070	1610	2480	1590
	Don Mills South of Gateway Boulevard N	1957	1679	1728	2001
Future (2041)	Laird south of Eglinton	962	1083	806	661
	Laird south of McRae	1052	1228	1052	876
	Eglinton East of Leslie	1520	1390	1850	1290
	Don Mills South of Gateway Boulevard N	1560	2860	2090	3470
Growth	Laird south of Eglinton	2%	1%	-1%	-1%
	Laird south of McRae	2%	6%	1%	1%
	Eglinton East of Leslie	-1%	-1%	-1%	-1%
	Don Mills South of Gateway Boulevard N	-1%	3%	1%	3%
	Average Compound Growth Rate	0.5%			

Sources: Laird in Focus and Don Mills Crossing studies

An annual compound growth rate of 0.5% was calculated from the above growth rates. This growth rate was applied to the east-west through-movements along Overlea Boulevard east of Millwood Road, as well as the WBL and WBR movements at Millwood Road. For pedestrian and bicycle volumes, a 1% annual compound growth rate was assumed, in order to be conservative.

4.4. Laird in Focus Development

Two major areas of redevelopment are proposed as part of the Laird in Focus study, referred to as Area A and Area B in this study. Area A, shown by the red blocks with prefix "A" in **Figure 13**, is bounded by Eglinton Avenue East to the north, Aerodrome Crescent to the east, Vanderhoof Avenue to the south, and Laird Drive to the west. Area B, shown by the blue blocks with prefix "B", is bounded by Vanderhoof Avenue to the north, Laird Drive to the east, Millwood Road to the south, and at a boundary line approximately midway between Laird Drive and Randolph Road to the west. The existing employment lands and surrounding residential/commercial uses are represented by areas C and D, respectively. Gateways to the roadway network beyond the transportation study area are represented by gateways with the label prefix "E". The above areas, as well as the Laird in Focus's transportation study area gateways are shown in **Figure 13**.

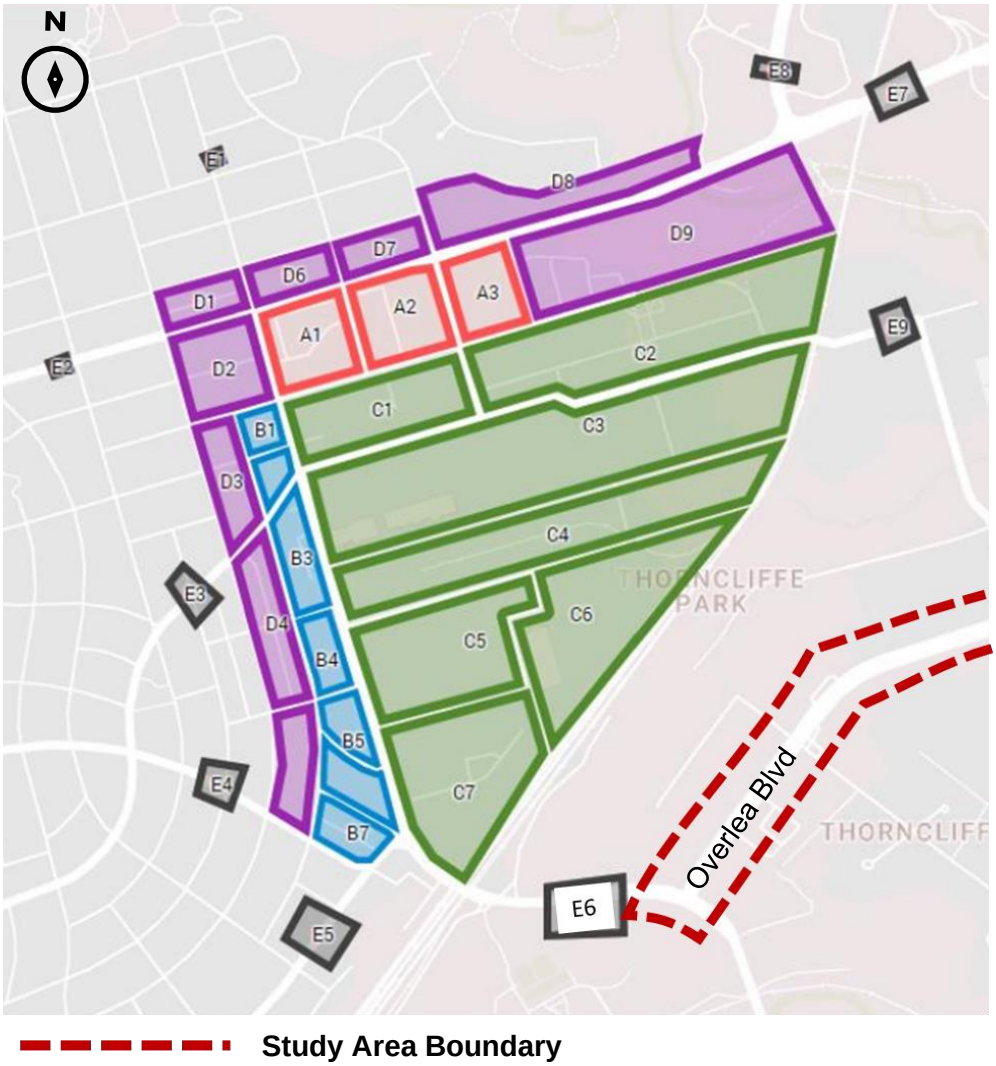


Figure 13: Laird In Focus Transportation Study Area with respect to Station TOC Study Area.

Source: Laird In Focus Mobility Report Figure 7-4, dated July 2018 by Steer Davies Gleave

The net change in vehicular turning movement volumes between existing and total future conditions in the Laird in Focus study (hereafter referred to as "Laird Site Traffic") was directly extractable from the study at the intersection of Laird/Wicksteed/McRae only, and was obtained by subtracting the TMC from the total future TMC. Three scenarios were tested in the Laird In Focus study to examine the sensitivity of traffic operations to the assumed non-auto mode split for the developments. Due to capacity constraints along Eglinton that were flagged by the study, the most aggressive non-auto mode split of 30% auto / 70% non-auto was assumed for the Thorncliffe Park Station TOC. It should be noted that this net change in traffic volumes is assumed to consider increases in traffic volumes due to new developments, as well as decreases in traffic volumes due to stronger TDM measures, as well as reroutes from new intersection configurations giving more access and egress route options for the site traffic.

Total Future Origin-Destination matrices for vehicular trips travelling between these development areas and gateways were also available, and were used to inform the assignment of Laird Site Traffic at major junctures throughout the rest of the study area. The following logic was applied to determine the Laird Site Traffic throughout the rest of the Thorncliffe Park Station TOC's study area:

- Between the intersections along Laird south of McRae/Wicksteed and north of Millwood/Southvale, the breakdown of Laird Site Traffic that travels north-south versus turning into and out of the zones and gateways to the west (E3) was assumed to follow the ratio of traffic in the OD matrix destined to enter and exit the study area via E3 to traffic destined to enter and exit via E3, E4, E5 or E6.
- At the intersection of Laird/Millwood/Southvale, the breakdown of the remaining Laird Site Traffic that continues travelling north-south versus turning to and from gateways to the west (E4 and E5) was assumed to follow the ratio of traffic in the OD matrix destined to enter and exit the study area via E4 or E5 to traffic destined to enter and exit via E4, E5 or E6.
- At Millwood/Overlea, which is beyond the Laird in Focus transportation study area, the distribution of the remaining Laird Site Traffic was assumed to follow the distributions of the existing turning movement counts at that intersection.

4.5. MSF Site Traffic

4.5.1. Trip Generation and Distribution

Future staff and shift data for the MSF were provided to reflect the operation needs of the proposed MSF site. Since all shift start and end times fall outside of the typical weekday AM and PM peak hours, to be conservative, it was assumed that the AM and PM peak hour site traffic would consist entirely of office workers. Therefore, the following trip generations were assumed:

- AM Peak Hour inbound: equal to the proposed number of office workers
- AM Peak Hour outbound: none
- PM Peak Hour inbound: none
- PM Peak Hour outbound: equal to the proposed number of office workers.

Due to the flexible nature of office worker start and end times, assuming that all office workers arrive within the same peak hour makes the analysis conservative.

To determine the automobile mode split and trip distribution for these office workers, 2016 TTS data was referenced. The data contains all trips starting or ending in 2006 GTA traffic analysis zones 221 and 222 during the weekday peak periods.

The trip generation and mode split reductions are summarized in **Table 8**. The gateway distribution assumed for the MSF trips is shown in **Table 9**.

Table 8: MSF Trip Generation Summary

Period	Direction	Person Trip Generation	Auto Driver Mode Share	Vehicular Trips
AM	Inbound	81	51%	41
	Outbound	0	100%	0
PM	Inbound	0	100%	0
	Outbound	81	56%	46

Table 9: MSF Trip Distribution

Location	AM (IN)	AM (OUT)	PM (IN)	PM (OUT)
North via Leslie	13%	13%	12%	12%
Near Vanderhoof/Brent Cliffe	1%	1%	1%	1%
West via Eglinton	6%	8%	7%	7%
West via McRae	1%	0%	0%	1%
Near Brent Cliffe/South of Wicksteed	0%	1%	0%	1%
West via Southvale	2%	1%	2%	2%
South via Millwood	15%	20%	23%	16%
South via Leaside Park	0%	0%	0%	0%
South via Thorncliffe W	14%	8%	7%	8%
South via East York Town Centre	0%	0%	0%	0%
South via Thorncliffe E	5%	2%	2%	2%
South via Don Mills	31%	23%	25%	29%
East via Gateway/Overlea	1%	2%	1%	2%
East via Gateway N	0%	2%	1%	1%
East via St Dennis	0%	2%	1%	1%
East via Rochefort	0%	2%	1%	1%
East via Eglinton	7%	7%	7%	9%
North via Don Mills	4%	9%	8%	6%
East via Wicksteed	0%	1%	1%	0%
TOTAL	100%	100%	100%	100%

4.6. Future Assignment of Remaining Business Traffic

As stated in Section 4.1, Thorncliffe Park Drive West, north of Overlea Boulevard, will be a dead-end at a cul-de-sac. To maintain access for the remaining businesses along Banigan Drive, a New City Street will be constructed as a normalized north leg to the intersection of Overlea Boulevard/Leaside Park drive (also known as New City Street).

Future trip assignment of the remaining commercial properties is generally assumed to remain unchanged from the existing route choices at study intersections farther away from the impacted roads, west of Leaside Park Drive and east of Thorncliffe Park Drive West. Between these two intersections, traffic associated with the remaining businesses was reassigned from Thorncliffe Park Drive West to New City Street.

4.7. New Mosque

In order to mitigate the loss of the existing mosque and retail during demolition activities, a new mosque and community center will be introduced in the existing building at 20 Overlea Boulevard, located on the north side of the street between Leaside Park Drive and Thorncliffe Park Drive W. The proposed land use for the building is shown in **Table 11.**

To capture the peak period of the mosque, the driveway counts also included Friday August 12, 2022. The trip rates used for the proposed mosque were derived using the Friday driveway counts, and are shown in **Table 10.**

For the proposed retail, the trip rates were based on the Thursday driveway count. Properties D, E, and I in **Figure 12** were identified as containing retail land uses.

Table 10 - Trip Rate Calculations for Mosque

Property	F (Existing Mosque)	Trip Rate per sq m
GFA (m^2)	1375 m^2	-
AM Inbound Trips	20	0.015
AM Outbound Trips	8	0.007
AM Total Trips	**28**	**0.020**
PM Inbound Trips	49	0.036
PM Outbound Trips	64	0.048
PM Total Trips	**113**	**0.082**

The trip rates used for the office space are based on ITE Trip Generation rates and equations. Due to trip rates for the mosque and retail being calculated directly from observed driveway counts, no further reductions in mode-split were applied to these land uses.

For the purposes of estimating the person trip generation for the office space, it was assumed that 95% of all observed office trips in ITE Trip Generation dataset was single-occupancy vehicle trips. The non-automobile-drive mode split was derived using 2016 TTS data containing trips beginning or ending in traffic zones 221 and 222 whose purpose was not home.

Table 11 - Site Statistics for New Mosque Community Centre

Vehicle Trips				
	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
	Inbound	Outbound	Inbound	Outbound
ITE Land Use driveway rates (Mosque)	107	43	261	341
Internal Trip Reduction	-	-	0	0
Non-Auto Trip Reduction	0	0	0	0
Pass-By Trips	-	-	0	0
Total	107	43	261	341

4.8. Jamatkhana / Mosque

The existing Ismaili Community Centre and Jamatkhana (80 Overlea Blvd, East York, ON M4H 1C5), will be redeveloped into a three-story building and generate trips in the PM and Saturday peak periods only. The site traffic assignment for this redevelopment proposal was prepared by WSP Canada Group Ltd on May 19, 2021. Beyond this study's study area, the site traffic was traced through the rest of the TOC's study area and assumed to follow the existing proportion of turning movements

4.9. Proposed Station Trip Generation

The station is expected to be completed and operational well before the horizon year 2041. The proposed station layout is shown in **Figure 14**.

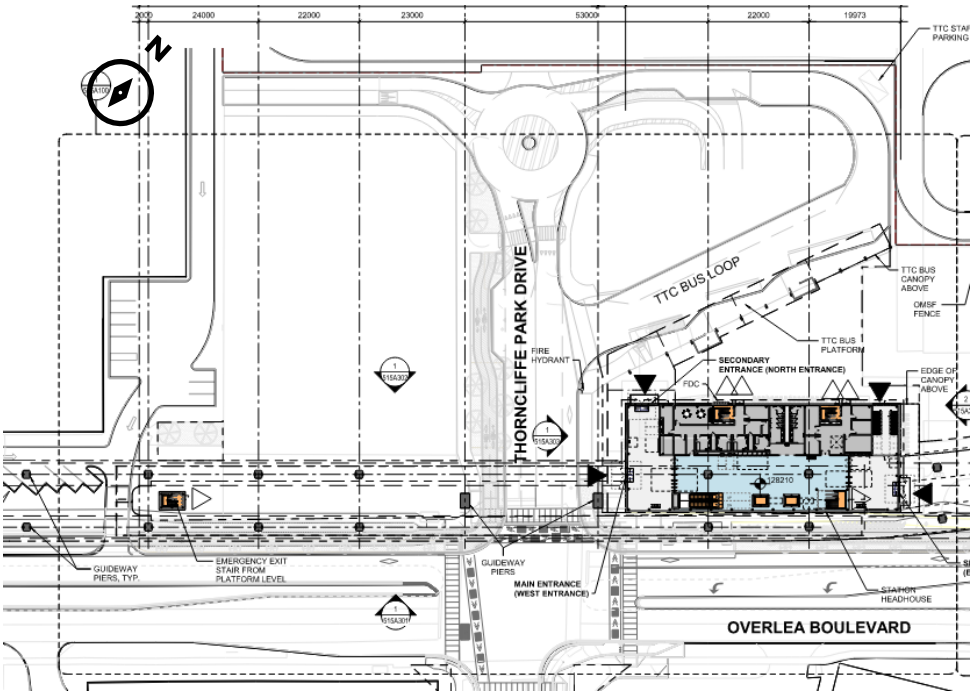


Figure 14: Thorncliffe Park Station Layout

Route 100 buses will serve curbside bus stops without entering the bus loop.

For the purposes of estimating the station's contribution of traffic volumes on the road network, the station site trips are assumed to be made of the following components:

- Change in bus traffic in the neighborhood.
- Walkin/walkout trips between the Ontario Line rail service and the neighborhood
- Walkin/walkout trips between routes 25, 72, or 88 and the neighborhood
- Transfer trips between the Ontario Line rail service and route 100
- Bike trips to Ontario Line

It is assumed that all transfer trips between the OL train service and routes 25, 72, or 88 bus service are fully contained within the station.

4.9.1. Change in Transit Bus Traffic

Based on the Ontario Line Indicative Transit Network Map dated June 26, 2020, as well as subsequent RFI's pertaining to the Thorncliffe Bus Loop, the proposed future bus network was assumed to be as shown in **Figure 15**. The proposed service frequencies are shown in **Table 12**. The future bus service volumes are added after general growth rates to 2041 have been applied.. Heavy vehicle percentages were adjusted accordingly.

Figure 15 - Future Bus Service Network

Table 12 - Future Bus Service Headways

Thorncliffe Park Station	Weekday Peak Period Headway (min)
Terminating Routes	
Don Mills	5
Pape	8
South Leaside	10
Unloading/Wheel-Trans (shared)	2-3*
Through Route	
Flemingdon	10

4.9.2. Trip Generation

Future trips for the station were estimated based on the Emme travel demand modeling completed for the 2041 horizon year shown in **Table 13.**

Table 13: 2041 Peak AM Transfer Trip Matrix – Thorncliffe Park Station

From \ To	OL EB/NB	OL WB/SB	OL walk egress	Bus NB	Bus EB	Bus SB	Bus WB	Bus walk egress (or transfer)	Total
OL EB/NB	-	-	666	43	11	43	119	-	882
OL WB/SB	-	-	154	10	0	20	25	-	209
OL walk access	374	914	-	-	-	-	-	-	1288
Bus NB	83	87	-	-	-	-	-	140	310
Bus EB	59	145	-	-	-	-	-	20	224
Bus SB	24	289	-	-	-	-	-	0	313
Bus WB	71	58	-	-	-	-	-	10	139
Bus walk access (or transfer)	-	-	-	251	15	150	184	-	600
Total	611	1,493	820	304	26	213	328	170	3965

To generate station trips for the 2041 Peak PM Hour, the 2041 Peak AM Transfer Matrix was transposed, which reflects the assumption that the predominant trip patterns in the AM and PM will be reversed. The 2041 PM Transfer matrix is shown in **Table 14**.

Table 14 - 2041 Peak PM Transfer Trip Matrix – Thorncliffe Park Station

From \ To	OL EB/NB	OL WB/SB	OL walk egress	Bus NB	Bus EB	Bus SB	Bus WB	Bus walk egress (or transfer)	Total
OL EB/NB	-	-	914	289	58	87	145	-	1,493
OL WB/SB	-	-	374	24	71	83	59	-	611
OL walk access	154	666	-	-	-	-	-	-	820
Bus NB	20	43	-	-	-	-	-	150	213
Bus EB	25	119	-	-	-	-	-	184	328
Bus SB	10	43	-	-	-	-	-	251	304
Bus WB	0	11	-	-	-	-	-	15	26
Bus walk access (or transfer)	-	-	-	0	10	140	20	-	170
Total	209	882	1288	313	139	310	224	600	3965

Of the estimated walk-in and walk-out trips directly to and from the Ontario Line Station, the vast majority were assumed to be pedestrian trips at 98%, and 2% were assumed to be bicycle trips. No dedicated PUDO facilities will be provided. The trip generation for each mode is shown in **Table 17** and **Table 18** for the AM and PM peak hours, respectively.

The total walking trips to and from the rail service versus all bus routes are provided directly in the station transfer matrices (**Table 13** and **Table 14**). To distinguish the number of walking bus trips using Route 100 from other bus trips walking to and from the station bus bays, the following boarding and alighting forecasts per route are provided by the Emme model, and are

given in **Table 15** and **Table 16** for AM and PM, respectively. The boarding and alighting percentages were then applied to the total walking bus trips from the station transfer matrices.

Table 15 - Boarding and Alighting Forecasts per Bus Route (AM)

All Bus Route Boardings/Alightings				
Route	**Boardings**	**Boardings%**	**Alightings**	**Alightings%**
Total	857	100%	902	100%
Route 25	290	34%	234	26%
Route 72	215	25%	310	34%
Route 88	240	28%	225	25%
Total Bus Bay %		87%		85%
Route 100 EB	19	**2%**	50	**6%**
Route 100 WB	93	**11%**	83	**9%**
Total Curbside %		**13%**		**15%**

Table 16 - Boarding and Alighting Forecasts per Bus Route (PM)

All Bus Route Boardings/Alightings				
Route	**Boardings**	**Boardings%**	**Alightings**	**Alightings%**
Total	902	100%	857	100%
Route 25	234	26%	290	34%
Route 72	310	34%	215	25%
Route 88	225	25%	240	28%
Total Bus Bay %		85%		87%
Route 100 EB	83	**9%**	93	**11%**
Route 100 WB	50	**6%**	19	**2%**
Total Curbside %		**15%**		**13%**

Trips between the TOC and future transit service was estimated in **Section 4.9** and was subtracted from the station and bus services' total walking-to-transit trips before distinguishing the remaining walking-to-transit trips over foot and bike trips. The TOC-to-Transit trips is the transit trips from both TOC's to be used as input to **Table 17** and **Table 18**.

Table 17: Generated Station Trips for AM - Summary

Walkins/Walkouts to/from All Transit								
		Access / Egress mode splits	Total Buses	Bus 100 EB	Bus 100 WB	Trains	Total Buses Internal to Station	Total for Station
Walkins to local transit	Total Walkin Riders		600	13	65	1288	522	1810
	TOC to transit		103	2	11	221	89	310
	Elsewhere to transit	100%	497	11	54	1067	432	1500
	Foot	98%	487	11	54	1046	424	1470
	Bike	2%	10	-	-	21	9	30
	PUDO	0%	0	-	-	0	0	0
Walkouts from local transit	Total Walkout riders		170	9	16	820	145	965
	transit to TOC		34	2	3	166	29	195
	transit to Elsewhere	100%	136	8	12	654	116	770
	Foot	98%	133	8	12	641	113	754
	Bike	2%	3	-	-	13	2	15
	PUDO	0%	0	-	-	0	0	0

Table 18: Generated Station Trips for PM - Summary

Walkins/Walkouts to/from All Transit								
		Access / Egress mode splits	Total Buses	Bus 100 EB	Bus 100 WB	Trains	Total Buses Internal to Station	Total for Station
Walkins to Local Transit	Total Walkin Riders		170	16	9	820	145	965
	TOC to station		43	4	2	209	37	246
	Elsewhere to Station	100%	127	12	7	611	108	719
	Foot	98%	124	12	7	598	106	704
	Bike	2%	3			12	2	14
	PUDO	0%	0			0	0	0
Walkouts from Local Transit	Total Walkout riders		600	65	13	1288	522	1810
	Station to TOC		90	10	2	193	78	271
	Station to Elsewhere	100%	510	55	11	1095	444	1539
	Foot	98%	500	55	11	1073	435	1508
	Bike	2%	10			22	9	31
	PUDO	0%	0			0	0	0

4.9.3. Site Distribution and Assignment

Different distributions were used for the walk trips (to/from the station), pick-up drop-off vehicle trips, and bicycle trips to/from the station.

The assumed distribution for pedestrian trips are shown in **Table 19.** The distributions are based on an analysis of 2016 TTS data of trips whose trip ends are within 1 km of the station, as well as in other planning districts that the Ontario Line will serve.

Table 19 - Directional Distribution for Pedestrian Trips To and From Thorncliffe Park Station

Direction	AM (IN)	AM (OUT)	PM (IN)	PM (OUT)
NW	7%	33%	44%	28%
N	0%	0%	0%	0%
NE	0%	0%	0%	0%
E	1%	37%	29%	7%
SE	91%	30%	28%	65%
S	0%	0%	0%	0%
SW	0%	0%	0%	0%
W	0%	0%	0%	0%
Total	**100%**	**100%**	**100%**	**100%**

Biking trips to and from the station will appear as vehicle trips before travelers park their bikes at the bike storage facility on the northeast quadrant of Overlea/Thorncliffe Park W. Since bike parking is in the same quadrant as the main station headhouse, these trips will not increase conflicting pedestrian volumes at the intersection crosswalks but may appear as conflicting bike volumes.

4.9.4. Trips Transferring Between Station/Bus Loop and Route 100

4.9.4.1. TRIP GENERATION

The volume of passengers transferring between Ontario Line rail service and any bus route is given directly in **Table 13** and **Table 14**. The boardings and alightings percentages derived in **Table 15** and **Table 16** were then applied to the total OL-bus transfer traffic to determine the transfer volume to and from each bus route. The resulting transfer volume for each bus route is given in **Table 20** and **Table 21**.

Table 20 - OL-Bus Transfer Volume (AM)

All Bus Route Boardings/Alightings			Transfers Between OL and Buses Only	
Route	Boardings%	Alightings%	OL to Bus Boardings	Bus to OL Alightings
Total	100%	100%	271	816
Route 25	34%	26%	92	212
Route 72	25%	34%	68	280
Route 88	28%	25%	76	204
Total Bus Bay%	87%	85%	-	-
Route 100 EB	2%	6%	6	45
Route 100 WB	11%	9%	29	75
Total Curbside %	13%	15%	-	-

Table 21 - OL-Bus Transfer Volume (PM)

All Bus Route Boardings/Alightings			Transfers Between OL and Buses Only	
Route	Boardings%	Alightings%	OL to Bus Boarding	Bus to OL Alighting
Total	100%	100%	816	271
Route 25	26%	34%	212	92
Route 72	34%	25%	280	68
Route 88	25%	28%	204	76
Total Bus Bay%	85%	87%	-	-
Route 100 EB	9%	11%	75	29
Route 100 WB	6%	2%	45	6
Total Curbside %	15%	13%	-	-

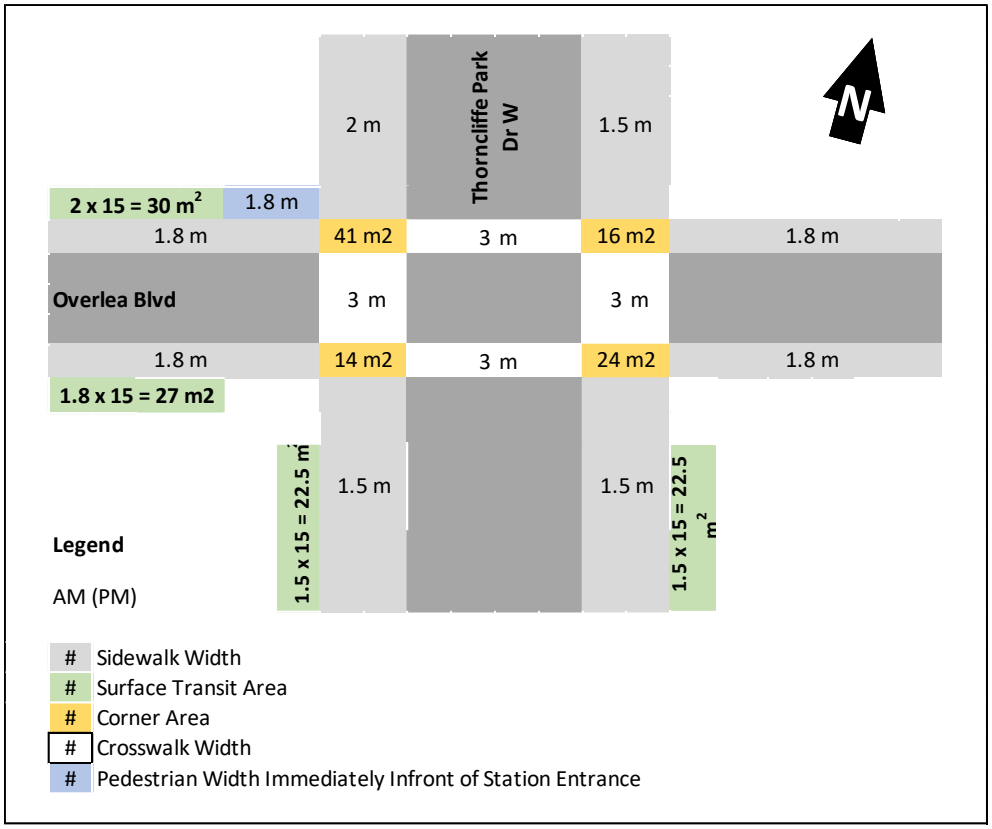


Figure 16: Future Pedestrian Dimensions

4.10. Future Background Traffic Volumes

The resulting Future 2041 Future Background traffic volumes are derived by removing trips from business being demolished, reassigning bus trips, subtracting the existing bus traffic, adding future bus traffic, business trips, and general traffic growth and station trips.

Figure 17 shows the future background pedestrian volumes on the sidewalks around the intersection of Overlea Boulevard/Thorncliffe Park Drive West. **Figure 18** and **Figure 19** shows the future background volumes (vehicles, pedestrians, bicycles) for all the study intersections.

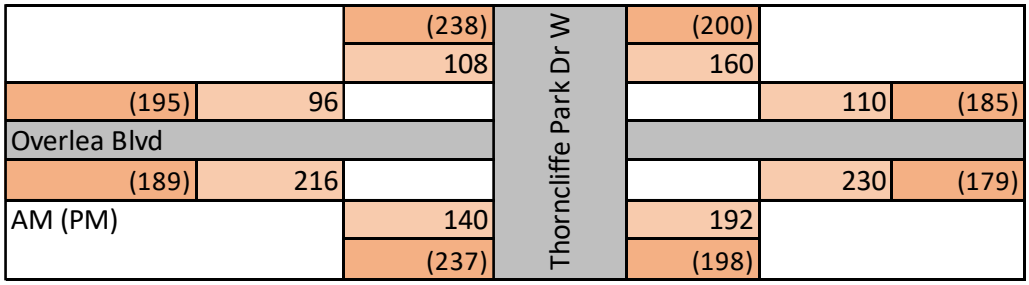


Figure 17: Future Background Sidewalk Volumes

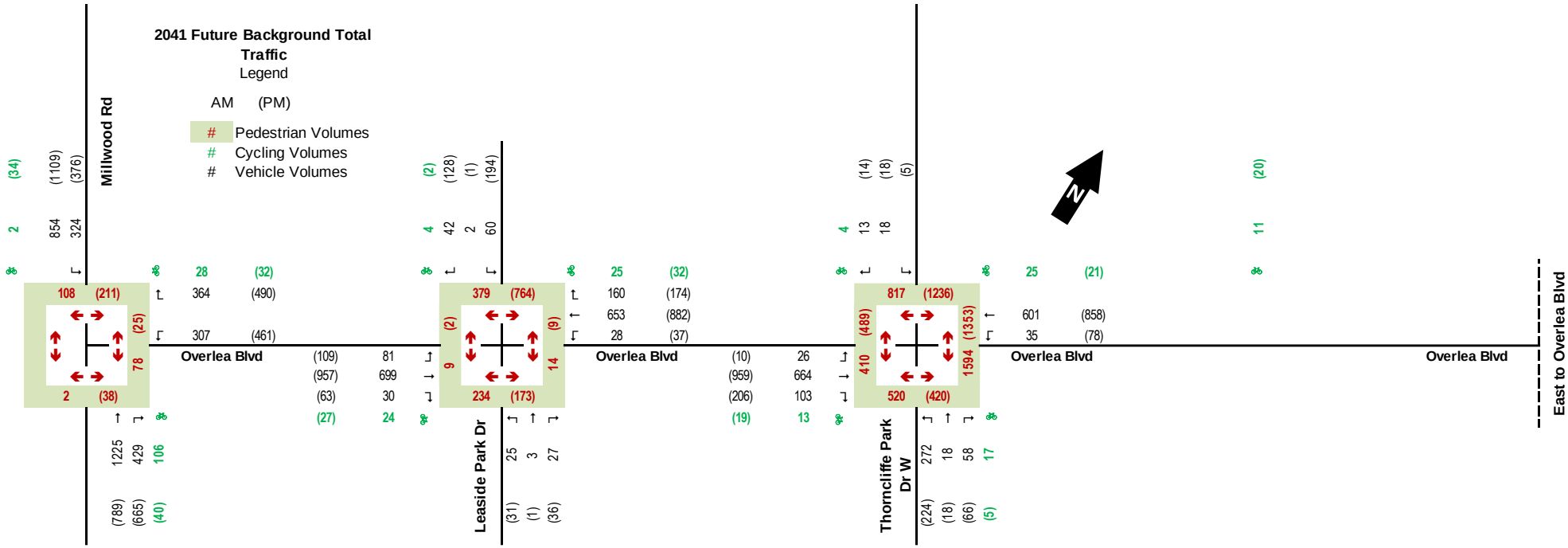


Figure 18: Future Background Volumes (2041) – Millwood Rd to TOC E DW

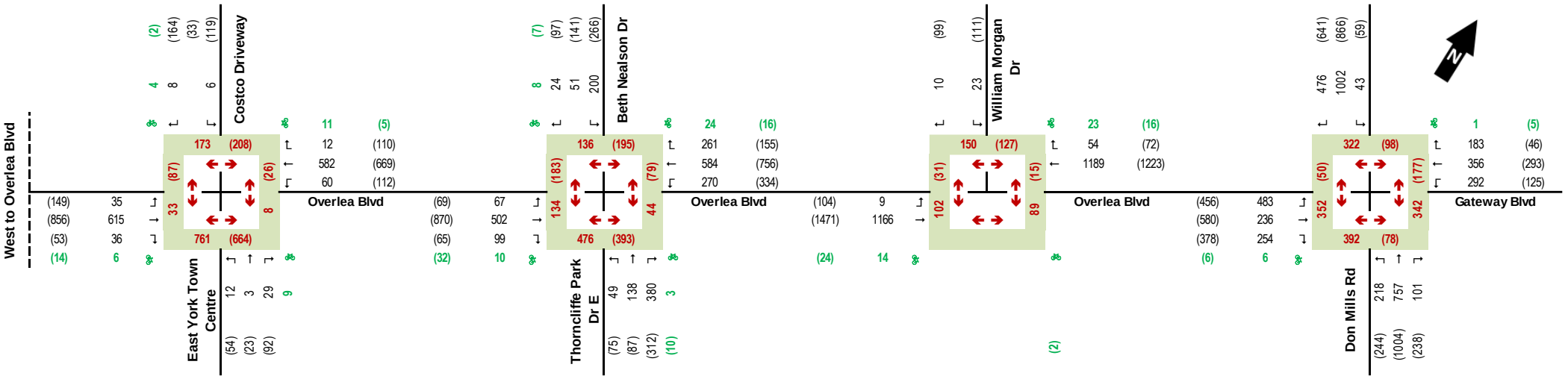


Figure 19: Future Background Volumes (2041) – TOC E DW to Don Mills Rd

4.11. Future Background Traffic Operations

Future Background traffic analysis results are shown in **Table 22,** with existing signal timing plans for all intersections. Detailed intersection capacity analysis in Synchro is shown in **Appendix A.**

Table 22: Future Background Traffic Conditions

Intersection	Movement	Storage Length	AM Peak Hour			PM Peak Hour		
			LOS	v/c Ratio	95th Percentile Queue (m)	LOS	v/c Ratio	95th Percentile Queue (m)
Overlea Boulevard/William Morgan Drive (Signalized)	***Overall***	-	**D**	***1.04***	**-**	**E**	***1.92***	**-**
	EBL	10	B	0.13	1.0	F	1.92	47.9
	EBT	165.4	D	1.01	287.5	E	1.07	329.8
	WBTR	588.9	E	1.04	315.7	D	0.99	346.2
	SBLR	90.1	C	0.08	11.3	D	0.57	56.3
Overlea Boulevard/Beth Nealson Drive (Signalized)	***Overall***	-	***C***	***0.86***	**-**	***E***	***1.13***	**-**
	EBL	30	D	0.61	35.4	F	0.81	42
	EBTR	158.9	D	0.86	154.4	F	1.13	260.0
	WBL	40	D	0.79	46.5	F	1.11	74
	WBTR	165.4	C	0.86	85.3	B	0.89	52
	NBL	30	C	0.14	16.9	C	0.30	26
	NBT	218.3	C	0.25	37.9	C	0.15	25.5
	NBR	80	B	0.58	42.4	A	0.51	32.3
	SBL	60	D	0.56	61.2	D	0.7	82.9
	SBTR	673.7	B	0.14	19.1	C	0.45	58.8
Overlea Boulevard/East York Town Centre/Costco (Signalized)	***Overall***	-	***B***	***0.61***	**-**	***C***	***0.90***	**-**
	EBL	90	A	0.1	7.3	B	0.57	24.3
	EBTR	177.6	C	0.61	138.3	D	0.90	226.1
	WBL	40	B	0.21	11.1	C	0.57	29.1
	WBT	158.9	B	0.54	113	C	0.78	176.4
	NBL	59	C	0.04	5.8	C	0.18	16.6
	NBTR	59	A	0.09	6.8	A	0.26	14.9
	SBL	68.9	C	0.02	3.9	C	0.41	32.8
	SBT	68.9	C	0.01	1.3	C	0.07	11.1

Intersection	Movement	Storage Length	AM Peak Hour			PM Peak Hour		
			LOS	v/c Ratio	95th Percentile Queue (m)	LOS	v/c Ratio	95th Percentile Queue (m)
	SBR	68.9	A	0.03	0	A	0.36	15
Overlea Boulevard/Thorncliffe Park Drive West (Signalized)	***Overall***	-	***C***	***0.82***	**-**	***C***	***1.21***	**-**
	EBL	204.2	C	0.21	10.5	B	0.12	1.3
	EBT	204.2	D	0.82	142.6	C	0.87	145.3
	EBR	20	B	0.46	20	B	0.66	**25.0**
	WBL	40	C	0.35	15.2	**F**	**1.21**	**44.7**
	WBTR	182.3	C	0.69	115	C	0.8	150.4
	NBL	191.7	C	0.62	59.6	D	0.71	73.8
	NBTR	191.7	B	0.19	20	C	0.22	20.6
	SBL	166.5	C	0.02	3.5	C	0.02	3.1
	SBTR	166.5	B	0.07	9.7	C	0.06	11
Millwood Road/Overlea Boulevard (Signalized)	***Overall***	-	***E***	***1.13***	**-**	***C***	***1.05***	**-**
	WBL	116.6	D	0.74	97.8	F	**1.05**	**173.4**
	WBR	116.6	B	0.51	66.9	C	0.69	89.7
	NBT	607.8	**F**	**1.13**	203.5	C	0.62	92
	NBR	608.7	B	0.77	63.5	A	0.78	41.4
	SBL	75	**F**	**1.07**	**128.1**	**D**	0.93	**108.8**
	SBT	145.5	B	0.32	41.8	E	0.39	54.4
Don Mills Road/Overlea Boulevard (Signalized)	***Overall***	-	***D***	**0.98**	**-**	**D**	**0.96**	**-**
	EBL	90	**F**	0.93	**105.4**	E	0.84	88
	EBT	588.9	D	0.51	87.1	D	0.86	223.7
	EBR	588.9	C	0.64	54.8	C	0.4	81.6
	WBL	130	C	0.65	74.8	D	0.61	31.9
	WBT	228.1	E	0.91	160.3	E	0.68	113.7
	WBR	130	C	0.55	42.2	A	0.1	1
	NBL	65	**F**	0.98	**98.2**	E	0.96	**133.4**
	NBTR	206.1	C	0.47	81.6	D	0.72	18.5
	SBL	45	C	0.19	13.9	C	0.38	**150.2**
	SBT	491.1	D	0.88	174.3	D	0.8	184.1
	SBR	-	C	0.78	-	D	0.86	-

Intersection	Movement	Storage Length	AM Peak Hour			PM Peak Hour		
			LOS	v/c Ratio	95th Percentile Queue (m)	LOS	v/c Ratio	95th Percentile Queue (m)
Overlea Boulevard/Leaside Park Drive (Signalized)	***Overall***	-	***B***	***0.65***	-	***C***	***1.14***	-
	EBL	150	B	0.35	15.9	**F**	**1.14**	8.8
	EBTR	150	A	0.53	73.9	B	0.79	51.9
	WBL	204.2	A	0.1	4.6	E	0.75	1.4
	WBTR	204.2	A	0.65	99.1	B	0.9	35.2
	NBTRL	95.3	C	0.31	15.9	B	0.2	16.1
	SBTRL	104	C	0.59	29.6	**F**	1.03	25

Note: LOS = level of service; v/c = volume to capacity ratio; 95th Q = 95th Percentile Queue using HCM 2000, and Pedestrian Crosswalk LOS using HCM 2010. Critical movements are highlighted in **red** as defined by the City's TIS Guidelines. Queues exceeding available storage lengths are highlighted in **blue**.

Overlea Boulevard/William Morgan Drive. In the AM peak hour, eastbound and westbound through movements are at capacity, with storage length exceeded for the eastbound through movement. In the In the PM peak hour, the eastbound left and through movement is at capacity with again the storage length exceeded for the eastbound through movement.

Overlea Boulevard/Beth Nealson Drive. In the AM peak hour, the eastbound left, southbound left and westbound left exceed storage lengths. In the In the PM peak hour, all eastbound and westbound left movements operate at a LOS F and exceed capacity. Storage lengths are exceeded for all eastbound, westbound left and southbound left movement.

Overlea Boulevard/East York Town Centre/Costco. In the AM peak hour, all movements are operating at an acceptable level of service and below capacity. In the In the PM peak hour, storage length is exceeded for eastbound through/right and westbound through movement.

Overlea Boulevard/Thorncliffe Park Drive West. In the AM peak hour all movements are operating at an acceptable level of service and below capacity. In the In the PM peak hour, the westbound left movement is at capacity and storage length is exceeded for eastbound right and westbound left movements.

Millwood Road/Overlea Boulevard. In the AM peak hour the northbound through and southbound left movement are at capacity with storage lengths exceeded for the southbound left movement. In the In the PM peak hour, the westbound left movement is at capacity and storage length is exceeded for southbound left and westbound left movements.

Don Mills Road/Overlea Boulevard. In the AM peak hour the eastbound left and northbound left and are at capacity with storage lengths exceeded for both movements. In the In the PM peak hour, the northbound and southbound left storage lengths are exceeded.

Overlea Boulevard/Leaside Park Drive. In the AM peak hour all movements are operating at an acceptable level of service and below capacity. In the In the PM peak hour, the eastbound left and southbound movement is at capacity.

Improvements are recommended to peak hours where the future background volumes will cause intersections to operate at capacity. No recommendations are provided for intersections already at capacity from existing traffic conditions.

Overlea Boulevard/William Morgan Drive

- No improvements recommended

Overlea Boulevard/Beth Nealson Drive

- Increase cycle length 30 seconds to 140 seconds during the PM peak period.

Overlea Boulevard/East York Town Centre/Costco

- No improvements recommended

Overlea Boulevard/Thorncliffe Park Drive West

- Increase cycle length 10 seconds to 110 seconds during the PM peak period.

Millwood Road/Overlea Boulevard

- Increase cycle length 10 seconds to 120 seconds during the PM peak period.

Don Mills Road/Overlea Boulevard

- No improvements recommended

Overlea Boulevard/Leaside Park Drive

- Increase cycle length 20 seconds to 120 seconds during the PM peak period.

It should be noted that the prevailing cycle lengths along Overlea Boulevard are either 100 seconds or 110 seconds. There is, therefore, an opportunity to coordinate all intersections along Overlea Boulevard west of Don Mills Road using a common cycle length of 110-120 seconds, and a relatively minor increase in cycle length of 10-20 seconds. The critical movements in the study area network after improvements are implemented are summarized in **Table 23.**

Table 23: Future Background Traffic Conditions – Summary

Intersection	Movement	Storage Length	AM Peak Hour			PM Peak Hour		
			LOS	v/c Ratio	95th Percentile Queue (m)	LOS	v/c Ratio	95th Percentile Queue (m)
Overlea Boulevard/William Morgan Drive (Signalized)	***Overall***	-						
	EBL	10	No Improvements Recommended			No Improvements Recommended		
	EBT	165.4						
	WBTR	588.9						
	SBLR	90.1						
Overlea Boulevard/Beth Nealson Drive (Signalized)	***Overall***	-				***E***	***0.99***	**-**
	EBL	30	No Improvements Recommended			**D**	0.61	40
	EBTR	158.9				**E**	0.99	289.0
	WBL	40				**F**	0.99	144.9
	WBTR	165.4				C	0.81	**199.2**
	NBL	30				D	0.47	30
	NBT	218.3				D	0.20	34.8
	NBR	80				B	0.58	38.2
	SBL	60				F	0.91	**128.2**
	SBTR	673.7				D	0.58	83.6
Overlea Boulevard/East York Town Centre/Costco (Signalized)	***Overall***	-						
	EBL	90	No Improvements Recommended			No Improvements Recommended		
	EBTR	177.6						
	WBL	40						
	WBT	158.9						
	NBL	59						
	NBTR	59						
	SBL	68.9						
	SBT	68.9						
	SBR	68.9						
Overlea Boulevard/Thorncliffe Park Drive West (Signalized)	***Overall***	-				***C***	*1.00*	**-**
	EBL	204.2	No Improvements Recommended			B	0.10	4.1
	EBT	204.2				C	0.81	176.6
	EBR	20				C	0.64	**55.5**

	WBL	40		F	1.00	31.3
	WBTR	182.3		C	0.77	155.9
	NBL	191.7		D	0.79	86.4
	NBTR	191.7		C	0.27	25
	SBL	166.5		C	0.02	3.5
	SBTR	166.5		C	0.07	12.3
Millwood Road/Overlea Boulevard (Signalized)	***Overall***	-		***C***	***0.98***	**-**
	WBL	116.6	No Improvements Recommended	E	0.95	**181**
	WBR	116.6		B	0.66	90.5
	NBT	607.8		D	0.73	107
	NBR	608.7		B	0.82	48.9
	SBL	75		E	0.98	**133**
	SBT	145.5		B	0.42	66.1
Don Mills Road/Overlea Boulevard (Signalized)	***Overall***	-				
	EBL	90	No Improvements Recommended	No Improvements Recommended		
	EBT	588.9				
	EBR	588.9				
	WBL	130				
	WBT	228.1				
	WBR	130				
	NBL	65				
	NBTR	206.1				
	SBL	45				
	SBT	491.1				
	SBR	-				
Overlea Boulevard/Leaside Park Drive (Signalized)	***Overall***	-		***D***	***1.07***	**-**
	EBL	150	No Improvements Recommended	F	0.93	36.6
	EBTR	150		A	0.74	50.5
	WBL	204.2		E	0.67	27.5
	WBTR	204.2		E	**1.03**	290.5
	NBTRL	95.3		C	0.23	20
	SBTRL	104		F	**1.07**	**138**

Note: LOS = level of service; v/c = volume to capacity ratio; 95th Q = 95th Percentile Queue using HCM 2000, and Pedestrian Crosswalk LOS using HCM 2010. Critical movements are highlighted in **red** as defined by the City's TIS Guidelines. Queues exceeding available storage lengths are highlighted in **blue**.

Figure 20 shows the background pedestrian operations. Under future background conditions, all locations will operate with LOS 'C' or better.

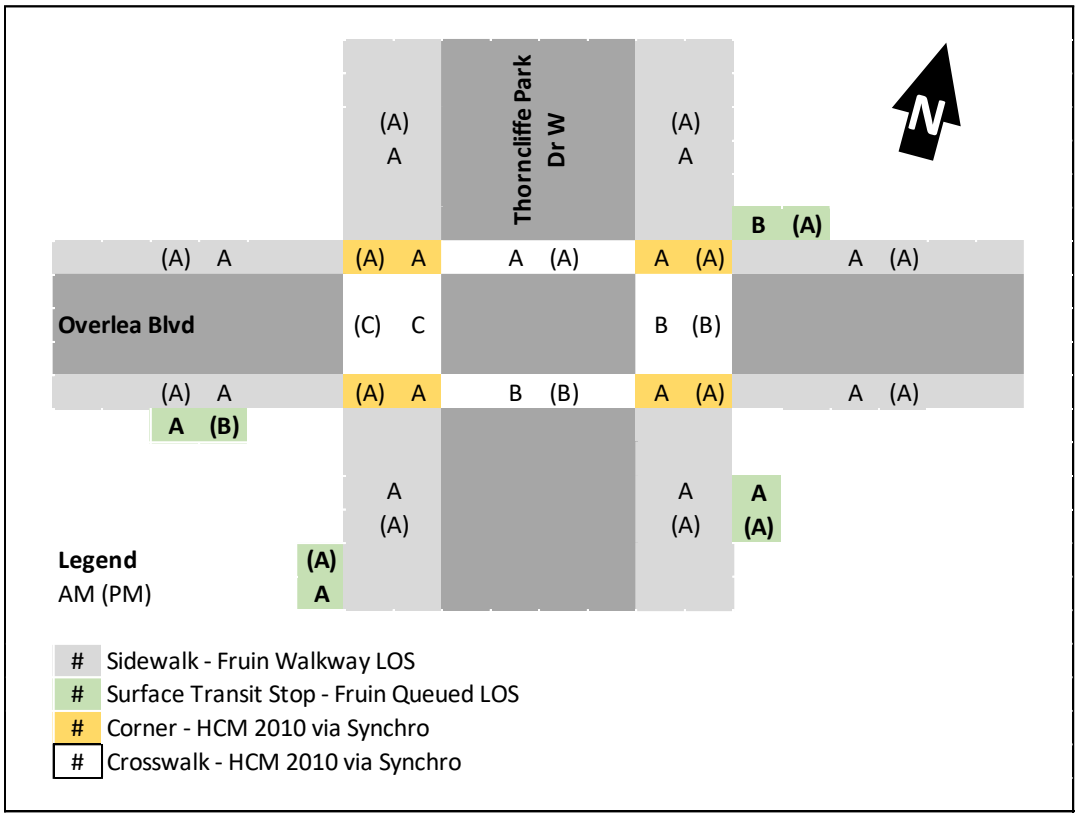


Figure 20: Background Pedestrian Operations

5. 2041 Total Future Traffic

5.1. Proposed TOC Trip Generation

5.1.1. Conceptual Site Plan

A high density mixed-use development is proposed in the vicinity of the future Thorncliffe Park Station to allow quick and efficient access to transit for residents, workers, and customers. The proposed high density development is comprised of two separate sites and the site plan statistics are shown in **Table 24**. For the purposes of the trip generation, blocks E1, E3, E4/E5 were combined for site E and blocks D and D1 were combined for site D, this was done to simplify the report.

Table 24: Site Plan Statistics (June 30th, 2023)

Use	Site West (Site E)	Site East (Site D)	Total
Residential	2,222 units	425 units	2,647 units
Retail	4,595 m^2 (49,460 ft^2)	2248 m^2 (24,197 ft^2)	6,843 m^2 (73,657 ft^2)
Office	-	16,248 m^2 (174,892 ft^2)	16,248 m^2 (174,892 ft^2)

5.1.2. Mode Splits

The 2016 TTS was used to inform the mode split assumptions for the development using existing information for nearby uses. The mode split for the area was obtained through review of TTS (2006) Zones 221 and 222, which are the zones surrounding the subject site. The TTS data and the proposed mode splits are summarized in **Table** 25. A proposed mode split was applied to account for improved transit service and modal shifts in the future.

Table 25: Existing and Proposed Mode Splits (2016 Transportation Tomorrow Survey)

Mode	Existing (TTS)				Proposed			
	AM (In)	AM (Out)	PM (In)	PM (Out)	AM (In)	AM (Out)	PM (In)	PM (Out)
Transit	25%	41%	50%	24%	35%	41%	50%	34%
Cycle	1%	1%	0%	1%	1%	1%	0%	1%
Auto Driver	51%	27%	36%	56%	41%	27%	36%	46%
Auto Passenger	5%	12%	11%	15%	5%	12%	11%	15%
Taxi/Ride Hail	1%	1%	0%	0%	1%	1%	0%	0%
Walk	17%	18%	3%	4%	17%	18%	3%	4%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

5.1.3. Person-Trip Generation

Trips were generated for the proposed development using the information provided in the Institute of Transportation Engineers (ITE) Trip Generation Manual (10th edition). Trip generation rates for Land Use 222 (Multifamily Housing – High-Rise), Land Use 820 (Shopping Centre), and Land Use 710 (General Office Building) were used. The land use assumes dense multi-use conditions for Land Uses 222 and 720, and general urban/suburban conditions were used for Land Use 820 as a dense multi-use category was not available. **Table** 26 and **Table** 27 shows the ITE trip generation rates used for each site's land use, and it includes estimated person trips per vehicle trip. The purpose of generating person trips rather than vehicle trips was to be able to assign pedestrian, cycling and transit trips to the study network. **Table** 28 and **Table** 29 shows the resulting trip generation by mode for both sites and the trip distributions for each mode.

Table 26: ITE Trip Generation Rates and Total Person Trip Generation – Site E

Site West (Site E)	Land Use	Multifamily Housing (High Rise)	Shopping Centre	General Office Building	Total
	LUC#	222	820	710	
	Size	2222	49.4601205	0	
	Setting	Dense Multi-Use Urban	General Urban/Suburban	Dense Multi-Use Urban	
AM	Average Rate	0.21	0.94	0.83	
	Equation	Ln(T) = 0.84 Ln(X) - 0.65	T = 0.50(X) + 151.78	T = 0.72(X) + 21.64	
	Entering%	12%	62%	86%	
	Exiting%	88%	38%	14%	
	Person Trips per Vehicle	2.81	NA	1.47	
	Total Person Trips (pre-interaction)	**950**	**46**	**0**	**996**
	Total Person Trips (multi-use interaction)	**807**	**40**	**0**	**847**
	Total Inbound Person Trips	**97**	**25**	**0**	**121**
	Total Outbound Person Trips	**711**	**15**	**0**	**726**
PM	Average Rate	0.19	3.81	0.87	
	Equation	Ln(T) = 0.81 Ln(X) - 0.60	Ln(T) = 0.74 Ln(X) + 2.89	T = 0.83(X) + 7.99	
	Entering%	70%	48%	17%	
	Exiting%	30%	52%	83%	
	Person Trips per Vehicle	2.17	1.43	1.46	
	Total Person Trips	**612**	**188**	**0**	**800**
	Total Person Trips	**523**	**161**	**0**	**684**
	Total Inbound Person Trips	**366**	**77**	**0**	**444**
	Total Outbound Person Trips	**157**	**84**	**0**	**241**

Note: The trip generation equation was used for residential and office land use, for retail land use, the total person trips were calculated using the average vehicular trip generation rate. For retail AM, it assumed there would be 1 person per vehicle. *Assumed 15% reduction in trip generation to account for internal trips between land uses.

*Gross trip generation for all additional development sites is the summation of trip generation of each site calculated using the equation or average rate.

Table 27: ITE Trip Generation Rates and Total Person Trip Generation – Site D

Site East (Site D)	Land Use	Multifamily Housing (High Rise)	Shopping Centre	General Office Building	Total
	LUC#	222	820	710	
	Size	425	24.1972472	174.8918472	
	Setting	Dense Multi-Use Urban	General Urban/Suburban	Dense Multi-Use Urban	
AM	Average Rate	0.21	0.94	0.83	
	Equation	Ln(T) = 0.84 Ln(X) - 0.65	T = 0.50(X) + 151.78	T = 0.72(X) + 21.64	
	Entering%	12%	62%	86%	
	Exiting%	88%	38%	14%	
	Person Trips per Vehicle	2.81	NA	1.47	
	Total Person Trips (pre-interaction)	**237**	**23**	**217**	**476**
	Total Person Trips (multi-use interaction)	**201**	**19**	**184**	**405**
	Total Inbound Person Trips	**24**	**12**	**159**	**195**
	Total Outbound Person Trips	**177**	**7**	**26**	**210**
PM	Average Rate	0.19	3.81	0.87	
	Equation	Ln(T) = 0.81 Ln(X) - 0.60	Ln(T) = 0.74 Ln(X) + 2.89	T = 0.83(X) + 7.99	
	Entering%	70%	48%	17%	
	Exiting%	30%	52%	83%	
	Person Trips per Vehicle	2.17	1.43	1.46	
	Total Person Trips	**160**	**92**	**224**	**476**
	Total Person Trips	**137**	**79**	**191**	**407**
	Total Inbound Person Trips	**96**	**38**	**33**	**166**
	Total Outbound Person Trips	**41**	**41**	**159**	**241**

Table 28: Trip Generation by Mode – Site E

Peak Hour	Direction	Mode	Mode Share	Total Person Trips
AM	Inbound	**Total**	**100%**	**121**
		Transit	35%	43
		Cycle	1%	1
		Auto driver	41%	50
		Auto passenger	5%	6
		Taxi	1%	1
		Walk	17%	21
	Outbound	**Total**	**100%**	**726**
		Transit	41%	300
		Cycle	1%	4
		Auto driver	27%	199
		Auto passenger	12%	84
		Taxi	1%	6
		Walk	18%	133
PM	Inbound	**Total**	**100%**	**444**
		Transit	50%	220
		Cycle	0%	2
		Auto driver	36%	158
		Auto passenger	11%	48
		Taxi	0%	1
		Walk	3%	14
	Outbound	**Total**	**100%**	**241**
		Transit	34%	83
		Cycle	1%	2
		Auto driver	46%	111
		Auto passenger	15%	36
		Taxi	0%	0
		Walk	4%	9

Table 29: Trip Generation by Mode – Site D

Peak Hour	Direction	Mode	Mode Share	Trips
AM	Inbound	**Total**	**100%**	**195**
		Transit	35%	68
		Cycle	1%	2
		Auto driver	41%	80
		Auto passenger	5%	9
		Taxi	1%	1
		Walk	17%	34
	Outbound	**Total**	**100%**	**210**
		Transit	41%	87
		Cycle	1%	1
		Auto driver	27%	58
		Auto passenger	12%	24
		Taxi	1%	2

Peak Hour	Direction	Mode	Mode Share	Trips
		Walk	18%	38
PM	Inbound	**Total**	**100%**	**166**
		Transit	50%	82
		Cycle	0%	1
		Auto driver	36%	59
		Auto passenger	11%	18
		Taxi	0%	1
		Walk	3%	5
	Outbound	**Total**	**100%**	**241**
		Transit	34%	83
		Cycle	1%	2
		Auto driver	46%	111
		Auto passenger	15%	36
		Taxi	0%	0
		Walk	4%	9

5.1.4. Trip Distribution

5.1.4.1. AUTOMOBILE, BICYCLE, AND WALKING TRIPS

For the automobile, bicycle and walking trips (excluding transit trips) to and from the TOC, the trip distribution to and from the gateways was based on 2016 TTS data. The local and regional road network, including the location of access ramps to major corridors and highways, was also considered. The gateway distributions are shown in **Table** 30 for the automobile and bicycle modes, and **Table** 31 for the walk mode.

Table 30: Assumed Trip Distribution for Auto and Bicycle Mode

Location	AM (IN)	AM (OUT)	PM (IN)	PM (OUT)
North via Leslie	13%	13%	12%	12%
Local 1 (Vanderhoof/Brentcliffe)	1%	1%	1%	1%
West via Eglinton	6%	8%	7%	7%
West via McRae	1%	0%	0%	1%
Local 2 (Brentcliffe/South of Wicksteed)	0%	1%	0%	1%
West via Southvale	2%	1%	2%	2%
South via Millwood	15%	20%	23%	16%
South via Leaside Park	0%	0%	0%	0%
South via Thorncliffe W	14%	8%	7%	8%
South via East York Town Centre	0%	0%	0%	0%
South via Thorncliffe E	5%	2%	2%	2%
South via Don Mills	31%	23%	25%	29%
East via Gateway/Overlea	1%	2%	1%	2%
East via Gateway N	0%	2%	1%	1%
East via St Dennis	0%	2%	1%	1%
East via Rochefort	0%	2%	1%	1%

Location	AM (IN)	AM (OUT)	PM (IN)	PM (OUT)
East via Eglinton	7%	7%	7%	9%
North via Don Mills	4%	9%	8%	6%
East via Wicksteed	0%	1%	1%	0%
TOTAL	100%	100%	100%	100%

Table 31: Assumed Trip Distribution for Walk-only Mode

Location	AM (IN)	AM (OUT)	PM (IN)	PM (OUT)
North via Banigan Connector	1%	0%	0%	1%
North via Costco Driveway	0%	45%	49%	4%
North via William Morgan Drive Eastside	0%	1%	2%	1%
South via Beth Nealson Eastside	20%	12%	11%	19%
South via Beth Nealson Westside	20%	12%	11%	19%
South via East York Town Centre Driveway Eastside	20%	10%	9%	18%
South via East York Town Centre Driveway Westside	20%	10%	9%	18%
South via Thorncliffe Park Drive West Eastside	20%	10%	9%	18%
TOTAL	100%	100%	100%	100%

5.1.5. Transit Trip Distribution

Trips between the TOC and the local transit service, including curbside bus service, buses serving the station bus bays, and the Ontario Line were estimated by applying the resulting transit gateway percentages listed in **Table** 25.

The ratios between walk-ins and walkouts to bus service versus rail service are calculated from the station transfer matrices. The resulting ratios are provided in **Table 32.**

Table 32: TOC Trips to Buses and Rail

Time Period	Percentages		TOC		
Mode	Rail	Bus	Total	Rail	Bus
From TOC to Transit	68%	32%	323	221	103
From Transit to TOC	83%	17%	200	166	34
From TOC to Transit	83%	17%	253	209	43
From Transit to TOC	68%	32%	282	193	90

In order to distinguish which bus routes the TOC to-transit trips choose, and ultimately which TOC trips walk to the bus bays versus to the curbside bus stops, the bus route usage splits provided in **Table 15** and **Table 16** were then applied to the percentage of TOC trips choosing bus instead of rail. The resulting route choices for walk-in/walkout trips to and from transit is shown in **Table 33.**

Table 33: Assumed Trip Distribution for Transit Mode

Time Period	Direction	Ontario Line Rail	Route 100EB	Route 100WB	Route 25	Route 72	Route 88	Total
	Location->	Station	Curbside	Curbside	Station	Station	Station	
AM	From Add. Dev. to Transit	68%	1%	3%	11%	8%	9%	100%
	From Transit to TOC	83%	1%	2%	4%	6%	4%	100%
PM	From TOC to Transit	83%	2%	1%	4%	6%	4%	100%
	From Transit to TOC	68%	3%	1%	11%	8%	9%	100%

Transit trips to and from the TOC were assigned to the station if they were using the Ontario Line rail service, route 25, route 72 or route 88, and the existing curbside bus stops on the northeast and southwest corners of Thorncliffe Park Drive West/Overlea Boulevard if they were using Route 100 eastbound and westbound.

5.2. Future Total Traffic Volumes

The resulting Future Total 2041 Future Background traffic volumes are shown in **Figure 21** and **Figure 22**.

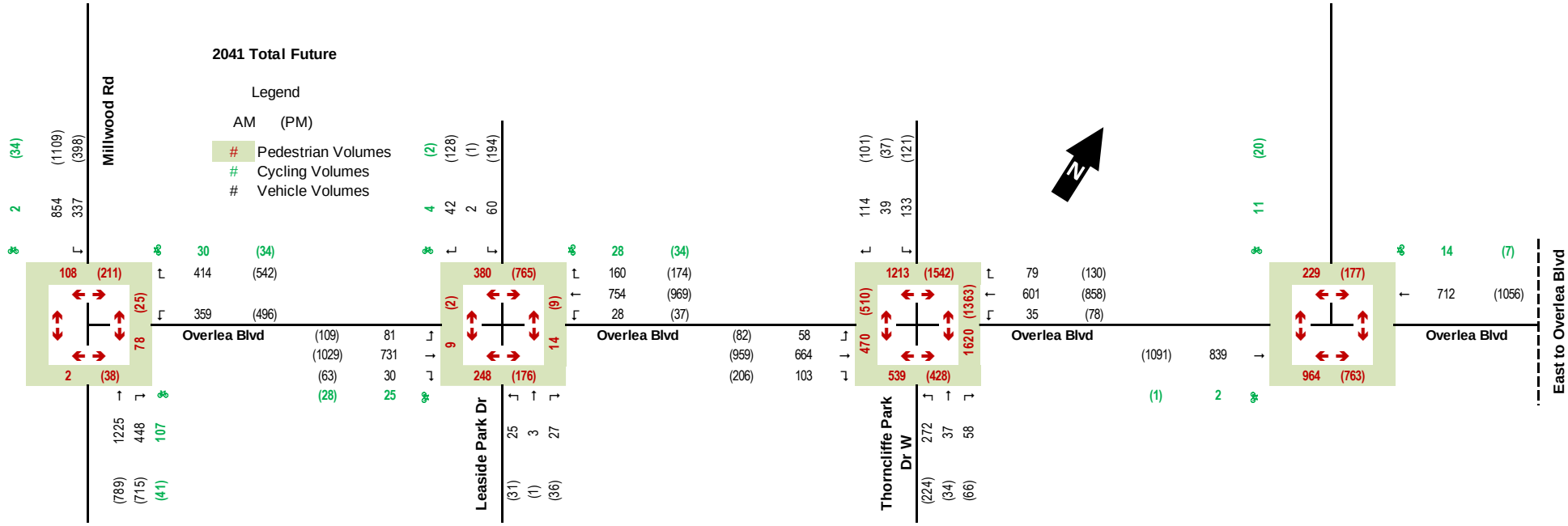


Figure 21: Total Future Volumes (2041) – Millwood Rd to TOC E DW

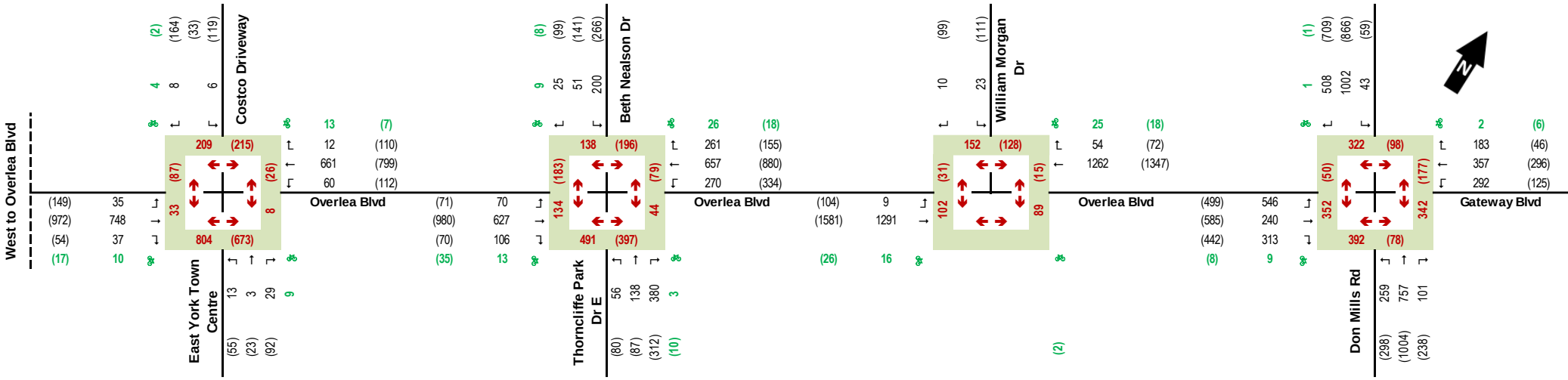


Figure 22: Total Future Volumes (2041) – TOC E DW to Don Mills Rd

5.3. Future Total Traffic Conditions

Table 34 summarizes the traffic operations using either existing timings or improved timings. Detailed intersection capacity analysis in Synchro is shown in **Appendix A.**

Table 34: Future Total Traffic Conditions

Intersection	Movement	Storage Length	AM Peak Hour			PM Peak Hour		
			LOS	v/c Ratio	95th Percentile Queue (m)	LOS	v/c Ratio	95th Percentile Queue (m)
Overlea Boulevard/William Morgan Drive (Signalized)	***Overall***	-	***E***	***1.12***	**-**	***F***	***1.92***	**-**
	EBL	10	B	0.13	1.0	F	1.92	63.0
	EBT	165.4	E	1.12	294.0	F	1.15	447.0
	WBTR	588.9	F	1.1	344.5	E	1.08	397.0
	SBLR	90.1	C	0.08	11.3	D	0.58	58.2
Overlea Boulevard/Beth Nealson Drive (Signalized)	***Overall***	-	***D***	***1.06***	**-**	***E***	***1.08***	**-**
	EBL	30	F	0.81	42.7	F	0.79	48.5
	EBTR	158.9	F	1.06	207.8	F	1.08	335.4
	WBL	40	D	0.86	48.7	F	0.99	144.9
	WBTR	165.4	C	0.93	88.3	C	0.87	242.8
	NBL	30	C	0.15	18.6	E	0.5	38.2
	NBT	218.3	C	0.25	37.9	D	0.2	34.8
	NBR	80	B	0.58	42.7	B	0.58	38.8
	SBL	60	D	0.56	61.2	F	0.91	128.2
	SBTR	673.7	B	0.15	19.1	D	0.58	84
Overlea Boulevard/East York Town Centre/Costco (Signalized)	***Overall***	-	***C***	***0.73***	**-**	***D***	***1.01***	**-**
	EBL	90	A	0.11	7.3	D	0.71	46.1
	EBTR	177.6	C	0.73	195.6	E	1.01	271.7
	WBL	40	B	0.24	11.1	C	0.58	30.2
	WBT	158.9	C	0.61	148.7	D	0.9	222.3
	NBL	59	C	0.04	6	C	0.18	17.1
	NBTR	59	A	0.09	6.8	A	0.26	14.9
	SBL	68.9	C	0.02	3.9	C	0.41	32.8
	SBT	68.9	C	0.24	1.3	C	0.07	11.1
	SBR	68.9	A	0.24	1	A	0.37	16.6

Intersection	Movement	Storage Length	AM Peak Hour			PM Peak Hour		
			LOS	v/c Ratio	95th Percentile Queue (m)	LOS	v/c Ratio	95th Percentile Queue (m)
Overlea Boulevard/Thorncliffe Park Drive West (Signalized)	***Overall***	-	***C***	***0.82***	-	***D***	***0.99***	-
	EBL	204.2	C	0.46	23.8	F	0.99	32
	EBT	204.2	D	0.82	142.6	C	0.8	174.4
	EBR	20	B	0.46	20.3	C	0.64	55.5
	WBL	40	C	0.35	15.2	F	0.99	31.1
	WBTR	182.3	C	0.69	115	D	0.98	236.1
	NBL	191.7	C	0.66	59.6	E	0.87	93.1
	NBTR	191.7	B	0.2	23.8	C	0.29	29.1
	SBL	166.5	D	0.64	52.8	D	0.55	42.9
	SBTR	166.5	C	0.39	38.5	C	0.36	41.3
Millwood Road/Overlea Boulevard (Signalized)	***Overall***	-	***E***	***1.13***	-	***C***	***1.03***	-
	WBL	116.6	E	0.86	129.9	D	0.98	121.9
	WBR	116.6	B	0.58	79.7	C	0.7	112.9
	NBT	607.8	F	1.13	203.5	D	0.74	107.6
	NBR	608.7	B	0.79	80.5	B	0.85	77.8
	SBL	75	F	1.11	134.9	F	1.03	147
	SBT	145.5	B	0.32	41.8	B	0.42	66.1
Don Mills Road/Overlea Boulevard (Signalized)	***Overall***	-	***E***	1.16	-	***D***	1.17	-
	EBL	90	F	1.05	126.1	E	0.89	103.7
	EBT	588.9	D	0.52	88.5	D	0.87	226.7
	EBR	588.9	D	0.79	95.2	C	0.69	109.6
	WBL	130	C	0.65	74.8	D	0.62	31.9
	WBT	228.1	E	0.91	160.3	E	0.7	115.2
	WBR	130	C	0.55	42.2	A	0.11	1
	NBL	65	F	1.16	127	F	1.17	141
	NBTR	206.1	C	0.47	81.6	D	0.72	133.4
	SBL	45	C	0.19	13.9	C	0.38	18.5
	SBT	491.1	D	0.88	174.3	D	0.8	150.2
	SBR	-	D	0.84	125.5	D	0.95	269.7
	Overall	-	***B***	***0.72***	-	***D***	***1.07***	-

Intersection	Movement	Storage Length	AM Peak Hour			PM Peak Hour		
			LOS	v/c Ratio	95th Percentile Queue (m)	LOS	v/c Ratio	95th Percentile Queue (m)
Overlea Boulevard/Leaside Park Drive (Signalized)	EBL	150	B	0.39	17.7	**F**	0.93	15.9
	EBTR	150	A	0.56	79.3	B	0.79	73.9
	WBL	204.2	A	0.11	4.7	**F**	0.75	4.6
	WBTR	204.2	B	0.72	128	E	**1.06**	99.1
	NBTRL	95.3	C	0.31	15.9	C	0.23	15.9
	SBTRL	104	D	0.59	29.6	**F**	**1.07**	29.6

Note: LOS = level of service; v/c = volume to capacity ratio; 95th Q = 95th Percentile Queue using HCM 2000, and Pedestrian Crosswalk LOS using HCM 2010. Critical movements are highlighted in **red** as defined by the City's TIS Guidelines. Queues exceeding available storage lengths are highlighted in **blue**.

Overlea Boulevard/William Morgan Drive. In the AM peak hour, eastbound and westbound through movements are at capacity, with storage length exceeded for the eastbound through movement. In the PM peak hour, the eastbound left, eastbound through and all westbound movement are at capacity with the storage length exceeded for the eastbound left and through movement.

Overlea Boulevard/Beth Nealson Drive. In the AM peak hour, the eastbound through and right are at capacity with all eastbound and westbound left movement exceeding storage lengths. In the PM peak hour, all eastbound and westbound left movements operate at a LOS F and exceed capacity. Storage lengths are exceeded for all eastbound, westbound left and southbound left movement.

Overlea Boulevard/East York Town Centre/Costco. In the AM peak hour, the eastbound through/right movement exceeds its storage length. In the PM peak hour, the eastbound through/right movement is at capacity and storage length is exceeded for eastbound through/right movement.

Overlea Boulevard/Thorncliffe Park Drive West. In the AM peak hour all movements are operating at an acceptable level of service and below capacity. In the PM peak hour, eastbound and westbound left movements are operating at a LOS F with storage exceeded for the westbound through/right movement.

Millwood Road/Overlea Boulevard. In the AM peak hour the northbound through and southbound left movement are at capacity with storage lengths exceeded for the southbound left movement. In the PM peak hour, the southbound left movement is at capacity and storage length is exceeded for southbound left and westbound left movements.

Don Mills Road/Overlea Boulevard. In the AM peak hour the eastbound left and northbound left movements are at capacity with storage lengths exceeded for both movements. In the In the PM

peak hour, the northbound left movement is at capacity with storage exceeded for northbound and southbound movements.

Overlea Boulevard/Leaside Park Drive. In the AM peak hour all movements are operating at an acceptable level of service and below capacity. In the PM peak hour, the westbound through/right and southbound movements are at capacity.

Improvements are recommended to peak hours where the total future volumes will cause intersections to operate at capacity. No recommendations are provided for intersections already at capacity from future background traffic conditions.

Overlea Boulevard/William Morgan Drive

- No improvements recommended

Overlea Boulevard/Beth Nealson Drive

- Increase cycle length 10 seconds to 120 seconds during the AM peak period
- Increase cycle length 10 seconds to 150 seconds during the PM peak period and optimize splits

Overlea Boulevard/East York Town Centre/Costco

- Increase cycle length 10 seconds to 110 seconds during the PM peak period

Overlea Boulevard/Thorncliffe Park Drive West

- No improvements recommended

Millwood Road/Overlea Boulevard

- Optimize splits (southbound left) during the PM peak period.

Don Mills Road/Overlea Boulevard

- Optimize splits (eastbound left and northbound left) during the AM peak period
- Optimize splits (eastbound left) during the PM peak period

Overlea Boulevard/Leaside Park Drive

- Optimize splits (eastbound through/right and southbound through) during the PM peak period.

The results of the scenario containing both mitigation measures are shown in **Table 35.**

Table 35: Total Future Traffic Operations with Signal Timing Improvements

Intersection	Movement	Storage Length	AM Peak Hour			PM Peak Hour		
			LOS	v/c Ratio	95th Percentile Queue (m)	LOS	v/c Ratio	95th Percentile Queue (m)
Overlea Boulevard/William Morgan Drive (Signalized)	***Overall***	-						
	EBL	10	No Improvements Recommended			No Improvements Recommended		
	EBT	165.4						
	WBTR	588.9						
	SBLR	90.1						
Overlea Boulevard/Beth Nealson Drive (Signalized)	***Overall***	-	***D***	*0.93*	-	***E***	***1.00***	-
	EBL	30	E	0.67	**40.4**	**E**	0.69	**47.1**
	EBTR	158.9	D	0.93	**200.4**	**F**	1.00	**337.8**
	WBL	40	D	0.88	**89.4**	**F**	1.00	**156.9**
	WBTR	165.4	C	0.88	90	C	0.83	**230.3**
	NBL	30	C	0.17	20.8	E	0.60	44.5
	NBT	218.3	C	0.27	42.7	D	0.21	37..7
	NBR	80	B	0.66	65	B	0.62	48.2
	SBL	60	D	0.62	**69.5**	**F**	1.00	**144.6**
	SBTR	673.7	C	0.16	21.9	D	0.64	92.8
Overlea Boulevard/East York Town Centre/Costco (Signalized)	***Overall***	-	***C***	***0.73***	-	***C***	***0.96***	-
	EBL	90	No Improvements Recommended			C	0.69	45.2
	EBTR	177.6				D	0.96	**278.5**
	WBL	40				C	0.64	36.6
	WBT	158.9				C	0.56	223.7
	NBL	59				C	0.2	19.2
	NBTR	59				A	0.27	16.6
	SBL	68.9				D	0.45	37.4
	SBT	68.9				C	0.08	12.6
	SBR	68.9				B	0.4	20.8
Overlea Boulevard/Thorncliffe Park Drive West (Signalized)	***Overall***	-						
	EBL	204.2	No Improvements Recommended			No Improvements Recommended		
	EBT	204.2						
	EBR	20						

Intersection	Movement	Storage Length	AM Peak Hour			PM Peak Hour		
			LOS	v/c Ratio	95th Percentile Queue (m)	LOS	v/c Ratio	95th Percentile Queue (m)
	WBL	40						
	WBTR	182.3						
	NBL	191.7						
	NBTR	191.7						
	SBL	166.5						
	SBTR	166.5						
Millwood Road/Overlea Boulevard (Signalized)	***Overall***	-				***C***	***1.00***	**-**
	WBL	116.6	No Improvements Recommended			E	0.99	**121.9**
	WBR	116.6				C	0.68	109.1
	NBT	607.8				D	0.79	111.1
	NBR	608.7				B	0.87	98.5
	SBL	75				E	1.00	**149.4**
	SBT	145.5				B	0.41	65.4
Don Mills Road/Overlea Boulevard (Signalized)	***Overall***	-	***E***	**0.98**	**-**	***D***	**0.99**	**-**
	EBL	90	**F**	0.97	**119.2**	**F**	0.96	**112.6**
	EBT	588.9	D	0.52	88.5	D	0.86	226.7
	EBR	588.9	C	0.71	60.3	C	0.65	109.6
	WBL	130	C	0.65	74.8	E	0.82	31.9
	WBT	228.1	F	0.96	166.6	E	0.73	115.2
	WBR	130	C	0.57	42.2	A	0.11	1
	NBL	65	**F**	0.96	**115**	**F**	0.99	**128.1**
	NBTR	206.1	C	0.47	81.6	D	0.67	133.4
	SBL	45	C	0.19	13.9	C	0.36	18.5
	SBT	491.1	E	0.98	198.8	D	0.81	150.2
	SBR	-	D	0.85	138.8	E	0.99	269.7
Overlea Boulevard/Leaside Park Drive (Signalized)	***Overall***	-				***E***	***1.07***	**-**
	EBL	150	No Improvements Recommended			**F**	0.95	15.9
	EBTR	150				C	0.78	73.9
	WBL	204.2				**F**	0.72	4.6
	WBTR	204.2				E	**1.04**	99.1

Intersection	Movement	Storage Length	AM Peak Hour			PM Peak Hour		
			LOS	v/c Ratio	95th Percentile Queue (m)	LOS	v/c Ratio	95th Percentile Queue (m)
	NBTRL	95.3				C	0.23	15.9
	SBTRL	104				**F**	**1.07**	29.6

Note: LOS = level of service; v/c = volume to capacity ratio; 95th Q = 95th Percentile Queue using HCM 2000, and Pedestrian Crosswalk LOS using HCM 2010. Critical movements are highlighted in **red** as defined by the City's TIS Guidelines. Queues exceeding available storage lengths are highlighted in **blue**.

At the intersection of Don Mills/Overlea, optimizing signal timing will alleviate capacity issues; however, some capacity issues are still expected to persist.

Movements for all updated intersections are expected to operate at a v/c of 1.07 or less with the recommended improvements implemented.

Figure 23 shows the Future Total pedestrian operations at the intersection of Overlea Blvd and Thorncliffe Park Drive West. Several intersection corners and crosswalks are likely to operate at LOS 'C' or better. The level of service of the pedestrian areas directly in front of the station entrance is anticipated to be LOS 'C' and LOS 'B' during AM and PM peak hours, respectively.

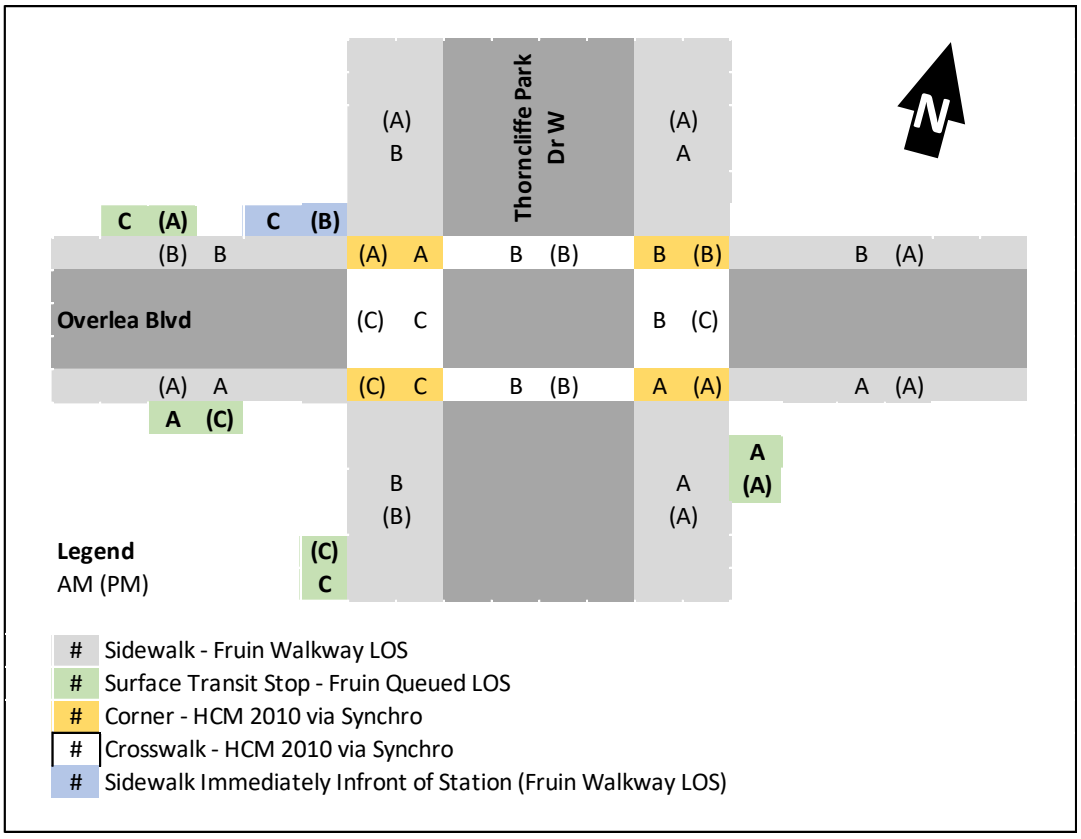


Figure 23: Future Pedestrian Operations

6. Parking and Loading Assessment

The proposed parking supply was originally reviewed based on the parking requirements of the City-wide Zoning By-law 569-2013, as amended (Office Consolidation) Version Date: May 1st, 2020. The by-law includes specific requirements for parking (bicycle and vehicle) as well as loading. However, the City enacted and passed Zoning By-law 89-2022 on February 3, 2022, which amends By-law 569-2013 and officially shifts the City's approach to one of a maximum limit on supplied parking at new developments instead of a minimum supply requirement. Although By-law 569-2013 does not apply to the site, the City is in the practice of updating site's zoned under the previous zoning by-law (438-86) to the current by-law, 569-2013, through the development process. Therefore, the parking requirements under 569-2013, as amended by 89-2022, is used to assess parking requirements for the site. Our assessment has review of both by-laws but only the applicable by-law has been documented below.

Both parking and loading assessments were conducted per site plans which were received on August, 2023.

6.1. Policy Area Designations and Parking Requirements

The current city-wide Zoning By-law 89-2022, an amendment to By-law 569-2013 includes multiple sets of vehicle parking rates with diminishing requirements for some areas that have better transit accessibility.

As shown in **Figure 24**, Both sites E and D will follow vehicle and bicycle parking requirements outlined in By-law 89-2022 Policy Zone B and Zone 1 respectively.

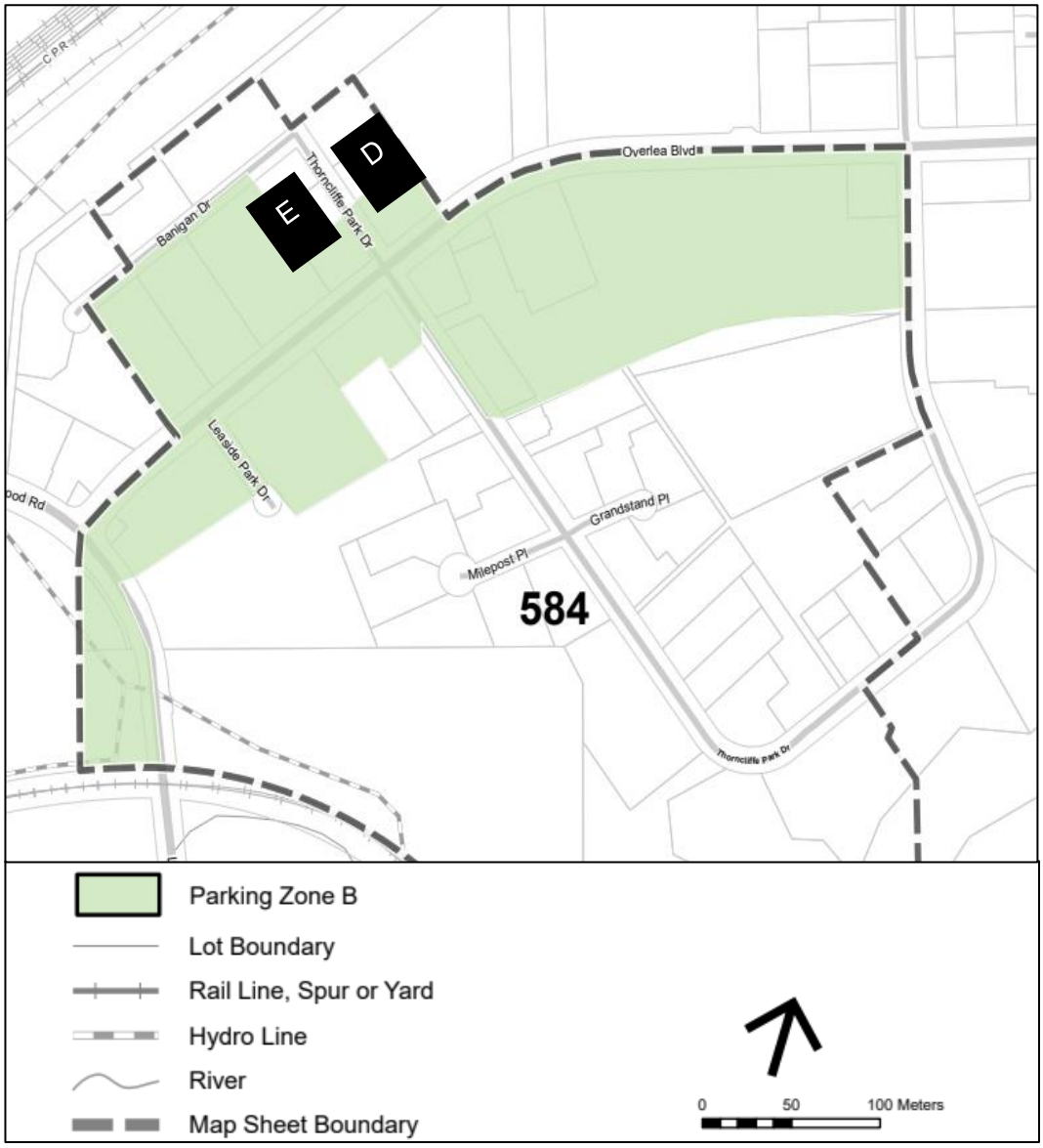


Figure 24: City of Toronto Policy Areas Source: https://www.toronto.ca/legdocs/bylaws/2022/law0089-diagram-1-pz-k-map.pdf

Vehicular Parking Supply

Both sites are composed of multiple blocks. Site E is comprised of blocks E1, E3, and E4/5. Site D is comprised of blocks D and D1.

Block E1

The total proposed vehicular parking supply for Block E1 is 252 spaces. The development proposes 5 car-share spaces and 48 nonresidential parking spaces. As a result, the blended visitor and residential parking rates are 2+0.05 and 0.31 per dwelling units, respectively. Parking will be provided by a three level below-grade parking garage. There is no surface parking. The parking supply for visitor parking and publicly accessible areas below grade will be separated from residential parking areas.

Block E3

The total proposed vehicular parking supply for Block E3 is 334 spaces. The development proposes 15 car-share spaces and 63 nonresidential parking spaces. As a result, the blended visitor and residential parking rates are 2+0.05 and 0.36 per dwelling units, respectively. Parking will be provided by a three level below-grade parking garage. The parking supply for visitor parking and publicly accessible areas below grade will be separated from residential parking areas.

Block E4/E5

The total proposed vehicular parking supply for Block E4/E5 is 333 spaces. The development proposes 15 car-share spaces, 48 nonresidential parking spaces As a result, the blended visitor and residential parking rates are 2+0.05 and 0.35 per dwelling units, respectively. Parking will be provided by a three level below-grade parking garage. There is no surface parking. The parking supply for visitor parking and publicly accessible areas below grade will be separated from residential parking areas.

Block D

The total proposed vehicular parking supply for Block D is 171 spaces with 20 retail store parking spaces, and 151 office parking spaces (Includes 85 from block D and 66 from block D1). Parking will be provided by a three level below-grade parking garage.

Block D1

The total proposed vehicular parking supply for Block D1 is 208 spaces. The development proposes 15 car-share spaces and 40 nonresidential parking spaces. As a result, the blended visitor and residential parking rates are 2+0.05 and 0.39 per dwelling units, respectively. Parking will be provided by a three level below-grade parking garage. There is no surface parking. The parking supply for visitor parking and publicly accessible areas below grade will be separated from residential parking areas. The parking supply for all Blocks in both sites are shown below in **Table** 36.

Table 36: Vehicle Parking Supply

Vehicle Parking Space Type				
Block	**Residential (including Visitor and Carshare)**	**Office**	**Retail and Commercial**	**Total**
E1	**204**	**0**	**48**	**252**
E3	**271**	**0**	**63**	**334**
E4/E5	**299**	**0**	**49**	**333**
D	**0**	**151**	**20**	**171**
D1	**168**	**0**	**40**	**208**

6.2. Vehicle Parking Requirements

Vehicle parking requirements based on using By-law 569-2013 By-law 89-2022 policy zone B are shown in **Table 37, Table 38, Table 39, Table 40 and Table 41.** City Council has adopted lower standards for approval for new developments, and more recently to eliminate parking minimums for residential multi-family dwellings. These actions have been bolstered by Ontario's New Five-Year Climate Change Action Plan and other initiatives by the City of Toronto. There has also been a decline in residential parking demand and vehicle ownership in the areas surrounding downtown Toronto.

This area is well served by transit, with access to the Ontario Line and will also be well served by a number of bus routes. Also, a very high transit-dependency is the fundamental characteristic of Transit Oriented Communities, as they promote reduced auto-dependency.

Toronto Green Standard Version 4 states that "all residential parking spaces provided for dwelling units located in an apartment building, mixed use building, multiple dwelling unit building, excluding visitor parking spaces, must include an energized outlet capable of providing level 2 charging or higher to the parking space:"[5]. All residential parking spaces will include an energized outlet capable of providing a minimum of Level 2 charging.

[5] https://www.toronto.ca/city-government/planning-development/official-plan-guidelines/toronto-green-standard/toronto-green-standard-version-4/mid-to-high-rise-residential-non-residential-version-4/air-quality/

Table 37: Vehicle Parking Zoning By-law Requirements – Block E1

Block	Land Use	Size (Unit or sqm)	By-law No. 89-2022 Policy Zone B			
			Minimum Rate	Maximum Rate	Minimum # of Spaces	Maximum # of Spaces
Block E1	Bachelor	0	-	0.7/unit	-	0
	1-bed	439	-	0.8/unit	-	351
	2-bed	148	-	0.9/unit	-	133
	3-bed	76	-	1.1/unit	-	83
	Visitors	663	2+(0.05/unit)	5+(0.1/unit)	35	71
	Retail & General Commerce	1718	-	4/100sqm	-	68
	Office	0	-	1/100sqm	-	0
Total Residential					**35**	**638**
Total Non-Residential					**-**	**68**

Table 38: Vehicle Parking Zoning By-law Requirements – Block E3

Block	Land Use	Size (Unit or sqm)	By-law No. 89-2022 Policy Zone B			
			Minimum Rate	Maximum Rate	Minimum # of Spaces	Maximum # of Spaces
Block E3	Bachelor	2	-	0.7/unit	-	1
	1-bed	470	-	0.8/unit	-	376
	2-bed	196	-	0.9/unit	-	176
	3-bed	93	-	1.1/unit	-	102
	Visitors	761	2+(0.05/unit)	5+(0.1/unit)	40	81
	Retail & General Commerce	1993	-	4/100sqm	-	79
	Office	0	-	1/100sqm	-	0
Total Residential					**40**	**736**
Total Non-Residential					**-**	**80**

Table 39: Table 17: Vehicle Parking Zoning By-law Requirements – Block E4/E5

Block	Land Use	Size (Unit or sqm)	By-law No. 89-2022 Policy Zone B			
			Minimum Rate	Maximum Rate	Minimum # of Spaces	Maximum # of Spaces
Block E4/E5	Bachelor	0	-	0.7/unit	-	0
	1-bed	539	-	0.8/unit	-	431
	2-bed	183	-	0.9/unit	-	164
	3-bed	91	-	1.1/unit	-	100
	Visitors	813	2+(0.05/unit)	5+(0.1/unit)	42	86
	Retail & General Commerce	843	-	4/100sqm	-	33
	Office	0	-	1/100sqm	-	0
Total Residential					**42**	**781**
Total Non-Residential					**-**	**33**

Table 40: Table 17: Vehicle Parking Zoning By-law Requirements – Block D

Block	Land Use	Size (Unit or sqm)	By-law No. 89-2022 Policy Zone B			
			Minimum Rate	Maximum Rate	Minimum # of Spaces	Maximum # of Spaces
Block D	Bachelor	0	-	0.7/unit	-	0
	1-bed	0	-	0.8/unit	-	0
	2-bed	0	-	0.9/unit	-	0
	3-bed	0	-	1.1/unit	-	0
	Visitors	0	2+(0.05/unit)	5+(0.1/unit)	0	5
	Retail & General Commerce	2048	-	4/100sqm	-	81
	Office	16137	-	1/100sqm	-	161
Total Residential					**0**	**5**
Total Non-Residential					**-**	**242**

Table 41: Vehicle Parking Zoning By-law Requirements – Block D1

Block	Land Use	Size (Unit or sqm)	By-law No. 89-2022 Policy Zone B			
			Minimum Rate	Maximum Rate	Minimum # of Spaces	Maximum # of Spaces
Block D1	Bachelor	0	-	0.7/unit	-	0
	1-bed	260	-	0.8/unit	-	208
	2-bed	121	-	0.9/unit	-	108
	3-bed	47	-	1.1/unit	-	51
	Visitors	428	2+(0.05/unit)	5+(0.1/unit)	23	47
	Retail & General Commerce	189	-	4/100sqm	-	7
	Office	0	-	1/100sqm	-	0
Total Residential					**23**	**414**
Total Non-Residential					**-**	**7**

Table 42 below shows the comparison to parking requirements under Zoning By-law 89-2022, all parking requirements have been met.

Table 42: Parking Requirements Summary

Site	Minimum	Maximum	Supplied	Supplied Parking Rate
Building E1				
Residential	0	638	204	0.31/unit
Visitor	35	71	35	2+0.05/unit
Retail	0	68	13	0.72/100sm
Building E3				
Residential	0	736	271	0.36/unit
Visitor	40	81	40	2+0.05/unit
Retail	0	79	22	1.11/100sm
Building E4/E5				
Residential	0	781	299	0.35/unit
Visitor	42	86	43	2+0.05/unit
Retail	0	33	6	0.70/100sm
Building D				
Residential	-	-	-	-
Retail	-	-	20	0.98/100sm
Office	-	242	151	0.94/100sm
Site D1				
Residential	0	414	168	0.39/unit
Visitor	23	47	23	2+0.05/unit
Retail	0	7	17	8.99/100sm

Accessible parking requirements were reviewed based on the new by-laws. **Table 43, Table 44, Table 45, Table 46 and Table 47** show the calculation of effective parking and required accessible parking for all sites. All accessible parking requirements have been met.

Table 43: Accessible Parking Requirements and Supply – Block E1

Type	Units	By-law No. 89-2022	
		Effective Rate	Effective Spaces
Dwelling units - Bachelor	0	0.7	0
Dwelling units - One Bed	439	0.8	352
Dwelling units - Two Bed	148	0.9	134
Dwelling units - Three or more	76	1.1	84
Residential Visitor	663	0.1	67
Retail Store (sqm)	1718	2/100 sqm GFA	35
Office (sqm)	0	1/100 sqm GFA	0
		Total Effective	672
		Total Accessible Parking Provided	16
		Greater of the above (Actual effective)	672
		Required Accessible Parking (if the number of effective parking spaces is more than 100, a minimum of 5 accessible parking spaces plus 1 accessible parking space for every 50 effective parking spaces or part thereof in excess of 100 parking spaces)	16
		Accessible parking Provided	16
		Surplus/Deficit	0

Table 44: Accessible Parking Requirements and Supply – Building E3

Type	Units	By-law No. 89-2022	
		Effective Rate	Effective Spaces
Dwelling units - Bachelor	2	0.7	2
Dwelling units - One Bed	470	0.8	376
Dwelling units - Two Bed	196	0.9	177
Dwelling units - Three or more	93	1.1	103
Residential Visitor	761	0.1	77
Retail Store (sqm)	2000	2/100 sqm GFA	40
Office (sqm)	0	1/100 sqm GFA	0
		Total Effective	775
		Total Accessible Parking Provided	18
		Greater of the above (Actual effective)	775
		Required Accessible Parking (if the number of effective parking spaces is more than 100, a minimum of 5 accessible parking spaces plus 1 accessible parking space for every 50 effective parking spaces or part thereof in excess of 100 parking spaces)	18
		Accessible parking Provided	18
		Surplus/Deficit	0

Table 45: Accessible Parking Requirements and Supply – Block E4/E5

Type	Units	By-law No. 89-2022	
		Effective Rate	Effective Spaces
Dwelling units - Bachelor	0	0.7	0
Dwelling units - One Bed	539	0.8	432
Dwelling units - Two Bed	183	0.9	165
Dwelling units - Three or more	91	1.1	101
Residential Visitor	813	0.1	82
Retail Store (sqm)	854	2/100 sqm GFA	18
Office (sqm)	0	1/100 sqm GFA	0
		Total Effective	798
		Total Accessible Parking Provided	18
		Greater of the above (Actual effective)	798
		Required Accessible Parking (if the number of effective parking spaces is more than 100, a minimum of 5 accessible parking spaces plus 1 accessible parking space for every 50 effective parking spaces or part thereof in excess of 100 parking spaces)	18
		Accessible parking Provided	18
		Surplus/Deficit	0

Table 46: Accessible Parking Requirements and Supply – Block D

Type	Units	By-law No. 89-2022	
		Effective Rate	Effective Spaces
Dwelling units - Bachelor	0	0.7	0
Dwelling units - One Bed	0	0.8	0
Dwelling units - Two Bed	0	0.9	0
Dwelling units - Three or more	0	1.1	0
Residential Visitor	0	0.1	0
Retail Store (sqm)	2057	2/100 sqm GFA	41
Office (sqm)	16248	1/100 sqm GFA	161
		Total Effective	201
		Total Accessible Parking Provided	7
		Greater of the above (Actual effective)	201
		Required Accessible Parking (if the number of effective parking spaces is more than 100, a minimum of 5 accessible parking spaces plus 1 accessible parking space for every 50 effective parking spaces or part thereof in excess of 100 parking spaces)	7
		Accessible parking Provided	7
		Surplus/Deficit	0

Table 47: Accessible Parking Requirements and Supply – Block D1

Type	Units	By-law No. 89-2022	
		Effective Rate	Effective Spaces
Dwelling units - Bachelor	0	0.7	0
Dwelling units - One Bed	260	0.8	208
Dwelling units - Two Bed	121	0.9	108
Dwelling units - Three or more	47	1.1	51
Residential Visitor	428	0.1	42
Retail Store (sqm)	191	2/100 sqm GFA	3
Office (sqm)	0	1/100 sqm GFA	0
		Total Effective	412
		Total Accessible Parking Provided	11
		Greater of the above (Actual effective)	412
		Required Accessible Parking (if the number of effective parking spaces is more than 100, a minimum of 5 accessible parking spaces plus 1 accessible parking space for every 50 effective parking spaces or part thereof in excess of 100 parking spaces)	11
		Accessible parking Provided	11
		Surplus/Deficit	0

6.3. Bicycle Parking Supply

Bicycle parking for the site will be provided in the form of short-term and long-term bicycle parking spaces. Short-term bicycle parking will be provided at-grade as well as underground, and will serve residential visitors, commercial patrons, and potentially residents who are making short stops at home. Long-term bicycle parking will be within each Block. The bicycle parking supply is summarized in **Table 48.** As per requirements of Toronto Green Standard Version 4, at least a 15% long-term bicycle parking spaces of long-term bicycle parking spaces will be adjacent to an Energized Outlet (120 V). Thus, meeting the requirement that 15% long-term bicycle parking spaces shall include an Energized Outlet (120 V).

Table 48: Bicycle Parking Supply

Block	Bicycle Parking Space Type				
	Residential Long Term	Residential Short Term	Non-residential Long Term	Non-residential Short Term	Total
E1	597	133	4	9	**743**
E3	685	153	4	9	**851**
E4/E5	732	163	2	6	**903**
D	0	0	38	46	**84**
D1	386	86	1	4	**477**

6.4. Bicycle Parking Requirements

Bicycle parking requirements were also assessed based on By-law 569-2013. Overall, the proposed bicycle parking supply is anticipated to serve the development well, there is a surplus of bicycle parking for the proposed development, which is aimed at encouraging the utilization of cycling as an active mode of transportation. There are no bicycle parking requirements for transit as per the By-law 569-2013. A summary of all Bicycle parking requirements are below in **Table 49, Table 50, Table 51, Table 52 and Table 53.** All bicycle parking requirements are met for each block.

Table 49: Bicycle Parking Zoning By-law Requirements – Block E1

Land Use		Unit or per 100 sqm	By-law No. 569-2013			
			Long Term		Short Term	
			Rate	# required	Rate	# required
Block E1	Residential	663	0.9	597	0.2	133
	Retail	1718	0.2	4	3+(0.3/unit)	9
	Office	0	0.2	0	3+(0.2/unit)	0
	Transit	-	-	-	-	-
Total Required			-	601	-	142
Proposed			-	601	-	142

Surplus / Deficit	-	0	-	0

Table 50: Bicycle Parking Zoning By-law Requirements – Block E3

Land Use		Unit or per 100 sqm	By-law No. 569-2013			
			Long Term		Short Term	
			Rate	# required	Rate	# required
Block E3	Residential	761	0.9	685	0.2	153
	Retail	1993	0.2	4	3+(0.3/unit)	9
	Office	0	0.2	0	3+(0.2/unit)	0
	Transit	-	-	-	-	-
Total Required			-	689	-	162
Proposed			-	689	-	162
Surplus / Deficit			-	0	-	0

Table 51: Bicycle Parking Zoning By-law Requirements – Block E4/E5

Land Use		Unit or per 100 sqm	By-law No. 569-2013			
			Long Term		Short Term	
			Rate	# required	Rate	# required
Block E4/E5	Residential	813	0.9	732	0.2	163
	Retail	843	0.2	2	3+(0.3/unit)	6
	Office	0	0.2	0	3+(0.2/unit)	0
	Transit	-	-	-	-	-
Total Required			-	734	-	169
Proposed			-	734	-	169
Surplus / Deficit			-	0	-	0

Table 52: Bicycle Parking Zoning By-law Requirements – Block D

Land Use		Unit or per 100 sqm	By-law No. 569-2013			
			Long Term		Short Term	
			Rate	# required	Rate	# required
Block D	Residential	0	0.9	0	0.2	0
	Retail	2048	0.2	5	3+(0.3/unit)	10
	Office	16137	0.2	33	3+(0.2/unit)	36
	Transit	-	-	-	-	-
Total Required			-	38	-	46
Proposed			-	38	-	46
Surplus / Deficit			-	0	-	0

Table 53: Bicycle Parking Zoning By-law Requirements – Block D1

Land Use		Unit or per 100 sqm	By-law No. 569-2013			
			Long Term		Short Term	
			Rate	# required	Rate	# required
Block D1	Residential	428	0.9	386	0.2	86
	Retail	189	0.2	1	3+(0.3/unit)	4
	Office	0	0.2	0	3+(0.2/unit)	0
	Transit	-	-	-	-	-
Total Required			-	387	-	90
Proposed			-	387	-	90
Surplus / Deficit			-	0	-	0

6.5. Loading Space Requirements

Loading space requirements of Zoning By-law 569-2013 were also reviewed for the proposed site. The loading space requirements as per the By-law, and loading spaces provided, are shown in **Table 54.** It is noted that the shared loading space calculations are used from Zoning By-law 569-2013, which stipulates that the Type “B” and Type “C” loading spaces can be shared between retail and office uses and that the highest requirement for each use is used as the overall requirement for the shared loading. It is also noted that within the same Block Type “B” and Type “G” will be shared, and schedules will be developed to ensure there is no overlap in loading space usages.

Table 54: Loading Spaces Required and Provided Based on By-Law Rates

Block	Land Use Type	Unit or sqm	Loading Space Required	Loading Space Provided
E1	Residential	660	1 Type "G" and 1 - Type "C"	1 Type "G" and 1 - Type "C"
	Retail Store	1800	1 Type "B"	1 Type "B"
	Total (Shared)	**-**	-	1 Type "G" and 1 - Type "C"
E3	Dwelling units	757	1 Type "G" and 1 - Type "C"	1 Type "G" and 1 - Type "C"
	Retail Store	1984	1 Type "B"	1 Type "B"
	Total (Shared)	-	-	1 Type "G" and 1 - Type "C"
E4/E5	Dwelling units	805	1 Type "G" and 1 - Type "C"	1 Type "G" and 2 - Type "C"
	Retail Store	811	1 Type "B"	1 Type "G" and 1 - Type "C"
	Total (Shared)	-	-	1 Type "B"
D	Retail Store	2057	2 Type "B"	2 Type "B" and 2 Type "C"
	Office	16248	2 Type "B" and 2 Type "C"	
	Total (Shared)	-	-	
	Retail Store	191	2 Type "B"	2 Type "B"
	Total (Shared)	-	-	

The dimensions of the proposed loadings spaces meet the By-law requirements, with the dimensions of each type listed below.

Type “G”

- Minimum Length: 13.0 meters
- Minimum Width: 4.0 meters
- Minimum Clearance: 6.1 meters

Type “B”

- Minimum Length: 11.0 meters
- Minimum Width: 3.5 meters
- Minimum Clearance: 4.0 meters

Type “C”

- Minimum Length: 6.0 meters
- Minimum Width: 3.5 meters
- Minimum Clearance: 3.0 meters

6.5.1. Loading Swept Path Analysis

The loading areas were tested using AutoTurn software (within AutoCAD) to check the loading space accessibility for the anticipated design vehicles entering the site, and for each of the Block loading areas. The largest vehicle anticipated to enter the site is a front-end load garbage vehicle. A Medium Single-Unit Truck (‘MSU’) was also tested. In the case of overlap, the largest vehicle was tested, and it is assumed that schedules will not overlap. The design vehicles are shown in **Figure 25**.

There are Type “G” / “B” / “C” loading spaces at Block E1. The swept path analysis for Type “G” / “B” and “C” are shown in **Figure 26**, **Figure 27** and **Figure 28.**

There are Type “G” / “B” / “C” loading spaces at Block E3. The Type “B” and The Type “G loading space accessibility are the most constrained movements in which the MSU and Wayne Titan vehicles were tested. The swept path analysis is shown in **Figure 29 and Figure 30.**

There are Type “G” / “B” / “C” loading spaces at Block E4/E5. The Type “B” and The Type “G loading space accessibility are the most constrained movements in which the MSU and Wayne Titan vehicles were tested. The swept path analysis is shown in **Figure 31, Figure 32** and **Figure 33.**

There are Type “B” / “C” loading spaces at Block D1. The Type “B” loading space accessibility are the most constrained movements in which the MSU and Wayne Titan vehicles were tested. The swept path analysis is shown in **Figure 34, Figure 35, Figure 36** and **Figure 37.**

There are Type “B” loading spaces at Block D. The Type “B” loading space accessibility are the most constrained movements in which the MSU and Wayne Titan vehicles were tested. The swept path analysis is shown in **Figure 38, Figure 39, Figure 40** and **Figure 41.**

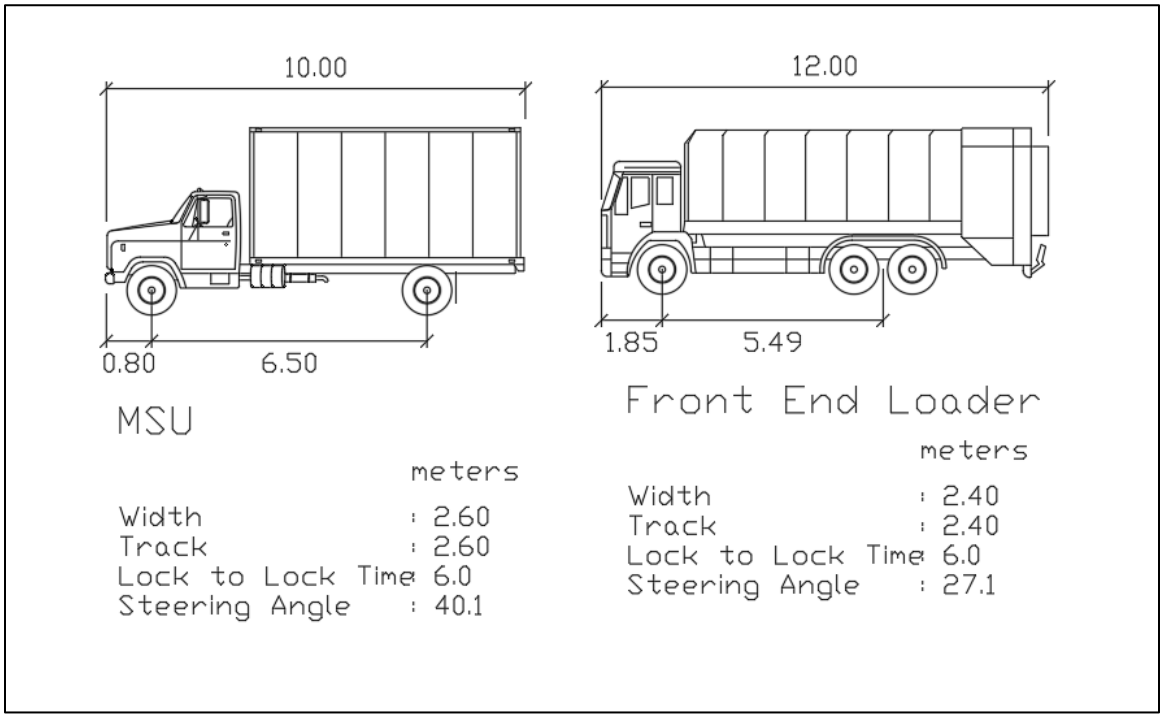


Figure 25: Design Vehicles

Figure 26: Block E1 – Type "B"

Figure 27: Block E1 – Type "G"

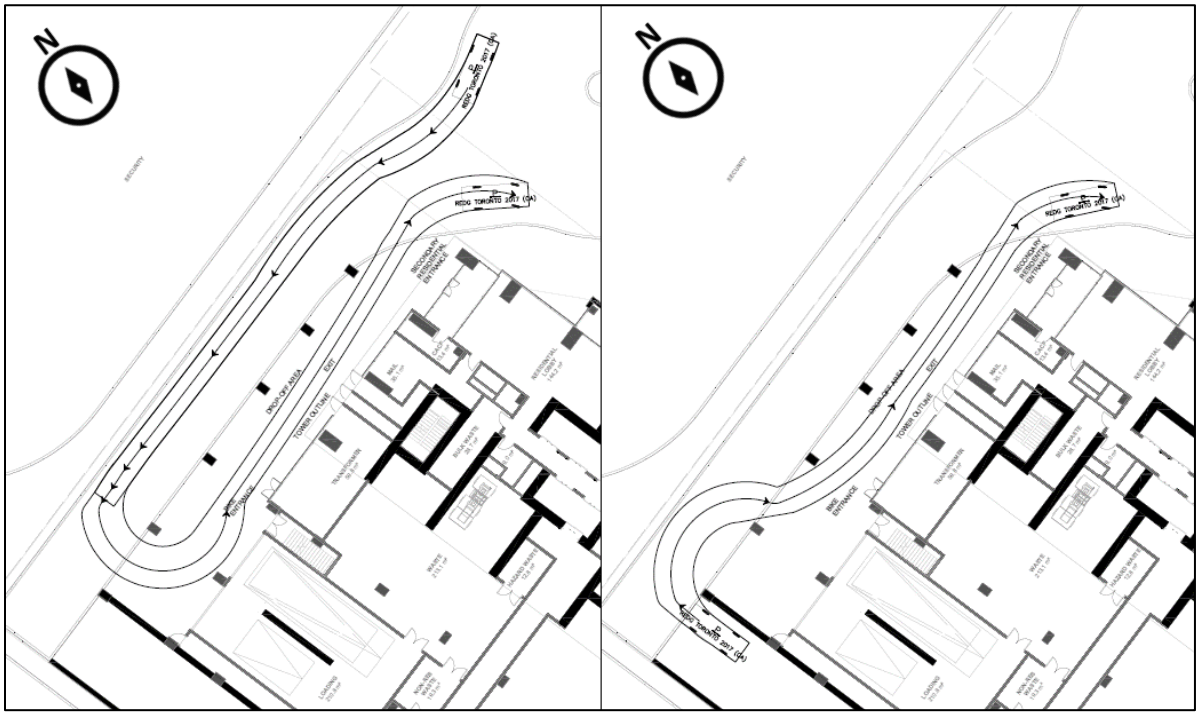


Figure 28: Block E1 – Type “C”

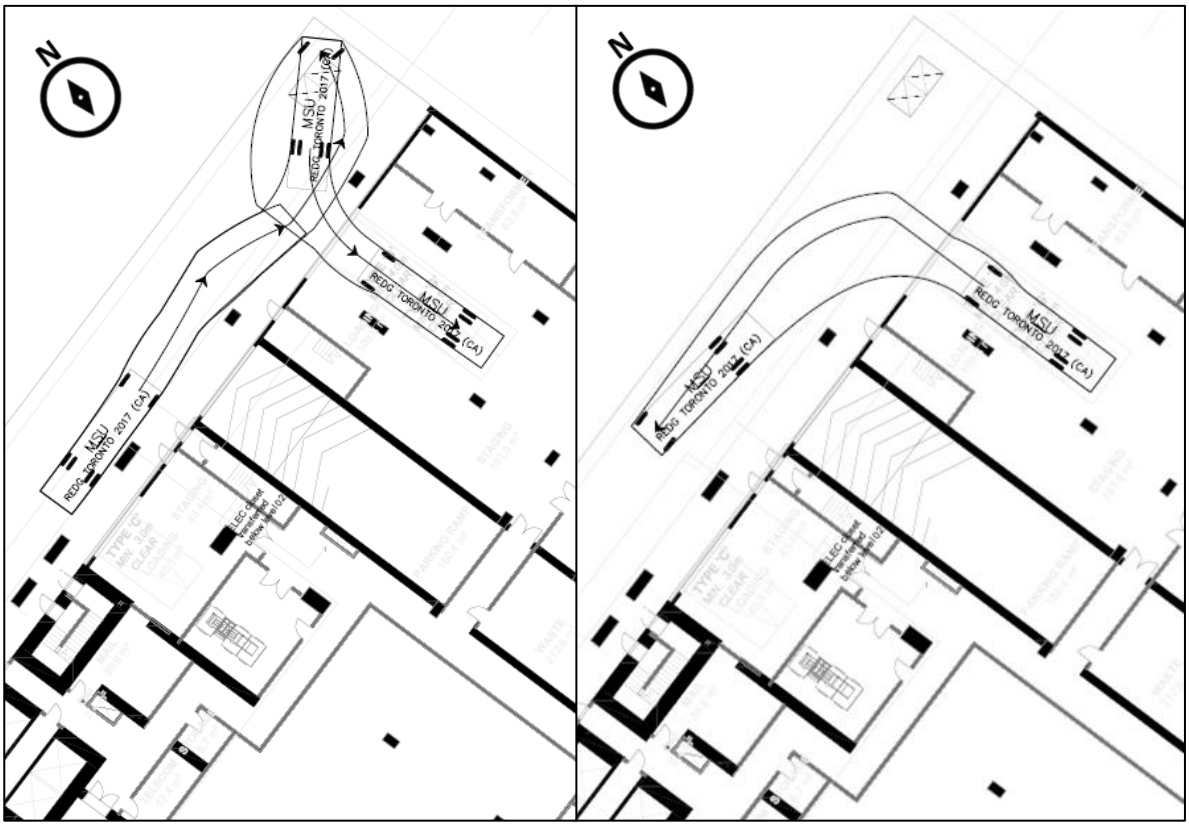


Figure 29: Block E3 - Type "B"

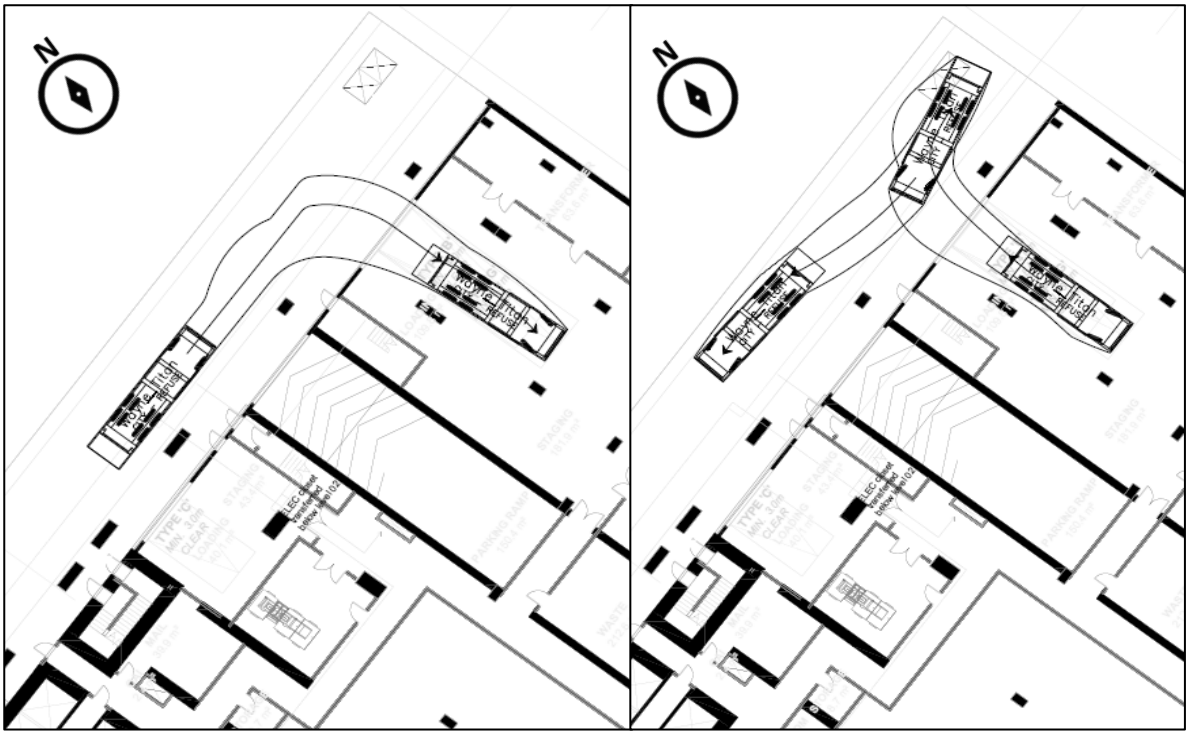


Figure 30: Block E3 - Type "G"

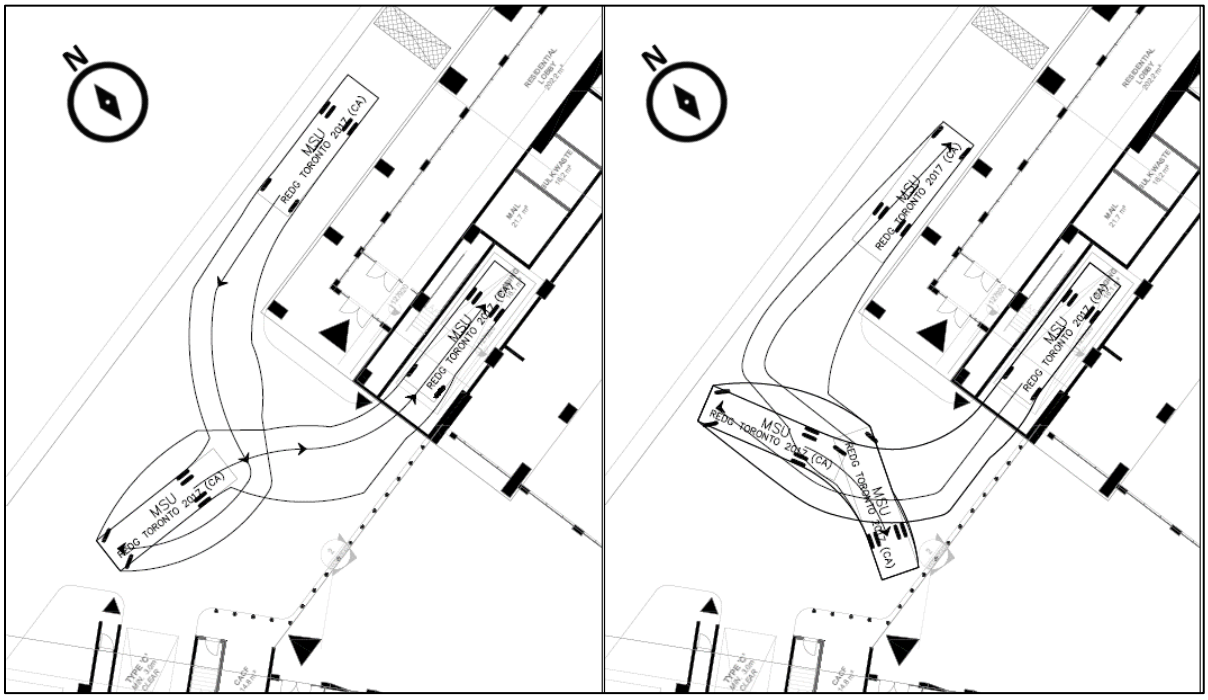


Figure 31: Block E4/5 – Type “B”

Figure 32: Block E4/5 – Type "G"

Figure 33: Block E4/5 – Type "B"

Figure 34: Block D1 – Type "B" Entering Movement

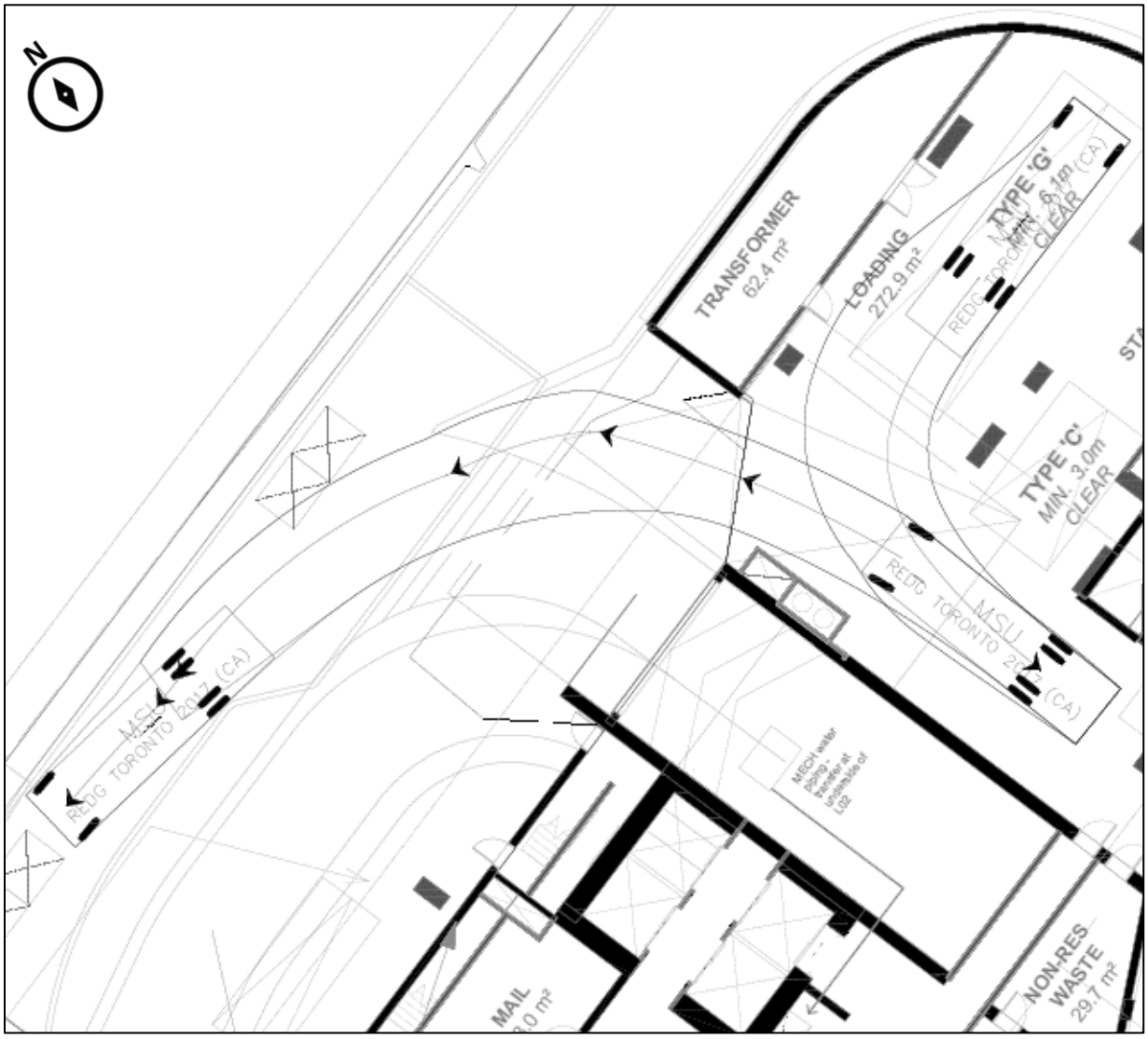


Figure 35: Block D1 - Type "B" Exiting Movement

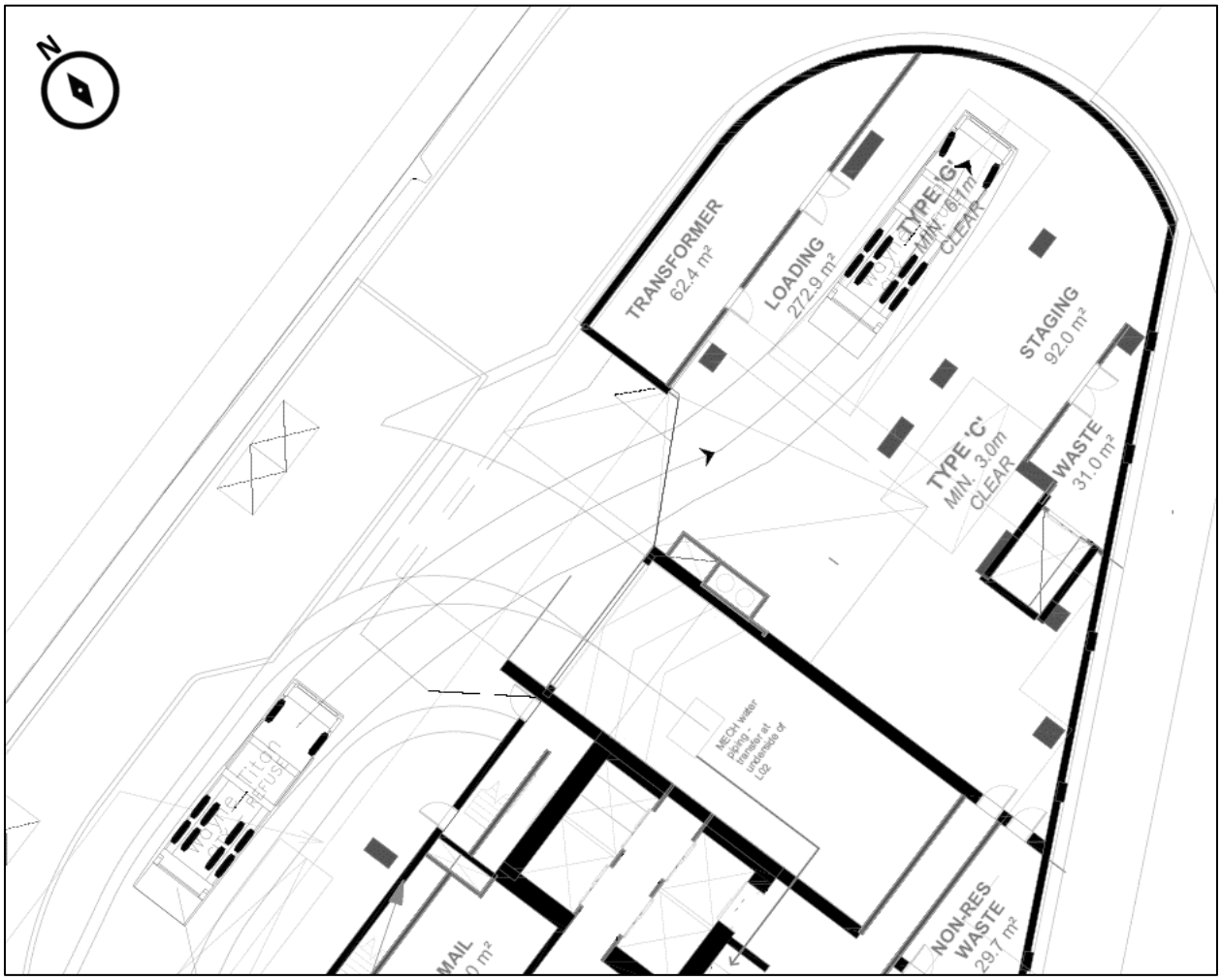


Figure 36: Block D1 – Type "G" Entering Movement

Figure 37: Block D1 – Type "G" Exiting Movement

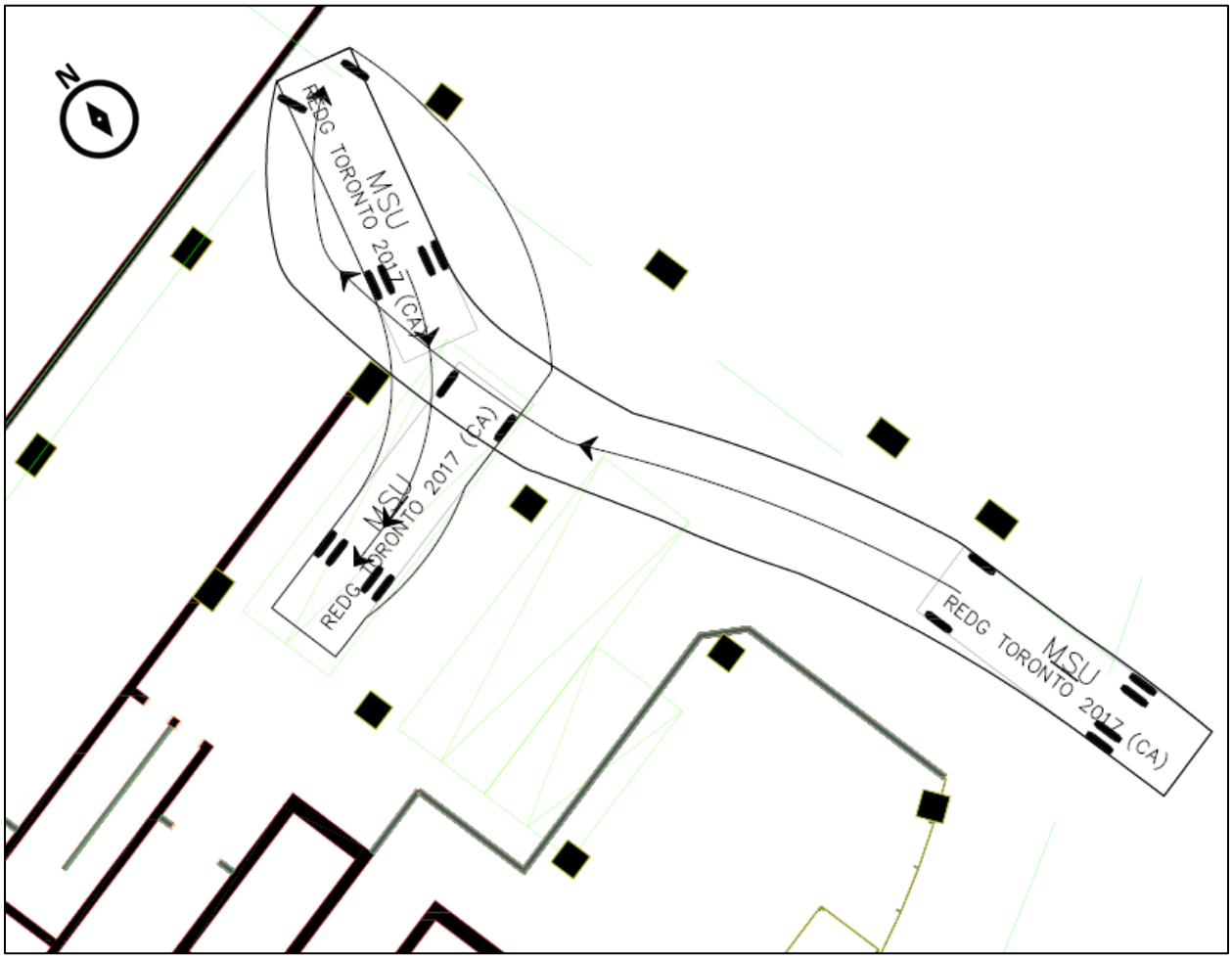


Figure 38: Block D – Type "B" Entering Movement

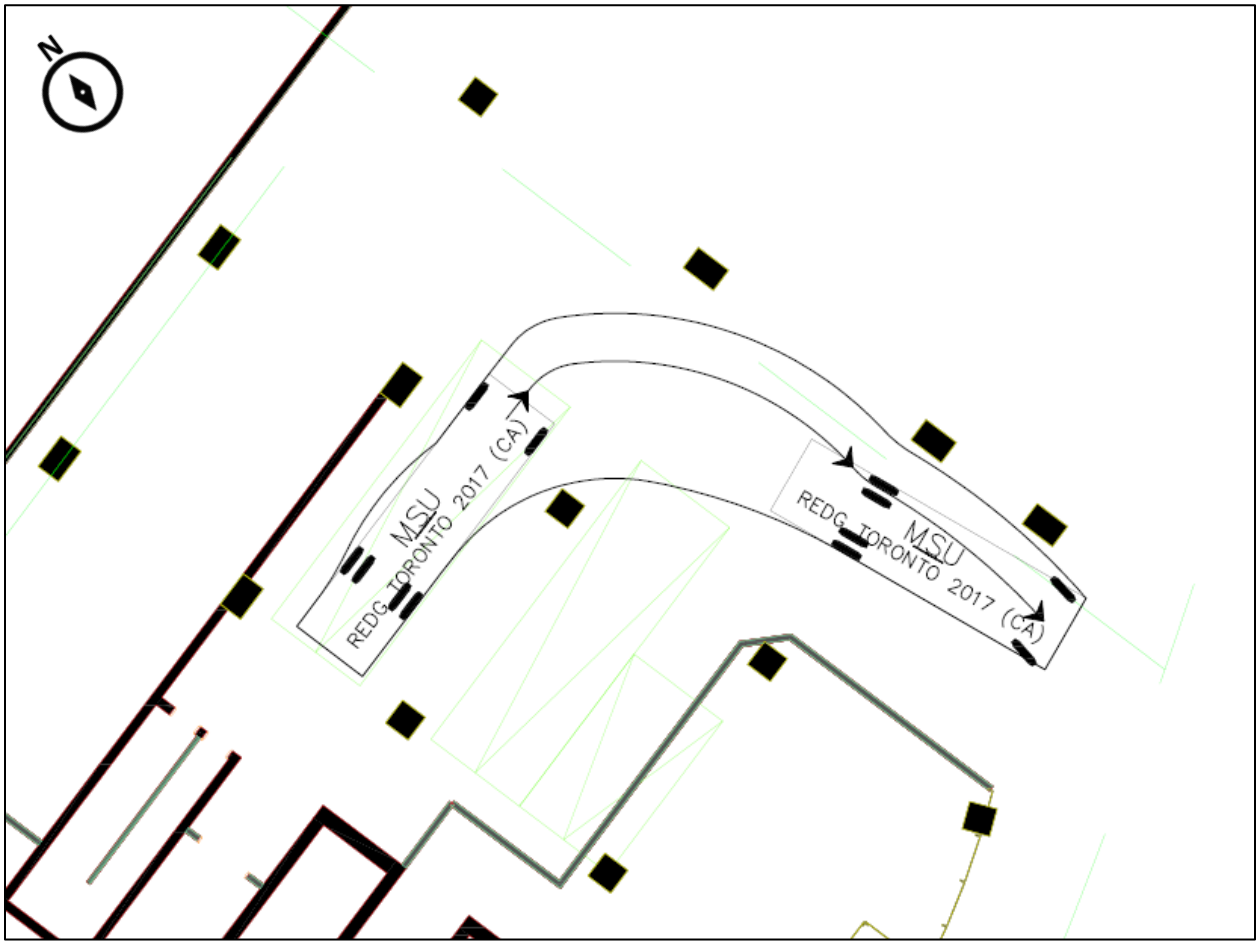


Figure 39: Block D – Type "B" Exiting Movement

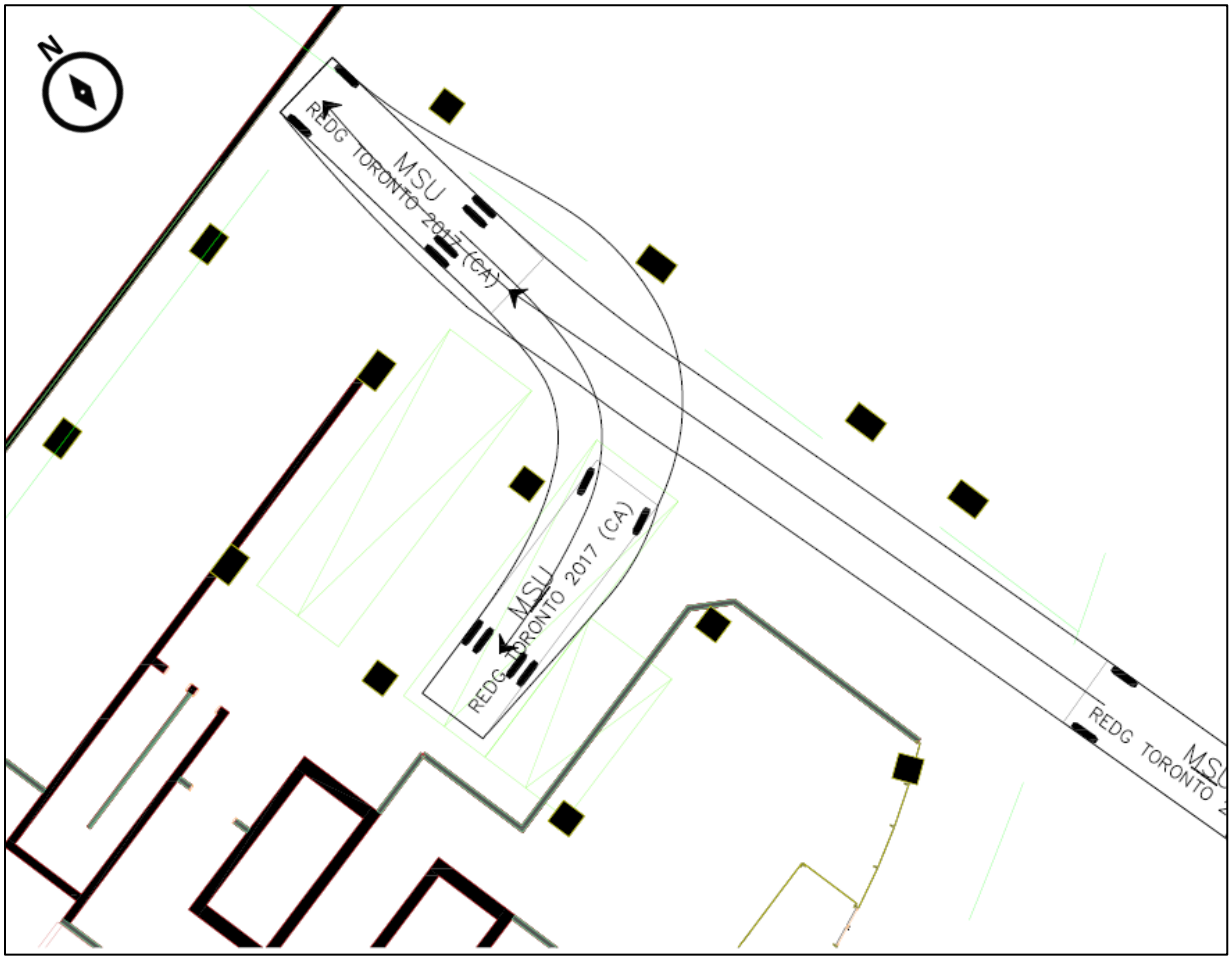


Figure 40: Block D – Type "B" Entering Movement

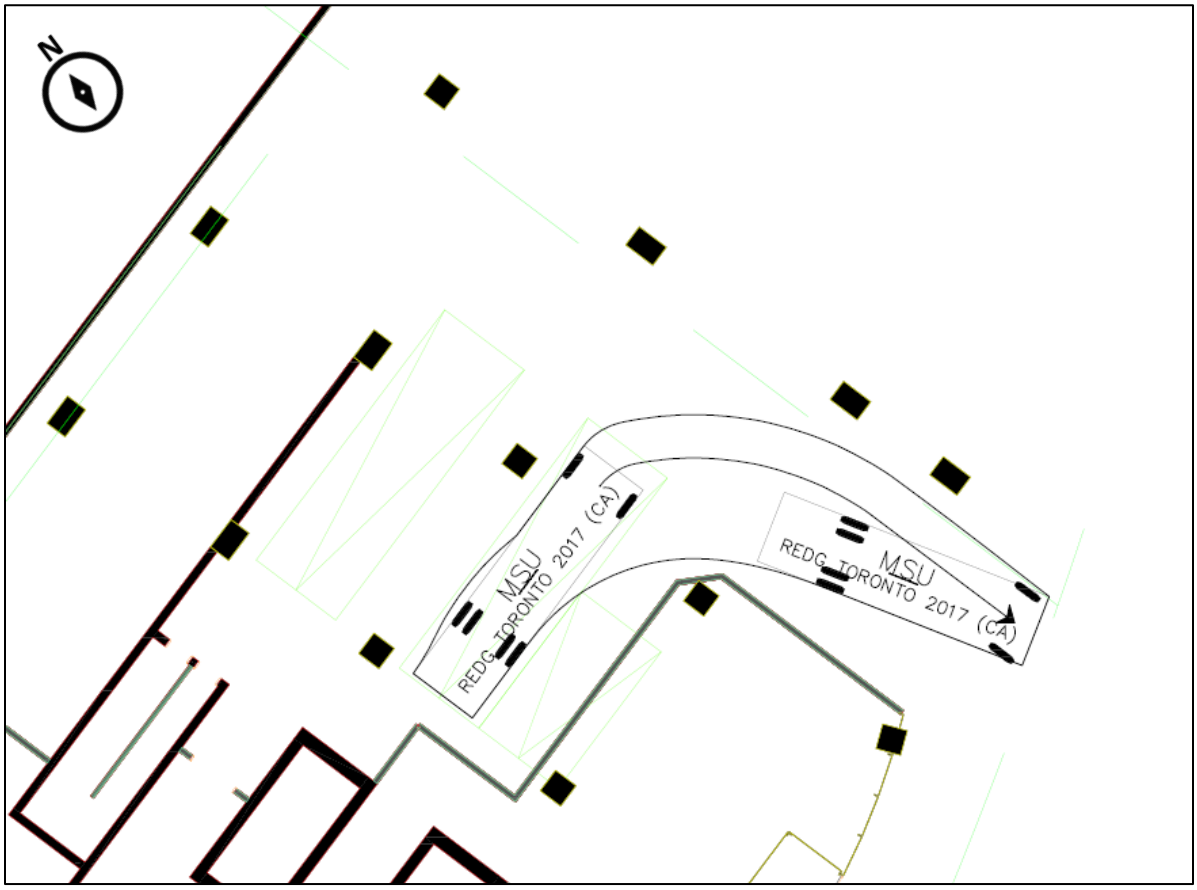


Figure 41: Block D – Type "B" Exiting Movement

7. Transportation Demand Management ('TDM')

Transportation Demand Management (TDM) measures are methods employed to reduce the traffic impacts of development through the reduction of Single-Occupant Vehicle (SOV) trips as well as the encouragement of more sustainable forms of travel and more efficient use of the transportation network for all modes of travel. TDM measures can be 'hard measures', such as infrastructure like bicycle parking, or can be 'soft measures' such as policies that allow for working-from-home or flex hours. TDM measures must also be tied to the surrounding transportation network context of the development. For example, bicycle parking will be ineffective if there is no surrounding bicycle infrastructure like bicycle lanes, multi-use paths, or a lack of bicycle parking at the ultimate destination. For this reason, successful TDM implementation requires a united effort and coordination between the City and developers.

Hard measures are physical infrastructure improvements that encourage alternative modes of travel and mode shifts away from single-occupant vehicles. This can include the provision of bicycle parking or enhanced pedestrian and cyclist facilities on-site including shower and change facilities for employment uses. Soft measures are programs or policies, such as unbundling or condo units to parking spaces, work-from-home policies, transit subsidies, carpooling assistance etc. In many cases, hard and soft measures work together and provide mutual benefit. For instance, transit pass subsidies are soft measures, but when paired with hard measures like improved waiting areas, they can have a greater impact on mode choice.

The Toronto Green Standard (Version 4) requires measures that will support a 15% or greater reduction in single occupancy vehicle (SOV) trips.

For both sites E and D, the general context of the area as industrial and commercial which is expected to be more urbanized with future development. The location is featured with excellent transit access and future direct transit access to the Ontario Line, will have an impact on the potential TDM measures. In fact, the inherent nature of the area and the presence of the Ontario Line and transit routes along both roadways adjacent to the development will make this location an excellent candidate to benefit from TDM initiatives.

Regardless of the ability for the development to leverage TDM initiatives, the strongest TDM measure will be the fact that residential towers will be able to provide limited vehicular parking. The occupancy of the Blocks will be market-driven, meaning that a lot of residents who decide to purchase units in this Block will want to be car-free and many will live and work in close proximity, thus relying on transit, walking, and cycling to get around.

Since the ancillary commercial will primarily serve the surrounding area and the residential condos above, the TDM plan will be geared towards adapting the residential component.

7.1. Local and Regional Transit Accessibility

As already discussed, there is good transit coverage within the vicinity of the site even without the construction of the Ontario Line. There are 6 active transit routes provided along Overlea Boulevard connecting to major transit routes such as the Line 1, Line 2, and Line 4.

7.2. Pedestrian and Cycling Connections

Within the study area, dedicated biking facilities are only provided along Millwood Road and Thorncliffe Park Drive. Bicycles are also allowed on the TTC subway system outside of peak periods. Residents will be able to bring their bicycles on the subway and use them to complete the last leg of their trips if it is conducive to their needs.

7.3. Bicycle Parking

The Blocks will be equipped with long-term bicycle parking that will be available to all residents. Long-term bicycle parking ensures that residents are encouraged to own bicycles in the first place by providing them with easily accessible, secure, and sheltered bicycle parking. Short-term bicycle parking will be provided for visitors. The short-term bicycle parking will be placed in safe, well lit, accessible areas at ground level. This will encourage visitors to feel cycling is a viable option.

Toronto Bike Share is also available within the general area. There are 8 bikeshare docks within 500 meters walking distance. 15 bike share docks and 1 e-bike charging station will be provided within a 1-minute walk of the Thorncliffe station. These will also be available for use by residents and visitors if they use the bikeshare services. Bikeshare spaces are considered usable if they are occupied or empty, as they can be used by residents or visitors when leaving the site (bicycle is available) or when returning (there is a free "dock").

A bicycle repair station is at Thorncliffe park station. Bicycle repair stations further encourages residents and visitors to travel by bicycle by providing tools needed to do routine and basic maintenance on bicycles.

7.4. Car-Share Services

Car-share services are an effective way to reduce auto dependency and parking needs for both residential and non-residential developments, by providing vehicles that can be used by residents on an as-needed basis. The result is that the development will attract those who do not own vehicles and typically rely on alternative forms of transportation, thus reducing the number of parking spaces required on site and attracting residents that will generally produce fewer vehicle trips but will still occasionally require a vehicle.

For some development proposals, the City of Toronto has accepted proposals that suggest that for each car-share parking space provided on site, the development will be able to reduce the parking supply by 4 parking spaces. This is another example of the City accepting TDM measures to reduce the parking supply.

7.5. Unbundled Resident Parking

Bundling parking spaces with unit sales, whether intended or not intended, results in the Block being marketed to drivers and vehicles owners. For those who do not own vehicles and do not wish to own a parking space, these hidden costs are forced on them and at the very least result in unwanted effort required to rent out and seek a renter for the parking space in an effort to recuperate lost money.

Therefore, unbundling further benefits the developer as well as the community because the Block will automatically be marketed to and attract those who do not drive as a primary form of transportation. This theoretically reduces parking requirements for the Block, reduces the amount of congestion on the surrounding road network, and allows for more efficient site design and use of the transportation network.

Unbundled resident parking will be offered as an option for some units. This will open the market up to those who do not want or cannot own vehicles, thus reducing the effect of single occupant vehicle activity generated by the development. Unbundled parking could lead to a potential 10% to the residential parking rates.[6]

7.6. Summary of Transportation Demand Management

The following summarizes the measures that will support a 15% or greater reduction in single occupancy vehicle (SOV) trips as required by the Toronto Green Standard (Version 3):

- Convenient access to Ontario Line;
- Six transit routes currently operating along Overlea Blvd connecting riders to higher order transit line such as the Line 1, Line 2, and Line 4 subway;
- Unbundled Resident Parking; and
- Carshare services.

7.7. Toronto Green Standard

The TDM plan supports the Tier 1 standard of the updated Toronto Green Standards (Version 4) for mid and high-rise residential buildings requiring that all development proposals have a 25% or greater reduction occupancy vehicle SOV trips.

Conservative estimates of the expected SOV trip reductions for the TDM measures are summarized in **Table 55.**

[6] https://www.vtpi.org/park_man.pdf

Table 55: Estimated Decrease in SOV

TDM Measure	Estimated % decrease in SOV	Details
Reduced Vehicle Parking Supply in combination with car share services, increased bike parking spaces, and bicycle repair station	≤ 20%	Overprovision of parking is known to encourage and reinforce the use of single occupant vehicles, even when transit is a viable option. Therefore, reduced parking supplies are expected to result in reduced parking demand and vehicle trips under some circumstances such as when there is a mixed-use environment, supporting nearby amenities, good transit services. The subject development meets this criterion. The proposed parking supply is 80% lower than the require parking supply based on the current in-force zoning By-law 89-2022. There, the vehicle trips are also likely to be reduced.
Pedestrian Connections	≤ 1%	The site is located directly adjacent to Overlea Blvd and Thorncliffe Park Dr and will have direct access to sidewalks and crosswalks.
Supporting Amenities	≤ 5%	The location of the development is approximately 300 meters from mixed-used developments with supporting amenities such as banks and grocery stores will increase interaction trips.
Total:	≤ 26%	Expected to exceed the minimum 25% reduction of SOV Trips

The above measures are expected to meet and likely to exceed the required 25% reduction to single occupant vehicle trips. Additionally, there are other measure that will also contribute to the marketing of this development as transit oriented and will encourage a market interest by those who do not rely on single-occupant vehicles even if those measures may not directly impact mode choice.

Toronto Green Standard Requirement	Proposed Development
AQ 1.1 Single-Occupant Vehicle Trips Reduce single occupancy auto vehicle trips generated by the proposed development by 25% through a variety of multimodal infrastructure strategies and Transportation Demand Management (TDM) measures	The TDM measures proposed are expected to meet and likely exceed the required 25% reduction to single-occupant vehicle trips.
AQ 1.2 Electric Vehicle Infrastructure Parking spaces must be equipped with an energized outlet, which is clearly marked and identified for electric vehicle charging, in accordance with Zoning By-law 569-2013, as amended: 2,3,4,5,6,7,8 1. all residential parking spaces provided for dwelling units located in an apartment building, mixed use building, multiple dwelling unit building, excluding visitor parking spaces, must include an energized outlet capable of providing Level 2 charging or higher to the parking space; and, 2. in cases other than those set out in (A) above, 25 percent of the residential and non-residential parking spaces in a building must include an energized outlet capable of providing Level 2 charging or higher.	All resident parking spaces will be electrified.
AQ 2.1 Bicycle Parking Rates Provide bicycle parking spaces in accordance with Chapter 230 of Zoning By-law 569-2013.	The bicycle parking supply meets the requirements outlined in the City-wide Zoning by-law
AQ 2.2 Long-term Bicycle Parking Location Long-term bicycle parking must be provided in a secure controlled-access bicycle parking facility or purpose-built bicycle locker on the first or second story of the building or on levels below ground commencing with the first level below ground	Long-term bicycle parking spaces are provided in basement parking.
AQ 2.3 Short-term Bicycle Parking Location Locate short-term bicycle parking in a highly visible and publicly accessible location at-grade or on the first parking level of the building below grade	As discussed in **Section 7.1**, all short-term bicycle parking spaces are located at-grade in publicly accessible locations.
AQ 2.4 Electric Bicycle Infrastructure Residential: At least 15% of the required long-term bicycle parking spaces, or one parking space, whichever is greater, shall include an Energized Outlet (120 V) adjacent to the bicycle rack or parking space.	Long-term parking spaces for residents will be electrified.
AQ 2.5 Shower and Change Facilities Provide shower and change facilities consistent with the rate identified in Chapter 230 of the City-wide Zoning By-law.	N/A
AQ 2.6 Publicly Accessible Bicycle Parking For all uses within 500m of transit station entrance, provide at least 10 additional publicly accessible, short-term bicycle parking spaces, at-grade on the site or within the public boulevard in addition to bicycle parking required under **AQ 2.1.**	Overlea Blvd has transit connectivity. Future Thorncliffe Ontario Line station will be constructed adjacent to the site. More than 10 publicly accessible bicycle parking spaces have been provided.
AQ 3.1 Connectivity Provide safe, direct, universally accessible pedestrian routes, including crosswalks and midblock crossings that connect the buildings on-site to the off-site pedestrian network and priority destinations.	Main entrances have pedestrian connections directly to the neighborhood sidewalk network.
AQ 3.2 Sidewalk Space Provide a context-sensitive pedestrian clearway that is a minimum of 2.1m wide, to accommodate pedestrian flow safely and comfortably.	Pedestrian areas surrounding the building will be designed to meet this criterion.
AQ 3.3 Weather Protection Provide covered outdoor waiting areas for pedestrian comfort and protection from inclement weather.	Canopies are provided above the main entrances of the building.
AQ 3.4 Pedestrian Specific Lighting Provide pedestrian scale lighting that is evenly spaced, continuous and directed onto sidewalks, pathways, entrances, outdoor waiting areas and public spaces.	Pedestrian-scale lighting will be provided throughout the site.

8. Conclusions and Recommendations

8.1. Capacity and Operations

Existing Conditions:

- Under existing conditions, the study area network generally operates under acceptable conditions, LOS E or better, apart for Overlea at William Morgan during the PM peak hour which operates at an LOS F. However, capacity constraints exist in the eastbound and westbound directions along Overlea Boulevard due to the HOV lane that causes a higher concentration of general through-traffic to favor the middle lane. Although conversion of the HOV lanes to general purpose lanes (GPL) can be considered, and consultation with the TTC and City is recommended, since such conversion may increase the attractiveness to automobile traffic.

Future Background Conditions:

- The southbound left-turn movement at Millwood/Overlea will continue to experience capacity issues during the AM and PM peak periods due to high demand for this movement. This is also exacerbated by the high conflicting demand from the northbound-through movement during the AM peak.
- Developments proposed in the Laird In Focus study will result in a substantial addition of traffic volumes at Millwood/Overlea.
- At Overlea/Beth Nealson, due to increase volumes from reroute commercial traffic, under future background conditions, triggers the east and west direction to operate over capacity during the PM peak hour.
- **Cycle length increases of 10-30 seconds** are recommended to accommodate this increase in background traffic at Millwood/Overlea, Overlea/Thorncliffe Park W, Overlea/Leaside Park, and Overlea/Beth Nealson.
- **Optimizing splits** are recommended to accommodate the increase traffic at Don Mills/Overlea during both the AM and PM peak hours and all intersections with increased cycle lengths.

Future Site Traffic and Future Total Conditions:

- The addition of trips from the station and associated potential development is anticipated to trigger overcapacity conditions along Overlea Boulevard at Beth Nealson. Other intersections that operate overcapacity are already present under existing conditions. Increasing the cycle lengths from 100s to 140s during both the AM and PM peak periods at all theses at capacity intersection, will be effective at alleviating these overcapacity conditions.

Mitigation Measures

- **Optimizing splits** are recommended to accommodate the increase traffic at Don Mills/Overlea, Overlea/Leaside Park, and Millwood/Overlea during both the AM and PM peak hours.
- **Cycle length increase of an additional 10 seconds from future background cycle lengths** are recommended to accommodate this increase in site traffic at the following:
  - Overlea/Beth Nealson
    - 110 seconds to 120 seconds cycle length during the AM peak hour.
    - 140 seconds to 150 seconds cycle length during the PM peak hour.

8.2. Parking

The vehicular parking requirements based on By-law 89-2022 rates are, 706 (E1), 815 (E3), 814 (E4/E5), 247 (D) and 421 (D1) without any reductions applied. However, due to the location and nature of the site, a total of 252(E1), 334 (E3), 333 (E4/E5), 171 (D) and 208 (D1) parking spaces are provided, consistent with no minimum parking requirement in the Zoning By-law 89-2022. The proposed parking on all sites will satisfy the City of Toronto by-law requirement for shared spaces between residential visitor and office uses. The minimum accessible parking space requirement will be satisfied.

The bicycle parking requirements based on By-law 569-2013 rates are 743 (E1), 851(E3), 903 (E4/E5), 84 (D) and 477(D1) for each building. The development supplies the required bicycle parking requirements.

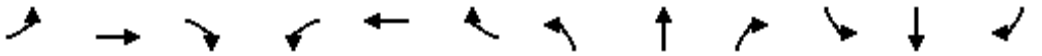
8.3. Loading

Application of Zoning By-laws 569-2013 and 438-86 requires various Type ‘G’, Type ‘B’, and two Type ‘C’ loading spaces on all sites. Loading sites provided satisfy all the requirements. The proposed development also accommodates the required maneuvering of all truck types, coming in and going out.

Appendix A

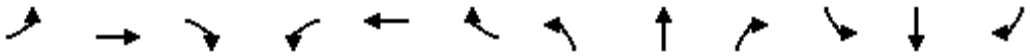
HCM Signalized Intersection Capacity Analysis
620: Don Mills Rd & Overlea Blvd

08/11/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	505	207	224	292	353	183	176	681	101	43	902	469
Future Volume (vph)	505	207	224	292	353	183	176	681	101	43	902	469
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	2000	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	6.0	3.0	6.0	6.0	1.0	6.0		3.0	6.0	5.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.91		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.67	1.00	1.00	0.68	1.00	0.96		1.00	1.00	0.80
Flpb, ped/bikes	1.00	1.00	1.00	0.85	1.00	1.00	1.00	1.00		0.98	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3219	1571	984	1469	1537	998	1711	4763		1600	3380	1171
Flt Permitted	0.95	1.00	1.00	0.62	1.00	1.00	0.11	1.00		0.25	1.00	1.00
Satd. Flow (perm)	3219	1571	984	966	1537	998	196	4763		423	3380	1171
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	521	213	231	301	364	189	181	702	104	44	930	484
RTOR Reduction (vph)	0	0	81	0	0	98	0	13	0	0	0	29
Lane Group Flow (vph)	521	213	150	301	364	91	181	793	0	44	930	455
Confl. Peds. (#/hr)	261		318	318		261	285		277	277		285
Heavy Vehicles (%)	10%	13%	11%	6%	13%	2%	12%	3%	7%	12%	8%	12%
Bus Blockages (#/hr)	0	19	0	0	24	22	0	0	0	0	0	0
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases			4	8		8	2			6		6
Actuated Green, G (s)	28.5	63.0	63.0	46.5	39.5	39.5	53.4	46.4		50.6	45.0	73.5
Effective Green, g (s)	29.5	64.0	64.0	48.5	40.5	40.5	59.0	47.4		52.6	46.0	75.5
Actuated g/C Ratio	0.20	0.44	0.44	0.34	0.28	0.28	0.41	0.33		0.37	0.32	0.52
Clearance Time (s)	6.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0		4.0	7.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	659	698	437	353	432	280	185	1567		208	1079	613
v/s Ratio Prot	c0.16	0.14		c0.05	0.24		c0.07	0.17		0.01	c0.28	0.15
v/s Ratio Perm			0.15	c0.24		0.09	0.33			0.07		0.24
v/c Ratio	0.79	0.31	0.34	0.85	0.84	0.33	0.98	0.51		0.21	0.86	0.74
Uniform Delay, d1	54.3	25.7	26.2	42.6	48.7	40.9	33.4	38.9		30.3	46.0	26.7
Progression Factor	1.00	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	1.1	2.1	17.7	17.8	3.1	59.2	1.2		0.5	9.1	4.8
Delay (s)	60.7	26.8	28.4	60.3	66.6	44.0	92.6	40.0		30.8	55.1	31.5
Level of Service	E	C	C	E	E	D	F	D		C	E	C
Approach Delay (s)		45.5			59.4			49.7			46.5	
Approach LOS		D			E			D			D	

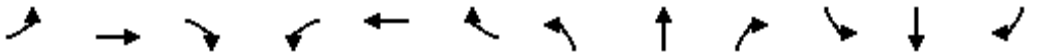
Intersection Summary			
HCM 2000 Control Delay	49.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	144.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	95.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	459	95	258	537	261	59	141	368	200	54	23
Future Volume (vph)	60	459	95	258	537	261	59	141	368	200	54	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		3.0	5.0		6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	*0.65		1.00	*0.63		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.96		1.00	0.96		1.00	1.00	0.96	1.00	0.97	
Flpb, ped/bikes	0.97	1.00		0.99	1.00		0.91	1.00	1.00	0.97	1.00	
Frt	1.00	0.97		1.00	0.95		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1742	1961		1777	1899		1569	1741	1434	1646	1603	
Flt Permitted	0.21	1.00		0.17	1.00		0.70	1.00	1.00	0.65	1.00	
Satd. Flow (perm)	382	1961		325	1899		1164	1741	1434	1132	1603	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	63	483	100	272	565	275	62	148	387	211	57	24
RTOR Reduction (vph)	0	9	0	0	19	0	0	0	203	0	16	0
Lane Group Flow (vph)	63	574	0	272	821	0	62	148	184	211	65	0
Confl. Peds. (#/hr)	43		163	163		43	108		35	35		108
Confl. Bikes (#/hr)			2			14			2			6
Heavy Vehicles (%)	2%	10%	16%	2%	9%	4%	6%	9%	4%	8%	10%	5%
Bus Blockages (#/hr)	0	36	36	0	40	0	0	3	11	0	5	5
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	39.9	39.9		61.0	61.0		36.0	36.0	36.0	36.0	36.0	
Effective Green, g (s)	40.9	40.9		62.0	62.0		37.0	37.0	37.0	37.0	37.0	
Actuated g/C Ratio	0.37	0.37		0.56	0.56		0.34	0.34	0.34	0.34	0.34	
Clearance Time (s)	6.0	6.0		4.0	6.0		7.0	7.0	7.0	7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	142	729		422	1070		391	585	482	380	539	
v/s Ratio Prot		0.29		0.11	c0.43			0.08			0.04	
v/s Ratio Perm	0.17			0.26			0.05		0.13	c0.19		
v/c Ratio	0.44	0.79		0.64	0.77		0.16	0.25	0.38	0.56	0.12	
Uniform Delay, d1	26.0	30.7		15.9	18.4		25.6	26.5	27.8	29.8	25.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	9.7	8.4		3.4	5.3		0.2	0.2	0.5	1.8	0.1	
Delay (s)	35.7	39.1		19.3	23.7		25.8	26.7	28.3	31.5	25.3	
Level of Service	D	D		B	C		C	C	C	C	C	
Approach Delay (s)		38.8			22.6			27.6			29.8	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	28.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	100.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



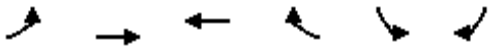
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	116	487	94	35	404	128	224	70	58	79	42	92
Future Volume (vph)	116	487	94	35	404	128	224	70	58	79	42	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		3.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	*0.67	1.00	1.00	*0.64		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.68	1.00	0.97		1.00	0.95		1.00	0.94	
Flpb, ped/bikes	0.96	1.00	1.00	0.88	1.00		0.97	1.00		0.91	1.00	
Frt	1.00	1.00	0.85	1.00	0.96		1.00	0.93		1.00	0.90	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1701	2015	780	1469	1929		1622	1679		1631	1564	
Flt Permitted	0.23	1.00	1.00	0.29	1.00		0.61	1.00		0.67	1.00	
Satd. Flow (perm)	417	2015	780	441	1929		1047	1679		1151	1564	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	123	518	100	37	430	136	238	74	62	84	45	98
RTOR Reduction (vph)	0	0	50	0	16	0	0	30	0	0	64	0
Lane Group Flow (vph)	123	518	50	37	550	0	238	106	0	84	79	0
Confl. Peds. (#/hr)	62		166	166		62	77		121	121		77
Confl. Bikes (#/hr)			6			15			2			3
Heavy Vehicles (%)	3%	15%	13%	9%	12%	2%	9%	0%	2%	2%	0%	6%
Bus Blockages (#/hr)	0	50	50	0	38	38	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		2			6		3	8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	41.0	41.0	41.0	41.0	41.0		45.0	45.0		34.0	34.0	
Effective Green, g (s)	42.0	42.0	42.0	42.0	42.0		46.0	46.0		35.0	35.0	
Actuated g/C Ratio	0.42	0.42	0.42	0.42	0.42		0.46	0.46		0.35	0.35	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0		4.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	175	846	327	185	810		527	772		402	547	
v/s Ratio Prot		0.26			0.28		c0.04	0.06			0.05	
v/s Ratio Perm	c0.30		0.06	0.08			c0.17			0.07		
v/c Ratio	0.70	0.61	0.15	0.20	0.68		0.45	0.14		0.21	0.14	
Uniform Delay, d1	23.9	22.6	18.0	18.4	23.5		17.5	15.6		22.8	22.3	
Progression Factor	1.14	1.15	1.38	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	15.9	2.4	0.7	2.4	4.6		0.6	0.4		1.2	0.6	
Delay (s)	43.2	28.4	25.4	20.7	28.0		18.1	15.9		24.0	22.8	
Level of Service	D	C	C	C	C		B	B		C	C	
Approach Delay (s)		30.5			27.5			17.3			23.2	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	26.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	121.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	353	300	991	488	227	577
Future Volume (vph)	353	300	991	488	227	577
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.0	3.5
Total Lost time (s)	5.0	3.0	6.0	5.0	3.0	6.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.91
Frpb, ped/bikes	1.00	0.98	1.00	0.96	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	2817	1467	3300	1158	1212	4932
Flt Permitted	0.95	1.00	1.00	1.00	0.11	1.00
Satd. Flow (perm)	2817	1467	3300	1158	136	4932
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	380	323	1066	525	244	620
RTOR Reduction (vph)	0	5	0	76	0	0
Lane Group Flow (vph)	380	318	1066	449	244	620
Confl. Peds. (#/hr)		11		49	49	
Confl. Bikes (#/hr)		18		83		
Heavy Vehicles (%)	16%	5%	3%	13%	39%	4%
Bus Blockages (#/hr)	0	4	24	24	0	0
Turn Type	Prot	pm+ov	NA	pm+ov	pm+pt	NA
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2	6	
Actuated Green, G (s)	34.0	49.6	33.4	67.4	53.0	53.0
Effective Green, g (s)	35.0	51.6	34.4	69.4	54.0	54.0
Actuated g/C Ratio	0.35	0.52	0.34	0.69	0.54	0.54
Clearance Time (s)	6.0	4.0	7.0	6.0	4.0	7.0
Vehicle Extension (s)	3.0	2.0	3.0	3.0	2.0	3.0
Lane Grp Cap (vph)	985	756	1135	803	252	2663
v/s Ratio Prot	0.13	0.07	0.32	c0.20	c0.16	0.13
v/s Ratio Perm		0.15		0.19	c0.36	
v/c Ratio	0.39	0.42	0.94	0.56	0.97	0.23
Uniform Delay, d1	24.4	15.0	31.8	7.7	29.0	12.1
Progression Factor	0.86	0.56	0.87	0.31	0.81	1.24
Incremental Delay, d2	1.0	0.1	12.9	2.2	46.4	0.2
Delay (s)	22.0	8.4	40.6	4.6	69.8	15.2
Level of Service	C	A	D	A	E	B
Approach Delay (s)	15.8		28.7			30.6
Approach LOS	B		C			C

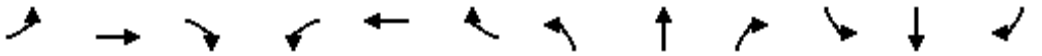
Intersection Summary			
HCM 2000 Control Delay	26.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	80.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	9	1046	1071	54	23	10
Future Volume (vph)	9	1046	1071	54	23	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	4.0		5.0	
Lane Util. Factor	1.00	*0.61	*0.61		1.00	
Frpb, ped/bikes	1.00	1.00	0.99		0.97	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.96	
Flt Protected	0.95	1.00	1.00		0.97	
Satd. Flow (prot)	1825	1975	2021		1533	
Flt Permitted	0.07	1.00	1.00		0.97	
Satd. Flow (perm)	132	1975	2021		1533	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	9	1101	1127	57	24	11
RTOR Reduction (vph)	0	0	2	0	7	0
Lane Group Flow (vph)	9	1101	1182	0	28	0
Confl. Peds. (#/hr)	54			54	72	82
Confl. Bikes (#/hr)				13		
Heavy Vehicles (%)	0%	8%	6%	10%	14%	10%
Bus Blockages (#/hr)	0	45	35	35	0	0
Turn Type	Perm	NA	NA		Prot	
Protected Phases		2	6		4	
Permitted Phases	2					
Actuated Green, G (s)	57.0	57.0	57.0		31.0	
Effective Green, g (s)	58.0	58.0	59.0		32.0	
Actuated g/C Ratio	0.58	0.58	0.59		0.32	
Clearance Time (s)	6.0	6.0	6.0		6.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	76	1145	1192		490	
v/s Ratio Prot		0.56	c0.58		c0.02	
v/s Ratio Perm	0.07					
v/c Ratio	0.12	0.96	0.99		0.06	
Uniform Delay, d1	9.5	19.9	20.3		23.5	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	3.2	18.8	24.1		0.0	
Delay (s)	12.6	38.8	44.4		23.6	
Level of Service	B	D	D		C	
Approach Delay (s)		38.6	44.4		23.6	
Approach LOS		D	D		C	

Intersection Summary			
HCM 2000 Control Delay	41.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	554	35	60	547	12	11	3	29	6	0	8
Future Volume (vph)	35	554	35	60	547	12	11	3	29	6	0	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0		3.0	5.0		6.0	6.0		6.0		6.0
Lane Util. Factor	1.00	*0.63		1.00	*0.65		1.00	1.00		1.00		1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98		1.00		0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.98	1.00		0.99		1.00
Frt	1.00	0.99		1.00	1.00		1.00	0.86		1.00		0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95		1.00
Satd. Flow (prot)	1770	2005		1752	1946		1782	1621		1816		1257
Flt Permitted	0.27	1.00		0.23	1.00		0.76	1.00		0.73		1.00
Satd. Flow (perm)	511	2005		426	1946		1420	1621		1403		1257
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	38	602	38	65	595	13	12	3	32	7	0	9
RTOR Reduction (vph)	0	2	0	0	1	0	0	25	0	0	0	7
Lane Group Flow (vph)	38	638	0	65	607	0	12	10	0	7	0	2
Confl. Peds. (#/hr)	6		14	14		6	26		6	6		26
Confl. Bikes (#/hr)									7			3
Heavy Vehicles (%)	3%	12%	3%	4%	15%	17%	0%	0%	0%	0%	2%	25%
Bus Blockages (#/hr)	0	33	33	0	50	50	0	0	0	0	0	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	60.5	56.4		63.1	57.7		21.2	21.2		21.2		21.2
Effective Green, g (s)	62.5	57.4		65.1	58.7		22.2	22.2		22.2		22.2
Actuated g/C Ratio	0.62	0.57		0.65	0.59		0.22	0.22		0.22		0.22
Clearance Time (s)	4.0	6.0		4.0	6.0		7.0	7.0		7.0		7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0		3.0
Lane Grp Cap (vph)	383	1150		362	1142		315	359		311		279
v/s Ratio Prot	0.01	c0.32		c0.01	0.31			0.01				
v/s Ratio Perm	0.06			0.11			c0.01			0.00		0.00
v/c Ratio	0.10	0.55		0.18	0.53		0.04	0.03		0.02		0.01
Uniform Delay, d1	7.5	13.3		7.3	12.4		30.5	30.5		30.4		30.3
Progression Factor	0.98	1.00		1.00	1.00		1.00	1.00		1.00		1.00
Incremental Delay, d2	0.1	1.9		0.2	1.8		0.0	0.0		0.0		0.0
Delay (s)	7.5	15.2		7.5	14.2		30.6	30.5		30.4		30.3
Level of Service	A	B		A	B		C	C		C		C
Approach Delay (s)		14.8			13.5			30.5			30.4	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	14.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	60.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

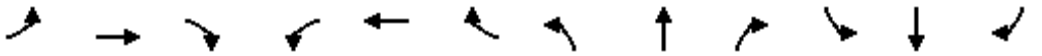
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	689	26	28	699	23	29
Future Volume (Veh/h)	689	26	28	699	23	29
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	718	27	29	728	24	30
Pedestrians	7			11	33	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	1			1	3	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	191			226		
pX, platoon unblocked						
vC, conflicting volume			778		1194	416
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			778		1194	416
tC, single (s)			4.1		6.9	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		85	95
cM capacity (veh/h)			822		163	567

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	479	266	29	364	364	54
Volume Left	0	0	29	0	0	24
Volume Right	0	27	0	0	0	30
cSH	1700	1700	822	1700	1700	269
Volume to Capacity	0.28	0.16	0.04	0.21	0.21	0.20
Queue Length 95th (m)	0.0	0.0	0.8	0.0	0.0	5.6
Control Delay (s)	0.0	0.0	9.5	0.0	0.0	21.7
Lane LOS			A			C
Approach Delay (s)	0.0		0.4			21.7
Approach LOS						C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	36.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
620: Overlea Blvd & Don Mills Rd

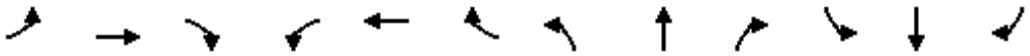
08/11/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	447	549	272	125	279	46	181	904	238	59	779	583
Future Volume (vph)	447	549	272	125	279	46	181	904	238	59	779	583
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	6.0	3.0	6.0	6.0	1.5	6.0		3.0	6.0	5.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.91		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.90	1.00	1.00	0.88	1.00	0.96		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3340	1761	1434	1788	1667	1313	1737	4745		1787	3510	1479
Flt Permitted	0.95	1.00	1.00	0.36	1.00	1.00	0.13	1.00		0.10	1.00	1.00
Satd. Flow (perm)	3340	1761	1434	676	1667	1313	242	4745		179	3510	1479
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	471	578	286	132	294	48	191	952	251	62	820	614
RTOR Reduction (vph)	0	0	103	0	0	32	0	33	0	0	0	46
Lane Group Flow (vph)	471	578	183	132	294	16	191	1170	0	62	820	568
Confl. Peds. (#/hr)	79		63	63		79	40		143	143		40
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	6%	3%	3%	1%	6%	5%	5%	3%	1%	2%	4%	6%
Bus Blockages (#/hr)	0	14	0	0	20	11	0	0	0	0	0	0
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases			4	8		8	2			6		6
Actuated Green, G (s)	25.7	67.0	67.0	53.3	46.3	46.3	49.4	42.4		46.6	41.0	66.7
Effective Green, g (s)	26.7	68.0	68.0	55.3	47.3	47.3	54.4	43.4		48.6	42.0	68.7
Actuated g/C Ratio	0.19	0.47	0.47	0.38	0.33	0.33	0.38	0.30		0.34	0.29	0.48
Clearance Time (s)	6.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0		4.0	7.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	619	831	677	321	547	431	190	1430		134	1023	705
v/s Ratio Prot	0.14	c0.33		0.02	0.18		c0.07	c0.25		0.02	0.23	c0.15
v/s Ratio Perm			0.13	0.13		0.01	0.31			0.13		0.23
v/c Ratio	0.76	0.70	0.27	0.41	0.54	0.04	1.01	0.82		0.46	0.80	0.81
Uniform Delay, d1	55.6	29.9	23.0	29.8	39.4	32.9	38.6	46.6		35.3	47.1	32.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	5.5	4.8	1.0	0.9	3.8	0.2	66.7	5.3		2.5	6.6	6.7
Delay (s)	61.1	34.6	24.0	30.7	43.2	33.0	105.3	52.0		37.8	53.8	38.7
Level of Service	E	C	C	C	D	C	F	D		D	D	D
Approach Delay (s)		41.7			38.7			59.3			46.9	
Approach LOS		D			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	48.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	144.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	93.6%	ICU Level of Service	F
Analysis Period (min)	15		

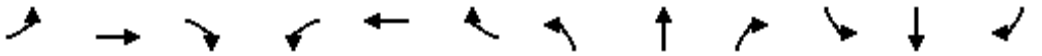
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	740	66	267	615	155	88	89	245	266	143	91
Future Volume (vph)	66	740	66	267	615	155	88	89	245	266	143	91
Ideal Flow (vphpl)	1900	2050	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	3.0		3.0	5.0		6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	*0.62		1.00	*0.63		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.96		1.00	1.00	0.93	1.00	0.94	
Flpb, ped/bikes	0.94	1.00		1.00	1.00		0.91	1.00	1.00	0.95	1.00	
Frt	1.00	0.99		1.00	0.97		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1653	2259		1807	1949		1471	1783	1393	1649	1630	
Flt Permitted	0.22	1.00		0.09	1.00		0.52	1.00	1.00	0.70	1.00	
Satd. Flow (perm)	382	2259		178	1949		807	1783	1393	1208	1630	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	69	779	69	281	647	163	93	94	258	280	151	96
RTOR Reduction (vph)	0	3	0	0	9	0	0	0	168	0	23	0
Lane Group Flow (vph)	69	845	0	281	801	0	93	94	90	280	224	0
Confl. Peds. (#/hr)	91		131	131		91	148		64	64		148
Confl. Bikes (#/hr)			18			9			8			5
Heavy Vehicles (%)	4%	5%	0%	1%	6%	6%	13%	6%	2%	5%	3%	4%
Bus Blockages (#/hr)	0	28	28	0	41	0	0	4	15	0	3	3
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	38.8	38.8		59.5	59.5		37.5	37.5	37.5	37.5	37.5	
Effective Green, g (s)	39.8	41.8		60.5	60.5		38.5	38.5	38.5	38.5	38.5	
Actuated g/C Ratio	0.36	0.38		0.55	0.55		0.35	0.35	0.35	0.35	0.35	
Clearance Time (s)	6.0	6.0		4.0	6.0		7.0	7.0	7.0	7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	138	858		360	1071		282	624	487	422	570	
v/s Ratio Prot		c0.37		c0.13	0.41			0.05			0.14	
v/s Ratio Perm	0.18			0.30			0.12		0.06	c0.23		
v/c Ratio	0.50	0.98		0.78	0.75		0.33	0.15	0.19	0.66	0.39	
Uniform Delay, d1	27.3	33.8		29.6	18.9		26.3	24.5	24.9	30.3	26.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	12.4	27.2		10.5	4.8		0.7	0.1	0.2	3.9	0.4	
Delay (s)	39.7	61.0		40.1	23.7		27.0	24.6	25.0	34.2	27.4	
Level of Service	D	E		D	C		C	C	C	C	C	
Approach Delay (s)		59.4			27.9			25.4			31.0	
Approach LOS		E			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	37.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	105.0%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



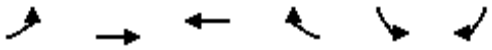
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	665	184	74	560	134	192	66	63	135	71	103
Future Volume (vph)	100	665	184	74	560	134	192	66	63	135	71	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	*0.63	1.00	1.00	*0.64		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.76	1.00	0.95		1.00	0.93		1.00	0.90	
Flpb, ped/bikes	0.94	1.00	1.00	0.94	1.00		0.88	1.00		0.90	1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.93		1.00	0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1702	2197	1024	1547	1993		1582	1593		1590	1571	
Flt Permitted	0.19	1.00	1.00	0.19	1.00		0.62	1.00		0.67	1.00	
Satd. Flow (perm)	332	2197	1024	317	1993		1028	1593		1123	1571	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	105	700	194	78	589	141	202	69	66	142	75	108
RTOR Reduction (vph)	0	0	46	0	12	0	0	34	0	0	52	0
Lane Group Flow (vph)	105	700	148	78	718	0	202	101	0	142	131	0
Confl. Peds. (#/hr)	122		117	117		122	173		140	140		173
Confl. Bikes (#/hr)			9			9						
Heavy Vehicles (%)	1%	4%	8%	11%	8%	3%	2%	4%	5%	3%	2%	0%
Bus Blockages (#/hr)	0	28	28	0	31	31	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	52.0	52.0	52.0	52.0	52.0		34.0	34.0		34.0	34.0	
Effective Green, g (s)	53.0	53.0	53.0	53.0	53.0		35.0	35.0		35.0	35.0	
Actuated g/C Ratio	0.53	0.53	0.53	0.53	0.53		0.35	0.35		0.35	0.35	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	175	1164	542	168	1056		359	557		393	549	
v/s Ratio Prot		0.32			c0.36			0.06			0.08	
v/s Ratio Perm	0.32		0.14	0.25			c0.20			0.13		
v/c Ratio	0.60	0.60	0.27	0.46	0.68		0.56	0.18		0.36	0.24	
Uniform Delay, d1	16.2	16.2	12.9	14.6	17.3		26.3	22.5		24.2	23.1	
Progression Factor	0.98	0.99	1.03	1.01	1.02		1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.6	1.5	0.8	9.0	3.5		6.3	0.7		2.6	1.0	
Delay (s)	25.4	17.6	14.2	23.8	21.1		32.6	23.3		26.8	24.1	
Level of Service	C	B	B	C	C		C	C		C	C	
Approach Delay (s)		17.7			21.4			28.8			25.2	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	21.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	121.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	453	338	629	652	347	960
Future Volume (vph)	453	338	629	652	347	960
Ideal Flow (vphpl)	1900	1900	2150	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.0	3.0	3.5
Total Lost time (s)	5.0	3.0	4.0	5.0	3.0	6.0
Lane Util. Factor	0.97	1.00	*1.00	1.00	1.00	0.91
Frpb, ped/bikes	1.00	0.97	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3177	1509	3996	1275	1449	5029
Flt Permitted	0.95	1.00	1.00	1.00	0.27	1.00
Satd. Flow (perm)	3177	1509	3996	1275	412	5029
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	472	352	655	679	361	1000
RTOR Reduction (vph)	0	36	0	63	0	0
Lane Group Flow (vph)	472	316	655	616	361	1000
Confl. Peds. (#/hr)	1	24		31	31	
Confl. Bikes (#/hr)		20		31		
Heavy Vehicles (%)	9%	2%	3%	8%	16%	2%
Bus Blockages (#/hr)	0	2	16	16	0	0
Turn Type	Prot	pm+ov	NA	pm+ov	pm+pt	NA
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2	6	
Actuated Green, G (s)	34.0	49.6	33.4	67.4	53.0	53.0
Effective Green, g (s)	35.0	51.6	36.4	69.4	54.0	54.0
Actuated g/C Ratio	0.35	0.52	0.36	0.69	0.54	0.54
Clearance Time (s)	6.0	4.0	7.0	6.0	4.0	7.0
Vehicle Extension (s)	3.0	2.0	3.0	3.0	2.0	3.0
Lane Grp Cap (vph)	1111	778	1454	884	394	2715
v/s Ratio Prot	0.15	0.07	0.16	c0.24	c0.15	0.20
v/s Ratio Perm		0.14		0.24	c0.34	
v/c Ratio	0.42	0.41	0.45	0.70	0.92	0.37
Uniform Delay, d1	24.8	14.8	24.2	9.1	16.1	13.2
Progression Factor	0.83	0.69	0.80	0.86	1.42	1.02
Incremental Delay, d2	1.0	0.1	0.9	4.1	22.4	0.3
Delay (s)	21.5	10.3	20.2	11.9	45.3	13.8
Level of Service	C	B	C	B	D	B
Approach Delay (s)	16.7		16.0			22.1
Approach LOS	B		B			C

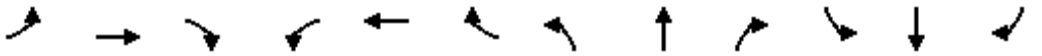
Intersection Summary			
HCM 2000 Control Delay	18.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	18	1299	1052	36	68	12
Future Volume (vph)	18	1299	1052	36	68	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0		5.0	
Lane Util. Factor	1.00	*0.61	*0.61		1.00	
Frpb, ped/bikes	1.00	1.00	1.00		0.99	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	1.00		0.98	
Flt Protected	0.95	1.00	1.00		0.96	
Satd. Flow (prot)	1560	2191	2123		1709	
Flt Permitted	0.07	1.00	1.00		0.96	
Satd. Flow (perm)	109	2191	2123		1709	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	1412	1143	39	74	13
RTOR Reduction (vph)	0	0	1	0	7	0
Lane Group Flow (vph)	20	1412	1181	0	80	0
Confl. Peds. (#/hr)	36			36	12	25
Confl. Bikes (#/hr)				9		
Heavy Vehicles (%)	17%	4%	5%	0%	6%	0%
Bus Blockages (#/hr)	0	14	21	21	0	0
Turn Type	Perm	NA	NA		Prot	
Protected Phases		2	6		4	
Permitted Phases	2					
Actuated Green, G (s)	67.7	67.7	67.7		20.3	
Effective Green, g (s)	68.7	68.7	68.7		21.3	
Actuated g/C Ratio	0.69	0.69	0.69		0.21	
Clearance Time (s)	6.0	6.0	6.0		6.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	74	1505	1458		364	
v/s Ratio Prot		c0.64	0.56		c0.05	
v/s Ratio Perm	0.18					
v/c Ratio	0.27	0.94	0.81		0.22	
Uniform Delay, d1	6.0	13.8	11.0		32.5	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	8.8	12.5	5.0		0.3	
Delay (s)	14.8	26.3	16.0		32.8	
Level of Service	B	C	B		C	
Approach Delay (s)		26.1	16.0		32.8	
Approach LOS		C	B		C	

Intersection Summary			
HCM 2000 Control Delay	21.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	61.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	149	728	52	112	547	110	53	23	92	119	33	164
Future Volume (vph)	149	728	52	112	547	110	53	23	92	119	33	164
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0		3.0	5.0		6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	*0.62		1.00	*0.64		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.98		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.94	1.00		0.98	1.00	1.00
Frt	1.00	0.99		1.00	0.97		1.00	0.88		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1750	2050		1787	2079		1681	1622		1727	1921	1452
Flt Permitted	0.20	1.00		0.13	1.00		0.73	1.00		0.68	1.00	1.00
Satd. Flow (perm)	360	2050		237	2079		1299	1622		1233	1921	1452
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	159	774	55	119	582	117	56	24	98	127	35	174
RTOR Reduction (vph)	0	3	0	0	8	0	0	73	0	0	0	130
Lane Group Flow (vph)	159	826	0	119	691	0	56	49	0	127	35	44
Confl. Peds. (#/hr)	35		44	44		35	70		21	21		70
Confl. Bikes (#/hr)			4									1
Heavy Vehicles (%)	4%	9%	2%	2%	9%	0%	2%	0%	2%	4%	0%	4%
Bus Blockages (#/hr)	0	25	25	0	27	27	0	0	0	0	0	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	59.0	52.2		58.8	52.1		24.1	24.1		24.1	24.1	24.1
Effective Green, g (s)	61.0	53.2		60.8	53.1		25.1	25.1		25.1	25.1	25.1
Actuated g/C Ratio	0.61	0.53		0.61	0.53		0.25	0.25		0.25	0.25	0.25
Clearance Time (s)	4.0	6.0		4.0	6.0		7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	328	1090		263	1103		326	407		309	482	364
v/s Ratio Prot	c0.04	c0.40		0.03	0.33			0.03			0.02	
v/s Ratio Perm	0.26			0.24			0.04			c0.10		0.03
v/c Ratio	0.48	0.76		0.45	0.63		0.17	0.12		0.41	0.07	0.12
Uniform Delay, d1	10.1	18.4		11.8	16.5		29.3	28.9		31.3	28.6	28.9
Progression Factor	0.97	0.98		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.1	4.9		1.2	2.7		0.3	0.1		0.9	0.1	0.1
Delay (s)	10.9	23.0		13.0	19.2		29.6	29.0		32.2	28.6	29.1
Level of Service	B	C		B	B		C	C		C	C	C
Approach Delay (s)		21.1			18.3			29.2			30.2	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	22.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	68.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

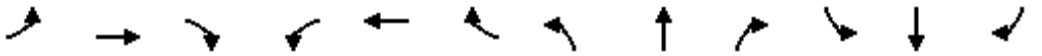
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	937	62	36	848	29	36
Future Volume (Veh/h)	937	62	36	848	29	36
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	966	64	37	874	30	37
Pedestrians	1			7	19	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	0			1	2	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	191			226		
pX, platoon unblocked						
vC, conflicting volume			1049		1529	541
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1049		1529	541
tC, single (s)			6.4		6.8	6.9
tC, 2 stage (s)						
tF (s)			3.4		3.5	3.3
p0 queue free %			85		67	92
cM capacity (veh/h)			252		92	479

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	644	386	37	437	437	67
Volume Left	0	0	37	0	0	30
Volume Right	0	64	0	0	0	37
cSH	1700	1700	252	1700	1700	166
Volume to Capacity	0.38	0.23	0.15	0.26	0.26	0.40
Queue Length 95th (m)	0.0	0.0	3.8	0.0	0.0	13.5
Control Delay (s)	0.0	0.0	21.7	0.0	0.0	40.5
Lane LOS			C			E
Approach Delay (s)	0.0		0.9			40.5
Approach LOS						E

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	42.7%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
620: Don Mills Rd & Overlea Blvd

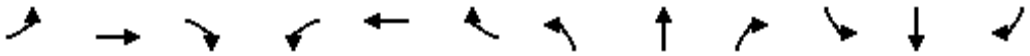
08/11/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	494	436	254	292	356	185	218	758	101	48	1009	494
Future Volume (vph)	494	436	254	292	356	185	218	758	101	48	1009	494
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	2000	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	6.0	3.0	6.0	6.0	1.0	6.0		3.0	6.0	5.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.91		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.65	1.00	1.00	0.67	1.00	0.96		1.00	1.00	0.77
Flpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00	1.00	1.00		0.98	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3219	1571	953	1693	1530	974	1715	4782		1598	3380	1123
Flt Permitted	0.95	1.00	1.00	0.19	1.00	1.00	0.09	1.00		0.26	1.00	1.00
Satd. Flow (perm)	3219	1571	953	333	1530	974	159	4782		441	3380	1123
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	509	449	262	301	367	191	225	781	104	49	1040	509
RTOR Reduction (vph)	0	0	103	0	0	89	0	12	0	0	0	44
Lane Group Flow (vph)	509	449	159	301	367	102	225	873	0	49	1040	465
Confl. Peds. (#/hr)	322		392	392		322	352		342	342		352
Confl. Bikes (#/hr)			4			1						
Heavy Vehicles (%)	10%	13%	11%	6%	13%	2%	12%	3%	7%	12%	8%	12%
Bus Blockages (#/hr)	0	19	0	0	25	22	0	0	0	0	0	0
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases			4	8		8	2			6		6
Actuated Green, G (s)	23.0	41.0	41.0	58.0	37.0	37.0	64.0	54.8		54.2	49.0	72.0
Effective Green, g (s)	24.0	42.0	42.0	60.0	38.0	38.0	67.0	55.8		56.2	50.0	74.0
Actuated g/C Ratio	0.17	0.29	0.29	0.42	0.26	0.26	0.47	0.39		0.39	0.35	0.51
Clearance Time (s)	6.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0		4.0	7.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	536	458	277	346	403	257	225	1853		221	1173	577
v/s Ratio Prot	c0.16	c0.29		0.13	0.24		c0.10	0.18		0.01	c0.31	0.13
v/s Ratio Perm			0.17	0.23		0.10	0.37			0.08		0.28
v/c Ratio	0.95	0.98	0.57	0.87	0.91	0.40	1.00	0.47		0.22	0.89	0.81
Uniform Delay, d1	59.4	50.6	43.4	32.8	51.4	43.6	41.0	33.0		27.8	44.3	29.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	26.4	37.5	8.3	20.1	27.2	4.5	60.0	0.9		0.5	10.0	8.0
Delay (s)	85.8	88.0	51.7	52.9	78.5	48.1	101.0	33.9		28.3	54.4	37.1
Level of Service	F	F	D	D	E	D	F	C		C	D	D
Approach Delay (s)		79.3			62.8			47.5			48.1	
Approach LOS		E			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	58.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	144.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	98.9%	ICU Level of Service	F
Analysis Period (min)	15		

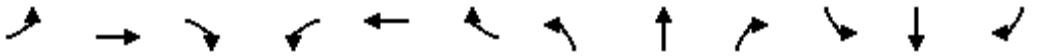
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	67	513	99	270	602	261	49	138	380	200	51	24
Future Volume (vph)	67	513	99	270	602	261	49	138	380	200	51	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		3.0	5.0		6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	*0.62		1.00	*0.63		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.94		1.00	0.91		1.00	1.00	0.95	1.00	0.96	
Flpb, ped/bikes	0.94	1.00		0.99	1.00		0.89	1.00	1.00	0.97	1.00	
Frt	1.00	0.98		1.00	0.95		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1678	1830		1777	1806		1532	1741	1421	1634	1583	
Flt Permitted	0.16	1.00		0.13	1.00		0.71	1.00	1.00	0.66	1.00	
Satd. Flow (perm)	281	1830		250	1806		1138	1741	1421	1131	1583	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	71	540	104	284	634	275	52	145	400	211	54	25
RTOR Reduction (vph)	0	8	0	0	20	0	0	0	208	0	15	0
Lane Group Flow (vph)	71	636	0	284	889	0	52	145	192	211	64	0
Confl. Peds. (#/hr)	128		472	472		128	134		44	44		134
Confl. Bikes (#/hr)			8			24			3			8
Heavy Vehicles (%)	2%	10%	16%	2%	9%	4%	6%	9%	4%	8%	10%	5%
Bus Blockages (#/hr)	0	36	36	0	40	0	0	3	11	0	5	5
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	42.4	42.4		61.0	61.0		36.0	36.0	36.0	36.0	36.0	
Effective Green, g (s)	43.4	43.4		62.0	62.0		37.0	37.0	37.0	37.0	37.0	
Actuated g/C Ratio	0.39	0.39		0.56	0.56		0.34	0.34	0.34	0.34	0.34	
Clearance Time (s)	6.0	6.0		4.0	6.0		7.0	7.0	7.0	7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	110	722		357	1017		382	585	477	380	532	
v/s Ratio Prot		0.35		0.11	c0.49			0.08			0.04	
v/s Ratio Perm	0.25			0.33			0.05		0.14	c0.19		
v/c Ratio	0.65	0.88		0.80	0.87		0.14	0.25	0.40	0.56	0.12	
Uniform Delay, d1	27.1	30.9		21.1	20.6		25.4	26.4	28.0	29.8	25.2	
Progression Factor	1.00	1.00		1.81	1.18		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	25.7	14.5		1.2	1.1		0.2	0.2	0.6	1.8	0.1	
Delay (s)	52.7	45.4		39.5	25.4		25.5	26.6	28.6	31.5	25.3	
Level of Service	D	D		D	C		C	C	C	C	C	
Approach Delay (s)		46.2			28.7			27.8			29.9	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	33.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	103.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



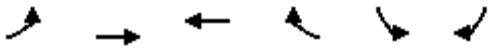
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	675	103	35	618	0	272	18	58	0	18	13
Future Volume (vph)	26	675	103	35	618	0	272	18	58	0	18	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		3.0	6.0			6.0	
Lane Util. Factor	1.00	*0.63	1.00	1.00	*0.64		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.37	1.00	1.00		1.00	0.59			0.86	
Flpb, ped/bikes	0.81	1.00	1.00	0.86	1.00		0.81	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.89			0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1427	1894	432	1448	2029		1350	980			1510	
Flt Permitted	0.19	1.00	1.00	0.15	1.00		0.68	1.00			1.00	
Satd. Flow (perm)	283	1894	432	227	2029		963	980			1510	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	28	718	110	37	657	0	289	19	62	0	19	14
RTOR Reduction (vph)	0	0	43	0	0	0	0	3	0	0	10	0
Lane Group Flow (vph)	28	718	67	37	657	0	289	78	0	0	23	0
Confl. Peds. (#/hr)	798		526	526		798	416		1602	1602		416
Confl. Bikes (#/hr)			13			24			17			4
Heavy Vehicles (%)	3%	15%	13%	9%	12%	2%	9%	0%	2%	2%	0%	6%
Bus Blockages (#/hr)	0	50	50	0	38	38	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		2			6		3	8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	49.0	49.0	49.0	49.0	49.0		47.0	47.0			34.0	
Effective Green, g (s)	50.0	50.0	50.0	50.0	50.0		48.0	48.0			35.0	
Actuated g/C Ratio	0.45	0.45	0.45	0.45	0.45		0.44	0.44			0.32	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0		4.0	7.0			7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	128	860	196	103	922		455	427			480	
v/s Ratio Prot		c0.38			0.32		c0.06	0.08			0.02	
v/s Ratio Perm	0.10		0.15	0.16			c0.22					
v/c Ratio	0.22	0.83	0.34	0.36	0.71		0.64	0.18			0.05	
Uniform Delay, d1	18.2	26.4	19.4	19.6	24.2		23.6	19.0			26.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	3.9	9.4	4.7	9.5	4.7		2.9	0.9			0.2	
Delay (s)	22.1	35.8	24.1	29.0	28.9		26.5	19.9			26.2	
Level of Service	C	D	C	C	C		C	B			C	
Approach Delay (s)		33.8			28.9			25.0			26.2	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	30.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	88.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	315	372	1225	436	327	854
Future Volume (vph)	315	372	1225	436	327	854
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.0	3.5
Total Lost time (s)	5.0	3.0	6.0	6.0	3.0	6.0
Lane Util. Factor	1.00	1.00	*1.00	1.00	1.00	0.91
Frpb, ped/bikes	1.00	0.93	1.00	0.85	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1449	1392	3473	1023	1212	4932
Flt Permitted	0.95	1.00	1.00	1.00	0.10	1.00
Satd. Flow (perm)	1449	1392	3473	1023	128	4932
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	339	400	1317	469	352	918
RTOR Reduction (vph)	0	1	0	256	0	0
Lane Group Flow (vph)	339	399	1317	213	352	918
Confl. Peds. (#/hr)	2	102		78	78	
Confl. Bikes (#/hr)		28		106		
Heavy Vehicles (%)	16%	5%	3%	13%	39%	4%
Bus Blockages (#/hr)	0	4	24	24	0	0
Turn Type	Perm	pm+ov	NA	Perm	pm+pt	NA
Protected Phases		1	2		1	6
Permitted Phases	8	8		2	6	
Actuated Green, G (s)	33.0	57.0	36.0	36.0	64.0	64.0
Effective Green, g (s)	34.0	59.0	37.0	37.0	65.0	65.0
Actuated g/C Ratio	0.31	0.54	0.34	0.34	0.59	0.59
Clearance Time (s)	6.0	4.0	7.0	7.0	4.0	7.0
Vehicle Extension (s)	3.0	2.0	3.0	3.0	2.0	3.0
Lane Grp Cap (vph)	447	746	1168	344	322	2914
v/s Ratio Prot		0.12	0.38		c0.25	0.19
v/s Ratio Perm	c0.23	0.17		0.21	c0.40	
v/c Ratio	0.76	0.53	1.13	0.62	1.09	0.32
Uniform Delay, d1	34.3	16.6	36.5	30.6	33.9	11.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	11.4	0.4	68.8	8.1	77.4	0.3
Delay (s)	45.7	17.0	105.3	38.7	111.4	11.6
Level of Service	D	B	F	D	F	B
Approach Delay (s)	30.2		87.8			39.2
Approach LOS	C		F			D

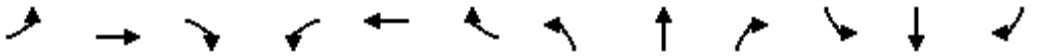
Intersection Summary			
HCM 2000 Control Delay	60.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	92.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	9	1177	1207	54	23	10
Future Volume (vph)	9	1177	1207	54	23	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	4.0		5.0	
Lane Util. Factor	1.00	*0.61	*0.61		1.00	
Frpb, ped/bikes	1.00	1.00	0.98		0.96	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.96	
Flt Protected	0.95	1.00	1.00		0.97	
Satd. Flow (prot)	1825	1970	1998		1519	
Flt Permitted	0.06	1.00	1.00		0.97	
Satd. Flow (perm)	113	1970	1998		1519	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	9	1239	1271	57	24	11
RTOR Reduction (vph)	0	0	2	0	8	0
Lane Group Flow (vph)	9	1239	1326	0	27	0
Confl. Peds. (#/hr)	142			142	89	102
Confl. Bikes (#/hr)				23		
Heavy Vehicles (%)	0%	8%	6%	10%	14%	10%
Bus Blockages (#/hr)	0	46	36	36	0	0
Turn Type	Perm	NA	NA		Prot	
Protected Phases		2	6		4	
Permitted Phases	2					
Actuated Green, G (s)	67.0	67.0	67.0		31.0	
Effective Green, g (s)	68.0	68.0	69.0		32.0	
Actuated g/C Ratio	0.62	0.62	0.63		0.29	
Clearance Time (s)	6.0	6.0	6.0		6.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	69	1217	1253		441	
v/s Ratio Prot		0.63	c0.66		c0.02	
v/s Ratio Perm	0.08					
v/c Ratio	0.13	1.02	1.06		0.06	
Uniform Delay, d1	8.7	21.0	20.5		28.2	
Progression Factor	1.04	0.79	1.00		1.00	
Incremental Delay, d2	2.9	26.9	42.4		0.1	
Delay (s)	12.0	43.4	62.9		28.2	
Level of Service	B	D	E		C	
Approach Delay (s)		43.2	62.9		28.2	
Approach LOS		D	E		C	

Intersection Summary			
HCM 2000 Control Delay	53.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	68.0%	ICU Level of Service	C
Analysis Period (min)	15		

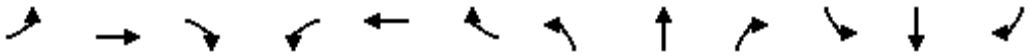
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	626	36	60	600	12	12	3	29	6	0	8
Future Volume (vph)	35	626	36	60	600	12	12	3	29	6	0	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0		3.0	5.0		6.0	6.0		6.0		6.0
Lane Util. Factor	1.00	*0.62		1.00	*0.64		1.00	1.00		1.00		1.00
Frpb, ped/bikes	1.00	0.96		1.00	0.99		1.00	0.97		1.00		0.95
Flpb, ped/bikes	0.98	1.00		0.97	1.00		0.97	1.00		0.99		1.00
Frt	1.00	0.99		1.00	1.00		1.00	0.86		1.00		0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95		1.00
Satd. Flow (prot)	1738	1900		1710	1902		1770	1615		1812		1247
Flt Permitted	0.24	1.00		0.19	1.00		0.76	1.00		0.73		1.00
Satd. Flow (perm)	436	1900		339	1902		1411	1615		1401		1247
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	38	680	39	65	652	13	13	3	32	7	0	9
RTOR Reduction (vph)	0	2	0	0	1	0	0	25	0	0	0	7
Lane Group Flow (vph)	38	717	0	65	664	0	13	10	0	7	0	2
Confl. Peds. (#/hr)	157		757	757		157	33		8	8		33
Confl. Bikes (#/hr)			5			12			9			4
Heavy Vehicles (%)	3%	12%	3%	4%	15%	17%	0%	0%	0%	0%	0%	25%
Bus Blockages (#/hr)	0	34	34	0	51	51	0	0	0	0	0	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	60.6	57.0		63.0	58.2		21.2	21.2		21.2		21.2
Effective Green, g (s)	62.6	58.0		65.0	59.2		22.2	22.2		22.2		22.2
Actuated g/C Ratio	0.63	0.58		0.65	0.59		0.22	0.22		0.22		0.22
Clearance Time (s)	4.0	6.0		4.0	6.0		7.0	7.0		7.0		7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0		3.0
Lane Grp Cap (vph)	332	1102		299	1125		313	358		311		276
v/s Ratio Prot	0.01	c0.38		c0.01	0.35			0.01				
v/s Ratio Perm	0.07			0.13			c0.01			0.00		0.00
v/c Ratio	0.11	0.65		0.22	0.59		0.04	0.03		0.02		0.01
Uniform Delay, d1	7.7	14.2		7.9	12.8		30.5	30.5		30.4		30.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00		1.00
Incremental Delay, d2	0.2	3.0		0.4	2.3		0.1	0.0		0.0		0.0
Delay (s)	7.9	17.1		8.3	15.1		30.6	30.5		30.4		30.3
Level of Service	A	B		A	B		C	C		C		C
Approach Delay (s)		16.7			14.5			30.5			30.4	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	16.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



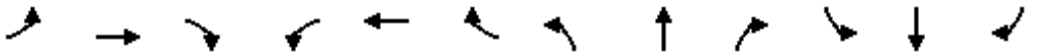
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	710	30	28	671	160	25	3	27	60	2	42
Future Volume (vph)	81	710	30	28	671	160	25	3	27	60	2	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.1	6.1		6.1	6.1			6.9			6.9	
Lane Util. Factor	1.00	*0.62		1.00	*0.62			1.00			1.00	
Frpb, ped/bikes	1.00	0.98		1.00	0.88			0.99			0.99	
Flpb, ped/bikes	0.87	1.00		0.85	1.00			1.00			0.99	
Frt	1.00	0.99		1.00	0.97			0.93			0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97	
Satd. Flow (prot)	1581	1874		1553	1707			1682			1726	
Flt Permitted	0.18	1.00		0.22	1.00			0.82			0.79	
Satd. Flow (perm)	302	1874		357	1707			1417			1402	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	84	740	31	29	699	167	26	3	28	62	2	44
RTOR Reduction (vph)	0	1	0	0	7	0	0	25	0	0	28	0
Lane Group Flow (vph)	84	770	0	29	859	0	0	32	0	0	81	0
Confl. Peds. (#/hr)	355		238	238		355	9		14	14		9
Confl. Bikes (#/hr)			24			24						4
Heavy Vehicles (%)	0%	11%	4%	0%	10%	0%	5%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	52	52	0	48	48	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	74.9	74.9		74.9	74.9			11.1			11.1	
Effective Green, g (s)	74.9	75.9		75.9	75.9			11.1			11.1	
Actuated g/C Ratio	0.75	0.76		0.76	0.76			0.11			0.11	
Clearance Time (s)	7.1	7.1		7.1	7.1			6.9			6.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	226	1422		270	1295			157			155	
v/s Ratio Prot		0.41			c0.50							
v/s Ratio Perm	0.28			0.08				0.02			c0.06	
v/c Ratio	0.37	0.54		0.11	0.66			0.20			0.52	
Uniform Delay, d1	4.4	4.9		3.2	5.8			40.4			41.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	4.6	1.5		0.8	2.7			0.6			2.9	
Delay (s)	9.0	6.4		4.0	8.5			41.1			44.9	
Level of Service	A	A		A	A			D			D	
Approach Delay (s)		6.7			8.4			41.1			44.9	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	10.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
620: Don Mills Rd & Overlea Blvd

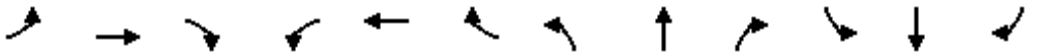
08/11/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	494	436	254	292	356	185	218	758	101	48	1009	494
Future Volume (vph)	494	436	254	292	356	185	218	758	101	48	1009	494
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	2000	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	6.0	3.0	6.0	6.0	1.0	6.0		3.0	6.0	5.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.91		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.65	1.00	1.00	0.67	1.00	0.96		1.00	1.00	0.77
Flpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00	1.00	1.00		0.98	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3219	1571	953	1693	1530	974	1715	4782		1598	3380	1123
Flt Permitted	0.95	1.00	1.00	0.19	1.00	1.00	0.09	1.00		0.26	1.00	1.00
Satd. Flow (perm)	3219	1571	953	333	1530	974	159	4782		441	3380	1123
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	509	449	262	301	367	191	225	781	104	49	1040	509
RTOR Reduction (vph)	0	0	103	0	0	89	0	12	0	0	0	44
Lane Group Flow (vph)	509	449	159	301	367	102	225	873	0	49	1040	465
Confl. Peds. (#/hr)	322		392	392		322	352		342	342		352
Confl. Bikes (#/hr)			4			1						
Heavy Vehicles (%)	10%	13%	11%	6%	13%	2%	12%	3%	7%	12%	8%	12%
Bus Blockages (#/hr)	0	19	0	0	25	22	0	0	0	0	0	0
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases			4	8		8	2			6		6
Actuated Green, G (s)	23.0	41.0	41.0	58.0	37.0	37.0	64.0	54.8		54.2	49.0	72.0
Effective Green, g (s)	24.0	42.0	42.0	60.0	38.0	38.0	67.0	55.8		56.2	50.0	74.0
Actuated g/C Ratio	0.17	0.29	0.29	0.42	0.26	0.26	0.47	0.39		0.39	0.35	0.51
Clearance Time (s)	6.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0		4.0	7.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	536	458	277	346	403	257	225	1853		221	1173	577
v/s Ratio Prot	c0.16	c0.29		0.13	0.24		c0.10	0.18		0.01	c0.31	0.13
v/s Ratio Perm			0.17	0.23		0.10	0.37			0.08		0.28
v/c Ratio	0.95	0.98	0.57	0.87	0.91	0.40	1.00	0.47		0.22	0.89	0.81
Uniform Delay, d1	59.4	50.6	43.4	32.8	51.4	43.6	41.0	33.0		27.8	44.3	29.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	26.4	37.5	8.3	20.1	27.2	4.5	60.0	0.9		0.5	10.0	8.0
Delay (s)	85.8	88.0	51.7	52.9	78.5	48.1	101.0	33.9		28.3	54.4	37.1
Level of Service	F	F	D	D	E	D	F	C		C	D	D
Approach Delay (s)		79.3			62.8			47.5			48.1	
Approach LOS		E			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	58.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	144.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	98.9%	ICU Level of Service	F
Analysis Period (min)	15		

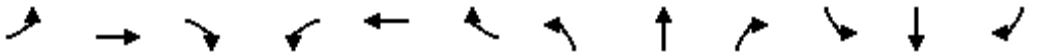
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	67	513	99	270	602	261	49	138	380	200	51	24
Future Volume (vph)	67	513	99	270	602	261	49	138	380	200	51	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		3.0	5.0		6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	*0.62		1.00	*0.63		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.94		1.00	0.91		1.00	1.00	0.95	1.00	0.96	
Flpb, ped/bikes	0.94	1.00		0.99	1.00		0.89	1.00	1.00	0.97	1.00	
Frt	1.00	0.98		1.00	0.95		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1678	1830		1777	1806		1532	1741	1421	1634	1583	
Flt Permitted	0.16	1.00		0.13	1.00		0.71	1.00	1.00	0.66	1.00	
Satd. Flow (perm)	281	1830		250	1806		1138	1741	1421	1131	1583	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	71	540	104	284	634	275	52	145	400	211	54	25
RTOR Reduction (vph)	0	8	0	0	20	0	0	0	208	0	15	0
Lane Group Flow (vph)	71	636	0	284	889	0	52	145	192	211	64	0
Confl. Peds. (#/hr)	128		472	472		128	134		44	44		134
Confl. Bikes (#/hr)			8			24			3			8
Heavy Vehicles (%)	2%	10%	16%	2%	9%	4%	6%	9%	4%	8%	10%	5%
Bus Blockages (#/hr)	0	36	36	0	40	0	0	3	11	0	5	5
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	42.4	42.4		61.0	61.0		36.0	36.0	36.0	36.0	36.0	
Effective Green, g (s)	43.4	43.4		62.0	62.0		37.0	37.0	37.0	37.0	37.0	
Actuated g/C Ratio	0.39	0.39		0.56	0.56		0.34	0.34	0.34	0.34	0.34	
Clearance Time (s)	6.0	6.0		4.0	6.0		7.0	7.0	7.0	7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	110	722		357	1017		382	585	477	380	532	
v/s Ratio Prot		0.35		0.11	c0.49			0.08			0.04	
v/s Ratio Perm	0.25			0.33			0.05		0.14	c0.19		
v/c Ratio	0.65	0.88		0.80	0.87		0.14	0.25	0.40	0.56	0.12	
Uniform Delay, d1	27.1	30.9		21.1	20.6		25.4	26.4	28.0	29.8	25.2	
Progression Factor	1.00	1.00		1.81	1.18		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	25.7	14.5		1.2	1.1		0.2	0.2	0.6	1.8	0.1	
Delay (s)	52.7	45.4		39.5	25.4		25.5	26.6	28.6	31.5	25.3	
Level of Service	D	D		D	C		C	C	C	C	C	
Approach Delay (s)		46.2			28.7			27.8			29.9	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	33.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	103.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



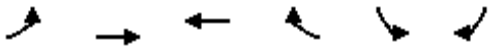
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	675	103	35	618	0	272	18	58	0	18	13
Future Volume (vph)	26	675	103	35	618	0	272	18	58	0	18	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		3.0	6.0			6.0	
Lane Util. Factor	1.00	*0.63	1.00	1.00	*0.64		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.37	1.00	1.00		1.00	0.59			0.86	
Flpb, ped/bikes	0.81	1.00	1.00	0.86	1.00		0.81	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.89			0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1427	1894	432	1448	2029		1350	980			1510	
Flt Permitted	0.19	1.00	1.00	0.15	1.00		0.68	1.00			1.00	
Satd. Flow (perm)	283	1894	432	227	2029		963	980			1510	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	28	718	110	37	657	0	289	19	62	0	19	14
RTOR Reduction (vph)	0	0	43	0	0	0	0	3	0	0	10	0
Lane Group Flow (vph)	28	718	67	37	657	0	289	78	0	0	23	0
Confl. Peds. (#/hr)	798		526	526		798	416		1602	1602		416
Confl. Bikes (#/hr)			13			24			17			4
Heavy Vehicles (%)	3%	15%	13%	9%	12%	2%	9%	0%	2%	2%	0%	6%
Bus Blockages (#/hr)	0	50	50	0	38	38	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		2			6		3	8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	49.0	49.0	49.0	49.0	49.0		47.0	47.0			34.0	
Effective Green, g (s)	50.0	50.0	50.0	50.0	50.0		48.0	48.0			35.0	
Actuated g/C Ratio	0.45	0.45	0.45	0.45	0.45		0.44	0.44			0.32	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0		4.0	7.0			7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	128	860	196	103	922		455	427			480	
v/s Ratio Prot		c0.38			0.32		c0.06	0.08			0.02	
v/s Ratio Perm	0.10		0.15	0.16			c0.22					
v/c Ratio	0.22	0.83	0.34	0.36	0.71		0.64	0.18			0.05	
Uniform Delay, d1	18.2	26.4	19.4	19.6	24.2		23.6	19.0			26.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	3.9	9.4	4.7	9.5	4.7		2.9	0.9			0.2	
Delay (s)	22.1	35.8	24.1	29.0	28.9		26.5	19.9			26.2	
Level of Service	C	D	C	C	C		C	B			C	
Approach Delay (s)		33.8			28.9			25.0			26.2	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	30.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	88.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	315	372	1225	436	327	854
Future Volume (vph)	315	372	1225	436	327	854
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.0	3.5
Total Lost time (s)	5.0	3.0	6.0	6.0	3.0	6.0
Lane Util. Factor	1.00	1.00	*1.00	1.00	1.00	0.91
Frpb, ped/bikes	1.00	0.93	1.00	0.85	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1449	1392	3473	1023	1212	4932
Flt Permitted	0.95	1.00	1.00	1.00	0.10	1.00
Satd. Flow (perm)	1449	1392	3473	1023	128	4932
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	339	400	1317	469	352	918
RTOR Reduction (vph)	0	1	0	256	0	0
Lane Group Flow (vph)	339	399	1317	213	352	918
Confl. Peds. (#/hr)	2	102		78	78	
Confl. Bikes (#/hr)		28		106		
Heavy Vehicles (%)	16%	5%	3%	13%	39%	4%
Bus Blockages (#/hr)	0	4	24	24	0	0
Turn Type	Perm	pm+ov	NA	Perm	pm+pt	NA
Protected Phases		1	2		1	6
Permitted Phases	8	8		2	6	
Actuated Green, G (s)	33.0	57.0	36.0	36.0	64.0	64.0
Effective Green, g (s)	34.0	59.0	37.0	37.0	65.0	65.0
Actuated g/C Ratio	0.31	0.54	0.34	0.34	0.59	0.59
Clearance Time (s)	6.0	4.0	7.0	7.0	4.0	7.0
Vehicle Extension (s)	3.0	2.0	3.0	3.0	2.0	3.0
Lane Grp Cap (vph)	447	746	1168	344	322	2914
v/s Ratio Prot		0.12	0.38		c0.25	0.19
v/s Ratio Perm	c0.23	0.17		0.21	c0.40	
v/c Ratio	0.76	0.53	1.13	0.62	1.09	0.32
Uniform Delay, d1	34.3	16.6	36.5	30.6	33.9	11.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	11.4	0.4	68.8	8.1	77.4	0.3
Delay (s)	45.7	17.0	105.3	38.7	111.4	11.6
Level of Service	D	B	F	D	F	B
Approach Delay (s)	30.2		87.8			39.2
Approach LOS	C		F			D

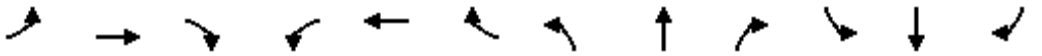
Intersection Summary			
HCM 2000 Control Delay	60.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	92.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	9	1177	1207	54	23	10
Future Volume (vph)	9	1177	1207	54	23	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	4.0		5.0	
Lane Util. Factor	1.00	*0.61	*0.61		1.00	
Frpb, ped/bikes	1.00	1.00	0.98		0.96	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.96	
Flt Protected	0.95	1.00	1.00		0.97	
Satd. Flow (prot)	1825	1970	1998		1519	
Flt Permitted	0.06	1.00	1.00		0.97	
Satd. Flow (perm)	113	1970	1998		1519	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	9	1239	1271	57	24	11
RTOR Reduction (vph)	0	0	2	0	8	0
Lane Group Flow (vph)	9	1239	1326	0	27	0
Confl. Peds. (#/hr)	142			142	89	102
Confl. Bikes (#/hr)				23		
Heavy Vehicles (%)	0%	8%	6%	10%	14%	10%
Bus Blockages (#/hr)	0	46	36	36	0	0
Turn Type	Perm	NA	NA		Prot	
Protected Phases		2	6		4	
Permitted Phases	2					
Actuated Green, G (s)	67.0	67.0	67.0		31.0	
Effective Green, g (s)	68.0	68.0	69.0		32.0	
Actuated g/C Ratio	0.62	0.62	0.63		0.29	
Clearance Time (s)	6.0	6.0	6.0		6.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	69	1217	1253		441	
v/s Ratio Prot		0.63	c0.66		c0.02	
v/s Ratio Perm	0.08					
v/c Ratio	0.13	1.02	1.06		0.06	
Uniform Delay, d1	8.7	21.0	20.5		28.2	
Progression Factor	1.04	0.79	1.00		1.00	
Incremental Delay, d2	2.9	26.9	42.4		0.1	
Delay (s)	12.0	43.4	62.9		28.2	
Level of Service	B	D	E		C	
Approach Delay (s)		43.2	62.9		28.2	
Approach LOS		D	E		C	

Intersection Summary			
HCM 2000 Control Delay	53.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	68.0%	ICU Level of Service	C
Analysis Period (min)	15		

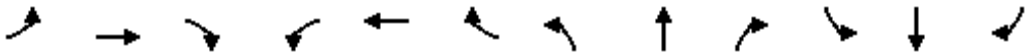
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	626	36	60	600	12	12	3	29	6	0	8
Future Volume (vph)	35	626	36	60	600	12	12	3	29	6	0	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0		3.0	5.0		6.0	6.0		6.0		6.0
Lane Util. Factor	1.00	*0.62		1.00	*0.64		1.00	1.00		1.00		1.00
Frpb, ped/bikes	1.00	0.96		1.00	0.99		1.00	0.97		1.00		0.95
Flpb, ped/bikes	0.98	1.00		0.97	1.00		0.97	1.00		0.99		1.00
Frt	1.00	0.99		1.00	1.00		1.00	0.86		1.00		0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95		1.00
Satd. Flow (prot)	1738	1900		1710	1902		1770	1615		1812		1247
Flt Permitted	0.24	1.00		0.19	1.00		0.76	1.00		0.73		1.00
Satd. Flow (perm)	436	1900		339	1902		1411	1615		1401		1247
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	38	680	39	65	652	13	13	3	32	7	0	9
RTOR Reduction (vph)	0	2	0	0	1	0	0	25	0	0	0	7
Lane Group Flow (vph)	38	717	0	65	664	0	13	10	0	7	0	2
Confl. Peds. (#/hr)	157		757	757		157	33		8	8		33
Confl. Bikes (#/hr)			5			12			9			4
Heavy Vehicles (%)	3%	12%	3%	4%	15%	17%	0%	0%	0%	0%	0%	25%
Bus Blockages (#/hr)	0	34	34	0	51	51	0	0	0	0	0	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	60.6	57.0		63.0	58.2		21.2	21.2		21.2		21.2
Effective Green, g (s)	62.6	58.0		65.0	59.2		22.2	22.2		22.2		22.2
Actuated g/C Ratio	0.63	0.58		0.65	0.59		0.22	0.22		0.22		0.22
Clearance Time (s)	4.0	6.0		4.0	6.0		7.0	7.0		7.0		7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0		3.0
Lane Grp Cap (vph)	332	1102		299	1125		313	358		311		276
v/s Ratio Prot	0.01	c0.38		c0.01	0.35			0.01				
v/s Ratio Perm	0.07			0.13			c0.01			0.00		0.00
v/c Ratio	0.11	0.65		0.22	0.59		0.04	0.03		0.02		0.01
Uniform Delay, d1	7.7	14.2		7.9	12.8		30.5	30.5		30.4		30.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00		1.00
Incremental Delay, d2	0.2	3.0		0.4	2.3		0.1	0.0		0.0		0.0
Delay (s)	7.9	17.1		8.3	15.1		30.6	30.5		30.4		30.3
Level of Service	A	B		A	B		C	C		C		C
Approach Delay (s)		16.7			14.5			30.5			30.4	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	16.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



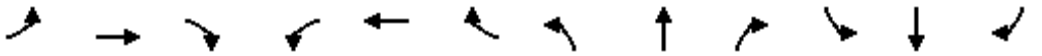
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	710	30	28	671	160	25	3	27	60	2	42
Future Volume (vph)	81	710	30	28	671	160	25	3	27	60	2	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.1	6.1		6.1	6.1			6.9			6.9	
Lane Util. Factor	1.00	*0.62		1.00	*0.62			1.00			1.00	
Frpb, ped/bikes	1.00	0.98		1.00	0.88			0.99			0.99	
Flpb, ped/bikes	0.87	1.00		0.85	1.00			1.00			0.99	
Frt	1.00	0.99		1.00	0.97			0.93			0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97	
Satd. Flow (prot)	1581	1874		1553	1707			1682			1726	
Flt Permitted	0.18	1.00		0.22	1.00			0.82			0.79	
Satd. Flow (perm)	302	1874		357	1707			1417			1402	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	84	740	31	29	699	167	26	3	28	62	2	44
RTOR Reduction (vph)	0	1	0	0	7	0	0	25	0	0	28	0
Lane Group Flow (vph)	84	770	0	29	859	0	0	32	0	0	81	0
Confl. Peds. (#/hr)	355		238	238		355	9		14	14		9
Confl. Bikes (#/hr)			24			24						4
Heavy Vehicles (%)	0%	11%	4%	0%	10%	0%	5%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	52	52	0	48	48	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	74.9	74.9		74.9	74.9			11.1			11.1	
Effective Green, g (s)	74.9	75.9		75.9	75.9			11.1			11.1	
Actuated g/C Ratio	0.75	0.76		0.76	0.76			0.11			0.11	
Clearance Time (s)	7.1	7.1		7.1	7.1			6.9			6.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	226	1422		270	1295			157			155	
v/s Ratio Prot		0.41			c0.50							
v/s Ratio Perm	0.28			0.08				0.02			c0.06	
v/c Ratio	0.37	0.54		0.11	0.66			0.20			0.52	
Uniform Delay, d1	4.4	4.9		3.2	5.8			40.4			41.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	4.6	1.5		0.8	2.7			0.6			2.9	
Delay (s)	9.0	6.4		4.0	8.5			41.1			44.9	
Level of Service	A	A		A	A			D			D	
Approach Delay (s)		6.7			8.4			41.1			44.9	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	10.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
620: Don Mills Rd & Overlea Blvd

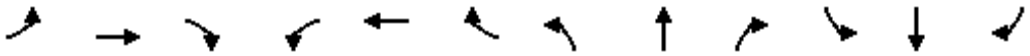
08/11/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	461	580	378	125	293	49	244	1010	238	67	891	679
Future Volume (vph)	461	580	378	125	293	49	244	1010	238	67	891	679
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	2000	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	6.0	3.0	6.0	6.0	1.5	6.0		3.0	6.0	5.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.91		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.88	1.00	1.00	0.86	1.00	0.95		1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3340	1761	1398	1797	1667	1271	1830	4731		1786	3510	1462
Flt Permitted	0.95	1.00	1.00	0.22	1.00	1.00	0.11	1.00		0.11	1.00	1.00
Satd. Flow (perm)	3340	1761	1398	414	1667	1271	209	4731		211	3510	1462
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	485	611	398	132	308	52	257	1063	251	71	938	715
RTOR Reduction (vph)	0	0	109	0	0	38	0	27	0	0	0	46
Lane Group Flow (vph)	485	611	289	132	308	14	257	1287	0	71	938	669
Confl. Peds. (#/hr)	98		78	78		98	50		177	177		50
Confl. Bikes (#/hr)			7			5						
Heavy Vehicles (%)	6%	3%	3%	1%	6%	5%	5%	3%	1%	2%	4%	6%
Bus Blockages (#/hr)	0	14	0	0	20	11	0	0	0	0	0	0
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases			4	8		8	2			6		6
Actuated Green, G (s)	23.8	57.0	57.0	45.2	38.2	38.2	62.0	52.7		51.3	46.0	69.8
Effective Green, g (s)	24.8	58.0	58.0	47.2	39.2	39.2	64.5	53.7		53.3	47.0	71.8
Actuated g/C Ratio	0.17	0.40	0.40	0.33	0.27	0.27	0.45	0.37		0.37	0.33	0.50
Clearance Time (s)	6.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0		4.0	7.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	575	709	563	212	453	345	256	1764		147	1145	728
v/s Ratio Prot	0.15	c0.35		0.03	0.18		c0.10	0.27		0.02	0.27	c0.16
v/s Ratio Perm			0.21	0.17		0.01	0.35			0.16		0.30
v/c Ratio	0.84	0.86	0.51	0.62	0.68	0.04	1.00	0.73		0.48	0.82	0.92
Uniform Delay, d1	57.7	39.3	32.4	36.7	46.8	38.6	37.5	38.9		31.5	44.6	33.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	10.9	13.1	3.3	5.6	8.0	0.2	57.2	2.7		2.5	6.6	16.6
Delay (s)	68.6	52.4	35.7	42.3	54.8	38.8	94.8	41.6		34.0	51.2	50.0
Level of Service	E	D	D	D	D	D	F	D		C	D	D
Approach Delay (s)		53.2			49.7			50.3			50.0	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	51.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	144.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	98.0%	ICU Level of Service	F
Analysis Period (min)	15		

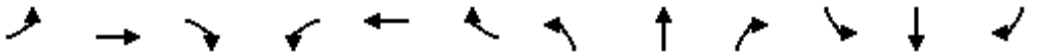
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	69	875	65	334	794	155	75	87	312	266	141	97
Future Volume (vph)	69	875	65	334	794	155	75	87	312	266	141	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	3.0		3.0	5.0		6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	*0.62		1.00	*0.63		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.98		1.00	0.93		1.00	1.00	0.91	1.00	0.93	
Flpb, ped/bikes	0.93	1.00		1.00	1.00		0.89	1.00	1.00	0.94	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1632	2076		1807	1910		1439	1783	1371	1627	1597	
Flt Permitted	0.11	1.00		0.09	1.00		0.51	1.00	1.00	0.70	1.00	
Satd. Flow (perm)	196	2076		162	1910		772	1783	1371	1195	1597	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	73	921	68	352	836	163	79	92	328	280	148	102
RTOR Reduction (vph)	0	3	0	0	8	0	0	0	179	0	23	0
Lane Group Flow (vph)	73	986	0	352	991	0	79	92	149	280	227	0
Confl. Peds. (#/hr)	190		386	386		190	183		79	79		183
Confl. Bikes (#/hr)			34			15			10			7
Heavy Vehicles (%)	4%	5%	0%	1%	6%	6%	13%	6%	2%	5%	3%	4%
Bus Blockages (#/hr)	0	28	28	0	41	0	0	4	15	0	3	3
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	43.0	43.0		61.0	61.0		36.0	36.0	36.0	36.0	36.0	
Effective Green, g (s)	44.0	46.0		62.0	62.0		37.0	37.0	37.0	37.0	37.0	
Actuated g/C Ratio	0.40	0.42		0.56	0.56		0.34	0.34	0.34	0.34	0.34	
Clearance Time (s)	6.0	6.0		4.0	6.0		7.0	7.0	7.0	7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	78	868		315	1076		259	599	461	401	537	
v/s Ratio Prot		c0.48		c0.15	0.52			0.05			0.14	
v/s Ratio Perm	0.37			0.48			0.10		0.11	c0.23		
v/c Ratio	0.94	1.14		1.12	0.92		0.31	0.15	0.32	0.70	0.42	
Uniform Delay, d1	31.6	32.0		34.9	21.8		27.0	25.5	27.2	31.7	28.2	
Progression Factor	1.00	1.00		1.33	0.62		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	85.2	75.3		64.9	4.7		0.7	0.1	0.4	5.2	0.5	
Delay (s)	116.9	107.3		111.2	18.2		27.7	25.7	27.6	36.9	28.8	
Level of Service	F	F		F	B		C	C	C	D	C	
Approach Delay (s)		108.0			42.4			27.2			33.1	
Approach LOS		F			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	59.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	112.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



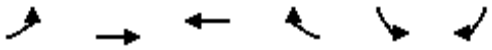
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	964	206	78	896	0	224	18	66	5	18	14
Future Volume (vph)	10	964	206	78	896	0	224	18	66	5	18	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	*0.63	1.00	1.00	*0.64		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.43	1.00	1.00		1.00	0.62		1.00	0.85	
Flpb, ped/bikes	0.88	1.00	1.00	1.00	1.00		0.69	1.00		0.58	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.88		1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1598	2197	578	1644	2136		1233	1011		1027	1515	
Flt Permitted	0.10	1.00	1.00	0.08	1.00		0.73	1.00		0.70	1.00	
Satd. Flow (perm)	161	2197	578	131	2136		954	1011		756	1515	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	1015	217	82	943	0	236	19	69	5	19	15
RTOR Reduction (vph)	0	0	21	0	0	0	0	5	0	0	0	0
Lane Group Flow (vph)	11	1015	196	82	943	0	236	83	0	5	34	0
Confl. Peds. (#/hr)	1202		418	418		1202	487		1333	1333		487
Confl. Bikes (#/hr)			18			21			5			
Heavy Vehicles (%)	1%	4%	8%	11%	8%	3%	2%	4%	5%	3%	2%	0%
Bus Blockages (#/hr)	0	28	28	0	31	31	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	52.0	52.0	52.0	52.0	52.0		34.0	34.0		34.0	34.0	
Effective Green, g (s)	53.0	53.0	53.0	53.0	53.0		35.0	35.0		35.0	35.0	
Actuated g/C Ratio	0.53	0.53	0.53	0.53	0.53		0.35	0.35		0.35	0.35	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	85	1164	306	69	1132		333	353		264	530	
v/s Ratio Prot		0.46			0.44			0.08			0.02	
v/s Ratio Perm	0.07		0.34	c0.63			c0.25			0.01		
v/c Ratio	0.13	0.87	0.64	1.19	0.83		0.71	0.23		0.02	0.06	
Uniform Delay, d1	11.9	20.5	16.7	23.5	19.8		28.1	23.0		21.3	21.6	
Progression Factor	1.01	0.75	0.79	1.12	1.10		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.8	5.4	5.7	167.6	7.2		12.0	1.6		0.1	0.2	
Delay (s)	13.7	20.8	18.9	193.9	28.9		40.1	24.6		21.4	21.8	
Level of Service	B	C	B	F	C		D	C		C	C	
Approach Delay (s)		20.4			42.1			35.9			21.8	
Approach LOS		C			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	30.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	92.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	483	506	789	668	375	1109
Future Volume (vph)	483	506	789	668	375	1109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.0	3.5
Total Lost time (s)	5.0	3.0	4.0	6.0	3.0	6.0
Lane Util. Factor	1.00	1.00	*1.00	1.00	1.00	0.91
Frpb, ped/bikes	1.00	0.87	1.00	0.94	1.00	1.00
Flpb, ped/bikes	0.96	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1487	1347	3532	1227	1451	5029
Flt Permitted	0.95	1.00	1.00	1.00	0.19	1.00
Satd. Flow (perm)	1487	1347	3532	1227	296	5029
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	503	527	822	696	391	1155
RTOR Reduction (vph)	0	21	0	447	0	0
Lane Group Flow (vph)	503	506	822	249	391	1155
Confl. Peds. (#/hr)	38	204		25	25	
Confl. Bikes (#/hr)		32		40		
Heavy Vehicles (%)	9%	2%	3%	8%	16%	2%
Bus Blockages (#/hr)	0	2	16	16	0	0
Turn Type	Perm	pm+ov	NA	Perm	pm+pt	NA
Protected Phases		1	2		1	6
Permitted Phases	8	8		2	6	
Actuated Green, G (s)	33.0	54.6	38.4	38.4	64.0	64.0
Effective Green, g (s)	34.0	56.6	41.4	39.4	65.0	65.0
Actuated g/C Ratio	0.31	0.51	0.38	0.36	0.59	0.59
Clearance Time (s)	6.0	4.0	7.0	7.0	4.0	7.0
Vehicle Extension (s)	3.0	2.0	3.0	3.0	2.0	3.0
Lane Grp Cap (vph)	459	693	1329	439	412	2971
v/s Ratio Prot		0.15	0.23		c0.19	0.23
v/s Ratio Perm	c0.34	0.23		0.20	c0.37	
v/c Ratio	1.10	0.73	0.62	0.57	0.95	0.39
Uniform Delay, d1	38.0	20.8	27.9	28.4	23.3	11.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	70.5	3.4	2.2	5.2	30.9	0.4
Delay (s)	108.5	24.2	30.0	33.7	54.2	12.3
Level of Service	F	C	C	C	D	B
Approach Delay (s)	65.4		31.7			22.9
Approach LOS	E		C			C

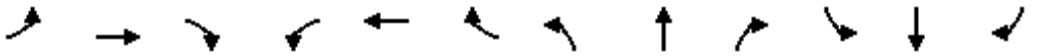
Intersection Summary			
HCM 2000 Control Delay	36.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	85.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	104	1476	1261	72	111	99
Future Volume (vph)	104	1476	1261	72	111	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0		5.0	
Lane Util. Factor	1.00	*0.61	*0.61		1.00	
Frpb, ped/bikes	1.00	1.00	0.98		0.98	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.94	
Flt Protected	0.95	1.00	1.00		0.97	
Satd. Flow (prot)	1560	2191	2084		1663	
Flt Permitted	0.05	1.00	1.00		0.97	
Satd. Flow (perm)	88	2191	2084		1663	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	113	1604	1371	78	121	108
RTOR Reduction (vph)	0	0	2	0	25	0
Lane Group Flow (vph)	113	1604	1447	0	204	0
Confl. Peds. (#/hr)	122			122	15	31
Confl. Bikes (#/hr)				15		
Heavy Vehicles (%)	17%	4%	5%	0%	6%	0%
Bus Blockages (#/hr)	0	14	21	21	0	0
Turn Type	Perm	NA	NA		Prot	
Protected Phases		2	6		4	
Permitted Phases	2					
Actuated Green, G (s)	74.0	74.0	74.0		24.0	
Effective Green, g (s)	75.0	75.0	75.0		25.0	
Actuated g/C Ratio	0.68	0.68	0.68		0.23	
Clearance Time (s)	6.0	6.0	6.0		6.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	60	1493	1420		377	
v/s Ratio Prot		0.73	0.69		c0.12	
v/s Ratio Perm	c1.29					
v/c Ratio	1.88	1.07	1.02		0.54	
Uniform Delay, d1	17.5	17.5	17.5		37.5	
Progression Factor	1.10	1.07	1.00		1.00	
Incremental Delay, d2	429.6	41.1	28.8		1.6	
Delay (s)	448.8	59.9	46.3		39.0	
Level of Service	F	E	D		D	
Approach Delay (s)		85.5	46.3		39.0	
Approach LOS		F	D		D	

Intersection Summary			
HCM 2000 Control Delay	65.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.55		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	87.3%	ICU Level of Service	E
Analysis Period (min)	15		

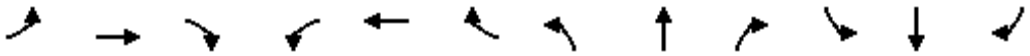
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	149	861	53	112	707	110	54	23	92	119	33	164
Future Volume (vph)	149	861	53	112	707	110	54	23	92	119	33	164
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0		3.0	5.0		6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	*0.62		1.00	*0.64		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.96		1.00	0.95		1.00	0.97		1.00	1.00	0.91
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.92	1.00		0.98	1.00	1.00
Frt	1.00	0.99		1.00	0.98		1.00	0.88		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1748	1987		1789	2003		1654	1616		1720	1921	1427
Flt Permitted	0.12	1.00		0.08	1.00		0.73	1.00		0.68	1.00	1.00
Satd. Flow (perm)	214	1987		145	2003		1279	1616		1229	1921	1427
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	159	916	56	119	752	117	57	24	98	127	35	174
RTOR Reduction (vph)	0	2	0	0	6	0	0	73	0	0	0	121
Lane Group Flow (vph)	159	970	0	119	863	0	57	49	0	127	35	53
Confl. Peds. (#/hr)	197		649	649		197	87		26	26		87
Confl. Bikes (#/hr)			15			4						2
Heavy Vehicles (%)	4%	9%	2%	2%	9%	0%	2%	0%	2%	4%	0%	4%
Bus Blockages (#/hr)	0	25	25	0	27	27	0	0	0	0	0	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	59.9	52.8		57.9	51.8		24.1	24.1		24.1	24.1	24.1
Effective Green, g (s)	61.9	53.8		59.9	52.8		25.1	25.1		25.1	25.1	25.1
Actuated g/C Ratio	0.62	0.54		0.60	0.53		0.25	0.25		0.25	0.25	0.25
Clearance Time (s)	4.0	6.0		4.0	6.0		7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	256	1069		203	1057		321	405		308	482	358
v/s Ratio Prot	c0.05	c0.49		0.04	0.43			0.03			0.02	
v/s Ratio Perm	0.33			0.31			0.04			c0.10		0.04
v/c Ratio	0.62	0.91		0.59	0.82		0.18	0.12		0.41	0.07	0.15
Uniform Delay, d1	13.0	20.8		15.5	19.6		29.4	28.9		31.3	28.6	29.1
Progression Factor	1.13	0.96		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	4.6	12.5		4.3	7.0		0.3	0.1		0.9	0.1	0.2
Delay (s)	19.3	32.5		19.8	26.6		29.6	29.1		32.2	28.6	29.3
Level of Service	B	C		B	C		C	C		C	C	C
Approach Delay (s)		30.7			25.7			29.2			30.3	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	28.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



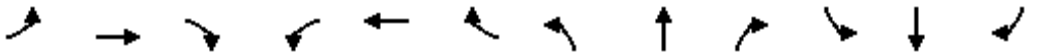
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	109	962	63	37	920	174	31	4	36	194	1	128
Future Volume (vph)	109	962	63	37	920	174	31	4	36	194	1	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.1	6.1		6.1	6.1			6.9			6.9	
Lane Util. Factor	1.00	*0.62		1.00	*0.62			1.00			1.00	
Frpb, ped/bikes	1.00	0.97		1.00	0.87			0.99			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99	
Frt	1.00	0.99		1.00	0.98			0.93			0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97	
Satd. Flow (prot)	1825	2068		841	1895			1730			1743	
Flt Permitted	0.07	1.00		0.09	1.00			0.78			0.77	
Satd. Flow (perm)	136	2068		80	1895			1383			1389	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	112	992	65	38	948	179	32	4	37	200	1	132
RTOR Reduction (vph)	0	3	0	0	9	0	0	28	0	0	5	0
Lane Group Flow (vph)	112	1054	0	38	1118	0	0	45	0	0	328	0
Confl. Peds. (#/hr)	733		171	171		733	2		9	9		2
Confl. Bikes (#/hr)			26			32						2
Heavy Vehicles (%)	0%	5%	0%	117%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	27	27	0	32	32	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	63.0	63.0		63.0	63.0			23.0			23.0	
Effective Green, g (s)	63.0	64.0		64.0	64.0			23.0			23.0	
Actuated g/C Ratio	0.63	0.64		0.64	0.64			0.23			0.23	
Clearance Time (s)	7.1	7.1		7.1	7.1			6.9			6.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	85	1323		51	1212			318			319	
v/s Ratio Prot		0.51			0.59							
v/s Ratio Perm	c0.82			0.47				0.03			c0.24	
v/c Ratio	1.32	0.80		0.75	0.92			0.14			1.03	
Uniform Delay, d1	18.5	13.2		12.4	15.8			30.6			38.5	
Progression Factor	1.00	1.00		0.43	0.44			1.00			1.00	
Incremental Delay, d2	204.4	5.1		28.4	7.3			0.2			58.2	
Delay (s)	222.9	18.3		33.7	14.2			30.8			96.7	
Level of Service	F	B		C	B			C			F	
Approach Delay (s)		37.9			14.9			30.8			96.7	
Approach LOS		D			B			C			F	

Intersection Summary			
HCM 2000 Control Delay	35.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.22		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	89.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
620: Don Mills Rd & Overlea Blvd

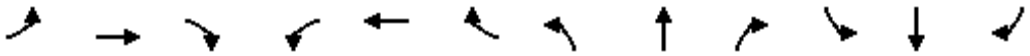
08/11/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	461	580	378	125	293	49	244	1010	238	67	891	679
Future Volume (vph)	461	580	378	125	293	49	244	1010	238	67	891	679
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	2000	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	6.0	3.0	6.0	6.0	1.5	6.0		3.0	6.0	5.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.91		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.88	1.00	1.00	0.86	1.00	0.95		1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3340	1761	1398	1797	1667	1271	1830	4731		1786	3510	1462
Flt Permitted	0.95	1.00	1.00	0.22	1.00	1.00	0.11	1.00		0.11	1.00	1.00
Satd. Flow (perm)	3340	1761	1398	414	1667	1271	209	4731		211	3510	1462
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	485	611	398	132	308	52	257	1063	251	71	938	715
RTOR Reduction (vph)	0	0	109	0	0	38	0	27	0	0	0	46
Lane Group Flow (vph)	485	611	289	132	308	14	257	1287	0	71	938	669
Confl. Peds. (#/hr)	98		78	78		98	50		177	177		50
Confl. Bikes (#/hr)			7			5						
Heavy Vehicles (%)	6%	3%	3%	1%	6%	5%	5%	3%	1%	2%	4%	6%
Bus Blockages (#/hr)	0	14	0	0	20	11	0	0	0	0	0	0
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases			4	8		8	2			6		6
Actuated Green, G (s)	23.8	57.0	57.0	45.2	38.2	38.2	62.0	52.7		51.3	46.0	69.8
Effective Green, g (s)	24.8	58.0	58.0	47.2	39.2	39.2	64.5	53.7		53.3	47.0	71.8
Actuated g/C Ratio	0.17	0.40	0.40	0.33	0.27	0.27	0.45	0.37		0.37	0.33	0.50
Clearance Time (s)	6.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0		4.0	7.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	575	709	563	212	453	345	256	1764		147	1145	728
v/s Ratio Prot	0.15	c0.35		0.03	0.18		c0.10	0.27		0.02	0.27	c0.16
v/s Ratio Perm			0.21	0.17		0.01	0.35			0.16		0.30
v/c Ratio	0.84	0.86	0.51	0.62	0.68	0.04	1.00	0.73		0.48	0.82	0.92
Uniform Delay, d1	57.7	39.3	32.4	36.7	46.8	38.6	37.5	38.9		31.5	44.6	33.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	10.9	13.1	3.3	5.6	8.0	0.2	57.2	2.7		2.5	6.6	16.6
Delay (s)	68.6	52.4	35.7	42.3	54.8	38.8	94.8	41.6		34.0	51.2	50.0
Level of Service	E	D	D	D	D	D	F	D		C	D	D
Approach Delay (s)		53.2			49.7			50.3			50.0	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	51.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	144.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	98.0%	ICU Level of Service	F
Analysis Period (min)	15		

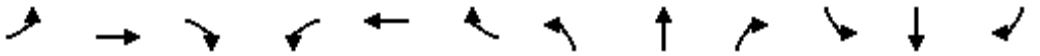
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	69	875	65	334	794	155	75	87	312	266	141	97
Future Volume (vph)	69	875	65	334	794	155	75	87	312	266	141	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	3.0		3.0	5.0		6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	*0.62		1.00	*0.63		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.97		1.00	0.92		1.00	1.00	0.89	1.00	0.91	
Flpb, ped/bikes	0.89	1.00		1.00	1.00		0.87	1.00	1.00	0.92	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1565	2072		1807	1876		1407	1783	1340	1597	1565	
Flt Permitted	0.16	1.00		0.06	1.00		0.43	1.00	1.00	0.70	1.00	
Satd. Flow (perm)	256	2072		111	1876		638	1783	1340	1172	1565	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	73	921	68	352	836	163	79	92	328	280	148	102
RTOR Reduction (vph)	0	3	0	0	7	0	0	0	211	0	18	0
Lane Group Flow (vph)	73	986	0	352	992	0	79	92	117	280	232	0
Confl. Peds. (#/hr)	190		386	386		190	183		79	79		183
Confl. Bikes (#/hr)			34			15			10			7
Heavy Vehicles (%)	4%	5%	0%	1%	6%	6%	13%	6%	2%	5%	3%	4%
Bus Blockages (#/hr)	0	28	28	0	41	0	0	4	15	0	3	3
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	64.6	64.6		91.0	91.0		36.0	36.0	36.0	36.0	36.0	
Effective Green, g (s)	65.6	67.6		92.0	92.0		37.0	37.0	37.0	37.0	37.0	
Actuated g/C Ratio	0.47	0.48		0.66	0.66		0.26	0.26	0.26	0.26	0.26	
Clearance Time (s)	6.0	6.0		4.0	6.0		7.0	7.0	7.0	7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	119	1000		356	1232		168	471	354	309	413	
v/s Ratio Prot		0.48		c0.17	0.53			0.05			0.15	
v/s Ratio Perm	0.29			c0.48			0.12		0.09	c0.24		
v/c Ratio	0.61	0.99		0.99	0.81		0.47	0.20	0.33	0.91	0.56	
Uniform Delay, d1	27.7	35.7		48.1	17.5		43.3	40.0	41.5	49.8	44.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	21.4	25.4		44.2	5.7		2.1	0.2	0.6	28.3	1.8	
Delay (s)	49.1	61.1		92.3	23.2		45.3	40.2	42.1	78.1	46.3	
Level of Service	D	E		F	C		D	D	D	E	D	
Approach Delay (s)		60.3			41.2			42.2			63.1	
Approach LOS		E			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	50.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	112.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



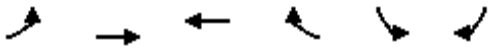
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	964	206	78	896	0	224	18	66	5	18	14
Future Volume (vph)	10	964	206	78	896	0	224	18	66	5	18	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	*0.63	1.00	1.00	*0.64		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.42	1.00	1.00		1.00	0.61		1.00	0.85	
Flpb, ped/bikes	0.88	1.00	1.00	1.00	1.00		0.68	1.00		0.56	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.88		1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1587	2197	559	1644	2136		1218	982		990	1508	
Flt Permitted	0.11	1.00	1.00	0.08	1.00		0.73	1.00		0.70	1.00	
Satd. Flow (perm)	185	2197	559	143	2136		943	982		729	1508	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	1015	217	82	943	0	236	19	69	5	19	15
RTOR Reduction (vph)	0	0	17	0	0	0	0	9	0	0	0	0
Lane Group Flow (vph)	11	1015	200	82	943	0	236	79	0	5	34	0
Confl. Peds. (#/hr)	1202		418	418		1202	487		1333	1333		487
Confl. Bikes (#/hr)			18			21			5			
Heavy Vehicles (%)	1%	4%	8%	11%	8%	3%	2%	4%	5%	3%	2%	0%
Bus Blockages (#/hr)	0	28	28	0	31	31	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	62.0	62.0	62.0	62.0	62.0		34.0	34.0		34.0	34.0	
Effective Green, g (s)	63.0	63.0	63.0	63.0	63.0		35.0	35.0		35.0	35.0	
Actuated g/C Ratio	0.57	0.57	0.57	0.57	0.57		0.32	0.32		0.32	0.32	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	105	1258	320	81	1223		300	312		231	479	
v/s Ratio Prot		0.46			0.44			0.08			0.02	
v/s Ratio Perm	0.06		0.36	c0.57			c0.25			0.01		
v/c Ratio	0.10	0.81	0.62	1.01	0.77		0.79	0.25		0.02	0.07	
Uniform Delay, d1	10.7	18.7	15.6	23.5	18.0		34.1	27.8		25.7	26.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.0	5.6	8.9	103.4	4.7		18.5	1.9		0.2	0.3	
Delay (s)	12.7	24.3	24.5	126.9	22.7		52.6	29.8		25.9	26.4	
Level of Service	B	C	C	F	C		D	C		C	C	
Approach Delay (s)		24.2			31.1			46.4			26.4	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	29.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	92.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	483	506	789	668	375	1109
Future Volume (vph)	483	506	789	668	375	1109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.0	3.5
Total Lost time (s)	5.0	3.0	4.0	6.0	3.0	6.0
Lane Util. Factor	1.00	1.00	*1.00	1.00	1.00	0.91
Frpb, ped/bikes	1.00	0.85	1.00	0.93	1.00	1.00
Flpb, ped/bikes	0.96	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1481	1325	3532	1218	1451	5029
Flt Permitted	0.95	1.00	1.00	1.00	0.15	1.00
Satd. Flow (perm)	1481	1325	3532	1218	223	5029
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	503	527	822	696	391	1155
RTOR Reduction (vph)	0	11	0	485	0	0
Lane Group Flow (vph)	503	516	822	211	391	1155
Confl. Peds. (#/hr)	38	204		25	25	
Confl. Bikes (#/hr)		32		40		
Heavy Vehicles (%)	9%	2%	3%	8%	16%	2%
Bus Blockages (#/hr)	0	2	16	16	0	0
Turn Type	Perm	pm+ov	NA	Perm	pm+pt	NA
Protected Phases		1	2		1	6
Permitted Phases	8	8		2	6	
Actuated Green, G (s)	42.0	67.7	35.3	35.3	65.0	65.0
Effective Green, g (s)	43.0	69.7	38.3	36.3	66.0	66.0
Actuated g/C Ratio	0.36	0.58	0.32	0.30	0.55	0.55
Clearance Time (s)	6.0	4.0	7.0	7.0	4.0	7.0
Vehicle Extension (s)	3.0	2.0	3.0	3.0	2.0	3.0
Lane Grp Cap (vph)	530	769	1127	368	395	2765
v/s Ratio Prot		0.15	0.23		c0.22	0.23
v/s Ratio Perm	c0.34	0.24		0.17	c0.32	
v/c Ratio	0.95	0.67	0.73	0.57	0.99	0.42
Uniform Delay, d1	37.4	17.3	36.3	35.3	32.4	15.8
Progression Factor	0.87	1.87	1.00	1.00	1.00	1.00
Incremental Delay, d2	15.5	0.8	4.2	6.3	42.0	0.5
Delay (s)	48.0	33.1	40.4	41.6	74.4	16.2
Level of Service	D	C	D	D	E	B
Approach Delay (s)	40.4		41.0			30.9
Approach LOS	D		D			C

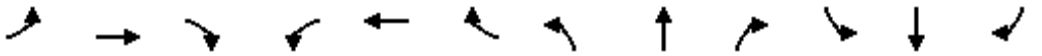
Intersection Summary			
HCM 2000 Control Delay	37.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	85.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	104	1476	1261	72	111	99
Future Volume (vph)	104	1476	1261	72	111	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0		5.0	
Lane Util. Factor	1.00	*0.61	*0.61		1.00	
Frpb, ped/bikes	1.00	1.00	0.98		0.98	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.94	
Flt Protected	0.95	1.00	1.00		0.97	
Satd. Flow (prot)	1560	2191	2084		1663	
Flt Permitted	0.05	1.00	1.00		0.97	
Satd. Flow (perm)	88	2191	2084		1663	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	113	1604	1371	78	121	108
RTOR Reduction (vph)	0	0	2	0	25	0
Lane Group Flow (vph)	113	1604	1447	0	204	0
Confl. Peds. (#/hr)	122			122	15	31
Confl. Bikes (#/hr)				15		
Heavy Vehicles (%)	17%	4%	5%	0%	6%	0%
Bus Blockages (#/hr)	0	14	21	21	0	0
Turn Type	Perm	NA	NA		Prot	
Protected Phases		2	6		4	
Permitted Phases	2					
Actuated Green, G (s)	74.0	74.0	74.0		24.0	
Effective Green, g (s)	75.0	75.0	75.0		25.0	
Actuated g/C Ratio	0.68	0.68	0.68		0.23	
Clearance Time (s)	6.0	6.0	6.0		6.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	60	1493	1420		377	
v/s Ratio Prot		0.73	0.69		c0.12	
v/s Ratio Perm	c1.29					
v/c Ratio	1.88	1.07	1.02		0.54	
Uniform Delay, d1	17.5	17.5	17.5		37.5	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	453.6	46.1	28.8		1.6	
Delay (s)	471.1	63.6	46.3		39.0	
Level of Service	F	E	D		D	
Approach Delay (s)		90.4	46.3		39.0	
Approach LOS		F	D		D	

Intersection Summary			
HCM 2000 Control Delay	68.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.55		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	87.3%	ICU Level of Service	E
Analysis Period (min)	15		

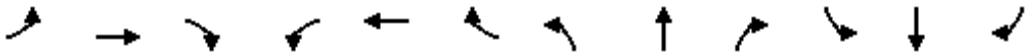
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	149	861	53	112	707	110	54	23	92	119	33	164
Future Volume (vph)	149	861	53	112	707	110	54	23	92	119	33	164
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0		3.0	5.0		6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	*0.62		1.00	*0.64		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.96		1.00	0.95		1.00	0.97		1.00	1.00	0.91
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.92	1.00		0.98	1.00	1.00
Frt	1.00	0.99		1.00	0.98		1.00	0.88		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1748	1987		1789	2003		1654	1616		1720	1921	1427
Flt Permitted	0.12	1.00		0.08	1.00		0.73	1.00		0.68	1.00	1.00
Satd. Flow (perm)	214	1987		145	2003		1279	1616		1229	1921	1427
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	159	916	56	119	752	117	57	24	98	127	35	174
RTOR Reduction (vph)	0	2	0	0	6	0	0	73	0	0	0	121
Lane Group Flow (vph)	159	970	0	119	863	0	57	49	0	127	35	53
Confl. Peds. (#/hr)	197		649	649		197	87		26	26		87
Confl. Bikes (#/hr)			15			4						2
Heavy Vehicles (%)	4%	9%	2%	2%	9%	0%	2%	0%	2%	4%	0%	4%
Bus Blockages (#/hr)	0	25	25	0	27	27	0	0	0	0	0	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	59.9	52.8		57.9	51.8		24.1	24.1		24.1	24.1	24.1
Effective Green, g (s)	61.9	53.8		59.9	52.8		25.1	25.1		25.1	25.1	25.1
Actuated g/C Ratio	0.62	0.54		0.60	0.53		0.25	0.25		0.25	0.25	0.25
Clearance Time (s)	4.0	6.0		4.0	6.0		7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	256	1069		203	1057		321	405		308	482	358
v/s Ratio Prot	c0.05	c0.49		0.04	0.43			0.03			0.02	
v/s Ratio Perm	0.33			0.31			0.04			c0.10		0.04
v/c Ratio	0.62	0.91		0.59	0.82		0.18	0.12		0.41	0.07	0.15
Uniform Delay, d1	13.0	20.8		15.5	19.6		29.4	28.9		31.3	28.6	29.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	4.6	12.6		4.3	7.0		0.3	0.1		0.9	0.1	0.2
Delay (s)	17.7	33.5		19.8	26.6		29.6	29.1		32.2	28.6	29.3
Level of Service	B	C		B	C		C	C		C	C	C
Approach Delay (s)		31.3			25.7			29.2			30.3	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	28.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



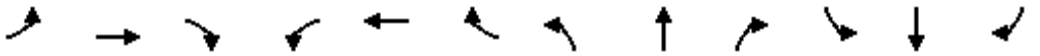
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	109	962	63	37	920	174	31	4	36	194	1	128
Future Volume (vph)	109	962	63	37	920	174	31	4	36	194	1	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	6.1		6.1	6.1			6.9			6.9	
Lane Util. Factor	1.00	*0.62		1.00	*0.62			1.00			1.00	
Frpb, ped/bikes	1.00	0.97		1.00	0.86			0.99			0.99	
Flpb, ped/bikes	1.00	1.00		0.93	1.00			1.00			0.99	
Frt	1.00	0.99		1.00	0.98			0.93			0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97	
Satd. Flow (prot)	1825	2063		784	1868			1727			1740	
Flt Permitted	0.95	1.00		0.12	1.00			0.78			0.80	
Satd. Flow (perm)	1825	2063		99	1868			1383			1427	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	112	992	65	38	948	179	32	4	37	200	1	132
RTOR Reduction (vph)	0	3	0	0	7	0	0	29	0	0	20	0
Lane Group Flow (vph)	112	1055	0	38	1120	0	0	44	0	0	313	0
Confl. Peds. (#/hr)	733		171	171		733	2		9	9		2
Confl. Bikes (#/hr)			26			32						2
Heavy Vehicles (%)	0%	5%	0%	117%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	27	27	0	32	32	0	0	0	0	0	0
Turn Type	Prot	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases				6			8			4		
Actuated Green, G (s)	7.9	81.5		69.1	69.1			24.5			24.5	
Effective Green, g (s)	7.9	82.5		70.1	70.1			24.5			24.5	
Actuated g/C Ratio	0.07	0.69		0.58	0.58			0.20			0.20	
Clearance Time (s)	4.5	7.1		7.1	7.1			6.9			6.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	120	1418		57	1091			282			291	
v/s Ratio Prot	c0.06	0.51			c0.60							
v/s Ratio Perm				0.38				0.03			c0.22	
v/c Ratio	0.93	0.74		0.67	1.03			0.15			1.08	
Uniform Delay, d1	55.8	12.0		17.0	25.0			39.2			47.8	
Progression Factor	1.22	0.55		1.00	1.00			1.00			1.00	
Incremental Delay, d2	42.9	2.0		25.7	34.1			0.3			74.4	
Delay (s)	111.0	8.6		42.7	59.1			39.5			122.2	
Level of Service	F	A		D	E			D			F	
Approach Delay (s)		18.4			58.5			39.5			122.2	
Approach LOS		B			E			D			F	

Intersection Summary			
HCM 2000 Control Delay	48.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.5
Intersection Capacity Utilization	85.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
620: Don Mills Rd & Overlea Blvd

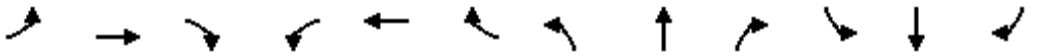
08/11/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	546	240	313	292	357	183	259	757	101	43	1002	508
Future Volume (vph)	546	240	313	292	357	183	259	757	101	43	1002	508
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	2000	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	6.0	3.0	6.0	6.0	1.0	6.0		3.0	6.0	5.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.91		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.65	1.00	1.00	0.67	1.00	0.96		1.00	1.00	0.77
Flpb, ped/bikes	1.00	1.00	1.00	0.89	1.00	1.00	1.00	1.00		0.98	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3219	1571	953	1524	1530	974	1715	4781		1598	3380	1123
Flt Permitted	0.95	1.00	1.00	0.53	1.00	1.00	0.09	1.00		0.26	1.00	1.00
Satd. Flow (perm)	3219	1571	953	851	1530	974	164	4781		442	3380	1123
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	563	247	323	301	368	189	267	780	104	44	1033	524
RTOR Reduction (vph)	0	0	124	0	0	89	0	12	0	0	0	44
Lane Group Flow (vph)	563	247	199	301	368	100	267	872	0	44	1033	480
Confl. Peds. (#/hr)	322		392	392		322	352		342	342		352
Confl. Bikes (#/hr)			4			1						
Heavy Vehicles (%)	10%	13%	11%	6%	13%	2%	12%	3%	7%	12%	8%	12%
Bus Blockages (#/hr)	0	19	0	0	25	22	0	0	0	0	0	0
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases			4	8		8	2			6		6
Actuated Green, G (s)	23.0	42.3	42.3	56.7	37.0	37.0	64.0	54.8		54.2	49.0	72.0
Effective Green, g (s)	24.0	43.3	43.3	58.7	38.0	38.0	67.0	55.8		56.2	50.0	74.0
Actuated g/C Ratio	0.17	0.30	0.30	0.41	0.26	0.26	0.47	0.39		0.39	0.35	0.51
Clearance Time (s)	6.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0		4.0	7.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	536	472	286	443	403	257	227	1852		222	1173	577
v/s Ratio Prot	c0.17	0.16		0.10	c0.24		c0.11	0.18		0.01	c0.31	0.14
v/s Ratio Perm			0.21	0.18		0.10	0.43			0.07		0.29
v/c Ratio	1.05	0.52	0.70	0.68	0.91	0.39	1.18	0.47		0.20	0.88	0.83
Uniform Delay, d1	60.0	41.8	44.5	31.7	51.4	43.5	40.4	33.0		27.7	44.2	29.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	52.8	4.1	13.2	4.1	27.5	4.4	115.6	0.9		0.4	9.6	9.9
Delay (s)	112.8	45.9	57.7	35.8	78.9	47.9	156.0	33.9		28.2	53.8	39.6
Level of Service	F	D	E	D	E	D	F	C		C	D	D
Approach Delay (s)		82.5			57.0			62.2			48.5	
Approach LOS		F			E			E			D	

Intersection Summary			
HCM 2000 Control Delay	61.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	144.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	101.1%	ICU Level of Service	G
Analysis Period (min)	15		

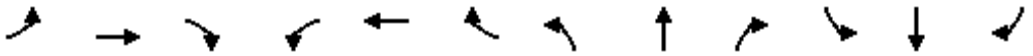
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	627	106	270	657	261	56	138	380	200	51	25
Future Volume (vph)	70	627	106	270	657	261	56	138	380	200	51	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		3.0	5.0		6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	*0.62		1.00	*0.63		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.95		1.00	0.92		1.00	1.00	0.95	1.00	0.96	
Flpb, ped/bikes	0.95	1.00		1.00	1.00		0.89	1.00	1.00	0.97	1.00	
Frt	1.00	0.98		1.00	0.96		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1694	1848		1789	1820		1533	1741	1421	1634	1579	
Flt Permitted	0.13	1.00		0.09	1.00		0.70	1.00	1.00	0.66	1.00	
Satd. Flow (perm)	235	1848		164	1820		1137	1741	1421	1131	1579	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	74	660	112	284	692	275	59	145	400	211	54	26
RTOR Reduction (vph)	0	7	0	0	18	0	0	0	207	0	16	0
Lane Group Flow (vph)	74	765	0	284	949	0	59	145	193	211	64	0
Confl. Peds. (#/hr)	128		472	472		128	134		44	44		134
Confl. Bikes (#/hr)			8			24			3			8
Heavy Vehicles (%)	2%	10%	16%	2%	9%	4%	6%	9%	4%	8%	10%	5%
Bus Blockages (#/hr)	0	36	36	0	40	0	0	3	11	0	5	5
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	42.0	42.0		61.0	61.0		36.0	36.0	36.0	36.0	36.0	
Effective Green, g (s)	43.0	43.0		62.0	62.0		37.0	37.0	37.0	37.0	37.0	
Actuated g/C Ratio	0.39	0.39		0.56	0.56		0.34	0.34	0.34	0.34	0.34	
Clearance Time (s)	6.0	6.0		4.0	6.0		7.0	7.0	7.0	7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	91	722		328	1025		382	585	477	380	531	
v/s Ratio Prot		c0.41		0.13	c0.52			0.08			0.04	
v/s Ratio Perm	0.31			0.36			0.05		0.14	c0.19		
v/c Ratio	0.81	1.06		0.87	0.93		0.15	0.25	0.40	0.56	0.12	
Uniform Delay, d1	29.9	33.5		31.0	21.9		25.6	26.4	28.0	29.8	25.2	
Progression Factor	1.00	1.00		1.54	1.16		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	52.9	50.3		2.4	1.9		0.2	0.2	0.6	1.8	0.1	
Delay (s)	82.8	83.8		50.2	27.3		25.7	26.6	28.6	31.5	25.3	
Level of Service	F	F		D	C		C	C	C	C	C	
Approach Delay (s)		83.7			32.5			27.9			29.8	
Approach LOS		F			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	45.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	105.1%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



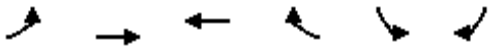
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	664	103	35	601	0	272	37	58	133	39	114
Future Volume (vph)	58	664	103	35	601	0	272	37	58	133	39	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		3.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	*0.63	1.00	1.00	*0.64		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.37	1.00	1.00		1.00	0.67		1.00	0.76	
Flpb, ped/bikes	0.80	1.00	1.00	0.86	1.00		0.87	1.00		0.53	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.91		1.00	0.89	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1410	1894	432	1439	2029		1451	1150		950	1233	
Flt Permitted	0.20	1.00	1.00	0.16	1.00		0.58	1.00		0.69	1.00	
Satd. Flow (perm)	295	1894	432	235	2029		884	1150		691	1233	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	62	706	110	37	639	0	289	39	62	141	41	121
RTOR Reduction (vph)	0	0	43	0	0	0	0	3	0	0	28	0
Lane Group Flow (vph)	62	706	67	37	639	0	289	98	0	141	134	0
Confl. Peds. (#/hr)	798		526	526		798	416		1602	1602		416
Confl. Bikes (#/hr)			13			24			17			4
Heavy Vehicles (%)	3%	15%	13%	9%	12%	2%	9%	0%	2%	2%	0%	6%
Bus Blockages (#/hr)	0	50	50	0	38	38	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		2			6		3	8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	49.0	49.0	49.0	49.0	49.0		47.0	47.0		34.0	34.0	
Effective Green, g (s)	50.0	50.0	50.0	50.0	50.0		48.0	48.0		35.0	35.0	
Actuated g/C Ratio	0.45	0.45	0.45	0.45	0.45		0.44	0.44		0.32	0.32	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0		4.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	134	860	196	106	922		437	501		219	392	
v/s Ratio Prot		c0.37			0.31		c0.06	0.09			0.11	
v/s Ratio Perm	0.21		0.15	0.16			c0.23			0.20		
v/c Ratio	0.46	0.82	0.34	0.35	0.69		0.66	0.20		0.64	0.34	
Uniform Delay, d1	20.7	26.1	19.4	19.4	23.9		23.5	19.1		32.2	28.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	11.1	8.7	4.7	8.8	4.3		3.7	0.9		13.7	2.4	
Delay (s)	31.8	34.8	24.1	28.3	28.2		27.2	20.0		45.8	31.1	
Level of Service	C	C	C	C	C		C	B		D	C	
Approach Delay (s)		33.2			28.2			25.4			37.9	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	31.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	119.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	359	414	1225	448	337	854
Future Volume (vph)	359	414	1225	448	337	854
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.0	3.5
Total Lost time (s)	5.0	3.0	6.0	6.0	3.0	6.0
Lane Util. Factor	1.00	1.00	*1.00	1.00	1.00	0.91
Frpb, ped/bikes	1.00	0.93	1.00	0.85	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1449	1392	3473	1023	1212	4932
Flt Permitted	0.95	1.00	1.00	1.00	0.10	1.00
Satd. Flow (perm)	1449	1392	3473	1023	128	4932
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	386	445	1317	482	362	918
RTOR Reduction (vph)	0	1	0	263	0	0
Lane Group Flow (vph)	386	444	1317	219	362	918
Confl. Peds. (#/hr)	2	102		78	78	
Confl. Bikes (#/hr)		28		106		
Heavy Vehicles (%)	16%	5%	3%	13%	39%	4%
Bus Blockages (#/hr)	0	4	24	24	0	0
Turn Type	Perm	pm+ov	NA	Perm	pm+pt	NA
Protected Phases		1	2		1	6
Permitted Phases	8	8		2	6	
Actuated Green, G (s)	33.0	57.0	36.0	36.0	64.0	64.0
Effective Green, g (s)	34.0	59.0	37.0	37.0	65.0	65.0
Actuated g/C Ratio	0.31	0.54	0.34	0.34	0.59	0.59
Clearance Time (s)	6.0	4.0	7.0	7.0	4.0	7.0
Vehicle Extension (s)	3.0	2.0	3.0	3.0	2.0	3.0
Lane Grp Cap (vph)	447	746	1168	344	322	2914
v/s Ratio Prot		0.14	0.38		c0.26	0.19
v/s Ratio Perm	c0.27	0.18		0.21	c0.41	
v/c Ratio	0.86	0.60	1.13	0.64	1.12	0.32
Uniform Delay, d1	35.8	17.4	36.5	30.8	33.9	11.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	19.4	0.9	68.8	8.7	88.0	0.3
Delay (s)	55.2	18.2	105.3	39.5	122.0	11.6
Level of Service	E	B	F	D	F	B
Approach Delay (s)	35.4		87.6			42.8
Approach LOS	D		F			D

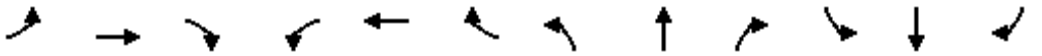
Intersection Summary			
HCM 2000 Control Delay	61.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	92.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	9	1291	1262	54	23	10
Future Volume (vph)	9	1291	1262	54	23	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	4.0		5.0	
Lane Util. Factor	1.00	*0.61	*0.61		1.00	
Frpb, ped/bikes	1.00	1.00	0.98		0.96	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.96	
Flt Protected	0.95	1.00	1.00		0.97	
Satd. Flow (prot)	1825	1970	2000		1519	
Flt Permitted	0.06	1.00	1.00		0.97	
Satd. Flow (perm)	113	1970	2000		1519	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	9	1359	1328	57	24	11
RTOR Reduction (vph)	0	0	2	0	8	0
Lane Group Flow (vph)	9	1359	1383	0	27	0
Confl. Peds. (#/hr)	142			142	89	102
Confl. Bikes (#/hr)				23		
Heavy Vehicles (%)	0%	8%	6%	10%	14%	10%
Bus Blockages (#/hr)	0	46	36	36	0	0
Turn Type	Perm	NA	NA		Prot	
Protected Phases		2	6		4	
Permitted Phases	2					
Actuated Green, G (s)	67.0	67.0	67.0		31.0	
Effective Green, g (s)	68.0	68.0	69.0		32.0	
Actuated g/C Ratio	0.62	0.62	0.63		0.29	
Clearance Time (s)	6.0	6.0	6.0		6.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	69	1217	1254		441	
v/s Ratio Prot		0.69	c0.69		c0.02	
v/s Ratio Perm	0.08					
v/c Ratio	0.13	1.12	1.10		0.06	
Uniform Delay, d1	8.7	21.0	20.5		28.2	
Progression Factor	0.93	0.67	1.00		1.00	
Incremental Delay, d2	2.4	60.2	58.5		0.1	
Delay (s)	10.5	74.1	79.0		28.2	
Level of Service	B	E	E		C	
Approach Delay (s)		73.7	79.0		28.2	
Approach LOS		E	E		C	

Intersection Summary			
HCM 2000 Control Delay	75.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	69.6%	ICU Level of Service	C
Analysis Period (min)	15		

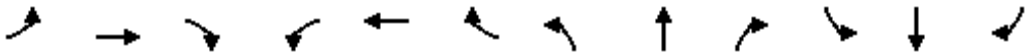
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	748	37	60	661	12	13	3	29	6	1	8
Future Volume (vph)	35	748	37	60	661	12	13	3	29	6	1	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0		3.0	5.0		6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	*0.62		1.00	*0.64		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.97		1.00	0.99		1.00	0.97		1.00	1.00	0.95
Flpb, ped/bikes	0.99	1.00		0.99	1.00		0.97	1.00		0.99	1.00	1.00
Frt	1.00	0.99		1.00	1.00		1.00	0.86		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1748	1911		1737	1904		1770	1615		1812	1921	1247
Flt Permitted	0.21	1.00		0.13	1.00		0.76	1.00		0.73	1.00	1.00
Satd. Flow (perm)	378	1911		241	1904		1411	1615		1401	1921	1247
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	38	813	40	65	718	13	14	3	32	7	1	9
RTOR Reduction (vph)	0	2	0	0	1	0	0	25	0	0	0	7
Lane Group Flow (vph)	38	851	0	65	730	0	14	10	0	7	1	2
Confl. Peds. (#/hr)	157		757	757		157	33		8	8		33
Confl. Bikes (#/hr)			5			12			9			4
Heavy Vehicles (%)	3%	12%	3%	4%	15%	17%	0%	0%	0%	0%	0%	25%
Bus Blockages (#/hr)	0	34	34	0	51	51	0	0	0	0	0	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	60.6	57.0		63.0	58.2		21.2	21.2		21.2	21.2	21.2
Effective Green, g (s)	62.6	58.0		65.0	59.2		22.2	22.2		22.2	22.2	22.2
Actuated g/C Ratio	0.63	0.58		0.65	0.59		0.22	0.22		0.22	0.22	0.22
Clearance Time (s)	4.0	6.0		4.0	6.0		7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	299	1108		243	1127		313	358		311	426	276
v/s Ratio Prot	0.01	c0.45		c0.02	0.38			0.01			0.00	
v/s Ratio Perm	0.07			0.16			c0.01			0.00		0.00
v/c Ratio	0.13	0.77		0.27	0.65		0.04	0.03		0.02	0.00	0.01
Uniform Delay, d1	8.0	15.9		9.3	13.5		30.6	30.5		30.4	30.3	30.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.2	5.1		0.6	2.9		0.1	0.0		0.0	0.0	0.0
Delay (s)	8.2	21.0		9.9	16.4		30.6	30.5		30.4	30.3	30.3
Level of Service	A	C		A	B		C	C		C	C	C
Approach Delay (s)		20.5			15.9			30.5			30.4	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	18.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



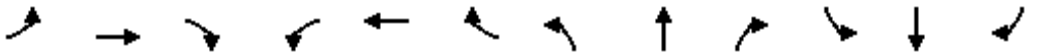
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	731	30	28	754	160	25	3	27	60	2	42
Future Volume (vph)	81	731	30	28	754	160	25	3	27	60	2	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.1	6.1		6.1	6.1			6.9			6.9	
Lane Util. Factor	1.00	*0.62		1.00	*0.62			1.00			1.00	
Frpb, ped/bikes	1.00	0.98		1.00	0.89			0.99			0.99	
Flpb, ped/bikes	0.89	1.00		0.86	1.00			1.00			0.99	
Frt	1.00	0.99		1.00	0.97			0.93			0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97	
Satd. Flow (prot)	1630	1875		1566	1730			1682			1726	
Flt Permitted	0.15	1.00		0.21	1.00			0.82			0.79	
Satd. Flow (perm)	261	1875		346	1730			1417			1402	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	84	761	31	29	785	167	26	3	28	62	2	44
RTOR Reduction (vph)	0	1	0	0	7	0	0	25	0	0	28	0
Lane Group Flow (vph)	84	791	0	29	945	0	0	32	0	0	81	0
Confl. Peds. (#/hr)	355		238	238		355	9		14	14		9
Confl. Bikes (#/hr)			24			24						4
Heavy Vehicles (%)	0%	11%	4%	0%	10%	0%	5%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	52	52	0	48	48	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	74.9	74.9		74.9	74.9			11.1			11.1	
Effective Green, g (s)	74.9	75.9		75.9	75.9			11.1			11.1	
Actuated g/C Ratio	0.75	0.76		0.76	0.76			0.11			0.11	
Clearance Time (s)	7.1	7.1		7.1	7.1			6.9			6.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	195	1423		262	1313			157			155	
v/s Ratio Prot		0.42			c0.55							
v/s Ratio Perm	0.32			0.08				0.02			c0.06	
v/c Ratio	0.43	0.56		0.11	0.72			0.20			0.52	
Uniform Delay, d1	4.7	5.0		3.2	6.4			40.4			41.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	6.8	1.6		0.9	3.4			0.6			2.9	
Delay (s)	11.5	6.6		4.0	9.8			41.1			44.9	
Level of Service	B	A		A	A			D			D	
Approach Delay (s)		7.1			9.7			41.1			44.9	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	11.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
620: Don Mills Rd & Overlea Blvd

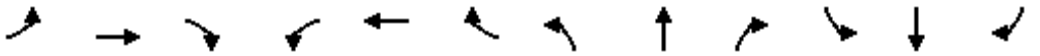
08/11/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	546	240	313	292	357	183	259	757	101	43	1002	508
Future Volume (vph)	546	240	313	292	357	183	259	757	101	43	1002	508
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	2000	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	6.0	3.0	6.0	6.0	1.0	6.0		3.0	6.0	5.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.91		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.65	1.00	1.00	0.67	1.00	0.96		1.00	1.00	0.78
Flpb, ped/bikes	1.00	1.00	1.00	0.87	1.00	1.00	1.00	1.00		0.98	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3219	1571	953	1505	1530	974	1715	4781		1591	3380	1143
Flt Permitted	0.95	1.00	1.00	0.56	1.00	1.00	0.08	1.00		0.29	1.00	1.00
Satd. Flow (perm)	3219	1571	953	887	1530	974	150	4781		489	3380	1143
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	563	247	323	301	368	189	267	780	104	44	1033	524
RTOR Reduction (vph)	0	0	172	0	0	91	0	12	0	0	0	46
Lane Group Flow (vph)	563	247	151	301	368	98	267	872	0	44	1033	478
Confl. Peds. (#/hr)	322		392	392		322	352		342	342		352
Confl. Bikes (#/hr)			4			1						
Heavy Vehicles (%)	10%	13%	11%	6%	13%	2%	12%	3%	7%	12%	8%	12%
Bus Blockages (#/hr)	0	19	0	0	25	22	0	0	0	0	0	0
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases			4	8		8	2			6		6
Actuated Green, G (s)	25.0	42.3	42.3	54.7	35.0	35.0	64.0	54.8		49.2	44.0	69.0
Effective Green, g (s)	26.0	43.3	43.3	56.7	36.0	36.0	67.0	55.8		51.2	45.0	71.0
Actuated g/C Ratio	0.18	0.30	0.30	0.39	0.25	0.25	0.47	0.39		0.36	0.31	0.49
Clearance Time (s)	6.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0		4.0	7.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	581	472	286	438	382	243	276	1852		221	1056	563
v/s Ratio Prot	c0.17	0.16		0.10	c0.24		c0.13	0.18		0.01	c0.31	0.15
v/s Ratio Perm			0.16	0.17		0.10	0.32			0.06		0.26
v/c Ratio	0.97	0.52	0.53	0.69	0.96	0.40	0.97	0.47		0.20	0.98	0.85
Uniform Delay, d1	58.6	41.8	41.9	33.3	53.3	45.1	45.0	33.0		30.8	49.0	31.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	29.3	4.1	6.8	4.4	37.7	4.9	44.7	0.9		0.4	22.9	11.4
Delay (s)	87.9	45.9	48.7	37.7	91.0	50.0	89.7	33.9		31.2	71.9	43.3
Level of Service	F	D	D	D	F	D	F	C		C	E	D
Approach Delay (s)		67.5			63.3			46.8			61.4	
Approach LOS		E			E			D			E	

Intersection Summary			
HCM 2000 Control Delay	59.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	144.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	101.1%	ICU Level of Service	G
Analysis Period (min)	15		

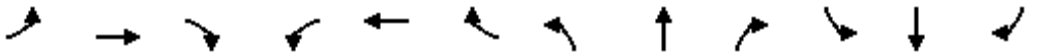
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	627	106	270	657	261	56	138	380	200	51	25
Future Volume (vph)	70	627	106	270	657	261	56	138	380	200	51	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		3.0	5.0		6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	*0.62		1.00	*0.63		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.95		1.00	0.91		1.00	1.00	0.94	1.00	0.95	
Flpb, ped/bikes	0.94	1.00		1.00	1.00		0.88	1.00	1.00	0.96	1.00	
Frt	1.00	0.98		1.00	0.96		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1687	1845		1789	1807		1515	1741	1415	1630	1573	
Flt Permitted	0.14	1.00		0.10	1.00		0.70	1.00	1.00	0.64	1.00	
Satd. Flow (perm)	248	1845		187	1807		1125	1741	1415	1101	1573	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	74	660	112	284	692	275	59	145	400	211	54	26
RTOR Reduction (vph)	0	7	0	0	17	0	0	0	173	0	15	0
Lane Group Flow (vph)	74	765	0	284	950	0	59	145	227	211	65	0
Confl. Peds. (#/hr)	128		472	472		128	134		44	44		134
Confl. Bikes (#/hr)			8			24			3			8
Heavy Vehicles (%)	2%	10%	16%	2%	9%	4%	6%	9%	4%	8%	10%	5%
Bus Blockages (#/hr)	0	36	36	0	40	0	0	3	11	0	5	5
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	52.6	52.6		71.0	71.0		36.0	36.0	36.0	36.0	36.0	
Effective Green, g (s)	53.6	53.6		72.0	72.0		37.0	37.0	37.0	37.0	37.0	
Actuated g/C Ratio	0.45	0.45		0.60	0.60		0.31	0.31	0.31	0.31	0.31	
Clearance Time (s)	6.0	6.0		4.0	6.0		7.0	7.0	7.0	7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	110	824		317	1084		346	536	436	339	485	
v/s Ratio Prot		0.41		0.11	c0.53			0.08			0.04	
v/s Ratio Perm	0.30			c0.42			0.05		0.16	c0.19		
v/c Ratio	0.67	0.93		0.90	0.88		0.17	0.27	0.52	0.62	0.13	
Uniform Delay, d1	26.3	31.4		30.6	20.3		30.3	31.3	34.2	35.5	30.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	28.2	18.2		25.9	10.0		0.2	0.3	1.1	3.5	0.1	
Delay (s)	54.5	49.6		56.6	30.2		30.5	31.6	35.3	39.1	30.1	
Level of Service	D	D		E	C		C	C	D	D	C	
Approach Delay (s)		50.0			36.2			34.0			36.6	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	39.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	105.1%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



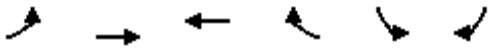
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	664	103	35	601	0	272	37	58	133	39	114
Future Volume (vph)	58	664	103	35	601	0	272	37	58	133	39	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		3.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	*0.63	1.00	1.00	*0.64		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.37	1.00	1.00		1.00	0.67		1.00	0.76	
Flpb, ped/bikes	0.80	1.00	1.00	0.86	1.00		0.87	1.00		0.53	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.91		1.00	0.89	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1410	1894	432	1439	2029		1451	1150		950	1233	
Flt Permitted	0.20	1.00	1.00	0.16	1.00		0.58	1.00		0.69	1.00	
Satd. Flow (perm)	295	1894	432	235	2029		884	1150		691	1233	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	62	706	110	37	639	0	289	39	62	141	41	121
RTOR Reduction (vph)	0	0	43	0	0	0	0	3	0	0	28	0
Lane Group Flow (vph)	62	706	67	37	639	0	289	98	0	141	134	0
Confl. Peds. (#/hr)	798		526	526		798	416		1602	1602		416
Confl. Bikes (#/hr)			13			24			17			4
Heavy Vehicles (%)	3%	15%	13%	9%	12%	2%	9%	0%	2%	2%	0%	6%
Bus Blockages (#/hr)	0	50	50	0	38	38	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		2			6		3	8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	49.0	49.0	49.0	49.0	49.0		47.0	47.0		34.0	34.0	
Effective Green, g (s)	50.0	50.0	50.0	50.0	50.0		48.0	48.0		35.0	35.0	
Actuated g/C Ratio	0.45	0.45	0.45	0.45	0.45		0.44	0.44		0.32	0.32	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0		4.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	134	860	196	106	922		437	501		219	392	
v/s Ratio Prot		c0.37			0.31		c0.06	0.09			0.11	
v/s Ratio Perm	0.21		0.15	0.16			c0.23			0.20		
v/c Ratio	0.46	0.82	0.34	0.35	0.69		0.66	0.20		0.64	0.34	
Uniform Delay, d1	20.7	26.1	19.4	19.4	23.9		23.5	19.1		32.2	28.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	11.1	8.7	4.7	8.8	4.3		3.7	0.9		13.7	2.4	
Delay (s)	31.8	34.8	24.1	28.3	28.2		27.2	20.0		45.8	31.1	
Level of Service	C	C	C	C	C		C	B		D	C	
Approach Delay (s)		33.2			28.2			25.4			37.9	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	31.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	119.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	359	414	1225	448	337	854
Future Volume (vph)	359	414	1225	448	337	854
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.0	3.5
Total Lost time (s)	5.0	3.0	6.0	6.0	3.0	6.0
Lane Util. Factor	1.00	1.00	*1.00	1.00	1.00	0.91
Frpb, ped/bikes	1.00	0.93	1.00	0.85	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1449	1392	3473	1023	1212	4932
Flt Permitted	0.95	1.00	1.00	1.00	0.10	1.00
Satd. Flow (perm)	1449	1392	3473	1023	128	4932
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	386	445	1317	482	362	918
RTOR Reduction (vph)	0	1	0	263	0	0
Lane Group Flow (vph)	386	444	1317	219	362	918
Confl. Peds. (#/hr)	2	102		78	78	
Confl. Bikes (#/hr)		28		106		
Heavy Vehicles (%)	16%	5%	3%	13%	39%	4%
Bus Blockages (#/hr)	0	4	24	24	0	0
Turn Type	Perm	pm+ov	NA	Perm	pm+pt	NA
Protected Phases		1	2		1	6
Permitted Phases	8	8		2	6	
Actuated Green, G (s)	33.0	57.0	36.0	36.0	64.0	64.0
Effective Green, g (s)	34.0	59.0	37.0	37.0	65.0	65.0
Actuated g/C Ratio	0.31	0.54	0.34	0.34	0.59	0.59
Clearance Time (s)	6.0	4.0	7.0	7.0	4.0	7.0
Vehicle Extension (s)	3.0	2.0	3.0	3.0	2.0	3.0
Lane Grp Cap (vph)	447	746	1168	344	322	2914
v/s Ratio Prot		0.14	0.38		c0.26	0.19
v/s Ratio Perm	c0.27	0.18		0.21	c0.41	
v/c Ratio	0.86	0.60	1.13	0.64	1.12	0.32
Uniform Delay, d1	35.8	17.4	36.5	30.8	33.9	11.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	19.4	0.9	68.8	8.7	88.0	0.3
Delay (s)	55.2	18.2	105.3	39.5	122.0	11.6
Level of Service	E	B	F	D	F	B
Approach Delay (s)	35.4		87.6			42.8
Approach LOS	D		F			D

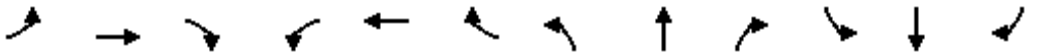
Intersection Summary			
HCM 2000 Control Delay	61.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	92.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	9	1291	1262	54	23	10
Future Volume (vph)	9	1291	1262	54	23	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	4.0		5.0	
Lane Util. Factor	1.00	*0.61	*0.61		1.00	
Frpb, ped/bikes	1.00	1.00	0.98		0.96	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.96	
Flt Protected	0.95	1.00	1.00		0.97	
Satd. Flow (prot)	1825	1970	2000		1519	
Flt Permitted	0.06	1.00	1.00		0.97	
Satd. Flow (perm)	113	1970	2000		1519	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	9	1359	1328	57	24	11
RTOR Reduction (vph)	0	0	2	0	8	0
Lane Group Flow (vph)	9	1359	1383	0	27	0
Confl. Peds. (#/hr)	142			142	89	102
Confl. Bikes (#/hr)				23		
Heavy Vehicles (%)	0%	8%	6%	10%	14%	10%
Bus Blockages (#/hr)	0	46	36	36	0	0
Turn Type	Perm	NA	NA		Prot	
Protected Phases		2	6		4	
Permitted Phases	2					
Actuated Green, G (s)	67.0	67.0	67.0		31.0	
Effective Green, g (s)	68.0	68.0	69.0		32.0	
Actuated g/C Ratio	0.62	0.62	0.63		0.29	
Clearance Time (s)	6.0	6.0	6.0		6.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	69	1217	1254		441	
v/s Ratio Prot		0.69	c0.69		c0.02	
v/s Ratio Perm	0.08					
v/c Ratio	0.13	1.12	1.10		0.06	
Uniform Delay, d1	8.7	21.0	20.5		28.2	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	3.9	64.1	58.5		0.1	
Delay (s)	12.6	85.1	79.0		28.2	
Level of Service	B	F	E		C	
Approach Delay (s)		84.6	79.0		28.2	
Approach LOS		F	E		C	

Intersection Summary			
HCM 2000 Control Delay	81.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	69.6%	ICU Level of Service	C
Analysis Period (min)	15		

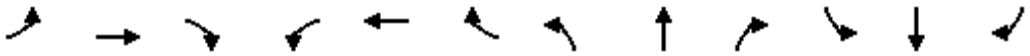
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	748	37	60	661	12	13	3	29	6	1	8
Future Volume (vph)	35	748	37	60	661	12	13	3	29	6	1	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0		3.0	5.0		6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	*0.62		1.00	*0.64		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.97		1.00	0.99		1.00	0.97		1.00	1.00	0.95
Flpb, ped/bikes	0.99	1.00		0.99	1.00		0.97	1.00		0.99	1.00	1.00
Frt	1.00	0.99		1.00	1.00		1.00	0.86		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1748	1911		1737	1904		1770	1615		1812	1921	1247
Flt Permitted	0.21	1.00		0.13	1.00		0.76	1.00		0.73	1.00	1.00
Satd. Flow (perm)	378	1911		241	1904		1411	1615		1401	1921	1247
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	38	813	40	65	718	13	14	3	32	7	1	9
RTOR Reduction (vph)	0	2	0	0	1	0	0	25	0	0	0	7
Lane Group Flow (vph)	38	851	0	65	730	0	14	10	0	7	1	2
Confl. Peds. (#/hr)	157		757	757		157	33		8	8		33
Confl. Bikes (#/hr)			5			12			9			4
Heavy Vehicles (%)	3%	12%	3%	4%	15%	17%	0%	0%	0%	0%	0%	25%
Bus Blockages (#/hr)	0	34	34	0	51	51	0	0	0	0	0	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	60.6	57.0		63.0	58.2		21.2	21.2		21.2	21.2	21.2
Effective Green, g (s)	62.6	58.0		65.0	59.2		22.2	22.2		22.2	22.2	22.2
Actuated g/C Ratio	0.63	0.58		0.65	0.59		0.22	0.22		0.22	0.22	0.22
Clearance Time (s)	4.0	6.0		4.0	6.0		7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	299	1108		243	1127		313	358		311	426	276
v/s Ratio Prot	0.01	c0.45		c0.02	0.38			0.01			0.00	
v/s Ratio Perm	0.07			0.16			c0.01			0.00		0.00
v/c Ratio	0.13	0.77		0.27	0.65		0.04	0.03		0.02	0.00	0.01
Uniform Delay, d1	8.0	15.9		9.3	13.5		30.6	30.5		30.4	30.3	30.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.2	5.1		0.6	2.9		0.1	0.0		0.0	0.0	0.0
Delay (s)	8.2	21.0		9.9	16.4		30.6	30.5		30.4	30.3	30.3
Level of Service	A	C		A	B		C	C		C	C	C
Approach Delay (s)		20.5			15.9			30.5			30.4	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	18.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



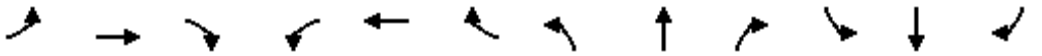
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	731	30	28	754	160	25	3	27	60	2	42
Future Volume (vph)	81	731	30	28	754	160	25	3	27	60	2	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.1	6.1		6.1	6.1			6.9			6.9	
Lane Util. Factor	1.00	*0.62		1.00	*0.62			1.00			1.00	
Frpb, ped/bikes	1.00	0.98		1.00	0.89			0.99			0.99	
Flpb, ped/bikes	0.89	1.00		0.86	1.00			1.00			0.99	
Frt	1.00	0.99		1.00	0.97			0.93			0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97	
Satd. Flow (prot)	1630	1875		1566	1730			1682			1726	
Flt Permitted	0.15	1.00		0.21	1.00			0.82			0.79	
Satd. Flow (perm)	261	1875		346	1730			1417			1402	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	84	761	31	29	785	167	26	3	28	62	2	44
RTOR Reduction (vph)	0	1	0	0	7	0	0	25	0	0	28	0
Lane Group Flow (vph)	84	791	0	29	945	0	0	32	0	0	81	0
Confl. Peds. (#/hr)	355		238	238		355	9		14	14		9
Confl. Bikes (#/hr)			24			24						4
Heavy Vehicles (%)	0%	11%	4%	0%	10%	0%	5%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	52	52	0	48	48	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	74.9	74.9		74.9	74.9			11.1			11.1	
Effective Green, g (s)	74.9	75.9		75.9	75.9			11.1			11.1	
Actuated g/C Ratio	0.75	0.76		0.76	0.76			0.11			0.11	
Clearance Time (s)	7.1	7.1		7.1	7.1			6.9			6.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	195	1423		262	1313			157			155	
v/s Ratio Prot		0.42			c0.55							
v/s Ratio Perm	0.32			0.08				0.02			c0.06	
v/c Ratio	0.43	0.56		0.11	0.72			0.20			0.52	
Uniform Delay, d1	4.7	5.0		3.2	6.4			40.4			41.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	6.8	1.6		0.9	3.4			0.6			2.9	
Delay (s)	11.5	6.6		4.0	9.8			41.1			44.9	
Level of Service	B	A		A	A			D			D	
Approach Delay (s)		7.1			9.7			41.1			44.9	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	11.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
620: Don Mills Rd & Overlea Blvd

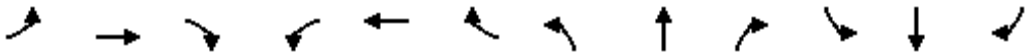
08/11/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	499	585	442	125	296	49	298	1004	238	59	866	709
Future Volume (vph)	499	585	442	125	296	49	298	1004	238	59	866	709
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	2000	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	6.0	3.0	6.0	6.0	1.5	6.0		3.0	6.0	5.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.91		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.88	1.00	1.00	0.86	1.00	0.95		1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3340	1761	1398	1797	1667	1271	1828	4729		1786	3510	1462
Flt Permitted	0.95	1.00	1.00	0.22	1.00	1.00	0.12	1.00		0.11	1.00	1.00
Satd. Flow (perm)	3340	1761	1398	407	1667	1271	231	4729		214	3510	1462
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	525	616	465	132	312	52	314	1057	251	62	912	746
RTOR Reduction (vph)	0	0	110	0	0	38	0	27	0	0	0	45
Lane Group Flow (vph)	525	616	355	132	312	14	314	1281	0	62	912	701
Confl. Peds. (#/hr)	98		78	78		98	50		177	177		50
Confl. Bikes (#/hr)			7			5						
Heavy Vehicles (%)	6%	3%	3%	1%	6%	5%	5%	3%	1%	2%	4%	6%
Bus Blockages (#/hr)	0	14	0	0	20	11	0	0	0	0	0	0
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases			4	8		8	2			6		6
Actuated Green, G (s)	24.4	57.0	57.0	44.6	37.6	37.6	62.0	52.7		51.3	46.0	70.4
Effective Green, g (s)	25.4	58.0	58.0	46.6	38.6	38.6	64.5	53.7		53.3	47.0	72.4
Actuated g/C Ratio	0.18	0.40	0.40	0.32	0.27	0.27	0.45	0.37		0.37	0.33	0.50
Clearance Time (s)	6.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0		4.0	7.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	589	709	563	208	446	340	264	1763		147	1145	735
v/s Ratio Prot	0.16	c0.35		0.04	0.19		c0.12	0.27		0.02	0.26	c0.17
v/s Ratio Perm			0.25	0.17		0.01	0.41			0.14		0.31
v/c Ratio	0.89	0.87	0.63	0.63	0.70	0.04	1.19	0.73		0.42	0.80	0.95
Uniform Delay, d1	58.0	39.5	34.4	37.1	47.5	39.0	35.4	38.8		31.3	44.1	34.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	15.6	13.7	5.3	6.2	8.8	0.2	116.5	2.7		2.0	5.8	22.3
Delay (s)	73.6	53.2	39.7	43.3	56.3	39.2	151.9	41.5		33.2	49.9	56.5
Level of Service	E	D	D	D	E	D	F	D		C	D	E
Approach Delay (s)		56.0			51.0			62.9			52.2	
Approach LOS		E			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	56.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	144.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	102.7%	ICU Level of Service	G
Analysis Period (min)	15		

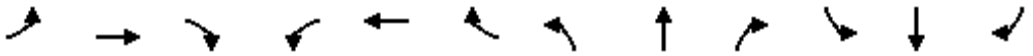
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	960	70	334	880	156	80	87	312	266	141	99
Future Volume (vph)	71	960	70	334	880	156	80	87	312	266	141	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	3.0		3.0	5.0		6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	*0.62		1.00	*0.63		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.97		1.00	0.92		1.00	1.00	0.89	1.00	0.91	
Flpb, ped/bikes	0.92	1.00		1.00	1.00		0.87	1.00	1.00	0.92	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1610	2073		1807	1893		1408	1783	1340	1597	1562	
Flt Permitted	0.12	1.00		0.06	1.00		0.43	1.00	1.00	0.70	1.00	
Satd. Flow (perm)	204	2073		111	1893		634	1783	1340	1172	1562	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	75	1011	74	352	926	164	84	92	328	280	148	104
RTOR Reduction (vph)	0	3	0	0	6	0	0	0	210	0	18	0
Lane Group Flow (vph)	75	1082	0	352	1084	0	84	92	118	280	234	0
Confl. Peds. (#/hr)	190		386	386		190	183		79	79		183
Confl. Bikes (#/hr)			34			15			10			7
Heavy Vehicles (%)	4%	5%	0%	1%	6%	6%	13%	6%	2%	5%	3%	4%
Bus Blockages (#/hr)	0	28	28	0	41	0	0	4	15	0	3	3
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	64.6	64.6		91.0	91.0		36.0	36.0	36.0	36.0	36.0	
Effective Green, g (s)	65.6	67.6		92.0	92.0		37.0	37.0	37.0	37.0	37.0	
Actuated g/C Ratio	0.47	0.48		0.66	0.66		0.26	0.26	0.26	0.26	0.26	
Clearance Time (s)	6.0	6.0		4.0	6.0		7.0	7.0	7.0	7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	95	1000		356	1243		167	471	354	309	412	
v/s Ratio Prot		c0.52		c0.17	0.57			0.05			0.15	
v/s Ratio Perm	0.37			0.48			0.13		0.09	c0.24		
v/c Ratio	0.79	1.08		0.99	0.87		0.50	0.20	0.33	0.91	0.57	
Uniform Delay, d1	31.4	36.2		48.6	19.3		43.7	40.0	41.6	49.8	44.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	47.4	53.5		44.2	8.6		2.4	0.2	0.6	28.3	1.8	
Delay (s)	78.7	89.7		92.8	27.9		46.1	40.2	42.1	78.1	46.4	
Level of Service	E	F		F	C		D	D	D	E	D	
Approach Delay (s)		89.0			43.7			42.4			63.1	
Approach LOS		F			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	60.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	114.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



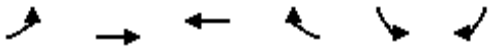
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	959	206	78	858	130	224	34	66	121	37	101
Future Volume (vph)	82	959	206	78	858	130	224	34	66	121	37	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	*0.63	1.00	1.00	*0.64		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.42	1.00	0.88		1.00	0.67		1.00	0.75	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.73	1.00		0.57	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.90		1.00	0.89	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1807	2197	559	1644	1858		1304	1110		1008	1279	
Flt Permitted	0.08	1.00	1.00	0.08	1.00		0.65	1.00		0.69	1.00	
Satd. Flow (perm)	152	2197	559	146	1858		897	1110		731	1279	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	86	1009	217	82	903	137	236	36	69	127	39	106
RTOR Reduction (vph)	0	0	17	0	0	0	0	9	0	0	0	0
Lane Group Flow (vph)	86	1009	200	82	1040	0	236	96	0	127	145	0
Confl. Peds. (#/hr)	1202		418	418		1202	487		1333	1333		487
Confl. Bikes (#/hr)			18			21			5			
Heavy Vehicles (%)	1%	4%	8%	11%	8%	3%	2%	4%	5%	3%	2%	0%
Bus Blockages (#/hr)	0	28	28	0	31	31	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	62.0	62.0	62.0	62.0	62.0		34.0	34.0		34.0	34.0	
Effective Green, g (s)	63.0	63.0	63.0	63.0	63.0		35.0	35.0		35.0	35.0	
Actuated g/C Ratio	0.57	0.57	0.57	0.57	0.57		0.32	0.32		0.32	0.32	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	87	1258	320	83	1064		285	353		232	406	
v/s Ratio Prot		0.46			0.56			0.09			0.11	
v/s Ratio Perm	c0.57		0.36	0.56			c0.26			0.17		
v/c Ratio	0.99	0.80	0.62	0.99	0.98		0.83	0.27		0.55	0.36	
Uniform Delay, d1	23.1	18.6	15.6	23.1	22.8		34.7	28.0		31.0	28.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	93.4	5.5	8.9	95.5	22.7		23.4	1.9		9.0	2.4	
Delay (s)	116.5	24.0	24.5	118.6	45.5		58.1	29.9		39.9	31.3	
Level of Service	F	C	C	F	D		E	C		D	C	
Approach Delay (s)		30.2			50.8			49.4			35.3	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	40.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	128.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	496	542	789	715	398	1109
Future Volume (vph)	496	542	789	715	398	1109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.0	3.5
Total Lost time (s)	5.0	3.0	4.0	6.0	3.0	6.0
Lane Util. Factor	1.00	1.00	*1.00	1.00	1.00	0.91
Frpb, ped/bikes	1.00	0.85	1.00	0.93	1.00	1.00
Flpb, ped/bikes	0.96	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1481	1326	3532	1218	1451	5029
Flt Permitted	0.95	1.00	1.00	1.00	0.14	1.00
Satd. Flow (perm)	1481	1326	3532	1218	219	5029
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	517	565	822	745	415	1155
RTOR Reduction (vph)	0	11	0	512	0	0
Lane Group Flow (vph)	517	554	822	233	415	1155
Confl. Peds. (#/hr)	38	204		25	25	
Confl. Bikes (#/hr)		32		40		
Heavy Vehicles (%)	9%	2%	3%	8%	16%	2%
Bus Blockages (#/hr)	0	2	16	16	0	0
Turn Type	Perm	pm+ov	NA	Perm	pm+pt	NA
Protected Phases		1	2		1	6
Permitted Phases	8	8		2	6	
Actuated Green, G (s)	42.0	68.0	35.0	35.0	65.0	65.0
Effective Green, g (s)	43.0	70.0	38.0	36.0	66.0	66.0
Actuated g/C Ratio	0.36	0.58	0.32	0.30	0.55	0.55
Clearance Time (s)	6.0	4.0	7.0	7.0	4.0	7.0
Vehicle Extension (s)	3.0	2.0	3.0	3.0	2.0	3.0
Lane Grp Cap (vph)	530	773	1118	365	397	2765
v/s Ratio Prot		0.16	0.23		c0.23	0.23
v/s Ratio Perm	c0.35	0.26		0.19	c0.34	
v/c Ratio	0.98	0.72	0.74	0.64	1.05	0.42
Uniform Delay, d1	38.0	17.9	36.5	36.3	32.9	15.8
Progression Factor	0.87	1.82	1.00	1.00	1.00	1.00
Incremental Delay, d2	19.9	1.1	4.3	8.2	57.5	0.5
Delay (s)	52.9	33.8	40.8	44.6	90.4	16.2
Level of Service	D	C	D	D	F	B
Approach Delay (s)	42.9		42.6			35.8
Approach LOS	D		D			D

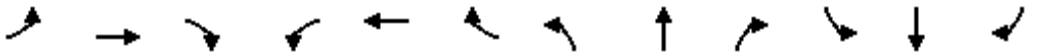
Intersection Summary			
HCM 2000 Control Delay	40.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	87.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	104	1581	1347	72	111	99
Future Volume (vph)	104	1581	1347	72	111	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0		5.0	
Lane Util. Factor	1.00	*0.61	*0.61		1.00	
Frpb, ped/bikes	1.00	1.00	0.98		0.98	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.94	
Flt Protected	0.95	1.00	1.00		0.97	
Satd. Flow (prot)	1560	2191	2087		1663	
Flt Permitted	0.05	1.00	1.00		0.97	
Satd. Flow (perm)	88	2191	2087		1663	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	113	1718	1464	78	121	108
RTOR Reduction (vph)	0	0	2	0	20	0
Lane Group Flow (vph)	113	1718	1540	0	209	0
Confl. Peds. (#/hr)	122			122	15	31
Confl. Bikes (#/hr)				15		
Heavy Vehicles (%)	17%	4%	5%	0%	6%	0%
Bus Blockages (#/hr)	0	14	21	21	0	0
Turn Type	Perm	NA	NA		Prot	
Protected Phases		2	6		4	
Permitted Phases	2					
Actuated Green, G (s)	73.9	73.9	73.9		24.1	
Effective Green, g (s)	74.9	74.9	74.9		25.1	
Actuated g/C Ratio	0.68	0.68	0.68		0.23	
Clearance Time (s)	6.0	6.0	6.0		6.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	59	1491	1421		379	
v/s Ratio Prot		0.78	0.74		c0.13	
v/s Ratio Perm	c1.29					
v/c Ratio	1.92	1.15	1.08		0.55	
Uniform Delay, d1	17.5	17.5	17.5		37.5	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	468.0	76.7	50.1		1.7	
Delay (s)	485.6	94.2	67.6		39.2	
Level of Service	F	F	E		D	
Approach Delay (s)		118.4	67.6		39.2	
Approach LOS		F	E		D	

Intersection Summary			
HCM 2000 Control Delay	91.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.55		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		

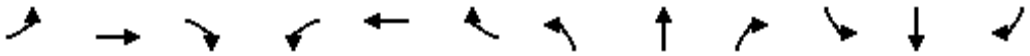
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	149	972	54	112	799	110	55	23	92	119	33	164
Future Volume (vph)	149	972	54	112	799	110	55	23	92	119	33	164
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0		3.0	5.0		6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	*0.62		1.00	*0.64		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.97		1.00	0.95		1.00	0.97		1.00	1.00	0.91
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.92	1.00		0.98	1.00	1.00
Frt	1.00	0.99		1.00	0.98		1.00	0.88		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1755	1996		1789	2016		1654	1616		1720	1921	1427
Flt Permitted	0.08	1.00		0.08	1.00		0.73	1.00		0.68	1.00	1.00
Satd. Flow (perm)	150	1996		143	2016		1279	1616		1229	1921	1427
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	159	1034	57	119	850	117	59	24	98	127	35	174
RTOR Reduction (vph)	0	2	0	0	6	0	0	73	0	0	0	115
Lane Group Flow (vph)	159	1089	0	119	961	0	59	49	0	127	35	59
Confl. Peds. (#/hr)	197		649	649		197	87		26	26		87
Confl. Bikes (#/hr)			15			4						2
Heavy Vehicles (%)	4%	9%	2%	2%	9%	0%	2%	0%	2%	4%	0%	4%
Bus Blockages (#/hr)	0	25	25	0	27	27	0	0	0	0	0	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	59.9	52.8		57.9	51.8		24.1	24.1		24.1	24.1	24.1
Effective Green, g (s)	61.9	53.8		59.9	52.8		25.1	25.1		25.1	25.1	25.1
Actuated g/C Ratio	0.62	0.54		0.60	0.53		0.25	0.25		0.25	0.25	0.25
Clearance Time (s)	4.0	6.0		4.0	6.0		7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	222	1073		202	1064		321	405		308	482	358
v/s Ratio Prot	c0.06	c0.55		0.04	0.48			0.03			0.02	
v/s Ratio Perm	0.38			0.31			0.05			c0.10		0.04
v/c Ratio	0.72	1.01		0.59	0.90		0.18	0.12		0.41	0.07	0.16
Uniform Delay, d1	17.7	23.1		18.1	21.3		29.4	28.9		31.3	28.6	29.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	10.5	31.2		4.3	12.3		0.3	0.1		0.9	0.1	0.2
Delay (s)	28.1	54.3		22.4	33.6		29.7	29.1		32.2	28.6	29.5
Level of Service	C	D		C	C		C	C		C	C	C
Approach Delay (s)		50.9			32.4			29.3			30.4	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	40.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	74.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



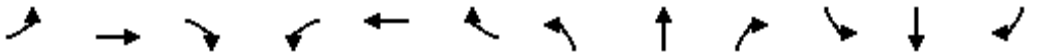
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	109	1029	63	37	969	174	31	1	36	194	1	128
Future Volume (vph)	109	1029	63	37	969	174	31	1	36	194	1	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	6.1		6.1	6.1			6.9			6.9	
Lane Util. Factor	1.00	*0.62		1.00	*0.62			1.00			1.00	
Frpb, ped/bikes	1.00	0.97		1.00	0.86			0.99			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99	
Frt	1.00	0.99		1.00	0.98			0.93			0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97	
Satd. Flow (prot)	1825	2068		841	1883			1719			1740	
Flt Permitted	0.95	1.00		0.10	1.00			0.78			0.79	
Satd. Flow (perm)	1825	2068		88	1883			1366			1424	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	112	1061	65	38	999	179	32	1	37	200	1	132
RTOR Reduction (vph)	0	2	0	0	7	0	0	29	0	0	20	0
Lane Group Flow (vph)	112	1124	0	38	1171	0	0	41	0	0	313	0
Confl. Peds. (#/hr)	733		171	171		733	2		9	9		2
Confl. Bikes (#/hr)			26			32						2
Heavy Vehicles (%)	0%	5%	0%	117%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	27	27	0	32	32	0	0	0	0	0	0
Turn Type	Prot	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases				6			8			4		
Actuated Green, G (s)	7.9	81.5		69.1	69.1			24.5			24.5	
Effective Green, g (s)	7.9	82.5		70.1	70.1			24.5			24.5	
Actuated g/C Ratio	0.07	0.69		0.58	0.58			0.20			0.20	
Clearance Time (s)	4.5	7.1		7.1	7.1			6.9			6.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	120	1421		51	1099			278			290	
v/s Ratio Prot	0.06	c0.54			c0.62							
v/s Ratio Perm				0.43				0.03			c0.22	
v/c Ratio	0.93	0.79		0.75	1.07			0.15			1.08	
Uniform Delay, d1	55.8	12.8		18.4	25.0			39.2			47.8	
Progression Factor	1.21	0.60		1.00	1.00			1.00			1.00	
Incremental Delay, d2	41.9	2.5		44.3	46.4			0.2			75.7	
Delay (s)	109.7	10.2		62.7	71.3			39.4			123.4	
Level of Service	F	B		E	E			D			F	
Approach Delay (s)		19.2			71.1			39.4			123.4	
Approach LOS		B			E			D			F	

Intersection Summary			
HCM 2000 Control Delay	53.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.5
Intersection Capacity Utilization	87.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
620: Don Mills Rd & Overlea Blvd

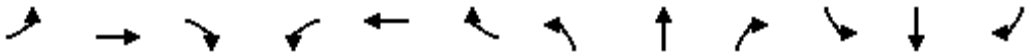
08/11/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	499	585	442	125	296	49	298	1004	238	59	866	709
Future Volume (vph)	499	585	442	125	296	49	298	1004	238	59	866	709
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	2000	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5	5.5	3.5	5.5	5.5	2.0	5.5		3.5	5.5	5.5
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.91		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.88	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3340	1761	1398	1795	1667	1271	1830	4729		1784	3510	1461
Flt Permitted	0.95	1.00	1.00	0.24	1.00	1.00	0.11	1.00		0.14	1.00	1.00
Satd. Flow (perm)	3340	1761	1398	445	1667	1271	213	4729		258	3510	1461
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	525	616	465	132	312	52	314	1057	251	62	912	746
RTOR Reduction (vph)	0	0	140	0	0	39	0	27	0	0	0	49
Lane Group Flow (vph)	525	616	325	132	312	13	314	1281	0	62	912	697
Confl. Peds. (#/hr)	98		78	78		98	50		177	177		50
Confl. Bikes (#/hr)			7			5						
Heavy Vehicles (%)	6%	3%	3%	1%	6%	5%	5%	3%	1%	2%	4%	6%
Bus Blockages (#/hr)	0	14	0	0	20	11	0	0	0	0	0	0
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases			4	8		8	2			6		6
Actuated Green, G (s)	22.5	57.9	57.9	38.4	35.9	35.9	66.1	56.7		50.0	45.1	67.6
Effective Green, g (s)	23.5	58.9	58.9	40.4	36.9	36.9	68.6	57.7		52.0	46.1	69.6
Actuated g/C Ratio	0.16	0.41	0.41	0.28	0.26	0.26	0.48	0.40		0.36	0.32	0.48
Clearance Time (s)	6.5	6.5	6.5	4.5	6.5	6.5	4.5	6.5		4.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	545	720	571	157	427	325	314	1894		155	1123	761
v/s Ratio Prot	c0.16	c0.35		0.02	0.19		c0.13	0.27		0.02	0.26	c0.15
v/s Ratio Perm			0.23	0.21		0.01	0.34			0.13		0.33
v/c Ratio	0.96	0.86	0.57	0.84	0.73	0.04	1.00	0.68		0.40	0.81	0.92
Uniform Delay, d1	59.8	38.7	32.8	51.1	49.0	40.3	40.6	35.5		31.3	45.0	34.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	29.3	12.4	4.1	31.3	10.5	0.2	50.8	2.0		1.7	6.4	15.6
Delay (s)	89.1	51.1	36.9	82.4	59.5	40.5	91.4	37.4		33.0	51.4	50.1
Level of Service	F	D	D	F	E	D	F	D		C	D	D
Approach Delay (s)		59.4			63.6			47.9			50.2	
Approach LOS		E			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	53.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	144.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	102.7%	ICU Level of Service	G
Analysis Period (min)	15		

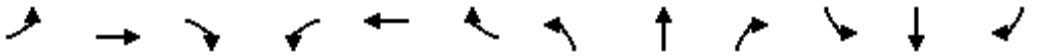
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	960	70	334	880	156	80	87	312	266	141	99
Future Volume (vph)	71	960	70	334	880	156	80	87	312	266	141	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	2.5		3.5	4.5		5.5	5.5	5.5	5.5	5.5	
Lane Util. Factor	1.00	*0.62		1.00	*0.63		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.97		1.00	0.92		1.00	1.00	0.88	1.00	0.90	
Flpb, ped/bikes	0.91	1.00		1.00	1.00		0.87	1.00	1.00	0.91	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1598	2072		1807	1889		1402	1783	1330	1588	1551	
Flt Permitted	0.13	1.00		0.05	1.00		0.39	1.00	1.00	0.69	1.00	
Satd. Flow (perm)	217	2072		96	1889		573	1783	1330	1146	1551	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	75	1011	74	352	926	164	84	92	328	280	148	104
RTOR Reduction (vph)	0	2	0	0	6	0	0	0	203	0	17	0
Lane Group Flow (vph)	75	1083	0	352	1084	0	84	92	125	280	235	0
Confl. Peds. (#/hr)	190		386	386		190	183		79	79		183
Confl. Bikes (#/hr)			34			15			10			7
Heavy Vehicles (%)	4%	5%	0%	1%	6%	6%	13%	6%	2%	5%	3%	4%
Bus Blockages (#/hr)	0	28	28	0	41	0	0	4	15	0	3	3
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	74.5	74.5		102.5	102.5		35.5	35.5	35.5	35.5	35.5	
Effective Green, g (s)	75.5	77.5		103.5	103.5		36.5	36.5	36.5	36.5	36.5	
Actuated g/C Ratio	0.50	0.52		0.69	0.69		0.24	0.24	0.24	0.24	0.24	
Clearance Time (s)	5.5	5.5		4.5	5.5		6.5	6.5	6.5	6.5	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	109	1070		345	1303		139	433	323	278	377	
v/s Ratio Prot		0.52		c0.17	0.57			0.05			0.15	
v/s Ratio Perm	0.35			c0.53			0.15		0.09	c0.24		
v/c Ratio	0.69	1.01		1.02	0.83		0.60	0.21	0.39	1.01	0.62	
Uniform Delay, d1	28.3	36.2		53.4	16.9		50.3	45.3	47.4	56.8	50.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	30.0	30.4		53.7	6.3		7.2	0.2	0.8	55.8	3.2	
Delay (s)	58.3	66.7		107.1	23.3		57.6	45.5	48.2	112.6	53.8	
Level of Service	E	E		F	C		E	D	D	F	D	
Approach Delay (s)		66.2			43.7			49.3			84.7	
Approach LOS		E			D			D			F	

Intersection Summary			
HCM 2000 Control Delay	57.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	112.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



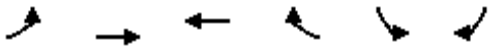
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	959	206	78	858	130	224	34	66	121	37	101
Future Volume (vph)	82	959	206	78	858	130	224	34	66	121	37	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5	5.5	5.5	5.5		6.5	6.5		6.5	6.5	
Lane Util. Factor	1.00	*0.63	1.00	1.00	*0.64		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.42	1.00	0.88		1.00	0.67		1.00	0.75	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.73	1.00		0.57	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.90		1.00	0.89	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1807	2197	558	1644	1858		1300	1108		1006	1278	
Flt Permitted	0.08	1.00	1.00	0.08	1.00		0.66	1.00		0.69	1.00	
Satd. Flow (perm)	151	2197	558	145	1858		907	1108		730	1278	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	86	1009	217	82	903	137	236	36	69	127	39	106
RTOR Reduction (vph)	0	0	19	0	0	0	0	9	0	0	0	0
Lane Group Flow (vph)	86	1009	198	82	1040	0	236	96	0	127	145	0
Confl. Peds. (#/hr)	1202		418	418		1202	487		1333	1333		487
Confl. Bikes (#/hr)			18			21			5			
Heavy Vehicles (%)	1%	4%	8%	11%	8%	3%	2%	4%	5%	3%	2%	0%
Bus Blockages (#/hr)	0	28	28	0	31	31	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	62.5	62.5	62.5	62.5	62.5		34.0	34.0		34.0	34.0	
Effective Green, g (s)	63.5	63.5	63.5	63.5	63.5		35.0	35.0		35.0	35.0	
Actuated g/C Ratio	0.57	0.57	0.57	0.57	0.57		0.32	0.32		0.32	0.32	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5		7.5	7.5		7.5	7.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	86	1262	320	83	1067		287	350		231	404	
v/s Ratio Prot		0.46			0.56			0.09			0.11	
v/s Ratio Perm	c0.57		0.36	0.57			c0.26			0.17		
v/c Ratio	1.00	0.80	0.62	0.99	0.97		0.82	0.27		0.55	0.36	
Uniform Delay, d1	23.5	18.5	15.5	23.1	22.7		34.9	28.3		31.2	29.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	97.0	5.4	8.7	95.5	22.1		22.6	1.9		9.1	2.5	
Delay (s)	120.5	23.9	24.2	118.6	44.8		57.5	30.2		40.3	31.6	
Level of Service	F	C	C	F	D		E	C		D	C	
Approach Delay (s)		30.3			50.2			49.1			35.7	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	40.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	110.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	128.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	496	542	789	715	398	1109
Future Volume (vph)	496	542	789	715	398	1109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.0	3.5
Total Lost time (s)	5.5	3.5	3.5	5.5	3.5	5.5
Lane Util. Factor	1.00	1.00	*1.00	1.00	1.00	0.91
Frpb, ped/bikes	1.00	0.86	1.00	0.93	1.00	1.00
Flpb, ped/bikes	0.96	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1481	1335	3532	1215	1452	5029
Flt Permitted	0.95	1.00	1.00	1.00	0.12	1.00
Satd. Flow (perm)	1481	1335	3532	1215	176	5029
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	517	565	822	745	415	1155
RTOR Reduction (vph)	0	8	0	513	0	0
Lane Group Flow (vph)	517	557	822	232	415	1155
Confl. Peds. (#/hr)	38	204		25	25	
Confl. Bikes (#/hr)		32		40		
Heavy Vehicles (%)	9%	2%	3%	8%	16%	2%
Bus Blockages (#/hr)	0	2	16	16	0	0
Turn Type	Perm	pm+ov	NA	Perm	pm+pt	NA
Protected Phases		1	2		1	6
Permitted Phases	8	8		2	6	
Actuated Green, G (s)	41.5	70.0	32.5	32.5	65.5	65.5
Effective Green, g (s)	42.5	72.0	35.5	33.5	66.5	66.5
Actuated g/C Ratio	0.35	0.60	0.30	0.28	0.55	0.55
Clearance Time (s)	6.5	4.5	6.5	6.5	4.5	6.5
Vehicle Extension (s)	3.0	2.0	3.0	3.0	2.0	3.0
Lane Grp Cap (vph)	524	801	1044	339	411	2786
v/s Ratio Prot		0.17	0.23		c0.25	0.23
v/s Ratio Perm	c0.35	0.25		0.19	c0.31	
v/c Ratio	0.99	0.70	0.79	0.68	1.01	0.41
Uniform Delay, d1	38.5	16.5	38.8	38.5	35.4	15.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	36.2	2.1	6.0	10.7	46.9	0.5
Delay (s)	74.6	18.6	44.8	49.2	82.3	15.9
Level of Service	E	B	D	D	F	B
Approach Delay (s)	45.4		46.9			33.5
Approach LOS	D		D			C

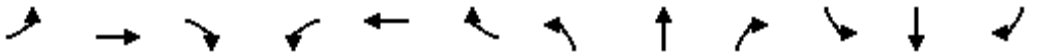
Intersection Summary			
HCM 2000 Control Delay	41.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	87.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	104	1581	1347	72	111	99
Future Volume (vph)	104	1581	1347	72	111	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5		5.5	
Lane Util. Factor	1.00	*0.61	*0.61		1.00	
Frpb, ped/bikes	1.00	1.00	0.98		0.98	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.94	
Flt Protected	0.95	1.00	1.00		0.97	
Satd. Flow (prot)	1560	2191	2087		1663	
Flt Permitted	0.05	1.00	1.00		0.97	
Satd. Flow (perm)	87	2191	2087		1663	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	113	1718	1464	78	121	108
RTOR Reduction (vph)	0	0	2	0	20	0
Lane Group Flow (vph)	113	1718	1540	0	209	0
Confl. Peds. (#/hr)	122			122	15	31
Confl. Bikes (#/hr)				15		
Heavy Vehicles (%)	17%	4%	5%	0%	6%	0%
Bus Blockages (#/hr)	0	14	21	21	0	0
Turn Type	Perm	NA	NA		Prot	
Protected Phases		2	6		4	
Permitted Phases	2					
Actuated Green, G (s)	74.4	74.4	74.4		24.1	
Effective Green, g (s)	75.4	75.4	75.4		25.1	
Actuated g/C Ratio	0.68	0.68	0.68		0.23	
Clearance Time (s)	5.5	5.5	5.5		6.5	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	59	1495	1424		377	
v/s Ratio Prot		0.78	0.74		c0.13	
v/s Ratio Perm	c1.30					
v/c Ratio	1.92	1.15	1.08		0.55	
Uniform Delay, d1	17.5	17.5	17.5		37.8	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	468.0	75.4	49.2		1.8	
Delay (s)	485.6	92.9	66.7		39.5	
Level of Service	F	F	E		D	
Approach Delay (s)		117.2	66.7		39.5	
Approach LOS		F	E		D	

Intersection Summary			
HCM 2000 Control Delay	90.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.57		
Actuated Cycle Length (s)	110.5	Sum of lost time (s)	10.0
Intersection Capacity Utilization	89.2%	ICU Level of Service	E
Analysis Period (min)	15		

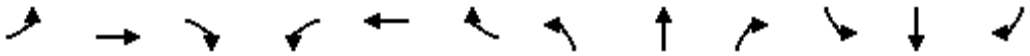
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	149	972	54	112	799	110	55	23	92	119	33	164
Future Volume (vph)	149	972	54	112	799	110	55	23	92	119	33	164
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.5		3.5	4.5		6.5	6.5		6.5	6.5	6.5
Lane Util. Factor	1.00	*0.62		1.00	*0.64		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.96		1.00	0.95		1.00	0.97		1.00	1.00	0.90
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.92	1.00		0.98	1.00	1.00
Frt	1.00	0.99		1.00	0.98		1.00	0.88		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1755	1993		1789	2006		1641	1613		1716	1921	1415
Flt Permitted	0.09	1.00		0.06	1.00		0.73	1.00		0.68	1.00	1.00
Satd. Flow (perm)	171	1993		122	2006		1268	1613		1226	1921	1415
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	159	1034	57	119	850	117	59	24	98	127	35	174
RTOR Reduction (vph)	0	2	0	0	5	0	0	75	0	0	0	109
Lane Group Flow (vph)	159	1089	0	119	962	0	59	47	0	127	35	65
Confl. Peds. (#/hr)	197		649	649		197	87		26	26		87
Confl. Bikes (#/hr)			15			4						2
Heavy Vehicles (%)	4%	9%	2%	2%	9%	0%	2%	0%	2%	4%	0%	4%
Bus Blockages (#/hr)	0	25	25	0	27	27	0	0	0	0	0	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	69.2	61.9		67.0	60.8		24.4	24.4		24.4	24.4	24.4
Effective Green, g (s)	71.2	62.9		69.0	61.8		25.4	25.4		25.4	25.4	25.4
Actuated g/C Ratio	0.65	0.57		0.63	0.56		0.23	0.23		0.23	0.23	0.23
Clearance Time (s)	4.5	5.5		4.5	5.5		7.5	7.5		7.5	7.5	7.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	230	1139		185	1127		292	372		283	443	326
v/s Ratio Prot	c0.05	c0.55		0.04	0.48			0.03			0.02	
v/s Ratio Perm	0.40			0.36			0.05			c0.10		0.05
v/c Ratio	0.69	0.96		0.64	0.85		0.20	0.13		0.45	0.08	0.20
Uniform Delay, d1	15.9	22.3		19.1	20.3		34.1	33.5		36.3	33.1	34.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	8.6	18.0		7.4	8.3		0.3	0.2		1.1	0.1	0.3
Delay (s)	24.6	40.3		26.6	28.5		34.5	33.7		37.4	33.2	34.4
Level of Service	C	D		C	C		C	C		D	C	C
Approach Delay (s)		38.3			28.3			33.9			35.4	
Approach LOS		D			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	33.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	74.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	109	1029	63	37	969	174	31	1	36	194	1	128
Future Volume (vph)	109	1029	63	37	969	174	31	1	36	194	1	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	6.2		6.2	6.2			7.1			7.1	
Lane Util. Factor	1.00	*0.62		1.00	*0.62			1.00			1.00	
Frpb, ped/bikes	1.00	0.97		1.00	0.86			0.99			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99	
Frt	1.00	0.99		1.00	0.98			0.93			0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97	
Satd. Flow (prot)	1825	2066		841	1880			1717			1738	
Flt Permitted	0.95	1.00		0.10	1.00			0.78			0.80	
Satd. Flow (perm)	1825	2066		88	1880			1363			1423	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	112	1061	65	38	999	179	32	1	37	200	1	132
RTOR Reduction (vph)	0	2	0	0	6	0	0	29	0	0	17	0
Lane Group Flow (vph)	112	1124	0	38	1172	0	0	41	0	0	316	0
Confl. Peds. (#/hr)	733		171	171		733	2		9	9		2
Confl. Bikes (#/hr)			26			32						2
Heavy Vehicles (%)	0%	5%	0%	117%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	27	27	0	32	32	0	0	0	0	0	0
Turn Type	Prot	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases				6			8			4		
Actuated Green, G (s)	9.1	96.8		83.2	83.2			28.9			28.9	
Effective Green, g (s)	9.1	97.8		84.2	84.2			28.9			28.9	
Actuated g/C Ratio	0.06	0.70		0.60	0.60			0.21			0.21	
Clearance Time (s)	4.5	7.2		7.2	7.2			7.1			7.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	118	1443		52	1130			281			293	
v/s Ratio Prot	0.06	c0.54			c0.62							
v/s Ratio Perm				0.43				0.03			c0.22	
v/c Ratio	0.95	0.78		0.73	1.04			0.15			1.08	
Uniform Delay, d1	65.2	14.0		19.8	27.9			45.5			55.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	66.2	4.2		40.9	36.9			0.2			75.4	
Delay (s)	131.4	18.2		60.7	64.8			45.7			131.0	
Level of Service	F	B		E	E			D			F	
Approach Delay (s)		28.4			64.7			45.7			131.0	
Approach LOS		C			E			D			F	

Intersection Summary			
HCM 2000 Control Delay	56.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.8
Intersection Capacity Utilization	87.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group