BURNSIDE

60 Dundas Street East Transportation Study

Almega Asset Management

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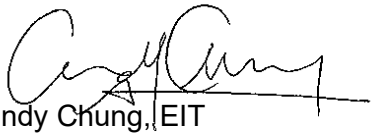

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Executive Summary

R.J. Burnside & Associates Limited (Burnside) was retained by Almega Asset Management (the Client) to undertake a Transportation Study as part of Official Plan Amendment and Zoning By-law Amendment applications. Three new apartment buildings are proposed and will replace the existing commercial plaza at 60 Dundas Street East in the City of Mississauga. Access is proposed via one full movement driveway on Shepard Avenue and one full movement driveway on Dundas Street East.

The development will include 1,224 apartments and 847 m^2 (9,117 ft^2) of retail on the ground floor. A three-level underground garage is proposed, which will include 856 parking spaces for residents and 123 parking spaces for visitors. There are also 736 long-term bicycle spaces and 64 short term bicycle spaces proposed.

The following is a summary of our key findings.

Traffic Operations

Under existing and future conditions, all intersections are currently and will operate with excess capacity, a level of service E or better and queues that are projected to be within their existing storage and link distances with a few exceptions as discussed below.

At the intersection of Hurontario Street / Dundas Street, under total conditions during the PM peak hour, the southbound left turn movement will approach capacity and experience a LOS F. Queues for several movements, primarily during the PM peak hour, either currently exceed or will exceed their storage or link distances.

As noted previously, there is a center two-way left turn lane on Dundas Street, east and west of this intersection, that can accommodate the minor east-west queue spillovers without affecting through traffic.

In addition, it is our opinion that the traffic volume projections should be considered conservative since the Region's higher mode share target was not considered and the growth rate provided by the City appears to underestimate the full impact of future transit and active transportation improvements.

It is recommended that the City monitor this intersection after the HULRT is constructed to confirm whether any additional improvements are required.

At the intersection of Dundas Street East / Jaguar Valley / Site Driveway, under total conditions during the PM peak hour, the northbound and southbound left turn movements will experience a LOS F but continue to have excess capacity. A traffic signal would significantly improve operations and therefore a signal warrant analysis was

conducted for background and total conditions based on the methodology contained in the Ontario Traffic Manual Book 12 but warrants were not met.

It is recommended that the City monitor this intersection for possible future improvements such as signalization.

Site Plan Review

The site is well designed to accommodate all modes of travel. Access and circulation analyses utilizing AutoTurn confirms that the site and garage can accommodate all expected design vehicles.

Transportation Demand Management (TDM)

Various TDM measures currently exist and are either under construction or are planned that will discourage vehicle use and dependency such as:

- Transit service provided immediately near the site via several existing MiWay bus routes, the under construction HULRT and the future DBRT.
- Existing temporary bicycle lanes along King Street and planned bike lanes on both sides of Hurontario Street and Dundas Street.
- The existing multi use trail on the east side of the site.

To further facilitate other modes of travel, several TDM measures are proposed for the development:

- Internal secured bicycle storage for residents.
- Short-term bicycle racks strategically placed at ground level near the main entrance / lobby for visitors and patrons.
- Sidewalk connections from building entrances to the existing external sidewalk network along Dundas Street and Shepard Avenue.
- An information package will be provided to residents, which will include MiWay and GO Transit maps and schedules, cycling and trail maps, and information on Smart Commute.
- Transit subsidy for residents via a preloaded PRESTO pass with $25 for first time purchasers and / or renters.
- Real time transit information displays in building lobbies.
- Encourage residents to join the Mississauga Smart Commute Program.
- Parking spaces will not be bundled with apartments but will be available for purchase or rent.
- Recommending parking rate reductions for resident and visitor parking.

The combination of these proposed TDM measures and the addition of significant transit improvements in the area are expected to reduce vehicle trips and parking demand.

Parking Review

According to the requirements of the ZBL, there will be a deficit of 676 resident spaces and 156 visitor spaces for an overall deficit of 832 spaces. According to the updated parking rates in the City's recently released Draft ZBA, there will be a deficit of 123 resident spaces and 86 visitor and patron spaces for an overall deficit of 209 spaces.

However, it is our opinion that the parking demand suggested by the ZBL and Draft ZBA is overestimating future parking demand for the proposed development, based on the availability of existing transit and upcoming significant transit improvements, existing and future active transportation infrastructure and proposed TDM measures.

A comparison was conducted of other similar developments with similar transit access and within similar neighbourhoods based on submitted applications. These proxy sites clearly show a pattern of reduced parking requirements / demand with resident rates from 0.46 to 0.70 spaces per unit and visitor rates from 0.03 to 0.10 spaces per unit.

Therefore, it is our opinion that the resident parking supply of 856 spaces (0.70 space / unit) and the visitor parking supply of 123 spaces (0.10 space / unit) will meet or exceed future parking demand.

The number of proposed accessible, short and long term bicycle spaces and loading spaces will meet or exceed the minimum requirements of the ZBL.

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Abbreviations

The following are abbreviations utilized within this report:

- Burnside – R.J. Burnside & Associates Limited
- City – City of Mississauga
- Directions
  - EB – Eastbound
  - SB – Southbound
  - NB – Northbound
  - WB – Westbound
- Traffic Movements
  - LT – shared left-through movement
  - LTR – shared left-through-right movement
  - LR – shared left-right movement
  - TR – shared through-right movement
- ITE – Institute of Transportation Engineers
- LOS – Level of service
- PHF – Peak hour factor
- TDM – Transportation demand management
- v/c – Volume to capacity ratio

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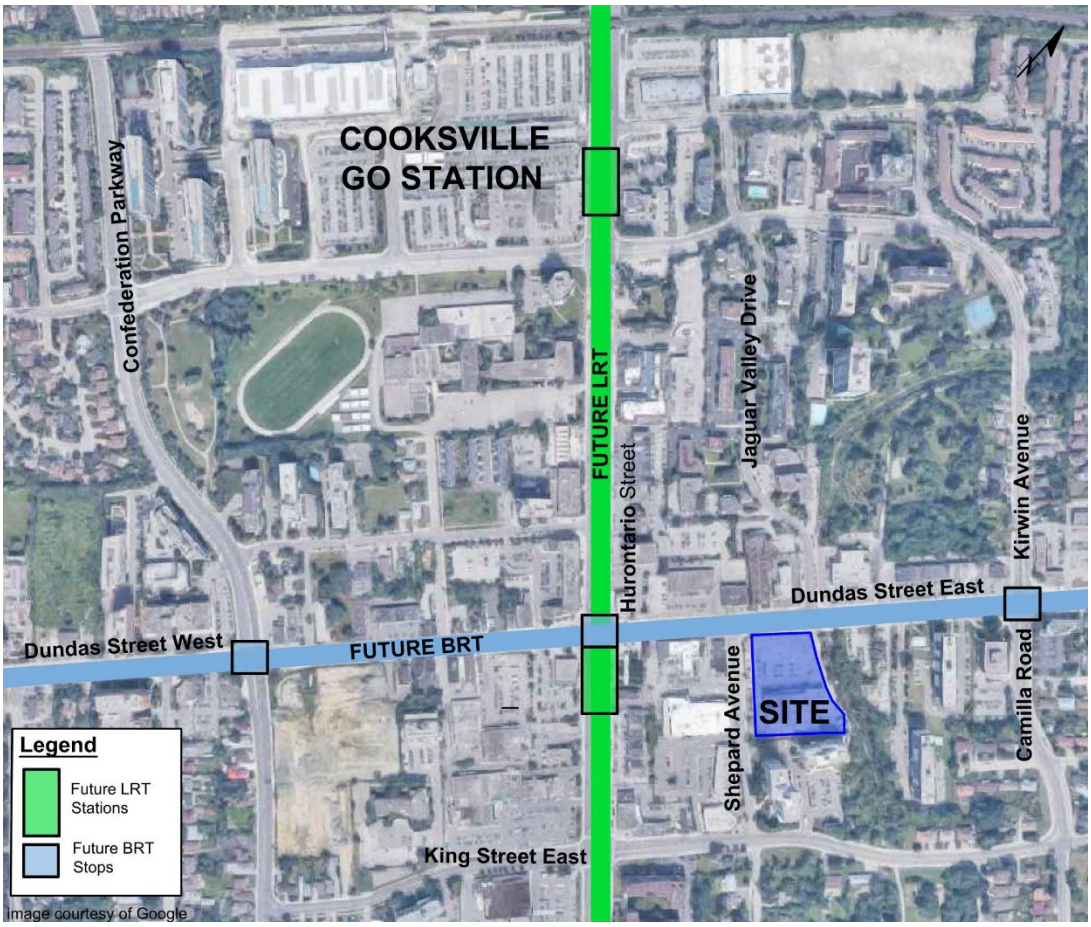
1.0 Introduction

1.1 Background

Almega Asset Management (the Client) is proposing three new apartment buildings that will replace the existing commercial building at 60 Dundas Street East in the City of Mississauga. The development will include 1,224 residential units and 847 m^2 (9,117 ft^2) of retail on the ground floor of one of the buildings. Existing access is provided by two full movement driveways on Shepard Avenue and one full movement driveway to Dundas Street East across from Jaguar Valley Drive. The northerly driveway on Shepard Avenue and the driveway on Dundas Street East will be maintained. The site location is shown in Figure 1.

Figure 1: Site Location



Official Plan Amendment and Zoning By-law Amendment applications are required and R.J. Burnside & Associates Limited (Burnside) was retained to undertake a Transportation Study and Parking Review as part of those applications.

1.2 Scope of Work

The following scope of work was confirmed with the City of Mississauga (the City) prior to conducting this study.

Analysis Scenarios	• Existing traffic conditions • 2028 background and total traffic conditions
Analysis Time Periods	• Weekday AM peak hour (7:00 AM to 9:00 AM) • Weekday PM peak hour (4:00 PM to 6:00 PM)
Analysis Intersections (Study Area)	• Dundas Street East / Hurontario Street • Dundas Street East / Shepard Avenue • Dundas Street East / Jaguar Valley Drive / Site Driveway • Shepard Avenue / Site Driveway
Transportation Demand Management (TDM) Plan	• Recommendations on feasible TDM strategies to discourage single occupant motor vehicle use
Active Transportation and Transit Infrastructure	• Review of existing and future pedestrian, cycling and transit plans
Parking / Loading Review	• Vehicle, accessible, bicycle and loading spaces

The City's Traffic Impact Study (TIS) Guidelines was taken into consideration.

1.3 Intersection Analysis Methodology

Signalized and stop controlled intersection operations were assessed for intersections in the study area using the software program Synchro 11, which employs methodology from the *Highway Capacity Manual (HCM 2000, HCM 2010 and HCM 6)*, published by the Transportation Research Board National Research Council.

Synchro 11 can analyze both signalized and unsignalized intersections in a road corridor or network taking into account the spacing, interaction, queues and operations between intersections. The analysis utilizes the HCM 2000 methodology for all intersections. The signalized and stop controlled intersection analysis methodology is provided in Appendix A.

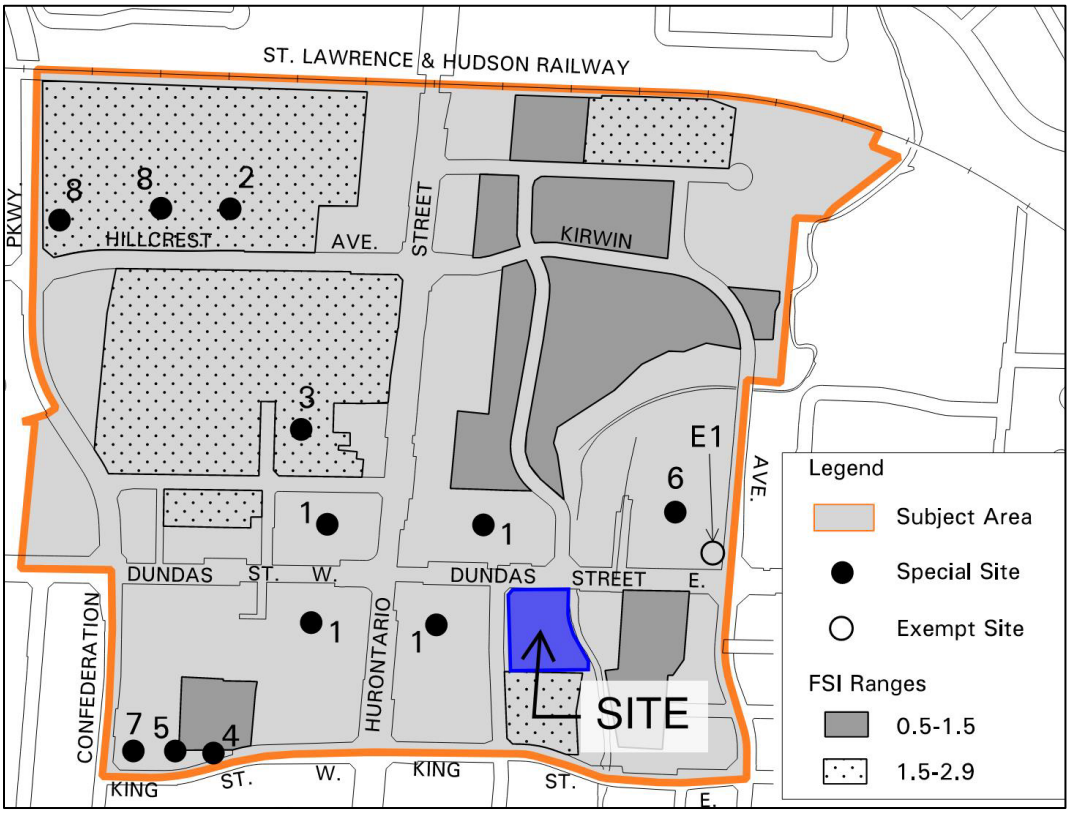
2.0 Existing Conditions

2.1 Site Context

The site is bounded by Dundas Street East to the north, Shepard Avenue to the west, apartments to the south and Cooksville Creek with a multi-use trail to the east. The existing site is occupied by restaurants, a grocery store, pharmacy, Canada Post, and small retail stores for a total of 2,592.4 m^2 (27,904 ft^2).

The development is located within the Downtown Cooksville Area as illustrated in Figure 2. It is a designated growth area planned for intensification. There has been significant ongoing redevelopment in the area with a number of mixed-used buildings. The City has implemented policies that encourage transit-oriented development due to upcoming future transit infrastructure including the currently under construction Hurontario Light Rail Transit (the HULRT). In addition, these policies encourage the area to become a multi modal urban core while discouraging the use of the single occupant motor vehicle.

Figure 2: Downtown Cooksville Area

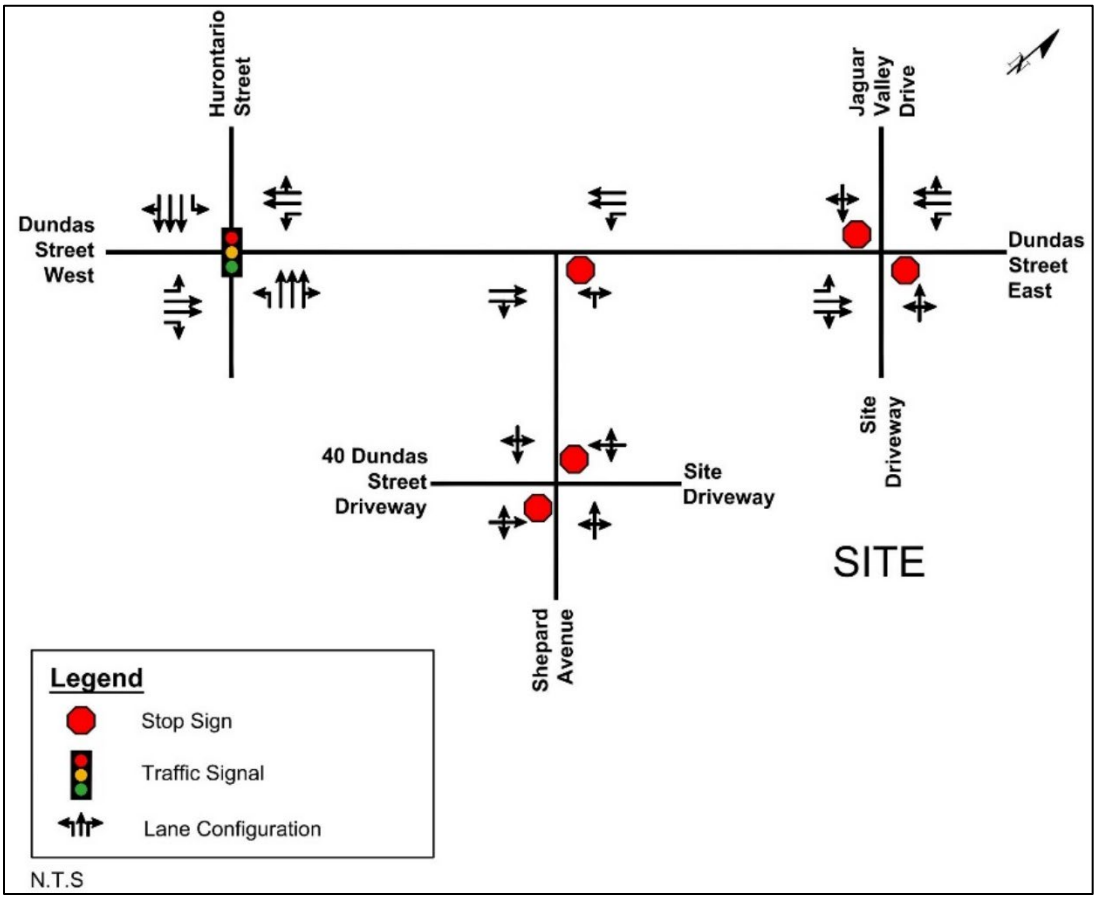


Source: *Mississauga Official Plan – Part 3*, August 11, 2015

2.2 Road Network

The existing road network is described below and illustrated in Figure 3. All roadways are under the jurisdiction of the City. For the purpose of this study, we have assumed that Dundas Street East is an east west road, and that Hurontario Street is a north south road. Sidewalks are provided on both sides of all roads unless otherwise specified below. In addition, along the east side of the site is an existing multi-use trail that runs south of Dundas Street to Frayne Court and extends north to the multi-use trail on Burnhamthorpe Road. There are temporary bike lanes on both sides of King Street East, south of the site.

Figure 3: Existing Lane Configuration



Hurontario Street

Hurontario Street is a north-south arterial road with a 6-lane urban cross section and a posted speed limit of 50 km/h. A site visit on Tuesday, February 15, 2022, found the southbound approach under construction with two of the southbound through lanes closed. Southbound left, southbound through and southbound right turn lanes remain open.

Dundas Street Dundas Street is an east-west arterial road with a 4-lane urban cross-section and a posted speed limit of 50 km/h. West of Hurontario Street, the roadway is called Dundas Street West and east of Hurontario Street, it is Dundas Street East. Within the study area, there is a centre 2-way left turn lane (TWLTL).

Shepard Avenue Shepard Avenue is a north-south local road with a 2-lane urban cross section and a posted speed limit of 40 km/h. On-street parking is prohibited on the east side of the roadway between Dundas Street and King Street and heavy trucks are prohibited from utilizing the road south of King Street.

Jaguar Valley Drive Jaguar Valley Drive is a north-south local road with a 2-lane urban cross section and a posted speed limit of 40 km/h. On-street parking is prohibited on the east side of the roadway and allowed on the west side with a time limit of 15 hours.

2.3 Transit Service

Mississauga Transit (MiWay) provides frequent bus service within the vicinity of the site on Dundas Street and Hurontario Street. Bus stops are located on both sides of Dundas Street just west of the site driveway, at the Hurontario Street / Dundas Street intersection, approximately 150 m (a 2-minute walk) west of the site and at the King Street East / Shepard Avenue intersection, approximately 100 m (a 1.5 minute walk) south of the site. The Cooksville GO Station, which is approximately 1 km (a 14-minute walk) from the site, is designated as a future Mobility Hub serving the Milton GO Train Line, MiWay and GO bus routes. Transit frequency and hours of operation are summarized in Table 1 and routes are illustrated in Figure 4.

Table 1: Transit Route Summary

	Route	Direction	Peak Hour Headways	Days and Hours of Operation
Regular Routes	1 / 1C – Dundas - Collegeway	Eastbound & Westbound	20 min	12:13 AM to 11:47 PM Monday to Sunday
	2 – Hurontario	Northbound & Southbound	10 min	12:13 AM to 11:47 PM Monday to Sunday
	4 – Sherway Gardens	Eastbound & Westbound	30 min	4:50 AM to 10:31 PM Monday to Sunday

Table 1: Transit Route Summary continued

	Route	Direction	Peak Hour Headways	Days and Hours of Operation
Express Route	101 / 101 A – Dundas Express	Eastbound & Westbound	10 min	5:00 AM to 11:00 PM Monday to Friday
	103 – Hurontario Express	Northbound & Southbound	10 min	5:00 AM to 11:00 PM Monday to Sunday

Figure 4: Transit Route Map

Source: *MiWay Service Map,* January 3, 2022

2.4 Traffic Volumes

Current traffic volumes have been significantly lower than usual due to the COVID-19 pandemic. Therefore, historical traffic counts were used at all study intersections, where available, to better reflect typical existing conditions. The historical traffic counts at the study intersections identified in Section 1.2 were either obtained from Spectrum Traffic's database and / or other area development studies. A weekday morning AM peak period (7:00 AM to 9:00 AM) and afternoon PM peak period (4:00 PM to 6:00 PM) were selected as these are typical peak traffic periods for this type of development. Table 2 summarizes the counts used for all study intersections, along with their sources.

Table 2: Traffic Counts Summary

Intersection	Date of Count	Source
Dundas Street / Hurontario Street	Thursday, September, 2019	189 Dundas TIS[1]
Dundas Street / Shepard Avenue	Thursday, September, 2019	Spectrum
Dundas Street / Jaguar Valley Drive / Site Driveway	Tuesday, June 19, 2018	3085 Hurontario TIS [2]
Shepard Avenue / Site Driveway	Thursday, September, 2019	Spectrum

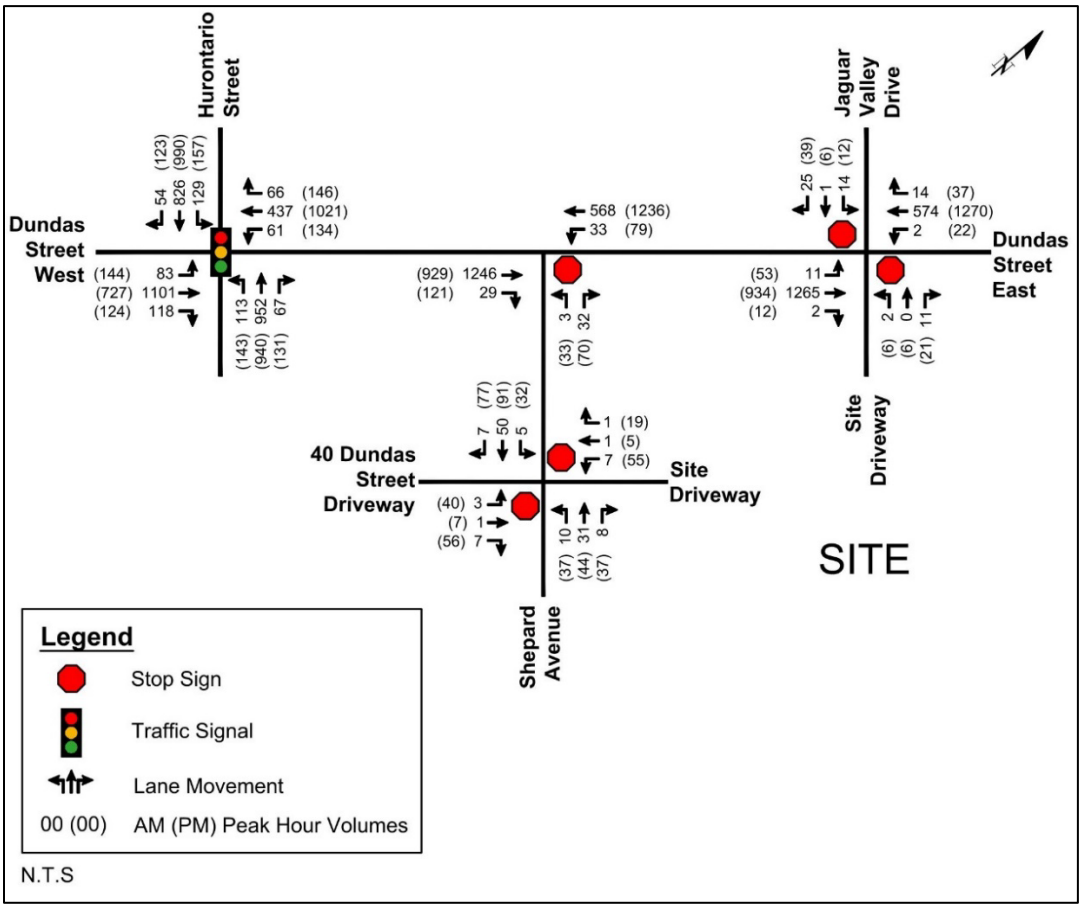
Note: 1. *189 Dundas Street West Village Properties Transportation Impact Study,* LEA Consulting Ltd., June 2021
2. *3085 Hurontario Street Transportation Study*, CGH, July 2021

Since the traffic counts were conducted in different years, there was an imbalance along Dundas Street. For a more conservative analysis, through traffic volumes were balanced using the highest through volumes between intersections. In addition, a review of historical traffic counts obtained from other TIS reports found that traffic volumes have been decreasing between 2000 to 2019. Therefore, no growth was applied to these historical traffic counts. This assumption was confirmed with City staff. The projected 2022 traffic volumes are illustrated in Figure 5. All historical counts are provided in Appendix B.

Traffic operations were observed in the field on Tuesday, February 15, 2022, during the afternoon peak period. Most intersections appeared to operate adequately, with the following exceptions, occurring periodically:

- Hurontario Street / Dundas Street Intersection:
  - Westbound through queue that extended upstream east of Jaguar Valley Drive.
  - Drivers travelling northbound, southbound and westbound would utilize the majority of the yellow phase and occasionally a portion of all red phase.
- Dundas Street at Shepard Avenue and Jaguar Valley Drive:
  - Drivers conducting a northbound left movement typically experienced approximately a 1 minute delay and often required a courtesy gap.

Figure 5: Estimated 2022 Traffic Volumes



3.0 Background Conditions

Future background traffic consists of existing traffic, background traffic growth and traffic from other developments. Background traffic growth and traffic from other developments are discussed below. Future road network and transit improvements within the study horizon year are also discussed. The horizon year of 2028 was selected for future projections, assuming buildout by 2023.

3.1 Future Transit

The Hurontario Light Rail Transit (HULRT) project is an 18 km transit line, which will extend north from the Port Credit GO Station to the Brampton Gateway Terminal at Steeles Avenue and occupy the two centre through lanes on Hurontario. There will be 19 stops that will include urban growth centres such as Mississauga City Centre with connections to major transit systems including GO Transit, MiWay, ZUM and Brampton Transit. The HULRT will have a future headway of 5 minutes during the weekday morning and afternoon peak periods, a 7.5-minute headway during weekday midday and on Saturdays and a 10-minute headway on Sundays and holidays. The closest station

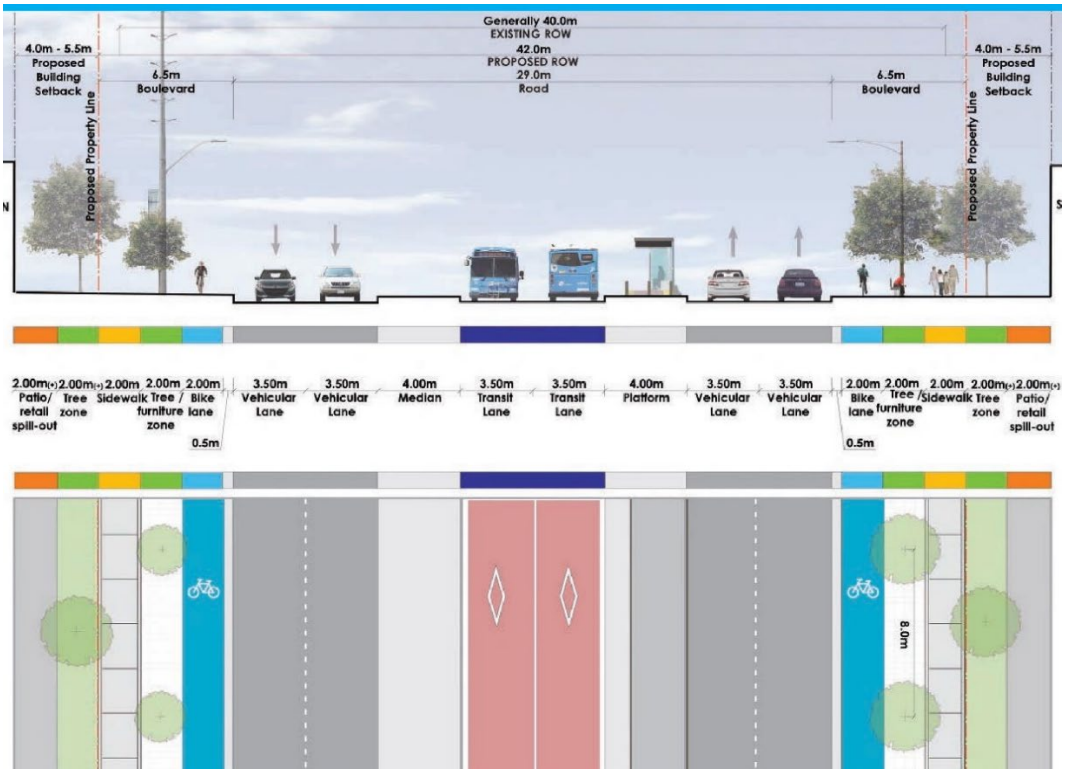
to the site will be located just south of Dundas Street, which will be an approximate 150 m (a 2-minute walk) west of the site. The HULRT is expected to be completed by 2024.

The Dundas Bus Rapid Transit (DBRT) is a proposed rapid bus line on Dundas Street that will occupy the two centre through lanes on Dundas Street. There will be 20 stops that will connect major destinations including the Kipling Mobility Hub, University of Toronto Mississauga Campus and Ridgeway Drive. The closest stop to the site will be located at Hurontario Street. Proposed headways will be as low as 3 minutes during both weekday peak periods and 10 minutes during non-peak periods and weekends. However, the expected completion year of this line is 2040, which is beyond the study horizon.

3.2 Future Active Transportation

Based on the City's *Cycling Master Plan*, dated 2018, either cycle tracks or separated bike lanes are planned along Dundas Street East and Hurontario Street. There is no indication of when these improvements will occur; however, it is assumed that they may occur with the implementation of the HULRT and the DBRT. Figure 6 is an excerpt from the *Dundas Connects Master Plan*, dated May 24, 2018, which shows a cross-section with the future DBRT and bike lanes on Dundas Street.

Figure 6: Future Dundas Street Cross-Section



Source: *Dundas Connects Master Plan,* May 24, 2018

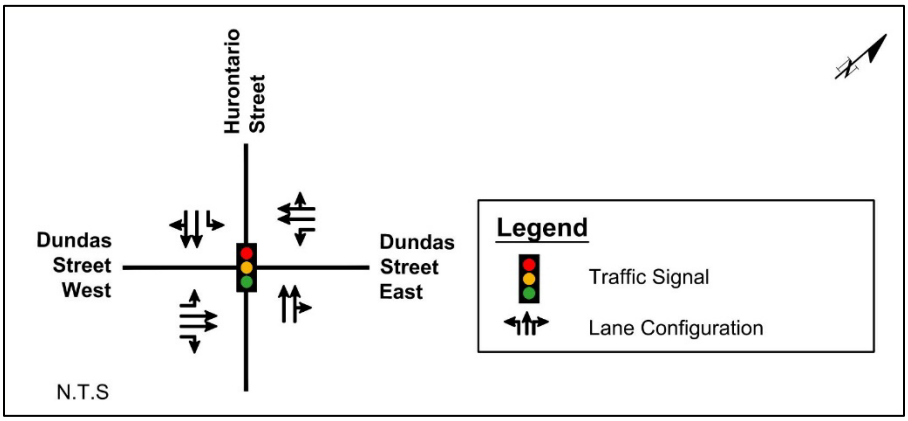
3.3 Future Road Network

Under background conditions, the completion of the HULRT line will result in the removal of one northbound and one southbound through lane and the northbound left turn lane at the Hurontario Street / Dundas Street intersection. It is assumed that drivers that want to make a northbound left onto Dundas Street will utilize downstream intersections such as King Street or Queensway to access Dundas Street. As a result, the northbound left turn traffic volume has been omitted under background traffic conditions.

In addition, according to the *Dundas Connects Master Plan*, a future signal is planned at the Dundas Street / Jaguar Valley Drive / Site Driveway intersection. It appears the timing of the signal will be implemented with the Dundas BRT and so was not considered in the analysis.

The future lane configuration for this intersection is shown in Figure 7.

Figure 7: Hurontario Street / Dundas Street Intersection Future Lane Configuration



3.4 Background Traffic Growth

Growth rates applied to study intersections were provided by City Staff and are summarized in Table 3. No growth was applied to Shepard Avenue and Jaguar Valley Drive.

Table 3: Growth Rate

Scenario / Street	Weekday AM Peak Hour		Weekday PM Peak Hour	
	NB / EB	SB / WB	NB / EB	SB / WB
2022 to 2026				
Hurontario Street (Total Growth)	-20.0%	-23.5%	-20.5%	-18.5%
Dundas Street [1]	0.0%	1.0%	0.5%	0.0%
2026 to 2028				
Hurontario Street [1]	1.0%	0.5%	0.5%	0.5%
Dundas Street [1]	0.0%	0.0%	0.0%	0.0%

Note: 1. Compounded annual growth rate.

3.5 Background Developments

Background developments were identified within the proximity of the site based on the City's online development application website and discussions with City staff. The developments are summarized in Table 4. Trips generated from each development were included in background traffic projections. Excerpts of the site traffic figures from each development are provided in Appendix C.

Table 4: Background Development Summary

Address	Development Statistics			Source
	Proposed Use	AM Trips	PM Trips	
189 Dundas Street West	966 Apartments 531 m^2 Retail	132	218	*189 Dundas Street West Village Properties Transportation Impact Study,* LEA Consulting Ltd., June 2021
3085 Hurontario Street	1,081 Apartments, 1,026 m^2 Retail	414	542	*3085 Hurontario Street Transportation Study,* CGH, July 2021
2444 Hurontario Street	215 Apartments 169 m^2 Office	47	52	*2444 Hurontario Transportation Impact Study*, prepared by IBI Group, dated June 2020
King Street East & Camilla Road	24 Townhomes	22	26	*Proposed Residential Development Transportation Impact Study*, prepared by NexTrans, dated April 2020
45 Agnes Street	312 Apartments 341 m^2 Retail	78	92	*45 Agnes Street Traffic Impact Study Addendum*, prepared by GHD, dated June 2021
89-95 Dundas Street West	419 Apartments 385 m^2 Retail	103	148	*89-95 Dundas Street West Transportation Impact Study*, prepared by GHD, dated October 2020

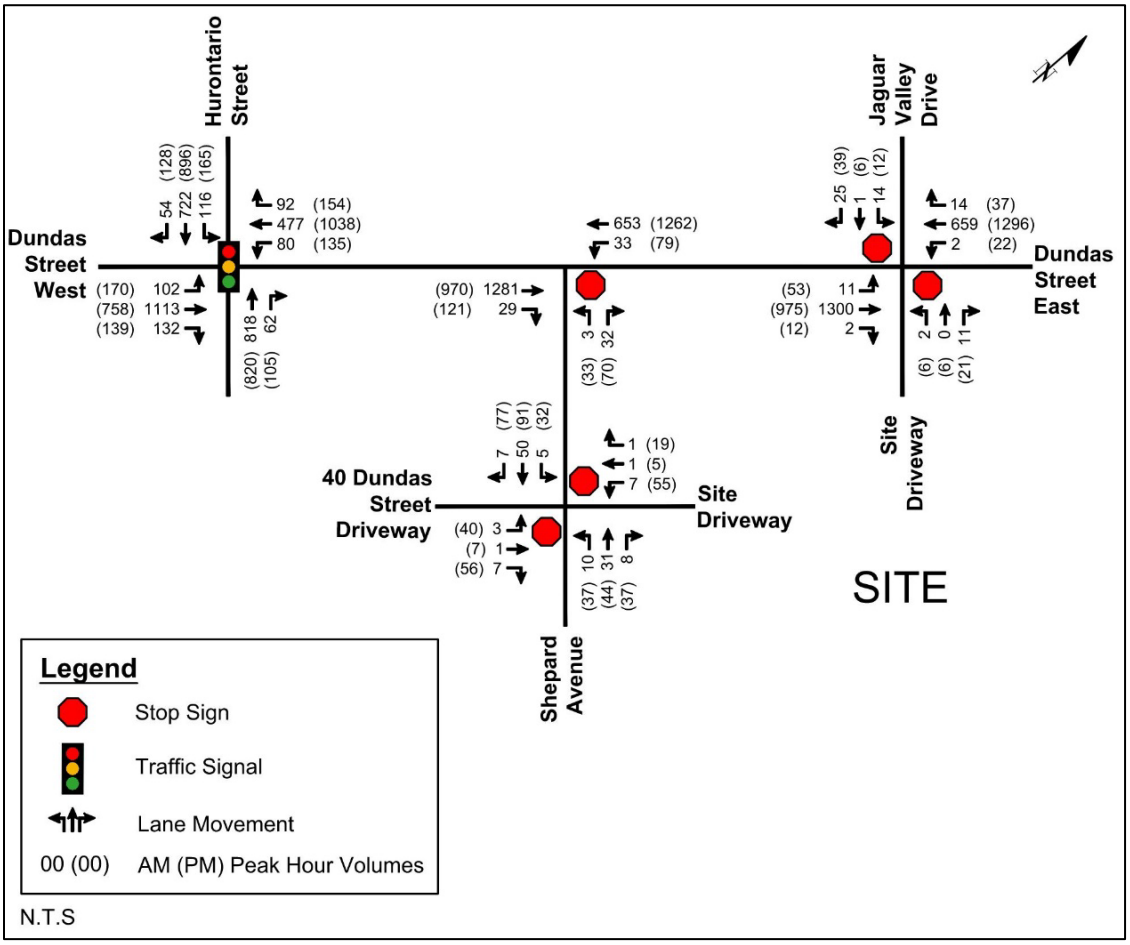
Table 4: Background Development Summary continued

Address	Development Statistics			Source
	Proposed Use	AM Trips	PM Trips	
86-90 Dundas Street West	419 Apartments 385 m² Retail	103	148	Trips are based on *86-90 Dundas Street East Traffic Impact Study Addendum*, prepared by GHD, dated September 2019. Trip distribution based on the methodology outlined in Section 3.5

3.6 Background Traffic Volumes

Background traffic volumes consist of the application of growth per annum (up to the horizon year of 2028) to the existing traffic volumes shown in Figure 5, along with traffic from background developments and the removal of the northbound left turn traffic at the Hurontario Street / Dundas Street intersection. The resulting background 2028 traffic volumes is illustrated in Figure 8.

Figure 8: 2028 Background Traffic Volumes



4.0 Proposed Development

According to the site plan by Chamberlain Architects, dated January 13, 2022, the proposed development will consist of 1,224 apartments and 847 m^2 (9,117 ft^2) of ground floor retail. Access will be provided by one full movement driveway on Dundas and one full movement driveway on Shepard Avenue. The site plan is shown in Figure 9.

Figure 9: Site Plan

4.1 Trip Generation

Trip generation was based on information contained in the *Trip Generation Manual, 11th Edition*, published by the Institute of Transportation Engineers. Land Use Code (LUC) 222 (Multifamily Housing – High Rise) was used for the apartment units and LUC 822 (Strip Retail Plaza less than 40k ft^2) was used for the ground floor retail.

A review of the *2016 Transportation Tomorrow Survey* (TTS) results published by the Data Management Group at the University of Toronto Transportation Research Institute indicate that 21% of trips made by residents of the local ward (TTS Ward 7) are by transit (excluding GO), walking or cycling. The site is located in an area where other modes of travel are encouraged. Residents can take advantage of the close proximity of the future HULRT, future Dundas BRT, designated bike lanes and multi-use trails in the area. There will also be a robust Transportation Demand Management Plan implemented for the site. The Region of Peel's *Sustainable Transportation Strategy*, dated February 2018, identified a 50% target for sustainable travel modes by 2041 while the City's *Transportation Master Plan* (TMP), dated May 2019, only identified a 29% mode share target. It appears that the Region's target is based on the significant transit and active transportation infrastructure improvements planned in the area, whereas the City's target may not have considered these improvements. However, for a more conservative analysis, an 8% mode share was applied to the generated trips. This is the difference between the City's target (29%) and the existing TTS (21%) mode share data.

In addition, for the retail component there are three types of trips considered: new trips, internal capture trips and pass-by trips. New trips are additional traffic added to the road network. The primary purpose of the trip is to visit the development. For example, a resident would leave their home, travel to work, and return home. Therefore, the primary trip purpose was to visit the development.

Interaction trips are trips that make stops at multiple adjacent facilities. There can be two types: external and internal interaction (internal capture). External interaction would occur for trips travelling between other adjacent developments. For the purpose of this analysis, no external interaction trips were assumed. Internal interaction trips are trips that make stops at multiple adjacent facilities within the site. In this case, internal capture strips would include interaction between the residential and retail. For example, the proposed retail uses located exclusively within the ground floors of the apartment buildings are predominantly meant to serve local residents, not patrons external to the development. An interaction of 25% was assumed.

Pass-by trips are trips that are already using the road network and passing by a commercial site. For example, a person leaves work and happens to see a desired store on their way home or plans on visiting the development on their way home along their typical route. They continue their way home after shopping. They do not add any additional trips to the road network but result in adjustments to traffic volumes at the site

driveways only. Pass-by rates for retail uses were derived based upon experience and information published in the ITE Trip Generation Handbook, 3rd Edition. A pass-by rate of 35% was applied to the weekday PM peak hour. There was no available pass-by data for the weekday AM peak hour and; therefore, no reductions were considered.

The resulting trip generation is summarized in Table 5.

Table 5: Site Trip Generation

Land Use (Size)	Weekday AM Peak Hour			Weekday PM Peak Hour		
	In	Out	Total	In	Out	Total
Multifamily Housing -High Rise (LUC 222) – 1,224 units						
Total Trips	112	218	330	220	172	392
Non-Vehicle Modal Split (8%)	-9	-17	-26	-17	-14	-31
New Trips Subtotal	*103*	*201*	*304*	*203*	*158*	*361*
Strip Plaza (LUC 822) – 9,117 ft²						
Total Trips	16	11	27	37	36	73
Non-Vehicle Modal Split (8%)	-1	-1	-2	-3	-3	-6
Pass-by (AM 0%, PM: 40%)	0	0	0	-12	-12	-24
Interaction (25%)	-4	-2	-6	-9	-8	-17
New Trips Subtotal	*11*	*8*	*19*	*13*	*13*	*26*
Total New Trips	**114**	**209**	**323**	**216**	**171**	**387**

4.2 Trip Distribution and Assignment

Trip distribution and assignment of site trips were based upon existing traffic patterns, the available road network, and a review of TTS data. The estimated distribution for residential and retail trips is summarized in Table 6.

Table 6: Trip Distribution

To/From	Via	Inbound / Outbound Distribution	
		Residential	Retail
North	Hurontario Street	35%	20%
South	Hurontario Street	30%	20%
East	Dundas Street	15%	30%
West	Dundas Street	20%	30%
Total		**100%**	**100%**

The resulting pass-by trips and total site traffic trips are shown in Figure 10 and Figure 11, respectively.

Figure 10: Pass-By Traffic Volumes

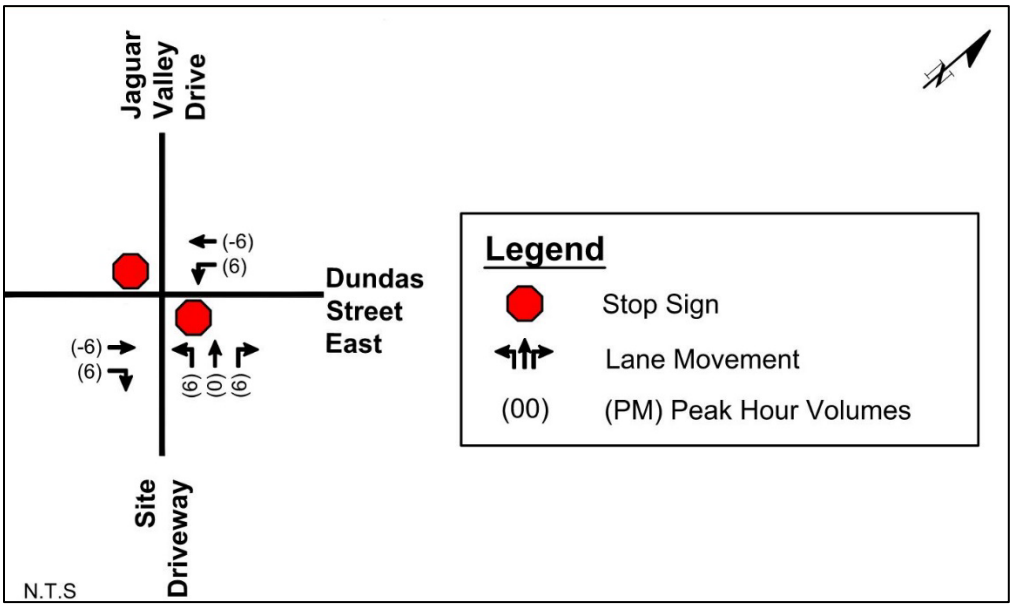
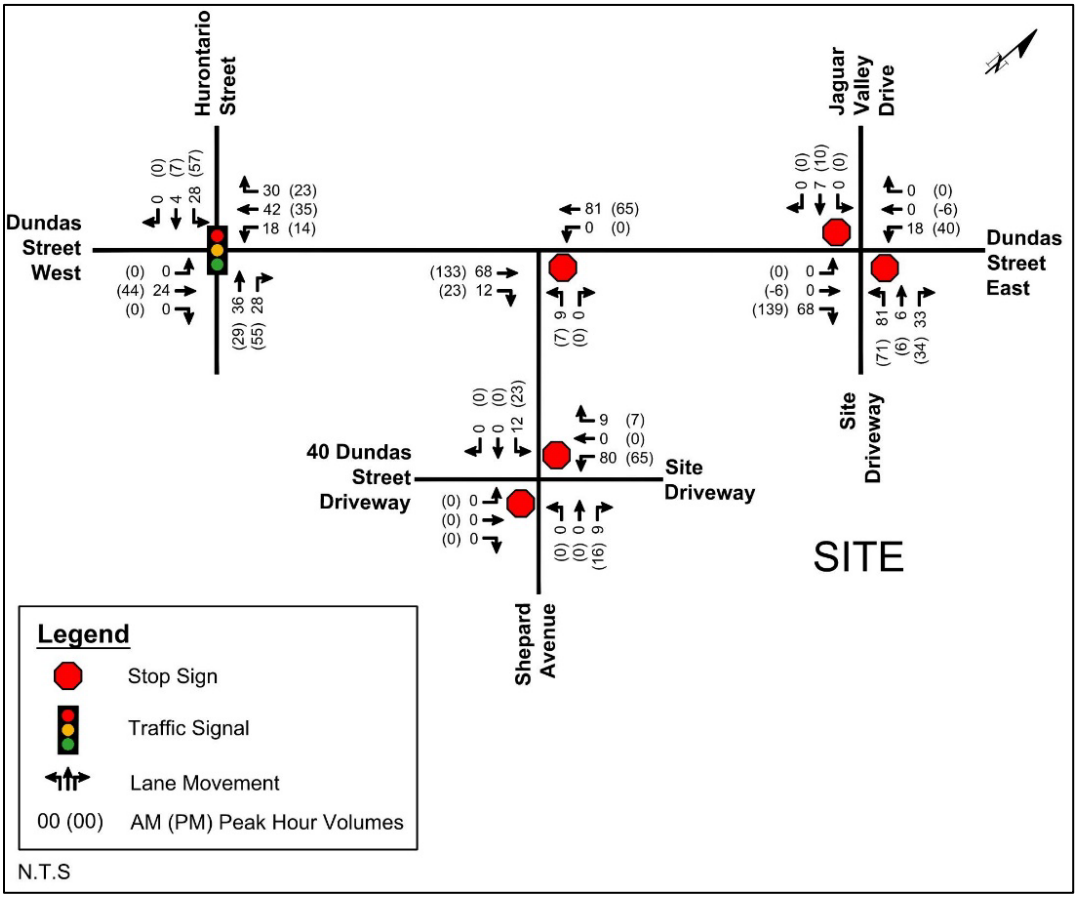


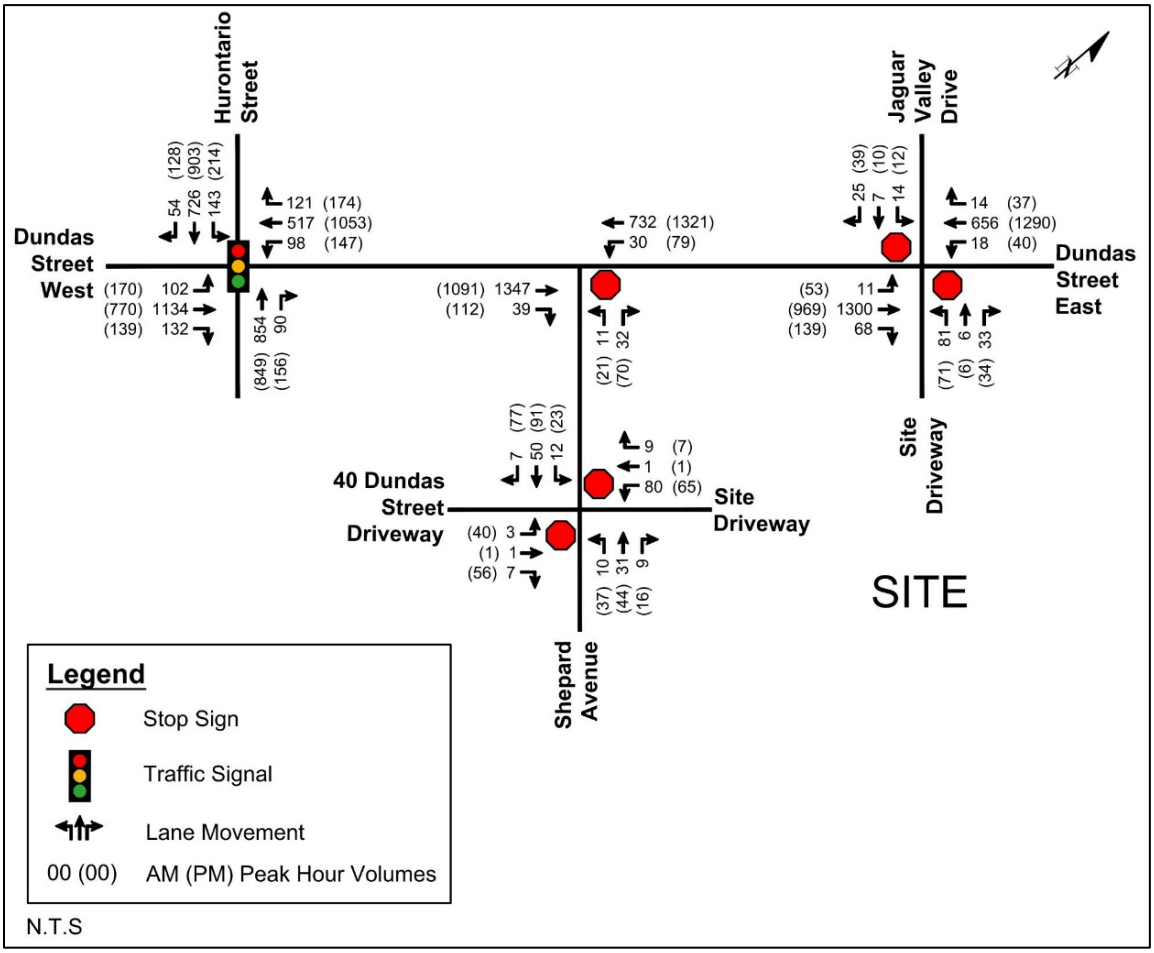
Figure 11: Total Site Traffic Volumes



5.0 Total Traffic

Total traffic volumes consist of background traffic for the horizon year 2028, the site traffic and the removal of the trips generated by the existing plaza. The existing plaza traffic that was removed is provided in Appendix D. The resulting 2028 total traffic volumes are shown in Figure 12.

Figure 12: 2028 Total Traffic Volumes



6.0 Traffic Operation Analysis

Traffic operations analyses were conducted under existing and future traffic conditions for the weekday AM and PM peak hours at all study intersections. In addition, queueing was reviewed using Synchro's 95th percentile queue. A comparison of the existing storage / link distances and projected queues are summarized. Detailed Synchro and queue reports are provided in Appendices E through G.

6.1 Hurontario Street / Dundas Street

Existing and future traffic operations at the signalized intersection of Hurontario Street / Dundas Street are summarized in Table 7.

Table 7: Hurontario / Dundas Intersection Operations

Movement	Existing Storage/ Link Distance (m)	Weekday AM Peak Hour			Weekday PM Peak Hour		
		v/c	LOS	95th % Queue (m)	v/c	LOS	95th % Queue (m)
Existing Conditions							
Overall	-	0.73	D	-	0.84	D	-
EBL	45	0.26	C	27	0.81	E	64
EBT	345	0.92	E	235	0.58	D	126
EBR	30	0.16	C	29	0.18	D	30
WBL	30	0.41	D	21	0.49	C	39
WBTR	430	0.45	D	87	0.98	E	251
NBL	50	0.48	C	35	0.70	D	41
NBTR	200	0.58	D	118	0.61	D	120
SBL	70	0.61	C	39	0.73	D	47
SBTR	380	0.50	D	100	0.63	D	126
Existing Conditions with lost time adjustments							
Overall	-	Operations are the same as above			0.76	D	-
EBL	45				0.81	E	63
EBT	345				0.59	D	126
EBR	30				0.18	D	30
WBL	30				0.45	C	38
WBTR	430				0.95	E	244
NBL	50				0.62	C	40
NBTR	200				0.59	D	118
SBL	70				0.65	C	44
SBTR	380				0.60	D	123
Background 2028 Conditions							
Overall	-	0.82	D	-	0.86	D	-
EBL	45	0.36	C	31	0.83	E	73
EBT	345	0.89	D	214	0.54	D	117
EBR	30	0.16	C	27	0.17	C	27
WBL	30	0.63	D	29	0.44	C	35
WBTR	430	0.49	D	93	0.92	E	228

Table 7: Hurontario / Dundas Intersection Operations continued

Movement	Existing Storage/ Link Distance (m)	Weekday AM Peak Hour			Weekday PM Peak Hour		
		v/c	LOS	95th % Queue (m)	v/c	LOS	95th % Queue (m)
Background 2028 Conditions continued							
NBTR	200	0.78	D	174	0.83	E	180
SBL	95	0.78	F	68	0.76	D	65
SBTR	380	0.52	C	120	0.71	D	174
Total 2028 Conditions							
Overall	-	0.88	D	-	0.94	D	-
EBL	45	0.39	C	31	0.83	E	73
EBT	345	0.91	E	220	0.54	D	119
EBR	30	0.16	C	27	0.17	C	27
WBL	30	0.77	E	46	0.48	C	37
WBTR	430	0.55	D	106	0.94	E	250
NBTR	200	0.87	E	192	0.96	E	215
SBL	95	0.88	F	92	0.97	F	113
SBTR	380	0.53	C	121	0.73	D	175

Under existing and future conditions, the intersection is currently operating and will continue to operate with excess capacity during the weekday AM peak hour, except for the southbound left turn movement, which will experience a level of service (LOS) F under background and total conditions.

During the weekday PM peak hour, under existing conditions, the westbound through-right turn movement is approaching capacity. As observed during the field visit, drivers travelling westbound, northbound, and southbound are utilizing more of the yellow or all red phases. With higher volumes, drivers typically utilize the yellow phase and a portion of the all red phase to clear the intersection. This is common throughout the GTA. As shown in the above table, the analysis was further calibrated by applying a lost time adjustment of -2 seconds for all westbound, northbound, and southbound movements to reflect the observed driver behaviour. This calibration was carried through to background and total conditions.

Under total conditions, the southbound left turn will approach capacity and experience a LOS F during the PM peak hour. However, the traffic volume projections should be considered conservative since the Region's mode share target was not considered and the growth rate provided by the City appears to underestimate the full impact of the transit and active transportation improvements. In addition, the future Dundas BRT will further significantly reduce vehicle usage.

Queue Review

Under existing and future conditions, during the AM peak hour, all queues are and are projected to be within their existing storage and link distances, except for the westbound left turn queue, which will exceed its storage by 16 m under total conditions. During the PM peak hour, the following movements have projected queues that exceed their respective existing storage and link distances:

- SBL turn queue under total conditions will exceed by 18 m.
- EBL turn queue under existing conditions exceeds by 19 m; under background conditions will exceed by 18 m; and under total conditions will exceed by 28 m.
- WBL turn queue under existing conditions exceeds by 9 m; under background conditions will exceed by 8 m; and under total conditions will exceed by 7 m.

As noted previously, there is a center two-way left turn lane on Dundas Street, east and west of this intersection, that can accommodate the above minor queue spillover without affecting through traffic. Under total conditions, during the PM peak hour, the northbound through-right turn queue will exceed its existing link distance by 15 m and the southbound left turn queue will exceed its existing storage by 18 m.

It is recommended that the City monitor this intersection after the HULRT is constructed and operating to confirm whether any additional improvements are required.

6.2 Dundas Street / Shepard Avenue

Existing and future traffic operations at the northbound stop controlled intersection of Dundas Street / Shepard Avenue are summarized in Table 8.

Table 8: Dundas / Shepard Intersection Operations

Movement	Existing Storage/ Link Distance (m)	Weekday AM Peak Hour			Weekday PM Peak Hour		
		v/c	LOS	95th % Queue (m)	v/c	LOS	95th % Queue (m)
Existing Conditions							
WBL [1]	30	0.05	B	2	0.13	B	4
NBLR	200	0.06	B	2	0.25	C	8
Background 2028 Conditions							
WBL [1]	30	0.06	B	2	0.16	B	4
NBLR	200	0.06	B	2	0.26	C	8
Total 2028 Conditions							
WBL [1]	30	0.06	B	2	0.15	B	4
NBLR	200	0.09	B	3	0.23	C	8

Note: *1. Westbound left is part of the centre TWLTL on Dundas Street*

This intersection is operation and will continue to operate with excess capacity and a level of service C or better.

6.3 Dundas Street / Jaguar Valley Drive / Proposed Driveway

Existing and future traffic operations at the northbound/southbound stop controlled intersection of Dundas Street / Jaguar Valley Drive / Site Driveway are summarized in Table 9.

Table 9: Dundas / Jaguar Valley / Proposed Driveway Intersection Operations [2]

Movement	Existing Storage/ Link Distance (m)	Weekday AM Peak Hour			Weekday PM Peak Hour		
		v/c	LOS	95th % Queue (m)	v/c	LOS	95th % Queue (m)
Existing Conditions							
EBL[1]	30	0.01	A	1	0.13	B	4
WBL [1]	30	0.00	B	1	0.03	B	1
NBLTR	200	0.03	B	1	0.17	C	5
SBL	15	0.04	B	1	0.12	E	4
SBTR	100+	0.05	B	2	0.19	C	6
Background 2028 Conditions							
EBL[1]	30	0.01	A	1	0.14	B	4
WBL [1]	30	0.00	B	1	0.04	B	1
NBLTR	200	0.03	B	1	0.18	D	5
SBL	15	0.05	C	2	0.13	E	4
SBTR	100+	0.05	B	2	0.19	C	6
Total 2028 Conditions							
EBL[1]	30	0.01	A	1	0.14	B	4
WBL [1]	30	0.04	B	1	0.07	B	2
NBL	30	0.44	E	16	0.59	F	23
NBTR	100	0.09	B	3	0.17	C	5
SBL	15	0.05	C	2	0.14	F	4
SBTR	100+	0.09	B	3	0.24	D	7

Note: 1. Westbound left is part of the centre TWLTL on Dundas Street
2. Jaguar Valley Drive is modelled with a dedicated southbound left turn movement. The width of the roadway (11.6 m from field measurements) will allow drivers wanting to make a right or through to bypass a driver waiting to make a southbound left onto Dundas Street.

Under existing and background conditions, all critical movements are and will operate with excess capacity and level of service E or better. All queues and projected queues are and will be within their existing storage.

Under total conditions, during the PM peak hour, the northbound and southbound left turn movements will experience a LOS F but continue to have excess capacity. A traffic signal would significantly improve operations and therefore a signal warrant analysis was

conducted for background and total conditions based on the methodology contained in the *Ontario Traffic Manual Book 12*, published by Ministry of Transportation. The results are summarized in Table 10. Detailed analyses are provided in Appendix H.

Table 10: Dundas / Jaguar Valley / Proposed Driveway Intersection Signal Warrant Analysis

Condition	Justification	Justification 1 Minimum Vehicular Volume[1]		Justification 2 Delay to Cross Traffic [1]		Justification 3 Combination [2]	
		1A	1B	2A	2B	3A	3B
Background	Compliance	126%	21%	122%	13%	21%	13%
	Justified	No		No		No	
Total	Compliance	137%	50%	128%	65%	50%	65%
	Justified	No		No		No	

Note: 1. 1A and 2A are total intersection volumes while 1B and 2B are crossing (of the main road) volumes.
2. 3A is Justification 1, while 3B is Justification 2.

For each justification, the lower percentage governs the warrant. A signal can be warranted by just one of the justifications, provided that it meets the threshold for both categories. The threshold required for each justification is 120% for projected volumes. Although this justification is met for the major road, it is not met for the crossing road. Therefore, a traffic signal is not warranted under either background or total conditions. It is recommended that the City monitor this intersection for possible future improvements.

6.4 Shepard Avenue / Proposed Driveway

Future traffic operations at the proposed westbound stop controlled driveway on Shepard Avenue are summarized in Table 11.

Table 11: Shepard / Proposed Driveway Intersection Total Operations

Movement	Existing Storage/ Link Distance (m)	Weekday AM Peak Hour			Weekday PM Peak Hour		
		v/c	LOS	95th % Queue (m)	v/c	LOS	95th % Queue (m)
EBLTR	30	0.02	A	1	0.17	B	5
WBLTR	30	0.15	A	4	0.20	C	6
NBLTR	150	0.01	A	1	0.03	A	1
SBLTR	50	0.01	A	1	0.02	A	1

Under total conditions, all critical movements will operate with excess capacity and a level of service C or better. All queues and projected queues will be within their existing storage.

7.0 Site Plan Review

A high-level review was conducted of the proposed site plan for multi modal circulation, access, and parking garage layout. The site is well designed to accommodate all modes of travel including pedestrians, cyclists, and vehicles. Sidewalks will connect the building entrances to the existing external sidewalk network on Dundas Street and Shepard Avenue. Cyclists can access the site via both driveways.

An access analysis was conducted for the 3-level underground garage with a PTAC or passenger car design vehicle utilizing AutoTURN. The garage will be able to accommodate the design vehicle at all ramps and on all levels as shown in Appendix I. An access analysis for the proposed refuse pickup / loading spaces was conducted for a Region refuse truck using AutoTURN and is also shown in Appendix I. The analysis confirms that the proposed geometrics will accommodate the refuse truck, which represents the largest design vehicle that will visit the site.

8.0 Transportation Demand Management

The proposed site plan incorporates design elements to support pedestrians, cyclists, and transit users to discourage the dependency on the single-occupant motor vehicle. This complements the City's overall transportation vision to achieve a greater sustainable transportation system by promoting and encouraging alternative modes of travel including walking, cycling and transit.

As noted in Section 2.3 and 3.0, there are several existing and planned Transportation Demand Management (TDM) measures within the study area including:

- Substantial transit service improvements provided immediately near the site via MiWay bus routes, and HULRT and the future DBRT.
- Existing multi use trail, east of the site.
- Existing temporary bike lanes installed on both sides of King Street East.
- Planned bike lanes or cycle tracks on both sides of Hurontario Street and Dundas Street.

To further facilitate other modes of travel, several TDM measures are proposed. These measures are expected to reduce not only vehicular trips but also parking demand. Table 12 summarizes the TDM measures proposed for this development.

Table 12: Proposed TDM Measures

TDM Item Description	Comments
Internal secured bicycle storage (long-term)	Internal secured bicycle storage within the building for residents
Short-Term Bicycle racks	Strategically placed at ground level near the main entrance / lobby for visitors
Sidewalk Connections	Sidewalk connections from the building's entrances to the existing external sidewalk network along Dundas Street and Shepard Avenue.
TDM information package	The information package provided to residents will include MiWay and GO transit maps and schedules, cycling and trail maps, and information on Smart Commute.
Transit subsidy	Transit subsidy for residents via a preloaded PRESTO pass with $25 for first time purchasers and / or renters.
Real time transit information displays	Real time transit information displays in building lobbies.
Smart Commute	Encourage residents to join the Mississauga Smart Commute Program.
Unbundled resident parking	Parking spaces will not be bundled with apartments and will be sold or rented separately.
Parking supply reduction	Parking rate reductions for resident and visitor parking are recommended.

9.0 Parking and Loading Supply Review

A 3-level underground garage is proposed, which will include 856 parking spaces for residents and 123 parking spaces for visitors and retail patrons. There are also 736 long term bicycle spaces and 64 short term bicycle spaces proposed.

9.1 Bicycle Parking

The City's current Zoning By-law 0225-2007 (ZBL) does not include bicycle parking requirements. The City is in the process of reviewing the ZBL to include bicycle parking requirements and have recently published the *Parking Regulation Study – Draft Zoning By-law Amendment (redline)* (Draft ZBA), dated November 12, 2021, with draft bicycle parking requirements. The bicycle parking requirements for Class A (long-term or resident) and Class B (short-term or visitor) spaces were reviewed and are summarized in Table 13. All applicable excerpts from the Draft ZBA are provided in Appendix J. For retail spaces less than 1,000 m^2, no bicycle parking is required.

Table 13: Draft Parking ZBA Bicycle Parking Requirements

Proposed Use	Parking Space Type	Rate	Required [1]	Supply	Surplus / Deficit
Apartment Building (1,224 units)	Class A	0.6 spaces / unit	734	736	+2
	Class B	0.05 spaces / unit	61	64	+3

Note: 1. City's rounding rules: fractions of less than 0.5 shall be rounded down to the nearest whole number and fractions equal to or greater than 0.5 shall be rounded up to the nearest whole number.

The proposed resident and visitor bicycle parking supply will exceed the Draft ZBA requirements.

9.2 Vehicle Parking

The ZBL was reviewed to determine minimum vehicle parking requirements. The results of the analysis are summarized in Table 14 and the applicable excerpts from the ZBL are provided in Appendix K.

Table 14: ZBL Vehicular Parking Requirements

Proposed Use	Zoning By-law Use	Size	Parking Spaces [1]			
			Rate	Required	Supply	Surplus / Deficit
Studio	Condominium Apartment Studio	176 units	1.0 / unit	176	**856**	**-676**
1 Bedroom	Condominium Apartment 1 Bedroom	741 units	1.25 / unit	926		
2 Bedrooms	Condominium Apartment 2 Bedrooms	307 units	1.40 / unit	430		
Resident Total		**1,224 units**	**1.25 / unit**	**1,532**		
Visitors	Condominium Apartment - Visitors	1,224 units	0.2 / unit	245	**123**	**-156**
Retail	Retail Store	847 m^2	4 / 100 m^2	34		
Visitor + Retail Total				**279**		
Site Totals				**1,811**	**979**	**-832**

Note: 1. City's rounding rules: fractions of less than 0.5 shall be rounded down to the nearest whole number and fractions equal to or greater than 0.5 shall be rounded up to the nearest whole number.

Based upon the ZBL there will be a deficit of 832 spaces overall. The Draft ZBA is also proposing updated vehicular parking requirements, which were reviewed based on the site residing in Precinct 1, with the results summarized in Table 15.

Table 15: ZBA Vehicular Parking Requirements (Precinct 1)

Proposed Use	Zoning By-law Use	Size	Parking Spaces [1]			
			Rate	Required	Supply	Surplus / Deficit
Apartment	Condominium Apartment	1,224 units	0.8 / unit	979	**856**	**-123**
Visitors	Condominium Apartment - Visitors		0.15 / unit	184	**123**	**-86**
Retail	Retail Store	847 m^2	3 / 100 m^2	25		
Visitor + Retail Total				**209**		
Site Totals				**1,188**	**979**	**-209**

Based upon the Draft ZBA, there will be a deficit of 123 resident spaces and 86 visitor and patron spaces for an overall deficit of 209 spaces. However, it is our opinion that the parking demand suggested by the ZBA is overestimating future parking demand for the proposed development, based on the availability of existing and future transit and the proposed TDM measures discussed in Section 8.0.

9.2.1 Resident Parking Demand

A review was conducted of other similar developments with similar transit access and similar neighbourhood characteristics based on City approvals and submitted applications. In addition, two parking demand surveys were reviewed from the 189 Dundas TIS. These example developments are summarized in Table 16.

Table 16: Resident Parking Rate Comparison

Site	Status / Source	Surrounding Land Use	Available Transit	Land Use & Size	Proposed Parking Rate (spaces / unit)
Subject Site	-	Residential + Retail	MiWay Buses, HULRT within 150 m	1,224 units 847 m^2 Retail	0.70
151 City Centre	Council Approved	Residential + Retail	MiWay Buses + HULRT within 500 m	1,889 units	0.69
3757 Kaneff Crescent	Under Review	Residential + Retail	MiWay Buses + HULRT within 300 m	282 units	0.46
78 Park Street and 22-28 Anna Street	Under Review	Residential + Retail	MiWay Buses + HULRT within 200 m + Across Port Credit GO	316 units	0.67
6719 Glen Eric Drive	189 Dundas TIS (proxy surveys)	Residential + Community Centre + Retail	MiWay Buses	179 units	0.61
1485 Williamsport Drive	189 Dundas TIS (proxy surveys)	Residential + Retail	MiWay Buses	264 units	0.56

It is our opinion that these proxy sites clearly show a pattern of reduced resident parking requirements and demand for similar developments with close proximity to transit and in

some cases with access to far less transit. Therefore, it is our further opinion that the resident parking supply of 0.70 spaces / unit will meet or exceed future parking demand.

9.2.2 Visitor Parking Demand

A similar review was conducted for visitor parking demand, which is summarized in Table 17.

Table 17: Visitor Parking Rate Comparison

Site	Status / Source	Surrounding Land Use	Available Transit	Land Use & Size	Proposed Parking Rate (spaces / unit)
Subject Site	-	Residential + Retail	MiWay Buses, HULRT within 150 m away	1,224 units 847 m^2 Retail	0.10
189 Dundas West	Under Review	Residential + Retail	MiWay Buses + HULRT within 300 m	966 units 531 m^2 Retail	0.10
78 Park Street and 22-28 Anna Street	Under Review	Residential + Retail	MiWay Buses + HULRT within 200 m + Across Port Credit GO	316 units	0.05
1475 Bloor Street	189 Dundas TIS (proxy surveys)	Residential + Retail	MiWay Buses	60 units	0.08
1485 Williamsport Drive	189 Dundas TIS (proxy surveys)	Residential + Retail	MiWay Buses	264 units	0.03

It is our opinion that these proxy sites clearly show a pattern of reduced visitor parking requirements and demand for similar developments with close proximity to transit. Therefore, it is our opinion that the visitor parking supply of 0.10 spaces / unit will meet or exceed future visitor parking demand.

9.2.3 Accessible Parking

The ZBL requires accessible parking for visitors and retail patrons. A minimum of 1 accessible parking space plus 3% of the total required (as determined above), based on a parking supply of 101 to 200 spaces. Therefore, 5 accessible parking spaces are required for the development.

The ZBL also requires that the number of spaces be evenly split between Type A (Van accessible) and B sized spaces, which would result in three Type A and two Type B spaces. The proposed accessible spaces exceed this requirement.

9.3 Loading

The ZBL requires one loading space for the residential component and one loading space for the retail component. The development is proposing two loading spaces, which meets the requirement.

10.0 Conclusions

10.1 Traffic Operations

Under existing and future conditions, all intersections are and will operate with excess capacity, a level of service E or better and queues that are projected to be within their existing storage and link distances with a few exceptions as discussed below.

Hurontario / Dundas Intersection

The southbound left turn movement will experience a LOS F under background and total conditions during the weekday AM peak hour and under total conditions during the PM peak hour, where it will also approach capacity . The projected queue for this movement will exceed the proposed storage length by 18 m under total conditions during the PM peak hour.

The westbound left turn queue will exceed its storage by 16 m under total conditions during the AM peak hour and during the PM peak hour by 9 m under existing conditions; by 8 m under background conditions; and by 7 m under total conditions.

The eastbound left turn queue, during the PM peak hour, will exceed its storage by 19 m under existing conditions; by 18 m under background conditions; and by 28 m under total conditions.

The northbound through-right turn queue will exceed its existing link distance by 15 m under total conditions, during the PM peak hour.

As noted previously, there is a center two-way left turn lane on Dundas Street, east and west of this intersection, that can accommodate the above minor east-west queue spillovers without affecting through traffic.

In addition, it is our opinion that the traffic volume projections should be considered conservative since the Region’s higher mode share target was not considered and the growth rate provided by the City appears to underestimate the full impact of future transit and active transportation improvements.

It is recommended that the City monitor this intersection after the HULRT is constructed to confirm whether any additional improvements are required.

Dundas / Jaguar Valley / Site Driveway Intersection

Under total conditions, during the PM peak hour, the northbound and southbound left turn movements will experience a LOS F but continue to have excess capacity. A traffic signal would significantly improve operations and therefore a signal warrant analysis was conducted for background and total conditions based on the methodology contained in the Ontario Traffic Manual Book 12 but warrants were not met.

It is recommended that the City monitor this intersection for possible future improvements such as signalization.

10.2 Site Plan Review

The site is well designed to accommodate all modes of travel. Access and circulation analyses utilizing AutoTurn confirms that the site and garage can accommodate all expected design vehicles.

10.3 Transportation Demand Management

Various TDM measures currently exist and are either under construction or are planned that will discourage vehicle use and dependency such as:

- Transit service provided immediately near the site via several MiWay bus routes, the under construction HULRT and the future DBRT.
- Existing temporary bicycle lanes along King Street and planned bike lanes on both sides of Hurontario Street and Dundas Street.
- The existing multi use trail on the east side of the site.

To further facilitate other modes of travel, several TDM measures are proposed by the development as follows:

- Internal secured bicycle storage for residents.
- Short-term bicycle racks strategically placed at ground level near the main entrance / lobby for visitors and patrons.
- Sidewalk connections from building entrances to the existing external sidewalk network along Dundas Street and Shepard Avenue.
- An information package will be provided to residents, which will include MiWay and GO Transit maps and schedules, cycling and trail maps, and information on Smart Commute.
- Transit subsidy for residents via a preloaded PRESTO pass with $25 for first time purchasers and / or renters.
- Real time transit information displays in building lobbies.
- Encourage residents to join the Mississauga Smart Commute Program.
- Parking spaces will not be bundled with apartments and will require sperate purchase or rent.

- Recommending parking rate reductions for resident and visitor parking.

The combination of these proposed TDM measures and the addition of significant transit improvements in the area are expected to reduce vehicle trips and parking demand.

10.4 Parking / Loading Review

According to the requirements of the ZBL, there will be a deficit of 676 resident spaces and 156 visitor spaces for an overall deficit of 832 spaces. A Draft ZBA with updated parking requirements was published on November 12, 2021, which is expected to be passed by Council this year. According to the updated parking rates in the Draft ZBA, there will be a deficit of 123 resident spaces and 86 visitor and patron spaces for an overall deficit of 209 spaces.

However, it is our opinion that the parking demand suggested by the ZBL and Draft ZBA is overestimating future parking demand for the proposed development for the following reasons:

- There are many MiWay bus routes within a 2 minute walk of the site.
- There will also be frequent, daily transit service provided by the future HULRT and DBRT, which will both have stations that are located within a 2 minute walk from the site.
- The proposed Transportation Demand Management (TDM) measures summarized in Section 8.0 will further reduce parking demand.
- There have been several similar developments with similar access to transit that have either lower peak parking demand or lower approved rates.

Based on the above, a comparison was conducted of other similar developments with similar transit access and within similar neighbourhoods based on submitted applications. These proxy sites clearly show a pattern of reduced parking requirements with resident rates from 0.46 to 0.70 spaces per unit and visitor rates from 0.03 to 0.10 spaces per unit.

Therefore, it is our opinion that the resident parking supply of 856 spaces (0.70 space / unit) and the visitor parking supply of 123 spaces (0.10 space / unit) will meet or exceed future parking demand.

The number of proposed accessible, short, and long term bicycle spaces and loading spaces will meet or exceed the minimum requirements of the ZBL.

BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Appendix A

Intersection Analysis Methodology

Intersection Analysis Methodology for Motor Vehicles

Signalized intersection analysis considers two separate measures of performance:

- The capacity of all intersection movements, which is based on a volume to capacity ratio that is a measure of the degree of capacity utilized.
- The level of service (LOS) for all intersection movements, which is based on the average control delay per vehicle for the various movements through the intersection and overall. Delay 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 link between LOS and delay (in seconds) for signalized intersections is summarized below.

Level of Service	Control Delay per Vehicle(s)
A	≤10
B	> 10 – 20
C	> 20 – 35
D	> 35 – 55
E	> 55 – 80
F	> 80

Unsignalized intersection analysis considers two separate measures of performance:

- The capacity of the intersection's critical movements, which is based on a volume to capacity ratio.
- The level of service for the critical movements, which is based on the average control delay per vehicle for the various critical movements within the intersection. The link between LOS and delay (in seconds) for unsignalized intersections is summarized below.

Level of Service	Control Delay per Vehicle(s)
A	0 – 10
B	> 10 – 15
C	> 15 – 25
D	> 25 – 35
E	> 35 – 50
F	> 50

Appendix B

Historical Counts and Signal Timing Plans

Spectrum

Turning Movement Count
Location Name: HURONTARIO ST & DUNDAS ST
Date: Thu, Sep 19, 2019 Deployment Lead: David Chu

Peak Hour: 08:00 AM - 09:00 AM **Weather: Few Clouds (13.17 °C)**

Taken from 189 Dundas St. Transportation Impact, prepared by LEA, June 2021

Spectrum

Turning Movement Count
Location Name: HURONTARIO ST & DUNDAS ST
Date: Thu, Sep 19, 2019 Deployment Lead: David Chu

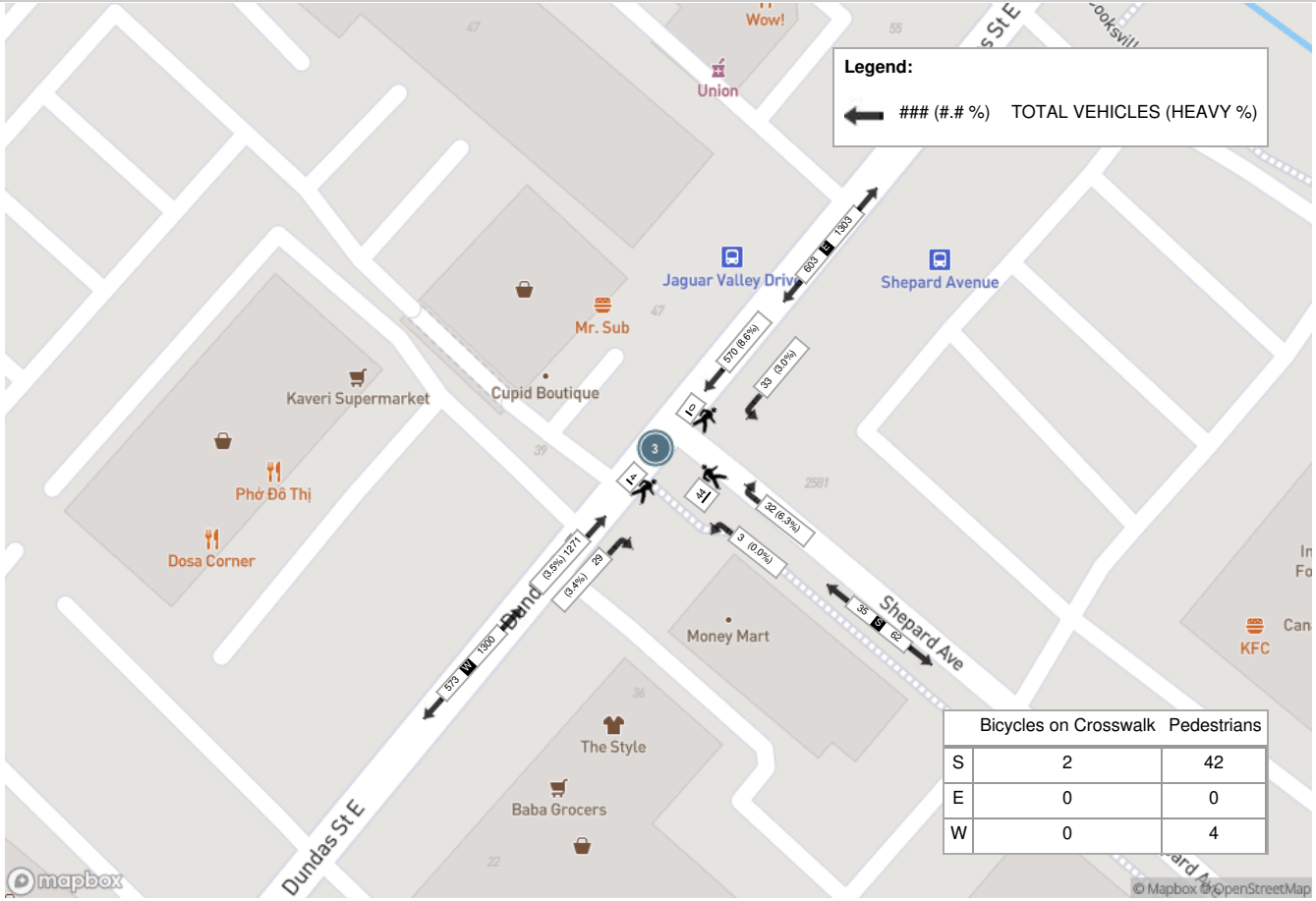
Peak Hour: 05:15 PM - 06:15 PM Weather: Broken Clouds (22.74 °C)

	Bicycles on Crosswalk	Pedestrians
N	3	107
S	0	143
E	2	204
W	4	245

Spectrum

Turning Movement Count
Location Name: DUNDAS ST E & SHEPARD AVE
Date: Thu, Sep 19, 2019 Deployment Lead: David Chu

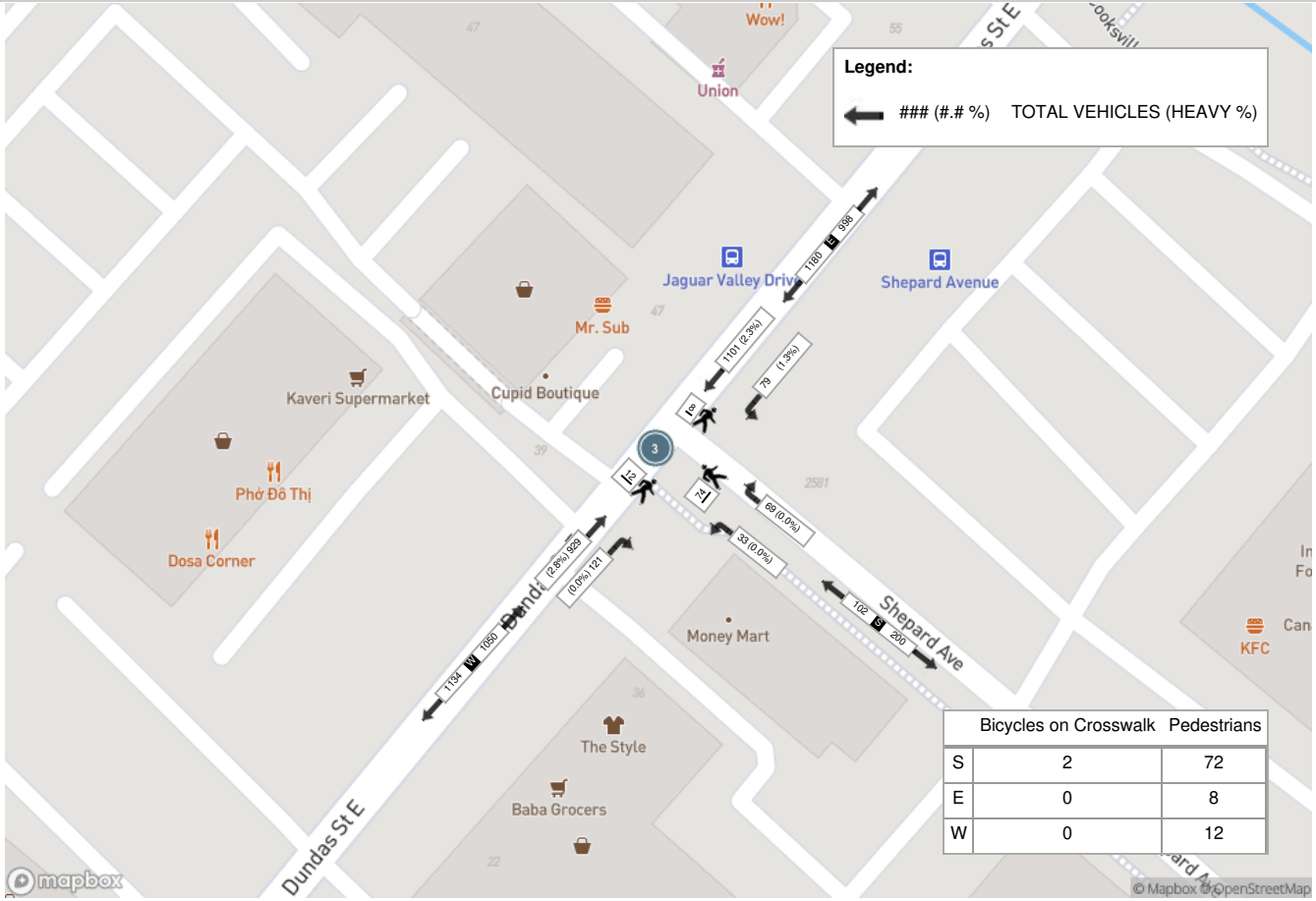
Peak Hour: 08:00 AM - 09:00 AM Weather: Few Clouds (13.17 °C)



Spectrum

Turning Movement Count
Location Name: DUNDAS ST E & SHEPARD AVE
Date: Thu, Sep 19, 2019 Deployment Lead: David Chu

Peak Hour: 05:15 PM - 06:15 PM Weather: Broken Clouds (22.74 °C)



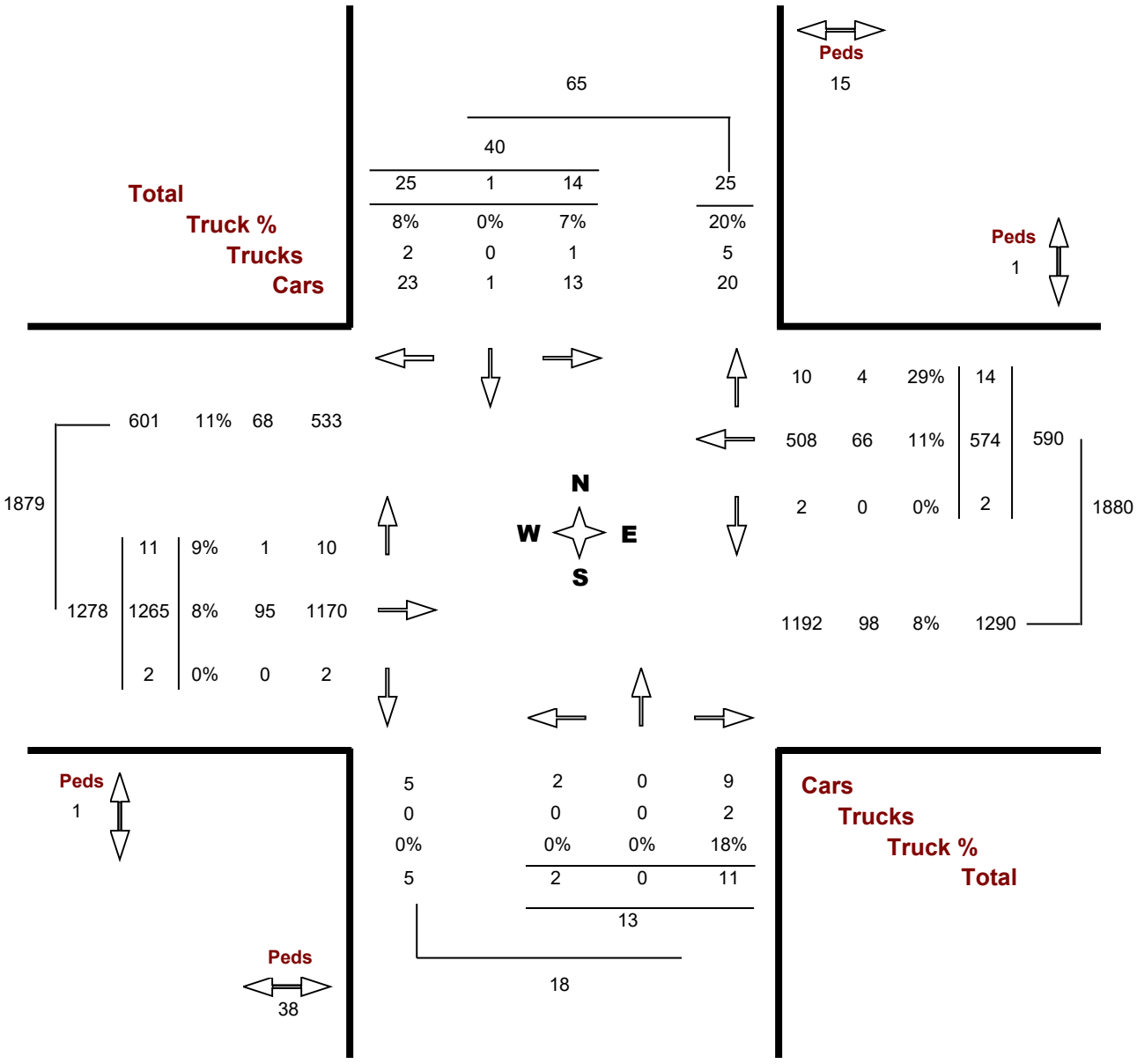
Turning Movements Report - AM Period

Location..... DUNDAS ST E @ JAGUAR VALLEY DR

Municipality..... Mississauga **GeoID.....** 349803

Count Date..... Tuesday, 19 June, 2018 **Peak Hour.....** 07:45 AM — 08:45 AM

Road 1 JAGUAR VALLEY DR **Road 2** DUNDAS ST E



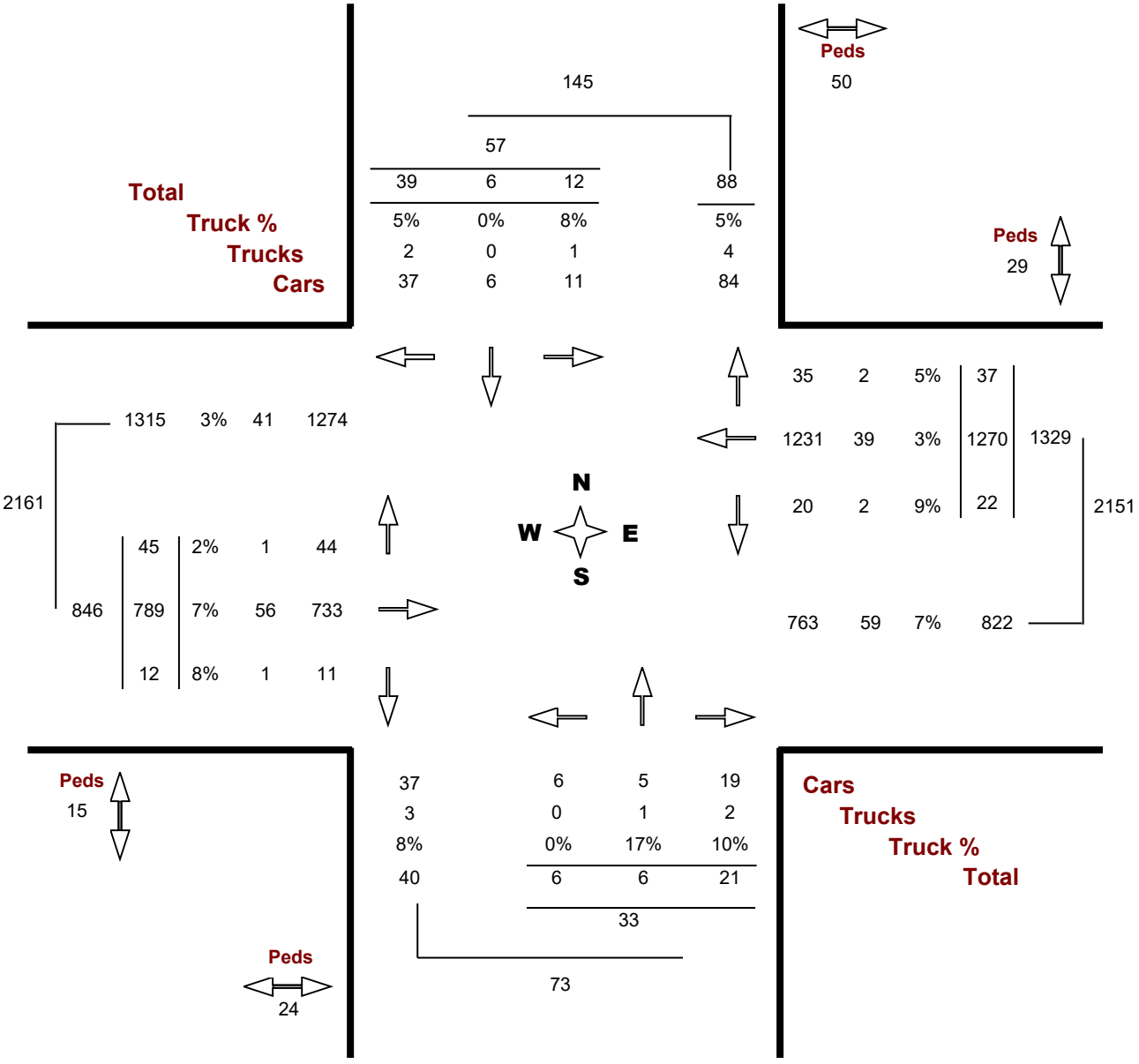
Turning Movements Report - PM Period

Location..... DUNDAS ST E @ JAGUAR VALLEY DR

Municipality..... Mississauga **GeoID.....** 349803

Count Date..... Tuesday, 19 June, 2018 **Peak Hour.....** 04:15 PM — 05:15 PM

Road 1 JAGUAR VALLEY DR **Road 2** DUNDAS ST E



Spectrum

Turning Movement Count
Location Name: SHEPARD AVE & 40 DUNDAS ST
Date: Thu, Sep 19, 2019 Deployment Lead: David Chu

Turning Movement Count (7 . SHEPARD AVE & 40 DUNDAS ST)

Start Time	N Approach SHEPARD AVE						E Approach EAST DRIVEWAY						S Approach SHEPARD AVE						W Approach 40 DUNDAS ST						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	U-Turn W:W	Peds W:	Approach Total		
07:00:00	0	3	0	0	0	3	0	0	0	0	0	0	2	4	1	0	1	7	0	0	0	0	0	0	10	
07:15:00	1	4	1	1	0	7	1	0	0	0	1	1	1	3	2	0	1	6	1	0	2	0	0	3	17	
07:30:00	1	16	2	0	0	19	1	0	2	0	3	3	1	5	2	0	3	8	3	0	1	0	3	4	34	
07:45:00	0	5	1	0	0	6	0	0	1	0	1	1	0	2	0	0	0	2	2	0	0	0	0	2	11	72
08:00:00	1	10	1	0	0	12	0	1	4	0	3	5	2	1	3	0	0	6	1	0	1	0	1	2	25	87
08:15:00	0	12	0	0	0	12	1	0	1	0	0	2	1	10	1	0	1	12	0	1	0	0	3	1	27	97
08:30:00	3	15	0	0	1	18	0	0	2	0	1	2	2	9	3	0	1	14	4	0	0	0	1	4	38	101
08:45:00	3	13	4	0	0	20	0	0	0	0	0	0	3	11	3	0	1	17	2	0	2	0	2	4	41	131
09:00:00	1	11	2	0	0	14	0	0	2	0	2	2	4	9	3	0	3	16	0	0	2	0	3	2	34	140
09:15:00	7	23	1	1	0	32	1	0	2	0	1	3	3	11	0	0	1	14	1	0	3	0	3	4	53	166
09:30:00	9	13	2	0	0	24	1	0	0	0	2	1	2	6	4	0	4	12	4	0	3	0	2	7	44	172
09:45:00	7	12	5	1	1	25	0	0	2	0	1	2	0	7	7	0	4	14	5	1	2	0	7	8	49	180
BREAK																										
16:00:00	14	19	7	0	2	40	4	0	9	0	11	13	5	11	7	0	17	23	12	1	10	0	1	23	99	
16:15:00	16	18	7	0	0	41	10	0	8	0	8	18	9	14	6	0	22	29	11	1	9	0	9	21	109	
16:30:00	13	18	11	0	2	42	2	1	14	0	8	17	10	9	7	0	12	26	5	1	12	0	8	18	103	
16:45:00	14	22	9	0	2	45	4	2	14	0	3	20	8	15	7	0	18	30	7	3	4	0	8	14	109	420
17:00:00	13	17	8	0	1	38	2	3	12	0	8	17	7	14	11	0	17	32	12	5	7	0	9	24	111	432
17:15:00	19	23	7	0	1	49	6	0	14	0	13	20	9	12	10	0	22	31	14	4	7	0	7	25	125	448
17:30:00	19	28	9	0	1	56	2	1	8	0	13	11	8	11	8	0	17	27	19	0	11	0	12	30	124	469
17:45:00	17	20	7	0	5	44	5	0	16	0	12	21	13	11	15	0	36	39	11	1	10	0	5	22	126	486
18:00:00	22	15	9	1	4	47	6	4	17	0	11	27	7	10	4	0	16	21	12	2	12	0	13	26	121	496
18:15:00	11	17	10	0	2	38	4	2	9	0	12	15	7	12	7	0	18	26	8	3	12	0	8	23	102	473
18:30:00	14	27	4	0	4	45	9	1	13	0	13	23	8	16	10	0	12	34	9	2	17	0	8	28	130	479
18:45:00	12	16	6	0	4	34	3	0	11	0	7	14	10	20	10	0	17	40	12	0	13	0	9	25	113	466
Grand Total	217	377	113	4	30	711	62	15	161	0	134	238	122	233	131	0	244	486	155	25	140	0	122	320	**1755**	-
Approach%	30.5%	53%	15.9%	0.6%		-	26.1%	6.3%	67.6%	0%		-	25.1%	47.9%	27%	0%		-	48.4%	7.8%	43.8%	0%		-	**-**	-
Totals %	12.4%	21.5%	6.4%	0.2%		40.5%	3.5%	0.9%	9.2%	0%		13.6%	7%	13.3%	7.5%	0%		27.7%	8.8%	1.4%	8%	0%		18.2%	**-**	-
Heavy	1	6	0	0		-	2	0	1	0		-	1	3	1	0		-	1	0	1	0		-	**-**	-
Heavy %	0.5%	1.6%	0%	0%		-	3.2%	0%	0.6%	0%		-	0.8%	1.3%	0.8%	0%		-	0.6%	0%	0.7%	0%		-	**-**	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

Spectrum

Turning Movement Count
Location Name: SHEPARD AVE & 40 DUNDAS ST
Date: Thu, Sep 19, 2019 Deployment Lead: David Chu

Peak Hour: 09:00 AM - 10:00 AM **Weather: Few Clouds (13.17 °C)**

	Bicycles on Crosswalk	Pedestrians
N	0	1
S	0	12
E	0	6
W	0	15

Spectrum

Turning Movement Count
Location Name: SHEPARD AVE & 40 DUNDAS ST
Date: Thu, Sep 19, 2019 Deployment Lead: David Chu

Peak Hour: 05:15 PM - 06:15 PM Weather: Broken Clouds (22.74 °C)

	Bicycles on Crosswalk	Pedestrians
N	0	11
S	0	91
E	1	48
W	0	37

Signal Timing Report

Runtime: 2021-08-04 09:05:26

Device: 1401

Region: Mississauga **Signal ID:** 1401 **Location:** HURONTARIO STREET N at Dundas Street E

Phase	Units	1	2	3	4	5	6	7	8
Walk	Sec	0	14	0	16	0	14	0	16
Ped Clear	Sec	0	20	0	22	0	20	0	22
Min Green	Sec	5	8	5	8	5	8	5	8
Passage	Sec	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0
Maximum 1	Sec	10	15	10	40	10	15	10	40
Maximum 2	Sec	10	15	10	40	10	15	10	40
Yellow Change	Sec	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
Red Clearance	Sec	0.0	3.0	0.0	3.5	0.0	3.0	0.0	3.5
Red Revert	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Added Initial	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Initial	Sec	0	0	0	0	0	0	0	0
Time Before	Sec	0	0	0	0	0	0	0	0
Cars Before	Veh	0	0	0	0	0	0	0	0
Time To Reduce	Sec	0	0	0	0	0	0	0	0
Reduce By	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min Gap	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dynamic Max Limit	Sec	0	0	0	0	0	0	0	0
Dynamic Max Step	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
[P2] Start Up	Enum	phaseNotOn	redClear	phaseNotOn	phaseNotOn	phaseNotOn	redClear	phaseNotOn	phaseNotOn
[P2] Options	Bit	Enabled Non Lock Det	Enabled Non-Actuated 1 Max Veh Recall Ped Recall Dual Entry Act Rest In Walk	Enabled Non Lock Det	Enabled Ped Recall Dual Entry	Enabled Non Lock Det	Enabled Non-Actuated 1 Max Veh Recall Ped Recall Dual Entry Act Rest In Walk	Enabled Non Lock Det	Enabled Ped Recall Dual Entry
[P2] Ring	Ring	1	1	1	1	2	2	2	2
[P2] Concurrency	Phase (,)	(5,6)	(5,6)	(7,8)	(7,8)	(1,2)	(1,2)	(3,4)	(3,4)

Phase	Units	9	10	11	12	13	14	15	16
Walk	Sec	0	0	0	0	0	0	0	0
Ped Clear	Sec	0	0	0	0	0	0	0	0
Min Green	Sec	0	0	1	1	1	1	1	1
Passage	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maximum 1	Sec	0	0	0	0	0	0	0	0
Maximum 2	Sec	0	0	0	0	0	0	0	0
Yellow Change	Sec	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Red Clearance	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red Revert	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Added Initial	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Initial	Sec	0	0	0	0	0	0	0	0
Time Before	Sec	0	0	0	0	0	0	0	0
Cars Before	Veh	0	0	0	0	0	0	0	0
Time To Reduce	Sec	0	0	0	0	0	0	0	0
Reduce By	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min Gap	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dynamic Max Limit	Sec	0	0	0	0	0	0	0	0
Dynamic Max Step	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
[P2] Start Up	Enum	other	other	other	other	other	other	other	other
[P2] Options	Bit	0	0	0	0	0	0	0	0
[P2] Ring	Ring	0	0	0	0	0	0	0	0
[P2] Concurrency	Phase (,)	()	()	()	()	()	()	()	()

Veh Detector	Units	1	2	3	4	5	6	7	8
Options	Bit	Passage Call	0	Passage Call	Passage Call	Passage Call	0	Passage Call	Passage Call
Call Phase	Phase	1	0	3	4	5	0	7	8
Switch Phase	Phase	0	0	0	0	0	0	0	0
Delay	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Extend	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Limit	Sec	0	0	0	0	0	0	0	0
No Activity	Min	0	0	0	0	0	0	0	0
Max Presence	Min	60	0	60	60	60	0	60	60
Erratic Counts	Counts/Min	0	0	0	0	0	0	0	0
Fail Time	Sec	255	0	255	255	255	0	255	255

Veh Detector	Units	9	10	11	12	13	14	15	16
Options	Bit	0	0	0	0	0	0	0	0
Call Phase	Phase	0	0	0	0	0	0	0	0
Switch Phase	Phase	0	0	0	0	0	0	0	0

Delay	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Extend	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Limit	Sec	0	0	0	0	0	0	0	0
No Activity	Min	0	0	0	0	0	0	0	0
Max Presence	Min	0	0	0	0	0	0	0	0
Erratic Counts	Counts/Min	0	0	0	0	0	0	0	0
Fail Time	Sec	0	0	0	0	0	0	0	0
Veh Detector	**Units**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
Options	Bit	0	0	0	0	0	0	0	0
Call Phase	Phase	0	0	0	0	0	0	0	0
Switch Phase	Phase	0	0	0	0	0	0	0	0
Delay	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Extend	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Limit	Sec	0	0	0	0	0	0	0	0
No Activity	Min	0	0	0	0	0	0	0	0
Max Presence	Min	0	0	0	0	0	0	0	0
Erratic Counts	Counts/Min	0	0	0	0	0	0	0	0
Fail Time	Sec	0	0	0	0	0	0	0	0
Veh Detector	**Units**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**
Options	Bit	0	0	0	0	0	0	0	0
Call Phase	Phase	0	0	0	0	0	0	0	0
Switch Phase	Phase	0	0	0	0	0	0	0	0
Delay	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Extend	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Limit	Sec	0	0	0	0	0	0	0	0
No Activity	Min	0	0	0	0	0	0	0	0
Max Presence	Min	0	0	0	0	0	0	0	0
Erratic Counts	Counts/Min	0	0	0	0	0	0	0	0
Fail Time	Sec	0	0	0	0	0	0	0	0
Veh Detector	**Units**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**
Options	Bit	0	0	0	0	0	0	0	0
Call Phase	Phase	0	0	0	0	0	0	0	0
Switch Phase	Phase	0	0	0	0	0	0	0	0
Delay	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Extend	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Limit	Sec	0	0	0	0	0	0	0	0
No Activity	Min	0	0	0	0	0	0	0	0
Max Presence	Min	0	0	0	0	0	0	0	0
Erratic Counts	Counts/Min	0	0	0	0	0	0	0	0
Fail Time	Sec	0	0	0	0	0	0	0	0
Veh Detector	**Units**	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**
Options	Bit	0	0	0	0	0	0	0	0
Call Phase	Phase	0	0	0	0	0	0	0	0
Switch Phase	Phase	0	0	0	0	0	0	0	0
Delay	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Extend	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Limit	Sec	0	0	0	0	0	0	0	0
No Activity	Min	0	0	0	0	0	0	0	0
Max Presence	Min	0	0	0	0	0	0	0	0
Erratic Counts	Counts/Min	0	0	0	0	0	0	0	0
Fail Time	Sec	0	0	0	0	0	0	0	0
Veh Detector	**Units**	**49**	**50**	**51**	**52**	**53**	**54**	**55**	**56**
Options	Bit	0	0	0	0	0	0	0	0
Call Phase	Phase	0	0	0	0	0	0	0	0
Switch Phase	Phase	0	0	0	0	0	0	0	0
Delay	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Extend	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Limit	Sec	0	0	0	0	0	0	0	0
No Activity	Min	0	0	0	0	0	0	0	0
Max Presence	Min	0	0	0	0	0	0	0	0
Erratic Counts	Counts/Min	0	0	0	0	0	0	0	0
Fail Time	Sec	0	0	0	0	0	0	0	0
Veh Detector	**Units**	**57**	**58**	**59**	**60**	**61**	**62**	**63**	**64**
Options	Bit	0	0	0	0	0	0	0	0
Call Phase	Phase	0	0	0	0	0	0	0	0
Switch Phase	Phase	0	0	0	0	0	0	0	0
Delay	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Extend	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Limit	Sec	0	0	0	0	0	0	0	0
No Activity	Min	0	0	0	0	0	0	0	0
Max Presence	Min	0	0	0	0	0	0	0	0
Erratic Counts	Counts/Min	0	0	0	0	0	0	0	0
Fail Time	Sec	0	0	0	0	0	0	0	0

Veh Vol/Occ	**Units**	**Value**
Period	Sec	0

Ped Detector	Units	1	2	3	4	5	6	7	8
Call Phase	Phase	0	2	0	4	0	6	0	8
No Activity	Min	0	0	0	0	0	0	0	0
Max Presence	Min	0	0	0	1	0	0	0	1
Erratic Counts	Counts/Min	0	0	0	0	0	0	0	0

Unit Param	Units	Value
Start Up Flash	Sec	0
Auto Ped Clear	Enum	enable
Back Up Time	Sec	300
Red Revert	Sec	0.0

Coord Param	Units	Value
Operational Mode	Enum	Automatic
Correction Mode	Enum	shortway
Maximum Mode	Enum	maxInhibit
Force Mode	Enum	other

Coord Pattern	Units	1	2	3	4	5	6	7	8
Cycle Time	Sec	160	160	160	0	0	0	0	0
Offset	Sec	72	88	130	0	0	0	0	0
Split	Split	1	2	3	4	5	6	7	8
Sequence	Sequence	1	1	1	1	1	1	1	1

Coord Pattern	Units	9	10	11	12	13	14	15	16
Cycle Time	Sec	0	0	0	0	0	0	0	0
Offset	Sec	0	0	0	0	0	0	0	0
Split	Split	9	10	11	12	13	14	15	16
Sequence	Sequence	1	1	1	1	1	1	1	1

Coord Split	Units	1	2	3	4	5	6	7	8
Split 1 - Mode	Enum	none	none	none	none	none	none	none	none
Split 1 - Time	Sec	14	66	14	66	14	66	14	66
Split 1 - Coord	Enum	false	true	false	false	false	true	false	false
Split 2 - Mode	Enum	none	none	none	none	none	none	none	none
Split 2 - Time	Sec	18	61	16	65	18	61	16	65
Split 2 - Coord	Enum	false	true	false	false	false	true	false	false
Split 3 - Mode	Enum	none	none	none	none	none	none	none	none
Split 3 - Time	Sec	14	61	14	71	14	61	14	71
Split 3 - Coord	Enum	false	true	false	false	false	true	false	false
Split 4 - Mode	Enum	none	none	none	none	none	none	none	none
Split 4 - Time	Sec	0	0	0	0	0	0	0	0
Split 4 - Coord	Enum	false	false	false	false	false	false	false	false
Split 5 - Mode	Enum	none	none	none	none	none	none	none	none
Split 5 - Time	Sec	0	0	0	0	0	0	0	0
Split 5 - Coord	Enum	false	false	false	false	false	false	false	false
Split 6 - Mode	Enum	none	none	none	none	none	none	none	none
Split 6 - Time	Sec	0	0	0	0	0	0	0	0
Split 6 - Coord	Enum	false	false	false	false	false	false	false	false
Split 7 - Mode	Enum	none	none	none	none	none	none	none	none
Split 7 - Time	Sec	0	0	0	0	0	0	0	0
Split 7 - Coord	Enum	false	false	false	false	false	false	false	false
Split 8 - Mode	Enum	none	none	none	none	none	none	none	none
Split 8 - Time	Sec	0	0	0	0	0	0	0	0
Split 8 - Coord	Enum	false	false	false	false	false	false	false	false
Split 9 - Mode	Enum	none	none	none	none	none	none	none	none
Split 9 - Time	Sec	0	0	0	0	0	0	0	0
Split 9 - Coord	Enum	false	false	false	false	false	false	false	false
Split 10 - Mode	Enum	none	none	none	none	none	none	none	none
Split 10 - Time	Sec	0	0	0	0	0	0	0	0
Split 10 - Coord	Enum	false	false	false	false	false	false	false	false
Split 11 - Mode	Enum	none	none	none	none	none	none	none	none
Split 11 - Time	Sec	0	0	0	0	0	0	0	0
Split 11 - Coord	Enum	false	false	false	false	false	false	false	false
Split 12 - Mode	Enum	none	none	none	none	none	none	none	none
Split 12 - Time	Sec	0	0	0	0	0	0	0	0
Split 12 - Coord	Enum	false	false	false	false	false	false	false	false
Split 13 - Mode	Enum	none	none	none	none	none	none	none	none
Split 13 - Time	Sec	0	0	0	0	0	0	0	0
Split 13 - Coord	Enum	false	false	false	false	false	false	false	false
Split 14 - Mode	Enum	none	none	none	none	none	none	none	none
Split 14 - Time	Sec	0	0	0	0	0	0	0	0
Split 14 - Coord	Enum	false	false	false	false	false	false	false	false
Split 15 - Mode	Enum	none	none	none	none	none	none	none	none
Split 15 - Time	Sec	0	0	0	0	0	0	0	0
Split 15 - Coord	Enum	false	false	false	false	false	false	false	false
Split 16 - Time	Sec	0	0	0	0	0	0	0	0
Split 16 - Mode	Enum	none	none	none	none	none	none	none	none
Split 16 - Coord	Enum	false	false	false	false	false	false	false	false

Coord Split	Units	9	10	11	12	13	14	15	16

Split 1 - Mode	Enum	none	none	none	none	none	none	none	none
Split 1 - Time	Sec	0	0	0	0	0	0	0	0
Split 1 - Coord	Enum	false	false	false	false	false	false	false	false
Split 2 - Mode	Enum	none	none	none	none	none	none	none	none
Split 2 - Time	Sec	0	0	0	0	0	0	0	0
Split 2 - Coord	Enum	false	false	false	false	false	false	false	false
Split 3 - Mode	Enum	none	none	none	none	none	none	none	none
Split 3 - Time	Sec	0	0	0	0	0	0	0	0
Split 3 - Coord	Enum	false	false	false	false	false	false	false	false
Split 4 - Mode	Enum	none	none	none	none	none	none	none	none
Split 4 - Time	Sec	0	0	0	0	0	0	0	0
Split 4 - Coord	Enum	false	false	false	false	false	false	false	false
Split 5 - Mode	Enum	none	none	none	none	none	none	none	none
Split 5 - Time	Sec	0	0	0	0	0	0	0	0
Split 5 - Coord	Enum	false	false	false	false	false	false	false	false
Split 6 - Mode	Enum	none	none	none	none	none	none	none	none
Split 6 - Time	Sec	0	0	0	0	0	0	0	0
Split 6 - Coord	Enum	false	false	false	false	false	false	false	false
Split 7 - Mode	Enum	none	none	none	none	none	none	none	none
Split 7 - Time	Sec	0	0	0	0	0	0	0	0
Split 7 - Coord	Enum	false	false	false	false	false	false	false	false
Split 8 - Mode	Enum	none	none	none	none	none	none	none	none
Split 8 - Time	Sec	0	0	0	0	0	0	0	0
Split 8 - Coord	Enum	false	false	false	false	false	false	false	false
Split 9 - Mode	Enum	none	none	none	none	none	none	none	none
Split 9 - Time	Sec	0	0	0	0	0	0	0	0
Split 9 - Coord	Enum	false	false	false	false	false	false	false	false
Split 10 - Mode	Enum	none	none	none	none	none	none	none	none
Split 10 - Time	Sec	0	0	0	0	0	0	0	0
Split 10 - Coord	Enum	false	false	false	false	false	false	false	false
Split 11 - Mode	Enum	none	none	none	none	none	none	none	none
Split 11 - Time	Sec	0	0	0	0	0	0	0	0
Split 11 - Coord	Enum	false	false	false	false	false	false	false	false
Split 12 - Mode	Enum	none	none	none	none	none	none	none	none
Split 12 - Time	Sec	0	0	0	0	0	0	0	0
Split 12 - Coord	Enum	false	false	false	false	false	false	false	false
Split 13 - Mode	Enum	none	none	none	none	none	none	none	none
Split 13 - Time	Sec	0	0	0	0	0	0	0	0
Split 13 - Coord	Enum	false	false	false	false	false	false	false	false
Split 14 - Mode	Enum	none	none	none	none	none	none	none	none
Split 14 - Time	Sec	0	0	0	0	0	0	0	0
Split 14 - Coord	Enum	false	false	false	false	false	false	false	false
Split 15 - Mode	Enum	none	none	none	none	none	none	none	none
Split 15 - Time	Sec	0	0	0	0	0	0	0	0
Split 15 - Coord	Enum	false	false	false	false	false	false	false	false
Split 16 - Time	Sec	0	0	0	0	0	0	0	0
Split 16 - Mode	Enum	none	none	none	none	none	none	none	none
Split 16 - Coord	Enum	false	false	false	false	false	false	false	false

TB Param	**Units**	**Value**
Daylight Saving	Enum	3
Standard Time Zone	Sec	-18000
Pattern Sync	Sec	0

TB Schedule	**Units**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Month	Bit	JFMAMJJASOND	JFMAMJJASOND	JFMAMJJASOND	J----------	-F---------	J----------	-F---------	---A-------
Day of Week	Bit	-MTWTF-	S------	------S	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS
Day of Month	Bit	12345678901234567890123456789012345678901	12345678901234567890123456789012345678901	12345678901234567890123456789012345678901	-2---------- -------	----------0---- -------	-2---------- ---------	----------0----- ------	----------4---------- -------
Day Plan	Number	1	3	2	3	3	3	3	3

TB Schedule	**Units**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
Month	Bit	----M-------	------J-----	-------A----	--------S---	---------O--	----------D	----------D	----------D
Day of Week	Bit	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS
Day of Month	Bit	----------2-- -------	--3---------- ------	------7---------- ------	---4---------- -------	--------9---------- -------	---------- -5------	---------- 6-----	---------- -7----
Day Plan	Number	3	3	3	3	3	3	3	3

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

Plan 4 Hour	Hour	0	0	0	0	0	0	0	0
Plan 4 Minute	Min	0	0	0	0	0	0	0	0
Plan 4 Action	Number	0	0	0	0	0	0	0	0
Plan 5 Hour	Hour	0	0	0	0	0	0	0	0
Plan 5 Minute	Min	0	0	0	0	0	0	0	0
Plan 5 Action	Number	0	0	0	0	0	0	0	0
Plan 6 Hour	Hour	0	0	0	0	0	0	0	0
Plan 6 Minute	Min	0	0	0	0	0	0	0	0
Plan 6 Action	Number	0	0	0	0	0	0	0	0
Plan 7 Hour	Hour	0	0	0	0	0	0	0	0
Plan 7 Minute	Min	0	0	0	0	0	0	0	0
Plan 7 Action	Number	0	0	0	0	0	0	0	0
Plan 8 Hour	Hour	0	0	0	0	0	0	0	0
Plan 8 Minute	Min	0	0	0	0	0	0	0	0
Plan 8 Action	Number	0	0	0	0	0	0	0	0

TB Dayplan	**Units**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
Plan 1 Hour	Hour	0	0	0	0	0	0	0	0
Plan 1 Minute	Min	0	0	0	0	0	0	0	0
Plan 1 Action	Number	0	0	0	0	0	0	0	0
Plan 2 Hour	Hour	0	0	0	0	0	0	0	0
Plan 2 Minute	Min	0	0	0	0	0	0	0	0
Plan 2 Action	Number	0	0	0	0	0	0	0	0
Plan 3 Hour	Hour	0	0	0	0	0	0	0	0
Plan 3 Minute	Min	0	0	0	0	0	0	0	0
Plan 3 Action	Number	0	0	0	0	0	0	0	0
Plan 4 Hour	Hour	0	0	0	0	0	0	0	0
Plan 4 Minute	Min	0	0	0	0	0	0	0	0
Plan 4 Action	Number	0	0	0	0	0	0	0	0
Plan 5 Hour	Hour	0	0	0	0	0	0	0	0
Plan 5 Minute	Min	0	0	0	0	0	0	0	0
Plan 5 Action	Number	0	0	0	0	0	0	0	0
Plan 6 Hour	Hour	0	0	0	0	0	0	0	0
Plan 6 Minute	Min	0	0	0	0	0	0	0	0
Plan 6 Action	Number	0	0	0	0	0	0	0	0
Plan 7 Hour	Hour	0	0	0	0	0	0	0	0
Plan 7 Minute	Min	0	0	0	0	0	0	0	0
Plan 7 Action	Number	0	0	0	0	0	0	0	0
Plan 8 Hour	Hour	0	0	0	0	0	0	0	0
Plan 8 Minute	Min	0	0	0	0	0	0	0	0
Plan 8 Action	Number	0	0	0	0	0	0	0	0

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

TB Action	**Units**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
Pattern	Enum	Pattern 9	Pattern 10	Interconnect	Interconnect	Interconnect	Interconnect	Interconnect	Interconnect
Aux. Functions	Bit	0	0	0	0	0	0	0	0
Spec. Functions	Bit	0	0	0	0	0	0	0	0

TB DST	**Units**	**Value**
Begin Month	Enum	
Begin Occurrence	Enum	
Begin DOW	Enum	
Begin DOM	Date	
End Occurrence	Enum	
End DOW	Enum	
End DOM	Date	
End Seconds	Sec	
Adjustment	Sec	

Preempt Param	**Units**	**1**	**2**	**3**	**4**	**5**	**6**
Control	Bit	0	0	0	0	0	0
Link	Preempt	0	0	0	0	0	0
Delay	Sec	0	0	0	0	0	0
Min Duration	Sec	0	0	0	0	0	0
Min Green	Sec	255	255	255	255	255	255
Min Walk	Sec	255	255	255	255	255	255
Enter Ped Clear	Sec	255	255	255	255	255	255
Track Green	Sec	0	0	0	0	0	0
Min Dwell	Sec	5	5	5	5	5	5
Max Presence	Sec	0	0	0	0	0	0
[P2] Track Phase	Phase (,)	()	()	()	()	()	()
[P2] Dwell Phase	Phase (,)	()	()	(2,6)	(4,8)	()	()
[P2] Dwell Ped	Phase (,)	()	()	()	()	()	()
[P2] Exit Phase	Phase (,)	()	()	()	()	()	()
[S] State	Enum						
[P2] Track Overlap	Phase (,)	()	()	()	()	()	()

[P2] Dwell Overlap	Phase (,)	()	()	()	()	()	()		
[P2] Cycling Phase	Phase (,)	()	()	()	()	()	()		
[P2] Cycling Ped	Phase (,)	()	()	()	()	()	()		
[P2] Cycling Overlap	Phase (,)	()	()	()	()	()	()		
Enter Yellow Change	Sec	25.5	25.5	25.5	25.5	25.5	25.5		
Enter Red Clear	Sec	25.5	25.5	25.5	25.5	25.5	25.5		
Track Yellow	Sec	25.5	25.5	25.5	25.5	25.5	25.5		
Track Red Clear	Sec	25.5	25.5	25.5	25.5	25.5	25.5		
Ring	**Units**	**1**		**2**		**3**		**4**	
[P2] Sequence 1	Phase (,)	()		()		()		()	
[P2] Sequence 2	Phase (,)	()		()		()		()	
[P2] Sequence 3	Phase (,)	()		()		()		()	
[P2] Sequence 4	Phase (,)	()		()		()		()	
Channel Param	**Units**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Control Source	Phase or Overlap	1	2	3	4	5	6	7	8
Control Type	Enum	phaseVehicle	phaseVehicle	phaseVehicle	phaseVehicle	phaseVehicle	phaseVehicle	phaseVehicle	phaseVehicle
Flash	Bit	0	Flash Red	0	Flash Red Half Hertz	0	Flash Red	0	Flash Red Half Hertz
Dimming	Bit	0	0	0	0	0	0	0	0
Channel Param	**Units**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
Control Source	Phase or Overlap	2	4	6	8	0	0	0	0
Control Type	Enum	phasePedestrian	phasePedestrian	phasePedestrian	phasePedestrian	other	other	other	other
Flash	Bit	0	0	0	0	0	0	0	0
Dimming	Bit	0	0	0	0	0	0	0	0
Overlap	**Units**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
[P2] Type	Enum	other	other	other	other	other	other	other	other
[P2] Included	Phase (,)	()	()	()	()	()	()	()	()
[P2] Modifier Phases	Phase (,)	()	()	()	()	()	()	()	()
Trail Green	Sec	0	0	0	0	0	0	0	0
Trail Yellow	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trail Red	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Overlap	**Units**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
[P2] Type	Enum	other	other	other	other	other	other	other	other
[P2] Included	Phase (,)	()	()	()	()	()	()	()	()
[P2] Modifier Phases	Phase (,)	()	()	()	()	()	()	()	()
Trail Green	Sec	0	0	0	0	0	0	0	0
Trail Yellow	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trail Red	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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Appendix C

Background Development Traffic

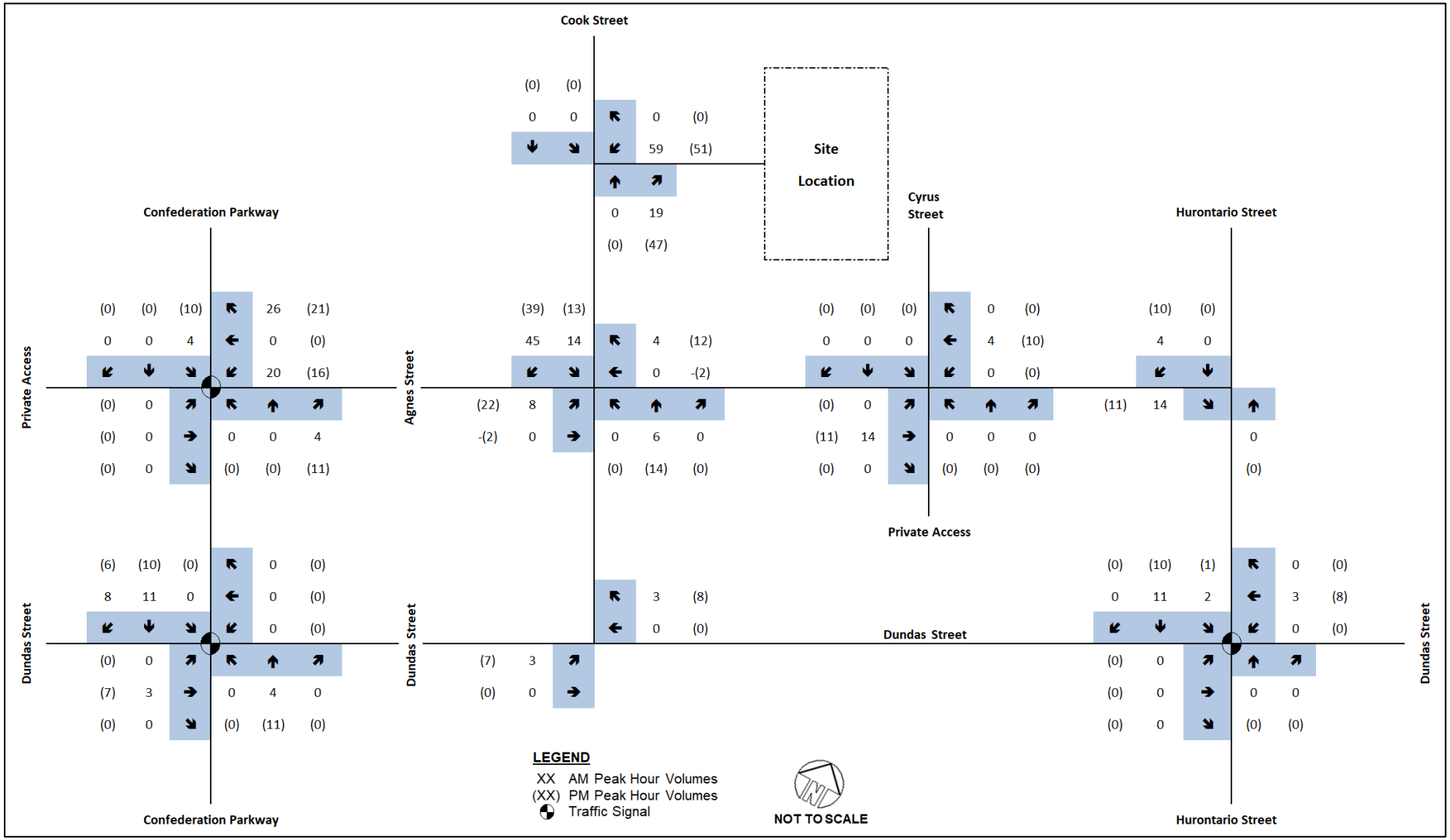


Figure 8: Total Site Trips

Figure 4-1: Site Generated Traffic Volumes

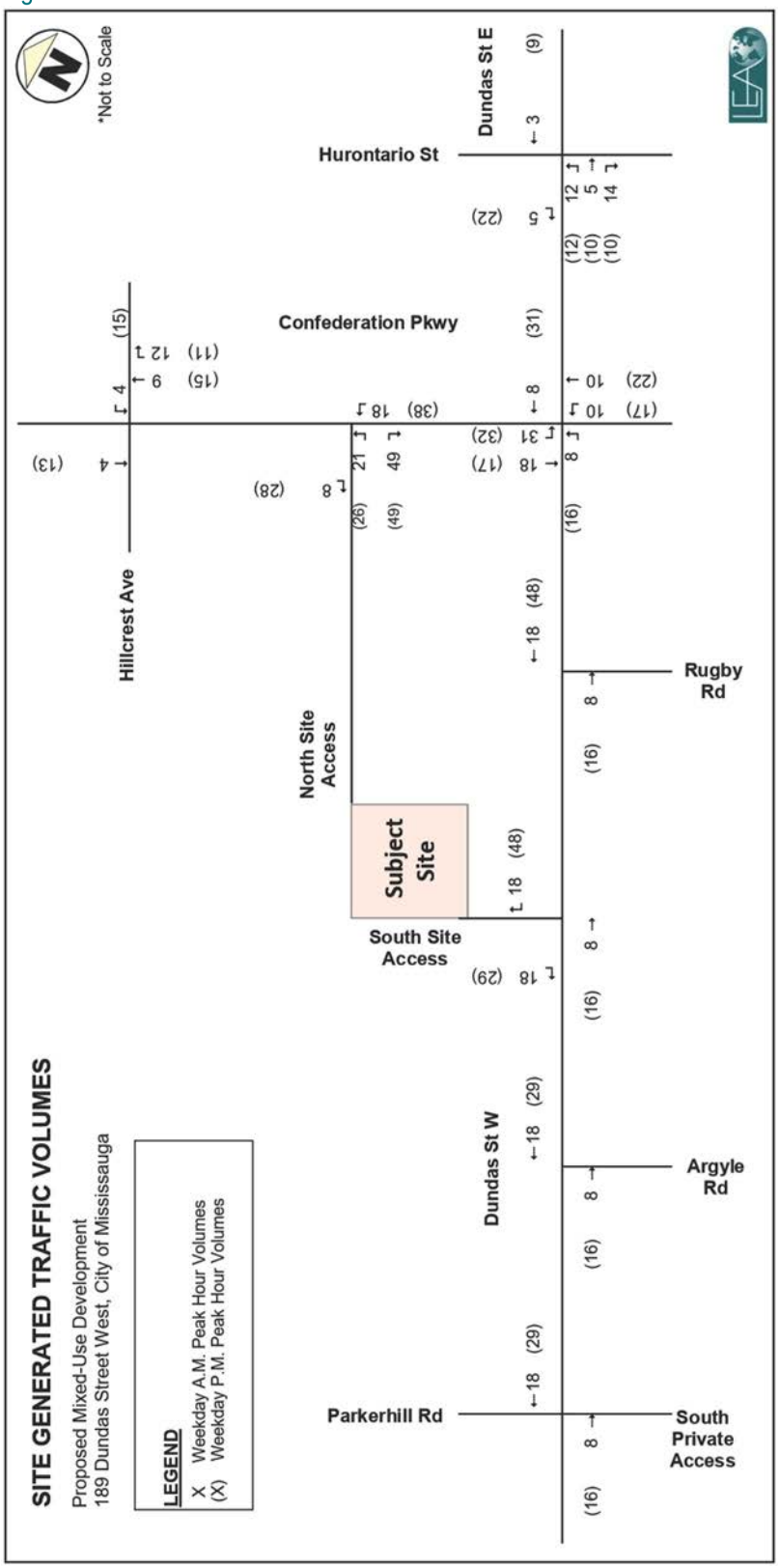


Figure 12: New Site Generated Auto Volumes

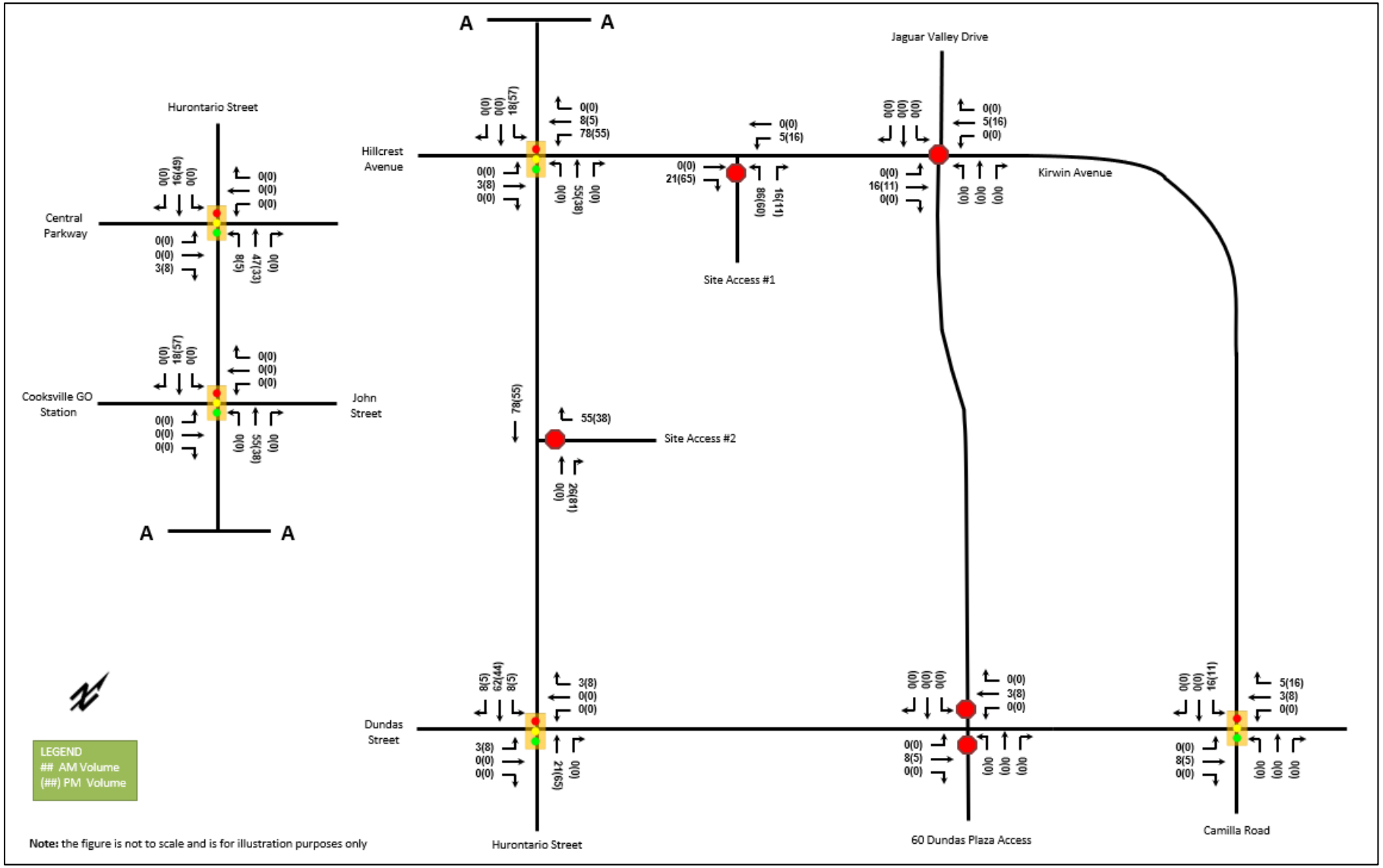


Exhibit 6-6: Medical Office Site Traffic Volumes

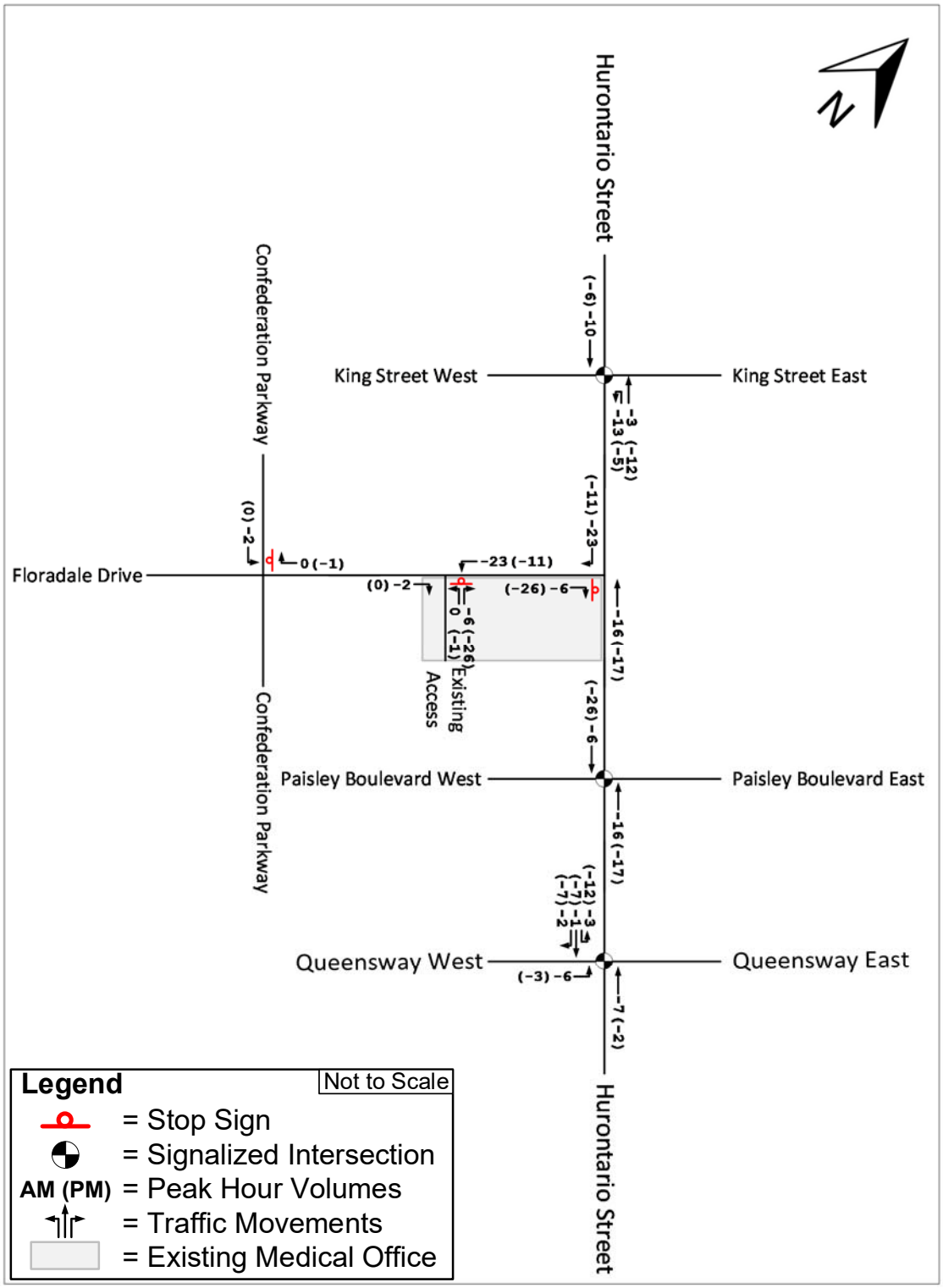
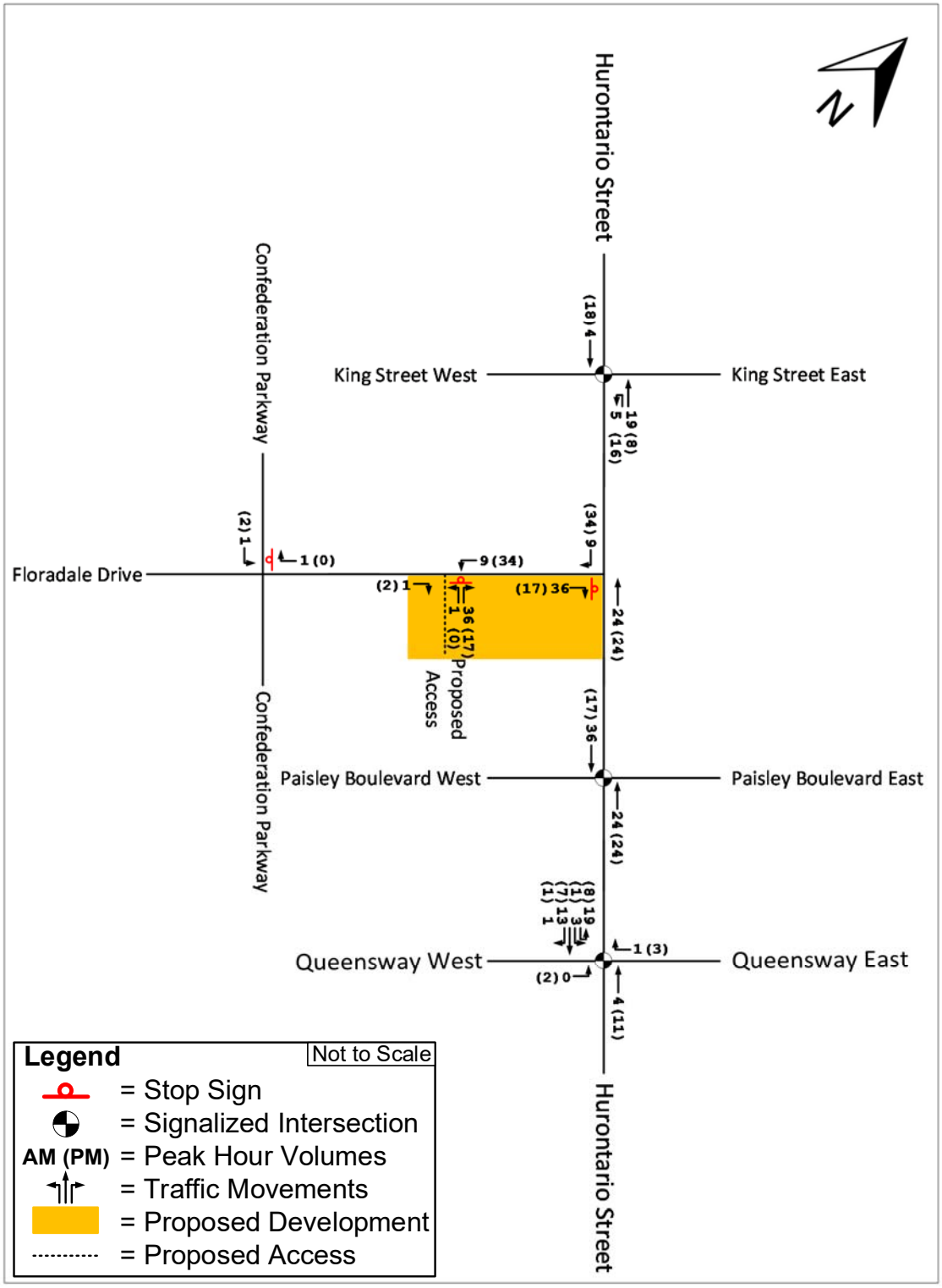


Exhibit 6-7: New Residential Site Traffic Volumes



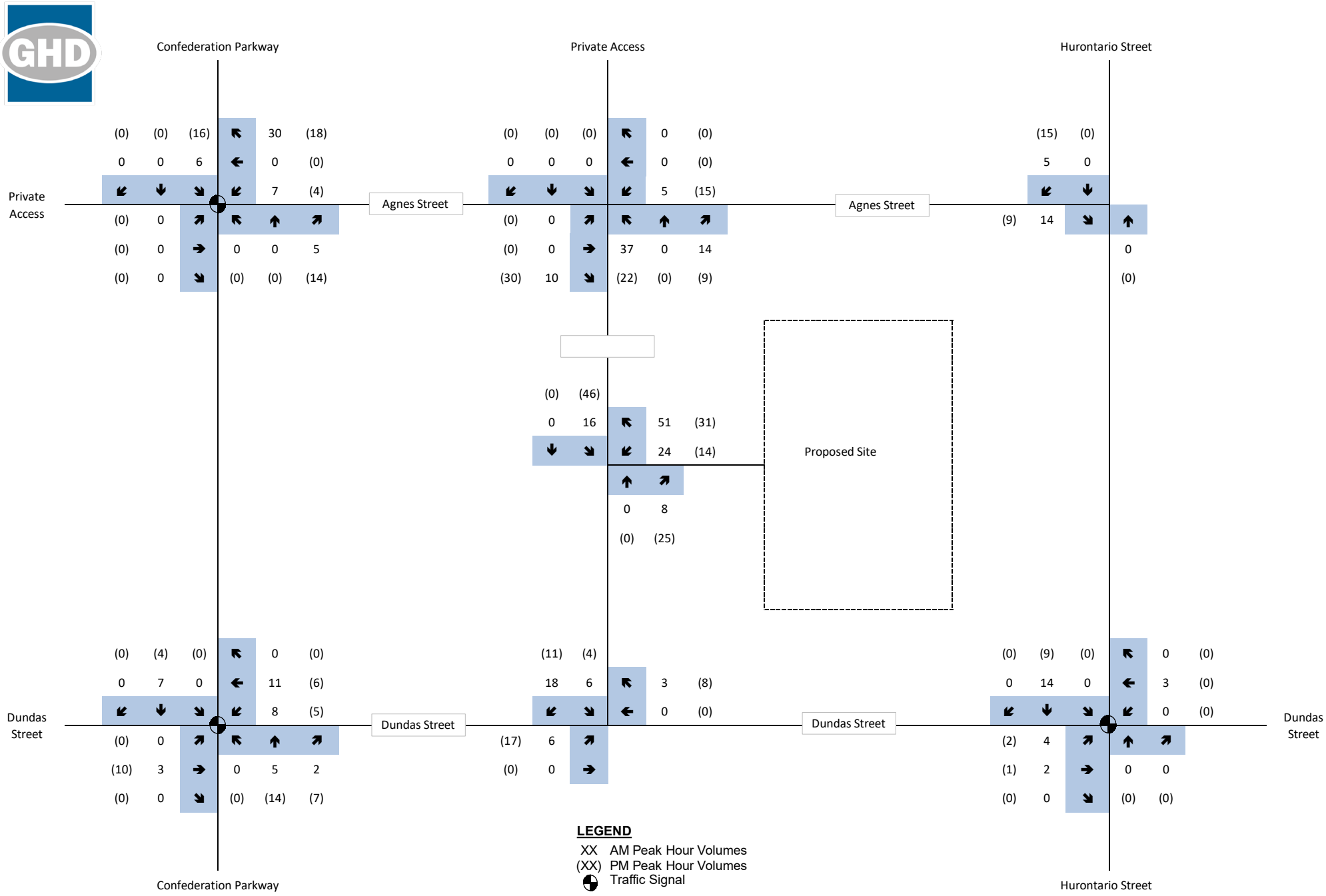


Figure 9 Estimated Residential Site Trips

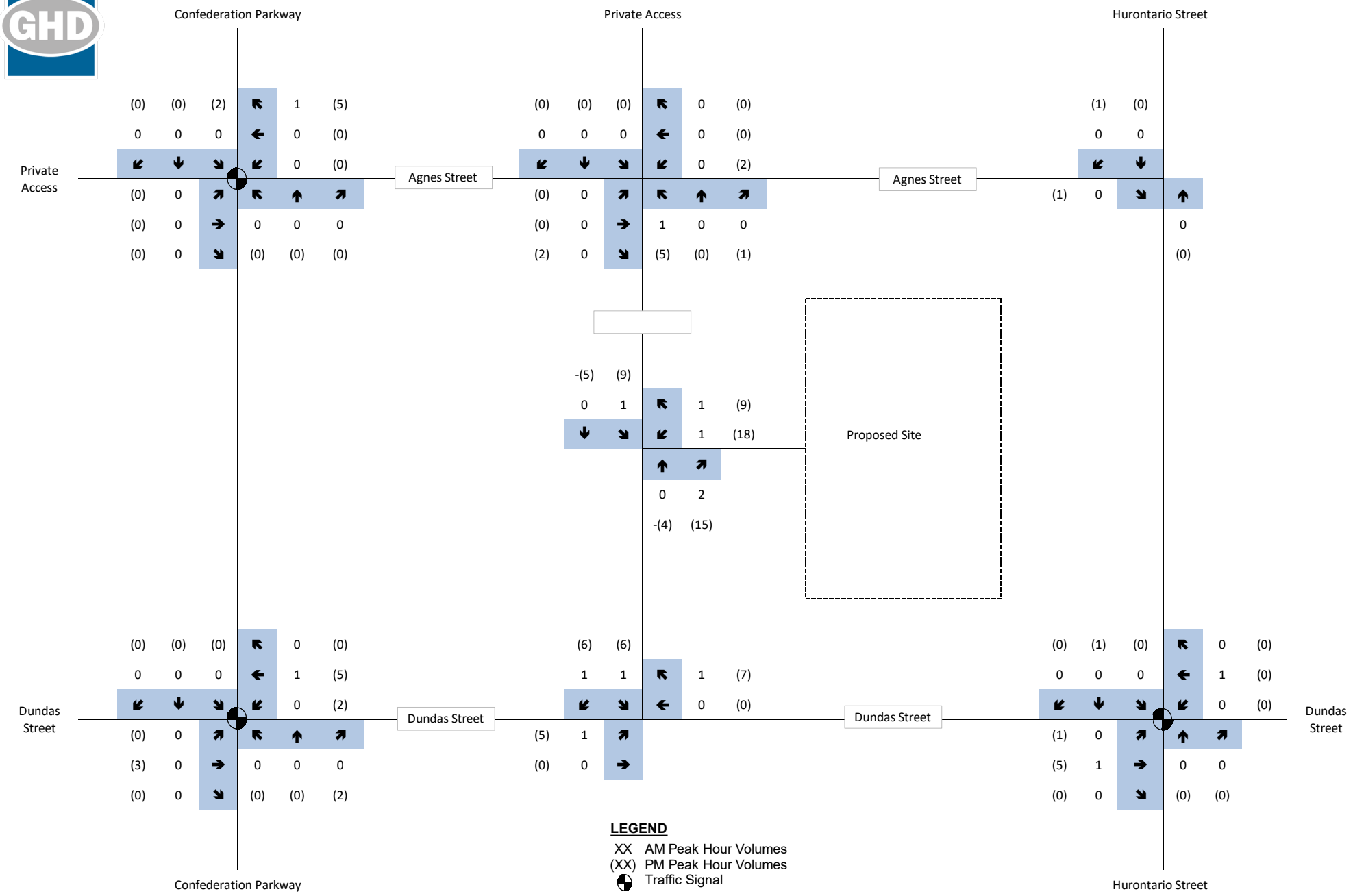
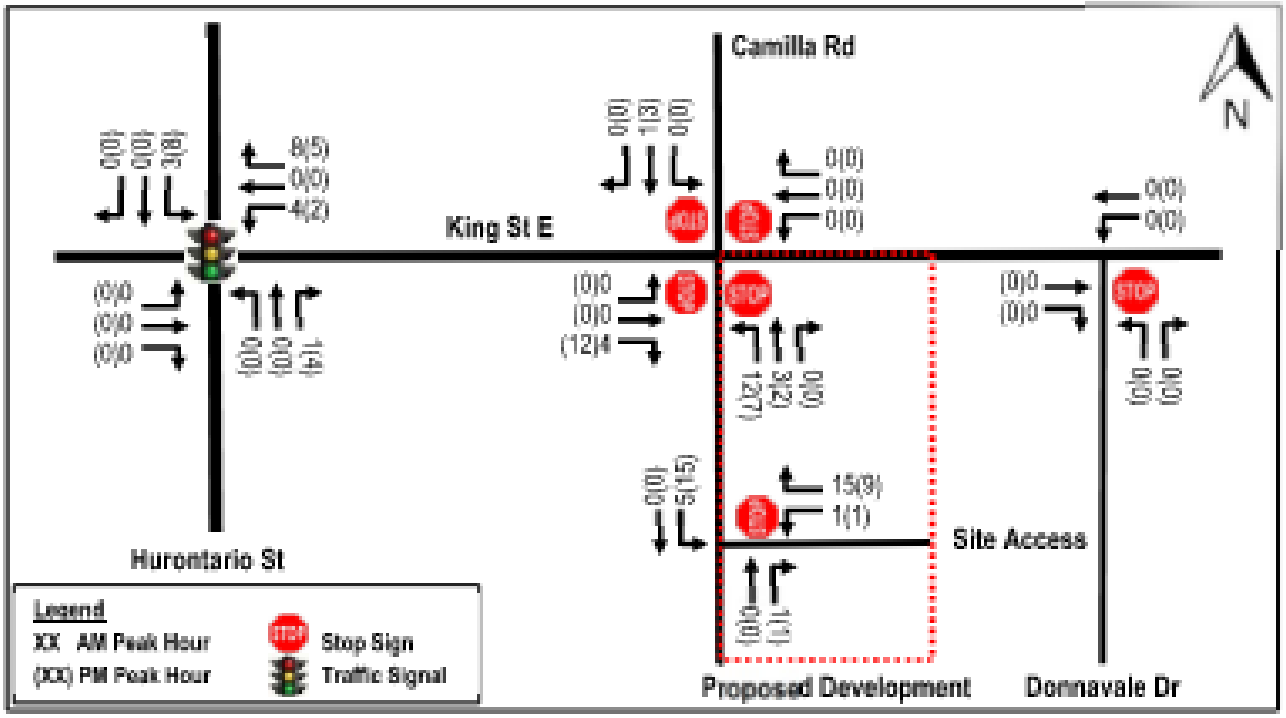


Figure 10 Estimated Commercial Trips

Figure 11 – Site Traffic Volumes

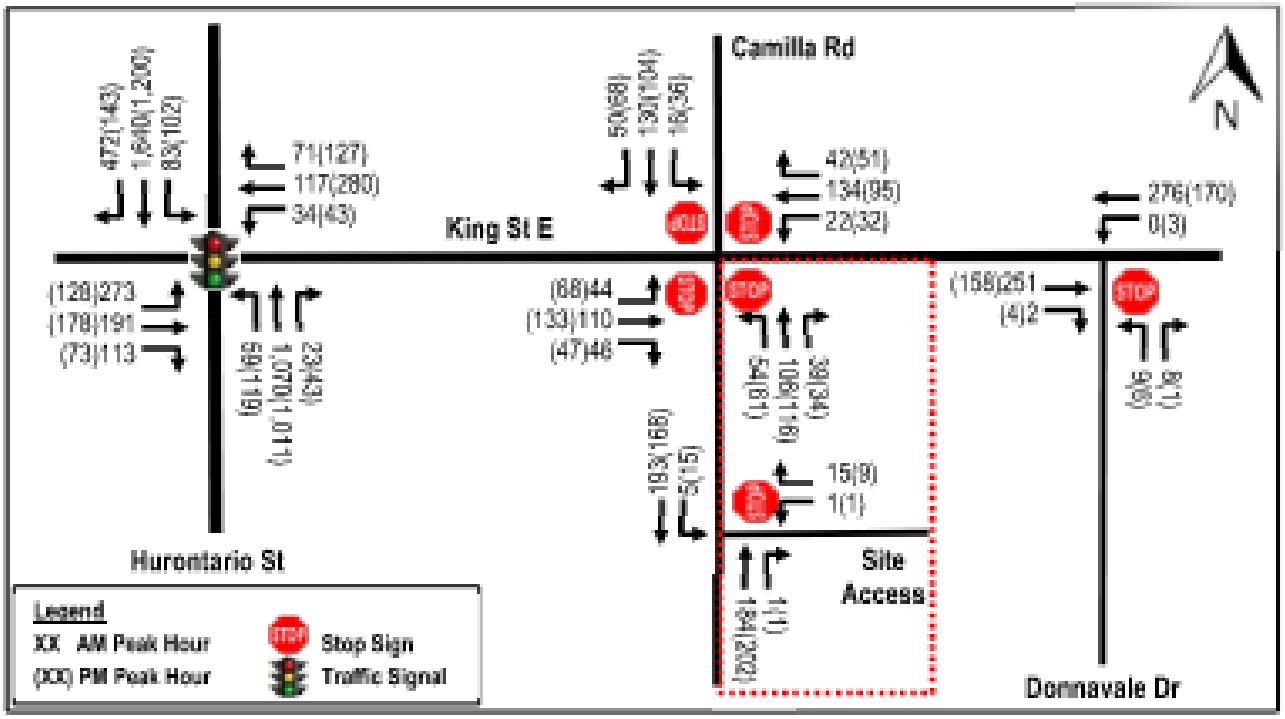


6.0 FUTURE TOTAL TRAFFIC CONDITIONS

6.1. Future Total Traffic Assessment for Auto Mode

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

Figure 12 – 2026 Future Total Traffic Volumes



2. Site trip generation

The original proposed site traffic volumes was extracted from the Site Trip Generation Table in Section 5.1 of the October 2018 Traffic Impact Study (TIS).

The recent proposed site traffic was estimated from the trip rates contained in Trip Generation, 10th Edition, produced by the Institute of Transportation Engineers (ITE). Site trips for the residential condominium units were estimated based on the trip rates of Multifamily Housing (High-Rise) (LUC #222), and site trips for the commercial uses were estimated based on the trip rates of Shopping Centre (LUC # 820).

The 2016 Transportation Tomorrow Survey (TTS) data shows the existing non-auto modal splits are approximately 30% and 32% respectively for a.m. and p.m. peak hour. As a conservative analysis, the subject site is assumed to achieve the same transit model split applied to the future planning horizons. In addition, it is expected that patrons of the commercial use will primarily be residents of the proposed development. Therefore, an internal capture rate from the Trip Generation Handbook, 3rd Edition, produced by the Institute of Transpiration Engineers were applied to the estimated trip generation for the commercial use. Resulting in a gross trip reduction of 14% for a.m. peak hour and 10% for p.m. peak hour.

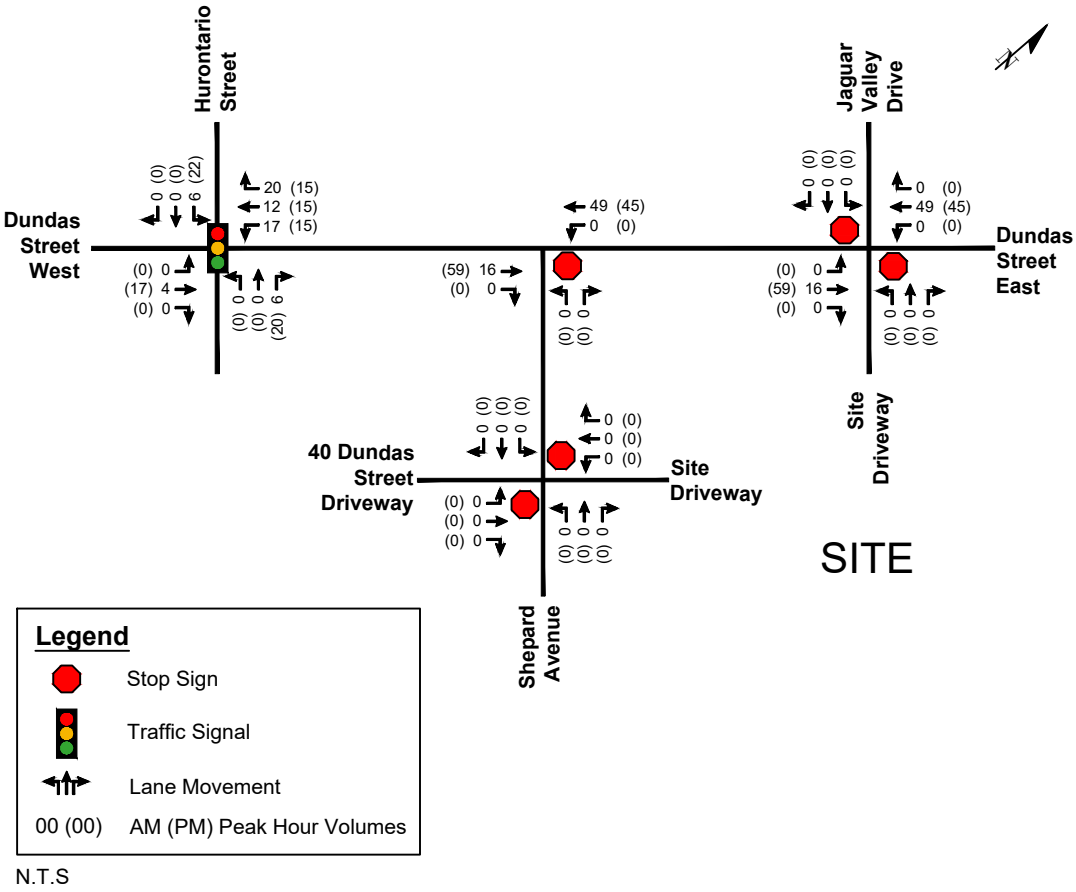
Table 2 summarizes the trip generation of the original and recent proposed site land uses.

Table 2: Original and recent proposed site trip generation

	Land use	Units / GFA	Parameter	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Original (October 2018 TIS)	Residential	289 units	Trips	15	71	86	68	34	102
	Commercial	158 m^2 (1701 ft^2)	Trips	3	3	6	6	7	13
	Total Site Trips			**18**	**74**	**92**	**74**	**41**	**115**
Recent (September 2019)	**Residential (LUC 222)**	334 Units	Trip Ratio	24%	76%	100%	61%	39%	100%
			Gross Trips	25	81	106	74	48	122
			Non-auto Trips	-8	-24	-32	-24	-15	-39
			Vehicle Trips	17	57	74	50	33	83
	Commercial (LUC 820)	363 m^2 (3902 ft^2)	Trip Ratio	62%	38%	100%	48%	52%	100%
			Gross Trips	2	2	4	24	25	49
			Int. Cap. Trips	0	0	0	-10	-11	-21
			Vehicle Trips	2	1	2	20	21	41
	Total Site Trips			**19**	**58**	**76**	**70**	**54**	**124**
Trip Difference (Recent Proposed Trips – Original proposed Trips)				**+1**	**-16**	**-15**	**-4**	**13**	**9**

As indicated in Table 2, the recent (September 19, 2019) site plan is expected to generate 76 and 124 two-way trips at the weekday AM and PM peak hours, respectively, which is -15 and +9 trips than the trips

86 to 90 Dundas Street East Traffic Volume



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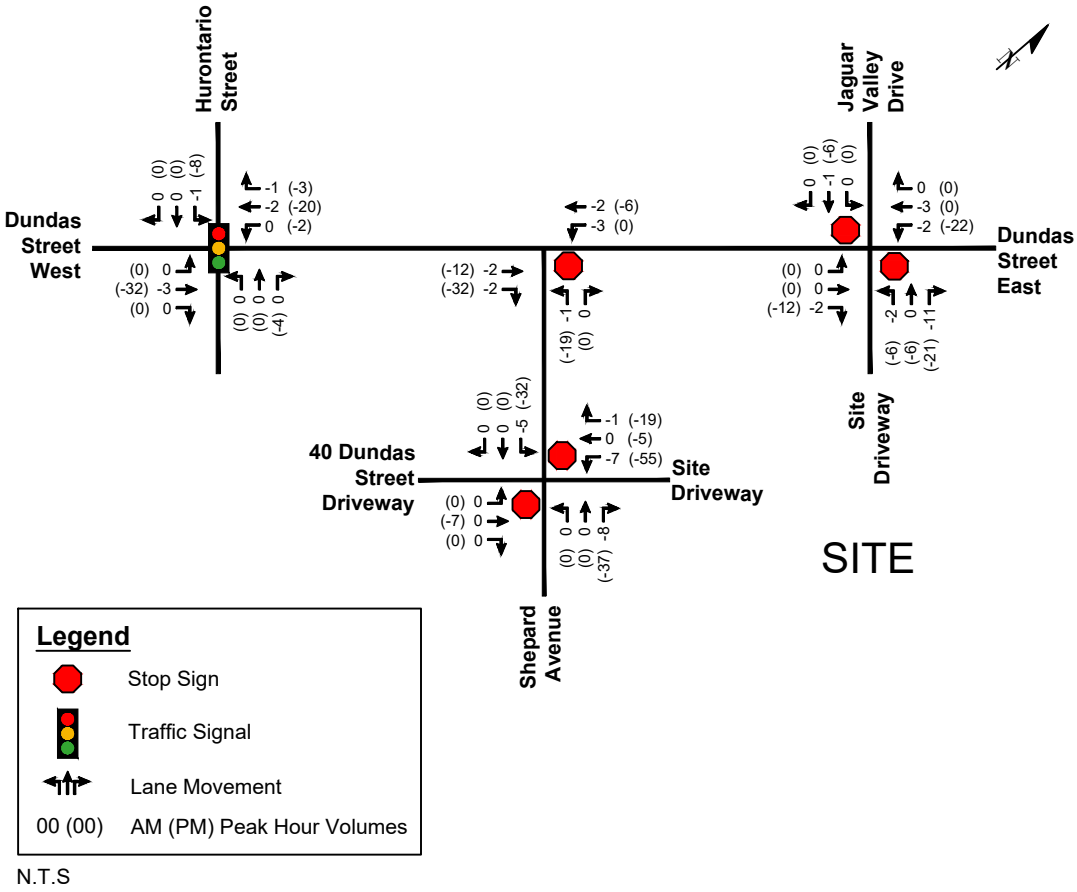
Appendix D

Existing Site Removal


Hurontario Street
Jaguar Valley Drive
Dundas Street West
Dundas Street East
40 Dundas Street Driveway
Site Driveway
Site Driveway
Shepard Avenue
SITE
Legend
Stop Sign
Traffic Signal
Lane Movement
00 (00) AM (PM) Peak Hour Volumes

N.T.S

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Appendix E

Existing Traffic Operations

Timings
1: Hurontario Street & Dundas Street West/Dundas Street East

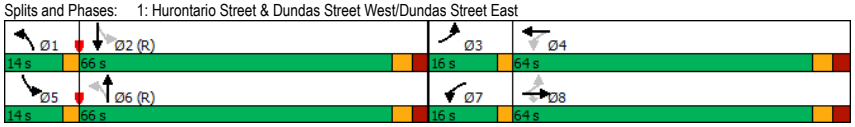
02/17/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	83	1101	118	61	437	113	952	129	826
Future Volume (vph)	83	1101	118	61	437	113	952	129	826
Lane Group Flow (vph)	89	1184	127	66	541	122	1096	139	946
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	3	8		7	4	1	6	5	2
Permitted Phases	8		8	4		6		2	
Detector Phase	3	8	8	7	4	1	6	5	2
Switch Phase									
Minimum Initial (s)	8.0	5.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.0	45.5	45.5	11.0	45.5	11.0	41.0	11.0	41.0
Total Split (s)	16.0	64.0	64.0	16.0	64.0	14.0	66.0	14.0	66.0
Total Split (%)	10.0%	40.0%	40.0%	10.0%	40.0%	8.8%	41.3%	8.8%	41.3%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	0.0	3.5	3.5	0.0	3.5	0.0	3.0	0.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.5	7.5	3.0	7.5	3.0	7.0	3.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
v/c Ratio	0.25	0.92	0.23	0.40	0.46	0.47	0.58	0.60	0.50
Control Delay	24.8	60.5	17.7	30.1	39.5	29.2	41.1	34.3	39.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.8	60.5	17.7	30.1	39.5	29.2	41.1	34.3	39.1
Queue Length 50th (m)	15.3	186.4	12.3	11.2	66.5	21.4	102.6	24.6	85.3
Queue Length 95th (m)	26.1	#234.7	29.0	20.2	86.2	34.1	118.0	38.4	99.3
Internal Link Dist (m)		105.5			126.5		151.8		175.1
Turn Bay Length (m)	44.0		30.0	33.0		50.0		68.0	
Base Capacity (vph)	389	1295	556	197	1193	267	1884	238	1888
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.91	0.23	0.34	0.45	0.46	0.58	0.58	0.50

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 72 (45%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Hurontario Street & Dundas Street West/Dundas Street East



HCM Signalized Intersection Capacity Analysis
1: Hurontario Street & Dundas Street West/Dundas Street East

02/17/2022

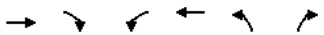
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	1101	118	61	437	66	113	952	67	129	826	54
Future Volume (vph)	83	1101	118	61	437	66	113	952	67	129	826	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.5	7.5	3.0	7.5		3.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	1.00	0.90	1.00	0.99		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1733	3544	1404	1807	3251		1710	4945		1751	4937	
Flt Permitted	0.36	1.00	1.00	0.07	1.00		0.21	1.00		0.16	1.00	
Satd. Flow (perm)	656	3544	1404	131	3251		382	4945		294	4937	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	89	1184	127	66	470	71	122	1024	72	139	888	58
RTOR Reduction (vph)	0	0	43	0	8	0	0	5	0	0	4	0
Lane Group Flow (vph)	89	1184	84	66	533	0	122	1091	0	139	942	0
Confl. Peds. (#/hr)	76		69	69		76	139		97	97		139
Heavy Vehicles (%)	4%	3%	5%	1%	8%	12%	6%	4%	4%	4%	4%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6			2		
Actuated Green, G (s)	68.3	58.2	58.2	68.1	58.1		71.0	60.8		71.6	61.1	
Effective Green, g (s)	68.3	58.2	58.2	68.1	58.1		71.0	60.8		71.6	61.1	
Actuated g/C Ratio	0.43	0.36	0.36	0.43	0.36		0.44	0.38		0.45	0.38	
Clearance Time (s)	3.0	7.5	7.5	3.0	7.5		3.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	348	1289	510	160	1180		254	1879		227	1885	
v/s Ratio Prot	0.02	c0.33		c0.03	0.16		0.03	0.22		c0.04	0.19	
v/s Ratio Perm	0.09		0.06	0.15			0.18			c0.23		
v/c Ratio	0.26	0.92	0.16	0.41	0.45		0.48	0.58		0.61	0.50	
Uniform Delay, d1	28.2	48.6	34.4	34.9	38.8		27.7	39.5		28.7	37.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	10.5	0.2	1.7	0.3		1.4	1.3		4.8	0.9	
Delay (s)	28.6	59.1	34.6	36.6	39.1		29.2	40.8		33.5	38.7	
Level of Service	C	E	C	D	D		C	D		C	D	
Approach Delay (s)		55.0			38.8			39.6			38.1	
Approach LOS		D			D			D			D	

Intersection Summary

HCM 2000 Control Delay	44.1	HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio	0.73				
Actuated Cycle Length (s)	160.0	Sum of lost time (s)		20.5	
Intersection Capacity Utilization	92.4%	ICU Level of Service		F	
Analysis Period (min)	15				

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
2: Shepard Avenue & Dundas Street East 02/17/2022

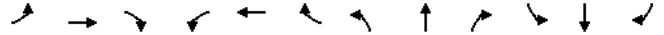


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1246	29	33	568	3	32
Future Volume (Veh/h)	1246	29	33	568	3	32
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	1298	30	34	592	3	33
Pedestrians	4				44	
Lane Width (m)	3.7				3.7	
Walking Speed (m/s)	1.1				1.1	
Percent Blockage	0				4	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)	151					
pX, platoon unblocked			0.68		0.68	0.68
vC, conflicting volume			1372		1725	708
vC1, stage 1 conf vol					1357	
vC2, stage 2 conf vol					368	
vCu, unblocked vol			605		1125	0
tC, single (s)			4.2		6.8	7.0
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.4
p0 queue free %			95		99	95
cM capacity (veh/h)			626		310	697

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	865	463	34	296	296	36
Volume Left	0	0	34	0	0	3
Volume Right	0	30	0	0	0	33
cSH	1700	1700	626	1700	1700	631
Volume to Capacity	0.51	0.27	0.05	0.17	0.17	0.06
Queue Length 95th (m)	0.0	0.0	1.3	0.0	0.0	1.4
Control Delay (s)	0.0	0.0	11.1	0.0	0.0	11.0
Lane LOS			B			B
Approach Delay (s)	0.0		0.6			11.0
Approach LOS						B

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	45.4%	ICU Level of Service		A
Analysis Period (min)	15			

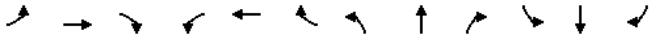
HCM Unsignalized Intersection Capacity Analysis
3: Site Driveway/Jaguar Valley Drive & Dundas Street East 02/17/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	1265	2	2	574	14	2	0	11	14	1	25
Future Volume (Veh/h)	11	1265	2	2	574	14	2	0	11	14	1	25
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	1375	2	2	624	15	2	0	12	15	1	27
Pedestrians		1			1			38			15	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		0			0			4			1	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		240										
pX, platoon unblocked				0.68			0.68	0.68	0.68	0.68	0.68	
vC, conflicting volume	654			1415			1782	2096	728	1375	2090	336
vC1, stage 1 conf vol							1438	1438		650	650	
vC2, stage 2 conf vol							344	658		724	1439	
vCu, unblocked vol	654			679			1217	1676	0	621	1667	336
tC, single (s)	4.3			4.1			7.5	6.5	7.3	7.6	6.5	7.1
tC, 2 stage (s)							6.5	5.5		6.6	5.5	
tF (s)	2.3			2.2			3.5	4.0	3.5	3.6	4.0	3.4
p0 queue free %	99			100			99	100	98	96	100	96
cM capacity (veh/h)	870			607			234	239	680	377	240	633

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1	SB 2
Volume Total	12	917	460	2	416	223	14	15	28
Volume Left	12	0	0	2	0	0	2	15	0
Volume Right	0	0	2	0	0	15	12	0	27
cSH	870	1700	1700	607	1700	1700	534	377	598
Volume to Capacity	0.01	0.54	0.27	0.00	0.24	0.13	0.03	0.04	0.05
Queue Length 95th (m)	0.3	0.0	0.0	0.1	0.0	0.0	0.6	0.9	1.1
Control Delay (s)	9.2	0.0	0.0	11.0	0.0	0.0	11.9	14.9	11.3
Lane LOS	A			B			B	B	B
Approach Delay (s)	0.1			0.0			11.9	12.6	
Approach LOS							B	B	

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	45.5%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	1	7	7	1	1	10	31	8	5	50	7
Future Volume (Veh/h)	3	1	7	7	1	1	10	31	8	5	50	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	4	1	9	9	1	1	12	39	10	6	62	9
Pedestrians		7			4			3			1	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	156	162	76	163	162	49	78			53		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	156	162	76	163	162	49	78			53		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	7.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	4.2	2.2			2.2		
p0 queue free %	99	100	99	99	100	100	99			100		
cM capacity (veh/h)	793	717	980	779	718	796	1523			1559		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	14	11	61	77
Volume Left	4	9	12	6
Volume Right	9	1	10	9
cSH	896	775	1523	1559
Volume to Capacity	0.02	0.01	0.01	0.00
Queue Length 95th (m)	0.4	0.3	0.2	0.1
Control Delay (s)	9.1	9.7	1.5	0.6
Lane LOS	A	A	A	A
Approach Delay (s)	9.1	9.7	1.5	0.6
Approach LOS	A	A		

Intersection Summary				
Average Delay		2.3		
Intersection Capacity Utilization		17.1%	ICU Level of Service	A
Analysis Period (min)		15		

Timings
1: Hurontario Street & Dundas Street West/Dundas Street East

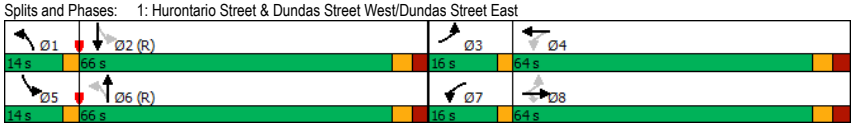
02/17/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	144	727	124	134	1021	143	940	157	990
Future Volume (vph)	144	727	124	134	1021	143	940	157	990
Lane Group Flow (vph)	150	757	129	140	1216	149	1115	164	1159
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	3	8		7	4	1	6	5	2
Permitted Phases	8		8	4		6		2	
Detector Phase	3	8	8	7	4	1	6	5	2
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.0	45.5	45.5	11.0	45.5	11.0	41.0	11.0	41.0
Total Split (s)	16.0	64.0	64.0	16.0	64.0	14.0	66.0	14.0	66.0
Total Split (%)	10.0%	40.0%	40.0%	10.0%	40.0%	8.8%	41.3%	8.8%	41.3%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	0.0	3.5	3.5	0.0	3.5	0.0	3.0	0.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.5	7.5	3.0	7.5	3.0	7.0	3.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
v/c Ratio	0.79	0.58	0.25	0.48	0.98	0.69	0.61	0.71	0.63
Control Delay	62.9	43.8	18.6	29.1	70.2	40.5	42.1	42.3	42.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.9	43.8	18.6	29.1	70.2	40.5	42.1	42.3	42.7
Queue Length 50th (m)	29.8	103.4	13.1	24.7	201.4	26.4	104.3	29.3	109.8
Queue Length 95th (m)	#63.1	125.4	30.0	38.4	#250.8	40.8	120.0	#46.7	125.7
Internal Link Dist (m)		105.5			126.5		151.8		175.1
Turn Bay Length (m)	44.0		30.0	33.0		50.0		68.0	
Base Capacity (vph)	199	1295	517	308	1245	221	1817	233	1839
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.58	0.25	0.45	0.98	0.67	0.61	0.70	0.63

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 72 (45%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Hurontario Street & Dundas Street West/Dundas Street East



HCM Signalized Intersection Capacity Analysis
1: Hurontario Street & Dundas Street West/Dundas Street East

02/17/2022

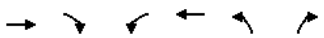
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	144	727	124	134	1021	146	143	940	131	157	990	123
Future Volume (vph)	144	727	124	134	1021	146	143	940	131	157	990	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.5	7.5	3.0	7.5		3.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	1.00	0.81	1.00	0.98		1.00	0.96		1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1825	3579	1311	1791	3455		1783	4877		1799	4934	
Flt Permitted	0.07	1.00	1.00	0.23	1.00		0.14	1.00		0.15	1.00	
Satd. Flow (perm)	133	3579	1311	436	3455		260	4877		284	4934	
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)	150	757	129	140	1064	152	149	979	136	164	1031	128
RTOR Reduction (vph)	0	0	43	0	7	0	0	11	0	0	9	0
Lane Group Flow (vph)	150	757	86	140	1209	0	149	1104	0	164	1150	0
Confl. Peds. (#/hr)	110		143	143		110	249		206	206		249
Heavy Vehicles (%)	0%	2%	1%	1%	2%	0%	2%	2%	0%	1%	1%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6			2		
Actuated Green, G (s)	70.0	57.9	57.9	69.0	57.4		69.8	59.2		70.2	59.4	
Effective Green, g (s)	70.0	57.9	57.9	69.0	57.4		69.8	59.2		70.2	59.4	
Actuated g/C Ratio	0.44	0.36	0.36	0.43	0.36		0.44	0.37		0.44	0.37	
Clearance Time (s)	3.0	7.5	7.5	3.0	7.5		3.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	186	1295	474	286	1239		214	1804		226	1831	
v/s Ratio Prot	c0.06	0.21		0.04	c0.35		0.05	0.23		c0.05	0.23	
v/s Ratio Perm	0.29		0.07	0.18			0.26			c0.27		
v/c Ratio	0.81	0.58	0.18	0.49	0.98		0.70	0.61		0.73	0.63	
Uniform Delay, d1	40.8	41.3	34.9	29.8	50.6		30.4	41.0		30.2	41.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	21.9	0.7	0.2	1.3	19.8		9.4	1.6		11.0	1.6	
Delay (s)	62.7	42.0	35.0	31.1	70.4		39.9	42.6		41.2	42.9	
Level of Service	E	D	D	C	E		D	D		D	D	
Approach Delay (s)		44.1			66.3			42.3			42.7	
Approach LOS		D			E			D			D	

Intersection Summary

HCM 2000 Control Delay	49.3	HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio	0.84				
Actuated Cycle Length (s)	160.0	Sum of lost time (s)		20.5	
Intersection Capacity Utilization	97.4%	ICU Level of Service		F	
Analysis Period (min)	15				

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
2: Shepard Avenue & Dundas Street East 02/17/2022

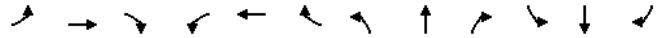


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	929	121	79	1236	33	70
Future Volume (Veh/h)	929	121	79	1236	33	70
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	968	126	82	1288	34	73
Pedestrians	12			8	74	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	1			1	7	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)	151					
pX, platoon unblocked			0.83		0.83	0.83
vC, conflicting volume			1168		1925	629
vC1, stage 1 conf vol					1105	
vC2, stage 2 conf vol					820	
vCu, unblocked vol			790		1703	139
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			87		86	89
cM capacity (veh/h)			640		243	679

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	645	449	82	644	644	107
Volume Left	0	0	82	0	0	34
Volume Right	0	126	0	0	0	73
cSH	1700	1700	640	1700	1700	432
Volume to Capacity	0.38	0.26	0.13	0.38	0.38	0.25
Queue Length 95th (m)	0.0	0.0	3.3	0.0	0.0	7.3
Control Delay (s)	0.0	0.0	11.4	0.0	0.0	16.0
Lane LOS			B			C
Approach Delay (s)	0.0		0.7			16.0
Approach LOS						C

Intersection Summary				
Average Delay	1.0			
Intersection Capacity Utilization	52.8%	ICU Level of Service		A
Analysis Period (min)	15			

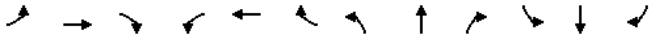
HCM Unsignalized Intersection Capacity Analysis
3: Site Driveway/Jaguar Valley Drive & Dundas Street East 02/17/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	934	12	22	1270	37	6	6	21	12	6	39
Future Volume (Veh/h)	53	934	12	22	1270	37	6	6	21	12	6	39
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	58	1015	13	24	1380	40	7	7	23	13	7	42
Pedestrians		15			29			24			50	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			3			2			5	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		240										
pX, platoon unblocked				0.85			0.85	0.85	0.85	0.85	0.85	
vC, conflicting volume	1470			1052			1960	2680	567	2177	2666	775
vC1, stage 1 conf vol							1162	1162		1498	1498	
vC2, stage 2 conf vol							798	1518		679	1168	
vCu, unblocked vol	1470			698			1771	2621	124	2027	2605	775
tC, single (s)	4.1			4.3			7.5	6.8	7.1	7.7	6.5	7.0
tC, 2 stage (s)							6.5	5.8		6.7	5.5	
tF (s)	2.2			2.3			3.5	4.2	3.4	3.6	4.0	3.3
p0 queue free %	87			97			96	91	97	88	95	87
cM capacity (veh/h)	433			702			159	79	705	105	136	313

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1	SB 2
Volume Total	58	677	351	24	920	500	37	13	49
Volume Left	58	0	0	24	0	0	7	13	0
Volume Right	0	0	13	0	0	40	23	0	42
cSH	433	1700	1700	702	1700	1700	223	105	264
Volume to Capacity	0.13	0.40	0.21	0.03	0.54	0.29	0.17	0.12	0.19
Queue Length 95th (m)	3.5	0.0	0.0	0.8	0.0	0.0	4.4	3.1	5.1
Control Delay (s)	14.6	0.0	0.0	10.3	0.0	0.0	24.3	44.0	21.7
Lane LOS	B			B			C	E	C
Approach Delay (s)	0.8			0.2			24.3	26.4	
Approach LOS							C	D	

Intersection Summary				
Average Delay	1.4			
Intersection Capacity Utilization	61.4%	ICU Level of Service		B
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	7	56	55	5	19	37	44	37	32	91	77
Future Volume (Veh/h)	40	7	56	55	5	19	37	44	37	32	91	77
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	41	7	57	56	5	19	38	45	38	33	93	79
Pedestrians		37			49			91			11	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		4			5			9			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	408	444	260	539	464	124	209			132		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	408	444	260	539	464	124	209			132		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	91	98	92	83	99	98	97			98		
cM capacity (veh/h)	464	445	687	322	434	878	1313			1395		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	105	80	121	205
Volume Left	41	56	38	33
Volume Right	57	19	38	79
cSH	561	386	1313	1395
Volume to Capacity	0.19	0.21	0.03	0.02
Queue Length 95th (m)	5.2	5.8	0.7	0.6
Control Delay (s)	12.9	16.7	2.6	1.4
Lane LOS	B	C	A	A
Approach Delay (s)	12.9	16.7	2.6	1.4
Approach LOS	B	C		

Intersection Summary					
Average Delay	6.4				
Intersection Capacity Utilization	33.7%	ICU Level of Service		A	
Analysis Period (min)	15				

Timings
1: Hurontario Street & Dundas Street West/Dundas Street East

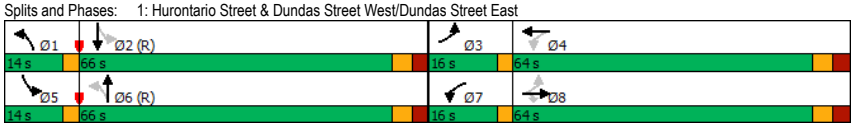
02/17/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	144	727	124	134	1021	143	940	157	990
Future Volume (vph)	144	727	124	134	1021	143	940	157	990
Lane Group Flow (vph)	150	757	129	140	1216	149	1115	164	1159
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	3	8		7	4	1	6	5	2
Permitted Phases	8		8	4		6		2	
Detector Phase	3	8	8	7	4	1	6	5	2
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.0	45.5	45.5	11.0	45.5	11.0	41.0	11.0	41.0
Total Split (s)	16.0	64.0	64.0	16.0	64.0	14.0	66.0	14.0	66.0
Total Split (%)	10.0%	40.0%	40.0%	10.0%	40.0%	8.8%	41.3%	8.8%	41.3%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	0.0	3.5	3.5	0.0	3.5	0.0	3.0	0.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	3.0	7.5	7.5	1.0	5.5	1.0	5.0	1.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
v/c Ratio	0.79	0.59	0.25	0.44	0.95	0.61	0.59	0.64	0.60
Control Delay	62.8	44.2	18.6	26.9	64.9	33.5	39.9	34.4	40.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.8	44.2	18.6	26.9	64.9	33.5	39.9	34.4	40.4
Queue Length 50th (m)	29.7	103.2	13.1	24.0	197.3	25.7	102.1	28.6	107.3
Queue Length 95th (m)	#62.9	125.4	30.0	37.4	#243.2	39.7	117.4	43.4	123.0
Internal Link Dist (m)		105.5			126.5		151.8		175.1
Turn Bay Length (m)	44.0		30.0	33.0		50.0		68.0	
Base Capacity (vph)	199	1282	513	335	1275	247	1899	259	1921
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.59	0.25	0.42	0.95	0.60	0.59	0.63	0.60

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 72 (45%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Hurontario Street & Dundas Street West/Dundas Street East



HCM Signalized Intersection Capacity Analysis
1: Hurontario Street & Dundas Street West/Dundas Street East

02/17/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	144	727	124	134	1021	146	143	940	131	157	990	123
Future Volume (vph)	144	727	124	134	1021	146	143	940	131	157	990	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.5	7.5	1.0	5.5		1.0	5.0		1.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	1.00	0.81	1.00	0.98		1.00	0.96		1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1825	3579	1311	1791	3455		1783	4877		1799	4934	
Flt Permitted	0.07	1.00	1.00	0.23	1.00		0.14	1.00		0.15	1.00	
Satd. Flow (perm)	134	3579	1311	439	3455		259	4877		283	4934	
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)	150	757	129	140	1064	152	149	979	136	164	1031	128
RTOR Reduction (vph)	0	0	44	0	7	0	0	11	0	0	10	0
Lane Group Flow (vph)	150	757	85	140	1209	0	149	1104	0	164	1149	0
Confl. Peds. (#/hr)	110		143	143		110	249		206	206		249
Heavy Vehicles (%)	0%	2%	1%	1%	2%	0%	2%	2%	0%	1%	1%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6			2		
Actuated Green, G (s)	69.4	57.3	57.3	68.4	56.8		70.5	59.9		70.7	60.0	
Effective Green, g (s)	69.4	57.3	57.3	72.4	58.8		74.5	61.9		74.7	62.0	
Actuated g/C Ratio	0.43	0.36	0.36	0.45	0.37		0.47	0.39		0.47	0.39	
Clearance Time (s)	3.0	7.5	7.5	3.0	7.5		3.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	186	1281	469	313	1269		240	1886		252	1911	
v/s Ratio Prot	c0.06	0.21		0.04	c0.35		0.05	0.23		c0.05	c0.23	
v/s Ratio Perm	0.29		0.07	0.16			0.24			0.25		
v/c Ratio	0.81	0.59	0.18	0.45	0.95		0.62	0.59		0.65	0.60	
Uniform Delay, d1	40.9	41.8	35.3	27.8	49.2		27.9	38.9		27.8	39.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	21.9	0.7	0.2	1.0	15.3		4.9	1.3		5.9	1.4	
Delay (s)	62.8	42.5	35.4	28.8	64.5		32.8	40.2		33.7	40.5	
Level of Service	E	D	D	C	E		C	D		C	D	
Approach Delay (s)		44.6			60.9			39.3			39.7	
Approach LOS		D			E			D			D	

Intersection Summary

HCM 2000 Control Delay	46.4	HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio	0.76				
Actuated Cycle Length (s)	160.0	Sum of lost time (s)		14.5	
Intersection Capacity Utilization	94.1%	ICU Level of Service		F	
Analysis Period (min)	15				

c Critical Lane Group

BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Appendix F

Background 2028 Traffic Operations

Timings
1: Hurontario Street & Dundas Street West/Dundas Street East

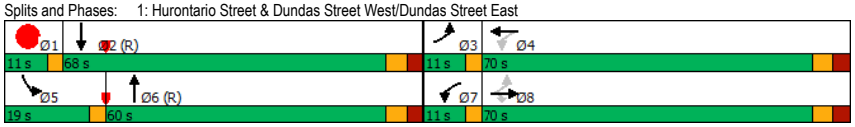
02/17/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBL	SBT	Ø1
Lane Configurations									
Traffic Volume (vph)	102	1113	132	80	477	818	116	722	
Future Volume (vph)	102	1113	132	80	477	818	116	722	
Lane Group Flow (vph)	110	1197	142	86	612	947	125	834	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	NA	Prot	NA	
Protected Phases	3	8		7	4	6	5	2	1
Permitted Phases	8		8	4					
Detector Phase	3	8	8	7	4	6	5	2	
Switch Phase									
Minimum Initial (s)	8.0	5.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.0	45.5	45.5	11.0	45.5	41.0	11.0	41.0	11.0
Total Split (s)	11.0	70.0	70.0	11.0	70.0	60.0	19.0	68.0	11.0
Total Split (%)	6.9%	43.8%	43.8%	6.9%	43.8%	37.5%	11.9%	42.5%	7%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0
All-Red Time (s)	0.0	3.5	3.5	0.0	3.5	3.0	0.0	3.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	3.0	7.5	7.5	3.0	7.5	7.0	3.0	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max	None
v/c Ratio	0.34	0.89	0.24	0.61	0.50	0.78	0.78	0.52	
Control Delay	26.3	56.3	13.8	43.7	38.4	52.3	100.7	32.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	26.3	56.3	13.8	43.7	38.4	52.3	100.7	32.1	
Queue Length 50th (m)	18.8	183.8	10.7	14.5	74.6	145.9	39.2	99.6	
Queue Length 95th (m)	30.8	213.7	26.7	28.2	92.8	173.1	#68.0	119.4	
Internal Link Dist (m)		105.5			126.5	151.8		175.1	
Turn Bay Length (m)	44.0		30.0	33.0			68.0		
Base Capacity (vph)	321	1384	602	141	1268	1212	175	1589	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.34	0.86	0.24	0.61	0.48	0.78	0.71	0.52	

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 72 (45%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Hurontario Street & Dundas Street West/Dundas Street East



HCM Signalized Intersection Capacity Analysis
1: Hurontario Street & Dundas Street West/Dundas Street East

02/17/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	1113	132	80	477	92	0	818	62	116	722	54
Future Volume (vph)	102	1113	132	80	477	92	0	818	62	116	722	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.5	7.5	3.0	7.5			7.0		3.0	7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.90	1.00	0.98			0.99		1.00	0.99	
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98			0.99		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1738	3544	1404	1807	3222			3437		1755	3426	
Flt Permitted	0.32	1.00	1.00	0.07	1.00			1.00		0.95	1.00	
Satd. Flow (perm)	588	3544	1404	126	3222			3437		1755	3426	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	110	1197	142	86	513	99	0	880	67	125	776	58
RTOR Reduction (vph)	0	0	55	0	10	0	0	3	0	0	3	0
Lane Group Flow (vph)	110	1197	87	86	602	0	0	944	0	125	831	0
Confl. Peds. (#/hr)	76		69	69		76	139		97	97		139
Heavy Vehicles (%)	4%	3%	5%	1%	8%	12%	6%	4%	4%	4%	4%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA			NA		Prot	NA	
Protected Phases	3	8		7	4			6		5	2	
Permitted Phases	8		8	4								
Actuated Green, G (s)	68.5	60.5	60.5	68.5	60.5			56.3		14.7	74.0	
Effective Green, g (s)	68.5	60.5	60.5	68.5	60.5			56.3		14.7	74.0	
Actuated g/C Ratio	0.43	0.38	0.38	0.43	0.38			0.35		0.09	0.46	
Clearance Time (s)	3.0	7.5	7.5	3.0	7.5			7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	309	1340	530	137	1218			1209		161	1584	
v/s Ratio Prot	0.02	c0.34		c0.03	0.19			c0.27		c0.07	0.24	
v/s Ratio Perm	0.13		0.06	0.24								
v/c Ratio	0.36	0.89	0.16	0.63	0.49			0.78		0.78	0.52	
Uniform Delay, d1	28.7	46.7	33.0	35.4	38.1			46.3		71.0	30.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.7	7.9	0.1	8.7	0.3			5.0		20.6	1.2	
Delay (s)	29.4	54.7	33.1	44.1	38.4			51.4		91.6	31.8	
Level of Service	C	D	C	D	D			D		F	C	
Approach Delay (s)		50.6			39.1			51.4			39.6	
Approach LOS		D			D			D			D	

Intersection Summary

HCM 2000 Control Delay	46.2	HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio	0.82				
Actuated Cycle Length (s)	160.0	Sum of lost time (s)		20.5	
Intersection Capacity Utilization	92.0%	ICU Level of Service		F	
Analysis Period (min)	15				

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
2: Shepard Avenue & Dundas Street East

02/17/2022

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1281	29	33	653	3	32
Future Volume (Veh/h)	1281	29	33	653	3	32
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)	1334	30	34	680	3	33
Pedestrians	4				44	
Lane Width (m)	3.7				3.7	
Walking Speed (m/s)	1.1				1.1	
Percent Blockage	0				4	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)	151					
pX, platoon unblocked			0.68		0.68	0.68
vC, conflicting volume			1408		1805	726
vC1, stage 1 conf vol					1393	
vC2, stage 2 conf vol					412	
vCu, unblocked vol			656		1241	0
tC, single (s)			4.2		6.8	7.0
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.4
p0 queue free %			94		99	95
cM capacity (veh/h)			598		290	696

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	889	475	34	340	340	36
Volume Left	0	0	34	0	0	3
Volume Right	0	30	0	0	0	33
cSH	1700	1700	598	1700	1700	624
Volume to Capacity	0.52	0.28	0.06	0.20	0.20	0.06
Queue Length 95th (m)	0.0	0.0	1.4	0.0	0.0	1.4
Control Delay (s)	0.0	0.0	11.4	0.0	0.0	11.1
Lane LOS			B			B
Approach Delay (s)	0.0		0.5			11.1
Approach LOS						B

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	46.4%	ICU Level of Service		A
Analysis Period (min)	15			

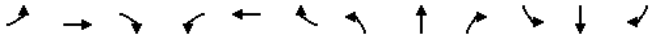
HCM Unsignalized Intersection Capacity Analysis
3: Site Driveway/Jaguar Valley Drive & Dundas Street East

02/17/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	1300	2	2	659	14	2	0	11	14	1	25
Future Volume (Veh/h)	11	1300	2	2	659	14	2	0	11	14	1	25
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	1413	2	2	716	15	2	0	12	15	1	27
Pedestrians		1			1			38			15	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		0			0			4			1	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		240										
pX, platoon unblocked				0.68			0.68	0.68	0.68	0.68	0.68	
vC, conflicting volume	746			1453			1866	2226	746	1486	2220	382
vC1, stage 1 conf vol							1476	1476		742	742	
vC2, stage 2 conf vol							390	750		744	1477	
vCu, unblocked vol	746			729			1336	1864	0	777	1854	382
tC, single (s)	4.3			4.1			7.5	6.5	7.3	7.6	6.5	7.1
tC, 2 stage (s)							6.5	5.5		6.6	5.5	
tF (s)	2.3			2.2			3.5	4.0	3.5	3.6	4.0	3.4
p0 queue free %	99			100			99	100	98	95	100	95
cM capacity (veh/h)	801			580			216	220	678	331	222	590

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1	SB 2
Volume Total	12	942	473	2	477	254	14	15	28
Volume Left	12	0	0	2	0	0	2	15	0
Volume Right	0	0	2	0	0	15	12	0	27
cSH	801	1700	1700	580	1700	1700	519	331	557
Volume to Capacity	0.01	0.55	0.28	0.00	0.28	0.15	0.03	0.05	0.05
Queue Length 95th (m)	0.3	0.0	0.0	0.1	0.0	0.0	0.6	1.1	1.2
Control Delay (s)	9.6	0.0	0.0	11.2	0.0	0.0	12.1	16.4	11.8
Lane LOS	A			B			B	C	B
Approach Delay (s)	0.1			0.0			12.1	13.4	
Approach LOS							B	B	

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	46.5%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	1	7	7	1	1	10	31	8	5	50	7
Future Volume (Veh/h)	3	1	7	7	1	1	10	31	8	5	50	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	4	1	9	9	1	1	12	39	10	6	62	9
Pedestrians		7			4			3			1	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	156	162	76	163	162	49	78			53		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	156	162	76	163	162	49	78			53		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	7.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	4.2	2.2			2.2		
p0 queue free %	99	100	99	99	100	100	99			100		
cM capacity (veh/h)	793	717	980	779	718	796	1523			1559		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	14	11	61	77
Volume Left	4	9	12	6
Volume Right	9	1	10	9
cSH	896	775	1523	1559
Volume to Capacity	0.02	0.01	0.01	0.00
Queue Length 95th (m)	0.4	0.3	0.2	0.1
Control Delay (s)	9.1	9.7	1.5	0.6
Lane LOS	A	A	A	A
Approach Delay (s)	9.1	9.7	1.5	0.6
Approach LOS	A	A		

Intersection Summary				
Average Delay		2.3		
Intersection Capacity Utilization		17.1%	ICU Level of Service	A
Analysis Period (min)		15		

Timings
1: Hurontario Street & Dundas Street West/Dundas Street East

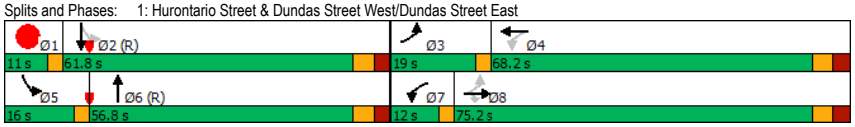
02/17/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBL	SBT	Ø1
Lane Configurations									
Traffic Volume (vph)	170	758	139	135	1038	820	165	896	
Future Volume (vph)	170	758	139	135	1038	820	165	896	
Lane Group Flow (vph)	177	790	145	141	1241	963	172	1066	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	NA	pm+pt	NA	
Protected Phases	3	8		7	4	6	5	2	1
Permitted Phases	8		8	4			2		
Detector Phase	3	8	8	7	4	6	5	2	
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.0	45.5	45.5	11.0	45.5	41.0	11.0	41.0	11.0
Total Split (s)	19.0	75.2	75.2	12.0	68.2	56.8	16.0	61.8	11.0
Total Split (%)	11.9%	47.0%	47.0%	7.5%	42.6%	35.5%	10.0%	38.6%	7%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0
All-Red Time (s)	0.0	3.5	3.5	0.0	3.5	3.0	0.0	3.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	3.0	7.5	7.5	1.0	5.5	5.0	1.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max	None
v/c Ratio	0.82	0.54	0.24	0.43	0.92	0.83	0.74	0.71	
Control Delay	66.1	36.9	12.8	23.6	57.4	56.2	50.8	40.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	66.1	36.9	12.8	23.6	57.4	56.2	50.8	40.4	
Queue Length 50th (m)	37.8	97.2	10.7	21.9	194.4	151.0	33.0	146.8	
Queue Length 95th (m)	#72.3	116.6	26.1	34.2	#227.8	179.2	#64.2	173.2	
Internal Link Dist (m)		105.5			126.5	151.8		175.1	
Turn Bay Length (m)	44.0		30.0	33.0			68.0		
Base Capacity (vph)	232	1514	606	326	1367	1158	236	1491	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.76	0.52	0.24	0.43	0.91	0.83	0.73	0.71	

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 72 (45%), Referenced to phase 2:SBTL and 6:NBT, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Hurontario Street & Dundas Street West/Dundas Street East



HCM Signalized Intersection Capacity Analysis
1: Hurontario Street & Dundas Street West/Dundas Street East

02/17/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	170	758	139	135	1038	154	0	820	105	165	896	128
Future Volume (vph)	170	758	139	135	1038	154	0	820	105	165	896	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.5	7.5	1.0	5.5			5.0		1.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.81	1.00	0.98			0.97		1.00	0.96	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00			1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98			0.98		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1825	3579	1311	1787	3451			3407		1807	3411	
Flt Permitted	0.06	1.00	1.00	0.27	1.00			1.00		0.09	1.00	
Satd. Flow (perm)	121	3579	1311	502	3451			3407		181	3411	
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)	177	790	145	141	1081	160	0	854	109	172	933	133
RTOR Reduction (vph)	0	0	52	0	7	0	0	6	0	0	6	0
Lane Group Flow (vph)	177	790	93	141	1234	0	0	957	0	172	1060	0
Confl. Peds. (#/hr)	110		143	143		110	249		206	206		249
Heavy Vehicles (%)	0%	2%	1%	1%	2%	0%	2%	2%	0%	1%	1%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA			NA		pm+pt	NA	
Protected Phases	3	8		7	4			6		5	2	
Permitted Phases	8		8	4						2		
Actuated Green, G (s)	77.8	65.9	65.9	69.2	60.3			52.1		67.7	67.7	
Effective Green, g (s)	77.8	65.9	65.9	73.2	62.3			54.1		69.7	69.7	
Actuated g/C Ratio	0.49	0.41	0.41	0.46	0.39			0.34		0.44	0.44	
Clearance Time (s)	3.0	7.5	7.5	3.0	7.5			7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	213	1474	539	317	1343			1151		227	1485	
v/s Ratio Prot	c0.08	0.22		0.03	c0.36			c0.28		c0.07	0.31	
v/s Ratio Perm	0.33		0.07	0.17						0.26		
v/c Ratio	0.83	0.54	0.17	0.44	0.92			0.83		0.76	0.71	
Uniform Delay, d1	46.0	35.5	29.8	26.5	46.4			48.8		34.5	37.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	23.2	0.4	0.2	1.0	10.1			7.1		13.5	3.0	
Delay (s)	69.2	35.9	29.9	27.5	56.6			55.8		47.9	39.9	
Level of Service	E	D	C	C	E			E		D	D	
Approach Delay (s)		40.4			53.6			55.8			41.0	
Approach LOS		D			D			E			D	

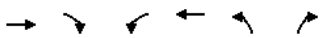
Intersection Summary

HCM 2000 Control Delay	47.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	96.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
2: Shepard Avenue & Dundas Street East

02/17/2022



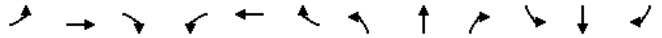
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	970	121	79	1262	33	70
Future Volume (Veh/h)	970	121	79	1262	33	70
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	1010	126	82	1315	34	73
Pedestrians	12			8	74	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	1			1	7	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)	151					
pX, platoon unblocked			0.83		0.83	0.83
vC, conflicting volume			1210		1980	650
vC1, stage 1 conf vol					1147	
vC2, stage 2 conf vol					834	
vCu, unblocked vol			851		1776	179
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			87		85	89
cM capacity (veh/h)			610		231	643

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	673	463	82	658	658	107
Volume Left	0	0	82	0	0	34
Volume Right	0	126	0	0	0	73
cSH	1700	1700	610	1700	1700	410
Volume to Capacity	0.40	0.27	0.13	0.39	0.39	0.26
Queue Length 95th (m)	0.0	0.0	3.5	0.0	0.0	7.8
Control Delay (s)	0.0	0.0	11.8	0.0	0.0	16.8
Lane LOS			B			C
Approach Delay (s)	0.0		0.7			16.8
Approach LOS						C

Intersection Summary				
Average Delay	1.0			
Intersection Capacity Utilization	53.9%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
3: Site Driveway/Jaguar Valley Drive & Dundas Street East

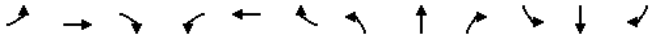
02/17/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	975	12	22	1296	37	6	6	21	12	6	39
Future Volume (Veh/h)	53	975	12	22	1296	37	6	6	21	12	6	39
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	58	1060	13	24	1409	40	7	7	23	13	7	42
Pedestrians		15			29			24			50	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			3			2			5	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		240										
pX, platoon unblocked				0.85			0.85	0.85	0.85	0.85	0.85	
vC, conflicting volume	1499			1097			2020	2754	590	2228	2740	790
vC1, stage 1 conf vol							1206	1206		1527	1527	
vC2, stage 2 conf vol							813	1547		702	1213	
vCu, unblocked vol	1499			760			1846	2710	163	2092	2694	790
tC, single (s)	4.1			4.3			7.5	6.8	7.1	7.7	6.5	7.0
tC, 2 stage (s)							6.5	5.8		6.7	5.5	
tF (s)	2.2			2.3			3.5	4.2	3.4	3.6	4.0	3.3
p0 queue free %	86			96			95	91	97	87	95	86
cM capacity (veh/h)	422			666			149	74	668	100	130	306

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1	SB 2
Volume Total	58	707	366	24	939	510	37	13	49
Volume Left	58	0	0	24	0	0	7	13	0
Volume Right	0	0	13	0	0	40	23	0	42
cSH	422	1700	1700	666	1700	1700	210	100	256
Volume to Capacity	0.14	0.42	0.22	0.04	0.55	0.30	0.18	0.13	0.19
Queue Length 95th (m)	3.6	0.0	0.0	0.9	0.0	0.0	4.7	3.3	5.2
Control Delay (s)	14.9	0.0	0.0	10.6	0.0	0.0	25.8	46.1	22.3
Lane LOS	B			B			D	E	C
Approach Delay (s)	0.8			0.2			25.8	27.3	
Approach LOS							D	D	

Intersection Summary				
Average Delay	1.4			
Intersection Capacity Utilization	62.1%	ICU Level of Service		B
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	7	56	55	5	19	37	44	37	32	91	77
Future Volume (Veh/h)	40	7	56	55	5	19	37	44	37	32	91	77
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	41	7	57	56	5	19	38	45	38	33	93	79
Pedestrians		37			49			91			11	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		4			5			9			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	408	444	260	539	464	124	209			132		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	408	444	260	539	464	124	209			132		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	91	98	92	83	99	98	97			98		
cM capacity (veh/h)	464	445	687	322	434	878	1313			1395		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	105	80	121	205
Volume Left	41	56	38	33
Volume Right	57	19	38	79
cSH	561	386	1313	1395
Volume to Capacity	0.19	0.21	0.03	0.02
Queue Length 95th (m)	5.2	5.8	0.7	0.6
Control Delay (s)	12.9	16.7	2.6	1.4
Lane LOS	B	C	A	A
Approach Delay (s)	12.9	16.7	2.6	1.4
Approach LOS	B	C		

Intersection Summary					
Average Delay			6.4		
Intersection Capacity Utilization			33.7%	ICU Level of Service	A
Analysis Period (min)			15		

BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Appendix G

Total 2028 Traffic Operations

Timings
1: Hurontario Street & Dundas Street West/Dundas Street East

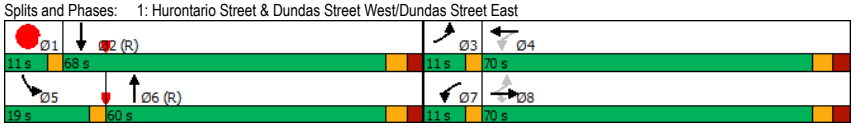
02/17/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBL	SBT	Ø1
Lane Configurations									
Traffic Volume (vph)	102	1134	132	98	517	854	143	726	
Future Volume (vph)	102	1134	132	98	517	854	143	726	
Lane Group Flow (vph)	110	1219	142	105	686	1015	154	839	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	NA	Prot	NA	
Protected Phases	3	8		7	4	6	5	2	1
Permitted Phases	8		8	4					
Detector Phase	3	8	8	7	4	6	5	2	
Switch Phase									
Minimum Initial (s)	8.0	5.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.0	45.5	45.5	11.0	45.5	41.0	11.0	41.0	11.0
Total Split (s)	11.0	70.0	70.0	11.0	70.0	60.0	19.0	68.0	11.0
Total Split (%)	6.9%	43.8%	43.8%	6.9%	43.8%	37.5%	11.9%	42.5%	7%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0
All-Red Time (s)	0.0	3.5	3.5	0.0	3.5	3.0	0.0	3.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	3.0	7.5	7.5	3.0	7.5	7.0	3.0	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max	None
v/c Ratio	0.38	0.90	0.24	0.74	0.56	0.87	0.88	0.53	
Control Delay	27.0	57.1	13.8	57.4	39.5	58.3	112.6	32.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	27.0	57.1	13.8	57.4	39.5	58.3	112.6	32.5	
Queue Length 50th (m)	18.8	189.0	10.7	17.9	85.9	160.9	49.2	100.6	
Queue Length 95th (m)	30.8	219.7	26.7	#45.3	105.6	#191.3	#91.1	120.7	
Internal Link Dist (m)		105.5			126.5	151.8		175.1	
Turn Bay Length (m)	44.0		30.0	33.0			68.0		
Base Capacity (vph)	291	1384	602	142	1261	1170	178	1581	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.38	0.88	0.24	0.74	0.54	0.87	0.87	0.53	

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 72 (45%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Hurontario Street & Dundas Street West/Dundas Street East



HCM Signalized Intersection Capacity Analysis
1: Hurontario Street & Dundas Street West/Dundas Street East

02/17/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	1134	132	98	517	121	0	854	90	143	726	54
Future Volume (vph)	102	1134	132	98	517	121	0	854	90	143	726	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.5	7.5	3.0	7.5			7.0		3.0	7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.90	1.00	0.98			0.99		1.00	0.99	
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.97			0.99		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1743	3544	1404	1807	3195			3411		1755	3427	
Flt Permitted	0.28	1.00	1.00	0.07	1.00			1.00		0.95	1.00	
Satd. Flow (perm)	512	3544	1404	125	3195			3411		1755	3427	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	110	1219	142	105	556	130	0	918	97	154	781	58
RTOR Reduction (vph)	0	0	55	0	13	0	0	5	0	0	3	0
Lane Group Flow (vph)	110	1219	87	105	673	0	0	1010	0	154	836	0
Confl. Peds. (#/hr)	76		69	69		76	139		97	97		139
Heavy Vehicles (%)	4%	3%	5%	1%	8%	12%	6%	4%	4%	4%	4%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA			NA		Prot	NA	
Protected Phases	3	8		7	4			6		5	2	
Permitted Phases	8		8	4								
Actuated Green, G (s)	68.8	60.8	60.8	68.8	60.8			54.7		16.0	73.7	
Effective Green, g (s)	68.8	60.8	60.8	68.8	60.8			54.7		16.0	73.7	
Actuated g/C Ratio	0.43	0.38	0.38	0.43	0.38			0.34		0.10	0.46	
Clearance Time (s)	3.0	7.5	7.5	3.0	7.5			7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	281	1346	533	137	1214			1166		175	1578	
v/s Ratio Prot	0.02	c0.34		c0.04	0.21			c0.30		c0.09	0.24	
v/s Ratio Perm	0.15		0.06	0.29								
v/c Ratio	0.39	0.91	0.16	0.77	0.55			0.87		0.88	0.53	
Uniform Delay, d1	28.9	46.9	32.8	36.2	39.0			49.2		71.1	30.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.9	8.9	0.1	22.2	0.6			8.7		36.4	1.3	
Delay (s)	29.8	55.8	32.9	58.4	39.5			58.0		107.5	32.1	
Level of Service	C	E	C	E	D			E		F	C	
Approach Delay (s)		51.6			42.0			58.0			43.8	
Approach LOS		D			D			E			D	

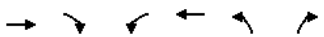
Intersection Summary

HCM 2000 Control Delay	49.5	HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio	0.88				
Actuated Cycle Length (s)	160.0	Sum of lost time (s)		20.5	
Intersection Capacity Utilization	93.3%	ICU Level of Service		F	
Analysis Period (min)	15				

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
2: Shepard Avenue & Dundas Street East

02/17/2022



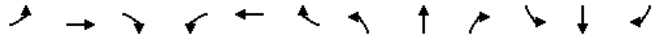
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1347	39	30	732	11	32
Future Volume (Veh/h)	1347	39	30	732	11	32
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	1403	41	31	762	11	33
Pedestrians	4				44	
Lane Width (m)	3.7				3.7	
Walking Speed (m/s)	1.1				1.1	
Percent Blockage	0				4	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)	151					
pX, platoon unblocked			0.67		0.67	0.67
vC, conflicting volume			1488		1914	766
vC1, stage 1 conf vol					1468	
vC2, stage 2 conf vol					447	
vCu, unblocked vol			747		1382	0
tC, single (s)			4.2		6.8	7.0
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.4
p0 queue free %			94		96	95
cM capacity (veh/h)			546		260	688

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	935	509	31	381	381	44
Volume Left	0	0	31	0	0	11
Volume Right	0	41	0	0	0	33
cSH	1700	1700	546	1700	1700	488
Volume to Capacity	0.55	0.30	0.06	0.22	0.22	0.09
Queue Length 95th (m)	0.0	0.0	1.4	0.0	0.0	2.2
Control Delay (s)	0.0	0.0	12.0	0.0	0.0	13.1
Lane LOS			B			B
Approach Delay (s)	0.0		0.5			13.1
Approach LOS						B

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	48.6%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
3: Site Driveway/Jaguar Valley Drive & Dundas Street East

02/17/2022

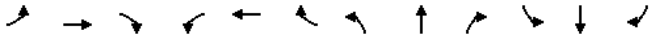


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	1300	68	18	656	14	81	6	33	14	7	25
Future Volume (Veh/h)	11	1300	68	18	656	14	81	6	33	14	7	25
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	1413	74	20	713	15	88	7	36	15	8	27
Pedestrians		1			1			38			15	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		0			0			4			1	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		240										
pX, platoon unblocked				0.67			0.67	0.67	0.67	0.67	0.67	
vC, conflicting volume	743			1525			1940	2295	782	1546	2324	380
vC1, stage 1 conf vol							1512	1512		776	776	
vC2, stage 2 conf vol							428	783		771	1549	
vCu, unblocked vol	743			810			1427	1953	0	841	1997	380
tC, single (s)	4.3			4.1			7.5	6.5	7.3	7.6	6.5	7.1
tC, 2 stage (s)							6.5	5.5		6.6	5.5	
tF (s)	2.3			2.2			3.5	4.0	3.5	3.6	4.0	3.4
p0 queue free %	99			96			56	97	95	95	96	95
cM capacity (veh/h)	804			535			202	208	670	301	190	592

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1	SB 2
Volume Total	12	942	545	20	475	253	131	15	35
Volume Left	12	0	0	20	0	0	88	15	0
Volume Right	0	0	74	0	0	15	36	0	27
cSH	804	1700	1700	535	1700	1700	251	301	399
Volume to Capacity	0.01	0.55	0.32	0.04	0.28	0.15	0.52	0.05	0.09
Queue Length 95th (m)	0.3	0.0	0.0	0.9	0.0	0.0	21.0	1.2	2.2
Control Delay (s)	9.5	0.0	0.0	12.0	0.0	0.0	34.1	17.6	14.9
Lane LOS	A			B			D	C	B
Approach Delay (s)	0.1			0.3			34.1	15.7	
Approach LOS							D	C	

Intersection Summary				
Average Delay	2.3			
Intersection Capacity Utilization	58.4%	ICU Level of Service		B
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
3: Site Driveway/Jaguar Valley Drive & Dundas Street East 02/22/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	1300	68	18	656	14	81	6	33	14	7	25
Future Volume (Veh/h)	11	1300	68	18	656	14	81	6	33	14	7	25
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	1413	74	20	713	15	88	7	36	15	8	27
Pedestrians		1			1			38			15	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		0			0			4			1	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		240										
pX, platoon unblocked				0.67			0.67	0.67	0.67	0.67	0.67	
vC, conflicting volume	743			1525			1940	2295	782	1546	2324	380
vC1, stage 1 conf vol							1512	1512		776	776	
vC2, stage 2 conf vol							428	783		771	1549	
vCu, unblocked vol	743			810			1427	1953	0	841	1997	380
tC, single (s)	4.3			4.1			7.5	6.5	7.3	7.6	6.5	7.1
tC, 2 stage (s)							6.5	5.5		6.6	5.5	
tF (s)	2.3			2.2			3.5	4.0	3.5	3.6	4.0	3.4
p0 queue free %	99			96			56	97	95	95	96	95
cM capacity (veh/h)	804			535			202	208	670	301	190	592

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1	SB 2
Volume Total	12	942	545	20	475	253	88	43	15	35
Volume Left	12	0	0	20	0	0	88	0	15	0
Volume Right	0	0	74	0	0	15	0	36	0	27
cSH	804	1700	1700	535	1700	1700	202	492	301	399
Volume to Capacity	0.01	0.55	0.32	0.04	0.28	0.15	0.44	0.09	0.05	0.09
Queue Length 95th (m)	0.3	0.0	0.0	0.9	0.0	0.0	15.4	2.2	1.2	2.2
Control Delay (s)	9.5	0.0	0.0	12.0	0.0	0.0	35.8	13.0	17.6	14.9
Lane LOS	A			B			E	B	C	B
Approach Delay (s)	0.1			0.3			28.3		15.7	
Approach LOS							D		C	

Intersection Summary				
Average Delay	2.0			
Intersection Capacity Utilization	56.2%	ICU Level of Service	B	
Analysis Period (min)	15			

Timings
1: Hurontario Street & Dundas Street West/Dundas Street East

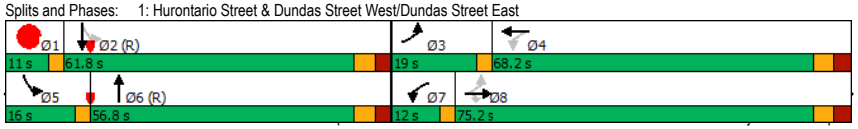
02/17/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBL	SBT	Ø1
Lane Configurations									
Traffic Volume (vph)	170	770	139	147	1053	849	214	903	
Future Volume (vph)	170	770	139	147	1053	849	214	903	
Lane Group Flow (vph)	177	802	145	153	1278	1047	223	1074	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	NA	pm+pt	NA	
Protected Phases	3	8		7	4	6	5	2	1
Permitted Phases	8		8	4			2		
Detector Phase	3	8	8	7	4	6	5	2	
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.0	45.5	45.5	11.0	45.5	41.0	11.0	41.0	11.0
Total Split (s)	19.0	75.2	75.2	12.0	68.2	56.8	16.0	61.8	11.0
Total Split (%)	11.9%	47.0%	47.0%	7.5%	42.6%	35.5%	10.0%	38.6%	7%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0
All-Red Time (s)	0.0	3.5	3.5	0.0	3.5	3.0	0.0	3.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	3.0	7.5	7.5	1.0	5.5	5.0	1.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max	None
v/c Ratio	0.82	0.54	0.24	0.47	0.94	0.96	0.95	0.73	
Control Delay	66.9	36.7	12.8	24.3	59.7	71.0	89.2	41.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	66.9	36.7	12.8	24.3	59.7	71.0	89.2	41.0	
Queue Length 50th (m)	38.2	99.1	10.7	23.9	204.0	170.6	~55.7	148.5	
Queue Length 95th (m)	#72.9	118.8	26.1	36.8	#249.3	#214.6	#112.2	174.8	
Internal Link Dist (m)		105.5			126.5	151.8		175.1	
Turn Bay Length (m)	44.0		30.0	33.0			68.0		
Base Capacity (vph)	232	1514	606	324	1366	1092	235	1478	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.76	0.53	0.24	0.47	0.94	0.96	0.95	0.73	

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 72 (45%), Referenced to phase 2:SBTL and 6:NBT, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Hurontario Street & Dundas Street West/Dundas Street East



HCM Signalized Intersection Capacity Analysis
1: Hurontario Street & Dundas Street West/Dundas Street East

02/17/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	170	770	139	147	1053	174	0	849	156	214	903	128
Future Volume (vph)	170	770	139	147	1053	174	0	849	156	214	903	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.5	7.5	1.0	5.5			5.0		1.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.81	1.00	0.98			0.95		1.00	0.96	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00			1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98			0.98		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1825	3579	1311	1788	3439			3344		1807	3412	
Flt Permitted	0.06	1.00	1.00	0.26	1.00			1.00		0.08	1.00	
Satd. Flow (perm)	120	3579	1311	493	3439			3344		144	3412	
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)	177	802	145	153	1097	181	0	884	162	223	941	133
RTOR Reduction (vph)	0	0	52	0	8	0	0	9	0	0	6	0
Lane Group Flow (vph)	177	802	93	153	1270	0	0	1038	0	223	1068	0
Confl. Peds. (#/hr)	110		143	143		110	249		206	206		249
Heavy Vehicles (%)	0%	2%	1%	1%	2%	0%	2%	2%	0%	1%	1%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA			NA		pm+pt	NA	
Protected Phases	3	8		7	4			6		5	2	
Permitted Phases	8		8	4						2		
Actuated Green, G (s)	78.5	66.5	66.5	70.0	61.0			49.7		67.0	67.0	
Effective Green, g (s)	78.5	66.5	66.5	74.0	63.0			51.7		69.0	69.0	
Actuated g/C Ratio	0.49	0.42	0.42	0.46	0.39			0.32		0.43	0.43	
Clearance Time (s)	3.0	7.5	7.5	3.0	7.5			7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	213	1487	544	317	1354			1080		231	1471	
v/s Ratio Prot	c0.08	0.22		0.03	c0.37			c0.31		c0.10	0.31	
v/s Ratio Perm	0.33		0.07	0.19						0.32		
v/c Ratio	0.83	0.54	0.17	0.48	0.94			0.96		0.97	0.73	
Uniform Delay, d1	46.4	35.2	29.4	26.3	46.6			53.2		49.5	37.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	23.2	0.4	0.2	1.2	12.3			19.4		49.0	3.2	
Delay (s)	69.6	35.6	29.6	27.4	58.9			72.6		98.5	40.8	
Level of Service	E	D	C	C	E			E		F	D	
Approach Delay (s)		40.2			55.6			72.6			50.7	
Approach LOS		D			E			E			D	

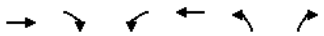
Intersection Summary

HCM 2000 Control Delay	54.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	101.9%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
2: Shepard Avenue & Dundas Street East

02/17/2022



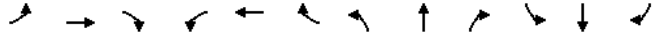
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1091	112	79	1321	21	70
Future Volume (Veh/h)	1091	112	79	1321	21	70
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	1136	117	82	1376	22	73
Pedestrians	12			8	74	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	1			1	7	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)	151					
pX, platoon unblocked			0.83		0.83	0.83
vC, conflicting volume			1327		2132	708
vC1, stage 1 conf vol					1268	
vC2, stage 2 conf vol					864	
vCu, unblocked vol			986		1956	242
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			85		89	88
cM capacity (veh/h)			541		203	585

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	757	496	82	688	688	95
Volume Left	0	0	82	0	0	22
Volume Right	0	117	0	0	0	73
cSH	1700	1700	541	1700	1700	407
Volume to Capacity	0.45	0.29	0.15	0.40	0.40	0.23
Queue Length 95th (m)	0.0	0.0	4.0	0.0	0.0	6.8
Control Delay (s)	0.0	0.0	12.8	0.0	0.0	16.5
Lane LOS			B			C
Approach Delay (s)	0.0		0.7			16.5
Approach LOS						C

Intersection Summary				
Average Delay	0.9			
Intersection Capacity Utilization	56.4%	ICU Level of Service		B
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
3: Site Driveway/Jaguar Valley Drive & Dundas Street East

02/17/2022

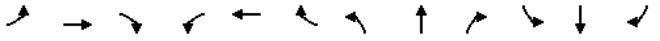


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	969	139	40	1290	37	71	6	34	12	10	39
Future Volume (Veh/h)	53	969	139	40	1290	37	71	6	34	12	10	39
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	58	1053	151	43	1402	40	77	7	37	13	11	42
Pedestrians		15			29			24			50	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			3			2			5	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		240										
pX, platoon unblocked				0.84			0.84	0.84	0.84	0.84	0.84	
vC, conflicting volume	1492			1228			2118	2846	655	2270	2902	786
vC1, stage 1 conf vol							1268	1268		1558	1558	
vC2, stage 2 conf vol							850	1578		712	1344	
vCu, unblocked vol	1492			902			1956	2818	224	2136	2884	786
tC, single (s)	4.1			4.3			7.5	6.8	7.1	7.7	6.5	7.0
tC, 2 stage (s)							6.5	5.8		6.7	5.5	
tF (s)	2.2			2.3			3.5	4.2	3.4	3.6	4.0	3.3
p0 queue free %	86			93			41	89	94	86	90	86
cM capacity (veh/h)	424			583			131	65	605	92	111	308

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1	SB 2
Volume Total	58	702	502	43	935	507	121	13	53
Volume Left	58	0	0	43	0	0	77	13	0
Volume Right	0	0	151	0	0	40	37	0	42
cSH	424	1700	1700	583	1700	1700	159	92	225
Volume to Capacity	0.14	0.41	0.30	0.07	0.55	0.30	0.76	0.14	0.24
Queue Length 95th (m)	3.6	0.0	0.0	1.8	0.0	0.0	36.1	3.6	6.8
Control Delay (s)	14.8	0.0	0.0	11.7	0.0	0.0	76.7	50.4	25.9
Lane LOS	B			B			F	F	D
Approach Delay (s)	0.7			0.3			76.7	30.7	
Approach LOS							F	D	

Intersection Summary				
Average Delay	4.3			
Intersection Capacity Utilization	64.1%	ICU Level of Service		C
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
3: Site Driveway/Jaguar Valley Drive & Dundas Street East 02/22/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	969	139	40	1290	37	71	6	34	12	10	39
Future Volume (Veh/h)	53	969	139	40	1290	37	71	6	34	12	10	39
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	58	1053	151	43	1402	40	77	7	37	13	11	42
Pedestrians		15			29			24			50	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			3			2			5	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		240										
pX, platoon unblocked				0.84			0.84	0.84	0.84	0.84	0.84	
vC, conflicting volume	1492			1228			2118	2846	655	2270	2902	786
vC1, stage 1 conf vol							1268	1268		1558	1558	
vC2, stage 2 conf vol							850	1578		712	1344	
vCu, unblocked vol	1492			902			1956	2818	224	2136	2884	786
tC, single (s)	4.1			4.3			7.5	6.8	7.1	7.7	6.5	7.0
tC, 2 stage (s)							6.5	5.8		6.7	5.5	
tF (s)	2.2			2.3			3.5	4.2	3.4	3.6	4.0	3.3
p0 queue free %	86			93			41	89	94	86	90	86
cM capacity (veh/h)	424			583			131	65	605	92	111	308

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1	SB 2
Volume Total	58	702	502	43	935	507	77	44	13	53
Volume Left	58	0	0	43	0	0	77	0	13	0
Volume Right	0	0	151	0	0	40	0	37	0	42
cSH	424	1700	1700	583	1700	1700	131	260	92	225
Volume to Capacity	0.14	0.41	0.30	0.07	0.55	0.30	0.59	0.17	0.14	0.24
Queue Length 95th (m)	3.6	0.0	0.0	1.8	0.0	0.0	22.7	4.5	3.6	6.8
Control Delay (s)	14.8	0.0	0.0	11.7	0.0	0.0	66.2	21.7	50.4	25.9
Lane LOS	B			B			F	C	F	D
Approach Delay (s)	0.7			0.3			50.0		30.7	
Approach LOS							E		D	

Intersection Summary				
Average Delay	3.2			
Intersection Capacity Utilization	62.6%	ICU Level of Service	B	
Analysis Period (min)	15			

BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Appendix H

Signal Warrant Analysis

Input Sheet

Main Road	Dundas Street
Minor Road	Jaguar Valley Drive / Site Driveway
Direction of Main Road	East / West
Date:	Background 2028
No. of Lanes on Main	2 or more
T-Intersection	No
Operating Environment	Urban
Scenario	Forecasted Traffic Volumes (Existing Intersection)

Analysis Sheet

Justification 1: Minimum Vehicle Volumes

Justification	Guidance Approach Lanes				Total	Section Percent
	1 Lanes		2 or More Lanes			
Flow Condition	FREE FLOW	RESTR. FLOW	FREE FLOW	RESTR. FLOW		
1A (All Approach Lanes)	480	720	600	900		
				x		
	COMPLIANCE %				1,132	126%
1B (Minor Street Both Approaches)	120	170	120	170		
				x		
	COMPLIANCE %				36	21%
Signal Justification 1:						

Justification 2: Delay to Cross Traffic

Justification	Guidance Approach Lanes				Total	Section Percent
	1 lanes		2 or More lanes			
Flow Condition	FREE FLOW	RESTR. FLOW	FREE FLOW	RESTR. FLOW		
2A (Major Street Both Approaches)	480	720	600	900		
				x		
	COMPLIANCE %				1,096	122%
2B (Traffic Crossing Major Street)	50	75	50	75		
				x		
	COMPLIANCE %				10	13%
Signal Justification 2:						

Justification 3: Combination (Justification 1 and 2)

Justification Satisfied 80% or More	
Justification 1	Minimun Vehicular Volume
Justification 2	Delay Cross Traffic

Results Sheet

Justification		Compliance	Minimum Target	Signal Justified? YES	Signal Justified? NO
1. Minimum Vehicular Volume	A. Total Volume	126%	120%		NO
	B. Crossing Volume	21%			
2. Delay to Cross Traffic	A. Main Road	122%	120%		NO
	B. Crossing Road	13%			
3. Combination	A. Justificaton 1	21%	120%		NO
	B. Justification 2	13%			

BURNSIDE
[THE DIFFERENCE IS OUR PEOPLE]

Input Sheet

Main Road	Dundas Street
Minor Road	Jaguar Valley Drive / Site Driveway
Direction of Main Road	East / West
Date:	Total 2028
No. of Lanes on Main	2 or more
T-Intersection	No
Operating Environment	Urban
Scenario	Forecasted Traffic Volumes (Existing Intersection)

Analysis Sheet

Justification 1: Minimum Vehicle Volumes

Justification	Guidance Approach Lanes				Total	Section Percent
	1 Lanes		2 or More Lanes			
Flow Condition	FREE FLOW	RESTR. FLOW	FREE FLOW	RESTR. FLOW		
1A (All Approach Lanes)	480	720	600	900		
				x		
	COMPLIANCE %				1,233	137%
1B (Minor Street Both Approaches)	120	170	120	170		
				x		
	COMPLIANCE %				85	50%
Signal Justification 1:						

Justification 2: Delay to Cross Traffic

Justification	Guidance Approach Lanes				Total	Section Percent
	1 lanes		2 or More lanes			
Flow Condition	FREE FLOW	RESTR. FLOW	FREE FLOW	RESTR. FLOW		
2A (Major Street Both Approaches)	480	720	600	900		
				x		
	COMPLIANCE %				1,149	128%
2B (Traffic Crossing Major Street)	50	75	50	75		
				x		
	COMPLIANCE %				49	65%
Signal Justification 2:						

Justification 3: Combination (Justification 1 and 2)

Justification Satisfied 80% or More	
Justification 1	Minimun Vehicular Volume
Justification 2	Delay Cross Traffic

Results Sheet

Justification		Compliance	Minimum Target	Signal Justified?	
				YES	NO
1. Minimum Vehicular Volume	A. Total Volume	137%	120%		NO
	B. Crossing Volume	50%			
2. Delay to Cross Traffic	A. Main Road	128%	120%		NO
	B. Crossing Road	65%			
3. Combination	A. Justificaton 1	50%	120%		NO
	B. Justification 2	65%			

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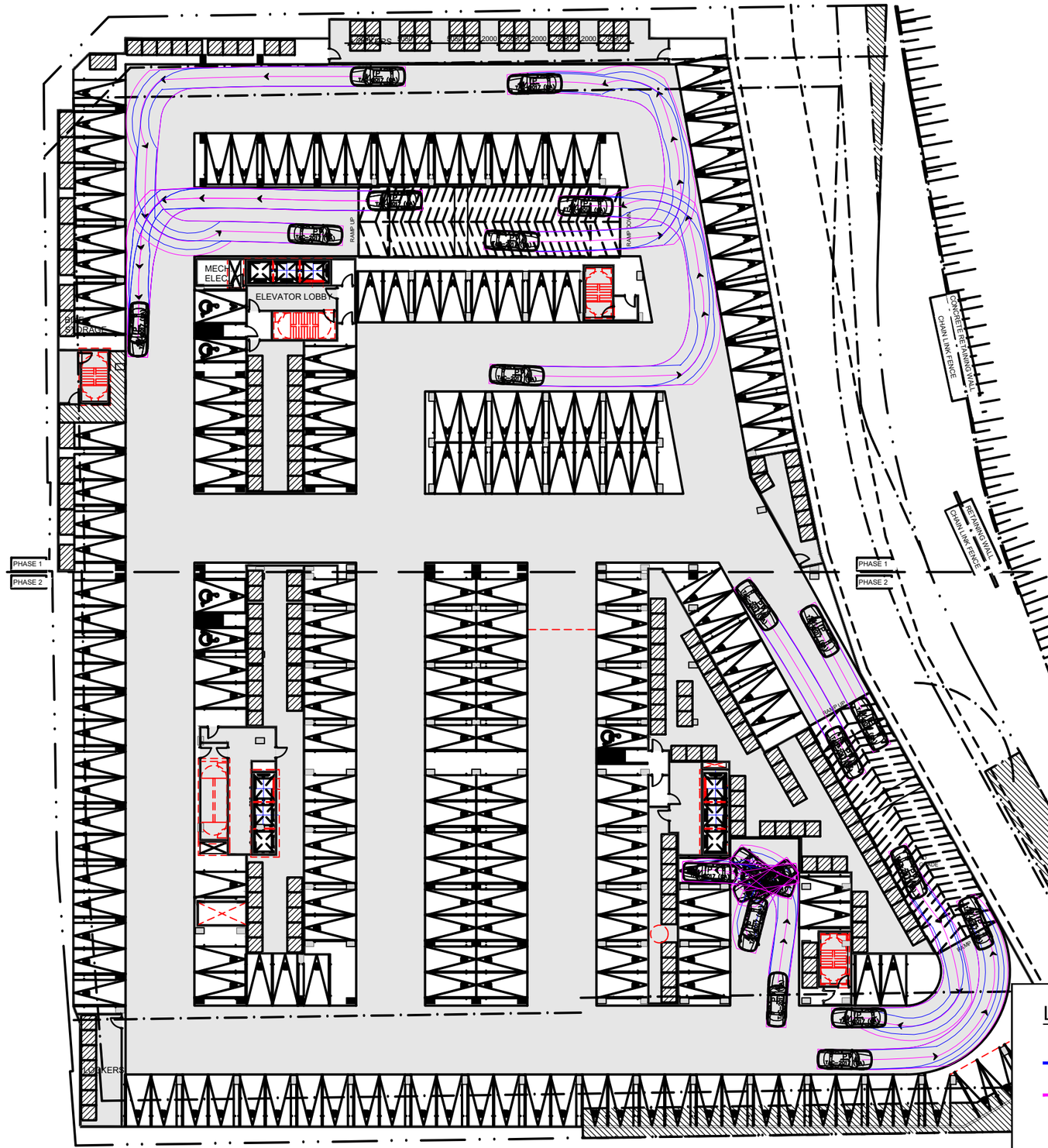
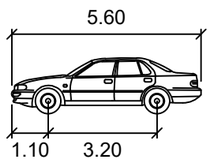
Appendix I

Swept Path Analysis



N



P

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

LEGEND

VEHICLE TIRE PATH

VEHICLE BODY PATH

BURNSIDE

60 DUNDAS ST. E

MISSISSAUGA, ON

SWEPT PATH ANALYSIS - UNDGRD
P2-5 PASSENGER VEHICLE

R.J Burnside & Associates Limited
CC / DWA
Jan. 19, 2022 N.T.S

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Appendix J

Draft Zoning By-law Excerpts

3.2.1.3 Bicycle Parking Space Dimensions

3.2.1.3.1 A **bicycle parking space** must have a minimum length of 1.8 metres, a minimum width of 0.6 metres and a minimum vertical clearance from the ground of 1.9 metres.

3.2.1.3.2 A **bicycle parking space** placed in a vertical position on a wall, structure or mechanical device must have a minimum length or vertical clearance of 1.9 metres, minimum width of 0.6 metres and minimum horizontal clearance from the wall of 1.2 metres.

3.2.1.3.3 A **stacked bicycle parking space** must have a minimum vertical clearance of 1.2 metres for each space and the minimum clearance from the floor shall be 2.4 metres.

3.2.1.4 Aisles

3.2.1.4.1 The minimum aisle width shall be 1.5 metres.

3.2.2 Required Number of Bicycle Parking Spaces

3.2.2.1 Required Number of Bicycle Parking Spaces for Residential Uses in CC1, CC2, CC3, CC4 and CCO Zones

Off-street **bicycle parking spaces** for residential **uses** CC1, CC2, CC3, CC4 and CCO Zones shall be provided in accordance with Table 3.2.2.1 – Required Number of Parking Spaces for Residential Uses in CC1, CC2, CC3, CC4 and CCO Zones.

Table 3.2.2.1 – Required Number of Bicycle Parking Spaces for Residential Uses in CC1, CC2, CC3, CC4 and CCO Zones

Column	A	B	C
Line	**TYPE OF USE**	**Class A Bicycle Parking**	**Class B Bicycle Parking**
1.0	**Apartment** and **Stacked Townhouse** without exclusive garages	0.80 space per unit	0.10 space per unit with a minimum of 6 spaces
2.0	**Long-Term Care Building**	0.30 space per 100 m^2 per **GFA - residential**	0.30 space per 100 m^2 per **GFA – residential**
3.0	**Retirement Building**	0.40 space per unit	0.05 space per unit with a minimum of 6 spaces

3.2.2.2 Required Number of Bicycle Parking Spaces for Residential Uses not in CC1, CC2, CC3, CC4 and CCO Zones

Off-street **bicycle parking spaces** for residential **uses** not in CC1, CC2, CC3, CC4 and CCO Zones shall be provided in accordance with Table 3.2.2.2 – Required Number of Parking Spaces for Residential Uses.

Table 3.2.2.2 – Required Number of Bicycle Parking Spaces for Residential Uses Not in CC1, CC2, CC3, CC4 and CCO Zones

Column	A	B	C
Line	**TYPE OF USE**	**Class A Bicycle Parking**	**Class B Bicycle Parking**
1.0	**Apartment** and **Stacked Townhouse** without exclusive garages	0.60 space per unit	0.05 space per unit with a minimum of 6 spaces
2.0	**Long-Term Care Building**	0.20 space per 100 m^2 per **GFA - residential**	0.20 space per 100 m^2 per **GFA – residential**
3.0	**Retirement Building**	0.30 space per unit	0.03 space per unit with a minimum of 6 spaces

3.2.2.3 Required Number of Bicycle Parking Spaces for Non-Residential Uses in CC1, CC2, CC3, CC4 and CCO Zones

Off-street **bicycle parking spaces** for non-residential **uses** in CC1, CC2, CC3, CC4 and CCO Zones shall be provided in accordance with Table 3.2.2.3 – Required Number of Parking Spaces for Residential Uses in CC1, CC2, CC3, CC4 and CCO Zones.

Table 3.2.2.3 – Required Number of Bicycle Parking Spaces for Non-Residential Uses in CC1, CC2, CC3, CC4 and CCO Zones

8.0	Contractor's Yard**, Essential Emergency Service, Power Generating Facility,** Self Storage Facility**,** Utilities (**Electric Transformer and Distribution Facility**, **Sewage Treatment Plant**, **Utility Building, Water Treatment Facility)** and **Waste Transfer Station**		2.00 spaces
9.0	All other non-residential uses	0.05 spaces per 100 m^2 **GFA – non-residential**	0.10 spaces per 100 m^2 **GFA – non-residential**

3.2.2.5 Waived Bicycle Parking

3.2.2.5.1 Notwithstanding Articles 3.2.2.1 and 3.2.2.2, zero **bicycle parking spaces** are required for residential uses with less than 20 units.

3.2.2.5.2 Notwithstanding Articles 3.2.2.3 and 3.2.2.4 , zero **bicycle parking spaces** are required for non-residential uses with less than 1000 m^2 of **GFA – non-residential**.

3.2.2.6 End-of-Trip Facilities

Buildings with uses, other that **dwelling units**, for which a Class A **bicycle parking space** is required, the number of toilets, sinks and shower facilities shall be provided in accordance with Table 3.2.2.6 – End-of-Trip Facilities.

Table 3.2.2.6 – End of Trip Facilities

Column	**A**	**B**	**C**	**D**
Line	**CLASS A BICYCLE SPACES**	**Toilets**	**Showers**	**Sinks**
1.0	0 to 3	0	0	0
2.0	4 to 29	1	1	1
3.0	30 to 64	2	2	1
4.0	65 to 94	3	3	2
5.0	95 to 129	4	4	2
6.0	130 to 159	5	5	3
Charlie4 7.0	160 to 194	6	6	3
8.0	Over 194	6 +1 / additional 30 spaces	6 + 1 / additional 30 spaces	3 +1 / additional 30 spaces

Table 3.1.2.1 - Minimum Required Number of Parking Spaces for Residential Uses

(note to reviewers: only categories in red underline have revised parking requirements; existing parking requirement in black font will remain across all precincts**)**

Column	A	B	C	D	E	F
Line 1.0	**TYPE OF USE**	~~**MINIMUM OFF-STREET PARKING REGULATION**~~ **UNIT**	**PRECINCT 1**	**PRECINCT 2**	**PRECINCT 3**	**PRECINCT 4**
2.0	Condominium **Apartment** *(0207-2008), (0174-2017), (0179-2018),*	~~1.00 resident space per studio unit~~ ~~1.25 resident spaces per one-bedroom unit~~ ~~1.40 resident spaces per two-bedroom unit~~ ~~1.75 resident spaces per three-bedroom unit~~ resident spaces per unit ~~0.20~~ visitor spaces per unit	0.8 0.15	0.9 0.15	1.0 0.20	1.1 0.20
3.0	Rental **Apartment** *(0207-2008), (0174-2017), (0179-2018),*	~~1.00 resident space per studio unit~~ ~~1.18 resident spaces per one-bedroom unit~~ ~~1.36 resident spaces per two-bedroom unit~~ ~~1.50 resident spaces per three-bedroom unit~~ resident spaces per unit ~~0.20~~ visitor spaces per unit	0.8 0.15	0.8 0.15	0.9 0.15	1.0 0.15
~~**4.0**~~	~~**Apartment** (within CC1 to CC4 zones) *(0207-2008), (0174-2017)*~~	~~1.0 resident space per unit~~ ~~0.15 visitor spaces per unit (1)~~ ~~For the visitor component, a shared parking arrangement may be used for the calculation of required visitor/non-residential parking in accordance with the following:~~ ~~the greater of~~ ~~0.15 visitor spaces per unit (1)(2)~~ ~~or~~ ~~Parking required for all non-residential **uses**, located in the same **building** or on the same **lot** as the residential **use**, except **banquet hall/conference centre/convention centre**, **entertainment establishment**, **overnight accommodation**, **place of religious assembly**, **recreational establishment** and **restaurant**.~~ ~~(1) (2)~~ ~~Parking for **banquet hall/conference centre/convention centre**, **entertainment establishment**, **overnight accommodation**, **place of religious assembly**, **recreational establishment** and **restaurant** shall not be included in the above shared parking arrangement and shall be provided in accordance with applicable regulations contained in Table 3.1.2.2 of this By-law.~~				
5.0	**Detached Dwelling**, **Linked Dwelling**, **Semi-Detached**, **Street Townhouse** *(0297-2013), (0174-2017), (0181-2018/ LPAT Order 2019 February 15)*	~~2.0~~ spaces per unit	2.0	2.0	2.0	2.0

Column		B	C	D	E	F
Line 1.0	**TYPE OF USE**	~~**MINIMUM OFF-STREET PARKING REGULATION**~~ **UNIT**	**PRECINCT 1**	**PRECINCT 2**	**PRECINCT 3**	**PRECINCT 4**
40.1	Retail Centre (Less than or equal to 2 000 m² **GFA - non-residential**) *(0325-2008), (0379-2009)*	~~4.3~~ spaces per 100 m² **GFA - non-residential** Parking for **restaurant** and **convenience restaurant** over 220 m² **GFA - non-residential**, **place of religious assembly**, **funeral establishment**, **overnight accommodation**, **banquet hall/conference centre/convention centre** and **entertainment establishment uses** will be provided in accordance with the applicable regulations contained in Table 3.1.2.2 of this By-law	3	3	3.5	4.3
40.2	Retail Centre (Greater than 2 000 m² **GFA - non-residential**) *(0379-2009)*	~~5.4~~ spaces per 100 m² **GFA - non-residential**	3.8	3.8	4.5	5.4
~~40.3~~	~~CC1 - Retail Core Commercial (lands bounded by City Centre Drive, Duke of York Boulevard and Rathburn Road West)~~	~~4.57 spaces per 100 m² **GFA - non-residential**~~				
41.0	~~Retail~~ **Retail Store~~:~~**	spaces per 100 m² **GFA - non-residential**	3	3	4	5
~~41.1~~	~~**Retail Store**~~	~~5.4 spaces per 100 m² **GFA - non-residential**~~				
~~41.2~~	~~**Retail Store** (in a C4 zone)~~	~~4.0 spaces per 100 m² **GFA - non-residential**~~				
~~41.3~~	~~**Retail Store** (in a CC2 to CC4 zones) *(0207-2008)*~~	~~4.3 spaces per 100 m² **GFA - non-residential**~~				
42.0	**Restaurants**:					
42.1	**Convenience Restaurant** *(0212-2015)*	~~16.0~~ spaces per 100 m² **GFA - non-residential** Up to 220 m² **GFA - non-residential** Over 220 m² **GFA - non-residential** plus a **stacking lane** (2)	3 6	3 6	4 9	5 9
42.2	**Restaurant** *(0212-2015)*	~~16.0~~ spaces per 100 m² **GFA - non-residential** Up to 220 m² **GFA - non-residential** Over 220 m² **GFA - non-residential**	3 6	3 6	4 9	5 9
42.3	**Take-out Restaurant** *(0212-2015)*	~~6.0~~ spaces per 100 m² **GFA - non-residential**	3	3	4	5

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Appendix K

Zoning By-law Excerpts

For the purposes of calculating required parking for a non-residential **use**, **gross floor area**, as defined by this By-law, may be used instead of **gross floor area - non-residential** as contained in Table 3.1.2.2 of this By-law and the following deductions to the total **gross floor area** calculated shall apply: 2% for **manufacturing facility** and **warehouse/distribution facility**, **wholesaling facility**, 10% for **office** and **medical office uses** and 5% for all other non-residential **uses**.

3.1.1.10 Retail Centre

3.1.1.10.1

A retail centre shall include permitted Retail, Service, Office, Hospitality or Entertainment/Recreation **uses** identified in Table 6.2.1 of this By-law, occupying three or more separated units on one property in a C1, C2, C3 and CC1 zone, where the **gross floor area - non-residential** is primarily used for permitted **uses** that require a parking regulation of 5.4 spaces per 100 m² **GFA - non-residential** or less, as identified in Part 3 of this By-law. (0379-2009), (0212-2015)

3.1.1.10.2

For the calculation of required parking for a retail centre, in addition to any deductions permitted by the definition of **gross floor area - non-residential**, an **enclosed pedestrian mall**, a **food court**, and any corridor not open to the public and used by more than one tenant of the **building** may be deducted from the total **gross floor area - non-residential** prior to calculating required parking. (0379-2009), (0174-2017)

3.1.1.11 Parking for Additional Uses in a Public or Private School

3.1.1.11.1 Parking for a Place of Religious Assembly

Where any part of a **public school** or **private school** is used as a place of public worship or for the conduct of religious activities on a weekly or other frequent and regular basis in compliance with the provisions of this By-law, and such public worship or religious activity is not part of the school curriculum or is attended by persons not enrolled or employed in the school, the portion of the **public school** or **private school** used for public worship or religious activity shall be deemed to be a **place of religious assembly** for the purpose of calculating required parking. When parking for multiple **uses** is calculated, the parking regulation will not be cumulative, but the higher parking regulation will apply.

3.1.1.11.2 Parking for any other Permitted Non-Residential Use

Where any part of a **public school** or **private school** is shared with any other permitted non-residential land **use**, the portion of the **public school** or **private school** used for the said **use** shall provide the required parking in accordance with the minimum parking regulations of the respective **uses**. When parking for multiple **uses** is calculated, the parking regulation will not be cumulative, but the higher parking regulation will apply. (0325-2008)

3.1.2 Required Number of Parking Spaces

3.1.2.1 Required Number of Parking Spaces for Residential Uses

Off-street **parking spaces** for residential **uses** shall be provided in accordance with Table 3.1.2.1 - Required Number of Parking Spaces for Residential Uses.

Table 3.1.2.1 - Required Number of Parking Spaces for Residential Uses

ColumnA		B
Line 1.0	**TYPE OF USE**	**MINIMUM OFF-STREET PARKING REGULATIONS**
2.0	Condominium **Apartment** (0207-2008), (0174-2017), (0179-2018)	1.00 resident space per studio unit 1.25 resident spaces per one-bedroom unit 1.40 resident spaces per two-bedroom unit 1.75 resident spaces per three-bedroom unit 0.20 visitor spaces per unit
3.0	Rental **Apartment** (0207-2008), (0174-2017), (0179-2018)	1.00 resident space per studio unit 1.18 resident spaces per one-bedroom unit 1.36 resident spaces per two-bedroom unit 1.50 resident spaces per three-bedroom unit 0.20 visitor spaces per unit
4.0	**Apartment** (within CC1 to CC4 zones) (0207-2008), (0174-2017)	1.0 resident space per unit 0.15 visitor spaces per unit (1) For the visitor component, a shared parking arrangement may be used for the calculation of required visitor/non-residential parking in accordance with the following: the greater of 0.15 visitor spaces per unit (1)(2) or Parking required for all non-residential **uses**, located in the same **building** or on the same **lot** as the residential **use**, except **banquet hall/conference centre/convention centre**, **entertainment establishment**, **overnight accommodation**, **place of religious assembly**, **recreational establishment** and **restaurant**. (1) (2) Parking for **banquet hall/conference centre/convention centre**, **entertainment establishment**, **overnight accommodation**, **place of religious assembly**, **recreational establishment** and **restaurant** shall not be included in the above shared parking arrangement and shall be provided in accordance with applicable regulations contained in Table 3.1.2.2 of this By-law.
5.0	**Detached Dwelling**, **Linked Dwelling**, **Semi-Detached**, **Street Townhouse** (0297-2013), (0174-2017), (0181-2018/ LPAT Order 2019 February 15)	2.0 spaces per unit
6.0	Condominium **Detached Dwelling**, Condominium **Semi-Detached**, Condominium **Townhouse**, **Detached Dwelling** on a **CEC - Road**, **Semi-Detached** on a **CEC - Road**, **Townhouse** on a **CEC - Road** (0174-2017), (0181-2018/LPAT Order 2019 February 15)	2.0 resident spaces per unit 0.25 visitor spaces per unit

Table 3.1.2.2 continued from previous page		
31.0	**Office**:	
31.1	**Office** [6] (0308-2011)	3.2 spaces per 100 m² **GFA - non-residential** Where the non-**office uses**, including **medical office** and real estate **office**, are greater than 10% of the total **GFA - non-residential** of the **building**, separate parking will be required for all of such **uses** in accordance with the regulations contained in Table 3.1.2.2 of this By-law
31.2	**Medical Office**	6.5 spaces per 100 m² **GFA - non-residential**
31.3	**Medical Office - Restricted**	6.5 spaces per 100 m² **GFA - non-residential**
31.4	Real Estate **Office**	6.5 spaces per 100 m² **GFA - non-residential**
32.0	**Overnight Accommodation** (0379-2009)	0.8 space per guest room;plus10.0 spaces per 100 m² **GFA - non-residential** used for public **use** areas including meeting rooms, conference rooms, recreational facilities, dining and lounge areas and other commercial facilities, but excluding bedrooms, kitchens, laundry rooms, washrooms, lobbies, hallways, elevators, stairways and recreational facilities directly related to the function of the **overnight accommodation**
33.0	**Personal Service Establishment:**	
33.1	**Personal Service Establishment**	5.4 spaces per 100 m² **GFA - non-residential**
33.2	**Personal Service Establishment** (in C4 zone)	4.0 spaces per 100 m² **GFA - non-residential**
33.3	**Personal Service Establishment** (in CC2 to CC4 zones) (0207-2008)	4.3 spaces per 100 m² **GFA - non-residential**
34.0	**Pilot Plant, Prototype Production Facility** (0325-2008)	1.6 spaces per 100 m² **GFA - non-residential** up to2 325 m² **GFA - non-residential**; and1.1 spaces per 100 m² **GFA - non-residential** between 2 325 m² and 9 300 m² **GFA - non-residential**; and0.6 spaces per 100 m² **GFA - non-residential** over9 300 m² **GFA - non-residential**
35.0	**Place of Religious Assembly**	1.0 space per 4.5 seats for permanent fixed seating [1];plus27.1 spaces for any non-fixed moveable seating per 100 m² **GFA - non-residential**, all in the **worship area**or27.1 spaces for all non-fixed moveable seating per 100 m² **GFA - non-residential**, in the **worship area**or10.0 spaces per 100 m² **GFA - non-residential**,whichever is greaterWhere the **worship area** of a **place of religious assembly** includes permanent fixed seating or non-fixed moveable seating for clergy, leaders, choirs, or musicians, such seating or area shall be included in the calculation of seating for the purpose of calculating required parking.Where a community/multi use hall is equal to or less than the **gross floor area** of the **worship area**, no additional parking shall be required for that **use**.
36.0	**Power Generating Facility**	1.0 space per staff on duty with a minimum of 2.0 spaces
37.0	**Private Club**	4.5 spaces per 100 m² **GFA - non-residential**
38.0	**Recreational Establishment**	4.5 spaces per 100 m² **GFA - non-residential**, except for an arena
39.0	Repair:	
39.1	**Repair Establishment**	5.4 spaces per 100 m² **GFA - non-residential**
39.2	**Repair Establishment** (in a C4 zone)	4.0 spaces per 100 m² **GFA - non-residential**
40.0	Retail Centre:	
40.1	Retail Centre(Less than or equal to 2 000 m² **GFA - non-residential**) (0325-2008), (0379-2009)	4.3 spaces per 100 m² **GFA - non-residential** Parking for **restaurant**, **convenience restaurant**, **place of religious assembly**, **funeral establishment**, **overnight accommodation**, **banquet hall/conference centre/convention centre** and **entertainment establishment uses** will be provided in accordance with the applicable regulations contained in Table 3.1.2.2 of this By-law
40.2	Retail Centre(Greater than 2 000 m² **GFA - non-residential**) (0379-2009)	5.4 spaces per 100 m² **GFA - non-residential**
40.3	CC1 - Retail Core Commercial (lands bounded by City Centre Drive, Duke of York Boulevard and Rathburn Road West)	4.57 spaces per 100 m² **GFA - non-residential**
41.0	Retail:	
41.1	**Retail Store**	5.4 spaces per 100 m² **GFA - non-residential**
41.2	**Retail Store** (in a C4 zone)	4.0 spaces per 100 m² **GFA - non-residential**
41.3	**Retail Store** (in a CC2 to CC4 zones) (0207-2008)	4.3 spaces per 100 m² **GFA - non-residential**
42.0	**Restaurants**:	
42.1	**Convenience Restaurant** (0212-2015)	16.0 spaces per 100 m² **GFA - non-residential**plus a **stacking lane** [2]

(1)Non-office **uses** in an **office** or **medical office building** or group of **buildings** on the same **lot**;
(2)**Office** or **medical office** space in a **building** or group of **buildings** on the same **lot** primarily occupied by retail **uses**;
(3)A **building** or group of **buildings** on the same **lot** containing a mix of **office** or **medical office**, commercial **uses** and **dwelling units**;
(4)Non-residential **uses** in an **apartment**. (0174-2017)
Shared parking is to be calculated in compliance with Table 3.1.2.3 - Mixed Use Development Shared Parking Formula. All required **parking spaces** must be accessible to all users participating in the shared parking arrangement and may not be reserved for specific users.
The initial step in determining required parking for a mixed use development is to calculate the parking requirement for each **use** in the development as if these **uses** were free-standing **buildings**. The parking requirement for each **use** is then multiplied by the percent of the peak period for each time period (i.e. noon), contained in Table 3.1.2.3 - Mixed Use Development Shared Parking Formula. Each column is totalled for weekday and weekend. The highest figure obtained from all time periods shall become the required parking for the mixed use development.

Table 3.1.2.3 - Mixed Use Development Shared Parking Formula

ColumnA		B	C	D	E
Line 1.0	**TYPE OF USE**	**PERCENTAGE OF PEAK PERIOD (WEEKDAY)**			
		Morning	**Noon**	**Afternoon**	**Evening**
1.1	**Office/Medical Office/Financial Institution**	100	90	95	10
1.2	Retail Centre**/Retail Store/Personal Service Establishment** (0379-2009)	80	90	90	90
1.3	**Restaurant/ Convenience Restaurant/ Take-out Restaurant**	20	100	30	100
1.4	**Overnight Accommodation**	70	70	70	100
1.5	Residential - Resident (1) Residential - Visitor	90 20	65 20	90 60	100 100
2.0	**TYPE OF USE**	**PERCENTAGE OF PEAK PERIOD (SATURDAY)**			
		Morning	**Noon**	**Afternoon**	**Evening**
2.1	**Office/Medical Office/Financial Institution**	10	10	10	10
2.2	Retail Centre**/Retail Store/Personal Service Establishment** (0379-2009)	80	100	100	70
2.3	**Restaurant/ Convenience Restaurant/ Take-out Restaurant**	20	100	50	100
2.4	**Overnight Accommodation**	70	70	70	100
2.5	Residential - Resident (1) Residential - Visitor	90 20	65 20	90 60	100 100

NOTE:(1)Excludes resident **physicians**, **dentists**, **drugless practitioners**, **health professionals**, **retirement buildings** and **long-term care buildings**. (0174-2017)

3.1.3 Accessible Parking Spaces

3.1.3.1 Required Number of Accessible Parking Spaces

3.1.3.1A**Accessible parking spaces** for non-residential **uses** shall be provided in compliance with Table 3.1.3.1 - Accessible Parking Regulations. (0144-2016)
3.1.3.1B**Accessible parking spaces** for residential **uses** shall only apply to the total number of visitor **parking spaces** required and shall be provided in compliance with Table 3.1.3.1 - Accessible Parking Regulations. (0144-2016)

Table 3.1.3.1 - Accessible Parking Regulations
(0190-2014), (0144-2016)

ColumnA		B	C
Line 1.0	**TOTAL NUMBER OF REQUIRED NON-RESIDENTIAL PARKING SPACES**	**TOTAL NUMBER OF REQUIRED VISITOR PARKING SPACES**	**MINIMUM NUMBER OF REQUIRED ACCESSIBLE PARKING SPACES (3)**
2.0	1-12	1-12	1.0 space (1)
3.0	13-100	13-100	4% of the total (1)(2)
4.0	101-200	101-200	1.0 space plus 3% of the total (2)
5.0	201-1 000	201-1 000	2.0 spaces plus 2% of the total (2)
6.0	1 001 and greater	1 001 and greater	11.0 spaces plus 1% of the total (2)

NOTES:(1)Where only 1 **accessible parking space** is required, a Type A **accessible parking space** shall be provided.
(2)Where more than 1 **accessible parking space** is required:
(2.1)if an even number of **accessible parking spaces** are required, an equal number of Type A and Type B **accessible parking spaces** must be provided;
(2.2)if an odd number of **accessible parking spaces** are required, an equal number of Type A and Type B **accessible parking spaces** must be provided and the odd space may be a Type B **accessible parking space**.
(3)Where a shared parking arrangement is used for the calculation of required visitor/non-residential parking, the required **accessible parking space** requirement will be calculated on either the visitor component or non-residential component. (0144-2016)

3.1.3.2 Location of Accessible Parking Spaces

Accessible parking spaces shall be provided and maintained on the same **lot** in proximity to the main entrances to a **building** or **structure**.

3.1.3.3 C4 Zone Exception

R.J. Burnside & Associates Limited