221 STERLING ROAD HOLDINGS INC.

221-227 STERLING ROAD

TRANSPORTATION IMPACT STUDY

April 30, 2021







221-227 STERLING ROAD DEVELOPMENT TRANSPORTATION IMPACT STUDY

221 STERLING ROAD HOLDINGS INC.

PROJECT NO.: 20M-01299-00 T01 DATE: APRIL 30, 2021

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WSP Canada Inc.



April 30, 2021

221 STERLING ROAD HOLDINGS INC. Mr. Barry Stern Vice President - Development 50 Confederation Parkway, Concord, ON L4K 4T8

Subject: Transportation Impact Study – 221 – 227 Sterling Road

WSP Canada Inc. (WSP) is pleased to present the findings of our Transportation Impact Study (TIS) for the proposed development located at 221 – 227 Sterling Road in the City of Toronto.

Based on the enclosed study findings, it is expected that the proposed development can be readily accommodated by the study area transportation network. The proposed auto, bicycle and loading arrangements will also adequately serve the needs of the subject development.

We thank you for the opportunity to undertake this study. Please do not hesitate to contact us if you have any questions or comments.

Sincerely,

WSP Canada Inc.

Peter Yu, P.Eng., PMP Project Manager Transportation Planning and Advisory Services

WSP ref.: 20M-01299-00 T01

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WSP Canada Inc.

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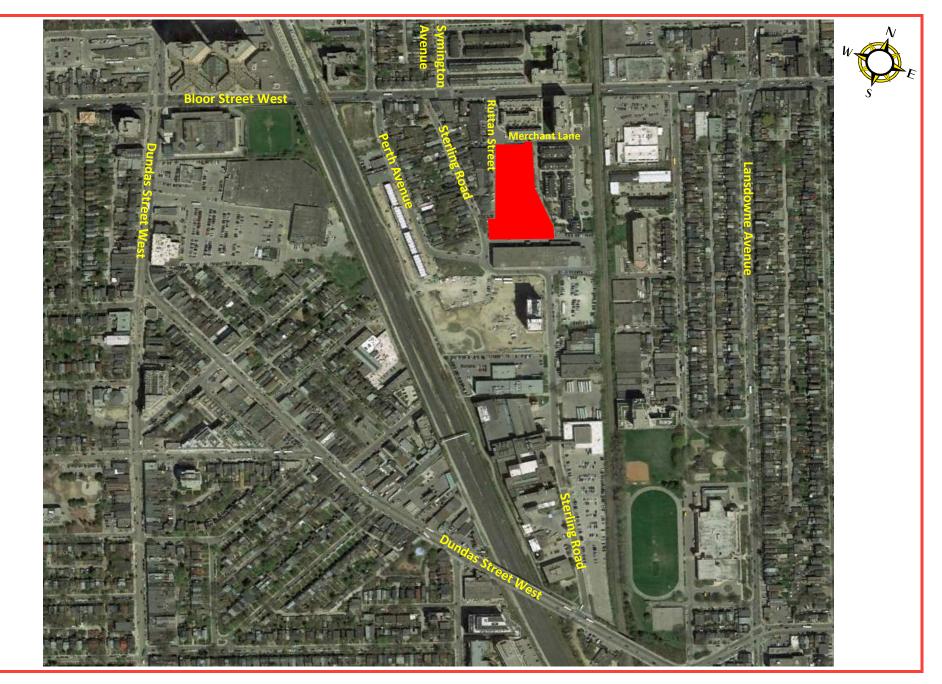
1 INTRODUCTION

WSP was retained by 221 Sterling Road Holdings Inc. to prepare a Transportation Impact Study (TIS) for the 221-227 Sterling Road Development in the City of Toronto. The site location and study area are shown in **Figure 1-1**.

The proposed development features 892 residential units. The site plan is shown in **Figure 1-2**. The proposed vehicular accesses are onto the proposed extension of Ruttan Street to Connect to Sterling Road. The extension of Ruttan Street will be discussed in greater detail in Sections 4 and 6.

The main objective of this study is to evaluate the traffic impacts of the redevelopment on the study area transportation network and to ensure the proposed parking and loading arrangements are adequate.

A Terms of Reference was sent to the City of Toronto transportation staff prior to commencing the TIS and is documented in **Appendix A**. Our study approach and findings are documented herein.



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Figure 1-1

Site Location

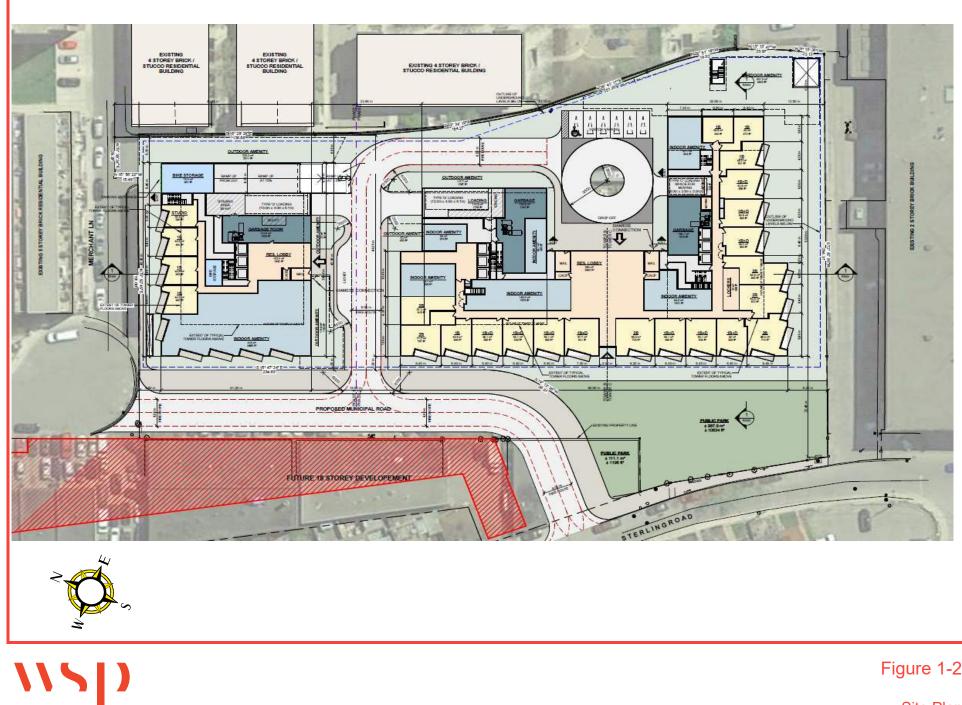


Figure 1-2

Site Plan

2 EXISTING CONDITIONS

This section of our assessment describes the existing road network and traffic conditions within the study area. Currently, Bloor Street West is undergoing construction for the Bloor Bikeway Extension project (herein referred to as the Bloor Bikeway project), reducing the cross-section from four lanes to two lanes as a result of the implementation of cycling facilities along the corridor. For the purpose of this assessment, two existing conditions scenarios were assessed.

The first scenario comprises of assessing turning movement counts collected along Bloor Street West prior to the implementation of the Bloor Bikeway Extension, which began in 2020. These traffic counts range from 2017 to 2018.

The second scenario involves assessing the study intersections along Bloor Street West after the implementation of the Bloor Bikeway project. By way of background, WSP was retained by the City of Toronto staff in 2020 to conduct the post-Bloor Bikeway project traffic assessment and forecast. Therefore, for consistency, the forecast turning movement counts developed by WSP for study intersections along Bloor Street have been adopted as the basis of this scenario. This post-Bloor Bikeway project scenario is the primary focus of the study and will be the basis of the future background and future total evaluations since the implementation of the active transportation improvement is already underway. An image of the latest configuration along Bloor Street West in the vicinity of the subject development at Bloor Street West and Ruttan Street is shown below (looking west along Bloor Street W).



2.1 BOUNDARY ROADWAYS

The following roadways make up the boundary road network that surrounds the subject site:

Bloor Street West, which is located north of the site, is an east-west arterial road with a posted speed limit of 40 km/h. Prior to the implementation of the bikeway, Bloor has a four-lane cross-section, with two lanes in each direction. On-street parking is prohibited on both sides at all times.

After the implementation of the bikeway initiative by the City, Bloor Street will have a two-lane crosssection, with one lane in each direction. In the vicinity of the site, from 7 a.m. to 6 p.m., no eastbound left turn movements are permitted at the intersections with Dundas Street West and Lansdowne Avenue. Furthermore, no eastbound right turn and westbound left movements are permitted at the intersection with Lansdowne Avenue from 7 a.m. to 6 p.m. These movement restrictions are accounted for in the assessment of the future traffic conditions. **Dundas Street West**, which is located west of the site, is a north-south arterial road with a posted speed limit of 40 km/h. Dundas Street West has a four-lane cross-section, with two lanes in the south direction, and direction.

Lansdowne Avenue, which is located east of the site, is a north-south arterial road with a speed limit of 40 km/h. Lansdowne Avenue has a two-lane cross-section, with one lane in each direction.

Sterling Road / Symington Avenue, which directly borders the site to the west, is a local road that has a one-lane cross-section south of Bloor Street, as it is a one-way direction. North of Bloor Street West, Sterling Road becomes Symington Avenue, which does not align with the south leg. Symington Avenue has a two-lane cross-section, and a speed limit of 40 km/h, whereas Sterling Road has a posted speed limit of 30 km/h.

Perth Avenue, which is located east of the site, is a predominately north-south local road, with a two-lane cross-section and a speed limit of 30 km/h in the vicinity of the site.

Ruttan Street, which is located west of the site, is a north-south local road with a two-lane cross-section and terminates today as a cul-de-sac near Merchant Lane. As part of the redevelopment proposal, Ruttan Street is proposed to be extended south from the cul-de-sac to connect to Sterling Road. Details of this initiative are provided in Section 4.

Merchant Lane, which is located north of the site, is an east-west private driveway that serves the residential uses north-east of the subject site.

Based on the subject site location and magnitude of redevelopment, the following study intersections have been evaluated in this TIS:

- Sterling Road / Symington Avenue at Bloor Street West (signalized);
- Dundas Street West at Bloor Street West (signalized);
- Lansdowne Avenue at Bloor Street West (signalized);
- Dundas Street West at Sterling Road (signalized);
- Ruttan Street at Bloor Street West (unsignalized);
- Ruttan Street at Merchant Lane (unsignalized); and
- Sterling Road at Perth Avenue (unsignalized).

The existing lane configurations at the study intersections prior to the implementation of the Bloor Bikeway Extension are illustrated in **Figure 2-1**. The lane configurations after the implementation of the Bloor Bikeway project are illustrated in **Figure 2-2**. The Bloor Bikeway project reduces the number of vehicular travel lanes from 4 lanes along Bloor to 2 lanes (1 lane in each direction).

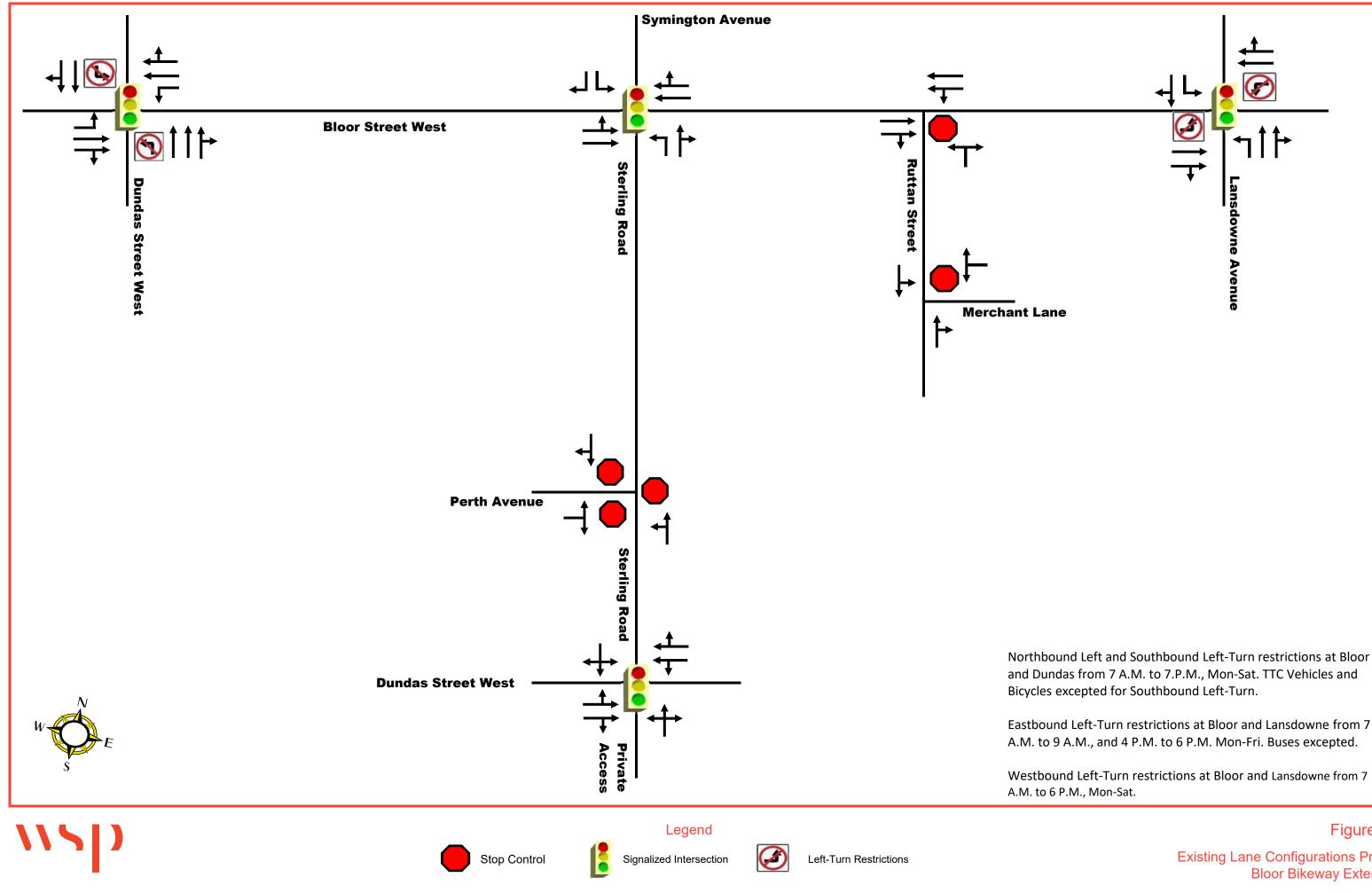
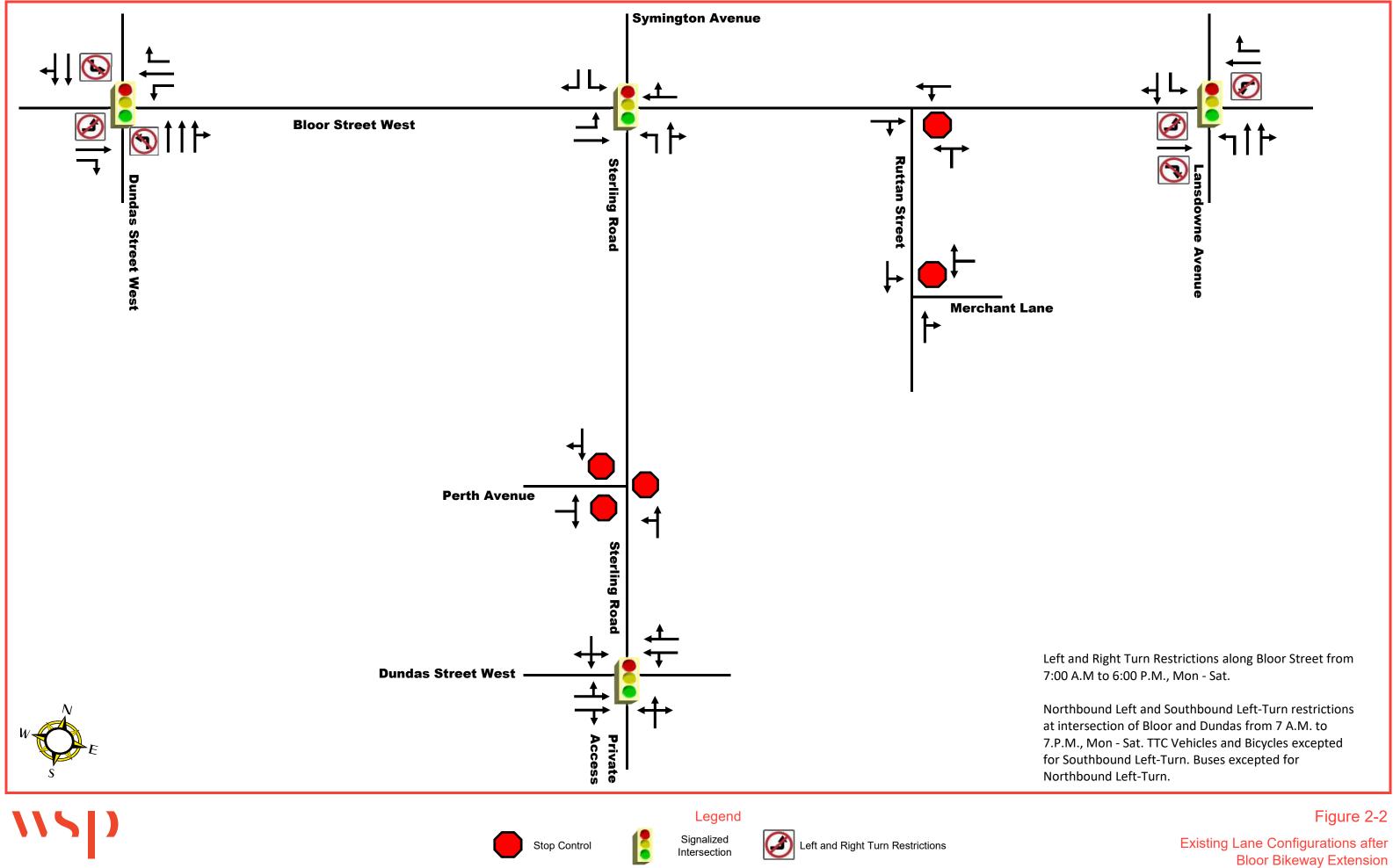


Figure 2-1

Existing Lane Configurations Prior to **Bloor Bikeway Extension**



Bloor Bikeway Extension

2.2 EXISTING TRANSIT SERVICES

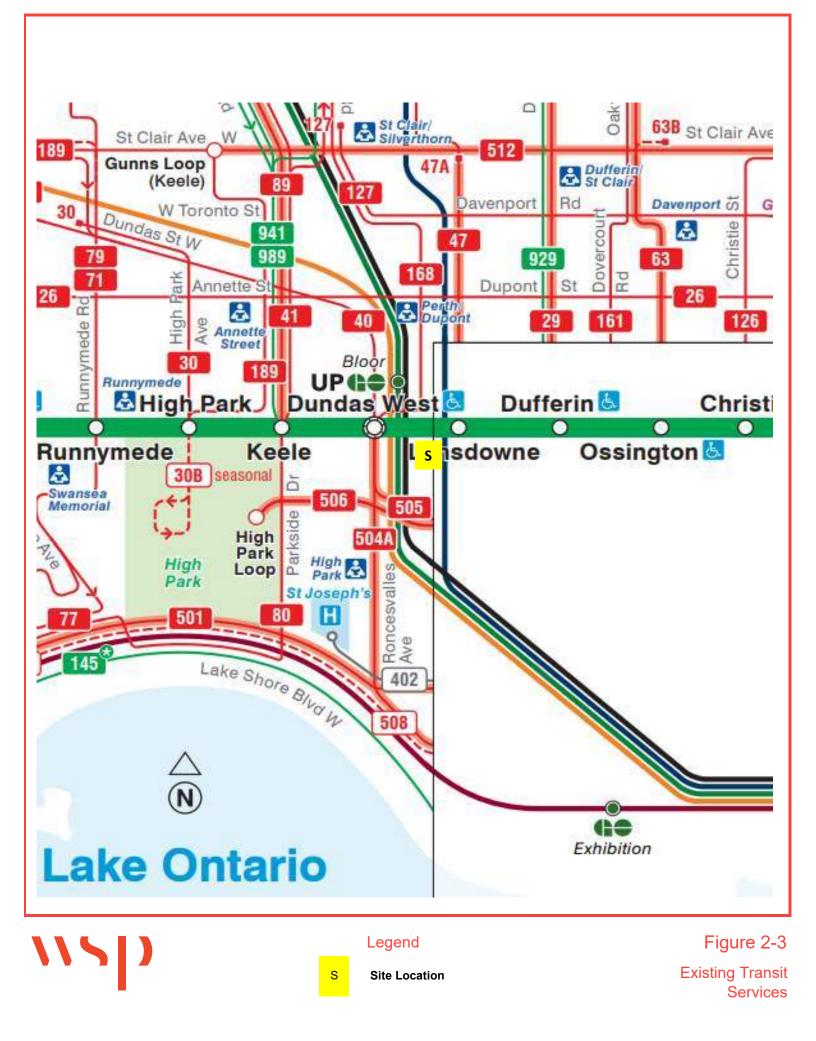
The site is situated in an area that is very well-served by the following Toronto Transit Commission (TTC) routes, resulting in a transit score of 99 out of 100. In addition, the site is within close proximity (350 m) to regional transit via the Bloor GO / UP Express Station.

- The 2 Bloor-Danforth subway route runs in a general east-west direction along Bloor Street West, Bloor Street East, and Danforth Avenue. It operates from the western area of Dundas Street West and Kipling Avenue, east to the area of Bloor Street and Yonge Street in downtown Toronto and continues east to the area of Eglinton Avenue East and Kennedy Road. Line 1 connects with Line 2 at Bloor-Yonge, St George and Spadina stations, and it connects with Line 3 at Kennedy Station. The subject site is located within 520m and 630m of the Lansdowne and Dundas West stations, respectively, which makes the site very accessible to higher-order transit.
- The 506 Carlton streetcar route operates between Main Street Station on the Bloor-Danforth Subway
 and High Park Loop, generally in an east-west direction. It also serves the College and Queen's Park
 Stations on the Yonge-University-Spadina Subway. Both Main Street and Queen's Park Stations are
 accessible subway stations. The route is part of the 10 Minute Network, and operates 10 minutes or
 better, all day, every day.
- The 504 King streetcar route operates between Dundas West Station and Broadview Station on Line 2 Bloor-Danforth, generally in an east-west direction. It also serves the St Andrew and King stations on Line 1 Yonge-University. Dundas West, St. Andrew, and Broadview stations are accessible. Two services, 504A and 504B branches operates at all times, seven days a week.
- The 505 Dundas streetcar route operates between Dundas West Station and Broadview Station on the Bloor-Danforth Subway, generally in an east-west direction. It also serves the St. Patrick and Dundas Stations on the Yonge-University-Spadina Subway. Dundas West, Dundas and Broadview Stations are all accessible subway stations. One single service is operated, the 505 (Dundas West Station-Broadview Station) branch operates at all times, seven days a week.
- The 168 Symington bus route operates between Dundas West Station on the Bloor-Danforth Subway and the area of Rogers Road and Weston Road, generally in a north-south direction. Dundas West Station is an accessible subway station. Bike racks are available on this route. This route operates seven days a week.

Table 2-1 summarizes the above-noted transit services, along with their posted headways throughout the service period. It should be noted that the headways shown are for each direction of travel. A map of the above transit routes is shown in **Figure 2-3**.

Route	Transit Service Operating Headways					
	A.M. Peak	Weekday Midday	P.M. Peak	Weekday Night		
168 Symington	5 minutes	10 minutes	7 minutes	10 minutes		
506 Carlton	4 minutes	6 minutes	6 minutes	8 minutes		
2 Bloor-Danforth	2 minutes	3 minutes	3 minutes	4 minutes		
504 King	4 minutes	4 minutes	4 minutes	4 minutes		
505 Dundas	7 minutes	7 minutes	7 minutes	9 minutes		

Table 2-1: Existing Transit Services within the Study Area



2.3 TRAFFIC DATA

2.3.1 DATA PRIOR TO BLOOR BIKEWAY EXTENSION

Table 2-2 summarizes the turning movement counts (TMC) collected for this study, as well as the source and date of the counts. Traffic data was collected during the weekday a.m. and p.m. peak periods prior to the implementation of the Bloor Bikeway Extension. Details of the turning movement counts are provided in **Appendix B**.

Intersections	Date of the count	Source
Sterling Road / Symington Avenue at Bloor Street West	November 9, 2017	BA Group Report, 72 Perth Avenue, 2018
Dundas Street West and Bloor Street West	November 9, 2017	BA Group Report, 1515 Bloor Street West, 2018
Lansdowne Avenue and Bloor Street West	November 9, 2017	BA Group Report, 1515 Bloor Street West, 2018
Dundas Street West and Sterling Road	November 18, 2018	City of Toronto TMC
Sterling Road and Perth Avenue	May 10, 2018	BA Group Report, 72 Perth Avenue, 2018
Merchant Lane and Ruttan Street		Volumes generated for existing residential units along Merchant Lane based on 1405 Bloor Street West 2020 LEA Report trip generation rates
Bloor Street West and Ruttan Street		Trips generated based on ITE 10 th Edition Land Use Code 820-Retail

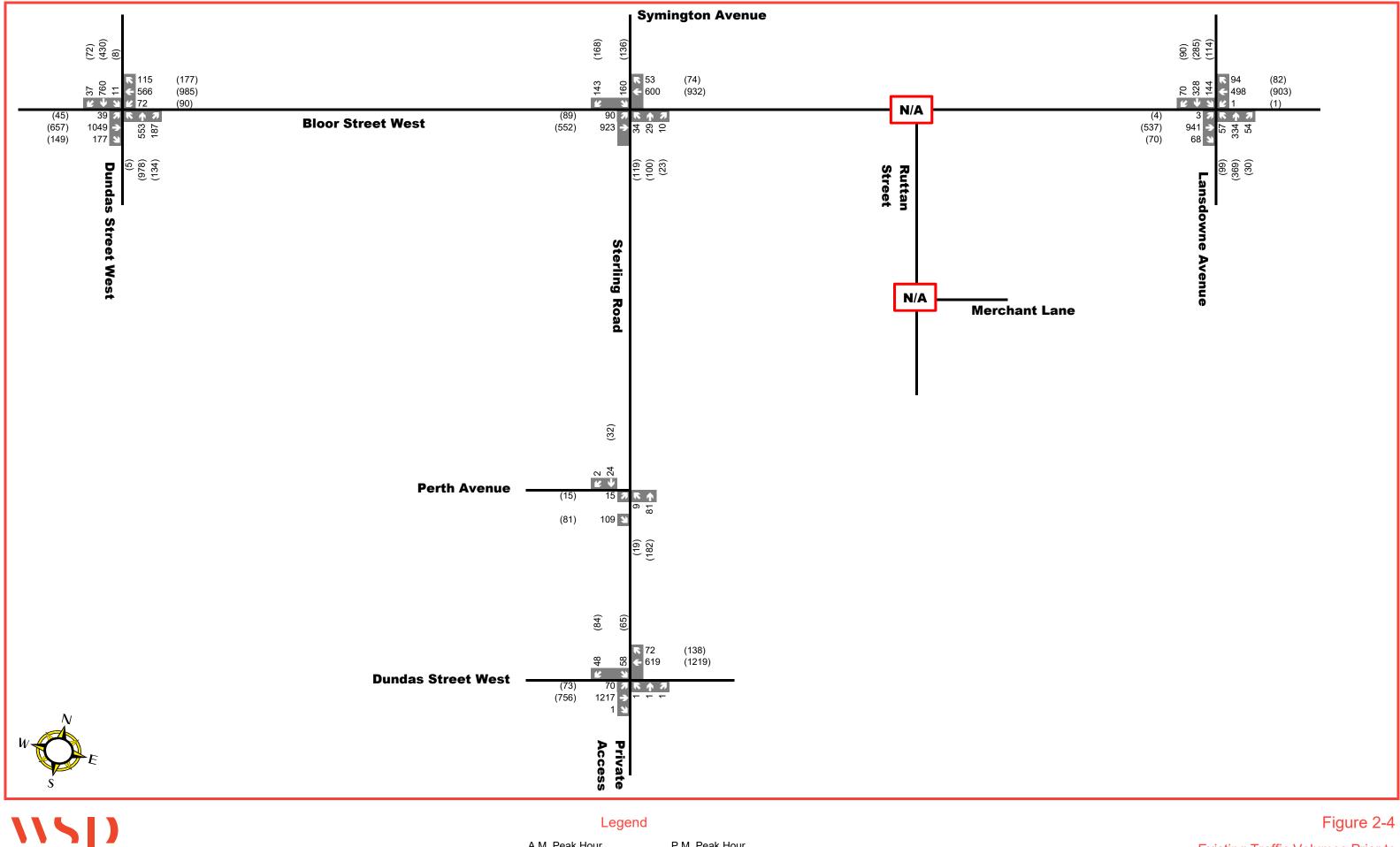
Table 2-2: Traffic Data Information Prior to Bloor Bikeway Extension

It should be noted that due to the impact of the COVID-19 pandemic, current traffic patterns would be atypical. Therefore, all of the turning movement counts are either historical or derived from first principle. Historical counts were collected from sources including background development reports and the City of Toronto.

As noted in the table above, all of the intersections along Bloor Street, with the exception of the intersection of Bloor Street West / Ruttan Street, had their TMCs conducted prior to the installation of the Bloor Bikeway Extension, which commenced during the summer of 2020. Therefore, these TMCs would not be reflective of current conditions, given the reduction in lanes along Bloor Street West impacting vehicular traffic.

The turning movement counts collected prior to the Bloor Bikeway extension were assessed separately in this study as a scenario to understand the operations relative to the current conditions with the Bloor Bikeway in place. For the purposes of this existing conditions scenario, the historical turning movement counts from 2017 and 2018 were not grown to 2021 since traffic in the downtown environment has stabilized along many arterial roads.

The existing traffic volumes counted prior to the installation of the Bloor Bikeway Extension project are presented in **Figure 2-4**.



A.M. Peak Hour ΧХ Traffic Volumes P.M. Peak Hour Traffic Volumes

(xx)

Existing Traffic Volumes Prior to Bloor Bikeway Extension

2.3.2 VOLUMES AFTER BLOOR BIKEWAY EXTENSION

As discussed earlier, the second existing conditions scenario involves the post Bloor Bikeway Extension Project along Bloor Street West in the vicinity of the site. WSP had assisted the City in preparing signal timing plans and projected traffic volumes for intersections along Bloor Street West impacted by the Bloor Bikeway Extension Project, which were accepted by City staff in the summer of 2020. These signal timings, volumes, and lane configurations have been applied in this study.

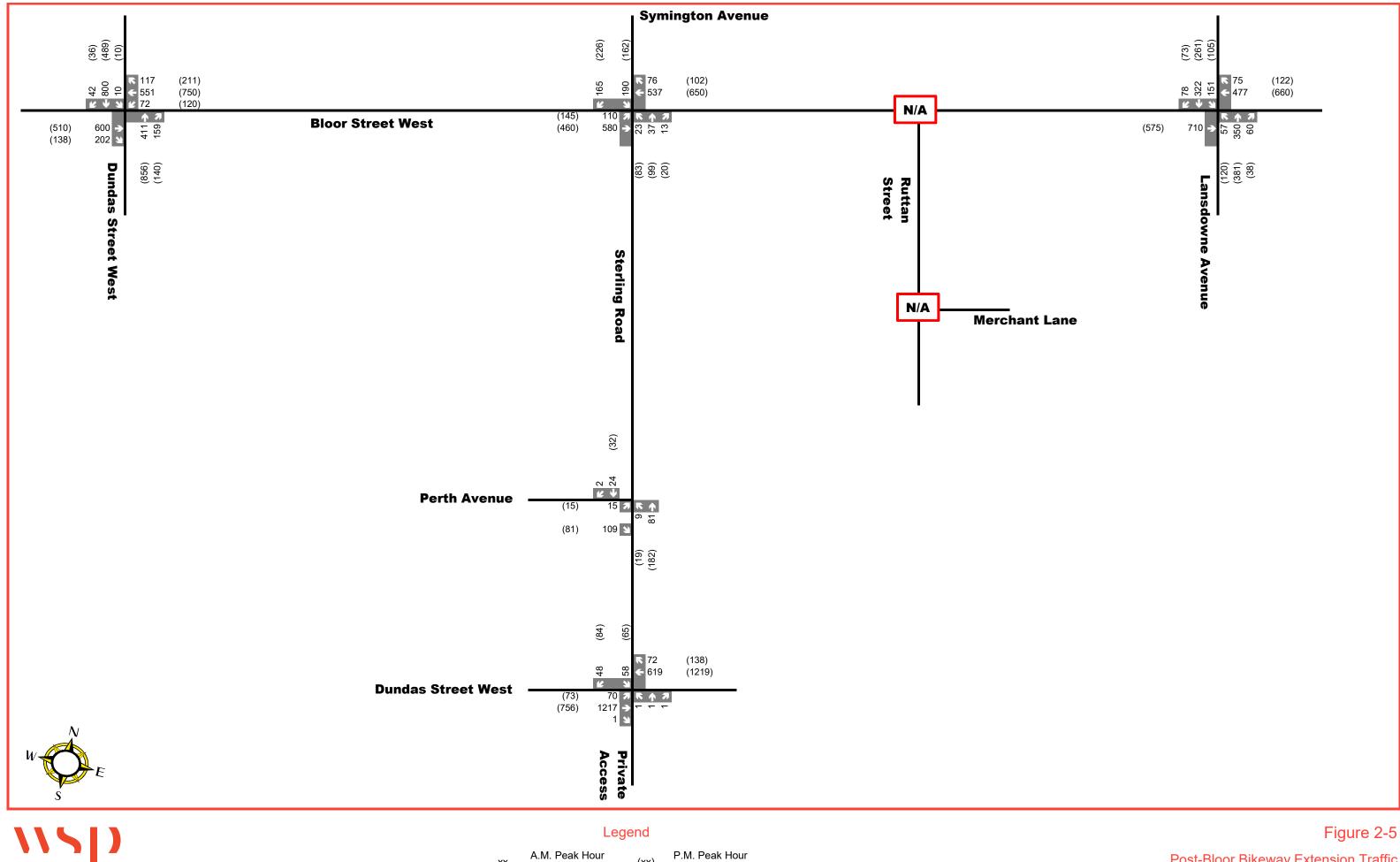
As part of the Bloor Bikeway Extension project, the City provided calibrated Synchro models along Bloor Street, which is the basis of the future background and future total conditions assessment in this study. For information and data regarding the Bloor Bikeway Extension Synchro volumes and lane configurations, please refer to **Appendix B**.

Table 2-3 summarizes the TMCs for the signalized intersections along Bloor Street West during the weekday a.m. and p.m. peak periods, after to the implementation of the Bloor Bikeway Extension.

Intersections	Source
Sterling Road / Symington Avenue at Bloor Street West	WSP Canada Inc., Bloor Bikeway Extension Project, 2020
Dundas Street West and Bloor Street West	WSP Canada Inc., Bloor Extension Bikeway Project, 2020
Lansdowne Avenue and Bloor Street West	WSP Canada Inc., Bloor Extension Bikeway Project, 2020
Dundas Street West and Sterling Road	November 18, 2018 City of Toronto TMC
Sterling Road and Perth Avenue	May 10, 2018, BA Group Report, 72 Perth Avenue
Merchant Lane and Ruttan Street	Volumes generated for existing residential uses based on 1405 Bloor Street West 2020 LEA Report trip generation rates plus ITE 10 th Edition Land Use Code 820-Retail for existing retail uses on site (discussed in Section 2.3.3)
Bloor Street West and Ruttan Street	Volumes generated for existing residential uses based on 1405 Bloor Street West 2020 LEA Report trip generation rates plus ITE 10 th Edition Land Use Code 820-Retail for existing retail uses on site (discussed in Section 2.3.3); and balanced volumes along Bloor from upstream intersection of Bloor Street West/Symington Avenue

Table 2-3: Traffic Data Information after Bloor Bikeway Extension

The post Bloor Bikeway Extension traffic volumes are illustrated in Figure 2-5.



A.M. Peak Hour хх **Traffic Volumes**

P.M. Peak Hour Traffic Volumes

(xx)

Post-Bloor Bikeway Extension Traffic Volumes

2.3.3 TRIP GENERATION OF EXISTING SITE AND SURROUNDING USES

For the intersections of Merchant Lane / Ruttan Street, and Bloor Street West / Ruttan Street, no historical turning movement counts are available. The peak hour traffic volumes were derived at these two unsignalized intersections from first principles based on the land uses that the two intersections serve. Trip generation was conducted for the various land uses served by these two intersections.

Information on the existing retail uses currently on site were provided by the client, and ITE 10th Edition Land Use Code 820 – Retail average trip generation rates were applied to the retail Gross Floor Area (GFA).

To estimate the vehicle trips generated by the existing residential uses that rely on Ruttan Street for vehicular access, the local residential trip generation rates from the September 2020 LEA Consulting Ltd. TIS for the 1405-1490A Bloor Street West development were applied for residential trip generation in this study. This report was selected since the average residential trip generation rates were derived from proxy site surveys for residential developments in the downtown transit-rich context. These rates would adequately represent the modal split characteristics of downtown developments, which have access to various transit, pedestrian, and cycling options.

The trip generation rates applied for the existing retail uses onsite and the surrounding residential uses are presented in **Table 2-4**. Based on the detailed review of the surrounding land uses, there are 419 condo/townhouse units that rely on the intersection of Ruttan Street / Bloor Street West for vehicular access. The existing retail uses on site (61,000 sq.ft. GFA) will be displaced by the proposed development. The trip generation rates in the table below were applied to the respective land uses.

		A.M. Peak Ho	ur		P.M. Peak Hour	•
Use	In	Out	Total	In	Out	Total
			Auto T	rips / Unit		
Multi-Unit						
Residential	0.02	0.08	0.10	0.09	0.03	0.12
(Average Rate)						
Retail			Auto Trip	s / sq.ft. GFA		
(Average Rate)	0.58	0.36	0.94	1.83	1.98	3.81

Table 2-4: Existing Site and Surrounding Residential Developments Trip Generation Rates

No non-auto reduction was applied to trip generation for the residential uses since the residential trip generation rates applied are already based on proxy surveys that account for modal split.

For the trip generation of the existing retail uses, the non-auto split derived from Transportation Tomorrow Survey (TTS) 2016 survey data for zones (105,106,107,114,115,116) were applied. The modal split in the study vicinity for retail uses are summarized in **Table 2-5**.

Primary Travel	A.M. Pe	eak Hour	P.M. Peak Hour			
Mode	Inbound	Outbound	Inbound	Outbound		
Auto – Driver	49%	65%	21%	47%		
Auto – Passenger	6%	26%	0%	8%		
Transit	30%	0%	18%	24%		
Walking and Cycling	15%	9%	61%	21%		
Non-Auto Total	45%	9%	79%	45%		

Table 2-5: Study Area Mode Split Characteristics - Retail

The calculation of the peak hour trips generated by the existing retail onsite and the surrounding residential uses are summarized in **Table 2-6**.

	Trip Generation						
Use	A.M. Peak Hour			P.M. Peak Hour		•	
	In	Out	Total	In	Out	Total	
Residential	8	34	42	38	13	51	
Retail	20	20	40	23	67	90	

Table 2-6: Existing Residential and Retail Vehicle Trip Generation

Based on the results in the table above, the existing retail uses onsite is forecast to generate 40 and 90 two-way trips in the a.m. and p.m. peak hours, respectively. The neighbouring residential uses currently generate 42 and 51 two-way trips during the a.m. and p.m. peak hours, respectively.

2.3.4 TRIP DISTRIBUTION RETAIL AND RESIDENTIAL USES

The vehicle trips generated by the existing retail onsite and surrounding residential properties were distributed at the intersections of Bloor Street West / Ruttan Street and Merchant Lane / Ruttan Street. The distribution patterns were based on 2016 TTS data of the zones (105,106,107,114,115,116) for home-based and work-based trips. **Tables 2-7** and **2-8** outline the resulting trip distribution for residential and retail trips. The traffic assignment of the trips were developed based on the trip distribution information and the most logical path for vehicles to travel in order to minimize travel time and distance. The detailed TTS queries are provided in **Appendix G**.

Direction	A.M. Inbound	A.M. Outbound	P.M. Inbound	P.M. Outbound
Northwest	0%	0%	0%	0%
North	3%	10%	10%	4%
Northeast	0%	0%	0%	0%
East	0%	8%	7%	5%
Southeast	0%	0%	0%	0%
South	9%	41%	38%	21%
Southwest	0%	0%	0%	0%
West	88%	41%	45%	69%
Total	100%	100%	100%	100%

Table 2-7: TTS Trip Distribution for the Study Area – Residential Use

Table 2-8: TTS Trip Distribution for the Study Area – Retail Use

Direction	A.M. Inbound	A.M. Outbound	P.M. Inbound	P.M. Outbound
Northwest	0%	0%	0%	0%
North	21%	0%	6%	19%
Northeast	0%	0%	0%	0%
East	10%	61%	17%	12%
Southeast	0%	0%	0%	0%
South	9%	0%	0%	11%
Southwest	0%	0%	0%	0%
West	60%	39%	77%	59%
Total	100%	100%	100%	100%

Figure 2-6 illustrates the trips generated from the neighbouring residential uses that are served by Ruttan Street. **Figure 2-7** illustrates the trips generated by the existing retail uses onsite. It should be noted that the traffic volumes at the other intersections where historical volumes are available already account for the trips associated with the residential and retail uses served by Ruttan Street.

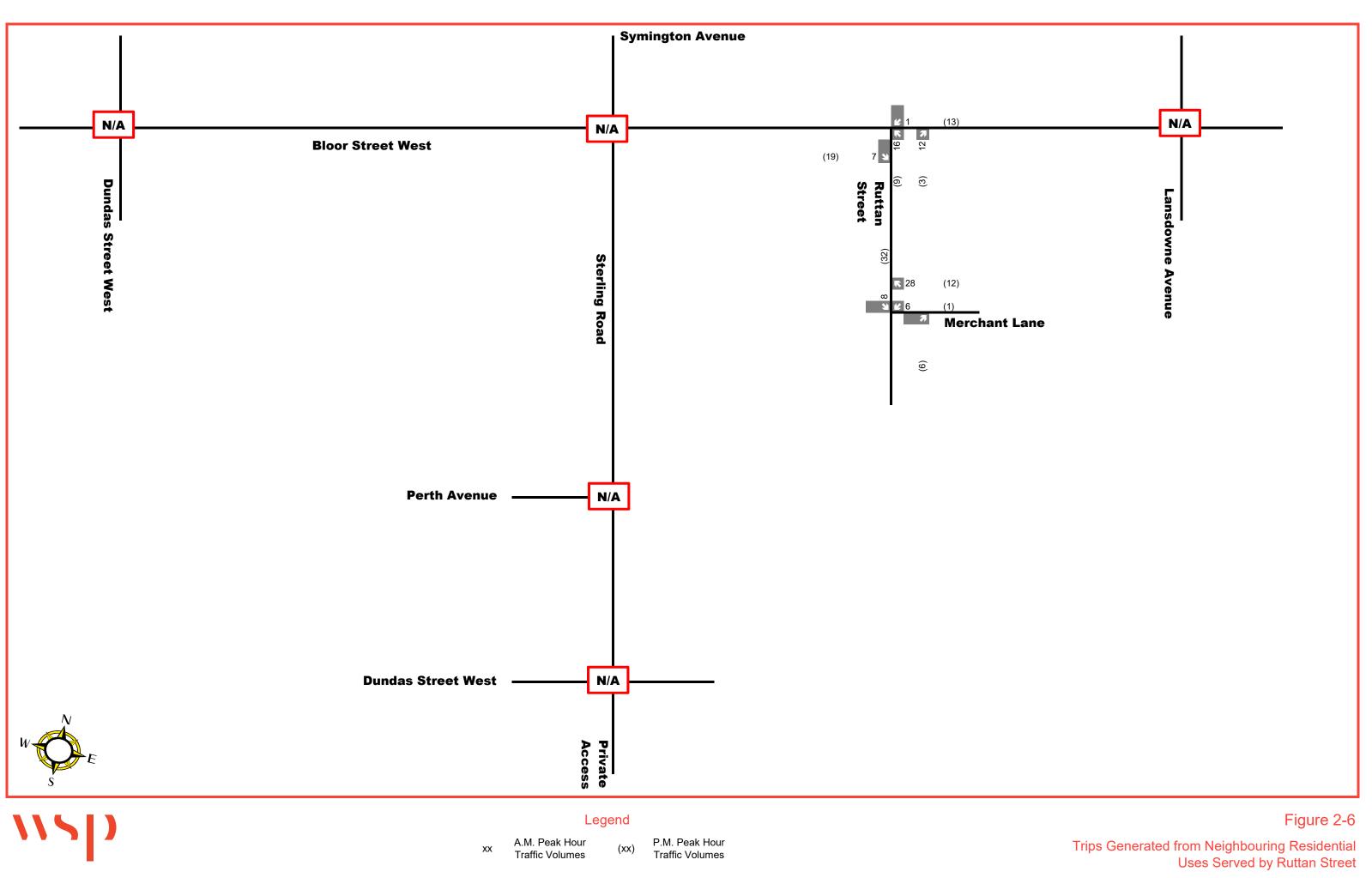
The eastbound and westbound through traffic volumes along Bloor Street West at the intersection of Bloor Street West / Ruttan Street were then balanced with the adjacent intersection of Bloor Street West / Symington Avenue.

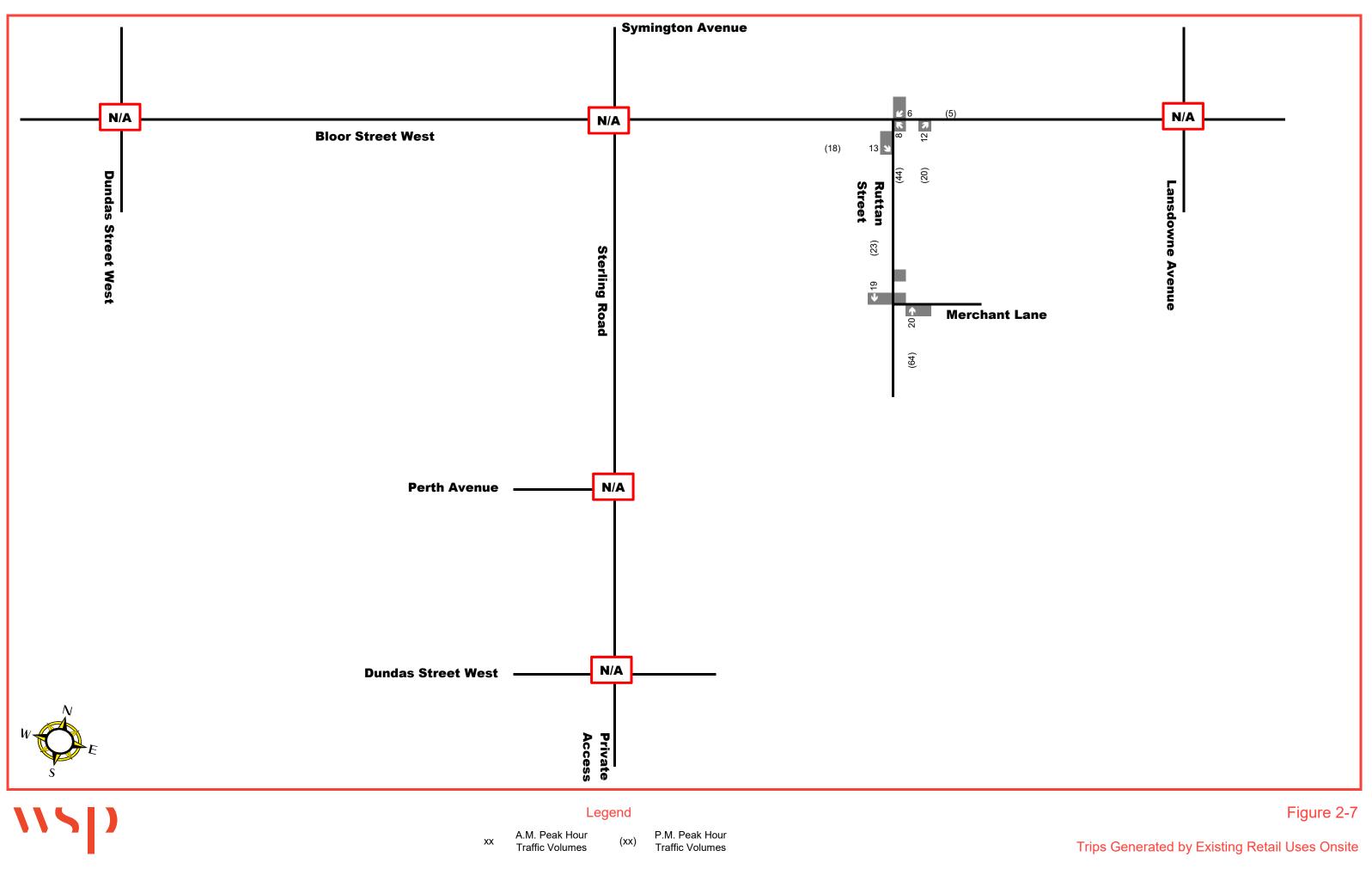
2.3.5 EXISTING TRAFFIC VOLUMES

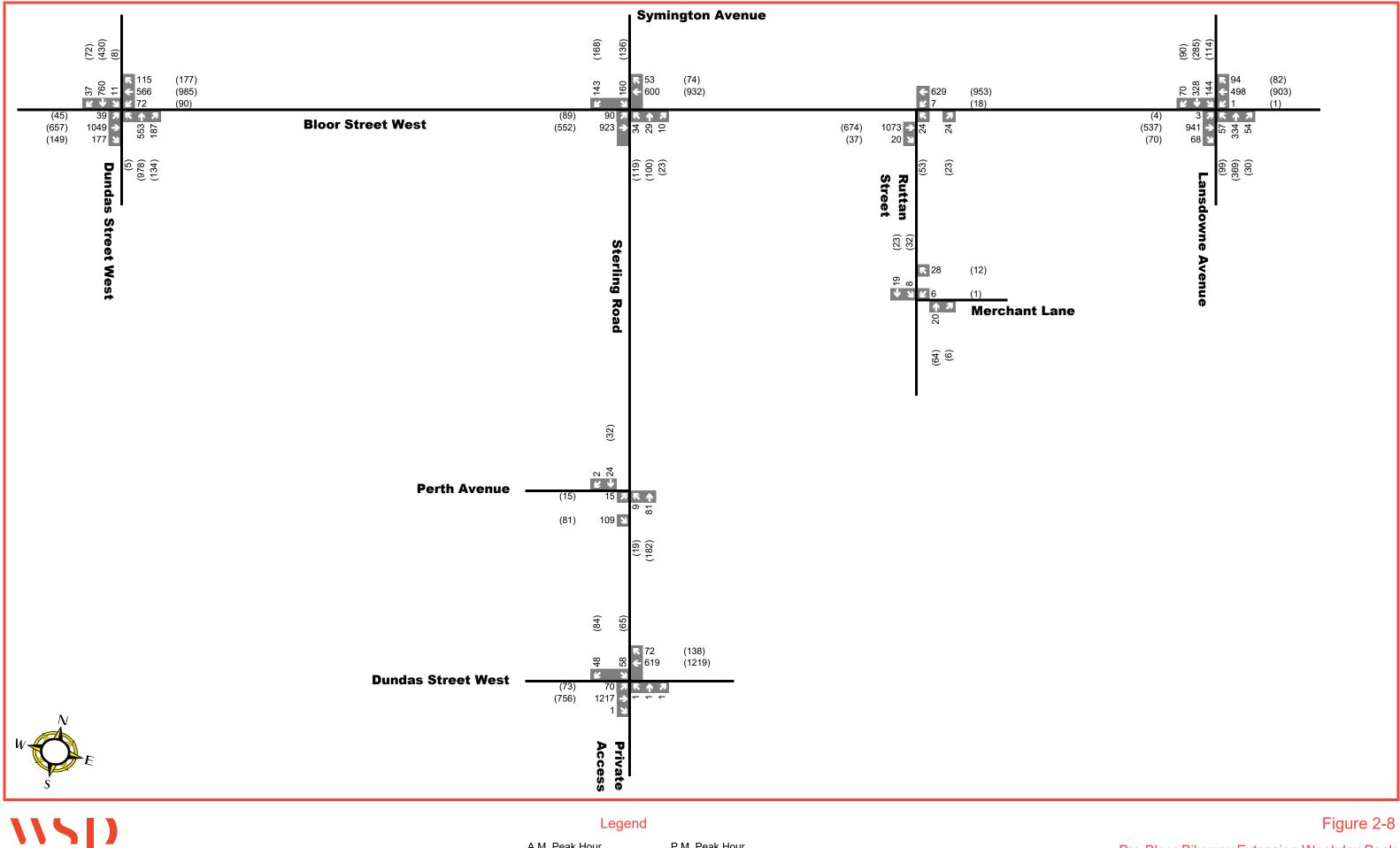
The existing traffic volumes prior to the Bloor Bikeway Extension were developed by superimposing the volumes in Figure 2-4 onto Figures 2-6 and 2-7. The resulting pre-Bloor Bikeway Extension weekday peak hour traffic volumes are shown in **Figure 2-8**.

The existing traffic volumes after the Bloor Bikeway Extension were developed by superimposing the volumes in Figure 2-5 onto Figures 2-6 and 2-7. The resulting post-Bloor Bikeway Extension weekday peak hour traffic volumes are shown in **Figure 2-9**.

These existing traffic volumes are the basis of the existing conditions assessment for the pre and post Bloor Bikeway Extension scenarios.



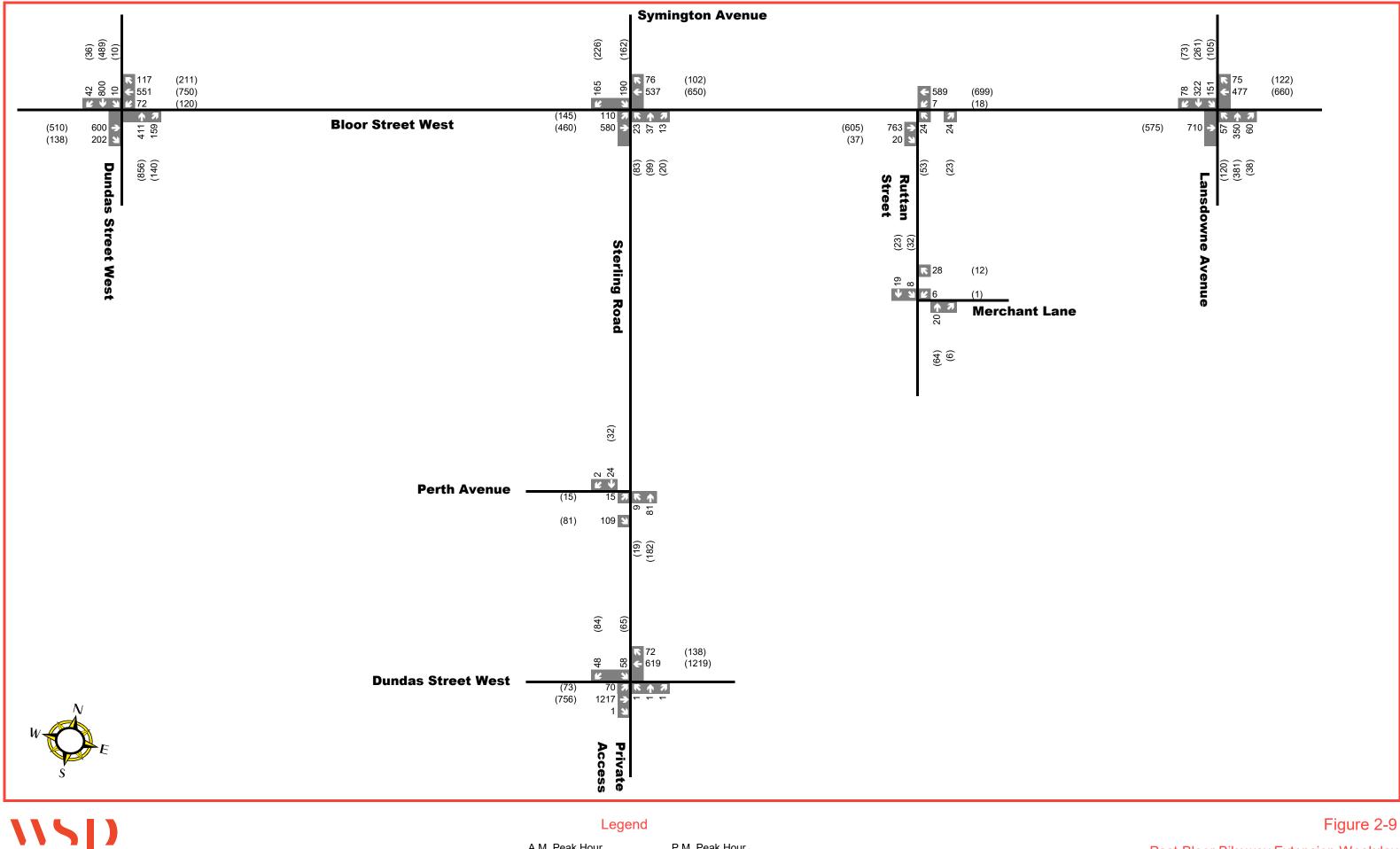




A.M. Peak Hour ΧХ Traffic Volumes P.M. Peak Hour Traffic Volumes

(xx)

Pre-Bloor Bikeway Extension Weekday Peak Hour Traffic Volumes



A.M. Peak Hour ΧХ Traffic Volumes P.M. Peak Hour Traffic Volumes

(xx)

Post-Bloor Bikeway Extension Weekday Peak Hour Traffic Volumes

2.4 MODEL ASSUMPTIONS

In the pre-Bloor Bikeway scenario, the Synchro model was established based on the City of Toronto Synchro 9.0 Guidelines. The peak hour factors (PHF) for the intersections of Dundas/Bloor, Bloor/Symington, Lansdowne/Bloor, Dundas/Sterling and Sterling/Perth were calculated from the respective TMCs. Calculations for the PHF at these intersections are provided in **Appendix B**. At the intersections where the peak hour volumes had to be derived from first principles and balancing (Ruttan/Bloor and Merchant/Ruttan) the PHF applied are based on the recommendations from the City of Toronto Synchro 9.0 Guidelines (ranging from 0.90 to 0.95 depending on the movement and the period evaluated). In addition, a lost time of -1 second was applied at the signalized intersections. The pedestrian and heavy vehicle percentages have also been inputted to the Synchro model. Bus blockages have been incorporated as well.

For the Bloor Bikeway scenario, the PHF, lost time, pedestrian and bus blockage information of the signalized intersections along Bloor Street West are based on the City of Toronto's calibrated Synchro model (used for the Bloor Bikeway Extension Project). The calibration parameters applied at the other study intersections are consistent with those applied in the pre-Bloor Bikeway scenario as noted above.

2.5 EXISTING TRANSPORTATION CONDITIONS

2.5.1 AUTO METHODOLOGY

To analyze existing traffic conditions in the study area, capacity analyses were undertaken using the Synchro 10 traffic analysis software. This software incorporates the methodology outlined in the Highway Capacity Manual (HCM), Transportation Research Board, 2000 and 2010. The signal timing plans for the study intersections were acquired from various background development studies and are provided in **Appendix B**.

An intersection capacity analysis provides an indication of traffic operations based on calculations of volume-to-capacity (v/c) and delays for individual movements at an intersection. Level of Service (LOS) denoted by letters 'A' through 'D', represent satisfactory traffic operations. LOS denoted by the letters 'E' and 'F' represent congested traffic operations. **Appendix C** provides the LOS definitions according to the HCM 2000 methodology.

EXISTING TRAFFIC CONDITIONS

Traffic operations were analyzed at the study intersections to understand the existing LOS during the weekday a.m. and p.m. peak hours for the two scenarios (before and after the Bloor Bikeway Extension volumes as shown in Figures 2-8 and 2-9). The results of the existing conditions assessment for both scenarios are summarized in **Tables 2-9** and **2-10**. Detailed Synchro worksheets for conditions before the bikeway are provided in **Appendix D-1**, and Synchro worksheets for conditions after the bikeway are provided in **Appendix D-1**.

14010 2 9. LAIS	ing intersee	cion operaciono ce	Tore broof bikeway	LAtension				
	Weekday	A.M. Peak Hour	Weekday P.M	. Peak Hour				
		Critical		Critical				
Intersections	LOS (Delay	Movement	LOS (Delay in	Movement				
	in Seconds)	(Volume/Capacity	Seconds)	(Volume/Capacity				
		Ratio)		Ratio)				
Signalized Intersections								
Dundas Street West								
and Bloor Street	C (24 sec)	-	C (24 sec)	-				
West								
Bloor Street West								
and Symington								
Avenue / Sterling	C (29 sec)	-	D (36 sec)	-				
Road								
Lansdowne Avenue								
and Bloor Street	C (22 sec)	-	C (24 sec)	-				
West								
Dundas Street West								
and Sterling Road /	A (8 sec)	-	A (10 sec)	-				
Private Access								
	Ur	nsignalized Intersect	tions					
Bloor Street West								
and	C (23 sec)	NB-LR (0.22)	B (14 sec)	NB-LR (0.16)				
Ruttan Street	- (- (000)					
Ruttan Street and								
	A (9 sec)	WB-LR (0.04)	A (9 sec)	WB-LR (0.01)				
Merchant Lane				· · ·				
Perth Avenue and	A (8 sec)	EB-LR (0.14)	A (9 sec)	NB-LT (0.27)				
Sterling Road								

Table 2-9: Existing Intersection Operations before Bloor Bikeway Extension

1 For signalized intersections, the level of service is based on the overall delay of the intersection. Critical v/c ratios are only listed for movements with values over 0.90.

2 For stop controlled intersections, the level of service is based on the delay associated with the critical movement.

The results presented in **Table 2-9** indicate that all of the signalized study intersections operate at acceptable LOS 'D' or better under existing conditions before the implementation of the Bloor Bikeway, with no critical movements that operate near or at capacity.

With regards to the unsignalized study intersections, all of the critical movements operate at LOS 'C' or better during the a.m. and p.m. peak hours. Furthermore, all of the busiest movements operate well within capacity. The busiest unsignalized intersection of Bloor Street West and Ruttan Street serves the existing retail uses on sites (pre COVID-19) and the residential uses along Merchant Lane and Ruttan Street.

	Weekday A.M. Peak Hour			Weekday P.M. Peak Hour			
Intersections	LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)	LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)			
Signalized Intersections							
Dundas Street West and Bloor Street West	C (28 sec)	-	C (29 sec)	-			
Bloor Street West and Symington Avenue / Sterling Road	C (30 sec)	-	D (40 sec)	WB-TR (0.97) NB-TR (0.92)			
Lansdowne Avenue and Bloor Street West	C (31 sec)	-	D (35 sec)	SB-TR (0.92)			
Dundas Street West and Sterling Road / Private Access	A (8 sec)	-	A (10 sec)	-			
Unsignalized Intersections							
Bloor Street West and Ruttan Street	C (24 sec)	NB-LR (0.22)	C (24 sec)	NB-LR (0.30)			
Ruttan Street and Merchant Lane	A (9 sec)	WB-LR (0.04)	A (9 sec)	WB-LR (0.01)			
Perth Avenue and Sterling Road	A (8 sec)	EB-LR (0.14)	A (9 sec)	NB-LT (0.27)			

Table 2-10: Existing Intersection Operations after Bloor Bikeway Extension

1 For signalized intersections, the level of service is based on the overall delay of the intersection. Critical v/c ratios are only listed for movements with values over 0.90.

2 For stop controlled intersections, the level of service is based on the delay associated with the critical movement.

The results presented in **Table 2-10** indicate that all of the signalized study intersections continue to operate at acceptable LOS 'D' or better under existing conditions after the implementation of the Bloor Bikeway extension. However, there are now some critical movements along Bloor Street at Symington Avenue/Sterling Road and Lansdowne Avenue in the p.m. peak hour. Since Bloor Street is narrowed from two to one in each in direction, the slight deterioration in intersection operations for the vehicular mode is not surprising given the shift in emphasis towards non-auto modes of transportation.

With regards to the existing unsignalized intersections, all of the intersections operate at LOS 'C' or better during the a.m. and p.m. peak hours, and there is no movement that is near or at capacity.

2.5.2 PEDESTRIANS

The following pedestrian facilities were analyzed because they are expected to be the sidewalks with the highest pedestrian volumes and will be used by pedestrian trips generated by the proposed redevelopment.

- the sidewalk along the south side of Bloor Street West; and
- the sidewalk along the east side of Sterling Road/Symington Avenue.

METHODOLOGY

The assessment of the pedestrian facilities is carried out using the HCM6 methodology. The HCM6 methodology involves the analysis of the pedestrian delays at intersections, the perceived width and flow rate of the sidewalk, as well as other factors such as distance to crossing locations and sidewalk pinch points. For example, the HCM6 has two separate methodologies for evaluating signalized and unsignalized intersections. The signalized intersections are evaluated based on both the time (delay) and space (geometric) characteristics of the intersection, while the unsignalized intersections are evaluated based on the time (delay) characteristics only.

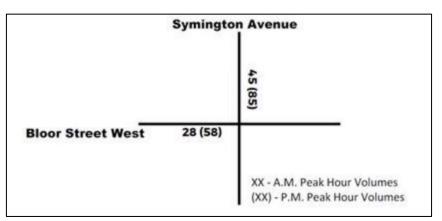
The intersection analysis findings are then combined with a pedestrian link analysis between the intersections. This measures the average flow along the pedestrian link and compares it to the perceived width, proximity to vehicles, obstructions in the path of travel and other pedestrian realm characteristics. The link analysis generates a pedestrian level of service score, which is then attributed to a letter grade from 'A' to 'F', representing the best and worst spectrum of performance, respectively.

EXISTING PEDESTRIAN LEVEL-OF-SERVICE

The existing pedestrian analysis findings for the Bloor Street West and Sterling Road/Symington Avenue pedestrian facilities in the vicinity of the site are summarized in **Table 2-11**. The existing pedestrian volumes in the vicinity of the subject site were based on the turning movement counts at the intersection of Bloor Street West and Sterling Road/Symington Avenue and shown in the image below. The definitions for the pedestrian LOS and the detailed pedestrian intersection analyses are provided in **Appendix E**.

Segment		AM Peak Hour	PM Peak Hour			
	Bloor Street West	LOS C	LOS C			
	Sterling Road / Symington Avenue	LOS B	LOS C			

Table 2-11: Existing Pedestrian Conditions



Based on the LOS noted above, the pedestrian facilities along Bloor Street West and Sterling Road/Symington Avenue in proximity to the proposed development are adequately accommodating the existing pedestrian volumes.

The cycle tracks in place along Bloor Street West greatly enhances the capacity and safety of cyclist along the arterial road. Given how recent this cycling initiative was evaluated and implemented by the City, further assessment of the cycling infrastructure in this report is not warranted.

2.5.3 TRANSIT

Existing ridership volumes for the representative transit routes in the study area were purchased from TTC, and provided in **Appendix B**. The most recent typical (pre-COVID-19) average passenger volumes at the stops in the vicinity of the redevelopment were obtained, and transit utilization rates were calculated based on the standard bus, streetcar and subway capacity. The existing transit ridership at the study stops are presented in **Table 2-12**, along with the resulting utilization.

	Capacity Per Transit Unit/hour	Direction	Weekday A.M. Peak Period		Weekday P.M. Peak Period	
Route			Average Hourly Ridership per transit route	Utilization	Average Hourly Ridership per transit route	Utilization
168	51	NB	11	21%	38	74%
Symington	51	SB	41	80%	22	43%
506 Carlton	74	EB	12	16%	5	7%
	74	WB	3	4%	10	13%
2 Bloor-	1000	EB	430	43%	600	60%
Danforth	1000	WB	430	43%	600	60%

Table 2-12: Existing Transit Ridership Utilization

As shown in **Table 2-12**, all of the transit routes evaluated operate within the available capacity during the weekday a.m. and p.m. peak periods under existing conditions. It should be noted that for the 2 Bloor-Danforth line, the average ridership calculated in the respective peak hours was assumed for both directions on the route.

3 FUTURE BACKGROUND CONDITIONS

3.1 HORIZON YEAR

A horizon year of 2026 was assessed for the proposed development in this study. It is assumed that the development will be completed in one phase and by this horizon year.

3.2 BACKGROUND GENERAL TRAFFIC VOLUMES

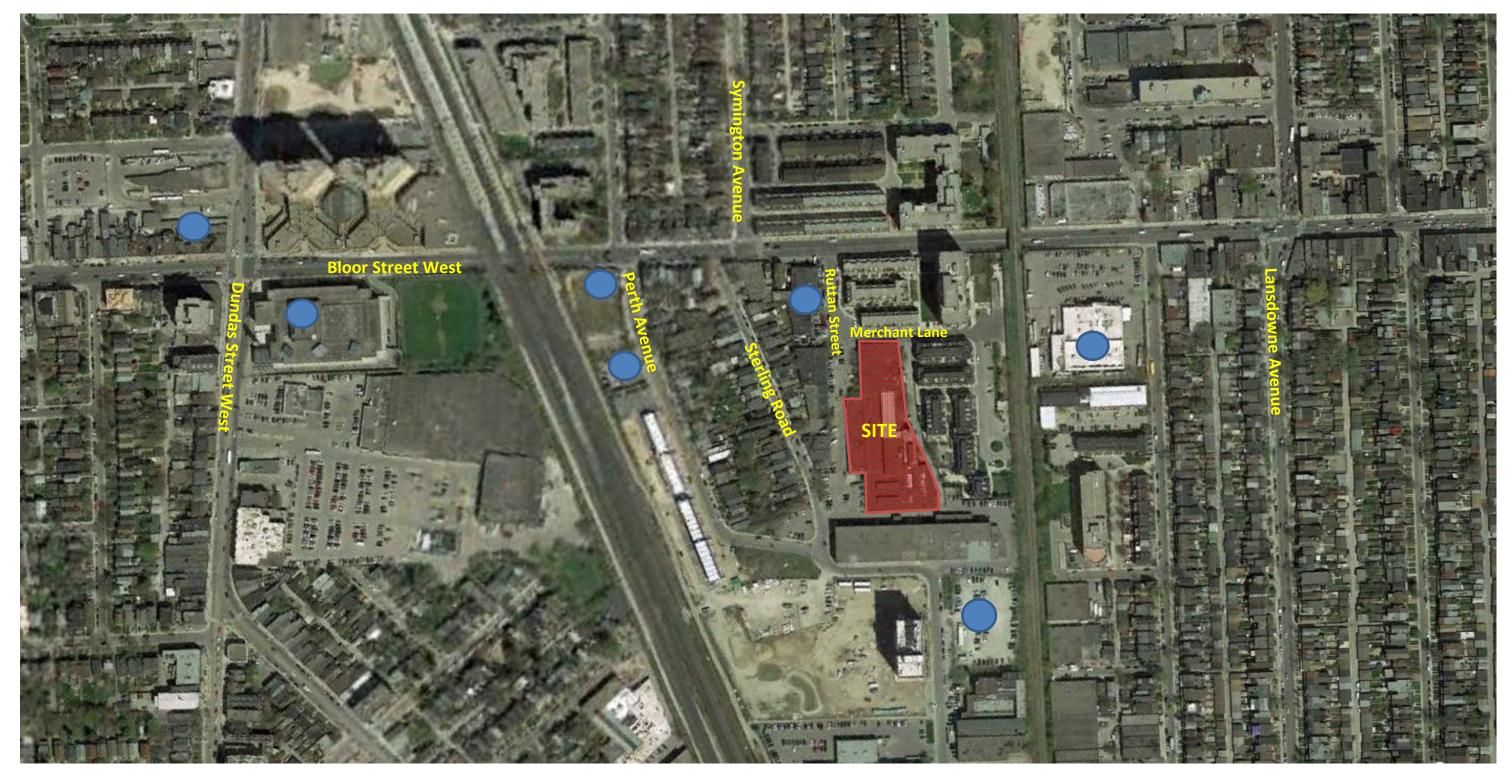
Consistent with other TIS' in the area, no general growth rate was applied along the boundary road network. This takes into consideration the fact that the implementation of the Bloor Bikeway will have a significant impact on the traffic flow along Bloor Street West and shift the emphasis to active transportation and transit instead. Given the lane reduction along the Bloor Street West corridor, it is anticipated that general traffic volumes along the Bloor Street West corridor will stabilize as observed in other parts of the downtown area. Instead of general growth, increase in the future background volume in the study area are being accounted for through the inclusion of the site traffic generated by the background developments as noted in the following section.

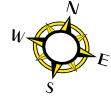
3.3 BACKGROUND DEVELOPMENTS

Based on our review of the City's development application website, seven background developments have been included as part of this TIS. Details of these background developments are summarized in **Table 3-1**. Figure 3-1 illustrates the location of these background developments relative to the subject site, and Figure 3-2 illustrates the traffic volumes generated by these background developments, which were extracted from their respective TIS'. Including all seven background development is conservative since they are at different stages of City review.

Development	Statistics	Traffic Volume Source	
1405-1409 Bloor Street West	326 residential units, 237 m² retail	BA Group, April 2018	
1439 Bloor Street West	169 condominium units	GHD, August 2018	
1540 Bloor Street West	327 residential units,	LEA Group,	
	8,685 ft² retail	December 2019	
	105 residential units, 484 m ²	PA Crown May 2019	
72 Perth Avenue	commercial	BA Group, May 2018	
	2600 residential units, 65,000	BA Group, April 2018	
2280 Bloor Street West	m ² office,		
	20,000 m² retail		
181 Sterling Road	243 residential units,	DA Crown 2017	
	1,079 m² retail	BA Group, 2017	
1210 Place Street West	634 residential units,	BA Group, December	
1319 Bloor Street West	769 m² retail	2020	

Table 3-1: Background Development Information





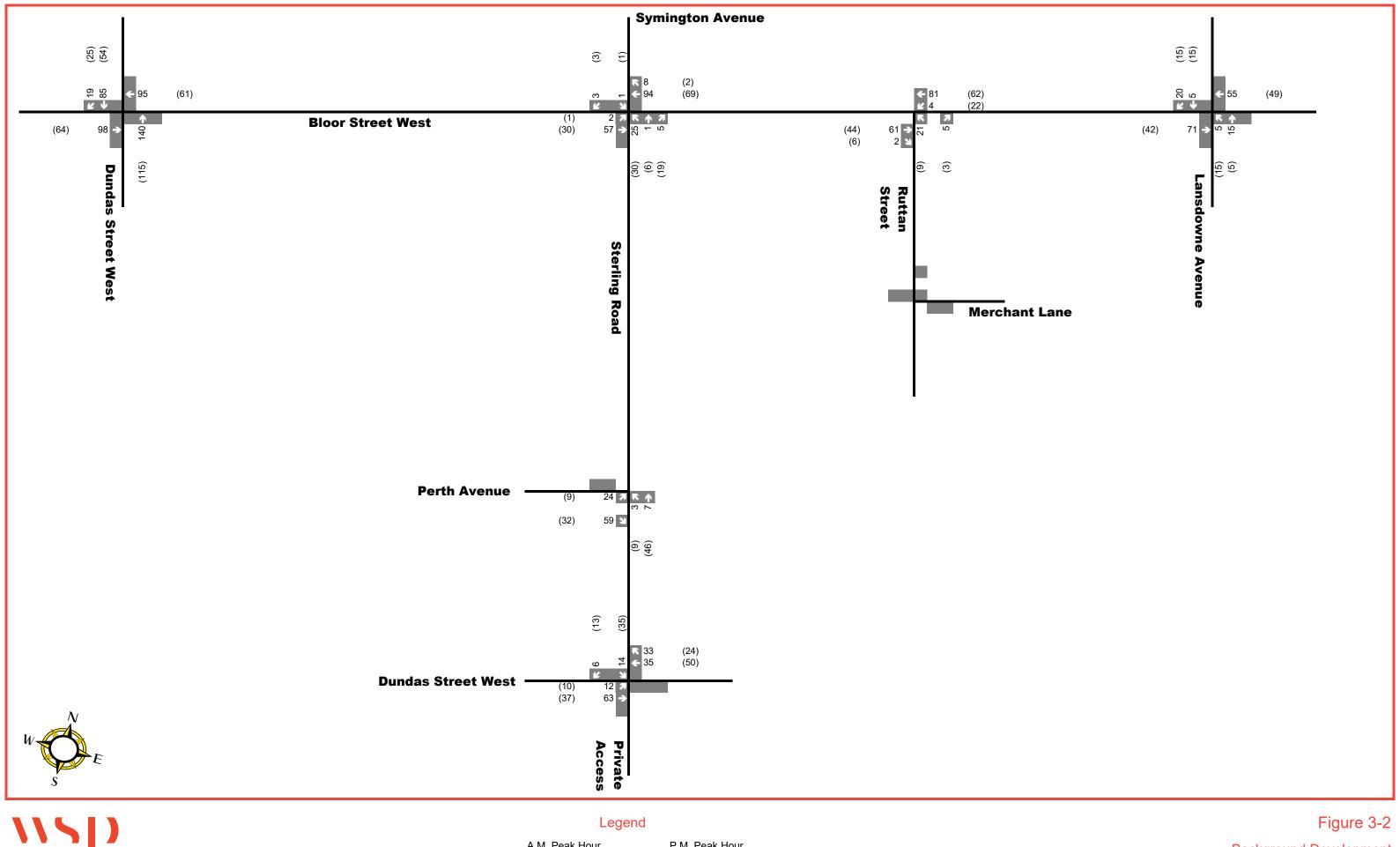




Background Development Location

Figure 3-1

Background Developments Map



A.M. Peak Hour ΧХ Traffic Volumes P.M. Peak Hour Traffic Volumes

(xx)

Figure 3-2 Background Development **Traffic Volumes**

3.4 BACKGROUND ROAD NETWORK

For the future assessments in this study, only the Bloor Bikeway extension scenario has been evaluated since the infrastructure is now in place. Figure 2-2 illustrates the lane configurations of the boundary road network after the implementation of the bikeway, which will be the basis of the future background evaluation.

3.5 FUTURE BACKGROUND OPERATIONS

3.5.1 AUTO

The projected future background traffic volumes were developed by superimposing the background development volumes in **Figure 3-2** onto the post-Bloor Bikeway Extension existing traffic volumes in **Figure 2-9**. The resulting 2026 future background volumes are shown in **Figure 3-3**. The future background intersection operations are outlined in **Table 3-2** and the Synchro worksheets are in **Appendix F**. Signalized intersections had their splits optimized where necessary, but cycle lengths remain the same from existing conditions.

	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour					
Intersections	LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)	LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)				
	Signalized Intersections							
Dundas Street West and Bloor Street West	D (37 sec)	EB-T (0.97) SB-LTR (0.97)	C (33 sec)	-				
Bloor Street West and Symington Avenue / Sterling Road	D (38 sec)	WB-TR (0.95)	E (55 sec)	WB-TR (1.09) NB-TR (1.01)				
Lansdowne Avenue and Bloor Street West	C (34 sec)	EB-T (0.90)	D (41 sec)	WB-T (0.98) SB-TR (0.94)				
Dundas Street West and Sterling Road / Private Access	A (10 sec)		B (13 sec)					
Unsignalized Intersections								
Bloor Street West and Ruttan Street	D (32 sec)	NB-LR (0.39)	D (34 sec)	NB-LR (0.43)				
Ruttan Street and Merchant Lane	A (9 sec)	WB-LR (0.04)	A (9 sec)	WB-LR (0.01)				
Perth Avenue and Sterling Road	A (8 sec)	EB-LR (0.23)	A (10 sec)	NB-LT (0.36)				

Table 3-2: 2026 Future Background Intersection Operations

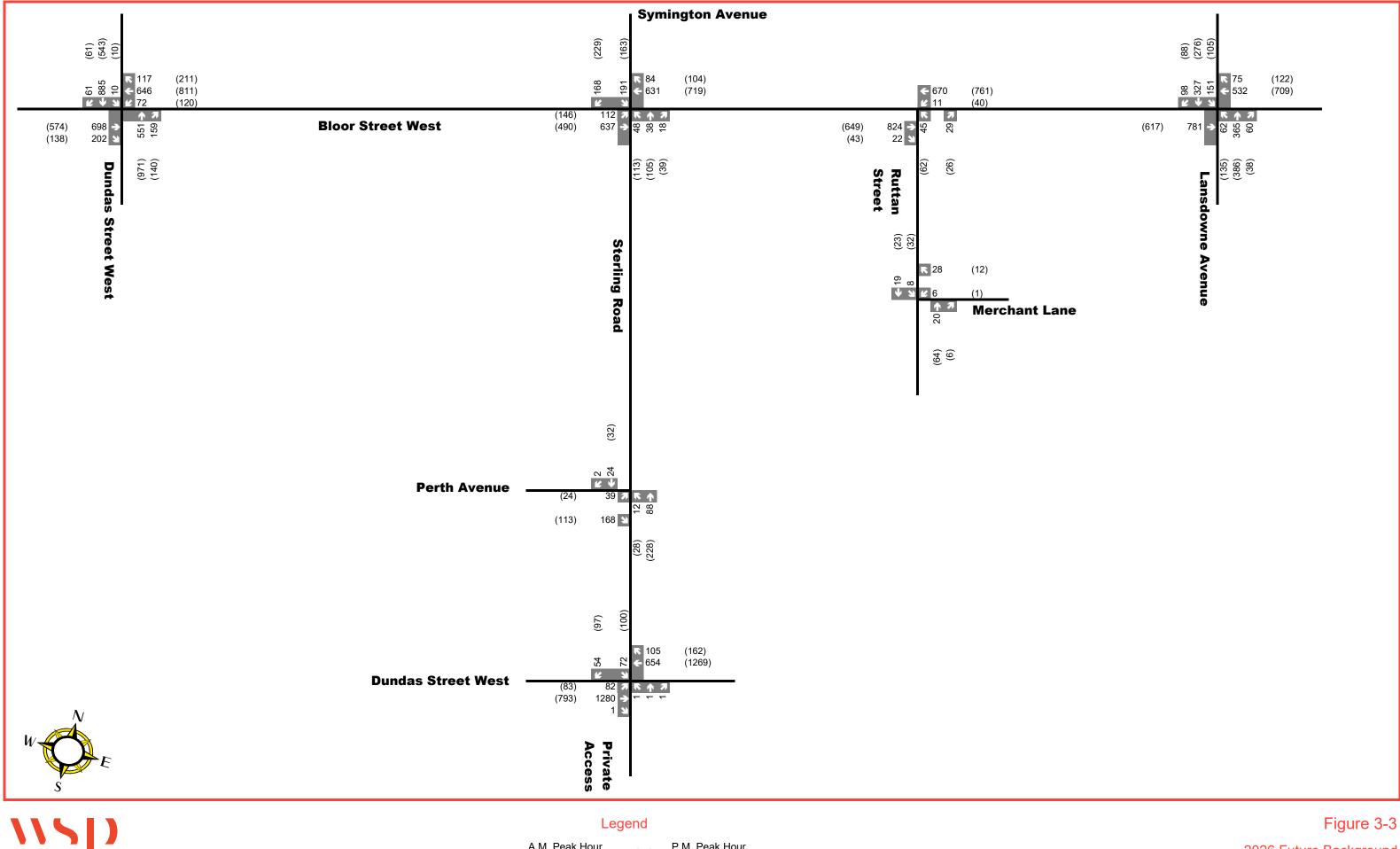
1 For signalized intersections, the level of service is based on the overall delay of the intersection. Critical v/c ratios are only listed for movements with values over 0.90.

2 For stop controlled intersections, the level of service is based on the delay associated with the critical movement.

The results in **Table 3-2** indicate that under future background conditions, most of the study intersections operate at acceptable LOS 'D' or better with the critical movements operating within capacity. However, the addition of traffic associated with 7 background development results in the intersection of Bloor Street / Symington Avenue / Sterling Road operating at LOS 'E' with two critical movements over capacity during the p.m. peak hour. Both of these movements were already critical under existing conditions and the additional through traffic along Bloor Street West related to the developments result in the busier operations.

All of the unsignalized intersections continue to operate at acceptable LOS 'D' or better with all movements operating within capacity.

The purpose of presenting the future background conditions is to compare the incremental increase in delay and v/c ratio when the site-generated traffic are added as part of the future total conditions.



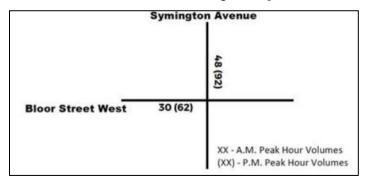
A.M. Peak Hour ΧХ Traffic Volumes P.M. Peak Hour Traffic Volumes

(xx)

Figure 3-3 2026 Future Background Volumes

3.5.2 PEDESTRIAN ASSESSMENT

The pedestrian volumes in the vicinity of the subject site have been assumed to grow by 1.5% per year over the next 5 years to the 2026 horizon. The future background pedestrian volumes are shown below.



The pedestrian LOS for the pedestrian facilities along Symington Avenue/Sterling Road and Bloor Street West were updated based on the projected volumes, and the results are summarized in **Table 3-3**. Detailed results and analysis of the pedestrian LOS are provided in **Appendix E**.

Table 3-3: Future Background Pedestrian Conditions

Segment	AM Peak Hour	PM Peak Hour
Bloor Street West	LOS C	LOS C
Symington Avenue / Sterling Road	LOS C	LOS C

As shown above, the general growth in pedestrian volumes results in a change in the pedestrian LOS during the a.m. peak hour along Symington Avenue/Sterling Road from LOS B under existing conditions to LOS C. However, this LOS along with other segments are still projected to adequately serve the pedestrian needs in the vicinity of the study area.

3.5.3 TRANSIT ASSESSMENT

The transit ridership under future background condition have been estimated using an annual ridership growth rate of 1.5% (no information was provided by TTC upon request). Based on the assumed growth rate, the resulting utilization rates of the bus routes within the study area by the 2026 horizon year are shown in **Table 3-4**.

Capacit	Capacity		Weekday A.M.	Peak Period	Weekday P.M. Peak Period	
Route	Per Transit Unit/hour	Direction	ection Average Hourly Ridership per transit route Utili		Average Hourly Ridership per transit route	Utilization
168	51	NB	12	23%	41	79%
Symington	51	SB	44	86%	24	46%
506 Carlton	74	EB	13	18%	5	7%
500 Cariton	74	WB	4	5%	10	14%
2 Bloor-	1000	EB	463	46%	646	65%
Danforth	1000	WB	463	46%	646	65%

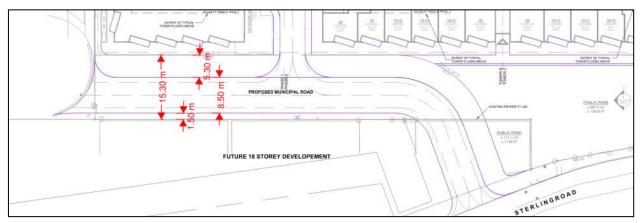
Table 3-4: Future Background Transit Conditions

As shown in **Table 3-4**, all the transit routes evaluated continue to operate within the available capacity during both the weekday a.m. and p.m. peak hours under future background conditions.

4 SITE-GENERATED VOLUMES

4.1 SITE ACCESS & RUTTAN STREET EXTENSION

The vehicular driveway for the site connects to the proposed extension of Ruttan Street as shown on the site plan in **Figure 1-2**. This proposed extension of Ruttan Street will connect Bloor Street West to Sterling Road thereby precluding the need for the existing cul-de-sac. Therefore, the site-generated traffic from the proposed development will have access to the intersection of Bloor/Ruttan and the signalized intersections of Sterling/Symington/Bloor to the north, and Dundas/Sterling to the south. The enhanced connectivity resulting from the proposed Ruttan Street extension also applies to the existing residential uses that currently only have access to the intersection of Bloor/Ruttan. Ruttan Street is a public road and the layout of the street extension is shown below and gives consideration to:



- The centreline of the Ruttan Street extension is based on the centreline of the existing segment to the north. On street parking is currently allowed on the east side of the street and streetlight poles are along the west side of the street.
- We have consulted the Development Infrastructure Policy & Standards (DIPS) so that the desired 5.3m boulevard is provided on the east side of the Rutan Street extension, which will be sufficient for the sidewalk and utilities. In addition, the pavement width of 8.5m is also consistent with DIPS and allows for one vehicular lane in each direction as well as on street parking on the east side. On the west side of the Rutan Street extension, 1.5m is allocated for either a boulevard or eventually integrated with the development proposal at 1405-1409A Bloor Street West & 229-231A Sterling Road. A potential cross-section of the 15.3m right-of-way (ROW) Ruttan Street extension is shown below (left) relative to the existing section of Ruttan Street (facing north).

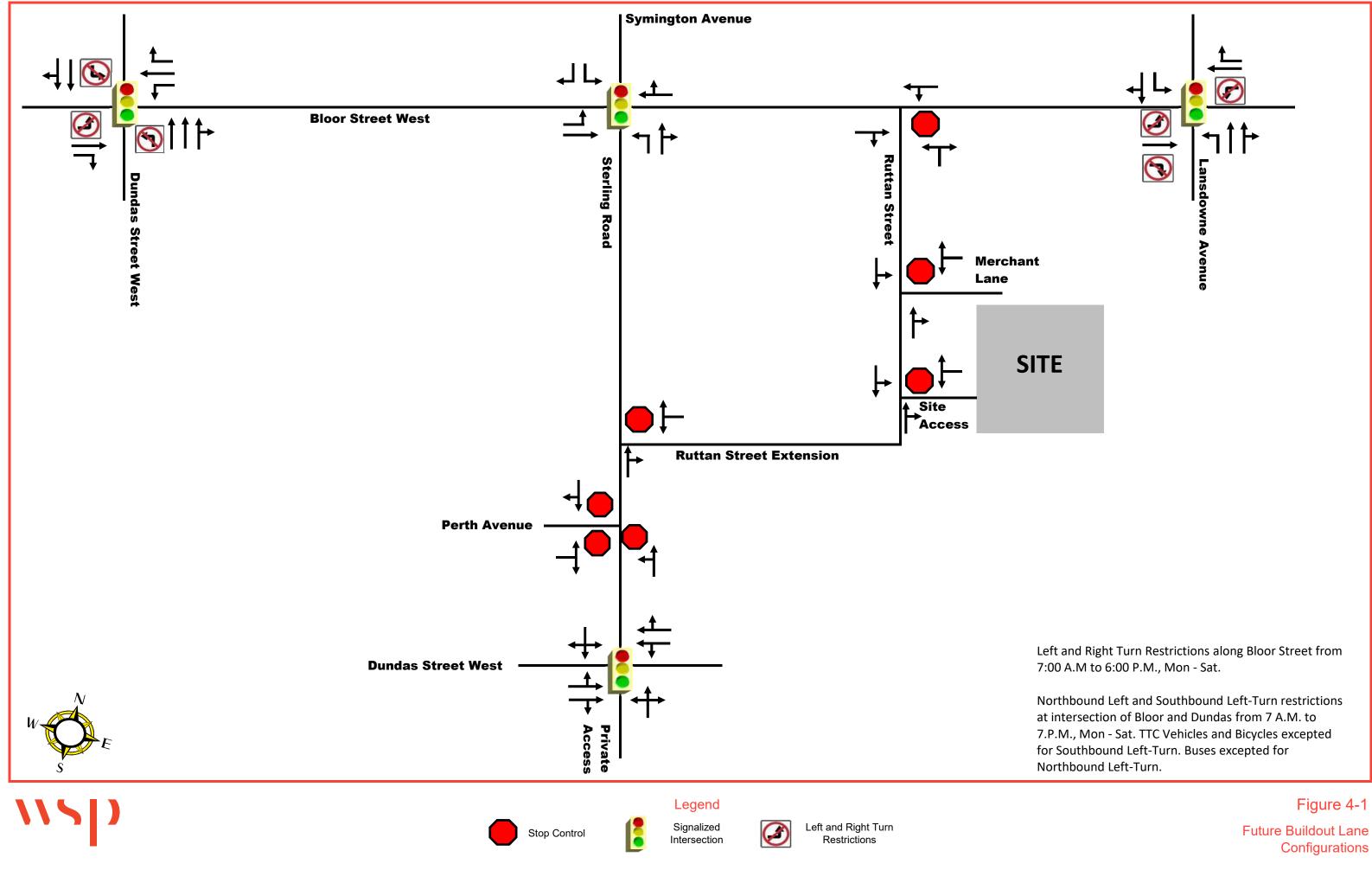


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• It is important to note that the westerly limit of the proposed Ruttan street extension already straddles the westerly property line limit of the subject development at 221-227 Sterling Road. Therefore, to maintain the centreline alignment of Ruttan Street, any additional ROW that the City requires to fulfill the boulevard needs along the west side of the street would need to be allocated from the development at 1405-1409A Bloor Street West & 229-231A Sterling Road.

Following this submission and with consideration of feedbacks from the City, a functional design (10%) design will be prepared for the Ruttan Street extension.

The new intersection formed by the proposed extension of Ruttan Street and the site driveway will be evaluated in this study and are shown in the future total lane configurations illustrated in **Figure 4-1**.



Configurations

4.2 TRIP GENERATION

4.2.1 AUTO TRIP GENERATION

The proposed development features a total of 892 residential units. The auto trip generation of the development is based on the area-specific trip generation rates applied in the September 2020 TIS for 1405-1409A Bloor Street West. As noted earlier in Section 2.3.3, these rates represent the downtown area modal split and was also applied for the trip generation of residential uses surrounding the proposed development. The average auto trip generation rates are presented in **Table 4-1**.

Table 4-1: Site Trip Generation Rates

	Average Auto Trips/Unit						
Use	A.M. Peak Hour			P.M. Peak Hour			
	In	Out	Total	In	Out	Total	
Multi-Unit Residential	0.02	0.08	0.10	0.09	0.03	0.12	

The calculation of the peak hour auto trips generated by the development is summarized in Table 4-2.

Table 4-2: Site-Generated Vehicle Trips

	Trip Generation					
Use		A.M. Peak Ho	ur	P.M. Peak Hour		•
	In	Out	Total	In	Out	Total
Residential	18	71	89	80	27	107

The development is forecasted to generate a total of 89 and 107 auto trips during the weekday a.m. and p.m. peak hours, respectively. With consideration of the displacement of the retail uses on the site today pre-COVID-19 (40 and 90 trips during the weekday a.m. and p.m. peak hours, respectively), the **net site-generated traffic for the development is 49 and 17 trips during the weekday a.m. and p.m. peak hours, respectively.** In comparison and for context, the City's TIS guideline has a threshold of 100 auto trips per hour in terms of determining when a TIS required. This indicates that the net impact of the redevelopment on the boundary road network is expected to be relatively minor.

4.2.2 TRANSIT AND PEDESTRIAN TRIP GENERATION

The transit and pedestrian trip generation of the proposed development were back calculated based on the auto trip generations in Table 4-2 and the proportion of auto mode use in the study area. **Table 4-3** summarizes the modal split characteristics for residential uses in the study area based on the TTS data for zones (105,106,107,114,115 and 116).

Primary Travel	A.M. Pe	eak Hour	P.M. Peak Hour		
Mode	Inbound	Outbound	Inbound	Outbound	
Auto – Driver	48%	26%	27%	35%	
Auto – Passenger	0%	3%	5%	13%	
Transit	19%	50%	49%	35%	
Walking & Cycling	33%	21%	19%	17%	
Non-Auto Total	52%	71%	68%	52%	

Table 4-3: Study Area Mode Split Characteristics - Residential

For clarification of the calculation, during the weekday a.m. peak hour, the 71 outbound auto trips tabulated in Table 4-2 represents 26% of the total outbound trips in the site area as per the TTS findings. Thus, there would be a total of 273 outbound trips during the a.m. peak hour. Based on the transit and active transportation mode splits presented in **Table 4-3**, 137 of the 273 outbound trips are forecast to be via transit (50%) and 57 trips via walking/cycling (21%) during the weekday a.m. peak hour.

The resulting transit and pedestrian trip generations for the redevelopment are summarized below in **Table 4-4**.

	Modal Split Percentage					
Primary Travel Mode	A.M. I	Peak Hour	P.M. Peak Hour			
	Inbound	Outbound	Inbound	Outbound		
Site Generation Auto Trips	18	71	80	27		
Site Generated Total Trips*	38	273	296	77		
Transit Person Trips	7	137	145	27		
Pedestrian Person Trips	13	57	56	13		

Table 4-4: Non-Auto Trip Generation

*Back calculated from the site auto trip generation in Table 4-2 and auto modal split in Table 4-3.

4.3 TRIP DISTRIBUTION AND ASSIGNMENT

4.3.1 AUTO

TTS trip distribution data of the study area's (zones 105,106,107,114,115,116) home-based trips were reviewed to determine site traffic distribution patterns for the proposed development. Table 4-5 outlines the resulting trip distribution for the site-generated traffic. The TTS queries are provided in **Appendix G**.

Direction	A.M. Inbound	A.M. Outbound	P.M. Inbound	P.M. Outbound
Northwest	0%	0%	0%	0%
North	3%	10%	10%	4%
Northeast	0%	0%	0%	0%
East	0%	8%	7%	5%
Southeast	0%	0%	0%	0%
South	9%	41%	38%	21%
Southwest	0%	0%	0%	0%
West	88%	41%	45%	69%
Total	100%	100%	100%	100%

The site-generated auto traffic was assigned based on the trip distribution information in **Table 4-5**, the future lane configuration shown in Figure 4-1 and the most logical path for vehicles to travel in order to minimize travel time and distance. For example a southbound outbound trip can either make a northbound right turn onto Bloor Street West or turn westbound left onto Sterling Road from the extension of Ruttan Street and connect over to Dundas Street.

Figure 4-2 illustrates the resulting traffic assignment of the site-generated trips to the boundary road network.

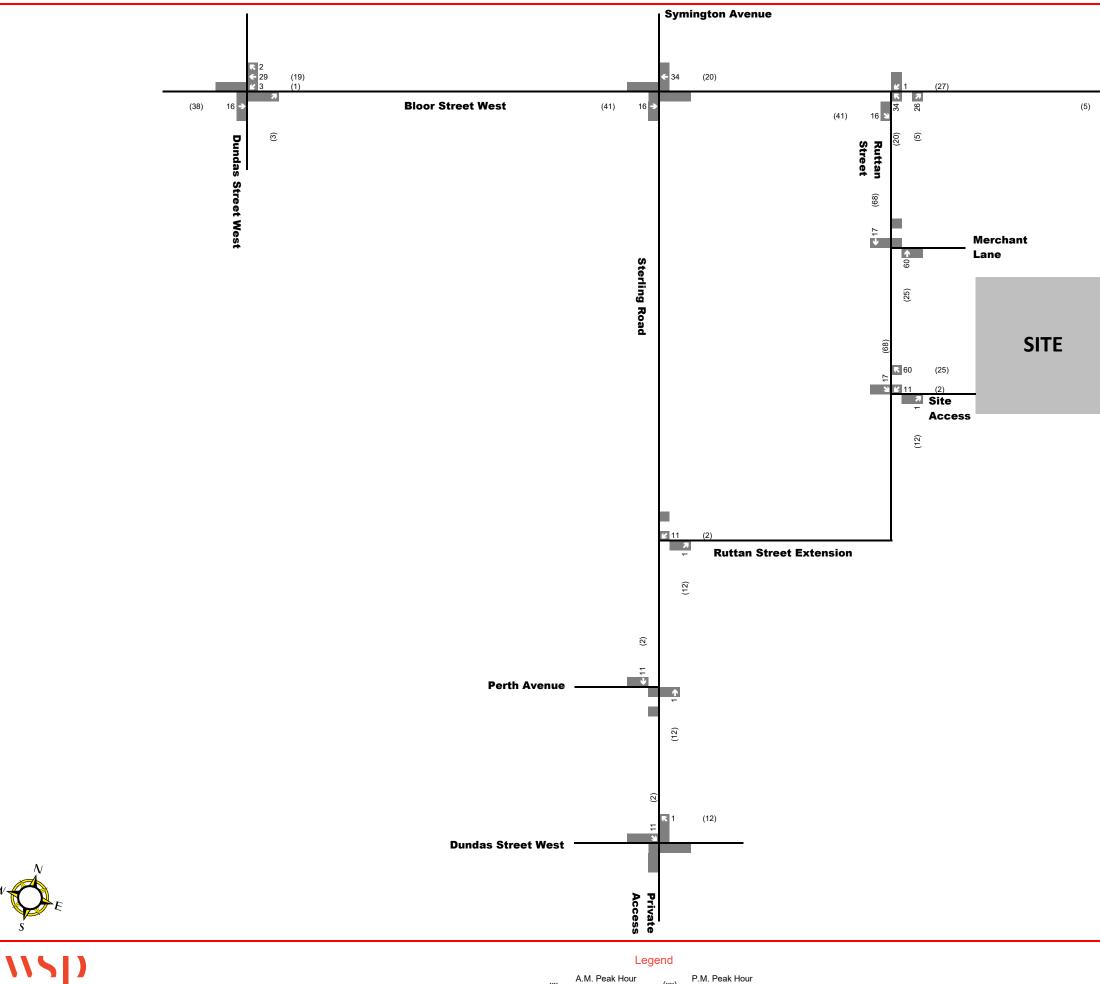
Since the proposed residential development will displace the existing retail uses on site, the traffic generated by the existing retail uses need to be removed to arrive at the net site-generated traffic volumes. Accordingly, **Figure 4-3** illustrates the existing retail site traffic volumes that are to be removed from the boundary road network (based on the trip generation presented in Section 2.3.3), and **Figure 4-** illustrates the net site-generated traffic derived by combining the residential trips being added and the retail trips being removed.

4.3.2 PEDESTRIANS

For the purpose of the pedestrian evaluation, it is assumed that the majority of the site-generated pedestrians would walk along the east side of Symington Avenue/Sterling Road and along the south side of Bloor Street West since this is the closest signalized intersection to the development. The site-generated transit volumes were also assumed to walk along the east side of Symington Avenue/Sterling Road and along the south side of Bloor Street West to access the closest bus stops and Dundas West subway station. Both the site-generated pedestrian and transit trips have been considered in the pedestrian analysis for the future total conditions.

4.3.3 TRANSIT

Transit trips were distributed by direction using the Transportation Tomorrow Survey (TTS) results. For the purpose of this assessment, the majority of transit trips (90%) have been assigned to the Bloor-Danforth subway line in the east-west direction since it is the highest order of transit in the City. The remaining 10% were allocated evenly between the streetcar and bus routes.



A.M. Peak Hour хх Traffic Volumes

P.M. Peak Hour (xx) P.M. Fear Lies. Traffic Volumes

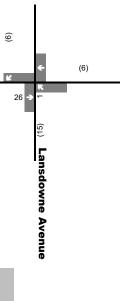
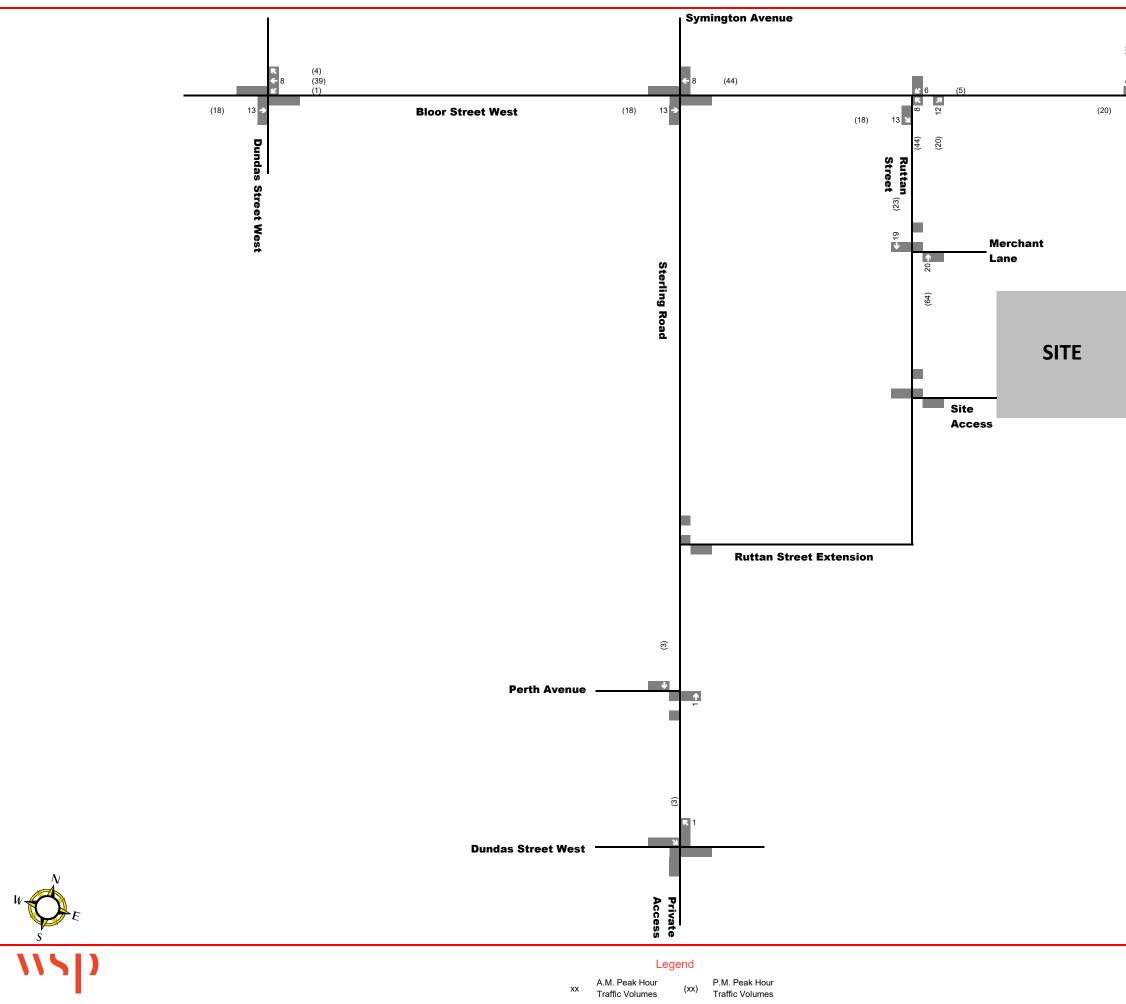


Figure 4-2 Site Generated Traffic Volumes



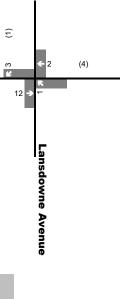
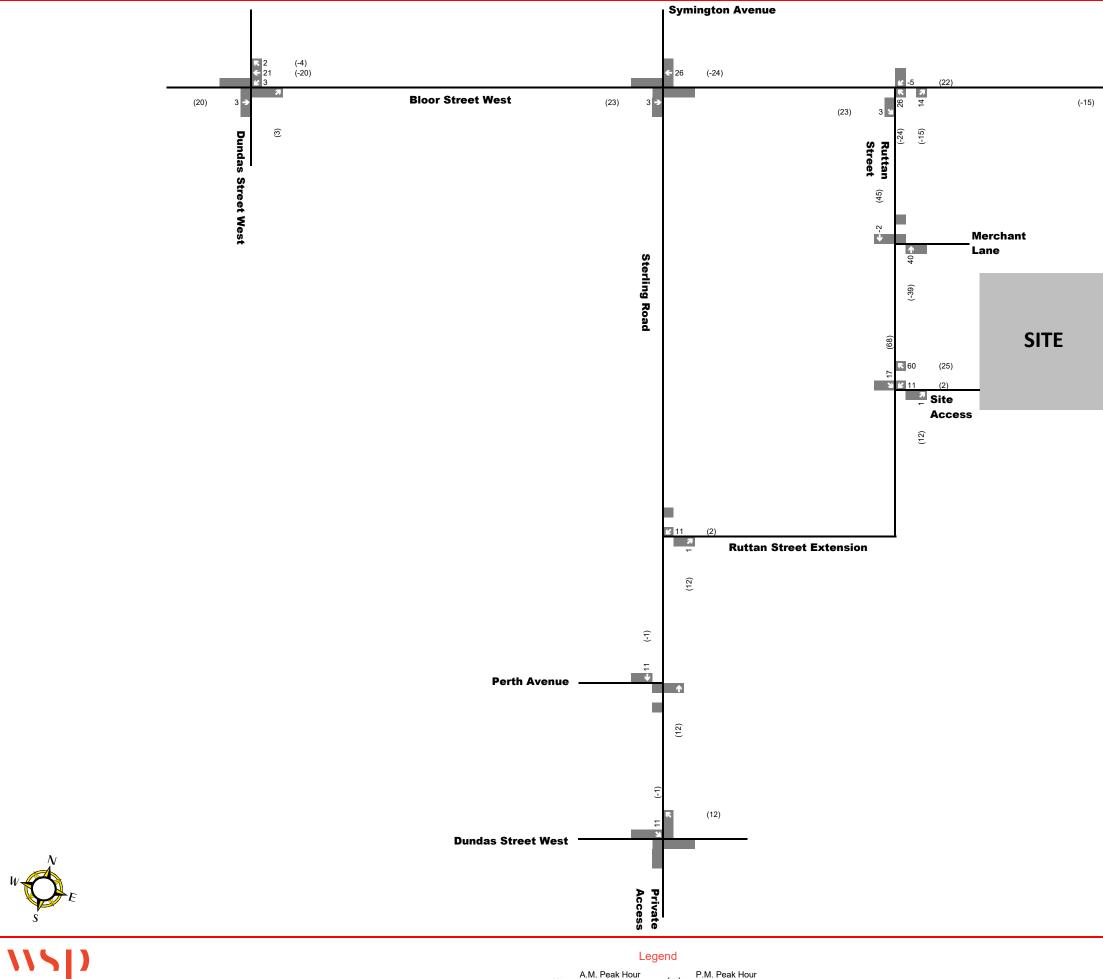


Figure 4-3

Existing Site Generated Traffic Volumes Removal



A.M. Peak Hour хх Traffic Volumes

P.M. Peak Hour (xx) P.M. Fear Lies. Traffic Volumes

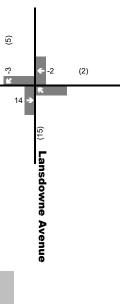


Figure 4-4

Net Site Generated Traffic

5 FUTURE TOTAL CONDITIONS

5.1 AUTO

The 2026 future total traffic volumes were developed by superimposing the following volumes:

- 2026 future background volumes as shown in Figure 3-3; and
- Net site-generated traffic volumes as shown in **Figure 4-4**.

The resulting future total traffic volumes are shown in **Figure 5-1**. Based on these volumes, the future total intersection operations have been evaluated and documented in **Table 5-1**. Detailed Synchro worksheets are available in **Appendix H**.

	Weekd	ay A.M. Peak Hour	Weekda	Weekday P.M. Peak Hour		
Intersection	LOS (Delay	Critical Movement	LOS (Delay	Critical Movement		
Intersection	in	(Volume/Capacity	in	(Volume/Capacity		
	Seconds)	Ratio)	Seconds)	Ratio)		
	Sig	nalized Intersections				
Dundas Street West and	D (37 sec)	EB-T (0.97)	C (33 sec)			
Bloor Street West	D (37 sec)	SB-LTR (0.97)	C (33 Sec)	-		
Bloor Street West and						
Symington Avenue /	D (41 sec)	WB-TR (0.98)	D (51 sec)	WB-TR (1.06)		
Sterling Road				NB-TR (1.01)		
Lansdowne Avenue and				WB-T (0.98)		
Bloor Street West	C (35 sec)	EB-T (0.92)	D (42 sec)	SB-TR (0.96)		
Dundas Street West and						
Sterling Road / Private	B (10 sec)	_	B (13 sec)	-		
Access	2 (10 500)		2 (10 000)			
	Unsi	gnalized Intersections				
Bloor Street West and	01131	Shunzeu meerseerions				
	E (44 sec)	NB-LR (0.59)	D (31 sec)	NB-LR (0.27)		
Ruttan Street						
Ruttan Street and	A (9 sec)	WB-LR (0.04)	A (9 sec)	WB-LR (0.01)		
Merchant Lane		. ,	. ,	. ,		
Perth Avenue and	A (8 sec)	EB-LR (0.23)	A (10 sec)	NB-LT (0.38)		
Sterling Road	11 (0 500)	ED ER (0.23)	11 (10 500)			
Site Access at	A (9 sec)	WB-LR (0.07)	A (9 sec)	WB-LR (0.03)		
Ruttan Street	11 (9 500)	$\mathbf{WD}^{-}\mathbf{Liv}\left(0.07\right)$	1 (9 300)	**D-TK (0*03)		
Sterling Road at	A (9 sec)	WB-LR (0.02)	B (10 sec)	WB-LR (0.00)		
Ruttan Street Access	A (9 Sec)	$WD^{-LK}(0.02)$	D (10 Sec)	WD-LK (0.00)		

Table 5-1: 2026 Future Total Intersection Operations

1 For signalized intersections, the level of service is based on the overall delay of the intersection. Critical v/c ratios are only listed for movements with values over 0.90.

2 For stop controlled intersections, the LOS is based on the delay associated with the critical movement.

The results in **Table 5-1** indicate that the future total conditions are similar to the future background conditions. All of the study intersections, with the exception of Bloor Street West / Ruttan Street during the a.m. peak hour, continue to operate at acceptable LOS 'D' or better. The change in average intersection delay (0 to 3 seconds) and critical movement v/c ratios (0 to 0.03) at the signalized intersections are minimal. In fact, the displacement of the retail trips generated by the existing uses on site result in improved operations at the signalized and unsignalized intersections of Bloor Street West and Symington Avenue/Sterling Road and Bloor Street West/ and Ruttan Street, respectively.

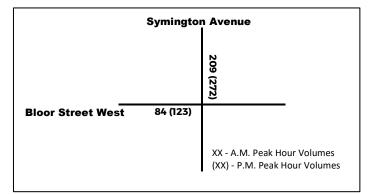
The unsignalized intersection of Bloor Street West/ Ruttan Street operates with LOS 'E' during the a.m. peak hour. However, the critical northbound movements still operates well within capacity at a v/c of 0.59 and for an unsignalized intersection in a downtown context, these levels of intersection operations are common. It is also worth noting that the evaluation at this unsignalized intersection is conservative since it does not consider the rerouting of the traffic generated by the adjacent development and existing residential uses that formerly only had vehicular access via Bloor Street West and Ruttan Street. Once the proposed Ruttan Street extension is in place, the traffic associated with these uses will have additional routing options via the signalized intersections of Bloor Street West and Sterling Road and Sterling Road and Dundas Street West. Therefore, motorists will be able to self-regulate between the enhanced road network.

The proposed minor-street stop controlled driveway onto the Ruttan Street extension is forecast to operate very well, which is to be expected given the opposing through volumes along Ruttan Street will be relatively low.

Overall, the findings indicate that the proposed development net site-generated auto traffic can be accommodated by the boundary road network.

5.2 ACTIVE TRANSPORTATION ASSESSMENT

The pedestrian and transit volumes generated by the subject site were added to the future background pedestrian volumes traveling along the south side of Bloor Street West and the east side of Symington Avenue/Sterling Road. The future total pedestrian volumes are shown below.

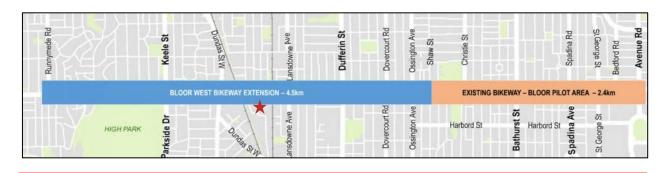


The proposed development contributes a minor increase in the total pedestrian volumes along both streets. The resulting pedestrian LOS based on the future total pedestrian volumes are shown in **Table 5-2** below.

Table 5-2: Future Total Pedestrian Conditions

Segment	AM Peak Hour	PM Peak Hour
Bloor Street West	LOS C	LOS C
Symington Avenue / Sterling Road	LOS C	LOS C

As shown in **Table 5-2**, the addition of the site-generated pedestrian volumes does not result in a change to the LOS of the pedestrian facilities relative to the future background conditions. The pedestrian facilities along the section of Bloor Street West and Symington Avenue/Sterling Road will continue to function at an adequate LOS. From a cyclist perspective, the proximity of the proposed development to the Bloor Bikeway extension (as shown below with the red star) offers a significant incentive for residents and visitors to cycle to and from the development. The proposed bicycle parking provision relative to the City's requirements are noted in Section 7.



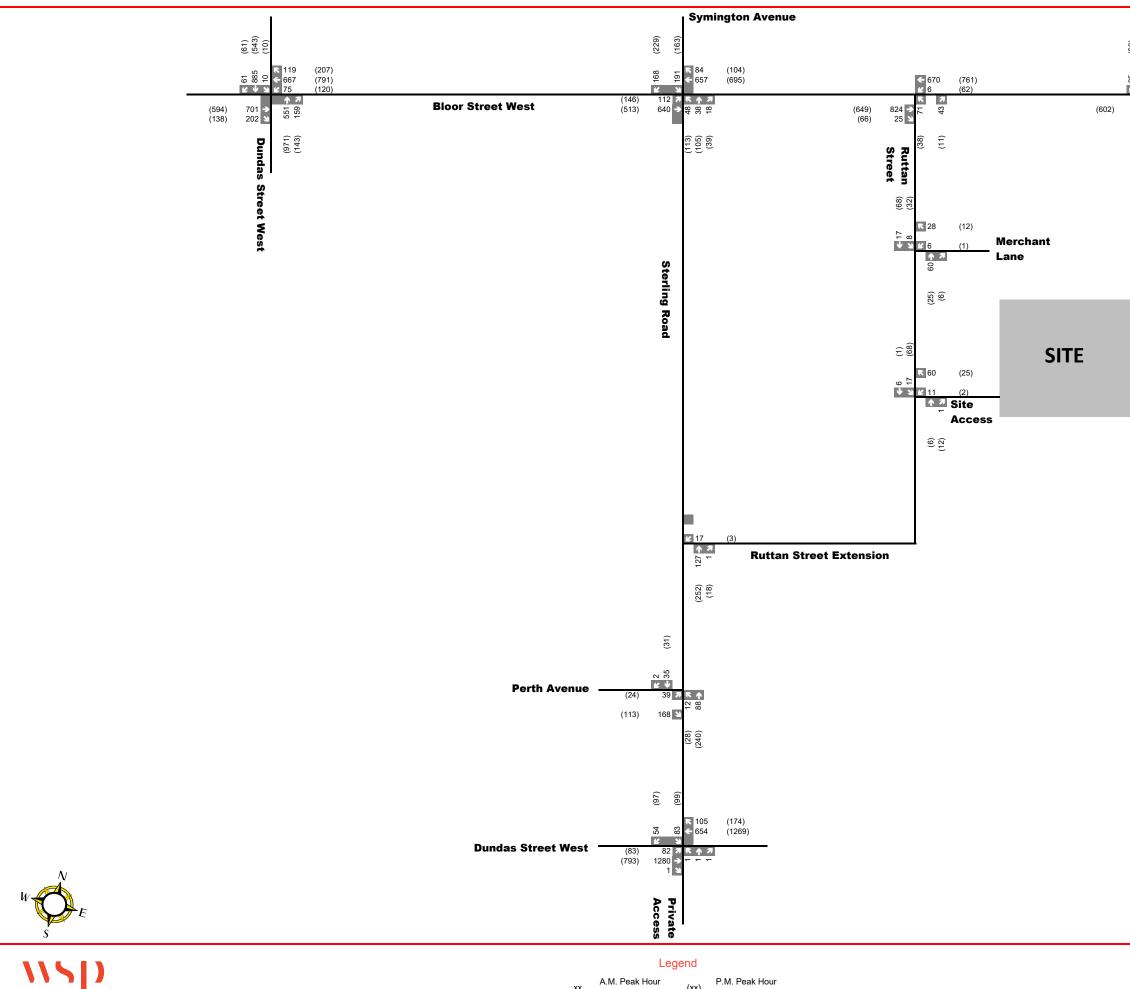
5.3 TRANSIT ASSESSMENT

The future total transit trips were projected by aggregating the future background transit trips with the site-generated transit trips. **Table 5-3** outlines the projected utilization rates for the various bus routes under future total conditions.

C.	Constitu	Consecile.		Weekday A.M. Peak Period		P.M. Peak riod	
Route	Capacity Per Transit Unit/hour	Per Transit	Transit Direction	Average Hourly Ridership per transit route	Utilization	Average Hourly Ridership per transit route	Utilization
168	51	NB	12	24%	41	80%	
Symington	51	SB	44	86%	24	48%	
506 Carlton	74	EB	14	18%	6	8%	
506 Cariton	74	WB	4	5%	11	15%	
2 Bloor-	1000	EB	466	47%	651	65%	
Danforth	1000	WB	464	46%	649	65%	

Table 5-3: Future Total Transit Conditions

The results presented in **Table 5-3** indicate that all the transit routes will continue to operate within capacity with the additional transit trips generated by the proposed development.



P.M. Peak Hour (xx) Traffic Volumes

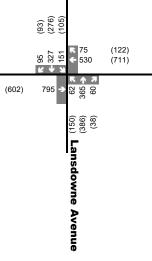


Figure 5-1 2026 Future Total Traffic Volumes

6 SITE PLAN REVIEW

6.1 CITY LOADING REQUIREMENT

The loading requirements of the proposed development have been established based on the City of Toronto harmonized By-law 569-2013 as summarized in **Table 6-1**.

Table 6-1: Loading Requirement at the Proposed Site (Zoning By-Law 569-2013)

Land Use M	Magnituda	Number of Loading Space Required				
	Magnitude	Type G	Туре А	Туре В	Type C	
Residential	892 units	1	-	-	1	

As presented in Table 6-1, one Type 'G', one Type 'C', loading space are required. As shown on the site plan, two Type 'G' and one Type 'C' loading bays are proposed on the ground floor to serve the proposed development. The dimensions of the loading bays satisfy the By-law 569-2013 requirements for both Type 'G' and 'C'. To facilitate public garbage pick-up, the structural design of the Type 'G' loading bays will comply with the City of Toronto Solid Waste Guideline, which requires the loading space and staging area to be built with reinforced concrete and have a vertical clearance of 6.1m. The proposed loading arrangement will more than adequately serve the needs of the development.

6.2 PUBLIC ROAD DESIGN

As noted earlier in Section 4.1, Ruttan Street is proposed to be extended south from the current cul-desac terminus to connect to Sterling Road as shown in the site plan. Based on the correspondence with City staff as provided in Appendix A, staff advised that a minimum 16.5m right-of-way (ROW) is required for the Ruttan Street extension as a public road. The project team proposes to convey 15.3m of the subject site for the ROW of the Ruttan Street extension. The 15.3m ROW and alignment has been designed based on the following factors:

- An 8.5m pavement width that is generally consistent with the 9m pavement width at the typical existing segment of Ruttan Street and is consistent with the City of Toronto Development Infrastructure Policy & Standards (DIPS);
- The centreline of the vehicular travel portion of 8.5m has been designed with consideration of the centreline of the existing section of Ruttan Street to minimize road offset;
- The 5.3m wide boulevard on the east side of the street extension is consistent with the City of Toronto DIPS to accommodate various utilities, landscaping and a 2.1m sidewalk; and
- The subject development has made fair provisions for a potential development along the west side of Ruttan Street (1405-1409A Bloor Street West & 229-231A Sterling Road) by providing a 1.5m wide section of boulevard ROW. It is important to note that the westerly limit of the 15.3m ROW public road as shown coincides with the subject site's (221-227 Sterling Road) westerly property line. It is anticipated that if a development is approved along the west side of Ruttan Street that the development would need to also contribute towards the balance of the overall ROW required by the City (minimum 16.5m ROW as per discussion with City staff). The project team will work with the City and the development team of the adjacent site to refine the public street ROW moving forward. At that point, a functional design will be prepared.

6.3 AT-GRADE AND UNDERGROUND CIRCULATION

The site layout has been reviewed from a transportation perspective through AutoTURN vehicle swept path analysis for a fire truck, garbage truck, delivery truck and passenger vehicles.

Fire Truck Manoeuvres

A City of Toronto custom Fire Truck was used to test the movement of emergency vehicles serving the building (being with 15m of the building entrance) from along both the extension of Ruttan Street and the internal driveway. As per Ontario Regulation 332/12: Building Code Section 3.2.5.5. Location of Access Routes, fire trucks need to get to a distance of less than 15 m from the principal entrances of the buildings. At the terminus of the internal driveway, a fire truck can make a 3-point turn to leave the site. The maneuvers work well as illustrated in **Figures 6-1** and **6-2** with no maneuvering issues.

Garbage Truck Manoeuvres

The maneuvers of a custom City of Toronto front-loading garbage truck as defined by the City's Solid Waste Guideline was tested entering the loading bay in a forward direction, and exiting the two proposed loading bays by reversing out while operating within the minimum inside (9.5 m) and outside (14 m) radius as specified in the City's Guideline. The garbage truck maneuvers work well as illustrated in **Figures 6-3** and **6-4** with no manoeuvring issues.

On-site building staff will be available to assist as a flag person if desired. In addition, a flashing warning beacon system will be installed along the parking ramp adjacent to the loading bay to caution motorists exiting the garage to proceed with caution if there are any loading ongoing activities in the loading bay. Convex mirrors and signage will also be installed as appropriate to raise multi-modal awareness near the loading area.

Loading Truck Manoeuvres

A TAC medium single unit truck was tested reversing into the Type G loading bays and leaving the loading bays in a forward motion. The maneuvers work well as illustrated in **Figures 6-5** and **Figure 6-6**.

A TAC LSU truck was tested accessing and egressing the Type C loading bay as shown in **Figures 6-7** and **6-8**. The manoeuvre works adequately.

Passenger Vehicle Circulation

A P-TAC standard passenger vehicle was tested entering and exiting the site and circulating through the ramp to the underground parking levels. The maneuvers work well as illustrated in **Figure 6-9**. The ramp has been designed such that adequate transition slope area is provided at the top and bottom of the ramp. Convex mirrors will also be proposed at the turning area and at the top/bottom of the ramp to assist with motorist awareness.

Underground Parking Levels

The circulation of a P-TAC vehicle template in the parking levels were tested and the maneuvers work well as shown in **Figures 6-10** and **6-11**. All of the spaces adjacent to physical structures have been reviewed to ensure there are appropriate buffers (0.3m). Convex mirrors are proposed at the corners of the driveways in all of the parking levels of the parking lot. All of the parking spaces meet the City of Toronto By-law 569-2013 requirements for regular and accessible parking spaces.

All of the drive aisles are 6m wide and the ramp to the underground parking has a maximum slope within the City allowance of 15% and an adequate transition slope at the top and bottom of the ramp of 7.5%.

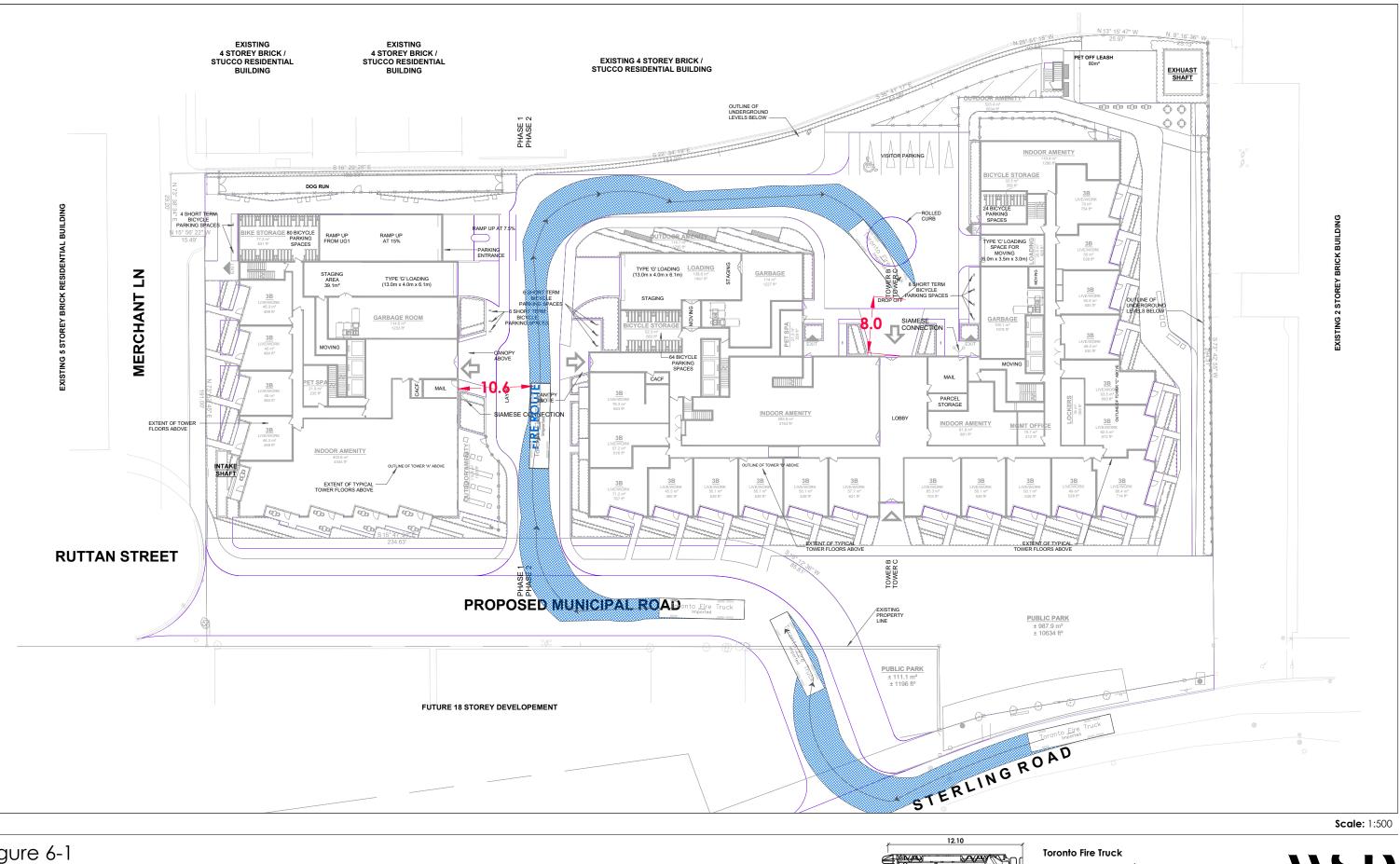
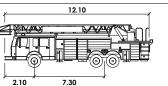
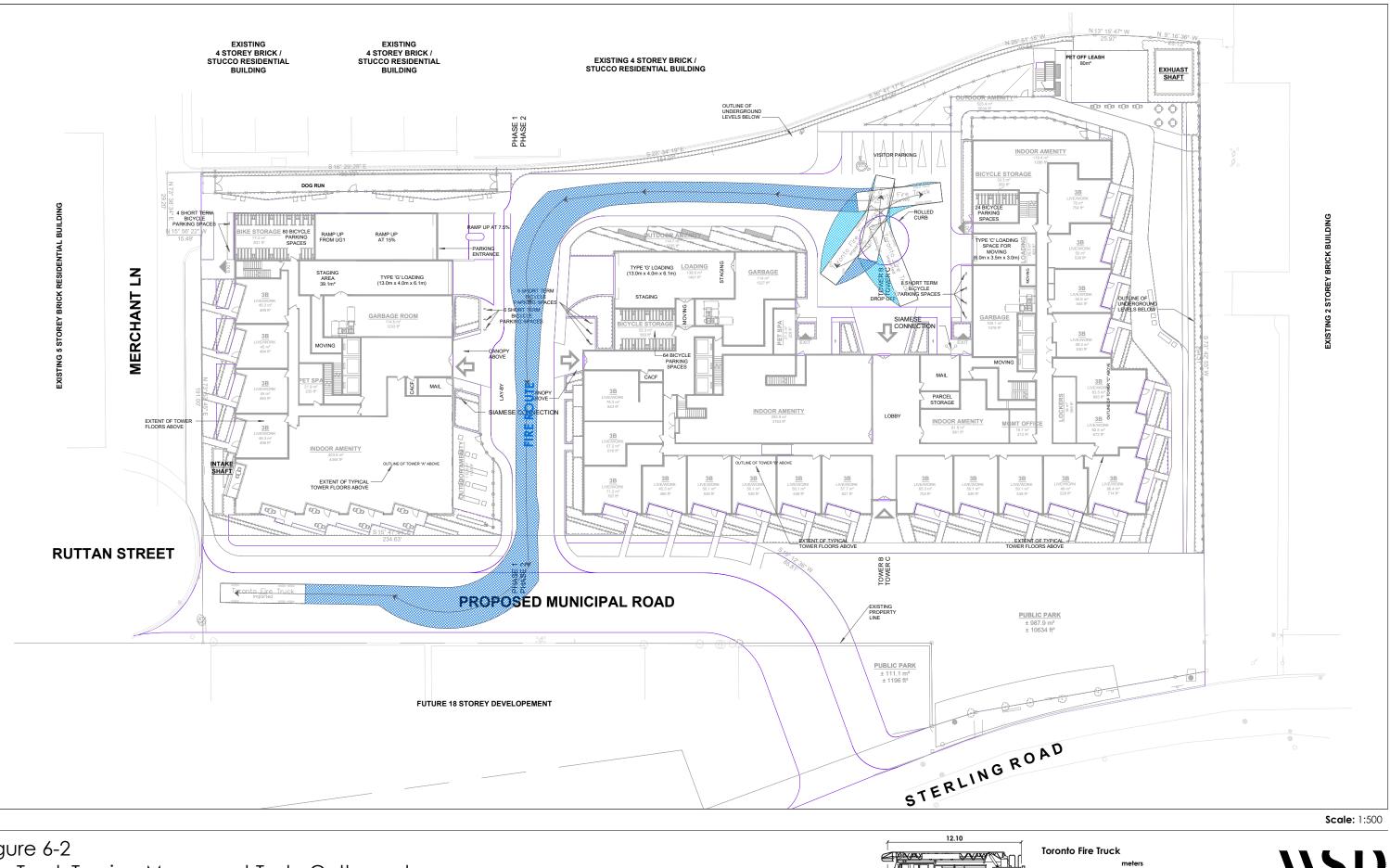
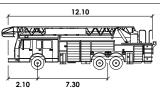


Figure 6-1 Fire Truck Turning Movement Test - Inbound 221 Sterling Road



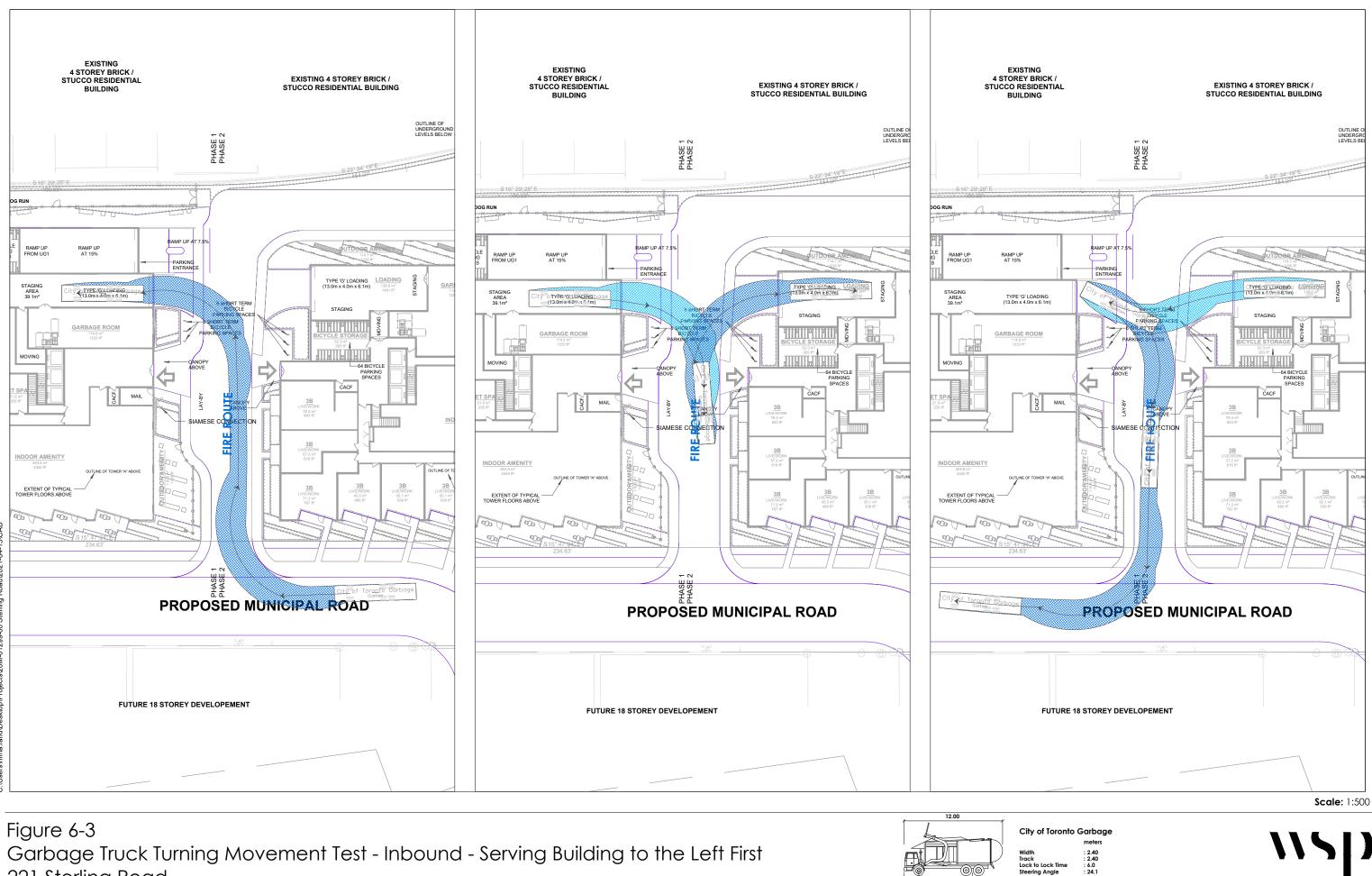
	meters	
Width	: 2.75	
Track	: 2.50	
Lock to Lock Time	: 6.0	
Steering Angle	: 32.5	

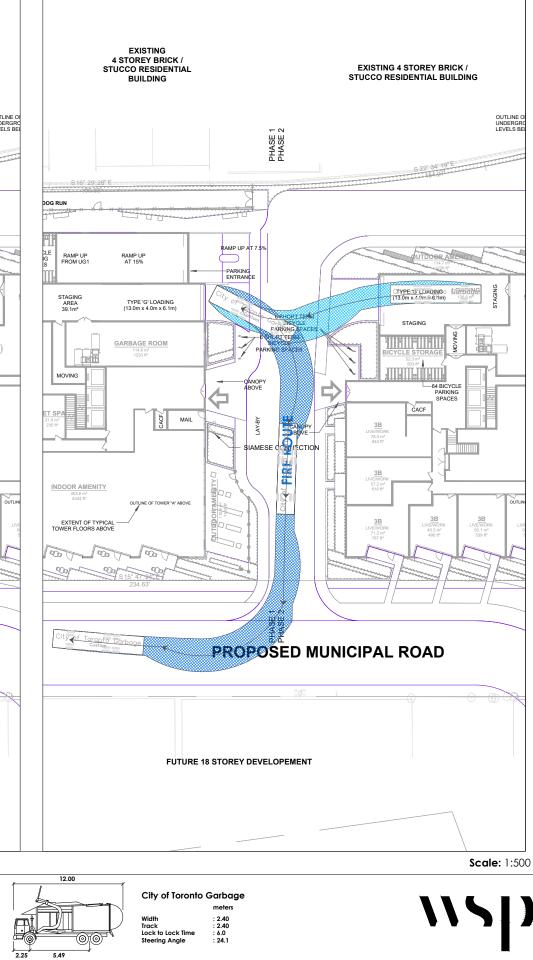


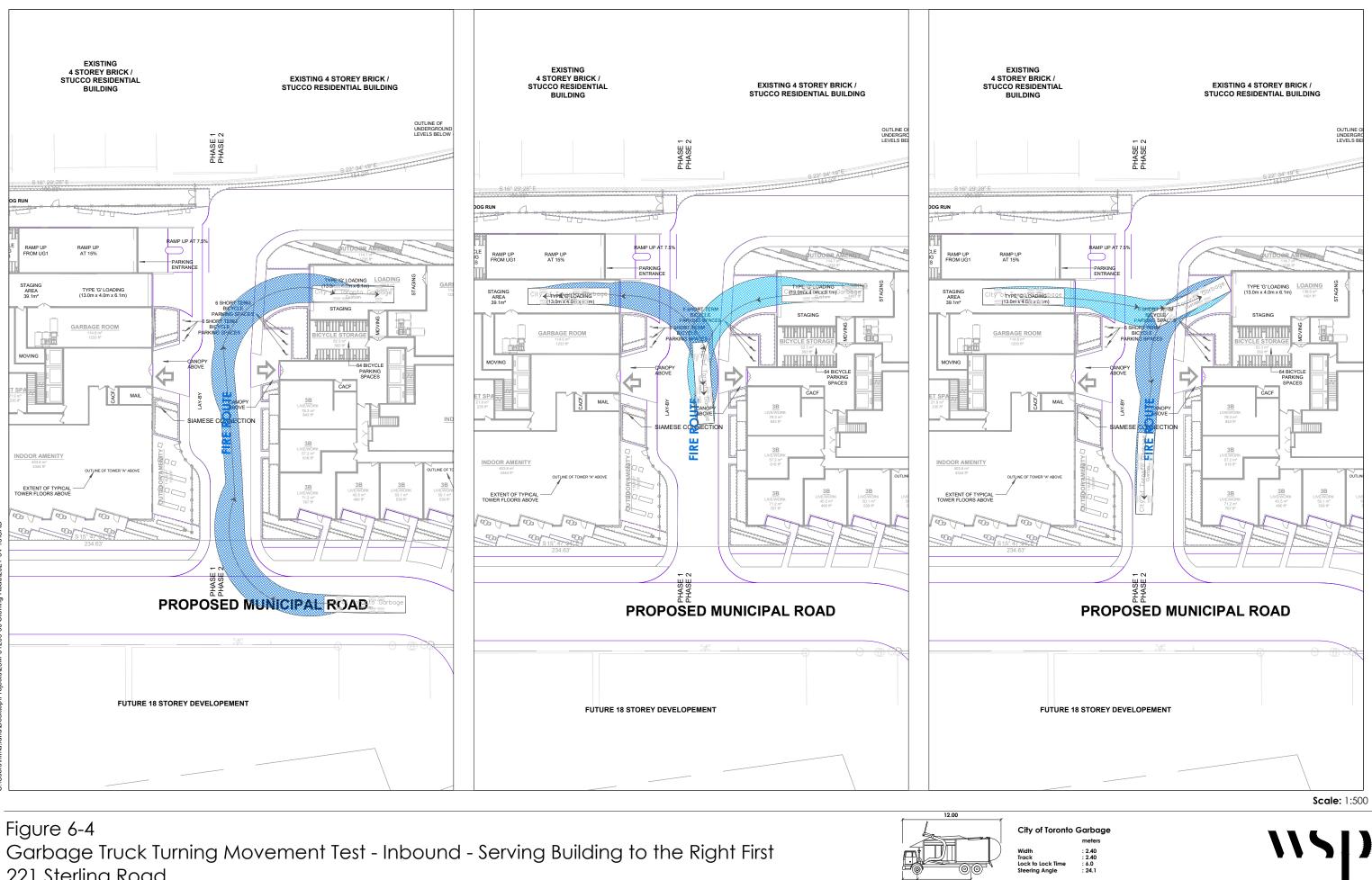


wsp - Sterling G Level.dwg_2

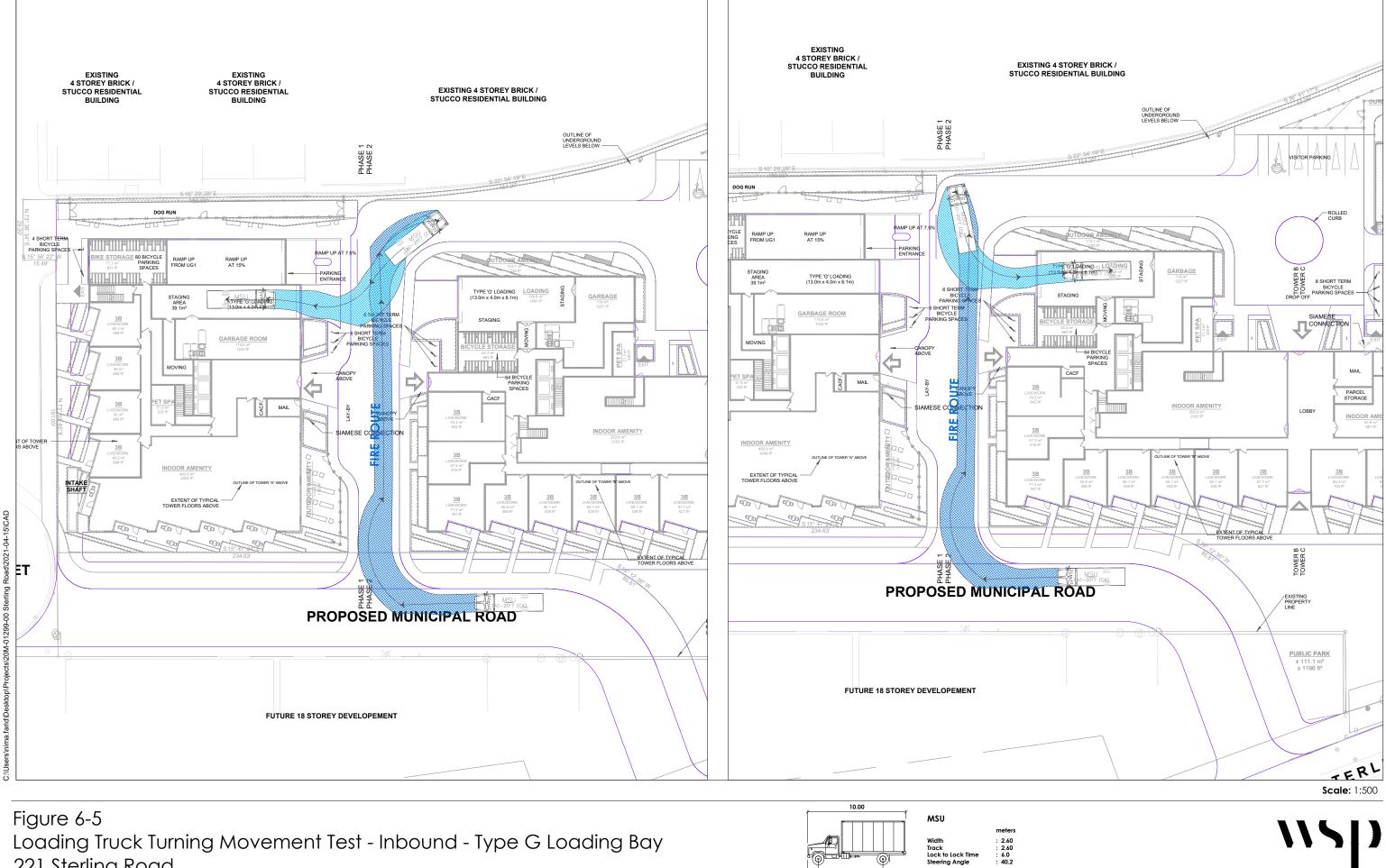
Width : 2.75 Track : 2.50 Lock to Lock Time : 6.0 Steering Angle : 32.5

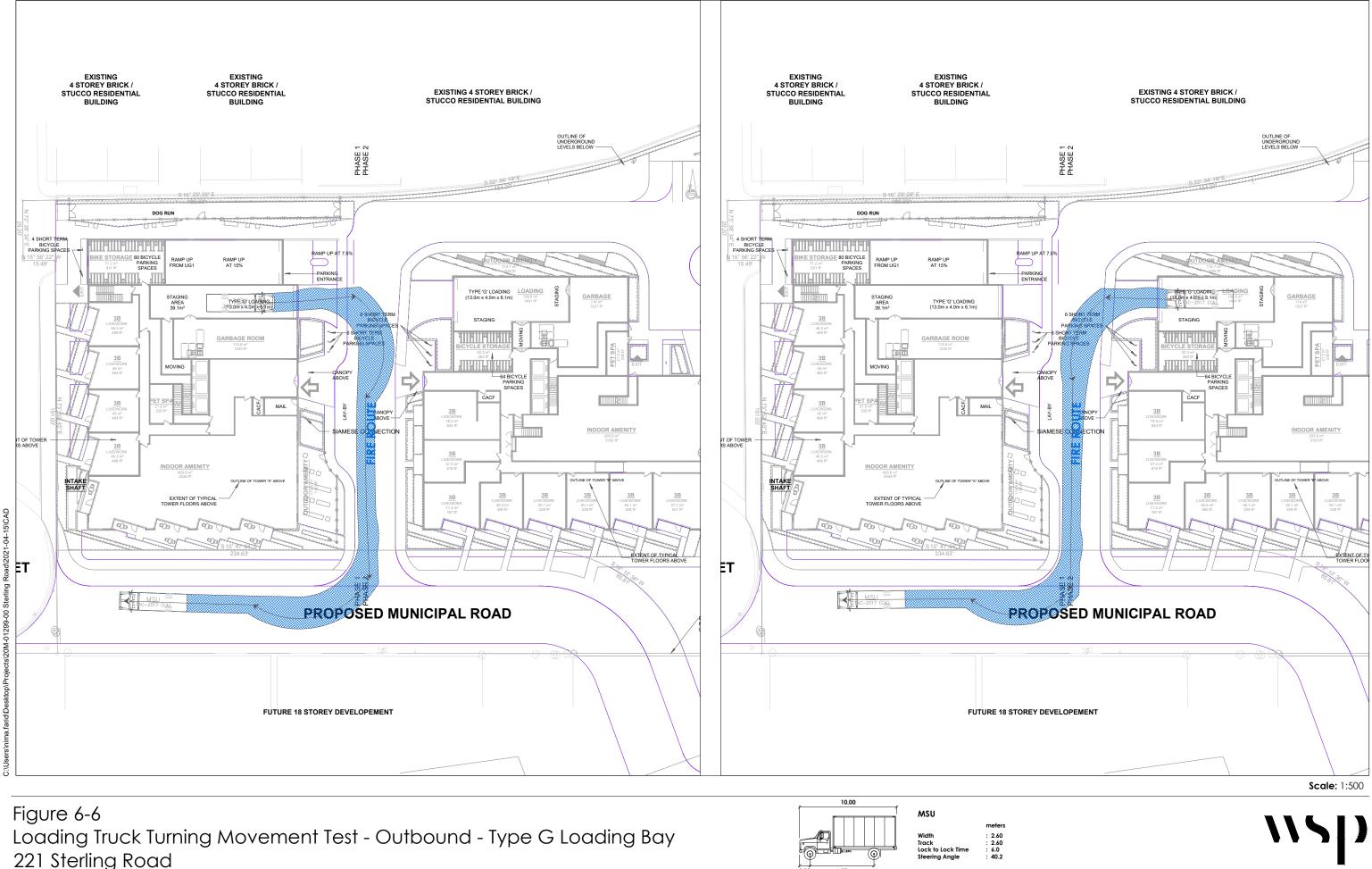


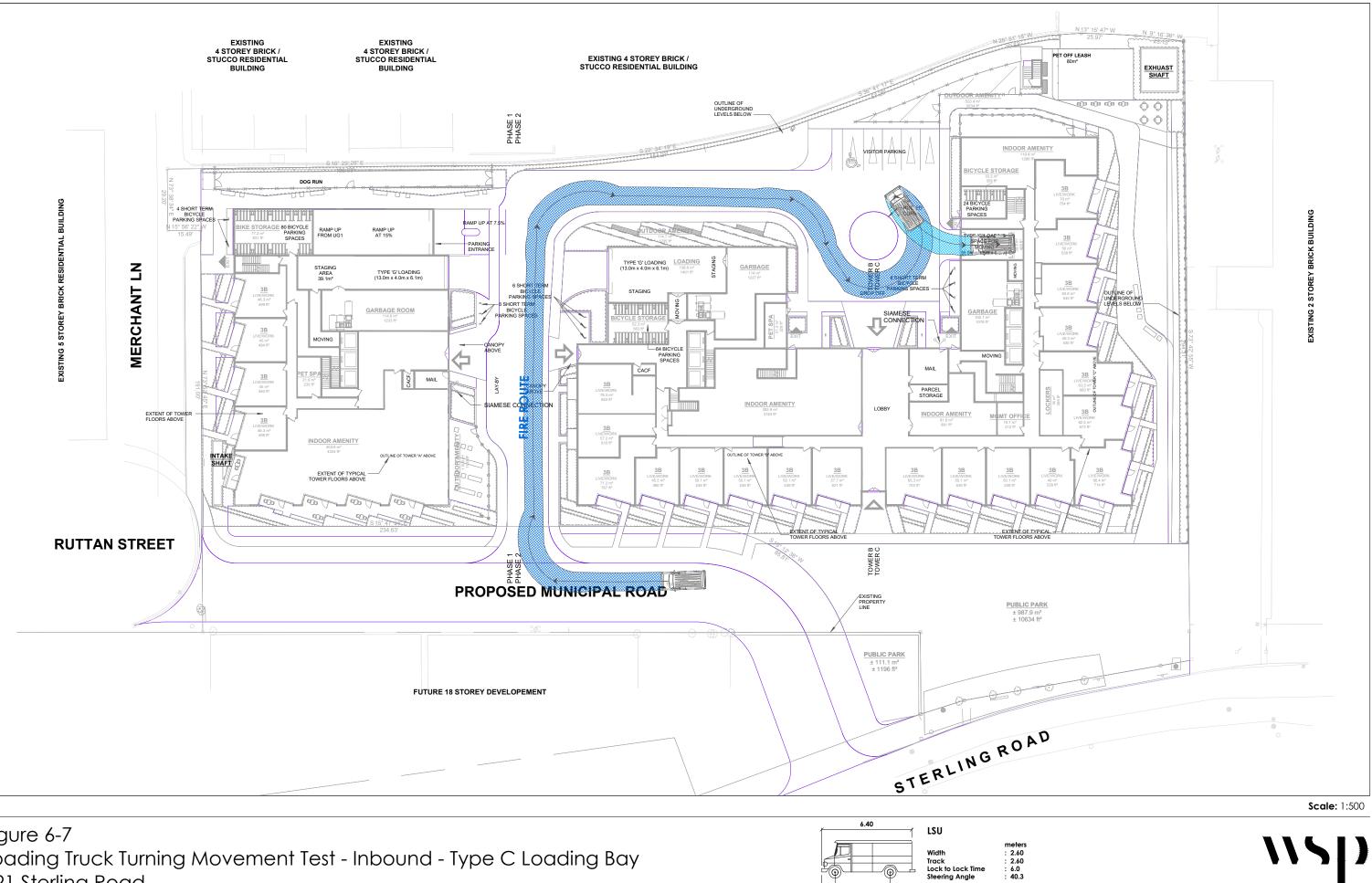


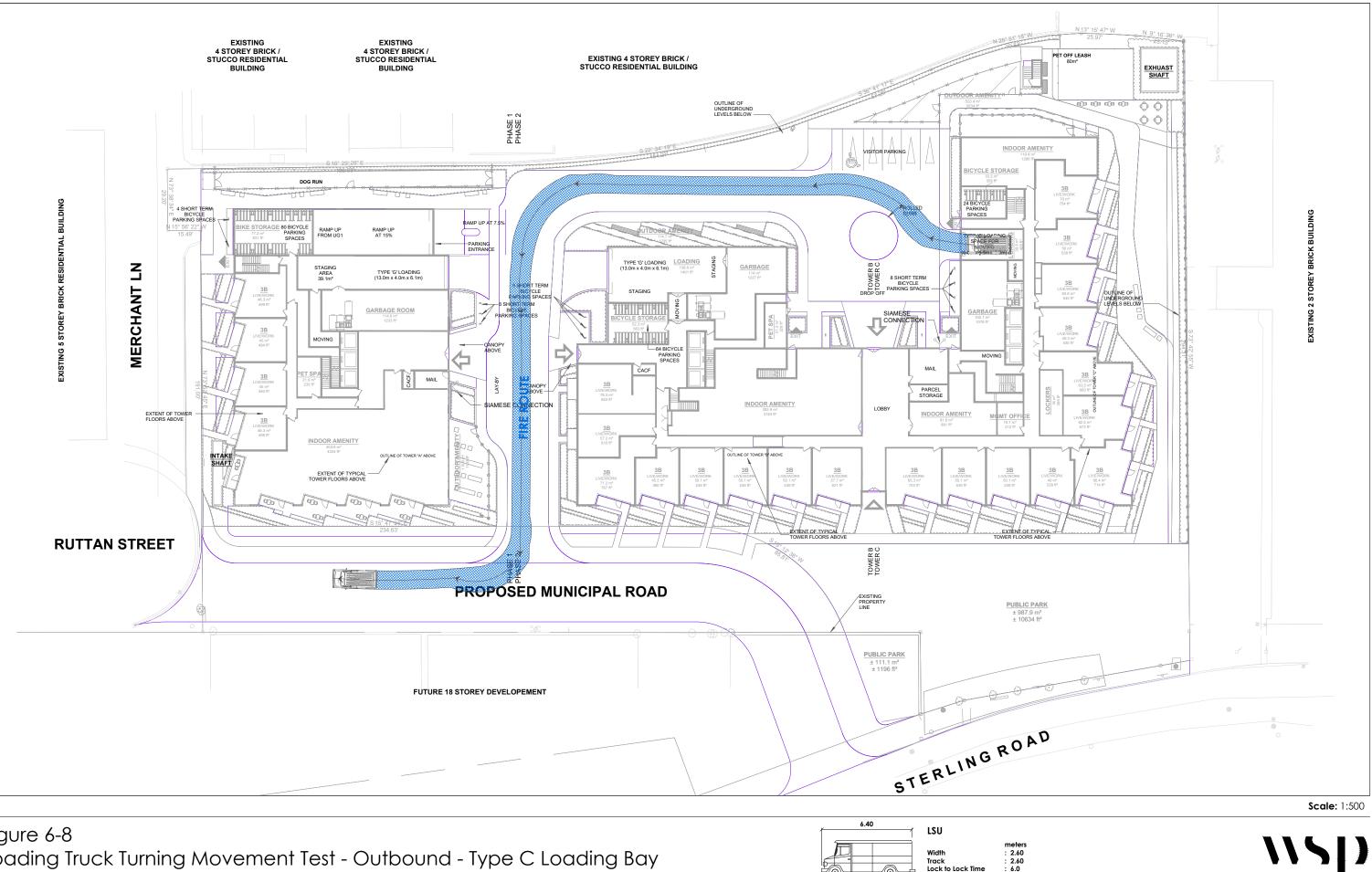












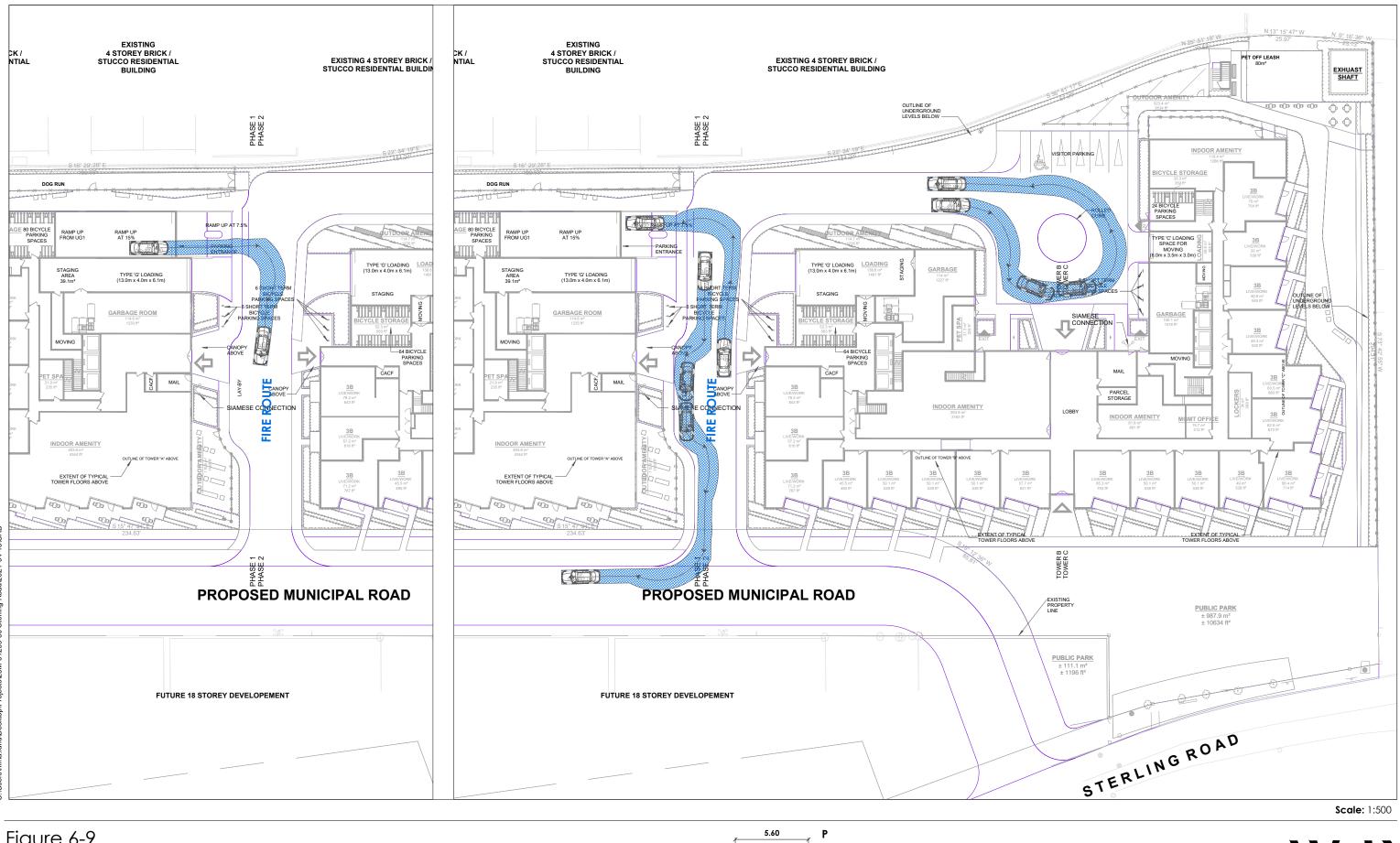


Figure 6-9 Passenger Vehicle Site Circulation Test - Ground Level 221 Sterling Road

5.60	P	
1.10 3.20	Width Track Lock to Lock Time Steering Angle	meters : 2.00 : 2.00 : 6.0 : 35.9

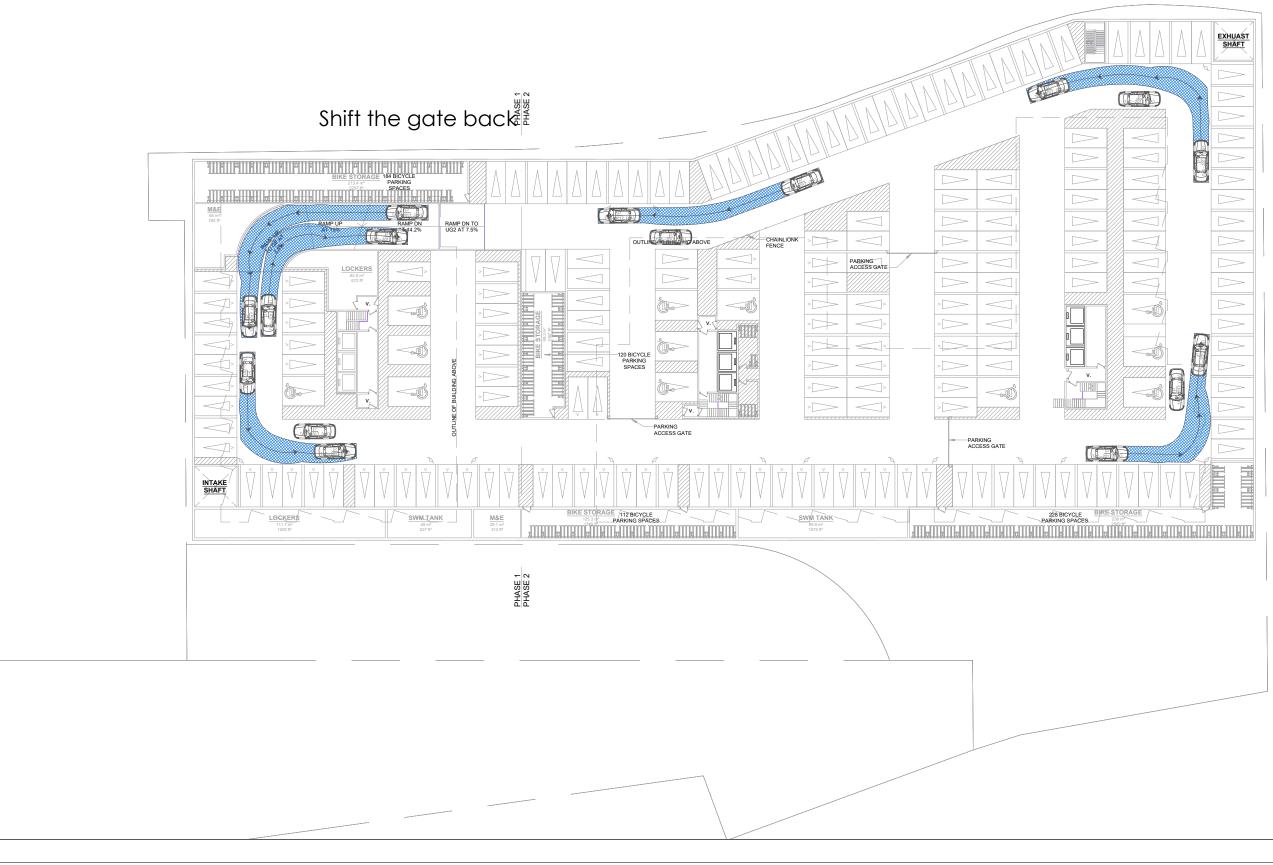
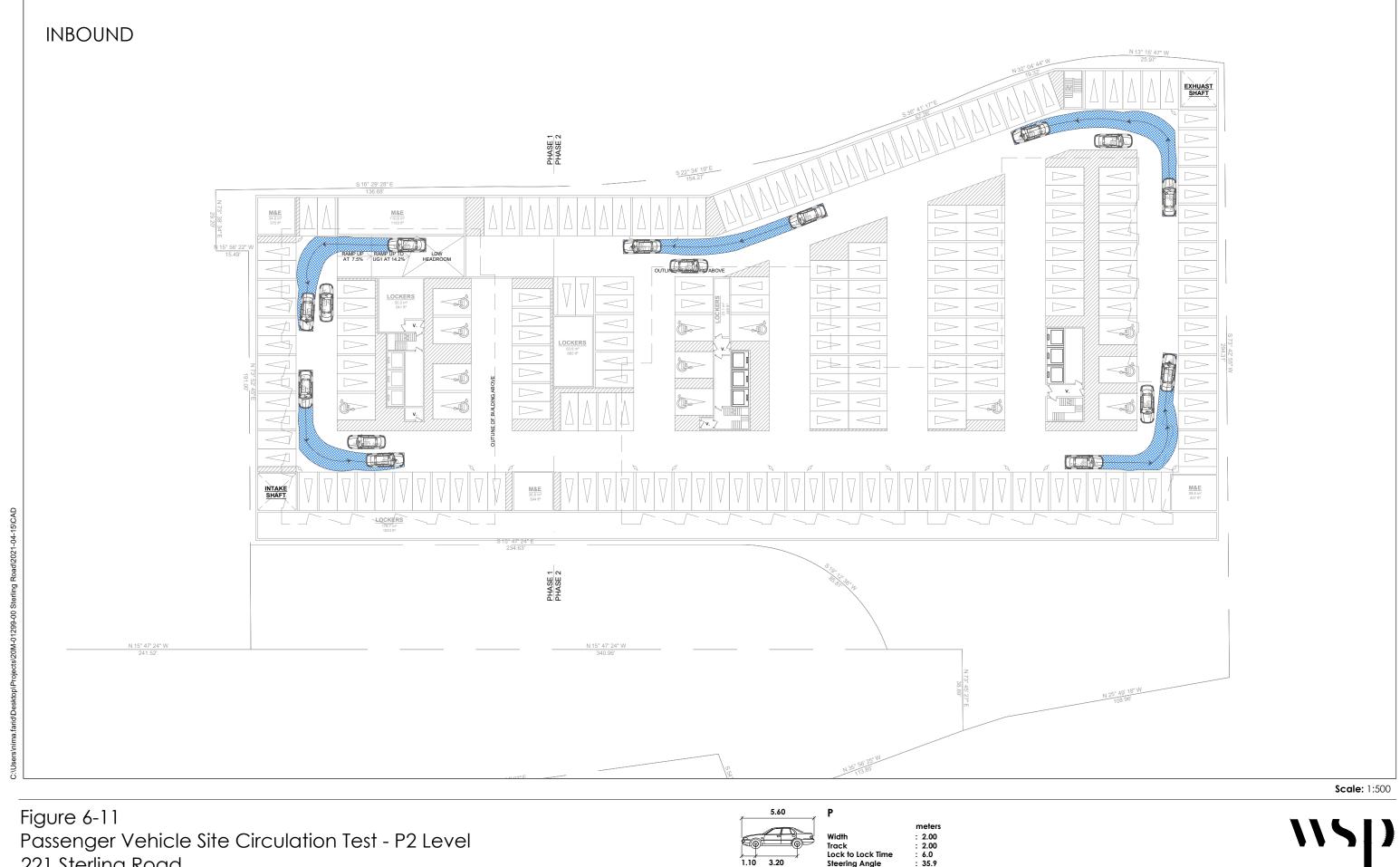


Figure 6-10 P1 Level Site Circulation Test

5.60	Ρ	
		meters
	Width	: 2.00
<u>rorio</u>	Track	: 2.00
	Lock to Lock Time	: 6.0
1.10 3.20	Steering Angle	: 35.9

Scale: 1:500





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

7 PARKING ASSESSMENT

7.1 MOTOR VEHICLE PARKING

Currently, based on the City of Toronto's Zoning By-law #569-2013 R (d1.5) (x58) Chapter 10 as noted below:

(58) Exception R 58

The lands, or a portion thereof as noted below, are subject to the following Site Specific Provisions, Prevailing By-laws and Prevailing Sections:

Site Specific Provisions:

(A) The lands must comply with exception 900.2.10(7).

Prevailing By-laws and Prevailing Sections:

(A) Section 12(2) 187 of former City of Toronto By-law 438-86;

(B) Section 12(2) 335 of former City of Toronto By-law 438-86; and

(C) On 2 Merchant Lane, former City of Toronto by-law 695-92.

(D) City of Toronto By-law 297-2003. [By-law: OMB PL130592]

Notwithstanding the current zoning on the site, the harmonized By-law 569-2013 has been considered as the baseline for the subject site. Given the site's walking distance proximity to two TTC subway stations and various streetcar and bus routes as well as the recently built cycling infrastructure along Bloor Street, Policy Area 1 minimum rates as shown in **Table 7-1** are appropriate for consideration. For context, the site has a transit score of 99 out of 100 and a bike score of 92 out of 100.

Table 7-1: By-Law #569-2013 Parking Rates for (Policy Area 1)

Use	Parking rate		
Studio	0.30 Space per Unit		
1-Bedroom Unit	0.50 Space per Unit		
2-Bedroom Unit	0.80 Space per Unit		
3-Bedroom Unit	1.0 Space per Unit		
Visitor	0.10 Space per Unit		

Based on the By-law parking rates noted in Table 7-1, the resulting requirement for the proposed development is detailed in **Table 7-2**. The statistics include the rental replacement and live-work units.

Building	Unit Type	Parking Rate	Units / GFA	Spaces
	Bachelor	0.3 Spaces per Unit	67	20
	One-Bedroom	0.5 Spaces per Unit	591	295
	Two-Bedroom	0.8 Spaces per Unit	136	108
Proposed	Three-Bedroom	1.0 Spaces per Unit	98	98
	Total Residential	-	892	521
	Visitor	0.10	892	89
	Total fo	610		

Table 7-2: Parking Required for 221 - 227 Sterling Road

As shown above, a minimum of 610 parking spaces are required based on the application of PA-1 By-law rates to the development. In comparison, **a total of 417 spaces are proposed for the development** (5 at-grade and 412 underground over 2 levels). 87 spaces will be allocated as visitor parking while the remaining 330 spaces are allocated for residential use (**average rate of 0.37 spaces/unit**). Notwithstanding the City's By-law requirement, **there are several justification factors in addition to the TDM measures being proposed**.

7.2 ONGOING AND APPROVED REDUCED RESIDENTIAL VEHICULAR PARKING

While the parking needs of each development varies site by site, reduced vehicular parking provision (relative to the City By-law 569-2013) is common in urban environments with convenient transit and active transportation access. The proposed development is located within walking distance to Dundas West-Bloor Mobility Hub including the following services:

- 2 subway stations (Dundas West and Lansdowne) to access Line 2;
- Regional Kitchener GO and UP Express services at the Bloor Station;
- 3 streetcar routes that connect to various parts of the downtown core; and
- 1 regular bus route along Symington.

In addition, the site is steps from the recently completed Bloor Bikeway extension that provides protected cycle tracks and enhanced pedestrian realms for pedestrian. Based on the development's context, the past approvals and current development proposals in the City for reduced vehicular parking are summarized in **Table 7-3**. The average residential parking supply rate and transit/bike scores are presented relative to the proposed development.

Development Address (magnitude) Approval Residential Transit and Bike					
Development Address (magnitude)	Process	Parking Supply	Scores		
571 to 597 Bloor Street West, 783 to 782 Bathurst Street, 26 to 38 Lennox Street, 581 to 603 and 588 o 612 Markham Street – former Honest Ed's and Mirvish Village development (806 units)	OPA & Rezoning Approved (Apr 28, 2017)	248 spaces Resident ratio: 0.31 spaces/unit	98 transit score 100 bike score		
158 Sterling Road (243 units)	Under review	84 spaces Resident ratio: 0.35 spaces/unit	98 transit score 100 bike score		
1660 Bloor Street West (133 units)	Under review	40 spaces Resident ratio: 0.30 spaces/unit	95 transit score 86 bike score		
155 Dundas Street East & 200 Jarvis Street (384 units)	Approved – Site Specific By-law 161- 2012	72 spaces Resident ratio: 0.19 spaces/unit	100 transit score 75 bike score		
1405 Bloor Street West (326 units)	Under review	101 spaces Resident ratio: 0.31 spaces/unit	99 transit score 92 bike score		
Average Residential Supply Rate		0.29 spaces/unit	98 transit score 91 bike score		
Proposed Development		0.37 spaces/unit	99 transit score 92 bike score		

Table 7-3: Developments with Reduced Residential Parking in Similar Context

Based on the information presented above, the proposed development's residential vehicular parking supply rate of 0.37 spaces/unit is 28% higher than the average supply rate of other development sites that have similar transit and active transportation access. Overall, the residential supply is being reduced in areas with excellent non-auto mobility options to encourage more sustainable transportation.

7.3 PROXY SURVEYS

Given the current COVID-19 context and the associated travel restrictions and social distancing policies, proxy surveys are not feasible. As an alternative suggested by City staff in recent projects, representative proxy surveys of other condominiums with similar transit and active transportation context can be considered. Accordingly, various proxy results are presented in **Table 7-4** to investigate the appropriateness of the proposed residential parking rate of 0.37 spaces/unit for the subject development. Many of the selected sites have walking distance access to subway stations and streetcar routes.

Development (magnitude)	Transit & Bike Scores	Peak Residential Parking Rate Surveyed	Date of Surveys	
51 Trolley Crescent (352 units)	100 transit score 57 bike score	0.22 spaces/unit ¹	Saturday January 18, 2014	
350 King Street W (465 units)	100 transit score 97 bike score	0.11 spaces/unit ¹	Tuesday & Saturday January 14/18, 2014	
21 & 25 Carlton St (732 units)	100 transit score 83 bike score	0.30 spaces/unit ¹	Tuesday & Saturday January 14/18, 2014	
8 Mercer Street (412 units)	100 transit score 90 bike score	0.17 spaces/unit²	Wednesday & Friday February 10/12, 2016	
Average	100 transit score 82 bike score	0.20 spaces/unit		
Proposed Development	99 transit score 92 bike score	0.37 spaces/unit		

1 Referenced from 2978 Dundas Street West TIS, January 2018

2 Referenced from 60, 64 Queen Street East and 131, 133, 135 Church Street TIS, January 2018

As shown in Table 7-4, **the proposed residential supply rate of 0.37 spaces/unit is higher than the average and the maximum surveyed residential demands from four different sites**. The comparison also indicates that the 4 proxy condominium sites have similar transit and bike scores as the subject site.

7.4 MARKETING DATA

WSP has worked with various developers in the downtown context with similar transit and bike scores to collect marketing data for vehicular parking demand. Marketing data is a strong indicator for demand in vehicular parking purchase when the sale of the space is unbundled from the unit (as is the case with the proposed development). Some relevant marketing data are presented in **Table 7-5**.

Address	Transit & Bike Scores	Unit Type	Parking Demand Rate (Based on sales) Units		Blended Residential Rate	
		Bachelor	0.01 space per unit	103	0.00	
215-219 Church	100 transit score	One-Bedroom	0.10 space per unit	259		
Street	84 bike score	Two-Bedroom	0.33 space per unit	196	0.20 spaces/unit	
511001		3-Bedroom	0.63 space per unit	46		
		Bachelor	0 space per unit	3	0.33 spaces/unit	
171 East	92 transit score 86 bike score	One-Bedroom	0.068 space per unit	183		
Liberty Street		Two-Bedroom	0.754 space per unit	61		
		3-Bedroom	1.037 space per unit	32		
	100 transit score 90 bike score	Bachelor	N/A	68		
8 Mercer		One-Bedroom	N/A	222	0.201 cpaces /upit	
Street		Two-Bedroom	N/A	112	0.30 ¹ spaces/unit	
		3-Bedroom	N/A	10		
Average	96 transit score 85 bike score	0.28 spaces/unit				
Proposed Development	99 transit score 92 bike score	Proposed residential supply: 0.37 spaces/unit				

Table 7-5: Marketing Sales Data for Other Downtown Approved Developments

1 Referenced from 88 North Mixed-use Development TIS, December 18, 2015

The results show that the **proposed residential supply of 0.37 spaces/unit is higher than the average of the marketing demand observed at the three approved sites**. The comparison of the parking demand is appropriate given the fact that the transit and bike scores are similar between the two sites and the proposed developments are all condominiums.

7.5 CITY PARKING MINIMUM POLICY REVIEW UNDERWAY

The City has recently acknowledged in publications and public notices such as PH20.4 – proposed review of parking requirements for new development (Agenda Item History - 2021.PH20.4 (toronto.ca), that:

- This report responds to a request from Planning and Housing Committee for information related to parking requirements for new developments. The City establishes its parking requirements for new development in zoning by-laws. A review of these requirements is timely. The last review of these standards concluded in 2013.
- The demand for parking is shifting as a result of societal changes and other factors. Decreases in automobile ownership and increases in the popularity of automobile alternatives have influenced parking demand in many new developments. Ongoing significant investments in transit infrastructure are intended to provide travel choices to more people and reduce demand for automobile-based travel. Removing minimum automobile parking requirements from and increasing the use of maximum automobile parking requirements in zoning by-laws would also reduce the risk of a future oversupply of automobile parking.

7.6 AUTO PARKING SUMMARY

Based on the comprehensive review of the proposed/approved residential parking rates, proxy survey results and marketing data of other condominium developments with similar transit and active transportation context, it can be concluded that the proposed residential supply rate of 0.37 spaces/unit is adequate. Additional parking provided beyond this rate would either be underutilized or be a catalyst to encourage people to drive. The Travel Demand Management (TDM) measures proposed in Section 8 will also help encourage residents and visitors to adopt a non-auto mode of transportation. The proposed visitor parking rate of 0.10 spaces/unit meets the City's By-law requirement and will help ensure visitor parking needs are accommodated internal to the site. Therefore the overall parking rate of 0.47 spaces/unit for the development is appropriate given the site's transit and active transportation context.

7.7 BICYCLE PARKING

7.7.1 BICYCLE PARKING REQUIREMENTS

The bicycle parking requirements for the proposed development based on the harmonized By-law 569-2013 and the Toronto Green Standard requirements have been calculated. The proposed development is located in Bicycle Zone 1. **Table 7-1** summarizes the bicycle parking requirements for the site.

Land Use	Bicycle Parking Rates		Units		cycle Parking equirements	Total Required Bicycle
	Short-Term (visitor)	Long-Term (Residents)		Short- Term (visitor)	Long-Term	Parking
Residential	0.1 spaces/Unit	0.9 spaces/Unit	892	90 spaces	803 spaces	893 spaces

Table 7-1: Bicycle Parking Standards according to Zoning by-law 569-2013 (Bicycle Zone 1)

7.7.2 BICYCLE PARKING SUPPLY

A total of 952 bicycle parking spaces, including 106 short-term and 846 long-term spaces, are provided as part of the development. This supply more than satisfies the City's bicycle parking requirements for the proposed development. **The extra 59 bicycle parking spaces proposed will help support the site to be less reliant on the auto mode and encourage active transportation** given the site's proximity to the recently implemented Bloor cycle track.

8 TRANSPORTATION DEMAND MANAGEMENT

Transportation Demand Management (TDM) is a general concept that includes various strategies that increase transportation system efficiency by managing the demand for travel. TDM treats mobility as a means to an end, rather than an end in itself, and emphasizes the movement of people and goods rather than motor vehicles. Generally speaking, TDM initiatives discourage single-occupant vehicle travel and encourage more efficient modes such as walking, cycling, ridesharing, public transit and teleworking, particularly under congested conditions. In the context of an urban environment, TDM elements are an essential part of any progressive transportation and traffic plan for a proposed development.

The objective of the proposed TDM strategy is to inform, encourage and facilitate the utilization of the non-automobile travel opportunities within the study area. In order to achieve this, it is recommended that the marketing strategy for the proposed residential development highlight key characteristics based on the below items via knowledgeable sales staff and visually attractive information packages so as maximize the success of these TDM strategies and minimize the need for automobile use. The following TDM strategies are recommended to be considered as part of the proposed development.

8.1.1 TRANSIT AND PRESTO CARDS

Preloaded PRESTO cards (i.e. \$25 per card) could be provided to the residents as part of the move in welcome package as an incentive to use public transit. This initiative provides residents the opportunity to try the excellent transit services in proximity of the site and to adopt a transit-dependent life-style. Additional incentives could be provided to units that choose not to purchase a parking space.

8.1.2 UNBUNDLING OF PARKING

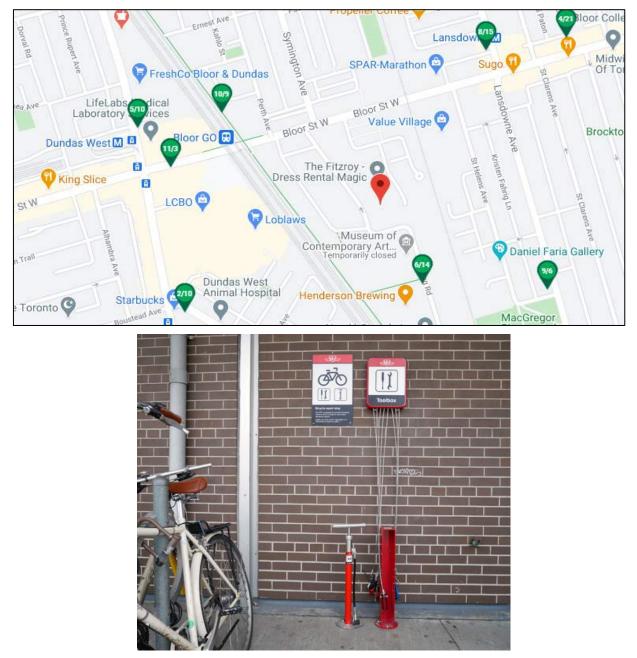
Parking spaces are expensive and add to the cost of rental or unit purchases. The parking spaces can be unbundled from the unit purchase so that residents are motivated and have the option to save cost by taking transit or using active transportation. The unbundling of parking from a unit sale has been a well documented TDM measure in urban context. At the other development sites noted in Section 7 where marketing data was available, it was observed that the unbundled approach resulted in lower auto parking purchases than the approved minimum parking requirements.

8.1.3 ON-SITE MOBILITY ALTERNATIVES INFORMATION AND INCENTIVES

Information regarding transit availability (i.e., schedule and stop locations) and available cycling facilities and connections will be available on-site in a convenient and logical location (i.e., elevator or lobby screen), and/or be included as part of the welcome package to residents of the development to inform them of the alternatives available to them. In addition, the site is within walking and cycling distance to a wide array of retail, service shop, recreational and community uses along Bloor Street West and Dundas Street West. For example, there is a Freshco, Loblaws, LCBO and secondary school within a 500 m radius of the subject site. The proximity of these utilitarian uses to the site allows residents to walk to these uses instead of driving the short distance and having to look for a parking space.

8.1.4 ENCOURAGING THE USE OF ACTIVE TRANSPORTATION

Residents will have access to ample of bicycle parking internally (59 spaces beyond the City's minimum) as well as have easy access to one of the many City of Toronto Bikeshare stations as shown below with the green circles. Information about available City cycling facilities and infrastructure should be distributed to residents and displayed at prominent locations to maximize the utilization of these facilities and minimize the use of automobiles. As noted earlier, there are sidewalks on both sides of the study road network and the site is in close proximity to the recently installed cycle track along Bloor Street West. This ensures that residents and visitors have a suitable walking and cycling environment for both utilitarian and recreational uses. Providing an on-site bicycle repair station similar to those present at subway station entrances can also be a way to encourage cycling as a day to day mode of transportation.



9 CONCLUSIONS

This TIS has assessed the ability of the road network to accommodate the proposed residential redevelopment at 221–227 Sterling Road which is comprised of 892 units.

When considering the displacement of the existing retail uses on site, the subject development is forecasted to generate a net total of 49 and 17 auto trips during the a.m. and p.m. peak hours, respectively. The analysis indicates that the traffic impacts of the development proposal on the boundary road network are minimal and the auto trip generation can be readily accommodated by the study road network. The pedestrian and transit assessments also indicate no issues for non-auto modes.

The proposed loading supply features two Type "G" and one Type "C" loading spaces more than satisfy the By-law requirements.

As part of the development, the existing dead-end of Ruttan Street is proposed to be extended further south to connect to Sterling Road. The extension will form a public road frontage for the proposed development to front onto (including the site driveway) and enhance the connectivity for the community that currently rely on the intersection Bloor and Ruttan for vehicular access. 15.3m of private property from the subject site is proposed towards the public road right-of-way (ROW). City staff have advised that the minimum overall ROW for the extension of Ruttan Street should be 16.5m. Any further ROW required by the City would need to be contributed by future development along the west side of Ruttan Street.

From an auto parking perspective, the development proposes an overall rate of 0.47 spaces/unit (0.37 for residents and 0.10 for visitors). The residential parking supply rate of 0.37 spaces/unit is adequate based on the evaluation of marketing data, proxy surveys and approved or proposed rates from other condominium developments with similar transit and active transportation access. A robust package of TDM measures are recommended to further encourage residents and visitors to adopt a non-auto and sustainable mode of transportation.

The proposed bicycle parking supply of 952 spaces exceeds the City's requirements by 59 spaces and is an excellent means of encouraging cycling in tandem with the site proximity to the recently implemented Bloor Street cycle track.

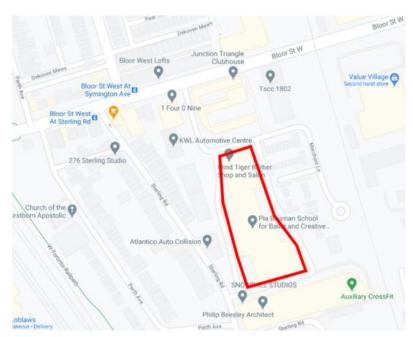


A Terms of Reference



To:	City of Toronto	Date:	September 30, 2020
From:	Peter Yu, WSP Canada Ltd.		
Subject:	Terms of Reference – TIS 221 - 225 Sterling Road		

WSP is undertaking a Transportation Impact Study (TIS) for the proposed mixed-use development application located at 221 – 225 Sterling Road in the City of Toronto. The preliminary concept of the development is comprised of three condo towers (approximately 733 residential units), and ground floor retail space as shown below.



Approximate Location of Development

Given the surrounding road network, one vehicular access will be provided onto the extension of Ruttan Street (extending from the current cul-de-sac south to connect to Sterling Road). The TIS will evaluate the multi-modal impact of the proposed development as well as the feasibility of the access arrangement.

The proposed scope of the TIS is outlined below for the City's confirmation:

1. Traffic Data Collection

Based on the type and location of the development, we have identified the following study intersections:

- Bloor Street West and Lansdowne Avenue (signalized);
- Bloor Street West and Ruttan Street (unsignalized);
- Bloor Street West and Symington Avenue (signalized);
- Bloor Street West and Sterling Road (signalized);
- Bloor Street West and Dundas Street West (signalized);
- Dundas Street West and Sterling Road (signalized);



- Sterling Road and Perth Avenue (unsignalized); and
- Sterling Road and Existing 221-225 Sterling Road site access (future Ruttan Street extension) (unsignalized intersection).

Due to the current COVID-19 pandemic conditions, new traffic data collection cannot be collected because volumes are not typical. As a result, WSP will purchase the available TMCs from the City and other sources for the typical weekday a.m. and p.m. peak hours at the study intersections. We will also purchase traffic signal timing plans from the City for the signalized intersections noted above, as well as transit ridership data from the TTC for bus and subway routes.

2. Existing Traffic Analysis

We will analyze the existing conditions using the Synchro 10.0 Traffic Software, which is the software implementation of the Highway Capacity Manual 2010, the recognized standard for traffic operations analysis in North America. The existing conditions will be modelled based on the existing transportation network and the peak hour traffic volumes. The City of Toronto Synchro Guidelines will be referenced for this project.

3. Future Background Traffic Analysis

- a. Based on the anticipated completion of the development, a **five-year horizon period of 2025** will be evaluated for future conditions. We will review the City's historical AADT records to determine if general growth are applicable along the boundary roadways.
- b. Confirm with the City any **future road/intersection improvements** within the study area, which are anticipated to be in place within the 5-year horizon and incorporate future lane configurations, if applicable.
- c. We will review the City's development application webpage to determine the applicable background developments to include within the study area.
- d. Estimate the traffic increases related to these other developments (if not available through site specific traffic impact studies) and assign this traffic to the boundary roadways in the vicinity of the subject site.
- e. Develop the future background traffic forecast for the 5-year horizon, on the basis of the existing traffic volumes, applicable traffic growth rate, and anticipated future traffic related to other developments in the vicinity of the site.
- f. Analyze the future background traffic operations on the basis of 5-year background traffic forecasts. This includes identifying whether improvements to the study area road network are required as a result of other background developments and general background traffic growth in the area.

4. Trip Generation and Assignment

a. Develop the weekday a.m. and p.m. peak hour site traffic from the development using the methodology outlined in the Institute of Transportation Engineers (ITE) Trip Generation



Manual, 10th Edition. If available from the background review, the study will use established trip generation rate to reflect site-specific characteristics.

- b. Transportation Tomorrow Survey (TTS) information will be consulted to determine the applicable non-auto modal adjustments to be applied. Given the proximity of the site to higher order transit facilities, a substantial non-auto modal split is anticipated.
- c. The site-generated traffic volume will be assigned to the study road network based on the existing traffic patterns, the future road network (i.e., Ruttan extension), as well as the TTS distribution information. The traffic volumes generated by the existing land uses on the site will also be removed from the study road network since these buildings will be displaced after the development is complete.

5. Future Total Traffic Analysis

- a. The 2025 future total traffic volumes at the site driveway and boundary intersections will be developed by superimposing the weekday a.m. and p.m. peak hour site-generated traffic volumes onto the future background traffic forecasts.
- b. Perform a detailed capacity analysis to determine the 2025 future total traffic operations for the study intersection and the proposed site driveway. Based on the findings, quantitative results and commentary on traffic operations within the study area will be provided. The focus of the assessment will be on the traffic operation impact associated with the proposed development.
- c. Identify any road and/or traffic operation improvements that may be required based on the future total traffic operations. Sensitivity scenarios will be evaluated if necessary to understand the implication of different improvements.

6. Multi-Modal Analysis

A multi-modal analysis of pedestrian and transit modes will be conducted given the proximity of the development site to a wide range of transit services. As a result, a comprehensive review of the needs and impacts on these alternative travel modes will be undertaken. The methodology of the multi-modal analysis will be a hybrid of the City of Ottawa's MMLOS Guidelines developed in 2015 & 2017, as well as the City's best practices.

7. Parking Review

- a. Review the proposed automobile parking supply for the proposed development relative to the pertinent Zoning By-law and comment on the appropriateness of the arrangement based on the site context and proposed TDM measures.
- b. Review the proposed bicycle parking supply of the development relative to the City of Toronto Zoning By-law 569-2013 Chapter 230 Bicycle Parking Space Regulations and Toronto Green Standards. This includes breakdown between visitor versus long-term spaces, and the location of the parking provision.



8. Loading Assessment

Evaluate the loading requirements of the proposed development with consideration of the City of the applicable By-law. This includes the dimensions of the loading bays, garbage room setup and design specifications.

Please provide your input on the above noted terms of reference at your earliest convenience.

Yours Sincerely,

Peter Yu, P. Eng., PMP Project Manager Transportation Planning and Advisory Services



B Traffic Data

LOCATION: MODE/COMMENT: TCS:	Dundas St W & E FXT - 2-Wire Pola		TSP*, LBO Sig	ns & LPI			COMPUTER SYSTEM:	
TCS: PREPARED BY / DATE:	327 Alvin Luk / WSP	/ August 11 0	120				CONTROLLER/CABINET TYPE: CONFLICT FLASH:	PEEK ATC - 1000 / TS2 T1 Red & Red
CHECKED BY / DATE:	Ihtesham Ahmad							1.0 m/s (FDW based on full crossing at 1.2 m/s)
MPLEMENTATION DATE:		•					CHANNEL/DROP:	4005/43
							CONTROLLER FIRMWARE:	3.018.1.2976
		OFF All Other	AM	PM 15:15-18:30	NIGHT 22:00-06:00	WKND 10:00-19:00	Phase Mode	-
NEMA Phase		Times	M-F	M-F	Daily	Sat & Sun		Remarks
	Local Plan	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	(Fixed/Demanded/Callable)	
	Split Table	Split 1	Split 2	Split 3	Split 4	Split 5		
								Pedestrian Minimums:
1	WLK FDW							NSWK = 7 sec NSFD = 17 sec EWWK = 7 sec EWFD = 18 sec
	MIN							EWWK = 7 sec EWFD = 18 sec Left-Turn Passage Time = 2 sec
(NOT USED)	MAX1							APS on during FULL WALK periods when activated by
	AMB							pushbuttons and no arrows are displayed.
	ALR							Extended Push Activation = 3 sec
	SPLIT							See back for TSP instructions.
Dundas St W	WLK DLY 5						Fixed.	TSP NS enabled on November 18, 2016
2	WLK 7						POZ activated by	
	FDW 17						Request Loop.	Scripts 5 and 6 are used for driving LBO signs to prohibit
	MIN 19 MAX1 25						(Max extension of 14 sec in Green/Walk & 16 sec in	Northbound and Southbound LTs. Load switch 16 is use to drive LBO signs.
	AMB 3.0	1					Green/Don't Walk)	NS Leading Pedestrian Interval - NSWK comes up 5
	ALR 3.0						Split shown includes 5 sec of	seconds before NS vehicle green
	SPLIT	36	36	38	37	36	NS LPI	2 far-side (primary and secondary) LED black-out signs
								(LBO) for the EBL prohibition
3	WLK							
	FDW						Fully protected.	
	MIN 6						Callable and extendable by	
	MAX1 7	-					stop bar Wavetronix.	
	AMB 3 ALR 2							
	ALR 2 SPLIT	12	12	12	12	12		
Bloor St W		12	12	12	12	12		
4	WLK 7							
	FDW 18						Fixed.	
	MIN 25							
\ ∢	MAX1 25							
	AMB 3.0	_						
	ALR <u>3.3</u> SPLIT	32	42	40	36	32		
			42	40		52		-
5	WLK							
	FDW							
(NOT USED)	MIN							
	MAX1 AMB							
	ALR							
	SPLIT							
Dundas St W	WLK DLY 5	_					Fixed.	
6	WLK 7						POZ activated by	
	FDW 17 MIN 19						Request Loop. (Max extension of 14 sec in	
	MAX1 25						Green/Walk & 16 sec in	
\bigvee V	AMB 3.0						Green/Don't Walk)	
	ALR 3.0	20	26	20	27	26	Split shown includes 5 sec of NS LPI	
	SPLIT	36	36	38	37	36		4
7	WLK							
	FDW							
(NOT USED)	MIN							
	MAX1 AMB							
	ALR							
	SPLIT							1
Bloor St W								
v / ``	WLK 7	-					Fixed	
8	FDW 18 MIN 25						Fixed.	
° (<		<mark>_</mark>						
°	MAX1 37				1	1	1	•
	MAX1 37 AMB 3.0							
	MAX1 <u>37</u> AMB 3.0 ALR <u>3.3</u>		-	50	40			
	MAX1 37 AMB 3.0	44	54	52	48	44		
	MAX1 <u>37</u> AMB 3.0 ALR <u>3.3</u>	44 80 8	54 90 34	52 90 77	48 85 64	44 80 8		

NOTES: NBLT movement prohibited during 7:00 A.M - 7:00 P.M, Mon - Sat

LOC:		Dunda	s St W	& Bloo	r St W									T	.S.P. PARAMETERS								
IODE:		FXT -	2-Wire	Polara	<mark>APS, R</mark>	LC, TS	P*, LB	O Signs	& LPI							TSP F	RUN	TSP	RUN	TSP	RUN	TSP R	UN
CS:		327			PI	REPAR	ATION	DATE (T	IMING C	ARD):	Augus	st 11, 20	020		PREPARED: AL	# 1	**	#	2	# 5	5**	# 6	
FFSET C	ORR	ECTIC	N PA	RAME	TERS	5										NB T	hru	NB ⁻	Thru	SB 1	Thru	SB T	nru
													2.3.5		2.8.2 Transit Run Parameters				-			-	
			_										0.C.				-						
	2.3.4 (0.C. E	-		-			-	otracted in	,		page 1			ATC Green Extend Mode	Mod		Mod		Mod		Mode	
			Ø 1	Ø 2	Ø 3	Ø 4	Ø 5	Ø 6	Ø7	Ø 8	[Cycle]	[Slop]	Thres.		(Equivalent TTC Algorithm)	B-		A		B-	-2	A*	
Г	OFF	1	-								1		Pattern 1		2.8.3 Transit Action Plan 1 (Us	1			/		-		
	Split 1	Ext.		19		19		19		19	80	2	5 s		Run Enable (X = Yes)				X	Х	<	Х	
		Rdc.			1	1				2			[6 %]		Run Config = 1Recovery		. with de	elay)					
F	AM					1		-			1		Pattern 2		2.8.4 Transit Run Configuratio								
	Split 2	Ext.		17		17		17		17	90	11	22 s		Delay / Extend / Fail	/ /			/ 235	/		/ /	
		Rdc.			1	10				11			[24 %]		CALLS (and Extends)	Ø 2	/6	Ø	2/6	Ø	2/6	Ø 2	6
-	PM	-	-	1				_					Pattern 3		Skips			-	-		-		
	Split 3	Ext.		17		17		17		17	90	11	22 s		Reduces (Truncates)			-	-		-		
		Rdc.		2	1	8		2		9			[24 %]						1				
-	NIGH	Ţ	-	7				_					Pattern 3				Ø 2	Ø 3	Ø 4	Ø 5	Ø 6	Ø 7	Ø 8
	Split 4	Ext.		16		17		<mark>16</mark>		17	85	7	20 s		2.8.6 TSP Split Tables: 1, 2, 3,	4 & 5							
L	-	Rdc.		1	1	5		1		6			[24 %]		GRN EXT (SDW Extension)		+16				+16		
_	WKNE												Pattern 3		GRN RDC (Reduction)								
	Split 5	Ext.		19		19		19		19	80	2	5 s		WLK EXT (Walk Extension)		+14				+14		
		Rdc.			1	1				2			[6 %]										
	OC cor																						
	Phase	2/6 mu	st not b	pe redu	ced to r	ninimur	ns due	to firm	vare 3.1	8.1.29	76 issu	ue with	LPI and TSP.										
									e 4/8 O0		also re	ducing											
	fraction	ns of a s	second	. These	e meas	ures ar	e used	due to	limited s	lop.													
	<mark>2.1.9.</mark> 2															F							
				<u>S327/</u>	-												Notes	:					
						U U		g Alg A	and Alg	B-2 du	<mark>le to fir</mark>	rmware	issue			•	*Due 1	to a firm	nware i	ssue, A	lg C is (emulated	1
	TSP In															l l	using A	Alg A ar	nd Alg I	3-2			
ľ	TSP In	i <mark>put 5 is</mark>	activa	ted 30s	after T	SP Inp	ut 6																
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											U							-				simplified	
								-								-	Script a	# <mark>3 TCS</mark>	327Alg	orithmC			
					TSI	P RUN	#6						1										

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SB Thru

SRM #1 Ch #2 TSP Input 6 BIU #3 PIN #12a

Bloor St W

			00		TSP RUN # 2					
		٤			NB Thru SRM #1 Ch #1 TSP Input 2	ATC Mode TTC Algor'm Extensions	0 B-2 SDW	2 A Walk	3 C W/SDW	4 D W/SDW
Schematic of TSP Loops	Dundas St W	115			BIU #3 PIN #10a TSP Loop Legend Request (Thru)	TSP SUMI Maximum Gr	MARY een Ext	tensions	:	/Don't Walk
and TSP Runs (N.T.S)		_			Cancel (Thru)					

Cold. Model Marking Model Marking	LOCATION: MODE/COMMENT:	Bloor St W & I FXT with 2-wir						ATO (District) / WARD: COMPUTER SYSTEM:	1 (Toronto-East York/Scarborough) / 9 TransSuite
NEMA Puese OP F Model AGM ($M > 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 $	PREPARED BY/DATE: CHECKED BY/DATE:	326 WSP / August Alvin Luk / Ihte	11, 2020 esham Ahmad	_	020			CONFLICT FLASH: DESIGN WALK SPEED: CHANNEL/DROP:	Red & Red 1.0 m/s (FDW based on full crossing at 1.2 m/s) 4005/4
NEDA Plane MI One of bit 36:57-33 22:00-060 800-1800 (FuedDemandedCalled) FuedDemandedCalled) 1 Image: 1 marked bit					DM	NIGUT			2.47.10
Note Fine Joste F	NEMA Phase		All Other	06:45-09:30	15:15-18:30	22:00-06:00	10:00-19:00		Remarks
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $			Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	(
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	1 NOT USED	WLK FDW MIN MAX1 AMB		Fidit Z					EWWK =7secEWFD =19secNSWK =7secNSFD =15secLeft Turn Passage Time = 2 secAPS on during FULL WALK periods for NSWK & EWWK when activated by push button and only
AR 3.6 9.0 0.0 0.0 0.0 0.00 0.	2	SPLIT WLK 7 FDW 19 MIN 26 MAX1 44						Fixed	Extended Pushbutton Activation = 3 sec NBLA signal head has been installed and programmed in the controller on July 20, 2017. The NBLA phase was activated on August 24, 2017.
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $		ALR <mark>3.6</mark>	51	59	54	46	51		for the EBR prohibitions. 2 far-side (primary and secondary) LED black-out
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	3	FDW MIN 6 MAX1 7 AMB 3 ALR 1	11	13	12		11	Wavetronix Overhead Detector	2 far-side (primary and secondary) LED black-out
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $		FDW 15 MIN 22 MAX1 22 AMB 4 ALR 2	28	28	34	29	28	Fixed	
6 WLK 7 FDW 19 MIN 26 MAX1 44 ABB 3 ALR 36 SPLIT 51 59 54 46 51 7 WLK 51 59 54 46 51 7 WLK FDW MIN 6 ABB 3 MAX1 6 ABB 3 ABB 3 ABB 3 SPLIT SPLIT 11 SPLIT	NOT USED	FDW MIN MAX1 AMB ALR							
FDW MIN MAX1 6 MAX1 6 MAB 3 SPLIT Image: SPLIT VLK 7 FDW NIN 22 MAX1 33 AMB 4 ALR 2 MAX1 33 AMB 4 ALR 2 MAX1 33 AMB 4 ALR 2 SPLIT 39 41 35 29 39 41 35 29 39 CL 90 100 75 90		FDW 19 MIN 26 MAX1 44 AMB 3 ALR <u>3.6</u>	51	59	54	46	51	Fixed	
8 WLK 7 FDW 15 MIN 22 MAX1 33 AMB 4 ALR 2 SPLIT 39 41 35 29 39 CL 90 100 100 75 90		FDW MIN 6 MAX1 6 AMB 3 ALR 1			11			Wavetronix Overhead Detector	
CL 90 100 100 75 90	8	WLK 7 FDW 15 MIN 22 MAX1 33 AMB 4 ALR 2	39	41		29	39	Fixed	
OF 43 38 20 52 45			90	100	100	75	90		

NOTES: WBL movement restricted between 7:00 A.M - 6:00 P.M, Mon - Sat EBL movement restricted between 7:00 A.M - 6:00 P.M, Mon - Sat EBR movement restricted between 7:00 A.M - 6:00 P.M, Mon - Sat

LOCATION:	Bloor St W & Syr	nington Ave	/Sterling Rd				ATO (District) / WARD:	1 (Toronto-East York/Scarborough) / 9
MODE/COMMENT:	SAP with PR	J	J				COMPUTER SYSTEM:	TransSuite N
TCS: PREPARED BY/DATE:	1062 WSP / August 11	2020					CONTROLLER/CABINET TYPE: CONFLICT FLASH:	Econolite ASC/3-2100 / TS2T1
CHECKED BY/DATE:	Tony Zhao / Ihtes		l / August 26.	2020			DESIGN WALK SPEED:	1.0 m/s (FDW based on full crossing at 1.2 m/s)
IMPLEMENTATION DATE:	September 25, 20		Ū į				CHANNEL/DROP:	4005/5
			A 5.4	DM	NIOUT		CONTROLLER FIRMWARE:	2.47.10
		OFF All Other	AM 06:30-09:30	PM 15:15-18:30	NIGHT 22:00-06:00	WKND 10:00-19:00	Phase Mode	
		Times	M-F	M-F	Daily	Sat & Sun	(Fixed/Demanded/Callable)	Remarks
	Local Plan	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5		
	System Plan	Plan 1	Plan 2	Plan 3	Plan 4	Plan 5		Pedestrian Minimums:
1	WLK							EWWK = 7 sec, EWFD = 14 sec
	FDW							NSWK = 7 sec, EWFD = 12 sec
(NOT USED)	MIN							SB phase is callable by vehicle or pedestrian actuation
	MAX1 AMB							with the NSWK & NSFD displayed on both East & West
	ALR							leg pedestrian crossings. NB phase is callable by vehicle
	SPLIT							actuation only. If a NB vehicle call is received, the minimum is 7 seconds. If ongoing NB vehicle demand
Bloor St W								exists on the Wavetronix detector, the NBG is capable of
2	WLK 7 FDW 14							providing vehicle extensions up to the maximum. The
	MIN 21						Fixed	unused time is given to EWG.
	MAX1 40							SB and NB phases are callable and skippable. If SB and
	AMB 3							NB detectors are both active at the end of the EW phase,
	ALR 3							the SB phase is served first followed by the NB phase. If only the SB detector is active at the end of the EW phase,
	RED MAX 4.7 SPLIT	46	55	55	40	46		only the SB phase is served (and any late NB demand will
Symington Ave	SPLII	40	00	00	40	40		only be served the following cycle). SB and NB phases
3	WLK 7							are only permitted once per cycle.
	WLK MAX 8							
	FDW 12							Floating force off is used, if phase 3 is skipped, then
	MIN 19 MAX1 20						Callable by Wavetronix and/or push button.	unused time is given to the EWG. Decision point for side street demand is at the end of the
	AMB 4						and/or push button.	EWFD.
	ALR 3							Side Street Passage Time = 3 sec
	SPLIT	29	29	29	29	29		Signal serves 8 seconds of NSWK (WLK MAX value)
Sterling Rd	WLK							during coordinated patterns.
	FDW						Callable and extendable	ALR for phases 2 and 6 is 4 seconds. Due to the
	MIN 7						by Wavetronix	controller design, a value greater than 3 will cause the
	MAX1 8						NBRA active concurrently	coordinated phase to rest in green and don't walk. To
	AMB 4 ALR 3						with NBG	work around this issue, a red max value of 4.7 seconds is used. Through logic statements, phases 2 and 6 ALR (3
	ALR 3 SPLIT	15	16	16	16	15		sec) are forced to extend by 2 seconds. These extra
								seconds will be taken from the next phase following phase 2 and 6. In this case, phase 3 will only time 27
5	WLK						Fired	seconds instead of the programmed 29 seconds.
	FDW MIN 6						Fixed SBRA on concurrently	
	MAX1 7						with EBLA.	
	AMB 3 ALR 1							
	SPLIT	11	11	11	11	11		
Bloor St W]
6	WLK 7 FDW 14							
	MIN 21						Fixed	
	MAX1 29							
	AMB 3 ALR 3							
	RED MAX 4.7							
	SPLIT	35	44	44	29	35		4
7	WLK 7							
	WLK MAX 8							
(NOT USED)	FDW 12							
	MIN 19 MAX1 20							
	AMB 4							
	ALR 3 SPLIT	20	20	29	20	20		
		29	29	29	29	29		4
8	WLK							
(NOT USED)	MIN 7 MAX1 8							
	AMB 4							
	ALR 3 SPLIT	15	16	16	16	15		
 	CL	90	100	100	85	90		1
Notes: Sterling Rd is one w	OF	8	89	64	1	1		

Notes: Sterling Rd is one way north. By-Law signs - No NB right turn on red. No SB right turn on red except with green arrow.

LOCATION:	Bloor St W & L	ansdowne Av	е						DISTRICT:	Toronto & East York
MODE/COMMENT:	FXT with 2-wir								COMPUTER SYSTEM:	TransSuite N
TCS:	326								CONTROLLER/CABINET TYPE:	Econolite ASC/3 - 2100 / TS2 T1
PREPARED/CHECKED BY:	SQ/HL								CONFLICT FLASH:	Red & Red
PREPARATION DATE:	April 26, 2017								DESIGN WALK SPEED:	1.0 m/s (FDW based on full crossing at 1.2 m/s)
		-								
IMPLEMENTATION DATE:	August 24, 201	17							CHANNEL/DROP:	4005/4
	1	OFF	AM	MIDDAY	PM	NIGHT	SATURDAY	Grdnr Clsr	CONTROLLER FIRMWARE:	2.47.10
		All Other	06:45-09:30		15:15-18:30 M			Times to be	Phase Mode	-
NEMA Phase		Times	M-F	M-F	F	Daily	06:45-18:30	determined	(Fixed/Demanded/Callable)	Remarks
	Local Plan	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 6	Pattern 7	(! !//04/201141/404/04/14/04/04	
	System Plan	Plan 1	Plan 2	Plan 3	Plan 4	Plan 5	Plan 6	Plan 7	1	
	,									Pedestrian Minimums:
1	WLK									EWWK = 7 sec EWFD = 19 sec
	FDW									NSWK = 7 sec NSFD = 15 sec
	MIN									Left Turn Passage Time = 2 sec
NOT USED	MAX1									APS on during NSWK & EWWK periods when
	AMB									activated by push button and only when no arrows
	ALR									are displayed.
	SPLIT									Extended Pushbutton Activation = 3 sec
Bloor St W	WLK 7									NBLA signal head has been installed and
2	FDW 19									programmed in the controller on July 20, 2017. The NBLA phase was activated on August 24, 2017.
	MIN 26									NDEA phase was activated on August 24, 2017.
	MAX1 44								Fixed	
	AMB 3									
	ALR 3									
	SPLIT	50	50	50	50	46	50	61		
3	WLK									
	FDW								Callable/Extendable by	
()	MIN 6 MAX1 6								Wavetronix Overhead Detector Calibrated for 9m setback 06:45	
	MAX1 6 AMB 3								18:30, M-F & SAT	-
	ALR 1								10.30, 101 & OAT	
	SPLIT		11	11	11		11			
Lansdowne Ave										
4	WLK 7									
	FDW 15									
	MIN 22								Fixed	
	MAX1 24								T KGG	
	AMB 4									
	ALR 2	00			00	00		00		
	SPLIT	30	29	29	29	29	29	29		-
5	WLK									
	FDW									
	MIN									
NOT USED	MAX1									
	AMB									
	ALR									
	SPLIT									-
Bloor St W										
6	WLK 7 FDW 19									
	MIN 26									
	MAX1 44								Fixed	
	AMB 3									
	ALR 3									
	SPLIT	50	50	50	50	46	50	61		
7	WLK								0-11-11-15-1	
	FDW								Callable/Extendable by	
	MIN 6 MAX1 6								Wavetronix Overhead Detector	
	MAX1 6 AMB 3								Calibrated for 9m setback 15:15 18:30, M-F	1
	AIVIB 3 ALR 1								10.00, WH	
	SPLIT				11					
Lansdowne Ave									1	1 1
8	WLK 7									
	FDW 15									
	MIN 22								Fixed	
	MAX1 24									
	AMB 4 ALR 2									
	ALR 2 SPLIT	30	40	40	29	29	40	29		
	JILII		40	40	29	29	40	29		4
	CL	80	90	90	90	75	90	90		
	OF	37	53	1	52	72	1	63		

NOTES: The NBLA was activated on August 24, 2017, and the phase is only callable from 15:15 - 18:30 during Monday to Friday.

Construction Model International Regulational 70, 2017 Description (2017) Description (2017) <thdescription (2017) <thdescription (2017)</thdescription </thdescription 	LOCATION:	Bloor St W & Sy	mington Ave	/Sterling Rd				DISTRICT:	Toronto and East York	
NEXPOND D1 0 1 September 3, 077 auxury 11, 2013 Constrained (1) 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0	MODE/COMMENT:	SAP with PR						COMPUTER SYSTEM:	TransSuite	N
	TCS:	1062						CONTROLLER/CABINET TYPE:	Econolite ASC/3-2100 / TS2T1	Ť
Description Answer 11, 2015 Convertient Presentation Addition Presentation Addition Presentation Addition Presentation Addition Presentation Addition Presentation	PREPARED/CHECKED BY:	AD / DS						CONFLICT FLASH:	Red & Red	I
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	PREPARATION DATE:	September 29, 2	017					DESIGN WALK SPEED:	1.0 m/s (FDW based on full crossin	g at 1.2 m/s)
Image: Provide the second se	IMPLEMENTATION DATE:	January 11, 201	В							
$ \begin{array}{ c c c c c } \hline tran ac & 10 ac & 053-063 & 051-053 & 250-060 & Trais is be the trans is be the trans is be the trans is be trans ac & 10 ac & 10$			OFF	ΔΜ	PM	NIGHT	Grdnr Cler		2.47.10	
Image: Provide Provide Partners 1 Partners 1 </th <th></th> <th></th> <th></th> <th></th> <th></th> <th>-</th> <th></th> <th>Filase Mode</th> <th></th> <th></th>						-		Filase Mode		
Log With Mark Pattern M						,		(Fixed/Demanded/Callable)	Remarks	
Vick NOT USED Vick HWN Provide HWN								, ´		
FOW MART AMA AMA AMA AMA AMA AMA AMA ALR ALR AMA B FOW AMA AMA ALR ALR ALR ALR ALR ALR ALR ALR ALR AL			T Idit T	TIGHTE	Tidiro		Tidito			
NOT USD ALAR ALAR ALAR ALAR ALAR ALAR ALAR ALA	1									
NOT UBED ALR SPLIT Non ALR SPLIT Non SPLIT Non SPLIT <td></td> <td>MIN</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>pedestrian actuatio</td>		MIN								pedestrian actuatio
AR Sector Ar Sector	NOT USED								with the NSWK & NSFD displayed of	on both East & We
Buor SW Mick 7 Image Im										
2 Witk 7 8 8 7 8 7 8 7 8 7 8 7 8 7 8 7 7 8 7	Black St W	SPLIT								
Image: Provide and	2	WLK 7								
MAX MD MAX MD MAX MD AAB 3 AAB 4 56 AAB 4 56 AAB 4 56 AAB AAB 4 56 AAB AAB <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>the maximum. In</td></td<>										the maximum. In
Mag 3 Alk 3 Alk 5 File Alk 6 55 53 41 50 Symapon Ave WLX WLX 7 46 55 53 41 50 50 50 51 50 50 51 50 50 51 50 50 50 51 50								Fixed		skippable. If SB an
RepLit 46 55 4.5 68 orty the SB detector is active at the exid of the EV parts 3 Symington Ave Witk K x 7 K X 7 1 5 5 5 68 3 TOW K X 7 1 </td <td></td> <td>AMB 3</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>NB detectors are both active at the e</td> <td>nd of the EW phase</td>		AMB 3							NB detectors are both active at the e	nd of the EW phase
Symptop Symptop WLK 7 46 55 53 41 56 only be served (and any tite NB demand- only be served (and any tite NB demand- only be served (and any tite NB demand- and) be served (and any tite NB demand- any be served (and any tite NB demand- be served (and any tite NB demand- served (any tite NB demand- served (any tite NB demand- served (any										
3 WLK 7 WLK 7 WLK 7 MM 12 MM 12 MM 12 Floating force of is used, if phase 3 is skipped, then in-made fina is given to the EVG. Floating force of is used, if phase 3 is skipped, then in-made fina is given to the EVG. MM 10 ALR 3 20 <td></td> <td></td> <td>46</td> <td>55</td> <td>53</td> <td>41</td> <td>56</td> <td></td> <td></td> <td></td>			46	55	53	41	56			
WIX MAX 8 PDW PDW <	Symington Ave	WIK 7								B and NB phases ar
Win 19 MAX Min 19 MAX Muse 10 AR Muse 10 AR <t< td=""><td>°</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>only permitted once per cycle.</td><td></td></t<>	°								only permitted once per cycle.	
MAX1 20 ALR A 29 20 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>skipped, then</td></t<>										skipped, then
With ALR Alb ALR 3 28 29 29 29 29 29 29 29 29 30 Steffing Rd Steffing Rd U.K. EWFD. Steffing Rd Steffing Rd U.K. Steffing Rd PDW V.K. Steffing Rd PDW V.K. Calable and stendable by Novembody. Alg Rowers. Alg Rowe										is at the end of the
SPLIT 29 29 29 29 29 5 grant serves 8 seconds of NSWK (VLK MAX value) 1 WLK FWW NUL FWW NUL		AMB 4							EWFD.	
Stering Rd WLK Caliable and extendable by Wavetronix Aur of the control (sign, a value great than 3 will cause the control (sign, a valu			29	29	29	29	29			/I K MAX value)
FDW FDW FDW AX1 8 MAX1 8 4 NERA active concurrently with NBC NERA active concurrently with NBC ALR or phases 2 and 6 is 4 seconds build cause the coordinate biasu, a red max value of 5 seconds is used. Through logic statements, phase 2 and 6 LR (sec) are force to extend by 2 seconds. These details are value of 5 seconds is used. Through logic statements, phase 2 and 6 LR (sec) are force to extend by 2 seconds. These details are value of 5 seconds. The value of 5 seconds. These details are value of 5 seconds. The value of 5	Sterling Rd	-	20	20	20	20	20			
Mini 7 Mini 7 Mini 7 Mini 7 Mini 6 15 16 18 15 15 15 16 18 15 15 16 18 15 15 16 18 15 15 16 18 15 15 16 18 15 15 16 18 15 15 16 18 15 15 16 18 17 17 18 18 18 16 18 17 17 18 16 18 18 18 18 18 18 18 18 18	4							Callable and extendable	ALR for phases 2 and 6 is 4 seconds	Due to the controlle
Mile 4 Alle Seconds Sec										
ALR 3										
SPLIT 15 16 18 15 15 to extend by 2 seconds. These extra seconds will be tak phase 3 will only time 27 seconds instead of the page 3 will only time 27 seconds. WLK T AR I I III IIII IIII IIII IIII IIII IIII IIII IIII IIIII IIIII IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII								WITH NBG		
MULK MIN MULK		SPLIT	15	16	18	15	15			
MIN 6 Second SBRA on concurrently with EBLA. AMB 3 ALR 1 11 11 11 11 Bloor St W WLK 7 FDW 14 Fixed Fixed MAX1 29 ARR 3 Fixed Fixed MAX1 29 ALR 3 Fixed MAX1 29 44 42 30 45 V VLK 7 VLK 7 MAX1 29 29 29 29 MAX1 20 ARB 4 ALR 3 ALR 5 SPLIT 35 44 42 30 MOT USED FDW 12 ALR 5 MAX1 29 29 29 29 3 VLK 7 Y 29 29 3 VLK 7 15 16 18 SPLIT 15 16 18 15 SPLIT 15 16 18 15 SPLIT 15 16 18 10 SPLIT 15 16 18 15 SPLIT 15 16 <td>5</td> <td>WLK</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	5	WLK								
MAX1 7 Au Image: Construction of the second s									programmed 29 seconds.	
ALR 1 11 11 11 11 11 11 11 Bloor Si W WLK 7 WLK 7 Fixed Fixed MNX1 29 AMB 3 Fixed Fixed ALR 3 RED MAX 5 SPLIT 35 44 42 30 45 V WLK 7 WLK MAX 8 Fixed Fixed Fixed NOT USED WLK 7 WLK MAX 8 Fixed Fixed Fixed NOT USED WLK 7 WLK MAX 8 Fixed Fixed Fixed MA1 29 29 29 29 29 29 29 3 WLK 7 WLK 7 Fixed Fixed MA21 20 29 29 29 29 29 3 WLK 7 Fixed Fixed Fixed MA21 8 Fixed Fixed Fixed AR 3 29 29 29										
SPLIT 11										
Muk 7 WLK 7 FDW 14 Fixed MiN 21 MAX1 29 AMB 3 Fixed ALR 3 RED MAX 5 SPLIT 35 44 42 30 45 V VLK 7 WLK 7 VLK MAX 8 Fixed Fixed NOT USED MIN 12 MIN 12 SPLIT 29 29 29 ALR 3 SPLIT 29 29 29 29 29 MOT USED WLK 7 VLK SPLIT 29 29 29 ALR 3 SPLIT 15 16 18 15 15 OF 9 19 86 33 24 24 24			11	11	11	11	11			
FDW 14 MN FDW 14 MN Fixed AMB 3 RED AR 3 RED AR 3 RED NOT USED WLK 7 FDW 12 MN 19 RED AR 44 42 30 45 MOT USED WLK 7 MAX1 20 AMB 44 42 30 45 MOT USED WLK 7 MAX1 8 ALR - - - - MOT USED WLK 7 MAX1 29 29 29 29 AMB 4 ALR - - - - MOT USED WLK - - - - MAX1 8 AMB - - - - ALR 3 - - - - SPLIT 15 16 18 15 15 CL 90 100 100 85 100 OF 9 19 86 32 24									1	
MIN 21 MAX1 Pixed AMB 3 ALR 3 BED MAX 5 SPLIT 35 44 42 30 45 7 WLK 7 WLK MAX 8 FDW 12 MiN 18 FDW 12 MiN 18 FDW 12 MiN 18 FDW 12 MiN 18 FDW 12 FDW 12 F	6									
AMB 3 ALR 3 SPLIT 35 44 42 30 45 V WLK 7 WLK MAX 8 FDW 12 MIN 19 MAX1 20 AMB 4 42 30 45 NOT USED WLK 7 MIN 19 MAX1 20 AMB 4 4 4 SPLIT 29 29 29 29 29 SPLIT 29 29 29 29 29 MIN 7 MAX1 8 AMB 4 ALR 4 4 4 ALR 3 5 16 18 15 15 CL 90 100 85 100 0 0 OF 9 19 86 33 24 4		MIN 21						Fixed		
ALR 3 RED MAX 3 5 44 42 30 45 WLK 7 WLK MAX 35 44 42 30 45 WLK 7 WLK MAX 8 FDW 12 MIN 19 MAX1 18 ALR 18 ALR 18 ALR MOT USED WLK 7 MAX1 29 29 29 29 WLK 7 MAX1 8 ALR 15 15 SPLIT 15 16 18 15 15 CL 90 100 100 85 100 OF 9 19 86 33 24										
SPLIT 35 44 42 30 45 7 WLK 7 WLK MAX 8 FDW 12 MIN Image: Split state st		ALR 3								
WLK 7 WLK MAX WLK 7 WLK MAX WLK FDW 12 MIN 19 MAX1 20 AMB 4 ALR 3 SPLIT 29 29 29 29 3 WLK FDW 1 29 29 29 29 3 WLK FDW 1 15 16 18 15 15 16 18 15 15 10 OF 9 19 86 33 24			35	44	42	30	45			
WLK MAX 8 FDW 12 MIN 19 MAX1 20 AMB 4 ALR 3 SPLIT 29 29 29 3 WLK FDW 12 MIN 7 MAX1 8 AMB 4 ALR 3 SPLIT 29 29 29 3 WLK FDW MIN 7 FDW MAX1 8 FDW ALR 3 FDU SPLIT 15 16 CL 90 100 100 OF 9 19 86 33 24 15 15	~ ~				72				1	
NOT USED FDW 12 MIN 19 MAX1 19 MAX1 19 MAX1 19 MAX1 19 MAX1 19 MAX1 29 29 29 29 29 3 WLK FDW 7 MIN 7 MAX1 8 AMB 4 ALR 3 15 16 18 15 15 CL 9 19 100 100 85 100 00 9 19 86 33 24	\prime									
MAX1 20 AMB 4 ALR 3 3 29 29 29 3 WLK FDW FDW FDW MIN 7 MAX1 8 AMB 4 4 ALR 3 SPLIT 15 16 SPLIT 15 16 CL 90 100 OF 9 19 86 33 24		FDW 12								
AMB 4 ALR 3 SPLIT 29 29 29 29 29 29 29 3 WLK FDW FDW MIN 7 MAX1 8 AMB 4 ALR 3 SPLIT 15 15 16 15 16 0F 9 19 86 33 24										
ALR 3 SPLIT 29 29 29 3 WLK FDW FDW MIN 7 MAX1 8 ALR 3 SPLIT 15 15 16 15 100 OF 9 19 86 33 24		AMB 4								
WLK FDW MIN V <thv< th=""> V</thv<>			20	20	20	20	20			
FDW FDW MIN 7 MAX1 8 AMB 4 ALR 3 SPLIT 15 16 18 CL 90 100 100 85 OF 9 19 86 33 24			29	29	29	29	29		1	
NOT USED MIN 7 7 MAX1 8 4 4 ALR 3 3 16 18 15 15 SPLIT 15 16 18 15 15 16 CL 90 100 100 85 100 0F 9 19 86 33 24	8									
MAX1 8 AMB 4 A ALR 3 SPLIT 15 16 18 15 15 CL 90 100 100 85 100 0F 9 19 86 33 24 4	(NOT USED)									
ALR 3 SPLIT 15 16 18 15 15 CL 90 100 100 85 100 OF 9 19 86 33 24		MAX1 8								
SPLIT 15 16 18 15 15 CL 90 100 100 85 100 OF 9 19 86 33 24										
OF 9 19 86 33 24		SPLIT							1	
		VP	9 14	19	14		14			

LOCATION: MODE/COMMENT:	Dundas St W & FXT - 2-Wire Po		\$ TSD*				DISTRICT: COMPUTER SYSTEM:	Toronto & East York TransSuite
TCS:	327	biara APS, RLC	6 I SP"				COMPUTER SYSTEM: CONTROLLER/CABINET TYPE:	PEEK ATC - 1000 / TS2 T1
PREPARED/CHECKED BY:	<i>IBI /</i> PV						CONFLICT FLASH:	Red & Red
PREPARATION DATE:	March 13, 2017						DESIGN WALK SPEED:	1.0 m/s (FDW based on full crossing at 1.2 m/s)
IMPLEMENTATION DATE:	March 15, 2017						CHANNEL/DROP: CONTROLLER FIRMWARE:	4005/43 3.018.1.2976
		OFF	AM	PM	NIGHT	Grdnr Clsr	Phase Mode	0.010.112010
NEMA Phase		All Other Times	06:30-09:30 M-F	15:15-18:30 M-F	22:00-06:00 Daily	Times to be determined	(Fixed/Demanded/Callable)	Remarks
	Local Plan Split Table	Pattern 1 Split 1	Pattern 2 Split 2	Pattern 3 Split 3	Pattern 4 Split 4	Pattern 5 Split 5		
1 NOT USED	WLK FDW MIN							Pedestrian Minimums: NSWK = 7 sec NSFD = 18 sec EWWK = 7 sec EWFD = 19 sec Left-Turn Passage Time = 2 sec
	MAX1 AMB							APS on during WALK periods when no arrows are displayed.
	ALR SPLIT							Extended Push Activation = 3 sec See back for TSP instructions.
Dundas St W	WLK 7						Fixed.	TSP NS enabled on November 18, 2016
	FDW 18 MIN 25 MAX1 40 AMB 3 ALR 3 SPLIT	46	44	40	42	50	POZ activated by Request Loop. (Max extension of 14 sec in Green/Walk & 16 sec in Green/Don't Walk)	
3	WLK FDW MIN 6 MAX1 6						Callable by 9m setback loop,	
Bloor St W	AMB 3 ALR 1 SPLIT			12				
4	WLK 7 FDW 19 MIN 26 MAX1 28 AMB 3 ALR 3 SPLIT	34	46	38	33	60	Fixed.	
5 NOT USED	WLK FDW MIN MAX1 AMB ALR SPLIT							
6 Dundas St W	WLK 7 FDW 18 MIN 25 MAX1 40 AMB 3 ALR 3 SPLIT	46	44	40	42	50	Fixed. POZ activated by Request Loop. (Max extension of 14 sec in Green/Walk & 16 sec in Green/Don't Walk)	
7 NOT USED	WLK FDW MIN MAX1 AMB ALR SPLIT							
Bloor St W	WLK 7 FDW 19 MIN 26 MAX1 28 AMB 3 ALR 3 SPLIT	24	46	FO	22	60	Fixed.	
	SPLIT	34	46	50	33	60		
	CL OF	80 8	90 34	90 77	75 31	110 6		

LOCATION: MODE/COMMENT:	Dundas St & SA2-VMG w						DISTRICT: COMPUTER SYSTEM:	Toronto & East York TransSuite N
TCS: PREPARED/CHECKED BY:	2366 <i>IBI /</i> PV						CONTROLLER/CABINET TYPE: CONFLICT FLASH:	Peek ATC-1000 / TS2T1
PREPARATION DATE:	December 1	4, 2016					DESIGN WALK SPEED:	1.0 m/s (FDW based on full crossing at 1.2
IMPLEMENTATION DATE:	December 1	6, 2016					CHANNEL/DROP:	m/s) 4005/39
							CONTROLLER FIRMWARE:	3.18.1.2976
		OFF All Other	AM 06:30-	PM 15:00-	NIGHT 23:00-	WKND 10:00-	Phase Mode	Remarks
NEMA Phase		Times	09:30 M-F	19:00 M-F	06:30 Daily	19:00 Sat	(Fixed/Demanded/Callable)	
	Local Plan Split Table	Pattern 1 Split 1	Pattern 2 Split 2	Pattern 3 Split 3	Pattern 4 Split 4	Pattern 5 Split 5	-	
		Opiit I	Opiit 2	Opiico	Opint 4	Opint 0		Pedestrian Minimums:
1	WLK							EWWK = 7 sec, EWFD = 18 sec
	FDW MIN							NSWK = 7 sec, NSFD = 16 sec
	MAX1							NS phase is callable by vehicle or pedestrian
	AMB							actuation. If a vehicle call is received, the minimum NSG is 7 seconds. If ongoing vehicle
	ALR SPLIT							demand exists in the detection zone, the NSG i
Dundas St								capable of providing vehicle extensions up to the
2	WLK 7						Fixed	maximum green split. If a pedestrian and/or bicycle call is received, the pedestrian minimum
	FDW 18 MIN 25						POZ activated by Request Loop	will be served. The NSWK & NSFD are only
	MAX1 46						Trequest Loop	displayed on the pedestrian signal heads if a pedestrian and/or bicycle call is received.
	AMB 3						(Max extension of 14 sec in	Extension time is based on vehicle demand.
	ALR 3	54	64	61	E4	61	Green/Walk & 16 sec in	Unused extension time is given to the EWG.
	SPLIT	51	61	01	51	01	Green/Solid Don't Walk)	Side Street Passage Time = 3 sec
3	WLK							The signal constantly cycles through main stree
	FDW MIN							FDW to improve response to main street APS, side street vehicle and pedestrian demand.
(NOT USED)	MAX1							EWFD reverts to EWWK if there is no side stre
	AMB							vehicle demand at the end of the NSFD.
	ALR SPLIT							APS on during 7 sec of NSWK & 7 sec of EWWK when activated by push button.
Private Access	JILII				1			Extended Push Activation = 3 sec
4	WLK 7						Callable by overhead	See back for TSP instructions.
	FDW 16 MIN 7							TSP disabled - TSP activation pending new firmware testing & field validation
	MAX1 23						by Traficam.	The Walk and FDW are served with the
· v ∕	AMB 3							presence of SB bicycle loop request.
_	ALR 2 SPLIT	29	29	29	29	29	(Truncations allowable to pedestrian minimum)	
-								1
5	WLK FDW							
	MIN							
	MAX1 AMB							
	ALR							
Dundas St	SPLIT							1
6	WLK 7						Fixed	
$\langle \langle \rangle \rangle$	FDW 18 MIN 25						POZ activated by Request Loop	
()	MAX1 46							
	AMB 3 ALR 3						(Max extension of 14 sec in Green/Walk & 16 sec in	
	SPLIT	51	61	61	51	61	Green/Solid Don't Walk)	1
7	WLK							
	FDW							
(NOT USED)	MIN MAX1							
	AMB							
	ALR							
Sterling Rd	SPLIT							4
8 Sterling Rd	WLK 7						Callable by overhead	
	FDW 16						detection, push button and/or	
(🗐 🖌)	MIN 7 MAX1 23						bicycle SB loop. Extendable by Traficam.	
\ \ ↓ \ /	MAX1 23 AMB 3						Sy franoditi.	
	ALR 2						(Truncations allowable to	
	SPLIT	29	29	29	29	29	pedestrian minimum)	1
	CL	80	90	90	80	90		
	OF	67	68	76	2	36		
tos: Dickod up updor Tr								

Notes: Picked up under TransSuite system control on Jan 13, 2014 at approximately 10:28. TCS2366_(2017_0270)_2017-10-23.xlsx



Turning Movement Count Location Name: BLOOR ST W & DUNDAS ST W Date: Thu, Nov 09, 2017 Deployment Lead: Theo Daglis

BA Group 45 St. Clair Avenue West, Suite 300 Toronto ON, CANADA, M4V 1K9

0			Peak Hour: 08:00 AM - 09:0																						
Start Time				V Approa UNDAS S					E B	Approa	ch TW					S Approa					V B	V Approa	ch W		Int. To (15 mi
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
08:00:00	11	171	4	0	129	186	40	170	18	0	79	228	47	134	0	0	47	181	44	288	7	0	89	339	93
08:15:00	6	203	2	0	167	211	24	138	20	0	151	182	37	149	0	0	75	186	41	260	11	0	146	312	89
08:30:00	8	195	2	0	197	205	22	137	17	0	159	176	62	155	0	0	112	217	48	256	8	0	203	312	91
08:45:00	12	191	3	0	123	206	29	121	17	0	95	167	41	115	0	0	77	156	44	245	13	0	145	302	83
Grand Total	37	760	11	0	616	808	115	566	72	0	484	753	187	553	0	0	311	740	177	1049	39	0	583	1265	35
Approach%	4.6%	94.1%	1.4%	0%		-	15.3%	75.2%	9.6%	0%		-	25.3%	74.7%	0%	0%		-	14%	82.9%	3.1%	0%			-
⊤o tals%	1%	21.3%	0.3%	0%		22.7%	3.2%	15.9%	2%	0%		21.1%	5.2%	15.5%	0%	0%		20.8%	5%	29.4%	1.1%	0%		35.5%	
PHF	0.77	0.94	0.69	0		0.96	0.72	0.83	0.9	0		0.83	0.75	0.89	0	0		0.85	0.92	0.91	0.75	0		0.93	
Heavy	1	46	10	0		57	17	26	6	0		49	10	49	0	0		59	8	40	1	0		49	
Heavy %	2.7%	6.1%	90.9%	0%		7.1%	14.8%	4.6%	8.3%	0%		6.5%	5.3%	8.9%	0%	0%		8%	4.5%	3.8%	2.6%	0%		3.9%	
Lights	36	714	1	0		751	98	540	66	0		704	177	504	0	0		681	169	1009	38	0		1216	
Lights %	97.3%	93.9%	9.1%	0%		92.9%	85,2%	95.4%	91.7%	0%		93.5%	94.7%	91.1%	0%	0%		92%	95.5%	96.2%	97.4%	0%		96.1%	
ngle-Unit Trucks	0	19	0	0		19	2	16	4	0		22	4	18	0	0		22	6	37	0	0		43	
gle-Unit Trucks %	0%	2.5%	0%	0%		2.4%	1.7%	2,8%	5.6%	0%		2.9%	2,1%	3.3%	0%	0%		3%	3.4%	3.5%	0%	0%		3.4%	
Buses	0	23	10	0		33	15	9	0	0		24	6	30	0	0		36	1	з	1	0		5	
Buses %	0%	3%	90.9%	0%		4.1%	13%	1.6%	0%	0%		3.2%	3.2%	5.4%	0%	0%		4.9%	0.6%	0.3%	2.6%	0%		0.4%	
rticulated Trucks	1	4	0	0		5	0	1	2	0		3	0	1	0	0		1	1	0	0	0		1	
	2.7%	0.5%	0%	0%		0.6%	0%	0.2%	2.8%	0%		0.4%	0%	0.2%	0%	0%		0.1%	0.6%	0%	0%	0%		0.1%	
Pedestrians	-	-	-	-	612		-	-	-	-	482		•	-	•	-	306	-		-	-	-	576	-	
Pedestrians%	-	-	-	-	30.7%		-	-	-	-	24.2%		-	-	-	-	15.3%		-	-	-	-	28.9%		
ycles on Crosswalk	-	-	-	-	4	-	-	-	-	-	2		-	-	-	-	5	•	-	-	-	•	7	-	
cles on Crosswalk%	-	-	-	-	0.2%		-	-	-	-	0.1%		-	-	-	-	0.3%		-	-	-	•	0.4%		
licycles on Road	1	25	3	0	0	-	2	7	1	0	0	-	5	15	0	0	0	-	5	21	0	0	0	-	

Turning Movement Count

Page 2 of 5

BAC17N1D

0	Spectrum
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Turning Movement Count Location Name: BLOOR ST W & DUNDAS ST W Date: Thu, Nov 09, 2017 Deployment Lead: Theo Daglis

Start Time				I Approa JNDAS S						Approa						S Approa UNDAS S						/ Approa			Int. Tot (15 min
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Tum	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
16:00:00	20	105	2	0	130	127	48	239	22	0	95	309	31	232	0	0	39	263	40	160	12	0	92	212	911
16:15:00	19	101	2	0	108	122	34	258	19	0	80	311	34	243	4	0	57	281	28	168	10	0	77	206	920
16:30:00	20	105	2	0	124	127	48	232	25	0	102	305	33	264	0	0	52	297	47	167	10	0	104	224	953
16:45:00	13	119	2	0	107	134	47	256	24	0	110	327	36	239	1	0	58	276	34	162	13	0	123	209	946
Grand Total	72	430	8	0	469	510	177	985	90	0	387	1252	134	978	5	0	206	1117	149	657	45	0	396	851	373
Approach%	14,1%	84.3%	1.6%	0%		-	14.1%	78.7%	7.2%	0%		-	12%	87.6%	0.4%	0%		-	17.5%	77.2%	5.3%	0%			
Totals %	1.9%	11.5%	0.2%	0%		13.7%	4.7%	26.4%	2,4%	0%		33.6%	3.6%	26.2%	0.1%	0%		29,9%	4%	17.6%	1.2%	0%		22.8%	-
PHF	0.9	0.9	1	0		0.95	0,92	0.95	0.9	0		0.96	0.93	0.93	0.31	0		0.94	0.79	0.98	0.87	0		0.95	-
Heavy	4	20	8	0		32	14	29	2	0		45	3	56	0	0		59	3	11	2	0		16	
Heavy %	5.6%	4.7%	100%	0%		6.3%	7.9%	2.9%	2.2%	0%		3.6%	2.2%	5.7%	0%	0%		5.3%	2%	1.7%	4.4%	0%		1.9%	
Lights	68	410	0	0		478	163	956	88	0		1207	131	922	5	0		1058	146	646	43	0		835	
Lights %	94.4%	95.3%	0%	0%		93.7%	92.1%	97.1%	97.8%	0%		96.4%	97.8%	94.3%	100%	0%		94.7%	98%	98.3%	95.6%	0%		96.1%	-
Single-Unit Trucks	2	4	0	0		6	2	23	1	0		26	3	18	0	0		21	2	7	1	0		10	-
Single-Unit Trucks %	2.8%	0.9%	0%	0%		1.2%	1.1%	2.3%	1.1%	0%		2.1%	2.2%	1.8%	0%	0%		1.9%	1.3%	1.1%	2.2%	0%		1.2%	
Buses	2	16	8	0		26	11	5	1	0		17	0	29	0	0		29	0	4	1	0		5	-
Buses %	2.8%	3.7%	100%	0%		5.1%	6.2%	0.5%	1.1%	0%		1.4%	0%	3%	0%	0%		2.6%	0%	0.6%	2.2%	0%		0.6%	•
Articulated Trucks	0	0	0	0		0	1	1	0	0		2	0	9	0	0		9	1	0	0	0		1	-
Articulated Trucks %	0%	0%	0%	0%		0%	0.6%	0.1%	0%	0%		0.2%	0%	0.9%	0%	0%		0.8%	0.7%	0%	0%	0%		0.1%	-
Pedestrians		-	•	•	466	•	•	-	-		376	-	-	•	-	-	196	•	•		-	•	388		-
Pedestrians%		-	-		32%			-	-		25.8%				-	-	13.4%				-		26.6%		-
licycles on Crosswalk			-		3	-			-		11	-			-	-	10				-		8		
cycles on Crosswalk%		-			0.2%			-	-		0.8%				-	-	0.7%		•		-		0.5%		-
Bicycles on Road	0	17	0	0	0	-	1	2	0	0	0	-	1	6	0	0	0	-	3	4	0	0	0		-
Bicycles on Road%		-	-	-	0%				-		0%		-	-		-	0%		-	-	-	-	0%		



Turning Movement Count Location Name: BLOOR ST W & KEELE ST / PARKSIDE DR Date: Sat, Nov 11, 2017 Deployment Lead: Theo Daglis

Start Time				Approad						E Approa						S Approa PARKSIDE						/ Approa			Int. To (15 mi
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
12:00:00	29	147	31	0	46	207	29	106	71	0	32	206	71	119	48	0	13	238	67	136	32	0	4	235	896
12:15:00	15	154	34	0	49	203	29	120	63	0	30	212	56	132	46	0	18	234	58	136	30	0	15	224	87
12:30:00	14	129	27	0	44	170	26	113	71	0	29	210	56	121	49	0	19	226	51	110	27	0	6	188	79
12:45:00	19	133	26	0	44	178	19	102	81	0	32	202	68	115	44	0	15	227	43	123	22	0	11	188	79
Grand Total	77	563	118	0	183	758	103	441	286	0	123	830	251	487	187	0	65	925	219	505	111	0	36	835	33
Approach%	10.2%	74.3%	15.6%	0%		-	12.4%	53.1%	34.5%	0%		-	27.1%	52.6%	20.2%	0%		-	26.2%	60.5%	13.3%	0%	••		-
⊤otals%	2.3%	16.8%	3.5%	0%		22.6%	3.1%	13.2%	8.5%	0%		24.8%	7.5%	14.5%	5.6%	0%		27.6%	6.5%	15.1%	3.3%	0%		24.9%	
PHF	0.66	0.91	0.87	0		0.92	0.89	0.92	0.88	0		0.98	0.88	0.92	0.95	0		0.97	0.82	0.93	0.87	0		0.89	
Heavy	0	4	0	0		4	0	2	5	0		7	3	7	3	0		13	0	3	1	0		4	
Heavy %	0%	0.7%	0%	0%		0.5%	0%	0.5%	1.7%	0%		0.8%	1.2%	1.4%	1.6%	0%		1.4%	0%	0.6%	0.9%	0%		0.5%	
Lights	77	559	118	0		754	103	439	281	0		823	248	480	184	0		912	219	502	110	0		831	
Lights %	100%	99.3%	100%	0%		99.5%	100%	99.5%	98.3%	0%		99,2%	98.8%	98.6%	98.4%	0%		98.6%	100%	99.4%	99,1%	0%		99.5%	
Single-Unit Trucks	0	0	0	0		0	0	2	3	0		5	1	5	з	0		9	0	2	1	0		3	
ingle-Unit Trucks %	0%	0%	0%	0%		0%	0%	0.5%	1%	0%		0.6%	0.4%	1%	1.6%	0%		1%	0%	0.4%	0.9%	0%		0.4%	÷
Buses	0	3	0	0		3	0	0	2	0		2	2	2	0	0		4	0	0	0	0		0	
Buses %	0%	0.5%	0%	0%		0.4%	0%	0%	0.7%	0%		0.2%	0,8%	0.4%	0%	0%		0.4%	0%	0%	0%	0%		0%	
Articulated Trucks	0	1	0	0		1	0	0	0	0		0	0	0	0	0		0	0	1	0	0		1	÷
rticulated Trucks %	0%	0.2%	0%	0%		0.1%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0.2%	0%	0%		0.1%	
Pedestrians	•	-	-	-	183	-	-	-	-	-	123		•	-	-	•	64	-	•	-	•	-	36	-	
Pedestrians%	-	-	-	-	45%		-	-	-	-	30.2%		-	-	-	-	15.7%		-	-	-	-	8.8%		
cycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	•	-	-	-	0	-	
voles on Crosswalk%	-	-		-	0%		-		•	-	0%		-	-	-		0.2%		-	-	-	-	0%		
Bicycles on Road	0	0	0	0	0	-	0	8	0	0	0	-	0	0	0	0	0	-	1	8	0	0	0	-	

Turning Movement Count

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BAC17N1D

0	Spectrum
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Turning Movement Count Location Name: BLOOR ST W & LANSDOWNE AVE Date: Thu, Nov 09, 2017 Deployment Lead: Theo Daglis

Start Time				Approad SDOWNE						Approa						S Approa						V Approa LOOR ST			Int. To (15 mi
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
08:00:00	18	80	38	0	56	136	24	136	1	0	47	161	10	95	18	0	36	123	17	258	1	0	37	276	696
08:15:00	19	76	33	0	49	128	27	123	0	0	52	150	15	80	11	0	40	106	18	233	1	0	34	252	63
08:30:00	18	96	36	0	78	150	26	128	0	0	60	154	14	75	12	0	46	101	18	225	0	0	43	243	64
08:45:00	15	76	37	0	64	128	17	111	0	0	74	128	15	84	16	0	38	115	15	225	1	0	40	241	61
Grand Total	70	328	144	0	247	542	94	498	1	0	233	593	54	334	57	0	160	445	68	941	3	0	154	1012	25
Approach%	12,9%	60.5%	26.6%	0%		-	15,9%	84%	0,2%	0%		-	12,1%	75.1%	12.8%	0%		-	6.7%	93%	0.3%	0%			
⊺otals%	2.7%	12.7%	5.6%	0%		20,9%	3.6%	19.2%	0%	0%		22,9%	2,1%	12.9%	2.2%	0%		17.2%	2.6%	36.3%	0.1%	0%		39%	
PHF	0.92	0.85	0.95	0		0.9	0.87	0.92	0.25	0		0.92	0.9	0.88	0.79	0		0.9	0.94	0.91	0.75	0		0.92	
Heavy	з	24	3	0		30	2	28	0	0		30	1	33	9	0		43	3	33	1	0		37	
Heavy %	4.3%	7.3%	2.1%	0%		5.5%	2.1%	5.6%	0%	0%		5.1%	1.9%	9.9%	15.8%	0%		9.7%	4.4%	3.5%	33.3%	0%		3.7%	
Lights	67	304	141	0		512	92	470	1	0		563	53	301	48	0		402	65	908	2	0		975	
Lights %	95.7%	92.7%	97.9%	0%		94.5%	97.9%	94.4%	100%	0%		94.9%	98.1%	90.1%	84.2%	0%		90.3%	95.6%	96.5%	66.7%	0%		96.3%	
Single-Unit Trucks	1	7	2	0		10	1	20	0	0		21	0	8	з	0		11	2	27	0	0		29	
Single-Unit Trucks %	1.4%	2.1%	1.4%	0%		1.8%	1.1%	4%	0%	0%		3.5%	0%	2.4%	5.3%	0%		2.5%	2.9%	2.9%	0%	0%		2.9%	
Buses	2	17	1	0		20	0	5	0	0		5	1	24	6	0		31	1	6	1	0		8	•
Buses %	2.9%	5.2%	0.7%	0%		3.7%	0%	1%	0%	0%		0.8%	1.9%	7.2%	10.5%	0%		7%	1.5%	0.6%	33.3%	0%		0.8%	
Articulated Trucks	0	0	0	0		0	1	3	0	0		4	0	1	0	0		1	0	0	0	0		0	•
Articulated Trucks %	0%	0%	0%	0%		0%	1.1%	0.6%	0%	0%		0.7%	0%	0.3%	0%	0%		0.2%	0%	0%	0%	0%		0%	
Pedestrians	-			•	246		-	-	-	-	232	•	•	-	•		157	•	·	•	-	•	153		
Pedestrians%	-	-	-	-	31%		-	-	-	-	29.2%		-	-	-		19.8%			-	-		19.3%		
icycles on Crosswalk	-	-	-	-	1		-	-	-	-	1		-	-	-		3			-	-		1		
cycles on Crosswalk%	-	-	-		0.1%		-	-	-	-	0.1%		-	-	-		0.4%			-	-		0.1%		
Bicycles on Road	0	14	5	0	0	-	2	14	0	0	0	-	3	6	0	0	0	-	2	52	0	0	0		
Bicycles on Road%	-	-	-	-	0%		-			-	0%		-	-	-	-	0%		-	-	-	-	0%		



Turning Movement Count Location Name: BLOOR ST W & LANSDOWNE AVE Date: Thu, Nov 09, 2017 Deployment Lead: Theo Daglis

BA Group 45 St. Clair Avenue West, Suite 300 Toronto ON, CANADA, M4V 1K9

							Pea	ak Ho	ur: (94:15	PM = (05:15 PM	Weat	her:	Over	cast (7	.7 °C)							
Start Time				I Approa ISDOWN					E	E Approa	nch ⊤W				LAP	S Approa	ch E AVE					W Approa			Int. To (15 mi
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Tum	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
16:15:00	29	75	28	0	67	132	19	243	1	0	100	263	10	88	23	0	93	121	16	141	0	0	65	157	67
16:30:00	22	76	38	0	63	136	18	226	0	0	76	244	13	88	26	0	69	127	21	130	2	0	71	153	66
16:45:00	18	64	14	0	80	96	27	202	0	0	76	229	6	109	24	0	57	139	18	146	2	0	61	166	63
17:00:00	21	70	34	0	93	125	18	232	0	0	94	250	1	84	26	0	82	111	15	120	0	0	68	135	62
Grand Total	90	285	114	0	303	489	82	903	1	0	346	986	30	369	99	0	301	498	70	537	4	0	265	611	258
Approach%	18.4%	58.3%	23.3%	0%		-	8.3%	91.6%	0.1%	0%		-	6%	74.1%	19.9%	0%		-	11.5%	87.9%	0.7%	0%		-	
⊤otals%	3.5%	11%	4.4%	0%		18.9%	3.2%	34.9%	0%	0%		38.2%	1.2%	14.3%	3.8%	0%		19.3%	2.7%	20.8%	0.2%	0%		23.6%	
PHF	0.78	0.94	0.75	0		0.9	0.76	0.93	0.25	0		0.94	0.58	0.85	0.95	0		0.9	0.83	0.92	0.5	0		0.92	
Heavy	5	10	3	0		18	2	20	0	0		22	1	15	5	0		21	1	3	0	0		4	
Heavy %	5.6%	3.5%	2.6%	0%		3.7%	2.4%	2.2%	0%	0%		2.2%	3.3%	4.1%	5.1%	0%		4.2%	1.4%	0.6%	0%	0%		0.7%	
Lights	85	275	111	0		471	80	883	1	0		964	29	354	94	0		477	69	534	4	0		607	
Lights %	94.4%	96.5%	97.4%	0%		96.3%	97.6%	97.8%	100%	0%		97.8%	96.7%	95.9%	94.9%	0%		95.8%	98.6%	99.4%	100%	0%		99.3%	
Single-Unit Trucks	4	2	2	0		8	1	12	0	0		13	0	5	5	0		10	1	1	0	0		2	
ingle-Unit Trucks %	4.4%	0.7%	1.8%	0%		1.6%	1.2%	1.3%	0%	0%		1.3%	0%	1.4%	5.1%	0%		2%	1.4%	0.2%	0%	0%		0.3%	•
Buses	0	8	0	0		8	1	7	0	0		8	1	9	0	0		10	0	2	0	0		2	•
Buses %	0%	2.8%	0%	0%		1.6%	1.2%	0.8%	0%	0%		0.8%	3.3%	2.4%	0%	0%		2%	0%	0.4%	0%	0%		0.3%	
Articulated Trucks	1	0	1	0		2	0	1	0	0		1	0	1	0	0		1	0	0	0	0		0	
Articulated Trucks %	1.1%	0%	0.9%	0%		0.4%	0%	0.1%	0%	0%		0.1%	0%	0.3%	0%	0%		0.2%	0%	0%	0%	0%		0%	
Pedestrians	-	-	-	-	297	-	-	-	•	-	341	•	-	-	-	-	298	•	-	-	-	-	264	-	
Pedestrians%	-	-	•	-	24.4%		-	-		-	28,1%		•	-	•	•	24.5%		•	•	-		21.7%		
cycles on Crosswalk	-	-	•	-	6	-	-	-	•	-	5	-	-	-	-	•	3	-	-	•	-	•	1		
cycles on Crosswalk%	-	-	-	-	0.5%		-	-	-	-	0.4%		-	-	-	•	0.2%		-	-	-	-	0.1%		
Bicycles on Road	0	6	4	0	0	-	0	20	0	0	0	-	1	5	0	0	0	-	1	25	0	0	0	-	

Turning Movement Count

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BAC17N1D

0	Spectrum	
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Turning Movement Count Location Name: BLOOR ST W & LANSDOWNE AVE Date: Sat, Nov 11, 2017 Deployment Lead: Theo Daglis

Start Time				Approad SDOWNE					B	Approa	ach TW				S LAN	Approa SDOWN	ch E AVE					/ Approa			Int. To (15 mir
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
12:00:00	34	80	25	0	59	139	21	130	2	0	57	153	9	91	16	0	69	116	22	144	16	0	38	182	590
12:15:00	34	74	42	0	62	150	29	107	3	0	70	139	14	87	21	0	96	122	16	148	14	0	67	178	589
12:30:00	20	63	29	0	59	112	22	110	2	0	55	134	14	88	22	0	83	124	21	136	24	0	59	181	55
12:45:00	23	78	21	0	85	122	24	144	0	0	52	168	20	84	17	0	73	121	16	120	21	0	58	157	568
Grand Total	111	295	117	0	265	523	96	491	7	0	234	594	57	350	76	0	321	483	75	548	75	0	222	698	229
Approach%	21.2%	56.4%	22.4%	0%		-	16,2%	82.7%	1.2%	0%		-	11.8%	72.5%	15.7%	0%		-	10.7%	78.5%	10,7%	0%			-
Totals %	4.8%	12,8%	5.1%	0%		22,8%	4.2%	21.4%	0.3%	0%		25.8%	2,5%	15.2%	3.3%	0%		21%	3.3%	23.8%	3.3%	0%		30,4%	
PHF	0.82	0.92	0.7	0		0.87	0.83	0.85	0.58	0		0.88	0.71	0.96	0.86	0		0.97	0.85	0.93	0.78	0		0.96	-
Heavy	4	9	0	0		13	2	9	1	0		12	1	8	1	0		10	0	5	2	0		7	
Heavy %	3.6%	3.1%	0%	0%		2.5%	2.1%	1.8%	14.3%	0%		2%	1.8%	2.3%	1.3%	0%		2.1%	0%	0.9%	2.7%	0%		1%	-
Lights	107	286	117	0		510	94	482	6	0		582	56	342	75	0		473	75	543	73	0		691	
Lights %	96.4%	96.9%	100%	0%		97.5%	97.9%	98.2%	85.7%	0%		98%	98.2%	97.7%	98.7%	0%		97.9%	100%	99.1%	97.3%	0%		99%	-
Single-Unit Trucks	4	3	0	0		7	2	7	1	0		10	1	1	1	0		3	0	5	1	0		6	-
Single-Unit Trucks %	3.6%	1%	0%	0%		1.3%	2.1%	1.4%	14.3%	0%		1.7%	1.8%	0.3%	1.3%	0%		0.6%	0%	0.9%	1.3%	0%		0.9%	
Buses	0	6	0	0		6	0	2	0	0		2	0	7	0	0		7	0	0	1	0		1	-
Buses %	0%	2%	0%	0%		1.1%	0%	0.4%	0%	0%		0.3%	0%	2%	0%	0%		1.4%	0%	0%	1.3%	0%		0.1%	-
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Pedestrians	-			•	261	•	-	-	•	-	234			-	-	-	320		-	-	-	-	220		-
Pedestrians%	-	-	-	-	25%		-	-		-	22.5%		-	-	-	-	30.7%		-	-	-	-	21.1%		-
icycles on Crosswalk	-	-	-		4		-	-	-	-	0			-	-	-	1		-	-	-	-	2		-
cycles on Crosswalk%	-	-	-		0.4%		-	-	-	-	0%			-	-	-	0.1%		-	-	-		0.2%		-
Bicycles on Road	0	2	0	0	0	-	1	7	0	0	0	-	0	2	0	0	0	-	0	3	0	0	0		-
Bicycles on Road%	-			-	0%						0%		-		-	-	0%		-	-	-	-	0%		-



Turning Movement Count Location Name: BLOOR ST W & PERTH AVE Date: Thu, Nov 09, 2017 Deployment Lead: Theo Daglis

		Peak Hour: 08:00 AM - 09:00 AM													: Ove	ercast	(4.6 °	C)							
Start Time				N Appro PERTH						Approac						S Appro PERTH						/ Approa LOOR ST			Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
08:00:00	31	0	5	0	29	36	7	200	7	0	1	214	2	0	0	0	6	2	16	267	26	0	0	309	561
08:15:00	35	2	1	0	43	38	2	164	4	0	1	170	0	0	1	0	12	1	24	246	30	0	1	300	509
08:30:00	30	2	0	0	33	32	5	169	9	0	2	183	0	0	0	0	27	0	34	247	35	0	0	316	531
08:45:00	23	7	4	0	29	34	7	156	12	0	1	175	1	0	1	0	20	2	21	241	35	0	0	297	508
Grand Total	119	11	10	0	134	140	21	689	32	0	5	742	3	0	2	0	65	5	95	1001	127	0	1	1222	2109
Approach%	85%	7.9%	7.1%	0%		-	2.8%	92.9%	4.3%	0%		-	60%	0%	40%	0%		-	7.8%	81.9%	10.4%	0%		-	
Totals %	5.6%	0.5%	0.5%	0%		6.6%	1%	32.7%	1.5%	0%		35.2%	0.1%	0%	0.1%	0%		0.2%	4.5%	47.5%	6%	0%		57.9%	-
PHF	0.85	0.39	0.5	0		0.92	0.75	0.86	0.67	0		0.87	0.38	0	0.5	0		0.63	0.7	0.94	0.9	0		0.97	-
Heavy	6	0	1	0		7	2	54	0	0		56	0	0	0	0		0	3	48	7	0		58	-
Heavy %	5%	0%	10%	0%		5%	9.5%	7.8%	0%	0%		7.5%	0%	0%	0%	0%		0%	3.2%	4.8%	5.5%	0%		4.7%	-
Lights	113	11	9	0		133	19	635	32	0		686	3	0	2	0		5	92	953	119	0		1164	
Lights %	95%	100%	90%	0%		95%	90.5%	92.2%	100%	0%		92.5%	100%	0%	100%	0%		100%	96.8%	95.2%	93.7%	0%		95.3%	-
Single-Unit Trucks	2	0	0	0		2	1	24	0	0		25	0	0	0	0		0	3	32	2	0		37	-
Single-Unit Trucks %	1.7%	0%	0%	0%		1.4%	4.8%	3.5%	0%	0%		3.4%	0%	0%	0%	0%		0%	3.2%	3.2%	1.6%	0%		3%	-
Buses	4	0	1	0		5	1	27	0	0		28	0	0	0	0		0	0	16	5	0		21	-
Buses %	3.4%	0%	10%	0%		3.6%	4.8%	3.9%	0%	0%		3.8%	0%	0%	0%	0%		0%	0%	1.6%	3.9%	0%		1.7%	-
Articulated Trucks	0	0	0	0		0	0	3	0	0		3	0	0	0	0		0	0	0	0	0		0	-
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0.4%	0%	0%		0.4%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	130	-	-	-	-	-	5	-	-	-	-	-	56	-	-	-	-	-	1	-	-
Pedestrians%	-	-	-	-	63.1%		-	-	-	-	2.4%		-	-	-	-	27.2%		-	-	-	-	0.5%		-
Bicycles on Crosswalk	-	-	-	-	4	-	-	-	-	-	0	-	-	-	-	-	9	-	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	-	1.9%		-	-	-	-	0%		-	-	-	-	4.4%		-	-	-	-	0%		-
Bicycles on Road	1	0	0	0	0	-	2	10	0	0	0	-	0	1	0	0	0	-	4	25	0	0	0	-	-
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-



Turning Movement Count Location Name: BLOOR ST W & PERTH AVE Date: Thu, Nov 09, 2017 Deployment Lead: Theo Daglis

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							Pe	eak H	our:	04:45	PM -	05:45 PM	Wea	ther	Over	rcast (7.7 °C	C)							
Start Time				N Approa PERTH A			_			E Approa			_			S Approa PERTH A			_			/ Approa LOOR ST			Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
16:45:00	35	3	0	0	43	38	9	286	7	0	0	302	1	0	2	0	29	3	10	147	39	0	0	196	539
17:00:00	35	4	0	0	50	39	10	268	7	0	2	285	4	0	0	0	30	4	8	153	55	0	0	216	544
17:15:00	37	2	0	0	60	39	7	244	6	0	0	257	5	0	3	0	23	8	7	174	51	0	0	232	536
17:30:00	36	4	2	0	54	42	14	279	10	0	1	303	1	2	4	0	27	7	10	169	46	0	0	225	577
Grand Total	143	13	2	0	207	158	40	1077	30	0	3	1147	11	2	9	0	109	22	35	643	191	0	0	869	2196
Approach%	90.5%	8.2%	1.3%	0%		-	3.5%	93.9%	2.6%	0%		-	50%	9.1%	40.9%	0%		-	4%	74%	22%	0%		-	-
Totals %	6.5%	0.6%	0.1%	0%		7.2%	1.8%	49%	1.4%	0%		52.2%	0.5%	0.1%	0.4%	0%		1%	1.6%	29.3%	8.7%	0%		39.6%	-
PHF	0.97	0.81	0.25	0		0.94	0.71	0.94	0.75	0		0.95	0.55	0.25	0.56	0		0.69	0.88	0.92	0.87	0		0.94	-
Heavy	0	0	0	0		0	0	31	0	0		31	1	0	0	0		1	1	11	0	0		12	
Heavy %	0%	0%	0%	0%		0%	0%	2.9%	0%	0%		2.7%	9.1%	0%	0%	0%		4.5%	2.9%	1.7%	0%	0%		1.4%	-
Lights	143	13	2	0		158	40	1046	30	0		1116	10	2	9	0		21	34	632	191	0		857	•
Lights %	100%	100%	100%	0%		100%	100%	97.1%	100%	0%		97.3%	90.9%	100%	100%	0%		95.5%	97.1%	98.3%	100%	0%		98.6%	-
Single-Unit Trucks	0	0	0	0		0	0	16	0	0		16	0	0	0	0		0	1	4	0	0		5	-
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	1.5%	0%	0%		1.4%	0%	0%	0%	0%		0%	2.9%	0.6%	0%	0%		0.6%	-
Buses	0	0	0	0		0	0	13	0	0		13	1	0	0	0		1	0	7	0	0		7	-
Buses %	0%	0%	0%	0%		0%	0%	1.2%	0%	0%		1.1%	9.1%	0%	0%	0%		4.5%	0%	1.1%	0%	0%		0.8%	-
Articulated Trucks	0	0	0	0		0	0	2	0	0		2	0	0	0	0		0	0	0	0	0		0	-
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0.2%	0%	0%		0.2%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	201	-	-	-	-	-	2	-	-	-	-	-	104	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	63%		-	-	-	-	0.6%		-	-	-	-	32.6%		-	-	-	-	0%		-
Bicycles on Crosswalk	-	-	-	-	6	-	-	-	-	-	1	-	-	-	-	-	5	-	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	-	1.9%		-	-	-	-	0.3%		-	-	-	-	1.6%		-	-	-	-	0%		-
Bicycles on Road	0	1	0	0	0	-	0	19	0	0	0	-	0	0	0	0	0	-	1	15	0	0	0	-	-
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-



Turning Movement Count Location Name: BLOOR ST W & SYMINGTON AVE / STERLING RD Date: Thu, Nov 09, 2017 Deployment Lead: Theo Daglis

Peak Hour: 07:30 AM - 08:30 AM Weather: Overcast (4.6 °C)

Start Time				Approa IINGTO						Appro LOOR S			5	E Approach SOUTHEAST CROSSWALK				Approa ERLING						Approa DOR ST			Int. Total (15 min)
	Right	Thru	Left	U- Turn	Peds	Approach Total	Right	Thru	Left	U- Turn	Peds	Approach Total	Peds	Approach Total	Right	Thru	Left	U- Turn	Peds	Approach Total	Right	Thru	Left	U- Turn	Peds	Approach Total	
07:30:00	38	0	29	0	15	67	10	145	0	0	7	155	6	0	2	3	12	0	12	17	0	258	17	0	0	275	514
07:45:00	37	0	34	0	16	71	13	155	0	0	16	168	13	0	1	8	9	0	11	18	0	207	21	0	0	228	485
08:00:00	36	0	50	0	17	86	15	170	0	0	11	185	21	0	3	9	6	0	6	18	0	241	22	0	0	263	552
08:15:00	32	0	47	0	15	79	15	130	0	0	10	145	30	0	4	9	7	0	15	20	0	217	30	0	0	247	491
Grand Total	143	0	160	0	63	303	53	600	0	0	44	653	70	0	10	29	34	0	44	73	0	923	90	0	0	1013	2042
Approach%	47.2%	0%	52.8%	0%		-	8.1%	91.9%	0%	0%		-		-	13.7%	39.7%	46.6%	0%		-	0%	91.1%	8.9%	0%		-	
Totals %	7%	0%	7.8%	0%		14.8%	2.6%	29.4%	0%	0%		32%		0%	0.5%	1.4%	1.7%	0%		3.6%	0%	45.2%	4.4%	0%		49.6%	-
PHF	0.94	0	0.8	0		0.88	0.88	0.88	0	0		0.88		0	0.63	0.81	0.71	0		0.91	0	0.89	0.75	0		0.92	-
Heavy	17	0	5	0		22	3	32	0	0		35		0	1	4	4	0		9	0	29	15	0		44	
Heavy %	11.9%	0%	3.1%	0%		7.3%	5.7%	5.3%	0%	0%		5.4%		0%	10%	13.8%	11.8%	0%		12.3%	0%	3.1%	16.7%	0%		4.3%	-
Lights	126	0	155	0		281	50	568	0	0		618		0	9	25	30	0		64	0	894	75	0		969	
Lights %	88.1%	0%	96.9%	0%		92.7%	94.3%	94.7%	0%	0%		94.6%		0%	90%	86.2%	88.2%	0%		87.7%	0%	96.9%	83.3%	0%		95.7%	-
Single-Unit Trucks	4	0	1	0		5	2	19	0	0		21		0	1	4	2	0		7	0	22	3	0		25	-
Single-Unit Trucks %	2.8%	0%	0.6%	0%		1.7%	3.8%	3.2%	0%	0%		3.2%		0%	10%	13.8%	5.9%	0%		9.6%	0%	2.4%	3.3%	0%		2.5%	-
Buses	13	0	4	0		17	1	11	0	0		12		0	0	0	2	0		2	0	7	12	0		19	-
Buses %	9.1%	0%	2.5%	0%		5.6%	1.9%	1.8%	0%	0%		1.8%		0%	0%	0%	5.9%	0%		2.7%	0%	0.8%	13.3%	0%		1.9%	-
Articulated Trucks	0	0	0	0		0	0	2	0	0		2		0	0	0	0	0		0	0	0	0	0		0	-
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0.3%	0%	0%		0.3%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	60	-	-	-	-	-	43	-	70	-	-	-	-	-	41	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	27.1%		-	-	-	-	19.5%		31.7%		-	-	-	-	18.6%		-	-	-	-	0%		-
Bicycles on Crosswalk	-	-	-	-	3	-	-	-	-	-	1	-	0	-	-	-	-	-	3	-	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	-	1.4%		-	-	-	-	0.5%		0%		-	-	-	-	1.4%		-	-	-	-	0%		-
Bicycles on Road	1	0	2	0	0	-	0	9	0	0	0	-	0	-	1	0	0	0	0	-	0	16	2	0	0	-	-
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		0%		-	-	-	-	0%		-	-	-	-	0%		-



Turning Movement Count Location Name: BLOOR ST W & SYMINGTON AVE / STERLING RD Date: Thu, Nov 09, 2017 Deployment Lead: Theo Daglis

Peak Hour: 04:00 PM - 05:00 PM Weather: Overcast (7.7 °C)

Start Time				Approa IINGTO						Appro LOOR S			5	E Approach SOUTHEAST CROSSWALK				Approa d RLING						Approa DOR ST			Int. Total (15 min)
	Right	Thru	Left	U- Turn	Peds	Approach Total	Right	Thru	Left	U- Turn	Peds	Approach Total	Peds	Approach Total	Right	Thru	Left	U- Turn	Peds	Approach Total	Right	Thru	Left	U- Turn	Peds	Approach Total	
16:00:00	54	0	23	0	23	77	18	216	0	0	9	234	17	0	7	30	37	0	12	74	0	141	20	0	0	161	546
16:15:00	45	0	32	0	23	77	20	236	0	0	11	256	14	0	5	24	30	0	21	59	0	143	26	0	0	169	561
16:30:00	34	0	38	0	24	72	18	245	0	0	12	263	8	0	5	28	28	0	17	61	0	133	21	0	1	154	550
16:45:00	35	0	43	0	40	78	18	235	0	0	25	253	20	0	6	18	24	0	26	48	0	135	22	0	0	157	536
Grand Total	168	0	136	0	110	304	74	932	0	0	57	1006	59	0	23	100	119	0	76	242	0	552	89	0	1	641	2193
Approach%	55.3%	0%	44.7%	0%		-	7.4%	92.6%	0%	0%		-			9.5%	41.3%	49.2%	0%		-	0%	86.1%	13.9%	0%			-
Totals %	7.7%	0%	6.2%	0%		13.9%	3.4%	42.5%	0%	0%		45.9%		0%	1%	4.6%	5.4%	0%		11%	0%	25.2%	4.1%	0%		29.2%	-
PHF	0.78	0	0.79	0		0.97	0.93	0.95	0	0		0.96		0	0.82	0.83	0.8	0		0.82	0	0.97	0.86	0		0.95	-
Heavy	12	0	1	0		13	4	23	0	0		27		0	1	3	3	0		7	0	9	8	0		17	-
Heavy %	7.1%	0%	0.7%	0%		4.3%	5.4%	2.5%	0%	0%		2.7%		0%	4.3%	3%	2.5%	0%		2.9%	0%	1.6%	9%	0%		2.7%	-
Lights	156	0	135	0		291	70	909	0	0		979		0	22	97	116	0		235	0	543	81	0		624	-
Lights %	92.9%	0%	99.3%	0%		95.7%	94.6%	97.5%	0%	0%		97.3%		0%	95.7%	97%	97.5%	0%		97.1%	0%	98.4%	91%	0%		97.3%	-
Single-Unit Trucks	2	0	0	0		2	2	16	0	0		18		0	0	3	2	0		5	0	7	0	0		7	-
Single-Unit Trucks %	1.2%	0%	0%	0%		0.7%	2.7%	1.7%	0%	0%		1.8%		0%	0%	3%	1.7%	0%		2.1%	0%	1.3%	0%	0%		1.1%	-
Buses	10	0	1	0		11	1	6	0	0		7		0	0	0	1	0		1	0	1	8	0		9	-
Buses %	6%	0%	0.7%	0%		3.6%	1.4%	0.6%	0%	0%		0.7%		0%	0%	0%	0.8%	0%		0.4%	0%	0.2%	9%	0%		1.4%	-
Articulated Trucks	0	0	0	0		0	1	1	0	0		2		0	1	0	0	0		1	0	1	0	0		1	-
Articulated Trucks %	0%	0%	0%	0%		0%	1.4%	0.1%	0%	0%		0.2%		0%	4.3%	0%	0%	0%		0.4%	0%	0.2%	0%	0%		0.2%	-
Pedestrians	-	-	-	-	104	-	-	-	-	-	53	-	59	-	-	-	-	-	72	-	-	-	-	-	1	-	-
Pedestrians%	-	-	-	-	34.3%		-	-	-	-	17.5%		19.5%		-	-	-	-	23.8%		-	-	-	-	0.3%		-
Bicycles on Crosswalk	-	-	-	-	6	-	-	-	-	-	4	-	0	-	-	-	-	-	4	-	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	-	2%		-	-	-	-	1.3%		0%		-	-	-	-	1.3%		-	-	-	-	0%		-
Bicycles on Road	3	0	2	0	0	-	1	11	0	0	0	-	0	-	0	1	0	0	0	-	0	11	0	0	0	-	-
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		0%		-	-	-	-	0%		-	-	-	-	0%		-



Turning Movement Count Location Name: STERLING AVE & PERTH AVE Date: Thu, May 10, 2018 Deployment Lead: Theo Daglis

				Peak	K Hour: 08:15	AM - 09	9:15 A	M W	eather	: Overcast (15.	8 °C)					
Start Time				proach ING AV	E				proach .ING AV	E			W App PERT	oroach H AVE		Int. Total (15 min)
	Right	Thru	U-Turn	Peds	Approach Total	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	
08:15:00	0	6	0	1	6	24	1	0	3	25	31	1	0	6	32	63
08:30:00	1	4	0	0	5	19	3	0	2	22	31	5	0	3	36	63
08:45:00	1	8	0	2	9	15	2	0	0	17	24	6	0	1	30	56
09:00:00	0	6	0	1	6	23	3	0	4	26	23	3	0	3	26	58
Grand Total	2	24	0	4	26	81	9	0	9	90	109	15	0	13	124	240
Approach%	7.7%	92.3%	0%		-	90%	10%	0%		-	87.9%	12.1%	0%		-	-
Totals %	0.8%	10%	0%		10.8%	33.8%	3.8%	0%		37.5%	45.4%	6.3%	0%		51.7%	-
PHF	0.5	0.75	0		0.72	0.84	0.75	0		0.87	0.88	0.63	0		0.86	-
Heavy	1	0	0		1	4	0	0		4	3	1	0		4	-
Heavy %	50%	0%	0%		3.8%	4.9%	0%	0%		4.4%	2.8%	6.7%	0%		3.2%	-
Lights	1	24	0		25	77	9	0		86	106	14	0		120	-
Lights %	50%	100%	0%		96.2%	95.1%	100%	0%		95.6%	97.2%	93.3%	0%		96.8%	-
Single-Unit Trucks	1	0	0		1	2	0	0		2	3	1	0		4	-
Single-Unit Trucks %	50%	0%	0%		3.8%	2.5%	0%	0%		2.2%	2.8%	6.7%	0%		3.2%	-
Buses	0	0	0		0	2	0	0		2	0	0	0		0	-
Buses %	0%	0%	0%		0%	2.5%	0%	0%		2.2%	0%	0%	0%		0%	-
Articulated Trucks	0	0	0		0	0	0	0		0	0	0	0		0	-
Articulated Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	4	-	-	-	-	9	-	-	-	-	13	-	-
Pedestrians%	-	-	-	15.4%		-	-	-	34.6%		-	-	-	50%		-
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-
Bicycles on Road	0	11	0	0	-	11	0	0	0	-	4	0	0	0	-	-

Bicycles on Road%

0%

0%

0%



Turning Movement Count Location Name: STERLING AVE & PERTH AVE Date: Thu, May 10, 2018 Deployment Lead: Theo Daglis

Peak Hour: 04:30 PM - 05:30 P							30 PM	M Weather: Mostly Cloudy (19.7 °C)								
Start Time				proach _ING A\				S App STERL	oroach ING AVI	=				proach H AVE		Int. Total (15 min)
	Right	Thru	U-Turn	Peds	Approach Total	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	
16:30:00	0	6	0	0	6	42	6	0	1	48	21	6	0	2	27	81
16:45:00	0	6	0	0	6	42	2	0	2	44	13	3	0	2	16	66
17:00:00	0	11	0	3	11	47	3	0	3	50	22	3	0	4	25	86
17:15:00	0	9	0	2	9	51	8	0	7	59	25	3	0	1	28	96
Grand Total	0	32	0	5	32	182	19	0	13	201	81	15	0	9	96	329
Approach%	0%	100%	0%		-	90.5%	9.5%	0%		-	84.4%	15.6%	0%		-	-
Totals %	0%	9.7%	0%		9.7%	55.3%	5.8%	0%		61.1%	24.6%	4.6%	0%		29.2%	-
PHF	0	0.73	0		0.73	0.89	0.59	0		0.85	0.81	0.63	0		0.86	-
Heavy	0	0	0		0	1	1	0		2	2	0	0		2	
Heavy %	0%	0%	0%		0%	0.5%	5.3%	0%		1%	2.5%	0%	0%		2.1%	-
Lights	0	32	0		32	181	18	0		199	79	15	0		94	-
Lights %	0%	100%	0%		100%	99.5%	94.7%	0%		99%	97.5%	100%	0%		97.9%	-
Single-Unit Trucks	0	0	0		0	1	1	0		2	2	0	0		2	-
Single-Unit Trucks %	0%	0%	0%		0%	0.5%	5.3%	0%		1%	2.5%	0%	0%		2.1%	-
Buses	0	0	0		0	0	0	0		0	0	0	0		0	-
Buses %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	-
Articulated Trucks	0	0	0		0	0	0	0		0	0	0	0		0	-
Articulated Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	5	-	-	-	-	13	-	-	-	-	8	-	-
Pedestrians%	-	-	-	18.5%		-	-	-	48.1%		-	-	-	29.6%		-
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	0%		-	-	-	3.7%		-
Bicycles on Road	0	4	0	0	-	16	1	0	0	-	1	1	0	0	-	-

Bicycles on Road%

0%

0%

0%



City of Toronto - Traffic Safety Unit

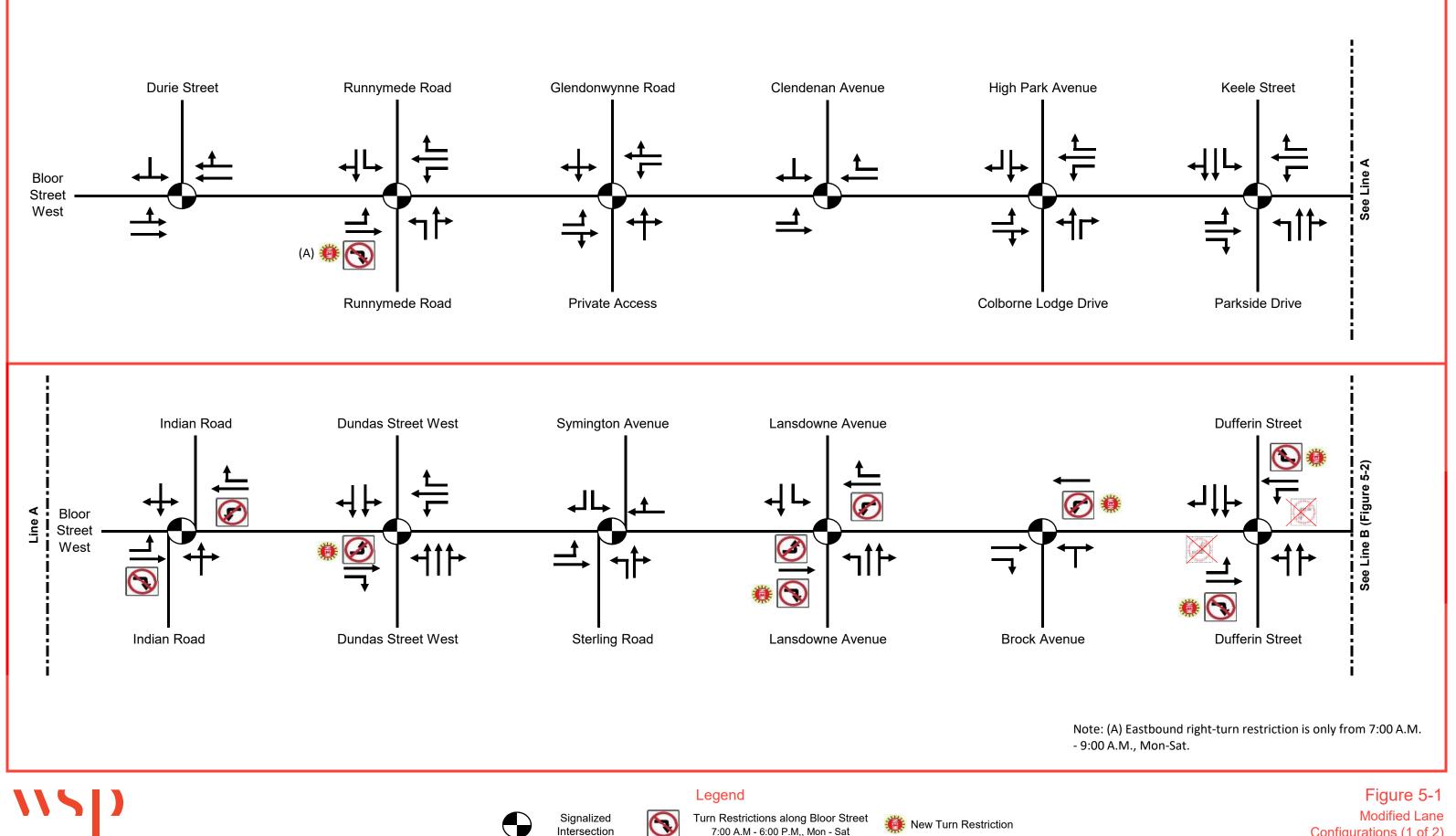
Turning Movement Count Summary Report

DUNDAS ST	W AT STERI	LING RD (F	YX 2366	6)													rvey Date rvey Type		2018-N Routine	e Hours		(Wedne	esday	()		
Time Period	Vehicle Type	Exits		RTHBO Thru		Total	Exits		ASTBO Thru	UND Right	Total	Exits		OUTH			Total	Exits		ESTBOI Thru		Total		Peds	Bike	Othe
08:00-09:00	CAR	138	0	1	0	1	1,217		1,161	1	1,230			56	0	45	101	605	0	560	69	629	N	50		
	TRK	5	1	0	1	2	32	2	29	0	31			2	0	3	5	28	0	24	3	27	S	27	0	
AM PEAK	BUS	0	0	0	0	0	27	0	27	0	27		0	0	0	0	0	35	0	35	0	35	E W	15 38		
	TOTAL:	143	1	1	1	3	1,276	70	1,217	1	1,288		 1 :	58	0	48	106	668	0	619	72	691				
	CAR	205	0	0	0	0	797	70	735	0	805		06	62	0	83	145	1,267	0	1,184	135	1,319	N	34	4	
16:30-17:30	TRK	6	0	0	0	0	6	3	3	0	6		0	3	0	1	4	15	0	14	3	17	S	50	1	
PM PEAK	BUS	0	0	0	0	0	18	0	18	0	18		0	0	0	0	0	21	0	21	0	21	E W	19 34		
	TOTAL:	211	 0		0	 0	821	73	756		829			 65	0	84	 149	1,303	0	1,219	138	1,357				
	CAR	134	0	0	- 1	1	624	46	574	0	620			19	0	39	88	631	1	592	88	681	N	37	4	
OFF HR	TRK	5	1	0	1	2	23	3	20	1	24			2	0	2	4	26	1	23	2	26	s	34		
AVG	BUS	0	0	0	0	0	23	0	23	0	23			0	0	0	0	23	0	23	0	23	E W	10 24	14	
	 TOTAL:	139		0	2		670	49	617	1	667			 51	0	41	 92	680	2	638	90	730				
	CAR	287	0		0	1	2,283		2,178	2	2,320		2 10		0	78	183	1,131	0	1,053	146	1,199	N	92	10	
07:30-09:30	TRK	12	1	0	1	2	59	5	54	0	2,320			4	0	5	9	42	0	36	7	43	S	48		
2 HR AM	BUS	0	0	0	0	0	47	0	47	0	47		-	0	0	0	0	42 59	0	59	0	43 59	E	27		
																							W	53	138	
	TOTAL:	299	1	1	1	3	2,389	145	2,279	2	2,426	:	2 10	09	0	83	192	1,232	0	1,148	153	1,301				
16:00-18:00	CAR	373	0	0	0	0	1,620	121	1,479	2	1,602		2 14	11	0	163	304	2,505	0	2,342	252	2,594	Ν	76	5	
10.00-10.00	TRK	10	0	0	0	0	10	5	7	0	12		0	3	0	2	5	30	0	28	5	33	S	97	2	
2 HR PM	BUS	0	0	0	0	0	43	0	43	0	43		0	0	0	0	0	47	0	47	0	47	Е	34		
																							W	52	45	
	TOTAL:	383	0	0	0	0	1,673	126	1,529	2	1,657	:	2 14	44	0	165	309	2,582	0	2,417	257	2,674				
07:30-18:00	CAR	1,193	0	1	3	4	6,396	444	5,953	5	6,402		7 44	10	0	398	838	6,162	2	5,764	748	6,514	Ν	316	29	
	TRK	42	4	0	4	8	160	22	142	2	166			4	1	16	31	177	3	157	20	180	S	281	3	
8 HR SUM	BUS	0	0	0	0	0	180	0	180	0	180		0	0	0	0	0	198	0	198	0	198	E W	101 201	186 268	
	TOTAL:	1,235	4	— — 1	7		6,736		6,275	7	6,748		3 4!		1	414	869	6,537		6,119	768	6,892				

Total 8 Hour Vehicle Volume: 14,521

Total 8 Hour Bicycle Volume: 486

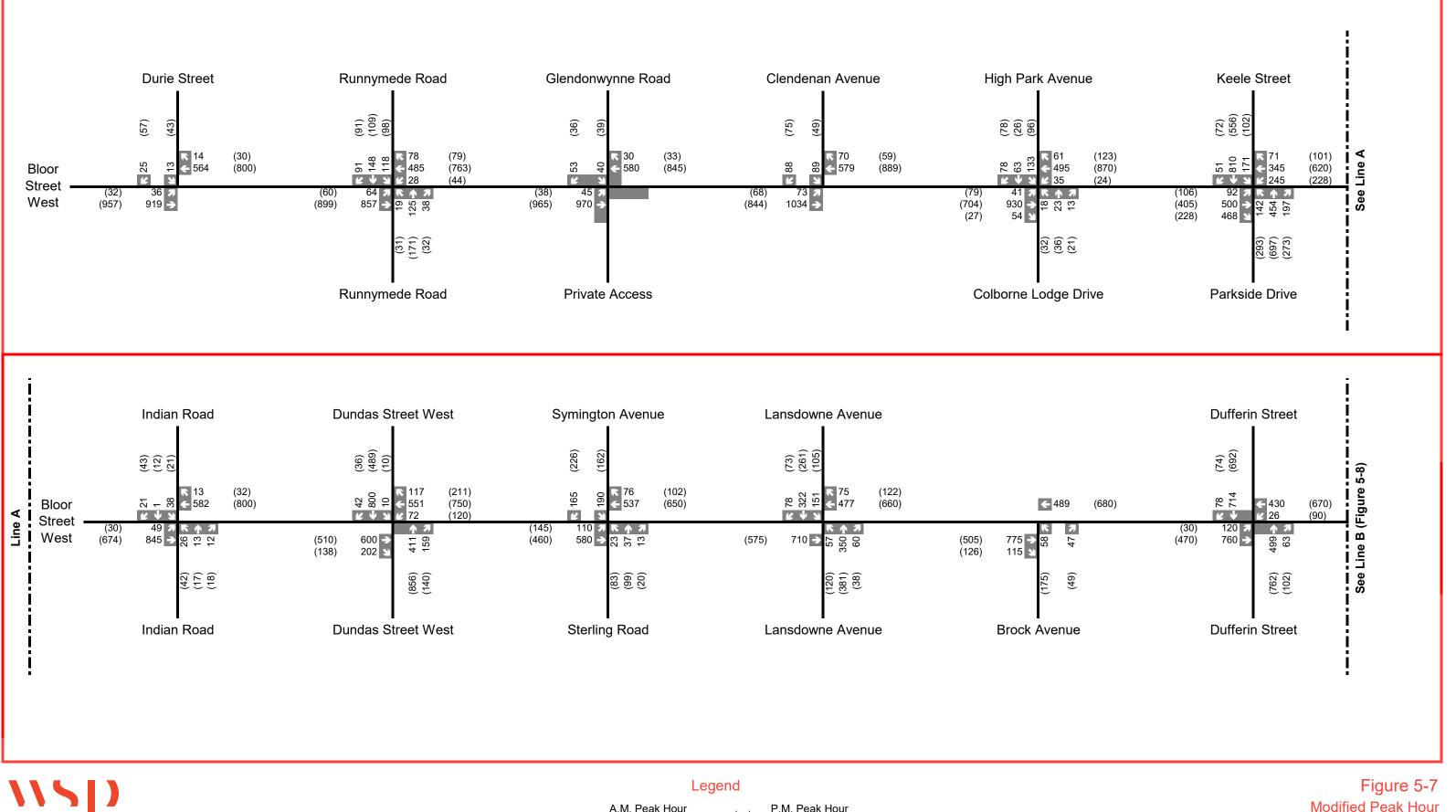
Total 8 Hour Intersection Volume: 15,007



7:00 A.M - 6:00 P.M,, Mon - Sat

Intersection

Modified Lane Configurations (1 of 2)



A.M. Peak Hour

Traffic Volumes

ΧХ

P.M. Peak Hour

Traffic Volumes

(xx)

Modified Peak Hour Volumes (1 of 2)

ROUTE: 168 SYMINGTON ROUTING CODE(S): _0, COUNT: 3246 ON 2019-OCT-14:M-F (FROM 07:50 TO 16:50) STOP CARD: 12 COUNT COVERAGE/METHOD: FULL(6X)/APC STOPS: 1 TO 299 COMMENTS:

Ν

NORTHBOUND PERIOD 1: 07:50

ROUTE							
<u>STOP</u>	LOCATION	<u>START</u>	<u>ONS</u>	<u>OFFS</u>	ACCUM.	VEHICLES	AVG. LOAD
1	DUNDAS WEST STATION	0	116	0	116	11	10.5
4	SYMINGTON AT BLOOR ST W	0	15	11	120	11	<mark>10.9</mark>
5	SYMINGTON AT PATON	0	6	2	124	11	11.3
6	SYMINGTON AT WALLACE	0	7	2	129	11	11.7
7	SYMINGTON AT ANTLER	0	5	19	115	11	10.5
8	SYMINGTON AT DUPONT	0	9	18	106	11	9.6
9	SYMINGTON AT ADRIAN	0	0	16	90	11	8.2
10	DAVENPORT AT SYMINGTON	0	9	14	85	11	7.7
11	DAVENPORT AT LAUGHTON	0	8	10	83	11	7.5
12	DAVENPORT AT OSLER	0	7	18	72	11	6.5
13	DAVENPORT AT OLD WESTON RD	0	0	0	72	11	6.5
14	OLD WESTON RD AT ST CLAIR AVE W	0	14	25	61	11	5.5
15	OLD WESTON RD AT ROCKWELL	0	5	0	66	11	6.0
16	OLD WESTON RD AT TURNBERRY	0	9	15	60	11	5.5
17	OLD WESTON RD AT KANE	0	0	4	56	11	5.1
18	OLD WESTON RD AT ROGERS RD	0	5	4	57	11	5.2
19	ROGERS RD AT SCOTT	0	0	1	56	11	5.1
20	ROGERS RD AT KEELE ST	0	1	14	43	11	3.9
21	ROGERS RD AT BICKNELL	0	2	5	40	11	3.6
22	LOOP (AVON) AT WESTON RD	0	0	40	0	11	0.0
TOTALS	SFOR PERIOD 1: 07:50	0	218	218	1551	220	7.1



ROUTE: 168 SYMINGTON ROUTING CODE(S): _0, COUNT: 3246 ON 2019-OCT-14:**M-F** (FROM 07:50 TO 16:50) STOP CARD: 12 COUNT COVERAGE/METHOD: **FULL(6X)/APC** STOPS: 1 TO 299 COMMENTS:

NB CONTROL POINT: 1 DUNDAS WEST STATION

NORTHBOUND PERIOD 2: 15:51	
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ROUTE	

STOP		<u>START</u>	ONS	<u>OFFS</u>	ACCUM.	VEHICLES	AVG. LOAD
1	DUNDAS WEST STATION	0	346	0	346	9	38.4
4	SYMINGTON AT BLOOR ST W	0	10	18	338	9	<mark>37.6</mark>
5	SYMINGTON AT PATON	0	1	13	326	9	36.2
6	SYMINGTON AT WALLACE	0	3	20	309	9	34.3
7	SYMINGTON AT ANTLER	0	2	25	286	9	31.8
8	SYMINGTON AT DUPONT	0	11	34	263	9	29.2
9	SYMINGTON AT ADRIAN	0	0	20	243	9	27.0
10	DAVENPORT AT SYMINGTON	0	7	30	220	9	24.4
11	DAVENPORT AT LAUGHTON	0	7	43	184	9	20.4
12	DAVENPORT AT OSLER	0	3	26	161	9	17.9
13	DAVENPORT AT OLD WESTON RD	0	1	6	156	9	17.3
14	OLD WESTON RD AT ST CLAIR AVE W	0	23	25	154	9	17.1
15	OLD WESTON RD AT ROCKWELL	0	0	12	142	9	15.8
16	OLD WESTON RD AT TURNBERRY	0	2	24	120	9	13.3
17	OLD WESTON RD AT KANE	0	0	20	100	9	11.1
18	OLD WESTON RD AT ROGERS RD	0	3	24	79	9	8.8
19	ROGERS RD AT SCOTT	0	0	14	65	9	7.2
20	ROGERS RD AT KEELE ST	0	1	29	37	9	4.1
21	ROGERS RD AT BICKNELL	0	0	11	26	9	2.9
22	LOOP (AVON) AT WESTON RD	0	0	26	0	9	0.0
TOTALS	FOR PERIOD 2: 15:51	0	420	420	3555	180	19.8

Report: TRIPS_DM - 002 Version: 002

ROUTE: 168 SYMINGTON ROUTING CODE(S): _0, COUNT: 3246 ON 2019-OCT-14:**M-F** (FROM 07:53 TO 18:18) STOP CARD: 12 COUNT COVERAGE/METHOD: **FULL(6X)/APC** STOPS: 1 TO 299 COMMENTS:

SB CONTROL POINT: 22 DUNDAS WEST STATION

SOUTH	BOUND PERIOD 1: 07:53						
ROUTE							
<u>STOP</u>	LOCATION	<u>START</u>	<u>ONS</u>	<u>OFFS</u>	ACCUM.	VEHICLES	<u>AVG. LOAD</u>
1	LOOP (AVON) AT WESTON RD	0	43	0	43	11	3.9
2	ROGERS RD AT BICKNELL	0	9	1	51	11	4.6
3	ROGERS RD AT KEELE ST	0	55	8	98	11	8.9
4	ROGERS RD AT SCOTT	0	11	0	109	11	9.9
5	OLD WESTON RD AT ROGERS RD	0	44	5	148	11	13.5
6	OLD WESTON RD AT LAVENDER	0	41	2	187	11	17.0
7	OLD WESTON RD AT TURNBERRY	0	45	4	228	11	20.7
8	OLD WESTON RD AT ROCKWELL	0	21	1	248	11	22.5
9	OLD WESTON RD AT ST CLAIR AVE W	0	21	56	213	11	19.4
10	DAVENPORT AT OLD WESTON RD	0	10	0	223	11	20.3
11	DAVENPORT AT OSLER	0	40	3	260	11	23.6
12	DAVENPORT AT LAUGHTON	0	56	4	312	11	28.4
13	DAVENPORT AT SYMINGTON	0	36	2	346	11	31.5
14	SYMINGTON AT KINGSLEY	0	25	1	370	11	33.6
15	SYMINGTON AT DUPONT	0	29	10	389	11	35.4
16	SYMINGTON AT ANTLER	0	35	9	415	11	37.7
17	SYMINGTON AT WALLACE	0	23	4	434	11	39.5
18	SYMINGTON AT ERNEST	0	14	0	448	11	40.7
19	SYMINGTON AT BLOOR ST W	0	17	17	448	11	40.7
20	BLOOR ST W AT DUNDAS ST W	0	4	39	413	11	37.5
22	DUNDAS WEST STATION	0	0	413	0	11	0.0
TOTALS	FOR PERIOD 1: 07:53	0	579	579	5383	231	23.3



ROUTE: 168 SYMINGTON ROUTING CODE(S): _0, COUNT: 3246 ON 2019-OCT-14:**M-F** (FROM 07:53 TO 18:18) STOP CARD: 12 COUNT COVERAGE/METHOD: **FULL(6X)/APC** STOPS: 1 TO 299 COMMENTS:

SB CONTROL POINT: 22 DUNDAS WEST STATION

SOUTH	IBOUND PERIOD 2: 17:19						
ROUTE							
<u>STOP</u>	LOCATION	<u>START</u>	<u>ONS</u>	<u>OFFS</u>	ACCUM.	VEHICLES	<u>AVG. LOAD</u>
1	LOOP (AVON) AT WESTON RD	0	41	0	41	9	4.6
2	ROGERS RD AT BICKNELL	0	0	1	40	9	4.4
3	ROGERS RD AT KEELE ST	0	51	8	83	9	9.2
4	ROGERS RD AT SCOTT	0	6	0	89	9	9.9
5	OLD WESTON RD AT ROGERS RD	0	11	4	96	9	10.7
6	OLD WESTON RD AT LAVENDER	0	6	2	100	9	11.1
7	OLD WESTON RD AT TURNBERRY	0	11	7	104	9	11.6
8	OLD WESTON RD AT ROCKWELL	0	2	7	99	9	11.0
9	OLD WESTON RD AT ST CLAIR AVE W	0	36	21	114	9	12.7
10	DAVENPORT AT OLD WESTON RD	0	6	1	119	9	13.2
11	DAVENPORT AT OSLER	0	10	9	120	9	13.3
12	DAVENPORT AT LAUGHTON	0	25	11	134	9	14.9
13	DAVENPORT AT SYMINGTON	0	25	7	152	9	16.9
14	SYMINGTON AT KINGSLEY	0	17	1	168	9	18.7
15	SYMINGTON AT DUPONT	0	27	11	184	9	20.4
16	SYMINGTON AT ANTLER	0	13	5	192	9	21.3
17	SYMINGTON AT WALLACE	0	9	5	196	9	21.8
18	SYMINGTON AT ERNEST	0	4	1	199	9	22.1
19	SYMINGTON AT BLOOR ST W	0	11	13	197	9	<mark>21.9</mark>
20	BLOOR ST W AT DUNDAS ST W	0	2	18	181	9	20.1
22	DUNDAS WEST STATION	0	0	181	0	9	0.0
TOTALS	SFOR PERIOD 2: 17:19	ō	313	313	2608	189	13.8





ROUTE: 506 CARLTON ROUTING CODE(S): _0, COUNT: 3260 ON 2018-MAY-14:**M-F** (FROM 08:20 TO 18:01) STOP CARD: 23 COUNT COVERAGE/METHOD: **PART(GE95)/APC** STOPS: 1 TO 299 COMMENTS: Final coverage 99.2% For SSP use only.

EB CONTROL POINT: 28 COLLEGE AT YONGE ST

EASTBOUND PERIOD 1: 08:20

ROUTE							
	LOCATION	<u>START</u>	<u>ONS</u>	<u>OFFS</u>			AVG. LOAD
1	HIGH PARK STATION	0	59	0	59	17	3.5
3	PARKSIDE DR AT INDIAN VALLEY	0	0	0	59	17	3.5
4	HOWARD PK AT PARKSIDE	0	23	3	79	17	4.6
5	HOWARD PK AT INDIAN RD	0	32	0	111	17	6.5
6	HOWARD PK AT RONCESVALLES	0	59	10	160	17	9.4
7	HOWARD PK AT DUNDAS ST W	0	13	0	173	17	10.2
8	DUNDAS ST W AT SORAUREN	0	38	3	208	17	12.2
9	DUNDAS ST W AT STERLING RD	0	0	1	207	17	12.2
10	COLLEGE AT LANSDOWNE	0	72	15	264	17	15.5
11	COLLEGE AT BROCK	0	59	7	316	17	18.6
12	COLLEGE AT DUFFERIN ST	0	116	9	423	17	24.9
13	COLLEGE AT RUSHOLME	0	51	1	473	17	27.8
14	COLLEGE AT DOVERCOURT	0	77	17	533	17	31.4
15	COLLEGE AT OSSINGTON AVE	0	94	21	606	17	35.6
16	COLLEGE AT CRAWFORD	0	72	23	655	17	38.5
17	COLLEGE AT GRACE	0	68	32	691	17	40.6
18	COLLEGE AT EUCLID	0	52	41	702	17	41.3
19	COLLEGE AT BATHURST ST	0	79	87	694	17	40.8
20	COLLEGE AT BORDEN	0	34	15	713	17	41.9
21	COLLEGE AT AUGUSTA	0	33	34	712	17	41.9
22	COLLEGE AT SPADINA AVE	0	63	76	699	17	41.1
23	COLLEGE AT BEVERLY	0	20	31	688	17	40.5
24	COLLEGE AT MCCAUL	0	14	36	666	17	39.2
25	COLLEGE AT UNIVERSITY AVE	0	76	257	485	17	28.5
26	COLLEGE AT ELIZABETH	0	4	42	447	17	26.3
27	COLLEGE AT BAY ST	0	12	88	371	17	21.8
28	COLLEGE AT YONGE ST	0	124	165	330	17	19.4
29	CARLTON AT CHURCH	0	15	39	306	17	18.0
30	CARLTON AT JARVIS ST	0	14	38	282	17	16.6
31	CARLTON AT SHERBOURNE	0	18	57	243	17	14.3
32	SHERBOURNE ST AT GERRARD	0	4	25	222	17	13.1
33	DUNDAS ST E AT ONTARIO	0	9	21	210	17	12.4
34	DUNDAS ST E AT PARLIAMENT	0	14	20	204	17	12.0
35	DUNDAS ST E AT SACKVILLE	0	8	12	200	17	11.8
36	DUNDAS ST E AT SUMACH	0	24	21	203	17	11.9
37	GERRARD AT BLACKBURN	0	30	16	217	17	12.8
38	GERRARD AT BROADVIEW	0	43	34	226	17	13.3
39	GERRARD AT DEGRASSI	0	9	8	227	17	13.4
40	GERRARD AT LOGAN	0	11	12	226	17	13.3
41	GERRARD AT CARLAW	0	12	34	204	17	12.0
42	GERRARD AT PAPE	0	10	40	174	17	10.2
42	GERRARD AT MARJORY	0	2	40	167	17	9.8
43 44	GERRARD AT JONES	0	13	36	107	17	9.0 8.5
44 45	GERRARD AT JONES GERRARD AT LESLIE	0	13	2	144	17	8.4
40		0	1	2	143	17	0.4

46 GERRARD AT ALTON

0

0

2

141

17

8.3





ROUTE: 506 CARLTON ROUTING CODE(S): _0, COUNT: 3260 ON 2018-MAY-14:**M-F** (FROM 08:20 TO 18:01) STOP CARD: 23 COUNT COVERAGE/METHOD: **PART(GE95)/APC** STOPS: 1 TO 299 COMMENTS: Final coverage 99.2% For SSP use only.

EB CONTROL POINT: 28 COLLEGE AT YONGE ST

EASTBO	DUND PERIOD 2: 17:02						
ROUTE							
<u>STOP</u>	LOCATION	<u>START</u>	<u>ONS</u>	<u>OFFS</u>			<u>AVG. LOAD</u>
1	HIGH PARK STATION	0	34	0	34	16	2.1
3	PARKSIDE DR AT INDIAN VALLEY	0	0	1	33	16	2.1
4	HOWARD PK AT PARKSIDE	0	11	1	43	16	2.7
5	HOWARD PK AT INDIAN RD	0	3	0	46	16	2.9
6	HOWARD PK AT RONCESVALLES	0	24	1	69	16	4.3
7	HOWARD PK AT DUNDAS ST W	0	2	0	71	16	4.4
8	DUNDAS ST W AT SORAUREN	0	8	2	77	16	4.8
9	DUNDAS ST W AT STERLING RD	0	6	1	82	16	<mark>5.1</mark>
10	COLLEGE AT LANSDOWNE	0	28	3	107	16	6.7
11	COLLEGE AT BROCK	0	12	2	117	16	7.3
12	COLLEGE AT DUFFERIN ST	0	73	10	180	16	11.3
13	COLLEGE AT RUSHOLME	0	7	1	186	16	11.6
14	COLLEGE AT DOVERCOURT	0	26	12	200	16	12.5
15	COLLEGE AT OSSINGTON AVE	0	41	17	224	16	14.0
16	COLLEGE AT CRAWFORD	0	30	17	237	16	14.8
17	COLLEGE AT GRACE	0	30	20	247	16	15.4
18	COLLEGE AT EUCLID	0	45	17	275	16	17.2
19	COLLEGE AT BATHURST ST	0	78	27	326	16	20.4
20	COLLEGE AT BORDEN	0	27	11	342	16	21.4
21	COLLEGE AT AUGUSTA	0	67	23	386	16	24.1
22	COLLEGE AT SPADINA AVE	0	113	41	458	16	28.6
23	COLLEGE AT BEVERLY	0	65	17	506	16	31.6
24	COLLEGE AT MCCAUL	0	34	12	528	16	33.0
25	COLLEGE AT UNIVERSITY AVE	0	127	126	529	16	33.1
26	COLLEGE AT ELIZABETH	0	37	12	554	16	34.6
27	COLLEGE AT BAY ST	0	62	47	569	16	35.6
28	COLLEGE AT YONGE ST	0	253	195	627	16	39.2
29	CARLTON AT CHURCH	0	49	43	633	16	39.6
30	CARLTON AT JARVIS ST	0	20	41	612	16	38.3
31	CARLTON AT SHERBOURNE	0	32	102	542	16	33.9
32	SHERBOURNE ST AT GERRARD	0	13	31	524	16	32.8
33	DUNDAS ST E AT ONTARIO	0	21	42	503	16	31.4
34	DUNDAS ST E AT PARLIAMENT	0	35	31	507	16	31.7
	DUNDAS ST E AT SACKVILLE	0	16	26	497	16	31.1
36	DUNDAS ST E AT SUMACH	0	22	46	473	16	29.6
37	GERRARD AT BLACKBURN	0	25	32	466	16	29.1
38	GERRARD AT BROADVIEW	0	133	58	541	16	33.8
39	GERRARD AT DEGRASSI	0	26	13	554	16	34.6
40	GERRARD AT LOGAN	0	18	29	543	16	33.9
41	GERRARD AT CARLAW	0	37	51	529	16	33.1
42	GERRARD AT PAPE	0	37	85	481	16	30.1
43	GERRARD AT MARJORY	0	28	33	476	16	29.8
44	GERRARD AT JONES	0	20	44	452	16	28.3
45	GERRARD AT LESLIE	0	9	22	439	16	27.4
46	GERRARD AT ALTON	0	1	18	422	16	26.4

ROUTE: 506 CARLTON ROUTING CODE(S): _0, COUNT: 3260 ON 2018-MAY-14:M-F (FROM 08:07 TO 17:46) STOP CARD: 23 COUNT COVERAGE/METHOD: PART(GE95)/APC STOPS: 1 TO 299 COMMENTS: Final coverage 99.2% For SSP use only.

WB CONTROL POINT: 43 CARLTON AT YONGE ST

SOUND PERIOD 1: 08:07						
<u> </u>						
LOCATION	<u>START</u>	<u>ONS</u>	<u>OFFS</u>	ACCUM.	VEHICLES	<u>AVG. LOAD</u>
COLLEGE AT MCCAUL	0	7	38	479	16	29.9
COLLEGE AT ST. GEORGE	0	9	75	413	16	25.8
COLLEGE AT SPADINA AVE	0	22	112	323	16	20.2
COLLEGE AT MAJOR	0	14	50	287	16	17.9
COLLEGE AT BORDEN	0	9	26	270	16	16.9
COLLEGE AT BATHURST ST	0	35	87	218	16	13.6
COLLEGE AT EUCLID	0	19	41	196	16	12.3
COLLEGE AT GRACE	0	17	24	189	16	11.8
COLLEGE AT CRAWFORD	0	10	50	149	16	9.3
COLLEGE AT OSSINGTON AVE	0	14	37	126	16	7.9
COLLEGE AT DOVERCOURT	0	8	18	116	16	7.3
COLLEGE AT HAVELOCK	0	0	0	116	16	7.3
COLLEGE AT DUFFERIN ST	0	9	48	77	16	4.8
COLLEGE AT BROCK	0	6	7	76	16	4.8
COLLEGE AT LANSDOWNE	0	4	21	59	16	3.7
DUNDAS ST W AT STERLING RD	0	0	7	52	16	<mark>3.3</mark>
DUNDAS ST W AT SORAUREN	0	2	3	51	16	3.2
HOWARD PARK AT DUNDAS ST W	0	0	4	47	16	2.9
HOWARD PK AT RONCESVALLES	0	1	19	29	16	1.8
HOWARD PK AT INDIAN RD	0	0	0	29	16	1.8
HOWARD PK AT PARKSIDE	0	1	2	28	16	1.8
PARKSIDE DR AT INDIAN VALLEY	0	0	0	28	16	1.8
HIGH PARK STATION	0	0	28	0	16	0.0
FOR PERIOD 1: 08:07	0	1869	1869	20067	1088	18.4
	LOCATION COLLEGE AT MCCAUL COLLEGE AT ST. GEORGE COLLEGE AT SPADINA AVE COLLEGE AT SPADINA AVE COLLEGE AT BORDEN COLLEGE AT BORDEN COLLEGE AT BATHURST ST COLLEGE AT EUCLID COLLEGE AT GRACE COLLEGE AT CRAWFORD COLLEGE AT CRAWFORD COLLEGE AT OSSINGTON AVE COLLEGE AT OVERCOURT COLLEGE AT DOVERCOURT COLLEGE AT DUFFERIN ST COLLEGE AT BROCK COLLEGE AT LANSDOWNE DUNDAS ST W AT STERLING RD DUNDAS ST W AT SORAUREN HOWARD PARK AT DUNDAS ST W HOWARD PK AT RONCESVALLES HOWARD PK AT PARKSIDE PARKSIDE DR AT INDIAN VALLEY HIGH PARK STATION	LOCATIONSTARTCOLLEGE AT MCCAUL0COLLEGE AT ST. GEORGE0COLLEGE AT SPADINA AVE0COLLEGE AT SPADINA AVE0COLLEGE AT BORDEN0COLLEGE AT BORDEN0COLLEGE AT BATHURST ST0COLLEGE AT EUCLID0COLLEGE AT GRACE0COLLEGE AT CRAWFORD0COLLEGE AT OSSINGTON AVE0COLLEGE AT DOVERCOURT0COLLEGE AT DOVERCOURT0COLLEGE AT DUFFERIN ST0COLLEGE AT BROCK0COLLEGE AT LANSDOWNE0DUNDAS ST W AT STERLING RD0DUNDAS ST W AT SORAUREN0HOWARD PARK AT DUNDAS ST W0HOWARD PK AT RONCESVALLES0HOWARD PK AT INDIAN RD0HOWARD PK AT PARKSIDE0PARKSIDE DR AT INDIAN VALLEY0HIGH PARK STATION0	LOCATIONSTARTONSCOLLEGE AT MCCAUL07COLLEGE AT ST. GEORGE09COLLEGE AT SPADINA AVE022COLLEGE AT BADRDR014COLLEGE AT BORDEN09COLLEGE AT BATHURST ST035COLLEGE AT GRACE017COLLEGE AT GRACE017COLLEGE AT CRAWFORD010COLLEGE AT OSSINGTON AVE014COLLEGE AT DOVERCOURT08COLLEGE AT DUFFERIN ST09COLLEGE AT BROCK06COLLEGE AT LANSDOWNE04DUNDAS ST W AT STERLING RD00DUNDAS ST W AT SORAUREN02HOWARD PARK AT DUNDAS ST W00HOWARD PK AT RONCESVALLES01HOWARD PK AT INDIAN RD00HOWARD PK AT INDIAN VALLEY00HIGH PARK STATION00	LOCATIONSTARTONSOFFSCOLLEGE AT MCCAUL0738COLLEGE AT ST. GEORGE0975COLLEGE AT SPADINA AVE022112COLLEGE AT SPADINA AVE022112COLLEGE AT BORDEN0926COLLEGE AT BORDEN0926COLLEGE AT BATHURST ST03587COLLEGE AT EUCLID01941COLLEGE AT GRACE01724COLLEGE AT CRAWFORD01050COLLEGE AT OSSINGTON AVE01437COLLEGE AT DOVERCOURT0818COLLEGE AT DOVERCOURT0818COLLEGE AT DOVERCOURT067COLLEGE AT BROCK000COLLEGE AT LANSDOWNE04DUNDAS ST W AT SORAUREN02HOWARD PARK AT DUNDAS ST W00HOWARD PK AT RONCESVALLES01HOWARD PK AT PARKSIDE01ONARD PK AT PARKSIDE01COLLEY000HIGH PARK STATION00	LOCATIONSTARTONSOFFSACCUM.COLLEGE AT MCCAUL0738479COLLEGE AT ST. GEORGE0975413COLLEGE AT SPADINA AVE022112323COLLEGE AT SPADINA AVE01450287COLLEGE AT BORDEN0926270COLLEGE AT BORDEN0926270COLLEGE AT BATHURST ST03587218COLLEGE AT GRACE01724189COLLEGE AT CRAWFORD01050149COLLEGE AT OSSINGTON AVE01437126COLLEGE AT DOVERCOURT0818116COLLEGE AT DUFFERIN ST094877COLLEGE AT DUFFERIN ST094877COLLEGE AT LANSDOWNE042159DUNDAS ST W AT SORAUREN02351HOWARD PK AT RONCESVALLES011929HOWARD PK AT PARKSIDE00028PARKSIDE DR AT INDIAN VALLEY00028	LOCATION START ONS OFFS ACCUM. VEHICLES COLLEGE AT MCCAUL 0 7 38 479 16 COLLEGE AT ST. GEORGE 0 9 75 413 16 COLLEGE AT SPADINA AVE 0 22 112 323 16 COLLEGE AT MAJOR 0 14 50 287 16 COLLEGE AT BORDEN 0 9 26 270 16 COLLEGE AT BORDEN 0 9 26 270 16 COLLEGE AT BORDEN 0 19 41 196 16 COLLEGE AT BORDEN 0 19 41 196 16 COLLEGE AT CRAWFORD 0 10 50 149 16 COLLEGE AT CRAWFORD 0 10 50 149 16 COLLEGE AT CRAWFORD 0 14 37 126 16 COLLEGE AT DOVERCOURT 0 8 18 116 16





ROUTE: 506 CARLTON ROUTING CODE(S): _0, COUNT: 3260 ON 2018-MAY-14:M-F (FROM 08:07 TO 17:46) STOP CARD: 23 COUNT COVERAGE/METHOD: PART(GE95)/APC STOPS: 1 TO 299 COMMENTS: Final coverage 99.2% For SSP use only.

WB CONTROL POINT: 43 CARLTON AT YONGE ST

WESTB	OUND PERIOD 2: 16:47										
ROUTE											
STOP		<u>START</u>	<u>ONS</u>	<u>OFFS</u>		<u>VEHICLES</u>	<u>AVG. LOAD</u>				
47	COLLEGE AT MCCAUL	0	23	24	586	16	36.6				
48	COLLEGE AT ST. GEORGE	0	26	25	587	16	36.7				
49	COLLEGE AT SPADINA AVE	0	74	97	564	16	35.3				
50	COLLEGE AT MAJOR	0	32	50	546	16	34.1				
51	COLLEGE AT BORDEN	0	15	27	534	16	33.4				
52	COLLEGE AT BATHURST ST	0	43	69	508	16	31.8				
53	COLLEGE AT EUCLID	0	18	55	471	16	29.4				
54	COLLEGE AT GRACE	0	27	66	432	16	27.0				
55	COLLEGE AT CRAWFORD	0	13	50	395	16	24.7				
56	COLLEGE AT OSSINGTON AVE	0	14	60	349	16	21.8				
57	COLLEGE AT DOVERCOURT	0	16	51	314	16	19.6				
58	COLLEGE AT HAVELOCK	0	1	22	293	16	18.3				
59	COLLEGE AT DUFFERIN ST	0	12	89	216	16	13.5				
60	COLLEGE AT BROCK	0	6	27	195	16	12.2				
61	COLLEGE AT LANSDOWNE	0	10	48	157	16	9.8				
62	DUNDAS ST W AT STERLING RD	0	2	4	155	16	<mark>9.7</mark>				
63	DUNDAS ST W AT SORAUREN	0	0	19	136	16	8.5				
64	HOWARD PARK AT DUNDAS ST W	0	0	11	125	16	7.8				
65	HOWARD PK AT RONCESVALLES	0	0	34	91	16	5.7				
66	HOWARD PK AT INDIAN RD	0	2	13	80	16	5.0				
67	HOWARD PK AT PARKSIDE	0	2	13	69	16	4.3				
68	PARKSIDE DR AT INDIAN VALLEY	0	0	1	68	16	4.3				
70	HIGH PARK STATION	0	0	68	0	16	0.0				

0

1596

1596

16114

1088

14.8

TOTALS FOR PERIOD 2: 16:47





LANSDOWNE STATION

SUBWAY STATION PLATFORM USAGE COUNT

2019

		1						MAXIMU	M HOUR
	TIME	ТО	SUBTOTAL	FROM	SUBTOTAL	COMBINED	SUBTOTAL	ТО	FROM
AM RUSH	06:00 - 06:14	75		50		125			
	06:15 - 06:29	105		37		142			
	06:30 - 06:44	120		45		165			
	06:45 - 06:59	122		47		169			
	07:00 - 07:14	155		55		210			
	07:15 - 07:29	190		59		249			
	07:30 - 07:44	181		125		306			
	07:45 - 07:59	217		199		416			
	08:00 - 08:14	334		114		448			
	08:15 - 08:29	314		118		432			556
	08:30 - 08:44	323		99		422		1,188	
	08:45 - 08:59	213	2,349	125	1,073	338	3,422		
	09:00 - 09:14	176		115		291			
	09:15 - 09:29	141		119		260			
	09:30 - 09:44	132		93		225			
	09:45 - 09:59	130		112		242			
	10:00 - 10:29	150		102		252			
≻	10:30 - 10:59	143		109		252			
MIDDAY	11:00 - 11:29	119		116		235			
ID	11:30 - 11:59	155		142		297			
Σ	12:00 - 12:29	120		207		327			
	12:30 - 12:59	149		189		338			
	13:00 - 13:29	105		166		271			
	13:30 - 13:59	114		236		350			
	14:00 - 14:29	202		216		418			452
	14:30 - 14:59	386	2,222	219	2,141	605	4,363	588	
	15:00 - 15:14	159		175		334			
	15:15 - 15:29	177		144		321			
	15:30 - 15:44	181		140		321			
	15:45 - 15:59	193		154		347			
	16:00 - 16:14	175		178		353			
	16:15 - 16:29	187		228		415			
H	16:30 - 16:44	256		248		504			
RUSH	16:45 - 16:59	220		224		444			
I R	17:00 - 17:14	200		297		497			
РМ	17:15 - 17:29	215		392		607		891	
	17:30 - 17:44	193		394		587			
	17:45 - 17:59	208		430		638			
	<u> 18:00 - 18:14</u>	165		406		571			1,622
	18:15 - 18:29	125		342		467			
	18:30 - 18:44	109		287		396			
	18:45 - 18:59	89	2,852	371	4,410	460	7,262		
EARLY	19:00 - 19:29	166		426		592			
	19:30 - 19:59	136		365		501		302	791
	20:00 - 20:29	117		286		403			
	20:30 - 20:59	117		272		389			
	21:00 - 21:29	89		262		351			
N N	21:30 - 21:59	87	712	145	1,756	232	2,468		
	22:00 - 22:29	55		154	×	209			
N I	22:30 - 22:59	56		85		141		111	239
E ⁾ LATE	23:00 - 23:29	44		69		113			
	23:30 - 23:59	28		55		83			
	24:00 - 24:29	24		33		57			
	24:30 - 24:59	18		29		47			
	25:00 - 25:29	8	233	19	444	27	677		
	TOTALS	_	8,368		9,824		18,192		
	IUTALƏ		0,000		5,024	J l	10,132		

Peak Hour Factor	r Based on Intersec AM	tion Totals PM
Bloor and Symington	514 485 552 491 2042	546 561 550 536 2193
	0.92	0.98
Bloor and Dundas	934 891 910 831 3566 0.95	911 920 953 946 3730 0.98
Bloor and Lansdowne	696 636 648 612 2592 0.93	673 660 630 621 2584 0.96
Sterling and Perth	63 63 56 58 240 0.95	81 66 86 96 329 0.86
Dundas and Sterling	520 520 517 531 2088 0.98	603 592 563 577 2335 0.97



C LOS Definitions

LEVEL OF SERVICE DEFINITIONS AT SIGNALIZED INTERSECTIONS⁽¹⁾

Level of service for signalized intersections is defined in terms of delay, which is a measure of driver discomfort and frustration, fuel consumption, and lost travel time. Specifically, level-of-service (LOS) criteria are stated in terms of the average control delay per vehicle, typically for a 15-min analysis period. The criteria are given in the table below. Delay may be measured in the field or estimated using software such as Highway Capacity Software. Delay is a complex measure and is dependent upon a number of variables, including quality of progression, the cycle length, the green ratio, and the v/c ratio for the lane group in question.

Level of Service	Features	Control Delay per vehicle (sec)
А	LOS A describes operations with very low delay, up to 10 sec per vehicle. This level of service occurs when progression is extremely favourable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.	≤ 10
В	LOS B describes operations with delay greater than 10 and up to 20 sec per vehicle. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of average delay.	$> 10 \text{ and } \le 20$
С	LOS C describes operations with delay greater than 20 and up to 35 sec per vehicle. These higher delays may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.	> 20 and ≤ 35
D	LOS D describes operations with delay greater than 35 and up to 55 sec per vehicle. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavourable progression, long cycle lengths, of high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	> 35 and ≤ 55
E	LOS E describes operations with delay greater than 55 and up to 80 sec per vehicle. This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.	> 55 and ≤ 80
F	LOS F describes operations with delay in excess of 80 sec per vehicle. This level, considered to be unacceptable to most drivers, often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the intersection. It may also occur at high v/c ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.	> 80

(1) Highway Capacity Manual 2000

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LEVEL OF SERVICE DEFINITIONS AT UNSIGNALIZED INTERSECTIONS⁽¹⁾

The level of service criteria for unsignalized intersections are given in the table below. As used here, total delay is defined as the total elapsed time from when a vehicle stops at the end of the queue until the vehicle departs from the stop line; this time includes the time required for the vehicle to travel from the last-in-queue position to the first-in-queue position. The average total delay for any particular minor movement is a function of the service rate or capacity of the approach and the degree of saturation.

Level of Service	Features	Average Total Delay (sec/veh)
А	Little or no traffic delay occurs. Approaches appear open, turning movements are easily made, and drivers have freedom of operation.	≤10
В	Short traffic delays occur. Many drivers begin to feel somewhat restricted in terms of freedom of operation.	$> 10 \text{ and } \le 15$
С	Average traffic delays occur. Operations are generally stable, but drivers emerging from the minor street may experience difficulty in completing their movement. This may occasionally impact on the stability of flow on the major street.	> 15 and ≤ 25
D	Long traffic delays occur. Motorists emerging from the minor street experience significant restriction and frustration. Drivers on the major street will experience congestion and delay as drivers emerging from the minor street interfere with the major through movements.	> 25 and ≤ 35
Е	Very long traffic delays occur. Operations approach the capacity of the intersection.	$>$ 35 and \leq 50
F	Saturation occurs, with vehicle demand exceeding the available capacity. Very long traffic delays occur.	> 50

(1) Highway Capacity Manual 2000.

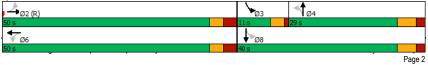
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D-1 Existing Traffic Conditions before Bikeway Extension

Lanes, Volumes, Ti 1: Lansdowne Aver		loor S	treet V	Vest			<exis< th=""><th>ting be</th><th>fore B</th><th>ikeway</th><th>/> AM 02/1</th><th>Peak 18/2021</th></exis<>	ting be	fore B	ikeway	/> AM 02/1	Peak 18/2021
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4 þ			4 þ		<u> </u>	A		۲	4Î	
Traffic Volume (vph)	3	941	68	1	498	94	57	334	54	144	328	70
Future Volume (vph)	3	941	68	1	498	94	57	334	54	144	328	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.5
Storage Length (m)	0.0		0.0	0.0		0.0	10.0		15.0	40.0		0.0
Storage Lanes	0		0	0		0	1		1	1		0
Taper Length (m)	2.5			2.5			25.0			10.0		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor		0.98			0.96		0.90	0.96		0.87	0.97	
Frt		0.990			0.976			0.979			0.974	
Flt Protected							0.950			0.950		
Satd. Flow (prot)	0	3328	0	0	3164	0	1452	3079	0	1636	1644	0
Flt Permitted		0.954			0.954		0.488			0.373		
Satd. Flow (perm)	0	3174	0	0	3019	0	671	3079	0	556	1644	0
Right Turn on Red	Ű		No	Ű	0010	No	0.11	0010	Yes			Yes
Satd. Flow (RTOR)								20			14	
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		374.8			112.0			258.8			36.6	
Travel Time (s)		33.7			10.1			23.3			3.3	
Confl. Peds. (#/hr)	246	00.7	157	157	10.1	246	153	20.0	232	232	0.0	153
Confl. Bikes (#/hr)	210		2	101		210	100		3	LOL		5
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	34%	4%	5%	0%	6%	3%	16%	10%	2%	3%	8%	5%
Adj. Flow (vph)	3	1012	73	1	535	101	61	359	58	155	353	75
Shared Lane Traffic (%)	U	1012	10		000	101	01	000	00	100	000	10
Lane Group Flow (vph)	0	1088	0	0	637	0	61	417	0	155	428	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	Lon	0.0	rugin	Lon	0.0	rugitt	Lon	3.0	rugin	Lon	3.0	rtigrit
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane		1.0			1.0			1.0			1.0	
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.09	1.01	1.01	1.09	1.01	1.01
Turning Speed (k/h)	24	1.01	14	24	1.01	14	24	1.01	14	24	1.01	1.01
Number of Detectors	1	2	14	24	2	14	24	2	14	24	2	14
Detector Template	Left	∠ Thru		Left	∠ Thru		Left	∠ Thru		Left	∠ Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	_
Detector 1 Position(m)												
Detector 1 Size(m)	6.1 Cl+Ex	1.8 Cl+Ex		6.1 CI+Ex	1.8 Cl+Ex		6.1 CI+Ex	1.8 Cl+Ex		6.1 Cl+Ex	1.8 Cl+Ex	
Detector 1 Type Detector 1 Channel	CI+EX	U+EX		CI+EX	UI+EX		UI+EX	CI+EX		UI+EX	UI+EX	
	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Extend (s)		0.0										
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	

Detector 2 Channel 0.0 0.0 0.0 0.0 0.0 Detector 2 Extend (s) 0.0 0.0 0.0 0.0 0.0 Tum Type Perm NA Perm NA Perm NA Perm NA Protected Phases 2 6 4 3 8 Switch Phase 2 2 6 6 4 4 3 8 Switch Phase 2 2 6 6 4 4 3 8 Switch Phase 2 2 6 6 4 4 3 8 Switch Phase 32.0 32.0 32.0 32.0 28.0 10.0 28.0 Total Split (%) 55.6% 55.6% 55.6% 32.2% 32.2% 12.2% 44.4% Maximum Green (s) 3.0 3.0 3.0 3.0 2.0 1.0 2.0 Lost Time (s) 3.0 3.0 3.0 3.0 3.0<		≯	-	\mathbf{r}	•	-		•	† 1	1	1	Ļ	1
Detector 2 Extend (s) 0.0 0.0 0.0 0.0 0.0 Tum Type Perm NA Perm NA Perm NA Perm NA Perm NA Permited Phases 2 6 4 3 8 Permited Phases 2 2 6 6 4 4 3 8 Detector Phase 2 2 6 6 4 4 3 8 Detector Phase 2 2 6 6 4 4 3 8 Minimum Split (s) 32.0 32.0 32.0 28.0 10.0 28.0 11.0 40.0 14.0 40.0 23.0 7.0 34.0 14.0 44.0 44.0 44.0 3.0 <	Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SB
Turn Type Perm NA Perm NA Perm NA Protected Phases 2 6 4 3 8 Protected Phases 2 6 4 3 8 Detector Phase 2 2 6 4 4 3 8 Switch Phase 2 2 6 6 4 4 3 8 Switch Phase 32.0 32.0 32.0 28.0 28.0 10.0 28.0 10.0 28.0 11.0 40.0 10.0 28.0 11.0 40.0 23.0 32.0 32.0 32.0 7.0 34.0 10.0	Detector 2 Channel												
Protected Phases 2 6 6 4 3 8 Permitted Phases 2 6 6 4 8 Permitted Phases 2 2 6 6 4 8 Switch Phase 2 2 6 6 4 4 3 Switch Phase 2 2 6 6 4 4 3 8 Switch Phase 2 2 6 6 4 4 3 8 Switch Phase 2 2 2 6 6 4 4 3 8 Switch Phase 2 2 2 6 6 4 4 3 8 Switch Phase 2 2 2 6 6 7 4 4 3 8 Switch Phase 2 2 2 6 6 7 4 4 3 8 Switch Phase 2 2 2 6 6 7 4 4 4 3 8 Switch Phase 2 2 2 6 6 7 4 4 4 3 8 Switch Phase 2 2 2 6 6 7 4 4 4 4 3 8 Switch Phase 2 2 2 6 6 7 4 4 4 4 3 8 Switch Phase 2 2 2 6 6 7 4 4 4 4 3 8 Switch Phase 2 2 2 6 6 7 4 4 4 4 3 8 Switch Phase 2 2 2 6 6 7 4 4 4 4 3 8 Switch Phase 2 2 2 6 6 7 4 4 4 4 3 8 Switch Phase 2 2 2 6 6 7 4 4 4 4 4 4 4 4 4 4 4 4 2 8 Switch Phase 2 2 8 0 10 0 28 0 Total Split (s) 55.6% 55.6% 55.6% 32.2% 32.2% 12.2% 44.4% Maximum Green (s) 44.0 44.0 44.0 42.0 23.0 23.0 7.0 34.0 Yellow Time (s) 3.0 3.0 3.0 3.0 3.0 4.0 4.0 3.0 4.0 All-Red Time (s) 3.0 3.0 3.0 3.0 3.0 2.0 2.0 1.0 2.0 Lost Time Adjust (s) -1.0 -1.0 -1.0 -1.0 -1.0 -1.0 -1.0 Total Lost Time (s) 5.0 5.0 5.0 5.0 5.0 3.0 5.0 Lead/Lag Lag Lag Lag Lead Lead-Lag Optimize? Yes Yes Yes Yes Yes Yes Yes Yes Yes Vehicle Extension (s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Protected Phases 2 6 4 3 8 Permitted Phases 2 6 6 4 8 Permitted Phases 2 2 6 6 4 8 Permitted Phases 2 2 6 6 4 4 3 Permitted Phase 4 3 8 Switch Phase 4 4 3 8 Switch Phase 4 4 3 8 Switch Phase 4 4 4 3 8 Switch Phase 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
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Switch Phase Switch Phase Second State Second State<	Permitted Phases	2			6			4			8		
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Lead-Lag Optimize? Yes Yes Yes Yes Vehicle Extension (s) 3.0 <			0.0			0.0						0.0	
Vehicle Extension (s) 3.0								•					
Recall Mode C-Max C-Max Max		3.0	3.0		3.0	3.0						3.0	
Walk Time (s) 7.0 <	()												
Flash Dont Walk (s) 19.0 19.0 19.0 15.0 15.0 15.0 Pedestrian Calls (#/hr) 0 0 0 0 0 0 0 Act Effict Green (s) 45.0 45.0 24.0 37.0 35.0 Actuated g/C Ratio 0.50 0.50 0.27 0.27 0.41 0.39 v/c Ratio 0.69 0.42 0.34 0.50 0.48 0.66 Control Delay 19.9 15.4 33.2 29.0 22.7 27.8 Queue Delay 0.0 0.0 0.0 0.0 0.0 0.0 0.0 Colat Delay 19.9 15.4 33.2 29.0 22.7 27.8 LOS B B C C C C Approach Delay 19.9 15.4 29.5 26.5 Approach LOS B B C C C Intersection Summary											NULLE		
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Natural Cycle: 70 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.69 Intersection Signal Delay: 21.9 Intersection LOS: C Intersection Capacity Utilization 84.4% ICU Level of Service E				Nort of C									
Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.69 Intersection Signal Delay: 21.9 Intersection Capacity Utilization 84.4% ICU Level of Service E		eu to phase	ZEBIL,	Start of G	reen								
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Intersection Signal Delay: 21.9 Intersection LOS: C Intersection Capacity Utilization 84.4% ICU Level of Service E		ordinated											
Intersection Capacity Utilization 84.4% ICU Level of Service E		04.0					100 0						
								-					
	Intersection Capacity Utiliz Analysis Period (min) 15	ation 84.4%			IC	U Level o	t Service	E					



Lanes, Volumes, Timings 2: Ruttan Street & Bloor Street West

<Existing before Bikeway> AM Peak 02/16/2021

	-	\mathbf{i}	4	+	•	1
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	A			41	Y	
Traffic Volume (vph)	1073	20	7	629	24	24
Future Volume (vph)	1073	20	7	629	24	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.0	3.0
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt	0.997				0.932	
Flt Protected				0.999	0.976	
Satd. Flow (prot)	3489	0	0	3496	1581	0
Flt Permitted				0.999	0.976	
Satd. Flow (perm)	3489	0	0	3496	1581	0
Link Speed (k/h)	40			40	30	
Link Distance (m)	69.7			374.8	79.4	
Travel Time (s)	6.3			33.7	9.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1192	22	8	699	27	27
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1214	0	0	707	54	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0	J		0.0	3.0	Ŭ
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.09	1.09
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type: 0	Other					
Control Type: Unsignalized						
Intersection Capacity Utilizat	ion 40.3%			IC	CU Level of	of Service
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis 2: Ruttan Street & Bloor Street West <Existing before Bikeway> AM Peak 02/16/2021

	-	$\mathbf{\hat{v}}$	4	-	1	1
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	tî≽			41	Y	
Traffic Volume (veh/h)	1073	20	7	629	24	24
Future Volume (Veh/h)	1073	20	7	629	24	24
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1192	22	8	699	27	27
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	70			375		
pX, platoon unblocked			0.77		0.77	0.77
vC, conflicting volume			1214		1568	607
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			692		1150	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		82	97
cM capacity (veh/h)			696		147	839
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	795	419	241	466	54	
Volume Left	0	419	241	400	27	
Volume Right	0	22	0	0	27	
cSH	1700	1700	696	1700	249	
Volume to Capacity	0.47	0.25	0.01	0.27	0.22	
	0.47	0.25	0.01	0.27	6.1	
Queue Length 95th (m)						
Control Delay (s)	0.0	0.0	0.5	0.0	23.4	
Lane LOS	0.0		A		C	
Approach Delay (s)	0.0		0.2		23.4 C	
Approach LOS					U	
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utiliz	ation		40.3%	IC	U Level o	of Service
Analysis Period (min)			15			

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3: Sterling Road/Sy												
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		41			A		5	4Î		5		7
Traffic Volume (vph)	90	923	0	0	600	53	34	29	10	160	0	143
Future Volume (vph)	90	923	0	0	600	53	34	29	10	160	0	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			0.99			0.96		0.88		
Frt					0.988			0.962				0.850
Flt Protected		0.996					0.950			0.950		
Satd. Flow (prot)	0	3381	0	0	3282	0	1504	1455	0	1620	0	1281
Flt Permitted	-	0.676	-	-		-	0.950			0.950		
Satd. Flow (perm)	0	2287	0	0	3282	0	1504	1455	0	1418	0	1281
Right Turn on Red	-		Yes	-		Yes			No			No
Satd. Flow (RTOR)					10							
Link Speed (k/h)		40			40			30			40	
Link Distance (m)		98.8			69.7			91.9			175.2	
Travel Time (s)		8.9			6.3			11.0			15.8	
Confl. Peds. (#/hr)	63	0.0	44	44	0.0	63		11.0	44	44	10.0	
Confl. Bikes (#/hr)	00		2			00			1			3
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
Heavy Vehicles (%)	17%	4%	2%	2%	6%	6%	12%	14%	10%	4%	0.02	12%
Bus Blockages (#/hr)	0	- 70	0	2 /0	0	0	0	0	0	470	0 /0	12
Adj. Flow (vph)	98	1003	0	0	652	58	37	32	11	174	0	155
Shared Lane Traffic (%)	50	1000	0	0	052	50	57	52		1/4	0	100
Lane Group Flow (vph)	0	1101	0	0	710	0	37	43	0	174	0	155
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	Lon	0.0	rugitt	Lon	0.0	rugin	Lon	3.0	rugin	Lon	3.0	rugin
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane		1.0			1.0			1.0			1.0	
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.09	1.09	1.09	1.09	1.09	1.16
Turning Speed (k/h)	24	1.01	14	24	1.01	14	24	1.03	1.03	24	1.05	14
Number of Detectors	24	2	14	24	2	14	24	2	14	24		14
Detector Template	Left	∠ Thru			∠ Thru		Left	∠ Thru		Left		Right
Leading Detector (m)	6.1	30.5			30.5		6.1	30.5		6.1		6.1
Trailing Detector (m)	0.1	0.0			0.0		0.1	0.0		0.0		0.0
Detector 1 Position(m)	0.0	0.0			0.0		0.0	0.0		0.0		0.0
()	6.1	1.8			1.8		6.1	1.8		6.1		6.1
Detector 1 Size(m)	CI+Ex	CI+Ex			CI+Ex		CI+Ex	CI+Ex		CI+Ex		••••
Detector 1 Type Detector 1 Channel	CI+EX	UI+EX			UI+EX		UI+EX	UI+EX		CI+EX		CI+Ex
	0.0	0.0			0.0		0.0	0.0		0.0		0.0
Detector 1 Extend (s) Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0		0.0		0.0
	0.0	0.0			0.0		0.0	0.0		0.0		
Detector 1 Delay (s)	0.0	28.7			28.7		0.0	28.7		0.0		0.0
Detector 2 Position(m)												
Detector 2 Size(m)		1.8			1.8			1.8				
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex				
Detector 2 Channel		0.0			0.0			0.0				
Detector 2 Extend (s)		0.0			0.0			0.0				

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Turn Type	pm+pt	NA			NA		Perm	NA		Prot		pt+o
Protected Phases	5	2			6			4		3		3 5
Permitted Phases	2						4					
Detector Phase	5	2			6		4	4		3		3 5
Switch Phase												
Minimum Initial (s)	6.0	21.0			21.0		7.0	7.0		20.0		
Minimum Split (s)	10.0	29.0			29.0		14.0	14.0		27.0		
Total Split (s)	11.0	55.0			44.0		16.0	16.0		29.0		
Total Split (%)	11.0%	55.0%			44.0%		16.0%	16.0%		29.0%		
Maximum Green (s)	7.0	47.0			36.0		9.0	9.0		22.0		
Yellow Time (s)	3.0	3.0			3.0		4.0	4.0		4.0		
All-Red Time (s)	1.0	5.0			5.0		3.0	3.0		3.0		
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0		-1.0		
Total Lost Time (s)		7.0			7.0		6.0	6.0		6.0		
Lead/Lag	Lead				Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	Yes				Yes		Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0		
Recall Mode	Мах	C-Max			C-Max		None	None		None		
Walk Time (s)		7.0			7.0		0.0	0.0		7.0		
Flash Dont Walk (s)		14.0			14.0		0.0	0.0		8.0		
Pedestrian Calls (#/hr)		0			0		0	0		0		
Act Effct Green (s)		53.2			37.0		9.2	9.2		21.4		32.8
Actuated g/C Ratio		0.53			0.37		0.09	0.09		0.21		0.33
v/c Ratio		0.84			0.58		0.27	0.32		0.50		0.37
Control Delay		28.0			27.3		47.0	48.8		40.3		20.0
Queue Delay		0.0			0.0		0.0	0.0		0.0		0.0
Total Delay		28.0			27.3		47.0	48.8		40.3		20.0
LOS		C			C		D	D		D		(
Approach Delay		28.0			27.3			48.0			30.7	
Approach LOS		C			С			D			С	
Intersection Summary												
Area Type:	Other											
Cycle Length: 100												
Actuated Cycle Length: 100												
Offset: 19 (19%), Reference	ed to phase	2:EBTL a	nd 6:WB	F, Start o	f Green							
Natural Cycle: 90												
Control Type: Actuated-Coo	ordinated											
Maximum v/c Ratio: 0.84												
Intersection Signal Delay: 2					itersection							
Intersection Capacity Utiliza	ation 77.3%			IC	CU Level c	of Service	e D					



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Lanes, Volumes, Ti 4: Dundas Street W		Bloor S	treet V	Vest				ung be	IOIE D	ikeway	/> AM 02/1	16/2021
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	5	A1≱		5	tî			ፈተኩ			4 þ	
Traffic Volume (vph)	39	1049	177	72	566	115	0	553	187	11	760	37
Future Volume (vph)	39	1049	177	72	566	115	0	553	187	11	760	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.5	3.5	3.0	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	30.0		0.0	20.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	50.0			55.0			2.5			2.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.91	0.91	0.91	0.95	0.95	0.95
Ped Bike Factor	0.88	0.96		0.97	0.94			0.91			0.98	
Frt		0.978			0.975			0.962			0.993	
Flt Protected	0.950			0.950							0.999	
Satd. Flow (prot)	1636	3202	0	1546	3057	0	0	4154	0	0	3223	0
Flt Permitted	0.325			0.115							0.939	
Satd. Flow (perm)	495	3202	0	182	3057	0	0	4154	0	0	3025	0
Right Turn on Red	100	0202	Yes	102		Yes	, in the second s		Yes	, in the second se	0020	Yes
Satd. Flow (RTOR)		2			7	100		5			4	
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		75.1			318.0			159.9			139.1	
Travel Time (s)		6.8			28.6			14.4			12.5	
Confl. Peds. (#/hr)	616	0.0	311	311	20.0	616	583	17.7	484	484	12.5	583
Confl. Bikes (#/hr)	010		5	511		3	505		8	-01		4
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	3%	4%	5%	9%	5%	15%	2%	9%	6%	91%	7%	3%
Bus Blockages (#/hr)	0	0	0	0	0	9	0	0	0	0	0	0,0
Adj. Flow (vph)	41	1104	186	76	596	121	0	582	197	12	800	39
Shared Lane Traffic (%)	71	1104	100	10	550	121	v	502	107	12	000	
Lane Group Flow (vph)	41	1290	0	76	717	0	0	779	0	0	851	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	Lon	3.0	rugin	Lon	3.0	rugin	Lon	0.0	rugitt	Lon	0.0	rugnu
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane		1.0			1.0			1.0			1.0	
Headway Factor	1.09	1.01	1.01	1.09	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	1.01	14	24	1.01	14	24	1.01	14	24	1.01	1.01
Number of Detectors	1	2	14	1	2	14	1	2	14	1	2	14
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Leading Detector (m) Trailing Detector (m)	0.1	0.0		0.1	30.5 0.0		0.1	0.0		0.1	30.5 0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m) Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	0.0 1.8		6.1	0.0	
					CI+Ex			CI+Ex			CI+Ex	
Detector 1 Type Detector 1 Channel	CI+Ex	CI+Ex		CI+Ex	UI+EX		CI+Ex	∪i+⊏X		CI+Ex	U+⊑X	
	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Extend (s)												
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SB
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA			NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	26.0	26.0		26.0	26.0		25.0	25.0		25.0	25.0	
Minimum Split (s)	32.0	32.0		32.0	32.0		31.0	31.0		31.0	31.0	
Total Split (s)	46.0	46.0		46.0	46.0		44.0	44.0		44.0	44.0	
Total Split (%)	51.1%	51.1%		51.1%	51.1%		48.9%	48.9%		48.9%	48.9%	
Maximum Green (s)	40.0	40.0		40.0	40.0		38.0	38.0		38.0	38.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0			-1.0			-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	19.0	19.0		19.0	19.0		18.0	18.0		18.0	18.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	46.3	46.3		46.3	46.3			33.7			33.7	
Actuated g/C Ratio	0.51	0.51		0.51	0.51			0.37			0.37	
v/c Ratio	0.16	0.78		0.82	0.45			0.50			0.75	
Control Delay	15.7	23.3		81.7	15.8			22.2			28.6	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	15.7	23.3		81.7	15.8			22.2			28.6	
LOS	В	C		F	В			С			C	
Approach Delay		23.1			22.1			22.2			28.6	
Approach LOS		С			С			С			С	
Intersection Summary												
Area Type:	Other											
Cycle Length: 90	Outor											
Actuated Cycle Length: 90												
Offset: 78 (87%), Reference	ed to phase	4. FBTL a	nd 8·WB	TI Start	of Green							
Natural Cycle: 70				. 2, 01011	01 010011							
Control Type: Actuated-Co	ordinated											
Maximum v/c Ratio: 0.82	o. amatod											
Intersection Signal Delay: 2	23.9			Ir	tersection	LOS: C						
Intersection Capacity Utiliz					CU Level c		F					
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44 s	46 s	
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44 s	46 s	

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Lane Configurations		4 þ			4Þ			4			4	
Traffic Volume (vph)	70	1217	1	0	619	72	1	1	1	58	0	48
Future Volume (vph)	70	1217	1	0	619	72	1	1	1	58	0	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			0.99			0.98			0.97	
Frt					0.984			0.955			0.939	
Flt Protected		0.997						0.984			0.973	
Satd. Flow (prot)	0	3393	0	0	3173	0	0	1049	0	0	1588	0
Flt Permitted		0.862						0.924			0.828	
Satd. Flow (perm)	0	2929	0	0	3173	0	0	973	0	0	1338	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)					26			1				
Link Speed (k/h)		40			40			30			30	
Link Distance (m)		123.6			101.7			33.0			87.8	
Travel Time (s)		11.1			9.2			4.0			10.5	
Confl. Peds. (#/hr)	50		27	27		50	38		15	15		38
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
Heavy Vehicles (%)	3%	5%	0%	2%	10%	5%	100%	0%	100%	4%	2%	7%
Adj. Flow (vph)	71	1242	1	0	632	73	1	1	1	59	0	49
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1314	0	0	705	0	0	3	0	0	108	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA			NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SB
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	25.0	25.0		25.0	25.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		28.0	28.0		28.0	28.0	
Total Split (s)	61.0	61.0		61.0	61.0		29.0	29.0		29.0	29.0	
Total Split (%)	67.8%	67.8%		67.8%	67.8%		32.2%	32.2%		32.2%	32.2%	
Maximum Green (s)	55.0	55.0		55.0	55.0		24.0	24.0		24.0	24.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		5.0			5.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		Max	Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	18.0	18.0		18.0	18.0		16.0	16.0		16.0	16.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		71.1			71.1			13.3			13.3	
Actuated g/C Ratio		0.79			0.79			0.15			0.15	
v/c Ratio		0.57			0.28			0.02			0.55	
Control Delay		6.5			3.9			27.0			45.0	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		6.5			3.9			27.0			45.0	
LOS		А			А			С			D	
Approach Delay		6.5			3.9			27.0			45.0	
Approach LOS		A			A			С			D	
Intersection Summary												
Area Type:	Other											
Cycle Length: 90												
Actuated Cycle Length: 90												
Offset: 76 (84%), Reference	ed to phase	2:EBTL, S	Start of G	Green								
Natural Cycle: 60												
Control Type: Actuated-Co	ordinated											
Maximum v/c Ratio: 0.57												
Intersection Signal Delay: 7				Ir	ntersection	LOS: A						
Intersection Capacity Utilization	ation 85.3%			IC	CU Level o	of Service	ε					
Analysis Period (min) 15												
Splits and Phases: 5: Pri	vate Acces	s/Sterling I	Road & F	Jundas S	treet West							
Splits and Phases: 5: Pri	vate Acces	s/Sterling I	Road & [Dundas S	treet West			≜ ₫ø4				

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221-225 Sterling Road Transportation Impact Study

Lanes, Volumes, Timings 6: Ruttan Street & Merchant Lane <Existing before Bikeway> AM Peak 02/16/2021

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Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	- M		ĥ			÷.	
Traffic Volume (vph)	6	28	20	0	8	19	
Future Volume (vph)	6	28	20	0	8	19	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.890						
Flt Protected	0.991					0.985	
Satd. Flow (prot)	1625	0	1842	0	0	1814	
Flt Permitted	0.991					0.985	
Satd. Flow (perm)	1625	0	1842	0	0	1814	
Link Speed (k/h)	30		30			30	
Link Distance (m)	40.4		89.3			79.4	
Travel Time (s)	4.8		10.7			9.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	7	31	22	0	9	21	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	38	0	22	0	0	30	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Right	Left	Left	
Median Width(m)	3.5		0.0			0.0	
Link Offset(m)	0.0		0.0			0.0	
Crosswalk Width(m)	1.6		1.6			1.6	
Two way Left Turn Lane							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	
Turning Speed (k/h)	24	14		14	24		
Sign Control	Stop		Free			Free	
Intersection Summary							
	Other						
Control Type: Unsignalized							
Intersection Capacity Utilizat	ion 18.0%			IC	U Level	of Service	λ÷
Analysis Period (min) 15							

HCM Unsignalized Intersection Capacity Analysis 6: Ruttan Street & Merchant Lane <Existing before Bikeway> AM Peak 02/16/2021

	4	٩.	Ť	1	1	Ŧ
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Ý		¢Î			ę
Traffic Volume (veh/h)	6	28	20	0	8	19
Future Volume (Veh/h)	6	28	20	0	8	19
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	7	31	22	0	9	21
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	61	22			22	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	61	22			22	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	97			99	
cM capacity (veh/h)	940	1055			1593	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	38	22	30			
Volume Left	7	0	9			
Volume Right	31	0	9			
cSH	1032	1700	1593			
Volume to Capacity	0.04	0.01	0.01			
	0.04	0.01	0.01			
Queue Length 95th (m)						
Control Delay (s) Lane LOS	8.6	0.0	2.2			
	A	0.0	A 2.2			
Approach Delay (s)	8.6	0.0	2.2			
Approach LOS	А					
Intersection Summary						
Average Delay			4.4			
Intersection Capacity Utilization	ation		18.0%	IC	U Level o	of Service
Analysis Period (min)			15			
,						

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Lanes, Volumes, Ti 8: Sterling Road & I	0	venue					<existing before="" bikeway=""> AM Peak 02/16/2021</existing>
	٦	\mathbf{r}	٠	1	Ŧ	-	
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	¥			ę	4Î		
Traffic Volume (vph)	15	109	9	81	24	2	
Future Volume (vph)	15	109	9	81	24	2	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor							
Frt	0.881				0.990		
Flt Protected	0.994			0.995			
Satd. Flow (prot)	1590	0	0	1789	1794	0	
Flt Permitted	0.994			0.995			
Satd. Flow (perm)	1590	0	0	1789	1794	0	
Link Speed (k/h)	30			30	30		
Link Distance (m)	70.2			16.3	54.8		
Travel Time (s)	8.4			2.0	6.6		
Confl. Peds. (#/hr)	4	90	13			13	
Confl. Bikes (#/hr)		4					
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Heavy Vehicles (%)	7%	3%	0%	5%	0%	50%	
Adj. Flow (vph)	16	115	9	85	25	2	
Shared Lane Traffic (%)			•	00	20	-	
Lane Group Flow (vph)	131	0	0	94	27	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(m)	3.5	. again	Lon	0.0	0.0	. ugint	
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	1.6			1.6	1.6		
Two way Left Turn Lane							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	
Turning Speed (k/h)	24	14	24			14	
Sign Control	Stop			Stop	Stop		
•	0.00			0.00	0.00		
Intersection Summary							
	Other						
Control Type: Unsignalized							
Intersection Capacity Utilizat	ion 31.4%			IC	CU Level	of Service	A
Analysis Period (min) 15							

HCM Unsignalized Intersection Capacity Analysis 8: Sterling Road & Perth Avenue

<Existing before Bikeway> AM Peak 02/16/2021

	≯	~	•	Ť	ţ	1
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	M			Ą	ţ,	
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	15	109	9	81	24	2
Future Volume (vph)	15	109	9	81	24	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	16	115	9	85	25	2
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total (vph)	131	94	27			
Volume Left (vph)	16	9	0			
Volume Right (vph)	115	0	2			
Hadj (s)	-0.44	0.10	0.02			
Departure Headway (s)	3.7	4.3	4.3			
Degree Utilization, x	0.14	0.11	0.03			
Capacity (veh/h)	934	807	809			
Control Delay (s)	7.3	7.8	7.4			
Approach Delay (s)	7.3	7.8	7.4			
Approach LOS	А	А	А			
Intersection Summary						
Delay			7.5			
Level of Service			А			
Intersection Capacity Utiliza	tion		31.4%	IC	U Level o	f Service
Analysis Period (min)			15			

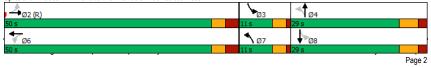
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Lanes, Volumes, Ti 1: Lansdowne Aven		loor S	treet V	/est			<exis< th=""><th>ting be</th><th>fore B</th><th>ikeway</th><th>/> PM 02/1</th><th>Peak 18/2021</th></exis<>	ting be	fore B	ikeway	/> PM 02/1	Peak 18/2021
	۶	-	\mathbf{F}	4	+	•	•	Ť	1	1	ţ	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4 þ			4 þ		5	A		ሻ	4Î	
Traffic Volume (vph)	4	537	70	1	903	82	99	369	30	114	285	90
Future Volume (vph)	4	537	70	1	903	82	99	369	30	114	285	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.5
Storage Length (m)	0.0		0.0	0.0		0.0	10.0		15.0	40.0		0.0
Storage Lanes	0		0	0		0	1		1	1		0
Taper Length (m)	2.5			2.5			25.0			10.0		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor		0.94			0.97		0.88	0.98		0.84	0.92	
Frt		0.983			0.988			0.989			0.964	
Flt Protected							0.950			0.950		
Satd. Flow (prot)	0	3266	0	0	3337	0	1620	3310	0	1604	1595	0
Flt Permitted		0.949			0.955		0.288			0.406		
Satd. Flow (perm)	0	3099	0	0	3186	0	430	3310	0	573	1595	0
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)								9			17	
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		374.8			112.0			258.8			36.6	
Travel Time (s)		33.7			10.1			23.3			3.3	
Confl. Peds. (#/hr)	297		298	298		297	264		341	341		264
Confl. Bikes (#/hr)			1						1			4
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	1%	2%	0%	3%	3%	4%	3%	17%	5%	6%	2%
Adj. Flow (vph)	4	559	73	1	941	85	103	384	31	119	297	94
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	636	0	0	1027	0	103	415	0	119	391	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0	Ŭ		0.0	Ŭ		3.0	Ŭ		3.0	Ŭ
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.09	1.01	1.01	1.09	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		CI+Ex			CI+Ex			Cl+Ex			CI+Ex	

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		7	4		3	8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		7	4		3	8	
Switch Phase												
Minimum Initial (s)	26.0	26.0		26.0	26.0		6.0	22.0		6.0	22.0	
Minimum Split (s)	32.0	32.0		32.0	32.0		10.0	28.0		10.0	28.0	
Total Split (s)	50.0	50.0		50.0	50.0		11.0	29.0		11.0	29.0	
Total Split (%)	55.6%	55.6%		55.6%	55.6%		12.2%	32.2%		12.2%	32.2%	
Maximum Green (s)	44.0	44.0		44.0	44.0		7.0	23.0		7.0	23.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	5.0	-1.0		5.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.0			5.0		3.0	5.0		3.0	5.0	
Lead/Lag		5.0			5.0		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		Max	Max		None	Max		None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		None	7.0		NUTIE	7.0	
Flash Dont Walk (s)	19.0	19.0		19.0	19.0			15.0			15.0	
Pedestrian Calls (#/hr)	19.0	19.0		19.0	19.0			0			0	
()	U	45.0		U	45.0		33.9	24.1		34.6	26.2	
Act Effct Green (s) Actuated g/C Ratio		45.0			45.0		0.38	0.27		0.38	0.29	
•												
v/c Ratio		0.41 15.2			0.64		0.39 21.3	0.46		0.38	0.82 46.0	
Control Delay					19.0			29.0		20.8		
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		15.2			19.0		21.3	29.0		20.8	46.0	
LOS		B			B		С	С		С	D	
Approach Delay		15.2			19.0			27.5			40.1	
Approach LOS		В			В			С			D	
Intersection Summary	01											
Area Type:	Other											
Cycle Length: 90	<u>_</u>											
Actuated Cycle Length: 9												
Offset: 52 (58%), Referen	ced to phase	ZEBIL,	start of G	reen								
Natural Cycle: 70												
Control Type: Actuated-C	oordinated											
Maximum v/c Ratio: 0.82	~~ =											
Intersection Signal Delay:					ntersection							
Intersection Capacity Utili	zation 68.6%			10	CU Level o	nt Service	A C					



Lanes, Volumes, Timings 2: Ruttan Street & Bloor Street West

<Existing before Bikeway> PM Peak 02/16/2021

	-	$\mathbf{\hat{z}}$	4	+	1	1	
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	≜ †î≽			4ħ	¥		
Traffic Volume (vph)	674	37	18	953	53	23	
Future Volume (vph)	674	37	18	953	53	23	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.5	3.5	3.5	3.5	3.0	3.0	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00	
Frt	0.992				0.959		
Flt Protected				0.999	0.966		
Satd. Flow (prot)	3472	0	0	3496	1611	0	
Flt Permitted				0.999	0.966		
Satd. Flow (perm)	3472	0	0	3496	1611	0	
Link Speed (k/h)	40			40	30		
Link Distance (m)	69.7			374.8	79.4		
Travel Time (s)	6.3			33.7	9.5		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	709	39	19	1003	56	24	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	748	0	0	1022	80	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(m)	0.0			0.0	3.0		
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	1.6			1.6	1.6		
Two way Left Turn Lane							
Headway Factor	1.01	1.01	1.01	1.01	1.09	1.09	
Turning Speed (k/h)		14	24		24	14	
Sign Control	Free			Free	Stop		
Intersection Summary							
	Other						
Control Type: Unsignalized							
Intersection Capacity Utilizat	ion 50.2%			IC	CU Level o	of Service	А
Analysis Period (min) 15							

HCM Unsignalized Intersection Capacity Analysis 2: Ruttan Street & Bloor Street West <Existing before Bikeway> PM Peak 02/16/2021

	-	\mathbf{i}	∢	←	1	1
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	t₽			4ħ	Y	
Traffic Volume (veh/h)	674	37	18	953	53	23
Future Volume (Veh/h)	674	37	18	953	53	23
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	709	39	19	1003	56	24
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	70			375		
pX, platoon unblocked			0.89		0.93	0.89
vC, conflicting volume			748		1268	374
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			468		601	48
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.0	2.10
tF (s)			2.2		3.5	3.3
p0 queue free %			98		86	97
cM capacity (veh/h)			969		393	899
,	FD 4	50.0				
Direction, Lane #	EB 1 473	EB 2 275	WB 1 353	WB 2 669	NB 1 80	
		2/5	353 19		80 56	
Volume Left	0	39		0		
Volume Right	0		0	0	24	
cSH	1700	1700	969	1700	473	
Volume to Capacity	0.28	0.16	0.02	0.39	0.17	
Queue Length 95th (m)	0.0	0.0	0.5	0.0	4.6	
Control Delay (s)	0.0	0.0	0.7	0.0	14.1	
Lane LOS			A		В	
Approach Delay (s)	0.0		0.2		14.1	
Approach LOS					В	
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization	ation		50.2%	IC	U Level o	of Service
Analysis Period (min)			15			

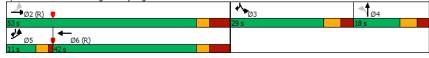
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3: Sterling Road/Sy												
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Lane Configurations		4ħ			≜ †}		5	4Î		۲.		1
Traffic Volume (vph)	89	552	0	0	932	74	119	100	23	136	0	168
Future Volume (vph)	89	552	0	0	932	74	119	100	23	136	0	168
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					0.98		0.85	0.97		0.86		
Frt					0.989			0.972				0.850
Flt Protected		0.993					0.950			0.950		
Satd. Flow (prot)	0	3443	0	0	3350	0	1636	1621	0	1668	0	1329
Flt Permitted	v	0.531		5	0000	5	0.950		5	0.950	5	
Satd. Flow (perm)	0	1841	0	0	3350	0	1394	1621	0	1428	0	1329
Right Turn on Red	5		Yes	v	0000	Yes			No		v	N
Satd. Flow (RTOR)			100		9	100			110			
Link Speed (k/h)		40			40			30			40	
Link Distance (m)		98.8			69.7			91.9			175.2	
Travel Time (s)		8.9			6.3			11.0			15.8	
Confl. Peds. (#/hr)	110	0.9	76	76	0.5	110	59	11.0	57	57	15.0	59
Confl. Bikes (#/hr)	110		70	70		1	09		57	57		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
Heavy Vehicles (%)	9%	2%	0.98	0.96	3%	0.98 6%	3%	3%	0.98 5%	1%	0.98	0.90
	9%	2%	0%	0%	3% 0	0%	3% 0	3% 0	5%	0	0%	07
Bus Blockages (#/hr)	91	563	0	0	951	76	121	102	23	139	0	171
Adj. Flow (vph)	91	202	0	U	951	70	121	102	23	139	0	17
Shared Lane Traffic (%)	0	654	0	0	4007	0	121	125	0	139	0	474
Lane Group Flow (vph)	-		-	-	1027	-			-		-	171
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Righ
Median Width(m)		0.0			0.0			3.0			3.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.09	1.09	1.09	1.09	1.09	1.16
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2			2		1	2		1		
Detector Template	Left	Thru			Thru		Left	Thru		Left		Righ
Leading Detector (m)	6.1	30.5			30.5		6.1	30.5		6.1		6.1
Trailing Detector (m)	0.0	0.0			0.0		0.0	0.0		0.0		0.0
Detector 1 Position(m)	0.0	0.0			0.0		0.0	0.0		0.0		0.0
Detector 1 Size(m)	6.1	1.8			1.8		6.1	1.8		6.1		6.1
Detector 1 Type	CI+Ex	CI+Ex			CI+Ex		Cl+Ex	CI+Ex		CI+Ex		CI+E:
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0		0.0		0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0		0.0		0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0		0.0		0.0
Detector 2 Position(m)		28.7			28.7			28.7				
Detector 2 Size(m)		1.8			1.8			1.8				
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Turn Type	pm+pt	NA			NA		Perm	NA		Prot		pt+o
Protected Phases	5	2			6			4		3		3 5
Permitted Phases	2						4					
Detector Phase	5	2			6		4	4		3		3 5
Switch Phase												
Minimum Initial (s)	6.0	21.0			21.0		7.0	7.0		19.0		
Minimum Split (s)	10.0	29.0			29.0		14.0	14.0		27.0		
Total Split (s)	11.0	53.0			42.0		18.0	18.0		29.0		
Total Split (%)	11.0%	53.0%			42.0%		18.0%	18.0%		29.0%		
Maximum Green (s)	7.0	45.0			34.0		11.0	11.0		22.0		
Yellow Time (s)	3.0	3.0			3.0		4.0	4.0		4.0		
All-Red Time (s)	1.0	5.0			5.0		3.0	3.0		3.0		
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0		-1.0		
Total Lost Time (s)		7.0			7.0		6.0	6.0		6.0		
Lead/Lag	Lead				Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	Yes				Yes		Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0		
Recall Mode	Max	C-Max			C-Max		None	None		None		
Walk Time (s)		7.0			7.0		0.0	0.0		7.0		
Flash Dont Walk (s)		14.0			14.0		0.0	0.0		8.0		
Pedestrian Calls (#/hr)		0			0		0	0		0		
Act Effct Green (s)		47.4			35.0		13.3	13.3		20.3		26.7
Actuated q/C Ratio		0.47			0.35		0.13	0.13		0.20		0.27
v/c Ratio		0.68			0.87		0.65	0.58		0.41		0.48
Control Delay		23.9			39.8		58.5	51.9		38.8		23.4
Queue Delay		0.0			0.0		0.0	0.0		0.0		0.0
Total Delay		23.9			39.8		58.5	51.9		38.8		23.4
LOS		С			D		E	D		D		(
Approach Delay		23.9			39.8			55.1			30.3	
Approach LOS		С			D			E			С	
Intersection Summary												
Area Type:	Other											
Cycle Length: 100												
Actuated Cycle Length: 10												
Offset: 86 (86%), Referent Natural Cycle: 80	ced to phase	2:EBTL a	nd 6:WB	r, Start o	t Green							
Control Type: Actuated-Co	oordinated											
Maximum v/c Ratio: 0.87												
Intersection Signal Delay:				In	itersection	LOS: D						
Intersection Capacity Utiliz	zation 86.4%			IC	CU Level a	f Service	Ε					
Analysis Period (min) 15												



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Lanes, Volumes, Ti 4: Dundas Street W		Bloor S	treet V	Existing before Bikeway> PM Peak 02/16/2021								
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	5	∱1 ≱		5	đ₽			4 † Ъ			4î»	
Traffic Volume (vph)	45	657	149	90	985	177	5	978	134	8	430	72
Future Volume (vph)	45	657	149	90	985	177	5	978	134	8	430	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.5	3.5	3.0	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	30.0		0.0	20.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	50.0			55.0			2.5			2.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.91	0.91	0.91	0.95	0.95	0.95
Ped Bike Factor	0.94	0.96		0.95	0.95			0.96			0.95	
Frt		0.972			0.977			0.982			0.979	
Flt Protected	0.950			0.950							0.999	
Satd. Flow (prot)	1604	3256	0	1636	3185	0	0	4581	0	0	3123	0
Flt Permitted	0.167			0.187				0.938			0.932	
Satd. Flow (perm)	266	3256	0	307	3185	0	0	4294	0	0	2911	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		34			2			32			5	
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		75.1			318.0			159.9			139.1	
Travel Time (s)		6.8			28.6			14.4			12.5	
Confl. Peds. (#/hr)	469		206	206		469	396		387	387		396
Confl. Bikes (#/hr)			3			1			1			
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
Heavy Vehicles (%)	5%	2%	3%	3%	3%	8%	0%	6%	3%	100%	5%	6%
Bus Blockages (#/hr)	0	0	0	0	0	9	0	0	0	0	0	0
Adj. Flow (vph)	46	670	152	92	1005	181	5	998	137	8	439	73
Shared Lane Traffic (%)												-
Lane Group Flow (vph)	46	822	0	92	1186	0	0	1140	0	0	520	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.0	Ū		3.0	Ū		0.0	Ũ		0.0	Ū
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.09	1.01	1.01	1.09	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	CI+Ex	CI+Ex		Cl+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SB
Detector 2 Type		CI+Ex			CI+Ex			Cl+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	26.0	26.0		6.0	26.0		25.0	25.0		25.0	25.0	
Minimum Split (s)	32.0	32.0		10.0	32.0		31.0	31.0		31.0	31.0	
Total Split (s)	38.0	38.0		12.0	50.0		40.0	40.0		40.0	40.0	
Total Split (%)	42.2%	42.2%		13.3%	55.6%		44.4%	44.4%		44.4%	44.4%	
Maximum Green (s)	32.0	32.0		8.0	44.0		34.0	34.0		34.0	34.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	3.0	3.0		1.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0			-1.0			-1.0	
Total Lost Time (s)	5.0	5.0		3.0	5.0			5.0			5.0	
Lead/Lag	Lag	Lag		Lead	0.0			0.0			0.0	
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	19.0	19.0			19.0		18.0	18.0		18.0	18.0	
Pedestrian Calls (#/hr)	0	0			0		0	0		0	0	
Act Effct Green (s)	32.6	32.6		44.1	42.1			37.9			37.9	
Actuated g/C Ratio	0.36	0.36		0.49	0.47			0.42			0.42	
v/c Ratio	0.48	0.68		0.33	0.80			0.62			0.42	
Control Delay	42.2	26.8		14.9	24.6			22.3			20.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	42.2	26.8		14.9	24.6			22.3			20.2	
LOS	D	С		В	C			C			С	
Approach Delay		27.7			23.9			22.3			20.2	
Approach LOS		С			С			С			С	
Intersection Summary												
Area Type:	Other											
Cycle Length: 90												
Actuated Cycle Length: 90												
Offset: 77 (86%), Reference	ed to phase	2:NBTL a	nd 6:SB	TL, Start o	of Green							
Natural Cycle: 75												
Control Type: Actuated-Coc	ordinated											
Maximum v/c Ratio: 0.80												
Intersection Signal Delay: 2	3.8			In	itersection	LOS: C						
Intersection Capacity Utiliza	ation 95.0%			IC	CU Level c	f Service	F					
Analysis Period (min) 15												

Ø2 (R)	√ Ø3	<u>≜</u> _{Ø4}	
40 s	12 s	38 s	
Ø6 (R)	₩ Ø8		
40 s	50 s		

5: Private Access/S	terning	·······										
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4 î b			4î»			4			\$	
Traffic Volume (vph)	73	756	0	0	1219	138	0	0	0	65	0	84
Future Volume (vph)	73	756	0	0	1219	138	0	0	0	65	0	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			0.99						0.96	
Frt					0.985						0.924	
Fit Protected		0.996									0.979	
Satd. Flow (prot)	0	3446	0	0	3386	0	0	1842	0	0	1598	0
Flt Permitted		0.698									0.864	
Satd. Flow (perm)	0	2414	0	0	3386	0	0	1842	0	0	1396	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)					25							
Link Speed (k/h)		40			40			30			30	
Link Distance (m)		123.6			101.7			33.0			87.8	
Travel Time (s)		11.1			9.2			4.0			10.5	
Confl. Peds. (#/hr)	34		50	50		34	34		19	19		34
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	5%	3%	2%	2%	3%	3%	2%	2%	2%	5%	2%	2%
Adj. Flow (vph)	75	779	0	0	1257	142	0	0	0	67	0	87
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	854	0	0	1399	0	0	0	0	0	154	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0	, in the second s		0.0	, in the second s		0.0	Ť		0.0	Ť
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA			NA					Perm	NA	
Protected Phases		2			6			4			8	

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Permitted Phases 2 6 4 8 Detector Phase 2 2 6 6 4 4 8 8 Detector Phase 2 2 6 6 4 4 8 8 Switch Phase		≯	→	\mathbf{r}	4	+	•	1	1	1	- \	Ŧ	1
Detector Phase 2 2 6 6 4 4 8 8 Switch Phase Minimum Initial (s) 25.0 25.0 25.0 7.0 <th>Lane Group</th> <th>EBL</th> <th>EBT</th> <th>EBR</th> <th>WBL</th> <th>WBT</th> <th>WBR</th> <th>NBL</th> <th>NBT</th> <th>NBR</th> <th>SBL</th> <th>SBT</th> <th>SBI</th>	Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBI
Switch Phase Switch Phase Minimum Initial (s) 25.0 25.0 25.0 7.0 7.0 7.0 7.0 Minimum Split (s) 31.0 31.0 31.0 28.0 28.0 28.0 28.0 28.0 28.0 28.0 28.0 28.0 29.0 20.0 20.0 20.0 20.0	Permitted Phases	2			6			4			8		
Minimum Initial (s) 25.0 25.0 25.0 25.0 7.0 7.0 7.0 7.0 7.0 Minimum Split (s) 31.0 31.0 31.0 31.0 28.0 30.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3	Detector Phase	2	2		6	6		4	4		8	8	
Minimum Split (s) 31.0 31.0 31.0 31.0 21.0 28.0 28.0 28.0 28.0 28.0 70.1 29.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20	Switch Phase												
Total Split (s) 61.0 61.0 61.0 29.0 29.0 29.0 29.0 Total Split (%) 67.8% 67.8% 67.8% 32.2% <td>Minimum Initial (s)</td> <td>25.0</td> <td>25.0</td> <td></td> <td>25.0</td> <td>25.0</td> <td></td> <td>7.0</td> <td>7.0</td> <td></td> <td>7.0</td> <td>7.0</td> <td></td>	Minimum Initial (s)	25.0	25.0		25.0	25.0		7.0	7.0		7.0	7.0	
Total Split (%) 67.8% 67.8% 52.2% 32.2% 32.2% 32.2% 32.2% Maximum Green (s) 55.0 55.0 55.0 55.0 24.0 24.0 24.0 24.0 Yellow Time (s) 3.0 <t< td=""><td>Minimum Split (s)</td><td>31.0</td><td>31.0</td><td></td><td>31.0</td><td>31.0</td><td></td><td>28.0</td><td>28.0</td><td></td><td>28.0</td><td>28.0</td><td></td></t<>	Minimum Split (s)	31.0	31.0		31.0	31.0		28.0	28.0		28.0	28.0	
Maximum Green (s) 55.0 55.0 55.0 52.0 24.0 26.0 26	Total Split (s)	61.0	61.0		61.0	61.0		29.0	29.0		29.0	29.0	
Yellow Time (s) 3.0	Total Split (%)	67.8%	67.8%		67.8%	67.8%		32.2%	32.2%		32.2%	32.2%	
All-Red Time (s) 3.0 3.0 3.0 3.0 2.0 2.0 2.0 2.0 Lost Time Adjust (s) -1.0 -1.0 -1.0 -1.0 -1.0 Total Lost Time (s) 5.0 5.0 5.0 4.0 4.0 Lead/Lag Lead/Lag Lead/Lag Vehicle Extension (s) 3.0	Maximum Green (s)	55.0	55.0		55.0	55.0		24.0	24.0		24.0	24.0	
Lost Time Adjust (s) -1.0 -1.0 -1.0 -1.0 -1.0 Total Lost Time (s) 5.0 5.0 4.0 4.0 Lead/Lag Lead-Lag Optimize? Vehicle Extension (s) 3.0 <t< td=""><td>Yellow Time (s)</td><td>3.0</td><td>3.0</td><td></td><td>3.0</td><td>3.0</td><td></td><td>3.0</td><td>3.0</td><td></td><td>3.0</td><td>3.0</td><td></td></t<>	Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Total Lost Time (s) 5.0 5.0 4.0 4.0 Lead/Lag Lead-Lag Optimize? Vehicle Extension (s) 3.0 <	All-Red Time (s)	3.0	3.0		3.0	3.0		2.0	2.0		2.0	2.0	
Lead/Lag Optimize? Vehicle Extension (s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 Recall Mode C-Max C-Max Max Max Max None None None None Walk Time (s) 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 Flash Dont Walk (s) 18.0 18.0 18.0 18.0 16.0 16.0 16.0 16.0 Pedestrian Calls (#hr) 0 0 0 0 0 0 0 0 0 Act Effict Green (s) 65.0 65.0 16.0 Actuated g/C Ratio 0.72 0.72 0.72 0.18 v/c Ratio 0.49 0.57 0.62 Control Delay 7.2 7.6 44.4 Queue Delay 0.0 0.0 0.0 0.0 Total Delay 7.2 7.6 44.4 LOS A A A D Approach Delay 7.2 7.6 44.4 Approach LOS A A A D Intersection Summary Area Type: Other Cycle Length: 90 Actuated Cycle Length: 90 Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green Natural Cycle: 60 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.62 Intersection Signal Delay 9.8 Intersection LOS: A Intersection Capacity Utilization 90.0% ICU Level of Service E	Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Lead-Lag Optimize? Vehicle Extension (s) 3.0 <	Total Lost Time (s)		5.0			5.0			4.0			4.0	
Vehicle Extension (s) 3.0	Lead/Lag												
Recall Mode C-Max C-Max Max Max Max None	Lead-Lag Optimize?												
Walk Time (s) 7.0 <	Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Flash Dont Walk (s) 18.0 18.0 18.0 16.0	Recall Mode	C-Max	C-Max		Max	Max		None	None		None	None	
Pedestrian Calls (#hr) 0	Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Act Effct Green (s) 65.0 65.0 16.0 Actuated g/C Ratio 0.72 0.72 0.18 v/c Ratio 0.49 0.57 0.62 Control Delay 7.2 7.6 44.4 Queue Delay 0.0 0.0 0.0 Total Delay 7.2 7.6 44.4 LOS A A D Approach Delay 7.2 7.6 44.4 Approach LOS A A D Intersection Summary	Flash Dont Walk (s)	18.0	18.0		18.0	18.0		16.0	16.0		16.0	16.0	
Actuated g/C Ratio 0.72 0.72 0.18 V/c Ratio 0.49 0.57 0.62 Control Delay 7.2 7.6 44.4 Queue Delay 0.0 0.0 0.0 Total Delay 7.2 7.6 44.4 LOS A A D Approach Delay 7.2 7.6 44.4 LOS A A D Approach Delay 7.2 7.6 44.4 LOS A A D Approach LOS A A D Intersection Summary Actuated Cycle Length: 90 O Actuated Cycle Length: 90 O O Actuated Cycle Length: 90 O O Other Cycle Length: 90 O Natural Cycle: 60 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.62 Intersection LOS: A Intersection Signal Delay 9.8 Intersection LOS: A Intersection Capacity Utilization 90.0% ICU Level of Service E	Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
vic Ratio 0.49 0.57 0.62 Control Delay 7.2 7.6 44.4 Queue Delay 0.0 0.0 0.0 Total Delay 7.2 7.6 44.4 LOS A A D Approach Delay 7.2 7.6 44.4 LOS A A D Approach Delay 7.2 7.6 44.4 DS A A D Intersection Summary Acta Type: O D Actarated Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle Length: 91 Actuated Cycle Length: 91 Actuated	Act Effct Green (s)		65.0			65.0						16.0	
Control Delay 7.2 7.6 44.4 Queue Delay 0.0 0.0 0.0 Total Delay 7.2 7.6 44.4 LOS A A D Approach Delay 7.2 7.6 44.4 Approach Delay 7.2 7.6 44.4 Approach Delay 7.2 7.6 44.4 Approach LOS A A D Intersection Summary D D Intersection Summary Actuated Cycle Length: 90 Other Other Other Cycle Length: 90 Other Other Other Other Other Other Other Oriset: 0 (0%), Referenced to phase 2:EBTL, Start of Green Natural Cycle: 60 Other Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.62 Intersection LOS: A Intersection LOS: A Intersection Capacity Utilization 90.0% ICU Level of Service E ICU Level of Service E ICU Level of Service E	Actuated g/C Ratio		0.72			0.72						0.18	
Queue Delay 0.0 0.0 0.0 Total Delay 7.2 7.6 44.4 LOS A A D Approach Delay 7.2 7.6 44.4 Approach Delay 7.2 7.6 44.4 Approach Delay 7.2 7.6 44.4 Approach LOS A A D Intersection Summary	v/c Ratio		0.49			0.57						0.62	
Total Delay 7.2 7.6 44.4 LOS A A D Approach Delay 7.2 7.6 44.4 Approach Delay 7.2 7.6 44.4 Approach Delay 7.2 7.6 44.4 Delay 7.2 7.6 44.4 Approach LOS A A D Intersection Summary A A D Area Type: Other Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle: 60 Control Type: Actuated-Coordinated Maximum V/c Ratic: 0.62 Intersection LOS: A Intersection Signal Delay 9.8 Intersection Capacity Utilization 90.0% ICU Level of Service E Intersection Service E	Control Delay		7.2			7.6						44.4	
LOS A A A D Approach Delay 7.2 7.6 44.4 Approach LOS A A A D Intersection Summary Area Type: Other Cycle Length: 90 Actuated Cycle Length: 90 Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green Natural Cycle: 60 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.62 Intersection Signal Delay: 9.8 Intersection LOS: A Intersection Capacity Utilization 90.0% ICU Level of Service E	Queue Delay		0.0			0.0						0.0	
Approach Delay 7.2 7.6 44.4 Approach LOS A A D Intersection Summary D Area Type: Other Cycle Length: 00 Actuated Cycle Length: 90 Actuated Cycle Length: 90 Offset: 0(%), Referenced to phase 2:EBTL, Start of Green Natural Cycle: 60 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.62 Intersection LOS: A Intersection Capacity Utilization 90.0% ICU Level of Service E	Total Delay		7.2			7.6						44.4	
Approach LOS A A A D Intersection Summary Area Type: Other Cycle Length: 90 Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green Natural Cycle: 60 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.62 Intersection LOS: A Intersection LOS: A Intersection Capacity Utilization 90.0% ICU Level of Service E	LOS		А			А						D	
Intersection Summary Intersection Summary Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle Length: 90 Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green Natural Cycle: 60 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.62 Intersection Signal Delay: 9.8 Intersection LOS: A Intersection Capacity Utilization 90.0% ICU Level of Service E	Approach Delay		7.2			7.6						44.4	
Area Type: Other Cycle Length: 90 Actuated Cycle Length: 90 Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green Natural Cycle: 60 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.62 Intersection Signal Delay: 9.8 Intersection LOS: A Intersection Capacity Utilization 90.0% ICU Level of Service E	Approach LOS		А			А						D	
Cycle Length: 90 Actuated Cycle Length: 90 Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green Natural Cycle: 60 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.62 Intersection Signal Delay: 9.8 Intersection LOS: A Intersection Capacity Utilization 90.0% ICU Level of Service E	Intersection Summary												
Actuated Cycle Length: 90 Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green Natural Cycle: 60 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.62 Intersection Signal Delay: 9.8 Intersection LOS: A Intersection Capacity Utilization 90.0% ICU Level of Service E	Area Type:	Other											
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green Natural Cycle: 60 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.62 Intersection Signal Delay: 9.8 Intersection LOS: A Intersection Capacity Utilization 90.0% ICU Level of Service E													
Natural Cycle: 60 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.62 Intersection Signal Delay: 9.8 Intersection Capacity Utilization 90.0% ICU Level of Service E													
Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.62 Intersection Signal Delay: 9.8 Intersection LOS: A Intersection Capacity Utilization 90.0% ICU Level of Service E		to phase 2	:EBTL, Sta	art of Gre	en								
Maximum v/c Ratio: 0.62 Intersection LOS: A Intersection Capacity Utilization 90.0% ICU Level of Service E													
Intersection Signal Delay: 9.8 Intersection LOS: A Intersection Capacity Utilization 90.0% ICU Level of Service E	Control Type: Actuated-Co	ordinated											
Intersection Capacity Utilization 90.0% ICU Level of Service E	Maximum v/c Ratio: 0.62												
					lr	ntersection	LOS: A						
Analysis Period (min) 15		ation 90.0%)		IC	CU Level o	of Service	ε					
	Analysis Period (min) 15												
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61s	29 s	

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Lanes, Volumes, Timings 6: Ruttan Street & Merchant Lane <Existing before Bikeway> PM Peak 02/16/2021

	1	*	t	۲	1	Ļ	
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	- Y		f,			ę	
Traffic Volume (vph)	1	12	64	6	32	23	
Future Volume (vph)	1	12	64	6	32	23	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.875		0.989				
Flt Protected	0.996					0.972	
Satd. Flow (prot)	1605	0	1822	0	0	1790	
Flt Permitted	0.996					0.972	
Satd. Flow (perm)	1605	0	1822	0	0	1790	
Link Speed (k/h)	30		30			30	
Link Distance (m)	41.6		87.0			79.4	
Travel Time (s)	5.0		10.4			9.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	1	13	67	6	34	24	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	14	0	73	0	0	58	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Right	Left	Left	
Median Width(m)	3.5		0.0			0.0	
Link Offset(m)	0.0		0.0			0.0	
Crosswalk Width(m)	1.6		1.6			1.6	
Two way Left Turn Lane							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	
Turning Speed (k/h)	24	14		14	24		
Sign Control	Stop		Free			Free	
Intersection Summary							(
	Other						
Control Type: Unsignalized							
Intersection Capacity Utilizat	ion 19.6%			IC	U Level	of Service	Α
Analysis Period (min) 15							

HCM Unsignalized Intersection Capacity Analysis 6: Ruttan Street & Merchant Lane <Existing before Bikeway> PM Peak 02/16/2021

	4	*	1	1	1	Ŧ
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		4Î			र्स
Traffic Volume (veh/h)	. 1	12	64	6	32	23
Future Volume (Veh/h)	1	12	64	6	32	23
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	13	67	6	34	24
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	162	70			73	
vC1, stage 1 conf vol	102				10	
vC2, stage 2 conf vol						
vCu, unblocked vol	162	70			73	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	0.1	0.2			4.1	
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			98	
cM capacity (veh/h)	810	993			1527	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	14	73	58			
Volume Left	1	0	34			
Volume Right	13	6	0			
cSH	977	1700	1527			
Volume to Capacity	0.01	0.04	0.02			
Queue Length 95th (m)	0.3	0.0	0.5			
Control Delay (s)	8.7	0.0	4.4			
Lane LOS	А		А			
Approach Delay (s)	8.7	0.0	4.4			
Approach LOS	А					
Intersection Summary						
Average Delay			2.6			
Intersection Capacity Utiliza	ation		19.6%	IC	U Level o	of Service
Analysis Period (min)			15			
,						

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Lanes, Volumes, Ti 8: Sterling Road & I	0	venue					<existing before="" bikeway=""> PM Peak 02/16/2021</existing>
	۶	*	≺	Ť	ţ	~	
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	¥			ę	¢Î		
Traffic Volume (vph)	15	81	19	182	32	0	
Future Volume (vph)	15	81	19	182	32	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor							
Frt	0.886						
Fit Protected	0.992			0.995			
Satd. Flow (prot)	1610	0	0	1842	1879	0	
Flt Permitted	0.992			0.995			
Satd. Flow (perm)	1610	0	0	1842	1879	0	
Link Speed (k/h)	30			30	30		
Link Distance (m)	70.2			16.3	54.8		
Travel Time (s)	8.4			2.0	6.6		
Confl. Peds. (#/hr)	5	13	9			9	
Confl. Bikes (#/hr)		2					
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	
Heavy Vehicles (%)	0%	3%	6%	1%	0%	2%	
Adj. Flow (vph)	17	94	22	212	37	0	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	111	0	0	234	37	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(m)	3.5	Ŭ		0.0	0.0	Ū	
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	1.6			1.6	1.6		
Two way Left Turn Lane							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	
Turning Speed (k/h)	24	14	24			14	
Sign Control	Stop			Stop	Stop		
Intersection Summary							
Area Type: (Other						
Control Type: Unsignalized							
Intersection Capacity Utilizat	ion 33.2%			IC	U Level o	of Service	A
Analysis Period (min) 15							

HCM Unsignalized Intersection Capacity Analysis 8: Sterling Road & Perth Avenue

<Existing before Bikeway> PM Peak 02/16/2021

	≯	~	•	Ť	Ļ	~
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	¥			Ą	f,	
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	15	81	19	182	32	0
Future Volume (vph)	15	81	19	182	32	0
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	17	94	22	212	37	0
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total (vph)	111	234	37			
Volume Left (vph)	17	22	0			
Volume Right (vph)	94	0	0			
Hadj (s)	-0.43	0.04	0.00			
Departure Headway (s)	4.1	4.2	4.4			
Degree Utilization, x	0.13	0.27	0.05			
Capacity (veh/h)	832	827	778			
Control Delay (s)	7.7	8.8	7.6			
Approach Delay (s)	7.7	8.8	7.6			
Approach LOS	А	А	А			
Intersection Summary						
Delay			8.4			
Level of Service			А			
Intersection Capacity Utiliza	ation		33.2%	IC	U Level o	f Service
Analysis Period (min)			15			

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D-2 Existing Traffic Conditions after Bikeway Extension

Lanes, Volumes, Tir 1: Lansdowne Aven	0	loor S	treet W	/est		Existing w/ Bikeway Volumes> AM Peak 02/16/2021							
	۶	-	\mathbf{r}	1	+	•	•	Ť	1	1	ţ	~	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		•			↑	1	۲	A		۲	4Î		
Traffic Volume (vph)	0	710	0	0	477	75	57	350	60	151	322	78	
Future Volume (vph)	0	710	0	0	477	75	57	350	60	151	322	78	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.0	3.5	3.0	3.0	3.2	3.0	3.0	3.5	3.0	3.0	3.5	3.0	
Storage Length (m)	0.0		0.0	0.0		14.1	14.4		15.3	36.3		0.0	
Storage Lanes	0		0	0		1	1		1	1		0	
Taper Length (m)	2.5			2.5			25.0			10.0			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	
Ped Bike Factor						0.69	0.83	0.91		0.78	0.91		
Frt						0.850		0.974			0.962		
Flt Protected							0.950			0.950			
Satd. Flow (prot)	0	1658	0	0	1602	1343	1458	2680	0	1501	1416	0	
Flt Permitted							0.455			0.304			
Satd. Flow (perm)	0	1658	0	0	1602	931	576	2680	0	377	1416	0	
Right Turn on Red			No			No			Yes			Yes	
Satd. Flow (RTOR)								23			19		
Link Speed (k/h)		40			40			40			40		
Link Distance (m)		374.8			112.0			258.8			36.6		
Travel Time (s)		33.7			10.1			23.3			3.3		
Confl. Peds. (#/hr)	261		188	188		261	149		271	271		149	
Confl. Bikes (#/hr)			2			2			3			5	
Peak Hour Factor	0.50	1.00	0.76	0.90	0.95	0.69	0.75	0.93	0.75	0.80	0.99	0.70	
Heavy Vehicles (%)	0%	2%	3%	0%	2%	1%	4%	6%	5%	1%	5%	3%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	13	0	0	0	
Adj. Flow (vph)	0	710	0	0	502	109	76	376	80	189	325	111	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	710	0	0	502	109	76	456	0	189	436	0	
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No	
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right	
Median Width(m)		0.0			0.0			3.0			3.0		
Link Offset(m)		0.0			0.0			0.0			0.0		
Crosswalk Width(m)		1.6			1.6			1.6			1.6		
Two way Left Turn Lane													
Headway Factor	1.25	1.16	1.25	1.25	1.21	1.25	1.25	1.16	1.25	1.25	1.16	1.25	
Turning Speed (k/h)	25	<u>,</u>	15	25		15	25		15	25		15	
Number of Detectors		2			2	1	1	2		1	2		
Detector Template		Thru			Thru	Right	Left	Thru		Left	Thru		
Leading Detector (m)		30.5			30.5	6.1	6.1	30.5		6.1	30.5		
Trailing Detector (m)		0.0			0.0	0.0	0.0	0.0		0.0	0.0		
Detector 1 Position(m)		0.0			0.0	0.0	0.0	0.0		0.0	0.0		
Detector 1 Size(m)		1.8			1.8	6.1	6.1	1.8		6.1	1.8		
Detector 1 Type		CI+Ex			CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex		
Detector 1 Channel		0.0			0.0	0.0	0.0	0.0		0.0	0.0		
Detector 1 Extend (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0		
Detector 1 Queue (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0		
Detector 1 Delay (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0		
Detector 2 Position(m)		28.7			28.7			28.7			28.7		
Detector 2 Size(m)		1.8			1.8			1.8			1.8		

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SE
Detector 2 Type		CI+Ex			Cl+Ex			Cl+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type		NA			NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		2			6			4		3	8	
Permitted Phases						6	4			8		
Detector Phase		2			6	6	4	4		3	8	
Switch Phase												
Minimum Initial (s)		26.0			26.0	26.0	22.0	22.0		6.0	22.0	
Minimum Split (s)		34.0			34.0	34.0	28.0	28.0		10.0	28.0	
Total Split (s)		59.0			59.0	59.0	28.0	28.0		13.0	41.0	
Total Split (%)		59.0%			59.0%	59.0%	28.0%	28.0%		13.0%	41.0%	
Maximum Green (s)		52.4			52.4	52.4	22.0	22.0		9.0	35.0	
Yellow Time (s)		3.0			3.0	3.0	4.0	4.0		3.0	4.0	
All-Red Time (s)		3.6			3.6	3.6	2.0	2.0		1.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.6			5.6	5.6	5.0	5.0		3.0	5.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0		2.0	3.0	
Recall Mode		C-Max			C-Max	C-Max	Max	Max		None	Max	
Walk Time (s)		7.0			7.0	7.0	7.0	7.0			7.0	
Flash Dont Walk (s)		19.0			19.0	19.0	15.0	15.0			15.0	
Pedestrian Calls (#/hr)		40			40	40	40	40			40	
Act Effct Green (s)		53.4			53.4	53.4	23.0	23.0		38.0	36.0	
Actuated g/C Ratio		0.53			0.53	0.53	0.23	0.23		0.38	0.36	
v/c Ratio		0.80			0.59	0.22	0.58	0.72		0.74	0.84	
Control Delay		21.8			19.3	13.8	53.5	41.0		42.0	44.1	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		21.8			19.3	13.8	53.5	41.0		42.0	44.1	
LOS		С			В	В	D	D		D	D	
Approach Delay		21.8			18.3			42.8			43.4	
Approach LOS		С			В			D			D	
Intersection Summary												
	CBD											
Cycle Length: 100												
Actuated Cycle Length: 100												
Offset: 38 (38%), Reference	d to phase	2:EBT an	d 6:WBT,	Start of	Green							
Natural Cycle: 80												
Control Type: Actuated-Coo	rdinated											
Maximum v/c Ratio: 0.84												
Intersection Signal Delay: 30					ntersection							
Intersection Capacity Utilizat	tion 98.3%			IC	CU Level	of Service	F					
Analysis Period (min) 15												

→Ø2 (R)	₩ø3	₫ Ø4	
59 s	13 s	28 s	
Ø6 (R)	₽ Ø8		
59 s	41 s		

Lanes, Volumes, Timings 2: Ruttan Street & Bloor Street West

<Existing w/ Bikeway Volumes> AM Peak 02/16/2021

	-	\mathbf{r}	4	+	1	1	
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	el el			ę	¥		
Traffic Volume (vph)	763	20	7	589	24	24	
Future Volume (vph)	763	20	7	589	24	24	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.5	3.5	3.5	3.5	3.0	3.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.997				0.932		
Flt Protected				0.999	0.976		
Satd. Flow (prot)	1837	0	0	1840	1581	0	
Flt Permitted				0.999	0.976		
Satd. Flow (perm)	1837	0	0	1840	1581	0	
Link Speed (k/h)	40			40	30		
Link Distance (m)	69.7			374.8	79.4		
Travel Time (s)	6.3			33.7	9.5		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	848	22	8	654	27	27	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	870	0	0	662	54	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(m)	0.0			0.0	3.0		
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	1.6			1.6	1.6		
Two way Left Turn Lane							
Headway Factor	1.01	1.01	1.01	1.01	1.09	1.09	
Turning Speed (k/h)		14	24		24	14	
Sign Control	Free			Free	Stop		
Intersection Summary							
	Other						
Control Type: Unsignalized							
Intersection Capacity Utilizat	tion 51.4%			IC	CU Level o	of Service	эA
Analysis Period (min) 15							

HCM Unsignalized Intersection Capacity Analysis 2: Ruttan Street & Bloor Street West

<Existing w/ Bikeway Volumes> AM Peak 02/16/2021

	-	\mathbf{r}	∢	+	٩	1
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	4Î			ર્સ	Y	
Traffic Volume (veh/h)	763	20	7	589	24	24
Future Volume (Veh/h)	763	20	7	589	24	24
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	848	22	8	654	27	27
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	70			375		
pX, platoon unblocked			0.75		0.83	0.75
vC, conflicting volume			870		1529	859
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			655		1102	640
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					0.11	0.2
tF (s)			2.2		3.5	3.3
p0 queue free %			99		86	92
cM capacity (veh/h)			695		191	354
Direction. Lane #	EB 1	WB 1	NB 1			
Volume Total	870	662	54			
Volume Left	0	8	27			
Volume Right cSH	22 1700	0 695	27 248			
			248			
Volume to Capacity	0.51	0.01				
Queue Length 95th (m)	0.0	0.3	6.1			
Control Delay (s)	0.0	0.3	23.5			
Lane LOS		A	С			
Approach Delay (s)	0.0	0.3	23.5			
Approach LOS			С			
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utiliz	zation		51.4%	IC	U Level o	of Service
Analysis Period (min)			15			
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221-225 Sterling Road Transportation Impact Study

Synchro 10 Report Page 3 221-225 Sterling Road Transportation Impact Study

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			*	•		~	7	-	7	-	*	-
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	<u> </u>	↑	•	•	•	=0	<u></u>	4	10	<u></u>	•	1
Traffic Volume (vph)	110	580	0	0	537	76	23	37	13	190	0	165
Future Volume (vph)	110	580	0	0	537	76	23	37	13	190	0	165
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.3	3.0	3.0	4.2	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Storage Length (m)	27.5		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	0		0	1		0	1		1
Taper Length (m)	7.5	4 00	4.00	2.5	4.00	4.00	2.5	4.00	4.00	2.5	4.00	4.00
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					0.96		0.62	0.93		0.90		0.79
Frt	0.050				0.981		0.050	0.956		0.050		0.850
Fit Protected	0.950	1005	0	0	1004	0	0.950	4000	0	0.950	0	4000
Satd. Flow (prot)	1531	1605	0	0	1864	0	1685	1632	0	1652	0	1333
Flt Permitted	0.124	4005	0	0	4004	0	0.950	4000	0	0.950	0	4050
Satd. Flow (perm)	200	1605	0	0	1864	0	1053	1632	0	1483	0	1052
Right Turn on Red			Yes		10	Yes			No			No
Satd. Flow (RTOR)		10			10			00			10	
Link Speed (k/h)		40			40			30			40	
Link Distance (m)		98.8			69.7			91.9			175.2	
Travel Time (s)	00	8.9	00	00	6.3	00	75	11.0	45	45	15.8	70
Confl. Peds. (#/hr)	86		28	28		86	75		45	45		75
Confl. Bikes (#/hr)	0.70	4.00	50	0.00	0.02	50	0.70	0.77	2	0.04	0.00	7
Peak Hour Factor	0.72	1.00	0.90	0.90	0.93	0.79	0.72	0.77	0.65	0.81	0.90	0.84
Heavy Vehicles (%)	14% 0	3%	0% 0	0%	3% 0	1%	0%	3% 0	0%	2% 0	0%	9%
Bus Blockages (#/hr)	0	0	0	0	0	1	0	0	0	0	3	ç
Parking (#/hr)	450	-	0	0	577	00	20	40	00	005	0	400
Adj. Flow (vph)	153	580	0	0	577	96	32	48	20	235	0	196
Shared Lane Traffic (%)	450	500	0	0	070	0	20	00	0	005	0	196
Lane Group Flow (vph)	153	580	0 No		673	-	32	68	-	235	0	
Enter Blocked Intersection	No	No		No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left 3.3	Right	Left	Left 3.3	Right	Left	Left 3.0	Right	Left	Left 3.0	Righ
Median Width(m)												
Link Offset(m)		0.0 4.8			0.0 4.8			0.0 4.8			0.0 4.8	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane	1.04	1.19	1.09	1.09	0.92	1.09	1.09	1.01	1.09	1.09	1.01	1 1/
Headway Factor		1.19	1.09		0.92			1.01			1.01	1.14 15
Turning Speed (k/h)	25 1	2	15	25	2	15	25 1	2	15	25 1		
Number of Detectors								Z Thru				1 D:-h
Detector Template	Left	Thru			Thru		Left			Left		Righ
Leading Detector (m)	6.1 0.0	30.5 0.0			30.5 0.0		6.1 0.0	30.5 0.0		6.1 0.0		6.1 0.0
Trailing Detector (m)	0.0	0.0			0.0			0.0		0.0		0.0
Detector 1 Position(m)	0.0 6.1	0.0 1.8			0.0 1.8		0.0 6.1	0.0 1.8		0.0 6.1		6.1
Detector 1 Size(m)	6.1 Cl+Ex	1.8 Cl+Ex			1.8 CI+Ex					6.1 CI+Ex		
Detector 1 Type Detector 1 Channel	CI+EX	UI+EX			UI+EX		CI+Ex	CI+Ex		UI+EX		CI+E
	0.0	0.0			0.0		0.0	0.0		0.0		~ ~
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0		0.0		0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0		0.0		0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0		0.0		0.0

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SB
Detector 2 Size(m)		1.8			1.8			1.8				
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	pm+pt	NA			NA		Split	NA		Prot		pt+c
Protected Phases	5	2			6		4	4		3		3
Permitted Phases	2											
Detector Phase	5	2			6		4	4		3		3
Switch Phase	-									-		-
Minimum Initial (s)	6.0	21.0			21.0		7.0	7.0		19.0		
Minimum Split (s)	10.0	29.0			29.0		16.0	16.0		27.0		
Total Split (s)	11.0	57.0			46.0		16.0	16.0		27.0		
Total Split (%)	11.0%	57.0%			46.0%		16.0%	16.0%		27.0%		
Maximum Green (s)	7.0	49.3			38.3		9.0	9.0		20.0		
Yellow Time (s)	3.0	3.0			3.0		4.0	4.0		4.0		
All-Red Time (s)	1.0	4.7			4.7		3.0	3.0		3.0		
Lost Time Adjust (s)	-1.0	-3.0			-1.0		-1.0	-1.0		-1.0		
Total Lost Time (s)	3.0	4.7			6.7		6.0	6.0		6.0		
Lead/Lag	Lead	4.7			Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	Leau				Lay		Lay	Lay		Leau		
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0		
Recall Mode	Max	C-Max			C-Max		None	None		None		
Walk Time (s)	IVIdX	7.0			7.0		None	None		8.0		
Flash Dont Walk (s)		14.0			14.0					12.0		
Pedestrian Calls (#/hr)		28			36					36		
Act Effct Green (s)	57.8	56.1			43.1		9.4	9.4		20.6		26
Actuated g/C Ratio	0.58	0.56			0.43		0.09	0.09		0.21		20
v/c Ratio	0.56	0.56			0.43		0.09	0.09		0.21		0.2
	30.2	20.7			30.2		44.8	52.3		48.5		
Control Delay	0.0	20.7			0.0		44.0	52.5 0.0		40.5		27
Queue Delay	30.2	20.7			30.2		44.8	52.3		48.5		0 27
Total Delay LOS	30.2 C	20.7 C			30.2 C		44.0 D	52.5 D		40.5 D		21.
	U						D			U	20.0	
Approach Delay		22.7			30.2			49.9			38.8 D	
Approach LOS		С			С			D			U	
Intersection Summary												
Area Type:	Other											
Cycle Length: 100												
Actuated Cycle Length: 1												
Offset: 89 (89%), Referer	nced to phase	2:EBTL a	nd 6:WB	F, Start o	f Green							
Natural Cycle: 85												
Control Type: Actuated-C	oordinated											
Maximum v/c Ratio: 0.83												
Intersection Signal Delay	: 30.3				itersection							
Intersection Capacity Util	ization 71.6%			IC	CU Level c	of Service	С					
Analysis Period (min) 15												

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Lanes, Volumes, Tin 4: Dundas Street We		Bloor S	street V	Vest		<exi< th=""><th>sting w</th><th>v/ Bike</th><th>way Vo</th><th>olume</th><th>s> AM 02/*</th><th>Peał 16/202⁻</th></exi<>	sting w	v/ Bike	way Vo	olume	s> AM 02/*	Peał 16/202 ⁻
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Lane Configurations		•	1	ľ	•	1		-{1 † }>			4î þ	
Traffic Volume (vph)	0	600	202	72	551	117	0	411	159	10	800	4
Future Volume (vph)	0	600	202	72	551	117	0	411	159	10	800	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	190
ane Width (m)	3.0	3.4	3.0	3.0	3.3	3.0	3.0	3.5	3.0	3.0	3.5	3.
Storage Length (m)	0.0		17.5	26.4		31.0	0.0		0.0	0.0		0.
Storage Lanes	0		1	1		1	0		0	0		
Taper Length (m)	50.0			7.5			2.5			2.5		
ane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	0.91	0.95	0.95	0.9
Ped Bike Factor			0.74	0.90		0.60		0.82			0.96	
Frt			0.850			0.850		0.955			0.991	
Fit Protected				0.950							0.999	
Satd. Flow (prot)	0	1623	1436	1589	1712	1358	0	3775	0	0	3224	
Flt Permitted				0.950							0.940	
Satd. Flow (perm)	0	1623	1062	1426	1712	820	0	3775	0	0	3022	
Right Turn on Red			Yes			Yes			Yes			Ye
Satd. Flow (RTOR)			121			101		120			8	
ink Speed (k/h)		40			40			40			40	
ink Distance (m)		75.1			318.0			159.9			139.1	
Travel Time (s)		6.8			28.6			14.4			12.5	
Confl. Peds. (#/hr)	670		219	219		670	453		442	442		45
Confl. Bikes (#/hr)			50			50			9			1
Peak Hour Factor	0.64	1.00	0.83	0.98	0.96	0.89	0.90	0.98	0.90	0.69	0.98	0.7
Heavy Vehicles (%)	4%	3%	5%	6%	3%	11%	0%	7%	3%	100%	4%	0%
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	0	
Parking (#/hr)	Ű	0	Ŭ	Ŭ		Ŭ	Ű	, in the second se	Ű	Ŭ		
Adj. Flow (vph)	0	600	243	73	574	131	0	419	177	14	816	5
Shared Lane Traffic (%)	Ū	000	210	10	014	101	Ū	410			010	0
ane Group Flow (vph)	0	600	243	73	574	131	0	596	0	0	886	
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	N
ane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Righ
Median Width(m)	Lon	3.0	rugite	Lon	3.0	rugne	Lon	0.0	rugitt	Lon	0.0	rugi
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
wo way Left Turn Lane		7.0			7.0			4.0			ч.u	
Headway Factor	1.09	1.18	1.09	1.09	1.10	1.09	1.09	1.01	1.09	1.09	1.01	1.0
Furning Speed (k/h)	25	1.10	1.09	25	1.10	1.09	25	1.01	1.09	25	1.01	1.0
Number of Detectors	25	2	10	25	2	10	25	2	IJ	25	2	1
Detector Template		∠ Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
eading Detector (m)		30.5	6.1	6.1	30.5	6.1	2.0	30.5		2.0	30.5	
		0.0	0.1	0.0	0.0	0.1	0.0	0.0		0.0	0.0	
Trailing Detector (m) Detector 1 Position(m)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)		1.8	6.1	6.1	1.8	6.1	6.1	1.8		6.1	1.8	
Detector 1 Type		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel		OFEX	OITEX	OITEX	OITEX	OFEX	OITEX	OITEX		OFEX	OFEX	
Detector 1 Extend (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s) Detector 1 Delay (s)		0.0	0.0	0.0 0.0	0.0 0.0	0.0	0.0 0.0	0.0 0.0		0.0 0.0	0.0 0.0	

Synchro 10 Report Page 7 Lanes, Volumes, Timings 4: Dundas Street West & Bloor Street West

<Existing w/ Bikeway Volumes> AM Peak 02/16/2021

Lane Group	Ø1	Ø5
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (m)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Fit Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Bus Blockages (#/hr)		
Parking (#/hr)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SB
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type		NA	Perm	Prot	NA	Perm		NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases			4			8	2			6		
Detector Phase		4	4	3	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)		25.0	25.0	6.0	25.0	25.0	19.0	19.0		19.0	19.0	
Minimum Split (s)		31.3	31.3	11.0	31.3	31.3	25.0	25.0		25.0	25.0	
Total Split (s)		42.0	42.0	12.0	54.0	54.0	31.0	31.0		31.0	31.0	
Total Split (%)		46.7%	46.7%	13.3%	60.0%	60.0%	34.4%	34.4%		34.4%	34.4%	
Maximum Green (s)		35.7	35.7	7.0	47.7	47.7	25.0	25.0		25.0	25.0	
Yellow Time (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)		3.3	3.3	2.0	3.3	3.3	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0	-1.0		-1.0			-1.0	
Total Lost Time (s)		5.3	5.3	4.0	5.3	5.3		5.0			5.0	
Lead/Lag		Lag	Lag	Lead			Lag	Lag		Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode		Max	Max	None	Max	Max	C-Max	C-Max		C-Max	C-Max	
Walk Time (s)		7.0	7.0		7.0	7.0	2.0	2.0		2.0	2.0	
Flash Dont Walk (s)		18.0	18.0		18.0	18.0	17.0	17.0		17.0	17.0	
Pedestrian Calls (#/hr)		40	40		40	40	40	40		40	40	
Act Effct Green (s)		39.1	39.1	7.8	48.7	48.7		28.0			31.0	
Actuated g/C Ratio		0.43	0.43	0.09	0.54	0.54		0.31			0.34	
v/c Ratio		0.85	0.46	0.53	0.62	0.27		0.47			0.85	
Control Delay		38.0	12.8	53.9	18.0	5.0		21.6			36.3	
Queue Delay		0.0	0.0	0.0	0.0	0.0		0.0			0.0	
Total Delay		38.0	12.8	53.9	18.0	5.0		21.6			36.3	
LOS		D	В	D	В	A		С			D	
Approach Delay		30.7			19.2			21.6			36.3	
Approach LOS		С			В			С			D	
Intersection Summary												
Area Type: Ot	her											
Cycle Length: 90												
Actuated Cycle Length: 90												
Offset: 34 (38%), Referenced t	to phase	2:NBTL	and 6:SB	TL, Start	of 1st Gre	en						
Natural Cycle: 90												
Control Type: Actuated-Coordi	nated											
Maximum v/c Ratio: 0.85												
Intersection Signal Delay: 27.7				Ir	ntersectio	n LOS: C						
Intersection Capacity Utilizatio				10	CU Level	of Service	Ð					
Analysis Period (min) 15												
Splits and Phases: 4: Dunda	as Straat	Wast & F	Bloor Stre	ot West								
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5s 31s				2 s		12 s						
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Lanes, Volumes, Timings 4: Dundas Street West & Bloor Street West <Existing w/ Bikeway Volumes> AM Peak 02/16/2021

Lane Group	Ø1	Ø5
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	1	5
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	3.0
Recall Mode	None	None
Walk Time (s)	3.0	
Flash Dont Walk (s)	0.0	
Pedestrian Calls (#/hr)	40	
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		
intersection Summary		

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5: Private Access/S												
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Lane Configurations		4 î b			4 î>			4			\$	
Traffic Volume (vph)	70	1217	1	0	619	72	1	1	1	58	0	48
Future Volume (vph)	70	1217	1	0	619	72	1	1	1	58	0	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			0.99			0.98			0.97	
Frt					0.984			0.955			0.939	
Fit Protected		0.997						0.984			0.973	
Satd. Flow (prot)	0	3393	0	0	3173	0	0	1049	0	0	1588	0
Flt Permitted		0.862						0.924			0.828	
Satd. Flow (perm)	0	2929	0	0	3173	0	0	974	0	0	1338	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)					26			1				
Link Speed (k/h)		40			40			30			30	
Link Distance (m)		123.6			101.7			33.0			87.8	
Travel Time (s)		11.1			9.2			4.0			10.5	
Confl. Peds. (#/hr)	50		27	27		50	38		15	15		38
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
Heavy Vehicles (%)	3%	5%	0%	2%	10%	5%	100%	0%	100%	4%	2%	7%
Adj. Flow (vph)	71	1242	1	0	632	73	1	1	1	59	0	49
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1314	0	0	705	0	0	3	0	0	108	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA			NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SB
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	25.0	25.0		25.0	25.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		28.0	28.0		28.0	28.0	
Total Split (s)	61.0	61.0		61.0	61.0		29.0	29.0		29.0	29.0	
Total Split (%)	67.8%	67.8%		67.8%	67.8%		32.2%	32.2%		32.2%	32.2%	
Maximum Green (s)	55.0	55.0		55.0	55.0		24.0	24.0		24.0	24.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		5.0			5.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		Max	Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	18.0	18.0		18.0	18.0		16.0	16.0		16.0	16.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		71.1			71.1			13.3			13.3	
Actuated g/C Ratio		0.79			0.79			0.15			0.15	
/c Ratio		0.57			0.28			0.02			0.55	
Control Delay		6.5			3.9			27.0			45.0	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		6.5			3.9			27.0			45.0	
LOS		А			Α			С			D	
Approach Delay		6.5			3.9			27.0			45.0	
Approach LOS		А			А			С			D	
Intersection Summary												
Area Type:	Other											
Cycle Length: 90												
Actuated Cycle Length: 90												
Offset: 76 (84%), Reference	ed to phase	Z:EBTL, S	Start of G	ireen								
Natural Cycle: 60	P 4 1											
Control Type: Actuated-Coo	ordinated											
Maximum v/c Ratio: 0.57	0					100 4						
Intersection Signal Delay: 7					itersection		-					
Intersection Capacity Utiliza	auo⊓ 85.3%			IC	CU Level c	Service						
Analysis Period (min) 15												
Splits and Phases: 5: Priv	vate Acces	s/Sterling I	Road & D	oundas St	reet West							
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Lanes, Volumes, Timings 6: Ruttan Street & Merchant Lane <Existing w/ Bikeway Volumes> AM Peak 02/16/2021

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Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	Y		4Î			ę	
Traffic Volume (vph)	6	28	20	0	8	19	
Future Volume (vph)	6	28	20	0	8	19	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.890						
Flt Protected	0.991					0.985	
Satd. Flow (prot)	1625	0	1842	0	0	1814	
Flt Permitted	0.991					0.985	
Satd. Flow (perm)	1625	0	1842	0	0	1814	
Link Speed (k/h)	30		30			30	
Link Distance (m)	40.4		89.3			79.4	
Travel Time (s)	4.8		10.7			9.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	7	31	22	0	9	21	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	38	0	22	0	0	30	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Right	Left	Left	
Median Width(m)	3.5		0.0			0.0	
Link Offset(m)	0.0		0.0			0.0	
Crosswalk Width(m)	1.6		1.6			1.6	
Two way Left Turn Lane							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	
Turning Speed (k/h)	24	14		14	24		
Sign Control	Stop		Free			Free	
Intersection Summary							
	Other						
Control Type: Unsignalized							
Intersection Capacity Utilizati	on 18.0%			IC	U Level	of Service	Α
Analysis Period (min) 15							

HCM Unsignalized Intersection Capacity Analysis 6: Ruttan Street & Merchant Lane

<Existing w/ Bikeway Volumes> AM Peak 02/16/2021

	4	•	1	1	1	Ļ
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		4Î			ę
Traffic Volume (veh/h)	6	28	20	0	8	19
Future Volume (Veh/h)	6	28	20	0	8	19
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	7	31	22	0	9	21
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	61	22			22	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	61	22			22	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	97			99	
cM capacity (veh/h)	940	1055			1593	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	38	22	30			
Volume Left	7	0	9			
Volume Right	31	0	0			
cSH	1032	1700	1593			
Volume to Capacity	0.04	0.01	0.01			
Queue Length 95th (m)	0.04	0.01	0.01			
Control Delay (s)	8.6	0.0	2.2			
Lane LOS	0.0 A	0.0	2.2 A			
	8.6	0.0	2.2			
Approach Delay (s) Approach LOS	0.0 A	0.0	2.2			
Approach LOS	А					
Intersection Summary						
Average Delay			4.4			
Intersection Capacity Utiliz	zation		18.0%	IC	U Level of	Service
Analysis Period (min)			15			

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Lanes, Volumes, Ti 8: Sterling Road & F	0	venue				<existi< th=""><th>ng w/ Bikeway Volumes> AM Peak 02/16/2021</th></existi<>	ng w/ Bikeway Volumes> AM Peak 02/16/2021
	۶	*	≺	1	Ŧ	~	
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	Y			ę	¢Î		
Traffic Volume (vph)	15	109	9	81	24	2	
Future Volume (vph)	15	109	9	81	24	2	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor							
Frt	0.881				0.990		
Flt Protected	0.994			0.995			
Satd. Flow (prot)	1590	0	0	1789	1794	0	
Flt Permitted	0.994			0.995			
Satd. Flow (perm)	1590	0	0	1789	1794	0	
Link Speed (k/h)	30			30	30		
Link Distance (m)	70.2			16.3	54.8		
Travel Time (s)	8.4			2.0	6.6		
Confl. Peds. (#/hr)	4	90	13			13	
Confl. Bikes (#/hr)		4					
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Heavy Vehicles (%)	7%	3%	0%	5%	0%	50%	
Adj. Flow (vph)	16	115	9	85	25	2	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	131	0	0	94	27	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(m)	3.5			0.0	0.0		
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	1.6			1.6	1.6		
Two way Left Turn Lane							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	
Turning Speed (k/h)	24	14	24			14	
Sign Control	Stop			Stop	Stop		
Intersection Summary							
	Other						
Control Type: Unsignalized							
Intersection Capacity Utilizat	ion 31.4%			IC	CU Level of	of Service A	
Analysis Period (min) 15							

 HCM Unsignalized Intersection Capacity Analysis
 <Existing w/ Bikeway Volumes> AM Peak

 8: Sterling Road & Perth Avenue
 02/16/2021

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Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			નુ	ĥ	
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	15	109	9	81	24	2
Future Volume (vph)	15	109	9	81	24	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	16	115	9	85	25	2
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total (vph)	131	94	27			
Volume Left (vph)	16	9	0			
Volume Right (vph)	115	0	2			
Hadj (s)	-0.44	0.10	0.02			
Departure Headway (s)	3.7	4.3	4.3			
Degree Utilization, x	0.14	0.11	0.03			
Capacity (veh/h)	934	807	809			
Control Delay (s)	7.3	7.8	7.4			
Approach Delay (s)	7.3	7.8	7.4			
Approach LOS	А	А	А			
Intersection Summary						
Delay			7.5			
Level of Service			А			
Intersection Capacity Utiliza	ation		31.4%	IC	U Level of	Service
Analysis Period (min)			15			

221-225 Sterling Road Transportation Impact Study

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221-225 Sterling Road Transportation Impact Study

Lanes, Volumes, Tir 1: Lansdowne Aven		loor S	treet W	/est		<existing bikeway="" volumes="" w=""> PM Peak 02/16/2021</existing>							
	۶	-	\mathbf{i}	4	+	•	1	Ť	*	1	ţ	4	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		1			1	1	٦	đħ		۲	4Î		
Traffic Volume (vph)	0	575	0	0	660	122	120	381	38	105	261	73	
Future Volume (vph)	0	575	0	0	660	122	120	381	38	105	261	73	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.0	3.5	3.0	3.0	3.2	3.0	3.0	3.5	3.0	3.0	3.5	3.0	
Storage Length (m)	0.0		0.0	0.0		14.1	14.4		15.3	36.3		0.0	
Storage Lanes	0		0	0		1	1		1	1		0	
Taper Length (m)	7.5			7.5			7.5			7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	
Ped Bike Factor						0.68	0.79	0.94		0.76	0.86		
Frt						0.850		0.984			0.962		
Flt Protected							0.950			0.950			
Satd. Flow (prot)	0	1674	0	0	1602	1343	1501	2882	0	1516	1361	0	
Flt Permitted							0.284			0.361			
Satd. Flow (perm)	0	1674	0	0	1602	911	353	2882	0	441	1361	0	
Right Turn on Red			No			No			Yes			Yes	
Satd. Flow (RTOR)								13			18		
Link Speed (k/h)		40			40			40			40		
Link Distance (m)		374.8			112.0			258.8			36.6		
Travel Time (s)		33.7			10.1			23.3	050	0.50	3.3		
Confl. Peds. (#/hr)	329		292	292		329	280		352	352		280	
Confl. Bikes (#/hr)	0.00	4.00	1	0.50	4.00	0.07	0.00	0.00	1	0.04	0.00	4	
Peak Hour Factor	0.63	1.00	0.63	0.50	1.00 2%	0.87	0.88	0.88	0.73	0.94 0%	0.90	0.73	
Heavy Vehicles (%)	0% 0	1% 0	4%	0% 0	2% 0	1% 0	1% 0	3% 0	3% 9	0%	4% 0	0% 0	
Bus Blockages (#/hr)		575	1 0		660		136	433	-				
Adj. Flow (vph)	0	5/5	U	0	000	140	130	433	52	112	290	100	
Shared Lane Traffic (%) Lane Group Flow (vph)	0	575	0	0	660	140	136	485	0	112	390	0	
Enter Blocked Intersection	No	No	No	No	No	No	No	405 No	No	No	No	No	
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right	
Median Width(m)	Lon	0.0	rugin	Lon	0.0	rugiit	Lon	3.0	Tugin	Lon	3.0	rugin	
Link Offset(m)		0.0			0.0			0.0			0.0		
Crosswalk Width(m)		4.8			4.8			4.8			4.8		
Two way Left Turn Lane		1.0			1.0			1.0			1.0		
Headway Factor	1.25	1.16	1.25	1.25	1.21	1.25	1.25	1.16	1.25	1.25	1.16	1.25	
Turning Speed (k/h)	25		15	25		15	25		15	25		15	
Number of Detectors		2			2	1	1	2		1	2		
Detector Template		Thru			Thru	Right	Left	Thru		Left	Thru		
Leading Detector (m)		30.5			30.5	6.1	6.1	30.5		6.1	30.5		
Trailing Detector (m)		0.0			0.0	0.0	0.0	0.0		0.0	0.0		
Detector 1 Position(m)		0.0			0.0	0.0	0.0	0.0		0.0	0.0		
Detector 1 Size(m)		1.8			1.8	6.1	6.1	1.8		6.1	1.8		
Detector 1 Type		CI+Ex			CI+Ex	Cl+Ex	Cl+Ex	CI+Ex		CI+Ex	CI+Ex		
Detector 1 Channel													
Detector 1 Extend (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0		
Detector 1 Queue (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0		
Detector 1 Delay (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0		
Detector 2 Position(m)		28.7			28.7			28.7			28.7		
Detector 2 Size(m)		1.8			1.8			1.8			1.8		

Lane Group EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBI		۶	-	\mathbf{r}	4	←	•	1	1	1	1	Ŧ	~
Detector 2 Channel 0.0 0.0 0.0 0.0 0.0 Detector 2 Extend (s) 0.0 0.0 0.0 0.0 0.0 Tum Type NA NA Parmited Phases 2 6 7 4 3 8 Portected Phases 2 6 6 7 4 3 8 Detector Phase 2 6 6 7 4 3 8 Switch Phase	Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Detector 2 Extend (s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Detector 2 Type		Cl+Ex			CI+Ex			CI+Ex			CI+Ex	
Turn Type NA NA Permitted Phases 2 6 7 A 3 8 Protected Phases 2 6 6 7 4 3 8 Detector Phase 2 6 6 7 4 3 8 Switch Phase 2 6 6 7 4 3 8 Winimum Split (s) 34.0 34.0 34.0 10.0 22.0 6.0 22.0 Minimum Split (s) 54.0% 54.0% 54.0% 11.0% 34.0% 12.0% 35.0% Total Split (s) 54.0% 54.0% 54.0% 11.0% 34.0% 12.0% 35.0% Maximum Green (s) 47.4 47.4 47.4 7.0 28.0 8.0 29.0 10.0 2.0 1.0 2.0 1.0 2.0 1.0 2.0 1.0 2.0 1.0 2.0 1.0 2.0 1.0 2.0 1.0 2.0 1.0 2.0	Detector 2 Channel												
Protected Phases 2 6 7 4 3 8 Permitted Phases 6 4 8 Permitted Phases 6 6 4 8 Detector Phase 2 6 6 7 4 3 8 Switch Phase 2 6 6 7 4 3 8 Switch Phase 2 6 6 7 4 3 8 Switch Phase 2 6 0 26.0 6.0 22.0 6.0 22.0 Minimum Split (s) 34.0 34.0 34.0 10.0 28.0 10.0 28.0 Total Split (s) 54.0% 54.0% 54.0% 54.0% 34.0% 12.0% 35.0% Maximum Green (s) 47.4 47.4 47.4 47.4 07.0 28.0 8.0 22.0 Yellow Time (s) 3.0 3.0 3.0 3.0 4.0 3.0 4.0 3.0 4.0 Last Time Adjust (s) 0.0 0.0 1.0 -1.0 -1.0 -1.0 -1.0 Total Split (s) 54.0% 54.0% 54.0% 54.0% 54.0% 54.0% 34.0% 12.0% 35.0% Maximum Green (s) 47.4 47.4 47.4 47.4 07.0 28.0 8.0 22.0 Yellow Time (s) 3.6 3.6 3.6 3.6 1.0 2.0 1.0 2.0 Last Time Adjust (s) 0.0 0.0 0.0 -1.0 -1.0 -1.0 -1.0 -1.0 Total Last Time (s) 6.6 6 6.6 5.6 3.0 5.0 3.0 5.0 LeadLag Lead Lag Lead Lag Lead Lag Lead Lag Lead Lag Detrive? Vehicle Extension (s) 3.0 3.0 3.0 2.0 3.0 2.0 3.0 Recall Mode C-Max C-Max C-Max None Max None Max Walk Time (s) 7.0 7.0 7.0 7.0 7.0 7.0 Recall Mode C-Max C-Max C-Max None Max None Max Walk Time (s) 7.0 7.0 7.0 7.0 7.0 7.0 Recall Mode 40 40 40 40 40 Act Effct Green (s) 47.4 47.4 47.4 48.4 39.3 29.5 40.7 30.1 Actuated g/C Ratio 0.73 0.87 0.32 0.59 0.56 0.41 0.32 Control Delay 23.4 37.8 18.3 30.1 32.2 22.6 62.3 Queue Delay 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 C C C C C Approach Delay 23.4 37.8 18.3 30.1 32.2 22.6 62.3 LOS C D B C C C E Approach Delay 23.4 37.8 18.3 30.1 32.2 22.6 62.3 LOS C D B C C C E Approach Delay 23.4 37.8 18.3 30.1 32.2 22.6 62.3 LOS C D B C C C E Approach Delay 23.4 37.8 18.3 30.1 32.2 22.6 62.3 LOS C D B C C C E Approach Delay 23.4 37.8 18.3 30.1 32.2 22.6 62.3 LOS C D B C C C E Approach Delay 23.4 37.8 18.3 30.1 32.2 22.6 62.3 LOS C D B C C C E Approach Delay 23.4 37.8 18.3 30.1 32.2 22.6 62.3 LOS C D B C C C E Approach Delay 23.4 37.8 18.3 30.1 32.2 22.6 62.3 LOS C D B C C C E Approach Delay 23.4 37.8 18.3 30.1 32.2 22.6 62.3 LOS C D C D B C C C E Approach Delay 23.4 37.8 18.3 30.1 32.2 22.6 62.3 LOS C D C D B C C C E Approach Delay 23.4 37.8 18.3 30.1 32.2 22.6 62.3 LOS C D D B C C C	Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Permitted Phases 6 4 8 Detector Phase 2 6 6 7 4 3 8 Detector Phase 2 6 6 7 4 3 8 Minimum Spit (s) 34.0 34.0 34.0 10.0 28.0 10.0 28.0 10.0 28.0 10.0 28.0 10.0 28.0 10.0 28.0 10.0 28.0 10.0 28.0 10.0 28.0 10.0 28.0 10.0 28.0 12.0% 35.0 10.0 28.0 12.0% 35.0 10.0 28.0 12.0% 35.0 10.0	Turn Type		NA			NA	Perm	pm+pt	NA		pm+pt	NA	
Detector Phase 2 6 6 7 4 3 8 Switch Phase Minimum Initial (s) 26.0 26.0 26.0 6.0 22.0 6.0 22.0 Minimum Split (s) 34.0 34.0 34.0 10.0 28.0 10.0 28.0 Total Split (s) 54.0% 54.0 54.0 11.0 34.0 12.0% 35.0% Total Split (%) 54.0% 54.0% 64.0% 11.0% 34.0 3.0 3.0 3.0 4.0 3.0 4.0 3.0 4.0 3.0 4.0 3.0 4.0 3.0 4.0 3.0 4.0 3.0 4.0 3.0 4.0 3.0 4.0 3.0 4.0 3.0 4.0 3.0	Protected Phases		2			6		7	4		3	8	
Switch Phase 26.0 26.0 26.0 26.0 22.0 6.0 22.0 Minimum Initial (s) 26.0 26.0 26.0 6.0 22.0 6.0 22.0 Minimum Split (s) 54.0 54.0 54.0% 54.0% 11.0 34.0 12.0 35.0 Total Split (s) 54.0% 54.0% 54.0% 11.0 34.0 12.0 35.0 Total Split (s) 54.0% 54.0% 54.0% 11.0 34.0 12.0 35.0 Total Split (s) 0.0 3.0 3.0 4.0 30.4 40 All-Red Time (s) 3.6 3.6 1.0 2.0 1.0 2.0 Lead Time (s) 6.6 6.6 5.6 3.0 5.0 3.0 5.0 Lead Lag Lead Lead Lag Lead Lag Lead Lag Lead Lag C-Max C-Max C-Max None Max None Max Vehicle Exten	Permitted Phases						6	4			8		
Minimum Initial (s) 26.0 26.0 26.0 6.0 22.0 6.0 22.0 Minimum Split (s) 34.0 34.0 34.0 10.0 28.0 10.0 28.0 Total Split (s) 54.0% 54.0% 54.0% 54.0% 11.0 34.0% 12.0% 35.0% Maximum Green (s) 47.4 47.4 47.4 47.4 7.0 28.0 8.0 29.0 Yellow Time (s) 3.0 3.0 3.0 3.0 4.0 3.0 4.0 3.0 4.0	Detector Phase		2			6	6	7	4		3	8	
Minimum Split (s) 34.0 34.0 34.0 10.0 28.0 10.0 28.0 Total Split (s) 54.0% 54.0% 54.0% 11.0% 34.0 12.0% 35.0% Maximum Green (s) 47.4 47.4 47.4 7.0 28.0 8.0 29.0 Yellow Time (s) 3.0 3.0 3.0 3.0 3.0 4.0 3.0 4.0 All-Red Time (s) 3.6 3.6 3.6 1.0 2.0 1.0 2.0 Lost Time Adjust (s) 0.0 0.0 -1.0 <	Switch Phase												
Total Split (s) 54.0 54.0 54.0 11.0 34.0 12.0 35.0 Total Split (%) 54.0% 54.0% 11.0% 34.0% 12.0% 35.0% Maximum Green (s) 47.4 47.4 47.4 47.4 47.0 28.0 8.0 29.0 Yellow Time (s) 3.0 3.0 3.0 3.0 4.0 3.0 4.0 All-Red Time (s) 3.6 3.6 3.6 10 2.0 1.0 2.0 Lost Time Adjust (s) 0.0 0.0 -1.0 -1.0 -1.0 -1.0 -1.0 Total Lost Time (s) 6.6 6.6 5.6 3.0 3.0 2.0 3.0 Lead-Lag Optimize? Vehicle Extension (s) 3.0 3.0 2.0 3.0 2.0 3.0 Vehicle Extension (s) 7.0 7.0 7.0 7.0 7.0 7.0 7.0 Flash Dont Walk (s) 19.0 19.0 19.0 19.0 15.0 Pedestrian Calls (#hr) 40 40 40 Act Effct Green (s) 47.4 <t< td=""><td>Minimum Initial (s)</td><td></td><td>26.0</td><td></td><td></td><td>26.0</td><td>26.0</td><td>6.0</td><td>22.0</td><td></td><td>6.0</td><td>22.0</td><td></td></t<>	Minimum Initial (s)		26.0			26.0	26.0	6.0	22.0		6.0	22.0	
Total Split (s) 54.0 54.0 54.0 11.0 34.0 12.0 35.0 Total Split (%) 54.0% 54.0% 11.0% 34.0% 12.0% 35.0% Maximum Green (s) 47.4 47.4 47.4 47.4 47.0 28.0 8.0 29.0 Yellow Time (s) 3.0 3.0 3.0 3.0 4.0 3.0 4.0 All-Red Time (s) 3.6 3.6 3.6 10 2.0 1.0 2.0 Lost Time Adjust (s) 0.0 0.0 -1.0 -1.0 -1.0 -1.0 -1.0 Total Lost Time (s) 6.6 6.6 5.6 3.0 3.0 2.0 3.0 Lead-Lag Optimize? Vehicle Extension (s) 3.0 3.0 2.0 3.0 2.0 3.0 Vehicle Extension (s) 7.0 7.0 7.0 7.0 7.0 7.0 7.0 Flash Dont Walk (s) 19.0 19.0 19.0 19.0 15.0 Pedestrian Calls (#hr) 40 40 40 Act Effct Green (s) 47.4 <t< td=""><td>Minimum Split (s)</td><td></td><td>34.0</td><td></td><td></td><td>34.0</td><td>34.0</td><td>10.0</td><td>28.0</td><td></td><td>10.0</td><td>28.0</td><td></td></t<>	Minimum Split (s)		34.0			34.0	34.0	10.0	28.0		10.0	28.0	
Total Split (%) 54.0% 54.0% 54.0% 11.0% 34.0% 12.0% 35.0% Maximum Green (s) 47.4 47.4 47.4 47.4 7.0 28.0 8.0 29.0 Vellow Time (s) 3.0 3.0 3.0 3.0 3.0 4.0 3.0 4.0 All-Red Time (s) 3.6 3.6 3.6 1.0 2.0 1.0 2.0 Lost Time Adjust (s) 0.0 0.0 -1.0 -1.0 -1.0 -1.0 -1.0 -1.0 Total Lost Time (s) 6.6 6.6 5.6 3.0 5.0 3.0 5.0 Lead/Lag Optimize? Lead Lag Lead Lag Lead Lag Vehicle Extension (s) 3.0 7.0 7.0 7.0 7.0 7.0 7.0 Recall Mode C-Max C-Max C-Max None Max Max Walk Time (s) 7.0 7.0 7.0 7.0 7.0 7.0 7.0 Flash Dont Walk (s) 19.0 19.0 19.0 15.0			54.0			54.0	54.0	11.0	34.0		12.0	35.0	
Maximum Green (s) 47.4 47.4 47.4 7.0 28.0 8.0 29.0 Yellow Time (s) 3.0 3.0 3.0 3.0 4.0 3.0 4.0 All-Red Time (s) 3.6 3.6 3.6 1.0 2.0 1.0 2.0 Lost Time Adjust (s) 0.0 0.0 -1.0 -1.0 -1.0 -1.0 -1.0 -1.0 Total Lost Time (s) 6.6 6.6 5.6 3.0 5.0 3.0 5.0 Lead/Lag Optimize? Lead Lag Lead Max None Max Valick Extension (s) 3.0 3.0 3.0 2.0 3.0 2.0 3.0 Recall Mode C-Max C-Max C-Max None Max None Max Walk Time (s) 7.0 7.0 7.0 7.0 7.0 16.1 15.0 15.0 Pedestrian Calls (#hr) 40 40 40 40 40 40 40 40 40 40 40 40 40 40 40 40			54.0%			54.0%	54.0%	11.0%	34.0%		12.0%	35.0%	
Yellow Time (s) 3.0 3.0 3.0 3.0 4.0 3.0 4.0 All-Red Time (s) 3.6 3.6 3.6 3.6 1.0 2.0 1.0 2.0 Lost Time Adjust (s) 0.0 0.0 -1.0 -1.0 -1.0 -1.0 -1.0 Total Lost Time (s) 6.6 6.6 5.6 3.0 5.0 3.0 5.0 Lead/Lag Lead Lag Lead Lag Lead Lag Vehicle Extension (s) 3.0 3.0 2.0 3.0 2.0 3.0 Recall Mode C-Max C-Max C-Max None Max None Max Walk Time (s) 7.0			47.4			47.4	47.4	7.0	28.0		8.0	29.0	
All-Red Time (s) 3.6 3.6 3.6 1.0 2.0 1.0 2.0 Lost Time Adjust (s) 0.0 0.0 -1.0 Read Lag Lead/Lag Lead/Lag Lead/Lag Lead/Lag Lag						3.0	3.0	3.0	4.0		3.0	4.0	
Lost Time Adjust (s) 0.0 0.0 -1.0 -1.0 -1.0 -1.0 -1.0 -1.0 -1.0 Total Lost Time (s) 6.6 6.6 5.6 3.0 5.0 3.0 5.0 Lead/Lag Lead Lag Lag <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>													
Total Lost Time (s) 6.6 6.6 5.6 3.0 5.0 3.0 5.0 Lead/Lag Optimize? Lead Lag Lead Lag Lead Lag Vehicle Extension (s) 3.0 3.0 3.0 2.0 3.0 2.0 3.0 Recall Mode C-Max C-Max C-Max None Max None Max Walk Time (s) 7.0													
Lead/Lag Lead Lag Lead Lag Lead-Lag Optimize?													
Lead-Lag Optimize? Vehicle Extension (s) 3.0 3.0 3.0 3.0 2.0 3.0 2.0 3.0 Recall Mode C-Max C-Max C-Max None Max None Max Walk Time (s) 7.0 7.0 7.0 7.0 7.0 Flash Dont Walk (s) 19.0 19.0 15.0 15.0 Pedestrian Calls (#/hr) 40 40 40 40 40 40 Act Effct Green (s) 47.4 47.4 48.4 39.3 29.5 40.7 30.1 Actuated gC Ratio 0.47 0.47 0.47 0.48 0.39 0.30 0.41 0.30 v/c Ratio 0.73 0.87 0.32 0.59 0.56 0.41 0.92 Control Delay 23.4 37.8 18.3 30.1 32.2 22.6 62.3 Queue Delay 0.0 0.0 0.0 0.0 0.0 0.0 0.0 Total Delay 23.4 37.8 18.3 30.1 32.2 22.6 62.3 LOS C D B C C C E Approach Delay 23.4 34.4 31.7 53.4 Approach LOS C C C D D B C C C E Approach LOS C C D D D C C C E Approach LOS C C C C D C D Intersection Summary Area Type: CBD Cycle Length: 100 Actuated Cycle Length: 100 Offset: 20 (20%), Referenced to phase 2:EBT and 6:WBT, Start of Green Natural Cycle: 90 Control Type: Actuated-Coordinated Maximum V/c Ratio 0.92 Intersection Signal Delay: 35.0 Intersection LOS: D Intersection Capacity Ultization 81.0% ICU Level of Service D													
Vehicle Extension (s) 3.0 3.0 3.0 2.0 3.0 2.0 3.0 Recall Mode C-Max C-Max C-Max None Max Walk Time (s) 7.0 7.0 7.0 7.0 7.0 Flash Dont Walk (s) 19.0 19.0 19.0 15.0 15.0 Pedestrian Calls (#/hr) 40 40 40 40 40 40 Act Effct Green (s) 47.4 47.4 48.4 39.3 29.5 40.7 30.1 Actuated g/C Ratio 0.47 0.47 0.48 0.39 0.30 0.41 0.30 V/c Ratio 0.73 0.87 0.32 0.59 0.66 0.41 0.92 Control Delay 23.4 37.8 18.3 30.1 32.2 22.6 62.3 Queue Delay 0.0 0.0 0.0 0.0 0.0 0.0 0.0 10.0 10.1 Total Delay 23.4 37.8 18.3									5			3	
Recall Mode C-Max C-Max C-Max None Max None Max Walk Time (s) 7.0<			3.0			3.0	3.0	20	3.0		20	3.0	
Walk Time (s) 7.0 7.0 7.0 7.0 7.0 7.0 Flash Dont Walk (s) 19.0 19.0 19.0 15.0 15.0 Pedestrian Calls (#/hr) 40 40 40 40 40 Act Effet Green (s) 47.4 47.4 48.4 39.3 29.5 40.7 30.1 Actuated g/C Ratio 0.47 0.47 0.48 0.39 0.30 0.41 0.30 v/c Ratio 0.73 0.87 0.32 0.59 0.56 0.41 0.92 Control Delay 23.4 37.8 18.3 30.1 32.2 22.6 62.3 Queue Delay 0.0 <													
Flash Dont Walk (s) 19.0 19.0 15.0 15.0 Pedestrian Calls (#/hr) 40 40 40 40 40 Act Effct Green (s) 47.4 47.4 48.4 39.3 29.5 40.7 30.1 Actuated g/C Ratio 0.47 0.47 0.48 0.39 0.30 0.41 0.92 Control Delay 23.4 37.8 18.3 30.1 32.2 22.6 62.3 Queue Delay 0.0 0.0 0.0 0.0 0.0 0.0 0.0 Queue Delay 0.0 0.0 0.0 0.0 0.0 0.0 0.0 Queue Delay 0.0 0.0 0.0 0.0 0.0 0.0 0.0 Queue Delay 23.4 37.8 18.3 30.1 32.2 22.6 62.3 LOS C D B C C E Approach LOS C C D Intersection Summary Z3.4 34.4 31.7 53.4 Approach LOS C D D C C <td></td>													
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Act Effct Green (s) 47.4 47.4 48.4 39.3 29.5 40.7 30.1 Actuated g/C Ratio 0.47 0.47 0.48 0.39 0.30 0.41 0.30 v/c Ratio 0.73 0.87 0.32 0.59 0.56 0.41 0.92 Control Delay 23.4 37.8 18.3 30.1 32.2 22.6 62.3 Queue Delay 0.0 0.0 0.0 0.0 0.0 0.0 0.0 Total Delay 23.4 37.8 18.3 30.1 32.2 22.6 62.3 LOS C D B C C E Approach Delay 23.4 34.4 31.7 53.4 Approach LOS C C C D Intersection Summary Z C C C D Actuated Cycle Length: 100 Offset: 20 (20%), Referenced to phase 2:EBT and 6:WBT, Start of Green Valued Cycle: 90 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.92 Intersection LOS: D Intersection LOS: D Intersection LOS: D													
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vic Ratio 0.73 0.87 0.32 0.59 0.56 0.41 0.92 Control Delay 23.4 37.8 18.3 30.1 32.2 22.6 62.3 Queue Delay 0.0 0.0 0.0 0.0 0.0 0.0 0.0 Total Delay 23.4 37.8 18.3 30.1 32.2 22.6 62.3 LOS C D B C C C E Approach Delay 23.4 34.4 31.7 53.4 Approach LOS C C C C D Intersection Summary Area Type: CBD Cycle Length: 100 Actuated Cycle Length: 100 Offset: 20 (20%), Referenced to phase 2:EBT and 6:WBT, Start of Green Natural Cycle: 90 Control Type: Actuated-Coordinated Maximum V/c Ratio: 0.92 Intersection Capacity Ultization 81.0% ICU Level of Service D	(/												
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Area Type: CBD Cycle Length: 100 Actuated Cycle Length: 100 Offset: 20 (20%), Referenced to phase 2:EBT and 6:WBT, Start of Green Natural Cycle: 90 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.92 Intersection Signal Delay: 35.0 Intersection Capacity Utilization 81.0%	Intersection Summary												
Cycle Length: 100 Actuated Cycle Length: 100 Offset: 20 (20%), Referenced to phase 2:EBT and 6:WBT, Start of Green Natural Cycle: 90 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.92 Intersection Signal Delay: 35.0 Intersection Capacity Utilization 81.0% ICU Level of Service D		BD											
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Offset: 20 (20%), Referenced to phase 2:EBT and 6:WBT, Start of Green Natural Cycle: 90 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.92 Intersection Signal Delay: 35.0 Intersection LOS: D Intersection Capacity Utilization 81.0% ICU Level of Service D													
Natural Cycle: 90 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.92 Intersection Signal Delay: 35.0 Intersection Capacity Utilization 81.0% ICU Level of Service D		to phase 2	2:EBT an	d 6:WBT.	Start of	Green							
Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.92 Intersection Signal Delay: 35.0 Intersection Capacity Utilization 81.0% ICU Level of Service D	(<i>p</i>												
Maximum v/c Ratio: 0.92 Intersection LOS: D Intersection Signal Delay: 35.0 Intersection LOS: D Intersection Capacity Utilization 81.0% ICU Level of Service D		dinated											
Intersection Signal Delay: 35.0 Intersection LOS: D Intersection Capacity Utilization 81.0% ICU Level of Service D													
Intersection Capacity Utilization 81.0% ICU Level of Service D		.0			1	ntersectio	n LOS: D						
								D					
						2.9.20.01							

→ø2 (R)	\ \	Ø3	1 ₀₄	
54 s	12 s		34 s	
Ø6 (R)	•	Ø7	↓ Ø8	
54 s	11s		35 s	

Lanes, Volumes, Timings 2: Ruttan Street & Bloor Street West

<Existing w/ Bikeway Volumes> PM Peak 02/16/2021

Ine Configurations Image: Configurations <t< th=""><th></th><th>-</th><th>\mathbf{r}</th><th>4</th><th>+</th><th>•</th><th>1</th><th></th></t<>		-	\mathbf{r}	4	+	•	1	
affic Volume (vph) 605 37 18 699 53 23 ture Volume (vph) 605 37 18 699 53 23 eal Flow (vphpl) 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1000 1000 1.00 <th>Lane Group</th> <th>EBT</th> <th>EBR</th> <th>WBL</th> <th>WBT</th> <th>NBL</th> <th>NBR</th> <th></th>	Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	
affic Volume (vph) 605 37 18 699 53 23 ture Volume (vph) 605 37 18 699 53 23 eal Flow (vphpl) 1900 1900 1900 1900 1900 1900 1900 new Vidth (m) 3.5 3.5 3.5 3.0 3.0 3.0 new Vidth (m) 3.5 3.5 3.5 3.5 3.0 3.0 new Vidth (m) 3.5 3.5 3.5 3.0 3.0 3.0 new Vidth (m) 3.5 3.5 3.5 3.5 3.5 3.0 3.0 new Vidth (m) 1.00 1.00 1.00 1.00 1.00 1.00 1.00 to rescription 1827 0 0 1840 1611 0 nk Distance (m) 69.7 374.8 79.4 30 nk No	Lane Configurations	eî			ę	Y		
Beak Flow (vphpl) 1900 1000 1000 100	Traffic Volume (vph)		37	18	699	53	23	
me Width (m) 3.5 3.5 3.5 3.5 3.0 3.0 nne Util. Factor 1.00	Future Volume (vph)	605	37	18	699	53	23	
nue Util. Factor 1.00 1.00 1.00 1.00 1.00 1.00 t 0.992 0.959 0.959 t Protected 0.999 0.966 tt. Flow (port) 1827 0 0 1840 1611 0 t Protected 0.999 0.966 0.999 0.966 0 1840 1611 0 t Permitted 0.999 0.966 0 1840 1611 0 nk Speed (k/h) 40 40 30 nk hk Distance (m) 69.7 374.8 79.4 avel Time (s) 6.3 33.7 9.5 0.95	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
t 0.992 0.959 Protected 0.999 0.966 atd. Flow (prot) 1827 0 0 1840 1611 0 Hermitted 0.999 0.966 atd. Flow (perm) 1827 0 0 1840 1611 0 nk Speed (k/h) 40 40 30 nk Distance (m) 69.7 374.8 79.4 avel Time (s) 6.3 33.7 9.5 sak Hour Factor 0.95 0.95 0.95 0.95 0.95 0.95 gi, Flow (yph) 637 39 19 736 56 24 hared Lane Traffic (%) me Group Flow (yph) 676 0 0 755 80 0 nter Blocked Intersection No No No No No No ne Alignment Left Right Left Left Left Right edian Width(m) 0.0 0.0 3.0 nk Offset(m) 0.0 0.0 0.0 rosswalk Width(m) 4.8 4.8 4.8 wo way Left Turn Lane sadway Factor 1.01 1.01 1.01 1.01 1.09 1.09 uming Speed (k/h) 14 24 24 14 gn Control Free Free Stop tersection Summary tersection Summary Etersection Summary Etersection Summary ICU Level of Service B	Lane Width (m)	3.5	3.5	3.5	3.5	3.0	3.0	
t Protected 0.999 0.966 tati. Flow (port) 1827 0 0 1840 1611 0 t Permitted 0.999 0.966 t Permitted 0.999 0.966 t Permitted 0.999 0.966 t Fermitted 0.999 0.966 t Fermitted 0.999 0.966 tati. Flow (perm) 1827 0 0 1840 1611 0 nk Speed (k/n) 40 40 30 the Distance (m) 69.7 374.8 79.4 avel Time (s) 6.3 33.7 9.5 sak Hour Factor 0.95 0.95 0.95 0.95 0.95 0.95 gi. Flow (vph) 637 39 19 736 56 24 tarred Lane Traffic (%) the Group Flow (vph) 676 0 0 755 80 0 nter Blocked Intersection No No No No No No ther Blocked Intersection No No No No No No ther Blocked Intersection No No No No No No the Algoment Left Right Left Left Left Right edian Width(m) 0.0 0.0 3.0 tho Offset(m) 0.0 0.0 tosswalk Width(m) 4.8 4.8 4.8 wo way Left Turn Lane sadway Factor 1.01 1.01 1.01 1.01 1.09 1.09 trining Speed (k/h) 14 24 24 14 gn Control Free Free Stop tersection Summary tersection Summary tersection Sapacity Utilization 62.3% ICU Level of Service B	Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
atd. Flow (prot) 1827 0 0 1840 1611 0 th Permitted 0.999 0.966 0.999 0.966 0.999 0.966 atd. Flow (perm) 1827 0 0 1840 1611 0 hk Speed (k/h) 40 30 1611 0 0 1840 1611 0 nk Speed (k/h) 40 30 33.7 9.5 24 5 5 5 6 24 1	Frt	0.992				0.959		
t Permitted 0.999 0.966 tati. Flow (perm) 1827 0 0 1840 1611 0 nk Speed (k/h) 40 40 30 nk Distance (m) 69.7 374.8 79.4 avel Time (s) 6.3 33.7 9.5 sak Hour Factor 0.95 0.95 0.95 0.95 0.95 0.95 ji. Flow (vph) 637 39 19 736 56 24 mared Lane Traffic (%) mared Lane Traffic (%) mared Lane Traffic (%) ane Alignment Left Right Left Left Left Right edian Width(m) 0.0 0.0 3.0 nk Offset(m) 0.0 0.0 0.0 nk Offset(m) 0.0 0.0 0.0 nk Offset(m) 0.0 0.0 0.0 rosswalk Width(m) 4.8 4.8 4.8 wo way Left Turn Lane sadway Factor 1.01 1.01 1.01 1.01 1.09 1.09 uming Speed (k/h) 14 24 24 14 gn Control Free Free Stop tersection Summary tersection Capacity Utilization 62.3% ICU Level of Service B	Flt Protected				0.999	0.966		
atd. Flow (perm) 1827 0 0 1840 1611 0 nk Speed (k/h) 40 40 30	Satd. Flow (prot)	1827	0	0	1840	1611	0	
nk Speed (k/h) 40 40 30 nk Distance (m) 69.7 374.8 79.4 avel Time (s) 6.3 33.7 9.5 sak Hour Factor 0.95 0.95 0.95 0.95 0.95 0.95 dj. Flow (vph) 637 39 19 736 56 24 mared Lane Traffic (%) me Group Flow (vph) 676 0 0 755 80 0 nter Blocked Intersection No No No No No No me Alignment Left Right Left Left Left Right edian Width(m) 0.0 0.0 3.0 nto K Offset(m) 0.0 0.0 rosswalk Width(m) 4.8 4.8 4.8 wo way Left Turn Lane sadway Factor 1.01 1.01 1.01 1.01 1.09 1.09 ming Speed (k/h) 14 24 24 14 gn Control Free Free Stop tersection Summary rea Type: Other ontrol Type: Unsignalized tersection Capacity Utilization 62.3% ICU Level of Service B	Flt Permitted				0.999	0.966		
nk Distance (m) 69.7 374.8 79.4 avel Time (s) 6.3 33.7 9.5 avel Time (s) 6.3 33.7 9.5 bak Hour Factor 0.95 0.95 0.95 0.95 0.95 part Hour Factor 0.95 0.95 0.95 0.95 0.95 0.95 pred Lam Traffic (%) mared Lam Traffic (%) mared Lam Traffic (%) mared Lam Traffic (%) no	Satd. Flow (perm)	1827	0	0	1840	1611	0	
avel Time (s) 6.3 33.7 9.5 pack Hour Factor 0.95<	Link Speed (k/h)	40			40	30		
sak Hour Factor 0.95	Link Distance (m)	69.7			374.8	79.4		
dj. Flow (vph) 637 39 19 736 56 24 nared Lane Traffic (%)	Travel Time (s)	6.3			33.7	9.5		
ared Lane Traffic (%) ared Lane Traffic (%) ane Group Flow (vph) 676 0 0 755 80 0 nter Blocked Intersection No No No No No No No ane Alignment Left Right Left Left Left Right edian Width(m) 0.0 0.0 0.0 3.0 nk Offset(m) 0.0 0.0 0.0 0.0 osswalk Width(m) 4.8 4.8 4.8 wo way Left Turn Lane sadway Factor 1.01 1.01 1.01 1.09 1.09 uming Speed (k/h) 14 24 24 14 gn Control Free Free Stop tersection Summary Eastrop: Other Other ontrol Type: Unsignalized tersection Capacity Utilization 62.3% ICU Level of Service B	Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
nne Group Flow (vph) 676 0 755 80 0 nter Blocked Intersection No No No No No No No ane Alignment Left Right Left Left Left Right edian Width(m) 0.0 0.0 0.0 3.0 nk Offset(m) 0.0 0.0 0.0 0.0 rosswalk Width(m) 4.8 4.8 4.8 we availeft Turn Lane adway Factor 1.01 1.01 1.01 1.09 1.09 uming Speed (k/h) 14 24 24 14 gn Control Free Free Stop tersection Summary Eastrope: Other ontrol Type: Unsignalized tersection Capacity Utilization 62.3% ICU Level of Service B Service B	Adj. Flow (vph)	637	39	19	736	56	24	
Iter Blocked Intersection No No <thn< td=""><td>Shared Lane Traffic (%)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></thn<>	Shared Lane Traffic (%)							
Ine Alignment Left Right Left Left Right edian Width(m) 0.0 0.0 3.0 nk Offset(m) 0.0 0.0 0.0 orosswalk Width(m) 4.8 4.8 4.8 ow avy Left Turn Lane	Lane Group Flow (vph)	676	0	0	755	80	0	
edian Width(m) 0.0 0.0 3.0 nk Offset(m) 0.0 0.0 0.0 rosswalk Width(m) 4.8 4.8 4.8 oway Left Turn Lane	Enter Blocked Intersection	No	No	No	No	No	No	
nk Offset(m) 0.0 0.0 0.0 rosswalk Width(m) 4.8 4.8 4.8 wo way Left Turn Lane aadway Factor 1.01 1.01 1.01 1.09 1.09 aming Speed (k/h) 14 24 24 14 14 24 14 14 14 24 14	Lane Alignment	Left	Right	Left	Left	Left	Right	
vosswalk Width(m) 4.8 4.8 4.8 wo way Left Turn Lane	Median Width(m)	0.0	J		0.0	3.0	Ū	
wo way Left Turn Lane	Link Offset(m)	0.0			0.0	0.0		
eadway Factor 1.01 1.01 1.01 1.01 1.09 1.09 uming Speed (k/h) 14 24 24 14 gn Control Free Free Stop tersection Summary rea Type: Other ontrol Type: Unsignalized tersection Capacity Utilization 62.3% ICU Level of Service B	Crosswalk Width(m)	4.8			4.8	4.8		
Jaming Speed (k/h) 14 24 24 14 gn Control Free Free Stop tersection Summary Vertex Vertex Vertex rea Type: Other Other Other Vertex	Two way Left Turn Lane							
gn Control Free Free Stop tersection Summary rea Type: Other ontrol Type: Unsignalized tersection Capacity Utilization 62.3% ICU Level of Service B	Headway Factor	1.01	1.01	1.01	1.01	1.09	1.09	
gn Control Free Free Stop tersection Summary rea Type: Other ontrol Type: Unsignalized tersection Capacity Utilization 62.3% ICU Level of Service B	Turning Speed (k/h)		14	24		24	14	
ea Type: Other ontrol Type: Unsignalized tersection Capacity Utilization 62.3% ICU Level of Service B	Sign Control	Free			Free	Stop		
ontrol Type: Unsignalized tersection Capacity Utilization 62.3% ICU Level of Service B	Intersection Summary							
tersection Capacity Utilization 62.3% ICU Level of Service B	Area Type:	Other						
	Control Type: Unsignalized							
nalysis Period (min) 15	Intersection Capacity Utilizat	tion 62.3%			IC	CU Level of	of Service	в
	Analysis Period (min) 15							

HCM Unsignalized Intersection Capacity Analysis 2: Ruttan Street & Bloor Street West

<Existing w/ Bikeway Volumes> PM Peak 02/16/2021

	→	$\mathbf{\hat{v}}$	4	+	•	1
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	¢Î,			ę	Y	
Traffic Volume (veh/h)	605	37	18	699	53	23
Future Volume (Veh/h)	605	37	18	699	53	23
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	637	39	19	736	56	24
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	70			375		
pX, platoon unblocked			0.83		0.80	0.83
vC, conflicting volume			676		1430	656
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			512		944	489
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		75	95
cM capacity (veh/h)			878		227	483
Direction. Lane #	EB 1	WB 1	NB 1			
Volume Total	676	755	80			
Volume Left	0	19	56			
Volume Right	39	0	24			
cSH	1700	878	270			
Volume to Capacity	0.40	0.02	0.30			
Queue Length 95th (m)	0.0	0.5	9.1			
Control Delay (s)	0.0	0.6	23.9			
Lane LOS	0.0	0.0 A	20.0 C			
Approach Delay (s)	0.0	0.6	23.9			
Approach LOS	0.0	0.0	20.0 C			
			0			
Intersection Summary						
Average Delay			1.6			(0 ·
Intersection Capacity Utilization	ation		62.3%	IC	U Level o	of Service
Analysis Period (min)			15			

221-225 Sterling Road Transportation Impact Study

Synchro 10 Report Page 3 221-225 Sterling Road Transportation Impact Study

3: Sterling Road/Sy												,
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SB
Lane Configurations	<u>۳</u>	↑			1 +		<u>۳</u>	4		٦.		ĩ
Traffic Volume (vph)	145	460	0	0	650	102	83	99	20	162	0	22
Future Volume (vph)	145	460	0	0	650	102	83	99	20	162	0	22
ldeal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	190
Lane Width (m)	3.3	3.3	3.0	3.0	4.2	3.0	3.0	3.5	3.0	3.0	3.5	3.
Storage Length (m)	27.5		0.0	0.0		0.0	0.0		0.0	0.0		0.
Storage Lanes	1		0	0		0	1		0	1		
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.0
Ped Bike Factor					0.95			0.91		0.83		0.8
Frt					0.982			0.968				0.85
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1646	1818	0	0	1843	0	1685	1651	0	1668	0	140
Flt Permitted	0.094						0.950			0.950		
Satd. Flow (perm)	163	1818	0	0	1843	0	1685	1651	0	1381	0	114
Right Turn on Red			Yes			Yes			No			N
Satd. Flow (RTOR)					10							
Link Speed (k/h)		40			40			30			40	
Link Distance (m)		98.8			69.7			91.9			175.2	
Travel Time (s)		8.9			6.3			11.0			15.8	
Confl. Peds. (#/hr)	155	0.0	58	58	0.0	155		11.0	85	85	10.0	6
Confl. Bikes (#/hr)	100		50	50		100			00	00		
Peak Hour Factor	1.00	1.00	1.00	0.90	1.00	1.00	0.83	0.83	0.63	0.79	0.95	0.8
Heavy Vehicles (%)	6%	1%	0%	0.50	2%	2%	0.00	0.00	0.00	1%	0.00	49
Bus Blockages (#/hr)	0	0	0	0	2 /0	2 /0	0	0	0	0	2	
Adj. Flow (vph)	145	460	0	0	650	102	100	119	32	205	0	26
Shared Lane Traffic (%)	145	400	0	0	000	102	100	113	JZ	205	U	20
Lane Group Flow (vph)	145	460	0	0	752	0	100	151	0	205	0	26
Enter Blocked Intersection	No	400 No	No	No	No	No	No	No	No	No	No	N
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Righ
Median Width(m)	Leit	3.3	Right	Leit	3.3	Right	Leit	3.0	Right	Leit	3.0	Riyi
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
		4.0			4.0			4.0			4.0	
Two way Left Turn Lane	1.04	1.04	1.09	1.09	0.92	1.09	1.09	1.01	1.09	1.09	1.01	1.1
Headway Factor	25	1.04	1.09	25	0.92	1.09	25	1.01	1.09	25	1.01	1.1
Turning Speed (k/h)	25	2	15	20	2	15	25	2	10	25		F
Number of Detectors												
Detector Template	Left	Thru			Thru		Left	Thru		Left		Righ
Leading Detector (m)	6.1	30.5			30.5		6.1	30.5		6.1		6.
Trailing Detector (m)	0.0	0.0			0.0		0.0	0.0		0.0		0.
Detector 1 Position(m)	0.0	0.0			0.0		0.0	0.0		0.0		0.
Detector 1 Size(m)	6.1	1.8			1.8		6.1	1.8		6.1		6.
Detector 1 Type	CI+Ex	CI+Ex			CI+Ex		CI+Ex	CI+Ex		CI+Ex		CI+E
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0		0.0		0.
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0		0.0		0.
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0		0.0		0.
Detector 2 Position(m)		28.7			28.7			28.7				
Detector 2 Size(m)		1.8			1.8			1.8				

Synchro 10 Report Page 5

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	▼ SBT	SB
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex				
Detector 2 Channel		0. 2.			U. LA			0. 2.4				
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	pm+pt	NA			NA		Split	NA		Prot		pt+c
Protected Phases	5	2			6		4	4		3		3
Permitted Phases	2											
Detector Phase	5	2			6		4	4		3		3
Switch Phase												
Minimum Initial (s)	6.0	21.0			21.0		7.0	7.0		19.0		
Minimum Split (s)	10.0	29.0			29.0		16.0	16.0		27.0		
Total Split (s)	11.0	57.0			46.0		16.0	16.0		27.0		
Total Split (%)	11.0%	57.0%			46.0%		16.0%	16.0%		27.0%		
Maximum Green (s)	7.0	49.3			38.3		9.0	9.0		20.0		
Yellow Time (s)	3.0	3.0			3.0		4.0	4.0		4.0		
All-Red Time (s)	1.0	4.7			4.7		3.0	3.0		3.0		
Lost Time Adjust (s)	-1.0	-1.5			-3.0		-1.0	-1.0		-1.0		
Total Lost Time (s)	3.0	6.2			4.7		6.0	6.0		6.0		
Lead/Lag	Lead				Lag		Lag	Lag		Lead		
Lead-Lag Optimize?					Ť		, in the second s	, in the second s				
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0		
Recall Mode	Max	C-Max			C-Max		None	None		None		
Walk Time (s)		7.0			7.0					8.0		
Flash Dont Walk (s)		14.0			14.0					12.0		
Pedestrian Calls (#/hr)		36			36					36		
Act Effct Green (s)	54.4	51.2			41.7		10.0	10.0		20.6		25
Actuated g/C Ratio	0.54	0.51			0.42		0.10	0.10		0.21		0.2
v/c Ratio	0.70	0.49			0.97		0.60	0.92		0.60		0.7
Control Delay	34.8	18.3			39.6		58.6	97.1		44.0		37
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0		0
Total Delay	34.8	18.3			39.6		58.6	97.1		44.0		37
LOS	С	В			D		E	F		D		
Approach Delay		22.3			39.6			81.8			40.1	
Approach LOS		С			D			F			D	
Intersection Summary												
Area Type:	Other											
Cycle Length: 100	•											
Actuated Cycle Length: 100												
Offset: 64 (64%), Referenc	eu to pnase	Z:EBIL a	na e:wB	i, Start o	Green							
Natural Cycle: 95	a adda a t - t											
Control Type: Actuated-Co	ordinated											
Maximum v/c Ratio: 0.97	0.0				4 4 ¹	100.0						
Intersection Signal Delay: 3					tersection		D					
Intersection Capacity Utiliza	ation 79.8%				CU Level o	T Service	e D					

Splits and Phases: 3: Sterling Road/Symington Avenue & Bloor Street West

→ _{Ø2 (R)}	∞ _{Ø3}	↑ Ø4
57 s	27 s	16 s
11 s 46 s		

Lanes, Volumes, Timings 4: Dundas Street West & Bloor Street West							<existing bikeway="" volumes="" w=""> PM Peak 02/16/2021</existing>						
۶	-	\mathbf{r}	4	+	•	•	Ť	1	1	ţ	4		
EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF		
	↑	1	ሻ	•	1		ፈቀኩ			4î»			
0	510	138	120	750	211	0	856	140	10	489	36		
0	510	138	120	750	211	0	856	140	10	489	36		
1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
3.0	3.4	3.0	3.0	3.3	3.0	3.0	3.5	3.0	3.0	3.5	3.0		
0.0		17.5	26.4		31.0	0.0		0.0	0.0		0.0		
0		1	1		1	0		0	0		(
7.5			7.5			7.5			7.5				
1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	0.91	0.95	0.95	0.9		
		0.77	0.89		0.64		0.92			0.95			
		0.850			0.850		0.980			0.987			
			0.950							0.999			
0	1655	1492	1685	1743	1422	0	4507	0	0	3136	(
			0.950							0.914			
0	1655	1155	1505	1743	916	0	4507	0	0	2863	(
		Yes			Yes			Yes			Yes		
		109			109		33			11			
	40			40						40			
	75.1			318.0						139.1			
534	0.0	209	209	20.0	534	429		517	517	.2.0	429		
					1			1					
0.79	1.00		0.88	1.00	0.88	0.25	0.91	-	0.70	0.91	0.69		
											0%		
					0					0	(
Ű		Ŭ	Ű	Ű	Ŭ	Ű	, in the second se	Ű	Ű	, in the second s			
0		173	136	750	240	0	941	144	14	537	52		
Ū	010	110	100	100	210	U	041			001	01		
0	510	173	136	750	240	0	1085	0	0	603	(
											No		
											Righ		
Lon		rugite	Lon		rugin	Lon		rugitt	Lon		rugn		
	7.0			4.0			4.0			4.0			
1 09	1 18	1 09	1 09	1 09	1.09	1 09	1.01	1 09	1 09	1.01	1.09		
	1.10			1.00			1.01			1.01	1.00		
25	2			2			2	15		2	1		
	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex			
				OITEX		OITEX	OITEX		OITEX	UITEX			
	OFER												
		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0			
	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0			
		0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0		0.0 0.0 0.0	0.0 0.0 0.0			
	est & E EBL 0 1900 3.0 0.0 0 7.5 1.00 0	EBL EBL EBT 0 510 0 1900 1900 3.0 3.4 0.0 7.5 1.00 1.00 0 1655 0 1655 0 1655 40 75.1 0 1655 40 75.1 0.79 1.00 0 0 0 1655 40 75.1 0.79 1.00 0 0 0 510 0 534 0.79 1.00 0 0 0 510 0 510 0 510 0.0 0.4.8 1.09 1.18 3.0 0.0	EBL EBT EBR 0 510 138 0 510 138 100 510 138 100 1900 1900 3.0 3.4 3.0 0 11.00 1.00 1.00 1.00 1.01 0 1655 1492 0 1655 1492 0 1655 1492 0 1655 1492 0 1655 1155 Yes 109 40 75.1 6.8 534 534 209 3 0.79 1.00 0.80 0% 1% 1% 0 0 0 0 510 173 0 510 173 0 510 173 0 510 173 0 515 15 10 1.18 1.09	A Bloor Street West EBL EBT EBR WBL 0 510 138 120 0 510 138 120 1900 1900 1900 1900 3.0 3.4 3.0 3.0 0 117.5 26.4 0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0 1655 1492 1685 0 1655 1155 1505 0 1655 1155 1505 0 1655 1155 1505 0 1655 1155 1505 0 1655 1155 1505 0 1655 1155 1505 0 1655 1157 1505 0 100 0.80 0.88 0% 1% 1% 9% 0 0 0 0 0	EBL EBT EBR WBL WBT 0 510 138 120 750 0 510 138 120 750 1900 1900 1900 1900 1900 3.0 3.4 3.0 3.0 3.3 0.0 17.5 26.4 0 0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0 1655 1492 1685 1743 0 0 1655 1155 1505 1743 0 0 1655 1155 1505 1743 0 0 0.88 28.6 28.6 534 209 209 3 3 0.79 1.00 0.80 0.88 1.00 0% 1% 1% 0% 2% 0 0 0 0 8 0.79 1	EBL EBT EBR WBL WBT WBR 0 510 138 120 750 211 1 0 510 138 120 750 211 1900 1900 1900 1900 1900 1900 1900 3.0 3.4 3.0 3.0 3.3 3.0 0.0 1.1 1 11 7.5 7.5 7.5 1.00	Best & Bloor Street West EBL EBT EBR WBL WBT WBR NBL 0 510 138 120 750 211 0 0 510 138 120 750 211 0 1900 1900 1900 1900 1900 1900 1900 3.0 3.4 3.0 3.0 3.3 3.0 3.0 0 11 1 1 0 7.5 7.5 1.00 1.00 1.00 1.00 1.00 0.91 0.64 0.77 0.89 0.64 0.850 0.850 0 0 1655 1155 1505 0.75 1.00 0.0 0 1655 1155 1505 1743 916 0 0 1655 1155 1505 1743 916 0 0.75.1 318.0 6.8 28.6 534 429 3	Best & Bloor Street West EBL EBT EBR WBL WBT WBR NBL NBT 0 510 138 120 750 211 0 856 1900 1900 1900 1900 1900 1900 1900 1900 3.0 3.4 3.0 3.0 3.3 3.0 3.0 3.5 0.0 17.5 26.4 31.0 0.0 0 0 1 1 0 7.5 7.5 7.5 7.5 7.5 0.91	Est & Bloor Street West WBT WBR NBL NBT NBR EBL EBT EBR WBL WBT WBR NBL NBT NBR 0 510 138 120 750 211 0 856 140 1900	est & Bloor Street West EBL EBT EBR WBL WBT WBR NBL NBT NBR SEL	Bior Street West 02/ EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBT 1 1 1 1 0 856 140 10 489 0 510 138 120 750 211 0 856 140 10 489 1900 190 190 190 191		

Synchro 10 Report Page 7 Lanes, Volumes, Timings 4: Dundas Street West & Bloor Street West

<Existing w/ Bikeway Volumes> PM Peak 02/16/2021

Lane Group	Ø1	Ø5
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (m)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Fit Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Bus Blockages (#/hr)		
Parking (#/hr)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s) Detector 2 Position(m)		

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ane Group	EBL EB	T EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SB
Detector 2 Size(m)	1	8		1.8			1.8			1.8	
Detector 2 Type	CI+E			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel											
Detector 2 Extend (s)	0	0		0.0			0.0			0.0	
Furn Type	N		Prot	NA	Perm		NA		Perm	NA	
Protected Phases		4	3	8			2			6	
Permitted Phases		4			8	2			6		
Detector Phase		4 4	3	8	8	2	2		6	6	
Switch Phase			Ű	Ű	, in the second se	-	-		Ŭ	Ű	
Minimum Initial (s)	26	0 26.0	7.0	26.0	26.0	25.0	25.0		25.0	25.0	
Minimum Split (s)	32		11.0	32.3	32.3	31.0	31.0		31.0	31.0	
Fotal Split (s)	40		12.0	52.0	52.0	33.0	33.0		33.0	33.0	
Fotal Split (%)	44.4		13.3%	57.8%	57.8%	36.7%	36.7%		36.7%	36.7%	
Maximum Green (s)	33		8.0	45.7	45.7	27.0	27.0		27.0	27.0	
fellow Time (s)	3		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	3		1.0	3.3	3.3	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-1		-1.0	-1.0	-1.0	0.0	-1.0		0.0	-1.0	
Fotal Lost Time (s)	5		3.0	5.3	5.3		5.0			5.0	
_ead/Lag	La		Lead	0.0	0.0	Lag	Lag		Lag	Lag	
_ead-Lag Optimize?		9 209	2000			209	249		Lug	209	
/ehicle Extension (s)	3	0 3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	Ma		None	Max	Max	C-Max	C-Max		C-Max	C-Max	
Nalk Time (s)	7		rtente	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	19			19.0	19.0	18.0	18.0		18.0	18.0	
Pedestrian Calls (#/hr)		0 40		40	40	40	40		40	40	
Act Effct Green (s)	34		9.0	46.7	46.7		30.0			33.0	
Actuated g/C Ratio	0.3		0.10	0.52	0.52		0.33			0.37	
/c Ratio	0.8		0.81	0.83	0.46		0.71			0.57	
Control Delay	35		74.8	28.2	10.3		28.9			25.0	
Queue Delay	0		0.0	0.0	0.0		0.0			0.0	
Total Delay	35		74.8	28.2	10.3		28.9			25.0	
LOS		D A	E	C	B		C			C	
Approach Delay	29		-	30.0			28.9			25.0	
Approach LOS		C		C			C			C	
		-		-			-			-	
ntersection Summary											
Area Type: Othe	er										
Cycle Length: 90											
Actuated Cycle Length: 90											
Offset: 77 (86%), Referenced to	phase 2:NB	L and 6:SE	STL, Start	of 1st Gre	en						
Natural Cycle: 80											
Control Type: Actuated-Coordin	ated										
Maximum v/c Ratio: 0.83											
ntersection Signal Delay: 28.7				ntersectio							
ntersection Capacity Utilization	70.5%		ŀ	CU Level	ot Service	эC					
Analysis Period (min) 15											
Splits and Phases: 4: Dundas	Street West	& Bloor Str	eet West								
● <i>a</i> 1			1	12		4					
- 24 1 Ø2 (R)				15		4					
5.6 33.6			12 6								
5 s 33 s			12 s		40 s						

Lanes, Volumes, Timings 4: Dundas Street West & Bloor Street West <Existing w/ Bikeway Volumes> PM Peak 02/16/2021

Lane Group	Ø1	Ø5
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	1	5
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	3.0
Recall Mode	None	None
Walk Time (s)	3.0	
Flash Dont Walk (s)	0.0	
Pedestrian Calls (#/hr)	40	
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		
intersection Summary		

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5: Private Access/S	coning	r touu t	A D ann									
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4î þ			4î»			4			\$	
Traffic Volume (vph)	73	756	0	0	1219	138	0	0	0	65	0	84
Future Volume (vph)	73	756	0	0	1219	138	0	0	0	65	0	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			0.99						0.96	
Frt					0.985						0.924	
Flt Protected		0.996									0.979	
Satd. Flow (prot)	0	3446	0	0	3386	0	0	1842	0	0	1598	0
Flt Permitted		0.698									0.864	
Satd. Flow (perm)	0	2414	0	0	3386	0	0	1842	0	0	1396	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)					25							
Link Speed (k/h)		40			40			30			30	
Link Distance (m)		123.6			101.7			33.0			87.8	
Travel Time (s)		11.1			9.2			4.0			10.5	
Confl. Peds. (#/hr)	34		50	50		34	34		19	19		34
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	5%	3%	2%	2%	3%	3%	2%	2%	2%	5%	2%	2%
Adj. Flow (vph)	75	779	0	0	1257	142	0	0	0	67	0	87
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	854	0	0	1399	0	0	0	0	0	154	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0	Ŭ		0.0	Ŭ		0.0	Ŭ		0.0	Ŭ
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA			NA			0.0		Perm	NA	
Protected Phases		2			6			4			8	

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SE
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	25.0	25.0		25.0	25.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		28.0	28.0		28.0	28.0	
Total Split (s)	61.0	61.0		61.0	61.0		29.0	29.0		29.0	29.0	
Total Split (%)	67.8%	67.8%		67.8%	67.8%		32.2%	32.2%		32.2%	32.2%	
Maximum Green (s)	55.0	55.0		55.0	55.0		24.0	24.0		24.0	24.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		5.0			5.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		Max	Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	18.0	18.0		18.0	18.0		16.0	16.0		16.0	16.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		65.0		-	65.0		-			-	16.0	
Actuated g/C Ratio		0.72			0.72						0.18	
v/c Ratio		0.49			0.57						0.62	
Control Delay		7.2			7.6						44.4	
Queue Delay		0.0			0.0						0.0	
Total Delay		7.2			7.6						44.4	
LOS		A			A						D	
Approach Delay		7.2			7.6						44.4	
Approach LOS		A			A						D	
Intersection Summary												
Area Type:	Other											
Cycle Length: 90												
Actuated Cycle Length: 90												
Offset: 0 (0%), Referenced	to phase 2:	EBTL, Sta	rt of Gre	en								
Natural Cycle: 60	•											
Control Type: Actuated-Co	ordinated											
Maximum v/c Ratio: 0.62												
Intersection Signal Delay:	9.8			Ir	ntersection	LOS: A						
Intersection Capacity Utiliz				IC	CU Level o	of Service	E					
Analysis Period (min) 15												
Splits and Phases: 5: Pr	ivate Acces	s/Sterling I	Road & F)undas S	treet West							
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221-225 Sterling Road Transportation Impact Study

Lanes, Volumes, Timings 6: Ruttan Street & Merchant Lane <Existing w/ Bikeway Volumes> PM Peak 02/16/2021

	4	•	t	۲	1	Ļ	
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	- Y		f,			با	
Traffic Volume (vph)	1	12	64	6	32	23	
Future Volume (vph)	1	12	64	6	32	23	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.875		0.989				
Flt Protected	0.996					0.972	
Satd. Flow (prot)	1605	0	1822	0	0	1790	
FIt Permitted	0.996					0.972	
Satd. Flow (perm)	1605	0	1822	0	0	1790	
Link Speed (k/h)	30		30			30	
Link Distance (m)	41.6		87.0			79.4	
Travel Time (s)	5.0		10.4			9.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	1	13	67	6	34	24	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	14	0	73	0	0	58	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Right	Left	Left	
Median Width(m)	3.5		0.0			0.0	
Link Offset(m)	0.0		0.0			0.0	
Crosswalk Width(m)	4.8		4.8			4.8	
Two way Left Turn Lane							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	
Turning Speed (k/h)	24	14		14	24		
Sign Control	Stop		Free			Free	
Intersection Summary							
Area Type: 0	Other						
Control Type: Unsignalized							
Intersection Capacity Utilizat	tion 19.6%			IC	U Level	of Service	А
Analysis Period (min) 15							

HCM Unsignalized Intersection Capacity Analysis 6: Ruttan Street & Merchant Lane

<Existing w/ Bikeway Volumes> PM Peak 02/16/2021

	4	•	Ť	1	×	t
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		ĥ			÷.
Traffic Volume (veh/h)	1	12	64	6	32	23
Future Volume (Veh/h)	1	12	64	6	32	23
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	13	67	6	34	24
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	162	70			73	
vC1, stage 1 conf vol	102	10			10	
vC2, stage 2 conf vol						
vCu, unblocked vol	162	70			73	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	0.4	0.2			7.1	
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			98	
cM capacity (veh/h)	810	993			1527	
					1327	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	14	73	58			
Volume Left	1	0	34			
Volume Right	13	6	0			
cSH	977	1700	1527			
Volume to Capacity	0.01	0.04	0.02			
Queue Length 95th (m)	0.3	0.0	0.5			
Control Delay (s)	8.7	0.0	4.4			
Lane LOS	A		Α			
Approach Delay (s)	8.7	0.0	4.4			
Approach LOS						
Intersection Summary						
Average Delay			2.6			
Intersection Capacity Utiliz	zation		19.6%	IC	U Level of	Service
Analysis Period (min)			15			
		10				

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Image: Construction EBL EBR NBL NBT SBT SBR Lane Configurations Image: Con	Lanes, Volumes, Ti 8: Sterling Road & F	0	venue			<existi< th=""><th>ng w/ Bikeway Volumes> PM Peak 02/16/2021</th></existi<>	ng w/ Bikeway Volumes> PM Peak 02/16/2021		
Lane Configurations Y Image: Configuration of the state of the st		۶	*	≺	Ť	Ŧ	~		
Traffic Volume (vph) 15 81 19 182 32 0 Future Volume (vph) 15 81 19 182 32 0 Ideal Flow (vphp) 1900 1900 1900 1900 1900 1900 Lane Width (m) 3.5 3.5 3.5 3.5 3.5 3.5 3.5 Ped Bike Factor 1.00 1.00 1.00 1.00 1.00 1.00 1.00 Ped Bike Factor 0.992 0.995 5 5 5 5 5 Std. Flow (perm) 1610 0 0 1842 1879 0 11 11 11 11 11 11 12 12 13 3 3 3 3 3 3 3 3 3 3 3 3 3 13 13 13 13 13 3 3 3 3 3 3 3 13 13 14 14 14 14 14 14 14 14 14 14 14	Lane Group	EBL	EBR	NBL	NBT	SBT	SBR		
Traffic Volume (vph) 15 81 19 182 32 0 Future Volume (vph) 15 81 19 182 32 0 Ideal Flow (vphp) 1900 1900 1900 1900 1900 1900 Lane Width (m) 3.5 3.5 3.5 3.5 3.5 3.5 3.5 Ped Bike Factor 1.00 1.00 1.00 1.00 1.00 1.00 1.00 Ped Bike Factor 0.886 Fit Protected 0.992 0.995	Lane Configurations	Y			ę	ĥ			
Ideal Flow (vphp) 1900 1900 1900 1900 1900 Lane With (m) 3.5 3.5 3.5 3.5 3.5 3.5 Lane Will, Factor 1.00 1.00 1.00 1.00 1.00 Ped Bike Factor	Traffic Volume (vph)	15	81	19	182	32	0		
Lane Width (m) 3.5 3.5 3.5 3.5 3.5 3.5 Lane Util. Factor 1.00 1.00 1.00 1.00 1.00 Ped Bike Factor Fit 0.886	Future Volume (vph)	15	81	19	182	32	0		
Lane Util. Factor 1.00 1.00 1.00 1.00 1.00 Ped Bike Factor Frt 0.886	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Ped Bike Factor Fit 0.886 Fit Protected 0.992 0.995 Stadt. Flow (port) 1610 0 0 Fit Permitted 0.992 0.995 Stadt. Flow (perm) 1610 0 0 Link Speed (k/h) 30 30 30 Link Distance (m) 70.2 16.3 54.8 Travel Time (s) 8.4 2.0 6.6 Confl. Bikes (#hr) 5 13 9 9 Confl. Bikes (#hr) 2 2 2 7.0 Peak Hour Pactor 0.86 0.86 0.86 0.86 Heavy Vehicles (%) 0% 3% 6% 1% 0% 2% Adj. Flow (vph) 17 94 22 212 37 0 Shared Lane Traffic (%) Lane Group Flow (vph) 111 0 0 234 37 0 Lane Alignment Left Right Left Left Right Media Midh(m) 4.8 4.8 4.8 4.8 4.8 4.8 4.8 4	Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5		
Fit 0.886 Fit Protected 0.992 0.995 Satd. Flow (port) 1610 0 0 1842 1879 0 Fit Permitted 0.992 0.995 0 0 1842 1879 0 Link Speed (k/h) 30 30 30 30 10 10 10 1842 1879 0 Link Speed (k/h) 30 30 30 30 10 10 10 1842 1879 0 Link Distance (m) 70.2 16.3 54.8 17 11	Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Fit Protected 0.992 0.995 Satd. Flow (prot) 1610 0 0 Fit Permitted 0.992 0.995 Satd. Flow (perm) 1610 0 0 Link Speed (k/h) 30 30 30 Link Distance (m) 70.2 16.3 54.8 Travel Time (s) 8.4 2.0 6.6 Confl. Peds. (#/hr) 5 13 9 9 Confl. Biks (#/hr) 2 2 2.12 37 0 Peak Hour Factor 0.86 0.86 0.86 0.86 0.86 1% 0 Adj. Flow (vph) 17 94 2.2 2.12 37 0 Shared Lane Traffic (%) 1 0 2.34 37 0 Lane Group Flow (vph) 111 0 0 2.34 37 0 1 Lane Alignment Left Left Left Left Right Metian Width(m) 4.8 4.8 4.8 Median Width(m) 4.8 4.8 4.8 14 14 14 <td< td=""><td>Ped Bike Factor</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	Ped Bike Factor								
Satd. Flow (prot) 1610 0 0 1842 1879 0 Flt Permitted 0.992 0.995 0 0 1842 1879 0 Satd. Flow (perm) 1610 0 0 1842 1879 0 Link Speed (k/h) 30 30 30 30 30 30 Link Distance (m) 70.2 16.3 54.8	Frt	0.886							
Fit Permitted 0.992 0.995 Satd. Flow (perm) 1610 0 0 1842 1879 0 Link Speed (k/h) 30 30 30 30 1 1 Link Distance (m) 70.2 16.3 54.8 54.8 1	Flt Protected	0.992			0.995				
Satd. Flow (perm) 1610 0 0 1842 1879 0 Link Speed (k/h) 30	Satd. Flow (prot)	1610	0	0	1842	1879	0		
Link Speed (k/h) 30 30 30 30 Link Distance (m) 70.2 16.3 54.8 Travel Time (s) 8.4 2.0 6.6 Confl. Biks (#/hr) 5 13 9 9 9 Confl. Biks (#/hr) 2 2 2 2 2 Peak Hour Factor 0.86 0.86 0.86 0.86 0.86 1% Adj. Flow (vph) 17 94 22 212 37 0 Shared Lane Traffic (%) 2 2 2 37 0 Lane Group Flow (vph) 111 0 0 234 37 0 Shared Lane Traffic (%) 2 2 2 37 0 5 Lane Alignment Left Right Left Left Right 0 0 2 Lane Alignment Left Right Left Right Median Mith(m) 4 8 4.8 4.8 3 3 3	Flt Permitted	0.992			0.995				
Link Distance (m) 70.2 16.3 54.8 Travel Time (s) 8.4 2.0 6.6 Confl. Bikes (#/hr) 5 13 9 9 Confl. Bikes (#/hr) 2 9 9 Peak Hour Factor 0.86 0.86 0.86 0.86 Heavy Vehicles (%) 0% 3% 6% 1% 0% 2% Adj. Flow (vph) 17 94 22 212 37 0 Shared Lane Tarffic (%) Lane Group Flow (vph) 111 0 0 234 37 0 Enter Blocked Intersection No No No No No No Median Width(m) 3.5 0.0 0.0 0.0 0.0 Link Offset(m) 0.0 0.0 0.0 0.0 0.0 Crosswalk Width(m) 4.8 4.8 4.8 4.8 3.8 Two way Left Turn Lane	Satd. Flow (perm)	1610	0	0	1842	1879	0		
Link Distance (m) 70.2 16.3 54.8 Travel Time (s) 8.4 2.0 6.6 Confl. Bikes (#hr) 5 13 9 9 Confl. Bikes (#hr) 2 9 9 Peak Hour Factor 0.86 0.86 0.86 0.86 Heavy Vehicles (%) 0% 3% 6% 1% 0% Adj. Flow (vph) 17 94 22 212 37 Shared Lane Traffic (%) 7 0 Shared Lane Traffic (%) 7 0 Lane Group Flow (vph) 111 0 0 234 37 0 Enter Blocked Intersection No No No No No Median Width(m) 3.5 0.0 0.0 0.0 0.0 Link Offset(m) 0.0 0.0 0.0 0.0 0.0 Crosswalk Width(m) 4.8 4.8 4.8 4.8 14 <t< td=""><td>Link Speed (k/h)</td><td>30</td><td></td><td></td><td>30</td><td>30</td><td></td><td></td></t<>	Link Speed (k/h)	30			30	30			
Travel Time (s) 8.4 2.0 6.6 Confl. Bikes (#hr) 5 13 9 9 Confl. Bikes (#hr) 2 2 2 Peak Hour Factor 0.86 0.86 0.86 0.86 Heavy Vehicles (%) 0% 3% 6% 1% 0% 2% Adj. Flow (vph) 17 94 22 212 37 0 Shared Lane Traffic (%) Lane Group Flow (vph) 111 0 0 234 37 0 Enter Blocked Intersection No No No No No No Median Width(m) 3.5 0.0 0.0 0.0 0 0 Lane Alignment Left Left Left Right Median Width(m) 4.8 4.8 4.8 Woway Left Turn Lane Headway Factor 1.01 1.01 1.01 1.01 1.01 1.01 1.01 Tuming Speed (kh) 24 14 24 14 3/2 14 3/2 14 3/2 14 3/2 14 3/2 </td <td></td> <td>70.2</td> <td></td> <td></td> <td>16.3</td> <td>54.8</td> <td></td> <td></td>		70.2			16.3	54.8			
Confl. Bikes (#/hr) 2 Peak Hour Factor 0.86 0.86 0.86 0.86 0.86 Heavy Vehicles (%) 0% 3% 6% 1% 0% 2% Adj. Flow (vph) 17 94 22 212 37 0 Shared Lane Traffic (%)		8.4			2.0	6.6			
Confl. Bikes (#/hr) 2 Peak Hour Factor 0.86 0.86 0.86 0.86 0.86 Heavy Vehicles (%) 0% 3% 6% 1% 0% 2% Adj. Flow (vph) 17 94 22 212 37 0 Shared Lane Traffic (%)	Confl. Peds. (#/hr)	5	13	9			9		
Peak Hour Factor 0.86 0.86 0.86 0.86 0.86 0.86 Heavy Vehicles (%) 0% 3% 6% 1% 0% 2% Adj. Flow (vph) 17 94 22 212 37 0 Shared Lane Traffic (%) Lane Group Flow (vph) 111 0 0 234 37 0 Enter Blocked Intersection No No No No No No Median Width(m) 3.5 0.0 0.0 0.0 0.0 0.0 Link Offset(m) 0.0 0.0 0.0 0.0 0.0 0.0 Krosswalk Width(m) 4.8 4.8 4.8 4.8 4.8 4.8 4.8 4.8 4.8 4.8 4.8 5 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0				-					
Adj. Flow (vph) 17 94 22 212 37 0 Shared Lane Traffic (%) Iane Alignment 111 0 0 234 37 0 Enter Blocked Intersection No No No No No No Lane Alignment Left Right Left Left Right Median Width(m) 3.5 0.0 0.0 0.0 Crosswalk Width(m) 4.8 4.8 4.8 Two way Left Turn Lane Headway Factor 1.01 1.01 1.01 1.01 Turning Speed (k/h) 24 14 24 14 14 Sign Control Stop Stop Stop Intersection Summary Area Type: Other Control Type: Unsignalized ICU Level of Service A Intersection Capacity Utilization 33.2% ICU Level of Service A ICU Level of Service A		0.86	0.86	0.86	0.86	0.86	0.86		
Adj. Flow (vph) 17 94 22 212 37 0 Shared Lane Traffic (%)	Heavy Vehicles (%)	0%	3%	6%	1%	0%	2%		
Shared Lane Traffic (%) Lane Group Flow (vph) 111 0 0 234 37 0 Enter Blocked Intersection No No No No No No Lane Alignment Left Right Left Left Right Median Width(m) 3.5 0.0 0.0 0.0 Crosswalk Width(m) 4.8 4.8 4.8 Two way Left Turn Lane		17	94	22	212	37	0		
Lane Group Flow (vph) 111 0 0 234 37 0 Enter Blocked Intersection No No No No No No Lane Alignment Left Right Left Left Right Median Width(m) 3.5 0.0 0.0 0.0 Link Offset(m) 0.0 0.0 0.0 Crosswalk Width(m) 4.8 4.8 4.8 Two way Left Turn Lane Headway Factor 1.01 1.01 1.01 1.01 Turning Speed (k/h) 24 14 24 14						-			
Enter Blocked Intersection No Left Left Left Left Right Left Left Right Left Left Right Left Left Right Left Left Left Left Left Left Left Left Left Left <thleft< td="" th<=""><td></td><td>111</td><td>0</td><td>0</td><td>234</td><td>37</td><td>0</td><td></td></thleft<>		111	0	0	234	37	0		
Median Width(m) 3.5 0.0 0.0 Link Offset(m) 0.0 0.0 0.0 Crosswalk Width(m) 4.8 4.8 4.8 Two way Left Turn Lane		No	No	No	No	No	No		
Median Width(m) 3.5 0.0 0.0 Link Offset(m) 0.0 0.0 0.0 Crosswalk Width(m) 4.8 4.8 4.8 Two way Left Turn Lane Headway Factor 1.01 1.01 1.01 1.01 Turning Speed (k/h) 24 14 24 14 Sign Control Stop Stop Stop Intersection Summary Control Type: Unsignalized ICU Level of Service A	Lane Alignment	Left	Right	Left	Left	Left	Right		
Link Offset(m) 0.0 0.0 0.0 Crosswalk Width(m) 4.8 4.8 4.8 Two way Left Turn Lane		3.5	J .		0.0	0.0	J -		
Crosswalk Width(m) 4.8 4.8 4.8 Two way Left Turn Lane		0.0			0.0	0.0			
Two way Left Turn Lane Headway Factor 1.01 1.01 1.01 1.01 1.01 Turning Speed (k/h) 24 14 24 14 Sign Control Stop Stop Stop Intersection Summary		4.8			4.8	4.8			
Headway Factor 1.01 1.01 1.01 1.01 1.01 Turning Speed (k/h) 24 14 24 14 Sign Control Stop Stop Stop Intersection Summary									
Turning Speed (k/h) 24 14 24 14 Sign Control Stop Stop Stop Intersection Summary Control Other Control Control <td></td> <td>1.01</td> <td>1.01</td> <td>1.01</td> <td>1.01</td> <td>1.01</td> <td>1.01</td> <td></td>		1.01	1.01	1.01	1.01	1.01	1.01		
Sign Control Stop Stop Intersection Summary Area Type: Other Control Type: Unsignalized Intersection Capacity Utilization 33.2% ICU Level of Service A									
Area Type: Other Control Type: Unsignalized Intersection Capacity Utilization 33.2% ICU Level of Service A					Stop	Stop			
Area Type: Other Control Type: Unsignalized Intersection Capacity Utilization 33.2% ICU Level of Service A	Intersection Summary								
Control Type: Unsignalized Intersection Capacity Utilization 33.2% ICU Level of Service A		Other							
Intersection Capacity Utilization 33.2% ICU Level of Service A									
	Analysis Period (min) 15	1011 00.2 /0							

 HCM Unsignalized Intersection Capacity Analysis
 <Existing w/ Bikeway Volumes> PM Peak

 8: Sterling Road & Perth Avenue
 02/16/2021

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Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			ب ا	۹î ا	
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	15	81	19	182	32	0
Future Volume (vph)	15	81	19	182	32	0
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	17	94	22	212	37	0
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total (vph)	111	234	37			
Volume Left (vph)	17	22	0			
Volume Right (vph)	94	0	0			
Hadj (s)	-0.43	0.04	0.00			
Departure Headway (s)	4.1	4.2	4.4			
Degree Utilization, x	0.13	0.27	0.05			
Capacity (veh/h)	832	827	778			
Control Delay (s)	7.7	8.8	7.6			
Approach Delay (s)	7.7	8.8	7.6			
Approach LOS	A	А	А			
Intersection Summary						
Delay			8.4			
Level of Service			А			
Intersection Capacity Utilization	ation		33.2%	IC	U Level of	Service
Analysis Period (min)			15			

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E Pedestrian LOS

Pedestrian LOS Analysis - AM Existing

Segment Name:

Symington Avenue

	Step 1: Free-Flow Walking Speed								
Variable	Value	HCM Description	Commentary						
S _{pf}	4.4	average free-flow pedestrian walking speed (ft/s)	-						
% Elderly	19%	-	This is used to trigger the walking speed change recommended in the HCM						

		Ste	p 2: Average Pedestrian Space
		Ра	rt A: Effective Sidewalk Width
Variable	Value	HCM Description	Commentary
W _E	6.5	effective sidewalk width (ft)	The calculation from this part used in the remainder of Step 2.
W _T	8	total walkway width (ft)	This is measured from the point of the sidewalk furthest from the road to the road, including any buffer space. If you have evidence that suggests the width extends past the sidewalk edge (or in the case of no sidewalk) include that width.
W _{o,i}	0	adjusted fixed-object effective width on inside (curb side) of sidewalk (ft)	This captures the fact that people tend to give way to trees, benches, etc. Note that it is dependent on the shy distance, so if the width of the object is less than the shy distance (or if it is fully contained within the buffer) it may have no impact on the effective sidewalk width.
W _{0,0}	0	adjusted fixed-object effective width on outside of sidewalk (ft)	Similar to above, but for objects on the side further from the road.
W _{s,i}	1.5	shy distance on inside (curb side) of sidewalk (ft)	The natural space that pedestrians give to the edge of a sidewalk, note that when a buffer greater than or equal to 1.5 ft is included the whole width of the sidewalk will be included in the effective sidewalk width (less any other width reductions).
W _{s,o}	0	shy distance on the outside of sidewalk (ft)	The natural space that pedestrians give to objects immediately adjacent to the sidewalk. If there is empty space greater than 3 ft beyond the edge of the sidewalk (that has not been included in the total walkway width) this value should be 0, as pedestrians will use the entire sidewalk.
W _{Buf}	0	buffer width between roadway and sidewalk (ft)	Measured from the curb to the edge of the sidewalk, again this is included in the total walkway width if it exists.
p _{window}	0	proportion of sidewalk length adjacent to a window display (decimal)	Measure or estimate this if required.
$p_{\rm building}$	0	proportion of sidewalk length adjacent to a building face (decimal)	Measure or estimate this if required.
p _{fence}	0	proportion of sidewalk length adjacent to a fence or low wall (decimal)	Measure or estimate this if required.
w _{o,i}	0	effective width of fixed objects on inside (curb side) of sidewalk (ft)	Used to calculate the fixed-object widths above. Theses values are contained in Chapter 23 of the HCM.
w _{O,o}	0	effective width of fixed objects on outside of sidewalk (ft)	Used to calculate the fixed-object widths above. Theses values are contained in Chapter 23 of the HCM.

	Part B: Pedestrian Flow Rate per Unit Width								
Variable	Value	HCM Description	Commentary						
Vp	0.1	pedestrian flow per unit width (p/ft/min)	The calculation from this part used in the remainder of Step 2.						
V	45	pedestrian flow rate in the subject sidewalk (walking in	This can be approximated from the crossing volumes at the adjacent intersections, in the case of very						
V _{ped}	45	both directions) (p/h)	high pedestrian volumes a count should be conducted.						
W _E	6.5	effective sidewalk width (ft)	Calculated from Step 2 Part B.						

	Part C: Average Walking Speed							
Variable	Value	HCM Description	Commentary					
S.	S _n 4.4	pedestrian walking speed (ft/s)	Value must be at least half of the average free-flow walking speed. The calculation from this part used in					
Jp	7.7		the remainder of Step 2.					
Vp	0.1	pedestrian flow per unit width (p/ft/min)	Determined in Step 2 Part B.					
S _{pf}	4.4	average free-flow pedestrian walking speed (ft/s)	Determined in Step 1.					

	Part D: Pedestrian Space			
Variable	Value	HCM Description	Commentary	
Ap	2288.0	pedestrian space (ft ² /p)	One key component in calculating overall LOS	
Sp	4.4	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.	
Vp	0.1	pedestrian flow per unit width (p/ft/min)	Determined in Step 2 Part B.	

Step 3: Pedestrian Delay at Intersection			
Variable	Value	HCM Description	Commentary
d_{pp}	43.25		It is currently assumed that there is a signalized intersection with equivalent walk time for both perpendicular and parallel crossings. This value is calculated as part of Step 5.

d_{pc}	43.75		It is currently assumed that there is a signalized intersection with equivalent walk time for both perpendicular and parallel crossings. This value is calculated as part of Step 5.
d_{pw}	No Value	Crossing delay incurred by pedestrians waiting for a gap crossing an uncontrolled location (s)	Note, this parameter should only have a value if it is legal to cross and uncontrolled, or there are significant observations of occurrence, look to HCM6 Chapter 20 for guidance. If illegal and/or no crossings are observed and/or controlled, type "no value" .

	Step 4: Pedestrian Travel Speed			
Variable	Value	HCM Description	Commentary	
c	3.19	travel speed of through pedestrians for the segment	A travel speed of 4.0 ft/s or more is considered desirable and a speed of 2.0 ft/s or less is considered	
S _{Tp,seg}	3.19	(ft/s)	undesirable.	
L	500	segment length (ft)	This length includes the boundary intersection width associated with the crossing delay.	
Sp	4.40	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.	
d	43.245	Crossing delay of boundary intersection parallel to the	Determined in Step 3.	
d _{pp}	45.245	segment centerline (s)	Determined in Step 5.	

	Step 5: Pedestrian LOS Score for Intersection			
Variable	Value	HCM Description	Commentary	
I _{p,int}	2.43	pedestrian LOS score for intersection	This value will be set to 0 if crossing an intersection where pedestrians have the right-of-way (as they will experience minimal delay). Note that this is only for 1 crosswalk, and the variables will have to be changed for other crosswalks. One key component in calculating overall LOS	
Fw	0.97	cross-section adjustment factor	-	
Fv	0.38	motorized vehicle volume adjustment factor	-	
Fs	0.33	motorized vehicle speed adjustment factor	-	
F _{delay}	0.15	pedestrian delay adjustment factor	-	
N _d	2.00	number of traffic lanes crossed when traversing crosswalk D (lanes)	-	
N _{rtci,d}	0	number of right-turn channelizing islands along Crosswalk D (0, 1, or 2)	-	
n _{15,mj}	102.00	count of vehicles traveling on the major street during a 15-min period (veh/ln)	The term "major street" is used when crossing the "minor street" and vice versa.	
∑vi	816	sum of demand flow rate for movements crossing crosswalk <i>i</i> (veh/h)	This value is from all movements crossing the crosswalk, including those which would never physically share the space with them. For example, if assessing the south crossswalk this would consist of the NBR, NBT, NBL, EBR, WBL, and SBT.	
m _d	-	set of all motorized vehicle movements	This variable is used to express the movements listed in the demand flow rate, and does not have a numerical value. It is provided for reference.	
V _{rtor}	76	RTOR flow rate crossing crosswalk (v/h)	Estimate this value from Synchro to establish the number of vehicles. Consider the saturation flow rate of RTOR vs. the number of right-turners, using the saturation flow rate if the number of right turners is higher than it, and the actual turns if lower to be conservative.	
v _{lt,perm}	190	permitted left turn flow rate crossing crosswalk (v/h)	If permitted-protected left, estimate this value from Synchro, otherwise if permitted: equal to # of permitted movements.	
S _{85,mj}	25.0	85th percentile vehicle speed at a midsegment location on the major street (mi/h)	-	
d _{p,d}	43.25	pedestrian delay (s/p)	If the intersection is two-way stop controlled (where pedestrians do not have to wait for a gap the value is 0. If signalized, try to assess the delay from Synchro HCM measures, otherwise, look to HCM6 Chapter 19 for guidance.	
C	100	Cycle length (s)	-	
g _{Wakl,mi}	7	walk time (s)	Effective walk time is based on the type of signal control. For most cases allow for walk time + 4.0. For more guidance consult Chapter 19 of the HCM.If the walk time is not the same for multiple legs this value will need to be changed for each crosswalk.	

	Step 6: Pedestrian LOS Score for Link			
Variable	Value	HCM Description	Commentary	
I _{p,link}	2.0	pedestrian LOS score for link	One key component in calculating overall LOS (along with corner and crosswalk geometrics)	
Fw	-4.57	cross-section adjustment factor	-	
Fv	0.25	motorized vehicle volume adjustment factor	-	
Fs	0.25	motorized vehicle speed adjustment factor	-	
W _v	12 50	effective total width of outside through lane, bicycle lane, and shoulder as a function of traffic volume (ft)	This value is conditional on the flow and sidewalk width	
WI	0.00	total width of shoulder, bicycle lane, and parking lane (ft)	This value is conditional on the parking and non-travel lane width	
p _{pk}	0.00	proportion of on-street parking occupied (decimal)	-	
W _{oi}	12.50	width of outside through lane (ft)	-	
W _{os} *	0.00	adjusted width of paved outside shoulder (ft)	If there is a curb, subtract 1.5 from W _{os}	

	-		
W _{os}	0.00	width of paved outside shoulder (ft)	-
W _{bl}	0.00	width of bicycle lane (ft)	-
W _{pk}	0.00	width of striped parking lane (ft)	-
W _{buff}	0.00	buffer width between roadway and available sidewalk (ft)	Determined in Step 2 Part A.
f _b	1.00	buffer area coefficient	If there is a continous barrier at least 3 ft high located between the sidewalk and the otuside edge of the roadway use 5.37, otherwise use 1.00
W _A	8.00	available sidewalk width (ft)	This value may be different than the effective width, as it does not consider object widths or shy distance.
W _T	8.00	total walkway width (ft)	Determined in Step 2 Part A.
W _{aA}	8.00	adjusted available sidewalk width (ft)	-
f _{sw}	3.60	sidewalk width coefficient	-
v _m	223	midsegment demand flow rate (direction nearest to subject sidewalk) (veh/h)	-
N _{th}	2.00	number of through lanes on the segment in the subject direction of travel (lanes)	-
S _R	25.00	motorized vehicle running speed (mi/h)	Note: Unless explicitly required, it is recommended that the speed limit is used for this value, as computing this parameter requires significant data regarding the segment, which is summarized in HCM6 chapter 19. A speed survey could also be conducted to assess the speed of vehicles adjacent to pedestrian travel.

	Step 7: Pedestrian LOS for Link				
LOS	Link Based LOS Score				
А	≤1.50				
В	>1.50-2.50				
С	>2.50-3.50	В			
D	>3.50-4.50	1			
E	>4.50-5.50	1			
F	>5.50]			

	Step 8: Roadway Crossing Difficulty Factor			
Variable	Value	HCM Description	Commentary	
F _{cd}	1.2	roadway crossing difficulty factor	One key component in calculating overall LOS. Must be between 0.8 and 1.2	
d _{px}	60.00	crossing delay (s/p)	Note: The crossing delay should not be 0 unless the intersection that is being crossed is stop-controlled on the leg attempting to be crossed	
d _{pd}	109.15	pedestrian diversion delay (s/p)	Determined in Step 6.	
d _{pw}	No Value	pedestrian waiting delay (s/p)	Determined in Step 3.	
D _d	290.00	diversion distance (ft)	Doubles the distance to nearest crossing to account for full deviation route.	
D _{dc}	145.00	distance to nearest signal-controlled crossing (ft)	Define this distance as either 1/3 of the distance between two crossings, or the distance that would be required to deviate from an established pedestrian path. Mainly the latter	
Sp	4.40	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.	
d _{pc}	43.25	Crossing delay of boundary intersection perpendicular to the segment centerline (s)	Determined in Step 3.	
I _{p,link}	1.98	pedestrian LOS score for link	Determined in Step 6.	
I _{p,int}	2.43	pedestrian LOS score for intersection	Determined in Step 5.	

	Step 9: Pedestrian LOS Score for Segment			
Variable	Value	HCM Description	Commentary	
I _{p,seg}	2.67	pedestrian LOS score for segment	One key component in calculating overall LOS (along with corner and crosswalk geometrics)	
F_{cd}	1.2	roadway crossing difficulty factor	One key component in calculating overall LOS	
I _{p,link}	1.98	pedestrian LOS score for link	Determined in Step 6.	
I _{p,int}	2.43	pedestrian LOS score for intersection	Determined in Step 5.	
L	500	segment length (ft)	Determined in Step 4.	
Sp	4.40	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.	
d_{pp}	43.25	Crossing delay of boundary intersection parallel to the segment centerline (s)	Determined in Step 3.	
	Step 7: Pedestrian LOS for Segment			
LOS	В			

Pedestrian LOS Analysis - PM Existing

Segment Name:

Symington Avenue

	Step 1: Free-Flow Walking Speed			
Variable	Value	HCM Description	Commentary	
S _{pf}	4.4	average free-flow pedestrian walking speed (ft/s)	-	
% Elderly	19%	-	This is used to trigger the walking speed change recommended in the HCM	

	Step 2: Average Pedestrian Space				
	Part A: Effective Sidewalk Width				
Variable	Value	HCM Description	Commentary		
W _E	6.5	effective sidewalk width (ft)	The calculation from this part used in the remainder of Step 2.		
W _T	8	total walkway width (ft)	This is measured from the point of the sidewalk furthest from the road to the road, including any buffer space. If you have evidence that suggests the width extends past the sidewalk edge (or in the case of no sidewalk) include that width.		
W _{o,i}	0	adjusted fixed-object effective width on inside (curb side) of sidewalk (ft)	This captures the fact that people tend to give way to trees, benches, etc. Note that it is dependent on the shy distance, so if the width of the object is less than the shy distance (or if it is fully contained within the buffer) it may have no impact on the effective sidewalk width.		
W _{0,0}	0	adjusted fixed-object effective width on outside of sidewalk (ft)	Similar to above, but for objects on the side further from the road.		
W _{s,i}	1.5	shy distance on inside (curb side) of sidewalk (ft)	The natural space that pedestrians give to the edge of a sidewalk, note that when a buffer greater than or equal to 1.5 ft is included the whole width of the sidewalk will be included in the effective sidewalk width (less any other width reductions).		
W _{s,o}	0	shy distance on the outside of sidewalk (ft)	The natural space that pedestrians give to objects immediately adjacent to the sidewalk. If there is empty space greater than 3 ft beyond the edge of the sidewalk (that has not been included in the total walkway width) this value should be 0, as pedestrians will use the entire sidewalk.		
W_{Buf}	0	buffer width between roadway and sidewalk (ft)	Measured from the curb to the edge of the sidewalk, again this is included in the total walkway width if it exists.		
$p_{ m window}$	0	proportion of sidewalk length adjacent to a window display (decimal)	Measure or estimate this if required.		
p _{building}	0	proportion of sidewalk length adjacent to a building face (decimal)	Measure or estimate this if required.		
p _{fence}	0	proportion of sidewalk length adjacent to a fence or low wall (decimal)	Measure or estimate this if required.		
w _{o,i}	0	effective width of fixed objects on inside (curb side) of sidewalk (ft)	Used to calculate the fixed-object widths above. Theses values are contained in Chapter 24 of the HCM.		
w _{0,0}	0	effective width of fixed objects on outside of sidewalk (ft)	Used to calculate the fixed-object widths above. Theses values are contained in Chapter 24 of the HCM.		

	Part B: Pedestrian Flow Rate per Unit Width			
Variable	Value	HCM Description	Commentary	
Vp	0.2	pedestrian flow per unit width (p/ft/min)	The calculation from this part used in the remainder of Step 2.	
V	85	pedestrian flow rate in the subject sidewalk (walking in	This can be approximated from the crossing volumes at the adjacent intersections, in the case of very	
V _{ped}		both directions) (p/h)	high pedestrian volumes a count should be conducted.	
W _E	6.5	effective sidewalk width (ft)	Calculated from Step 2 Part B.	

	Part C: Average Walking Speed			
Variable	Value	HCM Description	Commentary	
s	4.4	Inedestrian walking speed (ff/s)	Value must be at least half of the average free-flow walking speed. The calculation from this part used in	
Jp	4.4		the remainder of Step 2.	
Vp	0.2	pedestrian flow per unit width (p/ft/min)	Determined in Step 2 Part B.	
S _{pf}	4.4	average free-flow pedestrian walking speed (ft/s)	Determined in Step 1.	

	Part D: Pedestrian Space			
Variable	Value	HCM Description	Commentary	
A _p	1211.2	pedestrian space (ft ² /p)	One key component in calculating overall LOS	
Sp	4.4	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.	
Vp	0.2	pedestrian flow per unit width (p/ft/min)	Determined in Step 2 Part B.	

	Step 3: Pedestrian Delay at Intersection			
Variable	Value	HCM Description	Commentary	
d_{pp}	43.25		It is currently assumed that there is a signalized intersection with equivalent walk time for both perpendicular and parallel crossings. This value is calculated as part of Step 5.	

d_{pc}	43.25	Crossing delay of boundary intersection perpendicular	It is currently assumed that there is a signalized intersection with equivalent walk time for both
		to the segment centerline (s)	perpendicular and parallel crossings. This value is calculated as part of Step 5.
d_{pw}	No Value	Crossing delay incurred by pedestrians waiting for a gap crossing an uncontrolled location (s)	Note, this parameter should only have a value if it is legal to cross, or there are significant observations of occurrence, look to HCM6 Chapter 20 for guidance. If illegal and/or no crossings are observed, type "no value".

	Step 4: Pedestrian Travel Speed			
Variable	Value	HCM Description	Commentary	
c	3.19	travel speed of through pedestrians for the segment	A travel speed of 4.0 ft/s or more is considered desirable and a speed of 2.0 ft/s or less is considered	
S _{Tp,seg}	3.19	(ft/s)	undesirable.	
L	500	segment length (ft)	This length includes the boundary intersection width associated with the crossing delay.	
Sp	4.40	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.	
d_{pp}	43.245	Crossing delay of boundary intersection parallel to the segment centerline (s)	Determined in Step 3.	

	Step 5: Pedestrian LOS Score for Intersection			
Variable	Value	HCM Description	Commentary	
I _{p,int}	2.67	pedestrian LOS score for intersection	This value will be set to 0 if crossing an intersection where pedestrians have the right-of-way (as they will experience minimal delay). Note that this is only for 1 crosswalk, and the variables will have to be changed for other crosswalks. One key component in calculating overall LOS	
Fw	0.97	cross-section adjustment factor	-	
Fv	0.38	motorized vehicle volume adjustment factor	-	
Fs	0.57	motorized vehicle speed adjustment factor	-	
F _{delay}	0.15	pedestrian delay adjustment factor	-	
N _d	2.00	number of traffic lanes crossed when traversing crosswalk D (lanes)	-	
N _{rtci,d}	0	number of right-turn channelizing islands along Crosswalk D (0, 1, or 2)	-	
n _{15,mj}	174.25	count of vehicles traveling on the major street during a 15-min period (veh/ln)	The term "major street" is used when crossing the "minor street" and vice versa.	
∑vi	1394	sum of demand flow rate for movements crossing crosswalk <i>i</i> (veh/h)	This value is from all movements crossing the crosswalk, including those which would never physically share the space with them. For example, if assessing the south crossswalk this would consist of the NBR, NBT, NBL, EBR, WBL, and SBT.	
m _d	-	set of all motorized vehicle movements	This variable is used to express the movements listed in the demand flow rate, and does not have a numerical value. It is provided for reference.	
V _{rtor}	102	RTOR flow rate crossing crosswalk (v/h)	Estimate this value from Synchro to establish the number of vehicles. Consider the saturation flow rate of RTOR vs. the number of right-turners, using the saturation flow rate if the number of right turners is higher than it, and the actual turns if lower to be conservative.	
V _{lt,perm}	162	permitted left turn flow rate crossing crosswalk (v/h)	If permitted-protected left, estimate this value from Synchro.	
S _{85,mj}	25	85th percentile speed at a midsegment location on the major street (mi/h)	-	
d _{p,d}	43.25	pedestrian delay (s/p)	If the intersection is two-way stop controlled (where pedestrians do not have to wait for a gap the value is 0. If signalized try to assess the delay from Synchro HCM measures, otherwise look to HCM6 Chapter 19 for guidance.	
С	100	Cycle length (s)	-	
g _{Wakl,mi}	7	walk time (s)	Effective walk time is based on the type of signal control. For most cases allow for walk time + 4.0. For more guiance consult Chapter 19 of the HCM.If the walk time is not the same for multiple legs this value will need to be changed for each crosswalk.	

	Step 6: Pedestrian LOS Score for Link			
Variable	Value	HCM Description	Commentary	
I _{p,link}	2.1	pedestrian LOS score for link	One key component in calculating overall LOS (along with corner and crosswalk geometrics)	
Fw	-4.57	cross-section adjustment factor	-	
Fv	0.39	motorized vehicle volume adjustment factor	-	
Fs	0.25	motorized vehicle speed adjustment factor	-	
W _v	12.50	effective total width of outside through lane, bicycle lane, and shoulder as a function of traffic volume (ft)	This value is conditional on the flow and sidewalk width	
W	0.00	total width of shoulder, bicycle lane, and parking lane (ft)	This value is conditional on the parking and non-travel lane width	
₽ _{pk}	0	proportion of on-street parking occupied (decimal)	-	
W _{oi}	12.5	width of outside through lane (ft)	-	
W _{os} *	0	adjusted width of paved outside shoulder (ft)	If there is a curb, subtract 1.5 from W _{os}	

	_		
W _{os}	0	width of paved outside shoulder (ft)	-
W _{bl}	0	width of bicycle lane (ft)	-
W _{pk}	0	width of striped parking lane (ft)	-
W _{buff}	0.00	buffer width between roadway and available sidewalk (ft)	Determined in Step 2 Part A.
f _b	1	buffer area coefficient	If there is a continous barrier at least 3 ft high located between the sidewalk and the otuside edge of the roadway use 5.37, otherwise use 1.00
W _A	8.00	available sidewalk width (ft)	This value may be different than the effective width, as it does not consider object widths or shy distance.
W _T	8.00	total walkway width (ft)	Determined in Step 2 Part A.
W _{aA}	8.00	adjusted available sidewalk width (ft)	-
f _{sw}	3.60	sidewalk width coefficient	-
v _m	346	midsegment demand flow rate (direction nearest to subject sidewalk) (veh/h)	-
N _{th}	2	number of through lanes on the segment in the subject direction of travel (lanes)	-
S _R	25	motorized vehicle running speed (mi/h)	Note: Unless explicitly required, it is recommended that the speed limit is used for this value, as computing this parameter requires significant data regarding the segment, which is summarized in HCM6 chapter 19. A speed survey could also be conducted to assess the speed of vehicles adjacent to pedestrian travel.

	Step 7: Pedestrian LOS for Link			
LOS	Link Based LOS Score			
Α	≤1.50			
В	>1.50-2.50			
С	>2.50-3.50	В		
D	>3.50-4.50			
E	>4.50-5.50			
F	>5.50			

	Step 8: Roadway Crossing Difficulty Factor			
Variable	Value	HCM Description	Commentary	
F_{cd}	1.2	roadway crossing difficulty factor	One key component in calculating overall LOS. Must be between 0.8 and 1.2	
d _{px}	60.00	crossing delay (s/p)	Note: The crossing delay should not be 0 unless the intersection that is being crossed is stop-controlled on the leg attempting to be crossed	
d _{pd}	109.16	pedestrian diversion delay (s/p)	Determined in Step 6.	
d _{pw}	No Value	pedestrian waiting delay (s/p)	Determined in Step 3.	
D _d	290.00	diversion distance (ft)	-	
D _{dc}	145.00	distance to nearest signal-controlled crossing (ft)	Define this distance as either 1/3 of the distance between two crossings, or the distance that would be required to deviate from an established pedestrian path.	
Sp	4.40	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.	
d _{pc}	43.25	Crossing delay of boundary intersection perpendicular to the segment centerline (s)	Determined in Step 3.	
I _{p,link}	2.12	pedestrian LOS score for link	Determined in Step 6.	
I _{p,int}	2.67	pedestrian LOS score for intersection	Determined in Step 5.	

	Step 9: Pedestrian LOS Score for Segment			
Variable	Value	HCM Description	Commentary	
I _{p,seg}	2.81	pedestrian LOS score for segment	One key component in calculating overall LOS (along with corner and crosswalk geometrics)	
F _{cd}	1.2	roadway crossing difficulty factor	One key component in calculating overall LOS	
I _{p,link}	2.12	pedestrian LOS score for link	Determined in Step 6.	
I _{p,int}	2.67	pedestrian LOS score for intersection	Determined in Step 5.	
L	500	segment length (ft)	Determined in Step 4.	
Sp	4.40	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.	
d_{pp}	43.25	Crossing delay of boundary intersection parallel to the segment centerline (s)	Determined in Step 3.	
	Step 7: Pedestrian LOS for Segment			
LOS	c			

Pedestrian LOS Analysis - Future Background AM

Segment Name:

Symington Avenue

	Step 1: Free-Flow Walking Speed			
Variable	Value	HCM Description	Commentary	
S _{pf}	4.4	average free-flow pedestrian walking speed (ft/s)	-	
% Elderly	19%	-	This is used to trigger the walking speed change recommended in the HCM	

	Step 2: Average Pedestrian Space				
	Part A: Effective Sidewalk Width				
Variable	Value	HCM Description	Commentary		
W _E	6.5	effective sidewalk width (ft)	The calculation from this part used in the remainder of Step 2.		
W _T	8	total walkway width (ft)	This is measured from the point of the sidewalk furthest from the road to the road, including any buffer space. If you have evidence that suggests the width extends past the sidewalk edge (or in the case of no sidewalk) include that width.		
W _{o,i}	0	adjusted fixed-object effective width on inside (curb side) of sidewalk (ft)	This captures the fact that people tend to give way to trees, benches, etc. Note that it is dependent on the shy distance, so if the width of the object is less than the shy distance (or if it is fully contained within the buffer) it may have no impact on the effective sidewalk width.		
W _{0,0}	0	adjusted fixed-object effective width on outside of sidewalk (ft)	Similar to above, but for objects on the side further from the road.		
W _{s,i}	1.5	shy distance on inside (curb side) of sidewalk (ft)	The natural space that pedestrians give to the edge of a sidewalk, note that when a buffer greater than or equal to 1.5 ft is included the whole width of the sidewalk will be included in the effective sidewalk width (less any other width reductions).		
W _{s,o}	0	shy distance on the outside of sidewalk (ft)	The natural space that pedestrians give to objects immediately adjacent to the sidewalk. If there is empty space greater than 3 ft beyond the edge of the sidewalk (that has not been included in the total walkway width) this value should be 0, as pedestrians will use the entire sidewalk.		
W_{Buf}	0	buffer width between roadway and sidewalk (ft)	Measured from the curb to the edge of the sidewalk, again this is included in the total walkway width if it exists.		
$p_{ m window}$	0	proportion of sidewalk length adjacent to a window display (decimal)	Measure or estimate this if required.		
$p_{\rm building}$	0	proportion of sidewalk length adjacent to a building face (decimal)	Measure or estimate this if required.		
$p_{\rm fence}$	0	proportion of sidewalk length adjacent to a fence or low wall (decimal)	Measure or estimate this if required.		
W _{O,i}	0	effective width of fixed objects on inside (curb side) of sidewalk (ft)	Used to calculate the fixed-object widths above. Theses values are contained in Chapter 24 of the HCM.		
W _{O,o}	0	effective width of fixed objects on outside of sidewalk (ft)	Used to calculate the fixed-object widths above. Theses values are contained in Chapter 24 of the HCM.		

	Part B: Pedestrian Flow Rate per Unit Width			
Variable	Value	HCM Description	Commentary	
Vp	0.1	pedestrian flow per unit width (p/ft/min)	The calculation from this part used in the remainder of Step 2.	
V	48	pedestrian flow rate in the subject sidewalk (walking in	This can be approximated from the crossing volumes at the adjacent intersections, in the case of very	
V _{ped}	40	both directions) (p/h)	high pedestrian volumes a count should be conducted.	
W _E	6.5	effective sidewalk width (ft)	Calculated from Step 2 Part B.	

	Part C: Average Walking Speed			
Variable	Value	HCM Description	Commentary	
S.	4.4	nedestrian walking speed (tt/s)	Value must be at least half of the average free-flow walking speed. The calculation from this part used in	
Зp	7.7		the remainder of Step 2.	
v _p	0.1	pedestrian flow per unit width (p/ft/min)	Determined in Step 2 Part B.	
S _{pf}	4.4	average free-flow pedestrian walking speed (ft/s)	Determined in Step 1.	

	Part D: Pedestrian Space			
Variable	Value	HCM Description	Commentary	
A _p	2123.8	pedestrian space (ft ² /p)	One key component in calculating overall LOS	
Sp	4.4	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.	
Vp	0.1	pedestrian flow per unit width (p/ft/min)	Determined in Step 2 Part B.	

Step 3: Pedestrian Delay at Intersection			
Variable	Value	HCM Description	Commentary
d_{pp}	43.25		It is currently assumed that there is a signalized intersection with equivalent walk time for both perpendicular and parallel crossings. This value is calculated as part of Step 5.

d_{pc}	43.25	Crossing delay of boundary intersection perpendicular	It is currently assumed that there is a signalized intersection with equivalent walk time for both
		to the segment centerline (s)	perpendicular and parallel crossings. This value is calculated as part of Step 5.
d_{pw}	No Value	Crossing delay incurred by pedestrians waiting for a gap crossing an uncontrolled location (s)	Note, this parameter should only have a value if it is legal to cross, or there are significant observations of occurrence, look to HCM6 Chapter 20 for guidance. If illegal and/or no crossings are observed, type " no value ".

	Step 4: Pedestrian Travel Speed			
Variable	Value	HCM Description	Commentary	
c	3.19	travel speed of through pedestrians for the segment	A travel speed of 4.0 ft/s or more is considered desirable and a speed of 2.0 ft/s or less is considered	
3 _{Tp,seg}		(ft/s)	undesirable.	
L	500	segment length (ft)	This length includes the boundary intersection width associated with the crossing delay.	
Sp	4.40	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.	
d_{pp}	43.245	Crossing delay of boundary intersection parallel to the segment centerline (s)	Determined in Step 3.	

	Step 5: Pedestrian LOS Score for Intersection			
Variable	Value	HCM Description	Commentary	
I _{p,int}	2.75	pedestrian LOS score for intersection	This value will be set to 0 if crossing an intersection where pedestrians have the right-of-way (as they will experience minimal delay). Note that this is only for 1 crosswalk, and the variables will have to be changed for other crosswalks. One key component in calculating overall LOS	
Fw	0.97	cross-section adjustment factor	-	
Fv	0.39	motorized vehicle volume adjustment factor	-	
Fs	0.63	motorized vehicle speed adjustment factor	-	
F_{delay}	0.15	pedestrian delay adjustment factor	-	
N _d	2	number of traffic lanes crossed when traversing crosswalk D (lanes)	-	
N _{rtci,d}	0	number of right-turn channelizing islands along Crosswalk D (0, 1, or 2)	-	
n _{15,mj}	195.00	count of vehicles traveling on the major street during a 15-min period (veh/ln)	The term "major street" is used when crossing the "minor street" and vice versa.	
∑vi	1560	sum of demand flow rate for movements crossing crosswalk <i>i</i> (veh/h)	This value is from all movements crossing the crosswalk, including those which would never physically share the space with them. For example, if assessing the south crossswalk this would consist of the NBR, NBT, NBL, EBR, WBL, and SBT.	
m _d	-	set of all motorized vehicle movements	This variable is used to express the movements listed in the demand flow rate, and does not have a numerical value. It is provided for reference.	
V _{rtor}	84	RTOR flow rate crossing crosswalk (v/h)	Estimate this value from Synchro to establish the number of vehicles. Consider the saturation flow rate of RTOR vs. the number of right-turners, using the saturation flow rate if the number of right turners is higher than it, and the actual turns if lower to be conservative.	
V _{lt,perm}	191	permitted left turn flow rate crossing crosswalk (v/h)	If permitted-protected left, estimate this value from Synchro.	
S _{85,mj}	25	85th percentile speed at a midsegment location on the major street (mi/h)	-	
d _{p,d}	43.25	pedestrian delay (s/p)	If the intersection is two-way stop controlled (where pedestrians do not have to wait for a gap the value is 0. If signalized try to assess the delay from Synchro HCM measures, otherwise look to HCM6 Chapter 19 for guidance.	
С	100	Cycle length (s)	-	
g _{Wakl,mi}	7	walk time (s)	Effective walk time is based on the type of signal control. For most cases allow for walk time + 4.0. For more guiance consult Chapter 19 of the HCM.If the walk time is not the same for multiple legs this value will need to be changed for each crosswalk.	

	Step 6: Pedestrian LOS Score for Link			
Variable	Value	HCM Description	Commentary	
I _{p,link}	2.0	pedestrian LOS score for link	One key component in calculating overall LOS (along with corner and crosswalk geometrics)	
Fw	-4.57	cross-section adjustment factor	-	
Fv	0.27	motorized vehicle volume adjustment factor	-	
Fs	0.25	motorized vehicle speed adjustment factor	-	
W _v	12 50	effective total width of outside through lane, bicycle lane, and shoulder as a function of traffic volume (ft)	This value is conditional on the flow and sidewalk width	
Wı	0.00	total width of shoulder, bicycle lane, and parking lane (ft)	This value is conditional on the parking and non-travel lane width	
p _{pk}	0.00	proportion of on-street parking occupied (decimal)	-	
W _{oi}	12.5	width of outside through lane (ft)	-	
W _{os} *	0	adjusted width of paved outside shoulder (ft)	If there is a curb, subtract 1.5 from W_{os}	

W _{os}	0	width of paved outside shoulder (ft)	
W _{bl}	0	width of bicycle lane (ft)	-
W _{pk}	0	width of striped parking lane (ft)	-
W _{buff}	0.00	buffer width between roadway and available sidewalk (ft)	Determined in Step 2 Part A.
f _b	1	buffer area coefficient	If there is a continous barrier at least 3 ft high located between the sidewalk and the otuside edge of the roadway use 5.37, otherwise use 1.00
W _A	8.00	available sidewalk width (ft)	This value may be different than the effective width, as it does not consider object widths or shy distance.
W _T	8.00	total walkway width (ft)	Determined in Step 2 Part A.
W _{aA}	8.00	adjusted available sidewalk width (ft)	-
f _{sw}	3.60	sidewalk width coefficient	-
v _m	234	midsegment demand flow rate (direction nearest to subject sidewalk) (veh/h)	-
N _{th}	2	number of through lanes on the segment in the subject direction of travel (lanes)	-
S _R	25	motorized vehicle running speed (mi/h)	Note: Unless explicitly required, it is recommended that the speed limit is used for this value, as computing this parameter requires significant data regarding the segment, which is summarized in HCM6 chapter 19. A speed survey could also be conducted to assess the speed of vehicles adjacent to pedestrian travel.

	Step 7: Pedestrian LOS for Link					
LOS	Link Based LOS Score					
А	≤1.50					
В	>1.50-2.50					
С	>2.50-3.50	В				
D	>3.50-4.50					
E	>4.50-5.50					
F	>5.50					

	Step 8: Roadway Crossing Difficulty Factor			
Variable	Value	HCM Description	Commentary	
F_{cd}	1.2	roadway crossing difficulty factor	One key component in calculating overall LOS. Must be between 0.8 and 1.2	
d _{px}	60.00	crossing delay (s/p)	Note: The crossing delay should not be 0 unless the intersection that is being crossed is stop-controlled on the leg attempting to be crossed	
d _{pd}	109.15	pedestrian diversion delay (s/p)	Determined in Step 6.	
d _{pw}	No Value	pedestrian waiting delay (s/p)	Determined in Step 3.	
D _d	290.00	diversion distance (ft)	-	
D _{dc}	145.00	distance to nearest signal-controlled crossing (ft)	Define this distance as either 1/3 of the distance between two crossings, or the distance that would be required to deviate from an established pedestrian path.	
Sp	4.40	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.	
d _{pc}	43.25	Crossing delay of boundary intersection perpendicular to the segment centerline (s)	Determined in Step 3.	
I _{p,link}	2.00	pedestrian LOS score for link	Determined in Step 6.	
I _{p,int}	2.75	pedestrian LOS score for intersection	Determined in Step 5.	

	Step 9: Pedestrian LOS Score for Segment				
Variable	Value	HCM Description	Commentary		
I _{p,seg}	2.75	pedestrian LOS score for segment	One key component in calculating overall LOS (along with corner and crosswalk geometrics)		
F _{cd}	1.2	roadway crossing difficulty factor	One key component in calculating overall LOS		
I _{p,link}	2.00	pedestrian LOS score for link	Determined in Step 6.		
I _{p,int}	2.75	pedestrian LOS score for intersection	Determined in Step 5.		
L	500	segment length (ft)	Determined in Step 4.		
Sp	4.40	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.		
d_{pp}	43.25	Crossing delay of boundary intersection parallel to the segment centerline (s)	Determined in Step 3.		
	Step 7: Pedestrian LOS for Segment				
LOS	c				

Pedestrian LOS Analysis - Future Background PM

Segment Name:

Symington Avenue

Step 1: Free-Flow Walking Speed				
Variable	Value	HCM Description	Commentary	
S _{pf}	4.4	average free-flow pedestrian walking speed (ft/s)	-	
% Elderly	19%	-	This is used to trigger the walking speed change recommended in the HCM	

	Step 2: Average Pedestrian Space				
	Part A: Effective Sidewalk Width				
Variable	Value	HCM Description	Commentary		
W _E	6.5	effective sidewalk width (ft)	The calculation from this part used in the remainder of Step 2.		
W _T	8	total walkway width (ft)	This is measured from the point of the sidewalk furthest from the road to the road, including any buffer space. If you have evidence that suggests the width extends past the sidewalk edge (or in the case of no sidewalk) include that width.		
W _{o,i}	0	adjusted fixed-object effective width on inside (curb side) of sidewalk (ft)	This captures the fact that people tend to give way to trees, benches, etc. Note that it is dependent on the shy distance, so if the width of the object is less than the shy distance (or if it is fully contained within the buffer) it may have no impact on the effective sidewalk width.		
W _{0,0}	0	adjusted fixed-object effective width on outside of sidewalk (ft)	Similar to above, but for objects on the side further from the road.		
W _{s,i}	1.5	shy distance on inside (curb side) of sidewalk (ft)	The natural space that pedestrians give to the edge of a sidewalk, note that when a buffer greater than or equal to 1.5 ft is included the whole width of the sidewalk will be included in the effective sidewalk width (less any other width reductions).		
W _{s,o}	0	shy distance on the outside of sidewalk (ft)	The natural space that pedestrians give to objects immediately adjacent to the sidewalk. If there is empty space greater than 3 ft beyond the edge of the sidewalk (that has not been included in the total walkway width) this value should be 0, as pedestrians will use the entire sidewalk.		
W _{Buf}	0	buffer width between roadway and sidewalk (ft)	Measured from the curb to the edge of the sidewalk, again this is included in the total walkway width if it exists.		
$p_{ m window}$	0	proportion of sidewalk length adjacent to a window display (decimal)	Measure or estimate this if required.		
$p_{ m building}$	0	proportion of sidewalk length adjacent to a building face (decimal)	Measure or estimate this if required.		
$p_{\rm fence}$	0	proportion of sidewalk length adjacent to a fence or low wall (decimal)	Measure or estimate this if required.		
W _{O,i}	0	effective width of fixed objects on inside (curb side) of sidewalk (ft)	Used to calculate the fixed-object widths above. Theses values are contained in Chapter 24 of the HCM.		
w _{O,o}	0	effective width of fixed objects on outside of sidewalk (ft)	Used to calculate the fixed-object widths above. Theses values are contained in Chapter 24 of the HCM.		

	Part B: Pedestrian Flow Rate per Unit Width			
Variable	Value	HCM Description	Commentary	
Vp	0.2	pedestrian flow per unit width (p/ft/min)	The calculation from this part used in the remainder of Step 2.	
V	92	pedestrian flow rate in the subject sidewalk (walking in	This can be approximated from the crossing volumes at the adjacent intersections, in the case of very	
V _{ped}		both directions) (p/h)	high pedestrian volumes a count should be conducted.	
W _E	6.5	effective sidewalk width (ft)	Calculated from Step 2 Part B.	

	Part C: Average Walking Speed			
Variable	Value	HCM Description	Commentary	
S	4.4	nedestrian walking speed (ff/s)	Value must be at least half of the average free-flow walking speed. The calculation from this part used in	
Jp	4.4		the remainder of Step 2.	
v _p	0.2	pedestrian flow per unit width (p/ft/min)	Determined in Step 2 Part B.	
S _{pf}	4.4	average free-flow pedestrian walking speed (ft/s)	Determined in Step 1.	

	Part D: Pedestrian Space			
Variable	Value	HCM Description	Commentary	
A _p	1124.3	pedestrian space (ft ² /p)	One key component in calculating overall LOS	
Sp	4.4	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.	
Vp	0.2	pedestrian flow per unit width (p/ft/min)	Determined in Step 2 Part B.	

Step 3: Pedestrian Delay at Intersection			
Variable	Value	HCM Description	Commentary
d_{pp}	43.25		It is currently assumed that there is a signalized intersection with equivalent walk time for both perpendicular and parallel crossings. This value is calculated as part of Step 5.

d_{pc}	43.25	Crossing delay of boundary intersection perpendicular	It is currently assumed that there is a signalized intersection with equivalent walk time for both
		to the segment centerline (s)	perpendicular and parallel crossings. This value is calculated as part of Step 5.
d_{pw}	No Value	Crossing delay incurred by pedestrians waiting for a gap crossing an uncontrolled location (s)	Note, this parameter should only have a value if it is legal to cross, or there are significant observations of occurrence, look to HCM6 Chapter 20 for guidance. If illegal and/or no crossings are observed, type " no value ".

	Step 4: Pedestrian Travel Speed			
Variable	Value	HCM Description	Commentary	
c	3.19	travel speed of through pedestrians for the segment	A travel speed of 4.0 ft/s or more is considered desirable and a speed of 2.0 ft/s or less is considered	
3 _{Tp,seg}		(ft/s)	undesirable.	
L	500	segment length (ft)	This length includes the boundary intersection width associated with the crossing delay.	
Sp	4.40	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.	
d_{pp}	43.245	Crossing delay of boundary intersection parallel to the segment centerline (s)	Determined in Step 3.	

	Step 5: Pedestrian LOS Score for Intersection			
Variable	Value	HCM Description	Commentary	
I _{p,int}	3.09	pedestrian LOS score for intersection	This value will be set to 0 if crossing an intersection where pedestrians have the right-of-way (as they will experience minimal delay). Note that this is only for 1 crosswalk, and the variables will have to be changed for other crosswalks. One key component in calculating overall LOS	
Fw	0.97	cross-section adjustment factor	-	
Fv	0.38	motorized vehicle volume adjustment factor	-	
Fs	0.98	motorized vehicle speed adjustment factor	-	
F _{delay}	0.15	pedestrian delay adjustment factor	-	
N _d	2	number of traffic lanes crossed when traversing crosswalk D (lanes)	-	
N _{rtci,d}	0	number of right-turn channelizing islands along Crosswalk D (0, 1, or 2)	-	
n _{15,mj}	189.38	count of vehicles traveling on the major street during a 15-min period (veh/ln)	The term "major street" is used when crossing the "minor street" and vice versa.	
∑vi	1515	sum of demand flow rate for movements crossing crosswalk <i>i</i> (veh/h)	This value is from all movements crossing the crosswalk, including those which would never physically share the space with them. For example, if assessing the south crossswalk this would consist of the NBR, NBT, NBL, EBR, WBL, and SBT.	
m _d	-	set of all motorized vehicle movements	This variable is used to express the movements listed in the demand flow rate, and does not have a numerical value. It is provided for reference.	
V _{rtor}	104	RTOR flow rate crossing crosswalk (v/h)	Estimate this value from Synchro to establish the number of vehicles. Consider the saturation flow rate of RTOR vs. the number of right-turners, using the saturation flow rate if the number of right turners is higher than it, and the actual turns if lower to be conservative.	
V _{lt,perm}	163	permitted left turn flow rate crossing crosswalk (v/h)	If permitted-protected left, estimate this value from Synchro.	
S _{85,mj}	40	85th percentile speed at a midsegment location on the major street (mi/h)	-	
d _{p,d}	43.25	pedestrian delay (s/p)	If the intersection is two-way stop controlled (where pedestrians do not have to wait for a gap the value is 0. If signalized try to assess the delay from Synchro HCM measures, otherwise look to HCM6 Chapter 19 for guidance.	
С	100	Cycle length (s)	-	
g _{Wakl,mi}	7	walk time (s)	Effective walk time is based on the type of signal control. For most cases allow for walk time + 4.0. For more guiance consult Chapter 19 of the HCM.If the walk time is not the same for multiple legs this value will need to be changed for each crosswalk.	

	Step 6: Pedestrian LOS Score for Link			
Variable	Value	HCM Description	Commentary	
I _{p,link}	2.13	pedestrian LOS score for link	One key component in calculating overall LOS (along with corner and crosswalk geometrics)	
Fw	-4.57	cross-section adjustment factor	-	
Fv	0.40	motorized vehicle volume adjustment factor	-	
Fs	0.25	motorized vehicle speed adjustment factor	-	
W _v	17 50	effective total width of outside through lane, bicycle lane, and shoulder as a function of traffic volume (ft)	This value is conditional on the flow and sidewalk width	
Wı	0.00	total width of shoulder, bicycle lane, and parking lane (ft)	This value is conditional on the parking and non-travel lane width	
p _{pk}	0	proportion of on-street parking occupied (decimal)	-	
W _{oi}	12.5	width of outside through lane (ft)	-	
W _{os} *	0	adjusted width of paved outside shoulder (ft)	If there is a curb, subtract 1.5 from W _{os}	

Wos	0	width of paved outside shoulder (ft)	
	0		
W _{bl}	0	width of bicycle lane (ft)	-
W _{pk}	0	width of striped parking lane (ft)	-
W _{buff}	0.00	buffer width between roadway and available sidewalk (ft)	Determined in Step 2 Part A.
f _b	1	buffer area coefficient	If there is a continous barrier at least 3 ft high located between the sidewalk and the otuside edge of the roadway use 5.37, otherwise use 1.00
W _A	8.00	available sidewalk width (ft)	This value may be different than the effective width, as it does not consider object widths or shy distance.
W _T	8.00	total walkway width (ft)	Determined in Step 2 Part A.
W _{aA}	8.00	adjusted available sidewalk width (ft)	-
f _{sw}	3.60	sidewalk width coefficient	-
v _m	355	midsegment demand flow rate (direction nearest to subject sidewalk) (veh/h)	-
N _{th}	2	number of through lanes on the segment in the subject direction of travel (lanes)	-
S _R	25	motorized vehicle running speed (mi/h)	Note: Unless explicitly required, it is recommended that the speed limit is used for this value, as computing this parameter requires significant data regarding the segment, which is summarized in HCM6 chapter 19. A speed survey could also be conducted to assess the speed of vehicles adjacent to pedestrian travel.

	Step 7: Pedestrian LOS for Link				
LOS	Link Based LOS Score				
А	≤1.50	1			
В	>1.50-2.50				
С	>2.50-3.50	В			
D	>3.50-4.50				
E	>4.50-5.50	7			
F	>5.50				

	Step 8: Roadway Crossing Difficulty Factor			
Variable	Value	HCM Description	Commentary	
F _{cd}	1.2	roadway crossing difficulty factor	One key component in calculating overall LOS. Must be between 0.8 and 1.2	
d_px	60.00	crossing delay (s/p)	Note: The crossing delay should not be 0 unless the intersection that is being crossed is stop-controlled on the leg attempting to be crossed	
d _{pd}	109.16	pedestrian diversion delay (s/p)	Determined in Step 6.	
d _{pw}	No Value	pedestrian waiting delay (s/p)	Determined in Step 3.	
D _d	290.00	diversion distance (ft)	-	
D _{dc}	145.00	distance to nearest signal-controlled crossing (ft)	Define this distance as either 1/3 of the distance between two crossings, or the distance that would be required to deviate from an established pedestrian path.	
Sp	4.40	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.	
d _{pc}	43.25	Crossing delay of boundary intersection perpendicular to the segment centerline (s)	Determined in Step 3.	
I _{p,link}	2.13	pedestrian LOS score for link	Determined in Step 6.	
I _{p,int}	3.09	pedestrian LOS score for intersection	Determined in Step 5.	

	Step 9: Pedestrian LOS Score for Segment			
Variable	Value	HCM Description	Commentary	
I _{p,seg}	2.92	pedestrian LOS score for segment	One key component in calculating overall LOS (along with corner and crosswalk geometrics)	
F _{cd}	1.2	roadway crossing difficulty factor	One key component in calculating overall LOS	
I _{p,link}	2.13	pedestrian LOS score for link	Determined in Step 6.	
I _{p,int}	3.09	pedestrian LOS score for intersection	Determined in Step 5.	
L	500	segment length (ft)	Determined in Step 4.	
Sp	4.40	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.	
d _{pp}	43.25	Crossing delay of boundary intersection parallel to the segment centerline (s)	Determined in Step 3.	
		Step	7: Pedestrian LOS for Segment	
LOS			C	

Pedestrian LOS Analysis - Total Future AM

Segment Name:

Symington Avenue

	Step 1: Free-Flow Walking Speed			
Variable	Value	HCM Description	Commentary	
S _{pf}	4.4	average free-flow pedestrian walking speed (ft/s)	-	
% Elderly	19%	-	This is used to trigger the walking speed change recommended in the HCM	

	Step 2: Average Pedestrian Space				
	Part A: Effective Sidewalk Width				
Variable	Value	HCM Description	Commentary		
W _E	6.5	effective sidewalk width (ft)	The calculation from this part used in the remainder of Step 2.		
W _T	8	total walkway width (ft)	This is measured from the point of the sidewalk furthest from the road to the road, including any buffer space. If you have evidence that suggests the width extends past the sidewalk edge (or in the case of no sidewalk) include that width.		
W _{o,i}	0	adjusted fixed-object effective width on inside (curb side) of sidewalk (ft)	This captures the fact that people tend to give way to trees, benches, etc. Note that it is dependent on the shy distance, so if the width of the object is less than the shy distance (or if it is fully contained within the buffer) it may have no impact on the effective sidewalk width.		
W _{0,0}	0	adjusted fixed-object effective width on outside of sidewalk (ft)	Similar to above, but for objects on the side further from the road.		
W _{s,i}	1.5	shy distance on inside (curb side) of sidewalk (ft)	The natural space that pedestrians give to the edge of a sidewalk, note that when a buffer greater than or equal to 1.5 ft is included the whole width of the sidewalk will be included in the effective sidewalk width (less any other width reductions).		
W _{s,o}	0	shy distance on the outside of sidewalk (ft)	The natural space that pedestrians give to objects immediately adjacent to the sidewalk. If there is empty space greater than 3 ft beyond the edge of the sidewalk (that has not been included in the total walkway width) this value should be 0, as pedestrians will use the entire sidewalk.		
W_{Buf}	0	buffer width between roadway and sidewalk (ft)	Measured from the curb to the edge of the sidewalk, again this is included in the total walkway width if it exists.		
$p_{ m window}$	0	proportion of sidewalk length adjacent to a window display (decimal)	Measure or estimate this if required.		
$p_{ m building}$	0	proportion of sidewalk length adjacent to a building face (decimal)	Measure or estimate this if required.		
p _{fence}	0	proportion of sidewalk length adjacent to a fence or low wall (decimal)	Measure or estimate this if required.		
w _{o,i}	0	effective width of fixed objects on inside (curb side) of sidewalk (ft)	Used to calculate the fixed-object widths above. Theses values are contained in Chapter 24 of the HCM.		
w _{0,0}	0	effective width of fixed objects on outside of sidewalk (ft)	Used to calculate the fixed-object widths above. Theses values are contained in Chapter 24 of the HCM.		

	Part B: Pedestrian Flow Rate per Unit Width			
Variable	Value	HCM Description	Commentary	
Vp	0.5	pedestrian flow per unit width (p/ft/min)	The calculation from this part used in the remainder of Step 2.	
V	209	pedestrian flow rate in the subject sidewalk (walking in	This can be approximated from the crossing volumes at the adjacent intersections, in the case of very	
V _{ped}		both directions) (p/h)	high pedestrian volumes a count should be conducted.	
W _E	6.5	effective sidewalk width (ft)	Calculated from Step 2 Part B.	

	Part C: Average Walking Speed			
Variable	Value	HCM Description	Commentary	
ç	4.4	pedestrian walking speed (ff/s)	Value must be at least half of the average free-flow walking speed. The calculation from this part used in	
Jp	4.4		the remainder of Step 2.	
Vp	0.5	pedestrian flow per unit width (p/ft/min)	Determined in Step 2 Part B.	
S _{pf}	4.4	average free-flow pedestrian walking speed (ft/s)	Determined in Step 1.	

	Part D: Pedestrian Space				
Variable	Value	HCM Description	Commentary		
A _p	492.6	pedestrian space (ft ² /p)	One key component in calculating overall LOS		
Sp	4.4	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.		
Vp	0.5	pedestrian flow per unit width (p/ft/min)	Determined in Step 2 Part B.		

Step 3: Pedestrian Delay at Intersection			
Variable	Value	HCM Description	Commentary
d _{pp}	45.25		It is currently assumed that there is a signalized intersection with equivalent walk time for both perpendicular and parallel crossings. This value is calculated as part of Step 5.

d_{pc}	43.25	Crossing delay of boundary intersection perpendicular	It is currently assumed that there is a signalized intersection with equivalent walk time for both
		to the segment centerline (s)	perpendicular and parallel crossings. This value is calculated as part of Step 5.
d_{pw}	No Value	Crossing delay incurred by pedestrians waiting for a gap crossing an uncontrolled location (s)	Note, this parameter should only have a value if it is legal to cross, or there are significant observations of occurrence, look to HCM6 Chapter 20 for guidance. If illegal and/or no crossings are observed, type " no value ".

	Step 4: Pedestrian Travel Speed			
Variable	Value	HCM Description	Commentary	
c	3.19	travel speed of through pedestrians for the segment	A travel speed of 4.0 ft/s or more is considered desirable and a speed of 2.0 ft/s or less is considered	
3 _{Tp,seg}	3.19	(ft/s)	undesirable.	
L	500	segment length (ft)	This length includes the boundary intersection width associated with the crossing delay.	
Sp	4.40	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.	
d_{pp}	43.245	Crossing delay of boundary intersection parallel to the segment centerline (s)	Determined in Step 3.	

	Step 5: Pedestrian LOS Score for Intersection			
Variable	Value	HCM Description	Commentary	
I _{p,int}	3.15	pedestrian LOS score for intersection	This value will be set to 0 if crossing an intersection where pedestrians have the right-of-way (as they will experience minimal delay). Note that this is only for 1 crosswalk, and the variables will have to be changed for other crosswalks. One key component in calculating overall LOS	
Fw	0.97	cross-section adjustment factor	-	
Fv	0.39	motorized vehicle volume adjustment factor	-	
Fs	1.03	motorized vehicle speed adjustment factor	-	
F _{delay}	0.15	pedestrian delay adjustment factor	-	
N _d	2	number of traffic lanes crossed when traversing crosswalk D (lanes)	-	
N _{rtci,d}	0	number of right-turn channelizing islands along Crosswalk D (0, 1, or 2)	-	
n _{15,mj}	198.75	count of vehicles traveling on the major street during a 15-min period (veh/ln)	The term "major street" is used when crossing the "minor street" and vice versa.	
∑vi	1590	sum of demand flow rate for movements crossing crosswalk <i>i</i> (veh/h)	This value is from all movements crossing the crosswalk, including those which would never physically share the space with them. For example, if assessing the south crossswalk this would consist of the NBR, NBT, NBL, EBR, WBL, and SBT.	
m _d	-	set of all motorized vehicle movements	This variable is used to express the movements listed in the demand flow rate, and does not have a numerical value. It is provided for reference.	
V _{rtor}	84	RTOR flow rate crossing crosswalk (v/h)	Estimate this value from Synchro to establish the number of vehicles. Consider the saturation flow rate of RTOR vs. the number of right-turners, using the saturation flow rate if the number of right turners is higher than it, and the actual turns if lower to be conservative.	
V _{lt,perm}	191	permitted left turn flow rate crossing crosswalk (v/h)	If permitted-protected left, estimate this value from Synchro.	
S _{85,mj}	40	85th percentile speed at a midsegment location on the major street (mi/h)	-	
d _{p,d}	43.25	pedestrian delay (s/p)	If the intersection is two-way stop controlled (where pedestrians do not have to wait for a gap the value is 0. If signalized try to assess the delay from Synchro HCM measures, otherwise look to HCM6 Chapter 19 for guidance.	
С	100	Cycle length (s)	-	
g _{Wakl,mi}	7	walk time (s)	Effective walk time is based on the type of signal control. For most cases allow for walk time + 4.0. For more guiance consult Chapter 19 of the HCM.If the walk time is not the same for multiple legs this value will need to be changed for each crosswalk.	

	Step 6: Pedestrian LOS Score for Link			
Variable	Value	HCM Description	Commentary	
I _{p,link}	2.0	pedestrian LOS score for link	One key component in calculating overall LOS (along with corner and crosswalk geometrics)	
Fw	-4.57	cross-section adjustment factor	-	
Fv	0.27	motorized vehicle volume adjustment factor	-	
Fs	0.25	motorized vehicle speed adjustment factor	-	
W _v	12 50	effective total width of outside through lane, bicycle lane, and shoulder as a function of traffic volume (ft)	This value is conditional on the flow and sidewalk width	
Wı	0.00	total width of shoulder, bicycle lane, and parking lane (ft)	This value is conditional on the parking and non-travel lane width	
p _{pk}	0.00	proportion of on-street parking occupied (decimal)	-	
W _{oi}	12.5	width of outside through lane (ft)	-	
W _{os} *	0	adjusted width of paved outside shoulder (ft)	If there is a curb, subtract 1.5 from W_{os}	

W _{os}	0	width of paved outside shoulder (ft)	-
W _{bl}	0	width of bicycle lane (ft)	-
W _{pk}	0	width of striped parking lane (ft)	-
W _{buff}	0.00	buffer width between roadway and available sidewalk (ft)	Determined in Step 2 Part A.
f _b	1	buffer area coefficient	If there is a continous barrier at least 3 ft high located between the sidewalk and the otuside edge of the roadway use 5.37, otherwise use 1.00
W _A	8.00	available sidewalk width (ft)	This value may be different than the effective width, as it does not consider object widths or shy distance.
W _T	8.00	total walkway width (ft)	Determined in Step 2 Part A.
W _{aA}	8.00	adjusted available sidewalk width (ft)	-
f _{sw}	3.60	sidewalk width coefficient	-
v _m	234	midsegment demand flow rate (direction nearest to subject sidewalk) (veh/h)	-
N _{th}	2	number of through lanes on the segment in the subject direction of travel (lanes)	-
S _R	25	motorized vehicle running speed (mi/h)	Note: Unless explicitly required, it is recommended that the speed limit is used for this value, as computing this parameter requires significant data regarding the segment, which is summarized in HCM6 chapter 19. A speed survey could also be conducted to assess the speed of vehicles adjacent to pedestrian travel.

	Step 7: Pedestrian LOS for Link					
LOS	Link Based LOS Score					
А	≤1.50					
В	>1.50-2.50					
С	>2.50-3.50	В				
D	>3.50-4.50					
E	>4.50-5.50					
F	>5.50					

	Step 8: Roadway Crossing Difficulty Factor			
Variable	Value	HCM Description	Commentary	
F _{cd}	1.2	roadway crossing difficulty factor	One key component in calculating overall LOS. Must be between 0.8 and 1.2	
d _{px}	60.00	crossing delay (s/p)	Note: The crossing delay should not be 0 unless the intersection that is being crossed is stop-controlled on the leg attempting to be crossed	
d _{pd}	109.17	pedestrian diversion delay (s/p)	Determined in Step 6.	
d _{pw}	No Value	pedestrian waiting delay (s/p)	Determined in Step 3.	
D _d	290.00	diversion distance (ft)	-	
D _{dc}	145.00	distance to nearest signal-controlled crossing (ft)	Define this distance as either 1/3 of the distance between two crossings, or the distance that would be required to deviate from an established pedestrian path.	
Sp	4.40	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.	
d _{pc}	43.25	Crossing delay of boundary intersection perpendicular to the segment centerline (s)	Determined in Step 3.	
I _{p,link}	2.00	pedestrian LOS score for link	Determined in Step 6.	
I _{p,int}	3.15	pedestrian LOS score for intersection	Determined in Step 5.	

	Step 9: Pedestrian LOS Score for Segment			
Variable	Value	HCM Description	Commentary	
I _{p,seg}	2.85	pedestrian LOS score for segment	One key component in calculating overall LOS (along with corner and crosswalk geometrics)	
F_{cd}	1.2	roadway crossing difficulty factor	One key component in calculating overall LOS	
I _{p,link}	2.00	pedestrian LOS score for link	Determined in Step 6.	
I _{p,int}	3.15	pedestrian LOS score for intersection	Determined in Step 5.	
L	500	segment length (ft)	Determined in Step 4.	
Sp	4.40	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.	
d_{pp}	43.25	Crossing delay of boundary intersection parallel to the segment centerline (s)	Determined in Step 3.	
	Step 7: Pedestrian LOS for Segment			
LOS	s C			

Pedestrian LOS Analysis - Total Future PM

Segment Name:

Symington Avenue

	Step 1: Free-Flow Walking Speed			
Variable	Value	HCM Description	Commentary	
S _{pf}	4.4	average free-flow pedestrian walking speed (ft/s)	-	
% Elderly	19%	-	This is used to trigger the walking speed change recommended in the HCM	

	Step 2: Average Pedestrian Space				
	Part A: Effective Sidewalk Width				
Variable	Value	HCM Description	Commentary		
W _E	6.5	effective sidewalk width (ft)	The calculation from this part used in the remainder of Step 2.		
W _T	8	total walkway width (ft)	This is measured from the point of the sidewalk furthest from the road to the road, including any buffer space. If you have evidence that suggests the width extends past the sidewalk edge (or in the case of no sidewalk) include that width.		
W _{o,i}	0	adjusted fixed-object effective width on inside (curb side) of sidewalk (ft)	This captures the fact that people tend to give way to trees, benches, etc. Note that it is dependent on the shy distance, so if the width of the object is less than the shy distance (or if it is fully contained within the buffer) it may have no impact on the effective sidewalk width.		
W _{0,0}	0	adjusted fixed-object effective width on outside of sidewalk (ft)	Similar to above, but for objects on the side further from the road.		
W _{s,i}	1.5	shy distance on inside (curb side) of sidewalk (ft)	The natural space that pedestrians give to the edge of a sidewalk, note that when a buffer greater than or equal to 1.5 ft is included the whole width of the sidewalk will be included in the effective sidewalk width (less any other width reductions).		
W _{s,o}	0	shy distance on the outside of sidewalk (ft)	The natural space that pedestrians give to objects immediately adjacent to the sidewalk. If there is empty space greater than 3 ft beyond the edge of the sidewalk (that has not been included in the total walkway width) this value should be 0, as pedestrians will use the entire sidewalk.		
W_{Buf}	0	buffer width between roadway and sidewalk (ft)	Measured from the curb to the edge of the sidewalk, again this is included in the total walkway width if it exists.		
$p_{ m window}$	0	proportion of sidewalk length adjacent to a window display (decimal)	Measure or estimate this if required.		
p _{building}	0	proportion of sidewalk length adjacent to a building face (decimal)	Measure or estimate this if required.		
$p_{\rm fence}$	0	proportion of sidewalk length adjacent to a fence or low wall (decimal)	Measure or estimate this if required.		
w _{0,i}	0	effective width of fixed objects on inside (curb side) of sidewalk (ft)	Used to calculate the fixed-object widths above. Theses values are contained in Chapter 24 of the HCM.		
W _{O,o}	0	effective width of fixed objects on outside of sidewalk (ft)	Used to calculate the fixed-object widths above. Theses values are contained in Chapter 24 of the HCM.		

Part B: Pedestrian Flow Rate per Unit Width			
Variable	Value	HCM Description	Commentary
Vp	0.7	pedestrian flow per unit width (p/ft/min)	The calculation from this part used in the remainder of Step 2.
V	212	pedestrian flow rate in the subject sidewalk (walking in	This can be approximated from the crossing volumes at the adjacent intersections, in the case of very
V _{ped}		both directions) (p/h)	high pedestrian volumes a count should be conducted.
W _E	6.5	effective sidewalk width (ft)	Calculated from Step 2 Part B.

	Part C: Average Walking Speed			
Variable	Value	HCM Description	Commentary	
ç	4.4	Inedestrian walking speed (tt/s)	Value must be at least half of the average free-flow walking speed. The calculation from this part used in	
3 _p	4.4		the remainder of Step 2.	
Vp	0.7	pedestrian flow per unit width (p/ft/min)	Determined in Step 2 Part B.	
S _{pf}	4.4	average free-flow pedestrian walking speed (ft/s)	Determined in Step 1.	

	Part D: Pedestrian Space			
Variable	Value	HCM Description	Commentary	
A _p	377.9	pedestrian space (ft ² /p)	One key component in calculating overall LOS	
Sp	4.4	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.	
Vp	0.7	pedestrian flow per unit width (p/ft/min)	Determined in Step 2 Part B.	

Step 3: Pedestrian Delay at Intersection			
Variable	Value	HCM Description	Commentary
d_{pp}	43.25		It is currently assumed that there is a signalized intersection with equivalent walk time for both perpendicular and parallel crossings. This value is calculated as part of Step 5.

d_{pc}	43.25	Crossing delay of boundary intersection perpendicular	It is currently assumed that there is a signalized intersection with equivalent walk time for both
		to the segment centerline (s)	perpendicular and parallel crossings. This value is calculated as part of Step 5.
d_{pw}	No Value	Crossing delay incurred by pedestrians waiting for a gap crossing an uncontrolled location (s)	Note, this parameter should only have a value if it is legal to cross, or there are significant observations of occurrence, look to HCM6 Chapter 20 for guidance. If illegal and/or no crossings are observed, type " no value ".

	Step 4: Pedestrian Travel Speed			
Variable	Value	HCM Description	Commentary	
c	3.19	travel speed of through pedestrians for the segment	A travel speed of 4.0 ft/s or more is considered desirable and a speed of 2.0 ft/s or less is considered	
3 _{Tp,seg}		(ft/s)	undesirable.	
L	500	segment length (ft)	This length includes the boundary intersection width associated with the crossing delay.	
Sp	4.40	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.	
d_{pp}	43.245	Crossing delay of boundary intersection parallel to the segment centerline (s)	Determined in Step 3.	

	Step 5: Pedestrian LOS Score for Intersection			
Variable	Value	HCM Description	Commentary	
I _{p,int}	3.09	pedestrian LOS score for intersection	This value will be set to 0 if crossing an intersection where pedestrians have the right-of-way (as they will experience minimal delay). Note that this is only for 1 crosswalk, and the variables will have to be changed for other crosswalks. One key component in calculating overall LOS	
Fw	0.97	cross-section adjustment factor	-	
Fv	0.38	motorized vehicle volume adjustment factor	-	
Fs	0.98	motorized vehicle speed adjustment factor	-	
F_{delay}	0.15	pedestrian delay adjustment factor	-	
N _d	2.00	number of traffic lanes crossed when traversing crosswalk D (lanes)	-	
N _{rtci,d}	0	number of right-turn channelizing islands along Crosswalk D (0, 1, or 2)	-	
n _{15,mj}	189.25	count of vehicles traveling on the major street during a 15-min period (veh/ln)	The term "major street" is used when crossing the "minor street" and vice versa.	
∑vi	1514	sum of demand flow rate for movements crossing crosswalk <i>i</i> (veh/h)	This value is from all movements crossing the crosswalk, including those which would never physically share the space with them. For example, if assessing the south crossswalk this would consist of the NBR, NBT, NBL, EBR, WBL, and SBT.	
m _d	-	set of all motorized vehicle movements	This variable is used to express the movements listed in the demand flow rate, and does not have a numerical value. It is provided for reference.	
V _{rtor}	104	RTOR flow rate crossing crosswalk (v/h)	Estimate this value from Synchro to establish the number of vehicles. Consider the saturation flow rate of RTOR vs. the number of right-turners, using the saturation flow rate if the number of right turners is higher than it, and the actual turns if lower to be conservative.	
v _{lt,perm}	163	permitted left turn flow rate crossing crosswalk (v/h)	If permitted-protected left, estimate this value from Synchro.	
S _{85,mj}	40	85th percentile speed at a midsegment location on the major street (mi/h)	-	
d _{p,d}	43.25	pedestrian delay (s/p)	If the intersection is two-way stop controlled (where pedestrians do not have to wait for a gap the value is 0. If signalized try to assess the delay from Synchro HCM measures, otherwise look to HCM6 Chapter 19 for guidance.	
С	100	Cycle length (s)	-	
g _{Wakl,mi}	7	walk time (s)	Effective walk time is based on the type of signal control. For most cases allow for walk time + 4.0. For more guiance consult Chapter 19 of the HCM.If the walk time is not the same for multiple legs this value will need to be changed for each crosswalk.	

	Step 6: Pedestrian LOS Score for Link			
Variable	Value	HCM Description	Commentary	
I _{p,link}	2.1	pedestrian LOS score for link	One key component in calculating overall LOS (along with corner and crosswalk geometrics)	
Fw	-4.57	cross-section adjustment factor	· ·	
Fv	0.40	motorized vehicle volume adjustment factor	-	
Fs	0.25	motorized vehicle speed adjustment factor		
W _v	12 50	effective total width of outside through lane, bicycle lane, and shoulder as a function of traffic volume (ft)	This value is conditional on the flow and sidewalk width	
WI	0.00	total width of shoulder, bicycle lane, and parking lane (ft)	This value is conditional on the parking and non-travel lane width	
p _{pk}	0	proportion of on-street parking occupied (decimal)	-	
W _{oi}	12.5	width of outside through lane (ft)	-	
W _{os} *	0	adjusted width of paved outside shoulder (ft)	If there is a curb, subtract 1.5 from W_{os}	

W _{os}	0	width of paved outside shoulder (ft)	-
W _{bl}	0	width of bicycle lane (ft)	-
W _{pk}	0	width of striped parking lane (ft)	-
W _{buff}	0.00	buffer width between roadway and available sidewalk (ft)	Determined in Step 2 Part A.
f _b	1	buffer area coefficient	If there is a continous barrier at least 3 ft high located between the sidewalk and the otuside edge of the roadway use 5.37, otherwise use 1.00
W _A	8.00	available sidewalk width (ft)	This value may be different than the effective width, as it does not consider object widths or shy distance.
W _T	8.00	total walkway width (ft)	Determined in Step 2 Part A.
W _{aA}	8.00	adjusted available sidewalk width (ft)	-
f _{sw}	3.60	sidewalk width coefficient	-
v _m	355	midsegment demand flow rate (direction nearest to subject sidewalk) (veh/h)	-
N _{th}	2	number of through lanes on the segment in the subject direction of travel (lanes)	-
S _R	25	motorized vehicle running speed (mi/h)	Note: Unless explicitly required, it is recommended that the speed limit is used for this value, as computing this parameter requires significant data regarding the segment, which is summarized in HCM6 chapter 19. A speed survey could also be conducted to assess the speed of vehicles adjacent to pedestrian travel.

	Step 7: Pedestrian LOS for Link					
LOS	Link Based LOS Score					
А	≤1.50					
В	>1.50-2.50					
С	>2.50-3.50	В				
D	>3.50-4.50					
E	>4.50-5.50					
F	>5.50					

	Step 8: Roadway Crossing Difficulty Factor			
Variable	Value	HCM Description	Commentary	
F _{cd}	1.2	roadway crossing difficulty factor	One key component in calculating overall LOS. Must be between 0.8 and 1.2	
d _{px}	60.00	crossing delay (s/p)	Note: The crossing delay should not be 0 unless the intersection that is being crossed is stop-controlled on the leg attempting to be crossed	
d _{pd}	109.18	pedestrian diversion delay (s/p)	Determined in Step 6.	
d _{pw}	No Value	pedestrian waiting delay (s/p)	Determined in Step 3.	
D _d	290.00	diversion distance (ft)	-	
D _{dc}	145.00	distance to nearest signal-controlled crossing (ft)	Define this distance as either 1/3 of the distance between two crossings, or the distance that would be required to deviate from an established pedestrian path.	
Sp	4.40	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.	
d _{pc}	43.25	Crossing delay of boundary intersection perpendicular to the segment centerline (s)	Determined in Step 3.	
I _{p,link}	2.13	pedestrian LOS score for link	Determined in Step 6.	
I _{p,int}	3.09	pedestrian LOS score for intersection	Determined in Step 5.	

	Step 9: Pedestrian LOS Score for Segment			
Variable	Value	HCM Description	Commentary	
I _{p,seg}	2.92	pedestrian LOS score for segment	One key component in calculating overall LOS (along with corner and crosswalk geometrics)	
F_{cd}	1.2	roadway crossing difficulty factor	One key component in calculating overall LOS	
I _{p,link}	2.13	pedestrian LOS score for link	Determined in Step 6.	
I _{p,int}	3.09	pedestrian LOS score for intersection	Determined in Step 5.	
L	500	segment length (ft)	Determined in Step 4.	
Sp	4.40	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.	
d_{pp}	43.25	Crossing delay of boundary intersection parallel to the segment centerline (s)	Determined in Step 3.	
	Step 7: Pedestrian LOS for Segment			
LOS	c			

Pedestrian LOS Analysis - AM Existing

Segment Name:

Bloor Street West

	Step 1: Free-Flow Walking Speed			
Variable	Value	HCM Description	Commentary	
S _{pf}	4.4	average free-flow pedestrian walking speed (ft/s)	-	
% Elderly	19%	-	This is used to trigger the walking speed change recommended in the HCM	

		Ste	ep 2: Average Pedestrian Space		
	Part A: Effective Sidewalk Width				
Variable	Value	HCM Description	Commentary		
W _E	10.5	effective sidewalk width (ft)	The calculation from this part used in the remainder of Step 2.		
W _T	12	total walkway width (ft)	This is measured from the point of the sidewalk furthest from the road to the road, including any buffer space. If you have evidence that suggests the width extends past the sidewalk edge (or in the case of no sidewalk) include that width.		
W _{0,i}	0	adjusted fixed-object effective width on inside (curb side) of sidewalk (ft)	This captures the fact that people tend to give way to trees, benches, etc. Note that it is dependent on the shy distance, so if the width of the object is less than the shy distance (or if it is fully contained within the buffer) it may have no impact on the effective sidewalk width.		
W _{0,0}	0	adjusted fixed-object effective width on outside of sidewalk (ft)	Similar to above, but for objects on the side further from the road.		
W _{s,i}	1.5	shy distance on inside (curb side) of sidewalk (ft)	The natural space that pedestrians give to the edge of a sidewalk, note that when a buffer greater than or equal to 1.5 ft is included the whole width of the sidewalk will be included in the effective sidewalk width (less any other width reductions).		
W _{s,o}	0	shy distance on the outside of sidewalk (ft)	The natural space that pedestrians give to objects immediately adjacent to the sidewalk. If there is empty space greater than 3 ft beyond the edge of the sidewalk (that has not been included in the total walkway width) this value should be 0, as pedestrians will use the entire sidewalk.		
W_{Buf}	0	buffer width between roadway and sidewalk (ft)	Measured from the curb to the edge of the sidewalk, again this is included in the total walkway width if it exists.		
$p_{ m window}$	0	proportion of sidewalk length adjacent to a window display (decimal)	Measure or estimate this if required.		
$\pmb{p}_{\sf building}$	0	proportion of sidewalk length adjacent to a building face (decimal)	Measure or estimate this if required.		
p _{fence}	0	proportion of sidewalk length adjacent to a fence or low wall (decimal)	Measure or estimate this if required.		
W _{O,i}	0	effective width of fixed objects on inside (curb side) of sidewalk (ft)	Used to calculate the fixed-object widths above. Theses values are contained in Chapter 23 of the HCM.		
W _{0,0}	0	effective width of fixed objects on outside of sidewalk (ft)	Used to calculate the fixed-object widths above. Theses values are contained in Chapter 23 of the HCM.		

	Part B: Pedestrian Flow Rate per Unit Width			
Variable	Value	HCM Description	Commentary	
Vp	0.0	pedestrian flow per unit width (p/ft/min)	The calculation from this part used in the remainder of Step 2.	
V	28	pedestrian flow rate in the subject sidewalk (walking in	This can be approximated from the crossing volumes at the adjacent intersections, in the case of very	
V _{ped}		both directions) (p/h)	high pedestrian volumes a count should be conducted.	
W _E	10.5	effective sidewalk width (ft)	Calculated from Step 2 Part B.	

	Part C: Average Walking Speed			
Variable	Value	HCM Description	Commentary	
ç	4.4	pedestrian walking speed (ff/s)	Value must be at least half of the average free-flow walking speed. The calculation from this part used in	
3 _p	4.4		the remainder of Step 2.	
Vp	0.0	pedestrian flow per unit width (p/ft/min)	Determined in Step 2 Part B.	
S _{pf}	4.4	average free-flow pedestrian walking speed (ft/s)	Determined in Step 1.	

	Part D: Pedestrian Space				
Variable	Value	HCM Description	Commentary		
Ap	5940.0	pedestrian space (ft ² /p)	One key component in calculating overall LOS		
Sp	4.4	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.		
Vp	0.0	pedestrian flow per unit width (p/ft/min)	Determined in Step 2 Part B.		

Step 3: Pedestrian Delay at Intersection			
Variable	Value	HCM Description	Commentary
d_{pp}	43.25		It is currently assumed that there is a signalized intersection with equivalent walk time for both perpendicular and parallel crossings. This value is calculated as part of Step 5.

d _{pc}	43.75		It is currently assumed that there is a signalized intersection with equivalent walk time for both perpendicular and parallel crossings. This value is calculated as part of Step 5.
d_pw		Crossing delay incurred by pedestrians waiting for a gap	Note, this parameter should only have a value if it is legal to cross and uncontrolled, or there are significant observations of occurrence, look to HCM6 Chapter 20 for guidance. If illegal and/or no crossings are observed and/or controlled, type "no value" .

	Step 4: Pedestrian Travel Speed			
Variable	Value	HCM Description	Commentary	
c	3.27	travel speed of through pedestrians for the segment	A travel speed of 4.0 ft/s or more is considered desirable and a speed of 2.0 ft/s or less is considered	
3 _{Tp,seg}		(ft/s)	undesirable.	
L	550	segment length (ft)	This length includes the boundary intersection width associated with the crossing delay.	
Sp	4.40	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.	
d	43.245	Crossing delay of boundary intersection parallel to the	Determined in Step 3.	
a _{pp}		segment centerline (s)		

	Step 5: Pedestrian LOS Score for Intersection			
Variable	Value	HCM Description	Commentary	
I _{p,int}	1.92	pedestrian LOS score for intersection	This value will be set to 0 if crossing an intersection where pedestrians have the right-of-way (as they will experience minimal delay). Note that this is only for 1 crosswalk, and the variables will have to be changed for other crosswalks. One key component in calculating overall LOS	
Fw	0.97	cross-section adjustment factor	-	
Fv	0.17	motorized vehicle volume adjustment factor	-	
Fs	0.03	motorized vehicle speed adjustment factor	-	
F_{delay}	0.15	pedestrian delay adjustment factor	-	
N _d	2.00	number of traffic lanes crossed when traversing crosswalk D (lanes)	-	
N _{rtci,d}	1	number of right-turn channelizing islands along Crosswalk D (0, 1, or 2)	-	
n _{15,mj}	9.13	count of vehicles traveling on the major street during a 15-min period (veh/ln)	The term "major street" is used when crossing the "minor street" and vice versa.	
∑vi	73	sum of demand flow rate for movements crossing crosswalk <i>i</i> (veh/h)	This value is from all movements crossing the crosswalk, including those which would never physically share the space with them. For example, if assessing the south crossswalk this would consist of the NBR, NBT, NBL, EBR, WBL, and SBT.	
m _d	-	set of all motorized vehicle movements	This variable is used to express the movements listed in the demand flow rate, and does not have a numerical value. It is provided for reference.	
V _{rtor}	0	RTOR flow rate crossing crosswalk (v/h)	Estimate this value from Synchro to establish the number of vehicles. Consider the saturation flow rate of RTOR vs. the number of right-turners, using the saturation flow rate if the number of right turners is higher than it, and the actual turns if lower to be conservative.	
V _{lt,perm}	0	permitted left turn flow rate crossing crosswalk (v/h)	If permitted-protected left, estimate this value from Synchro, otherwise if permitted: equal to # of permitted movements.	
S _{85,mj}	25.0	85th percentile vehicle speed at a midsegment location on the major street (mi/h)	-	
d _{p,d}	43.25	pedestrian delay (s/p)	If the intersection is two-way stop controlled (where pedestrians do not have to wait for a gap the value is 0. If signalized, try to assess the delay from Synchro HCM measures, otherwise, look to HCM6 Chapter 19 for guidance.	
С	100	Cycle length (s)	-	
g _{Wakl,mi}	7	walk time (s)	Effective walk time is based on the type of signal control. For most cases allow for walk time + 4.0. For more guidance consult Chapter 19 of the HCM.If the walk time is not the same for multiple legs this value will need to be changed for each crosswalk.	

	Step 6: Pedestrian LOS Score for Link			
Variable	Value	HCM Description	Commentary	
I _{p,link}	3.0	pedestrian LOS score for link	One key component in calculating overall LOS (along with corner and crosswalk geometrics)	
Fw	-4.51	cross-section adjustment factor	-	
Fv	0.89	motorized vehicle volume adjustment factor	-	
Fs	0.55	motorized vehicle speed adjustment factor	-	
W _v	9 50	effective total width of outside through lane, bicycle lane, and shoulder as a function of traffic volume (ft)	This value is conditional on the flow and sidewalk width	
Wı	0.00	total width of shoulder, bicycle lane, and parking lane (ft)	This value is conditional on the parking and non-travel lane width	
$\mathbf{p}_{\mathbf{pk}}$	0.00	proportion of on-street parking occupied (decimal)	-	
W _{oi}	9.50	width of outside through lane (ft)	-	
W _{os} *	0.00	adjusted width of paved outside shoulder (ft)	If there is a curb, subtract 1.5 from W _{os}	

	-		
W _{os}	0.00	width of paved outside shoulder (ft)	-
W _{bl}	0.00	width of bicycle lane (ft)	-
W _{pk}	0.00	width of striped parking lane (ft)	-
W_{buff}	0.00	buffer width between roadway and available sidewalk (ft)	Determined in Step 2 Part A.
f _b	1.00	buffer area coefficient	If there is a continous barrier at least 3 ft high located between the sidewalk and the otuside edge of the roadway use 5.37, otherwise use 1.00
W _A	12.00	available sidewalk width (ft)	This value may be different than the effective width, as it does not consider object widths or shy distance.
W _T	12.00	total walkway width (ft)	Determined in Step 2 Part A.
W _{aA}	10.00	adjusted available sidewalk width (ft)	-
f _{sw}	3.00	sidewalk width coefficient	-
v _m	783.00	midsegment demand flow rate (direction nearest to subject sidewalk) (veh/h)	-
N _{th}	2.00	number of through lanes on the segment in the subject direction of travel (lanes)	-
S _R	37.00	motorized vehicle running speed (mi/h)	Note: Unless explicitly required, it is recommended that the speed limit is used for this value, as computing this parameter requires significant data regarding the segment, which is summarized in HCM6 chapter 19. A speed survey could also be conducted to assess the speed of vehicles adjacent to pedestrian travel.

	Step 7: Pedestrian LOS for Link				
LOS	Link Based LOS Score				
Α	≤1.50				
В	>1.50-2.50				
С	>2.50-3.50	С			
D	>3.50-4.50				
E	>4.50-5.50				
F	>5.50				

	Step 8: Roadway Crossing Difficulty Factor			
Variable	Value	HCM Description	Commentary	
F _{cd}	1.2	roadway crossing difficulty factor	One key component in calculating overall LOS. Must be between 0.8 and 1.2	
d _{px}	60.00	crossing delay (s/p)	Note: The crossing delay should not be 0 unless the intersection that is being crossed is stop-controlled on the leg attempting to be crossed	
d _{pd}	156.88	pedestrian diversion delay (s/p)	Determined in Step 6.	
d _{pw}	No Value	pedestrian waiting delay (s/p)	Determined in Step 3.	
D _d	500.00	diversion distance (ft)	Doubles the distance to nearest crossing to account for full deviation route.	
D _{dc}	250.00	distance to nearest signal-controlled crossing (ft)	Define this distance as either 1/3 of the distance between two crossings, or the distance that would be required to deviate from an established pedestrian path. Mainly the latter	
Sp	4.40	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.	
d _{pc}	43.25	Crossing delay of boundary intersection perpendicular to the segment centerline (s)	Determined in Step 3.	
l _{p,link}	2.97	pedestrian LOS score for link	Determined in Step 6.	
I _{p,int}	1.92	pedestrian LOS score for intersection	Determined in Step 5.	

	Step 9: Pedestrian LOS Score for Segment			
Variable	Value	HCM Description	Commentary	
I _{p,seg}	3.32	pedestrian LOS score for segment	One key component in calculating overall LOS (along with corner and crosswalk geometrics)	
F _{cd}	1.2	roadway crossing difficulty factor	One key component in calculating overall LOS	
l _{p,link}	2.97	pedestrian LOS score for link	Determined in Step 6.	
I _{p,int}	1.92	pedestrian LOS score for intersection	Determined in Step 5.	
L	550	segment length (ft)	Determined in Step 4.	
Sp	4.40	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.	
d_{pp}	43.25	Crossing delay of boundary intersection parallel to the segment centerline (s)	Determined in Step 3.	
	Step 7: Pedestrian LOS for Segment			
LOS	C			

Pedestrian LOS Analysis - PM Existing

Segment Name:

User defined value

Bloor Street West

	Step 1: Free-Flow Walking Speed			
Variable	Value	HCM Description	Commentary	
S _{pf}	4.4	average free-flow pedestrian walking speed (ft/s)	-	
% Elderly	19%	-	This is used to trigger the walking speed change recommended in the HCM	

	Step 2: Average Pedestrian Space				
	Part A: Effective Sidewalk Width				
Variable	Value	HCM Description	Commentary		
W _E	10.5	effective sidewalk width (ft)	The calculation from this part used in the remainder of Step 2.		
W _T	12	total walkway width (ft)	This is measured from the point of the sidewalk furthest from the road to the road, including any buffer space. If you have evidence that suggests the width extends past the sidewalk edge (or in the case of no sidewalk) include that width.		
W _{o,i}	0	adjusted fixed-object effective width on inside (curb side) of sidewalk (ft)	This captures the fact that people tend to give way to trees, benches, etc. Note that it is dependent on the shy distance, so if the width of the object is less than the shy distance (or if it is fully contained within the buffer) it may have no impact on the effective sidewalk width.		
W _{0,0}	0	adjusted fixed-object effective width on outside of sidewalk (ft)	Similar to above, but for objects on the side further from the road.		
W _{s,i}	1.5	shy distance on inside (curb side) of sidewalk (ft)	The natural space that pedestrians give to the edge of a sidewalk, note that when a buffer greater than or equal to 1.5 ft is included the whole width of the sidewalk will be included in the effective sidewalk width (less any other width reductions).		
W _{s,o}	0	shy distance on the outside of sidewalk (ft)	The natural space that pedestrians give to objects immediately adjacent to the sidewalk. If there is empty space greater than 3 ft beyond the edge of the sidewalk (that has not been included in the total walkway width) this value should be 0, as pedestrians will use the entire sidewalk.		
W _{Buf}	0	buffer width between roadway and sidewalk (ft)	Measured from the curb to the edge of the sidewalk, again this is included in the total walkway width if it exists.		
$p_{ m window}$	0	proportion of sidewalk length adjacent to a window display (decimal)	Measure or estimate this if required.		
$p_{\rm building}$	0	proportion of sidewalk length adjacent to a building face (decimal)	Measure or estimate this if required.		
$p_{\rm fence}$	0	proportion of sidewalk length adjacent to a fence or low wall (decimal)	Measure or estimate this if required.		
W _{O,i}	0	effective width of fixed objects on inside (curb side) of sidewalk (ft)	Used to calculate the fixed-object widths above. Theses values are contained in Chapter 24 of the HCM.		
W _{O,o}	0	effective width of fixed objects on outside of sidewalk (ft)	Used to calculate the fixed-object widths above. Theses values are contained in Chapter 24 of the HCM.		

	Part B: Pedestrian Flow Rate per Unit Width			
Variable	Value	HCM Description	Commentary	
v _p	0.1	pedestrian flow per unit width (p/ft/min)	The calculation from this part used in the remainder of Step 2.	
M	58	pedestrian flow rate in the subject sidewalk (walking in	This can be approximated from the crossing volumes at the adjacent intersections, in the case of very	
V _{ped}		both directions) (p/h)	high pedestrian volumes a count should be conducted.	
W _E	10.5	effective sidewalk width (ft)	Calculated from Step 2 Part B.	

	Part C: Average Walking Speed			
Variable	Value	HCM Description	Commentary	
Sp	4.4	Inedestrian walking speed (ff/s)	Value must be at least half of the average free-flow walking speed. The calculation from this part used in the remainder of Step 2.	
Vp	0.1	pedestrian flow per unit width (p/ft/min)	Determined in Step 2 Part B.	
S _{pf}	4.4	average free-flow pedestrian walking speed (ft/s)	Determined in Step 1.	

	Part D: Pedestrian Space		
Variable	Value	HCM Description	Commentary
A _p	2867.6	pedestrian space (ft ² /p)	One key component in calculating overall LOS
Sp	4.4	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.
Vp	0.1	pedestrian flow per unit width (p/ft/min)	Determined in Step 2 Part B.

Step 3: Pedestrian Delay at Intersection			
Variable	Value	HCM Description	Commentary
d_{pp}	43.25		It is currently assumed that there is a signalized intersection with equivalent walk time for both perpendicular and parallel crossings. This value is calculated as part of Step 5.

d_{pc}	43.25	Crossing delay of boundary intersection perpendicular	It is currently assumed that there is a signalized intersection with equivalent walk time for both
		to the segment centerline (s)	perpendicular and parallel crossings. This value is calculated as part of Step 5.
d_{pw}		i rossing delay inclirred by bedestrians waiting for a gan	Note, this parameter should only have a value if it is legal to cross, or there are significant observations of occurrence, look to HCM6 Chapter 20 for guidance. If illegal and/or no crossings are observed, type "no value".

	Step 4: Pedestrian Travel Speed			
Variable	Value	HCM Description	Commentary	
c	3.27	travel speed of through pedestrians for the segment	A travel speed of 4.0 ft/s or more is considered desirable and a speed of 2.0 ft/s or less is considered	
S _{Tp,seg}		(ft/s)	undesirable.	
L	550	segment length (ft)	This length includes the boundary intersection width associated with the crossing delay.	
Sp	4.40	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.	
d_{pp}	43,245	Crossing delay of boundary intersection parallel to the segment centerline (s)	Determined in Step 3.	

	Step 5: Pedestrian LOS Score for Intersection			
Variable	Value	HCM Description	Commentary	
I _{p,int}	1.93	pedestrian LOS score for intersection	This value will be set to 0 if crossing an intersection where pedestrians have the right-of-way (as they will experience minimal delay). Note that this is only for 1 crosswalk, and the variables will have to be changed for other crosswalks. One key component in calculating overall LOS	
Fw	0.97	cross-section adjustment factor	-	
Fv	0.13	motorized vehicle volume adjustment factor	-	
Fs	0.08	motorized vehicle speed adjustment factor	-	
F _{delay}	0.15	pedestrian delay adjustment factor	-	
N _d	2.00	number of traffic lanes crossed when traversing crosswalk D (lanes)	-	
N _{rtci,d}	1	number of right-turn channelizing islands along Crosswalk D (0, 1, or 2)	-	
n _{15,mj}	25.25	count of vehicles traveling on the major street during a 15-min period (veh/ln)	The term "major street" is used when crossing the "minor street" and vice versa.	
∑v _i	202	sum of demand flow rate for movements crossing crosswalk <i>i</i> (veh/h)	This value is from all movements crossing the crosswalk, including those which would never physically share the space with them. For example, if assessing the south crossswalk this would consist of the NBR, NBT, NBL, EBR, WBL, and SBT.	
m _d	-	set of all motorized vehicle movements	This variable is used to express the movements listed in the demand flow rate, and does not have a numerical value. It is provided for reference.	
V _{rtor}	0	RTOR flow rate crossing crosswalk (v/h)	Estimate this value from Synchro to establish the number of vehicles. Consider the saturation flow rate of RTOR vs. the number of right-turners, using the saturation flow rate if the number of right turners is higher than it, and the actual turns if lower to be conservative.	
V _{lt,perm}	0	permitted left turn flow rate crossing crosswalk (v/h)	If permitted-protected left, estimate this value from Synchro.	
S _{85,mj}	25	85th percentile speed at a midsegment location on the major street (mi/h)	-	
d _{p,d}	43.25	pedestrian delay (s/p)	If the intersection is two-way stop controlled (where pedestrians do not have to wait for a gap the value is 0. If signalized try to assess the delay from Synchro HCM measures, otherwise look to HCM6 Chapter 19 for guidance.	
С	100	Cycle length (s)	-	
g _{Wakl,mi}	7	walk time (s)	Effective walk time is based on the type of signal control. For most cases allow for walk time + 4.0. For more guiance consult Chapter 19 of the HCM.If the walk time is not the same for multiple legs this value will need to be changed for each crosswalk.	

	Step 6: Pedestrian LOS Score for Link			
Variable	Value	HCM Description	Commentary	
I _{p,link}	2.8	pedestrian LOS score for link	One key component in calculating overall LOS (along with corner and crosswalk geometrics)	
Fw	-4.51	cross-section adjustment factor	-	
Fv	0.73	motorized vehicle volume adjustment factor	-	
Fs	0.55	motorized vehicle speed adjustment factor	-	
W _v	9.50	effective total width of outside through lane, bicycle lane, and shoulder as a function of traffic volume (ft)	This value is conditional on the flow and sidewalk width	
W	0.00	total width of shoulder, bicycle lane, and parking lane (ft)	This value is conditional on the parking and non-travel lane width	
p _{pk}	0	proportion of on-street parking occupied (decimal)	-	
W _{oi}	9.5	width of outside through lane (ft)	-	
W _{os} *	0	adjusted width of paved outside shoulder (ft)	If there is a curb, subtract 1.5 from W _{os}	

	-		
W _{os}	0	width of paved outside shoulder (ft)	-
W _{bl}	0	width of bicycle lane (ft)	-
W _{pk}	0	width of striped parking lane (ft)	-
W_{buff}	0.00	buffer width between roadway and available sidewalk (ft)	Determined in Step 2 Part A.
f _b	1	buffer area coefficient	If there is a continous barrier at least 3 ft high located between the sidewalk and the otuside edge of the roadway use 5.37, otherwise use 1.00
W _A	12.00	available sidewalk width (ft)	This value may be different than the effective width, as it does not consider object widths or shy distance.
W _T	12.00	total walkway width (ft)	Determined in Step 2 Part A.
W _{aA}	10.00	adjusted available sidewalk width (ft)	-
f _{sw}	3.00	sidewalk width coefficient	-
v _m	642	midsegment demand flow rate (direction nearest to subject sidewalk) (veh/h)	-
N _{th}	2	number of through lanes on the segment in the subject direction of travel (lanes)	-
S _R	37	motorized vehicle running speed (mi/h)	Note: Unless explicitly required, it is recommended that the speed limit is used for this value, as computing this parameter requires significant data regarding the segment, which is summarized in HCM6 chapter 19. A speed survey could also be conducted to assess the speed of vehicles adjacent to pedestrian travel.

	Step 7: Pedestrian LOS for Link				
LOS	Link Based LOS Score				
А	≤1.50				
В	>1.50-2.50				
С	>2.50-3.50	С			
D	>3.50-4.50				
E	>4.50-5.50				
F	>5.50				

	Step 8: Roadway Crossing Difficulty Factor			
Variable	Value	HCM Description	Commentary	
F _{cd}	1.2	roadway crossing difficulty factor	One key component in calculating overall LOS. Must be between 0.8 and 1.2	
d _{px}	60.00	crossing delay (s/p)	Note: The crossing delay should not be 0 unless the intersection that is being crossed is stop-controlled on the leg attempting to be crossed	
d _{pd}	156.88	pedestrian diversion delay (s/p)	Determined in Step 6.	
d _{pw}	No Value	pedestrian waiting delay (s/p)	Determined in Step 3.	
D _d	500.00	diversion distance (ft)	-	
D _{dc}	250.00	distance to nearest signal-controlled crossing (ft)	Define this distance as either 1/3 of the distance between two crossings, or the distance that would be required to deviate from an established pedestrian path.	
Sp	4.40	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.	
d _{pc}	43.25	Crossing delay of boundary intersection perpendicular to the segment centerline (s)	Determined in Step 3.	
l _{p,link}	2.81	pedestrian LOS score for link	Determined in Step 6.	
$I_{p,int}$	1.93	pedestrian LOS score for intersection	Determined in Step 5.	

	Step 9: Pedestrian LOS Score for Segment			
Variable	Value	HCM Description	Commentary	
I _{p,seg}	3.20	pedestrian LOS score for segment	One key component in calculating overall LOS (along with corner and crosswalk geometrics)	
F _{cd}	1.2	roadway crossing difficulty factor	One key component in calculating overall LOS	
l _{p,link}	2.81	pedestrian LOS score for link	Determined in Step 6.	
I _{p,int}	1.93	pedestrian LOS score for intersection	Determined in Step 5.	
L	550	segment length (ft)	Determined in Step 4.	
Sp	4.40	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.	
d_{pp}	43.25	Crossing delay of boundary intersection parallel to the segment centerline (s)	Determined in Step 3.	
	Step 7: Pedestrian LOS for Segment			
LOS	c			

Pedestrian LOS Analysis - Future Background AM

Segment Name:

Bloor Street West

	Step 1: Free-Flow Walking Speed		
Variable	Value	HCM Description	Commentary
S _{pf}	4.4	average free-flow pedestrian walking speed (ft/s)	-
% Elderly	19%	-	This is used to trigger the walking speed change recommended in the HCM

	Step 2: Average Pedestrian Space				
	Part A: Effective Sidewalk Width				
Variable	Value	HCM Description	Commentary		
W _E	10.5	effective sidewalk width (ft)	The calculation from this part used in the remainder of Step 2.		
W _T	12	total walkway width (ft)	This is measured from the point of the sidewalk furthest from the road to the road, including any buffer space. If you have evidence that suggests the width extends past the sidewalk edge (or in the case of no sidewalk) include that width.		
W _{o,i}	0	adjusted fixed-object effective width on inside (curb side) of sidewalk (ft)	This captures the fact that people tend to give way to trees, benches, etc. Note that it is dependent on the shy distance, so if the width of the object is less than the shy distance (or if it is fully contained within the buffer) it may have no impact on the effective sidewalk width.		
W _{0,0}	0	adjusted fixed-object effective width on outside of sidewalk (ft)	Similar to above, but for objects on the side further from the road.		
W _{s,i}	1.5	shy distance on inside (curb side) of sidewalk (ft)	The natural space that pedestrians give to the edge of a sidewalk, note that when a buffer greater than or equal to 1.5 ft is included the whole width of the sidewalk will be included in the effective sidewalk width (less any other width reductions).		
W _{s,o}	0	shy distance on the outside of sidewalk (ft)	The natural space that pedestrians give to objects immediately adjacent to the sidewalk. If there is empty space greater than 3 ft beyond the edge of the sidewalk (that has not been included in the total walkway width) this value should be 0, as pedestrians will use the entire sidewalk.		
W_{Buf}	0	buffer width between roadway and sidewalk (ft)	Measured from the curb to the edge of the sidewalk, again this is included in the total walkway width if it exists.		
$p_{ m window}$	0	proportion of sidewalk length adjacent to a window display (decimal)	Measure or estimate this if required.		
$p_{\rm building}$	0	proportion of sidewalk length adjacent to a building face (decimal)	Measure or estimate this if required.		
$p_{\rm fence}$	0	proportion of sidewalk length adjacent to a fence or low wall (decimal)	Measure or estimate this if required.		
W _{O,i}	0	effective width of fixed objects on inside (curb side) of sidewalk (ft)	Used to calculate the fixed-object widths above. Theses values are contained in Chapter 24 of the HCM.		
W _{0,0}	0	effective width of fixed objects on outside of sidewalk (ft)	Used to calculate the fixed-object widths above. Theses values are contained in Chapter 24 of the HCM.		

	Part B: Pedestrian Flow Rate per Unit Width			
Variable	Value	HCM Description	Commentary	
Vp	0.0	pedestrian flow per unit width (p/ft/min)	The calculation from this part used in the remainder of Step 2.	
V	30	pedestrian flow rate in the subject sidewalk (walking in	This can be approximated from the crossing volumes at the adjacent intersections, in the case of very	
V _{ped}		both directions) (p/h)	high pedestrian volumes a count should be conducted.	
W _E	10.5	effective sidewalk width (ft)	Calculated from Step 2 Part B.	

	Part C: Average Walking Speed			
Variable	Value	HCM Description	Commentary	
ç	4.4	nedestrian walking sneed (tt/s)	Value must be at least half of the average free-flow walking speed. The calculation from this part used in	
Jp	4.4		the remainder of Step 2.	
Vp	0.0	pedestrian flow per unit width (p/ft/min)	Determined in Step 2 Part B.	
S _{pf}	4.4	average free-flow pedestrian walking speed (ft/s)	Determined in Step 1.	

	Part D: Pedestrian Space		
Variable	Value	HCM Description	Commentary
Ap	5513.9	pedestrian space (ft ² /p)	One key component in calculating overall LOS
Sp	4.4	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.
Vp	0.0	pedestrian flow per unit width (p/ft/min)	Determined in Step 2 Part B.

	Step 3: Pedestrian Delay at Intersection			
Variable	Value	HCM Description	Commentary	
d_{pp}	43.25		It is currently assumed that there is a signalized intersection with equivalent walk time for both perpendicular and parallel crossings. This value is calculated as part of Step 5.	

d_{pc}	43.25		It is currently assumed that there is a signalized intersection with equivalent walk time for both perpendicular and parallel crossings. This value is calculated as part of Step 5.
d_{pw}	No Value	Crossing delay incurred by nedestrians waiting for a gan	Note this parameter should only have a value if it is legal to cross, or there are significant observations.

	Step 4: Pedestrian Travel Speed			
Variable	Value	HCM Description	Commentary	
ç	3.77	travel speed of through pedestrians for the segment	A travel speed of 4.0 ft/s or more is considered desirable and a speed of 2.0 ft/s or less is considered	
3 _{Tp,seg}		(ft/s)	undesirable.	
L	550	segment length (ft)	This length includes the boundary intersection width associated with the crossing delay.	
Sp	4.40	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.	
d	43.245	Crossing delay of boundary intersection parallel to the	Determined in Step 3.	
a _{pp}	45.245	segment centerline (s)		

	Step 5: Pedestrian LOS Score for Intersection		
Variable	Value	HCM Description	Commentary
I _{p,int}	1.77	pedestrian LOS score for intersection	This value will be set to 0 if crossing an intersection where pedestrians have the right-of-way (as they will experience minimal delay). Note that this is only for 1 crosswalk, and the variables will have to be changed for other crosswalks. One key component in calculating overall LOS
Fw	0.97	cross-section adjustment factor	-
Fv	0.00	motorized vehicle volume adjustment factor	-
Fs	0.04	motorized vehicle speed adjustment factor	-
F _{delay}	0.15	pedestrian delay adjustment factor	-
N _d	2	number of traffic lanes crossed when traversing crosswalk D (lanes)	-
N _{rtci,d}	0	number of right-turn channelizing islands along Crosswalk D (0, 1, or 2)	-
n _{15,mj}	13.00	count of vehicles traveling on the major street during a 15-min period (veh/ln)	The term "major street" is used when crossing the "minor street" and vice versa.
∑vi	104	sum of demand flow rate for movements crossing crosswalk i (veh/h)	This value is from all movements crossing the crosswalk, including those which would never physically share the space with them. For example, if assessing the south crossswalk this would consist of the NBR, NBT, NBL, EBR, WBL, and SBT.
m _d	-	set of all motorized vehicle movements	This variable is used to express the movements listed in the demand flow rate, and does not have a numerical value. It is provided for reference.
V _{rtor}	0	RTOR flow rate crossing crosswalk (v/h)	Estimate this value from Synchro to establish the number of vehicles. Consider the saturation flow rate of RTOR vs. the number of right-turners, using the saturation flow rate if the number of right turners is higher than it, and the actual turns if lower to be conservative.
V _{lt,perm}	0	permitted left turn flow rate crossing crosswalk (v/h)	If permitted-protected left, estimate this value from Synchro.
S _{85,mj}	25	85th percentile speed at a midsegment location on the major street (mi/h)	-
d _{p,d}	43.25	pedestrian delay (s/p)	If the intersection is two-way stop controlled (where pedestrians do not have to wait for a gap the value is 0. If signalized try to assess the delay from Synchro HCM measures, otherwise look to HCM6 Chapter 19 for guidance.
С	100	Cycle length (s)	-
g _{Wakl,mi}	7	walk time (s)	Effective walk time is based on the type of signal control. For most cases allow for walk time + 4.0. For more guiance consult Chapter 19 of the HCM.If the walk time is not the same for multiple legs this value will need to be changed for each crosswalk.

	Step 6: Pedestrian LOS Score for Link			
Variable	Value	HCM Description	Commentary	
I _{p,link}	3.0	pedestrian LOS score for link	One key component in calculating overall LOS (along with corner and crosswalk geometrics)	
Fw	-4.51	cross-section adjustment factor	-	
Fv	0.96	motorized vehicle volume adjustment factor		
Fs	0.55	motorized vehicle speed adjustment factor	-	
W _v		effective total width of outside through lane, bicycle lane, and shoulder as a function of traffic volume (ft)	This value is conditional on the flow and sidewalk width	
Wı	0.00	total width of shoulder, bicycle lane, and parking lane (ft)	This value is conditional on the parking and non-travel lane width	
p _{pk}	0.00	proportion of on-street parking occupied (decimal)	-	
W _{oi}	9.5	width of outside through lane (ft)	-	
W _{os} *	0	adjusted width of paved outside shoulder (ft)	If there is a curb, subtract 1.5 from W _{os}	

14/	0	width of powed outside should be (ft)	
W _{os}	0	width of paved outside shoulder (ft)	-
W _{bl}	0	width of bicycle lane (ft)	-
W _{pk}	0	width of striped parking lane (ft)	-
W_{buff}	0.00	buffer width between roadway and available sidewalk (ft)	Determined in Step 2 Part A.
f _b	1	buffer area coefficient	If there is a continous barrier at least 3 ft high located between the sidewalk and the otuside edge of the roadway use 5.37, otherwise use 1.00
W _A	12.00	available sidewalk width (ft)	This value may be different than the effective width, as it does not consider object widths or shy distance.
W _T	12.00	total walkway width (ft)	Determined in Step 2 Part A.
W _{aA}	10.00	adjusted available sidewalk width (ft)	-
f _{sw}	3.00	sidewalk width coefficient	-
v _m	846	midsegment demand flow rate (direction nearest to subject sidewalk) (veh/h)	-
N _{th}	2	number of through lanes on the segment in the subject direction of travel (lanes)	-
S _R	37	motorized vehicle running speed (mi/h)	Note: Unless explicitly required, it is recommended that the speed limit is used for this value, as computing this parameter requires significant data regarding the segment, which is summarized in HCM6 chapter 19. A speed survey could also be conducted to assess the speed of vehicles adjacent to pedestrian travel.

	Step 7: Pedestrian LOS for Link				
LOS	Link Based LOS Score				
А	≤1.50				
В	>1.50-2.50				
С	>2.50-3.50	С			
D	>3.50-4.50				
E	>4.50-5.50				
F	>5.50				

	Step 8: Roadway Crossing Difficulty Factor			
Variable	Value	HCM Description	Commentary	
F _{cd}	1.2	roadway crossing difficulty factor	One key component in calculating overall LOS. Must be between 0.8 and 1.2	
d _{px}	60.00	crossing delay (s/p)	Note: The crossing delay should not be 0 unless the intersection that is being crossed is stop-controlled on the leg attempting to be crossed	
d _{pd}	156.88	pedestrian diversion delay (s/p)	Determined in Step 6.	
d _{pw}	No Value	pedestrian waiting delay (s/p)	Determined in Step 3.	
D _d	500.00	diversion distance (ft)	-	
D _{dc}	250.00	distance to nearest signal-controlled crossing (ft)	Define this distance as either 1/3 of the distance between two crossings, or the distance that would be required to deviate from an established pedestrian path.	
Sp	4.40	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.	
d _{pc}	43.25	Crossing delay of boundary intersection perpendicular to the segment centerline (s)	Determined in Step 3.	
l _{p,link}	3.04	pedestrian LOS score for link	Determined in Step 6.	
$I_{p,int}$	1.77	pedestrian LOS score for intersection	Determined in Step 5.	

	Step 9: Pedestrian LOS Score for Segment				
Variable	Value	HCM Description	Commentary		
I _{p,seg}	3.36	pedestrian LOS score for segment	One key component in calculating overall LOS (along with corner and crosswalk geometrics)		
F _{cd}	1.2	roadway crossing difficulty factor	One key component in calculating overall LOS		
l _{p,link}	3.04	pedestrian LOS score for link	Determined in Step 6.		
I _{p,int}	1.77	pedestrian LOS score for intersection	Determined in Step 5.		
L	550	segment length (ft)	Determined in Step 4.		
Sp	4.40	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.		
d_{pp}	43.25	Crossing delay of boundary intersection parallel to the segment centerline (s)	Determined in Step 3.		
	Step 7: Pedestrian LOS for Segment				
LOS	C				

Pedestrian LOS Analysis - Future Background PM

Segment Name:

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Bloor Street West

	Step 1: Free-Flow Walking Speed			
Variable	Value	HCM Description	Commentary	
S _{pf}	4.4	average free-flow pedestrian walking speed (ft/s)	-	
% Elderly	19%	-	This is used to trigger the walking speed change recommended in the HCM	

	Step 2: Average Pedestrian Space				
	Part A: Effective Sidewalk Width				
Variable	Value	HCM Description	Commentary		
W _E	10.5	effective sidewalk width (ft)	The calculation from this part used in the remainder of Step 2.		
W _T	12	total walkway width (ft)	This is measured from the point of the sidewalk furthest from the road to the road, including any buffer space. If you have evidence that suggests the width extends past the sidewalk edge (or in the case of no sidewalk) include that width.		
W _{o,i}	0	adjusted fixed-object effective width on inside (curb side) of sidewalk (ft)	This captures the fact that people tend to give way to trees, benches, etc. Note that it is dependent on the shy distance, so if the width of the object is less than the shy distance (or if it is fully contained within the buffer) it may have no impact on the effective sidewalk width.		
W _{0,0}	0	adjusted fixed-object effective width on outside of sidewalk (ft)	Similar to above, but for objects on the side further from the road.		
W _{s,i}	1.5	shy distance on inside (curb side) of sidewalk (ft)	The natural space that pedestrians give to the edge of a sidewalk, note that when a buffer greater than or equal to 1.5 ft is included the whole width of the sidewalk will be included in the effective sidewalk width (less any other width reductions).		
W _{s,o}	0	shy distance on the outside of sidewalk (ft)	The natural space that pedestrians give to objects immediately adjacent to the sidewalk. If there is empty space greater than 3 ft beyond the edge of the sidewalk (that has not been included in the total walkway width) this value should be 0, as pedestrians will use the entire sidewalk.		
W _{Buf}	0	buffer width between roadway and sidewalk (ft)	Measured from the curb to the edge of the sidewalk, again this is included in the total walkway width if it exists.		
p _{window}	0	proportion of sidewalk length adjacent to a window display (decimal)	Measure or estimate this if required.		
$p_{\rm building}$	0	proportion of sidewalk length adjacent to a building face (decimal)	Measure or estimate this if required.		
p_{fence}	0	proportion of sidewalk length adjacent to a fence or low wall (decimal)	Measure or estimate this if required.		
w _{o,i}	0	effective width of fixed objects on inside (curb side) of sidewalk (ft)	Used to calculate the fixed-object widths above. Theses values are contained in Chapter 24 of the HCM.		
W _{O,o}	0	effective width of fixed objects on outside of sidewalk (ft)	Used to calculate the fixed-object widths above. Theses values are contained in Chapter 24 of the HCM.		

	Part B: Pedestrian Flow Rate per Unit Width			
Variable	Value	HCM Description	Commentary	
Vp	0.1	pedestrian flow per unit width (p/ft/min)	The calculation from this part used in the remainder of Step 2.	
V	6/	pedestrian flow rate in the subject sidewalk (walking in	This can be approximated from the crossing volumes at the adjacent intersections, in the case of very	
V _{ped}		both directions) (p/h)	high pedestrian volumes a count should be conducted.	
W _E	10.5	effective sidewalk width (ft)	Calculated from Step 2 Part B.	

	Part C: Average Walking Speed			
Variable	Value	HCM Description	Commentary	
ç	4.4	4 Inedestrian walking speed (ft/s)	Value must be at least half of the average free-flow walking speed. The calculation from this part used in	
Jp	4.4		the remainder of Step 2.	
Vp	0.1	pedestrian flow per unit width (p/ft/min)	Determined in Step 2 Part B.	
S _{pf}	4.4	average free-flow pedestrian walking speed (ft/s)	Determined in Step 1.	

	Part D: Pedestrian Space			
Variable	Value	HCM Description	Commentary	
A _p	2661.8	pedestrian space (ft ² /p)	One key component in calculating overall LOS	
Sp	4.4	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.	
Vp	0.1	pedestrian flow per unit width (p/ft/min)	Determined in Step 2 Part B.	

Step 3: Pedestrian Delay at Intersection			
Variable	Value	HCM Description	Commentary
d_{pp}	43.25		It is currently assumed that there is a signalized intersection with equivalent walk time for both perpendicular and parallel crossings. This value is calculated as part of Step 5.

d _{pc}	43.25	Crossing delay of boundary intersection perpendicular	It is currently assumed that there is a signalized intersection with equivalent walk time for both
		to the segment centerline (s)	perpendicular and parallel crossings. This value is calculated as part of Step 5.
d_pw		Crossing delay incurred by nedestrians waiting for a gan	Note, this parameter should only have a value if it is legal to cross, or there are significant observations
			of occurrence, look to HCM6 Chapter 20 for guidance. If illegal and/or no crossings are observed, type
		crossing an uncontrolled location (s)	"no value".

	Step 4: Pedestrian Travel Speed			
Variable	Value	HCM Description	Commentary	
ç	3.27	travel speed of through pedestrians for the segment	A travel speed of 4.0 ft/s or more is considered desirable and a speed of 2.0 ft/s or less is considered	
3 _{Tp,seg}		(ft/s)	undesirable.	
L	550	segment length (ft)	This length includes the boundary intersection width associated with the crossing delay.	
Sp	4.40	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.	
d	43.245	Crossing delay of boundary intersection parallel to the	Determined in Step 3.	
a _{pp}	45.245	segment centerline (s)		

	Step 5: Pedestrian LOS Score for Intersection			
Variable	Value	HCM Description	Commentary	
I _{p,int}	1.89	pedestrian LOS score for intersection	This value will be set to 0 if crossing an intersection where pedestrians have the right-of-way (as they will experience minimal delay). Note that this is only for 1 crosswalk, and the variables will have to be changed for other crosswalks. One key component in calculating overall LOS	
Fw	0.97	cross-section adjustment factor	-	
Fv	0.00	motorized vehicle volume adjustment factor	-	
Fs	0.17	motorized vehicle speed adjustment factor	-	
F_{delay}	0.15	pedestrian delay adjustment factor	-	
N _d	2	number of traffic lanes crossed when traversing crosswalk D (lanes)	-	
N _{rtci,d}	0	number of right-turn channelizing islands along Crosswalk D (0, 1, or 2)	-	
n _{15,mj}	32.13	count of vehicles traveling on the major street during a 15-min period (veh/ln)	The term "major street" is used when crossing the "minor street" and vice versa.	
∑v _i	257	sum of demand flow rate for movements crossing crosswalk i (veh/h)	This value is from all movements crossing the crosswalk, including those which would never physically share the space with them. For example, if assessing the south crossswalk this would consist of the NBR, NBT, NBL, EBR, WBL, and SBT.	
m _d	-	set of all motorized vehicle movements	This variable is used to express the movements listed in the demand flow rate, and does not have a numerical value. It is provided for reference.	
V _{rtor}	0	RTOR flow rate crossing crosswalk (v/h)	Estimate this value from Synchro to establish the number of vehicles. Consider the saturation flow rate of RTOR vs. the number of right-turners, using the saturation flow rate if the number of right turners is higher than it, and the actual turns if lower to be conservative.	
V _{lt,perm}	0	permitted left turn flow rate crossing crosswalk (v/h)	If permitted-protected left, estimate this value from Synchro.	
S _{85,mj}	40	85th percentile speed at a midsegment location on the major street (mi/h)	-	
d _{p,d}	43.25	pedestrian delay (s/p)	If the intersection is two-way stop controlled (where pedestrians do not have to wait for a gap the value is 0. If signalized try to assess the delay from Synchro HCM measures, otherwise look to HCM6 Chapter 19 for guidance.	
С	100	Cycle length (s)	-	
g _{Wakl,mi}	7	walk time (s)	Effective walk time is based on the type of signal control. For most cases allow for walk time + 4.0. For more guiance consult Chapter 19 of the HCM.If the walk time is not the same for multiple legs this value will need to be changed for each crosswalk.	

	Step 6: Pedestrian LOS Score for Link			
Variable	Value	HCM Description	Commentary	
I _{p,link}	2.87	pedestrian LOS score for link	One key component in calculating overall LOS (along with corner and crosswalk geometrics)	
Fw	-4.51	cross-section adjustment factor	-	
Fv	0.79	motorized vehicle volume adjustment factor	-	
Fs	0.55	motorized vehicle speed adjustment factor	-	
W _v	9 50	effective total width of outside through lane, bicycle lane, and shoulder as a function of traffic volume (ft)	This value is conditional on the flow and sidewalk width	
W	0.00	total width of shoulder, bicycle lane, and parking lane (ft)	This value is conditional on the parking and non-travel lane width	
\mathbf{p}_{pk}	0	proportion of on-street parking occupied (decimal)	-	
W _{oi}	9.5	width of outside through lane (ft)	-	
W _{os} *	0	adjusted width of paved outside shoulder (ft)	If there is a curb, subtract 1.5 from W _{os}	

W _{os}	0	width of paved outside shoulder (ft)	-
W _{bl}	0	width of bicycle lane (ft)	
W _{pk}	0	width of striped parking lane (ft)	-
W _{buff}	0.00	buffer width between roadway and available sidewalk (ft)	Determined in Step 2 Part A.
f _b	1	buffer area coefficient	If there is a continous barrier at least 3 ft high located between the sidewalk and the otuside edge of the roadway use 5.37, otherwise use 1.00
W _A	12.00	available sidewalk width (ft)	This value may be different than the effective width, as it does not consider object widths or shy distance.
W _T	12.00	total walkway width (ft)	Determined in Step 2 Part A.
W _{aA}	10.00	adjusted available sidewalk width (ft)	-
f _{sw}	3.00	sidewalk width coefficient	-
v _m	692	midsegment demand flow rate (direction nearest to subject sidewalk) (veh/h)	-
N _{th}	2	number of through lanes on the segment in the subject direction of travel (lanes)	-
S _R	37	motorized vehicle running speed (mi/h)	Note: Unless explicitly required, it is recommended that the speed limit is used for this value, as computing this parameter requires significant data regarding the segment, which is summarized in HCM6 chapter 19. A speed survey could also be conducted to assess the speed of vehicles adjacent to pedestrian travel.

Step 7: Pedestrian LOS for Link					
LOS	Link Based LOS Score				
А	≤1.50				
В	>1.50-2.50				
С	>2.50-3.50	C			
D	>3.50-4.50				
E	>4.50-5.50				
F	>5.50				

	Step 8: Roadway Crossing Difficulty Factor				
Variable	Value	HCM Description	Commentary		
F _{cd}	1.2	roadway crossing difficulty factor	One key component in calculating overall LOS. Must be between 0.8 and 1.2		
d_px	60.00	crossing delay (s/p)	Note: The crossing delay should not be 0 unless the intersection that is being crossed is stop-controlled on the leg attempting to be crossed		
d _{pd}	156.88	pedestrian diversion delay (s/p)	Determined in Step 6.		
d _{pw}	No Value	pedestrian waiting delay (s/p)	Determined in Step 3.		
D _d	500.00	diversion distance (ft)	-		
D _{dc}	250.00	distance to nearest signal-controlled crossing (ft)	Define this distance as either 1/3 of the distance between two crossings, or the distance that would be required to deviate from an established pedestrian path.		
Sp	4.40	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.		
d _{pc}	43.25	Crossing delay of boundary intersection perpendicular to the segment centerline (s)	Determined in Step 3.		
l _{p,link}	2.87	pedestrian LOS score for link	Determined in Step 6.		
I _{p,int}	1.89	pedestrian LOS score for intersection	Determined in Step 5.		

	Step 9: Pedestrian LOS Score for Segment				
Variable	Value	HCM Description	Commentary		
I _{p,seg}	3.24	pedestrian LOS score for segment	One key component in calculating overall LOS (along with corner and crosswalk geometrics)		
F _{cd}	1.2	roadway crossing difficulty factor	One key component in calculating overall LOS		
l _{p,link}	2.87	pedestrian LOS score for link	Determined in Step 6.		
I _{p,int}	1.89	pedestrian LOS score for intersection	Determined in Step 5.		
L	550	segment length (ft)	Determined in Step 4.		
Sp	4.40	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.		
d _{pp}	4375	Crossing delay of boundary intersection parallel to the segment centerline (s)	Determined in Step 3.		
Step 7: Pedestrian LOS for Segment					
LOS	C				

Pedestrian LOS Analysis - Total Future AM

Segment Name:

Bloor Street West

User defined value

	Step 1: Free-Flow Walking Speed		
Variable	Value	HCM Description	Commentary
S _{pf}	4.4	average free-flow pedestrian walking speed (ft/s)	-
% Elderly	19%	-	This is used to trigger the walking speed change recommended in the HCM

	Step 2: Average Pedestrian Space				
	Part A: Effective Sidewalk Width				
Variable	Value	HCM Description	Commentary		
W _E	10.5	effective sidewalk width (ft)	The calculation from this part used in the remainder of Step 2.		
W _T	12	total walkway width (ft)	This is measured from the point of the sidewalk furthest from the road to the road, including any buffer space. If you have evidence that suggests the width extends past the sidewalk edge (or in the case of no sidewalk) include that width.		
W _{0,i}	0	adjusted fixed-object effective width on inside (curb side) of sidewalk (ft)	This captures the fact that people tend to give way to trees, benches, etc. Note that it is dependent on the shy distance, so if the width of the object is less than the shy distance (or if it is fully contained within the buffer) it may have no impact on the effective sidewalk width.		
W _{0,0}	0	adjusted fixed-object effective width on outside of sidewalk (ft)	Similar to above, but for objects on the side further from the road.		
W _{s,i}	1.5	shy distance on inside (curb side) of sidewalk (ft)	The natural space that pedestrians give to the edge of a sidewalk, note that when a buffer greater than or equal to 1.5 ft is included the whole width of the sidewalk will be included in the effective sidewalk width (less any other width reductions).		
W _{s,o}	0	shy distance on the outside of sidewalk (ft)	The natural space that pedestrians give to objects immediately adjacent to the sidewalk. If there is empty space greater than 3 ft beyond the edge of the sidewalk (that has not been included in the total walkway width) this value should be 0, as pedestrians will use the entire sidewalk.		
W_{Buf}	0	buffer width between roadway and sidewalk (ft)	Measured from the curb to the edge of the sidewalk, again this is included in the total walkway width if it exists.		
$p_{ m window}$	0	proportion of sidewalk length adjacent to a window display (decimal)	Measure or estimate this if required.		
$\pmb{p}_{\sf building}$	0	proportion of sidewalk length adjacent to a building face (decimal)	Measure or estimate this if required.		
p _{fence}	0	proportion of sidewalk length adjacent to a fence or low wall (decimal)	Measure or estimate this if required.		
W _{O,i}	0	effective width of fixed objects on inside (curb side) of sidewalk (ft)	Used to calculate the fixed-object widths above. Theses values are contained in Chapter 24 of the HCM.		
W _{0,0}	0	effective width of fixed objects on outside of sidewalk (ft)	Used to calculate the fixed-object widths above. Theses values are contained in Chapter 24 of the HCM.		

	Part B: Pedestrian Flow Rate per Unit Width			
Variable	Value	HCM Description	Commentary	
v _p	0.1	pedestrian flow per unit width (p/ft/min)	The calculation from this part used in the remainder of Step 2.	
M	84	pedestrian flow rate in the subject sidewalk (walking in	This can be approximated from the crossing volumes at the adjacent intersections, in the case of very	
v _{ped}		both directions) (p/h)	high pedestrian volumes a count should be conducted.	
W _E	10.5	effective sidewalk width (ft)	Calculated from Step 2 Part B.	

	Part C: Average Walking Speed			
Variable	Value	HCM Description	Commentary	
5 44	4.4	nedestrian walking speed (ff/s)	Value must be at least half of the average free-flow walking speed. The calculation from this part used in	
Jp	4.4		the remainder of Step 2.	
Vp	0.1	pedestrian flow per unit width (p/ft/min)	Determined in Step 2 Part B.	
S _{pf}	4.4	average free-flow pedestrian walking speed (ft/s)	Determined in Step 1.	

	Part D: Pedestrian Space		
Variable	Value	HCM Description	Commentary
A _p	1987.9	pedestrian space (ft ² /p)	One key component in calculating overall LOS
Sp	4.4	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.
Vp	0.1	pedestrian flow per unit width (p/ft/min)	Determined in Step 2 Part B.

Step 3: Pedestrian Delay at Intersection			
Variable	Value	HCM Description	Commentary
d_{pp}	43.25		It is currently assumed that there is a signalized intersection with equivalent walk time for both perpendicular and parallel crossings. This value is calculated as part of Step 5.

d _{pc}	43.25	Crossing delay of boundary intersection perpendicular	It is currently assumed that there is a signalized intersection with equivalent walk time for both
		to the segment centerline (s)	perpendicular and parallel crossings. This value is calculated as part of Step 5.
		Crossing delay incurred by nedestrians waiting for a gan	Note, this parameter should only have a value if it is legal to cross, or there are significant observations
d_{pw}			of occurrence, look to HCM6 Chapter 20 for guidance. If illegal and/or no crossings are observed, type
		crossing an uncontrolled location (s)	"no value".

	Step 4: Pedestrian Travel Speed			
Variable	Value	HCM Description	Commentary	
ç	3.27	travel speed of through pedestrians for the segment	A travel speed of 4.0 ft/s or more is considered desirable and a speed of 2.0 ft/s or less is considered	
3 _{Tp,seg}		(ft/s)	undesirable.	
L	550	segment length (ft)	This length includes the boundary intersection width associated with the crossing delay.	
Sp	4.40	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.	
d	43.245	Crossing delay of boundary intersection parallel to the	Determined in Step 3.	
a _{pp}	45.245	segment centerline (s)		

	Step 5: Pedestrian LOS Score for Intersection		
Variable	Value	HCM Description	Commentary
I _{p,int}	1.79	pedestrian LOS score for intersection	This value will be set to 0 if crossing an intersection where pedestrians have the right-of-way (as they will experience minimal delay). Note that this is only for 1 crosswalk, and the variables will have to be changed for other crosswalks. One key component in calculating overall LOS
Fw	0.97	cross-section adjustment factor	-
Fv	0.00	motorized vehicle volume adjustment factor	-
Fs	0.07	motorized vehicle speed adjustment factor	-
F_{delay}	0.15	pedestrian delay adjustment factor	-
N _d	2	number of traffic lanes crossed when traversing crosswalk D (lanes)	-
N _{rtci,d}	0	number of right-turn channelizing islands along Crosswalk D (0, 1, or 2)	-
n _{15,mj}	13.00	count of vehicles traveling on the major street during a 15-min period (veh/ln)	The term "major street" is used when crossing the "minor street" and vice versa.
∑v _i	104	sum of demand flow rate for movements crossing crosswalk i (veh/h)	This value is from all movements crossing the crosswalk, including those which would never physically share the space with them. For example, if assessing the south crossswalk this would consist of the NBR, NBT, NBL, EBR, WBL, and SBT.
m _d	-	set of all motorized vehicle movements	This variable is used to express the movements listed in the demand flow rate, and does not have a numerical value. It is provided for reference.
V _{rtor}	0	RTOR flow rate crossing crosswalk (v/h)	Estimate this value from Synchro to establish the number of vehicles. Consider the saturation flow rate of RTOR vs. the number of right-turners, using the saturation flow rate if the number of right turners is higher than it, and the actual turns if lower to be conservative.
V _{lt,perm}	0	permitted left turn flow rate crossing crosswalk (v/h)	If permitted-protected left, estimate this value from Synchro.
S _{85,mj}	40	85th percentile speed at a midsegment location on the major street (mi/h)	-
d _{p,d}	43.25	pedestrian delay (s/p)	If the intersection is two-way stop controlled (where pedestrians do not have to wait for a gap the value is 0. If signalized try to assess the delay from Synchro HCM measures, otherwise look to HCM6 Chapter 19 for guidance.
С	100	Cycle length (s)	-
g _{Wakl,mi}	7	walk time (s)	Effective walk time is based on the type of signal control. For most cases allow for walk time + 4.0. For more guiance consult Chapter 19 of the HCM.If the walk time is not the same for multiple legs this value will need to be changed for each crosswalk.

	Step 6: Pedestrian LOS Score for Link			
Variable	Value	HCM Description	Commentary	
I _{p,link}	3.0	pedestrian LOS score for link	One key component in calculating overall LOS (along with corner and crosswalk geometrics)	
Fw	-4.51	cross-section adjustment factor	-	
Fv	0.97	motorized vehicle volume adjustment factor	-	
Fs	0.55	motorized vehicle speed adjustment factor	-	
W _v	0 50	effective total width of outside through lane, bicycle lane, and shoulder as a function of traffic volume (ft)	This value is conditional on the flow and sidewalk width	
Wı	0.00	total width of shoulder, bicycle lane, and parking lane (ft)	This value is conditional on the parking and non-travel lane width	
\mathbf{p}_{pk}	0.00	proportion of on-street parking occupied (decimal)	-	
W _{oi}	9.5	width of outside through lane (ft)	-	
W _{os} *	0	adjusted width of paved outside shoulder (ft)	If there is a curb, subtract 1.5 from W _{os}	

	-		
W _{os}	0	width of paved outside shoulder (ft)	-
W _{bl}	0	width of bicycle lane (ft)	-
W _{pk}	0	width of striped parking lane (ft)	-
W_{buff}	0.00	buffer width between roadway and available sidewalk (ft)	Determined in Step 2 Part A.
f _b	1	buffer area coefficient	If there is a continous barrier at least 3 ft high located between the sidewalk and the otuside edge of the roadway use 5.37, otherwise use 1.00
W _A	12.00	available sidewalk width (ft)	This value may be different than the effective width, as it does not consider object widths or shy distance.
W _T	12.00	total walkway width (ft)	Determined in Step 2 Part A.
W _{aA}	10.00	adjusted available sidewalk width (ft)	
f _{sw}	3.00	sidewalk width coefficient	-
v _m	849	midsegment demand flow rate (direction nearest to subject sidewalk) (veh/h)	-
N _{th}	2	number of through lanes on the segment in the subject direction of travel (lanes)	-
S _R	37	motorized vehicle running speed (mi/h)	Note: Unless explicitly required, it is recommended that the speed limit is used for this value, as computing this parameter requires significant data regarding the segment, which is summarized in HCM6 chapter 19. A speed survey could also be conducted to assess the speed of vehicles adjacent to pedestrian travel.

	Step 7: Pedestrian LOS for Link				
LOS	Link Based LOS Score				
Α	≤1.50				
В	>1.50-2.50				
С	>2.50-3.50	C			
D	>3.50-4.50				
E	>4.50-5.50				
F	>5.50				

	Step 8: Roadway Crossing Difficulty Factor			
Variable	Value	HCM Description	Commentary	
F _{cd}	1.2	roadway crossing difficulty factor	One key component in calculating overall LOS. Must be between 0.8 and 1.2	
d _{px}	60.00	crossing delay (s/p)	Note: The crossing delay should not be 0 unless the intersection that is being crossed is stop-controlled on the leg attempting to be crossed	
d _{pd}	156.88	pedestrian diversion delay (s/p)	Determined in Step 6.	
d _{pw}	No Value	pedestrian waiting delay (s/p)	Determined in Step 3.	
D _d	500.00	diversion distance (ft)	-	
D _{dc}	250.00	distance to nearest signal-controlled crossing (ft)	Define this distance as either 1/3 of the distance between two crossings, or the distance that would be required to deviate from an established pedestrian path.	
Sp	4.40	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.	
d _{pc}	43.25	Crossing delay of boundary intersection perpendicular to the segment centerline (s)	Determined in Step 3.	
l _{p,link}	3.05	pedestrian LOS score for link	Determined in Step 6.	
I _{p,int}	1.79	pedestrian LOS score for intersection	Determined in Step 5.	

	Step 9: Pedestrian LOS Score for Segment			
Variable	Value	HCM Description	Commentary	
I _{p,seg}	3.36	pedestrian LOS score for segment	One key component in calculating overall LOS (along with corner and crosswalk geometrics)	
F _{cd}	1.2	roadway crossing difficulty factor	One key component in calculating overall LOS	
l _{p,link}	3.05	pedestrian LOS score for link	Determined in Step 6.	
I _{p,int}	1.79	pedestrian LOS score for intersection	Determined in Step 5.	
L	550	segment length (ft)	Determined in Step 4.	
Sp	4.40	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.	
d_{pp}	43.25	Crossing delay of boundary intersection parallel to the segment centerline (s)	Determined in Step 3.	
	Step 7: Pedestrian LOS for Segment			
LOS	C			

Pedestrian LOS Analysis - Total Future PM

Segment Name:

Bloor Street West

User defined value

	Step 1: Free-Flow Walking Speed			
Variable	Value	HCM Description	Commentary	
S _{pf}	4.4	average free-flow pedestrian walking speed (ft/s)	-	
% Elderly	19%	-	This is used to trigger the walking speed change recommended in the HCM	

		Ste	p 2: Average Pedestrian Space		
	Part A: Effective Sidewalk Width				
Variable	Value	HCM Description	Commentary		
W _E	10.5	effective sidewalk width (ft)	The calculation from this part used in the remainder of Step 2.		
W _T	12	total walkway width (ft)	This is measured from the point of the sidewalk furthest from the road to the road, including any buffer space. If you have evidence that suggests the width extends past the sidewalk edge (or in the case of no sidewalk) include that width.		
W _{o,i}	0	adjusted fixed-object effective width on inside (curb side) of sidewalk (ft)	This captures the fact that people tend to give way to trees, benches, etc. Note that it is dependent on the shy distance, so if the width of the object is less than the shy distance (or if it is fully contained within the buffer) it may have no impact on the effective sidewalk width.		
W _{0,0}	0	adjusted fixed-object effective width on outside of sidewalk (ft)	Similar to above, but for objects on the side further from the road.		
W _{s,i}	1.5	shy distance on inside (curb side) of sidewalk (ft)	The natural space that pedestrians give to the edge of a sidewalk, note that when a buffer greater than or equal to 1.5 ft is included the whole width of the sidewalk will be included in the effective sidewalk width (less any other width reductions).		
W _{s,o}	0	shy distance on the outside of sidewalk (ft)	The natural space that pedestrians give to objects immediately adjacent to the sidewalk. If there is empty space greater than 3 ft beyond the edge of the sidewalk (that has not been included in the total walkway width) this value should be 0, as pedestrians will use the entire sidewalk.		
W_{Buf}	0	buffer width between roadway and sidewalk (ft)	Measured from the curb to the edge of the sidewalk, again this is included in the total walkway width if it exists.		
$p_{ m window}$	0	proportion of sidewalk length adjacent to a window display (decimal)	Measure or estimate this if required.		
$p_{\rm building}$	0	proportion of sidewalk length adjacent to a building face (decimal)	Measure or estimate this if required.		
$p_{\rm fence}$	0	proportion of sidewalk length adjacent to a fence or low wall (decimal)	Measure or estimate this if required.		
W _{O,i}	0	effective width of fixed objects on inside (curb side) of sidewalk (ft)	Used to calculate the fixed-object widths above. Theses values are contained in Chapter 24 of the HCM.		
W _{0,0}	0	effective width of fixed objects on outside of sidewalk (ft)	Used to calculate the fixed-object widths above. Theses values are contained in Chapter 24 of the HCM.		

	Part B: Pedestrian Flow Rate per Unit Width			
Variable	Value	HCM Description	Commentary	
v _p	0.2	pedestrian flow per unit width (p/ft/min)	The calculation from this part used in the remainder of Step 2.	
M	123	pedestrian flow rate in the subject sidewalk (walking in	This can be approximated from the crossing volumes at the adjacent intersections, in the case of very	
v _{ped}		both directions) (p/h)	high pedestrian volumes a count should be conducted.	
W _E	10.5	effective sidewalk width (ft)	Calculated from Step 2 Part B.	

	Part C: Average Walking Speed			
Variable	Value	HCM Description	Commentary	
ç	4.4	nedestrian walking speed (ff/s)	Value must be at least half of the average free-flow walking speed. The calculation from this part used in	
Jp	4.4		the remainder of Step 2.	
Vp	0.2	pedestrian flow per unit width (p/ft/min)	Determined in Step 2 Part B.	
S _{pf}	4.4	average free-flow pedestrian walking speed (ft/s)	Determined in Step 1.	

	Part D: Pedestrian Space			
Variable	Value	HCM Description	Commentary	
A _p	1355.1	pedestrian space (ft ² /p)	One key component in calculating overall LOS	
Sp	4.4	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.	
Vp	0.2	pedestrian flow per unit width (p/ft/min)	Determined in Step 2 Part B.	

	Step 3: Pedestrian Delay at Intersection			
Variable	Value	HCM Description	Commentary	
d _{pp}	43.25		It is currently assumed that there is a signalized intersection with equivalent walk time for both perpendicular and parallel crossings. This value is calculated as part of Step 5.	
		segment centernine (s)	perpendicular and parallel crossings. This value is calculated as part of step 5.	

d_{pc}	43.25		It is currently assumed that there is a signalized intersection with equivalent walk time for both
		to the segment centerline (s)	perpendicular and parallel crossings. This value is calculated as part of Step 5.
d_pw	NO VAILLE	Crossing delay incurred by nedestrians waiting for a gan	Note, this parameter should only have a value if it is legal to cross, or there are significant observations
			of occurrence, look to HCM6 Chapter 20 for guidance. If illegal and/or no crossings are observed, type
		crossing an uncontrolled location (s)	"no value".

	Step 4: Pedestrian Travel Speed			
Variable	Value	HCM Description	Commentary	
ç	3.27	travel speed of through pedestrians for the segment	A travel speed of 4.0 ft/s or more is considered desirable and a speed of 2.0 ft/s or less is considered	
3 _{Tp,seg}		(ft/s)	undesirable.	
L	550	segment length (ft)	This length includes the boundary intersection width associated with the crossing delay.	
Sp	4.40	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.	
d	43.245	Crossing delay of boundary intersection parallel to the	Determined in Step 3.	
a _{pp}	45.245	segment centerline (s)		

	Step 5: Pedestrian LOS Score for Intersection			
Variable	Value	HCM Description	Commentary	
I _{p,int}	1.89	pedestrian LOS score for intersection	This value will be set to 0 if crossing an intersection where pedestrians have the right-of-way (as they will experience minimal delay). Note that this is only for 1 crosswalk, and the variables will have to be changed for other crosswalks. One key component in calculating overall LOS	
Fw	0.97	cross-section adjustment factor	-	
Fv	0.00	motorized vehicle volume adjustment factor	-	
Fs	0.17	motorized vehicle speed adjustment factor	-	
F_{delay}	0.15	pedestrian delay adjustment factor	-	
N _d	2	number of traffic lanes crossed when traversing crosswalk D (lanes)	-	
N _{rtci,d}	0	number of right-turn channelizing islands along Crosswalk D (0, 1, or 2)	-	
n _{15,mj}	32.13	count of vehicles traveling on the major street during a 15-min period (veh/ln)	The term "major street" is used when crossing the "minor street" and vice versa.	
∑v _i	257	sum of demand flow rate for movements crossing crosswalk i (veh/h)	This value is from all movements crossing the crosswalk, including those which would never physically share the space with them. For example, if assessing the south crossswalk this would consist of the NBR, NBT, NBL, EBR, WBL, and SBT.	
m _d	-	set of all motorized vehicle movements	This variable is used to express the movements listed in the demand flow rate, and does not have a numerical value. It is provided for reference.	
V _{rtor}	0	RTOR flow rate crossing crosswalk (v/h)	Estimate this value from Synchro to establish the number of vehicles. Consider the saturation flow rate of RTOR vs. the number of right-turners, using the saturation flow rate if the number of right turners is higher than it, and the actual turns if lower to be conservative.	
V _{lt,perm}	0	permitted left turn flow rate crossing crosswalk (v/h)	If permitted-protected left, estimate this value from Synchro.	
S _{85,mj}	40	85th percentile speed at a midsegment location on the major street (mi/h)	-	
d _{p,d}	43.25	pedestrian delay (s/p)	If the intersection is two-way stop controlled (where pedestrians do not have to wait for a gap the value is 0. If signalized try to assess the delay from Synchro HCM measures, otherwise look to HCM6 Chapter 19 for guidance.	
С	100	Cycle length (s)	-	
g _{Wakl,mi}	7	walk time (s)	Effective walk time is based on the type of signal control. For most cases allow for walk time + 4.0. For more guiance consult Chapter 19 of the HCM.If the walk time is not the same for multiple legs this value will need to be changed for each crosswalk.	

	Step 6: Pedestrian LOS Score for Link			
Variable	Value	HCM Description	Commentary	
I _{p,link}	2.9	pedestrian LOS score for link	One key component in calculating overall LOS (along with corner and crosswalk geometrics)	
Fw	-4.51	cross-section adjustment factor	-	
Fv	0.81	motorized vehicle volume adjustment factor	-	
Fs	0.55	motorized vehicle speed adjustment factor	-	
W _v		effective total width of outside through lane, bicycle lane, and shoulder as a function of traffic volume (ft)	This value is conditional on the flow and sidewalk width	
Wı	0.00	total width of shoulder, bicycle lane, and parking lane (ft)	This value is conditional on the parking and non-travel lane width	
p_{pk}	0	proportion of on-street parking occupied (decimal)	-	
W _{oi}	9.5	width of outside through lane (ft)	-	
W _{os} *	0	adjusted width of paved outside shoulder (ft)	If there is a curb, subtract 1.5 from W _{os}	

W _{os}	0	width of paved outside shoulder (ft)	-
W _{bl}	0	width of bicycle lane (ft)	-
W _{pk}	0	width of striped parking lane (ft)	-
W _{buff}	0.00	buffer width between roadway and available sidewalk (ft)	Determined in Step 2 Part A.
f _b	1	Ibutter area coefficient	If there is a continous barrier at least 3 ft high located between the sidewalk and the otuside edge of the roadway use 5.37, otherwise use 1.00
W _A	12.00	available sidewalk width (ft)	This value may be different than the effective width, as it does not consider object widths or shy distance.
W _T	12.00	total walkway width (ft)	Determined in Step 2 Part A.
W _{aA}	10.00	adjusted available sidewalk width (ft)	-
f _{sw}	3.00	sidewalk width coefficient	-
v _m	715	midsegment demand flow rate (direction nearest to subject sidewalk) (veh/h)	-
N _{th}	2	number of through lanes on the segment in the subject direction of travel (lanes)	-
S _R	37	motorized vehicle running speed (mi/h)	Note: Unless explicitly required, it is recommended that the speed limit is used for this value, as computing this parameter requires significant data regarding the segment, which is summarized in HCM6 chapter 19. A speed survey could also be conducted to assess the speed of vehicles adjacent to pedestrian travel.

	St	ep 7: Pedestrian LOS for Link
LOS	Link Based LOS Score	
А	≤1.50	
В	>1.50-2.50	
С	>2.50-3.50	C
D	>3.50-4.50	
E	>4.50-5.50	
F	>5.50	

		Step 8:	Roadway Crossing Difficulty Factor
Variable	Value	HCM Description	Commentary
F _{cd}	1.2	roadway crossing difficulty factor	One key component in calculating overall LOS. Must be between 0.8 and 1.2
d _{px}	60.00	crossing delay (s/p)	Note: The crossing delay should not be 0 unless the intersection that is being crossed is stop-controlled on the leg attempting to be crossed
d _{pd}	156.88	pedestrian diversion delay (s/p)	Determined in Step 6.
d _{pw}	No Value	pedestrian waiting delay (s/p)	Determined in Step 3.
D _d	500.00	diversion distance (ft)	
D _{dc}	250.00	distance to nearest signal-controlled crossing (ft)	Define this distance as either 1/3 of the distance between two crossings, or the distance that would be required to deviate from an established pedestrian path.
Sp	4.40	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.
d _{pc}	43.25	Crossing delay of boundary intersection perpendicular to the segment centerline (s)	Determined in Step 3.
l _{p,link}	2.89	pedestrian LOS score for link	Determined in Step 6.
I _{p,int}	1.89	pedestrian LOS score for intersection	Determined in Step 5.

		Step 9:	Pedestrian LOS Score for Segment
Variable	Value	HCM Description	Commentary
I _{p,seg}	3.26	pedestrian LOS score for segment	One key component in calculating overall LOS (along with corner and crosswalk geometrics)
F _{cd}	1.2	roadway crossing difficulty factor	One key component in calculating overall LOS
l _{p,link}	2.89	pedestrian LOS score for link	Determined in Step 6.
I _{p,int}	1.89	pedestrian LOS score for intersection	Determined in Step 5.
L	550	segment length (ft)	Determined in Step 4.
Sp	4.40	pedestrian walking speed (ft/s)	Determined in Step 2 Part C.
d_{pp}	43.25	Crossing delay of boundary intersection parallel to the segment centerline (s)	Determined in Step 3.
		Step	7: Pedestrian LOS for Segment
LOS			C



F

Future Background Traffic Conditions

1: Lansdowne Aven												
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Lane Configurations		•			•	1	1	A		2	¢Î	
Traffic Volume (vph)	0	781	0	0	532	75	62	365	60	151	327	98
Future Volume (vph)	0	781	0	0	532	75	62	365	60	151	327	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.5	3.0	3.0	3.2	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Storage Length (m)	0.0		0.0	0.0		14.1	14.4		15.3	36.3		0.0
Storage Lanes	0		0	0		1	1		1	1		C
Taper Length (m)	2.5			2.5			25.0			10.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor						0.69	0.85	0.91		0.79	0.89	
Frt						0.850		0.975			0.955	
Flt Protected							0.950			0.950		
Satd. Flow (prot)	0	1658	0	0	1602	1343	1458	2692	0	1501	1383	C
Flt Permitted							0.375			0.318		
Satd. Flow (perm)	0	1658	0	0	1602	931	488	2692	0	397	1383	0
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)								23			24	
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		374.8			112.0			258.8			36.6	
Travel Time (s)		33.7			10.1			23.3			3.3	
Confl. Peds. (#/hr)	261		188	188		261	149		271	271		149
Confl. Bikes (#/hr)			2			2			3			5
Peak Hour Factor	0.50	1.00	0.76	0.90	0.95	0.69	0.75	0.93	0.75	0.80	0.99	0.70
Heavy Vehicles (%)	0%	2%	3%	0%	2%	1%	4%	6%	5%	1%	5%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	13	0	0	C
Adj. Flow (vph)	0	781	0	0	560	109	83	392	80	189	330	140
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	781	0	0	560	109	83	472	0	189	470	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.0			3.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.25	1.16	1.25	1.25	1.21	1.25	1.25	1.16	1.25	1.25	1.16	1.25
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2			2	1	1	2		1	2	
Detector Template		Thru			Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)		30.5			30.5	6.1	6.1	30.5		6.1	30.5	
Trailing Detector (m)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)		1.8			1.8	6.1	6.1	1.8		6.1	1.8	
Detector 1 Type		Cl+Ex			CI+Ex	CI+Ex	CI+Ex	CI+Ex		Cl+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SB
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type		NA			NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		2			6			4		3	8	
Permitted Phases						6	4			8		
Detector Phase		2			6	6	4	4		3	8	
Switch Phase												
Minimum Initial (s)		26.0			26.0	26.0	22.0	22.0		6.0	22.0	
Minimum Split (s)		34.0			34.0	34.0	28.0	28.0		10.0	28.0	
Total Split (s)		58.0			58.0	58.0	31.0	31.0		11.0	42.0	
Total Split (%)		58.0%			58.0%	58.0%	31.0%	31.0%		11.0%	42.0%	
Maximum Green (s)		51.4			51.4	51.4	25.0	25.0		7.0	36.0	
Yellow Time (s)		3.0			3.0	3.0	4.0	4.0		3.0	4.0	
All-Red Time (s)		3.6			3.6	3.6	2.0	2.0		1.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.6			5.6	5.6	5.0	5.0		3.0	5.0	
Lead/Lag		0.0			0.0	0.0	Lag	Lag		Lead	0.0	
Lead-Lag Optimize?							209	209		2000		
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0		2.0	3.0	
Recall Mode	(C-Max			C-Max	C-Max	Max	Max		None	Max	
Walk Time (s)		7.0			7.0	7.0	7.0	7.0		Nono	7.0	
Flash Dont Walk (s)		19.0			19.0	19.0	15.0	15.0			15.0	
Pedestrian Calls (#/hr)		40			40	40	40	40			40	
Act Effct Green (s)		52.4			52.4	52.4	26.0	26.0		39.0	37.0	
Actuated g/C Ratio		0.52			0.52	0.52	0.26	0.26		0.39	0.37	
v/c Ratio		0.90			0.67	0.22	0.66	0.66		0.78	0.89	
Control Delay		29.3			22.3	14.4	60.0	36.5		46.1	49.8	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		29.3			22.3	14.4	60.0	36.5		46.1	49.8	
LOS		23.3 C			22.3 C	14.4 B	00.0 E	50.5 D		40.1 D	43.0 D	
Approach Delay		29.3			21.0	D	L	40.0		U	48.7	
Approach LOS		29.3 C			21.0 C			40.0 D			40.7 D	
••		U			U			U			D	
Intersection Summary Area Type: 0	CBD											
Cycle Length: 100	000											
Actuated Cycle Length: 100												
Offset: 38 (38%), Referenced	to phase ?	·FRT and	16.WBT	Start of	Green							
Natural Cycle: 90	2 10 01030 2		u 0.0001,	Otart of	Oreen							
Control Type: Actuated-Coor	dinated											
Maximum v/c Ratio: 0.90												
Intersection Signal Delay: 34	3			Ir	ntersectio	n LOS [.] C						
Intersection Capacity Utilizati					CU Level		G					
Analysis Period (min) 15				N	0.0 10101	0.001100						

→Ø2 (R)	Ø3 Ø4
58 s	11s 31s
 Ø6 (R)	₩Ø8
58 s	42 s

Lanes, Volumes, Timings 2: Ruttan Street & Bloor Street West

<Future Background> AM Peak 02/16/2021

	-	\mathbf{i}	4	+	•	1	
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	4Î			ا	Y		
Traffic Volume (vph)	824	22	11	670	45	29	
Future Volume (vph)	824	22	11	670	45	29	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.5	3.5	3.5	3.5	3.0	3.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.997				0.947		
Flt Protected				0.999	0.970		
Satd. Flow (prot)	1837	0	0	1840	1597	0	
Flt Permitted				0.999	0.970		
Satd. Flow (perm)	1837	0	0	1840	1597	0	
Link Speed (k/h)	40			40	30		
Link Distance (m)	69.7			374.8	79.4		
Travel Time (s)	6.3			33.7	9.5		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	916	24	12	744	50	32	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	940	0	0	756	82	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(m)	0.0			0.0	3.0		
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	1.6			1.6	1.6		
Two way Left Turn Lane							
Headway Factor	1.01	1.01	1.01	1.01	1.09	1.09	
Turning Speed (k/h)		14	24		24	14	
Sign Control	Free			Free	Stop		
Intersection Summary							
Area Type: 0	Other						
Control Type: Unsignalized							
Intersection Capacity Utilizat	ion 55.6%			IC	CU Level o	of Service I	В
Analysis Period (min) 15							

HCM Unsignalized Intersection Capacity Analysis 2: Ruttan Street & Bloor Street West

<Future Background> AM Peak 02/16/2021

	-	\mathbf{F}	4	+	1	1
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	ĥ			र्स	Y	
Traffic Volume (veh/h)	824	22	11	670	45	29
Future Volume (Veh/h)	824	22	11	670	45	29
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	916	24	12	744	50	32
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	70			375		
pX, platoon unblocked			0.70		0.81	0.70
vC, conflicting volume			940		1696	928
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			701		1140	684
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					0.11	0.2
tF (s)			2.2		3.5	3.3
p0 queue free %			98		72	90
cM capacity (veh/h)			628		176	314
Direction, Lane #	EB 1	WB 1	NB 1			•••
Volume Total	940	756	82			
Volume Left	940	12	50			
Volume Right	24	0	32			
cSH	1700	628	213			
Volume to Capacity	0.55	0.02	0.39			
Queue Length 95th (m)	0.05	0.02	12.9			
	0.0	0.4	32.1			
Control Delay (s) Lane LOS	0.0	••	32.1 D			
	0.0	A 0.5	32.1			
Approach Delay (s)	0.0	0.5				
Approach LOS			D			
Intersection Summary						
Average Delay			1.7			
Intersection Capacity Utiliz	zation		55.6%	IC	U Level o	of Service
Analysis Period (min)			15			
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221-225 Sterling Road Transportation Impact Study

Synchro 10 Report Page 3 221-225 Sterling Road Transportation Impact Study

3: Sterling Road/Sy												
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	٦	•			f,		ሻ	el 🗍		ሻ		1
Traffic Volume (vph)	112	637	0	0	631	84	48	38	18	191	0	168
Future Volume (vph)	112	637	0	0	631	84	48	38	18	191	0	168
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.3	3.0	3.0	4.2	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Storage Length (m)	27.5		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	0		0	1		0	1		1
Taper Length (m)	7.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					0.97		0.62	0.91		0.90		0.79
Frt					0.982			0.945				0.850
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1531	1605	0	0	1870	0	1685	1586	0	1652	0	1333
Flt Permitted	0.088						0.950			0.950		
Satd. Flow (perm)	142	1605	0	0	1870	0	1053	1586	0	1485	0	1051
Right Turn on Red	172	1000	Yes	U	1010	Yes	1000	1000	No	1100	Ū	No
Satd. Flow (RTOR)			100		9	100			110			110
Link Speed (k/h)		40			40			30			40	
Link Distance (m)		98.8			69.7			91.9			175.2	
Travel Time (s)		8.9			6.3			11.0			15.8	
Confl. Peds. (#/hr)	86	0.5	28	28	0.0	86	75	11.0	45	45	10.0	75
Confl. Bikes (#/hr)	00		50	20		50	15		43	40		7
Peak Hour Factor	0.72	1.00	0.90	0.90	0.93	0.79	0.72	0.77	0.65	0.81	0.90	0.84
Heavy Vehicles (%)	14%	3%	0.50	0%	3%	1%	0%	3%	0%	2%	0%	9%
Bus Blockages (#/hr)	0	0	0	0	0	1	0	0	0	2 /0	3	9
Parking (#/hr)	0	0	0	0	0		0	0	0	0	5	5
Adj. Flow (vph)	156	637	0	0	678	106	67	49	28	236	0	200
Shared Lane Traffic (%)	150	037	0	0	070	100	07	49	20	230	0	200
Lane Group Flow (vph)	156	637	0	0	784	0	67	77	0	236	0	200
Enter Blocked Intersection	No	No	No	No	No No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left		Left	Left	
Median Width(m)	Leit	3.3	Right	Leit	3.3	Right	Leit	3.0	Right	Leit	3.0	Right
					0.0			0.0				
Link Offset(m)		0.0 4.8			0.0 4.8			0.0 4.8			0.0 4.8	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane	1.04	1.19	1.09	1.09	0.92	1.09	1.09	1.01	1.09	1.09	1.01	1.14
Headway Factor		1.19			0.92			1.01			1.01	
Turning Speed (k/h)	25	0	15	25	0	15	25	2	15	25		15
Number of Detectors	1	2			2		1			1		1
Detector Template	Left	Thru			Thru		Left	Thru		Left		Right
Leading Detector (m)	6.1	30.5			30.5		6.1	30.5		6.1		6.1
Trailing Detector (m)	0.0	0.0			0.0		0.0	0.0		0.0		0.0
Detector 1 Position(m)	0.0	0.0			0.0		0.0	0.0		0.0		0.0
Detector 1 Size(m)	6.1	1.8			1.8		6.1	1.8		6.1		6.1
Detector 1 Type	CI+Ex	CI+Ex			Cl+Ex		CI+Ex	CI+Ex		CI+Ex		CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0		0.0		0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0		0.0		0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0		0.0		0.0
Detector 2 Position(m)		28.7			28.7			28.7				

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ane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SB
Detector 2 Size(m)		1.8			1.8			1.8				
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	pm+pt	NA			NA		Split	NA		Prot		pt+c
Protected Phases	5	2			6		4	4		3		. 3
Permitted Phases	2											
Detector Phase	5	2			6		4	4		3		3
Switch Phase												
/inimum Initial (s)	6.0	21.0			21.0		7.0	7.0		19.0		
/inimum Split (s)	10.0	29.0			29.0		16.0	16.0		27.0		
Total Split (s)	10.0	57.0			47.0		16.0	16.0		27.0		
Total Split (%)	10.0%	57.0%			47.0%		16.0%	16.0%		27.0%		
Aaximum Green (s)	6.0	49.3			39.3		9.0	9.0		20.0		
(ellow Time (s)	3.0	3.0			3.0		4.0	4.0		4.0		
All-Red Time (s)	1.0	4.7			4.7		3.0	3.0		3.0		
ost Time Adjust (s)	-1.0	-3.0			-1.0		-1.0	-1.0		-1.0		
Total Lost Time (s)	3.0	4.7			6.7		6.0	6.0		6.0		
.ead/Lag	Lead	-1.7			Lag		Lag	Lag		Lead		
.ead-Lag Optimize?	Loud				Lug		Lug	Lug		Loud		
/ehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0		
Recall Mode	Max	C-Max			C-Max		None	None		None		
Valk Time (s)	IVICIA	7.0			7.0		None	None		8.0		
lash Dont Walk (s)		14.0			14.0					12.0		
Pedestrian Calls (#/hr)		28			36					36		
Act Effct Green (s)	57.7	56.0			44.0		9.5	9.5		20.6		25
Actuated g/C Ratio	0.58	0.56			0.44		0.10	0.10		0.21		0.1
/c Ratio	0.58	0.50			0.44		0.10	0.10		0.21		0.
	61.4	23.0			41.4		51.0	55.5		48.7		30
Control Delay Queue Delay	01.4	0.0			0.0		0.0	0.0		40.7		0
Total Delay	61.4	23.0			41.4		51.0	55.5		48.7		30
.OS	61.4 E	23.0 C			41.4 D		51.0 D	55.5 E		40.7 D		30
	_	30.6			41.4		D	53.4		D	40.3	
Approach Delay												
Approach LOS		С			D			D			D	
ntersection Summary	0.11											
Area Type: Cycle Length: 100	Other											
	0											
Actuated Cycle Length: 10				T 04-4-	£ 0							
Offset: 89 (89%), Referen	ced to phase	ZEBIL a		i, Start o	ir Green							
Natural Cycle: 95	andinatad											
Control Type: Actuated-Co Maximum v/c Ratio: 0.95	Jordinated											
	20.0			- In	to rooti	100.0						
ntersection Signal Delay:					ntersection		D					
ntersection Capacity Utiliz	2auon 77.0%			IC	CU Level c	DI SELVICE	U					

4 _{Ø2 (R)}	•	Ø3	N ø₄	
57 s		27 s	16 s	
₽ _{Ø5}	← Ø6 (R)			
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4: Dundas Street W				1000								6/2021
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SB
ane Configurations		•	1	۲.	•	1		-€††}>			4 î>	
Traffic Volume (vph)	0	698	202	72	646	117	0	551	159	10	885	6
Future Volume (vph)	0	698	202	72	646	117	0	551	159	10	885	6
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	190
ane Width (m)	3.0	3.4	3.0	3.0	3.3	3.0	3.0	3.5	3.0	3.0	3.5	3.
Storage Length (m)	0.0		17.5	26.4		31.0	0.0		0.0	0.0		0.
Storage Lanes	0		1	1		1	0		0	0		(
Taper Length (m)	50.0			7.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	0.91	0.95	0.95	0.9
Ped Bike Factor			0.74	0.91		0.60		0.85			0.95	
Frt			0.850			0.850		0.964			0.988	
Fit Protected				0.950							0.999	
Satd. Flow (prot)	0	1623	1436	1589	1712	1358	0	3969	0	0	3184	(
FIt Permitted				0.950							0.938	
Satd. Flow (perm)	0	1623	1063	1447	1712	820	0	3969	0	0	2982	(
Right Turn on Red			Yes			Yes			Yes			Ye
Satd. Flow (RTOR)			121			86		89			10	
_ink Speed (k/h)		40			40			40			40	
ink Distance (m)		75.1			318.0			159.9			139.1	
Travel Time (s)		6.8			28.6			14.4			12.5	
Confl. Peds. (#/hr)	670		219	219		670	453		442	442		45
Confl. Bikes (#/hr)			50			50			9			1
Peak Hour Factor	0.64	1.00	0.83	0.98	0.96	0.89	0.90	0.98	0.90	0.69	0.98	0.7
Heavy Vehicles (%)	4%	3%	5%	6%	3%	11%	0%	7%	3%	100%	4%	0%
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	0	(
Parking (#/hr)		0										
Adj. Flow (vph)	0	698	243	73	673	131	0	562	177	14	903	8
Shared Lane Traffic (%)							-					
Lane Group Flow (vph)	0	698	243	73	673	131	0	739	0	0	998	(
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
ane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Righ
Median Width(m)		3.0			3.0			0.0			0.0	
_ink Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.09	1.18	1.09	1.09	1.10	1.09	1.09	1.01	1.09	1.09	1.01	1.0
Turning Speed (k/h)	25		15	25		15	25		15	25		1
Number of Detectors	20	2	.1	1	2	1	1	2	10	1	2	
Detector Template		Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
_eading Detector (m)		30.5	6.1	6.1	30.5	6.1	2.0	30.5		2.0	30.5	
Trailing Detector (m)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)		1.8	6.1	6.1	1.8	6.1	6.1	1.8		6.1	1.8	
Detector 1 Type		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel			OI'LA	OI'LA						OI'LA	OI-LA	
Detector 1 Extend (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7	0.0	0.0	28.7	0.0	0.0	28.7		0.0	28.7	

Synchro 10 Report Page 7 Lanes, Volumes, Timings 4: Dundas Street West & Bloor Street West

<Future Background> AM Peak 02/16/2021

Lane Group	Ø1	Ø5
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (m)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Bus Blockages (#/hr)		
Parking (#/hr)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		

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4: Dundas Street V	vest & Bio	013		vesi							02/1	6/202
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Lane Group	EBL E	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SB
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type	CI	+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type		NA	Perm	Prot	NA	Perm		NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases			4			8	2			6		
Detector Phase		4	4	3	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)		25.0	25.0	6.0	25.0	25.0	19.0	19.0		19.0	19.0	
Minimum Split (s)		31.3	31.3	11.0	31.3	31.3	25.0	25.0		25.0	25.0	
Total Split (s)		43.0	43.0	11.0	54.0	54.0	31.0	31.0		31.0	31.0	
Total Split (%)		.8%	47.8%	12.2%	60.0%	60.0%	34.4%	34.4%		34.4%	34.4%	
Maximum Green (s)		36.7	36.7	6.0	47.7	47.7	25.0	25.0		25.0	25.0	
Yellow Time (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)		3.3	3.3	2.0	3.3	3.3	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0	-1.0		-1.0			-1.0	
Total Lost Time (s)		5.3	5.3	4.0	5.3	5.3		5.0			5.0	
Lead/Lag		Lag	Lag	Lead			Lag	Lag		Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode		Max	Max	None	Max	Max	C-Max	C-Max		C-Max	C-Max	
Walk Time (s)		7.0	7.0		7.0	7.0	2.0	2.0		2.0	2.0	
Flash Dont Walk (s)		18.0	18.0		18.0	18.0	17.0	17.0		17.0	17.0	
Pedestrian Calls (#/hr)		40	40		40	40	40	40		40	40	
Act Effct Green (s)		39.9	39.9	7.0	48.7	48.7		28.0			31.0	
Actuated g/C Ratio).44	0.44	0.08	0.54	0.54		0.31			0.34	
v/c Ratio		0.97	0.45	0.59	0.73	0.27		0.57			0.97	
Control Delay	ţ	54.7	12.3	61.0	21.4	6.0		25.1			50.9	
Queue Delay		0.0	0.0	0.0	0.0	0.0		0.0			0.0	
Total Delay	ţ	54.7	12.3	61.0	21.4	6.0		25.1			50.9	
LOS		D	В	E	C	A		С			D	
Approach Delay	2	43.8			22.4			25.1			50.9	
Approach LOS		D			С			С			D	
Intersection Summary												
Area Type:	Other											
Cycle Length: 90												
Actuated Cycle Length: 90												
Offset: 34 (38%), Referenc	ed to phase 2:N	BTL :	and 6:SB	TL, Start	of 1st Gre	en						
Natural Cycle: 110												
Control Type: Actuated-Co	ordinated											
Maximum v/c Ratio: 0.97												
Intersection Signal Delay: 3					ntersectio							
Intersection Capacity Utilization	ation 87.8%			10	CU Level	of Service	ε					
Analysis Period (min) 15												
Splits and Phases: 4: Du	indas Street We	st & I	Bloor Stre	et West								
●ø∎ [≪] ¶ø2 (R)				Ø3	-	₩04						
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Lanes, Volumes, Timings 4: Dundas Street West & Bloor Street West <Future Background> AM Peak 02/16/2021

Lane Group	Ø1	Ø5
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	1	5
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	3.0
Recall Mode	None	None
Walk Time (s)	3.0	
Flash Dont Walk (s)	0.0	
Pedestrian Calls (#/hr)	40	
Act Effct Green (s)		
Actuated q/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		

221-225 Sterling Road Transportation Impact Study

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Lane Configurations		4 î b			đ þ			\$			\$	
Traffic Volume (vph)	82	1280	1	0	654	105	1	1	1	72	0	54
Future Volume (vph)	82	1280	1	0	654	105	1	1	1	72	0	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			0.99			0.98			0.97	
Frt					0.979			0.955			0.942	
Flt Protected		0.997						0.984			0.972	
Satd. Flow (prot)	0	3394	0	0	3149	0	0	1049	0	0	1595	0
Flt Permitted		0.834						0.933			0.822	
Satd. Flow (perm)	0	2834	0	0	3149	0	0	984	0	0	1335	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)					38			1				
Link Speed (k/h)		40			40			30			30	
Link Distance (m)		123.6			101.7			33.0			87.8	
Travel Time (s)		11.1			9.2			4.0			10.5	
Confl. Peds. (#/hr)	50		27	27		50	38		15	15		38
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
Heavy Vehicles (%)	3%	5%	0%	2%	10%	5%	100%	0%	100%	4%	2%	7%
Adj. Flow (vph)	84	1306	1	0	667	107	1	1	1	73	0	55
Shared Lane Traffic (%)	0.			, in the second s						10	Ŭ	
Lane Group Flow (vph)	0	1391	0	0	774	0	0	3	0	0	128	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel	-	-		-	-		-	-		-	-	
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA			NA		Perm	NA		Perm	NA	
Protected Phases	1 0111	2			6		i vini	4		i viili	8	

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SB
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	25.0	25.0		25.0	25.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		28.0	28.0		28.0	28.0	
Total Split (s)	61.0	61.0		61.0	61.0		29.0	29.0		29.0	29.0	
Total Split (%)	67.8%	67.8%		67.8%	67.8%		32.2%	32.2%		32.2%	32.2%	
Maximum Green (s)	55.0	55.0		55.0	55.0		24.0	24.0		24.0	24.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		5.0			5.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		Мах	Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	18.0	18.0		18.0	18.0		16.0	16.0		16.0	16.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		66.3		-	66.3		-	14.7		-	14.7	
Actuated g/C Ratio		0.74			0.74			0.16			0.16	
v/c Ratio		0.67			0.33			0.02			0.59	
Control Delay		8.9			4.8			25.7			45.0	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		8.9			4.8			25.7			45.0	
LOS		A			A			C			D	
Approach Delay		8.9			4.8			25.7			45.0	
Approach LOS		A			A			C			-10.0 D	
Intersection Summary		~			~			0			D	
Area Type:	Other											
Cycle Length: 90	outor											
Actuated Cycle Length: 90												
Offset: 76 (84%), Reference	ed to nhase	2 EBTL	Start of G	reen								
Natural Cycle: 70		2.2012, (10011								
Control Type: Actuated-Cod	ordinated											
Maximum v/c Ratio: 0.67	Junatou											
Intersection Signal Delay: 9	6			Ir	tersection							
Intersection Capacity Utiliza					CU Level c		F					
Analysis Period (min) 15				K								
Splits and Phases: 5: Pri	vate Acces	s/Storling	Road & F)undas S	treet West							
→ Ø2 (R)	10000	a o torning i						<∎ ø4				

, ▲ _{Ø2 (R)}	
61s	29 s
€ Ø6	↓ Ø8
61s	29 s

221-225 Sterling Road Transportation Impact Study

Lanes, Volumes, Timings	
6: Ruttan Street & Merchant Lane	

<Future Background> AM Peak 02/16/2021

	1	×	t	۲	1	Ļ	
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	- Y		ĥ			Ą	
Traffic Volume (vph)	6	28	20	0	8	19	
Future Volume (vph)	6	28	20	0	8	19	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.890						
Flt Protected	0.991					0.985	
Satd. Flow (prot)	1625	0	1842	0	0	1814	
FIt Permitted	0.991					0.985	
Satd. Flow (perm)	1625	0	1842	0	0	1814	
Link Speed (k/h)	30		30			30	
Link Distance (m)	40.4		89.3			79.4	
Travel Time (s)	4.8		10.7			9.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	7	31	22	0	9	21	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	38	0	22	0	0	30	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Right	Left	Left	
Median Width(m)	3.5		0.0			0.0	
Link Offset(m)	0.0		0.0			0.0	
Crosswalk Width(m)	1.6		1.6			1.6	
Two way Left Turn Lane							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	
Turning Speed (k/h)	24	14		14	24		
Sign Control	Stop		Free			Free	
Intersection Summary							
	Other						
Control Type: Unsignalized							
Intersection Capacity Utilizat	ion 18.0%			IC	U Level (of Service	А
Analysis Period (min) 15							

HCM Unsignalized Intersection Capacity Analysis 6: Ruttan Street & Merchant Lane <Future Background> AM Peak 02/16/2021

	4	•	Ť	1	1	Ŧ
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		¢Î			ę
Traffic Volume (veh/h)	6	28	20	0	8	19
Future Volume (Veh/h)	6	28	20	0	8	19
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	7	31	22	0	9	21
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	61	22			22	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	61	22			22	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	97			99	
cM capacity (veh/h)	940	1055			1593	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	38	22	30			
Volume Left	7	0	9			
Volume Right	31	0	0			
cSH	1032	1700	1593			
Volume to Capacity	0.04	0.01	0.01			
Queue Length 95th (m)	0.9	0.0	0.1			
Control Delay (s)	8.6	0.0	2.2			
Lane LOS	A		A			
Approach Delay (s)	8.6	0.0	2.2			
Approach LOS	A	0.0				
Intersection Summary						
Average Delay			4.4			
Intersection Capacity Utiliz	ation		18.0%	IC	U Level o	of Service
Analysis Period (min)			15			
			10			

221-225 Sterling Road Transportation Impact Study

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Lanes, Volumes, Ti 8: Sterling Road & I	•	venue					<future background=""> AM Peak 02/16/202⁻</future>
	•	>	•	t	Ļ	1	
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	Y			र्स	ĥ		
Traffic Volume (vph)	39	168	12	88	24	2	
Future Volume (vph)	39	168	12	88	24	2	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor							
Frt	0.890				0.990		
Flt Protected	0.991			0.994			
Satd. Flow (prot)	1597	0	0	1789	1794	0	
Flt Permitted	0.991			0.994			
Satd. Flow (perm)	1597	0	0	1789	1794	0	
Link Speed (k/h)	30			30	30		
Link Distance (m)	70.2			16.3	54.8		
Travel Time (s)	8.4			2.0	6.6		
Confl. Peds. (#/hr)	4	90	13			13	
Confl. Bikes (#/hr)		4					
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Heavy Vehicles (%)	7%	3%	0%	5%	0%	50%	
Adj. Flow (vph)	41	177	13	93	25	2	
Shared Lane Traffic (%)					20	-	
Lane Group Flow (vph)	218	0	0	106	27	0	
Enter Blocked Intersection	No	No	No	No	No.	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(m)	3.5		2011	0.0	0.0	. ugint	
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	1.6			1.6	1.6		
Two way Left Turn Lane	1.0			1.0	1.0		
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	
Turning Speed (k/h)	24	1.01	24	1.01	1.01	14	
Sign Control	Stop	17	27	Stop	Stop		
•	otop			otop	otop		
Intersection Summary	Other						
	Julei						
Control Type: Unsignalized	ion 25 99/			10		of Service A	
Intersection Capacity Utilizat	1011 35.8%			IC	O LEVEL	DI SEIVICE A	
Analysis Period (min) 15							

HCM Unsignalized Intersection Capacity Analysis 8: Sterling Road & Perth Avenue <Future Background> AM Peak 02/16/2021

Movement EBL EBR NBL NBT SBT SBR Lane Configurations Y Image: Configuration in the second sec
Sign Control Stop Stop Stop Traffic Volume (vph) 39 168 12 88 24 2 Future Volume (vph) 39 168 12 88 24 2 Peak Hour Factor 0.95 0.95 0.95 0.95 0.95 0.95 Hourly flow rate (vph) 41 177 13 93 25 2 Direction, Lane # EB 1 NB 1 SB 1 2 2 2 2 0 3 25 2 2 2 3 3 25 2 3 3 25 2 3 3 25 2 3<
Traffic Volume (vph) 39 168 12 88 24 2 Future Volume (vph) 39 168 12 88 24 2 Peak Hour Factor 0.95 0.95 0.95 0.95 0.95 0.95 0.95 Direction, Lane # EB 1 NB 1 SB 1 0.95 <t< td=""></t<>
Future Volume (vph) 39 168 12 88 24 2 Peak Hour Factor 0.95
Peak Hour Factor 0.95
Hourly flow rate (vph) 41 177 13 93 25 2 Direction, Lane # EB 1 NB 1 SB 1 Volume Total (vph) 218 106 27 Volume Left (vph) 41 13 0 Volume Right (vph) 177 0 2 Hadj (s) -0.39 0.10 0.02 Departure Headway (s) 3.8 4.5 4.5 Degree Utilization, x 0.23 0.13 0.03 Capacity (veh/h) 912 762 747 Control Delay (s) 8.0 8.2 7.6
Direction, Lane # EB 1 NB 1 SB 1 Volume Total (vph) 218 106 27 Volume Right (vph) 41 13 0 Volume Right (vph) 177 0 2 Hadj (s) -0.39 0.10 0.02 Departure Headway (s) 3.8 4.5 4.5 Degree Utilization, x 0.23 0.13 0.03 Capacity (veh/h) 912 762 747 Control Delay (s) 8.0 8.2 7.6
Volume Total (vph) 218 106 27 Volume Left (vph) 41 13 0 Volume Right (vph) 177 0 2 Hadj (s) -0.39 0.10 0.02 Departure Headway (s) 3.8 4.5 4.5 Degree Utilization, x 0.23 0.13 0.03 Capacity (veh/h) 912 762 747 Control Delay (s) 8.0 8.2 7.6
Volume Left (vph) 41 13 0 Volume Right (vph) 177 0 2 Hadj (s) -0.39 0.10 0.02 Departure Headway (s) 3.8 4.5 4.5 Degree Utilization, x 0.23 0.13 0.03 Capacity (veh/h) 912 762 747 Control Delay (s) 8.0 8.2 7.6
Volume Left (vph) 41 13 0 Volume Right (vph) 177 0 2 Hadj (s) -0.39 0.10 0.02 Departure Headway (s) 3.8 4.5 4.5 Degree Utilization, x 0.23 0.13 0.03 Capacity (veh/h) 912 762 747 Control Delay (s) 8.0 8.2 7.6
Hadj (s) -0.39 0.10 0.02 Departure Headway (s) 3.8 4.5 4.5 Degree Utilization, x 0.23 0.13 0.03 Capacity (velv/h) 912 762 747 Control Delay (s) 8.0 8.2 7.6
Departure Headway (s) 3.8 4.5 4.5 Degree Utilization, x 0.23 0.13 0.03 Capacity (veh/h) 912 762 747 Control Delay (s) 8.0 8.2 7.6
Degree Utilization, x 0.23 0.13 0.03 Capacity (veh/h) 912 762 747 Control Delay (s) 8.0 8.2 7.6
Capacity (veh/h) 912 762 747 Control Delay (s) 8.0 8.2 7.6
Control Delay (s) 8.0 8.2 7.6
Control Delay (s) 8.0 8.2 7.6
Approach LOS A A A
Intersection Summary
Delay 8.0
Level of Service A
Intersection Capacity Utilization 35.8% ICU Level of Servic
Analysis Period (min) 15

221-225 Sterling Road Transportation Impact Study

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1: Lansdowne Aven				001							02/16/2	
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		1			•	1	ľ	A		ľ	¢Î	
Traffic Volume (vph)	0	617	0	0	709	122	135	386	38	105	276	88
Future Volume (vph)	0	617	0	0	709	122	135	386	38	105	276	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.5	3.0	3.0	3.2	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Storage Length (m)	0.0		0.0	0.0		14.1	14.4		15.3	36.3		0.0
Storage Lanes	0		0	0		1	1		1	1		0
Taper Length (m)	2.5			2.5			25.0			10.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor						0.68	0.81	0.94		0.76	0.85	
Frt						0.850		0.984		••	0.958	
Flt Protected						0.000	0.950	0.001		0.950	0.000	
Satd. Flow (prot)	0	1674	0	0	1602	1343	1501	2884	0	1516	1335	0
Flt Permitted	Ŭ	1014	Ŭ	U	1002	1010	0.266	2004	Ŭ	0.383	1000	Ű
Satd. Flow (perm)	0	1674	0	0	1602	911	342	2884	0	463	1335	0
Right Turn on Red	0	1074	No	0	1002	No	J42	2004	Yes	403	1555	Yes
Satd. Flow (RTOR)			INU			NU		14	165		21	165
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		374.8			112.0			258.8			36.6	
		33.7			10.1			23.3			3.3	
Travel Time (s)	200	33.1	000	000	10.1	200	000	23.3	250	250	3.3	000
Confl. Peds. (#/hr)	329		292	292		329	280		352	352		280
Confl. Bikes (#/hr)	0.00	4.00	1	0.50	4.00	0.07	0.00	0.00	1	0.04	0.00	4
Peak Hour Factor	0.63	1.00	0.63	0.50	1.00	0.87	0.88	0.88	0.73	0.94	0.90	0.73
Heavy Vehicles (%)	0%	1%	4%	0%	2%	1%	1%	3%	3%	0%	4%	0%
Bus Blockages (#/hr)	0	0	1	0	0	0	0	0	9	0	0	0
Adj. Flow (vph)	0	617	0	0	709	140	153	439	52	112	307	121
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	617	0	0	709	140	153	491	0	112	428	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.0			3.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.25	1.16	1.25	1.25	1.21	1.25	1.25	1.16	1.25	1.25	1.16	1.25
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2			2	1	1	2		1	2	
Detector Template		Thru			Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)		30.5			30.5	6.1	6.1	30.5		6.1	30.5	
Trailing Detector (m)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)		1.8			1.8	6.1	6.1	1.8		6.1	1.8	
Detector 1 Type		Cl+Ex			Cl+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7	0.0	0.0	28.7		0.0	28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	

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ane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBI
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type		NA			NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		7	4		3	8	
Permitted Phases						6	4			8		
Detector Phase		2			6	6	7	4		3	8	
Switch Phase												
Vinimum Initial (s)		26.0			26.0	26.0	6.0	22.0		6.0	22.0	
Vinimum Split (s)		34.0			34.0	34.0	10.0	28.0		10.0	28.0	
Total Split (s)		52.0			52.0	52.0	10.0	38.0		10.0	38.0	
Total Split (%)		52.0%			52.0%	52.0%	10.0%	38.0%		10.0%	38.0%	
Maximum Green (s)		45.4			45.4	45.4	6.0	32.0		6.0	32.0	
Yellow Time (s)		3.0			3.0	3.0	3.0	4.0		3.0	4.0	
All-Red Time (s)		3.6			3.6	3.6	1.0	2.0		1.0	2.0	
.ost Time Adjust (s)		0.0			0.0	-1.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		6.6			6.6	5.6	3.0	5.0		3.0	5.0	
_ead/Lag							Lead	Lag		Lead	Lag	
_ead-Lag Optimize?												
/ehicle Extension (s)		3.0			3.0	3.0	2.0	3.0		2.0	3.0	
Recall Mode		C-Max			C-Max	C-Max	None	Max		None	Max	
Nalk Time (s)		7.0			7.0	7.0		7.0			7.0	
Flash Dont Walk (s)		19.0			19.0	19.0		15.0			15.0	
Pedestrian Calls (#/hr)		40			40	40		40			40	
Act Effct Green (s)		45.4			45.4	46.4	42.0	33.0		42.0	33.0	
Actuated g/C Ratio		0.45			0.45	0.46	0.42	0.33		0.42	0.33	
//c Ratio		0.81			0.98	0.33	0.68	0.51		0.42	0.94	
Control Delay		29.2			56.1	19.8	35.3	28.5		21.6	62.7	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		29.2			56.1	19.8	35.3	28.5		21.6	62.7	
LOS		С			E	В	D	С		С	E	
Approach Delay		29.2			50.1			30.1			54.2	
Approach LOS		С			D			С			D	
ntersection Summary												
· · · · · · · · · · · · · · · · · · ·	BD											
Cycle Length: 100												
Actuated Cycle Length: 100												
Offset: 20 (20%), Referenced	to phase	2:EBT an	d 6:WBT,	Start of	Green							
Natural Cycle: 90												
Control Type: Actuated-Coord	linated											
Maximum v/c Ratio: 0.98												
ntersection Signal Delay: 41.2					ntersectio							
ntersection Capacity Utilization	n 86 9%			10	CU Level	of Service	ε					

→Ø2 (R)	Ø3	√1 ø4	
52 s	10 s	38 s	
● Ø6 (R)	1 Ø7	Ø8	
52 s	10 s	38 s	

Lanes, Volumes, Timings 2: Ruttan Street & Bloor Street West

<Future Background> PM Peak 02/16/2021

	-	\mathbf{i}	4	+	٠	1	
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	eî			ę	Y		
Traffic Volume (vph)	649	43	40	761	62	26	
Future Volume (vph)	649	43	40	761	62	26	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.5	3.5	3.5	3.5	3.0	3.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.992				0.960		
Flt Protected				0.998	0.966		
Satd. Flow (prot)	1827	0	0	1838	1612	0	
Flt Permitted				0.998	0.966		
Satd. Flow (perm)	1827	0	0	1838	1612	0	
Link Speed (k/h)	40			40	30		
Link Distance (m)	69.7			374.8	79.4		
Travel Time (s)	6.3			33.7	9.5		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	683	45	42	801	65	27	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	728	0	0	843	92	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(m)	0.0			0.0	3.0		
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	1.6			1.6	1.6		
Two way Left Turn Lane							
Headway Factor	1.01	1.01	1.01	1.01	1.09	1.09	
Turning Speed (k/h)		14	24		24	14	
Sign Control	Free			Free	Stop		
Intersection Summary							
	Other						
Control Type: Unsignalized							
Intersection Capacity Utilizat	ion 84.4%			IC	CU Level of	of Service	Е
Analysis Period (min) 15							

HCM Unsignalized Intersection Capacity Analysis 2: Ruttan Street & Bloor Street West

<Future Background> PM Peak 02/16/2021

	-	\mathbf{r}	4	-	1	1
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	ĥ			र्स	Y	
Traffic Volume (veh/h)	649	43	40	761	62	26
Future Volume (Veh/h)	649	43	40	761	62	26
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	683	45	42	801	65	27
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	70			375		
pX, platoon unblocked			0.81		0.75	0.81
vC, conflicting volume			728		1590	706
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			549		1057	521
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			95		63	94
cM capacity (veh/h)			829		178	451
Direction. Lane #	EB 1	WB 1	NB 1			
Volume Total	728	843	92			
Volume Left	0	42	65			
Volume Right	45	0	27			
cSH	1700	829	216			
Volume to Capacity	0.43	0.05	0.43			
Queue Length 95th (m)	0.0	1.2	15.0			
Control Delay (s)	0.0	1.3	33.5			
Lane LOS	0.0	A	D			
Approach Delay (s)	0.0	1.3	33.5			
Approach LOS	0.0	1.0	D			
Intersection Summary						
Average Delay			2.5			
Intersection Capacity Utiliz	zation		84.4%	IC	U Level o	of Service
Analysis Period (min)			15			

221-225 Sterling Road Transportation Impact Study

Synchro 10 Report Page 3 221-225 Sterling Road Transportation Impact Study

Lane Configurations N A N					Bloor S					02/16/2021			
Lane Configurations Y A Y Y Y Traffic Volume (vph) 146 490 0 0 719 104 113 105 39 163 0 22 Ucture Volume (vph) 146 490 0 0 1900 100<		٦	-	\mathbf{r}	4	-	•	1	1	1	1	ŧ	~
Tarfife Volume (vph) 146 490 0 0 719 104 113 105 39 163 0 22 Future Volume (vph) 1900 100 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	ane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Traffic Volume (vph) 146 490 0 0 7 104 113 105 39 163 0 22 Future Volume (vph) 140 1900 100 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	ane Configurations	<u></u>	•			ĥ		۲	1		۲.		1
deal Flow (vph) 1900 100 1.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00				0	0		104			39		0	22
deal Flow (vph) 1900 100 1.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00		146		0	0		104			39		0	22
Lane Wirk (m) 3.3 3.3 3.0 3.0 4.2 3.0 3.0 3.5 3.0 3.0 3.5 3.5 Storage Langth (m) 27.5 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0		1900		1900	1900	1900	1900			1900		1900	190
Storage Length (m) 27.5 0.0 1.0 1.00 <td></td> <td>3.3</td> <td>3.3</td> <td>3.0</td> <td>3.0</td> <td>4.2</td> <td>3.0</td> <td>3.0</td> <td>3.5</td> <td>3.0</td> <td>3.0</td> <td>3.5</td> <td>3.</td>		3.3	3.3	3.0	3.0	4.2	3.0	3.0	3.5	3.0	3.0	3.5	3.
Storage Lanes 1 0 0 1 0 1 Taper Length (m) 2.5 2.5 2.5 2.5 2.5 2.5 Taper Length (m) 2.5 2.5 2.5 2.5 2.5 2.5 Ped Bike Factor 1.00 1.40		27.5		0.0	0.0		0.0	0.0		0.0	0.0		0.
Tape: Length (m) 2.5 2.5 2.5 2.5 2.5 Lane Ulii, Factor 1.00					0		0	1			1		
Lane Util. Factor 1.00 <td></td> <td></td> <td></td> <td>Ŭ</td> <td></td> <td></td> <td>, in the second s</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>				Ŭ			, in the second s						
Ped Bike Factor 0.95 0.83 0.84 0.13 Frt 0.930 0.950 0.950 0.850 Satd. Flow (prot) 1646 1818 0 1851 0 1685 1572 0 1668 0 140 Fit Protected 0.950 0.51 56 58 155 58 58 155 58 58 55 60 60 0.92 27 99 9.95 0.63 0.79 0.95 0.63 0.79 0.95 0.63 0.79			1 00	1.00		1.00	1.00		1.00	1.00		1 00	1.0
Frt 0.983 0.951 0.83 FIP rotected 0.950 0.950 0.950 0.950 Std. Flow (prot) 1646 1818 0 0 1851 0 1685 1572 0 1395 0 144 FIP rotected 0.096 0 1851 0 1685 1572 0 1395 0 144 Fit Permitted 0.096 0 1851 0 1685 1572 0 1395 0 117 Statl. Flow (prot) 166 1818 0 0 1851 0 1685 157 0 1395 0 117 Travel Time (s) 8.9 6.3 11.0 15.8 85 55 56 15 85 85 60 60 12 144 148 149 0 0 0 0 0 0 140 15 58 85 56 56 15 15 16		1.00	1.00	1.00	1.00		1.00	1.00		1.00		1.00	
Fit Protected 0.950 0.950 0.950 144 Satd. Flow (prot) 1646 1818 0 1851 0 1685 1572 0 1668 0 144 Riph Turn on Red Yes Yes Yes No 0 114 Right Turn on Red Yes Yes No No No No No Satd. Flow (RTOR) 9 9 114 1685 1572 0 1395 0 114 Right Turn on Red Yes Yes Yes No No </td <td></td> <td>0.04</td> <td></td> <td></td>											0.04		
Satd. Flow (prot) 1646 1818 0 0 1851 0 1685 1572 0 1668 0 1440 RIP Permitted 0.090 0.950 0.950 0.950 0.950 0.950 0.950 0.950 0.950 0.950 0.1685 1572 0 1395 0 114 Right Turn on Red Yes Yes Yes No		0 950				0.000		0.950	0.551		0.950		0.00
Fit Permitted 0.096 0.950 0.950 0.950 Satd. Flow (perm) 166 1818 0 1851 0 1685 1572 0 1395 0 114 Satd. Flow (perm) 166 1818 0 0 1851 0 1685 1572 0 1395 0 114 Satd. Flow (perm) 40 40 40 30 40<			1818	0	0	1851	٥		1572	٥		0	140
Satd. Flow (perm) 166 1818 0 0 1851 0 1665 1572 0 1395 0 114 Right Turn on Red Yes Yes No No <td></td> <td></td> <td>1010</td> <td>0</td> <td>0</td> <td>1031</td> <td>0</td> <td></td> <td>1372</td> <td>0</td> <td></td> <td>0</td> <td>140</td>			1010	0	0	1031	0		1372	0		0	140
Right Turn on Red Yes Yes No No Sald. Flow (RTOR) 9 175.2 7 9 9 155.5 85 85 85 9 0 <t< td=""><td></td><td></td><td>1010</td><td>0</td><td>0</td><td>1051</td><td>0</td><td></td><td>1570</td><td>0</td><td></td><td>0</td><td>114</td></t<>			1010	0	0	1051	0		1570	0		0	114
Said. Flow (RTOR) 9 Link Speed (k/h) 40 40 30 40 Link Distance (m) 98.8 69.7 91.9 175.2 Travel Time (s) 8.9 6.3 11.0 158 Confl. Bikes (#hr) 155 58 58 155 85 85 0.5 Peak Hour Factor 1.00 1.00 0.00 0.83 0.83 0.63 0.79 0.95 0.0 Peak Hour Factor 1.00 1.00 0.00 1 1 0 0 0 2% 0% 0% 0% 4 Bus Blockages (#hr) 0 0 0 1 1 0 0 0 2 Shared Lane Traffic (%) 116 126 206 0 2 Lane Alignment Left Right Left<		100	1010		U	1001	-	1000	1572		1395	0	
Link Speed (kh) 40 40 30 40 Link Distance (m) 98.8 69.7 91.9 175.2 Travel Time (s) 8.9 6.3 11.0 15.8 Confl. Peds. (#hr) 155 58 58 155 85 85 Confl. Bikes (#hr) 1 1 0 0.83 0.63 0.79 0.95 0.3 Heavy Vehicles (%) 6% 1% 0% 0% 2% 0% 0% 0% 0% 4 Bus Blockages (#hr) 0 0 0 1 1 0 0 0 2 2 0 2 2 0 2 2 0 2 2 0 2 2 0 2 2 0 0 2 2 0 0 2 2 0 0 2 2 0 0 2 2 0 0 2 2 0 0 2 2				res		0	res			INO			IN
Link Distance (m) 98.8 69.7 91.9 175.2 Travel Time (s) 8.9 6.3 11.0 15.8 Confl. Pieds. (#hr) 155 58 58 155 85 85 60.7 Confl. Bikes (#hr) 155 58 58 10 100 100 100 100 100 100 0.83 0.83 0.63 0.79 0.95 0.8 Gonfl. Bikes (#hr) 0 0 0 1 1 0 0 0 2% 0			40			-			00			40	
Travel Time (s) 8.9 6.3 11.0 15.8 Confl. Bikes (#hr) 155 58 58 155 85 85 0 Peak Hour Factor 1.00 1.00 1.00 0.90 0.83 0.83 0.63 0.79 0.95 0.3 Heavy Vehicles (%) 6% 1% 0% 0% 2% 0% 0% 0% 4 Bus Blockages (#hr) 0 0 0 1 1 0 0 0 2 2 0% 0% 0% 4 Bus Blockages (#hr) 0 0 0 11.0 136 127 62 206 0 22 Shared Lane Traffic (%) 146 490 0 823 0 136 189 0 206 0 22 Enter Blocked Intersection No													
Confl. Peds. (#hr) 155 58 58 155 85 85 66 Confl. Peds. (#hr) 1 0 0 0 1 1 0 0 0 0 1 1 0 0 0 2 2 2 2 2 0 <td></td>													
Confl. Bikes (#hr) 1 Peak Hour Factor 1.00 1.00 1.00 1.00 1.00 0.83 0.63 0.79 0.95 0.8 Heavy Vehicles (%) 6% 1% 0% 0% 2% 0% 206 0 22 Shared Lane Traffic (%) Lane Group Flow (vph) 146 490 0 0 823 0 136 189 0 206 0 27 Earle Group Flow (vph) 146 490 0 0 823 0 136 189 0 206 0 2			8.9			6.3			11.0			15.8	
Peak Hour Factor 1.00 1.00 1.00 0.90 1.00 1.00 0.83 0.83 0.63 0.79 0.95 0.8 Heavy Vehicles (%) 6% 1% 0% 0% 2% 2% 0% 0% 0% 1% 0% 0% 1% 0% 0% 1% 0% 4% 0% 2% 0% 0% 0% 1% 0% 4% 0% 0% 0% 1% 0% 4% 0% 0 0 1 1 0 0 0 2 Additable 104 136 127 62 206 0 22 Shared Lane Traffic (%) Lane Group Flow (vph) 146 490 0 0 823 0 136 189 0 206 0 22 Cher Blockde Intersection No		155		58	58					85	85		6
Heavy Vehicles (%) 6% 1% 0% 0% 2% 0% 0% 0% 1% 0% 4 Bus Blockages (#/hr) 0 0 0 1 1 0 0 0 2 2 0% 0% 0% 1% 0% 4 Adj. Flow (vph) 146 490 0 0 719 104 136 127 62 206 0 27 Shared Lane Traffic (%)													
Bus Élockages (#/hr) 0 0 0 0 1 1 0 0 0 2 Adj. Flow (vph) 146 490 0 0 719 104 136 127 62 206 0 27 Shared Lane Traffic (%) Lane Group Flow (vph) 146 490 0 0 823 0 136 189 0 206 0 27 Enter Blocked Intersection No 1.00 1.01													0.8
Adj. Flow (vph) 146 490 0 0 719 104 136 127 62 206 0 22 Shared Lane Traffic (%) Lane Group Flow (vph) 146 490 0 0 823 0 136 189 0 206 0 22 Enter Blocked Intersection No Si Si<													49
Shared Lane Traffic (%) 146 490 0 823 0 136 189 0 206 0 22 Enter Blocked Intersection No <		-	-						-		-		
Lane Group Flow (vph) 146 490 0 823 0 136 189 0 206 0 27 Enter Blocked Intersection No No <td< td=""><td></td><td>146</td><td>490</td><td>0</td><td>0</td><td>719</td><td>104</td><td>136</td><td>127</td><td>62</td><td>206</td><td>0</td><td>27</td></td<>		146	490	0	0	719	104	136	127	62	206	0	27
Enter Blocked Intersection No No <th< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>													
Lane Alignment Left Left Right Jan Left Right Left Right Left Right Left Right Left Right Left Left Left Left <thleft< th=""> Left Left<td>ane Group Flow (vph)</td><td>146</td><td>490</td><td>0</td><td>0</td><td>823</td><td>0</td><td>136</td><td>189</td><td>0</td><td>206</td><td>0</td><td>27</td></thleft<>	ane Group Flow (vph)	146	490	0	0	823	0	136	189	0	206	0	27
Median Width(m) 3.3 3.3 3.3 3.0 3.0 Link Offset(m) 0.0 0.0 0.0 0.0 0.0 Crosswalk Width(m) 1.6 1.6 1.6 1.6 1.6 Yow way Left Turn Lane Headway Factor 1.04 1.09 1.09 0.92 1.09 1.01 1.09 1.09 1.01 1.09 1.01 1.01 1.09 1.01 1.1 Turning Speed (kh) 25 15 25 16 30.5 6.1 30.5 6.1 30.5 6.1 30.5 6.1 30.5 6.1 30.5 6.1	Enter Blocked Intersection	No	No	No	No	No	No	No		No	No	No	N
Link Offset(m) 0.0 0.0 0.0 0.0 0.0 Crosswalk Width(m) 1.6 1.6 1.6 1.6 1.6 1.6 Two way Left Turn Lane Two year Left 1.04 1.09 1.09 1.09 1.01 1.09 1.09 1.01 1.09 1.09 1.01 1.09 1.09 1.01	ane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Righ
Crosswalk Width(m) 1.6 1.6 1.6 1.6 Irwo way Left Turn Lane	Median Width(m)		3.3			3.3			3.0			3.0	
Two way Left Turn Lane Headway Factor 1.04 1.04 1.09 1.09 0.92 1.09 1.09 1.09 1.01 1.02 1.01 </td <td>ink Offset(m)</td> <td></td> <td>0.0</td> <td></td> <td></td> <td>0.0</td> <td></td> <td></td> <td>0.0</td> <td></td> <td></td> <td>0.0</td> <td></td>	ink Offset(m)		0.0			0.0			0.0			0.0	
Two way Left Turn Lane Headway Factor 1.04 1.04 1.09 1.09 0.92 1.09 1.09 1.09 1.01 1.02 1.01 </td <td>Crosswalk Width(m)</td> <td></td> <td>1.6</td> <td></td> <td></td> <td>1.6</td> <td></td> <td></td> <td>1.6</td> <td></td> <td></td> <td>1.6</td> <td></td>	Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Turning Speed (k/h) 25 15 25 15 25 15 25 15 25 Number of Detectors 1 2 2 1 2 1 2 1 2 1 2 1 2 1 Detectors 1 2 2 1 2 1 Detector Template Left Thru Left Thru Left Thru Left Thru Left Rig Detector Thrup 6.1 30.5 6.1 30.5 6.1 </td <td>Two way Left Turn Lane</td> <td></td>	Two way Left Turn Lane												
Turning Speed (k/h) 25 15 25 16 26 16 26 16 16 16 16 16 16 16 16 16 <td></td> <td>1.04</td> <td>1.04</td> <td>1.09</td> <td>1.09</td> <td>0.92</td> <td>1.09</td> <td>1.09</td> <td>1.01</td> <td>1.09</td> <td>1.09</td> <td>1.01</td> <td>1.1</td>		1.04	1.04	1.09	1.09	0.92	1.09	1.09	1.01	1.09	1.09	1.01	1.1
Number of Detectors 1 2 2 1 2 1 Detector Template Left Thru Thru Left Thru Left Rig Leading Detector (m) 6.1 30.5 30.5 6.1 30.5 6.1 6.6 Trailing Detector (m) 0.0		25		15	25		15	25		15	25		1
Detector Template Left Thru Thru Left Thru Left Rig Rig Subscript Leading Detector (m) 6.1 30.5 30.5 6.1 30.5 6.1 0.0 <			2			2			2				-
Leading Detector (m) 6.1 30.5 30.5 6.1 30.5 6.1 0.0													Righ
Trailing Detector (m) 0.0													6.
Detector 1 Position(m) 0.0													0.
Detector 1 Size(m) 6.1 1.8 1.8 6.1 1.8 6.1 7.4 7.1													0.
Detector 1 Type CI+Ex													6.
Detector 1 Channel 0.0													
Detector 1 Extend (s) 0.0			OF EX			OITEX			OFEX				UITE
Detector 1 Queue (s) 0.0		0.0	0.0			0.0		0.0	0.0		0.0		0
Detector 1 Delay (s) 0.0	()												
Detector 2 Position(m) 28.7 28.7 28.7													
		0.0						0.0			0.0		0.

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SB
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	pm+pt	NA			NA		Split	NA		Prot		pt+o
Protected Phases	5	2			6		4	4		3		3 5
Permitted Phases	2											3
Detector Phase	5	2			6		4	4		3		3 5
Switch Phase												
Minimum Initial (s)	6.0	21.0			21.0		7.0	7.0		19.0		
Minimum Split (s)	10.0	29.0			29.0		16.0	16.0		27.0		
Total Split (s)	10.0	55.0			45.0		18.0	18.0		27.0		
Total Split (%)	10.0%	55.0%			45.0%		18.0%	18.0%		27.0%		
Maximum Green (s)	6.0	47.3			37.3		11.0	11.0		20.0		
Yellow Time (s)	3.0	3.0			3.0		4.0	4.0		4.0		
All-Red Time (s)	1.0	4.7			4.7		3.0	3.0		3.0		
Lost Time Adjust (s)	-1.0	-1.5			-3.0		-1.0	-1.0		-1.0		
Total Lost Time (s)	3.0	6.2			4.7		6.0	6.0		6.0		
Lead/Lag	Lead				Lag		Lag	Lag		Lead		
Lead-Lag Optimize?					, in the second s		Ť	, in the second s				
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0		
Recall Mode	Max	C-Max			C-Max		None	None		None		
Walk Time (s)		7.0			7.0					8.0		
Flash Dont Walk (s)		14.0			14.0					12.0		
Pedestrian Calls (#/hr)		36			36					36		
Act Effct Green (s)	52.4	49.2			40.7		12.0	12.0		20.6		24.6
Actuated g/C Ratio	0.52	0.49			0.41		0.12	0.12		0.21		0.25
v/c Ratio	0.77	0.55			1.09		0.67	1.01		0.60		0.79
Control Delay	43.2	20.7			71.2		59.8	112.8		44.1		43.5
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0		0.0
Total Delay	43.2	20.7			71.2		59.8	112.8		44.1		43.5
LOS	D	С			E		E	F		D		0
Approach Delay		25.8			71.2			90.6			43.8	
Approach LOS		С			E			F			D	
Intersection Summary												
Area Type:	Other											
Cycle Length: 100												
Actuated Cycle Length: 100												
Offset: 64 (64%), Referenc	ed to phase	2:EBTL a	nd 6:WB1	r, Start o	Green							
Natural Cycle: 105												
Control Type: Actuated-Co	ordinated											
Maximum v/c Ratio: 1.09												
Intersection Signal Delay: 5					tersection							
Intersection Capacity Utiliza	ation 91 0%			10	U Level o	f Sorvice	F					

Splits and Phases: 3: Sterling Road/Symington Avenue & Bloor Street West



4: Dundas Street W	est & E	sloor S	street v			Future Background> PM Peak 02/16/2021							
	≯	+	*	4	ţ	•	•	t	*	1	ţ	~	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
ane Configurations		•	1	٦	•	1		-{1 † }>			4 þ		
Traffic Volume (vph)	0	574	138	120	811	211	0	971	140	10	543	61	
Future Volume (vph)	0	574	138	120	811	211	0	971	140	10	543	61	
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
ane Width (m)	3.0	3.4	3.0	3.0	3.3	3.0	3.0	3.5	3.0	3.0	3.5	3.0	
Storage Length (m)	0.0		17.5	26.4		31.0	0.0		0.0	0.0		0.0	
Storage Lanes	0		1	1		1	0		0	0		0	
Taper Length (m)	50.0			55.0			2.5			2.5			
ane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	0.91	0.95	0.95	0.95	
Ped Bike Factor			0.77	0.90		0.64		0.93			0.93		
Frt			0.850			0.850		0.982			0.981		
Fit Protected				0.950							0.999		
Satd. Flow (prot)	0	1655	1492	1685	1743	1422	0	4555	0	0	3059	C	
FIt Permitted				0.950							0.850		
Satd. Flow (perm)	0	1655	1156	1520	1743	916	0	4555	0	0	2599	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			109			117		27			18		
ink Speed (k/h)		40			40			40			40		
ink Distance (m)		75.1			318.0			159.9			139.1		
Travel Time (s)		6.8			28.6			14.4			12.5		
Confl. Peds. (#/hr)	534		209	209		534	429		517	517		429	
Confl. Bikes (#/hr)			3			1			1				
Peak Hour Factor	0.79	1.00	0.80	0.88	1.00	0.88	0.25	0.91	0.97	0.70	0.91	0.69	
Heavy Vehicles (%)	0%	1%	1%	0%	2%	6%	0%	3%	1%	100%	5%	0%	
Bus Blockages (#/hr)	0	0	0	0	8	0	0	0	0	0	0	0	
Parking (#/hr)		0											
Adj. Flow (vph)	0	574	173	136	811	240	0	1067	144	14	597	88	
Shared Lane Traffic (%)													
ane Group Flow (vph)	0	574	173	136	811	240	0	1211	0	0	699	0	
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No	
ane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right	
Median Width(m)		3.0	Ť		3.0	Ť		0.0	Ť		0.0	, T	
_ink Offset(m)		0.0			0.0			0.0			0.0		
Crosswalk Width(m)		1.6			1.6			1.6			1.6		
Two way Left Turn Lane													
Headway Factor	1.09	1.18	1.09	1.09	1.09	1.09	1.09	1.01	1.09	1.09	1.01	1.09	
Furning Speed (k/h)	25		15	25		15	25		15	25		15	
Number of Detectors		2	1	1	2	1	1	2		1	2		
Detector Template		Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru		
eading Detector (m)		30.5	6.1	6.1	30.5	6.1	2.0	30.5		2.0	30.5		
Frailing Detector (m)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		
Detector 1 Position(m)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		
Detector 1 Size(m)		1.8	6.1	6.1	1.8	6.1	6.1	1.8		6.1	1.8		
Detector 1 Type		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex		
Detector 1 Channel													
Detector 1 Extend (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		
Detector 1 Queue (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		
Detector 1 Delay (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		
Detector 2 Position(m)		28.7	2.0	2.0	28.7			28.7			28.7		

Synchro 10 Report Page 7 Lanes, Volumes, Timings 4: Dundas Street West & Bloor Street West

<Future Background> PM Peak 02/16/2021

Lane Group	Ø1	Ø5
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (m)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Bus Blockages (#/hr)		
Parking (#/hr)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		

221-225 Sterling Road Transportation Impact Study

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SB
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type		NA	Perm	Prot	NA	Perm		NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases			4			8	2			6		
Detector Phase		4	4	3	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)		26.0	26.0	7.0	26.0	26.0	25.0	25.0		25.0	25.0	
Minimum Split (s)		32.3	32.3	11.0	32.3	32.3	31.0	31.0		31.0	31.0	
Total Split (s)		42.0	42.0	12.0	54.0	54.0	31.0	31.0		31.0	31.0	
Total Split (%)		46.7%	46.7%	13.3%	60.0%	60.0%	34.4%	34.4%		34.4%	34.4%	
Maximum Green (s)		35.7	35.7	8.0	47.7	47.7	25.0	25.0		25.0	25.0	
Yellow Time (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)		3.3	3.3	1.0	3.3	3.3	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0	-1.0		-1.0			-1.0	
Total Lost Time (s)		5.3	5.3	3.0	5.3	5.3		5.0			5.0	
Lead/Lag		Lag	Lag	Lead			Lag	Lag		Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode		Max	Max	None	Max	Max	C-Max	C-Max		C-Max	C-Max	
Walk Time (s)		7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		19.0	19.0		19.0	19.0	18.0	18.0		18.0	18.0	
Pedestrian Calls (#/hr)		40	40		40	40	40	40		40	40	
Act Effct Green (s)		36.7	36.7	9.0	48.7	48.7		28.0			31.0	
Actuated g/C Ratio		0.41	0.41	0.10	0.54	0.54		0.31			0.34	
v/c Ratio		0.85	0.32	0.81	0.86 29.2	0.44 8.9		0.84			0.77 32.5	
Control Delay		38.4	9.1 0.0	74.8 0.0	29.2	8.9 0.0		35.6 0.0			32.5 0.0	
Queue Delay		0.0 38.4	9.1		29.2	0.0 8.9		35.6			32.5	
Total Delay LOS		38.4 D	9.1 A	74.8 E	29.2 C			35.6 D			32.5 C	
		31.6	A	E	30.3	A		35.6			32.5	
Approach Delay Approach LOS					30.3 C			35.6 D			32.5 C	
Approach LUS		С			C			D			U	
Intersection Summary												
Area Type:	Other											
Cycle Length: 90												
Actuated Cycle Length: 90												
Offset: 77 (86%), Reference	d to phase 2	2:NBTL	and 6:SB	TL, Start	of 1st Gre	en						
Natural Cycle: 90												
Control Type: Actuated-Coo	rdinated											
Maximum v/c Ratio: 0.86												
Intersection Signal Delay: 32					ntersection							
Intersection Capacity Utilizat	tion 76.4%			IC	CU Level	of Service	эD					
Analysis Period (min) 15												
Splits and Phases: 4: Dun	das Street	West & F	Bloor Stre	et West								
· 📥 💷 📥				~								
🥊 🖉 🖉 🖉 🖉				🖌 Ø3		<u></u> ₩Ø4						
- DE IDE (IV)												
5s 31s			1	2 s	4	2 s						

Lanes, Volumes, Timings 4: Dundas Street West & Bloor Street West <Future Background> PM Peak 02/16/2021

Lane Group	Ø1	Ø5
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	1	5
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	3.0
Recall Mode	None	None
Walk Time (s)	3.0	
Flash Dont Walk (s)	0.0	
Pedestrian Calls (#/hr)	40	
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		
intersection Summary		

221-225 Sterling Road Transportation Impact Study

5: Private Access/S												
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		ብ î ja			ፈ ው የ			4			4	
Traffic Volume (vph)	83	793	0	0	1269	162	0	0	0	100	0	97
Future Volume (vph)	83	793	0	0	1269	162	0	0	0	100	0	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			0.99						0.96	
Frt					0.983						0.933	
Flt Protected		0.995									0.975	
Satd. Flow (prot)	0	3442	0	0	3376	0	0	1842	0	0	1609	0
Flt Permitted		0.641									0.840	
Satd. Flow (perm)	0	2217	0	0	3376	0	0	1842	0	0	1371	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)					29							
Link Speed (k/h)		40			40			30			30	
Link Distance (m)		123.6			101.7			33.0			87.8	
Travel Time (s)		11.1			9.2			4.0			10.5	
Confl. Peds. (#/hr)	34		50	50		34	34		19	19		34
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	5%	3%	2%	2%	3%	3%	2%	2%	2%	5%	2%	2%
Adj. Flow (vph)	86	818	0	0	1308	167	0	0	0	103	0	100
Shared Lane Traffic (%)				-				-			-	
Lane Group Flow (vph)	0	904	0	0	1475	0	0	0	0	0	203	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0	J .		0.0	J.		0.0	J		0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel					2. 2.4							
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA			NA			0.0		Perm	NA	
Protected Phases	1 0111	2			6			4		1 0111	8	

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Permitted Phases 2 6 4 8 Detector Phase 2 2 6 6 4 4 8 Detector Phase 2 2 6 6 4 4 8 8 Minimum Initial (s) 25.0 25.0 25.0 7.0 7.0 7.0 7.0 7.0 Minimum Split (s) 61.0 61.0 61.0 29.0 29.0 29.0 29.0 29.0 29.0 29.0 20.0		٦	-	\mathbf{i}	4	←	۰.	1	Ť	1	1	Ŧ	~
Detector Phase 2 2 6 6 4 4 8 8 Switch Phase Minimum Initial (s) 25.0 25.0 25.0 7.0 <th>Lane Group</th> <th>EBL</th> <th>EBT</th> <th>EBR</th> <th>WBL</th> <th>WBT</th> <th>WBR</th> <th>NBL</th> <th>NBT</th> <th>NBR</th> <th>SBL</th> <th>SBT</th> <th>SBF</th>	Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Switch Phase Switch Phase Minimum Initial (s) 25.0 25.0 25.0 7.0 7.0 7.0 7.0 Minimum Site (s) 31.0 31.0 31.0 28.0 3.0	Permitted Phases	2			6			4			8		
Minimum Initial (s) 25.0 25.0 25.0 25.0 7.0 7.0 7.0 7.0 7.0 Minimum Spitt (s) 31.0 31.0 31.0 28.0 28.0 28.0 28.0 Total Spit (s) 61.0 61.0 61.0 61.0 62.0 29.0 20.0	Detector Phase	2	2		6	6		4	4		8	8	
Minimum Split (s) 31.0 31.0 31.0 31.0 31.0 28.0 28.0 28.0 28.0 Total Split (s) 61.0 61.0 61.0 61.0 62.0 29.0 29.0 29.0 29.0 29.0 29.0 29.0 29.0 29.0 29.0 32.2% 32.	Switch Phase												
Total Split (%) 61.0 61.0 61.0 61.0 29.0 29.0 29.0 29.0 Total Split (%) 67.8% 67.8% 67.8% 32.2%	Minimum Initial (s)	25.0	25.0		25.0	25.0		7.0	7.0		7.0	7.0	
Total Split (%) 67.8% 67.8% 67.8% 32.2% 32.2% 32.2% 32.2% Maximum Green (s) 55.0 55.0 55.0 24.0 24.0 24.0 24.0 Yellow Time (s) 3.0 <td< td=""><td>Minimum Split (s)</td><td>31.0</td><td>31.0</td><td></td><td>31.0</td><td>31.0</td><td></td><td>28.0</td><td>28.0</td><td></td><td>28.0</td><td>28.0</td><td></td></td<>	Minimum Split (s)	31.0	31.0		31.0	31.0		28.0	28.0		28.0	28.0	
Maximum Green (s) 55.0 55.0 55.0 55.0 24.0 24.0 24.0 24.0 Yellow Time (s) 3.0 </td <td>Total Split (s)</td> <td>61.0</td> <td>61.0</td> <td></td> <td>61.0</td> <td>61.0</td> <td></td> <td>29.0</td> <td>29.0</td> <td></td> <td>29.0</td> <td>29.0</td> <td></td>	Total Split (s)	61.0	61.0		61.0	61.0		29.0	29.0		29.0	29.0	
Yellow Time (s) 3.0	Total Split (%)	67.8%	67.8%		67.8%	67.8%		32.2%	32.2%		32.2%	32.2%	
All-Red Time A(s) 3.0 3.0 3.0 3.0 2.0 2.0 2.0 2.0 Lost Time A(just (s) -1.0 -1.0 -1.0 -1.0 -1.0 Total Lost Time (s) 5.0 5.0 4.0 4.0 Lead/Lag Lead/Lag Optimize? Vehicle Extension (s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 Recall Mode C-Max Max Max None	Maximum Green (s)	55.0	55.0		55.0	55.0		24.0	24.0		24.0	24.0	
Lost Time Adjust (s) -1.0 -1.0 -1.0 -1.0 Total Lost Time (s) 5.0 5.0 4.0 4.0 Lead/Lag Lead-Lag Optimize? - - - - - - - - - 1.0 - 1.0 4.0 4.0 4.0 Lead/Lag - - - - - 1.0 - 1.0 - 1.0 - 1.0 4.0 4.0 Lead/Lag Lead/Lag C - - - - - - C Max None Addition (Los (Los (Los (Los (Los (Los (Los (Los	Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Total Lost Time (s) 5.0 5.0 4.0 4.0 Lead/Lag Lead-Lag Optimize? Vehicle Extension (s) 3.0 <	All-Red Time (s)	3.0	3.0		3.0	3.0		2.0	2.0		2.0	2.0	
Lead/Lag Optimize? Vehicle Extension (s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 Recall Mode C-Max C-Max Max Max None None None None Walk Time (s) 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 Flash Dont Walk (s) 18.0 18.0 18.0 16.0 16.0 16.0 16.0 Pedestrian Calls (#hr) 0 0 0 0 0 0 0 0 Act Efft Green (s) 62.0 62.0 19.0 Act Left Green (s) 62.0 62.0 19.0 Act Left Green (s) 0.69 0.69 0.21 v/c Ratio 0.59 0.63 0.70 Control Delay 10.3 9.9 45.4 Queue Delay 0.0 0.0 0.0 0.0 Total Delay 10.3 9.9 45.4 LOS B A D Approach Delay 10.3 9.9 45.4 Approach LOS B A D Approach LOS B A D Approach LOS B A D Marea Type: Other Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle Length: 90 Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green Natural Cycle: 65 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.70 Intersection Capacity Utilization 94.7% ICU Level of Service F	Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Lead-Lag Optimize? Vehicle Extension (s) 3.0 <	Total Lost Time (s)		5.0			5.0			4.0			4.0	
Vehicle Extension (s) 3.0 Recall Mode C-Max C-Max Max Max None	Lead/Lag												
Recall Mode C-Max C-Max Max Max Max None													
Walk Time (s) 7.0 <	Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Flash Dont Walk (s) 18.0 18.0 18.0 16.0	Recall Mode	C-Max	C-Max		Max	Max		None	None		None	None	
Pedestrian Calls (#hr) 0	Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Act Effet Green (s) 62.0 62.0 19.0 Act Effet Green (s) 0.69 0.69 0.21 Vic Ratio 0.59 0.63 0.70 Control Delay 10.3 9.9 45.4 Queue Delay 0.0 0.0 0.0 Total Delay 10.3 9.9 45.4 LOS B A D Approach Delay 10.3 9.9 45.4 LOS B A D Approach Delay 10.3 9.9 45.4 LOS B A D Approach LOS B A D Intersection Summary T Zerosense State D Actuated Cycle Length: 90 O O O O Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green Natural Cycle: 65 Section LOS: B Section LOS: B Intersection Signal Delay: 12.8 Intersection LOS: B Intersection Capacity Utilization 94.7% ICU Level of Service F	Flash Dont Walk (s)	18.0	18.0		18.0	18.0		16.0	16.0		16.0	16.0	
Actuated g/C Ratio 0.69 0.69 0.21 V/c Ratio 0.59 0.63 0.70 Control Delay 10.3 9.9 45.4 Queue Delay 0.0 0.0 0.0 Total Delay 10.3 9.9 45.4 LOS B A D Approach Delay 10.3 9.9 45.4 LOS B A D Approach Delay 10.3 9.9 45.4 LOS B A D Intersection Summary Transport D Area Type: Other Cycle Length: 90 Acturated Cycle Length: 90 Acturated Cycle: 65 Control Type: Acturated-Coordinated Maximum v/c Ratio: 0.70 Intersection LOS: B Intersection Signal Delay: 12.8 Intersection LOS: B Intersection Capacity Utilization 94.7% ICU Level of Service F ICU Level of Service F	Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
vic Ratio 0.59 0.63 0.70 Control Delay 10.3 9.9 45.4 Queue Delay 0.0 0.0 0.0 Total Delay 10.3 9.9 45.4 LOS B A D Approach Delay 10.3 9.9 45.4 LOS B A D Approach Delay 10.3 9.9 45.4 LOS B A D Approach LOS B A D Intersection Summary Area Type: Other Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle Length: 91 Actuated Cycl	Act Effct Green (s)		62.0			62.0						19.0	
Control Delay 10.3 9.9 45.4 Queue Delay 0.0 0.0 0.0 Total Delay 10.3 9.9 45.4 LOS B A D Approach Delay 10.3 9.9 45.4 Approach Delay 10.3 9.9 45.4 Approach Delay 10.3 9.9 45.4 Approach LOS B A D Intersection Summary D Actuated Cycle Length: 90 D Actuated Cycle Length: 90 Otfset: 0 (0%), Referenced to phase 2:EBTL, Start of Green Start of Green Start of Green Natural Cycle: 65 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.70 Intersection LOS: B Intersection Capacity Utilization 94.7% ICU Level of Service F ICU Level of Service F ICU Level of Service F	Actuated g/C Ratio		0.69			0.69						0.21	
Queue Delay 0.0 0.0 Total Delay 10.3 9.9 45.4 LOS B A D Approach Delay 10.3 9.9 45.4 Approach Delay 10.3 9.9 45.4 Approach LOS B A D Intersection Summary D Intersection Summary D Actuated Cycle Length: 90 Other Cycle Length: 90 Otfset: 0 (0%), Referenced to phase 2:EBTL, Start of Green Natural Cycle: 65 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.70 Intersection LOS: B Intersection LOS: B Intersection Signal Delay: 12.8 Intersection COS: B Intersection Capacity Utilization 94.7% ICU Level of Service F ICU Level of Se	v/c Ratio		0.59			0.63						0.70	
Total Delay 10.3 9.9 45.4 LOS B A D Approach Delay 10.3 9.9 45.4 Approach Delay 10.3 9.9 45.4 Approach Delay 10.3 9.9 45.4 Approach LOS B A D Intersection Summary Area Type: Other Cycle Length: 90 Acturated Cycle Length: 90 Acturated Cycle: Code Length: 90 Acturated Cycle: 65 Control Type: Acturated-Coordinated Maximum V/c Ratio: 0.70 Intersection LOS: B Intersection LOS: B Intersection LOS: B Intersection Capacity Utilization 94.7% ICU Level of Service F Control Type: Acturated Service F Control Type: Acturated Service F	Control Delay		10.3			9.9						45.4	
LOS B A D Approach Delay 10.3 9.9 45.4 Approach LOS B A D Intersection Summary Area Type: Other Cycle Length: 90 Actuated Cycle Length: 90 Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green Natural Cycle: 65 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.70 Intersection Capacity Utilization 94.7% ICU Level of Service F													
Approach Delay 10.3 9.9 45.4 Approach LOS B A D Intersection Summary D Area Type: Other Cycle Length: 90 Other Actuated Cycle Length: 90 Other Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green Start of Green Natural Cycle: 65 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.70 Intersection LOS: B Intersection Capacity Utilization 94.7% ICU Level of Service F	Total Delay		10.3			9.9						45.4	
Approach LOS B A D Intersection Summary Area Type: Other Cycle Length: 90 Actuated Cycle Length: 90 Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green Natural Cycle: 65 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.70 Intersection Signal Delay: 12.8 Intersection LOS: B Intersection Capacity Utilization 94.7% ICU Level of Service F	LOS		В			A						D	
Intersection Summary Intersection Summary Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle: 65 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.70 Intersection Signal Delay: 12.8 Intersection Capacity Utilization 94.7% ICU Level of Service F	Approach Delay		10.3			9.9						45.4	
Area Type: Other Cycle Length: 90 Actuated Cycle Length: 90 Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green Natural Cycle: 65 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.70 Intersection Signal Delay: 12.8 Intersection LOS: B Intersection Capacity Utilization 94.7% ICU Level of Service F	Approach LOS		В			А						D	
Cycle Length: 90 Actuated Cycle Length: 90 Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green Natural Cycle: 65 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.70 Intersection Signal Delay: 12.8 Intersection Capacity Utilization 94.7% ICU Level of Service F	Intersection Summary												
Actuated Cycle Length: 90 Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green Natural Cycle: 65 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.70 Intersection Signal Delay: 12.8 Intersection Capacity Utilization 94.7% ICU Level of Service F		Other											
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green Natural Cycle: 65 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.70 Intersection Signal Delay: 12.8 Intersection LOS: B Intersection Capacity Utilization 94.7% ICU Level of Service F	Cycle Length: 90												
Natural Cycle: 65 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.70 Intersection Signal Delay: 12.8 Intersection Capacity Utilization 94.7% ICU Level of Service F													
Control Type: Actuated-Coordinated Maximum V/c Ratio: 0.70 Intersection Signal Delay: 12.8 Intersection LOS: B Intersection Capacity Utilization 94.7% ICU Level of Service F		to phase 2	EBTL, Sta	art of Gre	en								
Maximum v/c Ratio: 0.70 Intersection LOS: B Intersection Capacity Utilization 94.7% ICU Level of Service F													
Intersection Signal Delay: 12.8 Intersection LOS: B Intersection Capacity Utilization 94.7% ICU Level of Service F	Control Type: Actuated-Co	ordinated											
Intersection Capacity Utilization 94.7% ICU Level of Service F	Maximum v/c Ratio: 0.70												
	Intersection Signal Delay: 1	2.8			lr	ntersection	LOS: B						
Analysis Period (min) 15	Intersection Capacity Utilization	ation 94.7%			IC	CU Level c	of Service	F					
	Analysis Period (min) 15												
Splits and Phases: 5: Private Access/Sterling Road & Dundas Street West	Splits and Phases: 5: Pri	vate Acces	s/Sterling l	Koad & L	Jundas S	treet West							

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221-225 Sterling Road Transportation Impact Study

Lanes, Volumes, Timings 6: Ruttan Street & Merchant Lane <Future Background> PM Peak 02/16/2021

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Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	Υ		4Î			ę	
Traffic Volume (vph)	1	12	64	6	32	23	
Future Volume (vph)	1	12	64	6	32	23	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.875		0.989				
Flt Protected	0.996					0.972	
Satd. Flow (prot)	1605	0	1822	0	0	1790	
Flt Permitted	0.996					0.972	
Satd. Flow (perm)	1605	0	1822	0	0	1790	
Link Speed (k/h)	30		30			30	
Link Distance (m)	41.6		87.0			79.4	
Travel Time (s)	5.0		10.4			9.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	1	13	67	6	34	24	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	14	0	73	0	0	58	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Right	Left	Left	
Median Width(m)	3.5		0.0			0.0	
Link Offset(m)	0.0		0.0			0.0	
Crosswalk Width(m)	1.6		1.6			1.6	
Two way Left Turn Lane							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	
Turning Speed (k/h)	24	14		14	24		
Sign Control	Stop		Free			Free	
Intersection Summary							
	Other						
Control Type: Unsignalized							
Intersection Capacity Utilizat	tion 19.6%			IC	U Level	of Service	A
Analysis Period (min) 15	nalysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis 6: Ruttan Street & Merchant Lane <Future Background> PM Peak 02/16/2021

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Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		4Î			ર્સ
Traffic Volume (veh/h)	1	12	64	6	32	23
Future Volume (Veh/h)	1	12	64	6	32	23
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	13	67	6	34	24
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	162	70			73	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	162	70			73	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)		0.2				
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			98	
cM capacity (veh/h)	810	993			1527	
			07 I		IUEI	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	14	73	58			
Volume Left	1	0	34			
Volume Right	13	6	0			
cSH	977	1700	1527			
Volume to Capacity	0.01	0.04	0.02			
Queue Length 95th (m)	0.3	0.0	0.5			
Control Delay (s)	8.7	0.0	4.4			
Lane LOS	A		Α			
Approach Delay (s)	8.7	0.0	4.4			
Approach LOS	А					
Intersection Summary						
Average Delay			2.6			
Intersection Capacity Utiliz	zation		19.6%	IC	U Level o	of Service
Analysis Period (min)			15			

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Lane Group EBL EBR NBL NBT SBT SBR Lane Configurations V 4 1 Traffic Volume (vph) 24 113 28 228 32 0 Ideal Flow (vph) 1900 1100 1.00	Lanes, Volumes, Ti 8: Sterling Road & I	0	venue					<future background=""> PM Peal 02/16/202</future>
Lane Configurations V Image: Configurations Traffic Volume (vph) 24 113 28 228 32 0 Iddael Flow (vphpl) 1900 1900 1900 1900 1900 1900 Lane Vtill, Factor 1.00 1.00 1.00 1.00 1.00 1.00 Lane Vtill, Factor 1.00 1.00 1.00 1.00 1.00 1.00 Ped Bike Factor 1.01 0 1.00 1.00 1.00 1.00 Fit Protected 0.991 0.994 Satd. Flow (port) 1615 0 1839 1879 0 Link Speed (k/h) 30 30 30 111 1615 0 1839 1879 0 Link Speed (k/h) 30 30 30 30 111 153 54.8 Travel Time (s) 8.4 2.0 6.6 26 26 26 26 26 26 26 26 26 26 27 26			7	•	1	ţ	~	
Traffic Volume (vph) 24 113 28 228 32 0 Future Volume (vph) 24 113 28 228 32 0 Ideal Flow (vphp) 100 1900 1900 1900 1900 1900 Lane Width (m) 3.5 3.5 3.5 3.5 3.5 3.5 Ped Bike Factor 1.00 1.00 1.00 1.00 1.00 1.00 Fit Protected 0.991 0.994 Satd. Flow (prot) 1615 0 1839 1879 0 Fit Protected 0.991 0.994 Satd. Flow (perm) 1615 0 1839 1879 0 Link Speed (k/h) 30 30 30 30 11ink Distance (m) 70.2 16.3 54.8 Travel Time (s) 8.4 2.0 6.6 6 6 6 Confl. Bikes (H/n) 2 2 2 2 2 2 2 Peak Hour Factor 0.86 0.86 0.86 0.86 0.86 0.86 1.83 1.33 265	Lane Group		EBR	NBL	NBT	SBT	SBR	
Future Volume (vph) 24 113 28 228 32 0 Ideal Flow (vphp) 1900 1900 1900 1900 1900 1900 Lane Width (m) 3.5 3.5 3.5 3.5 3.5 3.5 Lane Util, Factor 1.00 1.00 1.00 1.00 1.00 Ped Bike Factor 5 0 1839 1879 0 Fit Protected 0.991 0.994 - - Satd. Flow (perm) 1615 0 1839 1879 0 Link Speed (k/h) 30 30 30 - - Confl. Peds, (#hr) 2 16.3 54.8 - - Confl. Peds, (#hr) 2 - - - - Confl. Peds, (#hr) 2 - - - - Link Distance (m) 70.2 183 32.65 37 0 - Confl. Peds, (#hr) 2 - -	Lane Configurations	Y			با	ĥ		
Ideal Flow (vphpl) 1900 1900 1900 1900 1900 Lane Width (m) 3.5 3.5 3.5 3.5 3.5 3.5 Lane Will, Factor 1.00 1.00 1.00 1.00 1.00 1.00 Ped Bike Factor 0.889	Traffic Volume (vph)	24	113	28	228	32	0	
Lane Width (m) 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 Lane Width Factor 1.00 1.00 1.00 1.00 1.00 1.00 1.00 Ped Bike Factor Ft 0.889 Ft Protected 0.991 0.994 Satd. Flow (prot) 1615 0 0 1839 1879 0 Fit Permitted 0.991 0.994 Satd. Flow (perm) 1615 0 0 1839 1879 0 Link Speed (k/h) 30 30 30 Link Distance (m) 70.2 16.3 54.8 Travel Time (s) 8.4 2.0 6.6 Confl. Peds. (#/hr) 5 13 9 9 9 Confl. Bikes (#/hr) 2 Peak Hour Factor 0.86 0.86 0.86 0.86 0.86 Heavy Vehicles (%) 0% 3% 6% 1% 0% 2% Adj. Flow (vph) 159 0 0 298 37 0 Enter Blocked Intersection No No No No No No No No Lane Group Flow (vph) 159 0 0 298 37 0 Enter Blocked Intersection No No No No No No No Lane Alignment Left Right Left Left Right Median Width(m) 3.5 0.0 0.0 Link Offset(m) 0.0 0.0 0.0 0.0 Crosswalk Width(m) 1.6 1.6 1.6 Two way Left Tum Lane Headway Factor 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.0	Future Volume (vph)	24	113	28	228	32	0	
Lane Util. Factor 1.00 1.00 1.00 1.00 1.00 Ped Bike Factor Fit 0.889 Fit Protected 0.991 0.994 Satd. Flow (port) 1615 0 0 1839 1879 0 Satd. Flow (porm) 1615 0 0 1839 1879 0 Link Distance (m) 70.2 16.3 54.8 Travel Time (s) 8.4 2.0 6.6 Confl. Pieds. (#/hr) 5 13 9 9 Peak Hour Factor 0.86 0.86 0.86 0.86 0.86 Heavy Vehicles (%) 0% 3% 6% 1% 0% 2% Adj. Flow (vph) 28 131 33 265 37 0 Shared Lane Traffic (%) Lane Group Flow (vph) 159 0 0 298 37 0 Enter Blocked Intersection No No No No No Lane Alignment Left Right Left Left Right Median Width(m) 1.6 1.6 1.6 Trow way Left Turn Lane Headway Factor 1.01 1.01 1.01 1.01 1.01 Turning Speed (k/h) 24 14 24 14 Sign Control Stop Stop Stop Intersection Capacity Utilization 37.7% ICU Level of Service A	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Ped Bike Factor 0.889 Fit votected 0.991 0.994 Satd. Flow (port) 1615 0 0 Fit Permitted 0.991 0.994 Satd. Flow (perm) 1615 0 0 Link Speed (k/h) 30 30 30 Link Distance (m) 70.2 16.3 54.8 Travel Time (s) 8.4 2.0 6.6 Confl. Bikes (#hr) 2 2 Peak Hour Factor 0.86 0.86 0.86 0.86 Peak Hour Factor 0.86 0.86 0.86 0.86 Lane Group Flow (vph) 28 131 33 265 37 0 Enter Blocked Intersection No No No No No No No Lane Group Flow (vph) 1.59 0 0 298	Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	
Fit 0.889 FIt Protected 0.991 0.994 Satd. Flow (prot) 1615 0 1839 1879 0 Fit Permitted 0.991 0.994 0 1615 0 1839 1879 0 Satd. Flow (perm) 1615 0 1839 1879 0 11nk Speed (k/h) 30 30 30 Link Distance (m) 70.2 16.3 54.8 54.8 2.0 6.6 2 Confl. Bikes (#hr) 5 13 9 9 9 2 33 3 2 2% 34 33 2 2% 34 33 2 2% 34 33 2 2% 37 0 3 33 36 36 3.6 3.6 3.6 3.6 3.6 3.6 3.6 3.6 3.6 3.6 3.6	Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Fit Protected 0.991 0.994 Satd. Flow (port) 1615 0 0 Fit Permitted 0.991 0.994 Satd. Flow (perm) 1615 0 1839 1879 0 Link Speed (k/h) 30 30 30 30 30 Link Speed (k/h) 30 30 30 30 30 Confl. Peds. (#hr) 70.2 16.3 54.8 54.8 Travel Time (s) 8.4 2.0 6.6 6.6 Confl. Bikes (#hr) 2 9 9 64.14 64.04 Adj, Flow (vph) 28 131 33 265 37 0 Shared Lane Traffic (%) 34 14 33 265 37 0 Enter Blocked Intersection No No No No No No No Lane Alignment Left Right Left Right Median Width(m) 1.6 1.6 1.6 Lane Alignment Left Right Left Right 14 14 14 <td< td=""><td>Ped Bike Factor</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	Ped Bike Factor							
Satd. Flow (prot) 1615 0 1839 1879 0 FIL Permitted 0.991 0.994 0.994 0 Satd. Flow (perm) 1615 0 1839 1879 0 Link Speed (kh) 30 30 30 30 30 Link Distance (m) 70.2 16.3 54.8 54.8 54.8 Confl. Reds. (#/hr) 5 13 9 9 9 Confl. Bikes (#/hr) 2 2 6.6 0.86 0.86 0.86 0.86 0.86 Heavy Vehicles (%) 0% 3% 6% 1% 0% 2% Adj. Flow (vph) 28 131 33 265 37 0 Shared Lane Traffic (%)	Frt	0.889						
Fit Permitted 0.991 0.994 Satd. Flow (perm) 1615 0 1839 1879 0 Link Speed (k/h) 30 30 30 30 30 Link Distance (m) 70.2 16.3 54.8 54.8 Travel Time (s) 8.4 2.0 6.6 5 Confl. Bikes (#/hr) 2 2 2 Peak Hour Factor 0.86 0.86 0.86 0.86 Peak Hour Factor 0.86 0.86 0.86 0.86 Lane Group Flow (vph) 28 131 33 265 37 0 Shared Lane Traffic (%)	Flt Protected	0.991			0.994			
Satd. Flow (perm) 1615 0 0 1839 1879 0 Link Distance (m) 70.2 16.3 54.8 Intervent Time (s) 8.4 2.0 6.6 Confl. Peds. (#/hr) 5 13 9 9 9 Peak Hour Factor 0.86 0.86 0.86 0.86 0.86 Peak Hour Factor 0.86 0.86 0.86 0.86 0.86 Lane Group Flow (vph) 28 131 33 265 37 0 Shared Lane Traffic (%) Lane Group Flow (vph) 159 0 298 37 0 Lane Group Flow (vph) 159 0 298 37 0 Intervection No In	Satd. Flow (prot)	1615	0	0	1839	1879	0	
Link Speed (k/h) 30 30 30 Link Distance (m) 70.2 16.3 54.8 Travel Time (s) 8.4 2.0 6.6 Confl. Peds. (#hr) 5 13 9 9 Confl. Biks (#hr) 2 2 2 2 Peak Hour Factor 0.86 0.86 0.86 0.86 0.86 Adj, Flow (vph) 28 131 33 265 37 0 Shared Lane Traffic (%) 2 33 265 37 0 2 Lane Group Flow (vph) 159 0 0 298 37 0 Enter Blocked Intersection No No No No No No Lane Alignment Left Right Left Left Right 2 Median Width(m) 1.6 1.6 1.6 1.6 1.6 1.6 Link Offset(m) 0.0 0.0 0.0 0.0 2 2 14 2 <td></td> <td>0.991</td> <td></td> <td></td> <td>0.994</td> <td></td> <td></td> <td></td>		0.991			0.994			
Link Speed (k/h) 30 30 30 Link Distance (m) 70.2 16.3 54.8 Travel Time (s) 8.4 2.0 6.6 Confl. Peds, (#/hr) 5 13 9 9 Peak Hour Factor 0.86 0.86 0.86 0.86 Heavy Vehicles (%) 0% 3% 6% 1% 0% 2% Adj, Flow (vph) 28 131 33 265 37 0 Shared Lane Traffic (%) 131 33 265 37 0 Enter Blocked Intersection No No No No No Lane Alignment Left Right Left Right Median Width(m) 1.6 1.6 1.6 Link Offset(m) 0.0 0.0 0.0 0.0 0.0 0.0 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01	Satd, Flow (perm)	1615	0	0	1839	1879	0	
Link Distance (m) 70.2 16.3 54.8 Travel Time (s) 8.4 2.0 6.6 Confl. Reds. (#/hr) 5 13 9 9 Confl. Bikes (#/hr) 2 9 9 Peak Hour Factor 0.86 0.86 0.86 0.86 Heavy Vehicles (%) 0% 3% 6% 1% 0% Adj. Flow (vph) 28 131 33 265 37 0 Shared Lane Traffic (%)		30			30	30		
Travel Time (s) 8.4 2.0 6.6 Confl. Bikes (#/hr) 5 13 9 9 Confl. Bikes (#/hr) 2 - - Peak Hour Factor 0.86 0.86 0.86 0.86 Heavy Vehicles (%) 0% 3% 6% 1% 0% 2% Adj. Flow (vph) 28 131 33 265 37 0 Shared Lane Traffic (%)		70.2			16.3	54.8		
Confi. Peds. (#hr) 5 13 9 9 2onfi. Bikes (#hr) 2								
Confl. Bikes (#hr) 2 Peak Hour Factor 0.86 0.86 0.86 0.86 Heavy Vehicles (%) 0% 3% 6% 1% 0% 2% Adj, Flow (vph) 28 131 33 265 37 0 Shared Lane Traffic (%)			13	9	2.0	0.0	9	
Peak Hour Factor 0.86 0.86 0.86 0.86 0.86 Heavy Vehicles (%) 0% 3% 6% 1% 0% 2% Adj. Flow (vph) 28 131 33 265 37 0 Shared Lane Traffic (%)		-		-			-	
Heavy Vehicles (%) 0% 3% 6% 1% 0% 2% Adj. Flow (vph) 28 131 33 265 37 0 Shared Lane Traffic (%)		0.86	0.86	0.86	0.86	0.86	0.86	
Adj. Flow (vph) 28 131 33 265 37 0 Shared Lane Traffic (%)								
Shared Lane Traffic (%) Lane Group Flow (vph) 159 0 298 37 0 Enter Blocked Intersection No No No No No No Lane Alignment Left Right Left Left Right Median Width(m) 3.5 0.0 0.0 0.0 Link Offset(m) 0.0 0.0 0.0 Crosswalk Width(m) 1.6 1.6 1.6 Two way Left Turn Lane								
Lane Group Flow (vph) 159 0 0 298 37 0 Enter Blocked Intersection No No No No No No Lane Alignment Left Right Left Left Left Right Median Width(m) 3.5 0.0 0.0 0.0 Link Offset(m) 0.0 0.0 0.0 Crosswalk Width(m) 1.6 1.6 1.6 Two way Left Turn Lane		20			200	0.	Ū	
Enter Blocked Intersection No No <th< td=""><td></td><td>159</td><td>0</td><td>0</td><td>298</td><td>37</td><td>0</td><td></td></th<>		159	0	0	298	37	0	
Lane Alignment Left Right Left Left Left Right Wedian Width(m) 3.5 0.0 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td>-</td><td></td></td<>							-	
Median Width(m) 3.5 0.0 0.0 .ink Offset(m) 0.0 0.0 0.0 Crosswalk Width(m) 1.6 1.6 1.6 Yow way Left Turn Lane								
Link Offset(m) 0.0 0.0 0.0 Crosswalk Width(m) 1.6 1.6 1.6 Two way Left Turn Lane			rugit	Lon			rugin	
Crosswalk Width(m) 1.6 1.6 1.6 Two way Left Turn Lane								
Two way Left Turn Lane Headway Factor 1.01 1.01 1.01 1.01 Turning Speed (k/h) 24 14 24 14 Sign Control Stop Stop Stop Intersection Summary Area Type: Other Control Type: Unsignalized ICU Level of Service A								
Headway Factor 1.01 1.01 1.01 1.01 Turning Speed (k/h) 24 14 24 14 Sign Control Stop Stop Stop Intersection Summary Area Type: Other Control Type: Unsignalized ICU Level of Service A		1.0			1.0	1.0		
Turning Speed (k/h) 24 14 Sign Control Stop Stop Intersection Summary Area Type: Other Control Type: Unsignalized Other Intersection Capacity Utilization 37.7% ICU Level of Service A		1.01	1.01	1 01	1.01	1 01	1.01	
Sign Control Stop Stop Stop Intersection Summary Area Type: Other Control Type: Unsignalized Intersection Capacity Utilization 37.7% ICU Level of Service A					1.01	1.01		
Intersection Summary Area Type: Other Control Type: Unsignalized Intersection Capacity Utilization 37.7% ICU Level of Service A			14	24	Stor	Stor	14	
Area Type: Other Control Type: Unsignalized Intersection Capacity Utilization 37.7% ICU Level of Service A	•	Stop			Stop	Stop		
Control Type: Unsignalized Intersection Capacity Utilization 37.7% ICU Level of Service A								
ntersection Capacity Utilization 37.7% ICU Level of Service A		Other						
······································								
Analysis Period (min) 15		tion 37.7%			IC	U Level	of Service A	
	Analysis Period (min) 15							

8: Sterling Road & Perth Avenue 02/16/2021 ~ ≯ 1 t ŧ \mathbf{i} EBL NBT SBT SBR Movement EBR NBL Lane Configurations Y Æ ĥ Stop Sign Control Stop Stop Traffic Volume (vph) Future Volume (vph) Peak Hour Factor 24 113 28 228 32 0 24 113 28 228 32 0 0.86 0.86 0.86 0.86 0.86 0.86 Hourly flow rate (vph) 28 131 33 265 37 0 Direction, Lane # Volume Total (vph) EB 1 NB 1 SB 1 159 298 37 Volume Left (vph) 28 33 0 Volume Right (vph) 131 0 0 Hadj (s) -0.42 0.05 0.00 Departure Headway (s) 4.3 4.4 4.6 Degree Utilization, x 0.19 0.36 0.05 Capacity (veh/h) Control Delay (s) Approach Delay (s) Approach LOS 783 8.2 801 735 9.8 7.8 8.2 9.8 7.8 А А А

HCM Unsignalized Intersection Capacity Analysis

9.1			
А			
37.7%	ICU Level of Service	A	
15			
	9.1 A 37.7% 15	9.1 A 37.7% ICU Level of Service 15	9.1 A 37.7% ICU Level of Service A 15

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<Future Background> PM Peak





TTS Trip Distribution Summary

In order to inform the trip assignment stage of the analysis, informaton about the general trip distribution is required to inform the analysis. The distribution represents the proportion of trips to and away from the site in any given direction. The following pages summarizes the general trip distribution results, which were calculated using Transportation Tomorrow Survey (TTS) 2016 trip origin and destination data. Trips were grouped under cardinal directions based on the relative angle between trip origin and destination, and appropriate adjustments were made to the calculation to conform to local geography and street grid.

The "TTS Directional Distribution Summary" on the next page presents a summary of the calculations described above, along with notes on any details specific to the analysis in this report. The table shows the total number of trips to and from the subject site categorized into general directions (North, Northeast, East etc.) and the percentage share of trips in each general direction in all directions.

The pages after show graphical illustrations of the categorizations for all Traffic Analysis Zones (TAZ) in the TTS survey area. Note that the latest survey zones were last updated in 2006.

These results are used as reference information for the trip assignment. They do not directly determine the trip assignment on the study network. The final trip assignments are completed based on a combination of local context, engineering experience, and engineering judgement, with the trip distribution information presented here to illustrate general travel behaviour.

TTS Directional Distribution Summary: 221 Sterling Road - Retail

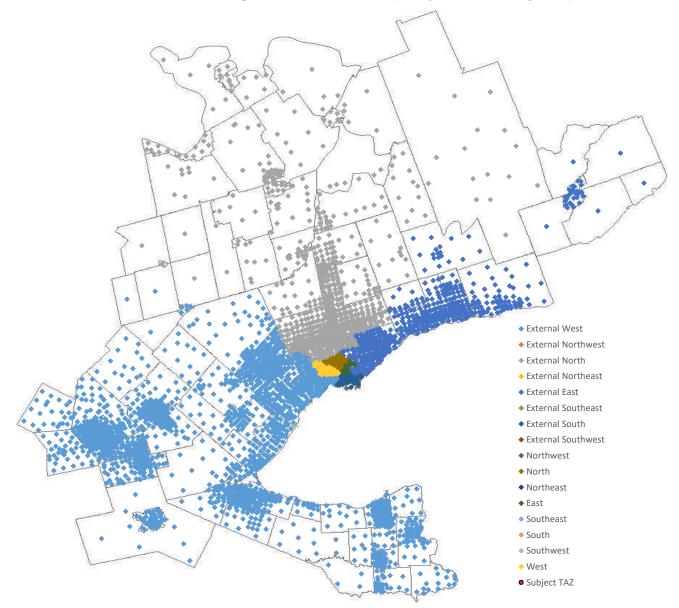
Notes:

1. Directions determined based on centroid coordinates of destination/origin planning districts.

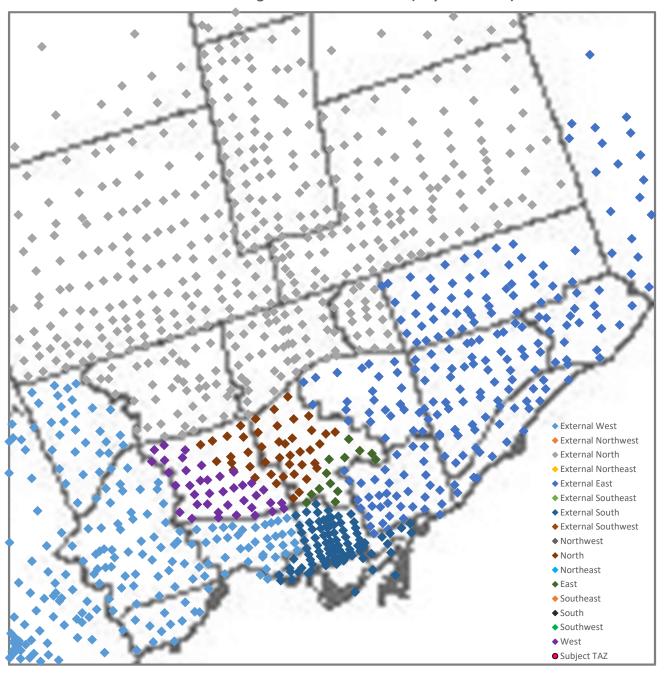
2. 'Internal' refers to local trips made within the home planning district(s), while 'External' refers to trips made to areas outside of the home planning district(s).

3. 'I' refers to local trips made within the subject TAZ that do not have a cardinal direction assigned to them. These trips are excluded from the analysis.

							Intern	nal					External								
	Time Period	Direction		NW	N	NE	E	SE	S	SW	W	Total	NW	Ν	NE	E	SE	S	SW	W	Total
	A.M.	Inbound	0	0	341	0	34	0	0	0	881	1256	0	917	0	543	0	534	0	2669	4663
Trips	A.WI.	Outbound	0	0	0	0	31	0	0	0	25	56	0	0	0	40	0	0	0	21	61
TTPS	P.M.	Inbound	0	0	0	0	27	0	0	0	0	27	0	15	0	18	0	0	0	200	233
	F.IVI.	Outbound	0	0	255	0	34	0	0	0	676	965	0	738	0	585	0	581	0	2478	4382
	A.M.	Inbound	0%	0%	6%	0%	1%	0%	0%	0%	15%	21%	0%	15%	0%	9%	0%	9%	0%	45%	79%
Percentage		Outbound	0%	0%	0%	0%	26%	0%	0%	0%	21%	48%	0%	0%	0%	34%	0%	0%	0%	18%	52%
reicentage	P.M.	Inbound	0%	0%	0%	0%	10%	0%	0%	0%	0%	10%	0%	6%	0%	7%	0%	0%	0%	77%	90%
	F.IVI.	Outbound	0%	0%	5%	0%	1%	0%	0%	0%	13%	18%	0%	14%	0%	11%	0%	11%	0%	46%	82%



TAZ Directional Categorisation Visualisation (Complete TTS Survey Area)



TAZ Directional Categorisation Visualisation (City of Toronto)

TTS Trip Distribution Summary

In order to inform the trip assignment stage of the analysis, informaton about the general trip distribution is required to inform the analysis. The distribution represents the proportion of trips to and away from the site in any given direction. The following pages summarizes the general trip distribution results, which were calculated using Transportation Tomorrow Survey (TTS) 2016 trip origin and destination data. Trips were grouped under cardinal directions based on the relative angle between trip origin and destination, and appropriate adjustments were made to the calculation to conform to local geography and street grid.

The "TTS Directional Distribution Summary" on the next page presents a summary of the calculations described above, along with notes on any details specific to the analysis in this report. The table shows the total number of trips to and from the subject site categorized into general directions (North, Northeast, East etc.) and the percentage share of trips in each general direction in all directions.

The pages after show graphical illustrations of the categorizations for all Traffic Analysis Zones (TAZ) in the TTS survey area. Note that the latest survey zones were last updated in 2006.

These results are used as reference information for the trip assignment. They do not directly determine the trip assignment on the study network. The final trip assignments are completed based on a combination of local context, engineering experience, and engineering judgement, with the trip distribution information presented here to illustrate general travel behaviour.

TTS Directional Distribution Summary: 221 Sterling Road - Residential

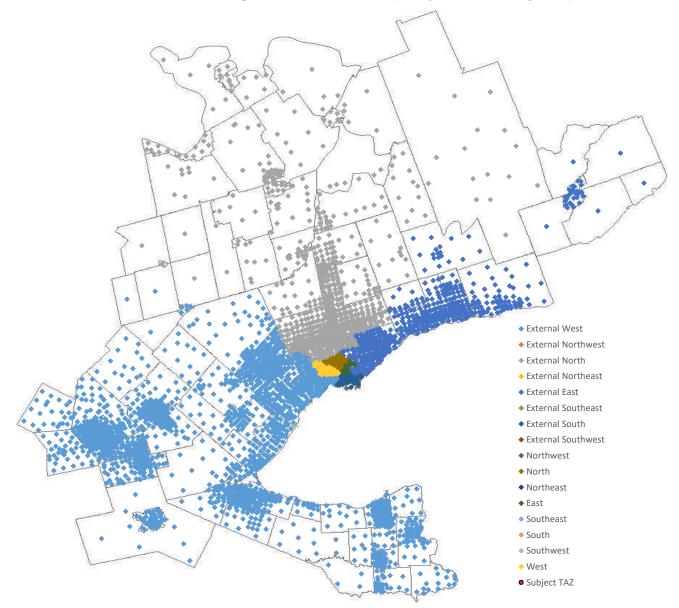
Notes:

1. Directions determined based on centroid coordinates of destination/origin planning districts.

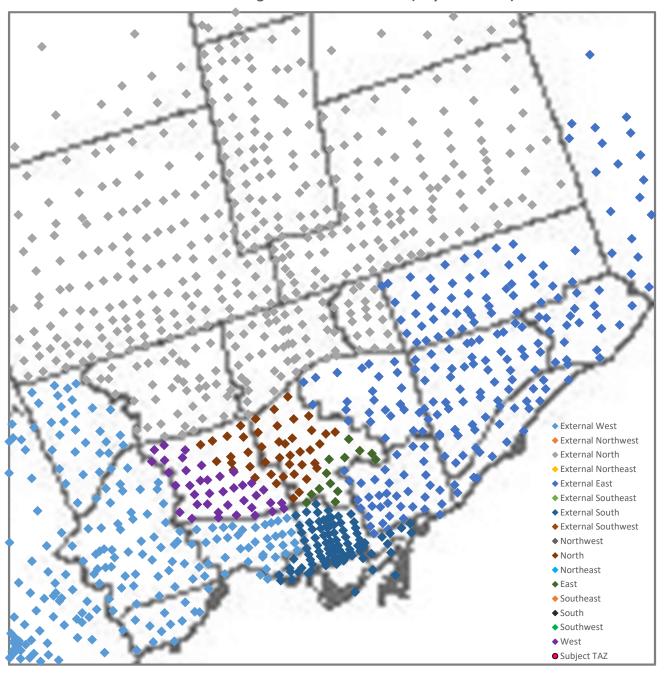
2. 'Internal' refers to local trips made within the home planning district(s), while 'External' refers to trips made to areas outside of the home planning district(s).

3. 'I' refers to local trips made within the subject TAZ that do not have a cardinal direction assigned to them. These trips are excluded from the analysis.

							Inter	nal									External				
	Time Period	Direction	_	NW	Ν	NE	E	SE	S	SW	W	Total	NW	Ν	NE	E	SE	s	SW	W	Total
	A.M.	Inbound	0	0	34	0	0	0	0	0	29	63	0	0	0	0	0	86	0	829	915
Trips	A.WI.	Outbound	0	0	640	0	304	0	0	0	622	1566	0	1041	0	1072	0	6854	0	6135	15102
TTPS	P.M.	Inbound	0	0	600	0	246	0	0	0	514	1360	0	911	0	778	0	5714	0	6103	13506
	Г.М.	Outbound	0	0	72	0	104	0	0	0	115	291	0	48	0	64	0	654	0	2017	2783
	A.M.	Inbound	0%	0%	3%	0%	0%	0%	0%	0%	3%	6%	0%	0%	0%	0%	0%	9%	0%	85%	94%
Percentage		Outbound	0%	0%	4%	0%	2%	0%	0%	0%	4%	9%	0%	6%	0%	6%	0%	41%	0%	37%	91%
reicentage	P.M.	Inbound	0%	0%	4%	0%	2%	0%	0%	0%	3%	9%	0%	6%	0%	5%	0%	38%	0%	41%	91%
	F.IVI.	Outbound	0%	0%	2%	0%	3%	0%	0%	0%	4%	9%	0%	2%	0%	2%	0%	21%	0%	66%	91%



TAZ Directional Categorisation Visualisation (Complete TTS Survey Area)



TAZ Directional Categorisation Visualisation (City of Toronto)

AM Inbound - Residential

Fri Jan 08 2021 12:53:00 GMT-0500 (Eastern Standard Time) - Run Time: 3037ms

Cross Tabulation Query Form - Trip - 2016 v1.1	Auto	462	47%
	Pass		0%
Row: 2006 GTA zone of origin - gta06_orig	Transit	188	19%
Column: 2006 GTA zone of destination - gta06_dest	Cycle	30	3%
Table: Primary travel mode of trip - mode_prime	Walk	298	30%
		978	

Filters:									
2006 GTA z	106	107	114	115	116				
and									
Start time of trip - start_time In 630-930									
and									
Trip purpose of destination - purp_dest In h									

Trip 2016

Table: Transit excluding GO rail

	105	106	107	115	116
56	0	0	0	51	0
59	0	16	0	0	0
110	0	0	7	0	0
125	0	0	0	0	20
173	0	0	34	0	0
317	42	0	0	0	0
371	0	0	18	0	0

Trip 2016

Table: Cycle

	105	106	114
113	0	0	17
118	5	0	0
125	0	8	0

AM Outbound - Residential

Fri Jan 08 2021 12:51:25 GMT-0500 (Eastern Standard Time) - Run Time: 3336ms

Cross Tabulation Query Form - Trip - 2016 v1.1

	Auto	4317	26%
Row: 2006 GTA zone of destination - gta06_dest	Auto Passe	418	3%
Column: 2006 GTA zone of origin - gta06_orig	Transit	8370	50%
Table: Primary travel mode of trip - mode_prime	Cycle	1836	11%
	Walk	1727	10%
		16668	

Filters:						
2006 GTA 2	106	107	114	115	116	
and						
Start time of trip - start_time In 630-930						
and						
Trip purpose of origin - purp_orig In h						

Trip 2016

Table: Transit excluding GO rail

	105	106	107	114	115	116
4	63	0	0	0	0	0
5	0	0	0	0	0	26
19	0	0	0	5	0	0
20	0	0	0	12	0	0
21	5	12	0	0	28	0
23	0	0	0	0	0	19
25	107	0	0	0	0	0
29	70	0	0	0	0	0
33	0	0	0	0	0	18
35	11	0	0	37	0	9
36	44	23	0	0	0	0
37	0	0	44	0	0	0
38	193	0	5	0	73	42
39	0	0	0	21	0	0
40	5	0	0	0	0	0
41	0	5	5	0	0	0
43	87	0	29	12	0	64
44	0	0	0	0	34	0
45	0	0	77	31	0	23
46	5	0	0	0	0	0
47	0	10	0	0	0	0
49	88	0	26	24	0	47
50	68	0	20	7	0	0
51	23	13	0	0	5	22
52	212	20	9	0	50	0
53	0	0	0	32	42	26
54	20	8	31	0	0	21
55	122	29	19	0	20	11
56	24	6	0	0	0	22
57	306	58	5	9	0	32
58	0	0	0	0	0	26
59	0	0	123	0	0	0
60	5	5	0	0	0	0
62	74	0	38	0	0	0
64	0	0	0	0	0	17
65	74	5	0	37	0	60
66	17	10	0	24	0	38
67	5	41	48	33	39	0
68	9	13	0	0	40	0
69	0	11	133	0	0	8

PM Inbound - Residential

Fri Jan 08 2021 12:52:41 GMT-0500 (Eastern Standard Time) - Run Time: 2935ms

Cross Tabulation Query Form - Trip - 2016 v1.1

	Auto	4027	27%
Row: 2006 GTA zone of origin - gta06_orig	Auto Passe	700	5%
Column: 2006 GTA zone of destination - gta06_dest	Transit	7308	49%
Table: Primary travel mode of trip - mode_prime	Cycle	1241	8%
	Walk	1674	11%
		14950	

Filters: 2006 GTA z and	106	107	114	115	116	
Start time of trip - start_time In 1530-1830						
and						
Trip purpose of destination - purp_dest In h						

Trip 2016

Table: Transit excluding GO rail

	105	106	107	114	115	116
5	0	0	0	0	0	26
19	0	0	0	5	0	0
21	0	12	0	4	0	0
23	0	0	0	0	0	19
25	225	0	0	0	0	8
29	70	0	0	0	0	0
33	0	0	0	0	0	18
35	11	0	0	37	0	0
36	44	62	62	0	0	8
37	0	0	44	0	0	0
38	296	0	5	0	45	0
39	0	0	0	47	0	0
41	0	5	0	0	0	0
43	87	0	29	12	0	64
45	0	0	0	31	26	0
47	0	0	0	0	26	0
49	162	0	31	0	0	28
50	36	0	20	6	0	0
51	64	5	0	0	19	22
52	186	20	5	0	50	20
53	0	0	0	0	42	26
54	0	0	0	0	0	21
55	270	19	19	0	20	0
56	24	6	0	0	0	22
57	184	58	5	9	0	32
58	0	0	0	0	0	26
59	0	0	123	0	0	0
60	5	5	0	0	0	0
64	0	0	0	0	0	17
65	74	0	0	37	8	24
66	12	10	0	24	0	38
67	5	36	19	46	39	0
68	0	5	0	33	0	0
69	0	7	5	7	0	29
70	0	5	0	0	0	21
71	0	24	0	0	19	6
76	0	0	0	4	0	0
78	0	7	0	31	0	0
88	16	0	0	0	0	0
89 00	0	0	0	82	0	149
90 02	0	0	0	0	0	9
92 02	0	39	0	0	0	0
93	5	0	0	0	65	0
94	0	5	0	0	0	0

PM Outbound - Residential

Fri Jan 08 2021 12:51:53 GMT-0500 (Eastern Standard Time) - Run Time: 3197ms

Cross Tabulation Query Form	m - Trip - 2016 v1.1
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	Auto	1059	34%
Row: 2006 GTA zone of destination - gta06_dest	Auto Passe	412	13%
Column: 2006 GTA zone of origin - gta06_orig	Transit	1080	35%
Table: Primary travel mode of trip - mode_prime	Cycle	186	6%
	Walk	337	11%
		3074	

Filters: 2006 GTA z and	106	107	114	115	116
Start time of tri	p - start_ti	me In 1530	-1830		
and					
Trip purpose of	origin - pu	rp_orig In h	ı		

Trip 2016

Table: Transit excluding GO rail

	105	106	107	114	115	116
20	0	0	0	12	0	0
37	74	5	0	0	0	0
38	27	0	0	0	0	0
42	0	0	0	4	0	0
45	0	0	0	66	0	23
48	40	0	0	0	0	0
50	63	0	18	0	0	0
56	0	0	0	0	51	0
59	26	0	0	0	0	0
65	0	0	0	34	0	0
70	0	0	0	0	0	23
72	0	0	0	0	0	7
77	0	8	0	0	0	0
86	0	0	0	0	0	26
94	59	0	0	0	0	0
96	122	0	0	0	0	0
105	57	0	0	0	0	0
118	0	0	0	116	0	0
120	74	0	0	0	10	0
186	27	0	0	0	0	0
203	5	0	0	0	0	0
209	0	0	0	0	6	0
277	0	0	0	0	0	15
306	0	0	59	0	0	0
312	5	0	0	0	0	0
464	0	9	0	0	0	0
3816	9	0	0	0	0	0

Trip 2016

Table: Cycle

	105	107	114
74	0	9	0
93	0	5	0
95	5	0	0
97	5	0	0
98	41	0	0
101	0	0	46
109	5	0	0
113	15	0	0
125	0	0	6
251	0	34	0
270	8	0	0
273	0	7	0

AM Inbound - Retail

Fri Jan 08 2021 12:05:21 GMT-0500 (Eastern Standard Time) - Run Time: 3118ms

	Auto	2906	49%
Row: 2006 GTA zone of origin - gta06_orig	Auto Passe	344	6%
Column: 2006 GTA zone of destination - gta06_dest	Transit	1761	30%
Table: Primary travel mode of trip - mode_prime	Cycle	423	7%
	Walk	485	8%
		5919	
Filters:			

Thiceis.					
(2006 GTA	106	107	114	115	116
and					
Start time of trip	- start_ti	me In 630-9	30		
and					
Trip purpose of o	destinatio	n - purp_de	st In w)		

Trip 2016

Table: Transit excluding GO rail

	105	106	107	114	115	116
15	0	0	10	0	0	0
18	0	0	0	0	0	31
34	0	18	0	0	0	0
46	0	0	18	0	0	0
60	21	0	0	0	0	0
66	17	0	0	0	0	0
72	0	0	0	31	0	0
90	4	0	4	0	0	0
95	0	0	0	0	49	0
105	51	0	0	5	0	0
106	22	0	0	0	0	0
110	0	0	0	0	37	0
119	0	0	27	26	0	0
124	14	0	68	19	0	0
125	0	0	0	9	0	0
127	0	0	0	6	0	0
130	0	0	0	0	14	0
134	0	0	12	0	0	0
137	0	0	0	0	19	0
140	0	0	7	0	0	0
147	0	0	12	0	0	0
151	0	0	30	0	0	0
163	0	0	0	0	0	22
164	13	0	0	0	0	0
166	136	0	0	19	0	0
172	25	0	0	0	0	0
188	0	0	0	0	33	0
210	0	25	0	0	0	0
211	33	17	0	0	0	0
212	21	0	0	0	0	0

AM Outbound - Retail

Fri Nov 13 2020 16:33:40 GMT-0500 (Eastern Standard Time) - Run Time: 2836ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of destination - gta06_dest Column: 2006 GTA zone of origin - gta06_orig Table: Primary travel mode of trip - mode_prime

Filters: (2006 GTA 107 114 115 116 and Start time of trip - start_time In 630-930 and Trip purpose of origin - purp_orig In w)

Trip 2016		Auto 76	65%
Table: Cycle		Auto Passe 31	26%
		Transit	0%
	115	Cycle 10	9%
147	10	Walk	0%
		117	

Trip 2016 Table: Auto driver

	106	107	114	115
125	0	0	0	15
170	0	0	15	0
537	0	40	0	0
3812	6	0	0	0

Trip 2016 Table: Paid rideshare

115 222 31

PM Inbound - Retail

Fri Jan 08 2021 12:04:50 GMT-0500 (Eastern Standard Time) - Run Time: 2897ms

Cross Tabulation Query Form - Trip - 2016 v1.1	Auto	55	21%
	Auto Passeng	ger	0%
Row: 2006 GTA zone of origin - gta06_orig	Transit	46	18%
Column: 2006 GTA zone of destination - gta06_dest	Cycle	159	61%
Table: Primary travel mode of trip - mode_prime	Walk		0%
	26	50	

Filters: (2006 GTA and Start time of t and Trip purpose o				115	116
Trip 2016					
Table: Transit	excluding G	O rail			
	107	114			
99	0	19			
222	27	0			
Trip 2016					
Table: Auto di	river				
	105	106	107		
101	0	22	0		
239	0	0	18		
2072	15	0	0		
Trip 2016					
Table: Walk					
	114	116			
99	19	0			
106	0	7			
109	17	0			
114	116	0			

PM Outbound - Retail

Fri Jan 08 2021 12:03:42 GMT-0500 (Eastern Standard Time) - Run Time: 3375ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GT	A zone of de	estination -	gta06_dest			Auto	2528	47%
Column: 2006	GTA zone o	of origin - gt	a06_orig			Auto Passe	427	8%
Table: Primary	rtravel mod	le of trip - n	node_prime			Transit	1283	24%
						Cycle	380	7%
						Walk	729	14%
Filters:							5347	
(2006 GTA	106	107	114	115	116			

and Start time of trip - start_time In 1530-1830 and

Trip purpose of origin - purp_orig In w)

Trip 2016

Table: Transit excluding GO rail

	105	106	107	114	115	116
15	0	0	10	0	0	0
18	0	0	0	0	0	31
22	0	0	0	0	0	13
34	0	18	0	0	0	0
46	0	0	18	0	0	0
60	21	0	0	0	0	0
72	0	0	0	31	0	0
79	0	0	0	18	0	0
90	0	0	4	0	0	0
93	33	0	0	0	0	0
102	13	0	0	0	0	14
106	22	0	0	0	0	0
119	0	0	27	26	0	0
120	0	0	23	0	0	0
124	0	0	0	19	0	0
126	0	0	0	0	10	0
127	0	0	0	6	0	0
130	0	0	0	0	14	0
134	0	0	12	0	0	0
140	0	0	7	0	0	0
151	0	0	30	0	0	0
154	0	0	0	0	32	0
163	0	0	0	0	0	22
172	17	0	0	0	0	0
173	0	0	0	0	0	11
183	0	20	0	0	0	0
188	0	0	0	0	33	0
211	0	17	0	0	0	0
212	21	0	0	0	0	0
214	0	38	0	0	0	0
219	0	0	5	0	0	0
220	0	0	0	0	0	29
249	26	0	0	0	0	0
250	0	0	0	83	0	0
251	0	0	15	0	0	0
257	0	0	0	0	0	6
258	0	12	0	0	0	0



H Future Total Traffic Conditions

	≯		~		+			*		τ.	1	7
	_	-	•	1				1	-	*	÷	*
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Lane Configurations		↑			↑	1	<u>۲</u>	↑ ĵ₀		<u>٦</u>	f,	
Traffic Volume (vph)	0	795	0	0	530	75	62	365	60	151	327	98
Future Volume (vph)	0	795	0	0	530	75	62	365	60	151	327	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	190
Lane Width (m)	3.0	3.5	3.0	3.0	3.2	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Storage Length (m)	0.0		0.0	0.0		14.1	14.4		15.3	36.3		0.0
Storage Lanes	0		0	0		1	1		1	1		(
Taper Length (m)	2.5			2.5			25.0			10.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor						0.69	0.85	0.91		0.79	0.90	
Frt						0.850		0.975			0.956	
Flt Protected							0.950			0.950		
Satd. Flow (prot)	0	1658	0	0	1602	1343	1458	2692	0	1501	1388	(
Flt Permitted							0.381			0.318		
Satd. Flow (perm)	0	1658	0	0	1602	931	495	2692	0	397	1388	(
Right Turn on Red			No			No			Yes			Ye
Satd. Flow (RTOR)								23			24	
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		374.8			112.0			258.8			36.6	
Travel Time (s)		33.7			10.1			23.3			3.3	
Confl. Peds. (#/hr)	261		188	188		261	149		271	271		149
Confl. Bikes (#/hr)			2			2			3			5
Peak Hour Factor	0.50	1.00	0.76	0.90	0.95	0.69	0.75	0.93	0.75	0.80	0.99	0.70
Heavy Vehicles (%)	0%	2%	3%	0%	2%	1%	4%	6%	5%	1%	5%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	13	0	0	(
Adj. Flow (vph)	0	795	0	0	558	109	83	392	80	189	330	136
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	795	0	0	558	109	83	472	0	189	466	(
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Righ
Median Width(m)		0.0			0.0			3.0			3.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.25	1.16	1.25	1.25	1.21	1.25	1.25	1.16	1.25	1.25	1.16	1.2
Turning Speed (k/h)	25		15	25		15	25		15	25		1
Number of Detectors		2			2	1	1	2		1	2	
Detector Template		Thru			Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)		30.5			30.5	6.1	6.1	30.5		6.1	30.5	
Trailing Detector (m)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)		1.8			1.8	6.1	6.1	1.8		6.1	1.8	
Detector 1 Type		CI+Ex			CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SB
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type		NA			NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		2			6			4		3	8	
Permitted Phases					-	6	4			8	-	
Detector Phase		2			6	6	4	4		3	8	
Switch Phase					-	-				-	-	
Minimum Initial (s)		26.0			26.0	26.0	22.0	22.0		6.0	22.0	
Minimum Split (s)		34.0			34.0	34.0	28.0	28.0		10.0	28.0	
Total Split (s)		58.0			58.0	58.0	31.0	31.0		11.0	42.0	
Total Split (%)		58.0%			58.0%	58.0%	31.0%	31.0%		11.0%	42.0%	
Maximum Green (s)		51.4			51.4	51.4	25.0	25.0		7.0	36.0	
Yellow Time (s)		3.0			3.0	3.0	4.0	4.0		3.0	4.0	
All-Red Time (s)		3.6			3.6	3.6	2.0	2.0		1.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.6			5.6	5.6	5.0	5.0		3.0	5.0	
Lead/Lag		0.0			0.0	0.0	Lag	Lag		Lead	0.0	
Lead-Lag Optimize?							Lag	Lug		Louu		
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0		2.0	3.0	
Recall Mode		C-Max			C-Max	C-Max	Max	Max		None	Max	
Walk Time (s)		7.0			7.0	7.0	7.0	7.0		None	7.0	
Flash Dont Walk (s)		19.0			19.0	19.0	15.0	15.0			15.0	
Pedestrian Calls (#/hr)		40			40	40	40	40			40	
Act Effct Green (s)		52.4			52.4	52.4	26.0	26.0		39.0	37.0	
Actuated g/C Ratio		0.52			0.52	0.52	0.26	0.26		0.39	0.37	
v/c Ratio		0.92			0.52	0.32	0.20	0.20		0.33	0.88	
Control Delay		31.4			22.2	14.4	58.7	36.5		46.1	48.2	
Queue Delay		0.0			0.0	0.0	0.0	0.0		40.1	40.2	
Total Delay		31.4			22.2	14.4	58.7	36.5		46.1	48.2	
LOS		51.4 C			22.2 C	14.4 B	50.7 E	30.5 D		40.1 D	40.2 D	
Approach Delay		31.4			21.0	D	E	39.8		U	47.6	
Approach LOS		51.4 C			21.0 C			39.0 D			47.0 D	
		U			U			U			U	
Intersection Summary	<u></u>											
	BD											
Cycle Length: 100												
Actuated Cycle Length: 100	to pho	0.EDT		Ctort -	Creen							
Offset: 38 (38%), Referenced	to phase	Z.EBI an	u o:wBI	, start of	Green							
Natural Cycle: 90	dia ata d											
Control Type: Actuated-Coord	ainated											
Maximum v/c Ratio: 0.92	-					- 1.00.0						
Intersection Signal Delay: 34.		1			ntersection							
Intersection Capacity Utilization	01 105.0%	/0		10	CU Level	or service	96					
Analysis Period (min) 15												

→Ø2 (R)	Ø3 Ø4
58 s	11s 31s
Ø6 (R)	↓ ≫ø8
58 s	42 s

2: Ruttan Street & B	1001 51	reet w	est				04/16/202
	-	\mathbf{i}	1	+	1	1	
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	¢Î			ŧ	Y		
Traffic Volume (vph)	824	25	6	670	71	43	
Future Volume (vph)	824	25	6	670	71	43	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.5	3.5	3.5	3.5	3.0	3.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.996				0.949		
Flt Protected					0.970		
Satd. Flow (prot)	1835	0	0	1842	1600	0	
Flt Permitted					0.970		
Satd. Flow (perm)	1835	0	0	1842	1600	0	
Link Speed (k/h)	40			40	30		
Link Distance (m)	69.7			374.8	79.4		
Travel Time (s)	6.3			33.7	9.5		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	916	28	7	744	79	48	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	944	0	0	751	127	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(m)	0.0			0.0	3.0	2	
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	1.6			1.6	1.6		
Two way Left Turn Lane							
Headway Factor	1.01	1.01	1.01	1.01	1.09	1.09	
Turning Speed (k/h)		14	24		24	14	
Sign Control	Free			Free	Stop		
Intersection Summary							
	Other						
Control Type: Unsignalized							
Intersection Capacity Utilizati	on 58.1%			IC	CU Level of	of Service	В
Analysis Period (min) 15							

HCM Unsignalized Intersection Capacity Analysis 2: Ruttan Street & Bloor Street West <Future Total> AM Peak 04/16/2021

	-	$\mathbf{\hat{z}}$	∢	+	1	1
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	ĥ			ŧ	Y	
Traffic Volume (veh/h)	824	25	6	670	71	43
Future Volume (Veh/h)	824	25	6	670	71	43
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	916	28	7	744	79	48
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	70			375		
pX, platoon unblocked			0.70		0.81	0.70
vC, conflicting volume			944		1688	930
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			704		1132	684
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		56	85
cM capacity (veh/h)			624		179	313
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	944	751	127			
Volume Left	0	751	79			
Volume Right	28	0	48			
cSH	1700	624	214			
Volume to Capacity	0.56	0.01	0.59			
Queue Length 95th (m)	0.0	0.01	25.5			
Control Delay (s)	0.0	0.3	25.5 43.9			
Lane LOS	0.0	0.5 A	43.9 F			
	0.0	0.3	43.9			
Approach Delay (s)	0.0	0.3	43.9 E			
Approach LOS			E			
Intersection Summary						
Average Delay			3.2			
Intersection Capacity Utilization	ation		58.1%	IC	U Level o	of Service
Analysis Period (min)			15			
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221-225 Sterling Road Transportation Impact Study

Synchro 10 Report Page 3 221-225 Sterling Road Transportation Impact Study

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Lane Configurations	٦	↑			4		٦	4Î		٦		1
Traffic Volume (vph)	112	640	0	0	657	84	48	38	18	191	0	16
Future Volume (vph)	112	640	0	0	657	84	48	38	18	191	0	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	190
Lane Width (m)	3.3	3.3	3.0	3.0	4.2	3.0	3.0	3.5	3.0	3.0	3.5	3.
Storage Length (m)	27.5		0.0	0.0		0.0	0.0		0.0	0.0		0.
Storage Lanes	1		0	0		0	1		0	1		
Taper Length (m)	7.5			2.5			2.5			2.5		
ane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.0
Ped Bike Factor					0.97		0.62	0.91		0.90		0.7
Frt					0.982			0.945				0.85
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1531	1605	0	0	1872	0	1685	1586	0	1652	0	133
Fit Permitted	0.088						0.950			0.950		
Satd. Flow (perm)	142	1605	0	0	1872	0	1053	1586	0	1485	0	105
Right Turn on Red			Yes			Yes			No			N
Satd. Flow (RTOR)					9							
Link Speed (k/h)		40			40			30			40	
Link Distance (m)		98.8			69.7			91.9			175.2	
Travel Time (s)		8.9			6.3			11.0			15.8	
Confl. Peds. (#/hr)	86	0.0	28	28	0.0	86	75	11.0	45	45	10.0	7
Confl. Bikes (#/hr)	00		50	20		50			2			
Peak Hour Factor	0.72	1.00	0.90	0.90	0.93	0.79	0.72	0.77	0.65	0.81	0.90	0.8
Heavy Vehicles (%)	14%	3%	0%	0%	3%	1%	0%	3%	0.05	2%	0.00	99
Bus Blockages (#/hr)	0	0	0	0	0	1	0	0	0	0	3	
Parking (#/hr)	0	0	0	0	0		0	0	0	0	5	
Adj. Flow (vph)	156	640	0	0	706	106	67	49	28	236	0	20
Shared Lane Traffic (%)	150	040	0	0	700	100	07	43	20	200	0	20
Lane Group Flow (vph)	156	640	0	0	812	0	67	77	0	236	0	20
Enter Blocked Intersection	No	No No	No	No	No	No	No	No	No	Z30 No	No	20 N
ane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	
Lane Alignment Median Width(m)	Leit	3.3	Right	Leit	3.3	Right	Leit	3.0	Right	Leit	3.0	Rigi
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
		4.0			4.0			4.0			4.0	
Two way Left Turn Lane	1.04	1.19	1.09	1.09	0.92	1.09	1.09	1.01	1.09	1.09	1.01	
Headway Factor		1.19			0.92			1.01			1.01	1.1
Turning Speed (k/h)	25	0	15	25	0	15	25	•	15	25		1
Number of Detectors	1	2			2		1	2		1		
Detector Template	Left	Thru			Thru		Left	Thru		Left		Righ
eading Detector (m)	6.1	30.5			30.5		6.1	30.5		6.1		6.
Frailing Detector (m)	0.0	0.0			0.0		0.0	0.0		0.0		0.
Detector 1 Position(m)	0.0	0.0			0.0		0.0	0.0		0.0		0.
Detector 1 Size(m)	6.1	1.8			1.8		6.1	1.8		6.1		6.
Detector 1 Type	CI+Ex	CI+Ex			Cl+Ex		CI+Ex	CI+Ex		CI+Ex		CI+E
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0		0.0		0.
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0		0.0		0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0		0.0		0.
Detector 2 Position(m)		28.7			28.7			28.7				

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ane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Detector 2 Size(m)		1.8			1.8			1.8				
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Furn Type	pm+pt	NA			NA		Split	NA		Prot		pt+o
Protected Phases	5	2			6		4	4		3		3 5
Permitted Phases	2											3
Detector Phase	5	2			6		4	4		3		3 5
Switch Phase												
Minimum Initial (s)	6.0	21.0			21.0		7.0	7.0		19.0		
Minimum Split (s)	10.0	29.0			29.0		16.0	16.0		27.0		
Total Split (s)	10.0	57.0			47.0		16.0	16.0		27.0		
Fotal Split (%)	10.0%	57.0%			47.0%		16.0%	16.0%		27.0%		
Maximum Green (s)	6.0	49.3			39.3		9.0	9.0		20.0		
fellow Time (s)	3.0	3.0			3.0		4.0	4.0		4.0		
All-Red Time (s)	1.0	4.7			4.7		3.0	3.0		3.0		
ost Time Adjust (s)	-1.0	-3.0			-1.0		-1.0	-1.0		-1.0		
Total Lost Time (s)	3.0	4.7			6.7		6.0	6.0		6.0		
_ead/Lag	Lead				Lag		Lag	Lag		Lead		
ead-Lag Optimize?					5		3	5				
/ehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0		
Recall Mode	Max	C-Max			C-Max		None	None		None		
Valk Time (s)	ind,	7.0			7.0					8.0		
Flash Dont Walk (s)		14.0			14.0					12.0		
Pedestrian Calls (#/hr)		28			36					36		
Act Effct Green (s)	57.7	56.0			44.0		9.5	9.5		20.6		25.8
Actuated g/C Ratio	0.58	0.56			0.44		0.10	0.10		0.21		0.26
/c Ratio	0.87	0.71			0.98		0.42	0.51		0.69		0.58
Control Delay	61.4	23.1			48.5		51.0	55.5		48.7		30.4
Queue Delay	01.4	0.0			0.0		0.0	0.0		0.0		0.0
Fotal Delay	61.4	23.1			48.5		51.0	55.5		48.7		30.4
OS	61.4 E	23.1 C			40.5 D		51.0 D	55.5 E		40.7 D		30.4
Approach Delay	E	30.6			48.5		U	53.4		U	40.3	C
Approach LOS		30.0 C			40.0 D			55.4 D			40.3 D	
		U			U			U			U	
ntersection Summary												
Area Type:	Other											
Cycle Length: 100												
Actuated Cycle Length: 10 Offset: 89 (89%), Reference		2.ERTL a	nd 6·WR	T Start o	of Green							
Vatural Cycle: 95		, 2.20120		i, otari c								
Control Type: Actuated-Co	ordinated											
Maximum v/c Ratio: 0.98	orumateu											
ntersection Signal Delay:	10 7			In	tersection							
							D					
ntersection Capacity Utiliz Analysis Period (min) 15	auon 78.3%	1		IC	CU Level o	I SELVICE	: U					

4 _{Ø2 (R)}	•	★ Ø3	↑ _{Ø4}	
57 s		27 s	16 s	
4 Ø5	← Ø6 (R)			
10 a	47.0			

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Lane Configurations	LDL		1		••••••		NDL	41412	NDIN	JDL	41)-	001
Traffic Volume (vph)	0	701	202	75	667	119	0	4TÞ 551	159	10	4 P 885	6
	0	701	202				0	551		10	000 885	
Future Volume (vph)				75	667	119	-		159			6
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	190
_ane Width (m)	3.0	3.4	3.0	3.0	3.3	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Storage Length (m)	0.0		17.5	26.4		31.0	0.0		0.0	0.0		0.0
Storage Lanes	0		1	1		1	0		0	0		
Faper Length (m)	50.0			7.5			2.5			2.5		
ane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	0.91	0.95	0.95	0.9
Ped Bike Factor			0.74	0.91		0.60		0.85			0.95	
Frt			0.850			0.850		0.964			0.988	
Fit Protected				0.950							0.999	
Satd. Flow (prot)	0	1623	1436	1589	1712	1358	0	3969	0	0	3184	(
FIt Permitted				0.950							0.938	
Satd. Flow (perm)	0	1623	1063	1447	1712	820	0	3969	0	0	2982	(
Right Turn on Red			Yes			Yes			Yes			Ye
Satd. Flow (RTOR)			121			85		89			10	
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		75.1			318.0			159.9			139.1	
Fravel Time (s)		6.8			28.6			14.4			12.5	
Confl. Peds. (#/hr)	670	0.0	219	219	20.0	670	453	14.4	442	442	12.0	45
Confl. Bikes (#/hr)	010		50	210		50	100		9	112		1
Peak Hour Factor	0.64	1.00	0.83	0.98	0.96	0.89	0.90	0.98	0.90	0.69	0.98	0.7
Heavy Vehicles (%)	4%	3%	5%	6%	3%	11%	0.30	7%	3%	100%	4%	0.7
	4 %	0	0	0 /0	10	0	0 /0	0	0	0	4 %	07
Bus Blockages (#/hr)	U	0	0	0	10	0	0	0	0	0	U	(
Parking (#/hr)	0		040	77	005	404	0	500	477	4.4	903	8
Adj. Flow (vph)	U	701	243	77	695	134	0	562	177	14	903	ð
Shared Lane Traffic (%)												
ane Group Flow (vph)	0	701	243	77	695	134	0	739	0	0	998	(
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
ane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Righ
Median Width(m)		3.0			3.0			0.0			0.0	
_ink Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.09	1.18	1.09	1.09	1.10	1.09	1.09	1.01	1.09	1.09	1.01	1.09
Furning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2	1	1	2	1	1	2		1	2	
Detector Template		Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
eading Detector (m)		30.5	6.1	6.1	30.5	6.1	2.0	30.5		2.0	30.5	
Frailing Detector (m)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)		1.8	6.1	6.1	1.8	6.1	6.1	1.8		6.1	1.8	
Detector 1 Type		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel								OITEX			OFEX	
Detector 1 Extend (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
· · · ·												
Detector 1 Queue (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	

Synchro 10 Report Page 7 Lanes, Volumes, Timings 4: Dundas Street West & Bloor Street West

<Future Total> AM Peak 04/16/2021

Lane Group	Ø1	Ø5	
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Lane Width (m)			
Storage Length (m)			
Storage Lanes			
Taper Length (m)			
Lane Util. Factor			
Ped Bike Factor			
Frt			
Fit Protected			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Right Turn on Red			
Satd. Flow (RTOR)			
Link Speed (k/h)			
Link Distance (m)			
Travel Time (s)			
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			
Peak Hour Factor			
Heavy Vehicles (%)			
Bus Blockages (#/hr)			
Parking (#/hr)			
Adj. Flow (vph)			
Shared Lane Traffic (%)			
Lane Group Flow (vph)			
Enter Blocked Intersection			
Lane Alignment			
Median Width(m)			
Link Offset(m)			
Crosswalk Width(m)			
Two way Left Turn Lane			
Headway Factor			
Turning Speed (k/h)			
Number of Detectors			
Detector Template			
Leading Detector (m)			
Trailing Detector (m)			
Detector 1 Position(m)			
Detector 1 Size(m)			
Detector 1 Type			
Detector 1 Channel			
Detector 1 Extend (s)			
Detector 1 Queue (s)			
Detector 1 Delay (s)			
Detector 2 Position(m)			

221-225 Sterling Road Transportation Impact Study

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Lane Group	EBL EB	T EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SB
Detector 2 Size(m)	1.		TIDE	1.8	TIDIX	HDL	1.8	HER	ODL	1.8	00
Detector 2 Type	CI+E			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel										.	
Detector 2 Extend (s)	0.	0		0.0			0.0			0.0	
Turn Type	N		Prot	NA	Perm		NA		Perm	NA	
Protected Phases		4	3	8	-		2			6	
Permitted Phases		4			8	2			6		
Detector Phase		4 4	3	8	8	2	2		6	6	
Switch Phase											
Minimum Initial (s)	25.	0 25.0	6.0	25.0	25.0	19.0	19.0		19.0	19.0	
Minimum Split (s)	31.		11.0	31.3	31.3	25.0	25.0		25.0	25.0	
Total Split (s)	43.	0 43.0	11.0	54.0	54.0	31.0	31.0		31.0	31.0	
Total Split (%)	47.8		12.2%	60.0%	60.0%	34.4%	34.4%		34.4%	34.4%	
Maximum Green (s)	36.		6.0	47.7	47.7	25.0	25.0		25.0	25.0	
Yellow Time (s)	3.	0 3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	3.		2.0	3.3	3.3	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-1.	0 -1.0	-1.0	-1.0	-1.0		-1.0			-1.0	
Total Lost Time (s)	5.		4.0	5.3	5.3		5.0			5.0	
Lead/Lag	La	g Lag	Lead			Lag	Lag		Lag	Lag	
Lead-Lag Optimize?											
Vehicle Extension (s)	3.		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	Ma		None	Max	Max	C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.			7.0	7.0	2.0	2.0		2.0	2.0	
Flash Dont Walk (s)	18.			18.0	18.0	17.0	17.0		17.0	17.0	
Pedestrian Calls (#/hr)	4			40	40	40	40		40	40	
Act Effct Green (s)	39.		7.0	48.7	48.7		28.0			31.0	
Actuated g/C Ratio	0.4		0.08	0.54	0.54		0.31			0.34	
v/c Ratio	0.9		0.63	0.75	0.28		0.57			0.97	
Control Delay	55.		63.7	22.4	6.2		25.1			50.9	
Queue Delay	0.		0.0	0.0	0.0		0.0			0.0	
Total Delay	55.		63.7	22.4	6.2		25.1			50.9	
LOS Annere de Delevi		E B	E	C	А		C			D	
Approach Delay	44.			23.5			25.1			50.9	
Approach LOS		C		С			С			D	
ntersection Summary											
Area Type: C	ther										
Cycle Length: 90											
Actuated Cycle Length: 90											
Offset: 34 (38%), Referenced	to phase 2:NB	L and 6:SI	3TL, Start	of 1st Gr	een						
Natural Cycle: 110											
Control Type: Actuated-Coord	dinated										
Maximum v/c Ratio: 0.97											
Intersection Signal Delay: 37.				ntersectio							
ntersection Capacity Utilizati	on 87.9%		ŀ	CU Level	of Service	θE					
Analysis Period (min) 15											
Splits and Phases: 4: Dunc	las Street West	& Bloor St	raat Wast								
opins and Phases. 4: Dunc	ias Sileel West		~								
📕 🖉 🖉 🖉 🖉			Ø3	-	₩ Ø4						
- 02 (R)											
5 s 31 s			11 s	43	s						

Lanes, Volumes, Timings 4: Dundas Street West & Bloor Street West <Future Total> AM Peak 04/16/2021

Lane Group	Ø1	Ø5
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	1	5
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	3.0
Recall Mode	None	None
Walk Time (s)	3.0	
Flash Dont Walk (s)	0.0	
Pedestrian Calls (#/hr)	40	
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		
intersection summary		

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	EDL	41»	EDR	WDL	41¢	WDR	INDL		INDIN	JDL	4	JDN
Traffic Volume (vph)	82	1280	1	0	654	105	1	••• •	1	83	**	54
Future Volume (vph)	82	1280	1	0	654	105	1	1	1	83	0	54
Ideal Flow (vphpl)	1900	1200	1900	1900	1900	1900	1900	1900	1900	1900	1900	54 1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.35	1.00	0.35	0.35	0.99	0.55	1.00	0.98	1.00	1.00	0.97	1.00
Frt		1.00			0.979			0.955			0.947	
Fit Protected		0.997			0.313			0.935			0.971	
Satd. Flow (prot)	0	3394	0	0	3149	0	0	1049	0	0	1607	0
Flt Permitted	0	0.834	0	0	5143	U	0	0.934	0	U	0.813	0
Satd. Flow (perm)	0	2834	0	0	3149	0	0	985	0	0	1331	0
Right Turn on Red	0	2034	Yes	U	5149	Yes	0	900	Yes	0	1331	No
Satd. Flow (RTOR)			103		38	163		1	163			INU
Link Speed (k/h)		40			40			30			30	
Link Distance (m)		123.6			101.7			33.0			87.8	
Travel Time (s)		123.0			9.2			4.0			10.5	
Confl. Peds. (#/hr)	50	11.1	27	27	9.2	50	38	4.0	15	15	10.5	38
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
Heavy Vehicles (%)	3%	5%	0.30	2%	10%	5%	100%	0.30	100%	4%	2%	7%
Adj. Flow (vph)	84	1306	1	2 /0	667	107	100 /8	1	100 /0	85	2 /0	55
Shared Lane Traffic (%)	04	1500		0	007	107	1	1	1	05	0	55
Lane Group Flow (vph)	0	1391	0	0	774	0	0	3	0	0	140	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	Leit	0.0	Night	Leit	0.0	Night	Leit	0.0	Right	Leit	0.0	Right
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane		1.0			1.0			1.0			1.0	
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	1.01	14	24	1.01	14	24	1.01	1.01	24	1.01	14
Number of Detectors	1	2	14	1	2	17	1	2	17	1	2	17
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel	OFER	OFER		OFER	OFER		OFER	ONEX		OFER	OFFER	
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)	0.0	28.7		0.0	28.7		0.0	28.7		0.5	28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel		0. EA			0. EA			0. LA			0. LA	
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA			NA		Perm	NA		Perm	NA	
Protected Phases	1 Unit	2			6		r onn	4		1 GHI	8	

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SB
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	25.0	25.0		25.0	25.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		28.0	28.0		28.0	28.0	
Total Split (s)	61.0	61.0		61.0	61.0		29.0	29.0		29.0	29.0	
Total Split (%)	67.8%	67.8%		67.8%	67.8%		32.2%	32.2%		32.2%	32.2%	
Maximum Green (s)	55.0	55.0		55.0	55.0		24.0	24.0		24.0	24.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		5.0			5.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		Max	Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	18.0	18.0		18.0	18.0		16.0	16.0		16.0	16.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		65.4			65.4			15.6			15.6	
Actuated g/C Ratio		0.73			0.73			0.17			0.17	
v/c Ratio		0.68			0.34			0.02			0.61	
Control Delay		9.6			5.2			24.7			44.9	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		9.6			5.2			24.7			44.9	
LOS		A			Α			С			D	
Approach Delay		9.6			5.2			24.7			44.9	
Approach LOS		Α			Α			С			D	
Intersection Summary												
Area Type:	Other											
Cycle Length: 90												
Actuated Cycle Length: 90												
Offset: 76 (84%), Reference	ed to phase	2:EBTL,	Start of 0	Green								
Natural Cycle: 70												
Control Type: Actuated-Coo	ordinated											
Maximum v/c Ratio: 0.68												
Intersection Signal Delay: 1					ntersection							
Intersection Capacity Utiliza	ation 89.5%			10	CU Level o	of Service	Ε					
Analysis Period (min) 15												

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61s	29 s
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61 s	29 s

221-225 Sterling Road Transportation Impact Study

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Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	Y		¢Î			ę	
Traffic Volume (vph)	6	28	60	0	8	17	
Future Volume (vph)	6	28	60	0	8	17	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.890						
Flt Protected	0.991					0.984	
Satd. Flow (prot)	1625	0	1842	0	0	1813	
Flt Permitted	0.991					0.984	
Satd. Flow (perm)	1625	0	1842	0	0	1813	
Link Speed (k/h)	30		30			30	
Link Distance (m)	20.2		89.3			79.4	
Travel Time (s)	2.4		10.7			9.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	7	31	67	0	9	19	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	38	0	67	0	0	28	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Right	Left	Left	
Median Width(m)	3.5	5	0.0	5		0.0	
Link Offset(m)	0.0		0.0			0.0	
Crosswalk Width(m)	1.6		1.6			1.6	
Two way Left Turn Lane							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	
Turning Speed (k/h)	24	14		14	24		
Sign Control	Stop		Free			Free	
Intersection Summary							
Area Type: 0	Other						
Control Type: Unsignalized							
Intersection Capacity Utilizat	ion 18.0%			IC	U Level	of Service	A

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Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	Y		f,			र्भ	
Traffic Volume (veh/h)	6	28	60	0	8	17	
Future Volume (Veh/h)	6	28	60	0	8	17	
Sign Control	Stop		Free			Free	
Grade	0%		0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	
Hourly flow rate (vph)	7	31	67	0	9	19	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type			None			None	
Median storage veh)							
Upstream signal (m)							
pX, platoon unblocked							
vC, conflicting volume	104	67			67		
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	104	67			67		
tC, single (s)	6.4	6.2			4.1		
tC, 2 stage (s)							
tF (s)	3.5	3.3			2.2		
p0 queue free %	99	97			99		
cM capacity (veh/h)	889	997			1535		
Direction, Lane #	WB 1	NB 1	SB 1				
Volume Total	38	67	28				
Volume Left	7	0	9				
Volume Right	31	0	0				
cSH	975	1700	1535				
Volume to Capacity	0.04	0.04	0.01				
Queue Length 95th (m)	0.9	0.0	0.1				
Control Delay (s)	8.8	0.0	2.4				
Lane LOS	A		Α				
Approach Delay (s)	8.8	0.0	2.4				
Approach LOS	А						
Intersection Summary							
Average Delay			3.0				
Intersection Capacity Utiliza	ation		18.0%	IC	U Level o	of Service	А
Analysis Period (min)			15				

HCM Unsignalized Intersection Capacity Analysis

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<Future Total> AM Peak

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Lane Group	EBL	EBR	NBL	NBT	SBT	SBR			
Lane Configurations	Y			र्स	ĥ			1	
Traffic Volume (vph)	39	168	12	88	35	2			
Future Volume (vph)	39	168	12	88	35	2			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900			
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00			
Ped Bike Factor									
Frt	0.890				0.993				
Flt Protected	0.991			0.994					
Satd. Flow (prot)	1597	0	0	1789	1819	0			
Flt Permitted	0.991			0.994					
Satd. Flow (perm)	1597	0	0	1789	1819	0			
Link Speed (k/h)	30			30	30				
Link Distance (m)	70.2			16.3	35.7				
Travel Time (s)	8.4			2.0	4.3				
Confl. Peds. (#/hr)	4	90	13			13			
Confl. Bikes (#/hr)		4							
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95			
Heavy Vehicles (%)	7%	3%	0%	5%	0%	50%			
Adj. Flow (vph)	41	177	13	93	37	2			
Shared Lane Traffic (%)									
Lane Group Flow (vph)	218	0	0	106	39	0			
Enter Blocked Intersection	No	No	No	No	No	No			
Lane Alignment	Left	Right	Left	Left	Left	Right			
Median Width(m)	3.5			0.0	0.0				
Link Offset(m)	0.0			0.0	0.0				
Crosswalk Width(m)	1.6			1.6	1.6				
Two way Left Turn Lane									
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01			
Turning Speed (k/h)	24	14	24			14			
Sign Control	Stop			Stop	Stop				
Intersection Summary									
	Other								
Control Type: Unsignalized									
Intersection Capacity Utilizati Analysis Period (min) 15	on 35.8%			IC	U Level	of Service A	۱ <u> </u>		

HCM Unsignalized Intersection Capacity Analysis 8: Sterling Road & Perth Avenue

<Future Total> AM Peak 04/16/2021

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Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			- କ	4Î	
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	39	168	12	88	35	2
Future Volume (vph)	39	168	12	88	35	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	41	177	13	93	37	2
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total (vph)	218	106	39			
Volume Left (vph)	41	13	0			
Volume Right (vph)	177	0	2			
Hadj (s)	-0.39	0.10	0.01			
Departure Headway (s)	3.9	4.5	4.5			
Degree Utilization, x	0.23	0.13	0.05			
Capacity (veh/h)	902	759	748			
Control Delay (s)	8.0	8.2	7.7			
Approach Delay (s)	8.0	8.2	7.7			
Approach LOS	A	А	А			
Intersection Summary						
Delay			8.0			
Level of Service			Α			
Intersection Capacity Utili	ization		35.8%	IC	U Level o	of Service
Analysis Period (min)			15			

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9: Ruttan Street & S							04/16/202
	-	*	T.	1	1	Ŧ	
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	Y		f,			ę	
Traffic Volume (vph)	11	60	0	1	17	6	
Future Volume (vph)	11	60	0	1	17	6	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.886		0.865				
Flt Protected	0.992					0.965	
Satd. Flow (prot)	1655	0	1629	0	0	1818	
Flt Permitted	0.992					0.965	
Satd. Flow (perm)	1655	0	1629	0	0	1818	
Link Speed (k/h)	30		30			30	
Link Distance (m)	28.8		60.7			89.3	
Travel Time (s)	3.5		7.3			10.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	12	67	0	1	19	7	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	79	0	1	0	0	26	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Right	Left	Left	
Median Width(m)	3.7	, in the second s	0.0			0.0	
Link Offset(m)	0.0		0.0			0.0	
Crosswalk Width(m)	1.6		1.6			1.6	
Two way Left Turn Lane							
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	
Turning Speed (k/h)	24	14		14	24		
Sign Control	Stop		Free			Free	
Intersection Summary							
	Other						
Control Type: Unsignalized							
Intersection Capacity Utilizat	ion 18.9%			IC	U Level	of Service	A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis 9: Ruttan Street & Site Access <Future Total> AM Peak 04/16/2021

	4	•	t	1	5	ţ
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		¢Î			ę
Traffic Volume (veh/h)	11	60	0	1	17	4 6
Future Volume (Veh/h)	11	60	0		17	6
Sign Control	Stop	00	Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	12	67	0.00	0.50	19	0.30
Pedestrians	12	07	0		15	'
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)			NOTE			None
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	46	0			1	
vC1, stage 1 conf vol	40	0				
vC1, stage 1 conf vol						
	46	0			1	
vCu, unblocked vol	46 6.4	6.2			4.1	
tC, single (s)	0.4	0.Z			4.1	
tC, 2 stage (s)	0.5	0.0			0.0	
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	94			99	
cM capacity (veh/h)	953	1084			1622	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	79	1	26			
Volume Left	12	0	19			
Volume Right	67	1	0			
cSH	1062	1700	1622			
Volume to Capacity	0.07	0.00	0.01			
Queue Length 95th (m)	1.8	0.0	0.3			
Control Delay (s)	8.7	0.0	5.3			
Lane LOS	А		А			
Approach Delay (s)	8.7	0.0	5.3			
Approach LOS	А					
Intersection Summary						
Average Delay			7.8			
Intersection Capacity Utiliz	ation		18.9%	IC	U Level o	of Service
Analysis Period (min)			15		0 2010. 0	
			15			

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11: Sterling Road &	rtattar			leien			
	1	•	1	1	1	Ŧ	
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	Y		4Î				
Traffic Volume (vph)	17	0	127	1	0	0	
Future Volume (vph)	17	0	127	1	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt			0.999				
Flt Protected	0.950						
Satd. Flow (prot)	1750	0	1840	0	0	0	
Flt Permitted	0.950						
Satd. Flow (perm)	1750	0	1840	0	0	0	
Link Speed (k/h)	30		30			30	
Link Distance (m)	22.2		35.7			19.2	
Travel Time (s)	2.7		4.3			2.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	19	0	141	1	0	0	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	19	0	142	0	0	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Right	Left	Left	
Median Width(m)	3.5		0.0			0.0	
Link Offset(m)	0.0		0.0			0.0	
Crosswalk Width(m)	1.6		1.6			1.6	
Two way Left Turn Lane							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	
Turning Speed (k/h)	24	14		14	24		
Sign Control	Stop		Free			Free	
Intersection Summary							
Area Type: C	ther						
Control Type: Unsignalized							
Intersection Capacity Utilizati	on 16.7%			IC	U Level o	of Service	e A

HCM Unsignalized Intersection Capacity Analysis 11: Sterling Road & Ruttan Street Extension <Future Total> AM Peak 04/16/2021

	<	•	1	۲	1	Ŧ
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		ĥ			
Traffic Volume (veh/h)	17	0	127	1	0	0
Future Volume (Veh/h)	17	0	127	1	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	19	0	141	1	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	142	142			142	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	142	142			142	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	100			100	
cM capacity (veh/h)	851	906			1441	
Direction, Lane #	WB 1	NB 1				
Volume Total	19	142				
Volume Left	19	142				
	0	1				
Volume Right cSH	851	1700				
Volume to Capacity	0.02	0.08 0.0				
Queue Length 95th (m)	9.3	0.0				
Control Delay (s)		0.0				
Lane LOS	A					
Approach Delay (s)	9.3	0.0				
Approach LOS	А					
Intersection Summary						
Average Delay			1.1			
Intersection Capacity Utiliz	zation		16.7%	IC	U Level o	of Service
Analysis Period (min)			15			
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Lane Configurations		↑			↑	1	<u>۲</u>	≜ †₽		<u>۲</u>	4	
Traffic Volume (vph)	0	602	0	0	711	122	150	386	38	105	276	93
Future Volume (vph)	0	602	0	0	711	122	150	386	38	105	276	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.5	3.0	3.0	3.2	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Storage Length (m)	0.0		0.0	0.0		14.1	14.4		15.3	36.3		0.0
Storage Lanes	0		0	0		1	1		1	1		(
Taper Length (m)	2.5			2.5			25.0			10.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor						0.68	0.82	0.94		0.76	0.84	
Frt						0.850		0.984			0.956	
Flt Protected							0.950			0.950		
Satd. Flow (prot)	0	1674	0	0	1602	1343	1501	2884	0	1516	1324	(
Flt Permitted							0.258			0.383		
Satd. Flow (perm)	0	1674	0	0	1602	911	334	2884	0	463	1324	(
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)								14			22	
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		374.8			112.0			258.8			36.6	
Travel Time (s)		33.7			10.1			23.3			3.3	
Confl. Peds. (#/hr)	329		292	292		329	280		352	352		280
Confl. Bikes (#/hr)			1						1			4
Peak Hour Factor	0.63	1.00	0.63	0.50	1.00	0.87	0.88	0.88	0.73	0.94	0.90	0.73
Heavy Vehicles (%)	0%	1%	4%	0%	2%	1%	1%	3%	3%	0%	4%	0%
Bus Blockages (#/hr)	0	0	1	0	0	0	0	0	9	0	0	(
Adj. Flow (vph)	0	602	0	0	711	140	170	439	52	112	307	127
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	602	0	0	711	140	170	491	0	112	434	(
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Righ
Median Width(m)		0.0	Ū		0.0	Ū		3.0	Ŭ		3.0	Ŭ
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.25	1.16	1.25	1.25	1.21	1.25	1.25	1.16	1.25	1.25	1.16	1.25
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2			2	1	1	2		1	2	
Detector Template		Thru			Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)		30.5			30.5	6.1	6.1	30.5		6.1	30.5	
Trailing Detector (m)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)		1.8			1.8	6.1	6.1	1.8		6.1	1.8	
Detector 1 Type		CI+Ex			CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SB
Detector 2 Type		Cl+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type		NA			NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		7	4		3	8	
Permitted Phases						6	4			8		
Detector Phase		2			6	6	7	4		3	8	
Switch Phase												
Minimum Initial (s)		26.0			26.0	26.0	6.0	22.0		6.0	22.0	
Minimum Split (s)		34.0			34.0	34.0	10.0	28.0		10.0	28.0	
Total Split (s)		52.0			52.0	52.0	10.0	38.0		10.0	38.0	
Total Split (%)		52.0%			52.0%	52.0%	10.0%	38.0%		10.0%	38.0%	
Maximum Green (s)		45.4			45.4	45.4	6.0	32.0		6.0	32.0	
Yellow Time (s)		3.0			3.0	3.0	3.0	4.0		3.0	4.0	
All-Red Time (s)		3.6			3.6	3.6	1.0	2.0		1.0	2.0	
Lost Time Adjust (s)		0.0			0.0	-1.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		6.6			6.6	5.6	3.0	5.0		3.0	5.0	
Lead/Lag		0.0			0.0	0.0	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							2000	209		Loud	209	
Vehicle Extension (s)		3.0			3.0	3.0	2.0	3.0		2.0	3.0	
Recall Mode		C-Max			C-Max	C-Max	None	Max		None	Max	
Walk Time (s)		7.0			7.0	7.0		7.0			7.0	
Flash Dont Walk (s)		19.0			19.0	19.0		15.0			15.0	
Pedestrian Calls (#/hr)		40			40	40		40			40	
Act Effct Green (s)		45.4			45.4	46.4	42.0	33.0		42.0	33.0	
Actuated g/C Ratio		0.45			0.45	0.46	0.42	0.33		0.42	0.33	
v/c Ratio		0.79			0.98	0.33	0.77	0.51		0.42	0.96	
Control Delay		27.8			56.7	19.8	43.5	28.5		21.6	66.8	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		27.8			56.7	19.8	43.5	28.5		21.6	66.8	
LOS		C			E	B	D	C		C	E	
Approach Delay		27.8			50.6	2	-	32.3		Ũ	57.6	
Approach LOS		C			D			C			E	
Intersection Summary												
	BD											
Cycle Length: 100												
Actuated Cycle Length: 100												
Offset: 20 (20%), Referenced	to phase	2. FBT an	d 6·WBT	Start of	Green							
Natural Cycle: 90	to pridoo	2.201 0.1		, otait o	0.001							
Control Type: Actuated-Coord	dinated											
Maximum v/c Ratio: 0.98												
Intersection Signal Delay: 42.	3			li	ntersectio	n LOS: D						
Intersection Capacity Utilization					CU Level							
						2. 00. 10						

→ø2 (R)	Ø3	<\$ [↑] Ø4
52 s	10 s	38 s
● Ø6 (R)	1 07	
52 s	10 s	38 s

				+			
	-	•	4	•		1	
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	4			र्भ	۰Y		
Traffic Volume (vph)	649	66	62	761	38	11	
Future Volume (vph)	649	66	62	761	38	11	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.5	3.5	3.5	3.5	3.0	3.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.988				0.969		
Flt Protected				0.996	0.963		
Satd. Flow (prot)	1820	0	0	1835	1622	0	
Flt Permitted				0.996	0.963		
Satd. Flow (perm)	1820	0	0	1835	1622	0	
Link Speed (k/h)	40			40	30		
Link Distance (m)	69.7			374.8	79.4		
Travel Time (s)	6.3			33.7	9.5		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	683	69	65	801	40	12	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	752	0	0	866	52	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(m)	0.0			0.0	3.0		
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	1.6			1.6	1.6		
Two way Left Turn Lane							
Headway Factor	1.01	1.01	1.01	1.01	1.09	1.09	
Turning Speed (k/h)		14	24		24	14	
Sign Control	Free			Free	Stop		
Intersection Summary							
Area Type: C	Other						
Control Type: Unsignalized							
Intersection Capacity Utilizati	on 95.0%			IC	Ulevel	of Service F	

HCM	Unsignalized Intersection Capacity Analysis
2: Ru	ttan Street & Bloor Street West

<Future Total> PM Peak 04/16/2021

	→	\mathbf{r}	4	←	1	1
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	ĥ			با	Y	
Traffic Volume (veh/h)	649	66	62	761	38	11
Future Volume (Veh/h)	649	66	62	761	38	11
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	683	69	65	801	40	12
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	70			375		
pX, platoon unblocked			0.80		0.76	0.80
vC, conflicting volume			752		1648	718
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			564		1098	521
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.1	
tF (s)			2.2		3.5	3.3
p0 queue free %			92		76	97
cM capacity (veh/h)			805		164	444
					101	111
Direction, Lane #	EB 1	WB 1	NB 1			
rolanio rolan	752	866	52			
Volume Left	0	65	40			
Volume Right	69	0	12			
cSH	1700	805	192			
Volume to Capacity	0.44	0.08	0.27			
Queue Length 95th (m)	0.0	2.0	8.0			
Control Delay (s)	0.0	2.1	30.6			
Lane LOS		А	D			
Approach Delay (s)	0.0	2.1	30.6			
Approach LOS			D			
Intersection Summary						
Average Delay			2.1			
Intersection Capacity Utiliz	ation		95.0%	IC	U Level o	of Service
Analysis Period (min)			15			

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Lane Configurations	ň				¢Î,		٦	¢Î		٦		1
Traffic Volume (vph)	146	513	0	0	695	104	113	105	39	163	0	22
Future Volume (vph)	146	513	0	0	695	104	113	105	39	163	0	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	190
Lane Width (m)	3.3	3.3	3.0	3.0	4.2	3.0	3.0	3.5	3.0	3.0	3.5	3.
Storage Length (m)	27.5		0.0	0.0		0.0	0.0		0.0	0.0		0.
Storage Lanes	1		0	0		0	1		0	1		
Taper Length (m)	2.5			2.5			2.5			2.5		
ane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.0
Ped Bike Factor					0.95			0.88		0.84		0.8
Frt					0.982			0.951		0.01		0.85
Fit Protected	0.950				0.002		0.950	0.001		0.950		0.00
Satd. Flow (prot)	1646	1818	0	0	1847	0	1685	1572	0	1668	0	140
Flt Permitted	0.096	1010	Ŭ	U	1011	Ŭ	0.950	1072	U	0.950	Ŭ	110
Satd. Flow (perm)	166	1818	0	0	1847	0	1685	1572	0	1395	0	114
Right Turn on Red	100	1010	Yes	0	1047	Yes	1005	1072	No	1000	0	N
Satd. Flow (RTOR)			165		9	165			INU			IN
Link Speed (k/h)		40			40			30			40	
Link Distance (m)		98.8			69.7			91.9			175.2	
		90.0 8.9			6.3			91.9 11.0			175.2	
Travel Time (s)	155	0.9	58	58	0.3	155		11.0	85	85	10.0	6
Confl. Peds. (#/hr)	100		56	56					80	60		6
Confl. Bikes (#/hr)	4.00	4.00	4.00	0.00	4.00	1	0.00	0.00	0.00	0.70	0.05	0.0
Peak Hour Factor	1.00	1.00	1.00	0.90	1.00	1.00	0.83	0.83	0.63	0.79	0.95	8.0
Heavy Vehicles (%)	6%	1%	0%	0%	2%	2%	0%	0%	0%	1%	0%	4
Bus Blockages (#/hr)	0	0	0	0	1	1	0	0	0	0	2	
Adj. Flow (vph)	146	513	0	0	695	104	136	127	62	206	0	27
Shared Lane Traffic (%)												
ane Group Flow (vph)	146	513	0	0	799	0	136	189	0	206	0	27
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	N
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Rig
Median Width(m)		3.3			3.3			3.0			3.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.09	1.09	0.92	1.09	1.09	1.01	1.09	1.09	1.01	1.1
Turning Speed (k/h)	25		15	25		15	25		15	25		1
Number of Detectors	1	2			2		1	2		1		
Detector Template	Left	Thru			Thru		Left	Thru		Left		Rig
eading Detector (m)	6.1	30.5			30.5		6.1	30.5		6.1		6
Frailing Detector (m)	0.0	0.0			0.0		0.0	0.0		0.0		0
Detector 1 Position(m)	0.0	0.0			0.0		0.0	0.0		0.0		0
Detector 1 Size(m)	6.1	1.8			1.8		6.1	1.8		6.1		6
Detector 1 Type	CI+Ex	CI+Ex			CI+Ex		CI+Ex	CI+Ex		CI+Ex		CI+E
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0		0.0		0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0		0.0		Ő
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0		0.0		0
Detector 2 Position(m)	0.0	28.7			28.7		0.0	28.7		0.0		0
Detector 2 Size(m)		1.8			1.8			1.8				

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	pm+pt	NA			NA		Split	NA		Prot		pt+o
Protected Phases	5	2			6		4	4		3		3
Permitted Phases	2											
Detector Phase	5	2			6		4	4		3		3
Switch Phase												
Minimum Initial (s)	6.0	21.0			21.0		7.0	7.0		19.0		
Minimum Split (s)	10.0	29.0			29.0		16.0	16.0		27.0		
Total Split (s)	10.0	55.0			45.0		18.0	18.0		27.0		
Total Split (%)	10.0%	55.0%			45.0%		18.0%	18.0%		27.0%		
Maximum Green (s)	6.0	47.3			37.3		11.0	11.0		20.0		
Yellow Time (s)	3.0	3.0			3.0		4.0	4.0		4.0		
All-Red Time (s)	1.0	4.7			4.7		3.0	3.0		3.0		
Lost Time Adjust (s)	-1.0	-1.5			-3.0		-1.0	-1.0		-1.0		
Total Lost Time (s)	3.0	6.2			4.7		6.0	6.0		6.0		
_ead/Lag	Lead				Lag		Lag	Lag		Lead		
_ead-Lag Optimize?					, in the second s		Ť					
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0		
Recall Mode	Max	C-Max			C-Max		None	None		None		
Nalk Time (s)		7.0			7.0					8.0		
Flash Dont Walk (s)		14.0			14.0					12.0		
Pedestrian Calls (#/hr)		36			36					36		
Act Effct Green (s)	52.4	49.2			40.7		12.0	12.0		20.6		24.
Actuated g/C Ratio	0.52	0.49			0.41		0.12	0.12		0.21		0.2
//c Ratio	0.77	0.57			1.06		0.67	1.01		0.60		0.7
Control Delay	43.2	21.3			59.4		59.8	112.8		44.1		43.
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0		0.
Total Delay	43.2	21.3			59.4		59.8	112.8		44.1		43.
LOS	D	C			E		E	F		D		101
Approach Delay		26.1			59.4		-	90.6		_	43.8	
Approach LOS		С			E			F			D	
ntersection Summary												
Area Type:	Other											
Cycle Length: 100												
Actuated Cycle Length: 100	0											
Offset: 64 (64%), Referenc	ed to phase	e 2:EBTL a	nd 6:WB	T, Start o	of Green							
Natural Cycle: 105												
Control Type: Actuated-Co	ordinated											
Maximum v/c Ratio: 1.06												
ntersection Signal Delay: 5	50.9			Ir	ntersection	LOS: D						
	ation 89.7%											

Splits and Phases: 3: Sterling Road/Symington Avenue & Bloor Street West



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	_	-	Y	•			,	· ·		-	•	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
ane Configurations		†	1	<u></u>	↑	1		ፈቀኮ			4 î b	
Traffic Volume (vph)	0	594	138	120	791	207	0	971	143	10	543	6
Future Volume (vph)	0	594	138	120	791	207	0	971	143	10	543	6
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	190
ane Width (m)	3.0	3.4	3.0	3.0	3.3	3.0	3.0	3.5	3.0	3.0	3.5	3.
Storage Length (m)	0.0		17.5	26.4		31.0	0.0		0.0	0.0		0.
Storage Lanes	0		1	1		1	0		0	0		
Taper Length (m)	50.0			55.0			2.5			2.5		
ane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	0.91	0.95	0.95	0.9
Ped Bike Factor			0.77	0.90		0.64		0.93			0.93	
Frt			0.850			0.850		0.982			0.981	
Fit Protected				0.950							0.999	
Satd. Flow (prot)	0	1655	1492	1685	1743	1422	0	4549	0	0	3059	
Fit Permitted				0.950							0.849	
Satd. Flow (perm)	0	1655	1156	1524	1743	916	0	4549	0	0	2595	
Right Turn on Red			Yes			Yes			Yes			Ye
Satd. Flow (RTOR)			109			117		28			18	
ink Speed (k/h)		40			40			40			40	
ink Distance (m)		75.1			318.0			159.9			139.1	
Travel Time (s)		6.8			28.6			14.4			12.5	
Confl. Peds. (#/hr)	534		209	209		534	429		517	517		42
Confl. Bikes (#/hr)	001		3	200		1	.20		1	011		
Peak Hour Factor	0.79	1.00	0.80	0.88	1.00	0.88	0.25	0.91	0.97	0.70	0.91	0.6
Heavy Vehicles (%)	0%	1%	1%	0%	2%	6%	0%	3%	1%	100%	5%	09
Bus Blockages (#/hr)	0	0	0	0	8	0	0	0	0	0	0	
Parking (#/hr)	v	0	Ŭ	U	Ŭ	v	Ŭ	Ŭ	Ŭ	Ŭ	U	
Adj. Flow (vph)	0	594	173	136	791	235	0	1067	147	14	597	8
Shared Lane Traffic (%)	0	554	175	100	751	200	0	1007	177	14	551	0
ane Group Flow (vph)	0	594	173	136	791	235	0	1214	0	0	699	
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	N
ane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Righ
Median Width(m)	Leit	3.0	Right	Leit	3.0	Right	Leit	0.0	Right	Leit	0.0	Rigi
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
()		1.0			1.0			1.0			1.0	
wo way Left Turn Lane	1.09	1.18	1.09	1.09	1.09	1.09	1.09	1.01	1.09	1.09	1.01	1.0
Headway Factor	25	1.10			1.09	1.09	25	1.01	1.09	25	1.01	
Turning Speed (k/h)	25	2	15	25 1	2	15		0	15		0	1
Number of Detectors			1 Diaba				1	2		1	2	
Detector Template		Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
eading Detector (m)		30.5	6.1	6.1	30.5	6.1	2.0	30.5		2.0	30.5	
railing Detector (m)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)		1.8	6.1	6.1	1.8	6.1	6.1	1.8		6.1	1.8	
Detector 1 Type		CI+Ex	Cl+Ex	Cl+Ex	Cl+Ex	CI+Ex	Cl+Ex	Cl+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	

Synchro 10 Report Page 7 Lanes, Volumes, Timings 4: Dundas Street West & Bloor Street West

<Future Total> PM Peak 04/16/2021

Lane Group	Ø1	Ø5	
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Lane Width (m)			
Storage Length (m)			
Storage Lanes			
Taper Length (m)			
Lane Util. Factor			
Ped Bike Factor			
Frt			
Fit Protected			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Right Turn on Red			
Satd. Flow (RTOR)			
Link Speed (k/h)			
Link Distance (m)			
Travel Time (s)			
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			
Peak Hour Factor			
Heavy Vehicles (%)			
Bus Blockages (#/hr)			
Parking (#/hr)			
Adj. Flow (vph)			
Shared Lane Traffic (%)			
Lane Group Flow (vph)			
Enter Blocked Intersection			
Lane Alignment			
Median Width(m)			
Link Offset(m)			
Crosswalk Width(m)			
Two way Left Turn Lane			
Headway Factor			
Turning Speed (k/h)			
Number of Detectors			
Detector Template			
Leading Detector (m)			
Trailing Detector (m)			
Detector 1 Position(m)			
Detector 1 Size(m)			
Detector 1 Type			
Detector 1 Channel			
Detector 1 Extend (s)			
Detector 1 Queue (s)			
Detector 1 Delay (s)			
Detector 2 Position(m)			

221-225 Sterling Road Transportation Impact Study

Lane Group EBL EBT EBR WBL WBT NBL NBR SBL Detector 2 Size(m) 1.8 <th>. †</th> <th>Ļ</th> <th></th> <th>*</th> <th>*</th> <th>t</th> <th></th> <th>•</th> <th>€</th> <th>←</th> <th>-</th> <th>4</th> <th>~</th> <th>+</th> <th>≯</th> <th></th>	. †	Ļ		*	*	t		•	€	←	-	4	~	+	≯	
Detector 2 Size(m)	SBT	SBT		SBL	NBR	NBT		NBI	WBR	WBT		W	FBR	FBT	FBI	ane Group
Delector 2 Type CI+Ex CI+Ex CI+Ex CI+Ex Delector 2 Channel 0.0 0.0 0.0 0.0 Um Type NA Perm NA Perm NA Perm Protected Phases 4 3 8 2 6 Permited Phases 4 4 3 8 2 6 Inimum Initial (s) 26.0 26.0 7.0 26.0 26.0 25.0 25.0 25.0 25.0 Aimmum Split (s) 32.3 31.0 31.	1.8		-	ODL	HBR			NDL	TIDIT		_		LDIX		LDL	
belector 2 Channel 0.0 0.0 0.0 0.0 vind rup pe NA Perm Prot NA Perm NA Perm vind rup pe NA Perm Prot NA Perm NA Perm vinder del Phases 4 4 3 8 2 6 wind Phase 4 4 3 8 2 2 6 wind Phase 4 4 3 8 2 2 6 wind Phase 4 4 3 8 2 2 6 finimum Initia (s) 26.0 26.0 7.0 26.0 26.0 25.0 25.0 25.0 foila Spiit (%) 46.7% 13.3 60.0% 60.0% 34.4% 34.4% 34.4% 34.4% 34.4% 34.4% 34.4% 34.4% 34.4% 34.4% 34.4% 34.4% 34.4% 30.3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	CI+Ex															
Detector 2 Extend (s) 0.0 0.0 0.0 0.0 um Type NA Perm NA Perm NA Perm Vint Type NA Perm NA Perm NA Perm NA Perm Vintected Phases 4 3 8 2 6 Vintether 4 3 8 2 2 6 Vintether 26.0 26.0 7.0 26.0 25.0 25.0 25.0 25.0 Vintaminum Split (s) 32.3 31.0																
Type NA Perm Prot NA Perm vince Phases 4 4 3 8 8 2 6 Vinch Phase 4 4 3 8 8 2 2 6 Vinch Phase 4 4 3 8 8 2 2 6 Vinch Phase 4 4 3 8 8 2 2 0 5 3	0.0	0.0				0.0				0.0				0.0		
Protected Phases 4 3 8 2 Permitted Phases 4 8 2 6 Selector Phase 4 4 3 8 2 2 Minimum Initial (s) 26.0 26.0 7.0 26.0 25.0 25.0 25.0 25.0 Minimum Initial (s) 22.0 42.0 12.0 54.0 54.0 31.0 30.0 <			a	Perm		NA			Perm		ot	Pr	Perm			
Detector Phase 4 4 3 8 8 2 2 6 Writch Phase 0 7.0 26.0 25.0<	6	6				2				8	3			4		
Switch Phase 26.0 26.0 26.0 26.0 26.0 25.0 25.0 25.0 Minimum Ditile (s) 32.3 32.3 31.0			3	6				2	8				4			
Jinimum Initial (s) 26.0 26.0 7.0 26.0 25.0 25.0 25.0 Jinimum Spitt (s) 32.3 32.3 11.0 32.3 32.3 31.0 <td>6</td> <td>6</td> <td>3</td> <td>6</td> <td></td> <td>2</td> <td></td> <td>2</td> <td>8</td> <td>8</td> <td>3</td> <td></td> <td>4</td> <td>4</td> <td></td> <td>Detector Phase</td>	6	6	3	6		2		2	8	8	3		4	4		Detector Phase
Jinimum Split (s) 32.3 32.3 31.0 3																Switch Phase
Fotal Split (s) 42.0 42.0 12.0 54.0 54.0 31.0 31.0 31.0 Ordal Split (%) 46.7% 46.7% 13.3% 60.0% 60.0% 34.4% 34.4% Maximum Green (s) 35.7 35.7 8.0 47.7 47.7 25.0 25.0 25.0 Vellow Time (s) 3.0 <	25.0	25.0	J	25.0		25.0		25.0	26.0	26.0	0	7	26.0	26.0		/inimum Initial (s)
Fotal Split (%) 46.7% 46.7% 13.3% 60.0% 60.0% 34.4% 34.4% 34.4% Maximum Green (s) 35.7 35.7 8.0 47.7 47.7 25.0 25.0 25.0 Valied Time (s) 3.0	31.0	31.0)	31.0		31.0		31.0	32.3	32.3	0	11	32.3	32.3		/inimum Split (s)
Maximum Green (s) 35.7 35.7 8.0 47.7 47.7 25.0 25.0 25.0 Velaive Time (s) 3.0<	31.0	31.0	J	31.0		31.0		31.0	54.0	54.0	0	12	42.0	42.0		otal Split (s)
Yellow Time (s) 3.0 <td>34.4%</td> <td>34.4%</td> <td>6</td> <td>34.4%</td> <td></td> <td>34.4%</td> <td></td> <td>34.4%</td> <td>60.0%</td> <td>0.0%</td> <td>6</td> <td>13.3</td> <td>46.7%</td> <td>46.7%</td> <td></td> <td></td>	34.4%	34.4%	6	34.4%		34.4%		34.4%	60.0%	0.0%	6	13.3	46.7%	46.7%		
NI-Red Time (s) 3.3 3.3 1.0 3.3 3.3 3.0 3.0 3.0 cost Time Adjust (s) -1.0 -1.0 -1.0 -1.0 -1.0 -1.0 Total Lost Time (s) 5.3 5.3 5.3 5.3 5.0 ceadLag Lag Lag Lag Lag Lag Lag Lag Lag Lag	25.0	25.0)	25.0		25.0		25.0	47.7	47.7	0	8	35.7	35.7		Aaximum Green (s)
Lost Time Adjust (s) Total Lost Time (s) Lag	3.0	3.0)	3.0		3.0		3.0	3.0	3.0	0	3	3.0	3.0		ellow Time (s)
Fotal Lost Time (s) 5.3 5.3 5.3 5.3 5.3 5.3 5.3 5.0 ead-Lag Optimize? Jag Lag	3.0	3.0)	3.0		3.0		3.0	3.3	3.3	0	1	3.3	3.3		
Lag	-1.0	-1.0				-1.0			-1.0	-1.0	0	-1	-1.0	-1.0		ost Time Adjust (s)
Lead-Lag Optimize? 0	5.0	5.0				5.0			5.3	5.3	0	3	5.3	5.3		otal Lost Time (s)
/ehicle Extension (s) 3.0 3	Lag	Lag	J	Lag		Lag		Lag			d	Le	Lag	Lag		.ead/Lag
Recall Mode Max Max None Max Max C-Max C-Max C-Max Valk Time (s) 7.0		-														.ead-Lag Optimize?
Walk Time (s) 7.0	3.0	3.0)	3.0		3.0		3.0	3.0	3.0	0	3	3.0	3.0		ehicle Extension (s)
Flash Dont Walk (s) 19.0 19.0 19.0 19.0 18.0 18.0 18.0 18.0 24 destrian Calls (#/hr) 40 40 40 40 40 40 40 40 40 40 40 40 40	C-Max	C-Max	x	C-Max		C-Max		C-Max	Max	Max	е	No	Max	Max		Recall Mode
Pedestrian Calls (#hr) 40 40 40 40 40 40 40 40 Act Effc Green (s) 36.7 36.7 9.0 48.7 48.7 28.0 Actuated g/C Ratio 0.41 0.41 0.10 0.54 0.54 0.31 // Ratio 0.88 0.32 0.81 0.84 0.43 0.85 Control Delay 41.5 9.1 74.8 27.5 8.7 35.7 Queue Delay 0.0 0.0 0.0 0.0 0.0 0.0 0.0 Fotal Delay 41.5 9.1 74.8 27.5 8.7 35.7 Queue Delay 0.0 0.0 0.0 0.0 0.0 0.0 A E C A D Approach Delay 34.2 29.2 35.7 Approach LOS C C C D Intersection Summary Area Type: Other Cycle Length: 90 Actuated Cycle Length: 90 Offset: 77 (86%), Referenced to phase 2:NBTL and 6:SBTL, Start of 1st Green Vatural Cycle: 90 Offset: 77 (86%), Referenced to phase 2:NBTL and 6:SBTL, Start of 1st Green Vatural Cycle: 90 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.88 Intersection Signal Delay: 32.9 Intersection LOS: C Intersection Cose: C Splits and Phases: 4: Dundas Street West & Bloor Street West € 20 (R) € 20 (R) € 20 (R) € 20 (R)	7.0	7.0)	7.0		7.0		7.0	7.0	7.0			7.0	7.0		Valk Time (s)
Act Effct Green (s) 36.7 36.7 9.0 48.7 48.7 28.0 Actuated g/C Ratio 0.41 0.11 0.14 0.54 0.54 0.31 v/c Ratio 0.88 0.32 0.81 0.84 0.43 0.85 Control Delay 41.5 9.1 74.8 27.5 8.7 35.7 Queue Delay 0.0 0.0 0.0 0.0 0.0 0.0 0.0 Total Delay 41.5 9.1 74.8 27.5 8.7 35.7 Queue Delay 0.0 0.0 0.0 0.0 0.0 0.0 0.0 Total Delay 41.5 9.1 74.8 27.5 8.7 35.7 Queue Delay 34.2 29.2 35.7 35.7 Approach LOS C C D A Area Type: Other Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle 2: 90 Control Type: Actuated-Coordinated Maximum V/c Ratio: 0.88 Intersection LOS: C Intersection LOS: C Intersection Sign	18.0	18.0)	18.0		18.0		18.0	19.0	19.0			19.0	19.0		lash Dont Walk (s)
Actuated g/C Ratio 0.41 0.41 0.10 0.54 0.54 0.31 //c Ratio 0.88 0.32 0.81 0.84 0.43 0.85 Control Delay 41.5 9.1 74.8 27.5 8.7 35.7 Queue Delay 0.0 0.0 0.0 0.0 0.0 0.0 Total Delay 41.5 9.1 74.8 27.5 8.7 35.7 QS D A E C A D Approach Delay 34.2 29.2 35.7 Approach LOS C C D Area Type: Other Other Other Oycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle Length: 90 Other Outriar Cycle: 90 Outriar Cycle: 90 Control Type: Actuated-Coordinated Hairmun v/c Ratio: 0.88 Intersection Capacity Utilization 75.3% ICU Level of Service D Analysis Period (min) 15 Splits and Phases: 4: Dundas Street West & Bloor Street West Image: 40.2 Image: 40.2	40	40)	40		40		40		40			40	40		Pedestrian Calls (#/hr)
//c Ratio 0.88 0.32 0.81 0.84 0.43 0.85 Control Delay 41.5 9.1 74.8 27.5 8.7 35.7 2ueue Delay 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	31.0	31.0				28.0			48.7	48.7	0	9	36.7	36.7		Act Effct Green (s)
Control Delay 41.5 9.1 74.8 27.5 8.7 35.7 Queue Delay 0.0 0.0 0.0 0.0 0.0 0.0 Total Delay 41.5 9.1 74.8 27.5 8.7 35.7 Column Delay 41.5 9.1 74.8 27.5 8.7 35.7 OS D A E C A D Approach Delay 34.2 29.2 35.7 Approach LOS C C D Area Type: Other Cycle Length: 90 Cycle Length: 90 Actuated Cycle Length: 90 Offset: 77 (86%), Referenced to phase 2:NBTL and 6:SBTL, Start of 1st Green Vatural Cycle: 90 Control Type: Actuated-Coordinated Waximum v/c Ratio: 0.88 Intersection LOS: C Intersection LOS: C Intersection Capacity Utilization 75.3% ICU Level of Service D Analysis Period (min) 15 Splits and Phases: 4: Dundas Street West & Bloor Street West Splits and Phases: 4: Dundas Street West & Bloor Street West Image: Page 4	0.34	0.34				0.31			0.54	0.54	0	0.	0.41	0.41		Actuated g/C Ratio
Queue Delay 0.0 0.0 0.0 0.0 0.0 Total Delay 41.5 9.1 74.8 27.5 8.7 35.7 LOS D A E C A D Approach Delay 34.2 29.2 35.7 Approach LOS C C D Area Type: Other Other Other Cycle Length: 90 Other Other Other Cycle Length: 90 Other Other Other Cycle 2: 90 Other Other Other Control Type: Actuated Coordinated Waximum v/c Ratio: 0.88 Intersection LOS: C Intersection Copacity Utilization 75.3% ICU Level of Service D Analysis Period (min) 15 Splits and Phases: 4: Dundas Street West & Bloor Street West Image: Action 10.5 Image: Action 10.5	0.77															/c Ratio
Total Delay 41.5 9.1 74.8 27.5 8.7 35.7 .OS D A E C A D Approach Delay 34.2 29.2 35.7 Approach LOS C C D Area Type: Other Other D Cycle Length: 90 Actuated Cycle Length: 90 Actuated Cycle Length: 90 Offset: 77 (86%), Referenced to phase 2:NBTL and 6:SBTL, Start of 1st Green Vatural Cycle: 90 Control Type: Actuated-Coordinated Waximum v/c Ratio: 0.88 Thtersection LOS: C Intersection Signal Delay: 32.9 Intersection LOS: C ICU Level of Service D Analysis Period (min) 15 Splits and Phases: 4: Dundas Street West & Bloor Street West	32.6															
LOS D A E C A D Approach Delay 34.2 29.2 35.7 Approach LOS C C D Intersection Summary Area Type: Other Cycle Length: 90 Actuated Cycle Length: 90 Offset: 77 (86%), Referenced to phase 2:NBTL and 6:SBTL, Start of 1st Green Natural Cycle: 90 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.88 Intersection LOS: C Intersection LOS: C Intersection Capacity Utilization 75.3% ICU Level of Service D Analysis Period (min) 15 Splits and Phases: 4: Dundas Street West & Bloor Street West € 20 1 20 (R)	0.0															
Approach Delay 34.2 29.2 35.7 Approach LOS C C D Intersection Summary Area Type: Other Cycle Length: 90 C C Catuated Cycle Length: 90 C C Offset: 77 (86%), Referenced to phase 2:NBTL and 6:SBTL, Start of 1st Green Vatural Cycle: 90 Control Type: Actuated-Coordinated Vaximum v/c Ratio: 0.88 Intersection Signal Delay: 32.9 Intersection LOS: C Intersection Capacity Utilization 75.3% ICU Level of Service D Analysis Period (min) 15 Splits and Phases: 4: Dundas Street West & Bloor Street West	32.6											74				
Approach LOS C C D Intersection Summary Other D Area Type: Other Other Cycle Length: 90 Other D Othersection Signal Delay: 32.9 Intersection LOS: C D Intersection Capacity Utilization 75.3% ICU Level of Service D Analysis Period (min) 15 Splits and Phases: 4: Dundas Street West & Bloor Street West Image: 4: Dundas Street West	С								A		Ξ		A	-		
ntersection Summary ntersection Summary verea Type: Other Cycle Length: 90 Cycluated Cycle Length: 90 Diffset: 77 (86%), Referenced to phase 2:NBTL and 6:SBTL, Start of 1st Green Vatural Cycle: 90 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.88 ntersection Signal Delay: 32.9 Intersection LOS: C ntersection Capacity Utilization 75.3% ICU Level of Service D Analysis Period (min) 15 Splits and Phases: 4: Dundas Street West & Bloor Street West	32.6															
Area Type: Other Cycle Length: 90 Control Type: Actuated-Coordinated Vatural Cycle: 90 Control Type: Actuated-Coordinated Vaximum v/c Ratio: 0.88 Intersection Capacity Utilization 75.3% ICU Level of Service D Analysis Period (min) 15 Splits and Phases: 4: Dundas Street West & Bloor Street West Control Type: Actuated Coordinated Vaximum V/c Ratio: 0.88 Control Type: Actuated Coordinated Control Type:	С	С				D				С				С		Approach LOS
Area Type: Other Cycle Length: 90 0 Actuated Cycle Length: 90 0 Diffset: 77 (86%), Referenced to phase 2:NBTL and 6:SBTL, Start of 1st Green 1 Variant Cycle: 90 0 Control Type: Actuated-Coordinated 0 Aaximum vic Ratio: 0.88 0 Intersection Signal Delay: 32.9 Intersection LOS: C Intersection Capacity Utilization 75.3% ICU Level of Service D Analysis Period (min) 15 5 Splits and Phases: 4: Dundas Street West & Bloor Street West																ntersection Summary
Actuated Öycle Length: 90 Offset: 77 (86%), Referenced to phase 2:NBTL and 6:SBTL, Start of 1st Green Vatural Cycle: 90 Option Type: Actuated-Coordinated Jaximum v/c Ratio: 0.88 Intersection Signal Delay: 32.9 Intersection Copacity Utilization 75.3% ICU Level of Service D Analysis Period (min) 15 Splits and Phases: 4: Dundas Street West & Bloor Street West			_				_								ther	
Offset: 77 (86%), Referenced to phase 2:NBTL and 6:SBTL, Start of 1st Green Vatural Cycle: 90 Control Type: Actuated-Coordinated Asximum v/c Ratio: 0.88 Intersection Signal Delay: 32.9 Intersection LOS: C Intersection Capacity Utilization 75.3% ICU Level of Service D Analysis Period (min) 15 Splits and Phases: 4: Dundas Street West & Bloor Street West																
Vatural Cycle: 90 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.88 Intersection Signal Delay: 32.9 Intersection LOS: C ICU Level of Service D Analysis Period (min) 15 Splits and Phases: 4: Dundas Street West & Bloor Street West																
Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.88 Intersection Signal Delay: 32.9 Intersection LOS: C Intersection Capacity Utilization 75.3% ICU Level of Service D Analysis Period (min) 15 Splits and Phases: 4: Dundas Street West & Bloor Street West									n	1st Gre	art o	TL, Si	and 6:SB	2:NBTL	to phase	
Maximum v/c Ratio: 0.88 ntersection Signal Delay: 32.9 Intersection LOS: C ntersection Capacity Utilization 75.3% ICU Level of Service D Analysis Period (min) 15 Splits and Phases: 4: Dundas Street West & Bloor Street West															lingtod	
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ntersection Capacity Utilization 75.3% ICU Level of Service D Analysis Period (min) 15 Splits and Phases: 4: Dundas Street West & Bloor Street West € a ↑ 02 (R) € 03 → 04									0.00	reaction	Int				٥	
Analysis Period (min) 15 Splits and Phases: 4: Dundas Street West & Bloor Street West																
Splits and Phases: 4: Dundas Street West & Bloor Street West								50	Service	Lever	101				JIT 7 J.J /0	
●at ↑a2 (R) ✓ a3 →a4																
											st	et We	Bloor Stre	West & I	as Street	plits and Phases: 4: Dur
									174	T	2	6				
5 31 c 47 c					_			_	e 104			2 8				- 21 M 1 1 2 (K)
							_									

Lanes, Volumes, Timings 4: Dundas Street West & Bloor Street West

<Future Total> PM Peak 04/16/2021

Lane Group	Ø1	Ø5
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	1	5
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	3.0
Recall Mode	None	None
Walk Time (s)	3.0	
Flash Dont Walk (s)	0.0	
Pedestrian Calls (#/hr)	40	
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		
intersection summary		

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4 <u>1</u> }	•	•	41>			4		~~	42	07
Traffic Volume (vph)	83	793	0	0	1269	174	0	0	0	99	0	97
Future Volume (vph)	83	793	0	0	1269	174	0	0	0	99	0	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			0.99						0.96	
Frt					0.982						0.933	
Flt Protected		0.995									0.975	
Satd. Flow (prot)	0	3442	0	0	3371	0	0	1842	0	0	1609	0
Flt Permitted		0.639									0.840	
Satd. Flow (perm)	0	2210	0	0	3371	0	0	1842	0	0	1371	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)					31							
Link Speed (k/h)		40			40			30			30	
Link Distance (m)		123.6			101.7			33.0			87.8	
Travel Time (s)		11.1			9.2			4.0			10.5	
Confl. Peds. (#/hr)	34		50	50		34	34		19	19		34
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	5%	3%	2%	2%	3%	3%	2%	2%	2%	5%	2%	2%
Adj. Flow (vph)	86	818	0	0	1308	179	0	0	0	102	0	100
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	904	0	0	1487	0	0	0	0	0	202	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	1.01	14	24	1.01	14	24	1.01	14	24	1.01	14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel	OITEX.	CITEX		OFEX.	CITEX		UTEX	CITEX		CITEX	CITEX	
	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Extend (s)												
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	_	0.0			0.0			0.0		_	0.0	
Turn Type	Perm	NA			NA					Perm	NA	
Protected Phases		2			6			4			8	

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	25.0	25.0		25.0	25.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		28.0	28.0		28.0	28.0	
Total Split (s)	61.0	61.0		61.0	61.0		29.0	29.0		29.0	29.0	
Total Split (%)	67.8%	67.8%		67.8%	67.8%		32.2%	32.2%		32.2%	32.2%	
Maximum Green (s)	55.0	55.0		55.0	55.0		24.0	24.0		24.0	24.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		5.0			5.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		Max	Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	18.0	18.0		18.0	18.0		16.0	16.0		16.0	16.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		62.0			62.0						19.0	
Actuated g/C Ratio		0.69			0.69						0.21	
v/c Ratio		0.59			0.64						0.70	
Control Delay		10.3			10.0						45.3	
Queue Delay		0.0			0.0						0.0	
Total Delay		10.3			10.0						45.3	
LOS		В			A						D	
Approach Delay		10.3			10.0						45.3	
Approach LOS		В			А						D	
Intersection Summary												
Area Type:	Other											
Cycle Length: 90												
Actuated Cycle Length: 90												
Offset: 0 (0%), Referenced	to phase 2	EBTL, Sta	art of Gre	en								
Natural Cycle: 65		,										
Control Type: Actuated-Cod	ordinated											
Maximum v/c Ratio: 0.70												
Intersection Signal Delay: 1	2.8			Ir	ntersectior	LOS: B						
Intersection Capacity Utiliza					CU Level o		F					

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61s	29 s	
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61s	29 s	

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Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	Y		ĥ			र्भ	
Traffic Volume (vph)	1	12	25	6	32	68	
Future Volume (vph)	1	12	25	6	32	68	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.875		0.975				
Flt Protected	0.996					0.984	
Satd. Flow (prot)	1605	0	1796	0	0	1813	
Flt Permitted	0.996					0.984	
Satd. Flow (perm)	1605	0	1796	0	0	1813	
Link Speed (k/h)	30		30			30	
Link Distance (m)	20.8		87.0			79.4	
Travel Time (s)	2.5		10.4			9.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	1	13	26	6	34	72	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	14	0	32	0	0	106	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Right	Left	Left	
Median Width(m)	3.5		0.0			0.0	
Link Offset(m)	0.0		0.0			0.0	
Crosswalk Width(m)	1.6		1.6			1.6	
Two way Left Turn Lane							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	
Turning Speed (k/h)	24	14		14	24		
Sign Control	Stop		Free			Free	
Intersection Summary							
	Other						
Control Type: Unsignalized							
Intersection Capacity Utilizati	ion 22.0%			IC	U Level	of Service	e A

HCM Unsignalized Intersection Capacity Analysis 6: Ruttan Street & Merchant Lane <Future Total> PM Peak 04/16/2021

	<	*	1	1	1	ŧ
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	¥		¢Î,			ų
Traffic Volume (veh/h)	1	12	25	6	32	68
Future Volume (Veh/h)	1	12	25	6	32	68
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	13	26	6	34	72
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	169	29			32	
vC1, stage 1 conf vol	100	20			02	
vC2, stage 2 conf vol						
vCu, unblocked vol	169	29			32	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	0.1	0.2			1.1	
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			98	
cM capacity (veh/h)	804	1046			1580	
					1000	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	14	32	106			
Volume Left	1	0	34			
Volume Right	13	6	0			
cSH	1024	1700	1580			
Volume to Capacity	0.01	0.02	0.02			
Queue Length 95th (m)	0.3	0.0	0.5			
Control Delay (s)	8.6	0.0	2.5			
Lane LOS	A		A			
Approach Delay (s)	8.6	0.0	2.5			
Approach LOS	А					
Intersection Summary						
Average Delay			2.5			
Intersection Capacity Utiliz	zation		22.0%	IC	U Level of	f Service
Analysis Period (min)			15			
			10			

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ane Group	EBL	EBR	NBL	NBT	SBT	SBR	
ane Configurations	- Y			ર્ન	ef 👘		
Fraffic Volume (vph)	24	113	28	240	31	0	
Future Volume (vph)	24	113	28	240	31	0	
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
ane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	
ane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor							
Frt	0.889						
Fit Protected	0.991			0.995			
Satd. Flow (prot)	1615	0	0	1841	1879	0	
-It Permitted	0.991			0.995			
Satd. Flow (perm)	1615	0	0	1841	1879	0	
ink Speed (k/h)	30			30	30		
ink Distance (m)	70.2			16.3	27.0		
Fravel Time (s)	8.4			2.0	3.2		
Confl. Peds. (#/hr)	5	13	9			9	
Confl. Bikes (#/hr)		2					
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	
Heavy Vehicles (%)	0%	3%	6%	1%	0%	2%	
Adj. Flow (vph)	28	131	33	279	36	0	
Shared Lane Traffic (%)						-	
ane Group Flow (vph)	159	0	0	312	36	0	
Enter Blocked Intersection	No	No	No	No	No	No	
ane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(m)	3.5			0.0	0.0		
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	1.6			1.6	1.6		
Two way Left Turn Lane							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	
Furning Speed (k/h)	24	14	24			14	
Sign Control	Stop		- '	Stop	Stop	••	
•	0.00			0.00	0.00		
ntersection Summary	201						
	Other						
Control Type: Unsignalized							
ntersection Capacity Utilizati Analysis Period (min) 15	ion 38.3%			IC	U Level	of Service A	

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Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	Y	2011		<u>ب</u>	1.	OBIN	
Sign Control	Stop			Stop	Stop		
Traffic Volume (vph)	24	113	28	240	31	0	
Future Volume (vph)	24	113	28	240	31	0	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	
Hourly flow rate (vph)	28	131	33	279	36	0	
Direction, Lane #	EB 1	NB 1	SB 1				
Volume Total (vph)	159	312	36				
Volume Left (vph)	28	33	0				
Volume Right (vph)	131	0	0				
Hadj (s)	-0.42	0.05	0.00				
Departure Headway (s)	4.3	4.4	4.6				
Degree Utilization, x	0.19	0.38	0.05				
Capacity (veh/h)	777	801	732				
Control Delay (s)	8.3	10.0	7.8				
Approach Delay (s)	8.3	10.0	7.8				
Approach LOS	А	А	А				
Intersection Summary							
Delay			9.3				
Level of Service			А				
Intersection Capacity Utiliza	ation		38.3%	IC	U Level o	of Service	А
Analysis Period (min)			15				

HCM Unsignalized Intersection Capacity Analysis

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<Future Total> PM Peak

Lane Group WBL WBR NBT NBR SBL SBT Itane Configurations Itane Configurations	11: Sterling Road &	Ruttan	1 Stree	t Exter	nsion			04/16/202
Lane Configurations No. Lane Configurations Traffic Volume (vph) 3 0 252 18 0 0 Future Volume (vph) 3 0 252 18 0 0 Ideal Flow (vph) 1900 1900 1900 1900 1900 1900 Lane Width (m) 3.5 3.5 3.5 3.5 3.5 3.5 Lane Width (m) 3.5 3.5 3.5 3.5 3.5 3.5 Fit Cactor 1.00 1.00 1.00 1.00 1.00 1.00 Fit Fit 0.991 Fit Toto 1.825 0 0 0 Fit Protected 0.950 Satd. Flow (port) 1750 0 1825 0 0 0 0 1.01 1.01 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00		1	•	1	1	1	ŧ	
Traffic Volume (vph) 3 0 252 18 0 0 Future Volume (vph) 3 0 252 18 0 0 Ideal Flow (vphpl) 1900 1900 1900 1900 1900 1900 Lane Width (m) 3.5 3.5 3.5 3.5 3.5 3.5 Lane Width (m) 3.5 3.5 3.5 3.5 3.5 3.5 State Flow (prot) 1750 0 1825 0 0 0 FIt Protected 0.950 950 9 0 0 0 Statd. Flow (prot) 1750 0 1825 0 0 0 Link Speed (kh) 48 48 30 30 26.3 32 Peak Hour Factor 0.95 0.95 0.95 0.95 0.95 0.95 Adj. Flow (vph) 3 0 265 19 0 0 Shared Lane Traffic (%) 2 2 10 0 0 0 Lane Group Flow (vph) 3 0 28	ane Group	WBL	WBR	NBT	NBR	SBL	SBT	
Future Volume (vph) 3 0 252 18 0 0 Ideal Flow (vphpl) 1900 1900 1900 1900 1900 1900 Lane With (m) 3.5 3.5 3.5 3.5 3.5 3.5 Lane Util, Factor 1.00 1.00 1.00 1.00 1.00 1.00 Frt 0.991 1750 0 1825 0 0 0 Fit Protected 0.950 5 5 5 0 0 0 Satd. Flow (perm) 1750 0 1825 0 0 0 Link Distance (m) 25.9 27.0 26.3 7 22.9 3.2 Peak Hour Factor 0.95 0.95 0.95 0.95 0.95 0.95 3.2 Peak Hour Factor 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95<	ane Configurations	Y		et F				
Ideal Flow (vphpl) 1900 1900 1900 1900 1900 Lane Width (m) 3.5 3.5 3.5 3.5 3.5 3.5 Lane Util. Factor 1.00 1.00 1.00 1.00 1.00 1.00 Frt 0.991 1750 0 1825 0 0 0 Satd. Flow (pert) 1750 0 1825 0 0 0 0 Link Speed (k/h) 48 48 30 3.2 3.2 3.2 3.2 Peak Hour Factor 0.95 0.95 0.95 0.95 0.95 0.95 3.2 Peak Hour Factor 0.95 0.95 0.95 0.95 0.95 0.95 Lane Group Flow (vph) 3 0 265 19 0 0 Enter Blocked Intersection No No No No No No Lane Group Flow (vph) 3.5 0.0 0.0 0.0 0.0 0.0 Enter Blocked Intersection No No No No No No	raffic Volume (vph)	3	0	252	18	0	0	
Lane Width (m) 3.5 3.5 3.5 3.5 3.5 3.5 Lane Width (m) 3.5 3.5 3.5 3.5 3.5 3.5 Lane Utili, Factor 1.00 1.00 1.00 1.00 1.00 1.00 Fit 0.991 0.991 0.991 0.991 0.991 0.991 Satd. Flow (prot) 1750 0 1825 0 0 0 Satd. Flow (perm) 1750 0 1825 0 0 0 Link Speed (kh) 48 48 30 1.1ink Speed (kh) 48 48 30 Link Distance (m) 25.9 27.0 26.3 22 22 3.2 Peak Hour Factor 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 Adj. Flow (vph) 3 0 265 19 0 0 0 Lane Group Flow (vph) 3 0 284 0 0 0	uture Volume (vph)	3	0	252	18	0	0	
Lane Util. Factor 1.00 1.00 1.00 1.00 1.00 1.00 1.00 Frt 0.991 0.991 0.991 0.991 0.991 0.991 Fit Protected 0.950 0.950 0.950 0.950 0.950 0.950 0.950 0.950 0.950 0.950 0.950 0.950 0.950 0.950 0.950 0.950 0.950 0.950 0.95	deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Frt 0.991 Fit Protected 0.950 Satd. Flow (prot) 1750 0 1825 0 0 Fit Permitted 0.950 0 0 0 Satd. Flow (perm) 1750 0 1825 0 0 0 Satd. Flow (perm) 1750 0 1825 0 0 0 Link Distance (m) 25.9 27.0 26.3 26.3 17avel Time (s) 1.9 2.0 3.2 Peak Hour Factor 0.95 0.95 0.95 0.95 0.95 0.95 Lane Group Flow (xph) 3 0 284 0 0 0 Eane Group Flow (xph) 3 0 284 0 0 0 Eane Group Flow (xph) 3 0 284 0 0 0 Lane Group Flow (xph) 3 0 284 0 0 0 Lane Group Flow (xph) 3.5 0.0 0.0 0.0 0.0 0.0 Lane Group Flow (xph) 3.5 0.0 0.0 0.0	ane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	
Fit Protected 0.950 Satd. Flow (port) 1750 0 1825 0 0 0 Fit Permitted 0.950 5 5 0 0 0 Satd. Flow (perm) 1750 0 1825 0 0 0 Link Speed (k/h) 48 48 30 30 11k	ane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Satd. Flow (prot) 1750 0 1825 0 0 0 FI Permitted 0.950 5 0 0 0 0 0 1750 1825 0 0 0 0 0 1750 1825 0 0 0 0 0 0 1161 5 0 0 0 0 0 1161 5 0 0 0 0 0 0 1161 0 0 0 0 0 0 1161 0 <td>rt</td> <td></td> <td></td> <td>0.991</td> <td></td> <td></td> <td></td> <td></td>	rt			0.991				
Fit Permitted 0.950 0.02 0 0 Satd. Flow (perm) 1750 0 1825 0 0 0 Link Speed (k/h) 48 48 30 30 11kh Distance (m) 25.9 27.0 26.3 Travel Time (s) 1.9 2.0 3.2 22 32 Peak Hour Factor 0.95 0.95 0.95 0.95 0.95 Adj. Flow (vph) 3 0 264 0 0 Shared Lane Traffic (%) Lane Group Flow (vph) 3 0 284 0 0 Lane Group Flow (vph) 3 0 284 0 0 0 Enter Blocked Intersection No No No No No No Lane Atignment Left Right Left Right Left Left Left Median Width(m) 3.5 0.0 0.0 0.0 0.0 Crosswalk Width(m) 1.6 1.6 1.6 Two way Left Turn Lane Headway Factor 1.01 1.01 1.01 1.01 <td< td=""><td>It Protected</td><td>0.950</td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	It Protected	0.950						
Satd. Flow (perm) 1750 0 1825 0 0 0 Link Speed (k/h) 48 48 30 Link Distance (m) 25.9 27.0 26.3 Travel Time (s) 1.9 2.0 3.2 Peak Hour Factor 0.95 0.95 0.95 0.95 Adj. Flow (vph) 3 0 265 19 0 Shared Lane Traffic (%)	Satd. Flow (prot)	1750	0	1825	0	0	0	
Link Speed (k/h) 48 48 30 Link Distance (m) 25.9 27.0 26.3 Travel Time (s) 1.9 2.0 3.2 Peak Hour Factor 0.95 0.95 0.95 0.95 Adj. Flow (vph) 3 0 265 19 0 0 Shared Lane Traffic (%) Lane Group Flow (vph) 3 0 284 0 0 0 Enter Blocked Intersection No No No No No No Link Offset(m) 3.5 0.0 0.0 0.0 0.0 0.0 Link Offset(m) 0.0 0.0 0.0 0.0 0.0 0.0 Crosswalk Width(m) 1.6 1.6 1.6 1.6 1.6 1.0 Tuming Speed (k/h) 24 14 14 24 Sign Control Stop Free Free Intersection Summary	It Permitted	0.950						
Link Distance (m) 25.9 27.0 26.3 Travel Time (s) 1.9 2.0 3.2 Peak Hour Factor 0.95 0.95 0.95 0.95 Adj. Flow (vph) 3 0 265 19 0 Shared Lane Traffic (%)	Satd. Flow (perm)	1750	0	1825	0	0	0	
Travel Time (s) 1.9 2.0 3.2 Peak Hour Factor 0.95 0.95 0.95 0.95 0.95 Adj. Flow (vph) 3 0 265 19 0 0 Shared Lane Traffic (%)	ink Speed (k/h)	48		48			30	
Peak Hour Factor 0.95 0.95 0.95 0.95 0.95 Adj. Flow (vph) 3 0 265 19 0 0 Shared Lane Traffic (%) Itane Group Flow (vph) 3 0 284 0 0 0 Eane Group Flow (vph) 3 0 284 0 0 0 Enter Blocked Intersection No No No No No No Lane Alignment Left Right Left Right Left Left Link Offseit(m) 0.0 0.0 0.0 0.0 Crosswalk Width(m) 1.6 1.6 1.6 Two way Left Turn Lane Headway Factor 1.01 1.01 1.01 1.01 1.01 1.01 Sign Control Stop Free Free Intersection Summary Free	ink Distance (m)	25.9		27.0			26.3	
Adj. Flow (vph) 3 0 265 19 0 0 Shared Lane Traffic (%) 2 0 0 0 0 Lane Group Flow (vph) 3 0 284 0 0 0 Enter Blocked Intersection No No No No No No Lane Alignment Left Right Left Right Left Median Width(m) 3.5 0.0 0.0 0.0 Crosswalk Width(m) 1.6 1.6 1.6 Two way Left Turn Lane Headway Factor 1.01 1.01 1.01 1.01 Headway Factor 1.01 1.01 1.01 1.01 1.01 1.01 Turning Speed (k/h) 24 14 14 24 Sign Control Stop Free Free Intersection Summary Vision Control Stop Free Free Stop Stop<	ravel Time (s)	1.9		2.0			3.2	
Shared Lane Traffic (%) X <thx< th=""> X X X</thx<>	Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Lane Group Flow (vph) 3 0 284 0 0 0 Enter Blocked Intersection No No No No No No No Lane Alignment Left Right Left Right Left Left Left Median Width(m) 3.5 0.0 0.0 0.0 Crosswalk Width(m) 1.6 1.6 1.6 Trow way Left Turn Lane Headway Factor 1.01 1.01 1.01 1.01 1.01 Turning Speed (k/h) 24 14 24 Sign Control Stop Free Free	dj. Flow (vph)	3	0	265	19	0	0	
Enter Blocked Intersection No No <th< td=""><td>shared Lane Traffic (%)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>	shared Lane Traffic (%)							
Lane Alignment Left Right Left Right Left Left Median Width(m) 3.5 0.0 No 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	ane Group Flow (vph)	3	0	284	0	0	0	
Median Width(m) 3.5 0.0 0.0 Link Offset(m) 0.0 0.0 0.0 Crosswalk Width(m) 1.6 1.6 1.6 Two way Left Turn Lane	Inter Blocked Intersection	No	No	No	No	No	No	
Link Offset(m) 0.0 0.0 0.0 Crosswalk Width(m) 1.6 1.6 1.6 Two way Left Turn Lane	ane Alignment	Left	Right	Left	Right	Left	Left	
Crosswalk Width(m) 1.6 1.6 1.6 Two way Left Turn Lane	Median Width(m)	3.5		0.0			0.0	
Two way Left Turn Lane Headway Factor 1.01 1.01 1.01 1.01 1.01 1.01 Turning Speed (k/h) 24 14 14 24 Sign Control Stop Free Free Intersection Summary	.ink Offset(m)	0.0		0.0			0.0	
Headway Factor 1.01 1.01 1.01 1.01 1.01 Turning Speed (k/h) 24 14 14 24 Sign Control Stop Free Free Intersection Summary Intersection Summary Intersection Summary Intersection Summary	Crosswalk Width(m)	1.6		1.6			1.6	
Turning Speed (k/h) 24 14 14 24 Sign Control Stop Free Free Intersection Summary	wo way Left Turn Lane							
Sign Control Stop Free Free Intersection Summary	leadway Factor			1.01		1.01	1.01	
Intersection Summary		24	14		14	24		
	Sign Control	Stop		Free			Free	
Area Transa Other	ntersection Summary							
Area Type: Other	Area Type: C	Other						
Control Type: Unsignalized	Control Type: Unsignalized							
Intersection Capacity Utilization 24.4% ICU Level of Service A	ntersection Capacity Utilizati	ion 24.4%			IC	U Level	of Service	A

	4	×	1	1	1	ŧ
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		4Î			
Traffic Volume (veh/h)	3	0	252	18	0	0
Future Volume (Veh/h)	3	0	252	18	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	3	0	265	19	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)			Nono			None
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	274	274			284	
vC1, stage 1 conf vol	214	214			204	
vC2, stage 2 conf vol						
vCu, unblocked vol	274	274			284	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	0.1	0.2			1.1	
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	715	764			1278	
, , , ,					1270	
Direction, Lane #	WB 1	NB 1				
Volume Total	3	284				
Volume Left	3	0				
Volume Right	0	19				
cSH	715	1700				
Volume to Capacity	0.00	0.17				
Queue Length 95th (m)	0.1	0.0				
Control Delay (s)	10.1	0.0				
Lane LOS	В					
Approach Delay (s)	10.1	0.0				
Approach LOS	В					
			_	_	_	
Intersection Summary						

HCM Unsignalized Intersection Capacity Analysis 11: Sterling Road & Ruttan Street Extension

 Intersection Summary
 0.1

 Average Delay
 0.1

 Intersection Capacity Utilization
 24.4%
 ICU Level of Service
 A

 Analysis Period (min)
 15
 15
 15

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<Future Total> PM Peak

04/16/2021

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Lane Group	WBL	WBR	NBT	NBR	SBL	▼ SBT	
Lane Configurations	VIDL VIDL	WDR		NDR	ODL	<u>्रावट</u>	
Traffic Volume (vph)	T 2	26	€ 6	13	71	4	
	2	26	6	13	71	1	
Future Volume (vph)	-	26 1900	1900	1900	1900	1900	
Ideal Flow (vphpl) Lane Util. Factor	1900 1.00	1.00	1.00	1.00	1.00	1.00	
Lane Util. Factor Frt	0.874	1.00		1.00	1.00	1.00	
Frt Flt Protected	0.874		0.905			0.953	
	0.997	0	1705	0	0	0.953	
Satd. Flow (prot) Flt Permitted		U	1705	U	0		
	0.997	0	1705	0	•	0.953	
Satd. Flow (perm)	1641 30	0	1705	0	0	1795	
Link Speed (k/h)	27.3		70.6			30 87.0	
Link Distance (m)						87.0 10.4	
Travel Time (s) Peak Hour Factor	3.3 0.95	0.95	8.5 0.95	0.95	0.95	0.95	
	0.95			0.95	0.95		
Adj. Flow (vph)	2	27	6	14	/5	1	
Shared Lane Traffic (%)				<u>,</u>		=0	
Lane Group Flow (vph)	29	0	20	0	0	76	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Right	Left	Left	
Median Width(m)	3.7		0.0			0.0	
Link Offset(m)	0.0		0.0			0.0	
Crosswalk Width(m)	1.6		1.6			1.6	
Two way Left Turn Lane	0.00	0.00	0.00	0.00	0.00	0.00	
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	
Turning Speed (k/h)	24	14	-	14	24	-	
Sign Control	Stop		Free			Free	
Intersection Summary							
Area Type: (Other						
Control Type: Unsignalized							
Intersection Capacity Utilizat	ion 20.7%			IC	U Level	of Service	A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis 29: Ruttan Street & Site Access <Future Total> PM Peak 04/16/2021

	4	×	1	1	1	ŧ
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Ý		f,			el.
Traffic Volume (veh/h)	2	26	6	13	71	1
Future Volume (Veh/h)	2	26	6	13	71	1
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	2	27	6	14	75	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	164	13			20	
vC1, stage 1 conf vol					20	
vC2, stage 2 conf vol						
vCu, unblocked vol	164	13			20	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	0	0.2				
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	97			95	
cM capacity (veh/h)	788	1067			1596	
			0.0.4		1000	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	29	20	76			
Volume Left	2	0	75			
Volume Right	27	14	0			
cSH	1042	1700	1596			
Volume to Capacity	0.03	0.01	0.05			
Queue Length 95th (m)	0.7	0.0	1.1			
Control Delay (s)	8.6	0.0	7.3			
Lane LOS	А		А			
Approach Delay (s)	8.6	0.0	7.3			
Approach LOS	A					
Intersection Summary						
Average Delay			6.4			
Intersection Capacity Utiliz	zation		20.7%	IC	U Level of	Service
Analysis Period (min)			15			

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