

Appendix A5

Ontario Line Project

Corktown Station Early Works – Traffic and Transportation Early Works Report



Metrolinx

Traffic and Transportation Early Works Report

Ontario Line Corktown Station Early Works

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Executive Summary

ES.1 Ontario Line Corktown Station Early Works

The Ontario Line Project (the Project) is being assessed in accordance with Ontario Regulation 341/20: Ontario Line Project under the Environmental Assessment Act. Ontario Regulation 341/20: Ontario Line Project outlines a Project-specific environmental assessment process that includes an Environmental Conditions Report, Environmental Impact Assessment Report, and an opportunity for Early Works Report(s) for assessment of works that are ready to proceed in advance of the Environmental Impact Assessment Report. The Environmental Conditions Report documents the local environmental conditions of the Ontario Line Study Area and provides a preliminary description of the potential environmental impacts from the Project. Information outlined in the Environmental Conditions Report is used to inform the Early Works Report(s) and Environmental Impact Assessment Report, which study environmental impacts in further detail and confirm and refine preliminary mitigation measures identified in the Environmental Conditions Report.

Ontario Line early works are components of the Project that are proposed to proceed before the completion of the Ontario Line environmental impact assessment process. An overview of the Project is provided in **Section 1.2**. Early works are defined in Ontario Regulation 341/20: Ontario Line Project under the Environmental Assessment Act as follows:

"any components of the Ontario Line Project that Metrolinx proposes to proceed with before the completion of the Ontario Line assessment process, such as station construction, rail corridor expansion, utility relocation or bridge replacement or expansion."

Corktown Station early works are considered to be of strategic importance in enabling the timely implementation of the Project. Corktown Station early works are considered to be of strategic importance in enabling the timely implementation of the Project. The Corktown Station early works site has been identified as the launch site for the tunnel excavation equipment to complete tunnels and underground station spaces for the downtown and Don Yard segments and construction of the Corktown Station. The First Parliament site is located within the Corktown Station early works site and is a known archaeological site which requires additional archaeological studies ahead of any ground disturbance activities. The Corktown Station early works site will provide essential logistics support required for the Project's tunneling. To prepare this site, demolition of existing buildings and structures followed by completion of necessary archaeological studies is required. Completion of this preparatory work on an expedited basis is essential to allow for the timely delivery of the overall Project.

AECOM Canada Limited (AECOM) was retained by Metrolinx and Infrastructure Ontario to complete the Ontario Line Corktown Station Early Works Report for the Project. This Traffic and Transportation Early Works Report (this Report) supports the Ontario Line Final Corktown Station Early Works Report and has been prepared for the Project to document the traffic and transportation impact assessment of Corktown Station early works (**Figure ES-1**).

The Corktown Station early works components and construction activities are further described in **Section 1.3**.

The purpose of this Report is to:

- Describe the local environmental conditions related to the identified transportation network and transit network within the Corktown Station Study Area;
- Assess the potential impacts of the Corktown Station early works construction activities on the identified transportation network and transit network; and,
- Identify mitigation measures and monitoring activities for any potential negative impacts on traffic and transportation operations within the Corktown Station Study Area.

This Report supports the Ontario Line Corktown Station Early Works Report prepared in accordance with Ontario Regulation 341/20: Ontario Line Project.

Refer to **Section 1** of this Report for more information related to the Project and a detailed early works description.

The Corktown Station early works include demolition of existing buildings, removal of other structures and asphalt where required, decommissioning of utilities, and soil removal and/or remediation where required. These activities will enable the completion of environmental due diligence investigations, including archaeological assessments.

ES.2 Methodology

This Report documents the assessment of Corktown Station early works construction impacts related to traffic and transportation operations. Impacts associated with Project operations will be addressed as part of the Environmental Impact Assessment Report, under separate cover. Detailed methodology is provided in **Section 2**.





Local Environmental Conditions

The following traffic and transportation elements within the Corktown Station Study Area were assessed:

- Transportation network:
 - Road Network
 - Pedestrian Network
 - Cycling Network
- Transit network.

It should be noted that the rail network was not assessed in this Report since the Corktown Station early works do not include any works along the existing railway corridor, and hence no impacts are anticipated to the rail network. It should also be noted that the section of Gardiner Expressway between Cherry Street and Sherbourne Street was not considered part of the road network as it is not anticipated to be directly impacted by the Corktown Station early works or be part of the route for heavy construction vehicles.

AECOM received available traffic data (i.e., turning movement counts and signal timing plans) at the intersections within the Corktown Station Study Area from the City of Toronto. In addition, the following secondary sources were used to conduct the background information review as part of the Ontario Line Final Environmental Conditions Report (AECOM, 2020)¹:

- City of Toronto's website:
 - Open Data Portal (City of Toronto, n.d.a;
 - Road Classification System Update (City of Toronto, 2018); and,
 - Vision Zero Mapping Tool (City of Toronto, 2020).
- Transit schedule and route information:
 - Toronto Transit Commission schedules (Toronto Transit Commission, 2019).

A quantitative multi-modal level of service assessment was undertaken at the intersections and road segments within the Corktown Station Study Area where traffic data was available. The automobile level of service assessment was completed using Synchro 9 capacity analysis software in accordance with the methodologies outlined in the Highway Capacity Manual and in line with the capacity analysis guidelines outlined in the City of Toronto's Guidelines for Using Synchro 9 (City of Toronto, 2016). The City

^{1.} The Ontario Line Final Environmental Conditions Report (AECOM, 2020) was published on November 30, 2020 in accordance with Ontario Regulation 341/20: Ontario Line Project.

of Ottawa's Multi-Modal Level of Service Guidelines (City of Ottawa, 2015) were generally followed to determine the level of service for non-auto modes of travel (i.e., pedestrians, cyclists, and transit). The City of Ottawa's Multi-Modal Level of Service Guidelines are widely used in transportation studies within Ontario and specifically the City of Toronto which has approved multiple studies in which they were used (e.g., Yorkdale Transportation Master Plan, Golden Mile Transportation Master Plan, etc.).

The level of service designation for all modes of travel range from level of service 'A' to level of service 'F' based on the relative attractiveness (e.g., the amount of average delay for automobile and transit users, the level of comfort, safety, and convenience experienced by pedestrians and cyclists) of the traffic and transportation elements within the Corktown Station Study Area. A level of service target was set for each mode of travel to ensure that the respective mode users experience a minimum desirable level of service which is consistent with both the surrounding land use designation and the road classification. The levels of service targets set for motorized vehicles (i.e., automobiles and transit) and active transportation users are level of service 'D' and level of service 'C', respectively. This indicates that for motorized vehicles, level of service 'A' through 'D' typically indicate acceptable operations, while level of service 'A' through 'C' indicate acceptable operations, while level of service 'A' through 'C' indicate acceptable operations, while level of service 'A' through 'C' indicate acceptable operations, while level of service 'A' through 'C' indicate acceptable operations, while level of service 'A' through 'C' indicate acceptable operations, while level of service 'A' through 'C' indicate acceptable operations, while level of service 'A' through 'C' indicate acceptable operations, while level of service 'A' through 'C' indicate acceptable operations, while level of service 'A' through 'C' indicate acceptable operations, while level of service 'A' through 'C' indicate acceptable operations.

The Ontario Line Final Environmental Conditions Report (AECOM, 2020) notes that turning movement counts and signal timing plans were not available at some intersections within the Ontario Line Study Area, and were not collected through new traffic surveys considering the uncharacteristic traffic conditions as a result of the COVID-19 pandemic. As a result of the noted data limitations, a quantitative traffic assessment of some intersections within the Corktown Station Study Area could not be undertaken.

Impact Assessment

This early works impact assessment and development of mitigation measures and monitoring activities considered the following in accordance with Ontario Regulation 341/20: Ontario Line Project under the Environmental Assessment Act:

- Corktown Station early works components, as described in **Section 1.3.1**;
- The Corktown Station Early Works Project Footprint and Corktown Station Study Area, as described in Section 1.3.2;
- Corktown Station construction activities, as described in **Section 1.3.3**; and,
- Local environmental conditions within the Corktown Station Study Area, as described in Section 3.

A quantitative impact assessment was not completed at this stage as the detailed construction staging schemes that describe the potential modifications to the existing transportation network were not available. The quantitative impact assessment will be completed, as required, once project planning progresses and this information becomes available. The quantitative impact assessment may include a larger study area.

ES.3 Local Environmental Conditions

The findings of the quantitative multi-modal level of service assessment of the existing transportation and transit networks within the Corktown Station Study Area are summarized as follows:

- Automobiles experience acceptable Automobile Level of Service 'D' or better at all the Corktown Station Study Area intersections in both the AM and PM peak hours;
- Pedestrians experience critical Pedestrian Level of Service 'D' or worse at all the Corktown Station Study Area intersections except at the intersection of Parliament Street and Mill Street where pedestrians experience acceptable Pedestrian Level of Service 'C'. Along road segments, pedestrians experience acceptable Pedestrian Level of Service 'C' or better along The Esplanade, Mill Street, Lake Shore Boulevard, Sherbourne Street, and Cherry Street. The remaining road segments have narrow sidewalk widths and thus operate at critical Pedestrian Level of Service 'E';
- Cyclists experience acceptable Bicycle Level of Service 'C' or better at the majority of the Corktown Station Study Area signalized intersections. Cyclists accommodated through the cycling facilities along Adelaide Street, Lake Shore Boulevard, Sherbourne Street and Cherry Street and through the signed bike routes along The Esplanade and Mill Street experience excellent Bicycle Level of Service 'A' or 'B'. Along the remaining road segments, cyclists travel with a total of four to five mixed traffic lanes and hence experience critical Bicycle Level of Service 'D'; and
- Transit vehicles operate at acceptable Transit Level of Service 'C' or 'D' during peak periods at all the signalized intersections within the Corktown Station Study Area, except at the intersection of Adelaide Street and Sherbourne Street and the intersection of Lake Shore Boulevard and Lower Sherbourne Street where transit vehicles operate at critical Transit Level of Service 'E' and 'F', respectively. Along road segments, all transit vehicles experience an acceptable Transit Level of Service 'D' or better, meeting the minimum desirable Transit Level of Service for the studied sections. Transit vehicles travelling along the dedicated streetcar facility along Cherry Street experience excellent Transit Level of Service 'A'.

Local environmental conditions are further described in Section 3.

ES.4 Potential Impacts, Mitigation Measures and Monitoring Activities

Section 3.2.2 includes information related to potential impacts, mitigation measures, and monitoring activities for the Corktown Station early works. Potential impacts may result from early works construction activities, including increased traffic, and closure of Green P municipal parking lots within the Corktown Station Early Works Project Footprint. Mitigation measures and monitoring activities are recommended to minimize the potential impacts during construction.

Refer to **Table ES-1** for a complete list of potential impacts, mitigation measures, and monitoring activities for the Corktown Station early works.

ES.5 Permits and Approvals

Section 5 notes that federal and provincial permits and approvals related to traffic and transportation are not required for the Corktown Station early works. Metrolinx will coordinate with the City of Toronto and Toronto Parking Authority for transportation-related permits and approvals (e.g., street occupation permit) prior to construction, as required.

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
Transportation Network – Roads	 Heavy construction vehicle traffic may impact traffic operations resulting in increased vehicular delays and queue lengths, especially at intersections where construction traffic is required to make left-turning movements. Potential overlapping construction timelines with other planned projects (e.g., local developments) nearby may result in impacts to the transportation network and its road users. Potential closure of the Green P municipal parking lots located within the Corktown Station Early Works Project Footprint. 	 A quantitative traffic impact assessment will be completed, if required, as project planning progresses to consider vehicular traffic impacts as a result of the Corktown Station early works. Develop and implement a Transit and Traffic Management Plan(s), which could include temporary changes to intersection lane configurations, traffic signal timing optimization, modifications to existing signal timing plans, etc. The Transit and Traffic Management Plan(s) will also address specific emergency services requirements in consultation with the City of Toronto. Traffic signal timing optimization may be assessed/implemented to increase capacity of affected intersections and to aid in the movement of traffic. Traffic signal timing adjustments would require coordination between Metrolinx and City of Toronto, and will be undertaken if required, to determine appropriate changes to traffic signal timings. Consider scheduling construction activities during off-peak periods and weekends to minimize disruptions to road users during the critical peak periods. Co-ordinate with the City of Toronto regarding other ongoing construction projects when scheduling the early works activities to maintain the mobility of all road users (i.e., avoid closure of parallel corridors). Consult with the City of Toronto and the Toronto Parking Authority should public parking be affected. 	The effectiveness of the Transit and Traffic Management Plan(s) will be monitored throughout the construction period and adjustments will be made based on actual field observations, as needed.
Transportation Network – Active Transportation	 Traffic congestion along Front Street and other adjacent roads, as a result of the increase in heavy vehicle traffic, could increase pedestrians' and cyclists' exposure to traffic. Potential realignment / closure of sidewalks along Front Street, Berkeley Street, King Street, and Parliament Street may increase walking distances and compromise pedestrians' convenience. 	 Co-ordinate with the City of Toronto to minimize the interference with pedestrians and cyclists. This may include fencing, hoarding (minimum 2 meters high, solid, and secured), shared-lane markings, signals, wayfinding signs, and lighting as required to provide pedestrians and cyclists with safe, accessible, and continuous routes. Include safety precautions for nearby schools (e.g., having school crossing guards at nearby intersections) in the Transit and Traffic Management Plan(s) in consultation with the City of Toronto, and local school board(s). Implement flagging where construction vehicles are present to ensure construction vehicle operators are aware of pedestrian and vehicular traffic within the construction area. If required, ensure any modifications to pedestrian crossings distances at signalized intersections are reflected in revised pedestrian clearance timings. Any temporary pedestrian crossing facilities including temporary or relocated Toronto Transit Commission transit stops will be designed to meet Toronto Transit Commission accessibility standards. Mitigation measures will be considered (e.g., maintaining a minimum sidewalk width) in order to maintain preconstruction pedestrian levels of service. Consult with the City of Toronto to minimize potential impacts during special events (e.g. Distillery District) should closures or long-term impacts be required. 	 The effectiveness of the Transit and Traffic Management Plan(s) will be monitored throughout the construction period and adjustments will be made based on actual field observations, as needed.
Transit Network	 Impacts to surface transit routes (i.e., bus and streetcar) within the Corktown Station Study Area are not anticipated. 	No mitigation measures are recommended.	 Transit services will be monitored through actual field observations throughout the construction period and mitigation measures will be considered, as needed.

Table ES-1: Potential Impacts, Mitigation Measures and Monitoring Activities for the Corktown Station Early Works

Table of Contents

			page
1.	Intro	oduction	1
	1.1	Purpose of the Ontario Line Early Works	1
		1.1.1 Purpose of this Report	2
	1.2	Ontario Line Project Overview	4
	1.3	Early Works Description	4
		1.3.1 Project Description	4
		1.3.2 Early Works Project Footprint and Study Area	4
		1.3.3 Construction Activities	7
2.	Meth	hodology	10
	2.1	Local Environmental Conditions	10
		2.1.1 Data Collection	
		2.1.2 Multi-Modal Level of Service Assessment	11
		2.1.2.1 Automobile Level of Service	
		2.1.2.2 Pedestrian Level of Service	12
		2.1.2.3 Bicycle Level of Service	14
		2.1.2.4 Transit Level of Service	15
	2.2	Impact Assessment	17
3.	Loca	al Environmental Conditions	18
	3.1	Transportation Network	18
		3.1.1 Roads and Intersection Operations	18
		3.1.1.1 Road Network	18
		3.1.1.2 Intersection Operations	20
		3.1.2 Pedestrian Network and Operations	24
		3.1.2.1 Pedestrian Network	24
		3.1.2.2 Pedestrian Operations	26
		3.1.3 Cycling Network and Operations	28
		3.1.3.1 Cycling Network	
		3.1.3.2 Cycling Operations	30
	3.2	Transit Network and Operations	33
		3.2.1 Transit Network	33
		3.2.2 Transit Operations	39
4.	Pote	ential Impacts, Mitigation Measures and Monitoring	
	Acti	vities	42
5.	Perr	nits and Approvals	45
6.	Refe	erences	46

List of Figures

Figure 1-1:	Corktown Station Early Works Project Footprint and Components	3
Figure 1-2:	Corktown Station Early Works Project Footprint and Corktown	
	Station Study Area	6
Figure 3-1:	Existing Road Network Within the Corktown Station Study Area	19
Figure 3-2:	Existing Pedestrian Network Within the Corktown Station Study	
	Area	25
Figure 3-3:	Pedestrian Level of Service Within the Corktown Station Study	
	Area	27
Figure 3-4:	Existing Cycling Network Within the Corktown Station Study Area	29
Figure 3-5:	Cyclist Level of Service Within the Corktown Station Study Area	31
Figure 3-6:	Existing Transit Network Within the Corktown Station Study Area	38
Figure 3-7:	Transit Level of Service Within the Corktown Station Study Area	41

List of Tables

Table 1-1:	Report Contents in Accordance with Ontario Regulation 341/20: Ontario Line Project	2
Table 1-2:	Anticipated Construction Activities for the Ontario Line Corktown Station Early Works	8
Table 2-1:	Key Determining Factors for Pedestrian Level of Service	. 13
Table 2-2:	Key Determining Factors for Bicycle Level of Service	. 15
Table 2-3:	Key Determining Factors for Transit Level of Service	. 16
Table 3-1:	Traffic Operations at the Corktown Station Study Area Intersections under Existing Conditions (2020) during the AM and PM Peak	
T	Hours	. 21
Table 3-2:	Intersections under Existing Conditions (2020)	. 26
Table 3-3:	Pedestrian Level of Service at the Corktown Station Study Area Road Segments under Existing Conditions (2020)	. 28
Table 3-4:	Bicycle Level of Service at the Corktown Station Study Area Intersections under Existing Conditions (2020)	. 30
Table 3-5:	Bicycle Level of Service at the Corktown Station Study Area Road Segments under Existing Conditions (2020)	. 32
Table 3-6:	Existing Transit Routes within the Corktown Station Study Area	. 34

Metrolinx

Ontario Line Corktown Station Early Works – Traffic and Transportation Early Works Report

Table 3-7:	Transit Level of Service at the Corktown Station Study Area Intersections under Existing Conditions (2020)	39
Table 3-8:	Transit Level of Service at the Corktown Station Study Area Road Segments under Existing Conditions (2020)	40
Table 4-1:	Potential Impacts, Mitigation Measures and Monitoring Activities for the Corktown Station Early Works	44

Appendices

- Appendix A. Turning Movement Counts
- Appendix B. Signal Timing Plans
- Appendix C. Multi-Modal Level of Service Criteria
- Appendix D. Synchro Modelling Assumptions and Parameters
- Appendix E. Synchro Reports
- Appendix F. Multi-Modal Level of Service Results

1. Introduction

1.1 Purpose of the Ontario Line Early Works

The Ontario Line Project (the Project) is being assessed in accordance with Ontario Regulation 341/20: Ontario Line Project under the Environmental Assessment Act. Ontario Regulation 341/20: Ontario Line Project outlines a Project-specific environmental assessment process that includes an Environmental Conditions Report, Environmental Impact Assessment Report, and an opportunity for Early Works Report(s) for assessment of works that are ready to proceed in advance of the Environmental Impact Assessment Report. The Environmental Conditions Report documents the local environmental conditions of the Ontario Line Study Area and provides a preliminary description of the potential environmental impacts from the Project. Information outlined in the Environmental Conditions Report is used to inform the Early Works Report(s) and Environmental Impact Assessment Report, which study environmental impacts in further detail and confirm and refine preliminary mitigation measures identified in the Environmental Conditions Report.

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"any components of the Ontario Line Project that Metrolinx proposes to proceed with before the completion of the Ontario Line assessment process, such as station construction, rail corridor expansion, utility relocation or bridge replacement or expansion."

Corktown Station early works are considered to be of strategic importance in enabling the timely implementation of the Project. The Corktown Station early works site has been identified as the launch site for the tunnel excavation equipment to complete tunnels and underground station spaces for the downtown and Don Yard segments and construction of the Corktown Station. The First Parliament site is located within the Corktown Station early works site and is a known archaeological site which requires additional archaeological studies ahead of any ground disturbance activities. The Corktown Station early works site will provide essential logistics support required for the Project's tunneling. To prepare this site, demolition of existing buildings and structures followed by completion of necessary archaeological studies is required. Completion of this preparatory work on an expedited basis is essential to allow for the timely delivery of the overall Project.

Corktown Station early works are described in detail in Section 1.3.

1.1.1 Purpose of this Report

AECOM Canada Limited (AECOM) was retained by Metrolinx and Infrastructure Ontario to complete the Ontario Line Corktown Station Early Works Report for the Project. This Traffic and Transportation Early Works Report (this Report) supports the Ontario Line Final Corktown Station Early Works Report and has been prepared for the Project to document the traffic and transportation impact assessment of Corktown Station early works (**Figure 1-1**). The early works components and construction activities are described in **Section 1.3**.

The purpose of this Report is to:

- Describe the local environmental conditions related to the identified transportation network and transit network within the Corktown Station Study Area;
- Assess the potential impacts of the Corktown Station early works construction activities on the identified transportation network and transit network; and,
- Identify mitigation measures and monitoring activities for any potential negative impacts on traffic and transportation operations within the Corktown Station Study Area.

This Report has been prepared in accordance with Ontario Regulation 341/20: Ontario Line Project and contains the information outlined in **Table 1-1**.

Reg. Section	Requirement	Report Section
Section 8(2)2	The rationale for proceeding with the early works.	Section 1.1
Section 8(2)4	A description of the local environmental conditions at the site of the early works.	Section 3
Section 8(2)6	Metrolinx's assessment and evaluation of the impacts that the preferred method of carrying out the early works and other methods might have on the environment, and Metrolinx's criteria for assessment and evaluation of those impacts.	Section 3.2.2
Section 8(2)7	A description of any measures proposed by Metrolinx for mitigating any negative impacts that the preferred method of carrying out the early works might have on the environment.	Section 3.2.2
Section 8(2)8	A description of the means Metrolinx proposes to use to monitor or verify the effectiveness of mitigation measures proposed.	Section 3.2.2
Section 8(2)9	A description of any municipal, provincial, federal or other approvals or permits that may be required for the early works.	Section 5

Table 1-1: Report Contents in Accordance with Ontario Regulation 341/20:Ontario Line Project





1.2 Ontario Line Project Overview

Metrolinx, an agency of the Province of Ontario, is proceeding with the planning and development of the Ontario Line, extending from Exhibition/Ontario Place to the Ontario Science Centre in the City of Toronto.

The Project is a new approximately 15.6-kilometre subway line with connections to Line 1 (Yonge-University) subway service at Osgoode and Queen Stations, Line 2 (Bloor-Danforth) subway service at Pape Station, and Line 5 (Eglinton Crosstown) light rail transit service at the future Science Centre Station. Fifteen stations are proposed, with additional connections to three GO Transit lines (Lakeshore East, Lakeshore West and Stouffville), and the Queen, King, Bathurst, Spadina, Harbourfront, and Gerrard/Carlton streetcar routes. The Project will reduce crowding on Line 1 and provide connections to new high-order rapid transit neighbourhoods. The Project will be constructed in a dedicated right-of-way with a combination of elevated (i.e., above existing rail corridor/roadway), tunnelled (i.e., underground), and at-grade (i.e., at grade with existing rail corridor) segments at various locations.

1.3 Early Works Description

1.3.1 Project Description

The Corktown Station early works include demolition of existing buildings, removal of other structures and asphalt where required, decommissioning of utilities, and soil removal and/or remediation where required. These activities will enable the completion of environmental due diligence investigations, including archaeological assessments. These activities will occur on properties within the Corktown Station Early Works Project Footprint, as shown in **Figure 1-1**.

1.3.2 Early Works Project Footprint and Study Area

The Corktown Station Early Works Project Footprint, shown in **Figure 1-2**, is defined as the area of direct disturbance associated with the early works activities. The site is bound by King Street East to the north, Parliament Street to the East, Berkeley Street to the West and Parliament Square Park to the south.

For the purpose of this Report, the Corktown Station Study Area, also shown in **Figure 1-2**, includes the Corktown Station Early Works Project Footprint and adjacent road

segments and intersections. The adjacent road segments and intersections within the Corktown Station Study Area were identified as they meet either of the following criteria:

- Directly impacted by the early works within the Corktown Station Early Works Project Footprint; or,
- Provides connection to the Corktown Station Early Works Project Footprint (i.e., Front Street, King Street East, Adelaide Street, The Esplanade, Lake Shore Boulevard, Parliament Street, Berkeley Street, Sherbourne Street, and Cherry Street) and therefore may be considered as a route for heavy construction vehicles.

The Corktown Station Study Area assessed in this Report is specific to the traffic and transportation impact assessment. The study areas for other environmental disciplines are outlined in the Ontario Line Final Corktown Station Early Works Report.





1.3.3 Construction Activities

Table 1-2 provides a description of the anticipated construction activities for the Corktown Station early works. These typical activities serve as the basis for the assessment of construction-related potential environmental effects. These activities may be expanded, further refined, or found to be unnecessary as early works planning progresses.

Anticipated Construction Activity	Description	Associated Equipment
Site Preparation	 Mobilization of equipment and temporary facilities to the site. Clearing and grubbing of vegetation, tree removal and protection. Erection of temporary fences. Installation of environmental management features (e.g., erosion and sediment controls). Dewatering works. Demobilization. Temporary signs. Locates and surveys. Notices. Site specific documents (safety, approvals, permit etc.). 	 Site compaction equipment and grading equipment. Vegetation removal equipment. Excavation equipment. Haulage/dump trucks. Dewatering equipment (pumps etc.). Hand tools. Surveying equipment. Flatbed truck. Forklift.
Site Servicing/ Removals/ Demolition	 Decommissioning, relocation and/or extension of services and utilities on the site, which may include both underground and aerial services and utilities (e.g., sewers, water, electrical, communications, gas). This may also involve installation of utilities within the site. Removal of paved driveways, parking areas, and sub- surface foundations and footings. Demolition and removal of buildings. Removal/remediation of contaminated soil. 	 Excavation/demolition equipment including backhoe, dump trucks, spoils removal equipment, jackhammers. Hand tools. Mobile crane. Flatbed trucks. Boom truck.
Excavating and Grading	 Excavation and grading activities may involve earth- moving activities and stockpiling, as applicable. Excavated material will be accommodated on-site on the degree practicable; however, where necessary, surplus material will be disposed of off-site to an approved facility. Any off-site disposal shall be done in compliance with applicable regulations, including as it relates to contaminated material that may be encountered. Any groundwater encountered will be managed and disposed of in accordance with applicable regulations. 	 Site compaction equipment and general grading equipment, dump trucks, soil removal equipment. Groundwater pumping equipment. Excavation equipment including backhoe, dump trucks, soil removal equipment, and jack hammers.

Table 1-2: Anticipated Construction Activities for the Ontario Line Corktown Station Early Works

Anticipated Construction Activity	Description	Associated Equipment
Temporary Road Closures	 All road closures will follow standard traffic control management guidelines. 	 Temporary traffic control devices such as signs, signals, barriers, traffic barrels, plate tampers.
Management of Stormwater	 All precipitation falling within the site will be managed as stormwater within a designed system of collection, conveyance, retention and discharge features, as required. The system will be designed and operated in compliance with applicable standards and regulatory requirements. Surface flows within the site will be managed within the site to ensure discharge to off-site receivers (i.e., municipal storm sewers) is appropriate in terms of water quantity and quality. 	 Site compaction equipment and general grading equipment. Groundwater pumping.

2. Methodology

This Report documents the assessment of Corktown Station early works construction impacts. Impacts associated with Project operations will be addressed as part of the Environmental Impact Assessment Report, under separate cover.

2.1 Local Environmental Conditions

The following traffic and transportation elements within the Corktown Station Study Area were assessed:

- Transportation network:
 - Road Network
 - Pedestrian Network
 - Cycling Network
- Transit network.

The types and sources of traffic data collected for the above-noted transportation elements are summarized in **Section 2.1.1**. The methodology and assumptions followed in the quantitative assessment of the transportation elements in the existing conditions are discussed in detail in **Section 2.1.2**.

It should be noted that the rail network was not assessed in this Report since the Corktown Station early works do not include any works along the existing rails, and hence no impacts are anticipated to the rail network.

2.1.1 Data Collection

Most recent available Turning Movement Count data at intersections within the Corktown Station Study Area were provided by the City of Toronto, consisting of eighthour counts of vehicles (cars, trucks, and buses), pedestrians, and bicycles and collected at 15-minute intervals during the weekday peak periods. The Turning Movement Count data are presented in **Appendix A**.

In addition, the signal timing plans for the signalized intersections within the Corktown Station Study Area were provided by the City of Toronto and are presented in **Appendix B**.

AECOM completed a desktop background review of secondary source information to complement the data provided by the City of Toronto and establish local traffic and transportation conditions within the Corktown Station Study Area. The desktop resources included the following:

- Review of City of Toronto's Open Data Portal (City of Toronto, n.d.a) to obtain mapping data related to roads, pedestrian and cyclist routes related to the Corktown Station Study Area;
- Review of City of Toronto's Road Classification System Update (City of Toronto, 2018) and Vision Zero Mapping Tool (City of Toronto, 2020) to obtain road classification and speed information related to roads within the Corktown Station Study Area; and,
- Review of the Toronto Transit Commission website (Toronto Transit Commission, 2019) to obtain transit schedule and route data related to the Corktown Station Study Area.

The Ontario Line Final Environmental Conditions Report (AECOM, 2020)² notes that turning movement counts and signal timing plans were not available at some intersections within the Ontario Line Study Area, and were not collected through new traffic surveys considering the uncharacteristic traffic conditions as a result of the COVID-19 pandemic. As a result of the noted data limitations, a quantitative traffic assessment of some intersections within the Corktown Station Study Area could not be undertaken.

2.1.2 Multi-Modal Level of Service Assessment

2.1.2.1 Automobile Level of Service

The intersection capacity analyses for the intersections within the Corktown Station Study Area were completed using Synchro 9 capacity analysis software in accordance with the methodologies outlined in the Highway Capacity Manual (Transportation Research Board, 2000) and in line with the capacity analysis guidelines outlined in the City's Guidelines for Using Synchro 9 (City of Toronto, 2016). Synchro models were developed to replicate local traffic conditions within the Corktown Station Study Area as the 2020 Existing Conditions³ (herein referred to as Existing Conditions) during the AM and PM peak hours on a typical weekday.

^{2.} The Ontario Line Final Environmental Conditions Report (AECOM, 2020) was published on November 30, 2020 in accordance with Ontario Regulation 341/20: Ontario Line Project.

^{3.} Traffic data were collected between 2017 and 2019 and were projected to year 2020 using an annual growth rate of 1% to account for the ambient growth in traffic volumes. The observed turning

The measures of effectiveness used to assess an intersection's operations are level of service and volume-to-capacity ratio. Level of service is an indicator describing the performance of individual intersection movements and of an overall intersection from the traffic operations standpoint. The level of service designation ranges from level of service 'A' to level of service 'F' based on the amount of average delay that a motorist experiences before taking a specific manoeuvre at an intersection. Level of service 'A' through 'D' typically indicate acceptable operations, while level of service 'E' indicates increasing congestion and at capacity operations, and level of service 'F' indicates long delays and, in some cases, severe traffic congestion. The level of service criteria for signalized and unsignalized intersections are attached in **Appendix C**. The level of service 'D' which implies that intersections and movements with level of service 'E' or worse are considered to be operating at critical levels.

The volume to capacity ratio is another indicator representing the capacity utilization at an intersection or for a specific movement. A volume to capacity ratio of 1.00 indicates that a movement or an intersection is operating at capacity. The target volume to capacity ratio is 0.84 which implies that intersections and movements with volume to capacity ratio exceeding 0.84 are considered to be operating at critical levels.

The key assumptions and modifications made to the default values of the Synchro parameters in the traffic modelling exercise are summarized in **Appendix D**.

2.1.2.2 Pedestrian Level of Service

The City of Ottawa's Multi-Modal Level of Service tool was used to assign a Pedestrian Level of Service to both road segments and signalized intersections along a stretch of road, based on level of comfort, safety, and convenience experienced by pedestrians as they travel along that stretch of road. The City of Ottawa's Multi-Modal Level of Service Guidelines are widely used in transportation studies within Ontario and specifically the City of Toronto which has approved multiple studies in which they were used (e.g., Yorkdale Transportation Master Plan and Golden Mile Transportation Master Plan).

The key determining factors in evaluating the Pedestrian Level of Service are summarized in **Table 2-1**. The Pedestrian Level of Service on a road segment is determined based on the quality of pedestrian facilities and impact of adjacent motorized traffic on pedestrians. It should be noted that sidewalk crowding was not considered in determining the segment Pedestrian Level of Service due to the absence of accurate pedestrian volumes along the sidewalks of the studied road segments. At

movement counts from 2017 and 2019 and the assumptions used in the analysis, including the adopted growth rate are presented in Appendix D.

the intersection level, and as per the City of Ottawa's Multi-Modal Level of Service Guidelines, the Pedestrian Level of Service is evaluated separately for each approach to a signalized intersection. For any given approach to a signalized intersection, the Pedestrian Level of Service is considered as the worst of the following two levels of service for the specific approach: (1) the level of service determined based on average delay to pedestrians crossing the specific intersection approach as per the Highway Capacity Manual methodology and (2) the level of service determined as per the pedestrian exposure to traffic at signalized intersections scoring technique. The overall intersection Pedestrian Level of Service is determined as the worst Pedestrian Level of Service among the intersection approaches. In evaluating the Pedestrian Level of Service along the road segments and at the signalized intersections within the Corktown Station Study Area, the following assumptions were made in estimating the key determining factors (identified in **Table 2-1**):

- The sidewalk width, boulevard width, and corner radius were estimated using aerial street views in Google Maps;
- For any given road segment, the average daily curb lane traffic volume was estimated separately for each direction of travel by assuming that the average traffic volumes of the AM and PM peak hours represent 10% of the average daily traffic volumes in the corresponding direction of travel and that the traffic lanes are equally utilized by motorized vehicles;

Segment Pedestrian Level of Service	Intersection Pedestrian Level of Service
 Sidewalk width Boulevard width Average daily curb lane traffic volume Average vehicular operating speed Presence of on-street parking 	 Street width (number of lanes to be crossed) Right- and left-turn conflicts based on signal phasing (e.g., permitted, protected/permitted, protected, and prohibited) and exclusive pedestrian phases (leading pedestrian interval) Right-turn on red restrictions Corner radius and type of right turn channel (e.g., no channel, right-turn channel with receiving lane, and smart right-turn channel) Crosswalk type (e.g., standard transverse marking, textures/coloured crosswalks, and high visibility markings) Cycle Length and pedestrian green time

Table 2-1:	Key Determining Factors for Pedestrian Level of Service

Source: City of Ottawa's Multi-Modal Level of Service Guidelines (2015)

- For any given approach to the intersection, the pedestrian green time / effective walk time was calculated as per the formula included in the Addendum to the City of Ottawa's Multi-Modal Level of Service Guidelines (2015) by conservatively assuming that no pedestrian is initiating their crossing during the Flashing Don't Walk time; and,
- For any given road segment within the Corktown Station Study Area, the vehicular operating speed is assumed to be equal to the corresponding posted speed on the road segment.

As per the City of Toronto's Official Plan (2019), land use designations within the Corktown Station Study Area vary between "Regeneration Areas", "Mixed Use Areas", and "Apartment Neighbourhoods". As shown in Exhibit 22 in the City of Ottawa's Multi-Modal Level of Service Guidelines, the Pedestrian Level of Service target for these areas is generally Level of Service 'C'. With the noted Pedestrian Level of Service target, the intersections, individual intersection approaches, and road segments within the Corktown Station Study Area with Pedestrian Level of Service 'D' or worse are considered to be operating at critical levels.

2.1.2.3 Bicycle Level of Service

The City of Ottawa's Multi-Modal Level of Service tool assigns a Bicycle Level of Service to both road segments and signalized intersections on a stretch of road, based on the level of traffic stress experienced by cyclists as they travel along the stretch of road. The level of traffic stress of a cycling facility in turn represents the degree of comfort experienced by a cyclist and the targeted category of cyclists (e.g., novice cyclists and experienced cyclists) that are comfortable using the facility. The key determining factors in evaluating the Bicycle Level of Service are dependent on the cycling facility / intersection type as summarized in **Table 2-2**. For any given road segment, the Bicycle Level of Service is considered as the worst of the following two levels of service for the specific road segment: (1) the level of service determined based on the number of lanes and operating speed and (2) the level of service determined based on the cyclist crossing configuration at unsignalized crossings. For any given approach to a signalized intersection, the Bicycle Level of Service is qualitatively assessed based on the cycling facility type and the intersection's lane configuration. The overall intersection Bicycle Level of Service is determined as the worst Bicycle Level of Service among the intersection approaches.

Segment Bicycle Level of Service	Intersection Bicycle Level of Service
 Cycling facility type 	Right-turn lane characteristics (number of right-
Bike lane width	turn lanes, length of right-turn lane, turning speed)
Number of travel lanes	Left-turn accommodation (presence of bike box,
Average vehicular operating speed	number of left-turn lanes, number of lanes
Frequency of bike lane blockages	crossed)
Presence of on-street parking	Average vehicular operating speed

Source: City of Ottawa's Multi-Modal Level of Service Guidelines (2015)

For the purpose of the Bicycle Level of Service assessment, the cycling facilities within the Corktown Station Study Area, namely along Adelaide Street, Sherbourne Street, and Cherry Street, are assumed to be designated as an equivalent to the City of Ottawa's cycling "spine route". As per the City of Ottawa's Official Plan, a cycling "spine route" is described as a cycling route that follows major roadways (typically arterials) and may provide reserved space for cyclists, ideally either a cycle track or a buffered bike lane and it provides access along major corridors, connecting the Cross-Town Bikeways, defined as the top designation in the hierarchy of the cycling facilities in the City of Ottawa's Official Plan, and major off-road bike paths to local routes and Neighbourhood Bikeways. As per the City of Ottawa's Multi-Modal Level of Service Guidelines, the Bicycle Level of Service target for any arterial road designated as a cycling "spine route", regardless of its land use designation, is recommended to be Level of Service 'C'.

Given the above, the Bicycle Level of Service target for cycling facilities as well as the mixed traffic network within the Corktown Station Study Area is set at Level of Service 'C'. With the noted minimum desirable Bicycle Level of Service, the intersections, individual approaches, and road segments within the Corktown Station Study Area with Bicycle Level of Service 'D' or worse are considered to be operating at critical levels.

2.1.2.4 Transit Level of Service

The City of Ottawa's Multi-Modal Level of Service tool assigns a Transit Level of Service to both road segments and signalized intersections along a stretch of road based on the relative attractiveness of transit facilities and services as compared to other modes of travel and especially autos. The relative attractiveness, for the purposes of Transit Level of Service, is evaluated based on transit travel time and level of transit priority given to transit vehicles based on varying facility types and conditions. The key determining factors in evaluating Transit Level of Service are presented in **Table 2-3**. As per the City of Ottawa's Multi-Modal Level of Service Guidelines, the Transit Level of Service for

each approach to an intersection is evaluated separately. For any given approach to a signalized intersection, the Transit Level of Service is evaluated based on the average vehicular delay of each intersection approach, obtained from the traffic modelling output through Synchro. The overall intersection Transit Level of Service is considered to be the worst Transit Level of Service among all the intersection approaches on which buses are travelling. In evaluating the Transit Level of Service along the road segments and at the signalized intersections within the Corktown Station Study Area, the following assumption was made in estimating the key determining factors (identified in **Table 2-3**):

Average delay at a signalized intersection for transit vehicles is considered to be equal to the average vehicular delay obtained as one of the outputs of the Synchro modelling analysis. This indicates that the impact of transit signal priority measures is not factored into the assessment of Transit Level of Service at the intersection level.

Table 2-3: Key Determining Factors for Transit Level of Service

Segment Transit Level of Service	Intersection Transit Level of Service					
 Facility Type (e.g., Mixed Traffic, Bus Lane, and Segregated Right-of-Way) 	 Average Signal Delay 					
Ratio of average transit speed to posted speed						

Source: City of Ottawa's Multi-Modal Level of Service Guidelines (2015)

None of the road segments within the Corktown Station Study Area are designated as a transit priority corridor. Accordingly, the studied streets are considered to have some isolated transit priority measures (e.g., transit signal priority, exclusive bus/streetcar lanes) or no transit priority measures at all, and for the purposes of identifying a level of service target, are considered as "Transit Priority with Isolated Measures". As per the City of Ottawa's Multi-Modal Level of Service Guidelines, the Transit Level of Service target for any road designated as "Transit Priority with Isolated Measures" is recommended to be Level of Service 'D'. With the noted minimum desirable Transit Level of Service, the intersections, individual approaches, and road segments within the Corktown Station Study Area with Transit Level of Service 'E' or worse are considered to be operating at critical levels.

Ontario Line Corktown Station Early Works - Traffic and Transportation Early Works Report

2.2 Impact Assessment

This early works impact assessment and development of mitigation measures and monitoring activities considered the following:

- Corktown Station early works components as described in **Section 1.3.1**;
- The Corktown Station Early Works Project Footprint and Corktown Station Study Area as described in Section 1.3.2;
- Corktown Station construction activities as described in **Section 1.3.3**; and,
- Local environmental conditions within the Corktown Station Study Area as described in Section 3.

Mitigation measures and monitoring activities have been recommended to mitigate the identified potential negative impacts within the Corktown Station Study Area. The results of the impact assessment are provided in **Section 4**.

A quantitative impact assessment was not completed at this stage as the detailed construction staging schemes that describe the potential modifications to the existing transportation network were not available. The quantitative impact assessment will be completed, as required, once project planning progresses to the point when this information becomes available. The quantitative impact assessment may include a larger study area. Prior to construction, Transit and Traffic Management Plan(s) shall be developed to provide more specific mitigation measures and monitoring activities. Transit and Traffic Management Plan(s) will outline the potential haul routes, staging and laydown areas, construction access, and road closures and potential detour routes.

3. Local Environmental Conditions

3.1 Transportation Network

3.1.1 Roads and Intersection Operations

3.1.1.1 Road Network

An overview of the roads located within the Corktown Station Study Area is described below. All the described roads are under the jurisdiction of the City of Toronto and are classified according to the City of Toronto's Road Classification System Update (City of Toronto, 2018). As part of the City of Toronto's Vision Zero strategy, the City has been implementing speed reductions for several streets within the City (City of Toronto, 2020). Posted speed reductions that have already been implemented on the roads located within the Corktown Station Study Area, if any, are reflected in the description below. **Figure 3-1** presents the existing road network, road classification, and the traffic control devices of the intersections within the Corktown Station Study Area. It should be noted that the section of the Gardiner Expressway between Cherry Street and Sherbourne Street was not considered part of the road network as it is not anticipated to be directly impacted by the Corktown Station early works within the Corktown Station Early Works Project Footprint or be part of the route for heavy construction vehicles.

Lake Shore Boulevard East is a major east-west arterial road with a six-lane crosssection and a posted speed of 60 kilometres per hour.

King Street East is a major east-west arterial road with a four-lane cross-section and a posted speed of 40 kilometres per hour.

Eastern Avenue is a minor east-west arterial road with a four lane-cross-section and a posted speed of 50 kilometres per hour.

Adelaide Street is a major arterial road which runs one-way in the eastbound direction with a three-lane cross-section and a posted speed of 40 kilometres per hour.

Front Street is a minor east-west arterial road with a four-lane cross-section. The section of Front Street between Parliament Street and Cherry Street has a posted speed of 30 kilometres per hour and the remaining section within the Corktown Station Early Works Study Area has a posted speed of 40 kilometres per hour.





Parliament Street is a minor north-south arterial road with a four-lane cross-section. Within the Corktown Station Early Work Study Area, Parliament Street does not have a posted speed and hence a statutory speed limit of 50 kilometres per hour is assumed.

Sherbourne Street is a minor north-south arterial road with a two-lane cross-section and a posted speed of 40 kilometres per hour.

Cherry Street is a north-south collector road with a two-lane cross-section and a posted speed of 40 kilometres per hour.

The Esplanade is an east-west collector road with a four-lane cross-section and a posted speed of 40 kilometres per hour.

Berkeley Street, Princess Street and **Trinity Street** are north-south local roads with two-lane cross-sections and posted speeds of 30 kilometres per hour.

Ontario Street is a local road which runs one-way in the southbound direction with a two-lane cross-section and a posted speed of 30 kilometres per hour.

Mill Street is an east-west local road with a two-lane cross-section and a posted speed of 30 kilometres per hour.

3.1.1.2 Intersection Operations

The analysis findings on traffic operations at the Corktown Station Study Area intersections in the Existing Conditions (2020) are summarized in **Table 3-1**. The critical movements are highlighted in grey in **Table 3-1** and are defined as those operating either with a volume to capacity ratio in excess of 0.84 or at level of service 'E' or worse. The detailed Highway Capacity Manual (Transportation Research Board, 2000) reports from Synchro pertaining to the existing conditions analysis are presented in **Appendix E**.

As shown in **Table 3-1**, all the Corktown Station Study Area intersections operate at acceptable level of service 'D' or better and within capacity in both the AM and PM peak hours except for the unsignalized intersection of King Street and Princess Street which operates at overall level of service 'F' in both peak hours. In addition, all individual movements at the studied intersections operate at acceptable levels except for the following movements:

The shared southbound through and right-turn movements at the intersection of Lower Sherbourne and Lake Shore Boulevard East which approach capacity in the PM peak hour with volume to capacity ratio of 0.97 and where motorists experience a long average delay of approximately 87 seconds;

		AM Peak Hour	AM Peak	AM Peak Hour	AM Peak Hour	PM Peak Hour	PM Peak	PM Peak Hour	PM Peak Hour
Synchro ID: Intersection	Movement	Volume to	Hour	Level of	95th Percentile	Volume to	Hour	Level of	95th Percentile
		capacity Ratio	Delay (sec)	service	Queue (metres)	capacity Ratio	Delay (sec)	service	Queue (metres)
90: Adelaide Street and Sherbourne Street (Signalized)	EBLTR	0.39	10.8	В	41.9	0.52	12.1	В	60.9
90: Adelaide Street and Sherbourne Street (Signalized)	NBTR	0.64	32.3	С	75.7	0.65	32.0	С	81.5
90: Adelaide Street and Sherbourne Street (Signalized)	SBL	0.32	27.4	С	19.3	0.57	38.0	D	#34.9
90: Adelaide Street and Sherbourne Street (Signalized)	SBT	0.37	25.3	С	47.4	0.51	27.9	С	67.8
90: Adelaide Street and Sherbourne Street (Signalized)	Overall	0.48	17.6	В	-	0.56	18.8	В	-
115: Adelaide Street and Berkeley Street (Signalized)	EBLTR	0.32	5.8	А	33.1	0.45	6.7	А	54.7
115: Adelaide Street and Berkeley Street (Signalized)	NBTR	0.23	30.7	С	22.0	0.25	30.8	С	23.8
115: Adelaide Street and Berkeley Street (Signalized)	SBLT	0.31	31.5	С	26.5	0.33	31.7	С	26.3
115: Adelaide Street and Berkeley Street (Signalized)	Overall	0.32	9.7	Α	-	0.42	9.5	Α	-
129: Adelaide Street and Parliament Street (Signalized)	EBL	0.10	4.0	A	3.9	0.09	3.4	A	3.3
129: Adelaide Street and Parliament Street (Signalized)	EBTR	0.44	7.2	A	11.3	0.74	11.4	В	121.3
129: Adelaide Street and Parliament Street (Signalized)	NBTR	0.31	24.5	С	31.4	0.42	25.7	С	44.8
129: Adelaide Street and Parliament Street (Signalized)	SBLT	0.36	25.1	С	34.8	0.38	25.3	С	37.1
129: Adelaide Street and Parliament Street (Signalized)	Overall	0.41	14.1	В	-	0.63	15.9	В	-
140: Berkeley Street and King Street East (Signalized)	EBTR	0.14	5.6	Α	9.8	0.25	6.2	Α	23.1
140: Berkeley Street and King Street East (Signalized)	WBTR	0.25	6.2	Α	22.0	0.14	5.7	Α	13.8
140: Berkeley Street and King Street East (Signalized)	NBLTR	0.26	25.7	С	17.5	0.36	26.5	С	28.5
140: Berkeley Street and King Street East (Signalized)	SBLTR	0.32	26.1	С	24.4	0.22	25.3	С	20.0
140: Berkeley Street and King Street East (Signalized)	Overall	0.27	10.2	В	-	0.28	10.4	В	-
141: King Street East and Parliament Street (Signalized)	EBTR	0.15	10.8	В	8.1	0.44	12.9	В	44.8
141: King Street East and Parliament Street (Signalized)	WBTR	0.32	15.9	В	29.6	0.23	15.1	В	21.7
141: King Street East and Parliament Street (Signalized)	NBLTR	0.33	15.0	В	28.5	0.42	16.0	В	39.1
141: King Street East and Parliament Street (Signalized)	SBLTR	0.30	14.6	В	28.7	0.41	15.8	В	40.2
141: King Street East and Parliament Street (Signalized)	Overall	0.32	14.6	В	-	0.43	14.9	В	-
150: King Street East and Sherbourne Street (Signalized)	EBTR	0.06	13.1	В	6.4	0.07	13.2	В	7.5
150: King Street East and Sherbourne Street (Signalized)	WBTR	0.19	15.5	В	22.0	0.20	12.8	В	20.2
150: King Street East and Sherbourne Street (Signalized)	NBTR	0.39	16.9	В	44.3	0.39	16.8	В	46.9
150: King Street East and Sherbourne Street (Signalized)	SBTR	0.33	16.1	В	37.4	0.46	17.9	В	55.8
150: King Street East and Sherbourne Street (Signalized)	Overall	0.29	15.9	В	-	0.33	15.9	В	-
161: Berkeley Street and Front Street (Signalized)	EBTR	0.18	8.2	A	16.3	0.50	11.1	В	57.2
161: Berkeley Street and Front Street (Signalized)	WBTR	0.55	26.2	С	111.8	0.39	14.3	В	59.2
161: Berkeley Street and Front Street (Signalized)	NBL	0.07	24.1	С	6.9	0.13	24.6	С	10.4
161: Berkeley Street and Front Street (Signalized)	NBTR	0.16	24.8	С	18.6	0.48	28.1	С	47.1
161: Berkeley Street and Front Street (Signalized)	SBLTR	0.40	27.2	С	36.8	0.64	33.0	С	#52.2
161: Berkeley Street and Front Street (Signalized)	Overall	0.51	23.0	С	-	0.54	16.5	В	-

 Table 3-1:
 Traffic Operations at the Corktown Station Study Area Intersections under Existing Conditions (2020) during the AM and PM Peak Hours
Ontario Line Corktown Station Early Works – Traffic and Transportation Early Works Report

Synchro ID: Intersection	Movement	AM Peak Hour Volume to capacity Ratio	AM Peak Hour Delay (sec)	AM Peak Hour Level of service	AM Peak Hour 95th Percentile Queue (metres)	PM Peak Hour Volume to capacity Ratio	PM Peak Hour Delay (sec)	PM Peak Hour Level of service	PM Peak Hour 95th Percentile Queue (metres)
163: King Street East and Princess Street (Unsignalized)	EBTR	0.09	0.0	A	0.0	0.19	0.0	A	0.0
163: King Street East and Princess Street (Unsignalized)	WBTR	0.14	0.0	A	0.0	0.13	0.0	A	0.0
163: King Street East and Princess Street (Unsignalized)	NBLTR	0.72	148.9	F	23.9	0.54	70.4	F	19.2
163: King Street East and Princess Street (Unsignalized)	SBLTR	0.55	81.6	F	19.2	0.22	25.2	D	6.3
163: King Street East and Princess Street (Unsignalized)	Overall	0.72	148.9	F	-	0.54	70.4	F	-
164: Parliament Street and Front Street (Signalized)	EBL	0.14	13.4	В	8.5	0.16	13.3	В	11.9
164: Parliament Street and Front Street (Signalized)	EBTR	0.18	12.6	В	21.6	0.49	15.9	В	61.1
164: Parliament Street and Front Street (Signalized)	WBL	0.35	15.6	В	31.4	0.59	26.8	С	#38.7
164: Parliament Street and Front Street (Signalized)	WBTR	0.51	16.3	В	66.4	0.34	14.1	В	40.4
164: Parliament Street and Front Street (Signalized)	NBLTR	0.50	22.8	С	43.1	0.62	25.4	С	56.0
164: Parliament Street and Front Street (Signalized)	SBLTR	0.37	20.7	С	32.8	0.39	21.0	С	35.2
164: Parliament Street and Front Street (Signalized)	Overall	0.51	17.8	B	-	0.60	19.0	В	-
166: Cherry Street and Front Street (Signalized)	EBL	0.02	21.3	С	3.1	0.05	17.9	В	6.2
166: Cherry Street and Front Street (Signalized)	EBT	0.13	22.1	С	14.6	0.34	20.2	С	41.2
166: Cherry Street and Front Street (Signalized)	EBR	0.02	21.3	С	0.0	0.06	18.0	В	4.2
166: Cherry Street and Front Street (Signalized)	WBL	0.11	22.0	С	9.3	0.20	19.1	В	16.2
166: Cherry Street and Front Street (Signalized)	WBTR	0.30	23.4	С	29.0	0.17	18.8	В	21.3
166: Cherry Street and Front Street (Signalized)	NBLT	0.19	4.4	A	3.1	0.21	14.6	В	38.5
166: Cherry Street and Front Street (Signalized)	NBR	0.31	33.2	С	6.0	0.50	39.6	D	20.7
166: Cherry Street and Front Street (Signalized)	SBTR	0.28	9.2	A	37.0	0.44	13.8	В	53.5
166: Cherry Street and Front Street (Signalized)	Overall	0.30	13.8	В	-	0.42	17.8	В	-
170: Lower Sherbourne Street and The Esplanade (Signalized)	EBLTR	0.30	20.7	С	24.9	0.50	25.2	С	37.2
170: Lower Sherbourne Street and The Esplanade (Signalized)	WBLTR	0.36	21.6	С	29.3	0.47	24.2	С	35.4
170: Lower Sherbourne Street and The Esplanade (Signalized)	NBL	0.09	7.1	A	7.1	0.11	7.4	A	7.1
170: Lower Sherbourne Street and The Esplanade (Signalized)	NBTR	0.33	8.9	A	29.6	0.29	8.5	A	29.0
170: Lower Sherbourne Street and The Esplanade (Signalized)	SBL	0.03	6.7	A	2.7	0.03	5.9	A	m2.6
170: Lower Sherbourne Street and The Esplanade (Signalized)	SBTR	0.26	8.2	A	23.2	0.42	10.4	В	57.7
170: Lower Sherbourne Street and The Esplanade (Signalized)	Overall	0.34	12.5	В	-	0.45	14.5	В	-
172: Parliament Street and Mill Street (Signalized)	WBL	0.17	18.1	В	18.1	0.17	18.2	В	19.2
172: Parliament Street and Mill Street (Signalized)	WBR	0.08	17.4	В	9.5	0.09	17.6	В	9.8
172: Parliament Street and Mill Street (Signalized)	NBTR	0.36	11.9	В	30.7	0.45	12.8	В	37.5
172: Parliament Street and Mill Street (Signalized)	SBLT	0.30	11.5	В	24.3	0.47	13.1	В	39.3
172: Parliament Street and Mill Street (Signalized)	Overall	0.27	12.7	В	-	0.33	13.7	В	-

Ontario Line Corktown Station Early Works – Traffic and Transportation Early Works Report

Synchro ID: Intersection	Movement	AM Peak Hour Volume to capacity Ratio	AM Peak Hour Delay (sec)	AM Peak Hour Level of service	AM Peak Hour 95th Percentile Queue (metres)	PM Peak Hour Volume to capacity Ratio	PM Peak Hour Delay (sec)	PM Peak Hour Level of service	PM Peak Hour 95th Percentile Queue (metres)
173: Cherry Street and Mill Street (Signalized)	EBL	0.09	17.6	В	9.8	0.13	17.9	В	12.7
173: Cherry Street and Mill Street (Signalized)	EBTR	0.14	17.9	В	16.3	0.32	19.3	В	35.0
173: Cherry Street and Mill Street (Signalized)	WBL	0.66	26.2	С	58.4	0.55	22.7	С	43.7
173: Cherry Street and Mill Street (Signalized)	WBTR	0.18	18.2	В	20.0	0.11	17.7	В	14.9
173: Cherry Street and Mill Street (Signalized)	NBL	0.11	14.9	В	11.3	0.10	14.8	В	8.2
173: Cherry Street and Mill Street (Signalized)	NBT	0.21	15.6	В	28.5	0.21	15.6	В	30.9
173: Cherry Street and Mill Street (Signalized)	SBL	0.25	37.6	D	m6.3	0.20	48.5	D	m3.2
173: Cherry Street and Mill Street (Signalized)	SBTR	0.34	20.9	С	56.2	0.57	11.1	В	45.9
173: Cherry Street and Mill Street (Signalized)	Overall	0.50	20.8	С	-	0.59	16.0	В	-
192: Lower Sherbourne Street and Lake Shore Boulevard East (Signalized)	EBLTR	0.45	37.1	D	51.5	0.48	34.8	С	63.8
192: Lower Sherbourne Street and Lake Shore Boulevard East (Signalized)	WBLTR	0.60	33.9	С	80.0	0.55	35.7	D	69.9
192: Lower Sherbourne Street and Lake Shore Boulevard East (Signalized)	NBL	0.00	36.9	D	1.7	0.03	38.1	D	2.8
192: Lower Sherbourne Street and Lake Shore Boulevard East (Signalized)	NBTR	-	-	-	-	0.01	36.9	D	3.2
192: Lower Sherbourne Street and Lake Shore Boulevard East (Signalized)	SBL	0.14	39.1	D	15.4	0.25	41.2	D	25.9
192: Lower Sherbourne Street and Lake Shore Boulevard East (Signalized)	SBTR	0.50	46.8	D	56.0	0.97	86.6	F	#145.7
192: Lower Sherbourne Street and Lake Shore Boulevard East (Signalized)	Overall	0.52	36.2	D	-	0.65	44.7	D	-
302: Adelaide Street and Ontario Street (Unsignalized)	EBTR	0.19	0.0	A	0.0	0.30	0.0	A	0.0
302: Adelaide Street and Ontario Street (Unsignalized)	SBL	0.15	12.6	В	4.1	0.22	16.3	С	6.3
302: Adelaide Street and Ontario Street (Unsignalized)	Overall	0.19	12.6	В	-	0.30	16.3	С	-
306: King Street East and Ontario Street (Unsignalized)	EBT	0.07	0.0	A	0.0	0.15	0.0	A	0.0
306: King Street East and Ontario Street (Unsignalized)	WBT	0.12	0.0	A	0.0	0.11	0.0	A	0.0
306: King Street East and Ontario Street (Unsignalized)	SBLR	0.13	26.5	D	3.5	0.22	30.0	D	6.2
306: King Street East and Ontario Street (Unsignalized)	Overall	0.13	26.5	D	-	0.22	30.0	D	-

Notes: #: 95th percentile cycle volume exceeds capacity, queue may be longer m: Volume for the 95th percentile queue is metered by an upstream signal The critical movements are highlighted in grey and are defined as those operating either with a volume to capacity ratio in excess of 0.84 or at level of service 'E' or 'F'

- The shared northbound left, through, and right-turn movements at the unsignalized intersection of King Street and Princess Street which operate at level of service 'F' during both peak hours; and,
- The shared southbound left, through, and right-turn movements at the unsignalized intersection of King Street and Princess Street which operate at level of service 'F' during the AM peak hour.

3.1.2 Pedestrian Network and Operations

3.1.2.1 Pedestrian Network

Within the Corktown Station Study Area, pedestrians are accommodated through sidewalks that are generally present on either side of the roads. Immediately south of the Corktown Station Early Works Project Footprint, there is a recreational trail which provides an active transportation connection between The Esplanade and Parliament Street and Mill Street. Active transportation users can also be accommodated through the Lower Don Trail and the Martin Goodman Trail, located north and south of the Lake Shore Boulevard, respectively. In addition, painted crosswalks are provided across all legs of the signalized intersections located within the Corktown Station Study Area. Pedestrian push buttons are provided at the majority of the legs of the signalized intersections within the Corktown Station Study Area.

Figure 3-2 illustrates the location and type of pedestrian facilities provided within the Corktown Station Study Area.





3.1.2.2 Pedestrian Operations

The findings of the Pedestrian Level of Service analysis at the signalized intersections and road segments within the Corktown Station Study Area in the Existing Conditions (2020) are summarized in **Table 3-2** and **Table 3-3**, respectively, and illustrated in **Figure 3-3**. The intersections and road segments with Pedestrian Level of Service 'D' or worse are identified as those not meeting the Pedestrian Level of Service target and thus, operating at "critical" levels. These critical road elements are highlighted in grey in **Table 3-2** and **Table 3-3**. The detailed Pedestrian Level of Service analysis results at the individual intersection approach level under the Existing Conditions (2020) are presented in **Appendix F**.

As shown in **Table 3-2**, pedestrians experience critical Pedestrian Level of Service 'D' or worse at all the Corktown Station Study Area intersections except at the intersection of King Street and Sherbourne Street and the intersection of Parliament Street and Mill Street where pedestrians experience acceptable Pedestrian Level of Service 'C'. This is mainly attributed to the long average delays/waiting times that pedestrians experience before they receive Walk Time and start crossing the arterial roads within the Corktown Station Study Area such as Adelaide Street, Sherbourne Street, King Street East, Front Street, and Lake Shore Boulevard. In addition, as they start crossing at the signalized intersections, they experience significant "exposure to traffic" due to the generally wide crossing distances (i.e., number of lanes to be crossed, the potential conflicts with left-turning and right-turning vehicular traffic, and the absence of right-turn-on-red restrictions or pedestrian signal leading intervals at the majority of the intersections).

Signalized Intersections	Pedestrian Level of Service
Adelaide Street and Sherbourne Street	D
Adelaide Street and Berkeley Street	D
Adelaide Street and Parliament Street	E
King Street East and Sherbourne Street	С
King Street East and Berkeley Street	D
King Street East and Parliament Street	D
Front Street and Berkeley Street	D
Front Street and Parliament Street	E
Front Street and Cherry Street	F
The Esplanade and Lower Sherbourne Street	E
Mill Street and Parliament Street	С
Mill Street and Cherry Street	F
Lake Shore Boulevard East and Lower Sherbourne Street	F

Table 3-2:Pedestrian Level of Service at the Corktown Station Study AreaIntersections under Existing Conditions (2020)

Note: The intersections that operate below the Pedestrian Level of Service target 'C' are highlighted in grey.





As shown in **Table 3-3**, the pedestrian facilities along The Esplanade, Mill Street, Lake Shore Boulevard, Sherbourne Street, and Cherry Street operate at acceptable Pedestrian Level of Service 'C' or better. This is mainly attributed to the wide sidewalks along the noted roads and the presence of a multi-use pathway along Lake Shore Boulevard. The remaining road segments have narrow sidewalk widths and thus operate at critical Pedestrian Level of Service 'E'.

Table 3-3:Pedestrian Level of Service at the Corktown Station Study AreaRoad Segments under Existing Conditions (2020)

Road Segment	Pedestrian Level of Service
Adelaide Street between Sherbourne Street and Parliament Street	E
King Street East between Sherbourne Street and Sumach Street	E
Front Street between Sherbourne Street and Parliament Street	E
Front Street between Parliament Street and Cherry Street	D
The Esplanade between Sherbourne Street and Berkeley Street	С
Mill Street between Parliament Street and Cherry Street	A
Lake Shore Boulevard between Sherbourne Street and Cherry Street	A
Sherbourne Street between Lake Shore Boulevard and Adelaide Street	С
Berkeley Street between The Esplanade and Adelaide Street	С
Parliament Street between Lake Shore Boulevard and Adelaide Street	E
Cherry Street between Lake Shore Boulevard and Adelaide Street	А

Note: The road segments that operate below the Pedestrian Level of Service target 'C' are highlighted in grey.

3.1.3 Cycling Network and Operations

3.1.3.1 Cycling Network

Cyclists are accommodated within the Corktown Station Study Area through cycle tracks and on-street bike lanes. The cycle tracks along the south side of Adelaide Street provide cyclists with one-way movement in the eastbound direction. Cyclists travelling in the northbound and southbound direction are accommodated through the directional cycle tracks along either side of Sherbourne Street and the on-street bike lanes along either side of Cherry Street.

Figure 3-4 illustrates the location and type of cycling facilities provided within the Corktown Station Study Area.





3.1.3.2 Cycling Operations

The findings of the Bicycle Level of Service analysis at the Corktown Station Study Area signalized intersections and road segments under Existing Conditions (2020) are summarized in **Table 3-4** and **Table 3-5**, respectively, and illustrated in **Figure 3-5**. The intersections and road segments with Bicycle Level of Service 'D' or worse are identified as those not meeting the Bicycle Level of Service target and thus, operating at "critical" levels. These critical road elements are highlighted in grey in **Table 3-4** and **Table 3-5**. The detailed Bicycle Level of Service analysis results for the Existing Conditions (2020) are presented in **Appendix F**.

As shown in **Table 3-4**, the majority of the Corktown Station Study Area signalized intersections operate at acceptable Bicycle Level of Service 'C' or better overall. However, cyclists experience critical Bicycle Level of Service 'D' at the following signalized Corktown Station Study Area intersections:

- Front Street and Parliament Street;
- Mill Street and Cherry Street; and
- Lake Shore Boulevard East and Lower Sherbourne Street.

Table 3-4: Bicycle Level of Service at the Corktown Station Study Area Intersections under Existing Conditions (2020)

Signalized Intersections	Bicycle Level of Service
Adelaide Street and Sherbourne Street	В
Adelaide Street and Berkeley Street	В
Adelaide Street and Parliament Street	В
King Street East and Sherbourne Street	В
King Street East and Berkeley Street	В
King Street East and Parliament Street	В
Front Street and Berkeley Street	В
Front Street and Parliament Street	D
Front Street and Cherry Street	В
The Esplanade and Lower Sherbourne Street	В
Mill Street and Parliament Street	В
Mill Street and Cherry Street	D
Lake Shore Boulevard East and Lower Sherbourne Street	D

Note: The intersections that operate below the Cyclist Level of Service target 'C' are highlighted in grey.





This is mainly attributed to lack of designated cycling facilities on some of the individual approaches to the noted intersections (e.g., bicycle left-turn box, pocket bike lanes, cross-rides, etc.) which requires a left-turning cyclist in mixed traffic to either dismount their bicycle and walk across two perpendicular intersection legs as a pedestrian or weave through and cross general-purpose traffic lanes(s) before making a left turn.

As shown in **Table 3-5**, cyclists accommodated through the cycling facilities along Adelaide Street, Lake Shore Boulevard, Sherbourne Street and Cherry Street and through the signed bike routes along The Esplanade and Mill Street experience excellent Bicycle Level of Service 'A' or 'B'. Along King Street East, Front Street, and Parliament Street, cyclists travel with a total of four to five mixed traffic lanes and hence experience critical Bicycle Level of Service 'D' along all the studied road segments of the noted roads.

Table 3-5: Bicycle Level of Service at the Corktown Station Study Area RoadSegments under Existing Conditions (2020)

Road Segment	Bicycle Level of Service
Adelaide Street between Sherbourne Street and Parliament Street	A
King Street East between Sherbourne Street and Sumach Street	D
Front Street between Sherbourne Street and Cherry Street	D
The Esplanade between Sherbourne Street and Berkeley Street	В
Mill Street between Parliament Street and Cherry Street	В
Lake Shore Boulevard between Sherbourne Street and Cherry Street	A
Sherbourne Street between Lake Shore Boulevard and Adelaide Street	A
Berkeley Street between The Esplanade and Adelaide Street	В
Parliament Street between Lake Shore Boulevard and Adelaide Street	D
Cherry Street between Lake Shore Boulevard and Adelaide Street	A

Note: The road segments that operate below the Cyclist Level of Service target 'C' are highlighted in grey.

3.2 Transit Network and Operations

3.2.1 Transit Network

The existing transit routes that operate within the Corktown Station Study Area are summarized in **Table 3-6** and illustrated in **Figure 3-6**. All transit routes described in **Table 3-6** are operated by the Toronto Transit Commission.

The service headways provided in **Table 3-6** represent the hours of peak transit service within the AM peak period (6:00 AM to 9:00 AM) and PM peak period (4:00 AM to 7:00 PM). Off-peak transit services are generally less frequent than AM and PM peak period services; therefore, only AM and PM peak period service headways are provided in **Table 3-6** to represent the maximum transit service that could be impacted by construction to form the transit impact assessment.

Table 3-6: Existing Transit Routes within the Corktown Station Study Area

Route Number – Name and Description	Service Headway during Peak Periods
#65 – Parliament bus route operates between Castle Frank Station on the Bloor-Danforth Subway and the area of The Esplanade and Princess Street, generally in a north-south direction. A single service is operated: the 65 (Castle Frank Station-Esplanade) branch which operates at all times, seven days a week. The bus service operates mainly along Parliament Street. The closest northbound stops to the Corktown Station Early Works Project Footprint are located nearside at the intersection of Front Street and Berkeley Street and the intersection of Parliament Street and King Street East. The closest southbound stops to the Corktown Station Early Works Project Footprint are located nearside at the intersection of Parliament Street and the intersection of Front Street and Berkeley Street.	13-minute in the AM peak hour 11-minute in the PM peak hour
#72 – Pape bus route operates between Pape Station on Line 2 Bloor-Danforth and Commissioners Street, and between Pape Station and Union Station on Line 1, generally in a north-south direction. Three services are operated: The 72A (Pape Station-Eastern) branch which operates at all times except the morning and afternoon peak periods from Monday to Friday. The 72B (Pape Station - Union Station via Queens Quay) branch which operates all day, every day. The 72C (Pape Station - Commissioners) branch which operates during the morning and afternoon peak periods from Monday to Friday. Service between Pape Station and Eastern Avenue is part of the 10 Minute Network and operates at 10-minute or better headways, all day, every day. Within the Corktown Station Study Area, the bus service has designated northbound and southbound stops at the intersection of Lake Shore Boulevard and Parliament Street and the intersection of Lake Shore Boulevard and Parliament Street and the intersection of Lake Shore Boulevard.	6-minute in the AM peak hour 7-minute in the PM peak hour
#75 – Sherbourne bus route operates between the area of Queens Quay East and Lower Jarvis Street, Sherbourne Station on the Bloor-Danforth Subway, and the area of South Drive and Glen Road, generally in a north-south direction. One single service is operated: the 75 (Queens Quay-South Drive) branch which operates at all times, seven days a week. At certain times of the week these buses alternate trips with the 82 Rosedale bus route. These trips are identified as the 75A (Queens Quay-South Drive & Summerhill) branch on schedules only. There is no change to the service or routing on the 75 Sherbourne route. The bus service mainly operates along Sherbourne Street. The closest northbound and southbound stops to the Corktown Station Early Work Project Footprint are located nearside at the intersection of Sherbourne Street and Front Street and the intersection of Sherbourne Street and King Street East.	5-minute in the AM peak hour 8-minute in the PM peak hour

Ontario Line Corktown Station Early Works – Traffic and Transportation Early Works Report

Route Number – Name and Description	Service Headway during Peak Periods
#121 – Fort York-Esplanade bus route operates between Exhibition Place, the Fort York neighbourhood and the Distillery neighbourhood, and, in the summer, between Ontario Place, the Fork York neighbourhood and Clarke Beach Park (Cherry Beach), generally in an east-west direction. All buses serve Union Station on Line 1, and the Fort York, City Place, Esplanade, and Distillery neighbourhoods. Two services are operated: the 121A (Exhibition (Princes' Gates)- Distillery via Union Station) branch operates all day, every day outside the summer months. The 121D (Ontario Place-Cherry Beach via Union Station and Distillery) seasonal branch operates from mid-May to mid-October. The bus service mainly operates along Cherry Street, Front Street, and The Esplanade. The closest eastbound stops to the Corktown Station Early Work Project Footprint are located nearside at the intersection of Front Street and Berkeley Street and the intersection of Front Street and Parliament Street. The closest westbound stops to the Corktown Station Early Work Project Footprint are located nearside at the intersection of Parliament Street and Mill Street and far-side at the intersection of Front Street and Berkeley Street. at The Esplanade intersections with Lower Jarvis Street, and Lower Sherbourne Street.	13-minute in the AM peak hour 18-minute in the PM peak hour
#142 – Downtown / Avenue Road Express bus route operates between the intersection of Berkeley Street and King Street and Bombay loop located northeast of the Highway 401 and Avenue Road interchange, generally in a north-south direction. The bus service operates mainly along Avenue Road, University Avenue, and King Street. The closest northbound and southbound stops to the Corktown Station Early Work Project Footprint are located at the intersection of King Street East and Berkeley Street.	30-minute in both the AM and PM peak hours
#143 – Downtown / Beach Express bus route operates between the intersection of Charlotte Street and King Street and the Neville Park Loop, generally in an east-west direction. The bus service mainly operates along King Street, Eastern Avenue, and Queen Street East. The closest eastbound and westbound stops to the Corktown Station Early Work Project Footprint are located at the intersection of King Street East and Parliament Street.	15-minute in the AM peak hour 25-minute in the PM peak hour
#144 – Downtown / Don Valley Express bus route operates between the intersection of Charlotte Street and King Street and the intersection of Victoria Park Avenue and Parkwoods Village Drive and Concorde Place, generally in a north-south direction. Two services are operated: the 144A (Underhill-Downtown Express) and the 144B (Wynford-Downtown Express) . The bus service mainly operates along King Street, Adelaide Street East, Don Valley Parkway, and Don Mills. The closest northbound and southbound stops to the Corktown Station Early Work Project Footprint are located at the intersection of King Street East and Parliament Street.	7-minute in the AM peak hour 20-minute in the PM peak hour

Ontario Line Corktown Station Early Works – Traffic and Transportation Early Works Report

Route Number – Name and Description	Service Headway during Peak Periods
#145 – Downtown / Humber Bay Express bus route operates between the intersection of Berkeley Street and King Street and the intersection of Lake Shore Boulevard and Royal York Road or the intersection of Lake Shore Boulevard and Kipling Avenue, generally in an east-west direction. Two services are operated: the 145A (Royal York-Downtown Express) and the 145B (Kipling-Downtown Express) . The bus service mainly operates along Lake Shore Boulevard, Bathurst Street, and King Street. The closest eastbound and westbound stops to the Corktown Station Early Work Project Footprint are located at King Street East and Berkeley Street.	20-minute in both the AM and PM peak hours
#304 – King Blue Night streetcar route operates between Dundas West Station and Broadview Station on Line 2 Bloor-Danforth via King Street, generally in an east-west direction. One single service is operated: the 304 (Dundas West Station-Broadview Station) branch which operates during the overnight period, seven days a week. The streetcar route operates mainly along King Street. The closest eastbound and westbound stops to the Corktown Station Early Work Project Footprint are located at nearside at the intersection of King Street East and Parliament Street.	15-minute
#365 – Parliament Blue Night bus route operates between Castle Frank Station on Line 2 Bloor- Danforth and The Esplanade, generally in a north-south direction. One single service is operated: the 365 (Castle Frank Station-Esplanade) branch which operates during the overnight period, seven days a week. The bus service operates mainly along Parliament Street. The closest northbound stops to the Corktown Station Early Works Project Footprint are located nearside at the intersection of Front Street and Berkeley Street and the intersection of Parliament Street and King Street East. The closest southbound stops to the Corktown Station Early Works Project Footprint are located nearside at the intersection of Parliament Street and the intersection of Front Street and Berkeley Street.	30-minute
#503 – Kingston Road streetcar route operates between the area of Kingston Road and Victoria Park Avenue, and the area of King Street West and York Street, generally in an east-west direction. It serves the King Station on Line 1 Yonge-University, and it also passes within one block of the Union and St. Andrew Stations on Line 1. One single service is operated: the 503 (Victoria Park- York) , which operates during the peak periods, from Monday to Friday only. The streetcar route operates mainly along Kingston Road, Queen Street East, and King Street East. The closest eastbound and westbound stops to the Corktown Station Early Work Project Footprint are located at the intersection of King Street East and Parliament Street.	9-minute in the AM peak hour 10-minute in the PM peak hour

Ontario Line Corktown Station Early Works – Traffic and Transportation Early Works Report

Route Number – Name and Description	Service Headway during Peak Periods
#504 – King streetcar route operates between Dundas Station and Broadview Station on Line 2 Bloor-Danforth, generally in an east-west direction. It also serves the St. Andrew and King Station on Line 1 Yonge-University. Two services are operated: the 504A (Dundas West Station- Distillery) and the 504B (Broadview Station-Dufferin Gate) , both branches operating at all times, seven days a week. The route is part of the 10-Minute Network and operates at 10-minute or better headways, all day, every day. The streetcar route operates mainly along King Street. The closest eastbound and westbound stops to the Corktown Station Early Work Project Footprint are located at nearside at the intersection of King Street East and Parliament Street.	3-minute in both the AM and PM peak hours

Sources: Toronto Transit Commission, 2019. Accessed in March 2021.





3.2.2 Transit Operations

The findings of the Transit Level of Service analysis at the Corktown Station Study Area signalized intersections, and road segments under Existing Conditions (2020) are summarized in **Table 3-7** and **Table 3-8**, respectively, and illustrated in **Figure 3-7**. The intersections and road segments with Transit Level of Service 'E' or worse are identified as those not meeting the Transit Level of Service target and thus, operating at "critical" levels. These critical road elements are highlighted in grey in **Table 3-7** and **Table 3-8**. The detailed Transit Level of Service analysis results are presented in **Appendix F**.

As shown in **Table 3-7**, all the signalized intersections within the Corktown Station Study Area operate at acceptable Transit Level of Service 'D' or 'C', except for the intersection of Adelaide Street and Sherbourne Street, the intersection of Front Street and Berkeley Street, and the intersection of Lake Shore Boulevard and Lower Sherbourne Street which operate at critical Transit Level of Service 'E' or 'F'. This is mainly attributed to the long average delays that buses along route #65 – Parliament, #75 – Sherbourne, and #145 – Downtown/Humber Bay Express experience when going through the noted intersections in both the southbound and northbound directions.

Signalized Intersections	Transit Level of Service
Adelaide Street and Sherbourne Street	E
Adelaide Street and Berkeley Street	-
Adelaide Street and Parliament Street	D
King Street East and Sherbourne Street	С
King Street East and Berkeley Street	D
King Street East and Parliament Street	С
Front Street and Berkeley Street	E
Front Street and Parliament Street	D
Front Street and Cherry Street	D
The Esplanade and Lower Sherbourne Street	D
Mill Street and Parliament Street	С
Mill Street and Cherry Street	С
Lake Shore Boulevard East and Lower Sherbourne Street	F

Table 3-7:Transit Level of Service at the Corktown Station Study AreaIntersections under Existing Conditions (2020)

Note: The intersections that operate below the Transit Level of Service target 'D' are highlighted in grey.

As shown in **Table 3-8**, all transit vehicles travelling along the road segments within the Corktown Station Study Area experience an acceptable Transit Level of Service 'D' or better, meeting the minimum desirable Transit Level of Service for the studied sections. Transit vehicles travelling along the dedicated streetcar facility along Cherry Street experience excellent Transit Level of Service 'A'.

Table 3-8:Transit Level of Service at the Corktown Station Study AreaRoad Segments under Existing Conditions (2020)

Road Segment	Transit Level of Service
Adelaide Street between Sherbourne Street and Parliament Street	D
King Street East between Sherbourne Street and Sumach Street	D
Front Street between Sherbourne Street and Cherry Street	D
The Esplanade between Sherbourne Street and Berkeley Street	D
Mill Street between Parliament Street and Cherry Street	D
Lake Shore Boulevard between Sherbourne Street and Cherry Street	D
Berkeley Street between The Esplanade and Adelaide Street	D
Sherbourne Street between Lake Shore Boulevard and Adelaide Street	D
Parliament Street between Lake Shore Boulevard and Adelaide Street	D
Cherry Street between Lake Shore Boulevard and Adelaide Street	А





4. Potential Impacts, Mitigation Measures and Monitoring Activities

In accordance with Sections 8(2)6, 8(2)7 and 8(2)8 of Ontario Regulation 341/20: Ontario Line Project, this section describes the potential impacts, mitigation measures, and monitoring activities to verify the effectiveness of mitigation measures associated with the Corktown Station early works.

Potential impacts to traffic and transportation operations as a result of the Corktown Station early works have been assessed and are presented in **Table 4-1**, in addition to mitigation measures and monitoring activities.

The Corktown Station early works are not anticipated to result in any lane restrictions or full closures of nearby roads. It is expected that heavy construction vehicles will be travelling within the Corktown Station Study Area, considering the extent of demolition and excavation and grading activities required. Depending on the available haul routes, the addition of these heavy vehicles to the road network will impact traffic operations resulting in increased vehicular delays and queue lengths, especially at intersections where construction traffic is required to make left-turning movements. Heavy construction vehicles are expected to be accommodated at construction laydown areas within the Corktown Station Early Works Project Footprint, and therefore it is not anticipated that these vehicles will occupy curb lanes of roads within the Corktown Station Study Area.

Other planned projects (e.g., capital projects, local developments, etc.) nearby with construction timelines that potentially overlap with the Corktown Station early works may result in impacts to the transportation network and its road users within the Corktown Station Study Area.

The Corktown Station early works are not anticipated to impact any sidewalks within the Corktown Station Study Area. Increased heavy vehicle traffic along major roads within the Corktown Station Study Area could increase pedestrians' exposure to vehicular traffic.

The cycling facilities within the Corktown Station Study Area are not anticipated to be impacted by the Corktown Station early works. The existing bicycle parking racks and the Bike Share Toronto stations on The Esplanade, King Street East, and Mill Street are anticipated to remain at their current location. Increased heavy vehicle traffic along major roads within the Corktown Station Study Area could increase cyclists' exposure to vehicular traffic. The Corktown Station early works does not include any works on the rail tracks and hence the existing commuter and freight rail services are not anticipated to be impacted.

The Corktown Station early works are not anticipated to impact operations of any of the existing surface transit routes (i.e., existing bus and streetcar routes) within the Corktown Station Study Area.

Table 4-1 provides mitigation measures and monitoring activities to be implemented for potential impacts that may result from the Corktown Station early works.

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
Transportation Network – Roads	 Heavy construction vehicle traffic may impact traffic operations resulting in increased vehicular delays and queue lengths, especially at intersections where construction traffic is required to make left-turning movements. Potential overlapping construction timelines with other planned projects (e.g., local developments) nearby may result in impacts to the transportation network and its road users. Closure of the Green P municipal parking lots located within the Corktown Station Early Works Project Footprint. 	 A quantitative traffic impact assessment will be completed, if required, as project planning progresses to consider vehicular traffic impacts as a result of the Corktown Station early works. Develop and implement a Transit and Traffic Management Plan(s), which could include temporary changes to intersection lane configurations, traffic signal timing optimization, modifications to existing signal timing plans, etc. The Transit and Traffic Management Plan(s) will also address specific emergency services requirements in consultation with the City of Toronto. Traffic signal timing optimization may be assessed/implemented to increase capacity of affected intersections and to aid in the movement of traffic. Traffic signal timing adjustments would require coordination between Metrolinx and City of Toronto, and will be undertaken if required, to determine appropriate changes to traffic signal timings. Consider scheduling construction activities during off-peak periods and weekends to minimize disruptions to road users during the critical peak periods. Co-ordinate with the City of Toronto regarding other ongoing construction projects when scheduling the early works activities to maintain the mobility of all road users (i.e., avoid closure of parallel corridors). Consult with the City of Toronto and the Toronto Parking Authority with regards to the Green P municipal parking lot closure. 	The effectiveness of the Transit and Traffic Management Plan(s) will be monitored throughout the construction period and adjustments will be made based on actual field observations, as needed.
Transportation Network – Active Transportation	 Traffic congestion along Front Street and other adjacent roads, as a result of the increase in heavy vehicle traffic, could increase pedestrians' and cyclists' exposure to traffic. Potential realignment / closure of sidewalks along Front Street, Berkeley Street, King Street, and Parliament Street may increase walking distances and compromise pedestrians' convenience. 	 Co-ordinate with the City of Toronto to minimize the interference with pedestrians and cyclists. This may include fencing, hoarding (minimum 2 meters high, solid, and secured), shared-lane markings, signals, wayfinding signs, and lighting as required to provide pedestrians and cyclists with safe, accessible, and continuous routes. Include safety precautions for nearby schools (e.g., having school crossing guards at nearby intersections) in the Transit and Traffic Management Plan(s) in consultation with the City of Toronto, and local school board(s). Implement flagging where construction vehicles are present to ensure construction vehicle operators are aware of pedestrian and vehicular traffic within the construction area. If required, ensure any modifications to pedestrian crossings distances at signalized intersections are reflected in revised pedestrian clearance timings. Any temporary pedestrian crossing facilities including temporary or relocated Toronto Transit Commission transit stops will be designed to meet Toronto Transit Commission accessibility standards. Mitigation measures will be considered (e.g., maintaining a minimum sidewalk width) in order to maintain pre-construction pedestrian levels of service. Consult with the City of Toronto to minimize potential impacts during special events (e.g. Distillery District) should closures or long-term impacts be required. 	The effectiveness of the Transit and Traffic Management Plan(s) will be monitored throughout the construction period and adjustments will be made based on actual field observations, as needed.
Transit Network	Impacts to surface transit routes (i.e., bus and streetcar) within the Corktown Station Study Area are not anticipated.	No mitigation measures are recommended.	 Transit services will be monitored through actual field observations throughout the construction period and mitigation measures will be considered, as needed.

Table 4-1: Potential Impacts, Mitigation Measures and Monitoring Activities for the Corktown Station Early Works

5. Permits and Approvals

No federal or provincial permits and approvals related to traffic and transportation are required for the Corktown Station early works.

Metrolinx will co-ordinate with the City of Toronto and Toronto Parking Authority for transportation-related permits and approvals (e.g., street occupation permit) prior to construction, as required.

Ontario Line Corktown Station Early Works - Traffic and Transportation Early Works Report

6. References

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City of Toronto, 2020:

Vision Zero Mapping Tool. Available: www.toronto.ca/services-payments/streetsparking-transportation/road-safety/vision-zero/safety-measures-and-mapping

Toronto Transit Commission, 2019:

Toronto Transit Commission Schedules and Maps. Available: https://www.ttc.ca/PDF/Transit_Planning/Service%20Summary_2019-05-12.pdf

Transportation Research Board, 2000:

Highway Capacity Manual 2000. Available: https://trid.trb.org/view/475202



Appendix A

Turning Movement Counts



Turning Movement Count Summary Report

			(DV 24	4)											Su	rvey Date	e:	2019-A	vpr-11		(Thurso	day)			
ADELAIDE			(ГА 21	-+)											Su	rvey Typ	e:	Routine	e Hours						
Time	Vehicle		NO	RTHBO	UND			EA	STBO				sou	тнво	UND			w	ESTBO	UND					
Period	Туре	Exits	Left	Thru	Right	Total	Exits	Left	Thru	Right	Total	Exits	Left	Thru	Right	Total	Exits	Left	Thru	Right	Total		Peds	Bike	Other
	CAR	304	0	224	21	245	722	80	673	78	831	331	28	253	0	281	0	0	0	0	0	Ν	34	+ 11	0
08:30-09:30	TRK	50	0	42	3	45	46	8	41	9	58	37	2	28	0	30	0	0	0	0	0	S	13	, 9	0
AM PEAK	BUS	6	0	6	0	6	9	0	9	0	9	6	0	6	0	6	0	0	0	0	0	E	69	17	0
																			·				66	0	0
	TOTAL:	360	0	272	24	296	777	88	723	87	898	374	30	287	0	317	0	0	0	0	0				
16:30-17:30	CAR	436	0	361	31	392	1,217	75	1,156	128	1,359	401	30	273	0	303	0	0	0	0	0	Ν	23	7	0
	TRK	19	0	15	2	17	47	4	44	14	62	32	1	18	0	19	0	0	0	0	0	S	11	5	0
PM PEAK	BUS	8	0	1	0	1	6	1	6	0	1	7	0	1	0	1	0	0	0	0	0	E W	78 89) 50	0
	TOTAL:	463	0	383	33	416	1.270	80	1.206	142	1.428	440	31	298		329	0	0		0	0				
	CAR	303	0	241	30	271	728	62	665	76	803	259	33	183	0	216	0	0	0	0	0	N	12	. 6	0
OFF HR	TRK	47	0	40	3	43	83	7	72	14	93	46	8	32	0	40	0	0	0	0	0	s	15	; 2	0
AVG	BUS	7	0	7	0	7	1	0	1	0	1	5	0	5	0	5	0	0	0	0	0	E	42	2 6	0
																						w	31	1	0
	TOTAL:	357	0	288	33	321	812	69	738	90	897	310	41	220	0	261	0	0	0	0	0				
07.00 00.00	CAR	570	0	422	37	459	1,382	148	1,292	162	1,602	635	53	473	0	526	0	0	0	0	0	Ν	56	; 18	0
07:30-09:30	TRK	108	0	89	4	93	89	19	81	18	118	66	4	48	0	52	0	0	0	0	0	S	27	['] 18	0
2 HR AM	BUS	15	0	14	0	14	17	1	17	1	19	12	0	11	0	11	0	0	0	0	0	Е	129) 22	0
																						W	99	0	0
	TOTAL:	693	0	525	41	566	1,488	168	1,390	181	1,739	713	57	532	0	589	0	0	0	0	0				
	CAR	872	0	719	55	774	2,304	153	2,193	278	2,624	775	56	497	0	553	0	0	0	0	0	Ν	60	23	0
16:00-18:00	TRK	45	0	35	5	40	114	10	103	24	137	65	6	41	0	47	0	0	0	0	0	S	31	9	0
2 HR PM	BUS	15	0	14	0	14	8	1	8	0	9	13	0	13	0	13	0	0	0	0	0	Е	156	; 89	0
																						W	142	. 2	0
	TOTAL:	932	0	768	60	828	2,426	164	2,304	302	2,770	853	62	551	0	613	0	0	0	0	0				
07.30 49.00	CAR	2,653	0	2,103	210	2,313	6,597	550	6,145	745	7,440	2,446	242	1,701	0	1,943	0	0	0	0	0	Ν	165	66	0
07.30-18.00	TRK	340	0	285	20	305	532	55	471	96	622	311	41	215	0	256	0	0	0	0	0	S	119	35	0
8 HR SUM	BUS	57	0	55	0	55	27	2	27	2	31	46	0	44	0	44	0	0	0	0	0	Е	451	133	0
		·																				W	366	5	0
	TOTAL:	3,050	0	2,443	230	2,673	7,156	607	6,643	843	8,093	2,803	283	1,960	0	2,243	0	0	0	0	0				

Total 8 Hour Vehicle Volume: 13,009

Total 8 Hour Bicycle Volume: 239

Total 8 Hour Intersection Volume: 13,248

Comment:



Turning Movement Count Summary Report

	ST AT SHERE		T (PX 2	:55)											Su	rvey Date	e:	2019-A	pr-11		(Thurs	day)			
															Su	rvey Typ	e:	Routine	e Hours	6					
Time	Vehicle		NO	RTHBO	UND			EA	STBO	UND			SOL	тнво	UND			W	ЕЅТВО	UND					
Period	Туре	Exits	Left	Thru	Right	Total	Exits	Left	Thru	Right	Total	Exits	Left	Thru	Right	Total	Exits	Left	Thru	Right	Tota		Peds	Bike	Other
00.00 00.00	CAR	298	0	224	38	262	899	74	807	38	919	213	54	175	0	229	0	0	0	0	0	Ν	218	24	0
08:30-09:30	TRK	34	0	28	5	33	51	6	43	5	54	19	3	14	0	17	0	0	0	0	0	S	129	57	0
AM PEAK	BUS	12	0	12	0	12	10	0	10	0	10	12	0	12	0	12	0	0	0	0	0	E	336	49	0
		244				207																			
		344	0	204	43	307	300		000	43	303	244	57	201		230	0	0	0	0	0		0.50		
17:00-18:00	CAR	349	0	292	39	331	1,331	57	1,197	70	1,324	358	95	288	0	383	0	0	0	0	0	N	253	54	0
	IRK	/	0	6	5	11	55	1	47	6	54	13	3	/ 0	0	10	0	0	0	0	0	5	146	160	0
	B03	9	0	9	U	9	4	0	4	U	4	0	0	0	0	0	0	0	0	U	0	W	176	2	0
	TOTAL:	365	0	307	44	351	1,390	58	1,248	76	1,382	379	98	303	 0	401	0	0	 0	0	0				
	CAR	285	0	206	37	243	841	79	747	63	889	252	57	189	0	246	0	0	0	0	0	N	124	13	0
OFF HR	TRK	26	0	20	6	26	95	6	81	10	97	35	8	25	0	33	0	0	0	0	0	s	81	12	0
AVG	BUS	10	0	10	0	10	1	0	1	0	1	9	0	9	0	9	0	0	0	0	0	Е	180	15	0
																						w	104	1	0
	TOTAL:	321	0	236	43	279	937	85	829	73	987	296	65	223	0	288	0	0	0	0	0				
07.20 00.20	CAR	567	0	422	68	490	1,710	145	1,530	75	1,750	400	112	325	0	437	0	0	0	0	0	Ν	386	54	0
07:30-09:30	TRK	69	0	56	8	64	112	13	100	10	123	40	4	30	0	34	0	0	0	0	0	S	198	127	0
2 HR AM	BUS	25	0	25	0	25	20	0	20	0	20	24	0	24	0	24	0	0	0	0	0	Е	554	69	0
																						W	270	7	0
	TOTAL:	661	0	503	76	579	1,842	158	1,650	85	1,893	464	116	379	0	495	0	0	0	0	0				
	CAR	662	0	558	85	643	2,584	104	2,324	119	2,547	665	175	546	0	721	0	0	0	0	0	Ν	393	98	0
16:00-18:00	TRK	25	0	23	7	30	132	2	118	10	130	31	7	21	0	28	0	0	0	0	0	S	225	49	0
2 HR PM	BUS	18	0	18	1	19	9	0	8	1	9	18	0	17	0	17	0	0	0	0	0	Е	626	250	0
																						W	298	3	0
	TOTAL:	705	0	599	93	692	2,725	106	2,450	130	2,686	714	182	584	0	766	0	0	0	0	0				
07:30-18:00	CAR	2,369	0	1,803	299	2,102	7,656	566	6,842	446	7,854	2,073	515	1,627	0	2,142	0	0	0	0	0	N	1,275	202	0
07.00-10.00	TRK	195	0	158	37	195	622	37	543	59	639	211	42	152	0	194	0	0	0	0	0	S	745	222	0
8 HR SUM	BUS	81	0	81	1	82	32	0	31	2	33	80	0	78	0	78	0	0	0	0	0	E	1,898	378	0
													·										982	14	0
	TOTAL:	2,645	0	2,042	337	2,379	8,310	603	7,416	507	8,526	2,364	557	1,857	0	2,414	0	0	0	0	0				

Total 8 Hour Vehicle Volume: 13,319

Total 8 Hour Bicycle Volume: 816

Total 8 Hour Intersection Volume: 14,135

Comment:



Turning Movement Count Summary Report

	ST AT BERKE	LEY ST (P	X 1964)											Su	rvey Date	ə:	2019-A	pr-11		(Thurs	day)			
															Su	rvey Typ	e:	Routine	e Hours	;					
Time	Vehicle		NO	RTHBO	UND			EA	STBO	UND			SOU	тнво	UND			w	ЕЅТВО	UND					
Period	Туре	Exits	Left	Thru	Right	Total	Exits	Left	Thru	Right	Total	Exits	Left	Thru	Right	Total	Exits	Left	Thru	Right	Tota	1	Peds	Bike	Other
00.00 00.00	CAR	132	0	58	27	85	838	74	776	65	915	118	35	53	0	88	0	0	0	0	0	Ν	1!	9 2	0
08:30-09:30	TRK	6	0	3	2	5	59	3	56	4	63	5	1	1	0	2	0	0	0	0	0	S	3:	2 3	0
AM PEAK	BUS	0	0	0	0	0	9	0	9	0	9	1	0	1	0	1	0	0	0	0	0	E W	43 8'	332 33	0 0
	TOTAL:	138	0	61	29	90	906	77	841	69	987	124	36	55	0	 91	0	0	0	0	0				
	CAR	113	0	63	36	99	1,381	50	1,301	50	1,401	93	44	43	0	87	0	0	0	0	0	N	3/) 8	0
16:45-17:45	TRK	4	0	2	1	3	51	2	48	1	51	2	2	1	0	3	0	0	0	0	0	s	4	5 1	0
PM PEAK	BUS	0	0	0	0	0	4	0	4	0	4	0	0	0	0	0	0	0	0	0	0	E	4	4 76	0
																						W	73	31	0
	TOTAL:	117	0	65	37	102	1,436	52	1,353	51	1,456	95	46	44	0	90	0	0	0	0	0				
	CAR	109	0	45	19	64	806	64	763	44	871	68	24	24	0	48	0	0	0	0	0	N	2	1 2	0
OFF HR	TRK	10	0	3	2	5	94	7	88	4	99	7	4	3	0	7	0	0	0	0	0	s	3:	2 2	0
A 10	BUS	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	Е	33	2 9	0
																						W	63	30	0
	TOTAL:	119	0	48	21	69	901	71	852	48	971	75	28	27	0	55	0	0	0	0	0				
	CAR	201	0	85	51	136	1,617	116	1,519	115	1,750	187	47	72	0	119	0	0	0	0	0	Ν	4!	53	0
07:30-09:30	TRK	11	0	4	3	7	122	7	115	10	132	13	4	3	0	7	0	0	0	0	0	S	5() 4	0
2 HR AM	BUS	0	0	0	0	0	20	0	20	0	20	1	0	1	0	1	0	0	0	0	0	Е	56	6 40	0
																						W	128	33	0
	TOTAL:	212	0	89	54	143	1,759	123	1,654	125	1,902	201	51	76	0	127	0	0	0	0	0				
	CAR	220	0	114	57	171	2,604	106	2,464	115	2,685	191	83	76	0	159	0	0	0	0	0	N	6 [,]	1 14	0
16:00-18:00	TRK	5	0	2	5	7	133	3	124	5	132	7	4	2	0	6	0	0	0	0	0	s	7() 1	0
2 HR PM	BUS	0	0	0	0	0	9	0	9	0	9	0	0	0	0	0	0	0	0	0	0	Е	8) 113	0
																						W	123	31	0
	TOTAL:	225	0	116	62	178	2,746	109	2,597	120	2,826	198	87	78	0	165	0	0	0	0	0				
07.30.18.00	CAR	856	0	378	185	563	7,443	478	7,033	407	7,918	649	225	242	0	467	0	0	0	0	0	Ν	19 [.]	1 25	0
07.30-10.00	TRK	56	0	18	14	32	626	38	590	29	657	44	22	15	0	37	0	0	0	0	0	S	248	3 14	0
8 HR SUM	BUS	0	0	0	0	0	32	0	32	0	32	1	0	1	0	1	0	0	0	0	0	Е	262	2 189	0
																						W	502	2 4	0
	-																								

Total 8 Hour Vehicle Volume: 9,707

Total 8 Hour Bicycle Volume: 232

Total 8 Hour Intersection Volume: 9,939



Turning Movement Count Summary Report

BERKEI EV		ST E (DY 1	966)												Su	rvey Date	e:	2017-N	/lay-17		(Wedn	esda	y)		
DERREET			500)												Su	rvey Typ	e:	Routine	e Hours						
Time	Vehicle		NO	RTHBO	UND			EA	STBO	UND			sou	тнво	UND			w	ESTBO	UND					
Period	Туре	Exits	Left	Thru	Right	Total	Exits	Left	Thru	Right	Total	Exits	Left	Thru	Right	Total	Exits	Left	Thru	Right	Total	l	Peds	Bike	Other
	CAR	43	25	26	13	64	166	4	146	38	188	117	7	71	22	100	429	8	382	13	403	Ν	167	19	0
08:15-09:15	TRK	3	4	2	0	6	4	0	4	6	10	9	0	3	0	3	10	0	6	1	7	S	216	4	0
AM PEAK	BUS	1	0	0	0	0	30	1	30	1	32	3	0	2	0	2	34	0	34	0	34	E	59 167	84 13	0
	 TOTAL:	47				 70		5	180	45		129	7			105	473	8	422						- —
	CAR	84	31	56	32	119	423	8	382	45	435	105	9	53	19	81	274	7	224	20	251	N	232	18	0
17:00-18:00	TRK	1	0	1	1	2	10	0	8	3	11	4	1	1	0	2	5	, 0	5	20	5	s	189	19	0
PM PEAK	BUS	0	0	0	0	0	21	0	21	2	23	2	0	0	0	0	26	0	26	0	26	E	82	27	0
	200																					w	131	53	0
	TOTAL:	85	31	57	33	121	454	8	411	50	469	111	10	54	19	83	305	7	255	20	282				
	CAR	50	19	28	16	63	174	10	151	31	192	84	7	37	14	58	201	16	168	12	196	N	112	11	0
OFF HR	TRK	2	1	1	1	3	11	0	10	4	14	6	0	1	0	1	10	1	9	1	11	S	160	8	0
Alt	BUS	0	0	0	0	0	18	0	18	0	18	0	0	0	0	0	20	0	20	0	20	Е	56	19	0
																						W	101	15	0
	TOTAL:	52	20	29	17	66	203	10	179	35	224	90	7	38	14	59	231	17	197	13	227				
	CAR	75	46	47	24	117	299	6	265	73	344	203	10	114	32	156	740	16	662	22	700	Ν	279	29	0
07:30-09:30	TRK	3	8	2	0	10	10	0	10	15	25	23	0	7	0	7	21	1	13	1	15	s	338	8	0
2 HR AM	BUS	2	0	1	0	1	61	1	61	3	65	5	0	2	0	2	64	0	64	0	64	Е	96	145	0
																						W	237	25	0
	TOTAL:	80	54	50	24	128	370	7	336	91	434	231	10	123	32	165	825	17	739	23	779				
	CAR	139	50	93	48	191	726	13	663	87	763	200	15	100	40	155	494	13	404	33	450	Ν	348	29	0
16:00-18:00	TRK	3	1	3	2	6	24	0	20	5	25	9	2	3	0	5	8	1	7	0	8	s	327	30	0
2 HR PM	BUS	1	0	1	0	1	49	0	49	3	52	4	0	1	0	1	61	0	61	0	61	Е	135	51	0
																						W	240	81	0
_	TOTAL:	143	51	97	50	198	799	13	732	95	840	213	17	104	40	161	563	14	472	33	519				
07:30-18:00	CAR	414	173	253	136	562	1,717	57	1,530	284	1,871	739	51	362	127	540	2,039	93	1,739	104	1,936	Ν	1,076	100	0
07.30-10.00	TRK	12	14	9	5	28	78	0	71	37	108	54	2	13	1	16	71	4	56	3	63	S	1,303	68	0
8 HR SUM	BUS	4	0	3	0	3	182	1	182	6	189	9	0	3	0	3	203	0	203	0	203	Е	455	272	0
																							880	165	0
	TOTAL:	430	187	265	141	593	1,977	58	1,783	327	2,168	802	53	378	128	559	2,313	97	1,998	107	2,202				

Total 8 Hour Vehicle Volume: 5,522

Total 8 Hour Bicycle Volume: 605

Total 8 Hour Intersection Volume: 6,127



Turning Movement Count Summary Report

Time Period	Vehicle Type CAR	Exits	NO												Sui	vey Type	e:	Routine	e Hours						
Time Period	Vehicle Type CAR	Exits	NO	DTUDO																					
Period	Type CAR	Exits		кінво	UND			EA	STBOL	JND			sou	тнвои	JND			W	ESTBOL	JND					
	CAR		Left	Thru	Right	Total	Exits	Left	Thru	Right	Total	Exits	Left	Thru	Right	Total	Exits	Left	Thru	Right	Total		Peds	Bike	Other
		270	77	211	95	383	402	26	253	25	304	382	54	206	39	299	856	151	740	33	924	N	89	17	0
08:15-09:15	TRK	38	7	33	10	50	25	0	10	2	12	32	5	25	3	33	42	5	32	5	42	S	79	17	0
AM PEAK	BUS	9	7	4	2	13	7	5	5	0	10	1	0	1	6	7	14	0	1	0	1	Е	129	28	0
																							53	5	0
	TOTAL:	317	91	248	107	446	434	31	268	27	326	415	59	232	48	339	912	156	773	38	967				
47.00 40.00	CAR	336	86	261	184	531	905	44	668	94	806	457	53	241	47	341	623	122	490	31	643	Ν	131	55	0
17:00-18:00	TRK	14	6	10	6	22	20	2	10	8	20	26	4	12	4	20	31	6	21	2	29	S	184	26	0
PM PEAK	BUS	6	2	0	1	3	5	6	4	0	10	3	0	2	6	8	8	1	0	0	1	Е	228	16	0
																							126	47	0
	TOTAL:	356	94	271	191	556	930	52	682	102	836	486	57	255	57	369	662	129	511	33	673				
	CAR	292	55	213	105	373	438	38	294	40	372	356	39	237	45	321	481	79	381	41	501	Ν	87	17	0
OFF HR AVG	TRK	32	5	25	14	44	48	4	30	7	41	55	4	41	8	53	40	7	27	3	37	S	91	11	0
	BUS	6	3	1	0	4	8	5	8	0	13	3	0	2	5	7	10	1	2	0	3	Е	113	12	0
																							90	16	0
	TOTAL:	330	63	239	119	421	494	47	332	47	426	414	43	280	58	381	531	87	410	44	541				
07:20 00:20	CAR	510	125	409	190	724	704	49	421	46	516	638	93	364	76	533	1,602	228	1,401	52	1,681	Ν	137	31	0
07:30-09:30	TRK	84	13	75	20	108	51	2	23	5	30	64	8	50	4	62	86	9	69	7	85	S	116	35	0
2 HR AM	BUS	13	10	4	2	16	13	9	10	0	19	3	1	3	10	14	22	0	2	0	2	Е	237	46	0
																							117	11	0
	TOTAL:	607	148	488	212	848	768	60	454	51	565	705	102	417	90	609	1,710	237	1,472	59	1,768				
46.00 48.00	CAR	682	160	530	335	1,025	1,635	91	1,197	162	1,450	880	103	479	92	674	1,125	239	873	61	1,173	Ν	246	89	0
16:00-16:00	TRK	31	6	24	13	43	52	4	31	14	49	63	8	38	5	51	51	11	40	3	54	S	309	41	0
2 HR PM	BUS	12	5	1	4	10	19	11	15	0	26	3	0	2	12	14	17	1	0	0	1	Е	385	35	0
																						W	251	74	0
	TOTAL:	725	171	555	352	1,078	1,706	106	1,243	176	1,525	946	111	519	109	739	1,193	251	913	64	1,228				
07-30-49-00	CAR	2,359	504	1,790	946	3,240	4,091	293	2,795	366	3,454	2,938	350	1,791	346	2,487	4,647	781	3,797	276	4,854	Ν	732	189	0
07.30-10.00	TRK	241	37	200	88	325	292	21	174	48	243	348	30	251	42	323	296	49	217	20	286	S	788	118	0
8 HR SUM	BUS	49	27	10	7	44	65	39	57	1	97	17	1	11	40	52	75	5	8	0	13	E	1,073	127	0
																						W		147	0
	TOTAL:	2,649	568	2,000	1,041	3,609	4,448	353	3,026	415	3,794	3,303	381	2,053	428	2,862	5,018	835	4,022	296	5,153				

Total 8 Hour Vehicle Volume: 15,418

Total 8 Hour Bicycle Volume: 581

Total 8 Hour Intersection Volume: 15,999



Turning Movement Count Summary Report

LAKE SHOR	RE BLVD AT L	OWER SH	ERBOU	RNE ST	T & SHE	RBOUR	RNE ST (P	X 203)							Su	rvey Date	ə:	2017-5	Sep-07		(Thurs	day)			
							• . (,							Su	rvey Typ	e:	Routin	e Hours						
Time	Vehicle		NOF	RTHBO	UND			EA	STBO	JND			SOU	тнвоі	JND			w	ESTBO	UND					
Period	Туре	Exits	Left	Thru	Right	Total	Exits	Left	Thru	Right	Total	Exits	Left	Thru	Right	Total	Exits	Left	Thru	Right	Total	l	Peds	Bike	Other
	CAR	305	1	0	0	1	273	164	250	80	494	145	23	55	106	184	981	10	874	141	1,025	N	7	65	0
08:15-09:15	TRK	6	0	0	0	0	34	2	28	6	36	13	6	7	6	19	66	0	60	4	64	s	15	59	0
AM PEAK	BUS	0	0	0	0	0	2	0	1	0	1	12	1	12	0	13	8	0	8	0	8	Е	37	0	0
																						W	38	3 <u>1</u>	0
	TOTAL:	311	1	0	0	1	309	166	279	86	531	170	30	74	112	216	1,055	i 10	942	145	1,097				
	CAR	287	2	3	0	5	526	151	469	22	642	192	57	141	236	434	973	29	735	133	897	Ν	2	56	0
16:45-17:45	TRK	1	0	0	0	0	10	1	8	3	12	5	2	2	4	8	29	0	25	0	25	S	8	40	0
PM PEAK	BUS	1	0	0	0	0	0	0	0	0	0	9	0	9	0	9	0	0	0	1	1	Е	76	6 0	0
																						W	41	2	0
	TOTAL:	289	2	3	0	5	536	152	477	25	654	206	59	152	240	451	1,002	29	760	134	923				
	CAR	176	3	2	1	6	288	106	257	27	390	113	30	79	148	257	768	7	617	68	692	Ν	4	19	0
OFF HR AVG	TRK	9	1	0	0	1	48	5	41	8	54	18	7	10	6	23	88	0	81	4	85	S	20) 14	0
	BUS	0	0	0	0	0	3	0	3	0	3	9	0	9	0	9	4	0	4	0	4	Е	49) 1	0
																						W	54	0	0
	TOTAL:	185	4	2	1	7	339	111	301	35	447	140	37	98	154	289	860	7	702	72	781				
	CAR	535	2	0	0	2	558	311	513	125	949	257	45	117	206	368	1,800	15	1,592	224	1,831	Ν	14	105	0
07:30-09:30	TRK	12	0	0	0	0	61	6	53	13	72	24	8	11	8	27	128	0	120	6	126	S	32	97	0
2 HR AM	BUS	0	0	0	0	0	2	0	1	0	1	24	1	24	2	27	17	0	15	0	15	Е	70	0 0	0
																						W	87	′ <u>1</u>	0
	TOTAL:	547	2	0	0	2	621	317	567	138	1,022	305	54	152	216	422	1,945	5 15	1,727	230	1,972				
	CAR	554	5	6	0	11	990	296	895	39	1,230	345	95	247	401	743	1,817	59	1,411	252	1,722	Ν	11	88	0
16:00-18:00	TRK	3	0	0	0	0	19	2	17	6	25	12	2	6	7	15	54	0	47	1	48	s	13	5 75	0
2 HR PM	BUS	2	0	0	0	0	1	1	1	0	2	18	0	16	0	16	4	2	4	1	7	Е	140) 1	0
																						W	81	3	0
	TOTAL:	559	5	6	0	11	1,010	299	913	45	1,257	375	97	269	408	774	1,875	61	1,462	254	1,777				
07.20 49.00	CAR	1,791	17	13	5	35	2,702	1,029	2,437	273	3,739	1,053	260	679	1,199	2,138	6,686	101	5,470	749	6,320	Ν	40	270	0
07.30-18.00	TRK	53	3	1	1	5	272	29	235	52	316	107	36	55	37	128	531	0	491	23	514	S	125	228	0
8 HR SUM	BUS	2	0	0	0	0	14	1	13	1	15	80	1	77	2	80	36	2	34	1	37	Е	405	5 3	0
																							382	4	0
	TOTAL:	1,846	20	14	6	40	2,988	1,059	2,685	326	4,070	1,240	297	811	1,238	2,346	7,253	103	5,995	773	6,871				

Total 8 Hour Vehicle Volume: 13,327

Total 8 Hour Bicycle Volume: 505

Total 8 Hour Intersection Volume: 13,832

Comment:



Turning Movement Count Summary Report

LOWER SH	ERBOURNE S	ST AT THE	ESPLA	NADE	(PX 144 [,]	1)									Su	rvey Dat	e:	2019-A	ug-22		(Thurs	day)			
															Su	rvey Typ	e:	Routin	e Hours						
Time	Vehicle		NC	RTHBC	UND			EA	STBO	UND			SOL	тнво	JND			W	ESTBO	UND					
Period	Туре	Exits	Left	Thru	Right	Total	Exits	Left	Thru	Right	Total	Exits	Left	Thru	Right	Total	Exits	Left	Thru	Right	Tota		Peds	Bike	Other
09.20 00.20	CAR	203	44	169	64	277	133	19	61	11	91	139	8	103	50	161	172	25	78	15	118	Ν	167	84	0
00:30-09:30	TRK	20	0	19	0	19	10	1	6	1	8	21	4	17	0	21	2	3	2	0	5	S	220	73	0
AM PEAK	BUS	12	0	2	0	2	4	10	4	0	14	9	0	9	0	9	5	0	5	0	5	E W	127 84	74 16	0 0
	TOTAL:	235	44	190	64	298	147	30	71	12	113	169	12	129	50	191	179	28	85	15	128				
	CAR	262	44	228	34	306	138	22	89	40	151	282	15	204	57	276	185	38	84	12	134	N	190	104	0
16:00-17:00	TRK	10	2	7	1	10	8	2	7	4	13	14	0	8	3	11	11	2	6	1	9	s	453	75	0
PM PEAK	BUS	8	0	2	0	2	4	6	3	0	9	7	1	7	- 1	9	5	0	4	0	4	E	128	37	0
																						W	110	39	0
	TOTAL:	280	46	237	35	318	150	30	99	44	173	303	16	219	61	296	201	40	94	13	147				
	CAR	197	33	157	26	216	96	29	57	17	103	195	13	149	38	200	115	29	44	11	84	N	130	41	0
OFF HR	TRK	23	2	20	3	25	9	2	5	4	11	33	1	27	3	31	10	2	5	1	8	S	320	32	0
A10	BUS	7	0	0	0	0	3	7	3	0	10	7	0	7	0	7	3	0	3	0	3	Е	94	26	0
																						W	90	20	0
	TOTAL:	227	35	177	29	241	108	38	65	21	124	235	14	183	41	238	128	31	52	12	95				
	CAR	357	100	303	101	504	201	29	88	17	134	275	12	208	89	309	327	50	138	25	213	Ν	274	141	0
07:30-09:30	TRK	40	1	35	2	38	14	1	7	3	11	40	5	31	1	37	8	6	6	4	16	s	365	136	0
2 HR AM	BUS	22	0	2	0	2	11	20	11	0	31	18	0	18	0	18	9	0	9	0	9	Е	226	166	0
																						W	143	32	0
	TOTAL:	419	101	340	103	544	226	50	106	20	176	333	17	257	90	364	344	56	153	29	238				
	CAR	512	87	435	72	594	290	48	185	83	316	503	33	333	77	443	358	87	194	29	310	Ν	530	227	0
16:00-18:00	TRK	24	3	18	2	23	13	4	11	4	19	22	0	12	3	15	17	6	11	2	19	s	927	144	0
2 HR PM	BUS	12	1	3	0	4	6	9	5	0	14	12	1	12	1	14	7	0	5	0	5	Е	349	63	0
																						W	274	98	0
	TOTAL:	548	91	456	74	621	309	61	201	87	349	537	34	357	81	472	382	93	210	31	334				
07:30-18:00	CAR	1,657	318	1,367	276	1,961	872	193	500	167	860	1,559	96	1,138	317	1,551	1,143	254	508	97	859	Ν	1,325	530	0
07.00-10.00	TRK	154	12	132	17	161	63	12	36	22	70	193	10	150	15	175	63	21	36	10	67	S	2,571	409	0
8 HR SUM	BUS	61	1	6	1	8	29	55	27	1	83	59	1	57	1	59	28	1	26	0	27	Е	951	333	0
																						W	775	211	0
	TOTAL:	1,872	331	1,505	294	2,130	964	260	563	190	1,013	1,811	107	1,345	333	1,785	1,234	276	570	107	953				

Total 8 Hour Vehicle Volume: 5,881

Total 8 Hour Bicycle Volume: 1,483

Total 8 Hour Intersection Volume: 7,364

Comment:



Turning Movement Count Summary Report

MULSTAT		T ST (DY 1	804)												Su	rvey Date	e:	2019-A	Aug-22		(Thurs	day)			
WILL ST AT	FARLIAWEN		554)												Su	rvey Typ	e:	Routin	e Hours	;					
Time	Vehicle		NO	RTHRO				F۵	STRO				SOL	ітнво	UND			w	ESTRO						
Period	Туре	Exits	Left	Thru	Right	Total	Exits	Left	Thru	Right	Total	Exits	Left	Thru	Right	Total	Exits	Left	Thru	Right	Tota	I	Peds	Bike	Other
	CAR	447	0	365	49	414	83	0	0	0	0	364	34	286	0	320	0	78	0	82	160	N	110	14	0
08:15-09:15	TRK	65	0	60	2	62	7	0	0	0	0	39	5	37	0	42	0	2	0	5	7	S	128	21	0
AM PEAK	BUS	14	0	8	0	8	0	0	0	0	0	2	0	1	0	1	0	1	0	6	7	Е	150	117	0
																						W	0	8	0
	TOTAL:	526	0	433	51	484	90	0	0	0	0	405	39	324	0	363	0	81	0	93	174				
47.00 48.00	CAR	532	0	441	132	573	188	0	0	0	0	546	56	464	0	520	0	82	0	91	173	Ν	196	41	0
17:00-18:00	TRK	19	0	18	5	23	5	0	0	0	0	33	0	29	0	29	0	4	0	1	5	S	413	24	0
PM PEAK	BUS	5	0	1	0	1	0	0	0	0	0	4	0	4	0	4	0	0	0	4	4	Е	273	25	0
																							0	93	0
	TOTAL:	556	0	460	137	597	193	0	0	0	0	583	56	497	0	553	0	86	0	96	182				
	CAR	386	0	313	67	380	112	0	0	0	0	351	45	307	0	352	0	44	0	73	117	Ν	104	13	0
AVG	TRK	46	0	43	6	49	8	0	0	0	0	57	2	54	0	56	0	3	0	3	6	S	364	12	0
	BUS	8	0	2	1	3	1	0	0	0	0	4	0	4	0	4	0	0	0	6	6	Е	171	26	0
																							0	16	0
	TOTAL:	440	0	358	74	432	121	0	0	0	0	412	47	365	0	412	0	47	0	82	129				
07:30-09:30	CAR	827	0	681	90	771	148	0	0	0	0	648	58	508	0	566	0	140	0	146	286	Ν	184	29	0
07.00-00.00	TRK	114	0	107	5	112	10	0	0	0	0	73	5	70	0	75	0	3	0	7	10	S	222	32	0
2 HR AM	BUS	18	0	9	1	10	1	0	0	0	0	4	0	3	0	3	0	1	0	9	10	Е	265	191	0
																						W	0	44	0
	TOTAL:	959	0	797	96	893	159	0	0	0	0	725	63	581	0	644	0	144	0	162	306				
16.00-18.00	CAR	994	0	812	254	1,066	364	0	0	0	0	995	110	856	0	966	0	139	0	182	321	Ν	313	71	0
10.00-10.00	TRK	39	0	38	15	53	17	0	0	0	0	72	2	67	0	69	0	5	0	1	6	S	804	38	0
2 HR PM	BUS	16	0	2	0	2	0	0	0	0	0	6	0	5	0	5	0	1	0	14	15	E	507	60	0
									· ·				·										0	145	0
	TOTAL:	1,049	0	852	269	1,121	381	0	0	0	0	1,073	112	928	0	1,040	0	145	0	197	342				
07:30-18:00	CAR	3,365	0	2,744	613	3,357	961	0	0	0	0	3,047	348	2,593	0	2,941	0	454	0	621	1,075	Ν	912	152	0
01.00 10.00	TRK	336	0	315	43	358	56	0	0	0	0	372	13	351	0	364	0	21	0	21	42	S	2,481	116	0
8 HR SUM	BUS	66	0	18	5	23	5	0	0	0	0	24	0	22	0	22	0	2	0	48	50	E	1,456	356	0
									· ·				(W	0	252	0
	TOTAL:	3,767	0	3,077	661	3,738	1,022	0	0	0	0	3,443	361	2,966	0	3,327	0	477	0	690	1,167				

Total 8 Hour Vehicle Volume: 8,232

Total 8 Hour Bicycle Volume: 876

Total 8 Hour Intersection Volume: 9,108



Turning Movement Count Summary Report

	TATMULST														Su	rvey Date	e:	2019-A	ug-22		(Thurs	day)			
CHERRI SI	AT MILL ST														Su	rvey Typ	e:	Routine	e Hours						
Time	Vehicle		NO	RTHBO	UND			EA	STBO				sou	тнвоі	JND			w	ESTBO	UND					
Period	Туре	Exits	Left	Thru	Right	Total	Exits	Left	Thru	Right	Total	Exits	Left	Thru	Right	Total	Exits	Left	Thru	Right	Total		Peds	Bike	Other
	CAR	134	29	97	0	126	60	29	52	29	110	433	8	195	21	224	111	209	61	8	278	N	29	22	0
08:30-09:30	TRK	24	5	18	0	23	6	4	4	4	12	48	2	21	0	23	17	23	12	2	37	S	32	14	0
AM PEAK	BUS	13	4	13	0	17	0	0	0	0	0	17	0	17	0	17	6	0	2	0	2	Е	17	57	0
																						W	53	21	0
	TOTAL:	171	38	128	0	166	66	33	56	33	122	498	10	233	21	264	134	232	75	10	317				
17.00-18.00	CAR	176	20	128	4	152	135	42	126	51	219	575	5	361	26	392	97	163	51	6	220	Ν	67	15	0
17.00-18.00	TRK	13	3	7	1	11	7	5	4	3	12	51	2	35	1	38	6	13	2	1	16	S	84	31	0
PM PEAK	BUS	10	1	10	0	11	0	0	0	0	0	11	0	11	0	11	1	0	0	0	0	Е	55	17	0
																							139	114	
	TOTAL:	199	24	145	5	174	142	47	130	54	231	637	7	407	27	441	104	176	53	7	236				
OFF HR	CAR	105	17	68	1	86	65	31	53	33	117	348	11	212	22	245	69	103	30	6	139	Ν	38	16	0
AVG	TRK	24	3	19	1	23	9	4	7	6	17	65	1	36	1	38	7	23	3	1	27	S	47	16	0
	BUS	10	3	9	0	12	0	1	0	1	2	14	0	12	0	12	3	1	0	0	1	E	32	18	0
																								17	
	TOTAL:	139	23	96	2	121	74	36	60	40	136	427	12	260	23	295	79	127	33	7	167				
07:30-09:30	CAR	217	46	158	0	204	119	48	104	47	199	744	15	322	39	376	203	375	118	11	504	Ν	80	40	0
07.30-03.30	TRK	42	11	31	0	42	15	9	9	9	27	81	6	36	0	42	23	36	12	2	50	S	58	38	0
2 HR AM	BUS	22	9	22	0	31	0	0	0	0	0	33	0	32	0	32	11	1	2	0	3	Е	35	118	0
																							103	37	0
	TOTAL:	281	66	211	0	277	134	57	113	56	226	858	21	390	39	450	237	412	132	13	557				
16.00-18.00	CAR	318	49	221	8	278	291	88	258	90	436	1,106	25	728	61	814	184	288	74	9	371	Ν	113	30	0
10.00-10.00	TRK	27	3	18	2	23	17	8	10	3	21	110	5	74	1	80	9	33	5	1	39	S	164	57	0
2 HR PM	BUS	19	5	19	0	24	0	0	0	0	0	23	0	23	0	23	6	0	1	0	1	Е	91	37	0
																							229	184	0
	TOTAL:	364	57	258	10	325	308	96	268	93	457	1,239	30	825	62	917	199	321	80	10	411				
07:30-18:00	CAR	957	164	652	12	828	670	261	573	270	1,104	3,241	85	1,897	187	2,169	661	1,074	310	44	1,428	Ν	343	132	0
07.30-18.00	TRK	163	25	124	4	153	65	32	46	34	112	450	15	255	6	276	59	161	28	7	196	S	409	157	0
8 HR SUM	BUS	78	27	75	0	102	1	3	1	2	6	108	0	102	0	102	30	4	3	0	7	Е	253	226	0
		·																				W	674	290	0
	TOTAL:	1,198	216	851	16	1,083	736	296	620	306	1,222	3,799	100	2,254	193	2,547	750	1,239	341	51	1,631				

Total 8 Hour Vehicle Volume: 6,483

Total 8 Hour Bicycle Volume: 805

Total 8 Hour Intersection Volume: 7,288



Turning Movement Count Summary Report

CHERRY ST		TF													Su	rvey Date	ə:	2019-A	ug-22		(Thurs	day)			
UNERKI SI	ATTRONTS	,, ,													Su	rvey Typ	e:	Routine	e Hours						
Time	Vehicle		NO	RTHBO	UND			EA	STBO	JND			SOL	ітнвоі	JND			w	ESTBO	UND					
Period	Туре	Exits	Left	Thru	Right	Total	Exits	Left	Thru	Right	Total	Exits	Left	Thru	Right	Total	Exits	Left	Thru	Right	Tota	l	Peds	Bike	Other
	CAR	106	29	90	17	136	73	6	54	14	74	235	2	194	40	236	191	27	122	10	159	N	67	17	0
08:30-09:30	TRK	16	2	15	3	20	7	0	4	3	7	20	0	13	1	14	5	4	2	1	7	S	55	11	0
AM PEAK	BUS	13	1	13	0	14	0	0	0	5	5	17	0	12	0	12	1	0	0	0	0	E W	66 45	21 5	0
	TOTAL:	135	32	118	20	170	 80	6		22	86	272	2	219	41				124		166				
	CAR	133	32	96	49	177	243	16	194	69	279	410	0	284	25	309	128	57	71	21	149	N	104	21	0
17:00-18:00	TRK	8	0	7	1	8	3	1	2	4	7	28	0	21	0	21	0	3	0	0	3	s	60	22	0
PM PEAK	BUS	10	0	10	1	11	1	0	0	1	1	15	0	14	0	14	0	0	0	0	0	E	79	14	0
																						W	428	54	0
	TOTAL:	151	32	113	51	196	247	17	196	74	287	453	0	319	25	344	128	60	71	21	152				
	CAR	93	21	71	15	107	74	10	58	29	97	256	1	199	31	231	108	28	56	12	96	N	59	10	0
OFF HR	TRK	15	3	12	4	19	9	0	5	3	8	27	0	20	1	21	7	4	3	3	10	S	46	7	0
Alt	BUS	9	1	9	0	10	1	0	1	3	4	12	0	9	0	9	1	0	0	0	0	Е	51	13	0
																						W	45	11	0
	TOTAL:	117	25	92	19	136	84	10	64	35	109	295	1	228	32	261	116	32	59	15	106				
	CAR	179	44	146	33	223	134	13	99	27	139	384	2	304	74	380	370	53	252	20	325	Ν	115	28	0
07:30-09:30	TRK	27	5	24	5	34	10	1	5	4	10	38	0	28	2	30	11	6	4	2	12	S	80	21	0
2 HR AM	BUS	24	1	24	0	25	2	0	2	9	11	32	0	23	0	23	2	0	1	0	1	Е	106	39	0
																						W	69	10	0
	TOTAL:	230	50	194	38	282	146	14	106	40	160	454	2	355	76	433	383	59	257	22	338				
40.00.40.00	CAR	254	56	174	85	315	419	33	334	125	492	834	0	610	49	659	249	99	144	47	290	Ν	193	37	0
16:00-18:00	TRK	14	2	12	4	18	8	1	4	5	10	56	0	46	0	46	3	5	1	1	7	s	124	41	0
2 HR PM	BUS	20	0	20	1	21	3	0	2	6	8	29	0	23	0	23	0	0	0	0	0	Е	195	23	0
																						W	497	73	0
	TOTAL:	288	58	206	90	354	430	34	340	136	510	919	0	679	49	728	252	104	145	48	297				
07:30-18:00	CAR	802	185	602	178	965	849	85	666	267	1,018	2,242	5	1,711	247	1,963	1,052	264	620	115	999	Ν	543	106	0
07.00-10.00	TRK	98	18	82	25	125	55	2	29	21	52	202	1	154	7	162	42	27	17	14	58	S	386	89	0
8 HR SUM	BUS	80	3	80	1	84	7	0	6	25	31	105	0	80	0	80	4	0	1	0	1	Е	504	112	0
																						W	746	127	0
	TOTAL:	980	206	764	204	1,174	911	87	701	313	1,101	2,549	6	1,945	254	2,205	1,098	291	638	129	1,058				

Total 8 Hour Vehicle Volume: 5,538

Total 8 Hour Bicycle Volume: 434

Total 8 Hour Intersection Volume: 5,972

Comment:


Appendix B

Signal Timing Plans

LOCATION:	Sherbourne	St & Adelai	de St E			DISTRICT:	Toronto & East York
MODE/COMMENT:	FXT					COMPUTER SYSTEM:	TransSuite N
TCS:	255					CONTROLLER/CABINET TYPE:	PEEK ATC-1000 / TS2T1
PREPARED BY/DATE:	Petr Emelia	nov / July 8,	, 2019			CONFLICT FLASH:	Red & Red
CHECKED BY/DATE:	Hao Le / Oc	t 1. 2019				DESIGN WALK SPEED:	1.0m/s (FDW based on full crossing @ 1.2m/s)
IMPLEMENTATION DATE:	October 9. 2	2019				CHANNEL/DROP:	4003/14
	,,,,,,,,,,,,					CONTROLLER FIRMWARE:	3.018.1.2976
		OFF	AM	PM	NGHT		
NEMA Phase		All Other	06:30-09:30	15:30-18:30	23:00-06:30	Phase Mode	Remarks
	Local Plan	Dattern 1	M-F Dattern 2	M-F Pattern 3	Dattern /	(Fixed/Demanded	
	Split Table	Split 1	Split 2	Split 3	Split 4	or Gallable)	
							Pedestrian Minimums:
1	WLK						NSWK = 7 sec, NSFD = 14 sec
	MIN						EWWK = 7 sec, EWFD = 13 sec Gardiner Rehabilitation signal timings
(NOT USED)	MAX1						Section1. 2019-2020
	AMB						
	ALR SPLIT						
Sherbourne St							
2	WLK 7						
	FDVV 14 MIN 21					Fixed	
	MAX1 24						
	AMB 4						
	ALR 2	30	34	34	30		
	SPLIT	30	- 34	34	30		
3	WLK						
	FDW						
NOT USED	MAX1						
	AMB						
	ALR						
Adelaide St E	SPLII						
4	WLK 7						
<	FDW 13					Fixed	
	MIN 20 MAX1 49						
	AMB 3						
	ALR 2	54	50	50	45		
	SPLIT	54	56	56	45		
5	WLK						
	FDW						
NOT USED	MAX1						
	AMB						
	ALR						
Sherhourne St	SPLII						4
6	WLK 7						
	FDW 14					Fixed	
	MIN 21 MAX1 24						
$\setminus \forall \vee$	AMB 4						
	ALR 2			0.1			
	SPLII	30	34	34	30		4
7	WLK						
	FDW						
(NOT USED	MIN MAX1						
	AMB		2				
	ALR						
	SPLIT						4
8	WLK 7						
	FDW 13						
(NOT USED)	MIN 20						
	AMB 3						
	ALR 2						
	SPLIT	54	56	56	45		4
	CL	84	90	90	75		
	OF	73	74	77	43		

NOTES: Adelaide St One-way eastbound

LOCATION:	Lower Sherb	ourne St & Th	e Esplanade		DISTRICT:	Toronto & East York	N
MODE/COMMENT:	FXT with 2-W	/ire Polara AP	S & TSP*		COMPUTER SYSTEM:	TransSuite	
TCS:	1441				CONTROLLER/CABINET TYPE:	Peek ATC - 1000 / TS2 T1	Ţ
PREPARED/CHECKED BY:	BA/HL				CONFLICT FLASH:	Red & Red	I
PREPARATION DATE:	July 24, 2018	8			DESIGN WALK SPEED:	1.0 m/s (FDW based on full crossing	at 1.2 m/s)
IMPLEMENTATION DATE:	August 1 20	18			CHANNEL/DROP:	4047/3	
		-			CONTROLLER FIRMWARE:	3.018.1.2976	
		OFF	AM	PM	Phase Mode		
NEMA Phase		All Other Times	06:45-09:30 M-F	15:30-18:15 M-F	(Fixed/Demanded or Callable)	Remarks	
	Local Plan	Pattern 1	Pattern 2	Pattern 3	1		
	Split Table	Split 1	Split 2	Split 3		Pedestrian Minimums:	
1	WLK					NSWK = 7 sec, NSFD = 11 sec	
	FDW					EWWK = 7 sec, EWFD = 13 sec	
(NOT USED)	MIN					APS on full EWWK & NSWK when activ	vated by push
	MAX1					buttons.	
	ALR					*See back for TSP instructions	
	SPLIT					TSP enabled on March 29, 2017	
Lower Sherbourne St							
2	WLK 7						
	FDW 11				Fixed		
	MIN 18						
	AMR 3						
	ALR 2						
	SPLIT	34	44	44			
3	WLK						
	FDW						
(NOT USED)	MIN MAX1						
	AMB						
	ALR						
	SPLIT					-	
The Esplanade							
4	FDW 13				Fixed		
	MIN 20				POZ activated by Request Loop		
	MAX1 20				(Max extension of 16 secs in		
	AMB 3				Green/Solid Don't Walk)		
	ALR 3	00	00	00			
	SPLIT	20	20	20		-	
5	WLK						
	FDW						
(NOT USED)	MIN						
	AMB						
	ALR						
	SPLIT					4	
Lower Sherbourne St							
	FDW 11			Y 4	Fixed		
	MIN 18				POZ activated by Request Loop		
	MAX1 29				(Max extension of 30 secs in		
	AMB 3				Green/Walk)		
	ALR 2						
	SPLII	34	44	44		-	
7	WLK						
	FDW						
(NOT USED)	MIN MAX1						
	AMB						
	ALR						
The Esplanade	5PLII					-	
8	WLK 7						
	FDW 13				Fixed		
	MIN 20						
	MAX1 20						
	AMB 3						
	SPLIT	26	26	26			
	CL	60	70	70		1	
	OF	13	5	36			

Notes:



		TSP RUN	TSP RUN	
REPARED: BA/H	1L	# 4	# 6	
		EB Thru	SB Thru	
8.2 Transit Run	Parameters			I
ATC Green Exte	nd Mode	Mode 0	Mode 2	
(Equivalent TTC	Algorithm)	B-2	A	
8.3 Transit Action	on Plan 1 (Used	d for Pattern 1	I)	
Run Enable (X = Y	es)	Х	Х	
Run Config = 1	Recovery =	= 2 (O.C. with dela	y)	
8.3 Transit Action	on Plan 2 (Used	d for Pattern 2	2)	
Run Enable (X = Y	es)	X	Х	
Run Config = 2	Recovery =	= 2 (O.C. with dela	y)	
8.3 Transit Action	on Plan 3 (Used	d for Pattern 3	3)	
Run Enable (X = Y	es)	X	Х	
Run Config = 3	Recovery =	= 2 (O.C. with dela	y)	
8.4 Transit Run	Configuration	1		1
Delay / Extend /	Fail	4 / / 235	/ / 235	
CALLS (and Ex	tends)	Ø 4/8	Ø 2/6	
Skips				
Reduces (Trunca	ates)			
8.4 Transit Run	Configuration	2		
Delay / Extend /	Fail	8 / / 235	/ / 235	
CALLS (and Ex	tends)	Ø 4/8	Ø 2/6	
Skips				
Reduces (Trunca	ates)			
8.4 Transit Run	Configuration	3		
Delay / Extend /	Fail	4 / / 235 / / 235		
CALLS (and Ex	tends)	Ø 4/8	Ø 2/6	

Ø1 Ø2 Ø3 Ø4 Ø5 Ø6 Ø7 Ø8

--

GRN EXT (SDW Extension)	 	 16			 16
GRN RDC (Reduction)	 	 	-	-	 -
WLK EXT (Walk Extension)	 30	 -	-	30	 -

Notes:

The Espla	nade			6						
	xxx m									
00										
	TSP RUN # 4									
	EB Thru									
	SRM #2 Ch #1					ATC Mode	0 B-2	2	3	4 D
	BIU #3 PIN #11a	e S				Extensions	SDW	Walk	W/SDW	W/SDW
		onu				TSP SUM	IARY			
		lerb				Maximum Gre	en Exte	nsions:		
		<u>ن</u> ک			TSP Loop Legend	SBG:30 s Gre	en/WLK			
Ņ	Schematic of TSP Loops	9 Me			Request (Thru)	EBG:16 s Gre	en/SDW	1		
Ť	and TSP Runs (N.T.S)		I		ZZZ Cancel (Thru)					

LOCATION:	Parliament St &	& Mill St				DISTRICT:	Toronto & East York
TCS:	1894					COMPUTER SYSTEM:	TransSuite
MODE/COMMENT:	FXT With 2 Wir	<mark>e Polara A</mark> F	PS and LPI			CONTROLLER/CABINET TYPE:	Econolite ASC/3-1000 / TS2T1
PREPARED BY/DATE:	CIMA+/Octobe	r 2, 2019				CONFLICT FLASH:	Red & Red
CHECKED BY/DATE:	Ranajamil Iftikha	ar/Ameneh D	ialameh/Octol	ber 15, 2019		DESIGN WALK SPEED:	1.0 m/s (FDW based on full crossing at 1.2 m/s)
IMPLEMENTATION DATE:	October 24, 20	19				CHANNEL/DROP:	4051/1
						FIRMWARE VERSION:	2.47.10
		OFF	AM	PM	OFF2		
		All Other	06:45-09:30	15:30-18:30	09:30-15:30	Phase Mode	Remarks
NEMA Phase		Times	M-F	M-F	M-F	(Fixed/Demanded	
	System Plan	Plan 1	Plan 2	Plan 3	Plan 4	/Gallable)	
	Local Plan	Pattern 1	Pattern 2	Pattern 3	Pattern 4		
							Pedestrian Minimums:
	MIN						EWWK = 7 sec., EWFD = 13 sec.
NOT USED	MAX						APS on during FULL WALK of NSWK and EWWK when
	AMB						activated by APS pushbuttons
	ALR						Extended Push Activation = 3 seconds
Parliament St	SFLIT						sec before EW vehicle green
2	WLK 7						
	FDW 12					Fixed	
	MIN 19						
	MAX1 28						
	AMB 3.0						
	SPLIT	34	44	44	34		
3	WLK						
	FDW						
	MIN						
NOTUSED	AMB						
	ALR						
	SPLIT						
Mill St	DLY GRN 5					Fixed	
4	WLK /					Fixed	
	FDW 13					Split shown includes 5 sec	
(«·····»)	MIN 15					of EW LPI	
	MAX1 21						P
	AMB 3.0						
	SPLIT	26	26	26	26		
5	WLK						
	FDW			-			
NOT USED	MIN						
	AMB						
	ALR						
	SPLIT						
Parliament St							
°	FDW 12					Fixed	
	MIN 19					TIXEG	
	MAX1 28		0				
	AMB 3.0						
	ALR 3.0	24	44	11	34		
	Jor LI I	34	44	44	34		4
7	WLK						
	FDW						
	MIN						
NOT USED	AMB						
	ALR						
	SPLIT						
Mill St	DLY GRN 5						
бб	VVLK 7					Fixed	
	13					Fixed	
	MIN 15					Split shown includes 5 sec	
	MAX1 21					of EW LPI	
	AMB 3.0						
	ALK 2.2	26	26	26	26		
	CL	60	70	70	60		1
	OFF	1	1	1	1		
Note:T-Intersection (no	west lea)						

LOCATION:	Adelaide St	E & Berkel	ey St			DISTRICT:	Toronto & East York
MODE/COMMENT:	SA2-VMG w	vith PR & 2-	Wire Polara	APS		COMPUTER SYSTEM:	TransSuite N
TCS:	1964					CONTROLLER/CABINET TYPE:	Econolite ASC/3-2100 / TS2T1
PREPARED BY/DATE:	WSP / Febr	uary 4 202	n			CONFLICT FLASH	Red & Red
	Amonoh Dia	alamoh / Eol	- bruary 11 - 2	020			1.0m/s (EDW based on full crossing @ $1.2m/s$)
	Echrucery 24		bruary 11, 2	.020		CHANNEL (DROD)	
IMPLEMENTATION DATE.	February 24	, 2020				CHANNEL/DROP:	4003/27
	1	075			NOUT	CONTROLLER FIRMWARE:	2.47.10
				PM	NGH1	Dhara Mada	
NEMA Phase		Times	06:30-09:30 M-F	M-F	23:00-06:30 daily	Fixed/Demanded or	Remarks
	Local Plan	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Callable)	Romano
	System Plan	Plan 1	Plan 2	Plan 3	Plan 4	· · · · ·	
1	WLK FDW						Pedestrian Minimums: EWWK = 7 sec, EWFD = 10 sec NSWK = 7 sec, NSFD = 14 sec
NOT USED	MIN						
	MAX1						INS phase is callable by vehicle or pedestrian actuation.
	ALR						seconds. If ongoing vehicle demand exists on the
	SPLIT						stopbar loop, the NSG is capable of providing vehicle
Adelaide St E							extensions up to the maximum. If a pedestrian call is
	IVLK 7						received, the maximum would be served. The NSWK &
	MIN 17						if a pedestrian call is received. Extension time is based
	MAX1 50					Fixed	on vehicle demand and is taken from the EWG. Unused
	AMB 3.0						extension time is given to the EWG.
	ISPLIT	56	62	62	47		Side Street Passage Time = 3 soc
			02	02	41		APS on during 7 secs of EWWK & 7 secs of NSWK
3	WLK						when activated by APS pushbuttons
	FDW						Extended Push Activation = 3 secs
(NOT USED	MIN MAX1						Gardiner Rehabilitation signal timings Section1. 2019-
	AMB						2020
	ALR						
	SPLIT						
Berkeley St							
	FDW 14					Callable by stopbar loop	
	MIN 7					and/or pushbutton;	
	MAX1 21					Extendable by stopbar loop	
	AMB 3.0						
	SPLIT	28	28	28	28		
	/			1			
5	WLK			1			
	MIN						
NOTUSED	MAX1						
	AMB						
	SPLII						4
6	WLK 7				5		
	FDW 10						
NOTUSED	MIN 17						
	AMB 3.0						
	ALR 2.5						
	SPLIT	56	62	62	47		1
7		4					
	FDW						
NOTURED	MIN						
	MAX1						
	SPLIT						
Berkeley St							1
8	WLK 7						
	FDW 14					Callable by stopbar loop	
	MAX1 21					and/or pushbutton;	
	AMB 3.0					L CYICHIGANIC NA SIONNAL 1000	
	ALR 3.6						
	SPLIT	28	28	28	28		4
	OF	48	90 44	49	26		
NOTES	<u> </u>					1	۱

LOCATION:	King St F &	Berkelev 4	St				DISTRICT:	Toronto & Fast York
		with PR and	TSP*				COMPUTER SYSTEM	
TCS:	1066							
	Amir Sufin	our / Docon	abor 05 2010					
CHECKED BY/DATE:	Anni Sunp	/ Amonoh Dio	lomoh / lonuory	02 2020			CONFLICT FLASH.	10 m/c (EDW based on full excession at 1.2 m/c)
CHECKED BI/ DATE:		/ Amenen Dia	lamen / January	02, 2020			DESIGN WALK SPEED:	1.0 m/s (FDW based on full crossing at 1.2 m/s)
IMPLEMENTATION DATE:	January 24	, 2020					CHANNEL/DROP:	4003/28
					1		CONTROLLER FIRMWARE:	3.018.1.2976
		OFF	AM	PM	NGHT	WKND	Phase Mode	
		All Other	06:30-09:30	15:00-19:00	23:00-6:30	09:00-19:00	(Fixed/Demanded or Callable)	Remarks
NEMA Phase		Times	M-F	M-F	Daily	Sat-Sun		
	Local Plan	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5		
	Split Table	Split 1	Split 2	Split 3	Split 4	Split 5		Pedestrian Minimums:
1	WLK							EWWK = 7 sec, EWFD = 13 sec
	FDW							NSWK = 7 sec, NSFD = 13 sec
NOT USED	ΜΙΝ ΜΔΧ1							NS phase is callable by vehicle and/or pedestrian
	AMB							NSG is 7 seconds. If ongoing vehicle demand
	ALR							exists in the Wavetronix detection zone, the NSG is
	SPLIT							capable of providing vehicle extensions up to the
King St E	WIK 7							maximum green split. If a pedestrian call is
	FDW 13						Fixed	The NSWK & NSFD are only displayed on the
	MIN 20						POZ activated by	pedestrian signal heads if a pedestrian call is
	MAX1 37						Request Loop	received. Extension time is based on vehicle
	AMB 3.0						(max extension of 16 secs in	EWG
	SPLIT	43	53	53	43	48	Green/SDW)	Side Street Passage Time = 3 sec.
								*See back for TSP instructions.
3	WLK							EB & WB TSP re-enabled on July 10, 2019.
	MIN							
NOT USED	MAX1							
	AMB							
Berkelev St	SPLII							
4	WLK 7							
	FDW 13						Callable by Wavetronix detector	
	$\begin{array}{c} MIN & 7 \\ MAX1 & 20 \end{array}$						and/or pushbutton;	
	AMB 3.0						Extendable by wavelronix detector.	
	ALR 3.5						(TSP Truncations allowable to pedestrian	
	SPLIT	27	27	27	27	27	min.)	-
5	WI K							
	FDW							
	MIN							
	MAX1							
	AIVID							
	SPLIT							
King St E								
° /	VVLK 7						Fixed	
	MIN 20						POZ activated by	
	MAX1 37						Request Loop	
	AMB 3.0						(mov ovtopolog of 40 cross in	
	SPLIT	43	53	53	43	48	(max extension of to secs in Green/SDW)	
		10	30	30				1
7	WLK							
NOT USED	MAX1							
	AMB							
	ALR							
Derivative Of	SPLIT							4
8 Berkeley St	WLK 7							
	FDW 13						Callable by Wavetronix detector	
	MIN 7						and/or pushbutton;	
	MAX1 20						Extendable by Wavetronix detector.	
	ALR 3.5						(TSP Truncations allowable to pedestrian	
	SPLIT	27	27	27	27	27	min.)	1
	CL	70	80	80	70	75		
1	OF	3	69	58	2	66		

Notes:





LOCATION:	Cherry St	& Front St	E				DISTRICT:	Toronto & East York
MODE/COMMENT:	SAP with F	PR and 2-v	vire Polara	APS & TSP	*		COMPUTER SYSTEM:	TransSuite
TCS:	2245						CONTROLLER/CABINET TYPE:	Peek ATC-1000 / TS2T1
PREPARED BY / DATE:	Sandy Wu	/ Novemb	er 15, 2018				CONFLICT FLASH:	Red & Red
CHECKED BY / DATE:	Rebecca (Carmen) La	am / Noven	nber 15, 201	8		DESIGN WALK SPEED:	1.0 m/s (FDW based on full crossing at 1.2 m/s)
IMPLEMENTATION DATE:	December	, 14. 2018		,			CHANNEL/DROP:	5003/17
	200011201	, _0.0						3 018 2976
		OFF	ΔΜ	РM	NGHT	WKND	Phase Mode	
		UFF	Alvi	15:45-	23:00-	10:00-	T hase mode	Dementer
		All Other	6:45-9:30	18:15	06:00	19:00	(Fixed/Demanded or	Remarks
NEMA Phase		Times	M-F	M-F	Daily	Sat & Sun	Callable)	
	Local Plan	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5]	
	Split Table	Split 1	Split 2	Split 3	Split 4	Split 5		
								Pedestrian Minimums:
	WLK						NBRA	NSWK = 7 sec, NSFD = 15 sec
	FDW						Fully Protected	EWWK = 7 sec, EWFD = 19 sec
							Callable/Extendable by	EWG phase is callable by vehicle or pedestrian
							Wavetronix	actuation. If a vehicle and/or pedestrian call is
								EWED are displayed on the pedestrian signal
	SPLIT	12	12	12	12	12		beads if a vehicle and/or pedestrian call is received
Overlap C Cherry St		12	12	12	12	12		Side Street Passage Time = 3 sec
2	WIK 7						NBG	Left-Turn Passage Time = 2 sec
	FDW 15						Fixed	APS Extended Push Activation = 3 sec
	MIN 22						POZ activated by	When activated, EW and/or NS APS on for 7 seconds of
	MAX1 23						Request Loop	walk when no arrows are displayed.
	AMB 4						(max extension of 16 secs	Overlap A & B are only displayed when NBRA is not
	ALR 3						in Green/Don't Walk)	active. Overlap C drives NBG vehicle display.
	SPLIT	29	34	34	29	29	(Parent Phase 1 & 2)	Phasing Diagram:
3	WLK							
	FDW							
	MIN							
Eropt St E	SPLII							Soo back for TSP Instructions
							FBG	TSP disabled - TSP activation pending new firmware
	FDW 19						EBG	testing & field validation
	MIN 26						Callable by Wavetronix	Additional 1 second above the pedestrian minimum
	MAX1 27						and/or Push Buttons	provided to the Phase 4/8 SPLIT is to be served in
	AMB 3							Phase 4/8.
	ALR 4							
	SPLIT	34	34	34	34	34		
5	WLK							
	FDW							and the second s
	MIN					Ť		CHERRY STREET IN SOL IN COMPANY STREET
	MAX1							
	AMB							
	ALR							
Objective Ot	SPLII							
Cherry St							SPC	
	FDW 15						Fixed	
	MIN 22						POZ activated by	FOR CONST
	MAX1 35						request Loop	
	AMB 4						(max extension of 16 secs	
	ALR 3						in Green/Don't Walk)	
	SPLIT	41	46	46	41	41		
7	WLK							
	FDW							
NOTUSED	MIN							
	MAX1							
	AMB							
	ALR							
	SPLIT	ļ	ļ					4
Front St E								
× ×	WLK 7						WBG	
							Callable by Wavetronix	
	MΔX1 27						and/or Push Buttons	
	AMR 2							
	ALR 4							
	SPLIT	34	34	34	34	34		
Overlan A	WLK							1
	FDW						NBTGA	
	MIN						(Parent Phase 2)	
	MAX1						(Conflicting Phase 5)	
	AMB 4						/	
	ALR 3							
	SPLIT							1
Overlap B	WLK							
	FDW						SBTGA	
	MIN						(Parent Phase 6)	
	MAX1						(Conflicting Phase 1)	
	SDI IT							
	JF'LI I							1
	CL	75	80	80	75	75		
	OF	9	60	14	11	54		

Notes: All EB, All WB, NBRT LOOP replaced with Wavetronix as of December 14, 2018





LOCATION: MODE/COMMENT: TCS: PREPARED BY/DATE: CHECKED BY/DATE: IMPLEMENTATION DATE:	Cherry St & SAP with P 2246 Julia Suen/ Toni Houra January 2,	& Mill St 'R, with 2-wire ' December 5, : ini / Ameneh D 2020	Polara APS & 2019 ialameh / Janu	TSP* µary 02, 2020	DISTRICT: COMPUTER SYSTEM: CONTROLLER/CABINET TYPE: CONFLICT FLASH: DESIGN WALK SPEED: CHANNEL/DROP:	Toronto & East York N TransSuite N Peek ATC-1000 / TS2T1 Red & Red 1.0 m/s (FDW based on full crossing at 1.2 m/s) 5003/18
NEMA Phase	Local Plan	OFF All Other Times Pattern 1	AM 6:45-9:30 M-F Pattern 2	PM 15:45-18:15 M-F Pattern 3	CONTROLLER FIRMWARE: Phase Mode (Fixed/Demanded or Callable)	3.018. 2976 Remarks
	WLK FDW MIN 6 MAX1 7 AMB 3 ALR 2	Split 1	Split 2	Split 3	SBLA Fully Protected Callable/Extendable by Wavetronix	Pedestrian Minimums: NSWK = 7 sec, NSFD = 13 sec EWWK = 7 sec, EWFD = 20 sec Side Street Passage Time = 3 sec Left-Tum Passage Time = 2 sec APS Extended Push Activation = 3 sec EWG phase is callable by vehicle or pedestrian
2 Cherry St	SPLIT WLK 7 FDW 13 MIN 20 MAX1 26 AMB 3.0 ALR 3.3 SPLIT	33	33	33	NBG Fixed POZ activated by Request Loop (max extension of 16 secs in Green/Don't Walk)	actuation. If a vehicle and/or pedestrian call is received, the maximum EWG is served. The EWWK & EWFD are displayed on the pedestrian signal heads if a vehicle and/or pedestrian call is received. Left-Turn Passage Time = 2 sec Overlap A & B are only displayed when NBRA is not active. Ring Structure: Ring 1 1 2 4
3 NOT USED	WLK FDW MIN MAX1 AMB ALR SPLIT					Phasing Diagram:
	WLK 7 FDW 20 MIN 27 MAX1 27 AMB 3.0 ALR 4.9 SPLIT	35	35	35	EBG Callable by Wavetronix and/or Push Buttons	See back for TSP Instructions. TSP-NB & SB enable on Dec 9, 2016 Additional 1 second above the pedestrian minimum provided to the Phase 4/8 SPLIT is to be served in Phase 4/8
5 NOT USED	WLK FDW MIN MAX1 AMB ALR SPLIT				20	When activated, EW and/ or NS APS on 7 seconds of walk when no arrows are displayed.
6 Cherry St	WLK 7 FDW 13 MIN 20 MAX1 38 AMB 3.0 ALR 3.3 SPLIT	45	45	45	SBG Fixed POZ activated by Request Loop (max extension of 16 secs in Green/Don't Walk)	
7 NOT USED	WLK FDW MIN MAX1 AMB ALR SPLIT		25		Y	Calls for fully-protected SBLT also call the side street, to avoid creating the yellow trap for the permissive NBLT.
8 Mill St	WLK 7 FDW 20 MIN 27 MAX1 27 AMB 3.0 ALR 4.9 SPLIT	35	35	35	WBG Callable by Wavetronix and/or Push Buttons	
Overlap A	WLK FDW MIN MAX1 AMB 3.0 ALR 3.3 SPLIT	D.			NBTGA (Parent Phase 2) (Conflicting Phase 1)	
	FDW MIN MAX1 AMB 3.0 ALR 3.3 SPLIT				SBTGA (Parent Phase 6) (Conflicting Phase 1)	
	CL OF	80 34	80 52	80 26		

Notes: All EB, All WB, SBLT Loop replaced with Wavetronix as of Decemeber 12, 2018.





LOCATION:	Adelaide St &	Parliament S	St			DISTRICT:	Toronto & East York
MODE/COMMENT:	FXT with 2-Wir	e Polara AP	S with RLC (E/B)		COMPUTER SYSTEM:	TransSuite
TCS:	214					CONTROLLER/CABINET TYPE:	Econolite Cobalt /TS2 T1
PREPARED BY/DATE:	Julia Suen/ Oc	tober 10, 20	19			CONFLICT FLASH:	Red & Red
CHECKED BY/DATE:	Ameneh Diala	meh / Nover	nber 4. 2019			DESIGN WALK SPEED:	1.0 m/s (FDW based on full crossing at 1.2 m/s)
	D						504040
IMPLEMENTATION DATE:	December 17,	2019				CHANNEL/DROP:	5012/12
	1					CONTROLLER FIRMWARE:	32.63.10
		OFF All Other	AM 06:30-09:30	PM 15:30-18:30	NGT 23:00-06:30	Phase Mode (Fixed/Demanded or	
NEMA Phase		Times	M-F	M-F	Daily	Callable)	Remarks
	System Plan	Pattern 1 Plan 1	Pattern 2 Plan 2	Pattern 3 Plan 3	Pattern 4 Plan 4	+	
							Pedestrian Minimums:
	WLK FDW						EWWK = 7 sec, EWFD = 17 sec NSWK = 7 sec, NSFD = 17 sec
NOT USED	MIN						APS on during FULL WALK period of EWWK &
	MAX1 AMB						NSWK when activated by pushbuttons.
	ALR						Gardiner Rehabilitation signal timings Section1.
Adolaido St	SPLIT						2019-2020
2	WLK 7					Fixed	
	FDW 17						
	MAX1 45						
	AMB 3						
	ALR 3.3 SPLIT	52	57	57	43		
3	WLK FDW						
NOT USED	MIN						
	MAX1 AMB						
	ALR						
Parliament St	SPLIT						·
4	WLK 7					Fixed	
	FDW 17						
	MIN 24 MAX1 26						
	AMB 3.3						
	ALR 2.6 SPLIT	32	33	33	32		
5	WLK FDW						
NOT LISED	MIN						
	MAX1						
	ALR						
Adelaide St	SPLIT						-
6	WLK 7					Fixed	
	FDW 17						
	MAX1 45						
	AMB 3						
	ALR 3.3 SPLIT	52	57	57	43		
	WLK FDW						
NOT USED	MIN						
	MAX1						
	ALR						
Parliament St	SPLIT						4
8	WLK 7					Fixed	
	FDW 17						
	MIN 24 MAX1 26						
	AMB 3.3						
	ALR 2.6 SPLIT	32	33	33	32		
	0	02			02		1
	CL	84 60	90 56	90 61	75 36		
	<u> </u>						

NOTES:

LOCATION:	Parliament	St & Front	St E				DISTRICT:	Toronto & East York
TCS:	244						COMPUTER SYSTEM:	TransSuite
MODE/COMMENT:	FXT						CONTROLLER/CABINET TYPE:	Econolite Cobalt / TS2T1
PREPARED BY / DATE:	Petr Emelia	nov / Oct 9	. 2019				CONFLICT FLASH:	Red & Red
CHECKED BY / DATE:	Hao Le / Oc	t 11. 2019					DESIGN WALK SPEED:	1.0 m/s (FDW based on full crossing at 1.2 m/s)
IMPLEMENTATION DATE:	October 11.	2019					CHANNEL/DROP:	2013/2
	,						CONTROLLER FIRMWARE:	32.63.10
		OFF	AM	PM	NGHT	WKND		
		All Other	06:30-09:30	15:30-18:30	23:00-06:00	10:00-19:00	Phase Mode	Demorito
NEMA Phase		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		Dedectrice Minimumer
1	WIK							NSWK = 7 secs : NSFD = 16 secs
	FDW							EWWK = 7 secs; $EWFD = 16$ secs
	MIN							Timing card developed for Gardiner
(NOT USED)	MAX1							Rehabilitation project Section 1. 2019-2020
	AMB							
Parliament St								
2	WLK 7						Fixed	
	FDW 16							
	MIN 23							
	MAX1 31							
	AMB 4							
	SPLIT	37	40	40	37	37		
			10	10	01	01		•
3								
Front St E								
4	WLK 7						Fixed	
	FDW 16							
	$\frac{1}{100} \frac{1}{100} \frac{1}$							
	AMB 3							
	ALR 3							
	SPLIT	38	50	50	38	47		
3								
	MIN							
	MAX1							
	AMB							
	ALR							
Devliament Of	SPLIT							ł
Parilament St	WIK 7						Fixed	
	FDW 16						i nou	
	MIN 23			X				
	MAX1 31							
	AMB 4				4			
	ALK 2	37	40	10	37	37		
	SFLII	37	40	40	37	37		1
7	WLK							
	FDW							
	MIN			V				
NOT USED	MAX1							
	SPLIT							
Front St E								1
8	WLK 7						Fixed	
	FDW 16							
	IVIIN 23 MAX1 24							
	AMB 3							
	ALR 3							
	SPLIT	38	50	50	38	47		ļ
	CL	75	90	90	75	84		
	OF	47	81	77	48	68		

NOTES:



Appendix C

Multi-Modal Level of Service Criteria

Automobile Level of Service

Highway Capacity Manual 2010

Table 1 summarizes the LOS criteria for signalized intersections, as described in the *Highway Capacity Manual 2010* (Transportation Research Board, 2010).

able 1. Level of Service Criteria for Signalized Intersections			
Level of Service	Average Control Delay (seconds/vehicle)	General Description	
А	≤10	Free Flow	
В	>10 - 20	Stable Flow (slight delays)	
С	>20 - 35	Stable flow (acceptable delays)	
D	>35 – 55	Approaching unstable flow (tolerable delay, occasionally wait through more than one signal cycle before proceeding)	
E	>55 - 80	Unstable flow (intolerable delay)	
F^1	>80	Forced flow (congested and queues fail to clear)	

Source: Highway Capacity Manual 2010, Transportation Research Board, 2010.

1. If the volume-to-capacity (v/c) ratio for a lane group exceeds 1.0 LOS F is assigned to the individual lane group. LOS for overall approach or intersection is determined solely by the control delay.

Table 2 summarizes the LOS criteria for unsignalized intersections.

Table 2. Level of Service Criteria for Unsignalized Intersections		
Level of Service	Average Control Delay (seconds/vehicle)	
A	0 – 10	
В	>10 - 15	
С	>15 – 25	
D	>25 – 35	
E	>35 – 50	
F ¹	>50	

Source: Highway Capacity Manual 2010, Transportation Research Board, 2010.

 If the volume-to-capacity (v/c) ratio exceeds 1.0, LOS F is assigned an individual lane group for all unsignalized intersections, or minor street approach at two-way stop-controlled intersections. Overall intersection LOS is determined solely by control delay.

Pedestrian Level of Service

Exhibit 4 – PLOS Segment Evaluation Table

		Boulevard Width (m) (AADT)		Segment PLOS			
Sidewalk Width (m)	Boulevard Width (m)		Presence of On- street Parking	Operating Speed (km/h)			
(iii)				≤30	>30 or 50	>50 or 60	>60 ¹
		≤ 3000	N/A	А	А	А	В
	> 2	> 2000	Yes	А	В	В	N/A
		> 2000	No	А	В	С	D
		≤ 3000	N/A	А	А	А	В
2.0 or more	0.5 to 2	> 2000	Yes	А	В	С	N/A
		> 2000	No	А	С	D	E
		≤ 3000	NA	А	В	С	D
	0	. 2000	Yes	В	В	D	N/A
		> 3000	No	В	С	E	F
		≤ 3000	N/A	А	А	А	В
	> 2	> 3000	Yes	А	В	С	N/A
			No	А	С	D	E
	0.5 to 2	≤ 3000	N/A	А	В	В	D
1.8		> 3000	Yes	А	С	С	N/A
			No	В	С	Е	E
	0	≤ 3000	N/A	А	В	С	D
		2000	Yes	В	С	D	N/A
		> 3000	No	С	D	F	F
	> 2	≤ 3000	N/A	С	С	С	С
		> 3000	Yes	С	С	D	N/A
1.5			No	С	D	E	E
		≤ 3000	N/A	С	С	С	D
	0.5 to 2	> 3000	Yes	С	С	D	N/A
			No	D	E	E	E
	0	N	/A	D	E	F ²	F ²
<1.5		N/A		F ³	F ³	F ³	F ³
No sidewalk		N/A		C ⁴	F ³	F ³	F ³

Notes:

1. On-street parking not provided on roadways with posted speed of 70 km/h or more

2. Sidewalk must be 1.8 m wide if no separation is provided (curb-face sidewalk) where speeds are high

3. Sidewalk must be 1.5 m wide to meet Provincial accessiblity standards

Ottawa Pedestrian Plan, 2014: "all new and reconstructed urban local roads where pedestrian facilities are required in accordance with these policies but no dedicated pedestrian facility is provided, require that roads be designed for a speed of 30 km/h or lower (pending development of a new 30 km/h roadway design standard)." Where a roadway is specifically designed as 'shared space', with appropriate design controls and features, it can achieve LOS A.
Where a multi-use path is provided in lieu of sidewalks, the MUP can be evaluated using the same methodology.

Exhibit 5 – PETSI Point Tables

5.1 Crossing Distance & Conditions			
Total travel lanes crossed	No median	With Median (>2.4m)	
2	120	120	
3	105	105	
4	88	90	
5	72	75	
6	55	60	
7	39	45	
8	23	30	
9	6	15	
10	-10	0	

5.2 Signal Phasing & Timing Features		
Left turn conflict ("Left_turns")	Points	
Permissive	-8	
Protected/permissive	-8	
Protected	0	
No left turn/prohibited	0	
Right turn conflict ("Right_turns")	Points	
Permissive or yield control	-5	
Protected/permissive	-5	
Protected	0	
No right turn	0	
Right turns on red ("RTOR")	Points	
RTOR allowed	-3	
RTOR prohibited	0	
Leading ped interval? ("LPI")	Points	
No	-2	
Yes	0	

5.3a Corner Radius	
Corner radius	Points
Greater than 25m	-9
> 15m to 25m	-8
> 10m to 15m	-6
> 5m to 10m	-5
>3m to 5m	-4
Less than/equal to 3m	-3
No right turn	0

5.3b Right Turn Channel	
Right turn channel	Points
Conventional right turn channel with receiving lane ⁽¹⁾	-3
Conventional right turn channel without receiving lane ⁽¹⁾	0
Right turn "smart channel" ⁽¹⁾	2
No right turn channel	-4
No right turn	0

⁽¹⁾ Right turn channels are counted as an additional "travel lane crossed" and so note that despite the points shown above overall they score lower than "No right turn channel".

5.4 Crosswalk Treatment	
Crosswalk treatment ("Crosswalk")	Points
Standard transverse markings	-7
Textured/coloured pavement	-4
Zebra stripe hi-vis markings	-4
Raised crosswalk	0

Exhibit 6 – PETSI Evaluation Table

Pedestrian Exposure to Traffic LOS		
Points threshold	LOS	
≥90	A	
≥75	В	
≥60	С	
≥45	D	
≥30	E	
<30	F	

Exhibit 7 – Pedestrian Delay Evaluation Table

Average Pedestrian Crossing Delay Component		
Delay = 0.5 × (Cycle Length - Pedestrian Effective Wardship) Cycle Length	alk Time) ²	
< 10 s per intersection leg	LOS A	
≥10 to 20 sec	LOS B	
>20 to 30 sec	LOSC	
>30 to 40 sec	LOS D	
>40 to 60 sec	LOSE	
> 60 sec	LOS F	

Bicycle Level of Service

Exhibit 11 – BLOS Segment Evaluation Table

Type of Bikeway		LOS
Physically Separated Bikeway (cycli	e tracks protected hike lanes and multi-use naths) Physical separation refers to but is not	
limited to curbs, raised medians, he	Ilards and narking lanes (adjacent to the hike lane along the travelled way i.e. not curbside)	A
Rike Lanes Not Adjacent Parking L	ana Salact Morst Scoring Criteria	
Dike Lanes Not Aujacent Parking La	1 travel land in each direction	٨
	1 travel lane in each direction	A
No. of Travel Lanes	2 travel lanes in each direction separated by a raised median	В
	2 travel lanes in each direction without a separating median	C
	More than 2 travel lanes in each direction	D
	1.8 m wide bike lane (includes marked buffer and paved gutter width)	A
Bike Lane Width	≥1.5 m to <1.8 m wide bike lane (includes marked buffer and paved gutter width)	В
	≥1.2 m to <1.5 m wide bike lane (includes marked buffer and paved gutter width)	С
	≤ 50 km/h operating speed	А
Operating Speed	60 km/h operating speed	С
	> 70 km/h operating speed	F
Rike lane blockage	Pare	Δ
(commorcial areas)	Fraguant	C C
Rike Lange Adjacent to surbeide De	ricyddin	C
Dike Lanes Aujacent to curbside Pa	1 kny Lane - Select worst Sconny Cinena	٨
No. of Travel Lanes		A
	2 or more travel lanes in each direction	C
	4.5 m wide bike lane plus parking lane (includes marked buffer and paved gutter width)	A
Rike Lane and Parking Lane Width	4.25 m wide bike lane plus parking lane (includes marked buffer and paved gutter width)	В
	≤ 4.0 m wide bike lane plus parking lane (includes marked buffer and paved gutter width)	С
	< 10 km/h operating speed	Α
	50 km/h operating speed	R
Operating Speed	40 km/h operating speed	D
	00 km/m operating speed	 Г
D'ha haar bhailean	<u>> 70 kn/m operating speed</u>	F
Bike lane blockage	Rare	A
(commercial areas)	Frequent	С
Mixed Traffic		
	2 travel lanes; \leq 40 km/h; no marked centerline or classified as residential	А
	2 to 3 travel lanes; \leq 40 km/h	В
	2 travel lanes; 50 km/h; no marked centerline or classified as residential	В
No. of Travel Lanes and Operating	2 to 3 travel lanes; 50 km/h	D
Speed	4 to 5 travel lanes; ≤ 40 km/h	D
	4 to 5 travel lanes: ≥ 50 km/h	E
	6 or more travel lanes: < 40 km/h	F
	> 60 km/h	F
Unsignalized Crossing along Pouto	2.00 kilini	1
	2 or loss longs being grossed < 40 km/b	۸
	s of less failes being crossed, < 40 km/h	A D
	4 to 5 lanes being crossed; 5 40 km/h	D
	3 OF IESS Iaries being crossed; 50 km/n	D
	4 to 5 lanes being crossed; 50 km/n	U O
No. of Iravel Lanes on Side Street	3 or less lanes being crossed; 60 km/n	L L
and Operating Speed	4 to 5 lanes being crossed; 60 km/h	D
	6 or more lanes being crossed; ≤ 40 km/h	E
	3 or less lanes being crossed; ≥ 65 km/h	E
	6 or more lanes being crossed; ≥ 50 km/h	F
	4 to 5 lanes being crossed; ≥ 65 km/h	F
Unsignalized Crossing along Route	:: with median refuge (≥ 1.8 m wide)	
	5 or less lanes being crossed; \leq 40 km/h	А
	3 or less lanes being crossed; 50 km/h	А
	6 or more lanes being crossed; \leq 40 km/h	В
	4 to 5 Janes being crossed: 50 km/h	В
	3 or less lanes being crossed: 60 km/h	B
No. of Travel Lanes on Side Street	6 or more lanes being crossed: 50 km/h	C C
and Operating Speed	A to 5 Janes heing crossed: 60 km/h	C C
	4 to 5 tartes being crossed, or kit/it	
	3 OF IESS TAILES DEING CLOSSEG; ≥ 65 Km/n	U 5
	o or more ranes being crossed; 60 km/n	E E
	4 to 5 lanes being crossed; ≥ 65 km/h	E
	6 or more lanes being crossed; ≥ 65 km/h	F

Rikoway and Intersection Type		201	
Bike Lanes or higher order facility of	n a Signalized Intersection Approach	L03	
Right-turn Lane and Turning Speed of	No impact on LTS (as long as cycling facility remains to the right of any turn lane - otherwise see pocket bike	lanes below)	
101011313	Two-stage left-turn bike box: < 50 km/b	А	
	No lane crossed, $\leq 50 \text{ km/h}$	В	
	1 lane crossed, ≤ 40 km/h	В	
Ovelist Making a Loft turn and	No lane crossed, ≥ 60 km/h	С	
Operating Speed of Motorists (refer	1 lane crossed, 50 km/h	С	
to figure)	2 or more lanes crossed, ≤ 40 km/h	D	
io iiguicy	1 lane crossed, ≥ 60 km/h	E	
	2 or more lanes crossed, ≥ 50 km/h	F	
	All other single left-turn lane configurations		
Decket Bike Lance on a Signalized L	Dual lei-luin lanes (shaleu ol exclusive)	г	
FOCKET DIKE Laties off a Signalized I	Restriction Approach Right-turn lane introduced to the right of the bike lane and ≤ 50 m long, turning speed ≤ 25 km/b (based on		
	curb radii and angle of intersection)	В	
Right-turn Lane and Turning Speed of	Right-turn lane introduced to the right of the bike lane and > 50 m long, turning speed \leq 30 km/h (based on curb radii and angle of intersection)	D	
Motorists	Bike lane shifts to the left of the right-turn lane, turning speed ≤ 25 km/h (based on curb radii and angle of intersection)	D	
	Right-turn lane with any other configurations	F	
	Dual right-turn lanes (shared or exclusive)	F	
	Two-stage, left-turn bike box; ≤ 50 km/h	А	
	No lane crossed, ≤ 50 km/h	В	
	1 lane crossed, \leq 40 km/h	В	
Cyclist Making a Left-turn and	No lane crossed, ≥ 60 km/h	C	
Operating Speed of Motorists (refer	1 lane crossed, 50 km/h		
to figure)	2 or more lanes crossed, ≤ 40 km/h		
	2 or more lange crossed > 50 km/h		
	All other single left.turn lane configurations	F	
	Dual left-turn lanes (shared or exclusive)	F	
Mixed Traffic on a Signalized Interse	ection Approach		
	Right-turn lane 25 to 50 m long, turning speed \leq 25 km/h (based on curb radii and angle of intersection)	D	
Right-turn Lane and Turning Speed of	Right-turn lane 25 to 50 m long, turning speed > 25 km/h (based on curb radii and angle of intersection)		
Motorists	Right-turn lane longer than 50 m	F	
	Dual right-turn lanes (shared or exclusive)	F	
	Two-stage, left-turn bike box; ≤ 50 km/h	A	
	No lane crossed, ≤ 50 km/h	В	
	1 lane crossed, \leq 40 km/h	B	
Cyclist Making a Left-turn and	No lane crossed, ≥ 60 km/h	D	
Operating Speed of Motorists (refer	1 Jane crossed, 50 km/n	D	
to figure)	2 01 more ranges crossed, \leq 40 km/h	D F	
	2 or more lanes crossed > 50 km/h	F	
	All other single left-turn lane configurations	F	
	Dual left-turn lanes (shared or exclusive)	F	
Left-turn Configurations Two-stage, left-t	urn bike box No lane crossed One lane crossed	<u> </u>	
•			
	One Lane Crossed		

Exhibit 12 – BLOS Signalized Intersection Evaluation Table

Notes: 1. Pocket bike lanes are defined as bike lanes that develop near intersections between vehicular right turn lanes on the right side and vehicular through or left lanes on the left side. All other configurations of bike lanes or separated facility that remain against the edge of the curb/parking lane and require right turning vehicles to yield to through cyclists will not impact the level of traffic stress (i.e. are considered to be LOS A).

Transit Level of Service

Exhibit 15 - TLOS Segment Evaluation Table

	Facility Type	Level/exposu frictio	ire to conge on and incid	Quantitative	1.05		
	racinty type	Congestion	Friction	Incident Potential	Measurement	203	
	Segregated ROW	No	No	No	N/A	А	
Bus lane	No/limited parking/driveway friction	No	Low	Low	$C_f \le 60$	В	
	Frequent parking/driveway friction	No	Medium	Medium	$C_{f} > 60$	С	
Mixed Traffic	Limited parking/driveway friction	Yes	Low	Medium	$Vt/Vp \ge 0.8$	D	
	Moderate parking/driveway friction	Yes	Medium	Medium	$Vt/Vp \le 0.6$	E	
	Frequent parking/driveway friction	Yes	High	High	Vt/Vp < 0.4	F	

Notes:

Cf, Conflict Factor = = (Number of driveways x crossing volume) / 1 km Vt/Vp is the ratio of average transit travel speed to posted speed limit

Exhibit 16 - TLOS Signalized Intersection Evaluation Table

Delay	Typical Location	LOS
0	Grade Separation	А
≤10 sec	High Level TSP	В
≤2 0 sec		С
≤3 0 sec		D
≤40 sec	TSP & long cycle length	E
>40 sec	No TSP & long cycle length	F

Note: Delay includes travel time from end of queue to entering the intersection

Truck Level of Service

Exhibit 20 -	TkLOS	Seament	Evaluation	Table
	INCOU	obginoin	Lvalaalon	rubio

Curb Lane Width (m)	Only two travel lanes (one in each direction)	More than two travel lanes
>3.7	В	А
≤3.5	С	А
≤3.3	D	С
≤3.2	E	D
≤3	F	E

Exhibit 21 – TkLOS Signalized Intersection Evaluation Table

Effective Corner Radius	One receiving lane on departure from intersection	More than one receiving lane on departure from intersection
< 10m	F	D
10 to 15m	E	В
> 15m	С	A

Level of Service Targets

		PLOS	Bicycle - BLOS					Transit - TLOS ³	Truck -			
OP Designation / Policy Area	Road Class		Cross-town	Spino Pouto	Local Pouto	Elsowhoro	Rapid Transit	TP - Continuous	TP - Isolated	Truck Pouto	Othor	Auto - LOS ⁴
			Bikeway	Spille Roule	LUCAI KUUle	EISEMHEIE	Corridor	Lanes	Measures	TTUCK KUULE	Other	
Land-Use Designation												
	Arterial	А	А	С	В	D	А	С	D	D	E	E
Central Area	Collector	А	А	В	В	D	А	С	D	D	No target	E
	Local	А	А	В	В	D	А	С	D	E	No target	E
	Arterial	С	В	С	В	D	В	С	D	D	No target	D
Developing Community	Collector	С	В	С	В	D	В	С	D	D	No target	D
	Local	С	В	С	В	D	В	С	D	N/A	No target	D
	Arterial	С	В	С	С	E	В	С	D	В	D	D
Employment Area	Collector	С	В	С	С	E	В	С	D	В	D	D
	Local	С	В	D	С	No target	В	С	D	D	E	D
	Arterial	С	В	С	В	D	В	С	D	В	E	D
Entreprise Area	Collector	С	В	С	В	D	В	С	D	В	E	D
	Local	С	В	С	В	No target	В	С	D	D	No target	D
	Arterial	No target	N/A	D	D	No target	N/A	N/A	N/A	С	E	D
General Rural Area	Collector	No target	N/A	D	D	No target	N/A	N/A	N/A	С	No target	D
	Local	No target	N/A	D	D	No target	N/A	N/A	N/A	No target	No target	D
	Arterial	С	В	С	В	D	В	С	D	D	E	D
General Urban Area	Collector	С	В	С	В	D	В	С	D	D	No target	D
	Local	С	В	С	В	D	В	С	D	N/A	No target	D
	Arterial	С	А	С	В	D	В	С	D	D	E	D
Mixed Use Centre	Collector	С	А	В	В	D	В	С	D	D	No target	D
	Local	С	А	В	В	D	В	С	D	N/A	No target	D
	Arterial	С	В	С	В	D	N/A	N/A	N/A	D	No target	D
Village	Collector	С	В	С	В	D	N/A	N/A	N/A	D	No target	D
	Local	С	В		В	D	N/A	N/A	N/A	N/A	No target	D
Traditional Main Streat	Arterial	В	А	С	С	D	В	С	D	D	E	D
Traditional Main Street	Collector	В	А	С	С	D	В	С	D	D	No target	D
Arterial Main Street	Arterial	С	В	С	D	D	В	С	D	D	E	D
	Arterial	D	В	С	С	D	В	С	D	D	No target	D
All Other Designations	Collector	D	В	С	С	D	В	С	D	D	No target	D
	Local	D	В	С	С	D	В	С	D	N/A	No target	D
Policy Area ²												
	Arterial	А	А	С	В	D	А	С	D	D	E	E
Within 600m of a rapid transit station	Collector	А	А	В	В	D	А	С	D	D	No target	E
	Local	А	А	В	В	D	А	С	D	N/A	No target	E
	Arterial	А	А	С	В	D	А	С	D	D	E	E
Within 300m of a school	Collector	А	А	В	В	D	А	С	D	D	No target	E
	Local	А	А	В	В	D	А	С	D	N/A	No target	E

Exhibit 22 – Minimum Desirable MMLOS Targets by Official Plan Policy/Designation & Road Class

1. This table indicates the minimum desirable target. Efforts should be made to exceed these minimum targets whenever possible, without negatively impacting the ability to achieve the minimum targets for other modes.

2. Where a policy area applies to a project or area, the modal targets should reflect the policy area targets regardless of the land use designation.

3. Transit targets are intended to be applied only for streets with a proposed or existing transit route.

4. Auto LOS is based on the two and a half hour peak period.

5. Minimum guidelines as dictated by City policy must be maintained, regardless of MMLOS targets.

N/A - Not applicable



Appendix D

Synchro Modelling Assumptions and Parameters



Synchro Modelling Parameters and Assumptions

The key assumptions and modifications made to the default values of the Synchro parameters in the traffic modelling exercise are as follows:

- The existing turning movement volumes at the Study Area intersections, developed from the raw Turning Movement Count data after applying a conservative annual growth rate of 1%, were used in the Existing Conditions model for all Turning Movement Counts collected before 2020.
- The Heavy Vehicle Percentages were calculated at the movement level based on the raw Turning Movement Count data.
- The Peak Hour Factors for each individual intersection was calculated based on the raw Turning Movement Count data. For the purpose of calibrating the PM peak hour Synchro model, the value for the southbound shared through and right-turn movements was increased from the calculated value of 0.93 to 1.00.
- Conflicting pedestrian and bicycle volumes were input for the left-turn and right-turn movements based on the raw Turning Movement Count data.
- Bus Blockages were input into the model to represent delays to vehicular traffic due to passenger boarding and alighting at the bus / streetcar stops. Buses stopping at the nearside of an intersection were reflected in Synchro as bus blockages for the shared right-turn and through movements. Streetcars stopping at the nearside of an intersection were reflected in Synchro as bus blockages for the whole approach. Bus blockages were estimated as per the Toronto Transit Commission schedule available online for the Toronto Transit Commission bus and streetcar routes that have stops within the Study Area. It should be noted that Synchro assumes that Bus Blockages cause an average blockage of 14.4 seconds during each occurrence and reduces the Saturation Flow Rate of the respective blocked movements accordingly. Hence, any existing streetcar stop locations with a passenger servicing time exceeding 14.4 seconds could have its impacts on traffic operations underestimated, as a result.
- The actual signal timing plans were used in the model.
- The Lost Time Adjust values for all the movements were set to -1 second as per the City's Guidelines for Using Synchro 9.
- The Synchro default values were used for all other parameters.



Appendix E

Synchro Reports

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Lane Group	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	1056	330	62	216
v/c Ratio	0.39	0.65	0.32	0.37
Control Delay	10.8	32.4	28.8	25.8
Queue Delay	0.4	2.0	0.0	0.0
Total Delay	11.2	34.4	28.8	25.8
Queue Length 50th (m)	33.4	47.0	8.0	28.5
Queue Length 95th (m)	41.9	75.7	19.3	47.4
Internal Link Dist (m)	84.4	80.5		115.7
Turn Bay Length (m)			70.0	
Base Capacity (vph)	2692	508	193	578
Starvation Cap Reductn	1032	76	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.64	0.76	0.32	0.37
Intersection Summary				

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		đ † β						f,		<u> </u>	•	
Traffic Volume (vph)	81	869	43	0	0	0	0	267	43	58	203	0
Future Volume (vph)	81	869	43	0	0	0	0	267	43	58	203	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						5.0		5.0	5.0	
Lane Util. Factor		0.91						1.00		1.00	1.00	
Frpb, ped/bikes		0.99						0.95		1.00	1.00	
Flpb, ped/bikes		0.96						1.00		0.84	1.00	
Frt		0.99						0.98		1.00	1.00	
Flt Protected		1.00						1.00		0.95	1.00	
Satd. Flow (prot)		4653						1558		1454	1795	
Flt Permitted		1.00						1.00		0.39	1.00	
Satd. Flow (perm)		4653						1558		602	1795	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	86	924	46	0	0	0	0	284	46	62	216	0
RTOR Reduction (vph)	0	5	0	0	0	0	0	7	0	0	0	0
Lane Group Flow (vph)	0	1051	0	0	0	0	0	323	0	62	216	0
Confl. Peds. (#/hr)	218		129	129		218	156		336	336		156
Confl. Bikes (#/hr)			49			1			24			57
Heavy Vehicles (%)	8%	5%	12%	0%	0%	0%	0%	11%	12%	5%	7%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	9	9	0	0	0
Turn Type	Perm	NA						NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4									6		
Actuated Green, G (s)		51.0						28.0		28.0	28.0	
Effective Green, g (s)		52.0						29.0		29.0	29.0	
Actuated g/C Ratio		0.58						0.32		0.32	0.32	
Clearance Time (s)		5.0						6.0		6.0	6.0	
Lane Grp Cap (vph)		2688						502		193	578	
v/s Ratio Prot								c0.21			0.12	
v/s Ratio Perm		0.23								0.10		
v/c Ratio		0.39						0.64		0.32	0.37	
Uniform Delay, d1		10.4						26.1		23.1	23.5	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		0.4						6.2		4.4	1.8	
Delay (s)		10.8						32.3		27.4	25.3	
Level of Service		В						С		С	С	
Approach Delay (s)		10.8			0.0			32.3			25.8	
Approach LOS		В			А			С			С	
Intersection Summary												
HCM 2000 Control Delay			17.6	H	CM 2000	Level of	Service		В			
HCM 2000 Volume to Capacity	y ratio		0.48									
Actuated Cycle Length (s)			90.0	S	um of los	t time (s)			9.0			
Intersection Capacity Utilizatio	n		53.0%	IC	CU Level	of Service	2		А			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	1050	96	97
v/c Ratio	0.31	0.25	0.29
Control Delay	6.4	22.4	30.6
Queue Delay	0.0	0.0	0.0
Total Delay	6.4	22.4	30.6
Queue Length 50th (m)	26.3	9.7	13.6
Queue Length 95th (m)	33.1	22.0	26.5
Internal Link Dist (m)	108.1	67.9	129.6
Turn Bay Length (m)			
Base Capacity (vph)	3424	441	387
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.31	0.22	0.25
Intersection Summary			

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		-€†₽						4Î			નુ	
Traffic Volume (vph)	78	849	70	0	0	0	0	62	29	36	56	0
Future Volume (vph)	78	849	70	0	0	0	0	62	29	36	56	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5						5.6			5.6	
Lane Util. Factor		0.91						1.00			1.00	
Frpb, ped/bikes		0.99						0.98			1.00	
Flpb, ped/bikes		1.00						1.00			0.98	
Frt		0.99						0.96			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		4785						1701			1805	
Flt Permitted		1.00						1.00			0.85	
Satd. Flow (perm)		4785						1701			1558	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	82	894	74	0	0	0	0	65	31	38	59	0
RTOR Reduction (vph)	0	8	0	0	0	0	0	20	0	0	0	0
Lane Group Flow (vph)	0	1042	0	0	0	0	0	76	0	0	97	0
Confl. Peds. (#/hr)	19		32	32		19	89		43	43		89
Confl. Bikes (#/hr)			32			3			2			3
Heavy Vehicles (%)	4%	7%	6%	0%	0%	0%	0%	5%	7%	3%	2%	0%
Turn Type	Perm	NA						NA		Perm	NA	
Protected Phases		2						4			8	
Permitted Phases	2									8		
Actuated Green, G (s)		61.1						16.8			16.8	
Effective Green, g (s)		62.1						17.8			17.8	
Actuated g/C Ratio		0.69						0.20			0.20	
Clearance Time (s)		5.5						6.6			6.6	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		3301						336			308	
v/s Ratio Prot								0.04				
v/s Ratio Perm		0.22									c0.06	
v/c Ratio		0.32						0.23			0.31	
Uniform Delay, d1		5.5						30.3			30.9	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.3						0.3			0.6	
Delay (S)		5.8						30.7			31.5	
Level of Service		A			0.0			20.7			21 5	
Approach Delay (S)		5.8			0.0			30.7			31.5	
Approach LOS		А			A			C			L	
Intersection Summary					011 000		2 1		-			
HCM 2000 Control Delay			9.7	Н	CM 2000	Level of	Service		А			
HCIVI 2000 Volume to Capacity	/ ratio		0.32	<u>^</u>	- E I	t the - ()			10.4			
Actuated Cycle Length (s)			90.0	SI	um of los	t time (s)			10.1			
Intersection Capacity Utilizatio	n		47.6%	IC	U Level	DI Service			A			
Analysis Penud (IIIII)			10									

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Lane Group	EBL	EBT	NBT	SBT
Lane Group Flow (vph)	93	852	311	333
v/c Ratio	0.10	0.44	0.32	0.36
Control Delay	4.1	7.1	24.0	25.4
Queue Delay	0.0	0.1	0.0	0.0
Total Delay	4.1	7.2	24.0	25.4
Queue Length 50th (m)	2.1	9.1	20.6	23.3
Queue Length 95th (m)	3.9	11.3	31.4	34.8
Internal Link Dist (m)		90.9	68.1	90.3
Turn Bay Length (m)				
Base Capacity (vph)	924	1942	974	921
Starvation Cap Reductn	0	279	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.10	0.51	0.32	0.36
Intersection Summary				

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	۲.	¢β						Åβ			- € †	
Traffic Volume (vph)	89	730	88	0	0	0	0	275	24	30	290	0
Future Volume (vph)	89	730	88	0	0	0	0	275	24	30	290	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.3	5.3						4.9			4.9	
Lane Util. Factor	1.00	0.95						0.95			0.95	
Frpb, ped/bikes	1.00	1.00						0.99			1.00	
Flpb, ped/bikes	0.96	1.00						1.00			1.00	
Frt	1.00	0.98						0.99			1.00	
Flt Protected	0.95	1.00						1.00			1.00	
Satd. Flow (prot)	1610	3362						3097			3276	
Flt Permitted	0.95	1.00						1.00			0.90	
Satd. Flow (perm)	1610	3362						3097			2953	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	93	760	92	0	0	0	0	286	25	31	302	0
RTOR Reduction (vph)	0	10	0	0	0	0	0	7	0	0	0	0
Lane Group Flow (vph)	93	842	0	0	0	0	0	304	0	0	333	0
Confl. Peds. (#/hr)	34		13	13		34	66		69	69		66
Confl. Bikes (#/hr)			17						11			9
Heavy Vehicles (%)	9%	6%	10%	0%	0%	0%	0%	15%	13%	7%	10%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	3	0	0	3	0
Turn Type	Perm	NA						NA		Perm	NA	
Protected Phases		2						4			8	
Permitted Phases	2									8		
Actuated Green, G (s)	50.7	50.7						27.1			27.1	
Effective Green, g (s)	51.7	51.7						28.1			28.1	
Actuated g/C Ratio	0.57	0.57						0.31			0.31	
Clearance Time (s)	6.3	6.3						5.9			5.9	
Lane Grp Cap (vph)	924	1931						966			921	
v/s Ratio Prot		c0.25						0.10				
v/s Ratio Perm	0.06										c0.11	
v/c Ratio	0.10	0.44						0.31			0.36	
Uniform Delay, d1	8.6	10.9						23.6			24.0	
Progression Factor	0.44	0.60						1.00			1.00	
Incremental Delay, d2	0.2	0.7						0.9			1.1	_
Delay (s)	4.0	1.2						24.5			25.1	
Level of Service	А	A						C			C	_
Approach Delay (s)		6.9			0.0			24.5			25.1	
Approach LOS		A			A			С			С	
Intersection Summary												
HCM 2000 Control Delay			14.1	H	CM 2000	Level of	Service		В			
HCM 2000 Volume to Capad	city ratio		0.41	-								
Actuated Cycle Length (s)			90.0	S	um of los	t time (s)			10.2			
Intersection Capacity Utiliza	tion		62.9%	IC	U Level	of Service	;		В			
Analysis Period (min)			15									
c Critical Lane Group												

Queues 140: Berkeley St & King Street

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Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	296	576	92	138
v/c Ratio	0.15	0.25	0.29	0.34
Control Delay	5.2	6.8	22.7	23.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	5.2	6.8	22.7	23.9
Queue Length 50th (m)	7.1	18.7	9.3	14.7
Queue Length 95th (m)	9.8	22.0	17.5	24.4
Internal Link Dist (m)	110.1	92.3	87.5	67.9
Turn Bay Length (m)				
Base Capacity (vph)	2009	2296	374	466
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.15	0.25	0.25	0.30
Intersection Summary				

HCM Signalized Intersection Capacity Analysis 140: Berkeley St & King Street

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		A1⊅			A1⊅			\$			\$	
Traffic Volume (vph)	0	185	46	0	435	14	30	29	13	7	78	23
Future Volume (vph)	0	185	46	0	435	14	30	29	13	7	78	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.4			4.4			5.5			5.5	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		0.91			0.99			0.98			0.96	
Flpb, ped/bikes		1.00			1.00			0.94			1.00	
Frt		0.97			1.00			0.98			0.97	
Flt Protected		1.00			1.00			0.98			1.00	
Satd. Flow (prot)		3080			3551			1555			1721	
Flt Permitted		1.00			1.00			0.85			0.98	
Satd. Flow (perm)		3080			3551			1354			1693	
Peak-hour factor, PHF	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Adj. Flow (vph)	0	237	59	0	558	18	38	37	17	9	100	29
RTOR Reduction (vph)	0	21	0	0	2	0	0	11	0	0	12	0
Lane Group Flow (vph)	0	275	0	0	574	0	0	81	0	0	126	0
Confl. Peds. (#/hr)	167		216	216		167	167		59	59		167
Confl. Bikes (#/hr)			84			13			19			4
Heavy Vehicles (%)	0%	2%	13%	0%	1%	7%	14%	7%	0%	0%	4%	0%
Turn Type		NA			NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)		50.7			50.7			17.4			17.4	
Effective Green, g (s)		51.7			51.7			18.4			18.4	
Actuated g/C Ratio		0.65			0.65			0.23			0.23	
Clearance Time (s)		5.4			5.4			6.5			6.5	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1990			2294			311			389	
v/s Ratio Prot		0.09			c0.16							
v/s Ratio Perm								0.06			c0.07	
v/c Ratio		0.14			0.25			0.26			0.32	
Uniform Delay, d1		5.5			6.0			25.2			25.6	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.1			0.3			0.4			0.5	
Delay (s)		5.6			6.2			25.7			26.1	
Level of Service		А			А			С			С	
Approach Delay (s)		5.6			6.2			25.7			26.1	
Approach LOS		А			А			С			С	
Intersection Summary												
HCM 2000 Control Delay			10.2	Н	CM 2000	Level of	Service		В			
HCM 2000 Volume to Capacity ratio			0.27									
Actuated Cycle Length (s)			80.0	S	um of los	t time (s)			9.9			
Intersection Capacity Utilization			41.5%	IC	CU Level	of Service	;		А			
Analysis Period (min)			15									
c Critical Lane Group												
Queues 164: Parliament St & Front St

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Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	33	317	168	871	479	364
v/c Ratio	0.14	0.19	0.35	0.51	0.51	0.38
Control Delay	14.2	12.1	16.3	16.3	20.8	19.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.2	12.1	16.3	16.3	20.8	19.7
Queue Length 50th (m)	2.9	14.3	16.8	50.2	28.6	21.5
Queue Length 95th (m)	8.5	21.6	31.4	66.4	43.1	32.8
Internal Link Dist (m)		87.7		140.6	136.0	125.7
Turn Bay Length (m)	45.0		40.0			
Base Capacity (vph)	230	1679	480	1692	931	969
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.19	0.35	0.51	0.51	0.38
Intersection Summary						

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ሻ	A		ሻ	≜ ⊅			4î b			4î b	
Traffic Volume (vph)	31	271	27	158	781	38	92	250	108	60	234	48
Future Volume (vph)	31	271	27	158	781	38	92	250	108	60	234	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.95			0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99			0.96			0.99	
Flpb, ped/bikes	0.98	1.00		0.94	1.00			0.99			0.99	
Frt	1.00	0.99		1.00	0.99			0.96			0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1742	3342		1629	3377			2923			3062	
Flt Permitted	0.25	1.00		0.56	1.00			0.78			0.79	
Satd. Flow (perm)	459	3342		960	3377			2308			2455	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	33	288	29	168	831	40	98	266	115	64	249	51
RTOR Reduction (vph)	0	9	0	0	4	0	0	34	0	0	15	0
Lane Group Flow (vph)	33	309	0	168	867	0	0	445	0	0	349	0
Confl. Peds. (#/hr)	89		79	79		89	53		129	129		53
Confl. Bikes (#/hr)			28			5			17			17
Heavy Vehicles (%)	0%	4%	7%	3%	4%	13%	8%	13%	9%	8%	11%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	3	3
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	44.0	44.0		44.0	44.0			34.0			34.0	
Effective Green, g (s)	45.0	45.0		45.0	45.0			35.0			35.0	
Actuated g/C Ratio	0.50	0.50		0.50	0.50			0.39			0.39	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Lane Grp Cap (vph)	229	1671		480	1688			897			954	
v/s Ratio Prot		0.09			c0.26							
v/s Ratio Perm	0.07			0.18				c0.19			0.14	
v/c Ratio	0.14	0.18		0.35	0.51			0.50			0.37	
Uniform Delay, d1	12.1	12.4		13.6	15.1			20.8			19.6	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	1.3	0.2		2.0	1.1			2.0			1.1	
Delay (s)	13.4	12.6		15.6	16.3			22.8			20.7	
Level of Service	В	В		В	В			С			С	
Approach Delay (s)		12.7			16.2			22.8			20.7	
Approach LOS		В			В			С			С	
Interception Summony												
			17.0		014 0000		<u> </u>					
HCM 2000 Control Delay			17.8	HCM 2000 Level of Service					В			
HCIVI 2000 VOIUme to Capac	City ratio		0.51	$0 \qquad \qquad \text{Sum of lost time (s)}$					10.0			
Actuated Cycle Length (S)	tion		90.0	SI	um of Iosi	t time (s)			10.0			
Intersection Capacity Utiliza	uon		97.2%	IC	U Level (DI Service)		F			
Analysis Period (min)			15									

Queues 166: Cherry St & Front St

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Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	6	63	24	33	146	162	22	282
v/c Ratio	0.02	0.11	0.05	0.09	0.24	0.18	0.16	0.27
Control Delay	18.0	18.9	0.2	19.0	20.5	5.4	30.2	10.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.0	18.9	0.2	19.0	20.5	5.4	30.2	10.6
Queue Length 50th (m)	0.6	6.5	0.0	3.4	15.8	14.6	3.3	21.9
Queue Length 95th (m)	3.1	14.6	0.0	9.3	29.0	3.1	6.0	37.0
Internal Link Dist (m)		133.9			121.8	134.8		120.9
Turn Bay Length (m)	15.0		20.0	45.0			45.0	
Base Capacity (vph)	414	614	509	384	629	915	144	1053
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.10	0.05	0.09	0.23	0.18	0.15	0.27
Intersection Summary								

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ľ	•	1	۲	ર્લ			ર્સ	1		લૈ	
Traffic Volume (vph)	6	59	22	31	125	11	32	119	20	0	221	41
Future Volume (vph)	6	59	22	31	125	11	32	119	20	0	221	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0			6.0	4.0		6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	0.87	1.00	0.99			1.00	1.00		0.98	
Flpb, ped/bikes	0.95	1.00	1.00	0.92	1.00			0.99	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99	1.00		1.00	
Satd. Flow (prot)	1695	1756	1220	1457	1798			1648	1389		1716	
Flt Permitted	0.66	1.00	1.00	0.72	1.00			0.90	1.00		1.00	
Satd. Flow (perm)	1185	1756	1220	1098	1798			1501	1389		1716	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	6	63	24	33	134	12	34	128	22	0	238	44
RTOR Reduction (vph)	0	0	17	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	6	63	7	33	146	0	0	162	22	0	275	0
Confl. Peds. (#/hr)	67		55	55		67	45		66	66		45
Confl. Bikes (#/hr)			21			5			17			11
Heavy Vehicles (%)	0%	7%	14%	13%	2%	9%	6%	13%	15%	0%	6%	2%
Turn Type	Perm	NA	Perm	Perm	NA		custom	NA	custom		NA	
Protected Phases		4			8			26	1		26	
Permitted Phases	4		4	8			2					
Actuated Green, G (s)	20.8	20.8	20.8	20.8	20.8			45.2	3.1		45.2	
Effective Green, g (s)	21.8	21.8	21.8	21.8	21.8			46.2	4.1		46.2	
Actuated g/C Ratio	0.27	0.27	0.27	0.27	0.27			0.58	0.05		0.58	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0				5.0			
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0				3.0			
Lane Grp Cap (vph)	322	478	332	299	489			866	71		990	
v/s Ratio Prot		0.04			c0.08				0.02		c0.16	
v/s Ratio Perm	0.01		0.01	0.03				0.11				
v/c Ratio	0.02	0.13	0.02	0.11	0.30			0.19	0.31		0.28	
Uniform Delay, d1	21.3	22.0	21.3	21.8	23.0			8.0	36.6		8.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00			0.48	0.84		1.00	
Incremental Delay, d2	0.0	0.1	0.0	0.2	0.3			0.5	2.5		0.7	
Delay (s)	21.3	22.1	21.3	22.0	23.4			4.4	33.2		9.2	
Level of Service	С	С	С	С	С			А	С		А	
Approach Delay (s)		21.8			23.1			7.8			9.2	
Approach LOS		С			С			А			А	
Intersection Summary												
HIGH 2000 Central Dalay			12.0		CM 2000	Lovel of	Convigo					
HCM 2000 Volume to Conce	ity ratio		13.8	H		Level of	Service		В			
nuivi 2000 voluine to Capac	apacity ratio 0.30			Sum of loct time (c)					1/ 0			
Actuated Cycle Length (S)	S) 80.0					t time (S)	2		10.0			
Intersection Capacity Utilizati	10[1		/0./% 1E	IC	U Level (JI Service	5		D			
Analysis Penod (min)			15									

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Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	130	154	52	304	13	246
v/c Ratio	0.31	0.36	0.09	0.34	0.03	0.27
Control Delay	19.8	21.2	7.3	8.1	6.9	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.8	21.2	7.3	8.1	6.9	7.3
Queue Length 50th (m)	11.8	14.7	2.8	16.1	0.7	12.3
Queue Length 95th (m)	24.9	29.3	7.1	29.6	2.7	23.2
Internal Link Dist (m)	283.3	301.6		269.4		134.5
Turn Bay Length (m)			30.0		35.0	
Base Capacity (vph)	415	422	566	887	373	909
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.36	0.09	0.34	0.03	0.27
Intersection Summary						

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		\$			\$		٢	el el		۲	el 🕴	
Traffic Volume (vph)	30	72	15	37	86	15	47	204	69	12	170	51
Future Volume (vph)	30	72	15	37	86	15	47	204	69	12	170	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)		5.0			5.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.94			0.96		1.00	0.92		1.00	0.95	
Flpb, ped/bikes		0.94			0.92		0.89	1.00		0.85	1.00	
Frt		0.98			0.99		1.00	0.96		1.00	0.97	
Flt Protected		0.99			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1493			1529		1582	1522		1137	1565	
Flt Permitted		0.90			0.90		0.59	1.00		0.54	1.00	
Satd. Flow (perm)		1359			1386		991	1522		652	1565	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	33	80	17	41	96	17	52	227	77	13	189	57
RTOR Reduction (vph)	0	8	0	0	6	0	0	18	0	0	15	0
Lane Group Flow (vph)	0	122	0	0	148	0	52	286	0	13	231	0
Confl. Peds. (#/hr)	167		220	220		167	84		127	127		84
Confl. Bikes (#/hr)			74			16			84			73
Heavy Vehicles (%)	3%	8%	8%	11%	2%	0%	0%	10%	0%	33%	13%	0%
Bus Blockages (#/hr)	4	4	4	4	4	4	0	5	5	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		20.0			20.0		39.0	39.0		39.0	39.0	
Effective Green, g (s)		21.0			21.0		40.0	40.0		40.0	40.0	
Actuated g/C Ratio		0.30			0.30		0.57	0.57		0.57	0.57	
Clearance Time (s)		6.0			6.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		407			415		566	869		372	894	
v/s Ratio Prot								c0.19			0.15	
v/s Ratio Perm		0.09			c0.11		0.05			0.02		
v/c Ratio		0.30			0.36		0.09	0.33		0.03	0.26	
Uniform Delay, d1		18.8			19.2		6.8	7.9		6.6	7.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.9			2.4		0.3	1.0		0.2	0.7	
Delay (s)		20.7			21.6		7.1	8.9		6.7	8.2	
Level of Service		С			С		А	А		А	А	
Approach Delay (s)		20.7			21.6			8.7			8.2	
Approach LOS		С			С			А			А	
Intersection Summary												
HCM 2000 Control Delay			12.5	Н	CM 2000	Level of	Service		R			
HCM 2000 Volume to Capac	rity ratio		0.34	11	5101 2000				U			
Actuated Cycle Length (s)	ny ratio		70.0	S	um of los	t time (s)			9.0			
Intersection Canacity Utilizat	tion		59.1%			of Service	2		7.0 R			
Analysis Period (min)			15				, 					
			15									

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Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	90	103	537	402
v/c Ratio	0.21	0.27	0.32	0.26
Control Delay	23.0	7.3	8.5	8.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	23.0	7.3	8.5	8.6
Queue Length 50th (m)	9.5	0.0	16.9	13.1
Queue Length 95th (m)	20.2	10.6	25.4	20.2
Internal Link Dist (m)	379.6		245.4	136.0
Turn Bay Length (m)	15.0			
Base Capacity (vph)	420	377	1690	1520
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.21	0.27	0.32	0.26
Intersection Summary				

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Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations	۲	1	A1⊅			41		
Traffic Volume (vph)	82	94	437	52	39	327		
Future Volume (vph)	82	94	437	52	39	327		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5		
Total Lost time (s)	4.2	4.2	5.0			5.0		
Lane Util. Factor	1.00	1.00	0.95			0.95		
Frpb, ped/bikes	1.00	0.83	0.97			1.00		
Flpb, ped/bikes	1.00	1.00	1.00			0.99		
Frt	1.00	0.85	0.98			1.00		
Flt Protected	0.95	1.00	1.00			0.99		
Satd. Flow (prot)	1750	1245	3012			3149		
Flt Permitted	0.95	1.00	1.00			0.86		
Satd, Flow (perm)	1750	1245	3012			2730		
Peak-hour factor PHF	0.91	0.91	0.91	0.91	0.91	0.91		
Adi Flow (vph)	90	103	480	57	43	350		
RTOR Reduction (vnh)	0	78	12	0		0		
Lane Group Flow (vph)	90	25	52/	0	0	/02		
Confl Dods (#/hr)	128	110	JZH	150	150	402		
Confl. Rikes $(\#/hr)$	120	8		130	150			
Hoavy Vobiclos (%)	20/	5%	1/10/	14	12%	11%		
Rus Blockages (#/br)	270	J 70	1470	4 /0	1370	0		
	Drot	Dorm		0	Dorm			
Turri Type Drotoctod Dhococ	PIUL	Pelm	NA 2		Pelm	NA 4		
Protected Pridses	Ŏ	0	Z		4	0		
Actuated Croop C (c)	15.0	0 1E 0	20.0		0	20.0		
Actualed Green, G (S)	10.0	10.0	38.0			38.0		
Effective Green, g (S)	10.8	10.8	39.0			39.0		
	0.24	0.24	0.56			0.56		
	5.2	5.2	6.0			0.0		
Lane Grp Cap (vph)	420	298	16/8			1521		
v/s Ratio Prot	c0.05	0.00	c0.17			0.4-		
v/s Ratio Perm	0.01	0.02	0.01			0.15		
v/c Ratio	0.21	0.08	0.31			0.26		
Uniform Delay, d1	21.3	20.6	8.3			8.0		
Progression Factor	1.00	1.00	1.00			1.00		
Incremental Delay, d2	1.2	0.5	0.5			0.4		
Delay (s)	22.5	21.2	8.8			8.5		
Level of Service	С	С	А			А		
Approach Delay (s)	21.8		8.8			8.5		
Approach LOS	С		А			А		
Intersection Summary								
HCM 2000 Control Delay			10.9	Н	CM 2000	Level of Se	ervice B	
HCM 2000 Volume to Capa	acity ratio		0.27					
Actuated Cycle Length (s)	- ing rano		70.0	S	um of los	t time (s)	11.2	
Intersection Capacity Utiliz	ation		56.0%	10	CU Level (of Service	B	
Analysis Period (min)			15					
Critical Lana Croup			10					

Queues 173: Cherry St & Mill St

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Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	
Lane Group Flow (vph)	37	101	263	96	43	145	11	288	
v/c Ratio	0.09	0.18	0.66	0.18	0.10	0.19	0.08	0.34	
Control Delay	18.3	13.0	31.6	19.1	14.9	14.7	31.6	21.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	18.3	13.0	31.6	19.1	14.9	14.7	31.6	21.0	
Queue Length 50th (m)	3.7	6.5	33.3	10.0	3.3	11.5	1.7	29.8	
Queue Length 95th (m)	9.8	16.3	58.4	20.0	11.3	28.5	m6.3	56.2	
Internal Link Dist (m)		379.6		303.0		221.1		134.8	
Turn Bay Length (m)	30.0		45.0		25.0		25.0		
Base Capacity (vph)	394	571	397	543	420	769	148	845	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.09	0.18	0.66	0.18	0.10	0.19	0.07	0.34	
Intersection Summary									

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 173: Cherry St & Mill St

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ľ	f,		ľ	et 🗧		ľ	1		ľ	¢Î	
Traffic Volume (vph)	33	57	33	234	76	10	38	129	0	10	235	21
Future Volume (vph)	33	57	33	234	76	10	38	129	0	10	235	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.9	6.9		6.9	6.9		5.3	5.3		4.0	5.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.95		1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	0.96	1.00		0.96	1.00		0.93	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	0.98		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1534	1557		1556	1545		1467	1648		1487	1695	
Flt Permitted	0.69	1.00		0.69	1.00		0.58	1.00		0.95	1.00	
Satd. Flow (perm)	1122	1557		1133	1545		901	1648		1487	1695	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	37	64	37	263	85	11	43	145	0	11	264	24
RTOR Reduction (vph)	0	24	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	37	77	0	263	96	0	43	145	0	11	284	0
Confl. Peds. (#/hr)	29		32	32		29	53		17	17		53
Confl. Bikes (#/hr)			57			21			22			14
Heavy Vehicles (%)	12%	7%	12%	10%	16%	20%	13%	14%	0%	20%	9%	0%
Bus Blockages (#/hr)	0	0	0	0	4	4	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Prot	NA	
Protected Phases		4			8		_	2		1	6	
Permitted Phases	4			8			2					
Actuated Green, G (s)	27.0	27.0		27.0	27.0		32.4	32.4		1.4	38.8	
Effective Green, g (s)	28.0	28.0		28.0	28.0		33.4	33.4		2.4	39.8	_
Actuated g/C Ratio	0.35	0.35		0.35	0.35		0.42	0.42		0.03	0.50	
Clearance Time (s)	7.9	7.9		7.9	7.9		6.3	6.3		5.0	6.3	
	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vpn)	392	544		396	540		376	688		44	843	
V/S Ratio Prot	0.00	0.05		-0.00	0.06		0.05	0.09		0.01	CU.17	
V/S Rallo Perm	0.03	0.14		CU.23	0.10		0.05	0.01		0.05	0.24	
V/C Rallo	0.09 17 E	0.14		0.00	0.18		0.11	0.21		0.25	0.34	
Unitorm Delay, d I Dregression Factor	1/.5	1/.8		22.0	18.0		14.3	14.9		37.9	Z. 1.64	
Progression Facion	1.00	0.1		1.00	1.00		1.00	1.00		0.92	1.04	
Doloy (c)	0.1	0.1 17.0		4.Z	0.Z		14.0	15.6		2.9	20.0	
Loval of Sarvica	17.0 D	17.9 D		20.2	10.Z		14.9 D	10.0 D		37.0 D	20.9	
Approach Dolay (s)	D	17 Q		C	24.0		D	15 /		D	21.6	
Approach LOS		17.0 R			24.0			13.4 R			21.0	
		D			C			D			C	
Intersection Summary				<u> </u>			<u> </u>					
HCM 2000 Control Delay			20.8	H	CM 2000	Level of	Service		С			
HCM 2000 Volume to Capa	city ratio		0.50	<u>^</u>		4/ 0						
Actuated Cycle Length (s)	1 ¹		0.08	0 Sum of lost time (s)					16.2			
Intersection Capacity Utiliza	lion		64.2%	IC	U Level (DI Service	<u>,</u>		C			
Analysis Period (MIN)			15									
c Critical Lane Group												

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Lane Group	EBT	WBT	NBL	SBL	SBT
Lane Group Flow (vph)	589	1215	1	33	206
v/c Ratio	0.46	0.60	0.00	0.14	0.56
Control Delay	35.3	34.1	37.0	39.8	36.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	35.3	34.1	37.0	39.8	36.4
Queue Length 50th (m)	39.8	68.3	0.2	6.3	31.0
Queue Length 95th (m)	51.5	80.0	1.7	15.4	56.0
Internal Link Dist (m)	129.2	5.3			269.4
Turn Bay Length (m)			35.0	25.0	
Base Capacity (vph)	1283	2040	206	242	367
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.46	0.60	0.00	0.14	0.56
Intersection Summary					

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		-€¶‡}>			ৰাাফ		1	eî 👘		ľ	ef 🔰	
Traffic Volume (vph)	171	287	89	10	971	149	1	0	0	31	76	115
Future Volume (vph)	171	287	89	10	971	149	1	0	0	31	76	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)		6.0			6.0		8.0			8.0	8.0	
Lane Util. Factor		0.91			0.86		1.00			1.00	1.00	
Frpb, ped/bikes		0.99			0.99		1.00			1.00	0.93	
Flpb, ped/bikes		1.00			1.00		0.96			0.94	1.00	
Frt		0.98			0.98		1.00			1.00	0.91	
Flt Protected		0.98			1.00		0.95			0.95	1.00	
Satd. Flow (prot)		4575			5970		1715			1405	1485	
Flt Permitted		0.98			1.00		0.53			0.76	1.00	
Satd. Flow (perm)		4575			5970		954			1120	1485	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	184	309	96	11	1044	160	1	0	0	33	82	124
RTOR Reduction (vph)	0	24	0	0	0	0	0	0	0	0	45	0
Lane Group Flow (vph)	0	565	0	0	1215	0	1	0	0	33	161	0
Confl. Peds. (#/hr)	7		15	15		7	38		37	37		38
Confl. Bikes (#/hr)						1			65			59
Heavy Vehicles (%)	1%	10%	7%	0%	6%	3%	0%	0%	0%	20%	9%	5%
Turn Type	Split	NA		Split	NA		Perm			Perm	NA	
Protected Phases	2	2		1	1			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)		32.0			40.0		25.0			25.0	25.0	
Effective Green, g (s)		33.0			41.0		26.0			26.0	26.0	
Actuated g/C Ratio		0.28			0.34		0.22			0.22	0.22	
Clearance Time (s)		7.0			7.0		9.0			9.0	9.0	
Lane Grp Cap (vph)		1258			2039		206			242	321	
v/s Ratio Prot		c0.12			c0.20						c0.11	
v/s Ratio Perm							0.00			0.03		
v/c Ratio		0.45			0.60		0.00			0.14	0.50	
Uniform Delay, d1		36.0			32.7		36.9			37.9	41.3	
Progression Factor		1.00			1.00		1.00			1.00	1.00	
Incremental Delay, d2		1.2			1.3		0.0			1.2	5.5	
Delay (s)		37.1			33.9		36.9			39.1	46.8	
Level of Service		D			С		D			D	D	
Approach Delay (s)		37.1			33.9			36.9			45.7	
Approach LOS		D			С			D			D	
Intersection Summary												
HCM 2000 Control Delay			36.2	H	ICM 2000	Level of	Service		D			
HCM 2000 Volume to Capacity	ratio		0.52									
Actuated Cycle Length (s)			120.0	S	um of los	t time (s)			20.0			
Intersection Capacity Utilization	n		76.7%	10	CU Level	of Service	;		D			
Analysis Period (min)			15									
c Critical Lane Group												

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Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		^			5	
Traffic Volume (veh/h)	0	918	0	0	80	0
Future Volume (Veh/h)	0	918	0	0	80	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	987	0	0	86	0
Pedestrians		91	3		46	
Lane Width (m)		3.7	0.0		3.7	
Walking Speed (m/s)		1.1	1.1		1.1	
Percent Blockage		9	0		5	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		189	132			
pX, platoon unblocked						
vC, conflicting volume	46				378	137
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	46				378	137
tC, single (s)	4.1				6.9	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				85	100
cM capacity (veh/h)	1504				562	777
Direction, Lane #	EB 1	EB 2	EB 3	SB 1		
Volume Total	329	329	329	86		
Volume Left	0	0	0	86		
Volume Right	0	0	0	0		
cSH	1700	1700	1700	562		
Volume to Capacity	0.19	0.19	0.19	0.15		
Oueue Length 95th (m)	0.0	0.0	0.0	4.1		
Control Delay (s)	0.0	0.0	0.0	12.6		
Lane LOS	0.0	510	0.0	. <u></u> 8		
Approach Delay (s)	0.0			12.6		
Approach LOS	010			В		
Intersection Summary						
			1.0			
Average Delay	zation		1.0	10		of Convios
Analysis Doriod (min)	ZaliUH		37.370 15	IC	U Level (JI SELVICE
Analysis Penod (min)			15			

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Lane Group	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	1425	361	101	312
v/c Ratio	0.52	0.65	0.57	0.51
Control Delay	12.1	32.2	40.2	28.5
Queue Delay	1.0	3.4	0.0	0.0
Total Delay	13.1	35.6	40.2	28.5
Queue Length 50th (m)	49.7	52.0	14.4	43.4
Queue Length 95th (m)	60.9	81.5	#34.9	67.8
Internal Link Dist (m)	84.4	80.5		115.7
Turn Bay Length (m)			70.0	
Base Capacity (vph)	2760	552	177	606
Starvation Cap Reductn	975	111	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.80	0.82	0.57	0.51
Intersection Summary				

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		-a†ħ						લૈ		ľ	•	
Traffic Volume (vph)	59	1260	77	0	0	0	0	310	44	99	306	0
Future Volume (vph)	59	1260	77	0	0	0	0	310	44	99	306	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						5.0		5.0	5.0	
Lane Util. Factor		0.91						1.00		1.00	1.00	
Frpb, ped/bikes		0.98						0.95		1.00	1.00	
Flpb, ped/bikes		0.98						1.00		0.84	1.00	
Frt		0.99						0.98		1.00	1.00	
Flt Protected		1.00						1.00		0.95	1.00	
Satd. Flow (prot)		4764						1699		1491	1883	
Flt Permitted		1.00						1.00		0.35	1.00	
Satd. Flow (perm)		4764						1699		552	1883	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	60	1286	79	0	0	0	0	316	45	101	312	0
RTOR Reduction (vph)	0	7	0	0	0	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	1418	0	0	0	0	0	356	0	101	312	0
Confl. Peds. (#/hr)	253		146	146		253	176		417	417		176
Confl. Bikes (#/hr)			168			2			54			21
Heavy Vehicles (%)	2%	4%	8%	0%	0%	0%	0%	2%	11%	3%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	7	7	0	0	0
Turn Type	Perm	NA						NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4									6		
Actuated Green, G (s)		51.0						28.0		28.0	28.0	
Effective Green, g (s)		52.0						29.0		29.0	29.0	
Actuated g/C Ratio		0.58						0.32		0.32	0.32	
Clearance Time (s)		5.0						6.0		6.0	6.0	
Lane Grp Cap (vph)		2752						547		177	606	
v/s Ratio Prot								c0.21			0.17	
v/s Ratio Perm		0.30								0.18		
v/c Ratio		0.52						0.65		0.57	0.51	
Uniform Delay, d1		11.4						26.1		25.3	24.8	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		0.7						5.9		12.7	3.1	
Delay (s)		12.1						32.0		38.0	27.9	
Level of Service		В						С		D	С	
Approach Delay (s)		12.1			0.0			32.0			30.4	
Approach LOS		В			А			С			С	
Intersection Summary												
HCM 2000 Control Delay			18.8	Н	CM 2000	Level of	Service		В			
HCM 2000 Volume to Capacity	/ ratio		0.56									
Actuated Cycle Length (s)			90.0	S	um of los	t time (s)			9.0			
Intersection Capacity Utilization	n		63.2%	IC	U Level	of Service	;		В			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	1550	108	94
v/c Ratio	0.44	0.28	0.31
Control Delay	7.5	22.0	31.1
Queue Delay	0.0	0.0	0.0
Total Delay	7.6	22.0	31.1
Queue Length 50th (m)	45.0	10.7	13.2
Queue Length 95th (m)	54.7	23.8	26.3
Internal Link Dist (m)	108.1	67.9	129.6
Turn Bay Length (m)			
Base Capacity (vph)	3552	452	358
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	341	1	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.48	0.24	0.26
Intersection Summary			

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		.₫ ≜ Ъ						ĥ			ۍ ۲	
Traffic Volume (vph)	53	1367	52	0	0	0	0	66	37	46	44	0
Future Volume (vph)	53	1367	52	0	0	0	0	66	37	46	44	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5						5.6			5.6	
Lane Util. Factor		0.91						1.00			1.00	
Frpb, ped/bikes		0.99						0.97			1.00	
Flpb, ped/bikes		1.00						1.00			0.98	
Frt		0.99						0.95			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		4965						1726			1773	
Flt Permitted		1.00						1.00			0.79	
Satd. Flow (perm)		4965						1726			1442	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	56	1439	55	0	0	0	0	69	39	48	46	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	24	0	0	0	0
Lane Group Flow (vph)	0	1546	0	0	0	0	0	84	0	0	94	0
Confl. Peds. (#/hr)	30		45	45		30	73		44	44		73
Confl. Bikes (#/hr)			76			1			8			1
Heavy Vehicles (%)	4%	4%	2%	0%	0%	0%	0%	3%	3%	4%	2%	0%
Turn Type	Perm	NA						NA		Perm	NA	
Protected Phases		2						4			8	
Permitted Phases	2									8		
Actuated Green, G (s)		61.1						16.8			16.8	
Effective Green, g (s)		62.1						17.8			17.8	
Actuated g/C Ratio		0.69						0.20			0.20	
Clearance Time (s)		5.5						6.6			6.6	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		3425						341			285	
v/s Ratio Prot								0.05				
v/s Ratio Perm		0.31									c0.07	
v/c Ratio		0.45						0.25			0.33	
Uniform Delay, d1		6.3						30.4			31.0	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.4						0.4			0.7	
Delay (s)		6.7						30.8			31.7	
Level of Service		А						С			С	
Approach Delay (s)		6.7			0.0			30.8			31.7	
Approach LOS		А			А			С			С	
Intersection Summary												
HCM 2000 Control Delay			9.5	Н	CM 2000	Level of	Service		А			
HCM 2000 Volume to Capacit	y ratio		0.42									
Actuated Cycle Length (s)			90.0	S	um of los	t time (s)			10.1			
Intersection Capacity Utilization	on		56.4%	IC	CU Level	of Service	;		В			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBL	EBT	NBT	SBT
Lane Group Flow (vph)	87	1464	451	357
v/c Ratio	0.09	0.74	0.42	0.38
Control Delay	3.5	11.5	25.4	25.6
Queue Delay	0.0	0.0	0.9	0.0
Total Delay	3.5	11.5	26.3	25.6
Queue Length 50th (m)	1.7	94.7	31.5	25.1
Queue Length 95th (m)	3.3	121.3	44.8	37.1
Internal Link Dist (m)		90.9	68.1	90.3
Turn Bay Length (m)				
Base Capacity (vph)	972	1972	1072	936
Starvation Cap Reductn	0	0	361	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.09	0.74	0.63	0.38
Intersection Summary				

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	<u>۲</u>	tβ						A			-4 ↑	
Traffic Volume (vph)	81	1218	143	0	0	0	0	387	33	31	301	0
Future Volume (vph)	81	1218	143	0	0	0	0	387	33	31	301	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.3	5.3						4.9			4.9	
Lane Util. Factor	1.00	0.95						0.95			0.95	
Frpb, ped/bikes	1.00	1.00						0.99			1.00	
Flpb, ped/bikes	0.97	1.00						1.00			1.00	
Frt	1.00	0.98						0.99			1.00	
Flt Protected	0.95	1.00						1.00			1.00	
Satd. Flow (prot)	1693	3418						3416			3403	
Flt Permitted	0.95	1.00						1.00			0.88	
Satd. Flow (perm)	1693	3418						3416			3002	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	87	1310	154	0	0	0	0	416	35	33	324	0
RTOR Reduction (vph)	0	10	0	0	0	0	0	7	0	0	0	0
Lane Group Flow (vph)	87	1454	0	0	0	0	0	444	0	0	357	0
Confl. Peds. (#/hr)	23		11	11		23	89		78	78		89
Confl. Bikes (#/hr)	50/	10/	50	00/	00/	2	00/	10/	1	00/	(0)	5
Heavy Vehicles (%)	5%	4%	10%	0%	0%	0%	0%	4%	6%	3%	6%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	3	0	0	3	0
Turn Type	Perm	NA						NA		Perm	NA	
Protected Phases	0	2						4		0	8	
Permitted Phases	2	50.7						07.4		8	07.4	
Actuated Green, G (s)	50.7	50.7						27.1			27.1	
Effective Green, g (s)	51.7	51.7						28.1			28.1	
Actuated g/C Ratio	0.57	0.57						0.31			0.31	
	0.3	0.3						5.9			5.9	
Lane Grp Cap (vpn)	972	1963						1066			937	
V/S Rallo Prol	0.05	CU.43						CU. 13			0.10	
V/S Ralio Perm	0.05	074						0.40			0.12	
V/C Rallo Uniform Doloy, d1	0.09	0.74						0.42			0.38	
Unitorm Delay, dT	δ.0 0.20	14.2						24.5			24.2	
Progression Facion	0.30	0.03						1.00			1.00	
Dolay (s)	0.Z 3.4	2.4 11 /						1.Z 25.7			1.Z 25.3	
Level of Service	J.4 Δ	11.4 R						23.7			25.5	
Approach Delay (s)	A	10.0			0.0			25.7			25.3	
Approach LOS		B			A			23.7 C			23.3 C	
Intersection Summary												
HCM 2000 Control Delay			15.9	H	CM 2000	Level of	Service		В			
HCM 2000 Volume to Capac	city ratio		0.63									
Actuated Cycle Length (s)			90.0	S	um of los	t time (s)			10.2			
Intersection Capacity Utilizat	ion		79.2%	IC	U Level	of Service	;		D			
Analysis Period (min)			15									
c Critical Lane Group												

Queues 140: Berkeley St & King Street

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Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	546	326	144	98
v/c Ratio	0.25	0.15	0.39	0.25
Control Delay	6.5	6.0	23.9	20.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	6.5	6.0	23.9	20.7
Queue Length 50th (m)	16.8	9.3	14.7	9.3
Queue Length 95th (m)	23.1	13.8	28.5	20.0
Internal Link Dist (m)	110.1	92.3	87.5	67.9
Turn Bay Length (m)				
Base Capacity (vph)	2176	2213	426	458
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.25	0.15	0.34	0.21
Intersection Summarv				

HCM Signalized Intersection Capacity Analysis 140: Berkeley St & King Street

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		≜ 1≽			≜ 16			\$			\$	
Traffic Volume (vph)	0	423	52	0	263	21	32	59	34	10	56	20
Future Volume (vph)	0	423	52	0	263	21	32	59	34	10	56	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.4			4.4			5.5			5.5	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		0.96			0.96			0.97			0.96	
Flpb, ped/bikes		1.00			1.00			0.97			0.99	
Frt		0.98			0.99			0.96			0.97	
Flt Protected		1.00			1.00			0.99			0.99	
Satd. Flow (prot)		3350			3416			1677			1716	
Flt Permitted		1.00			1.00			0.90			0.96	
Satd. Flow (perm)		3350			3416			1525			1656	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	0	486	60	0	302	24	37	68	39	11	64	23
RTOR Reduction (vph)	0	11	0	0	7	0	0	18	0	0	15	0
Lane Group Flow (vph)	0	535	0	0	319	0	0	126	0	0	83	0
Confl. Peds. (#/hr)	232		189	189		232	131		82	82		131
Confl. Bikes (#/hr)			27			53			18			19
Heavy Vehicles (%)	0%	2%	6%	0%	2%	0%	0%	2%	3%	10%	2%	0%
Turn Type		NA			NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)		50.7			50.7			17.4			17.4	
Effective Green, g (s)		51.7			51.7			18.4			18.4	
Actuated g/C Ratio		0.65			0.65			0.23			0.23	
Clearance Time (s)		5.4			5.4			6.5			6.5	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		2164			2207			350			380	
v/s Ratio Prot		c0.16			0.09							
v/s Ratio Perm								c0.08			0.05	
v/c Ratio		0.25			0.14			0.36			0.22	
Uniform Delay, d1		6.0			5.5			25.9			25.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.3			0.1			0.6			0.3	
Delay (s)		6.2			5.7			26.5			25.3	
Level of Service		А			А			С			С	
Approach Delay (s)		6.2			5.7			26.5			25.3	
Approach LOS		А			А			С			С	
Intersection Summary												
HCM 2000 Control Delay			10.4	Н	CM 2000	Level of	Service		В			
HCM 2000 Volume to Capacity	ratio		0.28									
Actuated Cycle Length (s)			80.0	S	um of los	t time (s)			9.9			
Intersection Capacity Utilization	1		41.5%	IC	CU Level	of Service	<u>;</u>		А			
Analysis Period (min)			15									
c Critical Lane Group												

Queues 164: Parliament St & Front St

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Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	55	825	135	572	585	389
v/c Ratio	0.16	0.49	0.59	0.34	0.64	0.40
Control Delay	13.9	15.6	29.1	14.0	23.7	19.9
Queue Delay	0.0	1.1	0.0	0.0	0.0	0.0
Total Delay	13.9	16.7	29.1	14.0	23.7	19.9
Queue Length 50th (m)	5.0	45.8	15.8	29.2	38.1	23.2
Queue Length 95th (m)	11.9	61.1	#38.7	40.4	56.0	35.2
Internal Link Dist (m)		87.7		140.6	136.0	125.7
Turn Bay Length (m)	45.0		40.0			
Base Capacity (vph)	336	1680	228	1686	920	972
Starvation Cap Reductn	0	575	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.75	0.59	0.34	0.64	0.40

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	۲.	≜1 ≱		۲.	≜1 ≱			đ þ			đ þ	
Traffic Volume (vph)	53	689	103	130	516	33	95	274	193	58	258	58
Future Volume (vph)	53	689	103	130	516	33	95	274	193	58	258	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.95			0.95	
Frpb, ped/bikes	1.00	0.97		1.00	0.99			0.90			0.97	
Flpb, ped/bikes	0.94	1.00		0.95	1.00			0.99			0.98	
Frt	1.00	0.98		1.00	0.99			0.95			0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1608	3333		1607	3362			2864			3122	
Flt Permitted	0.40	1.00		0.27	1.00			0.79			0.78	
Satd. Flow (perm)	673	3333		457	3362			2277			2456	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	55	718	107	135	538	34	99	285	201	60	269	60
RTOR Reduction (vph)	0	13	0	0	5	0	0	35	0	0	17	0
Lane Group Flow (vph)	55	812	0	135	567	0	0	550	0	0	373	0
Confl. Peds. (#/hr)	131		184	184		131	126		228	228		126
Confl. Bikes (#/hr)			16			47			55			26
Heavy Vehicles (%)	4%	1%	8%	5%	4%	6%	6%	4%	3%	7%	5%	7%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	3	3
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	44.0	44.0		44.0	44.0			34.0			34.0	
Effective Green, g (s)	45.0	45.0		45.0	45.0			35.0			35.0	
Actuated g/C Ratio	0.50	0.50		0.50	0.50			0.39			0.39	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Lane Grp Cap (vph)	336	1666		228	1681			885			955	
v/s Ratio Prot		0.24			0.17							
v/s Ratio Perm	0.08			c0.30				c0.24			0.15	
v/c Ratio	0.16	0.49		0.59	0.34			0.62			0.39	
Uniform Delay, d1	12.3	14.9		16.0	13.5			22.2			19.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	1.0	1.0		10.8	0.5			3.3			1.2	
Delay (s)	13.3	15.9		26.8	14.1			25.4			21.0	
Level of Service	В	В		С	В			С			С	
Approach Delay (s)		15.7			16.5			25.4			21.0	
Approach LOS		В			В			С			С	
Intersection Summary												
HCM 2000 Control Dolov			10.0		CM 2000	Loval of	Sonvico		D			
HCM 2000 Volume to Conce	city ratio		19.0	Н		Level U	Service		D			
Actuated Cycle Length (c)	LILY I dliU		00.0	C.	um of loc	t time (c)			10.0			
Intersection Canacity Litilize	tion		90.0 07.60/	5		of Sorvior	`		10.0 E			
Analysis Deried (min)	UUH		97.0% 15	IC	U Level		;		F			
Analysis Peniuu (IIIII)			10									

Queues 166: Cherry St & Front St

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Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT	
Lane Group Flow (vph)	18	215	82	66	101	159	57	377	
v/c Ratio	0.05	0.34	0.15	0.20	0.17	0.21	0.35	0.44	
Control Delay	18.4	21.8	2.3	20.8	19.6	15.0	39.6	14.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	18.4	21.8	2.3	20.8	19.6	15.0	39.6	14.0	
Queue Length 50th (m)	1.8	24.1	0.0	7.0	10.6	11.7	9.3	33.2	
Queue Length 95th (m)	6.2	41.2	4.2	16.2	21.3	38.5	20.7	53.5	
Internal Link Dist (m)		133.9			121.8	134.8		120.9	
Turn Bay Length (m)	15.0		20.0	45.0			45.0		
Base Capacity (vph)	393	651	546	348	615	751	168	861	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.05	0.33	0.15	0.19	0.16	0.21	0.34	0.44	
Intersection Summary									

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ľ	•	1	ľ	el 🕴			ŧ	1		el 🕴	
Traffic Volume (vph)	17	198	75	61	72	21	32	114	52	0	322	25
Future Volume (vph)	17	198	75	61	72	21	32	114	52	0	322	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0			6.0	4.0		6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	0.88	1.00	0.97			1.00	1.00		0.96	
Flpb, ped/bikes	0.92	1.00	1.00	0.93	1.00			0.93	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.97			1.00	0.85		0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99	1.00		1.00	
Satd. Flow (prot)	1543	1860	1332	1586	1759			1659	1566		1676	
Flt Permitted	0.69	1.00	1.00	0.60	1.00			0.87	1.00		1.00	
Satd. Flow (perm)	1124	1860	1332	995	1759			1467	1566		1676	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	18	215	82	66	78	23	35	124	57	0	350	27
RTOR Reduction (vph)	0	0	54	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	18	215	28	66	101	0	0	159	57	0	374	0
Confl. Peds. (#/hr)	104		60	60		104	428		79	79		428
Confl. Bikes (#/hr)			14			54			21			22
Heavy Vehicles (%)	6%	1%	5%	5%	0%	0%	0%	6%	2%	0%	7%	0%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA	custom		NA	
Protected Phases		4			8			26	1		26	
Permitted Phases	4		4	8			26					
Actuated Green, G (s)	26.0	26.0	26.0	26.0	26.0			40.0	4.8		40.0	
Effective Green, g (s)	27.0	27.0	27.0	27.0	27.0			41.0	5.8		41.0	
Actuated g/C Ratio	0.34	0.34	0.34	0.34	0.34			0.51	0.07		0.51	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0				5.0			
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0				3.0			
Lane Grp Cap (vph)	379	627	449	335	593			751	113		858	
v/s Ratio Prot		c0.12			0.06				0.04		c0.22	
v/s Ratio Perm	0.02		0.02	0.07				0.11				
v/c Ratio	0.05	0.34	0.06	0.20	0.17			0.21	0.50		0.44	
Uniform Delay, d1	17.8	19.9	1/.9	18.8	18.6			10.7	35.7		12.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.31	1.01		1.00	
Incremental Delay, d2	0.1	0.3	0.1	0.3	0.1			0.6	3.5		1.6	
Delay (s)	17.9	20.2	18.0	19.1	18.8			14.6	39.6		13.8	
Level of Service	В	ل 10 ت	В	В	10.0			D1 D	D		12.0	
Approach Delay (S)		19.5			18.9			21.2			13.8	
Approach LUS		В			В			C			В	
Intersection Summary												
HCM 2000 Control Delay	H	CM 2000	Level of S	Service		В						
HCM 2000 Volume to Capacit	0.42	-										
Actuated Cycle Length (s) 80.0				Si	um of lost	time (s)	16.0					
Intersection Capacity Utilization	IC	U Level o	ot Service	•		F						
Analysis Period (min)			15									

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Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	205	177	48	285	17	416
v/c Ratio	0.54	0.48	0.11	0.29	0.03	0.43
Control Delay	22.6	24.4	7.8	8.5	6.1	10.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.6	24.4	7.8	8.5	6.1	10.3
Queue Length 50th (m)	17.8	18.1	2.6	16.7	1.1	35.1
Queue Length 95th (m)	37.2	35.4	7.1	29.0	m2.6	57.7
Internal Link Dist (m)	283.3	301.6		269.4		134.5
Turn Bay Length (m)			30.0		35.0	
Base Capacity (vph)	383	372	420	970	506	974
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.48	0.11	0.29	0.03	0.43
Intersection Summary						

m Volume for 95th percentile queue is metered by upstream signal.

Movement EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBT SBR Traffic Volume (vph) 30 100 67 61 95 13 46 239 35 16 337 62 Iduar Slume (vph) 30 100 67 61 95 13 46 239 35 16 337 62 Iduar Slume (vph) 1900 100 100
Lane Configurations Image: Configurations <
Traffic Volume (vph) 30 100 67 61 95 13 46 239 35 16 337 62 Future Volume (vph) 30 100 67 61 95 13 46 239 35 16 337 62 Gleal Flow (vphi) 1900 100 100 1.00 <
Future Volume (vph) 30 100 67 61 95 13 46 239 35 16 337 62 Ideal Flow (vphp) 1900 100 1.00
$\begin{array}{c c c c c c c c c c c c c c c c c c c $
Lane Width3.5
Total Lost time (s) 5.0 5.0 4.0 4.0 4.0 4.0 Lane Util. Factor 1.00 0.96 1.00 0.96 1.00 0.96 1.00 0.96 1.00 0.98 1.00 0.98 1.00 0.98 1.00 0.98 1.00 0.98 1.00 0.98 1.00 0.98 1.00 0.98 1.00 0.98 1.00 0.98 1.00 0.98 1.00 0.56 1.00 5.0 1.00 5.0 1.00 5.0 1.00 5.0 3.0 8.4 0.45 1.00 0.56 1.00 5.0 5.0 9.0 1.00 1.00 5.0 6.0 6.0 9.0 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96
Lane Util. Factor1.001.001.001.001.001.001.001.00Frpb, ped/bikes0.800.971.000.961.000.96Flipb, ped/bikes0.960.870.901.000.841.00Frt0.950.991.000.981.000.98Flit Protected0.990.980.951.000.951.00Satd. Flow (prot)126314381539169115001688Flit Permitted0.930.840.451.000.960.96Satd. Flow (perm)1189122773516918851688Peak-hour factor, PHF0.960.960.960.960.960.960.960.96Adj. Flow (vph)311047064991448249361735165RTOR Reduction (vph)0270040040090Lane Group Flow (vph)017801730482810174070Confl. Bikes (#/hr)2222044000Turn TypePermNAPermNAPermNAPermNAPotoeted Phases482666666Lane Group (s)21.021.040.040.040.040.040.0 <t< td=""></t<>
Frpb, ped/bikes 0.80 0.97 1.00 0.96 1.00 0.96 Flpb, ped/bikes 0.96 0.87 0.90 1.00 0.84 1.00 Frt 0.95 0.99 1.00 0.98 1.00 0.98 FlP torected 0.99 0.98 0.95 1.00 0.95 1.00 Satd. Flow (port) 1263 1438 1539 1691 1500 1688 Flt Permitted 0.93 0.84 0.45 1.00 0.56 1.00 Satd. Flow (perm) 1189 1227 735 1691 885 1688 Peak-hour factor, PHF 0.96
Flipb, ped/bikes 0.96 0.87 0.90 1.00 0.84 1.00 Frt 0.95 0.99 1.00 0.98 1.00 0.98 Flt Protected 0.99 0.98 0.95 1.00 0.95 1.00 Satd. Flow (prot) 1263 1438 1539 1691 1500 1688 Flt Permitted 0.93 0.84 0.45 1.00 0.56 1.00 Satd. Flow (perm) 1189 1227 735 1691 885 1688 Peak-hour factor, PHF 0.96
Frt 0.95 0.99 1.00 0.98 1.00 0.98 FIt Protected 0.99 0.98 0.95 1.00 0.95 1.00 Satd. Flow (prot) 1263 1438 1539 1691 1500 1688 Fit Permitted 0.93 0.84 0.45 1.00 0.56 1.00 Satd. Flow (perm) 1189 1227 735 1691 885 1688 Peak-hour factor, PHF 0.96 0.
Fit Protected 0.99 0.98 0.95 1.00 0.95 1.00 Satd. Flow (prot) 1263 1438 1539 1691 1500 1688 Fit Pernitted 0.93 0.84 0.45 1.00 0.56 1.00 Satd. Flow (perm) 1189 1227 735 1691 885 1688 Peak-hour factor, PHF 0.96
Satd. Flow (prot) 1263 1438 1539 1691 1500 1688 Flt Permitted 0.93 0.84 0.45 1.00 0.56 1.00 Satd. Flow (perm) 1189 1227 735 1691 885 1688 Peak-hour factor, PHF 0.96
Fit Permitted 0.93 0.84 0.45 1.00 0.56 1.00 Satd. Flow (perm) 1189 1227 735 1691 885 1688 Peak-hour factor, PHF 0.96
Satd. Flow (perm) 1189 1227 735 1691 885 1688 Peak-hour factor, PHF 0.96 0.97 0.97 0.97
Peak-hour factor, PHF 0.96
Adj. Flow (vph) 31 104 70 64 99 14 48 249 36 17 351 65 RTOR Reduction (vph) 0 27 0 0 4 0 0 4 0 0 9 0 Lane Group Flow (vph) 0 178 0 0 173 0 48 281 0 17 407 0 Confl. Peds. (#/hr) 190 453 453 190 110 128 128 110 Confl. Bikes (#/hr) 37 39 104 75 44 0 0 0 0 Heavy Vehicles (%) 7% 7% 9% 5% 6% 8% 4% 3% 3% 0% 4% 5% Bus Blockages (#/hr) 2 2 2 2 0 4 4 0 0 0 Turn Type Perm NA Perm NA Perm NA Perm NA Permitted Phases 4 8 2 6 6
RTOR Reduction (vph) 0 27 0 0 4 0 0 4 0 0 9 0 Lane Group Flow (vph) 0 178 0 0 173 0 48 281 0 17 407 0 Confl. Peds. (#/hr) 190 453 453 190 110 128 128 110 Confl. Bikes (#/hr) 37 39 104 75 Heavy Vehicles (%) 7% 7% 9% 5% 6% 8% 4% 3% 3% 0% 4% 5% Bus Blockages (#/hr) 2 2 2 2 2 0 4 4 0 0 0 Turn Type Perm NA Perm NA Perm NA Perm NA Protected Phases 4 8 2 6
Lane Group Flow (vph) 0 178 0 0 173 0 48 281 0 17 407 0 Confl. Peds. (#/hr) 190 453 453 190 110 128 128 110 Confl. Bikes (#/hr) 37 39 104 75 Heavy Vehicles (%) 7% 7% 9% 5% 6% 8% 4% 3% 3% 0% 4% 5% Bus Blockages (#/hr) 2 2 2 2 2 0 4 4 0 0 0 Turn Type Perm NA Perm NA Perm NA Perm NA Protected Phases 4 8 2 6 6 6 6 Actuated Green, G (s) 20.0 20.0 39.0 39.0 39.0 39.0 2 6 Actuated g/C Ratio 0.30 0.30 0.57 0.57 0.57 0.57
Confl. Peds. (#/hr) 190 453 453 190 110 128 128 110 Confl. Bikes (#/hr) 37 39 104 75 Heavy Vehicles (%) 7% 7% 9% 5% 6% 8% 4% 3% 3% 0% 4% 5% Bus Blockages (#/hr) 2 2 2 2 2 0 4 4 0 0 0 0 Turn Type Perm NA Statuated Green G 6 Contacted Green G 2 6 Contacted Green G Statuated Green G Statuated Green G Statuated Green
Confl. Bikes (#/hr) 37 39 104 75 Heavy Vehicles (%) 7% 7% 9% 5% 6% 8% 4% 3% 3% 0% 4% 5% Bus Blockages (#/hr) 2 2 2 2 2 0 4 4 0 0 0 Turn Type Perm NA Perm NA Perm NA Perm NA Protected Phases 4 8 2 6 6 Actuated Green, G (s) 20.0 20.0 39.0 39.0 39.0 39.0 Effective Green, g (s) 21.0 21.0 40.0 40.0 40.0 40.0 Actuated g/C Ratio 0.30 0.30 0.57 0.57 0.57 0.57 Clearance Time (s) 6.0 5.0 5.0 5.0 5.0 5.0 Lane Grp Cap (vph) 356 368 420 966 505 964 v/s Ratio Perm 0
Heavy Vehicles (%) 7% 7% 9% 5% 6% 8% 4% 3% 3% 0% 4% 5% Bus Blockages (#/hr) 2 2 2 2 2 0 4 4 0 0 0 Turn Type Perm NA Perm NA Perm NA Perm NA Protected Phases 4 8 2 6 Actuated Green, G (s) 20.0 20.0 39.0 39.0 39.0 39.0 Effective Green, g (s) 21.0 21.0 40.0 40.0 40.0 40.0 Actuated g/C Ratio 0.30 0.30 0.57 0.57 0.57 0.57 Clearance Time (s) 6.0 6.0 5.0 5.0 5.0 5.0 5.0 5.0 Lane Grp Cap (vph) 356 368 420 966 505 964 0.17 c0.24 v/s Ratio Perm 0.15 0.14 0.07 0.02 0.03 0.42
Bus Blockages (#/hr) 2 2 2 2 2 0 4 4 0 0 0 Turn Type Perm NA NA Perm Sign 10 Sign 10
Turn Type Perm NA Perm NA Perm NA Protected Phases 4 8 2 6 Permitted Phases 4 8 2 6 Actuated Green, G (s) 20.0 20.0 39.0 39.0 39.0 Effective Green, g (s) 21.0 21.0 40.0 40.0 40.0 40.0 Actuated g/C Ratio 0.30 0.30 0.57 0.57 0.57 0.57 Clearance Time (s) 6.0 6.0 5.0 5.0 5.0 5.0 Lane Grp Cap (vph) 356 368 420 966 505 964 v/s Ratio Prot 0.17 c0.24 0.02 0.02 0.03 0.42
Protected Phases 4 8 2 6 Permitted Phases 4 8 2 6 Actuated Green, G (s) 20.0 20.0 39.0 39.0 39.0 Effective Green, g (s) 21.0 21.0 40.0 40.0 40.0 40.0 Actuated g/C Ratio 0.30 0.30 0.57 0.57 0.57 Clearance Time (s) 6.0 6.0 5.0 5.0 5.0 Lane Grp Cap (vph) 356 368 420 966 505 964 v/s Ratio Prot 0.17 c0.24 0.02 0.02 0.03 0.42
Permitted Phases 4 8 2 6 Actuated Green, G (s) 20.0 39.0 39.0 39.0 39.0 Effective Green, g (s) 21.0 21.0 40.0 40.0 40.0 40.0 Actuated g/C Ratio 0.30 0.30 0.57 0.57 0.57 0.57 Clearance Time (s) 6.0 6.0 5.0 5.0 5.0 5.0 Lane Grp Cap (vph) 356 368 420 966 505 964 v/s Ratio Prot 0.17 c0.24 0.02 0.02 0.02 0.03 0.42
Actuated Green, G (s) 20.0 20.0 39.0 39.0 39.0 39.0 Effective Green, g (s) 21.0 21.0 40.0 40.0 40.0 40.0 Actuated g/C Ratio 0.30 0.30 0.57 0.57 0.57 0.57 Clearance Time (s) 6.0 6.0 5.0 5.0 5.0 Lane Grp Cap (vph) 356 368 420 966 505 964 v/s Ratio Prot 0.17 c0.24 0.02 0.02 0.02 0.03 0.42
Effective Green, g (s) 21.0 21.0 40.0 40.0 40.0 40.0 Actuated g/C Ratio 0.30 0.30 0.57 0.57 0.57 0.57 Clearance Time (s) 6.0 6.0 5.0 5.0 5.0 5.0 Lane Grp Cap (vph) 356 368 420 966 505 964 v/s Ratio Prot 0.17 c0.24 v/s Ratio Perm c0.15 0.14 0.07 0.02 v/c Ratio 0.50 0.47 0.11 0.29 0.03 0.42
Actuated g/C Ratio 0.30 0.30 0.57 0.57 0.57 0.57 Clearance Time (s) 6.0 6.0 5.0 5.0 5.0 5.0 Lane Grp Cap (vph) 356 368 420 966 505 964 v/s Ratio Prot 0.17 c0.24 v/s Ratio Perm c0.15 0.14 0.07 0.02 v/c Ratio 0.50 0.47 0.11 0.29 0.03 0.42
Clearance Time (s) 6.0 6.0 5.0 5.0 5.0 Lane Grp Cap (vph) 356 368 420 966 505 964 v/s Ratio Prot 0.17 c0.24 v/s Ratio Perm c0.15 0.14 0.07 0.02 v/c Ratio 0.50 0.47 0.11 0.29 0.03 0.42
Lane Grp Cap (vph) 356 368 420 966 505 964 v/s Ratio Prot 0.17 c0.24 v/s Ratio Perm c0.15 0.14 0.07 0.02 v/c Ratio 0.50 0.47 0.11 0.29 0.03 0.42
v/s Ratio Prot 0.17 c0.24 v/s Ratio Perm c0.15 0.14 0.07 0.02 v/c Ratio 0.50 0.47 0.11 0.29 0.03 0.42
v/s Ratio Perm c0.15 0.14 0.07 0.02 v/c Ratio 0.50 0.47 0.11 0.29 0.03 0.42
v/c Ratio 0.50 0.47 0.11 0.29 0.03 0.42
Uniform Delay, d1 20.2 20.0 6.9 7.7 6.6 8.5
Progression Factor 1.00 1.00 1.00 0.89 1.07
Incremental Delay, d2 5.0 4.3 0.6 0.8 0.1 1.3
Delay (s) 25.2 24.2 7.4 8.5 5.9 10.4
Level of Service C C A A B
Approach Delay (s) 25.2 24.2 8.3 10.3
Approach LOS C C A B
Intersection Summary
HCM 2000 Control Delay 14.5 HCM 2000 Level of Service B
HCM 2000 Volume to Capacity ratio 0.45
Actuated Cycle Length (s)70.0Sum of lost time (s)9.0
Intersection Capacity Utilization 64.7% ICU Level of Service C
Analysis Period (min) 15

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Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	97	108	670	621
v/c Ratio	0.17	0.25	0.46	0.47
Control Delay	18.7	5.8	11.7	13.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	18.7	5.8	11.7	13.4
Queue Length 50th (m)	9.2	0.0	25.0	26.7
Queue Length 95th (m)	19.2	9.8	37.5	39.3
Internal Link Dist (m)	379.6		245.4	136.0
Turn Bay Length (m)	15.0			
Base Capacity (vph)	555	439	1455	1332
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.17	0.25	0.46	0.47
Intersection Summary				

	*	*	t	1	1	Ļ		
Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations	NDC	1	≜t ⊾			1		
Traffic Volume (vnh)	87	97	165	138	57	502		
Future Volume (vph)	87	97	465	138	57	502		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Lane Width	35	3 5	3 5	3 5	35	35		
Total Lost time (s)	4.2	4.2	5.0	0.0	0.0	5.0		
Lane I Itil Factor	1.00	1.00	0.95			0.95		
Frnh ned/hikes	1.00	0.74	0.88			1.00		
Flph ped/bikes	1.00	1 00	1.00			0.98		
Frt	1.00	0.85	0.97			1.00		
Flt Protected	0.95	1 00	1.00			0.99		
Satd Flow (prot)	1785	1172	2917			3309		
Flt Permitted	0.95	1 00	1.00			0.82		
Satd. Flow (perm)	1785	1172	2917			2744		
Peak-hour factor PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Adi Flow (vph)	97	108	517	152	63	558		
RTOR Reduction (vnh)	0	74	30	0	0	0		
Lane Group Flow (vph)	97	34	631	0	0	621		
Confl Peds (#/hr)	413	196	001	273	273	021		
Confl. Bikes (#/hr)	10	93		41	275			
Heavy Vehicles (%)	0%	0%	4%	4%	0%	6%		
Bus Blockages (#/hr)	0,0	3	0	0	0	0		
	Prot	Perm	NA	<u> </u>	Perm	NA		
Protected Phases	8	T CITI	2		T CHIII	6		
Permitted Phases	0	8	۷		6	0		
Actuated Green G (s)	20.8	20.8	33.0		0	33.0		
Effective Green a (s)	20.0	20.0	34.0			34.0		
Actuated o/C Ratio	0.31	0.31	0 49			0 49		
Clearance Time (s)	5.2	5.2	6.0			6.0		
Lano Grn Can (ynh)	555	364	1/16			1222		
v/s Ratio Prot	c0.05	304	0 22			IJJZ		
v/s Ratio Perm	0.00	0.03	0.22			cU 23		
v/c Ratio	0 17	0.03	0.45			0.23		
Uniform Delay, d1	17 5	17.1	11 8			12.0		
Progression Eactor	1 00	1 00	1 00			1 00		
Incremental Delay d2	0.7	0.5	1.00			1.00		
Delay (s)	18.2	17.6	12.8			13.1		
Level of Service	R	R	12.0 R			B		
Approach Delay (s)	17 9		12.8			13.1		
Approach LOS	- R		12.0 R			B		
	U		U			U		
Intersection Summary			46 -		1014 2222			
HCM 2000 Control Delay			13.7	ŀ	ICM 2000	Level of Serv	vice	В
HCM 2000 Volume to Capa	city ratio		0.33					
Actuated Cycle Length (s)			70.0		sum of lost		11.2	
Intersection Capacity Utiliza	ation		63.5%		CU Level o	of Service		В
Analysis Period (min)			15					

Queues 173: Cherry St & Mill St

	≯	-	1	-	1	1	1	Ŧ	
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	
Lane Group Flow (vph)	51	202	193	67	26	159	8	476	
v/c Ratio	0.13	0.34	0.55	0.11	0.09	0.19	0.06	0.57	
Control Delay	18.9	18.2	28.1	18.3	15.2	14.6	41.6	11.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	18.9	18.2	28.1	18.3	15.2	14.6	41.6	11.3	
Queue Length 50th (m)	5.2	18.8	23.2	6.8	2.0	12.6	1.0	19.0	
Queue Length 95th (m)	12.7	35.0	43.7	14.9	8.2	30.9	m3.2	45.9	
Internal Link Dist (m)		379.6		303.0		221.1		134.8	
Turn Bay Length (m)	30.0		45.0		25.0		25.0		
Base Capacity (vph)	385	596	352	592	299	836	138	839	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.13	0.34	0.55	0.11	0.09	0.19	0.06	0.57	
Intersection Summary									

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 173: Cherry St & Mill St

Movement EBL EBT EBR WBL WBT WBR NBL NBR SBL SBL SBL SBL SBR Lane Configurations 1		≯	-	\mathbf{F}	∢	+	•	1	Ť	1	1	Ļ	~
Lane Configurations 1 1 5 1 4 1	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph) 47 131 55 178 54 7 24 146 0 7 411 27 Future Volume (vph) 47 131 55 178 54 7 24 146 0 7 411 27 Ideal Flow (vph) 1900 130 100 1.00	Lane Configurations	٦	¢Î		ľ	et 🗧		٢	•		۲.	et	
Fulure (vph) 47 131 55 178 54 7 24 146 0 7 411 27 ideal Flow (vphp) 1900 100	Traffic Volume (vph)	47	131	55	178	54	7	24	146	0	7	411	27
Ideal Flow (vphpl) 1900 100	Future Volume (vph)	47	131	55	178	54	7	24	146	0	7	411	27
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s) 6.9 6.9 6.9 5.3 5.3 4.0 5.3 Lane Util. Factor 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 Flpb, ped/bikes 0.91 1.00 0.97 1.00 1.00 1.00 1.00 0.98 Flpb, ped/bikes 0.91 1.00 0.97 1.00 0.087 1.00	Lane Width	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 UIII. Factor 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Total Lost time (s)	6.9	6.9		6.9	6.9		5.3	5.3		4.0	5.3	
Frpb. ped/bikes 1.00 0.95 1.00 0.97 1.00 1.00 1.00 0.00 1.00 1.00 0.00 1.00 1.00 1.00 0.00 1.00 0.05 1.00 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes 0.91 1.00 0.87 1.00 1.00 1.00 1.00 1.00 Frt 1.00 0.96 1.00 0.98 1.00 1.00 1.00 0.99 Satd. Flow (prot) 1463 1647 1511 1686 1368 1789 1384 1681 Fl Pertentited 0.71 1.00 0.63 1.00 0.45 1.00 0.95 1.00 Satd. Flow (perm) 1098 1647 1004 1686 649 1789 1384 1681 Peak-hour factor, PHF 0.92 <t< td=""><td>Frpb, ped/bikes</td><td>1.00</td><td>0.95</td><td></td><td>1.00</td><td>0.97</td><td></td><td>1.00</td><td>1.00</td><td></td><td>1.00</td><td>0.98</td><td></td></t<>	Frpb, ped/bikes	1.00	0.95		1.00	0.97		1.00	1.00		1.00	0.98	
Frit 1.00 0.96 1.00 0.98 1.00 1.00 1.00 0.99 FII Protected 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 Satd. Flow (prot) 1463 1647 1511 1686 1368 1789 1384 1681 FII Permitted 0.71 1.00 0.63 1.00 0.45 1.00 0.95 1.00 Satd. Flow (perm) 1098 1647 1004 1686 649 1789 1384 1681 Peak-hour factor, PHF 0.92	Flpb, ped/bikes	0.91	1.00		0.91	1.00		0.87	1.00		1.00	1.00	
FIP Protected 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 Satd. Flow (prot) 1463 1647 1511 1686 1368 1789 1384 1681 FIP Permitted 0.71 1.00 0.63 1.00 0.45 1.00 0.95 1.00 Satd. Flow (perm) 1098 1647 1004 1686 649 1789 1384 1681 Peak-hour factor, PHF 0.92 <td< td=""><td>Frt</td><td>1.00</td><td>0.96</td><td></td><td>1.00</td><td>0.98</td><td></td><td>1.00</td><td>1.00</td><td></td><td>1.00</td><td>0.99</td><td></td></td<>	Frt	1.00	0.96		1.00	0.98		1.00	1.00		1.00	0.99	
Satd. Flow (prot) 1463 1647 1511 1686 1368 1789 1384 1681 FIt Permitted 0.71 1.00 0.63 1.00 0.45 1.00 0.95 1.00 Satd. Flow (perm) 1098 1647 1004 1686 649 1789 1384 1681 Peak-hour factor, PHF 0.92 <td>Flt Protected</td> <td>0.95</td> <td>1.00</td> <td></td> <td>0.95</td> <td>1.00</td> <td></td> <td>0.95</td> <td>1.00</td> <td></td> <td>0.95</td> <td>1.00</td> <td></td>	Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
FIP Permitted 0.71 1.00 0.63 1.00 0.45 1.00 0.95 1.00 Satd. Flow (perm) 1098 1647 1004 1686 649 1789 1384 1681 Peak-hour factor, PHF 0.92 <td< td=""><td>Satd. Flow (prot)</td><td>1463</td><td>1647</td><td></td><td>1511</td><td>1686</td><td></td><td>1368</td><td>1789</td><td></td><td>1384</td><td>1681</td><td></td></td<>	Satd. Flow (prot)	1463	1647		1511	1686		1368	1789		1384	1681	
Satid. Flow (perm) 1098 1647 1004 1686 649 1789 1384 1681 Peak-hour factor, PHF 0.92	Flt Permitted	0.71	1.00		0.63	1.00		0.45	1.00		0.95	1.00	
Peak-hour factor, PHF 0.92	Satd. Flow (perm)	1098	1647		1004	1686		649	1789		1384	1681	
Adj. Flow (vph) 51 142 60 193 59 8 26 159 0 8 447 29 RTOR Reduction (vph) 0 19 0 0 0 0 0 0 0 0 3 0 Lane Group Flow (vph) 51 183 0 193 67 0 26 159 0 8 473 0 Confl. Peks. (#/hr) 67 84 84 67 139 55 55 139 Confl. Bikes (#/hr) 17 114 15 31 Heavy Vehicles (%) 11% 3% 6% 7% 4% 14% 13% 5% 20% 2% 9% 4% Bus Blockages (#/hr) 0 0 0 3 3 0 </td <td>Peak-hour factor, PHF</td> <td>0.92</td>	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
RTOR Reduction (vph) 0 19 0 0 0 0 0 0 0 0 3 0 Lane Group Flow (vph) 51 183 0 193 67 0 26 159 0 8 473 0 Confl. Bikes (#/hr) 67 84 84 67 139 55 55 139 Confl. Bikes (#/hr) 0 0 0 3 3 0	Adj. Flow (vph)	51	142	60	193	59	8	26	159	0	8	447	29
Lane Group Flow (vph) 51 183 0 193 67 0 26 159 0 8 473 0 Confl. Peds. (#/hr) 67 84 84 67 139 55 55 139 Confl. Bikes (#/hr) 17 114 15 31 Heavy Vehicles (%) 11% 3% 6% 7% 4% 14% 13% 5% 20% 29% 9% 4% Bus Blockages (#/hr) 0 0 0 3 0	RTOR Reduction (vph)	0	19	0	0	0	0	0	0	0	0	3	0
Confl. Peds. (#/hr) 67 84 84 67 139 55 55 139 Confl. Bikes (#/hr) 17 114 15 31 Heavy Vehicles (%) 11% 3% 6% 7% 4% 14% 13% 5% 20% 29% 9% 4% Bus Blockages (#/hr) 0 0 0 3 3 0	Lane Group Flow (vph)	51	183	0	193	67	0	26	159	0	8	473	0
Confl. Bikes (#/hr) 17 114 15 31 Heavy Vehicles (%) 11% 3% 6% 7% 4% 14% 13% 5% 20% 29% 9% 4% Bus Blockages (#/hr) 0	Confl. Peds. (#/hr)	67		84	84		67	139		55	55		139
Heavy Vehicles (%) 11% 3% 6% 7% 4% 14% 13% 5% 20% 29% 9% 4% Bus Blockages (#/hr) 0 <td>Confl. Bikes (#/hr)</td> <td></td> <td></td> <td>17</td> <td></td> <td></td> <td>114</td> <td></td> <td></td> <td>15</td> <td></td> <td></td> <td>31</td>	Confl. Bikes (#/hr)			17			114			15			31
Bus Blockages (#/hr) 0	Heavy Vehicles (%)	11%	3%	6%	7%	4%	14%	13%	5%	20%	29%	9%	4%
Turn Type Perm NA Perm NA Perm NA Perd NA Protected Phases 4 8 2 1 6 Permitted Phases 4 8 2 1 6 Actuated Green, G (s) 27.0 27.0 27.0 32.4 32.4 1.4 38.8 Effective Green, g (s) 28.0 28.0 28.0 33.4 33.4 2.4 39.8 Actuated g/C Ratio 0.35 0.35 0.35 0.42 0.42 0.03 0.50 Clearance Time (s) 7.9 7.9 7.9 6.3 6.3 5.0 6.3 Vehicle Extension (s) 3.0	Bus Blockages (#/hr)	0	0	0	0	3	3	0	0	0	0	0	0
Protected Phases 4 8 2 1 6 Permitted Phases 4 8 2 Actuated Green, G (s) 27.0 27.0 27.0 32.4 32.4 1.4 38.8 Effective Green, g (s) 28.0 28.0 28.0 33.4 33.4 2.4 39.8 Actuated g/C Ratio 0.35 0.35 0.35 0.42 0.42 0.03 0.50 Clearance Time (s) 7.9 7.9 7.9 6.3 6.3 5.0 6.3 Vehicle Extension (s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 Lane Grp Cap (vph) 384 576 351 590 270 746 41 836 v/s Ratio Prot 0.11 0.04 0.09 0.01 c0.28 v/s Ratio Perm 0.05 c0.19 0.04 0.10 0.20 0.57 Uniform Delay, d1 17.7 19.0 20.9 17.6 14.1 14.9 37.9 14.1 Progression Factor 1.00 1.00	Turn Type	Perm	NA		Perm	NA		Perm	NA		Prot	NA	
Permitted Phases 4 8 2 Actuated Green, G (s) 27.0 27.0 27.0 32.4 32.4 1.4 38.8 Effective Green, g (s) 28.0 28.0 28.0 28.0 33.4 33.4 2.4 39.8 Actuated g/C Ratio 0.35 0.35 0.35 0.42 0.42 0.03 0.50 Clearance Time (s) 7.9 7.9 7.9 6.3 6.3 5.0 6.3 Vehicle Extension (s) 3.0	Protected Phases		4			8			2		1	6	
Actuated Green, G (s) 27.0 27.0 27.0 32.4 32.4 1.4 38.8 Effective Green, g (s) 28.0 28.0 28.0 28.0 33.4 33.4 2.4 39.8 Actuated g/C Ratio 0.35 0.35 0.35 0.35 0.42 0.42 0.03 0.50 Clearance Time (s) 7.9 7.9 7.9 7.9 6.3 6.3 5.0 6.3 Vehicle Extension (s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 Lane Grp Cap (vph) 384 576 351 590 270 746 41 836 v/s Ratio Prot 0.11 0.04 0.09 0.01 c0.28 v/s Ratio Perm 0.05 c0.19 0.04 0.00 0.57 Uniform Delay, d1 17.7 19.0 20.9 17.6 14.1 14.9 37.9 14.1 Progression Factor 1.00 1.00 1.00 1.00 1.00 1.22 0.60 Incremental Delay, d2 0.2 0.3	Permitted Phases	4			8			2					
Effective Green, g (s) 28.0 28.0 28.0 28.0 33.4 33.4 2.4 39.8 Actuated g/C Ratio 0.35 0.35 0.35 0.35 0.42 0.42 0.03 0.50 Clearance Time (s) 7.9 7.9 7.9 7.9 6.3 6.3 5.0 6.3 Vehicle Extension (s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 Lane Grp Cap (vph) 384 576 351 590 270 746 41 836 v/s Ratio Prot 0.11 0.04 0.09 0.01 c0.28 v/s Ratio Perm 0.05 c0.19 0.04 0.09 0.57 Uniform Delay, d1 17.7 19.0 20.9 17.6 14.1 14.9 37.9 14.1 Progression Factor 1.00 1.00 1.00 1.00 1.00 1.22 0.60 Incremental Delay, d2 0.2 0.3 1.8 0.1 0.7 0.7 2.2 2.6 Delay (s) 17.9 19.3	Actuated Green, G (s)	27.0	27.0		27.0	27.0		32.4	32.4		1.4	38.8	
Actuated g/C Ratio 0.35 0.35 0.35 0.42 0.42 0.03 0.50 Clearance Time (s) 7.9 7.9 7.9 7.9 6.3 6.3 5.0 6.3 Vehicle Extension (s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 Lane Grp Cap (vph) 384 576 351 590 270 746 41 836 v/s Ratio Prot 0.11 0.04 0.09 0.01 c0.28 v/s Ratio Perm 0.05 c0.19 0.04 0.00 0.57 Uniform Delay, d1 17.7 19.0 20.9 17.6 14.1 14.9 37.9 14.1 Progression Factor 1.00 1.00 1.00 1.00 1.00 1.22 0.60 Incremental Delay, d2 0.2 0.3 1.8 0.1 0.7 0.7 2.2 2.6 Delay (s) 17.9 19.3 22.7 17.7 14.8 15.6 48.5 11.1 Level of Service B B C </td <td>Effective Green, g (s)</td> <td>28.0</td> <td>28.0</td> <td></td> <td>28.0</td> <td>28.0</td> <td></td> <td>33.4</td> <td>33.4</td> <td></td> <td>2.4</td> <td>39.8</td> <td></td>	Effective Green, g (s)	28.0	28.0		28.0	28.0		33.4	33.4		2.4	39.8	
Clearance Time (s) 7.9 7.9 7.9 7.9 6.3 6.3 5.0 6.3 Vehicle Extension (s) 3.0 <td>Actuated g/C Ratio</td> <td>0.35</td> <td>0.35</td> <td></td> <td>0.35</td> <td>0.35</td> <td></td> <td>0.42</td> <td>0.42</td> <td></td> <td>0.03</td> <td>0.50</td> <td></td>	Actuated g/C Ratio	0.35	0.35		0.35	0.35		0.42	0.42		0.03	0.50	
Vehicle Extension (s) 3.0	Clearance Time (s)	7.9	7.9		7.9	7.9		6.3	6.3		5.0	6.3	
Lane Grp Cap (vph)38457635159027074641836v/s Ratio Prot0.110.040.090.01c0.28v/s Ratio Perm0.05c0.190.04v/c Ratio0.130.320.550.110.100.210.20Uniform Delay, d117.719.020.917.614.114.937.914.1Progression Factor1.001.001.001.001.001.220.60Incremental Delay, d20.20.31.80.10.70.72.22.6Delay (s)17.919.322.717.714.815.648.511.1Level of ServiceBBCBBDBApproach Delay (s)19.021.415.511.7	Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
v/s Ratio Prot 0.11 0.04 0.09 0.01 c0.28 v/s Ratio Perm 0.05 c0.19 0.04	Lane Grp Cap (vph)	384	576		351	590		270	746		41	836	
v/s Ratio Perm 0.05 c0.19 0.04 v/c Ratio 0.13 0.32 0.55 0.11 0.10 0.21 0.20 0.57 Uniform Delay, d1 17.7 19.0 20.9 17.6 14.1 14.9 37.9 14.1 Progression Factor 1.00 1.00 1.00 1.00 1.00 1.22 0.60 Incremental Delay, d2 0.2 0.3 1.8 0.1 0.7 0.7 2.2 2.6 Delay (s) 17.9 19.3 22.7 17.7 14.8 15.6 48.5 11.1 Level of Service B B C B B D B Approach Delay (s) 19.0 21.4 15.5 11.7	v/s Ratio Prot		0.11			0.04			0.09		0.01	c0.28	
v/c Ratio 0.13 0.32 0.55 0.11 0.10 0.21 0.20 0.57 Uniform Delay, d1 17.7 19.0 20.9 17.6 14.1 14.9 37.9 14.1 Progression Factor 1.00 1.00 1.00 1.00 1.00 1.22 0.60 Incremental Delay, d2 0.2 0.3 1.8 0.1 0.7 0.7 2.2 2.6 Delay (s) 17.9 19.3 22.7 17.7 14.8 15.6 48.5 11.1 Level of Service B B C B B D B Approach Delay (s) 19.0 21.4 15.5 11.7	v/s Ratio Perm	0.05			c0.19			0.04					
Uniform Delay, d1 17.7 19.0 20.9 17.6 14.1 14.9 37.9 14.1 Progression Factor 1.00 1.00 1.00 1.00 1.00 1.00 1.22 0.60 Incremental Delay, d2 0.2 0.3 1.8 0.1 0.7 0.7 2.2 2.6 Delay (s) 17.9 19.3 22.7 17.7 14.8 15.6 48.5 11.1 Level of Service B B C B B D B Approach Delay (s) 19.0 21.4 15.5 11.7	v/c Ratio	0.13	0.32		0.55	0.11		0.10	0.21		0.20	0.57	
Progression Factor 1.00 1.00 1.00 1.00 1.00 1.00 1.22 0.60 Incremental Delay, d2 0.2 0.3 1.8 0.1 0.7 0.7 2.2 2.6 Delay (s) 17.9 19.3 22.7 17.7 14.8 15.6 48.5 11.1 Level of Service B B C B B D B Approach Delay (s) 19.0 21.4 15.5 11.7	Uniform Delay, d1	17.7	19.0		20.9	17.6		14.1	14.9		37.9	14.1	_
Incremental Delay, d2 0.2 0.3 1.8 0.1 0.7 0.7 2.2 2.6 Delay (s) 17.9 19.3 22.7 17.7 14.8 15.6 48.5 11.1 Level of Service B B C B B D B Approach Delay (s) 19.0 21.4 15.5 11.7	Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.22	0.60	
Delay (s) 17.9 19.3 22.7 17.7 14.8 15.6 48.5 11.1 Level of Service B B C B B D B Approach Delay (s) 19.0 21.4 15.5 11.7	Incremental Delay, d2	0.2	0.3		1.8	0.1		0.7	0.7		2.2	2.6	_
Level of Service B B C B B D B Approach Delay (s) 19.0 21.4 15.5 11.7	Delay (s)	17.9	19.3		22.1	17.7		14.8	15.6		48.5	11.1	
Approach Delay (S) 19.0 21.4 15.5 11.7	Level of Service	В	B		C	В		В	В		D	B	
	Approach Delay (s)		19.0			21.4			15.5			II./	
Approach LUS B B C B	Approach LUS		В			C			В			В	
Intersection Summary	Intersection Summary			1(0		014 0000	Laure C.	Caral		5			
HUM 2000 Level of Service B	HCM 2000 Control Delay			16.0	H	CM 2000	Level of	Service		В			
HUM 2000 Volume to Capacity ratio 0.59	HCM 2000 Volume to Capacity ratio			0.59	-	un of la	h Alma (-)			1/ 0			
Actuated Cycle Length (S) 80.0 Sum of lost time (S) 16.2	Actuated Cycle Length (s)			80.0									
Intersection Capacity Utilization 84.0% ICU Level of Service E	niersection Capacity Utilization 84.6% Analysis Period (min) 15				IC	U Level (JI Service	;		E			
Analysis Fenue (Inin) 10	Critical Lano Group			15									

	-	+	1	t t	1	↓ I
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	738	1033	2	3	66	435
v/c Ratio	0.48	0.55	0.03	0.01	0.25	1.13
Control Delay	34.8	35.8	39.0	37.0	42.0	122.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.8	35.8	39.0	37.0	42.0	122.4
Queue Length 50th (m)	51.3	58.7	0.4	0.6	13.0	~107.0
Queue Length 95th (m)	63.8	69.9	2.8	3.2	25.9	#169.8
Internal Link Dist (m)	129.2	5.3		75.9		269.4
Turn Bay Length (m)			35.0		25.0	
Base Capacity (vph)	1522	1888	61	407	264	386
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.55	0.03	0.01	0.25	1.13

Intersection Summary

Volume exceeds capacity, queue is theoretically infinite.
 Oueue shown is maximum after two cycles.

Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		-€††Ъ			ৰাক		٦	eî 🗧		٦	f,	
Traffic Volume (vph)	169	491	26	30	783	148	2	3	0	61	157	247
Future Volume (vph)	169	491	26	30	783	148	2	3	0	61	157	247
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)		6.0			6.0		8.0	8.0		8.0	8.0	
Lane Util. Factor		0.91			0.86		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	0.93	
Flpb, ped/bikes		1.00			1.00		0.98	1.00		0.89	1.00	
Frt		0.99			0.98		1.00	1.00		1.00	0.91	
Flt Protected		0.99			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		4925			6128		1752	1879		1536	1567	
Flt Permitted		0.99			1.00		0.15	1.00		0.76	1.00	
Satd. Flow (perm)		4925			6128		284	1879		1222	1567	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	182	528	28	32	842	159	2	3	0	66	169	266
RTOR Reduction (vph)	0	3	0	0	0	0	0	0	0	0	47	0
Lane Group Flow (vph)	0	735	0	0	1033	0	2	3	0	66	388	0
Confl. Peds. (#/hr)	2		8	8		2	41		76	76		41
Confl. Bikes (#/hr)						2			56			40
Heavy Vehicles (%)	1%	2%	12%	0%	3%	0%	0%	0%	0%	3%	1%	2%
Turn Type	Split	NA		Split	NA		Perm	NA		Perm	NA	
Protected Phases	2	2		. 1	1			4			4	
Permitted Phases							4			4		
Actuated Green, G (s)		36.0			36.0		25.0	25.0		25.0	25.0	
Effective Green, g (s)		37.0			37.0		26.0	26.0		26.0	26.0	
Actuated g/C Ratio		0.31			0.31		0.22	0.22		0.22	0.22	
Clearance Time (s)		7.0			7.0		9.0	9.0		9.0	9.0	
Lane Grp Cap (vph)		1518			1889		61	407		264	339	
v/s Ratio Prot		c0.15			c0.17			0.00			c0.25	
v/s Ratio Perm							0.01			0.05		
v/c Ratio		0.48			0.55		0.03	0.01		0.25	1.14	
Uniform Delay, d1		33.7			34.5		37.1	36.9		38.9	47.0	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.1			1.1		1.0	0.0		2.3	94.1	
Delay (s)		34.8			35.7		38.1	36.9		41.2	141.1	
Level of Service		С			D		D	D		D	F	
Approach Delay (s)		34.8			35.7			37.4			127.9	
Approach LOS		С			D			D			F	
Intersection Summary												
HCM 2000 Control Delay			55.7	H	ICM 2000	Level of	Service		E			
HCM 2000 Volume to Capacit	y ratio		0.68									
Actuated Cycle Length (s)			120.0	S	um of los	t time (s)			20.0			
Intersection Capacity Utilization	n		82.2%	10	CU Level	of Service	;		E			
Analysis Period (min)			15									
c Critical Lane Group												

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Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		^			۲.	
Traffic Volume (veh/h)	0	1434	0	0	84	0
Future Volume (Veh/h)	0	1434	0	0	84	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	1526	0	0	89	0
Pedestrians		103	8		78	
Lane Width (m)		3.7	0.0		3.7	
Walking Speed (m/s)		1.1	1.1		1.1	
Percent Blockage		10	0		8	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		189	132			
pX, platoon unblocked						
vC, conflicting volume	78				595	181
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	78				595	181
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				78	100
cM capacity (veh/h)	1416				407	695
Direction, Lane #	EB 1	EB 2	EB 3	SB 1		
Volume Total	509	509	509	89		
Volume Left	0	0	0	89		
Volume Right	0	0	0	0		
cSH	1700	1700	1700	407		
Volume to Capacity	0.30	0.30	0.30	0.22		
Oueue Length 95th (m)	0.0	0.0	0.0	6.3		
Control Delay (s)	0.0	0.0	0.0	16.3		
Lane LOS	5.0	5.0	510	C		
Approach Delay (s)	0.0			16.3		
Approach LOS				С		
Intersection Summary						
			0.0			
Interspection Conacity Litilizativ	n		0.9	IC		of Sonvice
Analysis Period (min)			+7.470	iC		



Appendix F

Multi-Modal Level of Service Results

Multi-Modal Level of Service - Intersections Form

Project Ontario Line Subway

Scenario MMLC	DS Assessment - Existing Conditions (2020) - AM Pea	ak Date	22/06/2020														
	INTERSECTIONS	A	delaide Street /	Sherbourne Stre	et		Adelaide Street	/ Berkeley Stree	t	ļ	Adelaide Street /	Parliament Stre	et		King Street / I	Berkeley Street	
	Crossing Side	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
	Lanes Median	5 No Median - 2.4 m	5 No Median - 2.4 m	4 No Median - 2.4 m	4 No Median - 2.4 m	3 No Median - 2.4 m	3 No Median - 2.4 m	4 No Median - 2.4 m	4 No Median - 2.4 m	4 No Median - 2.4 m	4 No Median - 2.4 m	3 No Median - 2.4 m	5 No Median - 2.4 m	0 - 2 No Median - 2.4 m	0 - 2 No Median - 2.4 m	4 No Median - 2.4 m	4 No Median - 2.4 m
	Conflicting Left Turns	Permissive	No left turn / Prohib.	Permissive	No left turn / Prohib.	No left turn / Prohib.	Permissive	Permissive	No left turn / Prohib.	Permissive	No left turn / Prohib.	No left turn / Prohib.	Permissive	Permissive	Permissive	No left turn / Prohib.	Permissive
	Conflicting Right Turns Right Turns on Red (RToR) ? Ped Signal Leading Interval?	No right turn RTOR prohibited	Permissive or yield control RTOR allowed	Permissive or yield control RTOR allowed	No right turn RTOR prohibited	Permissive or yield control RTOR allowed	No right turn RTOR prohibited	Permissive or yield control RTOR allowed	No right turn RTOR prohibited	No right turn RTOR prohibited	Permissive or yield control RTOR allowed	No right turn RTOR prohibited	Permissive or yield control RTOR allowed				
E	Right Turn Channel	No Right Turn	No Channel	No Channel	No Right Turn	No Channel	No Right Turn	No Channel	No Right Turn	No Right Turn	No Channel	No Right Turn	No Channel				
destria	Corner Radius Crosswalk Type	No Right Turn Zebra stripe hi-vis markings	10-15m Zebra stripe hi-vis markings	10-15m Zebra stripe hi-vis markings	No Right Turn Zebra stripe hi-vis markings	10-15m Zebra stripe hi-vis markings	No Right Turn Zebra stripe hi-vis markings	10-15m Zebra stripe hi-vis markings	No Right Turn Zebra stripe hi-vis markings	No Right Turn Zebra stripe hi-vis markings	10-15m Zebra stripe hi-vis markings	No Right Turn Zebra stripe hi-vis markings	10-15m Zebra stripe hi-vis markings	10-15m Textured/coloured pavement	10-15m Textured/coloured pavement	10-15m Std transverse markings	10-15m Std transverse markings
ĕ	PETSI Score	58	48	56	82	81	91	56	82	74	64	99	40	88	88	61	53
_	Ped. Exposure to Traffic LoS	D	D	D	В	В	Α	D	В	С	С	Α	E	В	В	С	D
	Cycle Length	90	90	90	90	90	90	90	90	90	90	90	90	80	80	80	80
	Effective Walk Time	38	38	14	14	46	46	7	7	34	34	10	10	34	34	7	7
	Average Pedestrian Delay	15	15	32	32	11	11	38	38	17	17	36	36	13	13	33	33
	Pedestrian Delay LoS	В	В	D	D	В	В	D	D	В	В	D	D	В	В	D	D
		D	D	D	D	В	В	D	D	С	С	D	E	В	В	D	D
	Level of Service		I	Ď				Ď				Ê				Ď	
	Approach From	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
	Bicycle Lane Arrangement on Approach IF Dedicated Right Turn Lane,	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP		Curb Bike Lane, Cycletrack or MUP	Mixed Traffic	Mixed Traffic		Curb Bike Lane, Cycletrack or MUP	Mixed Traffic	Mixed Traffic		Curb Bike Lane, Cycletrack or MUP	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic
٩	THEN Right Turn Configuration, ELSE <blank> Dedicated Right Turning Speed</blank>																
<u>ر</u>	Cyclist Through Movement	Not Applicable	Not Applicable	-	Not Applicable			-	Not Applicable			-	Not Applicable				
<u></u>	Separated or Mixed Traffic	Separated	Separated	-	Separated	Mixed Traffic	Mixed Traffic	•	Separated	Mixed Traffic	Mixed Traffic	-	Separated	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic
ä	Left Turn Approach Operating Speed	No lane crossed ≤ 40 km/h	No lane crossed ≤ 40 km/h		No lane crossed ≤ 40 km/h	No lane crossed ≤ 40 km/h	No lane crossed ≤ 40 km/h		No lane crossed ≤ 40 km/h	One lane crossed ≤ 40 km/h	No lane crossed ≤ 40 km/h		No lane crossed ≤ 40 km/h				
	Left Turning Cyclist	В	В	-	В	В	В	-	В	В	В	-	В	В	В	В	В
		В	В	-	В	В	В	-	В	В	В	-	В	В	В	В	В
	Level of Service			В				В				B				в	
<u></u>	Average Signal Delay	≤ 30 sec	≤ 40 sec							≤ 30 sec				≤ 30 sec	≤ 30 sec		
an:	Lovel of Service	D	E	-	-	-	-	-	-	D	-	-	-	D	D	-	-
Tr	Level of Service			E				-				D				D	

Consultant AECOM Scenario MMLOS Assessmen
Multi-Modal Level of Service - Intersections Form

Consultant Scenario	AECOM MMLOS Assessment - Existing Con	nditions (2020) - Al	M Peak	Project Ont Date 22/	tario Line Subv 06/2020	way																			
	NTERSECTIONS		Front Street / F	Parliament Street	t		Front Street	/ Cherry Street		The	Esplanade / Low	er Sherbourne	Street		Mill Street / Pa	arliament Street			Mill Street /	Cherry Street		Lake Shore	Boulevard Eas	t / Lower Sherb	ourne Street
	Crossing Side	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
	Lanes	4 No Modian 2.4 m	4 No Modion 2.4 m	5 No Median - 2.4 m	5 No Median 2.4 m	8 No Modion 2.4 m	8 No Modion 2.4 m	3 No Modion 2.4 m	4 No Modion 2.4 m	5 No Modian 2.4 m	5 No Madian 2.4 m	0 - 2	0 - 2	4 No Modion 2.4 m	4 No Median 2.4 m	3 No Median 2.4 m		8 No Modian 2.4 m	8 No Modian 2.4 m	5 No Madian 2.4 m	0 - 2	4 Madian - 2.4 m	4 Madian - 2.4 m	7 Median - 2.4 m	6 Madian - 2.4 m
		No Wedian - 2.4 m	NO Median - 2.4 m	i No Median - 2.4 m	No Wedian - 2.4 m	No Wedian - 2.4 m	No Wedian - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Wedian - 2.4 m	No wedian - 2.4 m	No Wedian - 2.4 m	No wedian - 2.4 m	No Median - 2.4 m		No Wedian - 2.4 m	Protected/	No Wedian - 2.4 m	No Wedian - 2.4 m	wedian > 2.4 m	Wedian > 2.4 m	Median > 2.4 m	weulan > 2.4 m
	Conflicting Left Turns	Permissive	Permissive	Permissive	Permissive	No left turn / Prohib.	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive	No left turn / Prohib.	Permissive		Permissive	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
	Conflicting Right Turns	Permissive or yield	Permissive or yield	d Permissive or yield	Permissive or yield	Permissive or yield	Protected/	Permissive or yield	Permissive or yield	Permissive or yield	Permissive or yield	Permissive or yield	Permissive or yield	No right turn	Permissive or yield	Permissive or yield		Permissive or yield	No right turn	Protected/	Permissive or yield				
	Right Turns on Red (RToR) 2	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR prohibited	RTOR allowed	RTOR allowed	RTOR prohibited	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR prohibited	RTOR allowed	RTOR allowed		RTOR prohibited	RTOR allowed	RTOR prohibited	RTOR allowed	RTOR prohibited	RTOR allowed	RTOR allowed	RTOR prohibited
	Ped Signal Leading Interval?	No	No	No	No	No	No	No	No	No	No	No	No	No	No	Yes		No	No	No	No	No	No	No	No
_	Right Turn Channel	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel	No Right Turn	No Channel	No Channel		No Channel	No Right Turn	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel
stria	Corner Radius	10-15m	10-15m	10-15m	10-15m	10-15m	10-15m	10-15m	10-15m	10-15m	10-15m	10-15m	10-15m	No Right Turn	10-15m	10-15m		10-15m	No Right Turn	10-15m	10-15m	10-15m	10-15m	10-15m	10-15m
	Crosswalk Type	Zebra stripe hi-vis	Zebra stripe hi-vis	Zebra stripe hi-vis	Zebra stripe hi-vis	Zebra stripe hi-vis	Zebra stripe hi-vis	Zebra stripe hi-vis	Zebra stripe hi-vis	Zebra stripe hi-vis	Zebra stripe hi-vis	Zebra stripe hi-vis	Zebra stripe hi-vis	Zebra stripe hi-vis	Zebra stripe hi-vis	Zebra stripe hi-vis		Zebra stripe hi-vis	Zebra stripe hi-vis	Zebra stripe hi-vis	Zebra stripe hi-vis	Zebra stripe hi-vis	Zebra stripe hi-vis	Zebra stripe hi-vis	Zebra stripe hi-vis
e		markings	markings	markings	markings	markings	markings	markings	markings	markings	markings	markings	markings	markings	markings	markings		markings	markings	markings	markings	markings	markings	markings	markings
ĕ	PETSI Score	56	56	40	40	2	-9	73	59	40	40	88	88	74	64	75		-6	6	43	88	61	58	13	31
-	Ped. Exposure to Traffic LoS	D	D	E	E	F	F	C	D	E	E	В	В	C	C	В	-	F	F	E	В	C	D	F	E
	Cycle Length Effoctive Walk Time	90	90	90	90	80	80	80	80	70	70	70	70	70	/0	70		80	80	80	80	120	120	120	120
	Average Pedestrian Delay	20	20	20	20	32	32	29	24	28	28	13	13	27	27	17		33	33	27	18	20	46	52	52
	Pedestrian Delay LoS	<u> </u>	<u> </u>	C	<u> </u>	D	D	<u> </u>		C	<u> </u>	B	B	C	<u> </u>	B	-	D	D	<u> </u>	B	D	F	F	F
	roucontait Dotay 200	n	D D	F	F	F	F	Č	n n	F	F	B	B	Č	Č Č	B	-	F	F	F	B	D	F	F	F
	Level of Service			<u> </u>		· · ·		<u> </u>		-				l ~				-	· · ·	<u> </u>		5	-		-
				<u>E</u>				F												F				F	
	Approach From	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
	Bicycle Lane Arrangement on Approach	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Curb Bike Lane,	Pocket Bike Lane	Mixed Traffic	Mixed Traffic	Curb Bike Lane,	Curb Bike Lane,	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic		Curb Bike Lane,	Curb Bike Lane,	Curb Bike Lane,	Mixed Traffic	Curb Bike Lane,	Curb Bike Lane,	Mixed Traffic	Mixed Traffic
	IF Dedicated Right Turn Lane.					Cycletrack of WOF				Cycletrack of MOF	Cyclellack of MOF							Cycletrack of MOF	Cycletrack of WOF	Cycletrack of WOF		Cycletrack of MOF	Cyclellack of MOF		
	THEN Right Turn Configuration,																								
	ELSE <blank></blank>																								
<u>o</u>	Dedicated Right Turning Speed																								
Ś	Cyclist Through Movement					Not Applicable	Not Applicable			Not Applicable	Not Applicable						-	Not Applicable	Not Applicable	Not Applicable		Not Applicable	Not Applicable		
i Si Si	Separated or Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Separated	Separated	Mixed Traffic	Mixed Traffic	Separated	Separated	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	•	Separated	Separated	Separated	Mixed Traffic	Separated	Separated	Mixed Traffic	Mixed Traffic
	Operating Speed	< 40 km/b	< 40 km/b	2 lanes crossed < 40 km/b	< 10 km/b	<pre>No lane crossed </pre>	< 40 km/b	< 40 km/b	< 40 km/b	<pre>No lane crossed </pre>	< 40 km/b	< 40 km/b	< 40 km/b	< 40 km/b	< 40 km/b	< 40 km/b		2 lanes crossed < 40 km/b	< 10 km/b	2 lanes crossed < 40 km/b	< 40 km/b	< 10 km/b	< 10 km/b	> 60 km/b	> 60 km/b
	Left Turning Cyclist	B	B	D	D	B	B	B	B	B	B	B	B	B	B	B	-	D	D	D	B	D	D	D	D
		В	B	D	D	В	B	В	B	В	B	B	В	В	B	B	-	D	D	D	B	D	D	D	D
	Level of Service			<u> </u>				R -				2				B				<u> </u>				<u> </u>	
	Average Signal Delay		< 20 coc			< 10 coo	< 10 coc				< 10 coo	< 20.000	< 20 coc			< 20 coo		< 20 coc	£ 20.000						
<u>I</u>	Average Signal Deidy		= 20 Sec			= 10 Sec	= 10 Sec				= 10 Sec	- 30 Sec	= 30 Sec			= 20 Sec		_ 30 sec	- 20 Sec						
a	Level of Service	-	<u>ر</u>			В	в		-	-			U	-	-	<u> </u>	-	D	<u> </u>			-		-	
				6				Б																-	

Multi-Modal Level of Service - Intersections Form

Project Ontario Line Subway
Date 22/06/2020

1	NTERSECTIONS	A	Adelaide Street / S	Sherbourne Stre	eet		Adelaide Street	/ Berkeley Stree	t		Adelaide Street /	Parliament Stre	et		King Street /	Berkeley Street	
	Crossing Side	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
	Lanes Median	5 No Median - 2.4 m	5 No Median - 2.4 m	4 No Median - 2.4 m	4 No Median - 2.4 m	3 No Median - 2.4 m	3 No Median - 2.4 m	4 No Median - 2.4 m	4 No Median - 2.4 m	4 No Median - 2.4 m	4 No Median - 2.4 m	3 No Median - 2.4 m	5 No Median - 2.4 m	0 - 2 No Median - 2.4 m	0 - 2 No Median - 2.4 m	4 No Median - 2.4 m	4 No Median - 2.4 m
	Conflicting Left Turns	Permissive	No left turn / Prohib.	Permissive	No left turn / Prohib.	No left turn / Prohib.	Permissive	Permissive	No left turn / Prohib.	Permissive	No left turn / Prohib.	No left turn / Prohib.	Permissive	Permissive	Permissive	No left turn / Prohib.	Permissive
	Conflicting Right Turns	No right turn	Permissive or yield control	Permissive or yield control	No right turn	Permissive or yield control	No right turn	Permissive or yield control	No right turn	No right turn	Permissive or yield control	No right turn	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control
	Right Turns on Red (RToR) ? Ped Signal Leading Interval?	RTOR prohibited No	RTOR allowed No	RTOR allowed No	RTOR prohibited No	RTOR allowed No	RTOR prohibited No	RTOR allowed No	RTOR prohibited No	RTOR prohibited No	RTOR allowed No	RTOR prohibited No	RTOR allowed No	RTOR allowed No	RTOR allowed No	RTOR allowed No	RTOR allowed No
B	Right Turn Channel	No Right Turn	No Channel	No Channel	No Right Turn	No Channel	No Right Turn	No Channel	No Right Turn	No Right Turn	No Channel	No Right Turn	No Channel	No Channel	No Channel	No Channel	No Channel
destri	Corner Radius Crosswalk Type	No Right Turn Zebra stripe hi-vis markings	10-15m Zebra stripe hi-vis markings	10-15m Zebra stripe hi-vis markings	No Right Turn Zebra stripe hi-vis markings	10-15m Zebra stripe hi-vis markings	No Right Turn Zebra stripe hi-vis markings	10-15m Zebra stripe hi-vis markings	No Right Turn Zebra stripe hi-vis markings	No Right Turn Zebra stripe hi-vis markings	10-15m Zebra stripe hi-vis markings	No Right Turn Zebra stripe hi-vis markings	10-15m Zebra stripe hi-vis markings	10-15m Textured/coloured pavement	10-15m Textured/coloured pavement	10-15m Std transverse markings	10-15m Std transverse markings
Geo	PETSI Score	58	48	56	82	81	91	56	82	74	64	99	40	88	88	61	53
	Ped. Exposure to Traffic LoS	D	D	D	В	В	А	D	В	С	С	А	E	В	В	С	D
	Cycle Length	90	90	90	90	90	90	90	90	90	90	90	90	80	80	80	80
	Effective Walk Time	38	38	14	14	46	46	7	7	34	34	10	10	35	35	7	7
	Average Pedestrian Delay	15	15	32	32	11	11	38	38	17	17	36	36	13	13	33	33
	Pedestrian Delay LoS	В	В	D	D	В	В	D	D	В	В	D	D	В	В	D	D
	Level of Service	D	D	D	D	В	В	D	D	С	С	D	E	В	В	D	D
			·	D			,	D			· · · · · ·	E				D	
	Approach From	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
	Bicycle Lane Arrangement on Approach	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP		Curb Bike Lane, Cycletrack or MUP	Mixed Traffic	Mixed Traffic		Curb Bike Lane, Cycletrack or MUP	Mixed Traffic	Mixed Traffic		Curb Bike Lane, Cycletrack or MUP	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic
<u>0</u>	IF Dedicated Right Turn Lane, THEN Right Turn Configuration, ELSE shank> Dedicated Right Turning Speed																
2	Cyclist Through Movement	Not Applicable	Not Applicable	-	Not Applicable			-	Not Applicable			-	Not Applicable				
<u>.</u>	Separated or Mixed Traffic	Separated	Separated	-	Separated	Mixed Traffic	Mixed Traffic	-	Separated	Mixed Traffic	Mixed Traffic	-	Separated	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic
Ω .	Left Turn Approach	No lane crossed	No lane crossed		No lane crossed	No lane crossed	No lane crossed		No lane crossed	One lane crossed	No lane crossed		No lane crossed	No lane crossed	No lane crossed	No lane crossed	No lane crossed
	Operating Speed	≤ 40 km/h	≤ 40 km/h		≤ 40 km/h	≤ 40 km/h	≤ 40 km/h		≤ 40 km/h	≤ 40 km/h	≤ 40 km/h		≤ 40 km/h	≤ 40 km/h	≤ 40 km/h	≤ 40 km/h	≤ 40 km/h
	Left Turning Cyclist	в	В	•	В	В	В	•	В	В	В	•	в	В	В	В	В
	Loval of Sorvice	В	В	-	В	В	В	-	В	В	В	-	В	В	В	В	В
				В				В				3				В	
<u>si</u>	Average Signal Delay	≤ 40 sec	≤ 40 sec							≤ 30 sec				≤ 30 sec	≤ 30 sec		
Trans	Level of Service	E	E	-	-	-	-	-		D		-		D	D		-
	Level of Service			E				-				C				D	

Consultant AECOM Scenario MMLOS Assessment - Existing Conditions (2020) - PM Peak

Multi-Modal Level of Service - Intersections Form

Consultant Scenario	AECOM MMLOS Assessment - Existing Con	nditions (2020) - Pl	M Peak	Project Ont Date 22/	tario Line Subv 06/2020	vay																			
	INTERSECTIONS		Front Street / F	Parliament Street	t		Front Street	Cherry Street		The	Esplanade / Low	er Sherbourne	Street		Mill Street / Pa	rliament Street			Mill Street /	Cherry Street		Lake Shore	e Boulevard Eas	t / Lower Sherb	ourne Street
	Crossing Side	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
	Lanes	4	4	5	5	7	7	3	4	5	5	0-2	0-2	4	4	3		8		5	0-2	4	4	7	6
	Median	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	Median > 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	n No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m		No Median - 2.4 m	No Median - 2.4 m Protected/	No Median - 2.4 m	No Median - 2.4 m	Median > 2.4 m	Median > 2.4 m	Median > 2.4 m	Median > 2.4 m
	Conflicting Left Turns	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive	No left turn / Prohib.	Permissive		Permissive	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
	Conflicting Right Turns	Permissive or yield	Permissive or yield	Permissive or yield	Permissive or yield	Permissive or yield	Permissive or yield	Permissive or yield	Permissive or yield	Permissive or yield	Permissive or yield	Permissive or yield	d Permissive or yield	No right turn	Permissive or yield	Permissive or yield		Permissive or yield	No right turn	Protected/	Permissive or yield				
		control	control	control	control	control	control	control	control	control	control	control	control		control	control		control	DTOD III I	Permissive	control	control	control	control	control
	Right Turns on Red (RToR) ? Red Signal Loading Interval?	RIOR allowed	RIOR allowed	RIOR allowed	RIOR allowed	RIOR prohibited	RIOR allowed	RIOR prohibited	RIOR allowed	RIOR prohibited	RIOR allowed	RIOR allowed		R I OR prohibited	RIOR allowed	R I OR prohibited	RIOR allowed	RTOR prohibited	RIOR allowed	RIOR allowed	RIOR prohibited				
c	Right Turn Channel	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel	No Right Turn	No Channel	No Channel		No Channel	No Right Turn	No Channel					
ia.	Corner Radius	10-15m	10-15m	10-15m	10-15m	10-15m	10-15m	10-15m	10-15m	10-15m	10-15m	10-15m	10-15m	No Right Turn	10-15m	10-15m		10-15m	No Right Turn	10-15m	10-15m	10-15m	10-15m	10-15m	10-15m
ř.	Crosswalk Type	Zebra stripe hi-vis	Zebra stripe hi-vis	Zebra stripe hi-vis	Zebra stripe hi-vis	Zebra stripe hi-vis	Zebra stripe hi-vis	Zebra stripe hi-vis	Zebra stripe hi-vis	Zebra stripe hi-vis	Zebra stripe hi-vis	Zebra stripe hi-vis	s Zebra stripe hi-vis	Zebra stripe hi-vis	Zebra stripe hi-vis	Zebra stripe hi-vis		Zebra stripe hi-vis	Zebra stripe hi-vis	Zebra stripe hi-vis	Zebra stripe hi-vis	Zebra stripe hi-vis	Zebra stripe hi-vis	Zebra stripe hi-vis	Zebra stripe hi-vis
<u>ö</u>	Crosswaik Type	markings	markings	markings	markings	markings	markings	markings	markings	markings	markings	markings	markings	markings	markings	markings		markings	markings	markings	markings	markings	markings	markings	markings
eq	PETSI Score	56	56	40	40	16	7	76	56	40	40	88	88	74	64	75		-6	6	43	88	61	58	13	31
<u> </u>	Ped. Exposure to Traffic LoS	D	D	E	E	F	F	В	D	E	E	В	В	С	С	В	-	F	F	E	В	С	D	F	E
	Cycle Length	90	90	90	90	80	80	80	80	70	70	70	70	70	70	70		80	80	80	80	120	120	120	120
	Effective Walk Time	28	28	18	18	8	8	12	24	7	7	28	28	8	8	21		7	7	14	26	19	19	8	8
	Average Pedestrian Delay	21	21	29	29	32	32	29	20	28	28	13	13	2/	2/	1/		33	33	2/	18	43	43	52	52
	Pedestrian Delay Los					-				с -		B	B			B	<u> </u>				B		E	<u> </u>	
	Level of Service	U	U	E	E	- F	E F	<u> </u>	U	E	E	В	В	L C	L C	в	-	F	F	<u> </u>	В	E	E	- F	E
				E				F				E			(C				F				F	
	Approach From	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
	Bicycle Lane Arrangement on Approach	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Curb Bike Lane,	Pocket Bike Lane	Mixed Traffic	Mixed Traffic	Curb Bike Lane,	Curb Bike Lane,	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic		Curb Bike Lane,	Curb Bike Lane,	Curb Bike Lane,	Mixed Traffic	Curb Bike Lane,	Curb Bike Lane,	Mixed Traffic	Mixed Traffic
	IF Dedicated Right Turn Lane.					Oyciellack of Mol				Oycietrack of Wor	Oycicitatic of Mor							Oycicitatik of Mor	Cycletrack of Mor	Oycicitatik of Mor		Cycletrack of Mor	Cycletrack of Mol		
	THEN Right Turn Configuration,																								
	ELSE <black></black>																								
e	Dedicated Right Turning Speed					Mart Annella alua	Mart Annulla alula			Mart Annella aluta	Mart Annella abda							Mart Annulla abda	Mart Annellashia	Mart Annella abda		Net Anniles ble	Mart Assorbandela		
Š.	Cyclist Through Movement	Mine d Teeffle	Mine of Tan (f) a	Mine of Tea (f) a	Mine of Tax (f) a	Not Applicable		Mine of Tea (Ca	Mine of Tandilla	Not Applicable		Mine d Teeffle	Mine of Tee (Co	Mine d Traffia	Mine d Tee (f) -	Mine of Tee (f) -		Not Applicable			Mine d Treffie	Not Applicable		Mine of Tax (file	Missed Tastfie
ŝ	Left Turn Approach	One lone grossed		Nixed Traffic	Nixed Traffic	Separated	Separated No long grocood			Separated	Separated	No long grocod	No long grocod	Mixed Traffic	No long grocod	Ope lone groced		Separated	Separated	> 2 Japan grossed	No long grocod	> 2 Japas grossed	> 2 longs grossed	Mixed Framic	No long grocod
	Operating Speed	≤ 40 km/h	≤ 40 km/h	≤ 40 km/h	≤ 40 km/h	≤ 40 km/h	≤ 40 km/h	≤ 40 km/h	≤ 40 km/h	≤ 40 km/h	≤ 40 km/h	≤ 40 km/h	≤ 40 km/h	≤ 40 km/h	≤ 40 km/h	≤ 40 km/h		≤ 40 km/h	≤ 40 km/h	≤ 40 km/h	≤ 40 km/h	≤ 40 km/h	≤ 40 km/h	≥ 60 km/h	≥ 60 km/h
	Left Turning Cyclist	В	В	D	D	В	В	В	В	В	В	В	В	В	В	В	-	D	D	D	В	D	D	D	D
		В	В	D	D	В	В	В	В	В	В	В	В	В	В	В	-	D	D	D	В	D	D	D	D
	Level of Service			D				В				В			i	В				D				D	
-	Average Signal Delay		≤ 30 sec			≤ 20 sec	≤ 30 sec				≤ 10 sec	≤ 30 sec	≤ 30 sec		≤ 20 sec			≤ 20 sec	≤ 20 sec						
su		-	D	-	-	С	D	-	-	-	В	D	D	-	С	-	-	С	С	-	-	-	-	-	-
Trar	Level of Service			D				D				D			(C				С				-	

Consultant	AECOM		
Scenario	MMLOS Assessment - Existing Conditio	ns (2020)	
SEGMENTS		Adelaide Street	Section
			Sherbourne St to Parliament St
	Sidewalk Width		1.5 m
	Boulevard Width		< 0.5 m
LE LE	Avg Daily Curb Lane Traffic Volume		≤ 3000
÷Ë	Operating Speed		> 30 to 50 km/n
st		E	no
<u>0</u>	Exposure to Traffic PLOS		E
ĕ	Effective Sidewalk width		1.5 III 250 pod/br
_	Crowding PLoS		
	Level of Service		E
	Type of Cycling Facility		Physically Separated
	Number of Travel Lanes		
	Operating Speed		
	# of Lanes & Operating Speed LoS		-
O	Bike Lane (+ Parking Lane) Width		
	Bike Lane Width LoS		-
Š.	Bike Lane Blockages	Α	
i i c	Blockage LoS		-
	Median Refuge Width (no median = < 1.8 m)		
	No. of Lanes at Unsignalized Crossing		
	Sidestreet Operating Speed		
	Unsignalized Crossing - Lowest LoS		A
	Level of Service		Α
#	Facility Type		Mixed Traffic
S	Friction or Ratio Transit:Posted Speed		Vt/Vp ≥ 0.8
Tran	Level of Service		D

Consultant Scenario	AECOM MMLOS Assessment - Existing Conditio	Project Date		
SEGMENTS		King Street	Section Sherbourne St to Sumach St	
Pedestrian	Sidewalk Width Boulevard Width Avg Daily Curb Lane Traffic Volume Operating Speed On-Street Parking <u>Exposure to Traffic PLoS</u> Effective Sidewalk Width Pedestrian Volume <u>Crowding PLoS</u> Level of Service	E	1.5 m < 0.5 m ≤ 3000 > 30 to 50 km/h no E 1.5 m 1000 ped/hr C E	
Bicycle	Type of Cycling Facility Number of Travel Lanes Operating Speed # of Lanes & Operating Speed LoS Bike Lane (+ Parking Lane) Width Bike Lane Width LoS Bike Lane Blockages Blockage LoS Median Refuge Width (no median = < 1.8 m) No. of Lanes at Unsignalized Crossing Sidestreet Operating Speed Unsignalized Crossing - Lowest LoS Level of Service	_	Mixed Traffic 4-5 lanes total ≤ 40 km/h D - - - - - - -	
Transit	Facility Type Friction or Ratio Transit:Posted Speed Level of Service	D	Mixed Traffic Vt/Vp ≥ 0.8 D	

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Consultant	AECOM				
Scenario	MMLOS Assessment - Existing Condition	ons (2020)			
SEGMENTS		Eront Stroot	Section	Section	
SEGIVIENTS		FION SUPER	Sherbourne St to Parliament St	Parliament St to Cherry St	
	Sidewalk Width		1.5 m	1.5 m	
	Boulevard Width		< 0.5 m	< 0.5 m	
E	Avg Daily Curb Lane Traffic Volume		≤ 3000	≤ 3000	
<u>.</u>	Operating Speed		> 30 to 50 km/h	≤ 30 km/h	
ž.	On-Street Parking	_	no	no	
ő	Exposure to Traffic PLoS	E	E	D	
Ď	Effective Sidewalk Width		1.5 m	1.5 m	
ے ا	Pedestrian Volume		250 ped/hr	250 ped/hr	
	Crowding PLoS		В	В	
	Level of Service		E	D	
	Type of Cycling Facility		Mixed Traffic	Mixed Traffic	
	Number of Travel Lanes		4-5 lanes total	4-5 lanes total	
	Operating Speed		≤ 40 km/h	≤ 40 km/h	
	# of Lanes & Operating Speed LoS		D	D	
(h)	Bike Lane (+ Parking Lane) Width				
.	Bike Lane Width LoS		-	-	
Sec. 1	Bike Lane Blockages				
<u>.0</u>	Blockage LoS		-	-	
m	Median Refuge Width (no median = < 1.8 m)				
	No. of Lanes at Unsignalized Crossing				
	Sidestreet Operating Speed				
	Unsignalized Crossing - Lowest LoS		-	-	
	Level of Service		-		
i.	Facility Type		Mixed Traffic	Mixed Traffic	
S	Friction or Ratio Transit:Posted Speed		Vt/Vp ≥ 0.8	Vt/Vp ≥ 0.8	
Trar	Level of Service	U	D	D	

Consultant	AECOM		Project			
Scenario	MMLOS Assessment - Existing Conditio	ns (2020)	Date			
SEGMENTS		The Esplanade	Section			
CEOMENTO			Sherbourne St to Berkeley St			
	Sidewalk Width Boulevard Width		1.5 m 0.5 - 2 m			
Ę	Avg Daily Curb Lane Traffic Volume		≤ 3000			
<u> </u>	Operating Speed		≤ 30 km/h			
sti	On-Street Parking	C	yes			
<u>ö</u>	Exposure to Traffic PLoS		C			
O O	Effective Sidewalk Width		1.5 m			
<u> </u>			250 ped/nr			
			В			
	Level of Service		C			
	Type of Cycling Facility		Mixed Traffic			
	Number of Travel Lanes		2-3 lanes total			
	Operating Speed		≤ 40 km/h			
	# of Lanes & Operating Speed LoS		В			
a	Bike Lane (+ Parking Lane) Width					
	Bike Lane Width LoS		-			
Š.	Bike Lane Blockages	-				
	Blockage LoS		-			
•••	Median Refuge Width (no median = < 1.8 m)					
	No. of Lanes at Unsignalized Crossing					
	Sidestreet Operating Speed					
	Unsignalized Crossing - Lowest LoS		-			
	Level of Service		-			
::	Facility Type		Mixed Traffic			
SL	Friction or Ratio Transit:Posted Speed		Vt/Vp ≥ 0.8			
Trar	Level of Service		D			

Consultant	AECOM		Project
Scenario	MMLOS Assessment - Existing Conditio	ns (2020)	Date
SECMENTS		Mill Street	Section
SEGMENTS		IVIIII Street	Parliament St to Cherry St
e e	Sidewalk Width Boulevard Width Avg Daily Curb Lane Traffic Volume		1.8 m 0.5 - 2 m ≤ 3000
triar	Operating Speed On-Street Parking		≤ 30 km/h yes
S S	Exposure to Traffic PLoS	В	A
ed	Effective Sidewalk Width		1.5 m
<u> </u>	Pedestrian Volume		250 ped/nr
			D D
	Level of Service		В
	Type of Cycling Facility		Mixed Traffic
	Number of Travel Lanes		2-3 lanes total
	Operating Speed		≤ 40 km/h
	# of Lanes & Operating Speed LoS		В
U	Bike Lane (+ Parking Lane) Width		
5	Bike Lane Width LoS		-
S S	Bike Lane Blockages	-	
Mi	Blockage LoS		-
	Ne of Lance at Lineignelized Creesing		
	Sidestreet Operating Speed		
	Unsignalized Crossing - Lowest LoS		-
	Level of Service		-
	Facility Type		Mixed Traffic
ISI	Friction or Ratio Transit:Posted Speed		Vt/Vp ≥ 0.8
Trar	Level of Service		D

SEGMENTS		Lake Shore Blvd	Section
		Lake Shore Divu	Sherbourne St to Cherry St
	Sidewalk Width		1.8 m
	Boulevard Width		> 2 m
_	Avg Daily Curb Lane Traffic Volume		≤ 3000
<u>0</u>	Operating Speed		> 50 to 60 km/h
itr	On-Street Parking		no
B	Exposure to Traffic PLoS	В	А
ğ	Effective Sidewalk Width		2.5 m
Ъ.	Pedestrian Volume		250 ped/hr
	Crowding PLoS		В
	Level of Service		B
	Type of Cycling Facility		Physically Separated
	Number of Travel Lanes		4-5 lanes total
	Operating Speed		<u>≤ 40 km/h</u>
	# of Lanes & Operating Speed LoS		A
	Bike Lane (+ Parking Lane) Width		
e	Bike Lane Width LoS		-
, Хо	Bike Lane Blockages	Δ	
<u>ic</u>	Blockage LoS	~	-
m	Median Refuge Width (no median = < 1.8 m)		< 1.8 m refuge
	No. of Lanes at Unsignalized Crossing		≤ 3 lanes
	Sidestreet Operating Speed		<u>≤ 40 km/h</u>
	Unsignalized Crossing - Lowest LoS		A
	Level of Service		Α
it	Facility Type		Mixed Traffic
SL	Friction or Ratio Transit:Posted Speed		Vt/Vp ≥ 0.8
Trar	Level of Service		D

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MMLOS Assessment - Existing Conditions (2020)

SEGMENTS		Sherhourne St	Section
SLGWILNIS		Sherbourne St	Lake Shore Blvd to Adelaide St
	Sidewalk Width		1.8 m
	Boulevard Width		> 2 m
_	Avg Daily Curb Lane Traffic Volume		> 3000
<u></u>	Operating Speed		> 30 to 50 km/h
, it is a second se	On-Street Parking	^	no
ő	Exposure to Traffic PLoS	C.	С
ğ	Effective Sidewalk Width		2.0 m
Å	Pedestrian Volume		250 ped/hr
	Crowding PLoS		В
	Level of Service		С
	Type of Cycling Facility		Physically Separated
	Number of Travel Lanes		4-5 lanes total
	Operating Speed		<u>≤ 40 km/h</u>
	# of Lanes & Operating Speed LoS		A
	Bike Lane (+ Parking Lane) Width		
- Hereit	Bike Lane Width LoS		-
Š.	Bike Lane Blockages	Δ	
<u>.</u>	Blockage LoS		-
m	Median Refuge Width (no median = < 1.8 m)		< 1.8 m refuge
	No. of Lanes at Unsignalized Crossing		≤ 3 lanes
	Sidestreet Operating Speed		<u>≤ 40 km/h</u>
	Unsignalized Crossing - Lowest LoS		A
	Level of Service		А
÷	Facility Type		
ડા	Friction or Ratio Transit:Posted Speed		
Tra	Level of Service	U	-

Consultant	AECOM	Project			
Scenario	MMLOS Assessment - Existing Condition	ns (2020)	Date		
SEGMENTS		Barkalay St	Section		
SEGMIENTS		Derkeley St	The Esplanade to Adelaide St		
c	Sidewalk Width Boulevard Width Avg Daily Curb Lane Traffic Volume		1.5 m 0.5 - 2 m ≤ 3000		
<u>a</u> .	Operating Speed		≤ 30 km/h		
štr	On-Street Parking	^	yes		
e e e e e e e e e e e e e e e e e e e	Exposure to Traffic PLoS	C	С		
ğ	Effective Sidewalk Width		1.5 m		
۲ ۲	Pedestrian Volume		250 ped/hr		
	Crowding PLoS		В		
	Level of Service		С		
	Type of Cycling Facility		Mixed Traffic		
	Number of Travel Lanes		2-3 lanes total		
	Operating Speed		≤ 40 km/h		
	# of Lanes & Operating Speed LoS		B		
	Bike Lane (+ Parking Lane) Width				
.	Bike Lane Width LoS		-		
Š.	Bike Lane Blockages	_			
io i	Blockage LoS		-		
•••	Median Refuge Width (no median = < 1.8 m)				
	No. of Lanes at Unsignalized Crossing				
	Sidestreet Operating Speed				
	Unsignalized Crossing - Lowest LoS		-		
	Level of Service		-		
E.	Facility Type		Mixed Traffic		
SL	Friction or Ratio Transit:Posted Speed		Vt/Vp ≥ 0.8		
Tran	Level of Service	U U	D		

Consultant Scenario

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MMLOS Assessment - Existing Conditions (2020)

SEGMENTS		Parliamont St	Section
SEGIVIENTS		Famalient St	Lake Shore Blvd to Adelaide St
	Sidewalk Width Boulevard Width		1.5 m < 0.5 m
E	Avg Daily Curb Lane Traffic Volume		≤ 3000
<u>.</u>	Operating Speed		> 30 to 50 km/h
st	On-Street Parking	E	no
<u>ö</u>	Exposure to Traffic PLoS		Ξ
e e e e e e e e e e e e e e e e e e e	Effective Sidewalk Width		1.5 m
e e	Pedestrian Volume		250 ped/hr
	Crowding PLoS		В
	Level of Service		E
	Type of Cycling Facility		Mixed Traffic
	Number of Travel Lanes		4-5 lanes total
	Operating Speed		≤ 40 km/h
	# of Lanes & Operating Speed LoS		D
	Bike Lane (+ Parking Lane) Width		
	Bike Lane Width LoS		-
Š.	Bike Lane Blockages	_	
<u>.0</u>	Blockage LoS		-
m	Median Refuge Width (no median = < 1.8 m)		
	No. of Lanes at Unsignalized Crossing		
	Sidestreet Operating Speed		
	Unsignalized Crossing - Lowest LoS		-
	Level of Service		-
<u>.</u>	Facility Type		Mixed Traffic
S	Friction or Ratio Transit:Posted Speed		Vt/Vp ≥ 0.8
Tran	Level of Service	D	D

Consultant	AECOM MMLOS Assessment - Existing Conditions (2020)		Project Date
Scenario			
SEGMENTS		Cherry St	Section
		oneny or	Lake Shore Blvd to Adelaide St
Pedestrian	Sidewalk Width		1.8 m
	Boulevard Width		> 2 m
	Avg Daily Curb Lane Traffic Volume		≤ 3000
	Operating Speed	P	> 30 to 50 km/h
	Un-Street Parking		no
	Exposure to Traffic PLoS	D	A
	Effective Sidewalk Width		1.5 m
	Pedestrian Volume		250 ped/hr
	Crowding PLoS		B
	Level of Service		B
Bicycle	Type of Cycling Facility	-	Curbside Bike Lane
	Number of Travel Lanes		≤ 1 each direction
	Operating Speed		≤ 50 km/h
	# of Lanes & Operating Speed LoS		A
	Bike Lane (+ Parking Lane) Width		≥ 1.8 m
	Bike Lane Width LoS		Α
	Bike Lane Blockages		Rare
	Blockage LoS		А
	Median Refuge Width (no median = < 1.8 m)		
	No. of Lanes at Unsignalized Crossing		
	Sidestreet Operating Speed		
	Unsignalized Crossing - Lowest LoS		-
	Level of Service		-
Transit	Facility Type	А	Segregated ROW
	Friction or Ratio Transit:Posted Speed		<u>Vt/Vp ≥ 0.8</u>
	Level of Service		A