

# 70 MISSISSAUGA ROAD SOUTH & 181 LAKESHORE ROAD WEST URBAN TRANSPORTATION CONSIDERATIONS FOR OPA, ZBA AND DRAFT PLAN OF SUBDIVISION

City of Mississauga

Prepared For: Port Credit West Village Partners

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# 1.0 INTRODUCTION

BA Group is retained by Port Credit West Village Partnership ("the WVP") to provide urban transportation advisory services in relation to the property located at 70 Mississauga Road South and 181 Lakeshore Road in the City of Mississauga. The site is a 72-acre plot of land on the Port Credit waterfront, generally bounded by Mississauga Road to the east, an existing residential neighbourhood to the west, Lakeshore Road West to the north, and a strip of waterfront lands to the south that are not part of this application, as illustrated in **Figure 1**.

The site is currently vacant but was previously used as an oil refinery and storage facility that was decommissioned in 1990. The existing areas located to the east, west and north of the property are primarily residential, with some commercial land uses fronting onto Lakeshore Road West.

The lands are zoned as a "D" zone (Development) within the City of Mississauga's Zoning By-law 225-2007. According to the Zoning By-law, the D zone recognizes vacant lands not yet developed and/or permits the use that legally existed on the date of passing of this By-law, until such time as the lands are rezoned in conformity with Mississauga Official Plan. The WVP is seeking an Official Plan Amendment (OPA) to permit development of a mixed-use community on the subject lands, as well as submitting concurrent applications for a Zoning By-law Amendment (ZBA) and a Draft Plan of Subdivision.

A Master Plan, prepared by the WVP envisages approximately 2,500 residential units in the form of condominiums and townhouses, along with approximately 22,745 m<sup>2</sup> of commercial space (including community centre/institutional uses), approximately 13,820 m<sup>2</sup> of retail space and a significant portion of park land and open space. Several new public roads providing pedestrian, cycling, transit and automobile connections through the lands and to the existing transportation network are identified in the Master Plan to support the proposed development.

This report summarizes BA Group's review of the urban transportation elements of the mixed-use development proposal and the related OPA, ZBA and Draft Plan of Subdivision applications, which are required to permit the development of the lands as proposed.

# 1.1 SCOPE OF WORK

In consultation with the City of Mississauga's Transportation and Works department, the following scope has been adopted for this transportation study:

- A description of the existing transportation context of the site including vehicular, transit, cycling and pedestrian accessibility;
- a description of the concept Master Plan including proposed uses and densities, as well as a review of the proposed street and development block layout;
- a review of relevant planning documentation from a transportation infrastructure planning perspective;
- a review of the concept development plan from three frames of reference the site, the local area, and the regional level;



- a review of the proposed vehicle parking, bicycle parking and loading facility provisions for the lands;
- trip generation forecasts for the development plan as proposed, including pedestrian, cyclist, transit and personal vehicle trips;
- a Transportation Demand Management (TDM) strategy for the site, which identifies potential measures to implemented as part of the development plan aimed at reducing auto-driver trips; and
- a review of weekday peak hour traffic operations (using the Synchro 9.1 software suite) under existing and future traffic conditions (at the 2027 horizon year) at the following intersections:
  - Lakeshore Road West / Loblaws/Retail Plaza Entrance (signalized);
  - o Mississauga Road South / Port Street West (unsignalized);
  - o Mississauga Road South / Lake Street (unsignalized);
  - o Lakeshore Road West / Lake Street (future unsignalized intersection);
  - Lakeshore Road West / Site driveway west of Wesley Avenue (future unsignalized intersection); and
  - o All internal public road intersections (unsignalized).

It is noted that this report is the first of two transportation studies completed in support of the OPA, ZBA and Draft Plan of Subdivision applications. The analyses conducted herein focus on operations at the proposed connections to the adjacent municipal streets (i.e. Lakeshore Road West and Mississauga Road South) and the proposed internal future public roads and intersections. This study combines the requirements for a Transportation Impact Study (TIS), Transportation Demand Management Strategy and a Parking Utilization Study.

A second transportation study that addresses transportation impacts on the broader local area network is currently underway and will be completed in coordination with the ongoing Lakeshore Connecting Communities study being undertaken by the City of Mississauga (see Section 5.0). The phased submission was discussed with City Staff as the best method to work in coordination with the Lakeshore Connecting Communities study.

In order to satisfy the established OPA, ZBA and Draft Plan of Subdivision transportation requirements of the City's Transportation and Works department, the forthcoming Phase 2 transportation study will include the following elements:



- Both Synchro (Highway Capacity Manual) and VISSIM (microsimulation) analyses;
- site trip generation analyses for at least two different modal split scenarios (i.e. low and medium transit use);
- analyses of the 2021, 2031 and 2041 planning horizon years;
- analyses of the broader local road network including:
  - All significant public road intersections on Lakeshore Road West between Lorne Park Road and Hurontario Street;
  - All significant public road intersections on Mississauga Road between Front Street North and Lake Street; and
  - All public road intersections on Port Street West, Bay Street, Lake Street, Peter Street, John Street and Front Street South;
- recommendations regarding the need for additional area transportation network improvements based on the analyses performed.



# 2.0 SITE DESCRIPTION AND AREA TRANSPORTATION CONTEXT

### 2.1 EXISTING SITE CONDITIONS

The subject site is an approximately 72-acre plot of land located southwest of the intersection of Mississauga Road South and Lakeshore Road West in the City of Mississauga. It is bounded to the west by the rear of residential properties on Pine Avenue South, and to the east by Mississauga Road South. The northern site boundary is Lakeshore Road West, and the southern boundary is a strip of waterfront lands that are not part of this application.

The parcel of land considered for development in this report (herby referred to as "the site" or "the proposed development" or "the development parcel") is an unoccupied brownfield site that is fenced to prevent access, and so has no existing driveways or in-use circulation systems, with the exception of the Waterfront Trail that extends across the sites southern frontage along the Lake Ontario shoreline. A fenced vehicle access to the site exists on Mississauga Road South, generally in line with Port Street West.

The site location is illustrated in **Figure 1** and the site context in relation to the surrounding area is shown in **Figure 2**.

### 2.2 CURRENT ZONING DESIGNATION

The lands are zoned as a "D" zone (Development) within the City of Mississauga's Zoning By-law 225-2007. According to the Zoning By-law, the D zone recognizes vacant lands not yet developed and/or permits the use that legally existed on the date of passing of this By-law, until such time as the lands are rezoned in conformity with Mississauga Official Plan.





Site Location



70 Mississauga Road South 7189-21 August 2017

Figure 1



Site Context



# 2.3 EXISTING AREA TRAVEL CHARACTERISTICS

To gain an understanding of existing travel mode characteristics for the area, the Transportation Tomorrow Survey (TTS) database was queried to derive the existing travel mode shares during the morning and afternoon peak periods, based on the most recent TTS data available (2011).

 Table 1 sets out the existing modal split for the site area.

#### TABLE 1: EXISTING TRAVEL MODE SPLIT

Mode	Morning Outbound	Afternoon Inbound
GO Transit <sup>1</sup>	12%	12%
Mi-Way	2%	2%
Auto driver	66%	68%
Auto passenger	11%	9%
School bus	3%	2%
Walk	6%	7%
Total	100%	100%

Notes:

1. Either solely GO Transit or in combination with other transit providers i.e. Mi-Way & TTC.

2. Based on 2011 TTS data for home-based trips to/from TTS zones 3640-3642, 3646-3648, and 3877-3878 during the weekday peak travel periods.

The existing modal splits show that between 65% and 70% of all trips to and from these zones during the peak periods are via private car and between 15% and 17% are via public transit. Of the public transit trips, GO Transit rail represent approximately 12% of all trips during both peak periods.

### 2.4 EXISTING AREA STREET NETWORK

From a road connectivity perspective, Port Credit is served by four major corridors: Lakeshore Road which runs east-west through Port Credit, Mississauga Road which runs north from Lakeshore Road at the east boundary of the subject site, the Queen Elizabeth Way (Q.E.W.) highway, and Hurontario Street, which runs north from central Port Credit. All roads in the vicinity of the site are under the jurisdiction of the City of Mississauga, with the nearest regional arterial road being Cawthra Road to the east of Hurontario Street.

Traffic conditions along the Lakeshore Road corridor can become congested, particularly on left turn movements at signalized intersections, at times during the weekday peak hours due to the relatively high traffic volumes carried during these periods. An overview of the surrounding existing area street network is provided below. The surrounding street network is illustrated in **Figure 3**.





# Existing Road Network



#### LAKESHORE ROAD WEST

Lakeshore Road is an east-west major arterial roadway that extends through the entirety of the City of Mississauga, providing connections (in the vicinity of the West Village site) to the Queen Elizabeth Way at Southdown Road, Mississauga Road and Hurontario Street. Lakeshore Road turns into Lake Shore Boulevard at the east limits of Mississauga, where it continues east through the City of Toronto. In the vicinity of the West Village property, Lakeshore Road West forms the northern boundary of the site and operates with four travel lanes with a posted speed limit of 50 km/h, and with lay-by parking on both sides of the street. Near the site (and running from the west to the east), Lakeshore Road West has signalized intersections with Maple Avenue, the Credit Landing Shopping Centre, Mississauga Road, John Street, and Stavebank Road on the east side of the Credit River.

#### **MISSISSAUGA ROAD**

Mississauga Road is a generally north-south major collector (Scenic Route) roadway that intersects Lakeshore Road West on the west side of the Credit River. Mississauga Road runs north-south through the majority of the City of Mississauga, and provides access to / from the Queen Elizabeth Way. In the vicinity of the study area, Mississauga Road has two travel lanes with additional turning lanes at its intersection with Lakeshore Road West, and a posted speed limit of 50 km/h. South of Lakeshore Road, Mississauga Road South provides access to J.C. Saddington Park at Lake Ontario, and forms the eastern boundary of the West Village property. Mississauga Road changes classification south of Lakeshore Road West, and is designated as a minor collector road from Lakeshore Road West to Port Street West, and a local road south of Port Street West. Mississauga Road South permits on-street parking on both sides of the street for most of its length, with the exception of sections in proximity to Lakeshore Road West.

#### PETER STREET

Peter Street is a local road under the jurisdiction of the City of Mississauga that runs between Lakeshore Road West and Lake Street. It has a two-lane cross-section and posted speed limit of 50 km/h, and parking is permitted on both sides of the street. Peter Street has a truck prohibition posted for traffic entering from Lakeshore Road West. The intersection of Peter Street and Lakeshore Road West is stop controlled for traffic on Peter Street.

#### JOHN STREET SOUTH

John Street South is a local road under the jurisdiction of the City of Mississauga that runs between Lakeshore Road and Lake Street. It has a two lane cross-section and posted speed limit of 50 km/h. John Street South has a truck prohibition posted for traffic entering from Lakeshore Road West. The intersection of John Street South with Lakeshore Road West is signalized.

#### FRONT STREET

Front Street north of Lakeshore Road West is a minor collector road under the jurisdiction of the City of Mississauga. South of Lakeshore Road West, Front Street South is designated as a minor collector road from Lakeshore Road to Port Street West, and then a local road from Port Street West to Lake Street. It has a two lane cross-section and a posted speed limit of 50 km/h. On-street parking is permitted on both sides north of Port Street, and on the east side only from Port Street to Lake Street. Front Street South has a truck



prohibition posted for traffic entering from Lakeshore Road West. The intersection of Front Street and Lakeshore Road West is not signalized.

#### PORT STREET WEST

Port Street West is an east-west minor collector road under the jurisdiction of the City of Mississauga that runs between Mississauga Road South and Front Street. Port Street West has a two-lane cross-section and a posted speed limit of 40 km/h. On street parking is not permitted west of Peter Street, but is permitted on both sides from Peter Street to Front Street. Port Street West has a truck prohibition posted for traffic entering from Mississauga Road South.

#### **BAY STREET**

Bay Street is an east-west local road under the jurisdiction of the City of Mississauga that runs between Mississauga Road South and Front Street. Bay Street has a two-lane cross-section and a posted speed limit of 50 km/h. On street parking is not permitted on the south side of Bay Street, and is also not permitted on the north side between John Street and Front Street. Bay Street has a truck prohibition posted for traffic entering from Mississauga Road South.

#### LAKE STREET

Lake Street is an east-west local road under the jurisdiction of the City of Mississauga that runs between Mississauga Road South and Front Street. Lake Street has a two-lane cross-section and a posted speed limit of 50 km/h. On street parking is not permitted on the south side of Lake Street. Lake Street has a truck prohibition posted for traffic entering from Mississauga Road South.

#### HURONTARIO STREET

Hurontario Street is a north-south arterial road under the jurisdiction of the City of Mississauga and provides access between a number of key destinations throughout the City. From Lakeshore Road north, some key destinations include the Queen Elizabeth Way, the City Centre, and Highways 403, 401 and 407. In the study area, Hurontario Street has a four-lane urban cross section with a posted speed limit of 50 km/h. Auxiliary turn lanes are provided at major intersections.



# 2.5 CYCLING CONTEXT

Under existing conditions, with the exception of the Waterfront Trail, there is limited cycling-specific infrastructure in place within Port Credit. For example, there are no direct, bicycle-specific connections providing for commuter access to / from the Port Credit GO Station.

A brief description of existing cycling infrastructure is provided in the following section.

#### 2.5.1 Existing Cycling Context

Existing cycling facilities run along the Mississauga waterfront, largely in the form of off-road multi-use paths. In the Port Credit area, the multi-use path and connecting links also make up part of the Great Lakes Waterfront Trail that (within its Mississauga section) runs along the north shore of Lake Ontario.

On-street connections to the Waterfront Trail (through shared lanes) are provided on Mississauga Road South, Lake Street and Front Street. Using the trail, and its separate bridge over the Credit River adjacent to Lakeshore Road, it is possible to travel from Mississauga Road South to the Port Credit GO Station via Memorial Park and High Street, or via Port Street East and Elizabeth Street. Under current conditions, cycling from Port Credit GO Station to the intersection of Mississauga Road South and Lake Street would take five minutes or less.

#### 2.5.2 Future Cycling Context

There are plans, both at the municipal level and as part of the Mobility Hub strategy, to considerably improve and enhance the formal facilities provided within Port Credit to provide safe and convenient linkages for cyclists and encourage non-automobile travel.

The City of Mississauga is planning significant improvements to cycling and pedestrian infrastructure in the Port Credit area extending across the Lake Ontario waterfront and, significantly, to the Port Credit GO Station. In particular, Lakeshore Road is identified as a primary on-road cycling route in the City's Cycling Master Plan, and in the Official Plan.

The existing and proposed cycling context is illustrated in Figure 4.





Existing and Future Cycling Context



# 2.6 EXISTING TRANSIT CONTEXT

The site is currently served by a number of bus routes providing transit connections to employment and education areas within Mississauga as well as to the nearest regional transit station (Port Credit GO Station), which provides broader transit connections. The Port Credit GO Station located west of Hurontario Street, which is an approximately 1.2-kilometre walk from the eastern boundary of the site.

The Regional Transportation Plan for the Greater Toronto and Hamilton Area (GTHA), otherwise known as "The Big Move", identifies Port Credit as a Mobility Hub. Mobility hubs are identified as major transfer points between all types of modes (transit, walk, cycle, drive) that provide connections to regional transportation systems and support intensification and centres of attraction at each hub.

The existing transit context is illustrated in **Figure 5** and detailed in the section below.

#### 2.6.1 GO Transit

Port Credit GO Transit station, which is a station on the Lakeshore West GO rail line, is located approximately 1.5 kilometres (km) from the centre of the site (a 5-minute drive or cycle from the site). Port Credit GO Station currently has 936 parking spaces comprising free, car-pool only and rented spaces.

In June 2013, Metrolinx introduced a 30-minute or better all-day two-way service on the Lakeshore West line between Aldershot and Union stations with more frequent services during peak periods. On weekdays, six trains serve Hamilton directly in the morning and the evening rush hour; four at Hamilton GO Centre, and two at West Harbour GO Station. Prior to June 2013, service on the Lakeshore West line operated hourly during off-peak periods with more frequent services during peak periods.

As part of Metrolinx's Regional Express Rail (RER) project, 15-minute two-way all-day service is planned for five GO rail lines including the Lakeshore West line. This service is expected to be in place once electrification of the GO network is completed by around the year 2024.





Existing and Future Transit Context



#### 2.6.2 MiWay

MiWay is the City of Mississauga's municipal transit provider. The nearest bus stops to the site are located on Lakeshore Road at the access for Credit Landing Shopping Centre and at the intersection of Lakeshore Road and Mississauga Road. Both sets of bus stops are served by the following routes operated by Mi-Way:

- **23 Lakeshore** operates daily between Clarkson GO Transit station to the west and Long Branch GO Transit station to the east via Port Credit GO Transit station at a peak period frequency of every 11 to 17 minutes.
- **335 Allan A. Martin** a school service that operates on weekdays only during term time between several high schools to the east and Clarkson GO Transit station to the west with part of the route operating along Lakeshore Road past the site. This service operates eastbound only during the morning school run and westbound only during the afternoon school run.
- **14 Lorne Park** operates on weekdays only between Clarkson station and Port Credit station predominantly via Mississauga Road and Indian Road at a peak period frequency of every 30 to 40 minutes (this route is only accessible via bus stops north of the Lakeshore Road and Mississauga Road intersection).

# 2.7 PLANNED TRANSIT INFRASTRUCTURE CONTEXT

#### 2.7.1 MiWay 5 Year Plan

In 2015, MiWay published the *MiWay Five Year Transit Service Plan* outlining planned service improvements. The service plan includes providing more frequent service on main corridors, increasing the number of express routes and streamlining routes through transit corridors in a grid-pattern.

The improvements included in MiWay's 5-year plan would not directly increase the service level on the MiWay bus routes that currently access the site, but will make transit more attractive for trips across the City by resulting in a more efficient and connected network, in particular through service increases on Hurontario Street.

#### 2.7.2 Metrolinx Regional Transit Plan

Metrolinx is an agency of the Government of Ontario and is responsible for coordinating regional transportation in the Greater Toronto Hamilton Area (GTHA). The Regional Transportation Plan (RTP) outlines a number of transit improvement programs, which includes building a higher-order transit system on the Hurontario-Main corridor, which is discussed in greater detail in Section 2.7.3.

The RTP also includes a number of other transit improvements in the area, which, in combination with a rapid transit program along Hurontario Street, would provide excellent and efficient access between Port Credit and Downtown Mississauga and other areas in the GTHA. These programs include the following:

- increased service on GO Transit lines and at area GO Stations (Port Credit, Brampton, and Cooksville);
- higher-order transit on Dundas Street between Waterdown and Kipling Station;



- the Mississauga Transitway along Highway 403 between Oakville and Renforth; and
- higher-order transit along Lakeshore Road between Hurontario Street and Union Station.

#### 2.7.3 Hurontario-Main LRT

The Hurontario-Main Light Rail Transit (The Hurontario LRT) will be the most significant transit improvement to the proposed development site area. A new LRT line will be provided along the Hurontario Street corridor connecting Brampton's Gateway Terminal in the north and Port Credit GO Station in the south. The Hurontario LRT will run generally at grade in a segregated lane, separate from other road traffic and will use grade-separated crossings at rail lines and highways as required. The LRT plan proposes a total of 26 stops along Hurontario Street and Downtown Mississauga City Centre.

Initial planning and assessment of the alignment investigated continuing the Hurontario LRT south of Port Credit GO Station to a terminal station on Port Street at Elizabeth Street. The alignment that has been arrived at through the design process and which is planned for implementation has its southern terminus at the Port Credit GO Station.

Construction of the Hurontario LRT is anticipated to start in 2018. It is expected to be completed and fully operational by 2022.

The *Hurontario / Main Street Master Plan Report* (October 2010) considers the impact of the LRT line from a travel mode share perspective. The forecast for future transit mode share considers two land development scenarios. The base growth scenario considers population growth of 6 percent and employment growth of 14 percent along the corridor and the high growth scenario considers population growth of 21 percent and employment growth of 31 percent.

Existing and future mode share for northbound and southbound trips along the Hurontario corridor, as shown in table 3.6.3 of the Hurontario / Main Street Master Plan Report, are summarized in **Table 2**. As noted in **Table 2**, a considerable change in public transit use along the corridor is forecast together with a corresponding reduction in auto travel.

#### TABLE 2 FORECAST MODE SHARE ASSUMPTIONS

Mode Share for Hurontario between	Auto		Transit	
Hwy 407 and Hwy 401	Southbound	Northbound	Southbound	Northbound
Existing	90.1%	90.2%	9.9%	9.8%
Future (2031) Base LRT	43.9%	49.4%	56.1%	50.6%
Future (2031) High Growth	44.4%	48.4%	55.6%	51.4%

Notes:

1. Table source: Hurontario / Main Street Master Plan Report, table 3.6.3 (p. 99).



# 3.0 THE MASTER PLAN

The Master Plan identifies the subject site as a mixed-use development comprising residential, retail, community/institutional and office uses. A Draft Master Plan was prepared and submitted by West Village Partners in March 2017.

The Master Plan was informed by the framework laid out in the Inspiration Port Credit document (see Section 4.6), and shows how a mixed-use development could be realized on the site with consideration of good planning and urban design principles. Key consideration is given for transportation items including the provision of a mobility network that will support the site with pedestrian and cycling connections, and connections to existing and planned transit. The Master Plan is illustrated in **Figure 6**.

An overview of the Master Plan is provided below. An evaluation of the Plan considering three different perspectives – the site itself, local and regional – is provided in Section 6.0.

# 3.1 BUILDING PROGRAMME

In total, the Master Plan includes 2,500 new residential units, 13,819 m<sup>2</sup> of retail gross floor area (GFA), and 22,745 m<sup>2</sup> of commercial and community/institutional GFA. The residential units include traditional townhomes, stacked and back to back townhomes, and apartment units.

The Master Plan includes five different precincts within the site, each with a different character:

- Retail and commercial land uses are to be focused primarily along Lakeshore Road on the northern portion of the site, in the area referred to as the West Village Precinct.
- On the southern area of the site, the Campus precinct will contain community uses (a partnership with the YMCA is being explored along with other institutional and community uses) and higher density residential apartment uses.
- The Promenade precinct links the West Village and Campus precincts and contains low and mid-rise residential uses through the central area of the proposed Master Plan.
- To the east, the Old Port Transition precinct contains predominantly townhouse forms with a lower density.
- To the west, the Parkside precinct also contains predominantly townhouse forms with a lower density.

# 3.2 PHASING OF DEVELOPMENT

The proposed development will be phased to respond to site remediation needs, as well as market absorption for the various proposed land uses. It is anticipated that the full build-out of the Master Plan may take 8-10 years from commencement of work on the site to final occupancy of the last phase.





West Village Master Plan



70 Mississauga Road South 7189-21 August 2017

Figure 6

### 3.3 MASTER PLAN TRANSPORTATION PRINCIPLES

The proposed development plan provides a fine-grained network of streets and blocks, facilitating access by all modes of transportation by generally replicating the existing street network pattern. The network includes both municipal streets and private condominium roads to ensure a range of facilities are provided to accommodate the different needs of various parts of the site.

#### 3.3.1 Vehicular Traffic Access Principles

It is important that any development plan established for the site does not rely upon a single point of access, to avoid a concentration of traffic at a single location, along with a consideration of limiting traffic volumes in the existing adjacent residential areas.

The adoption of multiple vehicular connections to Lakeshore Road West and Mississauga Road South, along with a network of condominium and municipal streets through the site will provide for vehicular circulation around the property, connections to on-site parking and loading facilities, and will enable a distribution of traffic activity on the area street system. With the exception of the campus area, the non-residential land uses are proposed to be generally focused on Lakeshore Road, limiting the extent to which traffic and parking impacts may occur in residential areas within and adjacent to the site.

It is intended that Port Street West and Lake Street will be extended as municipal streets into the subject site, with a non-automobile connection along the alignment of Bay Street. The main site access will be on Lakeshore Road West at the location of the existing traffic control signal that serves the existing retail plaza on the north side of the street. In addition, secondary vehicle access points will be provided on Lakeshore Road West, east and west of the main signalized intersection.

#### 3.3.2 Transit Access Principles

The proposed development plan will capitalize on the available existing and planned transit facilities in Port Credit and adopt other strategies that seek to minimize auto-dependent travel, maximize transit usage and provide an environment that encourages pedestrian and cycling usage. This will include provisions for the future introduction of a bus-based transit route into the site on a loop created by the proposed municipal roads, as well as planning for a transit-supportive urban form, and a reduced parking provision to support the use of transit.

The transit strategy will also contemplate future provision of rapid transit on Lakeshore Road (in a form to be determined through the City's Lakeshore Connecting Communities study), anticipated within a 20+ year time frame.

#### 3.3.3 Non-Automobile Access Principles

Non-automobile connections will be provided on the site that link to the existing Waterfront Trail to the south, with pedestrian and bicycle connections throughout the site that compliment the primary bike route along Lakeshore Road and support non-auto trip making for work and recreation. In terms of the City's Cycling Master Plan route network, the new cycling connections will provide a significant improvement in connectivity. Secure bicycle parking facilities will be provided for residents and employees of the development, along with bicycle parking facilities for visitors to the site.



The development plan will integrate a high quality, pedestrian-focused public realm that emphasizes walkability and is at a pedestrian scale. The additional pedestrian connections, along with mixed-use and community components of the proposed development will provide an increased permeability and accessibility between Lakeshore Boulevard and the Lake Ontario shoreline.



# 4.0 RELEVANT PLANNING DOCUMENTATION

Urban transportation policies and direction from the Provincial Policy Statement (2014), the Growth Plan for the Golden Horseshoe (2006), the City of Mississauga Official Plan (2015), and Moving Mississauga (2011) support the proposed Official Plan Amendment as discussed below. Further, the City's policies contained in the Port Credit Local Area Plan and the Inspiration Port Credit Master Plan provide more detailed guidance for the site development. The transportation-related elements of the above planning documents are summarized below.

### 4.1 PROVINCIAL PLANNING DOCUMENTS

The **Provincial Policy Statement** (PPS) is issued under the authority of Section 3 of the Planning Act. It provides direction on matters of provincial interest related to land use planning and development, and promotes the provincial "policy-led" planning system.

With respect to transportation systems, Part V of the PPS, through the Policies in Section 1.6.7, promote maintaining and improving connectivity within and among transportation systems and modes (1.6.7.3) as well as a land use pattern, density and mix of uses that minimize the length and number of vehicle trips and support current and future use of transit and active transportation (1.6.7.4). The integration of residential, retail and employment land uses, as proposed in the West Village Master Plan, supports this policy direction and encourages the residential mixing of land uses in a major regional employment node.

The **Growth Plan for the Greater Golden Horseshoe** (2006) provides a framework for implementing the Government of Ontario's vision for building stronger, prosperous communities within the Greater Golden Horseshoe area. The Plan directs growth within the Greater Golden Horseshoe area to existing urban areas in order to make better use of land and infrastructure. The intensification of existing built-up areas supports transit and infrastructure investment.

The Growth Plan, through policies in Section 3.2.2, supports a transportation system that exhibits connectivity amongst modes, a balance of modal choices for users of the system with priority given to walking, cycling, transit and, sustainability (i.e., economical and environmentally appropriate). Furthermore, the Growth Plan directs Transportation Demand Management (TDM) policies to be adopted by municipalities towards reducing trip distance and time and increasing modal share to alternatives other than the automobile.

The proposed West Village redevelopment fulfills a number of transportation related policy directions, by intensifying land use along a major transit corridor and mixing commercial and residential land uses to permit and encourage the uptake of active transportation options and ensure the viability of planned transit.

# 4.2 REGION OF PEEL OFFICIAL PLAN

The Region of Peel Official Plan provides coordinated planning in the Peel region through long-term policies with an intention of promoting sustainable forms of transportation.

Regional policies include Regional Intensification Corridors, which promote the development of urban areas within the region that support sustainable development through efficient use of land, densities supportive of



transit and pedestrian mobility, and complete urban communities containing living, working and recreational opportunities.

Policy 5.3.3 provides that Regional Intensification Corridors are characterized by the following:

- urban Growth Centres linked by public transit;
- high intensity, compact urban form with an appropriate mix of uses including commercial, office, residential, recreational and major institutional;
- transit-supportive and pedestrian-oriented urban forms; and
- opportunities for higher order transit;

The proposed West Village development is in line with development of the type of corridor listed above.

#### 4.3 CITY OF MISSISSAUGA OFFICIAL PLAN

The City of Mississauga Official Plan contains direction and policies which link land use and transportation stressing multi-modal accessibility to support the daily needs of residential and business communities.

Section 4.5 of the Official Plan puts an emphasis on direction growth towards higher order transit such as Hurontario Street.

Policies in the Official Plan set out development criteria for Intensification Areas. Among these are provisions for promoting multi-modal transportation and avoiding excessive car-traffic on the road system within the intensification area. The Intensification Area through Port Credit has its western boundary at Mississauga Road and while the area does not cover the subject lands, it is considered that the policies related to transportation provide relevant guidance for the development of the site.

Policy 8.2.3.8 outlines criteria for decisions on transit planning and investment, which relates to land use planning and development. This policy requires the following:

- using transit infrastructure to shape growth, and planning for high residential and employment densities that ensure the efficiency and viability of existing and planned transit; and
- expanding transit service to areas that plan to achieve transit supportive mixed residential and employment densities.

The proposal for a mixed-use development on the site promotes the viability of a potential future extension of higher order transit by adding residential, office and retail, along with community uses, all in a transit-supportive density.

### 4.4 MOVING MISSISSAUGA

Moving Mississauga is the City's interim transportation strategy outlining the City's vision for movement of good and people through a safe and connected multi-modal transportation system. The document identifies actions that the City will undertake to achieve a viable multi-modal transportation system and address the



City's existing and future transportation needs. Moving Mississauga proposes a number of strategic directions to address the key transportation related issues facing the City. These directions include the following:

- advancing the development of a multi-modal transportation network;
- enhancing system capacity through design, network linkages, and new roads; and
- supporting the integration of context sensitive design and transportation.

The addition of new streets within the proposed mixed-use West Village development parcel is consistent with these policies.

# 4.5 PORT CREDIT LOCAL AREA PLAN

The Port Credit Local Area Plan includes a detailed section on how the development of the Port Credit area would support the creation of a "Multi-Modal City". The Plan focuses on the consideration of needs for all modes and all users of the transportation network.

The Port Credit Local Area Plan also documents issues related to peak hour travel times and queuing on Lakeshore Road, and refers to the City's Lakeshore Road Transportation Master Plan (now known as the "Lakeshore Connecting Communities Study"). The Plan notes that improvements to connectivity and provision of a fine-grained network may be identified through the Transportation Master Plan and lists a number of potential road connections in the Port Credit area.

For development site traffic, the Plan gives direction that traffic should be directed towards signalized intersections and vehicular turning movements consolidated at other locations. Further, the Plan requires that development applications will consider methods to limit impacts on the transportation network such as:

- Reduced parking standards;
- Transportation demand management;
- Transit oriented design;
- Pedestrian/cycling connections; and
- Access management plan.

The Port Credit Local Area Plan designates the subject lands as Special Site 3, and requires that a comprehensive master plan be prepared that addresses transportation, amongst other things. The Inspiration Port Credit Master Planning Framework was prepared by the City in consultation with the Port Credit community to describe a master plan framework for the subject site. The transportation elements of that framework are described in the following section.

### 4.6 INSPIRATION PORT CREDIT

The Inspiration Port Credit Master Planning Framework (November 2015) was prepared by the City of Mississauga to establish a framework to guide the renewal of the site. The mobility aspects of the Framework were described in Section 4.5.3 of the plan.



Key aspects of the Framework included support for a variety of transportation modes, prioritizing active transportation and consideration of the site's internal transportation network and a sensitivity to integrating the site's transportation network into the surrounding area. In particular, the Framework gave direction that:

- Rapid transit supporting the site should be explored (noting that specific transit options will need to be coordinated with the City's Lakeshore Road Transportation Master Plan);
- Parking requirements should be appropriate for a mixed-use community and support transit-oriented development;
- A walkable fine-grained street network should include connections for pedestrians, cyclist and vehicles;
- Connections to adjacent areas need to be carefully considered and sensitive to the existing neighbourhood communities;
- An active transportation network should provide for many opportunities for pedestrian and cycling connections;
- The Waterfront Trail will be a key active transportation corridor through the site; and
- Mississauga Road South will be recognized as a street with special character.

The proposed development has been designed from a transportation perspective to be in line with the intent of the Framework. Descriptions of the proposed transportation connections, parking provision and transportation demand management measures are described in the following sections, along with the anticipated impacts on the adjacent transportation network.



# 5.0 LAKESHORE CONNECTING COMMUNITIES STUDY

The City of Mississauga is currently undertaking a Transportation Master Plan study along the Lakeshore Road / Royal Windsor Drive corridor named *Lakeshore Connecting Communities*. The intention of the study is to guide the planning and implementation of the transportation network along the Lakeshore corridor over the next 25 years, including decisions about optimizing roadways, improving transit, and enhancing cycling and walking connections.

The focus of the study is improving long-term mobility for the Clarkson Village, Port Credit and Lakeview communities located along the corridor.



The study will include detailed transportation modelling for existing and future conditions, with a review of network connectivity for all modes, and an investigation of opportunities to provide enhanced linkages at key locations. It is expected that preliminary transit recommendations for the corridor will be published in the fall of 2017.

At this juncture, in advance of the Lakeshore Connecting Communities study being completed, the Master Plan has been designed to be able to accommodate the integration of future higher-order transit within the site via the proposed internal public road network, as discussed in Section 3.3.2.

Going forward, the forthcoming subsequent transportation study related to the 70 Mississauga Road South OPA/ZBA/Draft Plan of Subdivision (see Section 1.1) will be coordinated with the Lakeshore Connecting Communities study, with the aim of being consistent with the methodology, assumptions and conclusions made in the City's study once it is complete. Likewise, it is anticipated that the Lakeshore Connecting Communities study will consider the transportation needs of the subject site.



# 6.0 REVIEW OF DEVELOPMENT CONCEPT – THREE FRAMES OF REFERENCE

The OPA/ZBA/Draft Plan of Subdivision for the West Village Master Plan seeks to introduce mixed-use development onto the site. The Master Plan is evaluated based upon three frames of reference; from the site planning (internal) perspective, from the local area (external) perspective, and from the regional perspective.

The three applications are being submitted concurrently to permit certain height, density, parking and other matters. The application will address the appropriateness of any specific development concept including its proposed intensity, form and supporting infrastructure to enable the proposal to be appropriately supported from a transportation perspective.

### 6.1 SITE PLAN CONSIDERATIONS

#### 6.1.1 Internal Road Network

As part of the redevelopment of the site, a street network is required to service the property and provide connectivity to the existing surrounding transportation infrastructure. The concept Master Plan internal road network is illustrated in **Figure 7**.

A finer grain of local roads are provided in a 'grid' throughout the site, with key connections onto Lakeshore Road West to the north and Mississauga Road South to the east. The road network illustrated throughout the site is in line with Mississauga Official Plan objectives for Intensification Areas, which identify a creating a finer grained road network, and providing the completion of road network connections through site development.

The concept internal road network comprises a hierarchy of roads that provide network connectivity for all modes of travel. Each classification of road is described in the following sections.

#### 6.1.1.1 Major Collector Roads

Avenue 'A' and Lake Street east of Avenue 'A' will be classified as Major Collector roads and intended to function as the main vehicular corridor through the Master Plan lands.

These roads will have a 20-metre right-of-way (ROW) width and include 3.5-metre-wide vehicle travel lanes in each direction with on-street parking on one side of the street. Pedestrian sidewalks (2.0 metres in width) will be provided on both sides of the road. At intersections with Lakeshore Road West and Mississauga Road South, these roads will widen to include exclusive left-turn lanes.

These roads will be designed to accommodate future transit service routes – likely bus service in the short-term horizon and potentially higher-order transit in the long-term horizon – servicing the development lands.

A concept cross-section of Avenue 'A' is shown in Figure 8.





# Master Plan Road Network



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# Avenue 'A' Concept Cross-Section



#### 6.1.1.2 Minor Collector Roads

Port Street West between Avenue 'A' and Mississauga Road South will be classified as a Minor Collector road. The primary function of the Minor Collector road is to accommodate vehicular travel, although it will carry a lower volume of traffic than the Major Collector roads.

This road will have a 20-metre right-of-way (ROW) width and include 3.0-metre-wide vehicle travel lanes in each direction with on-street parking on one side of the street. Pedestrian sidewalks (2.5 to 2.8 metres in width) and on-street cycle lanes will be provided on both sides of the road.

A concept cross-section of Port Street West is shown in Figure 9.

#### 6.1.1.3 Local Streets

Lake Street between Avenue 'A' and Lakeshore Road West, Port Street West west of Avenue 'A', and Avenue 'B' will be classified as Local streets. Local streets are intended to carry low volumes of vehicular traffic and be ideal cycling and pedestrian travel routes.

These roads will have a 20-metre right-of-way (ROW) width and include 3.0-metre-wide vehicle travel lanes in each direction with no on-street parking. Cycle lanes and/or off-road bicycle paths are provided along with pedestrian sidewalks (2.5 to 5.5 metres in width) on both sides of the road.

A concept cross-section of Lake Street is shown in Figure 10.

#### 6.1.1.4 Condominium Roads

All other roads will function as condominium roads whose function will be primarily to provide direct access to the residential townhouses. These roads will carry low volumes of vehicular traffic and be ideal cycling and pedestrian travel routes. In some cases, condominium roads are provided above below-grade parking.

In general, the condominium roads will include 3.0-metre-wide vehicle travel lanes in each direction with no on-street parking. Pedestrian sidewalks (1.8 metres in width) will be provided on both sides of the road. In general, building setback distances will be reduced compared to the other road classes, given that mainly low-density residential housing will front onto these streets.

A pedestrian-focused route (woonerf) is also envisioned connecting between Avenue 'A' and the Waterfront through the southern Campus (Blocks T and U), providing access to the recreational Waterfront area for pedestrians, and also allowing for service vehicle access.

A concept cross-section of a typical condominium road is shown in Figure 11.




# Port Street West Concept Cross-Section





Lake Street Concept Cross-Section





# Condominium Road Concept Cross-Section



#### 6.1.2 Internal Cycling Route Network

The internal cycling route network proposed as part of the Master Plan is illustrated in Figure 12.

There are two main components of the proposed internal cycling route network:

- a) the off-road two-way route connecting between the existing Waterfront trail and Lakeshore Road West, running parallel to the future Lake Street extension; and
- b) the on-street cycle lanes on Lake Street, Port Street West and Avenue 'B' connecting between the existing on-street cycle route on Mississauga Road/Lake Street and Lakeshore Road West.

The off-road two-way cycling lane is proposed to be 3.0 metres wide and will function primarily as a recreational route connecting to the Waterfront area.

The on-street cycle lanes will be a minimum of 1.5 metres wide and provide cycling connectivity throughout the site, linking to the existing Mississauga Road South/Lake Street on-street cycle routes. Furthermore, it is proposed that Mississauga Road South be reconstructed with an off-road west-side multi-use path as part of the Master Plan, providing another high-quality cycling route between Lakeshore Road West and the Waterfront.

The City of Mississauga's Draft Cycling Master Plan identifies Lakeshore Road West as a 'Special Study Area', indicating that the potential for cycling route along the corridor will be investigated as part of the Lakeshore Connecting Communities study.

#### 6.1.3 Internal Pedestrian Route Network

The internal pedestrian route network proposed as part of the Master Plan is illustrated in Figure 13.

In general, pedestrian sidewalks and/or paths are provided along all public and private roads within the Master Plan lands. Additionally, the following pedestrian-focused elements are proposed:

- a) A natural corridor running along the west border of the site, connecting between Lakeshore Road West and the Waterfront area;
- b) a central pedestrian plaza located at the north end of Avenue 'A', connecting to Lakeshore Road West;
- c) an east-west, off-road pedestrian connection between Mississauga Road and Avenue 'A', aligning with the existing Bay Street to the east;
- d) a second pedestrian plaza centred on an around the southern Campus area (Blocks T and U), connecting to Mississauga Road South, the future Lake Street extension and the Waterfront; and
- e) a pedestrian-focused 'woonerf' style connection between Avenue 'A' and the Waterfront through the southern Campus, serving as an access to the recreational Waterfront area.





# Master Plan Cycling Connections





## Master Plan Pedestrian Connections



#### 6.1.4 Transit Accessibility

The site is within 1.2 kilometres of the Port Credit GO Station and existing bus service in the area running along Lakeshore Road West and Mississauga Road North. Furthermore, the future Hurontario LRT route terminating at the Port Credit GO Station will provide additional transit connectivity for the site.

The Master Plan transit context is illustrated in Figure 14.

Given the site's proximity to these facilities, it is anticipated that a significant portion of trips to/from the site will be transit oriented. As the plan seeks to provide a mix of uses on the vacant lands, it is anticipated that it will increase ridership at the Port Credit GO Station and on the MiWay bus service, and therefore provide greater utilization of planned infrastructure investments.

The Master Plan has been developed with the intention of accommodating a potential future transit route through the site via the proposed new public road connections. This potential route would loop through the site from Lakeshore Road West along the proposed Promenade, proposed Lake Street extension and Mississauga Road South.

In the short-term horizon, this will likely be a bus transit route – either MiWay, GO Bus or private shuttle bus to/from the Port Credit GO Station (a potential Transportation Demand Management strategy discussed in Section 9.0). In the long-term horizon, the route may utilize higher-order transit, subject to the findings of the ongoing Lakeshore Connecting Communities study.

#### 6.1.5 Parking and Loading

The subject site is sufficiently large to accommodate the provision of the appropriate vehicular parking supply and service vehicle loading facilities that are required to support the proposed mixed-use development on the property.

Parking and loading operations on-site will be developed in a way so as to take maximum advantage of any shared parking / loading relationships between the contemplated mixed land uses in order to minimize the supply of both for the proposal as a whole.

Proposed parking and loading requirements for the site are discussed further in Section 7.0.





# Master Plan Transit Connections



#### 6.1.6 Broader Mixed-Use Site Plan Benefits

A mixed-use development on the site would address the following transportation objectives:

- Provide greater potential for the internalization / interaction of site traffic within the development site itself, as well as in the local area, thereby reducing external trip making while realizing similar or greater development intensity.
- Provide a greater variety of land uses and services within the site and immediate area thereby potentially reducing trip distances and encouraging active transportation.
- Provide potential for more interaction between the site and other area development activities including existing / emerging retail land uses, office development, and other employment land uses in the immediate vicinity.
- Provide for more efficient use of on-site infrastructure through shared:
  - o general amenity space for employees, residents, and visitors to the proposed development;
  - parking supply between residential visitors, retail patrons and staff as well as other nonresidential land uses, particularly during evening and weekend periods;
  - vehicular servicing / loading requirements i.e., refuse collection, general delivery, and moving needs; and
  - pedestrian facilities / connections to public rights-of-way and public transit facilities (residential and employment peak directions are generally opposite to one another so there are economies of scale when considering peak direction loads).

### 6.2 LOCAL AREA PERSPECTIVE

#### 6.2.1 Arterial Road Improvements

Improvements to Mississauga Road South along the site's frontage, between Lakeshore Road West and the Waterfront, are proposed as part of the Master Plan. A concept cross-section is shown in **Figure 15**.

The road will be reconstructed as a more pedestrian- and cyclist-focussed route connecting the Lakeshore Road corridor to the Waterfront and J.C. Saddington Park. Vehicle travel lanes (3.5 metres in width) will be provided in each direction with on-street parking on the east side of the street. Sidewalks (1.5 metres in width) will be provided on both sides of the road and a 3.0-metre-wide multi-use trail will be provided on the west side of road.

The south side of Lakeshore Road West along the frontage of the site will also be improved from a pedestrian standpoint with an increased boulevard width (3.0 metres) and 2.0- to 3.0-metre-wide sidewalks.





# Mississauga Road South Concept Cross-Section



#### 6.2.2 Travel Demand Forecasts

In order to assess the impacts of the type and intensity of development proposed in the Master Plan on the local area transportation infrastructure, travel demand forecasts were made for future walking, cycling, transit and automobile trips.

#### 6.2.2.1 Residential Trips

Residential trip generation forecasts were based upon:

- a) proxy trip generation surveys conducted at comparable residential townhouse and condominium developments located within a similar transportation context as the subject site (i.e. west of the downtown Toronto area with good access to transit and within approximately 1 kilometre of a GO station);
- b) data from the ITE Trip Generation Manual for Land Use Code 230 Residential Condominium/Townhouse;
- c) trip generation rates utilized in the One Port Street transportation study conducted by BA Group in 2013; and
- d) 2011 Transportation Tomorrow Survey (TTS) travel mode distribution data for home-based trips in the Port Credit area.

Trip generation forecasts for the proposed 1,962 and 538 residential units are summarized in Table 3.

#### 6.2.2.2 Commercial Office Trips

Commercial office trip generation forecasts were based upon:

- a) proxy trip generation surveys conducted at the Hatch Global office building located at 2800 Speakman Drive in Mississauga, which was selected as a proxy site because of its proximity to the Clarkson GO Station and access to local transit;
- b) data from the ITE Trip Generation Manual for Land Use Code 710 General Office Building; and
- c) 2011 Transportation Tomorrow Survey (TTS) travel mode distribution data for work-based trips in the Port Credit area.

Trip generation forecasts for the proposed 13,627 m<sup>2</sup> of commercial office GFA are summarized in **Table 4**.

#### 6.2.2.3 Community/Institutional Use Trips

The trip generation forecast for community/institutional uses was based upon ITE data, along with data from a YMCA site, since a YMCA is being considered as a potential use on the site. The trip generation approach was as follows:

- a) proxy trip generation surveys conducted at the Oakville YMCA located at 410 Rebecca Street, which was selected as a proxy site because of its similar transportation context compared to the subject site;
- b) data from the ITE Trip Generation Manual for Land Use Code 495 Community Centre; and
- c) 2011 Transportation Tomorrow Survey (TTS) travel mode distribution data for all trips in the Port Credit area.



Trip generation forecasts for the proposed community/institutional use (9,118 m<sup>2</sup> GFA in size) are summarized in **Table 5**.

Vehicle Trip Generation Rate Source		A	M Peak Hou	ır	PM Peak Hour		
venicie Trip Generatio	on Rate Source	In	Out	2-Way	In	Out	2-Way
		Ve	ehicle Trip C	Generation F	Rates per Re	esidential U	nit
Legion Road Condomi	niums <sup>1</sup>	0.02	0.24	0.27	0.17	0.09	0.26
Manitoba Street Condo Townhomes <sup>2</sup>	ominiums and	0.08	0.44	0.51	0.38	0.23	0.61
Port Credit Townhome	S <sup>3 4</sup>	0.17	0.36	0.52	0.66	0.55	1.22
ITE Trip Generation Ma	anual <sup>5</sup>	0.05	0.23	0.27	0.23	0.11	0.34
One Port Street Transp	portation Study <sup>6</sup>	0.07	0.27	0.34	0.28	0.12	0.40
Selected Vehicle Trip (Apartment Units)	Generation Rate	0.05	0.25	0.29	0.23	0.11	0.33
Selected Vehicle Trip (Townhouse Units)	Generation Rate	0.08	0.44	0.51	0.38	0.23	0.61
Travel Mode	Split <sup>7</sup>	1,955 C	Total I Condominiur	Future Trips n Apartmen			se Units
Driver Trips	67%	131	718	849	647	329	976
Auto Passenger Trips	12%	24	132	156	119	61	180
Transit Trips	19%	37	206	243	185	94	280
Cycling/Walking Trips	2%	4	19	23	17	9	26
Total Person Trips	100%	196	1,075	1,271	968	494	1,462

#### TABLE 3 Residential Trip Generation Summary

Notes:

1. Survey conducted by BA Group on Wednesday, April 26, 2017 at 155 Legion Road North. Proxy site contains approximately 930 residential condominium apartments units in total.

2. Survey conducted by BA Group on Wednesday, April 26, 2017 at 210 Manitoba Street. Proxy site contains approximately 32 townhouse units and 310 residential condominium apartments units in total.

3. Survey conducted by BA Group on Thursday, June 1, 2017 at townhouse development bordered by St. Lawrence Drive in Port Credit. Proxy site contains 185 townhouse units (include 8 live/work units) in total.

4. Weekday afternoon trip generation rates not utilized, as they were found to be unusually high.

5. Based on trip generation data for Land Use Code 230 (Residential Townhouse/Condominium) contained in the ITE Trip Generation Manual, 9<sup>th</sup> edition.

6. Based on transportation study associated with the One Port Street development in Port Credit conducted by BA Group in 2013. The One Port Street Master Plan contemplated 1,500 new residential units.

7. Mode split based on 2011 Transportation Tomorrow Survey (TTS) data for home-based trips made during the weekday peak periods in the Port Credit area.



Vehicle Trip Generation Rate Source		A	M Peak Hou	ır	F	M Peak Hou	ır
venicie Trip Generatio	on Rate Source	In	Out	2-Way	In	Out	2-Way
			Vehicle Trip	o Generatior	n Rates per	100 m² GFA	
Hatch Global Office Sit	te <sup>1 2</sup>	1.30	0.15	1.45	0.11	1.27	1.38
ITE Trip Generation Ma	anual <sup>3</sup>	1.56	0.21	1.77	0.28	1.37	1.65
Selected Vehicle Trip	Generation Rate	1.43	0.18	1.61	0.20	1.32	1.52
Travel Mode	Split⁴			Future Trips 3,627 m² Coi			
Driver Trips	85%	210	26	236	29	194	223
Auto Passenger Trips	10%	24	3	27	3	22	25
Transit Trips	3%	9	1	10	1	8	9
Cycling/Walking Trips	2%	6	1	7	1	6	7
Total Person Trips	100%	249	31	280	34	230	264

#### TABLE 4 COMMERCIAL OFFICE TRIP GENERATION SUMMARY

Notes:

1. Survey conducted by BA Group on Tuesday, April 25, 2017 at 2800 Speakman Drive. Proxy site contains approximately 11,700 m<sup>2</sup> of office-related gross floor area.

2. Trip generation rates reduced by a decreasing rate factor of 98% in the AM peak hour and 96% in the PM peak hour to account for the size difference between the proxy site and the proposed amount of commercial office (11,700 m<sup>2</sup> versus 13,627 m<sup>2</sup>). These factors were calculated based on a comparison of ITE Trip Generation Manual (9<sup>th</sup> Ed.) vehicle trip generation rates for a General Office Building (Land Use Code 710) 11,700 m<sup>2</sup> and 13,627 m<sup>2</sup> in size.

 Based on trip generation data for Land Use Code 710 (General Office Building) contained in the ITE Trip Generation Manual, 9<sup>th</sup> edition.

4. Mode split based on 2011 Transportation Tomorrow Survey (TTS) data for work-based trips made during the weekday peak periods in the Port Credit area.

#### 6.2.2.4 Retail Trips

Retail trip generation forecasts were based upon:

- a) proxy trip generation surveys conducted at Loblaws retail plaza located directly north of the site at 220 Lakeshore Road West;
- b) data from the ITE Trip Generation Manual for Land Use Code 820 Shopping Centre; and
- c) 2011 Transportation Tomorrow Survey (TTS) travel mode distribution data for market-based trips in the Port Credit area.

Trip generation forecasts for the proposed 13,819 m<sup>2</sup> GFA (12,437 m<sup>2</sup> Gross Leasable Area) of retail space are summarized in **Table 6**.



Vehicle Trip Generation Rate Source		ļ	AM Peak Hour		PM Peak Hour		
venicle Trip Generatio	on Rate Source	In	Out	2-Way	In	Out	2-Way
			Vehicle Trip	Generation	n Rates per	100 m <sup>2</sup> GFA	
YMCA Oakville Site <sup>1</sup>		2.92	1.14	4.06	3.12	2.09	5.21
ITE Trip Generation Ma	anual <sup>2</sup>	1.35	0.70	2.05	1.34	1.40	2.74
Selected Vehicle Trip	Generation Rate	2.14 0.92 3.06 2.23 1.74 3.9				3.97	
Travel Mode	Split <sup>3</sup>			Future Trips Community/			
Driver Trips	74%	210	90	300	219	171	390
Auto Passenger Trips	16%	43	18	61	45	35	80
Transit Trips	7%	21	9	30	22	17	38
Cycling/Walking Trips	3%	10	4	14	10	8	18
Total Person Trips	100%	283	122	405	296	231	526

#### TABLE 5 COMMUNITY/INSTITUTIONAL USE TRIP GENERATION SUMMARY

Notes:

 Survey conducted by BA Group on Tuesday, April 25, 2017 at YMCA Oakville. Proxy site contains approximately 4,140 m<sup>2</sup> of floor area.

2. Based on trip generation data for Land Use Code 495 (Community Centre) contained in the ITE Trip Generation Manual, 9<sup>th</sup> edition.

3. Mode split based on 2011 Transportation Tomorrow Survey (TTS) data for all trips made during the weekday peak periods in the Port Credit area.



Vehicle Trip Generation Rate Source		A	AM Peak Hour		PM Peak Hour		
venicie Trip Generatio	on Rate Source	In	Out	2-Way	In	Out	2-Way
			Vehicle Trip	o Generatior	n Rates per	100 m² GLA	
Loblaws Retail Site <sup>12</sup>		1.59	0.70	2.29	3.10	2.49	5.59
ITE Trip Generation Ma	anual <sup>3</sup>	1.00	0.61	1.62	2.97	3.21	6.18
Selected Vehicle Trip	Generation Rate	1.30         0.66         1.95         3.03         2.85         5.4					5.88
Travel Mode	Split <sup>4</sup>	Total Future Trips by Travel Mode – 12,437 m² Retail GLA <sup>5</sup>					
Driver Trips		149	76	225	358	336	694
Primary Trips <sup>6</sup>	81%	149	76	225	202	180	381
Pass-by Trips <sup>6</sup>		0	0	0	156	156	312
Auto Passenger Trips	15%	27	14	40	64	60	124
Transit Trips	1%	2	1	4	6	5	11
Cycling/Walking Trips	3%	5	2	7	12	12	24
Total Person Trips	100%	184	93	277	439	413	852

#### TABLE 6 RETAIL TRIP GENERATION SUMMARY

Notes:

 Survey conducted by BA Group on Thursday, May 4, 2017 at the Loblaws retail plaza located at 240 Lakeshore Road West. Proxy site contains approximately 3,320 m<sup>2</sup> of retail gross leasable floor area. Vehicle trip rates exclude the Loblaws grocery store.

2. Trip generation rates reduced by a decreasing rate factor of 69% in the AM peak hour and 73% in the PM peak hour to account for the size difference between the proxy site and the proposed amount of retail space (3,320 m<sup>2</sup> versus 8,465 m<sup>2</sup>). These factors were calculated based on a comparison of ITE Trip Generation Manual (9<sup>th</sup> Ed.) vehicle trip generation rates for a Shopping Centre (Land Use Code 820) 3,320 m<sup>2</sup> and 12,437 m<sup>2</sup> in size.

Based on trip generation data for Land Use Code 820 (Shopping Centre) contained in the ITE Trip Generation Manual, 9<sup>th</sup> edition.

4. Mode split based on 2011 Transportation Tomorrow Survey (TTS) data for market-based trips made during the weekday peak periods in the Port Credit area.

5. Gross Leasable Area (GLA) assumed to be 90 percent of Gross Floor Area (GFA).

6. A pass-by trip percentage of 45% was assumed in the PM peak hour based on pass-by trip data for Shopping Centres contained in the ITE Trip Generation Handbook, 3<sup>rd</sup> Edition. Pass-by trips are vehicle trips made to the site that are already on the road network on route to another destination. These trips are opposed to primary trips, which are trips made to the site where the site is the primary destination.

#### 6.2.2.5 Total Site Trip Generation Forecasts

Total site trip generation was estimated by summing the trips generated by the individual proposed uses onsite – residential, office, community/institutional use, and retail uses – and applying an 'internalization' factor to account for a reduction in external home-based trips due to several common destination points being onsite.

An internalization factor of 5% was applied to the total amount of forecast residential person trips during the peak hours. These internal trips represent persons who would normally make an external trip to either a place of work, retail store or recreational destination if they lived on a site containing no other uses but residential,



who now only travel internally to the site, taking advantage of the mixed uses in their immediately local community.

Correspondingly, it was assumed that 50% of these internal trips displace external trips to the office and community/institutional uses on the site. The other 50% of internal trips are assumed to travel to the retail uses on the site, but don't displace any external trips associated with those uses – i.e. the internal trips are additive, not substitutional. These assumptions were made with the logic that the offices and community/institutional uses on the site have a more fixed person capacity compared to retail uses.

Total trip generation for the site is summarized in Table 7.

In total, the proposed 70 Mississauga Road South site as a whole is anticipated to generate approximately 2,138 and 2,995 new person trips during the critical weekday morning and afternoon peak hour periods, respectively. Of these trips, 1,548 and 1,898 are net new vehicle trips (i.e. new vehicles on the local road network) during the weekday morning and afternoon peak hour periods, respectively.

The above-noted number of trips forecasted assumes that people travel the same as they do today with respect to their travel mode of choice. In order to gain an understanding of future vehicle trip generation associated with the proposed site if future improvements to transit infrastructure resulted in a modal shift away from personal automobiles to transit, a sensitivity analysis was performed that considered a 5% mode shift from driver to transit. The 5% assumption was based on direction from City transportation staff, and is not intended to reflect a mode shift that may occur with introduction of rapid transit.

Total trip generation for the proposed site assuming this 5% modal shift is summarized in **Table 8**. In this scenario, the total number of net new vehicle trips on the local road network is reduced to 1,441 and 1,749 during the weekday morning and afternoon peak hour periods, respectively.



	ļ	AM Peak Hou	ır	PM Peak Hour				
	In	Out	2-Way	In	Out	2-Way		
	Residential							
Auto Driver	124	683	808	615	313	929		
Auto Passenger	23	125	148	113	58	170		
Transit	36	196	232	176	90	266		
Cycle/Walk	3	18	22	16	8	25		
Total Residential Person Trips	186	1,023	1,209	921	469	1,390		
			Of	ice				
Auto Driver	201	25	226	25	186	210		
Auto Passenger	22	3	25	2	20	23		
Transit	6	1	7	0	6	6		
Cycle/Walk	6	1	7	1	5	6		
Total Office Person Trips	235	29	263	28	217	245		
		Co	ommunity/In	stitutional l	Jse			
Auto Driver	201	89	289	215	163	378		
Auto Passenger	41	18	59	44	33	77		
Transit	18	8	26	20	15	35		
Cycle/Walk	10	4	14	10	8	18		
Total Community/Institutional Use Person Trips	269	120	389	289	219	508		
			Re	tail				
Auto Driver	149	76	225	358	336	694		
Primary	149	76	225	202	180	381		
Pass-by	0	0	0	156	156	312		
Auto Passenger	27	14	40	64	60	124		
Transit	2	1	4	6	5	11		
	5	2	7	12	12	24		
Cycle/Walk								

#### TABLE 7 TOTAL SITE TRIP GENERATION SUMMARY



#### TABLE 9 TOTAL SITE TRIP GENERATION SUMMARY (CONTINUED FROM PREVIOUS PAGE)

	AM Peak Hour		PM Peak Hour		ır	
	In	Out	2-Way	In	Out	2-Way
			Total	Trips		
Auto Driver	675	873	1,548	1,213	998	2,211
Primary	675	873	1,548	1,057	842	1,898
Pass-by	0	0	0	156	156	312
Auto Passenger	113	160	272	223	171	394
Transit	62	206	268	202	115	318
Cycle/Walk	24	26	50	39	34	73
Total Site Person Trips	874	1,264	2,138	1,678	1,317	2,995

Notes: 1.

Assumes 5% of residential trips are internalized compared to residential trip forecasts made in Section 6.2.2.1. Half of internalized trips are deducted from the office and community/institutional use external trip generation forecasts estimated in Sections 6.2.2.2 and 6.2.2.3.



	ļ	AM Peak Hou	ır	PM Peak Hour			
	In	Out	2-Way	In	Out	2-Way	
	Residential						
Auto Driver	115	632	747	569	290	859	
Auto Passenger	23	125	148	113	58	170	
Transit	45	247	292	223	113	336	
Cycle/Walk	3	18	22	16	8	25	
Total Residential Person Trips	186	1,023	1,209	921	469	1,390	
		·	Off	ice	•		
Auto Driver	189	23	212	23	175	198	
Auto Passenger	22	3	25	2	20	23	
Transit	18	2	20	1	16	18	
Cycle/Walk	6	1	7	1	5	6	
Total Office Person Trips	235	29	263	28	217	245	
		Co	ommunity/In	stitutional L	Jse		
Auto Driver	187	83	270	200	152	352	
Auto Passenger	41	18	59	44	33	77	
Transit	32	14	46	35	25	60	
Cycle/Walk	10	4	14	10	8	18	
Total Community/Institutional Use Person Trips	269	120	389	289	219	508	
			Re	tail			
Auto Driver	140	71	211	336	315	651	
Primary	140	71	211	180	159	339	
Pass-by	0	0	0	156	156	312	
Auto Passenger	27	14	40	64	60	124	
	12	6	17	28	26	54	
Transit							
Transit Cycle/Walk	5	2	7	12	12	24	

#### TABLE 8 TOTAL SITE TRIP GENERATION SUMMARY – 5% MODE SHIFT TO TRANSIT



# TABLE 10TOTAL SITE TRIP GENERATION SUMMARY - 5% MODE SHIFT TO TRANSIT<br/>(CONTINUED FROM PREVIOUS PAGE)

	AM Peak Hour		PM Peak Hour			
	In	Out	2-Way	In	Out	2-Way
			Total	Trips		
Auto Driver	632	809	1,441	1,129	932	2,061
Primary	632	809	1,441	973	776	1,749
Pass-by	0	0	0	156	156	312
Auto Passenger	113	160	272	223	171	394
Transit	106	269	375	286	181	467
Cycle/Walk	24	26	50	39	34	73
Total Site Person Trips	874	1,264	2,138	1,678	1,317	2,995

Notes:

1. Assumes 5% of residential trips are internalized compared to residential trip forecasts made in Section 6.2.2.1. Half of internalized trips are deducted from the office and community/institutional use external trip generation forecasts estimated in Sections 6.2.2.2 and 6.2.2.3.

2. Assumes a 5% mode shift from auto driver trips to transit trips compared to the base trip generation estimates summarized in Table 7.



#### 6.2.3 Master Plan Transportation Network Impacts Evaluation

The impacts of the Master Plan on the broader area transportation network will be evaluated as part of the Phase 2 transportation study to be conducted following the initial OPA/ZBA/Draft Plan of Subdivision application submission, which will build upon the travel demand forecasts made in this study.

The ability of the proposed Master Plan to accommodate the travel demand on the immediately local area transportation network – i.e. the proposed internal road system and its intersections with Lakeshore Road West and Mississauga Road South – are discussed in detail in Section 10.0.

Based on this review, the transportation elements of the Master Plan are able to appropriately accommodate its estimated future travel demand from a traffic capacity perspective, with a reasonable impact on the local area transportation network.

### 6.3 REGIONAL AREA PERSPECTIVE

The mixed-use nature of the proposal brings about land use synergies that will allow for a reduction in interregional vehicle kilometres travelled by creating local points of both origin and destination. The complement of uses on site reduce the need for residents and employees to travel outside of the local area to accomplish daily tasks and reduces the need for stop-over vehicle trips, thereby benefiting traffic conditions in the region at large.

A balance of uses on site will also achieve a more complete community that reduces the need for longdistance commuting and increases the proportion of travel by transit, walking and cycling, thereby lessening regional road congestion.

From a regional area transportation planning perspective, the concept Master Plan is consistent with the planning documents discussed in Section 4.0 with respect to:

- promoting, maintaining and improving connectivity within and among transportation systems and modes;
- minimizing the length and number of vehicle trips and supporting current and future use of transit and active transportation;
- the intensification of existing built-up areas to support transit and infrastructure investment;
- promoting a high intensity, compact urban form with an appropriate mix of uses including commercial, office, residential, recreational and major institutional;
- promoting transit-supportive and pedestrian-oriented urban forms;
- enhancing system capacity through design, network linkages, and new roads;
- creating new pedestrian and cycling connections;
- implementing reduced parking standards; and
- designing and implementing an effective transportation demand management strategy aimed at reduced the number of personal vehicle trips made.



# 7.0 MASTER PLAN PARKING CONSIDERATIONS

The Master Plan includes provision of parking in a manner that supports the proposed development but is also in line with sustainable transportation practices and the City of Mississauga's strategic direction towards a multi-modal city. The following section describes the prevailing current Zoning By-law requirements, parking policy context and rationale for the proposed parking provision.

### 7.1 ZONING BY-LAW PARKING REQUIREMENTS

The parking supply requirements for buildings in Port Credit and Lakeview are set out in Tables 3.1.2.1 and 3.1.2.2 in Part 3 of Mississauga Zoning By-Law 0225-2007. The predominant uses and associated requirements are summarized in **Table 9**.

Much of the Port Credit commercial area is classified as a C4 zone. The C4 zone parking supply rates for some uses are lower than those for similar uses in other areas of the City in recognition that they tend to generate lower parking demands than typical suburban uses.

A shared parking schedule in **Table 10** is also provided in the general zoning regulations which allows the amount of parking for mixed-use development projects to be reduced by taking into account the different temporal parking characteristics for each use.

### 7.2 POLICY CONTEXT FOR PARKING

As part of the Mississauga Parking Master Plan and Implementation Strategy (PMPIS), a review of city parking policies, such as by-law parking requirements, was undertaken in the May 2017 "*Parking Matters – Mississauga Best Practices Overview*" report. In general, it was found that Mississauga's existing minimum parking standards were consistently found to be higher than municipalities such as Toronto, Vancouver, and Oakville. As Mississauga strives to shift towards becoming a multi-modal city, lower parking requirements and policies are required to further encourage the shift from auto-based modes of transportation to more active modes of transportation.

By way of context, recent studies indicate that the City of Mississauga general office parking standards (3.2 spaces / 100 m<sup>2</sup> of GFA) and general retail parking standards (4.0 spaces / 100 m<sup>2</sup> of GFA) are approximately 1.5 to 2 times higher than the office rates and more than 2 times the retail rates required by municipalities such as Toronto, Victoria, and Vancouver.

Lower parking minimums and the introduction of parking maximums help promote an urban, compact neighbourhood environment and foster the growth of more vibrant mixed-use neighbourhoods.

#### 7.2.1 Port Credit Local Area Plan

Supplementary to the Mississauga Official Plan document, the Port Credit Local Area Plan provides policies for lands in south central Mississauga. Based on the language in the Local Area Plan, it is intended that larger redevelopment sites be self-sufficient in the provision of parking, with preference to the maintenance of pockets of small parking lots as opposed to large centrally located parking structures. However, it is noted that the above policies may not necessarily be in line with the sustainable development vision for the site.



#### TABLE 9 ZONING BY-LAW 0225-2007 PARKING REQUIREMENTS

Use	Zoning Requirement
Condominium Apartment Dwelling	1.00 resident / bachelor unit 1.25 resident spaces / one-bedroom unit 1.40 resident spaces / two-bedroom unit 1.75 resident spaces / three-bedroom unit 0.20 visitor spaces / unit
Rental Apartment Dwelling	<ul> <li>1.00 resident space / bachelor unit</li> <li>1.18 resident spaces / one-bedroom unit</li> <li>1.36 resident spaces / two-bedroom unit</li> <li>1.50 resident spaces / three-bedroom unit</li> <li>0.20 visitor spaces / unit</li> </ul>
Office	3.2 spaces / 100 m <sup>2</sup> of GFA $^1$
Medical Office	6.5 spaces / 100 m <sup>2</sup> of GFA
Retail Store (in a C4 Zone)	4.0 spaces / 100 m <sup>2</sup> of GFA
Restaurant (in a C4 Zone)	9.0 spaces / 100 m <sup>2</sup> of GFA
Take-out Restaurant	6.0 spaces / 100 m <sup>2</sup> of GFA
Warehousing (Single Occupancy Building)	1.1 spaces / 100 m <sup>2</sup> of GFA up to $6975m^2$ 0.6 spaces / 100 m of GFA over $6975m^2$
Marina	0.6 spaces / slip or berth
Art Gallery, Museum	3.6 spaces / 100 m <sup>2</sup> GFA
Financial Institution	5.5 spaces / 100 m <sup>2</sup> of GFA
Animal Care Establishment (in a C4 Zone)	4.0 spaces / 100 m <sup>2</sup> of GFA
Real Estate Office	6.5 spaces / 100 m <sup>2</sup> of GFA
Repair Establishment (in a C4 Zone)	4.0 spaces / 100 m <sup>2</sup> of GFA
Personal Service (in a C4 Zone)	4.0 spaces / 100 m <sup>2</sup> of GFA
Dwelling Unit (located above a commercial development with a max height of three storeys)	1.25 spaces / unit
Detached or semi-detached Townhouse	2.0 resident spaces / unit 0.25 visitor spaces / unit
Condominium Horizontal multiple dwelling (without exclusive use garage and driveway)	As for Condominium Apartment Dwelling

Notes:

1. Where the non-office uses are greater than 10% of the total GFA, separate parking will be required for all such uses in accordance with Table 3.1.2.2. of Zoning By-law 0225-2007.



#### TABLE 10 Shared Parking in Zoning By-Law 0225-2007

	Percentage of Peak Period <sup>1</sup>							
Use	Morning	Noon	Afternoon	Evening				
Office / Medical / Financial Institution	100 (10)	90 (10)	95 (10)	10 (10)				
Retail Centre / Retail Store / Personal Service	80 (80)	90 (100)	90 (100)	90 (70)				
Restaurant / Take-out Restaurant	20 (20)	100 (100)	30 (50)	100 (100)				
Overnight Accommodation	70 (70)	70 (70)	70 (70)	100 (100)				
Residential – Resident Residential – Visitor	90 (90) 20 (20)	65 (65) 20 (20)	90 (90) 60 (60)	100 (100) 100 (100)				

Notes: 1.

00 - Indicates weekday peak period percentage, (00) indicates weekend peak period percentage.

#### 7.2.2 Inspiration Port Credit

The "*Inspiration Port Credit*" planning document dated November 2015 provides the planning framework for 1 Port Street East and 70 Mississauga Road South. It is intended that the parking requirements for the 70 Mississauga Road South site be appropriate for a mixed-use community and support transit-oriented development.

#### 7.2.3 Port Credit & Lakeview Parking Strategy

The study entitled *"City of Mississauga Parking Strategy – Phase II Port Credit & Lakeview"*, conducted by BA Group in June 2014 develops an effective parking strategy for the Port Credit and Lakeview areas that support's the City's urban design, economic, land use, and transportation objectives.

The study found that the peak commercial parking demand in the Port Credit commercial area was well below current Zoning By-law requirements, and noted that this is a common occurrence in main street commercial areas which tend to exhibit lower parking demand characteristics compared to similar suburban commercial centres, which are often used as the basis for establishing zoning requirements.

It was recommended that the City reduce parking supply requirements in the Zoning By-law to reflect actual need, achieve broader urban design objectives, and support good urban design.

#### 7.2.3.1 Automobile Parking

The Port Credit & Lakeview Parking Strategy recommended reduced and consolidated Zoning By-law parking requirements for the Port Credit area. The study recommended the following revisions to the existing Zoning By-law rates for commercial uses be implemented for C4 zones, to be applied to land uses in a main street type setting:



- 3.0 spaces per hundred square metres GFA for retail, personal service, repair establishments, art galleries and museums;
- 4.85 spaces per hundred square metres GFA for financial institutions, real estate offices, medical offices and take-out restaurants; and
- 3.0 spaces per hundred square metres GFA for office uses.

For residential uses, the study recommended reducing parking requirements within the Port Credit Mobility Hub area (generally within 500 metre radius of the Port Credit GO Station) and also in proximity to the future extension of light rail through Port Credit. Within those areas, the study recommended a reduced residential parking requirement of:

- a minimum of 1.0 space per unit for residents; and
- a minimum of 0.15 space per unit for visitors

The Port Credit & Lakeview Parking Strategy also recommended a modified shared parking schedule to better reflect the temporal variations in demand found in main street commercial areas. The recommended shared parking schedule is shown in **Table 11** below.

TABLE 11	PORT CREDIT PARKING STRATEGY - RECOMMENDED SHARED PARKING SCHEDULE

	Percentage of Peak Period <sup>1</sup>							
Use	Morning	Noon	Afternoon	Evening				
Office / Medical Office	100 (10)	90 (10)	95 (10)	10 (10)				
Real Estate Office	90 (50)	80 (50)	100 (50)	50 (20)				
Financial Institution	70 (90)	75 (90)	100 (90)	80 (20)				
Retail Store / Personal Service/Art Galleries/Museums/Repair Establishments	50 (50)	50 (75)	70 (100)	75 (10)				
Restaurant / Take-out Restaurant	25 (20)	65 (90)	25 (50)	100 (100)				
Hotel - Rooms	50 (70)	25 (25)	25 (25)	65 (50)				
Hotel – Function Space <sup>2</sup>	95 (95)	100 (95)	90 (90)	95 (95)				
Residential – Resident Residential – Visitor	90 (90) 20 (20)	65 (65) 20 (20)	90 (90) 50 (60)	100 (100) 100 (100)				

Notes: 1.

00 – Indicates weekday peak period percentage, (00) indicates weekend peak period percentage.

2. Hotel Function space includes restaurants, meeting rooms, banquet and conference facilities.



#### 7.2.3.2 Bicycle Parking

The Port Credit & Lakeview Parking Strategy noted that the existing Zoning By-law 0225-2007 did not have bicycle parking requirements, but recommended noted that the bicycle parking requirement for the City Centre area developed in Phase I of the Parking Strategy developed be applied to new developments in the Port Credit and Lakeview areas.

# TABLE 12 PORT CREDIT PARKING STRATEGY - RECOMMENDED BICYCLE PARKING REQUIREMENTS PORT CREDIT PARKING STRATEGY - RECOMMENDED BICYCLE PARKING

Bicycle Parking Requirement
0.17 spaces per 100 m <sup>2</sup> GFA staff plus 0.03 spaces per 100 m <sup>2</sup> GFA visitor
0.085 spaces per 100 m <sup>2</sup> GFA staff plus 0.25 spaces per 100 m <sup>2</sup> GFA visitor
4% for staff and 4% for visitors
0.60 resident spaces per unit 0.15 visitor spaces per unit

1. Residential requirement applies to apartments and townhouses that do not have an exclusive garage.

The Port Credit & Lakeview Parking Strategy also recommended that the City should implement a requirement for showers and change rooms in the Zoning By-law for any non-residential use to further encourage cycling in the Port Credit area and Lakeview. It was recommended that the City adopt shower and change room requirements for employment uses as shown in **Table 13** below. The study recommended that developments with less than 2,325 m<sup>2</sup> (approximately 25,000 ft<sup>2</sup>) of office space and 4,700 m<sup>2</sup> (50,650 ft<sup>2</sup>) of retail/restaurant/personal service uses should be exempted from the requirement for showers and change rooms.

#### TABLE 13 SHOWER AND CHANGE FACILITIES

Required No. of Employee Bike Spaces	Number of Shower Stalls per gender
0 - 4	0
5 - 29	1
30 - 59	2
60 - 89	3
90 - 119	4
120 - 149	5
150 - 179	6
over 179	7 plus 1 for each additional 30 bike spaces

Notes:

1. Each gender will also require a change and washroom facility, including storage lockers equal to 0.70 times the number of employee parking spaces provided.



### 7.3 PROPOSED PARKING PROVISION

Parking is a powerful tool that can be used to achieve a variety of community objectives. It is intended that the parking provisions on the site meet the projected the demands of the site such that the residents and visitors will be unlikely to disrupt off-site roadways and parking areas, but not provide so much parking as to discourage achievement of the City of Mississauga multi-modal objectives.

The proposed parking requirements will be appropriate for a mixed-use community and support transitoriented development. Transportation demand management measures (discussed further in Section 9.0) such as maximum parking standards, shared parking, enhanced bicycle parking, and carpool / car share priority parking will complement the characteristics of transit-oriented mixed-use neighbourhood, support the increased use of non-automobile travel and reduce the need for car ownership.

#### 7.3.1 Automobile Parking

#### 7.3.1.1 Proposed Non-Residential Parking Supply

It is proposed to meet the non-residential parking requirements outlined in BA Group's *"City of Mississauga Parking Strategy – Phase II Port Credit & Lakeview"* report (summarized in Section 7.2.3.1), which represent a 25% reduction in parking spaces for retail, personal service, repair, real estate and medical office uses, a 19% reduction for take-out restaurants, a 17% reduction for art galleries and museums, a 12% reduction for financial institutions and a 6% reduction for office uses compared to current by-law rates. These rates more closely represent the rates outlined for non-downtown core areas in the City of Toronto in their new consolidated zoning by-law review.

On-street parking spaces are proposed where feasible along the new municipal streets, namely Avenue 'A' and the westward extension of Port Street, and on Mississauga Road South, to support the need for short-term visitor parking within the development.

#### 7.3.1.2 Proposed Residential Parking Supply

Guidance in the Local Area Plan and Inspiration Port Credit gives direction to consider reduced and transit supportive parking requirement rates for residential developments in proximity to the Port Credit GO Station. As a matter of policy, and to reflect the intended transit supportive nature of the subject site, it is proposed to adopt minimum residential parking supply rates as follows:

- 1.0 resident spaces per unit for apartment units or multi-unit condo buildings
- 0.15 visitor spaces per unit for apartment units or multi-unit condo buildings
- 2.0 parking spaces for townhouse units with exclusive garages
- 0.3 spaces per unit for retirement home, long term dwelling and hospice dwelling
- 0.4 resident parking spaces per dwelling unit for apartment dwelling units secured as affordable housing

Reducing the parking supply requirement would recognize the potential for higher transit, walk and active transportation use in the area, and is in line with the sustainability objectives of the City. In addition, it would recognize a trend to a more urban lifestyle and minimise the cost of expensive underground parking for



residents who do not actually want or need it, while making the most efficient shared use of the parking capacity that is provided, including on-street parking for visitors to the site.

#### 7.3.2 Bicycle Parking

It is proposed to meet the bicycle parking requirements recommended in the City of Mississauga Cycling Masterplan and bicycle parking requirements outlined in BA Group's *"City of Mississauga Parking Strategy – Phase II Port Credit & Lakeview"* report (summarised in **Section 7.2.3.2**).

It is intended that visitor bicycle parking spaces be placed at highly visible and publicly accessible locations and occupant spaces be located in secure and weather-protected facilities.

The provision of bicycle parking on site will encourage the use of sustainable and active modes of transportation to / from the site. Shower and change facilities will be provided for the office uses on the site.

# 8.0 MASTER PLAN LOADING CONSIDERATIONS

The provision of appropriate loading facilities is crucial to the functionality of the Master Plan from servicing perspective for both the proposed residential and non-residential uses.

It is proposed that loading facilities for the site be provided in accordance with the requirements of the prevailing City of Mississauga Zoning By-law 0225-2007. By-law 0225-2007 requires loading spaces be provided for the following uses:

- Retail store;
- Retail centre;
- Office;
- Medical office;
- Overnight accommodation;
- Restaurant;
- Convenience restaurant;
- Manufacturing facility;
- Warehouse/Distribution facility;
- Wholesaling facility; and
- Apartment dwellings containing a minimum number of 30 dwelling units.

The number of loading spaces required for each type of use is summarized in Table 14.



	Loading Space	Requirement <sup>1</sup>
Use	Gross Floor Area ²/ Number of Units	Minimum Number of Off- Street Loading Spaces
	GFA ≤ 2,350 m²	None
Office / Medical Office	2,350 m² ≤ GFA ≤ 11,600 m²	1 space
	GFA ≥ 11,600 m <sup>2</sup>	1 space plus 1 additional space for each 9,300 m <sup>2</sup> GFA or portion thereof
All Other Non-Residential Uses	GFA ≤ 250 m²	None
	250 m² ≤ GFA ≤ 2,350 m²	1 space
	2,350 m² ≤ GFA ≤ 7,500 m²	2 spaces
	7,500 m <sup>2</sup> ≤ GFA ≤ 14,000 m <sup>2</sup>	3 spaces
	GFA ≥ 14,000 m <sup>2</sup>	3 spaces plus 1 additional space for each 9,300 m <sup>2</sup> GFA or portion thereof
	Number of Units < 30	None
Apartment Buildings	Number of units ≥ 30	1 space

#### TABLE 14 ZONING BY-LAW 0225-2007 LOADING REQUIREMENTS

Notes:

1. A loading space is defined as an unobstructed rectangular area with a minimum width of 3.5 metres and a minimum length of 9.0 metres.

2. Excluding mezzanine space

### 8.1 SHARED LOADING PROVISIONS

In addition to adopting the Zoning By-law 0225-2007 base loading requirements, it is also proposed that the sharing of loading spaces between uses located within the same development block be permitted on the Master Plan lands in order to facilitate the design of efficient, pedestrian-oriented buildings and spaces while still meeting the functional servicing requirements of the multiple uses on the site.

Specifically, it is proposed to allow the sharing of loading spaces in the mixed-used blocks between the residential uses and commercial/retail uses, as well the sharing of loading spaces between uses on the solely commercial/retail use blocks. This permitting of sharing is intended to be accomplished through provisions in the site-specific Zoning By-law for the Master Plan lands.



# 9.0 TRANSPORTATION DEMAND MANAGEMENT PLAN

A central element of the transportation strategy for the Master Plan will be the adoption of a sustainable transportation demand management (TDM) Plan for the project that will attempt to influence the way people travel to and from the site through a comprehensive suite of TDM strategies.

These measures will include the application of various site design elements, alternative transportation offerings, property management, and operational policies, each of which have the goal of redistributing and reducing the travel demand of the project. Specifically, the primary goal is to reduce the overall reliance on single-occupant vehicles (SOV) while promoting the use of more active and sustainable modes of transportation.

Generally, this TDM Plan has three primary objectives:

- a) Reduce car dependence and the need for everyday SOV travel;
- b) Make it easy and attractive for people to walk and cycle; and
- c) Promote car-sharing and transit, each of which are low-carbon in comparison to car ownership and SOV travel.

The Site has the potential to set a sustainable precedent of urban development in Mississauga. The City of Mississauga's strategic plan – *Our Future Mississauga* – states the aspiration for the City to be one where people can travel without an automobile, where transit is promoted as a preferred, affordable, and accessible choice, and to provide all people with the choice to walk, cycle, or use transit because these options will be desirable and convenient. The TDM Plan aims to leverage the advantages imbedded within the design of the Master Plan (i.e. it will be a compact, mixed-use development) to achieve its objectives.

### 9.1 SITE LOCATION AND TRANSPORTATION CONTEXT

While the site currently has convenient access to Lakeshore Road West, Mississauga Road South, and Hurontario Street, it is also well located from a sustainable transportation perspective.

The site is located in close proximity to the Port Credit GO Station (approximately one kilometre from the northeastern corner of the site), itself a part of the GO Transit Lakeshore West line which provides frequent train service between Aldershot GO Station in Burlington to the west and Union Station in Toronto to the east. As was outlined in Section 2.6, the site is currently directly serviced by several local MiWay Transit routes that connect it (from Lakeshore Road West) to Port Credit GO Station. Providing more convenient access to the Port Credit GO Station to and from the site is considered within the TDM Plan.

In addition, the southern portion of the site is bordered by the Waterfront Trail which alternates between being a paved multi-use trail and a route that shares space with automobiles on residential streets, and travels the extent of the City of Mississauga along its waterfront. Providing more thorough walking and cycling connections to the surrounding area (and specifically to Port Credit GO Station) is a featured aspect of the TDM Plan.



### 9.2 TDM-SUPPORTIVE ELEMENTS OF THE MASTER PLAN

#### 9.2.1 Mixed-use and Compact Development

The Master Plan includes a mix of land uses on the site and the introduction of a fine-grained network of streets and blocks. Each of these features are conducive to sustainable transportation behaviour. With retail and commercial facilities along Lakeshore Road and community/institutional uses being considered for the southern area of the site, a series of prominent destinations will serve residents that are located close enough to their residence that they will not need to drive. Further, shorter distances between residential blocks are conducive to walking activity.

#### 9.2.2 Vehicular Parking

Sensible vehicular parking management and the provision of an extensive suite of TDM measures are mutually supportive. If vehicular parking is oversupplied on the site, residents and visitors would have less incentive to utilize the options that are available to them. Likewise, a modest parking supply without appropriate TDM measures would negatively affect local traffic and place undue parking demand on the surrounding area. This concept was taken into consideration in Section 7.0 of this Report where vehicular and bicycle parking standards were contemplated. A reduction in vehicular parking rates is supportive of the TDM measures discussed in this section.

### 9.3 TDM PLAN STRATEGIES AND INITIATIVES

The future site context provides for good public transit service as well as pedestrian and cycling connectivity. Additional strategies have been developed to further support the use of non-auto modes of travel, and to encourage a change in travel behaviour that reduces automobile travel.

Based upon the site context and proposed land uses, the following TDM strategies will be explored. These measures are summarized in **Table 15**. The table outlines which of the three general TDM Plan objectives the strategy is targeting. The following sections provide additional details regarding each proposed TDM strategy.

#### 9.3.1 Travel Mode Information Packages

Marketing programs aimed at new residential unit purchasers should be implemented to ensure that new residents have comprehensive information on modal choices in the area now and in the future. These programs should be made available at the sales centres for the new residential buildings and also be available to residents of the building once it is occupied. Residents should have the option to opt-in to e-mailing lists dedicated to updates regarding their travel options and printed materials should also be available.



Measure	Description	TDM Plan Objective	Cost Estimate	
Travel Mode Information Packages	Implement marketing programs aimed at new residential unit purchasers to ensure that residents are aware of available modal choices in the area.	<ol> <li>Reduce car dependence and the need for everyday travel.</li> <li>Make it easy and attractive for people to walk and cycle.</li> <li>Promote car-sharing and transit.</li> </ol>	To be determined.	
Shuttle to/from Port Credit GO Station	Explore opportunities to provide service on a shuttle route that loops within the site and travels to Port Credit GO Station to replace short vehicular trips.	<ol> <li>Reduce car dependence and the need for everyday travel.</li> <li>Promote car-sharing and transit.</li> </ol>	To be determined.	
Ride-Sharing Program	Explore opportunities to offer ride-sharing programs originating within the buildings. Online services are freely available and can be promoted on the site to facilitate carpooling activity.	<ol> <li>Reduce car dependence and the need for everyday travel.</li> <li>Promote car-sharing and transit.</li> </ol>	To be determined.	
Unbundled Vehicular Parking	Provide unbundled parking for all residential development on the site, allowing home purchasers to only pay for the amount of parking they require.	1. Reduce car dependence and the need for everyday travel.	None (likely an opportunity for revenue generation if resulting excess parking can be sold.)	
Pedestrian Connections	Provide public pedestrian sidewalks on all new public streets within the Project's boundaries.	2. Make it easy and attractive for people to walk and cycle.	Integrated into overall development cost.	
Bicycle Parking	Where possible, provide bicycle parking in excess of requirements outlined in Section 7.2.3.2.	2. Make it easy and attractive for people to walk and cycle.	Integrated into overall development cost.	
Bike Repair Stations	Consider a bicycle repair / maintenance station on the site and/or smaller public facilities located where there is bicycle parking.	2. Make it easy and attractive for people to walk and cycle.	Integrated into overall development cost.	
Bike Share / Bike Fleet System	Facilitate the implementation of a bike share system on the Site and in the surrounding area; make the site a catalyst for a larger bike share system in the Port Credit area.	2. Make it easy and attractive for people to walk and cycle.	Implementation: To be determined. Usage: Provide a subsidy to future residents	
Table continued on next page				



TABLE 17	RECOMMENDED SITE TDM MEASURES (CONTINUED FROM PREVIOUS PAGE)	
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Measure	Description	TDM Plan Objective	Cost Estimate
CAN-BIKE Cycling Course Subsidies	Provide subsidy/rebate towards a CAN-BIKE cycling course for purchases of residential units for the first two years of occupancy.	2. Make it easy and attractive for people to walk and cycle	Provide a subsidy to future residents
Shower and Change Facilities	For the office components of the Project, provide shower and change facilities in accordance with the Port Credit & Lakeview Parking Strategy recommendations, as outlined in Section 7.2.3.2.	2. Make it easy and attractive for people to walk and cycle	Integrated into overall development cost.
Transit Information Centres (with real-time Transit Screens)	Provide an information centre within all buildings that ensures current transit information (arrival times, route information, advisory notices) is conveniently available to all residents of and visitors to the Project. This information will be delivered electronically via a transit information screen located in a central location of each building.	3. Promote car-sharing and transit.	Integrated into overall development cost.
Car-Share Program	Explore opportunities to offer car-share service on the site, ideally with car-share stations (parking spaces) located within the parking area of every residential building within the Site and	<ol> <li>Reduce car dependence and the need for everyday travel.</li> <li>Promote car-sharing and transit.</li> </ol>	Subject to which commercially- oriented ride- matching service can be provided on- site.
Pre-loaded PRESTO Cards	Provide PRESTO fare cards to purchasers of new condominium units for the first two years of occupancy.	3. Promote car-sharing and transit.	Provide one fare card pre- loaded with \$100 per residential unit.
Electric Vehicle Charging	Provide electric vehicle charging stations within residential parking areas and in proximity to the non-residential land uses found within the site.	3. Promote car-sharing and transit.	Integrated into overall development cost
Community Outreach	Organize local events for residents once substantial occupancy has been achieved. At the events, attendees can receive information about the transportation options available to them, including all elements of this TDM Plan.	<ol> <li>Reduce car dependence and the need for everyday travel.</li> <li>Make it easy and attractive for people to walk and cycle.</li> <li>Promote car-sharing and transit.</li> </ol>	To be determined.



#### 9.3.2 Shuttle to/from Port Credit GO Station

While the current local public transit service connecting the Site to Port Credit GO Station is adequate, greater incentive is likely required to successfully leverage the site's location in relation to the station. A shuttle service operating on a loop between the two locations would provide significant disincentive to car ownership and car usage for residents of the site who must use the Lakeshore West GO Rail service. A shuttle service would reduce the strain on parking demand at this GO Station if it is well-utilized. In addition, the future Hurontario-Main LRT service will terminate in Port Credit; a shuttle can deliver residents to this service as well.

The shuttle could be publicly or privately operated; there are more examples of the latter in the GTHA than there are of the former. In the North York, Smart Commute operates three shuttle services that operate on loops with Don Mills (subway) station as their origin and destination (more information on this service can be found here: <u>http://smartcommute.ca/north-toronto-vaughan/get-me-there/corporate-shuttles/</u>). Although that shuttle service is predicated on delivering commuters to workplaces in the area, a similar service can be provided to residents of the Site intending to access Port Credit GO Station.



Source: http://smartcommute.ca/north-toronto-vaughan/wp-content/uploads/sites/15/2014/07/dec-2014-map.jpg



#### 9.3.3 Ride-Sharing Program

Explore opportunities to offer ride-sharing (carpooling) programs originating within the buildings. Carpooling services tend to be less effective at the residential end of the trip because it is likely that destinations will vary; residents are not likely to be travelling to the same destination. Nevertheless, ride-sharing services should be offered, perhaps informally, through the various property managers for each building. Free online ride-matching (with potential to upgrade to location-only matching services at cost) is widely available; www.explore.smartcommute.ca is an example that is entirely focused on the Greater Toronto & Hamilton Area.

#### 9.3.4 Unbundled Vehicular Parking

Provide unbundled parking for all residential development on the site, allowing home purchasers to only pay for the amount of parking they require. Prospective residents should not be forced to own a parking space because if they are and are not inclined to use it, they can be expected to sell it. This can add traffic to the site and can be avoided if home purchasers are not required to purchase parking along with their unit.

#### 9.3.5 Pedestrian Connections

High quality pedestrian connections within the site (and surrounding it) are one of the most important design features in the effort to ensure the viability of non-automotive modes of travel. Thus, it is critical for pedestrian and sidewalk infrastructure to enhance the pedestrian experience especially as it relates to safety and convenience. Children and elderly residents should feel comfortable walking within the site.

#### 9.3.6 Bicycle Parking

Secure long-term bicycle parking should be provided in conveniently-located and accessible facilities within each residential building on the site. Short-term bicycle parking should be widely distributed across the site in conveniently-situated and readily accessible locations relative to key building entrances, open spaces, and destinations.

Proposed bicycle parking standard for the site are discussion in Section 7.3.

#### 9.3.7 Bike Repair Stations

Public bike repair stations can be located throughout the site to allow cyclists to engage in timely repairs if required. Public stations can be spread throughout the site, ideally located alongside bicycle racks. A larger, more comprehensive bike repair station to service the entire site can also be considered.

#### 9.3.8 Bike Share Systems

The introduction of a bike share system to the surrounding area is included in the Metrolinx GO Rail Station Access Plan for Port Credit GO Station. As a mixed-use development covering a large area in close proximity to this station, the Site is an ideal candidate to launch a bike share system within the area. There are several locations included in the Master Plan that would be ideal locations for bike share stations, including at the



community/institutional uses being considered on the Site's southern end, located adjacent to the Waterfront Trail.

A variety of service providers should be considered, including the following:

*Bike Share Toronto*: Operated by the Toronto Parking Authority, Bike Share Toronto currently does not extend west of High Park in Toronto. Nevertheless, it would be worthwhile to investigate the possibility of agency's first expansion outside of Toronto's city limits occurring on the Site and in the larger Port Credit area.

*CycleLoan*: Based in Mississauga and operated by SustainMobility, CycleLoan (<u>www.cycleloan.ca</u>) is a turnkey bike fleet program that requires minimal infrastructure to launch and operate. After launch, property management for residential buildings would likely be responsible for keeping the bike fleet operational on a daily basis.

*City of Mississauga Bike Share*: Mississauga does not have a municipally-operated bike share system although the Site and the Port Credit area are ideal locations to launch this type of program should the City decide to do so.

#### 9.3.9 CAN-BIKE Cycling Course Subsidies

Cycling Canada's CAN-BIKE program is a series of courses for adults and children intended to educate participants on the safe and enjoyable use of a bicycle on the road.

Program development is coordinated through national instructor committees and Cycling Canada. Course delivery and administration takes place through CAN-BIKE Delivery Agents, such as provincial and territorial cycling associations, regional instructor committees, community associations, municipal departments, service groups and the efforts of individual/independent instructors.

Courses are offered frequently in several locations throughout the GTA (as can be viewed here: <u>http://canbikecanada.ca/who-we-are-2/</u>). It is recommended that a subsidy or rebate of approximately \$100 be provided to purchasers of new units for the first two years of occupancy. This course subsidy will encourage the use of cycling by residents as a viable means of travel to and from the proposed subdivision.

#### 9.3.10 Shower and Change Facilities

Shower and change facilities should be provided within office buildings and will be available for staff use in accordance with the rates discussed in Section 7.2.3.2.

#### 9.3.11 Transit Information Centres (with real-time Transit Screens)

Given the proximity to a regional rail station and a future LRT terminus, at least one transit information centre should be located on the site and ideally, real-time transit screens should be provided in all multi-unit residential buildings. It should be maintained by the property manager of each building in tandem with the local transit service providers (MiWay and GO Transit). The objective of providing real-time transit information


is to enhance the convenience and comfort of using public transit. Bus arrival times, transit route information, and transit service advisory notices should be included among the information provided at these stations.

Multiple vendors provide real-time transit information boards, including *TransitScreen*. To obtain this service, there would be an initial capital cost for equipment and an ongoing subscription fee to keep it operational.

## 9.3.12 Car-Share Program

Car-sharing programs should be introduced through third-party providers (e.g. ZipCar, Car2Go, Enterprise CarShare, etc.) at each building on the site. It should be noted that the provision of a car-share program onsite is contingent on a service provider agreeing to locate car-share spaces on the Site. Car-share providers are currently active in Mississauga, including the following:

*Enterprise CarShare*: There are four cars available in Mississauga at three locations, all of which are located in the Downtown Mississauga (Square One) area.

*Zipcar*: There are 16 cars available in Mississauga at 10 locations, including GO Stations, the University of Toronto Mississauga, Credit Valley Hospital, Toronto Pearson Airport, and downtown Mississauga.

Car-sharing programs are an important TDM measure because it allows residents to use automobiles as needed without requiring them to own a vehicle. By nature, this means that they make less vehicular trips, directly reducing the amount of vehicular travel emanating from the site.

## 9.3.13 Pre-loaded PRESTO Cards

Considering the site's location relative to both existing local transit service, the Port Credit GO Station, and the future terminus of the Hurontario-Main LRT, it is recommended that pre-loaded PRESTO fare cards be provided to purchasers of new condominium units for the first two years of occupancy to encourage the use of transit to travel to and from the site. A fare card value of \$100 per unit is recommended, which equates to approximately 33 MiWay Adult fares, or 16 GO Train trips into the downtown Toronto area.

## 9.3.14 Electric Vehicle Charging

Allocating vehicular parking spaces as electric vehicle (EV) charging stations is advised to accommodate growing demand as the site matures. Including EV charging stations within each residential parking garage and supporting the non-residential components of the site would support the broader environmental goals of the Project.

## 9.3.15 Community Outreach

Local events can be launched for residents of each building once substantial occupancy has been achieved. Residents would be invited to receive information about their transportation options including information on pedestrian, cycling and transit routes. The WVP would be required to coordinate the date of the meetings with Transportation Planning staff at the City of Mississauga so that a representative can attend to provide information packages to each new residential unit which contain information / pamphlets about cycling, walking, and transit options.



## 9.4 IMPLEMENTATION

Some of the measures being considered as part of the TDM Plan can be classified as 'hard' TDM measures; these are the physical infrastructure components and they include pedestrian connections, bicycle parking, bicycle repair stations, shower and change facilities, transit information centres, and electric vehicle charging stations. The implementation of these elements and the costs associated with them will be the responsibility of the applicant / land developer. After construction, their integration into the greater transportation network can be confirmed and monitored by planners and property managers.

Other measures can be classified as 'soft' measures, including travel mode information packages, a ridesharing program, unbundled vehicular parking, CAN-BIKE cycling course subsidies, and pre-loaded PRESTO cards. Efforts to implement these measures should be the shared responsibility of property managers, City staff, and staff representing the relevant transit agencies.

The remainder of TDM initiatives included in the Master Plan involve connecting the site to other locations and are likely to be provided by third parties (i.e. Port Credit GO Station shuttle, bike-share system, and carshare program). Obtaining these services for the site will require negotiations with service providers and in some cases, minor infrastructure additions will be required for implementation (i.e. signs marking car-share parking spaces), and it is anticipated that the City would be involved in implementing such measures.



# **10.0 MASTER PLAN TRAFFIC OPERATIONS**

This section provides details regarding the traffic analysis that was performed as part of this study to assess the impacts of the contemplated Master Plan on the immediately local area road network and confirm acceptable traffic operations on the proposed future internal public road network.

Note that a Phase 2 transportation study that will assess the impacts of the Master Plan on the broader area traffic network will be completed subsequent to this study and the initial submission of the OPA/ZBA/Draft Plan of Subdivision application for the 70 Mississauga Road South and 181 Lakeshore Road West site. This analysis will utilize both the Highway Capacity Manual methodology and a VISSIM micro-simulation model and will consider the 2021, 2031 and 2041 horizon years. This study will be coordinated with the ongoing Lakeshore Connecting Communities study being undertaken by the City of Mississauga with respect to model inputs and future traffic volume assumptions.

# 10.1 STUDY AREA

Based on the foregoing, the following study area was adopted for this analysis:

- Lakeshore Road West / Loblaws Retail Plaza Access / New Avenue 'A' (signalized)
- Lakeshore Road West / New Lake Street
- Lakeshore Road West / Northeast Block Driveway
- Mississauga Road South / Northeast Block Driveway
- Mississauga Road South / Port Street
- Mississauga Road South / Lake Street
- New Avenue 'A' / New Port Street
- New Lake Street / New Port Street
- New Lake Street / New Avenue 'A'
- New Lake Street / New Avenue 'B'
- New Port Street / New Avenue 'B'

## 10.2 HORIZON YEAR

A specific build-out date and phasing timeline for the Master Plan will be determined by market factors as well as the length of time necessary to satisfy the requirements of the municipal approvals process. Preliminary estimates regarding the phasing timeline for the development are that development may take place within a range of 8-10 years.

For the purpose of this analysis, a horizon year of 2027 (i.e. a 10-year build-out period) was assumed.

# 10.3 TRAFFIC VOLUMES

## 10.3.1 Existing Traffic Volumes

Levels of existing vehicular traffic volumes on the area road network have been assessed using turning movement count data collected in 2016 and 2017. This data is summarized in **Table 16**.



## TABLE 16 EXISTING TRAFFIC VOLUME DATA SOURCES

Intersection	Count Date	Count Times	Source
Lakeshore Road West / Mississauga	Thursday, May 4, 2017	7:30am–9:30am	Spectrum
Road South	Wednesday, March 30, 2016	4:00pm–6:00pm	Traffic Data
Lakeshore Road West / Loblaws Retail	Thursday, May 4, 2017	7:30am–9:30am	Spectrum
Plaza Access		4:00pm–6:00pm	Traffic Data
Mississauga Road South / Port Street	Thursday, May 4, 2017	7:30am–9:30am	Spectrum
West		4:00pm–6:00pm	Traffic Data
Mississauga Road South / Lake Street	Thursday, May 4, 2017	7:30am–9:30am 4:00pm–6:00pm	Spectrum Traffic Data

All of the amassed vehicle turning movement data was considered to create a comprehensive base existing traffic network that is meant to represent typical traffic volumes on that area road network during the peak hour periods. Although a capacity analysis was not performed for the intersection of Lakeshore Road West / Mississauga Road South in this study, both 2016 and 2017 volumes from turning movement counts performed at the intersection were utilized in establishing the based traffic volumes along Lakeshore Road West and Mississauga Road South assumed in the analysis.

It is noted that the site currently does not generate any significant volume of traffic, as the gas station located on the site at the southwest corner of Lakeshore Road West / Mississauga Road South is no longer in operation. The adopted existing area road network traffic volumes are illustrated in **Figure 16**.

## 10.3.2 Future Background Traffic Volumes

Future background traffic volumes were established based on a review of area developments that are planned or under construction and historical corridor growth.

### 10.3.2.1 Background Developments

A number of area developments that are planned or under construction have been considered in the traffic analysis model. The background developments included in this study are summarized in **Table 17**.

## TABLE 17 BACKGROUND DEVELOPMENTS CONSIDERED

Site	Development Programme
5-7 Benson Avenue	139 residential apartment units 170 rental retirement units 16 townhouse units
8 Ann Street	70 residential condominium apartment units 2 townhouse units
21-27 Park Street East	142 residential condominium units
Total	539 residential units





# EXISTING AREA TRAFFIC VOLUMES



Traffic volumes allowances made for background developments estimated made based on the residential vehicular trip generation methodology discussed in Section 6.2.2.1 and the residential traffic distribution summarized in Section 10.3.3.

#### 10.3.2.2 Corridor Growth

In addition to considering specific allowances for area developments, based on consultation with the City of Mississauga's Transportation and Works department, the annual compounded traffic growth rates summarized in **Table 18** were applied to forecast future corridor traffic volumes on Lakeshore Road West at the 2027 horizon year.

#### TABLE 18 LAKESHORE ROAD WEST CORRIDOR TRAFFIC VOLUME GROWTH RATES

Peak Period	Direction	Growth Rate per Annum
Weekdey Merning Deek Hour	Eastbound	0.25%
Weekday Morning Peak Hour	Westbound	1.75%
Maakday Aftarnaan Daak Haur	Eastbound	1.25%
Weekday Afternoon Peak Hour	Westbound	0.5%

Future background traffic volumes, which are developed by adding traffic volume allowances made for area background developments to existing traffic volumes are illustrated in **Figure 17**.

### 10.3.3 Site-Generated Traffic Volumes

Person-based trip generation forecasts have been developed in order to quantify the estimated number of new driver, passenger, transit, cycling and walking trips associated with the proposed Master Plan during the critical weekday morning and afternoon peak travel hours. Details regarding the person trip generation analysis are provided in Section 6.2.2.

The vehicular trip generation forecasts for the Master Plan as proposed are summarized in **Table 19**. As discussed in Section 6.2.2, a sensitivity analysis was performed that considered a 5% modal shift from auto driver to transit. Vehicular trip generation forecasts for this scenario are summarized in **Table 20**.

New site traffic is distributed to the traffic network based on a review of the 2011 Transportation Tomorrow Survey (2011 TTS) data for home-based, work-based and market-based trips to/from the local area during the weekday peak travel periods. Traffic generated by the community/institutional uses was distributed based on existing area traffic patterns. The adopted traffic distribution is summarized in **Table 21**.

Site-generated traffic volumes assigned to the area road network for the base and improved transit mode split scenarios are illustrated in **Figure 18** and **Figure 19**, respectively.







# FUTURE BACKGROUND TRAFFIC VOLUMES



	ļ	M Peak Hou	ır	F	PM Peak Hou	ır
	In	Out	2-Way	In	Out	2-Way
Residential Driver Trips	124	683	808	615	313	929
Office Driver Trips	201	25	226	25	186	210
Community Centre Driver Trips	201	89	289	215	163	378
Retail Driver Trips	149	76	225	358	336	694
Primary Trips	149	76	225	202	180	381
Pass-by Trips	0	0	0	156	156	312
Total Driver Trips	675	873	1,548	1,213	998	2,221
Primary Trips	675	873	1,548	1,057	842	1,898
Pass-by Trips	0	0	0	156	156	312

### TABLE 19 MASTER PLAN VEHICULAR TRIP GENERATION SUMMARY

## TABLE 20 Master Plan Vehicular Trip Generation Summary – 5% Modal Shift

	ļ	M Peak Hou	ır	F	M Peak Hou	ır
	In	Out	2-Way	In	Out	2-Way
Residential Driver Trips	115	632	747	569	290	859
Office Driver Trips	189	23	212	23	1745	198
Community Centre Driver Trips	187	83	270	200	152	352
Retail Driver Trips	140	71	211	336	315	651
Primary Trips	140	71	211	180	159	339
Pass-by Trips	0	0	0	156	156	312
Total Driver Trips	632	809	1,441	1,129	932	2,061
Primary Trips	632	809	1,441	973	776	1,749
Pass-by Trips	0	0	0	156	156	312



To/From	Resi	dential	Of	fice	Retai	I Store	Community	/Institutional
Route	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound
East on Lakeshore Road	15%	15%	10%	10%	30%	20%	30%	30%
West on Lakeshore Road	30%	20%	15%	15%	40%	45%	50%	50%
North on Mississauga Road	30%	40%	45%	45%	15%	20%	10%	10%
North on Hurontario Street	25%	25%	30%	30%	15%	15%	10%	10%
Total	100%	100%	100%	100%	100%	100%	100%	100%

#### TABLE 21 SITE TRAFFIC DISTRIBUTION

## 10.3.4 Future Total Traffic Volumes

Future total traffic volumes are developed by adding traffic generated by the proposed Master Plan to future background traffic volumes. Future total traffic volumes for the base analysis scenario and 5% modal shift to transit scenario are illustrated in **Figure 20** and **Figure 21**, respectively. As noted previously, the assumption of a 5% modal shift was a result of direction from City staff and is not intended to reflect a longer term modal shift that may occur with introduction of rapid transit on Lakeshore Road. The Phase 2 transportation submission will look in more detail at the impacts of higher shifts in travel mode from automobile driver to transit.







# SITE-GENERATED TRAFFIC VOLUMES







# SITE-GENERATED TRAFFIC VOLUMES (5% MODAL SHIFT TO TRANSIT)







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# FUTURE TOTAL TRAFFIC VOLUMES



Figure 20

00 AM Peak Hour

(00) PM Peak Hour

Stop Control

Existing Traffic Signal

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# FUTURE TOTAL TRAFFIC VOLUMES (5% MODAL SHIFT TO TRANSIT)



## 10.4 OPERATIONS ANALYSIS

## 10.4.1 Analysis Methodology

The traffic capacity impact analysis has been completed using the Synchro (version 9.1) capacity analysis software in accordance with the methodologies outlined in the Highway Capacity Manual (HCM), and in accordance with the City of Mississauga's *Traffic Impact Study Guidelines*.

The key performance indicator of the signalized intersection evaluation is an intersection performance index (volume to capacity ratio, or v/c), where a v/c index of 1.00 indicates 'at or near capacity' conditions.

The key performance indicator of the unsignalized intersection / driveway analyses is an average delay per vehicle (in seconds) and a level of service (LOS) designation, where the LOS A (little delay) to LOS F (extended delay) range provides an understanding of the relative time a motorist may have to wait to complete a turn at an intersection or driveway.

## 10.4.2 Key Analysis Parameters

#### Lane Configurations

Existing lane configurations are used for existing and future background traffic conditions.

Under future total traffic conditions, the additional road network connections proposed as part of the Master Plan are assumed. These include:

- the connection of the new Avenue 'A' to Lakeshore Road West at the existing signalized intersection of Lakeshore Road West and the Loblaws retail plaza access to the north of the site;
- the connection of the extended Lake Street to Lakeshore Road West;
- the addition of a new driveway access on Lakeshore Road West between the Loblaws retail plaza access and Mississauga Road;
- the addition of a new driveway access on Mississauga Road South between Lakeshore Road West and Port Street West;
- the extension of Port Street West to the west, past Mississauga Road South and terminating at the extended Lake Street;
- the extension of Lake Street to the west, past Mississauga Road South and terminating at Lakeshore Road West; and
- the internal road network proposed the Master Plan, as illustrated in Figure 6.

The future area road network configuration is illustrated in Figure 22.

#### **Signal Timing Plans**

The existing signal timing plan for the Lakeshore Road West / Loblaws retail plaza access was obtained from the City of Mississauga and utilized in the analysis of the existing and future background scenarios. Under the future total traffic scenarios, this signal timing plan has been optimized as discussed in Section 10.4.4 to demonstrate its capacity to accommodate the forecast additional traffic generated by the Master Plan as proposed.







# FUTURE AREA ROAD NETWORK CONFIGURATION



#### **Other Parameters**

- Heavy vehicle percentages as derived from existing traffic counts;
- Peak hour factors as derived from existing traffic counts;
- Pedestrian and bicycle approach crossings as derived from existing traffic counts;
- Lost time adjust value of -1.0; and
- Synchro defaults for all other parameters.

## 10.4.3 Analysis Scenarios

Traffic operations of the area signalized and unsignalized intersections have been assessed under existing, future background, and future total conditions for the weekday morning and afternoon peak hour periods. These time periods typically reflect the busiest periods of activity on the area road network and are adopted as an appropriate basis for the analyses outlined herein.

Based on the collected data, the analyzed peak hours are representative of the following time periods:

- weekday morning peak hour 7:45 a.m. to 8:45 a.m.
- weekday afternoon peak hour 4:45 p.m. to 5:45 p.m.

An additional scenario that considered a 5% mode shift from automobile driver to transit was also analyzed in order to gain understanding of future traffic operations on the local road network due to a modal shift away from personal automobiles to transit. As noted previously, the assumption of a 5% modal shift was a result of direction from City staff and is not intended to reflect a longer term modal shift that may occur with introduction of rapid transit on Lakeshore Road. The Phase 2 transportation submission will look in more detail at the impacts of higher shifts in travel mode from automobile driver to transit.

The results of the traffic analysis are presented in the following sections.

### 10.4.4 Key Findings

Capacity analysis results summaries for each intersection within the study area are provided in **Table 22** and **Table 23**. Detailed Synchro HCM analysis output sheets are included in **Appendix A**.

Based on this analysis, new vehicular traffic volumes generated by the Master Plan concept can be appropriately accommodated on the immediate local area network, assuming on the configuration illustrated in **Figure 22**, in both the existing travel mode split and increase transit mode split scenarios.

Traffic operations on the new internal public road network envisioned by the Master Plan will also be acceptable without a significant amount of vehicular delay or queuing.

As previously mentioned, analysis of the impacts of the Master Plan on the broader area road network will be provided as part of the Phase 2 Transportation study.



Movement	Existing Traffic	Future Background Traffic	Future Total Traffic	Future Total Traffic Conditions (5% Mode Shift to Transit)
EBL	0.08 (0.42)	0.10 (0.48)	0.14 (0.76)	0.13 (0.73)
EBT	0.51 (0.42)	0.54 (0.49)	0.77 (0.91)	0.76 (0.88)
EBR	N/A (N/A)	N/A (N/A)	0.06 (0.24)	0.05 (0.22)
WBL	N/A (N/A)	N/A (N/A)	0.69 (0.94)	0.65 (0.91)
WBT	0.24 (0.50)	0.29 (0.54)	0.35 (0.65)	0.34 (0.64)
WBR	0.08 (0.16)	0.08 (0.16)	0.08 (0.19)	0.08 (0.19)
NBL	N/A (N/A)	N/A (N/A)	0.69 (0.87)	0.67 (0.85)
NBTR	N/A (N/A)	N/A (N/A)	0.18 (0.13)	0.13 (0.12)
SBL	0.47 (0.63)	0.47 (0.63)	0.80 (0.94)	0.74 (0.93)
SBTR	0.02 (0.26)	0.02 (0.30)	0.02 (0.22)	0.02 (0.21)
Overall	0.50 (0.52)	0.54 (0.55)	0.77 (0.96)	0.75 (0.93)

# TABLE 22 LAKESHORE ROAD WEST / LOBLAWS RETAIL PLAZA ACCESS / NEW AVENUE 'A' SIGNALIZED INTERSECTION CAPACITY ANALYSIS RESULTS SUMMARY

1. 0.00 (0.00) – Weekday morning peak hour (Weekday afternoon peak hour)



Intersection / Movement	Existing	g Traffic		nckground Iffic	Future To	tal Traffic	Future To Cond (5% Mode Trai	itions
	LOS	Avg. Delay (s)	LOS	Avg. Delay (s)	LOS	Avg. Delay (s)	LOS	Avg. Delay (s)
		Lak	keshore Roa	d West / Nev	v Lake Stree	t		
NBR	N/A (N/A)	N/A (N/A)	N/A (N/A)	N/A (N/A)	23.1 (21.3)	C (C)	22.4 (20.5)	C (C)
		Lakesho	re Road Wes	st / Northeas	t Driveway A	Access	•	
NBR	N/A (N/A)	N/A (N/A)	N/A (N/A)	N/A (N/A)	10.5 (11.1)	B (B)	10.4 (10.9)	B (B)
		Miss	issauga Roa	ad South / Po	ort Street We	est		
EBLTR	N/A (N/A)	N/A (N/A)	N/A (N/A)	N/A (N/A)	41.3 (31.5)	E (D)	33.7 (27.7)	D (D)
WBTLR	9.0 (8.8)	A (A)	9.0 (8.8)	A (A)	11.5 (17.5)	B (C)	11.2 (16.4)	B (C)
SBLTR	4.1 (5.1)	A (A)	4.1 (5.1)	A (A)	1.7 (2.0)	A (A)	1.8 (2.1)	A (A)
		Mi	ississauga F	Road South /	Lake Street			
EBLTR	N/A (N/A)	N/A (N/A)	N/A (N/A)	N/A (N/A)	10.8 (11.0)	B (B)	10.4 (10.5)	B (B)
WBLTR	9.0 (8.3)	A (A)	9.0 (8.3)	A (A)	9.1 (9.0)	A (A)	8.9 (8.8)	A (A)
NBLTR	9.8 (8.9)	A (A)	9.8 (8.9)	A (A)	9.5 (8.8)	A (A)	9.4 (8.7)	A (A)
SBLTR	2.2 (0.0)	A (N/A)	2.2 (0.0)	A (N/A)	9.8 (9.5)	A (A)	9.5 (9.2)	A (A)
			Table cont	inued on nex	kt page			

TABLE 23	UNSIGNALIZED INTERSECTION CAPACITY ANALYSIS SUMMARY

Notes: 1. 0.0 (0.0) – Weekday morning peak hour (Weekday afternoon peak hour)



Intersection / Movement	Existing	g Traffic		ckground ffic	Future To	tal Traffic	Future To Cond (5% Mode Trai	itions e Shift to
	LOS	Avg. Delay (s)	LOS	Avg. Delay (s)	LOS	Avg. Delay (s)	LOS	Avg. Delay (s)
			Avenue 'A' /	New Port S	treet West			
WBLTR	N/A (N/A)	N/A (N/A)	N/A (N/A)	N/A (N/A)	8.5 (8.4)	A (A)	8.4 (8.3)	A (A)
EBLTR	N/A (N/A)	N/A (N/A)	N/A (N/A)	N/A (N/A)	7.7 (8.1)	A (A)	7.5 (8.0)	A (A)
NBLTR	N/A (N/A)	N/A (N/A)	N/A (N/A)	N/A (N/A)	8.3 (8.4)	A (A)	8.2 (8.3)	A (A)
SBLTR	N/A (N/A)	N/A (N/A)	N/A (N/A)	N/A (N/A)	8.4 (9.3)	A (A)	8.3 (9.0)	A (A)
			Avenue 'A	A' / New Lak	e Street		•	
EBLT	N/A (N/A)	N/A (N/A)	N/A (N/A)	N/A (N/A)	0.6 (1.7)	A (A)	0.7 (1.7)	A (A)
SBLR	N/A (N/A)	N/A (N/A)	N/A (N/A)	N/A (N/A)	10.3 (11.2)	B (B)	10.1 (11.0)	B (B)
			New Port St	reet West / A	Avenue 'B'			
EBLTR	N/A (N/A)	N/A (N/A)	N/A (N/A)	N/A (N/A)	4.2 (4.1)	A (A)	4.1 (4.1)	A (A)
NBLTR	N/A (N/A)	N/A (N/A)	N/A (N/A)	N/A (N/A)	9.7 (9.8)	A (A)	9.6 (9.6)	A (A)
SBLTR	N/A (N/A)	N/A (N/A)	N/A (N/A)	N/A (N/A)	9.9 (11.6)	A (B)	9.8 (11.3)	A (B)
			New Lake	Street / Ave	enue 'B'			
EBLT	N/A (N/A)	N/A (N/A)	N/A (N/A)	N/A (N/A)	0.3 (0.3)	A (A)	0.3 (0.3)	A (A)
SBLR	N/A (N/A)	N/A (N/A)	N/A (N/A)	N/A (N/A)	12.7 (12.9)	B (B)	12.2 (12.4)	B (B)
		Ne	w Lake Stre	et / New Por	t Street Wes	t		
WBLR	N/A (N/A)	N/A (N/A)	N/A (N/A)	N/A (N/A)	8.8 (9.6)	A (A)	8.8 (9.5)	A (A)
SBLT	N/A (N/A)	N/A (N/A)	N/A (N/A)	N/A (N/A)	0.5 (1.7)	A (A)	0.6 (1.7)	A (A)

# TABLE 25 Unsignalized Intersection Capacity Analysis Summary (Continued from Previous Page)

Notes:

1. 0.0 (0.0) – Weekday morning peak hour (Weekday afternoon peak hour)



# 11.0 SUMMARY AND CONCLUSIONS

BA Group is retained by Port Credit West Village Partnership ("the WVP") to provide urban transportation advisory services in relation to the property located at 70 Mississauga Road South and 181 Lakeshore Road West in the City of Mississauga. The site is a 72-acre plot of land on the Port Credit waterfront, generally bounded by Mississauga Road to the east, an existing residential neighbourhood to the west, Lakeshore Road West to the north, and to the south a strip of waterfront land that is not subject to this application.

The parcel of land considered for development in this report is an unoccupied brownfield site that is fenced to prevent access, and so has no existing driveways or in-use circulation systems, with the exception of a portion of the Waterfront Trail that extends across the sites southern frontage along the Lake Ontario shoreline. A fenced vehicle access to the site exists on Mississauga Road South, generally in line with Port Street West.

The WVP is seeking an OPA, ZBA and Draft Plan of Subdivision to permit development of a mixed-use community on the subject lands. A Master Plan, prepared by the WVP envisages approximately 2,500 residential units in the form of condominiums and townhouses, along with approximately 22,745 m<sup>2</sup> of commercial space (including community/institutional uses), approximately 13,820 m<sup>2</sup> of retail space and a significant portion of park land and open space. Several new public roads providing pedestrian, cycling, transit and automobile connections through the lands and to the existing transportation network are identified in the Master Plan to support the proposed development.

The Master Plan was informed by the Inspiration Port Credit document, and shows how a mixed-use development could be realized on site with consideration of good planning and urban design principles. Key consideration is given for transportation items including the illustration of a mobility network that will support the site with pedestrian and cycling connections, and connections to existing and planned transit

A summary of BA Group's review of the urban transportation elements of the proposed mixed-use development is provided below.

### **Existing Area Transportation Context**

- 1. Currently, between 65% and 70% of home-based trips to and from the local area during the peak periods are via private car and between 15% and 17% are via public transit.
- 2. From a road connectivity perspective, the site is well-served by four major corridors Lakeshore Road, Mississauga Road, the Queen Elizabeth Way (Q.E.W.) and Hurontario Street.
- 3. Under existing conditions, with the exception of the Waterfront Trail, there is limited cycling-specific infrastructure in place within the area of the site. However, the City of Mississauga is planning significant improvements to cycling and pedestrian infrastructure in the Port Credit area. In particular, Lakeshore Road is identified as a primary on-road cycling route in the City's Cycling Master Plan, and in the Official Plan.
- 4. The site is currently served by a number of bus routes providing transit connections to employment and education areas within Mississauga as well as to the nearest regional transit station (Port Credit



GO Station), which provides broader transit connections. The Port Credit GO Station located west of Hurontario Street, which is an approximately 1.2-kilometre walk from the eastern boundary of the site.

5. There are a number of planned transit infrastructure improvements for the Port Credit are including increase service on GO Transit lines including the Port Credit GO Station and the Hurontario-Main Light Rail Transit line, which will connect the Port Credit GO Station to Brampton's Gateway Terminal in the north.

#### The Master Plan

- 6. In total the Master Plan includes 2,500 new residential units, 13,819 m<sup>2</sup> of retail gross floor area (GFA), and 22,745 m<sup>2</sup> of commercial and community/institutional GFA. The residential units include traditional townhomes, stacked and back to back townhomes, and apartments units. The development will include five different precincts within the site, each with a different character ranging from retail and commercial uses to community space and residential uses.
- 7. The proposed development will be phased to respond to site remediation needs, as well as market absorption for the various proposed land uses. It is anticipated that the full build-out of the Master Plan may take 8-10 years from commencement of work on the site to final occupancy of the last phase.
- 8. The proposed development plan provides a fine-grained network of streets and blocks, facilitating access by all modes of transportation by generally replicating the existing street network pattern. The network includes both municipal streets and private condominium roads to ensure a range of facilities are provided to accommodate the different needs of various parts of the site.
- 9. It is intended that Port Street West and Lake Street will be extended as municipal streets into the subject site, with a non-automobile connection along the alignment of Bay Street. The main site access will be on Lakeshore Road West at the location of the existing traffic control signal that serves the existing retail plaza on the north side of the street. In addition, secondary vehicle access points will be provided on Lakeshore Road West, east and west of the main signalized intersection.
- 10. An internal cycling network is proposed comprising two main components: a) an off-road two-way route connecting between the existing Waterfront trail and Lakeshore Road West; and b) on-street cycle lanes on Lake Street, Port Street West and Avenue 'B' connecting between the existing on-street cycle route on Mississauga Road/Lake Street and Lakeshore Road West.
- 11. In general, pedestrian sidewalks and/or paths are provided along all public and private roads within the Master Plan lands. Additional pedestrian-focused elements are proposed including: a natural trail connecting to the Waterfront area, pedestrian plazas at the north and south end of the site, an eastwest pedestrian connection through the site aligning with Bay Street, and a 'woonerf'-style connection to the Waterfront.
- 12. The Master Plan has been developed with the intention of accommodating a potential future transit route through the site via the proposed new public road connections. This potential route would loop through the site from Lakeshore Road West along the proposed Avenue 'A', proposed Lake Street



extension and Mississauga Road South. In the short-term horizon, this will likely be a bus transit route – either MiWay, GO Bus or private shuttle bus to/from the Port Credit GO Station.

13. Improvements to Mississauga Road South and Lakeshore Road West to make them more pedestrian-friendly and introduce a multi-use path on Mississauga Road are also proposed as part of the Master Plan.

#### **Parking and Loading**

- 14. It is proposed that reduced non-residential vehicle parking standards recommended in the *City of Mississauga Parking Strategy Phase II Port Credit & Lakeview* report be adopted for the site.
- 15. Reduced and transit-supportive minimum parking requirement rates for the residential component of the site are proposed as follows:
  - o 1.0 resident spaces per unit for apartment units or multi-unit condo buildings
  - o 0.15 visitor spaces per unit for apartment units or multi-unit condo buildings
  - o 2.0 parking spaces for townhouse units with exclusive garages
  - 0.3 spaces per unit for retirement home, long term dwelling and hospice dwelling
  - 0.4 resident parking spaces per dwelling unit for apartment dwelling units secured as affordable housing
- 16. The bicycle parking requirements recommended in the City of Mississauga Cycling Master Plan and bicycle parking requirements outlined in the *City of Mississauga Parking Strategy Phase II Port Credit & Lakeview* report are proposed for the site.
- 17. It is proposed that loading facilities for the site be provided in accordance with the requirements of the prevailing City of Mississauga Zoning By-law 0225-2007, with additional provisions made to permit the sharing of loading spaces between uses located within the same development block in order to facilitate the design of efficient, pedestrian-oriented buildings and spaces while still meeting the functional servicing requirements of the multiple uses on the site.
- 18. The Master Plan lands are sufficiently large enough to appropriately accommodate these proposed parking and loading requirements.

#### **Transportation Demand Management Strategy**

- 19. A Transportation Demand Management (TDM) strategy for the site has been envisioned which includes several measures aimed at reducing the number of single-occupant vehicle trips made to and from the site.
- 20. The measures being investigated for inclusion include, among others, a potential shuttle service to/from the Port Credit GO Station, the provision of pre-loaded PRESTO cards for new residents, the installation of transit information screens that provide real-time transit information and the incorporation of car-share services such as ZipCar and Car2Go into the site.



#### Master Plan Impacts to Local Area Transportation Infrastructure

- 21. In total, the proposed 70 Mississauga Road South site as a whole is anticipated to generate approximately 2,138 and 2,995 new person trips during the critical weekday morning and afternoon peak hour periods, respectively. Of these trips, 1,548 and 1,898 are net new vehicle trips (i.e. new vehicles on the local road network) during the weekday morning and afternoon peak hour periods, respectively.
- 22. Assuming a 5% modal shift to transit from auto drivers to account for future transit infrastructure improvements in the area, the total number of net new vehicle trips on the local road network is reduced to approximately 1,440 and 1,750 during the weekday morning and afternoon peak hour periods, respectively. In the future, with rapid transit on Lakeshore Road, the shift to transit is expected to be higher and the impacts of higher transit mode shares will be assessed in the Phase 2 transportation report.
- 23. Based on the analysis performed as part of this study, new vehicular traffic volumes generated by the Master Plan concept can be appropriately accommodated on the immediate local area network in both the existing travel mode split and increase transit mode split scenarios.
- 24. Traffic operations on the new internal public road network envisioned by the Master Plan will also be acceptable without a significant amount of vehicular delay or queuing.
- 25. Analysis of the impacts of the Master Plan on the broader area road network will be provided as part of a subsequent study.

#### Appropriateness of the Proposed Master Plan from a Planning Perspective

26. Urban transportation policies and direction from the Provincial Policy Statement (2014), the Growth Plan for the Golden Horseshoe (2006), the City of Mississauga Official Plan (2015), and Moving Mississauga (2011) support the proposed Master Plan and supporting Official Plan Amendment.



**APPENDIX A: Synchro Analysis Output Sheets** 



Movement         EBL         EBT         WBT         WBT         WBR           Traffic volume (vph)         45         1370         635         105           Eutriff: volume (vph)         45         1370         635         105           Eutriff: volume (vph)         45         1370         635         105           Eutriff: volume (vph)         45         1370         635         105           Lane Width         3.5         3.7         3.7         3.7         3.7         3.7         3.7         3.7         3.7         3.5         105         100         <		SBR 35 35 35 35 35 35 60 1100 1100 1100 1100 1100 0 33 33 33 33 37 100 100 100 100 100 100 100 100 100 10	
T         T         T         T         T           45         1370         635         635         635           1900         1900         1900         1370         635         635           100         050         050         100         100         100         100           100         055         37         37         37         37         37         37           100         100         055         055         100		35 35 35 35 35 35 60 150 155 155 155 155 155 155 155 155 15	
(h)         45         1370         635         53 $35$ $37$ $37$ $37$ $37$ $35$ $37$ $37$ $37$ $37$ $35$ $37$ $37$ $37$ $37$ $35$ $37$ $37$ $37$ $37$ $60$ $60$ $50$ $100$ $100$ $100$ $1000$ $100$ $100$ $100$ $100$ $100$ $100$ $1711$ $3515$ $3444$ $11$ $110$ $109$ $09$ $0.39$ $1.00$ $109$ $091$ $001$ $00$ $0.39$ $1091$ $091$ $091$ $00$ $00$ $0.910$ $0.91$ $0.91$ $0.91$ $1001$ $1001$ $1001$ $0.911173$ $1173$ $1173$ $1173$ $1173$ $1173$ $1173$ $0.911123$ $1173$ $1173$ $1133$ $1133$ $1133$ $1133$		35 35 35 35 35 35 100 1100 1100 1100 110	
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0.95         1.00         100         1           PHF         0.91         1.00         100         104           0.13         515         3444         11           0.13         1.00         109         100         100           0.91         0.91         0.91         0.91         0.91         0.91           0.91         0.91         0.91         0.91         0.91         0.91         0.91           (ph)         49         1505         698         698         69         698         70		1.00 1551 1551 1551 0.91 38 33 35 33 35 33 37 1 Prot	
1750         3515         3444         11           PHF         0.91         0.91         0.91         0.91         0.91           711         3515         3444         11         3515         3444         11           711         3515         698         70         10         10         0         0           (ph)         49         1505         698         70         10         10         0           (ph)         49         1505         698         70         11         23         6%           (ph)         2%         3%         6%         3%         6%         5%           (ph)         2%         3%         6%         3%         6%         7%           (ph)         Perm         NA         NA         NA         NA         NA         NA           (ph)         Perm         NA         NA<		1551 15.00 0.91 38 35 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5	
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n (vph)         0         1505         598           w (vph)         0         0         0           w (vph)         49         1505         698           (%)         2%         3%         6%           (%)         2%         3%         6%           (%)         2%         3%         6%           (%)         2%         4         8         8%           5%         4         4         8         8%           5%         4         4         8         8%           5%         4         4         8         8%           5%         6(%)         117.3         117.3         117.3           6(%)         113.3         118.3         113.3         113.3           6(%)         7.0         7.0         7.0         7.0           6(%)         3.0         3.0         3.0         3.0           6(%)         3.0         3.0         3.0         7.0           7(0         13         3.0         3.0         2.0           7(%)         3.0         3.0         2.0         0.0           7(%)         7.0         7.0		38 35 33 3 3 7 0 1	
10         49         1505         698           2%         3%         6%         6%           2%         3%         6%         6%           0         4         N         N         P           Perm         NA         N         8%         6%           11         311         117.3         117.3         117.3           118.3         118.3         118.3         118.3         11           118.3         118.3         118.3         118.3         11           118.3         118.3         118.3         118.3         11           118.3         118.3         118.3         118.3         11           118.3         118.3         118.3         128.3         12           0.30         3.0         3.0         3.0         3.0           0.07         7.0         7.0         7.0         7.0           0.07         7.0         2.0         2.0         1.0         1.0           0.07         0.07         2.01         2.1         2.4         0.0         0.0         0.0         0.0         0.0         0.0         0.0         0.0         0.0         0.0		33 3% 10 1	
7         7         7         7         6%           0         4         0         6%         6%           0         4         NA         NA         P           Perm         NA         NA         NA         P           117.3         117.3         117.3         117.3         117.3           118.3         118.3         118.3         118.3         118.3         118.3         118.3         118.3         118.3         118.3         118.3         11         0.84<		3% 0 1	
0         4         0           Perm         NA         NA         PA           Perm         NA         NA         PA           117.3         117.3         117.3         117.3           118.3         118.3         118.3         118.3           0.84         0.84         0.84         0.84           7.0         7.0         7.0         7.0           7.0         7.0         7.0         7.0           6.00         2.970         2.910         1.1           0.30         0.51         0.24         0.0           0.00         0.51         0.24         0.0           1.00         1.00         1.00         1.0           1.00         1.00         1.00         1.0         1.0		Drot	
Perm NA PA		Prot 1	
4         4         8           4         4         8           117.3         117.3         117.3         117.3           118.3         118.3         118.3         113           118.3         118.3         118.3         113           0.84         0.84         0.84         0.84           0.83         0.84         0.84         0.70           7.0         7.0         7.0         7.0           3.0         3.0         3.0         3.0           600         2970         2910         1.1           0.07         0.07         2910         1.1           0.07         0.03         2.0         0.20           0.07         0.31         0.20         0.20           0.08         0.51         0.24         0.2           1.08         0.51         0.24         0.2           1.08         1.00         1.00         1.00         1.00		<del>,</del>	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$			
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118.3 118.3 118.3 118.3 118.3 118.3 118.3 118.3 118.3 119.4 (20.7 7.0 7.0 7.0 10.7 10.0 10.0 10.0 10.0		8.7	
1.84         0.84 <th0.84< th="">         0.84         0.84         <th0< td=""><td></td><td>9.7 2.62</td><td></td></th0<></th0.84<>		9.7 2.62	
N         1/0         1/0         1/0           1         600         2970         2910         1/0           1         600         2970         2910         1/0           0.07         0.043         0.20         1/0         1/0           0.08         0.51         0.24         0         0           1.0         1.08         0.51         0.24         0           1.0         1.00         1.00         1.00         1.00         1           1.00         1.00         1.00         1.00         1.00         1         0           1.00         0.00         0.51         0.24         0.00         1         0         0         0	0.84 0.0/	7.0 2.0	
0         0.0         27.0         21.0         1           0         600         29.70         29.10         1           0.07         604.3         020         1         1           0.07         0.07         20.10         1         1           0.07         0.07         20.10         1         1         1           0.07         0.07         0.02         0.02         0.02         1         1         1           1.08         0.51         0.24         0         0.1         1         0         1         0         1	3.0 3.0	3.0	
270 2710 1. 0.07 2.470 2.710 1. 0.08 0.51 0.24 0. 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00		0.0	
0.07 0.07 0.08 0.51 1.8 1.00 1.00 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0		10/	
0.08 0.51 0.24 0 0.08 0.51 0.24 0 1.00 1.00 1.00 1 0.3 0.6 0.2	0.06	0.00	
1.8 2.9 2.1 1.00 1.00 1.00 1 0.3 0.6 0.2	0.08 0.47	0.02	
1.00 1.00 1.00 1.00 1 d2 0.3 0.6 0.2		60.7	
0.3 0.6 0.2		1.00	
	0.1 3.0	0.1	
2.1 3.6 2.3	1.9 65.7	60.8	
A		ш	
/ (s) 3.5 2.	63.7		
Approach LOS A A	ш		
Intersection Summary			
	HCM 20001	HCM 2000 Level of Service	A
bacity ratio			
	Sum of lost time (s)	time (s)	12.0
Utilization 52.0	ICU Level of Service	of Service	Α
Analysis Period (min) 15			

~ HCM Unsignalized Intersection Capacity Analysis 16: Mississauga Rd & Lake St 4

Existing Conditions AM Peak

	1	t	Ļ	~	۶	•	
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		ţ	\$		۶		
Traffic Volume (veh/h)	35	<u>م</u>	ഹ	2	10	25	
Future Volume (Veh/h)	35	£	£	2	10	25	
Sign Control		Stop	Stop		Free		
Grade		%0	%0		%0		
Peak Hour Factor	0.66	0.66	0.66	0.66	0.66	0.66	
Hourly flow rate (vph)	53	œ	œ	8	15	38	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type					None		
Median storage veh)							
Upstream signal (m)					360		
pX, platoon unblocked							
vC, conflicting volume	61	49	89	0	0		
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	61	49	68	0	0		
tC, single (s)	7.6	6.5	6.5	6.4	4.5		
tC, 2 stage (s)							
tF (s)	4.0	4.0	4.0	3.5	2.5		
p0 queue free %	93	66	66	66	66		
cM capacity (veh/h)	809	837	818	1043	1416		
Direction, Lane #	EB 1	WB 1	SB 1				
Volume Total	61	16	53				
Volume Left	53	0	15				
Volume Right	0	œ	38				
cSH	813	917	1416				
Volume to Capacity	0.08	0.02	0.01				
Cueue Lengin 95in (m)	<u>.</u> .	0.4	0.3				
Control Delay (s)	9.6	0. <u>v</u>	7.7				
Lane LOS	A o	A o	A o				
Approach Delay (s)	9.8	9.0	2.2				
Approach LOS	A	A					
Intersection Summary							
Average Delay			9.9				
Intersection Capacity Utilization	tion		18.9%	<u>כ</u>	J Level o	ICU Level of Service A	
Analysis Period (min)			2				

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Synchro 9 Report Page 1

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	1	t	ŧ	~	۶	•	
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	۴	ŧ	ŧ	*	٣	×	
Traffic Volume (vph)	100	1070	1255	205	185	120	
Future Volume (vph)	100	1070	1255	205	185	120	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900 3 F	
Total Lact time (c)	3.5 C.5	3.1	3.1	3.5 0.4	3.5	3.5 4 0	
Lotat Lust unite (s)	0.0	0.05	0.05	1 00	1 00	1.00	
Emb ned/hikes	9.1	1 00	1 00	0.98	1 00	1 00	
Flab. ped/bikes	1.00	1 00	1 00	1 00	1 00	1.00	
Frt	1.00	1.00	1.00	0.85	1.00	0.85	
Fit Protected	0.95	1.00	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1784	3550	3614	1532	1785	1597	
Flt Permitted	0.18	1.00	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	342	3550	3614	1532	1785	1597	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	
Adj. Flow (vph)	102	1092	1281	209	189	122	
RTOR Reduction (vph)	0	0	0	34	0	53	
Lane Group Flow (vph)	102	1092	1281	175	189	69	
Confl. Peds. (#/hr)	9			9		8	
Heavy Vehicles (%)	%0	2%	1%	%0	%0	%0	
Bus Blockages (#/hr)	0	4	0	4	0	0	
Turn Type	Perm	NA	NA	Perm	Prot	Prot	
Protected Phases		4	∞			-	
Permitted Phases	4			00			
Actuated Green, G (s)	70.1	70.1	70.1	70.1	15.9	15.9	
Effective Green, g (s)	71.1	71.1	71.1	71.1	16.9	16.9	
Actuated g/C Ratio	0.71	0.71	0.71	0.71	0.17	0.17	
Clearance lime (s)	0.7	0.7	0.7	0.7	0.7	0.7	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	243	2524	2569	1089	301	269	
V/S Ratio Prot	000	0.31	c0.35	110	c0.11	0.04	
W5 Ratio	00.00	0.43	0 50	0.16	0.63	0.36	
Iniform Delay d1	90.9	0.9	9.50	47	38.6	361	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	5.3	0.5	0.7	0.3	4.1	0.5	
Delay (s)	11.2	6.6	7.2	5.0	42.7	36.6	
Level of Service	8	A	A	A	۵	D	
Approach Delay (s)		7.0	6.9		40.3		
Approach LOS		A	A		D		
Intersection Summary							
HCM 2000 Control Delay			10.4	H	IM 2000 I	HCM 2000 Level of Service	в
HCM 2000 Volume to Capacity ratio	city ratio		0.52				
Actuated Cycle Length (s)			100.0	Su	m of lost	Sum of lost time (s)	12.0
Intersection Capacity Utilization	tion		83.5%		J Level o	f Service	ш
Analysis Period (min)			c I				
c Critical Lane Group							

HCM Unsignalized Intersection Capacity Analysis 24: Mississauga Rd & Port St W	nterse & Port	ction ( t St W	Capaci	ty Ana	lysis		Existing Conditions AM Peak
	5	~	-	٠	۶	<b>→</b>	
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	×		¢			÷	
Traffic Volume (veh/h)	0	50	45	2	45	40	
Future Volume (Veh/h)	0	50	45	2	45	40	
Sign Control	Stop		Free			Free	
Grade	%0		%0			%0	
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	
Hourly flow rate (vph)	0	68	62	7	62	55	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type			None			None	
Median storage veh)							
Upstream signal (m)						135	
pX, platoon unblocked							
vC, conflicting volume	244	99			69		
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	244	99			69		
tC, single (s)	6.4	6.3			4.2		
tC, 2 stage (s)							
tF (s)	3.5	3.4			2.3		
p0 queue free %	100	93			96		
cM capacity (veh/h)	717	976			1501		
Direction, Lane #	WB 1	NB 1	SB 1				
Volume Total	68	69	117				
Volume Left	0	0	62				
Volume Right	68	7	0				
cSH	976	1700	1501				
Volume to Capacity	0.07	0.04	0.04				
Queue Length 95th (m)	1.8	0.0	1.0				
Control Delay (s)	9.0	0.0	4.1				
Lane LOS	A		A				
Approach Delay (s)	9.0	0.0	4.1				
Approach LOS	A						
Intersection Summary							
Average Delav			4.3				
Intersection Capacity Utilization	u		21.3%		ICU Level of Service		A
Analysis Period (min)			15				

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Moment         EII         WBT         MBR         SIL         SIR           Lane Configurations         10         5         0         5         0         25           Tutue Volume (Vehh)         10         5         0         5         0         25           Sign Control         Sign Control         Sign Control         0%         0%         0%         25           Sign Control         065	16: Mississauga Rd & Lake St	Ţ				/ 12/201/	
EBI         EBI         VBI         Stop         5 </th <th>т ~</th> <th>*</th> <th>ı.</th> <th>~</th> <th>۶</th> <th>*</th> <th></th>	т ~	*	ı.	~	۶	*	
10     5     0     5       10     5     0     5       10     5     0     5       15     8     0     8       15     8     0     8       15     8     0     8       27     19     38     0       21     19     38     0       71     6.5     6.2     6.2       71     6.5     6.3     0       71     6.5     6.2     03       71     6.5     6.2     03       931     879     103     138       931     197     1636     03       933     193     1638     103       93     193     1638     103       93     193     1633     1636       8.9     8.3     0.0     8       8.9     8.3     0.0     0       8.9     8.3     0.0     1636       8.9     8.3     0.0     0.0       8.9     8.3     0.0     1.5%				WBR	SBL	SBR	
10         5         0         5           10         5         0         5           0.65         0.65         0.65         0.65           0%         0%         0%         0%           15         8         0         8         0         8           15         8         0.65         0.65         0.65         0.65           27         19         38         0         33         33           35         4.0         4.0         33         33           35         4.0         4.0         33         33           981         879         858         1091         34           1691         1635         6.2         6.2         6.2           61         8.9         0.0         33         33           943         1091         1636         0.0         34           163         8.3         0.0         8         6           8.9         8.3         0.0         8         6           8.9         8.3         0.0         8         6           8.9         8.3         0.0         3         3	•	÷z	¢.		×		1
10     5     0     5       15     0.65     0.65     0.65       0%     0%     0%       0%     0%     0%       15     0     6       27     19     38     0       7.1     6.5     6.5     6.2       7.1     6.5     6.5     6.2       981     879     858     1091       981     879     858     1091       15     0     0     0       15     0     1638     9.3       16     1091     1636       943     1091     1636       8.9     8.3     0.0       8.9     8.3     0.0       8.9     8.3     0.0       8.9     8.3     0.0       8.9     8.3     0.0       8.9     8.3     0.0       8.9     8.3     0.0       8.9     8.3     0.0       8.9     8.3     0.0       8.9     3.9     0.0       8.9     3.9     0.0       8.9     3.9     0.0       9.3     3.9     0.0	10	5	0	2	0	25	
Stop Stop Stop 0.65 0.65 0.65 0.65 0.65 0.65 0.65 0.65	10		0	5	0	25	
0% 0% 0% 0% 15 15 8 0 8 27 19 38 0 8 7.1 6.5 6.2 7.1 6.5 6.2 7.1 6.5 6.2 7.1 6.5 6.2 7.1 8.1 33 93 109 15 8 109 91 33 92 109 15 8 109 93 8 109 94 0 3 15 8 109 93 8 109 94 0 3 8.9 8.3 0.0 A A A 8.9 8.3 0.0 A A A 8.9 8.3 0.0 A A A 175%	Sto		do		Free		
0.65 0.65 0.65 0.65 0.65 0.65 0.65 0.65	50		%(		%0		
15     8     0     8       27     19     38     0       27     19     38     0       27     19     38     0       35     4.0     4.0     33       981     879     958     1091       981     879     858     1091       983     1091     1636     9       913     1091     1636     0       93     98.3     0.0     8       94.3     1091     1636     1091       8.9     8.3     0.0     8       8.9     8.3     0.0     3       8.9     8.3     0.0     3       8.9     8.3     0.0     3       8.9     8.3     0.0     3       8.9     8.3     0.0     3       8.9     8.3     0.0     3       8.9     8.3     0.0     3       8.9     8.3     0.0     3       8.9     8.3     0.0     3       11     15.5%     5.5     5.5			65	0.65	0.65	0.65	
27 19 38 0 27 19 38 0 7.1 6.5 6.2 7.1 6.5 6.2 35 4.0 4.0 33 981 879 88 1091 981 879 88 1091 91 165 0 15 0 0 15 0 0 8.9 8.3 0.0 8.9 8.3 0.0 8.0 8.3 0.0 8.9 8.3 0.0 8.0 0.000000000	15		0	œ	0	38	
27 19 38 0 27 19 38 0 7.1 6.5 6.5 6.2 3.5 4.0 4.0 33 98 99 100 99 98 99 100 99 98 99 100 99 98 3 38 1091 1636 943 1091 1636 943 1091 1636 943 1091 1636 943 1091 1636 8 8 3 0.0 A A A A A A A A A A A A A A A							
27 19 38 0 27 19 38 0 7.1 6.5 6.5 6.2 3.5 4.0 4.0 3.3 9.8 9,9 100 9,9 9.8 9,100 9,3 9.8 9,100 9,3 9.8 9,100 9,3 9.8 9,100 9,3 9.1 1636 9.4 1091 1636 9.4 1091 1636 9.4 A A 8.9 8.3 0.0 A A A 8.9 8.3 0.0 A A A 17.5% 17.5%							
27 19 38 0 27 19 38 0 7.1 6.5 6.5 6.2 35 4.0 4.0 33 981 879 858 1091 981 879 858 1091 981 879 858 1091 981 879 858 1091 983 993 1091 1636 943 1091 1636 943 1091 1636 8.9 8.3 0.0 8.9 8.3 0.0 8.0 8.3 0.000000000000000000000000000000							
27 19 38 0 27 19 38 0 7.1 6.5 6.2 7.1 6.5 6.2 3.5 4.0 4.0 33 981 879 88 1091 981 879 88 1091 981 879 88 1091 91 168 10 15 8 3 93 00 8.9 8.3 0.0 8.9 8.3 0.0 8.9 8.3 0.0 8.9 8.3 0.0 8.9 8.3 0.0 17.5%							
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27 19 38 0 7.1 6.5 6.5 6.2 7.1 6.5 6.5 6.2 3.5 4.0 4.0 3.3 9.8 9.1 00 9.3 9.8 9.1 00 9.3 9.8 9.1 100 9.3 15 0 0 15 0 0 15 0 0 16 0.2 0.0 8.9 8.3 0.0 8.0 8.0 0.0 8.0 8.0 0.0 8.0 8.0 0.0 8.0 8.0 0.0 8.0 8.0 0.0 8.0 0.0000000000					None		
27 19 38 0 27 19 38 0 7.1 16.5 6.5 6.2 3.5 4.0 4.0 33 981 879 88 1091 981 879 88 1091 981 879 88 1091 15 0 0 15 0 0 15 0 0 8.9 8.3 0.0 8.9 8.3 0.0 8.0 8.0 0.0 8.0 8.0 0.0 8.0 0.00000							
27 19 38 0 27 19 38 0 7.1 6.5 6.2 7.1 6.5 6.2 3.5 4.0 3.3 9.8 1091 9.8 1091 15 8 1091 15 8 1091 15 8 38 109 1636 0 0 2 0.0 8.9 8.3 0.0 A A A 8.9 8.3 0.0 A A A 17.5% 17.5% 17.5%					376		
27 19 38 0 27 19 38 0 7.1 6.5 6.5 6.2 3.5 4.0 4.0 33 98 99 100 99 981 879 858 1091 983 1091 1636 943 1091 158 943 1091 158 944 158 945 158 946 158 947 158 948 158							
27 19 38 0 7.1 6.5 6.5 6.2 3.5 4.0 3.3 9.8 9.9 100 3.3 9.81 879 858 1091 15 0 0 15 0 0 15 0 0 15 0 0 8.9 8.3 0.0 8.9 8.3 0.0 8.9 8.3 0.0 8.9 8.3 0.0 8.9 8.3 0.0 8.9 8.3 0.0 110112ation 715%	27	6	38	0	0		
27 19 38 0 7,1 6.5 6.5 6.2 35 4.0 4.0 33 98 99 100 99 981 879 88 1091 981 879 88 1091 15 0 0 15 0 0 15 0 0 15 0 0 15 0 0 15 0 0 13 38 943 1091 1336 943 1091 1000 0,02 0,01 0,00 8,9 8,3 0,0 8,9 8,3 0,0 8,9 8,3 0,0 8,9 8,3 0,0 8,9 8,3 0,0 8,9 8,3 0,0 110112alton 7 3,9 110112alton 117245 110112alton 117245 110112alton 117245 110112alton 117245 110112alton 1111112alton 111112alton 1111112alton 1111112alton 1111112alton 1111112alton 1111112alton 1111112alton 1111112alton 1111112alton 1111112alton 1111112alton 1111112alton 11111112alton 11111112alton 11111112alton 1111111112alton 11111112alton 11111112alton 1111111112alton 1111111111112alton 111111111111111111111111111111111111							
27 19 38 0 7,1 6,5 6,5 6,5 6,2 98 99 100 99 981 879 858 1091 981 879 858 1091 981 879 858 1091 981 879 858 1091 933 1091 1636 943 1091 1636 943 1091 1636 0 0 0 0 0 (m) 0.6 0.2 0.0 8,9 8,3 0.0 8,9 8,3 0.0 8,9 8,3 0.0 17,5% A A A 17,5%							
7.1         6.5         6.5         6.2           3.5         4.0         4.0         3.3           98         99         100         99           981         879         858         1091           981         879         858         1091           101         88         101         99           115         0         0         0           105         0.1         1636         0           105         0.1         1636         0           108         8.3         0.0         0           109         0.2         0.0         0.0         0           8.9         8.3         0.0         0         0           8.9         8.3         0.0         1.1636         0           101         8.9         8.3         0.0         0           109         8.3         0.0         1.4         3.9           109         8.3         0.0         1.4         3.9			8	0	0		
35 4.0 4.0 3.3 98 99 100 99 981 879 858 1091 EB1 WB1 SB1 23 8 38 23 8 38 943 1091 1636 943 1091 1636 (m) 0.6 0.2 0.0 8.9 8.3 0.0 8.9 8.3 0.0 8.9 8.3 0.0 8.9 8.3 0.0 175%			5.5	6.2	4.1		
35 4.0 4.0 33 99 100 99 981 879 88 109 15 88 109 15 8 38 101 15 8 38 943 109 168 0 0 10 0.6 0.2 0.0 8.9 8.3 0.0 8.9 8.3 0.0 8.9 8.3 0.0 8.9 8.3 0.0 8.9 8.3 0.0 10 17 17 17 17 17 17 17 17 17 17 17 17 17							
98 99 100 99 981 879 858 1091 EB1 WB1 5B1 23 8 38 943 1091 1636 943 1091 1636 943 1091 1636 002 0.01 0.00 (m) 0.6 0.2 0.0 89 8.3 0.0 A A A A A IN 175% VHIIIzation 175%			0.4	3.3	2.2		
981 879 858 1091 EB1 WB1 SB1 23 8 38 15 0 8 38 943 1091 1636 002 001 0.00 (m) 0.6 0.2 0.0 8,9 8,3 0.0 A A A IT 3,9 VUIIIzation 175%					100		
EB1 WB1 SB1 23 B 38 15 8 38 943 1091 1636 (m) 0.02 0.01 0.00 (m) 8,9 8,3 0.0 A A A B,9 8,3 0.0 A A A ity 3,9 17,5%					1636		
23 8 38 15 0 0 0 8 38 943 1091 1636 (m) 0.6 0.2 0.0 8.9 8.3 0.0 8.9 8.3 0.0 8.9 8.3 0.0 10 17 17.5%			31				
15 0 0 0 8 38 943 1091 1686 (m) 0.6 0.2 0.0 8.9 8.3 0.0 A A A 0.0 8.9 8.3 0.0 A A A 175%		~	38				
0 8 38 943 1091 1636 (m) 0.6 0.1 0.00 (m) 0.6 0.2 0.01 8.9 8.3 0.0 A A A 10 8.9 8.3 0.0 A A A 17 175%			0				
943 1091 1636 (m) 0.2 0.01 0.00 (m) 0.6 0.2 0.0 A A A B 9 8.3 0.0 A A A 3.9 Multilization 175%			38				
(m) 0.02 0.01 0.00 (m) 0.6 0.2 0.0 A A A 8.9 8.3 0.0 A A A 3.9 3.9 (Multization 17.5%			36				
(m) 0.6 0.2 0.0 A A A 0.0 B A A 0.0 B A A 0.0 A A 3 0.0 A 3.9 CHITIZENION 175%	0.02		8				
8.9 8.3 0.0 A A 8.9 8.3 0.0 A A A 3.9 ITY 3.9 3.9 175%	0.6		0.0				
A A 8.9 8.3 0.0 A A 3.9 17 3.9 175%			0.0				
8.9 8.3 0.0 A A A ary 3.9 3.9 17.5%							
A A mmary 3.9 Dacity Utilitzation 17.5%			0.0				
3.9 17.5%		A					
3.9 17.5%	1						
17.5%		.,	3.9				
	Utilization	17.5	%	ICU	Level of	Service A	
Analysis Period (min) 15			15				

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	\$	~	-	•	۶	<b>→</b>	
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	×		£,			ţ	
Traffic Volume (veh/h)	2	45	25	0	65	30	
Future Volume (Veh/h)	2	45	25	0	65	30	
Sign Control	Stop		Free			Free	
Grade	%0		%0			%0	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	
Hourly flow rate (vph)	2	49	27	0	71	33	
Pedestrians	2						
Lane Width (m)	3.7						
Walking Speed (m/s)	1.2						
Percent Blockage	0						
Right turn flare (veh)							
Median type			None			None	
Median storage veh)							
Upstream signal (m)						135	
pX, platoon unblocked							
vC, conflicting volume	204	29			29		
vC1, stage 1 conf vol							
VC2, stage 2 conf vol							
vCu, unblocked vol	204	29			29		
iC, single (s)	6.4	6.2			4.1		
iC, 2 stage (s)							
iF (s)	3.5	3.3			2.2		
p0 queue free %	66	95			96		
cM capacity (veh/h)	753	1044			1595		
Direction, Lane #	WB 1	NB 1	SB 1				
Volume Total	54	27	104				
Volume Left	2	0	71				
Volume Right	49	0	0				
cSH	1008	1700	1595				
Volume to Capacity	0.05	0.02	0.04				
Queue Length 95th (m)	1.4	0.0	1.1				
Control Delay (s)	8.8	0.0	5.1				
Lane LOS	A		A				
Approach Delay (s)	8.8	0.0	5.1				
Approach LOS	A						
Intersection Summary							
Average Delay			5.4				
Intersection Capacity Utilization	tion		21.8%	5 D	J Level o	ICU Level of Service A	

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Existing Conditions 08/09/2017 PM Peak LJR

Synchro 9 Report Page 1

Existing Conditions 08/09/2017 PM Peak LJR

HCM Signalized Intersection Capacity Analysis 46: Lakeshore Rd W & Loblaws Access	sectiol & Lobl	n Cap; aws A	acity A ccess	nalysis			08/21/2017	
	1	t	ŧ	~	۶	•		
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations	F	44	ŧ	×.	F	*-		
Traffic Volume (vph)	45	1470	770	105	50	35		
Future Volume (vph)	45	1470	770	105	20	35		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Lane Width	3.5	3.7	3.7	3.5	3.5	3.5		
Total Lost time (s)	6.0	6.0	6.0	0.9	6.0	6.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00		
Frt	1.00	1.00	1.00	0.85	1.00	0.85		
Fit Protected	0.95	1.00	1.00	1.00	0.95	1.00		
Satd. Flow (prot)	1750	3515	3444	1532	1684	1551		
Flt Permitted	0.33	1.00	1.00	1.00	0.95	1.00		
Satd. Flow (perm)	609	3515	3444	1532	1684	1551		
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91		
Adj. Flow (vph)	49	1615	846	115	22	38 1		
	- ç	1,17		0	- F			
Lane Group Flow (vpn)	49	41.91	840	001	22 22	30		
Heavy venicles (%)	°%7	3%	9%0	3%	0%0	3%		
ages (#/hr)	0	4	0	~	0	0		
	Perm	ΝA	NA	Perm	Prot	Prot		
Protected Phases		4	œ		<del>,</del>	-		
	4			~				
	117.3	117.3	117.3	117.3	8.7	8.7		
2)	118.3	118.3	118.3	118.3	1.6	9.7 2.22		
	0.84	0.84	0.84	0.84	0.07	0.07		
Clearance Lime (s)	0.7	0.7	0.7	0./	0.7	0.7		
	3.0	3.0	3.0	3.0	3.0	0.0		
Lane Grp Cap (vph)	514	2970	2910	1294	116	10/		
V/S Kallo Prot	00 0	CU.40	CZ-U	F0 0	c0.03	0.00		
V/S Katio Perm	0.08	I L		0.07		500		
V/C Kallo	0.10	+C.U	67.0	0.08	0.47	0.02		
Uniorm Delay, u I Dronression Factor	1 00	 1 00	7.7	1 00	1.20	00.7 1 DD		
Incremental Delay d2	0.4	20.1	00. 0	0.10	00°	01		
Delav (s)	2.2	3.8	2.5	1.9	65.7	60.8		
Level of Service	A	A	A	A	ц.	2 LL		
Approach Delav (s)		3.8	2.4	:	63.7	1		
Approach LOS		A	A		ш			
Intersection Summary								
HCM 2000 Control Delav			5.4	HC	M 2000 I	HCM 2000 Level of Service A		
HCM 2000 Volume to Capacity ratio	ratio		0.54					
Actuated Cycle Length (s)			140.0	Sur	Sum of lost time (s)	ime (s) 12.0		
Intersection Capacity Utilization			54.8%	ICL	ICU Level of Service	Service A		
Analysis Period (min)			15					
c Critical Lane Group								

HCM Unsignalized Intersection Capacity Analysis 16: Mississauga Rd & Lake St

	1	t	ŧ	~	۶	•	
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		÷	\$		۶		
Traffic Volume (veh/h)	35	2	2	5	9	25	
Future Volume (Veh/h)	35	2	5	5	10	25	
Sign Control		Stop	Stop		Free		
Grade		%0	%0		%0		
Peak Hour Factor	0.66	0.66	0.66	0.66	0.66	0.66	
Hourly flow rate (vph)	53	80	80	œ	15	38	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type					None		
Median storage veh)							
Upstream signal (m)					360		
pX, platoon unblocked							
vC, conflicting volume	61	49	68	0	0		
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	61	49	68	0	0		
tC, single (s)	7.6	6.5	6.5	6.4	4.5		
tC, 2 stage (s)							
tF (s)	4.0	4.0	4.0	3.5	2.5		
p0 queue free %	93	66	66	66	66		
cM capacity (veh/h)	809	837	818	1043	1416		
Direction, Lane #	EB 1	WB 1	SB 1				
Volume Total	61	16	53				
Volume Left	23	0	15				
Volume Right	0	œ	38				
cSH	813	917	1416				
Volume to Capacity	0.08	0.02	0.01				
Queue Length 95th (m)	1.9	0.4	0.3				
Control Delay (s)	9.8	9.0	2.2				
Lane LOS	A	A	A				
Approach Delay (s)	9.8	9.0	2.2				
Approach LOS	A	A					
Intersection Summary							
Average Delay			6.6				
Intersection Capacity Utilization	ation		18.9%	<u>⊇</u>	U Level o	ICU Level of Service	A

Future Background 08/09/2017 AM Peak LJR

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Future Background 08/09/2017 AM Peak LJR

NBR SBL SBT 5 45 40 5 45 40 60% 0.73 0.73 0.73 0.73 0.73 0.73 0.73 135 135 69 69 69 23				
45 45 073 62 69 69 4.2 23		† \	√  ↓	۲ ب
45 073 62 69 69 4.2 2.3	Movement	EBL EBT V	WBT WBR	SBL SBR
073 62 69 69 4.2 2.3	Lane Configurations	ŧ		L
Z	Traffic Volume (vph)	1220	1350 205	185 120
62 69 69 23 23	Future Volume (vph)		1350 205	185 120 1000 1000
	lean Flow (vprip)	1900		
	Totall ost time (s)			
	Lane Util. Factor	0.95	-	-
	Frpb, ped/bikes		1.00 0.98	
	Flpb, ped/bikes	1.00		
	TT.	1.00		-
	Flt Protected	1.00		
	Satd. Flow (prot)	3550	-	
69 69 4.2 2.3	Fit Permitted	1.00		
69 69 4.2 3.3	Satd. Flow (perm)	3550		
69 4.2 2.3	Peak-hour factor, PHF	0.98 0.98	0.98 0.98	0.98 0.98
69 4.2 2.3	Adi. Flow (vph)	1245		
69 4.2 2.3	RTOR Reduction (vph)	0	0 32	0 42
4.2 2.3	Lane Group Flow (vph)	102 1245 1	1378 177	189 80
2.3	Confl. Peds. (#/hr)			
	Heavy Vehicles (%)	5	1% 0%	õ
0.1	Bus Blockages (#/nr)			
1501	Turn Type Drotortad Dhases	Perm NA	NA Perm 8	Prot Prot
	Dermitted Phases	4	~	-
	Actuated Green. G (s)	70.1 70.1	70.1 70.1	15.9 15.9
	Effective Green a (s)	71 1		
	Actuated n/C Ratio	0.71	0.71 0.71	
	Clearance Time (s)	7.0		7.0 7.0
	Vehicle Extension (s)	3.0 3.0	3.0 3.0	
	Lane Grp Cap (vph)	211 2524 2	2569 1089	301 269
	v/s Ratio Prot	0.35		c0.11 0.05
	v/s Ratio Perm			
	v/c Ratio		Č	
	Uniform Delay, d1			
	Progression Factor	Ì	`	
	Incremental Delay, d2		0.8 0.3	4.1 0.6
	Delay (s)	14.1 7.1	2	
ICU Level of Service A		A L	A A	
	Approach Delay (s) Ammach LOS	1.1 A	7.7 V	40.4 D
		c	¢	2
	Intersection Summary			
	HCM 2000 Control Delay		10.6 HC	HCM 2000 Level of Service
	HCM ZUUU VOIUME TO CAPACITY FAILO			100 - 51 11 100 - 12 V
	Aurated Uyure Lengin (>) Interention Connectual Hillisation		02 602 101	Sulli UI IOSI IIITIE (S) ICTEE aval of Somico
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Future Background 08/09/2017 PM Peak

Future Background 08/09/2017 AM Peak LJR

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Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	۴	ŧ	ŧ	*-	۴	×	
Traffic Volume (vph)	100	1220	1350	205	185	120	
Future Volume (vph)	100	1220	1350	205	185	120	
Ideal Flow (vpnpi)	0061	0061	0061	1900	1900	1900 3 E	
Total Lost time (c)	0.0	9.1	9.7 9.0	0.0 V	0.0 V	0.0 V (	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	1.00	0.85	1.00	0.85	
Fit Protected	0.95	1.00	1.00	1.00	0.95	1.00	
Sata. Flow (prot)	1/84	1000	3014	1000	1/85	1 00	
Fit Petititteu Satd Flow (norm)	01.U	3550	3614	1532	1785	1507	
Peak-hnir factor PHF	0.98	0.08	0 98	0 98	0 98	0.98	
Adi. Flow (vph)	102	1245	1378	209	189	122	
RTOR Reduction (vph)	0	0	0	32	0	42	
Lane Group Flow (vph)	102	1245	1378	177	189	80	
Confl. Peds. (#/hr)	9			9		80	
Heavy Vehicles (%)	%0	2%	1%	%0	%0	0%	
Bus Blockages (#/hr)	0	4	0	4	0	0	
Turn Type	Perm	NA	ΝA	Perm	Prot	Prot	
Protected Phases		4	œ	¢	-	-	
Permitted Phases	4 4	7 0 1	4 0 1	7 00	C L	11.0	
Actuated Green, G (S) Effortive Croon G (S)	1.0/	1.0/	1.0/	1.0/	6.61	12.0	
	1.17	1.1/	1.1/	1.1/	7 1 0.4	10.7	
Autuateu y/C Ratio Clearance Time (s)	1/.0	7.0	7 0	7 0	71.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	211	2524	2569	1089	301	269	
v/s Ratio Prot		0.35	c0.38		c0.11	0.05	
v/s Ratio Perm	0.34			0.12			
v/c Ratio	0.48	0.49	0.54	0.16	0.63	0.30	
Uniform Delay, d1	6.4	6.4	6.8	4.7	38.6	36.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.1	0.7	0.8	0.3	4.1	0.6	
Delay (S)	- 14 - 1	- · /	0.1	0.0	47.1	3/.U	
Level ul Selvice Approach Delav (s)	۵	A.T.T	A 7.2	A	40.4	D	
Approach LOS		A	A		۵		
Intersection Summary							
HCM 2000 Control Delav			10.6	Ξ	M 2000 I	HCM 2000 Level of Service	В
HCM 2000 Volume to Capacity ratio	ity ratio		0.55				
Actuated Cycle Length (s)			100.0	Su	Sum of lost time (s)	time (s)	12.0
Intersection Capacity Utilization	uo		83.5%		ICU Level of Service	f Service	ш

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	1	Ť	ŧ	~	۶	ŕ	
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		ţ	ۍ		×		
Traffic Volume (veh/h)	10	Ω.	0	2	0	25	
Future Volume (Veh/h)	10	£	0	£	0	25	
Sign Control		Stop	Stop		Free		
Grade		%0	%0		%0		
Peak Hour Factor	0.65	0.65	0.65	0.65	0.65	0.65	
Hourly flow rate (vph)	15	∞	0	∞	0	38	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type					None		
Median storage veh)							
Upstream signal (m)					376		
pX, platoon unblocked							
vC, conflicting volume	27	19	89	0	0		
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	27	19	89	0	0		
tC, single (s)	7.1	6.5	6.5	6.2	4.1		
tC, 2 stage (s)							
tF (s)	3.5	4.0	4.0	3.3	2.2		
p0 queue free %	98	66	100	66	100		
cM capacity (veh/h)	981	879	858	1091	1636		
Direction, Lane #	EB 1	WB 1	SB 1				
Volume Total	23	œ	38				
Volume Left	15	0	0				
Volume Right	0	œ	38				
cSH	943	1091	1636				
Volume to Capacity	0.02	0.01	0.00				
Queue Length 95th (m)	0.6	0.2	0.0				
Control Delay (s)	8.9	8.3	0.0				
Lane LOS	A	A					
Approach Delay (s)	8.9	8.3	0.0				
Approach LOS	A	A					
Intersection Summary							
Average Delav			3.9				
Intersection Capacity Utilization	ation		17 E0/	2	11 0100	ICITI outed of Service	
in a friendlage reasonance			0/ 07/	2	EVEL C		ſ

HCM Unsignalized Intersection Capacity Analysis	
HCM Un:	24. IVI001

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Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	7		÷			ţ	
Traffic Volume (veh/h)	2	45	25	0	65	30	
Future Volume (Veh/h)	2	45	25	0	65	30	
Sign Control	Stop		Free			Free	
Grade	%0		%0			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	
Hourly flow rate (vph)	5	49	27	0	71	33	
Pedestrians	2						
Lane Width (m)	3.7						
Walking Speed (m/s)	1.2						
Percent Blockage	0						
Right turn flare (veh)							
Median type			None			None	
Median storage veh)							
Upstream signal (m)						135	
pX, platoon unblocked							
vC, conflicting volume	204	29			29		
vC1, stage 1 conf vol							
VLZ, SIAGE Z CUTI VUI							
vCu, unblocked vol	204	29			57		
ic, single (s)	0.4	7.0			4.		
tC, 2 stage (s)	8	4			0		
tF (S)	3.5	3.3			7.7		
p0 queue free %	66	95			96		
cM capacity (veh/h)	753	1044			1595		
Direction, Lane #	WB 1	NB 1	SB 1				
Volume Total	54	27	104				
Volume Left	2	0	71				
Volume Right	49	0	0				
cSH	1008	1700	1595				
Volume to Capacity	0.05	0.02	0.04				
Queue Length 95th (m)	1.4	0.0	1.1				
Control Delay (s)	8.8	0.0	5.1				
Lane LOS	A		A				
Approach Delay (s)	8.8	0.0	5.1				
Approach LOS	A						
Intersection Summary							
Average Delav			5.4				
Intersection Capacity Utilization	ation		21 Q0/			ICIII aval of Sarvica	Δ
				1.1			

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Future Background 08/09/2017 PM Peak LJR

Synchro 9 Report Page 1

Future Background 08/09/2017 PM Peak

Montantine         Ex         Montantine         Ex         Montantine	TO: MACING M LODIANO MACOOO & LANCOIDI CINA M		C Lar								4 50	0.011100			5	Т
161         161 <th>`\</th> <th>۱ م</th> <th>·</th> <th>*</th> <th>Ť.</th> <th>∢</th> <th>•</th> <th>-</th> <th>۰.</th> <th>۶</th> <th>-</th> <th>•</th> <th></th> <th>1</th> <th>t</th> <th>1</th>	`\	۱ م	·	*	Ť.	∢	•	-	۰.	۶	-	•		1	t	1
						_		NBT	NBR	SBL	SBT	SBR	Movement	EBL	EBT	8
4         130         7         13         6         13         7         13 <td>Lane Configurations</td> <td>*</td> <td>÷</td> <td>×</td> <td>¥</td> <td>*</td> <td>۴</td> <td><del>د</del></td> <td></td> <td>۴</td> <td><del>م</del></td> <td></td> <td>Lane Configurations</td> <td></td> <td>¢</td> <td></td>	Lane Configurations	*	÷	×	¥	*	۴	<del>د</del>		۴	<del>م</del>		Lane Configurations		¢	
100         100 <td>Traffic Volume (vph)</td> <td>45 159</td> <td></td> <td>2 17</td> <td>6 840</td> <td></td> <td></td> <td>0</td> <td>202</td> <td>50</td> <td>0</td> <td>35</td> <td>Sign Control</td> <td></td> <td>Stop</td> <td></td>	Traffic Volume (vph)	45 159		2 17	6 840			0	202	50	0	35	Sign Control		Stop	
130         131         130         131         130         131         130         131         130         131         130         131         130         131 <td>(hc</td> <td>-</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>0</td> <td>202</td> <td>50</td> <td>0</td> <td>35</td> <td>Traffic Volume (vph)</td> <td>158</td> <td>78</td> <td></td>	(hc	-						0	202	50	0	35	Traffic Volume (vph)	158	78	
3         3	10						÷	1900	1900	1900	1900	1900	Future Volume (vph)	158	78	
10         0								3.7	3.7	3.5	3.7	3.5	Peak Hour Factor	0.92	0.92	ö
10         0         100								6.0		6.0	6.0		Hourly flow rate (vph)	172	85	
10         10<		0						1.00		1.00	1.00		Diraction   and #	CD 1	1 U/U	N
050         100         050         100         050         100         050         100         050         100         050         100         050         100         050         100         050         100         050         100         050         100         050         051         050         051         050         051         050         051         050         051 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>0.85</td> <td></td> <td>1.00</td> <td>0.85</td> <td></td> <td></td> <td></td> <td></td> <td>Z</td>								0.85		1.00	0.85					Z
130         134         132         134         132         134         132         134         135         135         134         135         134         135         134         135         134         135         134         135         134         135         135         135         136         134         135 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>1.00</td> <td></td> <td>0.95</td> <td>1.00</td> <td></td> <td></td> <td>107</td> <td>124</td> <td></td>								1.00		0.95	1.00			107	124	
031         100 <td>•</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>1601</td> <td></td> <td>1684</td> <td>1585</td> <td></td> <td>Volume Left (vpn)</td> <td>7/1</td> <td>~ ~</td> <td></td>	•							1601		1684	1585		Volume Left (vpn)	7/1	~ ~	
5/0         3:44         1:13         3:44         1:52         3:34         1:00         3:46         1:00         3:46         1:00         3:47         3:47         1:00								1.00		0.28	1.00		Volume Kight (vpn)	0	χ 2	4
01         01         02         02         03         02         03<								1601		496	1585		Hadj (s)	0.1/	0.02	э'
9         114         78         10         023         15         17         0         174         78         10         023         10         023         10         023         10         023         01         003         01          6         174         5         10         923         125         126         10         23         24         01         010	PHF (							0.92	0.92	0.91	0.92	0.91	Departure Headway (s)	5.0	5.1 2	ິ ເ
0         0         23         0         0         33         0         33         0         34         0 <td></td> <td>Ċ</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>0</td> <td>220</td> <td>55</td> <td>0</td> <td>38</td> <td>Degree Utilization, x</td> <td>0.30</td> <td>0.17</td> <td>- S</td>		Ċ						0	220	55	0	38	Degree Utilization, x	0.30	0.17	- S
9         141         55         191         232         63         23         64         13         108         11           26         36         26         56         36         26         5         5         0								179	0	0	33	0	Capacity (vervn)	0/0	604 0	ñ
2%         3%         2%         3%         3%         2%         3%<								41	C	55	LC.	0	Control Delay (s)	10.8	9.1	6
0         0         4         0	6.04	-						3%	2%	%9	2%	3%	Approach Delay (s)	10.8	9.1	0.
Perm         NA         Perm         Perm         NA         Perm         NA         Perm         Perm         NA         Perm         NA         Perm         Perm         NA         Perm         Per								0	0	0	0	0	Approach LOS	B	A	
Term         M         Fail			1			1	L	NN	,	, and	NIN	'n	Intersection Summary			
4         4         8         2         5         6         0           881         881         881         1074         1074         1074         1084         196         186 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>evi c</td><td></td><td></td><td>4</td><td></td><td></td><td></td><td></td><td>1</td></t<>								evi c			4					1
881         881         074         10	Protected Filases		Ŧ		2 0	0	ſ	7		4	D		Loud of Contino			2
861         861 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>101</td> <td></td> <td>0 ,</td> <td>101</td> <td></td> <td></td> <td></td> <td></td> <td>1</td>								101		0 ,	101					1
871     887     1084     1084     1084     1084     1046     1046     1046     1046       700     700     704     077     077     074     074     074     074       30     30     30     30     30     30     30     30     30     30       310     700     700     070     70     70     70     70     70     70       32     2255     980     228     2666     1186     188     284     69     221       0.09     0.04     0.45     2006     0.10     0.00     0.00     0.00     0.00       0.09     0.04     0.45     2006     0.10     100     100     100       0.09     0.04     0.45     0.05     0.16     0.10     100     100       0.09     0.04     0.45     0.06     0.10     100     100     100       0.09     0.04     0.45     0.04     0.14     0.14     0.14     0.14       0.09     0.04     0.45     0.06     0.10     100     100     000       0.09     0.01     0.01     0.01     0.01     0.01     000     000       0.08								18.0		18.0	18.0		Intersection Capacity Utilizatio	UOI		40.1
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	2)							19.6		19.6	19.6		Analysis Period (min)			
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$				-				0.14		0.14	0.14					
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$								7.0		7.0	7.0					
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$								3.0		3.0	3.0					
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$								224		69	221					
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$		-						0.03			0.00					
014 077 006 0.69 0.35 0.08 0.69 0.18 0.08 101 18.3 9.6 3.24 9.3 3.8 57.3 53.1 58.3 108 2.7 0.1 6.9 0.4 0.1 99 0.4 45.5 109 209 9.7 43.2 5.2 3.9 67.2 35.5 103.8 B C A D A E D F 202 11.0 A E D F 202 11.0 A E D F 202 11.0 Sun of lost time (s) 15.0 site (s) 15.0 site (s) 15.0										c0.11						
10.1         18.3         9.6         36.3         4.9         38         57.3         53.1         58.3           100         100         100         100         100         100         100         100           100         20.7         0.1         6.9         0.4         0.1         9.9         0.4         15.5           10.9         20.9         9.7         4.2         5.2         3.9         67.2         53.5         103.8           20.2         11.0         6.9         67.2         53.5         103.8         F           20.2         11.0         A         A         E         D         F         D           20.2         11.0         5.0         11.0         58.6         E         D         F           20.2         11.0         Scool Level of Service         E         D         E         C           20.1         140.0         Sum of lost time (s)         15.0         T         G         C           20.3         140.0         Sum of lost time (s)         15.0         F         C         C           20.1         140.0         Sum of lost time (s)         T         T         C <td></td> <td><u> </u></td> <td></td> <td></td> <td></td> <td>0</td> <td></td> <td>0.18</td> <td></td> <td>0.80</td> <td>0.02</td> <td></td> <td></td> <td></td> <td></td> <td></td>		<u> </u>				0		0.18		0.80	0.02					
1.00         1.00 <th< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>53.1</td><td></td><td>58.3</td><td>51.9</td><td></td><td></td><td></td><td></td><td></td></th<>								53.1		58.3	51.9					
08         27         01         69         0.4         01         99         0.4         45.5           109         209         9.7         3.2         5.2         3.9         67.2         53.5         103.8           8         20.2         11.0         5.3         9.7         3.5         56.6         7           20.2         11.0         5.8.6         58.6         58.6         58.6         58.6           20.2         11.0         58.6         59.0         50.0					,			1.00		1.00	1.00					
109         209         97         43.2         5.2         3.9         67.2         3.5.5         103.8           B         C         A         D         A         A         E         D         F           20.2         11.0         58.6         58.6         58.6         58.6         58.6           C         B         2         B         F         C         58.6         58.6           A         HOU 2000 Level of Service         B         C         C         20.2         20.4         10.0         50.0           apacity ratio         0.77         Sum of lost time (s)         1140.0         Sum of lost time (s)         15.0         15.0           (s)         140.0         Sum of lost time (s)         15.0         T         15.0         15.0           (s)         15.0         Sum of lost time (s)         15.0         T         15.0         15.0								0.4		45.5	0.0					
B         C         A         D         A         E         D         F           202         11.0         58.6         58.7         58.7         58.7         58.7         59.0         59.0         59.0         59.0         59.0         50.0<								53.5		103.8	52.0					
20.2         11.0         58.6           C         B         E           3y         22.4         HCM 2000 Level of Service         C           appecity ratio         0.77         Sum of lost time (s)         15.0           (s)         140.0         Sum of lost time (s)         15.0           112ation         81.7%         ICU Level of Service         E	Level of Service			A	√ 0		ш			ш	Ω					
C         B         E           ay         22.4         HCM 2000 Level of Service         C           capacity ratio         0.77         Under time (s)         15.0           (s)         140.0         Sum of lost time (s)         15.0           filization         87.%         ICU Level of Service         E	Approach Delay (s)	20	.2		11.0	_		58.6			82.6					
ay         22.4         HCM 2000 Level of Service           2apacity ratio         0.77         Sum of lost time (s)           (s)         1.40.0         Sum of lost time (s)           fillization         80.7%         ICU Level of Service	Approach LOS		c		ш			ш			ш					
yy         22.4         HCM 2000 Level of Service           "apacity ratio         0.77         Sum of lost time (s)           (s)         1.40.0         Sum of lost time (s)           Itilization         8.7%         ICU Level of Service           15         ICU Level of Service	Intersection Summary															
y 27.4 HUM 2000 LEVEL OF SERVICE appecily ratio 0.77 Sum of lost time (s) (s) 140.0 Sum of lost time (s) 11/2ation 85.7% ICU Level of Service 15			6									1				
.apacity ratio 0.77 (s) 140.0 Sum of lost time (s) tilization 88.7% ICU Level of Service 15	HCIM ZUUU CONITOI DEIAY		77	4,1	HCM Z0	JU LEVEI C	I Service		ر							
(s) 140.0 Sum of lost time (s) Iilitzation 88.7% ICU Level of Service 15	HCM 2000 Volume to Capacity rat	0	0.7													
tilization 88.7% 15	Actuated Cycle Length (s)		140.	0	Sum of Ic	ost time (s			15.0							
	Intersection Capacity Utilization		88.7	%	ICU Leve	el of Servic	Ge		ш							
c Critical Lane Group	Analysis Period (min)		<i>_</i>	Ð												
	c Critical Lane Group															

Future Total Existing Mode Split 08/09/2017 AM Peak LJR

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HCM Unsignalized Intersection Capacity Analysis

itom onsignanzed intersection capacity Anarysis 16: Mississauga Rd & Lake St	& Lake	e St	apacit		00						08/2	08/21/2017
	•	t	1	5	Ŧ	~	*	+	٠	۶	-	$\mathbf{\hat{v}}$
Aovement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
ane Configurations		¢			¢			¢			¢	
sign Control		Stop			Stop			Stop			Stop	
raffic Volume (vph)	158	78	0	2	66	2	0	35	2	10	25	174
uture Volume (vph)	158	78	0	2	66	2	0	35	2	10	25	174
eak Hour Factor	0.92	0.92	0.92	0.66	0.92	0.66	0.92	0.66	0.66	0.66	0.66	0.92
Hourly flow rate (vph)	172	85	0	80	108	8	0	53	8	15	38	189
birection, Lane #	EB 1	WB 1	NB 1	SB 1								
'olume Total (vph)	257	124	61	242								
'olume Left (vph)	172	œ	0	15								
olume Right (vph)	0	œ	∞	189								
ladj (s)	0.17	0.02	0.66	-0.33								
eparture Headway (s)	5.0	5.1	5.9	4.7								
begree Utilization, x	0.36	0.17	0.10	0.31								
apacity (veh/h)	676	654	555	718								
control Delay (s)	10.8	9.1	9.5	9.8								
vpproach Delay (s)	10.8	9.1	9.5	9.8								
vpproach LOS	8	A	A	A								
ntersection Summary												
Jelay			10.0									
evel of Service			в									
ntersection Capacity Utilization	c		45.5% 16	0	ICU Level of Service	f Service			A			
			2									

Future Total Existing Mode Split 08/09/2017 AM Peak

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HCM Unsignalized Intersection Capacity Analysis 24: Mississauga Rd & Port St W	Port	tion C St W	apacity	Analy	sis.						08/21	08/21/2017
,	•	Ť	1	\$	Ļ	~	4	-	۰.	۶	-	$\mathbf{F}$
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		¢			¢			¢			¢	
Traffic Volume (veh/h)	123	55	0	0	10	50	0	203	2	45	214	24
Future Volume (Veh/h)	123	55	0	0	10	50	0	203	2	45	214	24
Sign Control		Stop			Stop			Free			Free	
Grade		%0			%0			%0			%0	
Peak Hour Factor (	0.92	0.92	0.92	0.73	0.92	0.73	0.92	0.73	0.73	0.73	0.73	0.92
Hourly flow rate (vph)	134	09	0	0	11	68	0	278	7	62	293	26
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)											135	Ĺ
nX. platoon unblocked												
vC. conflicting volume	785	715	306	742	724	282	319			285		Ĺ
vC1 stane 1 conf vol												
vC2 starte 2 conf vol												l
	7.85	715	306	CPL	PCL	282	310			285		
tC sindle (s)	71	9.5	6.9	71	5.9	63	41			4.7		Ĺ
tC, 2 stane (s)	:	5	4		2	2	1			4		
tF (s)	3.5	4.0	3.3	3.5	4.0	3.4	22			2.3		Ĺ
p0 aueue free %	49	82	100	100	16	61	100			95		
cM capacity (veh/h)	264	339	734	278	334	739	1241			1249		Ľ
Direction. Lane #	EB 1	WB 1	NB 1	SB1								
Volume Total	194	6L	285	381								
Volume Left	134	0	0	62								
Volume Right	0	89	7	26								
	283	632	1241	1249								
	0.68	0.12	0.00	0.05								
ith (m)	36.9	3.4	0.0	1.3								
lay (s)	41.3	11.5	0.0	1.7								
Lane LOS	ш	8		A								
/ (S)	41.3	11.5	0.0	1.7								
Approach LOS	ш	8										
Intersection Summary												
Average Delay			10.2									
Intersection Capacity Utilization			52.6%	ICU	ICU Level of Service	Service			A			
Analysis Period (min)			15									

SBR		40	40			0.92	43	
SBL	Å	64	64	Stop	%0	0.92	70	
WBR		38	38			0.92	41	
WBT	¢	140	140	Free	%0	0.92	152	
EBT	ţ	52	52	Free	%0	0.92	57	
_		2	2			32	2	

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HCM Unsignalized Intersection Capacity Analysis 66: Lake St & Avenue A

Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		÷	¢		Þ		
Traffic Volume (veh/h)	2	52	140	38	64	40	
Future Volume (Veh/h)	ß	52	140	38	64	40	
Sign Control		Free	Free		Stop		
Grade		%0	%0		%0		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	പ	57	152	41	70	43	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		None	None				
Median storage veh)							
Upstream signal (m)							
pX, platoon unblocked							
vC, conflicting volume	193				240	172	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	193				240	172	
tC, single (s)	4.1				6.4	6.2	
tC, 2 stage (s)							
tF (s)	2.2				3.5	3.3	
	100				91	95	
cM capacity (veh/h)	1380				746	871	
Direction, Lane #	EB 1	WB 1	SB 1				
Volume Total	62	193	113				
Volume Left	2	0	70				
Volume Right	0	41	43				
CSH	1380	1700	789				
	0.00	0.11	0.14				
Queue Length 95th (m)	0.1	0.0	4.0				
Control Delay (s)	0.6	0.0	10.3				
Lane LOS	A		8				
Approach Delay (s)	0.6	0.0	10.3				
Approach LOS			8				
Intersection Summary							
Average Delay			3.3		CIII oud of Condee	Condico	<
Analysis Derind (min)			22.370 15	2	ח רבעבו חו	Sel VICE	¥
			2				

08/09/2017 AM Peak	
Future Total Existing Mode Split C	LIR

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Future Total Existing Mode Split 08/09/2017 AM Peak LJR

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Movement         EBL         EBT         EBN         WBL           Lane Configurations         EBL         EBT         EBN         WBL           Lane Configurations         EBL         EBT         EBN         WBL           Future Volume (veh/h)         0         68         6         19           Sign Control         Control         0         68         6         19           Sign Control         0         0         8         6         19           Deat Hour Factor         0         1         1         21         21           Hourly Itom rate (wh)         0         6         4         1         21           Walking Speed (m/s)         None         None         None         81         4.1           Vex stages (wh)         Unmer (wh)         None         4         4.1         2.2	+ + +	•	•				
EBL         EBT         EBR         WBL         VBL           0         68         6         19           Free         0         74         7         21           0         032         092         092         092           0         74         7         21           16         7         7         21           16         81         7         21           16         81         7         21           16         81         4.1         4.1           16         81         161         11           1602         1517         92         22           1602         1517         93         7           1602         1517         93         7           1602         1517         92         7           1602         1517         93         70           1602         1517         93         72           1602         1517         93         72           1602         137         00         00           1602         137         93         73           1600         01         42 <th></th> <th>r 1</th> <th>•</th> <th>Ł</th> <th>۶</th> <th>-</th> <th>¥</th>		r 1	•	Ł	۶	-	¥
0         64 B         6         19 CHER         6         19 C           10         68         6         19 C         00         0         14         7         21           0         74         7         21         22         23         23           0         74         7         21         21         21           16         81         41         4.1         4.1         4.1           16         81         37         163         1517         22           100         100         21         37         0         22           1602         1517         928         72         1517           1602         1517         928         72         1517           1602         1517         928         72         1517           1602         1517         928         72         1600           1602         1517         928         72         1600           1600         001         0.18         0.00         0.00         0.00           1600         4.1         A         A         A         A         A		WBR NBL	NBT	NBR	SBL	SBT	SBR
0         68         6         19           Free         0%         6         19           092         092         092         092           0         74         7         21           0         74         7         21           16         81         7         21           16         81         7         21           16         81         41         41           16         81         41         41           100         9         9         9           1100         100         93         1517           110         137         163         1           11         81         37         163           100         0.01         0.18         0.00           100         0.01         0.18         0.00           0.00         0.01         0.18         0.00           0.01         0.18         0.00         0.00           0.0         4         A         A	¢		¢			¢	
0         68         6         19           0%         0.92         0.92         0.92         0.92           0%         0.74         7         21           0         74         7         21           1         6         7         21           1         81         7         21           16         81         41         41           16         81         41         41           16         81         41         41           16         81         41         41           16         13         163         11           160         37         163         11           160         37         163         1           160         131         92         7           160         131         93         7           0         133         16         0           160         133         133         0           160         4         3         1         99           0         4         A         A         A         A	19	0 34	7	109	0		0
Free 0.92 0.92 0.92 0 74 7 21 16 None 16 81 16 41 4.1 16 81 16 81 1602 1517 928 742 1602 1517 928 742 170	19		7	109	0	<del>.</del> –	0
0 2 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0	Free		Stop			Stop	
0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92	%0		%0			%0	
0 74 7 21 None 81 16 81 41 41 41 41 41 41 41 41 41 41 41 41 41 41 81 100 99 1602 1517 928 742 1602 1517 928 742 1703 1600 1600 1600 170 178 742 742 1704 744 744 744 744 744 744 744 744 744	0.92 0.	0.92 0.92	0.92	0.92	0.92	0.92	0.92
None 16 81 16 81 4.1 4.1 81 4.1 4.1 4.1 4.1 4.1 1002 1517 928 742 1602 1517 928 742 1602 1517 928 742 1602 001 018 018 000 1602 4.2 9.7 9,9 1604 4.2 9,7 9,9 1600 4.2 9,7 9,7 1600 4.2 9,7 1		0 37	œ	118	0		0
None 16 81 16 81 16 81 16 81 16 81 110 81 100 22 22 100 41 NB1 81 1517 1517 1517 1517 1517 1517 1517 15							
None 16 None 16 81 16 81 4.1 4.1 4.1 4.1 4.1 1602 100 1602 1517 928 742 1602 1517 928 742 1602 1517 928 742 1602 1517 928 742 160 4.2 9.7 9.9 160 4.2 9.7 9.7 9.7 9.9 160 4.2 9.7 9.7 9.7 9.7 9.9 160 4.2 9.7 9.7 9.7 9.7 9.7 9.7 9.7 9.7 9.7 9.7							
None 16 81 16 81 4.1 4.1 4.1 4.1 4.1 2.2 2.2 1002 1517 928 742 1602 1517 928 742 1603 1603 1617 743 74 1603 1617 743 74 1603 1617 743 74 1603 1617 743 74 1603 1617 743 74 1604 74 743 74 1604 74 744 74 1604 74 74 74 74 1604 74 74 74 74 74 74 74 74 74 74 74 74 74							
None 16 81 16 81 16 81 4.1 4.1 4.1 2.2 22 100 20 1602 1517 928 742 1602 1517 928 742 1602 001 018 000 1602 1517 928 742 1602 1517 948 742 1602 1517 747 747 747 747 747 747 747 747 747 7							
None 16 81 16 81 16 81 116 81 116 81 1100 100 22 1002 1517 928 1617 928 1617 928 1617 928 1617 928 172 0 1617 928 172 0 1617 928 161 00 160 4.2 9.7 9.9 160 4.2 9.7 9.7 9.9 9.9 9.9 9.9 9.9 9.9 9.9 9.9							
16 16 16 4.1 4.1 4.1 2.2 100 1602 161 163 163 163 163 163 163 163	None						
16 16 4.1 4.1 2.2 1002 1602 1602 1617 0 181 1602 1517 928 161 0.0 0.01 0.18 0 13 16 10 0.0 4.2 9.7 0 0.18 0 18 0 0 4.2 9.7 0 0 4.2 9.7 0 0 18 0 18 0 18 0 18 0 18 0 18 0 18 0							
16 16 4.1 4.1 4.1 2.2 100 100 1602 118 163 163 163 163 163 163 163 163							
16 16 4.1 4.1 4.1 2.2 100 1602 1602 17 163 163 163 163 163 163 163 163							
16 4.1 2.2 1002 1602 1602 161 81 37 163 163 161 163 161 163 161 163 161 163 161 163 161 163 161 163 161 163 163	81	136	136	78	258	139	16
16 4.1 2.2 2.2 100 1602 1602 1613 1613 163 163 163 163 163 163 163 1							
16 4.1 2.2 100 1602 1602 81 37 163 81 37 163 7 0 118 1602 1517 928 1602 1517 928 0.00 0.3 51 0.00 4.2 9.7 0.0 4.2 9.7 0.0 4.2 9.7 0.0 4.2 9.7 0.0 4.2 9.7 0.0 4.2 9.7 0.0 4.2 9.7							
yge (s) 4.1 arge (s) 2.1 arge (s) 2.2 event free % 100 pacity (veh/h) 1602 11 ion Lane # EB1 WB1 NB1 5 ier Left 0 137 163 ier Left 0 2187 928 ier Left 0 0.0 0.1 0.18 ( the Loghs/bth (m) 0.0 0.11 0.18 ( the Loghs/bth (m) 0.0 0.11 0.18 ( the Loghs/bth (m) 0.0 0.12 0.18 ( arch LOS 0.0 4.2 9.7 A A A A A A A A A A A A A A A A A A A	81	136	136	78	258	139	16
alage (s) 22 ever free % 100 pacity (vehh) 1602 1 ion. Lane # EB 1 WB 1 NB 1 S ie Tdal 81 37 163 ie Left 0 21 ie Left 0 2118 ie Rght 1 0 0118 ( ie LoghaSh (m) 0.00 0.118 ( ie Leggh Sh (m) 0.00 0.128 ( ie Leggh Sh (m) 0.1	4.1	7.1	6.5	6.2	7.1	6.5	6.2
2.2         2.2           eue free %         100         100           pacity (veh/h)         16.02         1           lon, Lane #         E81         WB1         NB1         S           le Tdal         81         37         163         163           le Right         7         0         118         163         118           le Right         7         0         118         163         113         164           le Right         7         0         0         21         37         163         118         164         160         118         164         160         118         164         160         160         118         164         160         160         161         160         160         161         16         160							
100 1602 EB1 WB1 NB1 S 81 37 163 81 37 163 0 21517 928 1602 1517 928 0.00 0.01 0.18 0.00 0.3 51 0.0 4.2 9.7 0.0 4.2 9.7 A A	2.2	3.5	4.0	3.3	3.5	4.0	3.3
1602         1602         1         1         1         1         1         1         1         1         1         1         1         3         1 </td <td>66</td> <td>96</td> <td>66</td> <td>88</td> <td>100</td> <td>100</td> <td>100</td>	66	96	66	88	100	100	100
EB1         WB1         NB1         S           81         37         163         37           81         7         0         118           7         0         118         37           1602         1517         928           1602         1517         928           1600         0.01         0.18         (0)           0.00         0.01         0.18         (1)           0.00         0.03         5.1         9.7           0.0         4.2         9.7         0.7           0.0         4.2         9.7         9.7	1517	825	745	983	601	742	1063
81 37 163 0 21 37 7 0 118 1602 1517 918 0.00 0.01 0.18 ( (m) 0.0 0.1 0.18 ( 0.0 4.2 9.7 0.0 4.2 9.7 A A A A A A A A A A							
0 21 37 7 0 118 1602 151 0 118 0.00 0.01 0.18 ( 0.0 4.2 9.7 0.0 4.2 9.7	63 1						
7 0 118 1602 1517 928 0.00 0.01 0.18 (1) 0.18 (1							
1602 1517 928 1602 0.01 0.18 ( (m) 0.00 0.3 5.1 0.0 4.2 9.7 0.0 4.2 9.7 A A							
0.00 0.01 0.18 ( (m) 0.0 0.3 5.1 0.0 4.2 9.7 0.0 4.2 9.7 0.0 4.2 9.7 A A							
DBth (m)         0.0         0.3         5.1         5.							
s) 0.0 4.2 9.7 A A V(s) 0.0 4.2 9.7 A							
A A A (s) 0.0 4.2 9.7 A							
/ (S) 0.0 4.2 9.7 A							
A							
	A A						
Intersection Summary							
6.2							
	3% ICU Level of Service	Service		A			
Analysis Period (min) 15	15						

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HCM Unsignalized Intersection Capacity Analysis 68: Avenue A & Port St W

68: Avenue A & Port St W	st ∨										08/2	08/21/2017
	-	t	1	\$	ŧ	~	*	-	٠	۶	-	$\mathbf{F}$
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		¢			¢			¢			¢	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	89	22	-	2	11	68	7	96	14	12	103	12
Future Volume (vph)	68	22	-	2	1	68	7	96	14	12	103	12
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	74	24	<del></del>	2	12	74	œ	104	15	13	112	13
Direction, Lane # E	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	66	88	127	138								
Volume Left (vph)	74	2	œ	13								
Volume Right (vph)	-	74	15	13								
	0.18	-0.47	-0.02	0.00								
Departure Headway (s)	4.8	4.2	4.5	4.5								
Degree Utilization, x	0.13	0.10	0.16	0.17								
Capacity (veh/h)	669	795	762	758								
Control Delay (s)	8.5	7.7	8.3	8.4								
Approach Delay (s)	8.5	7.7	8.3	8.4								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			8.3									
Level of Service			A									
Intersection Capacity Utilization			28.3%	10	ICU Level of Service	f Service			A			
Analysis Period (min)			15									

Synchro 9 Report Page 5

Future Total Existing Mode Split 08/09/2017 AM Peak

Future Total Existing Mode Split 08/09/2017 AM Peak LJR

	US. LANG OL & L OIL OL W						1102/12/00	/U: Lake SI & Lakeshore Kd VV	akesnore			
NII         NIII         NIII         NIII         NIII         NIIII         NIIII         NIIII         NIIII         NIIII         NIIII         NIIII         NIIIII         NIIIIII         NIIIIII         NIIIIIIIII         NIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	•	<b>∢</b>		< ←	~	→			Ť	1	1	Ŧ
0         1								Movement	EBT			WBT
0         0         2         2         4         2         2         4         102         40         102         40         102         40         102         40         102         40         102         40         102         40         102         40         102         40         102         40         102         40         102         40         102         40         102         40         102         40         103         102         40         103         102         40         103 <t< td=""><td></td><td>2</td><td></td><td>÷2</td><td></td><td>ţ</td><td></td><td>Lane Configurations</td><td>¥</td><td>~</td><td></td><td>ŧ</td></t<>		2		÷2		ţ		Lane Configurations	¥	~		ŧ
0         10         2         24 <td>raffic Volume (veh/h)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Traffic Volume (veh/h)</td> <td></td> <td></td> <td></td> <td></td>	raffic Volume (veh/h)							Traffic Volume (veh/h)				
900         Free         Sign Control         Sign Control         Free         Sign Control         Sign Contro         Sign Control         Sign Cont	ne (Veh/h)							Future Volume (Veh/h)				
075         076         076 <td></td> <td>do</td> <td>F</td> <td>ee</td> <td></td> <td>Free</td> <td></td> <td>Sign Control</td> <td>Free</td> <td></td> <td></td> <td>Free</td>		do	F	ee		Free		Sign Control	Free			Free
0         0.22         0.22         0.23         0.24         0.24         0.25         0.								Grade	%0			
1         7         2         47         37         2         26         0           1         1         2         2         2         2         2         0           1								Peak Hour Factor	0.92			
More         None         None <th< td=""><td>Hourly flow rate (vph)</td><td>7 2.</td><td></td><td></td><td></td><td></td><td></td><td>Hourly flow rate (vph)</td><td>1763</td><td></td><td></td><td></td></th<>	Hourly flow rate (vph)	7 2.						Hourly flow rate (vph)	1763			
More         None         None <th< td=""><td>bedestrians</td><td></td><td></td><td></td><td></td><td></td><td></td><td>Pedestrians</td><td></td><td></td><td></td><td></td></th<>	bedestrians							Pedestrians				
More         None         None <th< td=""><td>ane Width (m)</td><td></td><td></td><td></td><td></td><td></td><td></td><td>Lane Width (m)</td><td></td><td></td><td></td><td></td></th<>	ane Width (m)							Lane Width (m)				
More         None         None <th< td=""><td>Valking Speed (m/s)</td><td></td><td></td><td></td><td></td><td></td><td></td><td>Walking Speed (m/s)</td><td></td><td></td><td></td><td></td></th<>	Valking Speed (m/s)							Walking Speed (m/s)				
Nne         Nne <td>Percent Blockage</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Percent Blockage</td> <td></td> <td></td> <td></td> <td></td>	Percent Blockage							Percent Blockage				
None         None         None         None         None           1	Right turn flare (veh)							Right turn flare (veh)				
a         96         66         84         181           a         96         66         84         181           b         6         6         84         181           b         3         2         181         181           b         3         2         181         181           b         8         1000 unboked         181         181           b         1513         1513         181         181           b         1513         151         151         181           c         1513         151         181         181           c         151         151         181         181           c         131         151         151         170         170           c         131         151         151         1	Aedian type		No	ne		None		Median type	None			None
9         6         84         131         32           9         6         84         0.00000000000000000000000000000000000	Aedian storage veh)							Median storage veh)				
a         0         6         84         101           a         0         6         84         101           a         1         101         101         101         101           b         6         84         00         101         000	Jpstream signal (m)							Upstream signal (m)	342			118
9         6         94         6         94         6         94         6         94         10	X, platoon unblocked							pX, platoon unblocked				
96         66         84         CC: stage 1 control         1315           6.4         6.2         4.1         CC: stage 2 control         4.1           7         3.5         3.3         2.2         Victual066664001         1315           9.9         9         9         Victual066664001         1315           9.9         9         1513         C: stage (s)         4.1           9.9         9         100         Victual06666401         1313           9.9         9         1513         C: stage (s)         4.1           9.9         9         1611         20         23           9         9         00         1611         161         161           9         1         0         2         161         161         161           9         1         0         2         161         161         161         161           9         1         100 <t< td=""><td>C, conflicting volume</td><td></td><td>5</td><td></td><td>80</td><td>4</td><td></td><td>vC, conflicting volume</td><td></td><td></td><td>1815</td><td></td></t<>	C, conflicting volume		5		80	4		vC, conflicting volume			1815	
9         6         94         C.2, Siage 2, Control         11           1         2         41         2         41         41           1         2         41         2         41         41         41           1         3         3         2         2         41	C1, stage 1 conf vol							vC1, stage 1 conf vol				
96         66         84         CU unblocked vol         181           64         62         41         23         24         1           7         93         33         22         23         23           90         98         100         00         90         24         23           9         98         1513         2         23         23         23           9         98         1513         00         90         90         90         91         33           1         93         98         00	C2, stage 2 conf vol							vC2, stage 2 conf vol				
64         6.2         4.1         C. Single (S)         4.1           7         35         3         22         20         22         23         22           7         93         98         1513         5         34         23         34           7         93         98         1513         5         7         23         34           7         93         98         1513         5         90         64         55         34           7         93         98         1513         5         90         64         55         34           7         94         23         7         0         6         55         56			2		80	4		vCu, unblocked vol			1815	
35       33       22       C. 2 stage (s)       22         (h)       903       998       1513       22         (h)       903       998       1513       334         (c)       81       81       81       33         (c)       93       948       1513       334         (c)       93       948       1513       334         (c)       93       949       1513       334         (c)       0       2       00 uene free %       100         27       31       0       2       82       82       52         17       0       2       100       100       100       100       100         28       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0         11(m)       0.1       0.0			2		4.	_		tC, single (s)			4.1	
35       33       22       22       22         10       00       00       00       00       00       00         11       0       3       1513       33       34       34         11       0       2       00       00       00       00       00       00         11       0       2       37       0       2       24       25       27       37       34         12       1       0       2       37       0       2       26       20 <td>stage (s)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>tC, 2 stage (s)</td> <td></td> <td></td> <td></td> <td></td>	stage (s)							tC, 2 stage (s)				
99         98         100           (h)         903         98         100           (h)         903         98         1513         334           •         WB1         NB1         SB1         SB1         SB1         S34           2         84         28         Colume for and fy (eth)         334         334           2         84         28         Colume for and fy (eth)         334         334           2         31         0         28         Colume for and fy (eth)         334         334           2         31         0         28         Colume for and fy (eth)         334         334           2         31         0         28         Colume for and fy (eth)         334         334           2         31         0         28         28         29         20         20         20           110         131         100         151         100         100         100         100           111(m)         0.1         0.0         0.0         0.0         0.0         0.0         0.0           111(m)         0.0         0.0         0.0         0.0         0.0					2.	2		tF (s)			2.2	
pactly (vehh)         93         98         1513         334           pactly (vehh)         93         93         1513         334           ion Lane #         MB         NB         SB1         NB         SB1         SB2         SD2         SD2         SD3			00		10	0		p0 queue free %			100	
Ion Lane #         WB1         NB1         SB1         EB1         EB2         EB3           re Edit         2         84         28         28         28         25           re Left         2         3         0         0         0         0         0           re Rut         27         3         0         2         2         82         82         52           re Rut         73         700         513         2         20         00         0         0           re Rut         73         700         513         2         <			ŝ		151			cM capacity (veh/h)			334	
re Total         29         84         28         82         82         52           re Left         7         0         2         37         0	#			31				Direction, Lane #	EB 1			WB 1
Interfact         7         0         2         37         0	/olume Total			28				Volume Total	882			540
ie Right         22         37         0         0         52           ie Right         22         37         0         0         0         0         0         0         0         0         1700				2				Volume Left	0			
974         1700         1513         1700	ne Right			0				Volume Right	0			
0.03         0.05         0.00         0.5         0.52         0.52         0.52         0.52         0.52         0.52         0.52         0.03         0.00				13				cSH	1700			
0.7         0.0 <td></td> <td></td> <td></td> <td>00</td> <td></td> <td></td> <td></td> <td>Volume to Capacity</td> <td>0.52</td> <td></td> <td></td> <td></td>				00				Volume to Capacity	0.52			
s)         8.8         0.0         0.5         0.0	_			0.0				Queue Length 95th (m)	_			
A         A           (s)         88         0.0         0.5           Approach Delay (s)         0.0           Approach Loss         Approach Loss           Imary         1.9         Average Delay           Activity Illization         1.4         0.7           Ansiste Service         A         Average Delay         0.7           Average Delay         1.6         Intersection Scinitization         0.7           Ansiste Deriver (rein)         1.6         Ansiste Deriver (rein)         0.7				).5				Control Delay (s)	0.0			
(5)         8.8         0.0         0.5         Approach Delay (s)         0.0           mmary         A         Approach LOS         Approach LOS         0.0           mmary         1.9         Average Delay         0.7         Average Delay         0.7           modely Ullization         1.3         Koul Level of Service         A         Average Delay         0.7           forial Ullization         1.5         KCU Level of Service         A         Average Delay         0.7				A				Lane LOS				
A Approach LOS App	/ (S)			).5				Approach Delay (s)	0.0			0.0
Image         Intersection Summary           mary         1.9         Nerage Delay           pacity Utilization         1.3%         ICU Level of Service         A           intersection         1.5         Merage Delay         Intersection Summary	Approach LOS	A						Approach LOS				
1.9 Average Delay Average Dela	ntersection Summary							Intersection Summary				
pacity Utilization 14.3% ICU Level of Service A Intersection Capacity Utilization 16. Analysis Desired (min)	Average Delav			6				Average Delav			0.7	
15 Analysis Derived Mills	ntersection Capacity Utilization		14.3	%	ICU Lev	el of Service	A	Intersection Canacity L	Itilization		56.8%	0
	holocic Doriod (min)			16	000			Analusia Dariad (min)				

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CM Unsignalized Intersection Capacity Analysis : Lake St & Lakeshore Rd W	ersec ore R(	d V d	apacity	/ Analy	/sis		08/21/2017
-	t	1	\$	Ļ	∢	•	
vement	EBT	EBR	WBL	WBT	NBL	NBR	
le Configurations	ŧ	×		ŧ		×	
	1622	48	0	994	0	85	
ne (Veh/h)	1622	48	0	994	0	85	
n Control	Free			Free	Stop		
Ide	%0			%0	%0		
	0.92	0.92	0.92	0.92	0.92	0.92	
urly flow rate (vph)	1763	52	0	1080	0	92	
lestrians							
ie Width (m)							
lking Speed (m/s)							
cent Blockage							
ht turn flare (veh)							
	None			None			
dian storage veh)							
stream signal (m)	342			118			
platoon unblocked					0.92		
conflicting volume			1815		2303	882	
I, stage 1 conf vol							
2, stage 2 conf vol							
u, unblocked vol			1815		2241	882	
single (s)			4.1		6.8	6.9	
2 stage (s)							
S)			2.2		3.5	3.3	
queue free %			100		100	68	
capacity (veh/h)			334		33	290	
ection, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	
ume Total	882	882	52	540	540	92	
ume Left	0	0	0	0	0	0	
ume Right	0	0	52	0	0	92	
	1700	1700	1700	1700	1700	290	
	0.52	0.52	0.03	0.32	0.32	0.32	
eue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	10.6	
ntrol Delay (s)	0.0	0.0	0.0	0.0	0.0	23.1	
le LOS						U	
oroach Delay (s)	0.0			0.0		23.1	
proach LOS						U	
rsection Summary							
erage Delay			0.7				
rsection Capacity Utilization			56.8%	2	ICU Level of Service	Service	В
(IIIII) DOI IAA SISGI			0				

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Future Total Existing Mode Split 08/09/2017 AM Peak

Future Total Existing Mode Split 08/09/2017 AM Peak LJR

•			.	.	-	1.0.1			
•	Ť	ŧ	4	٠	*			, t	*
Aovement EBL	EBT	WBT	WBR	SBL	SBR	Movement		EBT E	EBR WBL
ane Configurations	÷	¢\$		≻		Lane Configurations		ŧ	
raffic Volume (veh/h)	203	264	10	34	0	Traffic Volume (veh/h)		1812	35 0
uture Volume (Veh/h)	203	264	10	34	0	Future Volume (Veh/h)		1812	
Sign Control	Free	Free		Stop		Sign Control		Free	
Grade		%0		%0		Grade			
Deak Hour Factor 0.92	0.92	0.92	0.92	0.92	0.92	Peak Hour Factor		0.92 0	0.92 0.92
Hourly flow rate (vph) 8		287	11	37	0	Hourly flow rate (vph)			38 0
Dedestrians						Pedestrians			
ane Width (m)						Lane Width (m)	(m)		
Valking Speed (m/s)						Walking Speed (m/s)	ed (m/s)		
Percent Blockage						Percent Blockage	ckage		
Right turn flare (veh)						Right turn flare (veh)	are (veh)		
Aedian type	None	None				Median type		None	
Aedian storage veh)						Median storage veh)	age veh)		
Upstream signal (m)						Upstream signal (m)	gnal (m)	133	
oX, platoon unblocked						pX, platoon unblocked	unblocked		0.6
VC. conflicting volume 298				530	292	vC. conflicting volume	a volume		2008
						vC1. stage 1 conf vol	conf vol		
VC2, starte 2 conf vol						vC2. stane 2 conf vol	Conf vol		
				530	202		ked vol		1410
C. sindle (s) 41				6.4	6.7 6.2	tC. sindle (s)			4.1
(7				5	6 E	tC. 2 starte (s)	(c)		
				35	33	FF (s)	10		6
ine free %				3	100	n0 dilette %	20 %		1 1
				507	747	po quede ince 20 cM canacity (veh/h)	(veh/h)		001
				200		funneline une			
e# E	>	SB1				Direction, Lane	ŧ		EB 2 EB 3
volume Total 229	~	37				Volume Total	le		985 38
		37				Volume Left		0	0 0
ne Right		0				Volume Right			
cSH 1265		507				CSH	-		
/olume to Capacity 0.01	0	0.07				Volume to Capacity		0.58 0	_
Queue Length 95th (m) 0.2		1.9				Queue Length 95th (m)			
	0.0	12.7				Control Delay (s)			0.0 0.0
		æ				I ane I OS			
Abbroach Delav (s) 0.3	0.0	12.7				Approach Delav (s)	elav (s)	0.0	
Approach LOS		В				Approach LOS	SC		
ntersection Summary						Intersection Summary	Summary		
		5					( mumo		C
Average Delay		0.1	Ģ	l or to l of		Average Delay	ldy Consolity Hillingtion		1.0
niersection Capacity Utilization		20.3%	20	ICU LEVEI OF SERVICE	Service A	Intersection	Intersection Capacity Utilization		00. I%
		L T							

city Analysis

icini Unsignalized Intersection Capacity Analysis 3: Private Rd & Lakeshore Rd W	eshore	ר Rd א	apacir.	y Analy	<u>s</u>		08/21/2017
	t	1	1	Ļ	1	•	
ovement	EBT	EBR	WBL	WBT	NBL	NBR	
ane Configurations	ŧ	×.		ŧ		×	
affic Volume (veh/h)	1812	35	0	1106	0	26	
uture Volume (Veh/h)	1812	35	0	1106	0	26	
ign Control	Free			Free	Stop		
rade	%0			%0	%0		
eak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
ourly flow rate (vph) edestrians	1970	38	0	1202	0	28	
ane Width (m)							
/alking Speed (m/s)							
ercent Blockage							
ight turn flare (veh)	Mono			Mono			
culari iype odian etorado voh)				DIIONI			
eulari storage veri) pstream signal (m)	133			137			
K, platoon unblocked			0.63		0.63	0.63	
C, conflicting volume			2008		2571	985	
C1, stage 1 conf vol							
C2, stage 2 conf vol							
Cu, unblocked vol			1419		2316	0	
t, single (s)			4.1		6.8	6.9	
c, 2 stage (s)			0		1	4	
(S)			2.2		3.5	3.3	
J queue Tree %			000		00	96	
/i capacity (veh/h)			667		20	680	
irection, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	
olume Total	985	985	38	601	601	28	
olume Left	0	0	0	0	0	0 8	
olume kignt	0	Э	38	Э	Э	87	
H. 	1700	1700	1700	1700	1700	680	
olume to Capacity	0.58	0.58	0.02	0.35	0.35	0.04	
ueue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	1.0	
ontrol Delay (s)	0.0	0.0	0.0	0.0	0.0	G.UT	
ane LOS	0			0		20 L	
pproacn Delay (s)	0.0			0.0		G.UI	
pproach LUS						ю	
tersection Summary							
verage Delay			0.1				
tersection Capacity Utilization nalvsis Period (min)	_		60.1% 15	D	ICU Level of Service	Service	в
fund some solding			2				

Future Total Existing Mode Split 08/09/2017 AM Peak LJR

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Future Total Existing Mode Split 08/09/2017 AM Peak

		1	1		ļŧ	-	4	•	•	و	_	
-		ŀ	Þ	Þ		,	-	-			Þ	,
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	r	ŧ	*	۶	ŧ	×.	F	÷		r	÷	
Traffic Volume (vph)	100	1330	189	329	1353	205	232	0	192	185	0	120
Future Volume (vph)	100	1330	189	329	1353	205	232	0	192	185	0	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.5	3.7	3.5
Total Lost time (s)	6.0	6.0	6.0	3.0	9.0	6.0	6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.85	
FIt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3544	1541	1750	3444	1526	1750	1601		1684	1585	
	0.17	1.00	1.00	0.06	1.00	1.00	0.63	1.00		0.49	1.00	
erm)	320	3544	1541	111	3444	1526	1157	1601		864	1585	
PHF	0.91	0.91	0.92	0.92	0.91	0.91	0.92	0.92	0.92	0.91	0.92	0.91
	110	1462	205	358	1487	225	252	0	209	203	0	132
RTOR Reduction (vph)	0	0	34	0	0	29	0	157	0	0	47	0
Lane Group Flow (vph)	110	1462	171	358	1487	196	252	52	0	203	86	0
Heavy Vehicles (%)	2%	3%	2%	2%	%9	3%	2%	2%	2%	%9	2%	3%
Bus Blockages (#/hr)	0	0	4	0	0	4	0	0	0	0	0	0
	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Phases		4			~			2			9	
Permitted Phases	4		4	œ		œ	2			9		
Actuated Green, G (s)	62.6	62.6	62.6	92.0	92.0	92.0	34.0	34.0		34.0	34.0	
Effective Green, g (s)	63.6	63.6	63.6	93.0	93.0	93.0	35.0	35.0		35.0	35.0	
Actuated g/C Ratio	0.45	0.45	0.45	0.66	0.66	0.66	0.25	0.25		0.25	0.25	
Clearance Time (s)	7.0	7.0	7.0	4.0	7.0	7.0	7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	145	1609	700	382	2287	1013	289	400		216	396	
v/s Ratio Prot		0.41		c0.18	0.43			0.03			0.05	
Perm	0.34		0.11	c0.45		0.13	0.22			c0.23		
	0.76	0.91	0.24	0.94	0.65	0.19	0.87	0.13		0.94	0.22	
Uniform Delay, d1	31.8	35.5	23.5	46.2	13.9	9.1	50.4	40.7		51.5	41.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	30.5	9.1	0.8	30.2	1.4	0.4	23.8	0.1		44.0	0.3	
Delay (s)	62.3	44.6	24.3	76.4	15.3	9.5	74.1	40.9		95.5	41.9	
Level of Service	ш	۵	U	ш	8	A	ш	۵		Ŀ	۵	
Approach Delay (s)		43.4			25.3			59.0			74.4	
Approach LOS		D			ပ			ш			ш	
Intersection Summary												
HCM 2000 Control Delay			39.1	Ĭ	HCM 2000 Level of Service	evel of S	ervice					
HCM 2000 Volume to Capacity ratio	ratio		0.96									
Actuated Cycle Length (s)			140.0	SL	Sum of lost time (s)	time (s)			15.0			
Intersection Capacity Utilization			95.5%	2	ICU Level of Service	f Service			Ŀ			
Analysis Period (min)			15									
c Critical Lane Group												

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Future Total Existing Mode Split 08/09/2017 PM Peak LJR

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HCM Unsignalized Intersection Capacity Analysis 16: Mississauga Rd & Lake St

am unsignanzed intersection capacity Analysis : Mississauga Rd & Lake St	& Lake	s St	apacır	у Ана	siek						08/2	08/21/2017
	٠	1	1	1	Ŧ	~	1	-	٠	۶	-	$\mathbf{F}$
ement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
e Configurations		<del>4</del>			¢			¢			¢	
1 Control		Stop			Stop			Stop			Stop	
fic Volume (vph)	167	66	0	0	111	2	0	10	2	0	25	184
ire Volume (vph)	167	66	0	0	111	2	0	10	2	0	25	184
k Hour Factor	0.92	0.92	0.92	0.66	0.92	0.66	0.92	0.66	0.66	0.66	0.66	0.92
rly flow rate (vph)	182	108	0	0	121	80	0	15	∞	0	38	200
ction, Lane #	EB 1	WB 1	NB 1	SB 1								
ime Total (vph)	290	129	23	238								
ime Left (vph)	182	0	0	0								
ime Right (vph)	0	œ	~	200								
i (s)	0.16	0.01	0.35	-0.42								
arture Headway (s)	4.9	4.9	5.6	4.6								
ree Utilization, x	0.39	0.18	0.04	0.30								
acity (veh/h)	701	676	570	729								
trol Delay (s)	11.0	9.0	8.8	9.5								
roach Delay (s)	11.0	0.6	8.8	9.5								
roach LOS	8	A	A	A								
section Summary												
JV			10.0									
el of Service			в									
*section Capacity Utilization	ç		40.5%	2	ICU Level of Service	of Service			A			

Synchro 9 Report Page 1
HCM Unsignalized Intersection Capacity Analysis 24: Mississauga Rd & Port St W	ersec Port	tion C St W	apacity	/ Anal)	/sis						08/2	08/21/2017	
		Ť	1	\$	ŧ	~	∢	-	۰.	۶	-	$\mathbf{k}$	
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		¢			¢			¢			¢		
Traffic Volume (veh/h)	56	25	0	2	49	45	0	192	0	65	214	105	
Future Volume (Veh/h)	56	25	0	2	49	45	0	192	0	65	214	105	
Sign Control		Stop			Stop			Free			Free		
Grade		%0			%0			%0			%0		
Peak Hour Factor	0.92	0.92	0.92	0.73	0.92	0.73	0.92	0.73	0.73	0.73	0.73	0.92	
Hourly flow rate (vph)	61	27	0	٢	53	62	0	263	0	89	293	114	
Pedestrians													
Lane Width (m)													
Walking Speed (m/s)													
Percent Blockage													
Right turn flare (veh)													
Median type								None			None		
Median storage veh)													
Upstream signal (m)											135		
pX, platoon unblocked													
vC. conflicting volume	880	791	350	804	848	263	407			263		Ĺ	
vC1. stage 1 conf vol													
vC2, stage 2 conf vol												Ĺ	
vCu. unblocked vol	880	791	350	804	848	263	407			263			
tC. single (s)	7.1	6.5	6.2	7.1	6.5	6.3	4.1			4.2		Ĺ	
tC, 2 stage (s)													
tF (s)	3.5	4.0	3.3	3.5	4.0	3.4	2.2			2.3		Ĺ	
p0 queue free %	69	91	100	<i>L</i> 6	81	92	100			93			
cM capacity (veh/h)	199	299	693	268	277	757	1152			1273		Ľ	
Direction. Lane #	EB 1	WB 1	NB 1	SB1									
Volume Total	88	122	263	496									
Volume Left	61		C	68									
Volume Riaht	; 0	62	0	114								É	
cSH	222	408	1152	1273									
Volume to Capacity	0.40	0.30	0.00	0.07								Ľ	
Queue Lenath 95th (m)	14.3	6.6	0.0	1.8									
Control Delay (s)	31.5	17.5	0.0	2.0								Ľ	
Lane LOS		ပ		A									
Approach Delay (s)	31.5	17.5	0.0	2.0								Ľ	
Approach LOS	Ω	ပ											
Intersection Summary													
Average Delay			6.1										
Intersection Capacity Utilization			52.4% 15	ICI	ICU Level of Service	Service			A				
			2									Ľ	

HCM Unsignalized Intersection Capacity Analysis 66: Lake St & Avenue A	nterseo ie A	ction C	apacity	y Analy	/sis	08/21/2017	2017
	1	t	ŧ	~	۶	~	
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		÷	÷.		×		
Traffic Volume (veh/h)	37	152	90	69	09	D	
Future Volume (Veh/h)	37	152	90	69	90	5	
Sign Control		Free	Free		Stop		
Grade		%0	%0		%0		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	40	165	65	75	65	5	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		None	None				
Median storage veh)							
Upstream signal (m)							
pX, platoon unblocked							
vC, conflicting volume	140				348	102	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	140				348	102	
tC, single (s)	4.1				6.4	6.2	
tC, 2 stage (s)							
tF (s)	2.2				3.5	3.3	
p0 queue free %	<i>L</i> 6				90	66	
cM capacity (veh/h)	1443				631	953	
Direction, Lane #	EB 1	WB 1	SB 1				
Volume Total	205	140	70				
Volume Left	40	0	65				
Volume Right	0	75	2				
cSH	1443	1700	647				
Volume to Capacity	0.03	0.08	0.11				
Queue Length 95th (m)	0.7	0.0	2.9				
Control Delay (s)	1.7	0.0	11.2				1
Lane LOS	A		8				
Approach Delay (s)	1.7	0.0	11.2				
Approach LOS			8				

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Future Total Existing Mode Split 08/09/2017 PM Peak

Synchro 9 Report Page 3

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ICU Level of Service

2.7 31.1% 15

Intersection Summary Average Delay Intersection Capacity Utilization Analysis Period (min)

## Future Total Existing Mode Split 08/09/2017 PM Peak LJR

HCM Unsignalized Intersection Capacity Analysis 67: Avenue B/Private Rd & Port St W	tersec Rd &	tion C Port S	apacity st W	/ Anal	ysis						08/2	08/21/2017
	1	1	1	\$	ŧ	~	*	+	٠	۶	-	$\mathbf{F}$
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		¢			¢			¢			¢	
Traffic Volume (veh/h)	0	31	31	80	74	0	16	9	50	0	12	0
Future Volume (Veh/h)	0	31	31	80	74	0	16	9	50	0	12	0
Sign Control		Free			Free			Stop			Stop	
Grade		%0			%0			%0			%0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	34	34	87	80	0	17	٢	54	0	13	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	8			89			312	305	51	362	322	80
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	8			68			312	305	51	362	322	80
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			94			<i>L</i> 6	66	95	100	98	100
cM capacity (veh/h)	1518			1533			602	574	1017	533	562	980
Direction, Lane #	EB 1	WB 1	NB 1	SB1								
Volume Total	89	167	78	13								
Volume Left	0	87	17	0								
Volume Right	34	0	54	0								
cSH	1518	1533	834	562								
Volume to Capacity	0.00	0.06	0.09	0.02								
Queue Length 95th (m)	0.0	1.4	2.5	0.6								
Control Delay (s)	0.0	4.1	9.8	11.6								
Lane LOS		A	A	8								
Approach Delay (s)	0.0	4.1	9.8	11.6								
Approach LOS			A	8								
Intersection Summary												
Average Delay			4.9									
Intersection Capacity Utilization	_		32.6%	Q	ICU Level of Service	f Service			A			1
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis 68: Avenue A & Port St W

Image: Figure 1     Image: Figure 1 <th< th=""><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></th<>													
EB1         EB7         EB7         WB1         WB7         WBR         NB1         NB1 <th>·</th> <th>1</th> <th>t</th> <th>1</th> <th>\$</th> <th>Ļ</th> <th>~</th> <th>*</th> <th>-</th> <th>٠</th> <th>۶</th> <th>-</th> <th><math>\mathbf{\hat{v}}</math></th>	·	1	t	1	\$	Ļ	~	*	-	٠	۶	-	$\mathbf{\hat{v}}$
Abilitzation     Abilitzation     Abilitzation     Abilitzation     Abilitzation       31     16     6     12     22     31     3     109     6       31     16     6     12     22     31     3     109     6       31     16     6     12     22     31     3     109     6       31     16     6     12     22     31     3     109     6       31     17     7     13     24     34     3     118     7       58     71     128     264     3     3     67     7       7     34     7     661     7     3     67       7     34     7     63     63     7       50     61     7     3     67     7       61     704     76     032     63     7       61     704     76     33     8     8     8       84     81     84     9.3     8     8       8     8     7     8     7		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Stop         Stop         Stop         Stop         Stop         Stop         Stop         Stop         6         12         22         31         3         109         6         6         7         31         3         109         6         6         7         31         3         109         6         6         7         31         3         109         6         6         7         31         3         109         6         6         7         31         3         109         6         6         7         31         3         109         6         6         7         31         3         13         3         109         6         6         7         31         3         31         3	Lane Configurations		¢			¢			¢			¢	
31     16     6     12     22     31     3     109     6       31     16     6     12     22     31     3     109     6       34     17     7     13     24     34     3     118     7       58     71     128     264     7     128     007     002     007       58     71     128     264     7     128     264     7     7       50     47     45     43     67     7     7     7       50     47     45     43     8     8     8     8       661     704     706     032     601     007     7       50     47     45     43     8     8     8       8.4     8.1     8.4     9.3     8     8       8.4     8.1     8.4     9.3     8       4     A     A     A     A       4     A     A     A       601     003     033     8     9       8.4     8.1     8.4     9.3     8       8.4     8.1     8.4     9.3       4     A     A     A	Sign Control		Stop			Stop			Stop			Stop	
31         16         6         12         22         31         3         109         6           0.92	ne (vph)	31	16	9	12	22	31	ę	109	9	62	120	62
032         033         033 <td></td> <td>31</td> <td>16</td> <td>9</td> <td>12</td> <td>22</td> <td>31</td> <td>č</td> <td>109</td> <td>9</td> <td>62</td> <td>120</td> <td>62</td>		31	16	9	12	22	31	č	109	9	62	120	62
34     17     7     13     24     34     3     118       EB1     WB1     NB1     SB1     SB1     34     3     118       58     71     128     264     56     34     3     15       34     13     3     67     67     67     66     66       008     -0.22     001     -007     003     66     74     74       50     4.7     4.5     4.3     66     74     74     7       8.4     8.1     8.4     9.3     8     8     8       8.4     8.1     8.4     9.3     8     8       101ilization     34.3     iCU Level of Service     14.3		0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
EB1         WB1         NB1         SB1           58         71         128         264           58         71         128         264           7         3         3         67           7         13         3         67           7         7         67         007           50         4.7         4.5         4.3           661         709         706         032           8.4         8.1         8.4         9.3           8.4         8.1         8.4         9.3           8.4         8.1         8.4         9.3           1011ization         31.3%         iCU Level of Service	Hourly flow rate (vph)	34	17	7	13	24	34	33	118	7	67	130	67
58 71 128 264 34 13 3 67 7 67 60 47 67 60 47 67 008 -0.22 001 -0.07 60 7 009 716 0.322 661 7 009 716 0.322 661 81 84 9.3 8.4 8.1 8.4 9.3 8.4 8.4 8.1 8.4 9.3 8.4 8.4 8.4 8.4 8.4 8.4 8.4 8.4 8.4 8.4		EB 1	WB 1	NB 1	SB 1								
34 13 3 67 7 2 01 -007 5) 5.0 4.7 4.5 4.3 0.08 0.9 0.16 0.32 6.1 704 760 803 8.4 8.1 8.4 9.3 8.4 8.1 8.4 9.3 8.4 8.4 8.4 8.4 8.4 8.4 8.4 8.4 8.4 8.4	Volume Total (vph)	28	71	128	264								
7         34         7         67           (0)         0.02         0.01         0.07           (5)         5.0         4.15         4.3           (6)         0.32         661         704         7.6           (6)         7.6         803         84         9.3           (6)         7.4         9.3         84         9.3           (7)         4         9.3         84         9.3           (8)         8.1         8.4         9.3         88           (1)         A         A         A         A           (1)         18.4         9.3         88         4           (1)         3.4         9.3         88         4	Volume Left (vph)	34	13	ę	67								
\$5         -0.22         0.01         -0.07           \$5.0         -4.7         -4.5         -4.3           6.08         0.04         760         803           6.61         704         760         803           8.4         8.1         8.4         9.3           8.4         8.1         8.4         9.3           A         A         A         A           A         A         A         A           A         A         A         A           A         A         A         A           A         A         A         A           A         A         A         A	Volume Right (vph)	7	34	7	67								
<ul> <li>(s) 5.0 4.7 4.5 4.3</li> <li>0.08 0.04 7.6 0.32</li> <li>661 704 7.6 0.32</li> <li>8.4 8.1 8.4 9.3</li> <li>8.4 8.1 8.4 9.3</li> <li>8.4 8.1 8.4 9.3</li> <li>A A A</li> <li>A A A</li> <li>Initization 31.3%</li> <li>ICU Level of Service</li> </ul>		0.08	-0.22	0.01	-0.07								
008 009 016 0.32 661 704 760 803 8.4 8.1 8.4 9.3 8.4 8.1 8.4 9.3 A A A 0.001/2210 8.8 A	Departure Headway (s)	5.0	4.7	4.5	4.3								
661 704 760 803 8.4 8.1 8.4 9.3 8.4 8.1 8.4 9.3 A A A 8.8 B 8.8 B 8.8 CU Level of Service 13.3% ICU Level of Service		0.08	0.09	0.16	0.32								
8.4 8.1 8.4 9.3 8.4 8.1 8.4 9.3 A A A A 8.8 8.8 8.8 0.011ization 34.3% ICU Level of Service		661	704	760	803								
84 8.1 8.4 9.3 A A A 88 Utilization 31.3% ICU Level of Service		8.4	8.1	8.4	9.3								
y A A A 8.8 Utilization 34.3% ICU Level of Service	Approach Delay (s)	8.4	8.1	8.4	9.3								
y 8.8 A A ICU Level of Service	Approach LOS	A	A	A	A								
8.8 A Utilization 34.3% ICU Level of Service	Intersection Summary												
A Utilization 34.3% ICU Level of Service 15	Delay			8.8									
Utilization 34.3% ICU Level of Service	Level of Service			A									
	Intersection Capacity Utilization			34.3%	10	J Level of	f Service			A			
	Analysis Period (min)			15									

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HCM Unsignalized Intersection Capacity Analysis 70: Lake St & Lakeshore Rd W	$ \begin{array}{c} \checkmark & \checkmark & \checkmark & \checkmark & \checkmark & \land & \uparrow \\ \end{array} $	Movement EBT EBR WBL WBT NBL NBR	igurations AA 7 AA	1) 1536 107 0 1705	0 1705 0	0% 0% 0%	0.92 0.92 0.92 0.92 0.	ate (vph) 1670 116 0 1853 0	Pedestrians	Lane Width (m)	Walking Speed (m/s)	Percent Blocker	Right turn flare (web)	Median Vice None None	de veh)	Ibstream simulation 342 118	pi di la constante	vC, conflicting volume 1786 2596 835		vCu, unblocked vol 1786 2452 835	4.1 6.8	tage (s)	2.2 3.5	100	19	Direction, Lane # EB1 EB2 EB3 WB1 WB2 NB1	835 116 926	0 0 0 0	t 0 0 116 0 0	cSH 1700 1700 1700 1700 311	0.49 0.49 0.07 0.55 0.55	th (m) 0.0 0.0 0.0	ay (s) 0.0 0.0 0.0 0.0 0.0	elav (s) 0.0 0.0	0.0	Intersection Summary	0.5	Intersection Capacity Utilization 54.3% ICU Level of Service A
08/21/2017																																						A

None

Movement Lare Configurations Traffic Volume (veh/h) Sign Control Grade Beak Hour Factor Hourly flow rate (vph) Pedestrians Lare With (m) Walking Speed (ms) Pedestrians Lare With (m) Walking Speed (ms) Percent Blockage Right um flare (veh) Median type Right um flare (veh) Median type Right um flare (veh) Vic conflicting volume vCL, stage 1 conf vol vCL, stage 2 conf vol vCL, stage 1 conf vol vCL, stage 2 conf vol vCL, stage 2 conf vol vCL, stage 1 conf vol vCL, stage 1 conf vol vCL, stage 2 conf vol vCL, stage 1 conf vol vCL, stage 1 conf vol vCL, stage 2 conf vol vCL, stage 1 conf vol vCL, stage 1 conf vol vCL, stage 1 conf vol vCL, stage 2 conf vol vol vCL, stage 2 conf vol vol vCL, stage 2 conf vol vol vCL, stage 1 conf vol vol vCL, stage 2 conf vol vol vCL, stage 1 conf vol vol vCL, stage 2 con

62

172

49 49 49 0.92 53

WBL 31 31 31 31 0.92 34

0.92 3

91 20 0 1531 0.01 0.01 0.3 1.7 A 1.7

37 34 34 34 820 0.05 1.1 1.1 1.1 9.6 9.6 9.6 8 A

0.0

Approach Delay (s) Approach LOS

70 0 17 1700 0.04 0.04 0.0

Direction, Lane # Volume Total Volume Left Volume Right CSH Volume In Capacity Cueue Length 95th (m) Control Delay (s) Lane LOS

SB1

NB 1

3.3 100 1004

3.5 96 807 WB 1

62 6.2

172 6.4

2.6 21.1% 15

Intersection Summary Average Delay Intersection Capacity Utilization Analysis Period (min)

HCM Unsignalized Intersection Capacity Ane 69: Lake St & Port St W

-

\$

NBT

NBR ~

08/21/2017

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						110211200	73: Private Rd & Lakeshore Rd W	Lakesnore		
	Ť	ŧ	~	۶	*			t	1	\$
Movement EBL	L EBT	WBT	WBR	SBL	SBR		Movement	EBT	EBR	WBL
Lane Configurations	¢	\$		¥			Lane Configurations	¥	×.	
Traffic Volume (veh/h)	6 250	246	49	16	0		Traffic Volume (veh/h)	1629	73	0
Future Volume (Veh/h)	6 250	246	49	16	0		Future Volume (Veh/h)	1629	73	0
Sign Control	Free	Free		Stop			Sign Control	Free		
Grade		%0		%0			Grade	%0		
Peak Hour Factor 0.92	2 0.92	0.92	0.92	0.92	0.92		Peak Hour Factor	0.92	0.92	0.92
Hourly flow rate (vph)	7 272	267	53	17	0		Hourly flow rate (vph)	1771	79	0
Pedestrians							Pedestrians			
Lane Width (m)							Lane Width (m)			
Walking Speed (m/s)							Walking Speed (m/s)			
Percent Blockage							Percent Blockage			
Right turn flare (veh)							Right turn flare (veh)			
Median type	None	None					Median type	None		
Median storage veh)							Median storage veh)			
Upstream signal (m)							Ubstream signal (m)	133		
nX. platoon unblocked							bX. platoon unblocked			0.61
vC conflicting volume 320	_			580	100					1850
				200	L/ 7					0001
ver, stage i cuili vol							VC1, stage 1 curr vol			
5				001	201					0011
VCu, unblocked vol 320				080	294		VCU, UNDIOCKED VOI			1170
	_			6.4	6.2		tC, single (s)			4.1
stage (s)							tC, 2 stage (s)			
tF (s) 2.2	2			3.5	3.3		tF (s)			2.2
	6			96	100		p0 queue free %			100
cM capacity (veh/h) 1240	0			474	746		cM capacity (veh/h)			379
Direction, Lane # EB 1	1 WB1	SB1					Direction, Lane #	EB 1	EB 2	EB 3
Volume Total 279	9 320	17					Volume Total	886	886	79
Volume Left 7		17					Volume Left	0	0	0
Volume Right		0					Volume Right	0	0	79
cSH 1240	0 1700	474					cSH	1700	1700	1700
Volume to Capacity 0.0		0.04					Volume to Capacity	0.52	0.52	0.05
Queue Length 95th (m) 0.		0.9					Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s) 0.3	3 0.0	12.9					Control Delay (s)	0.0	0.0	0.0
	Δ	8					Lane LOS			
Approach Delav (s) 0.3	3 0.0	12.9					Approach Delav (s)	0.0		
Approach LOS		8					Approach LOS			
Internetion Common.							Isternation Cummon.			
							IIII SECTION SUMMING			
Average Delay		0.5	ŝ				Average Delay			0.2
Intersection Capacity Utilization		28.0%	2	ICU Level of Service	Service A		Intersection Capacity Utilization	ization		56.0%
Analysis Doriod (min)							And Dariod (min)			

ty Analysis

3: Private Rd & Lakeshore Rd W	eshore	Rd V	· · · · · ·		2		08/21/2017
	Ť	1	1	ŧ	1	*	
wamant	FRT	FRD	WRI	WRT	NRI	NRD	
ne Configurations		*	2		1		
affic Violinma (viah/h)	1420	7.2	0	1803	0	90	
titre Volume (Veh/h)	1420	C /		1902		609	
tare voluine (vervit) in Control	Eroo	2	>	Eroo	Cton	60	
	200			200			
	0/0	000	000	000	0.00	000	
ak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
urly flow rate (vph)	1771	79	0	2058	0	75	
destrians							
ne Width (m)							
alking Speed (m/s)							
rcent Blockage							
tht turn flare (veh)							
dian type	None			None			
edian storage veh)							
stream signal (m)	133			137			
platoon unblocked			0.61		0.61	0.61	
			1850		2800	886	
1 stage 1 confinal			-		20007	8	
1, stage 1 cont vol							
z, stage z cutit vu			0011		0270	<	
u, unblockea vol			1170		20/3	0	
single (s)			4.1		6.8	6.9	
2 stage (s)							
(s)			2.2		3.5	3.3	
queue free %			100		100	89	
capacity (veh/h)			379		1	663	
ection, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	
lume Total	886	886	79	1029	1029	75	
lume Left	0	0	0	0	0	0	
lume Right	0	0	79	0	0	75	
н	1700	1700	1700	1700	1700	663	
lume to Capacity	0.52	0.52	0.05	0.61	0.61	0.11	
ieue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	3.0	
ntrol Delay (s)	0.0	0.0	0.0	0.0	0.0	11.1	
ne LOS						8	
proach Delay (s)	0.0			0.0		11.1	
proach LOS						8	
ersection Summary							
erade Delav			0.2				
ersection Capacity Utilization	c		56.0%	Ū	ICU Level of Service	Servic	В
alvsis Period (min)			15				
· · · · · · · · · · · · · · · · · · ·							

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$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	46: Avenue A/Loblaws Access & Lakeshore Kd W	Acces	S&L	akesh	ore K	×						12/80	/ 1.07/1.7/90	16: Mississauga Rd & Lake St	d & La	(e St
File         File         Met         Met </th <th>`\</th> <th>•</th> <th></th> <th>~</th> <th>\$</th> <th>Ļ</th> <th>~</th> <th>•</th> <th>-</th> <th>٠</th> <th>۶</th> <th>-</th> <th>•</th> <th></th> <th>1</th> <th>Ť</th>	`\	•		~	\$	Ļ	~	•	-	٠	۶	-	•		1	Ť
				EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Movement	EBL	EBT
6         15         6         16         10         0         33 <th>Lane Configurations</th> <th>*</th> <th></th> <th>×</th> <th>۴</th> <th>ŧ</th> <th>×</th> <th>F</th> <th>£,</th> <th></th> <th>r</th> <th>÷,</th> <th>1</th> <th>Lane Configurations</th> <th></th> <th>÷</th>	Lane Configurations	*		×	۴	ŧ	×	F	£,		r	÷,	1	Lane Configurations		÷
9.6         10.2         10.1			582	68	165	835	105	110	0	187	50	0	35	Sign Control		Stop
130         130 <td>(h)</td> <td>-</td> <td>582</td> <td>68</td> <td>165</td> <td>835</td> <td>105</td> <td>110</td> <td>0</td> <td>187</td> <td>50</td> <td>0</td> <td>35</td> <td>Traffic Volume (vph)</td> <td>147</td> <td></td>	(h)	-	582	68	165	835	105	110	0	187	50	0	35	Traffic Volume (vph)	147	
10         10         10         10         10         10         100	-		006	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	Future Volume (vph)	147	
10         0		3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.5	3.7	3.5	Peak Hour Factor	0.92	0
100         100 <td></td> <td></td> <td>6.0</td> <td>6.0</td> <td>3.5</td> <td>6.0</td> <td>6.0</td> <td>6.0</td> <td>6.0</td> <td></td> <td>6.0</td> <td>0.9</td> <td></td> <td>Hourly flow rate (vph)</td> <td>160</td> <td></td>			6.0	6.0	3.5	6.0	6.0	6.0	6.0		6.0	0.9		Hourly flow rate (vph)	160	
100         100         050         100         050         100         050         100         050         100         050         100         050         100         050         100 <td></td> <td></td> <td>0.95</td> <td>1.00</td> <td>1.00</td> <td>0.95</td> <td>1.00</td> <td>1.00</td> <td>1.00</td> <td></td> <td>1.00</td> <td>1.00</td> <td></td> <td>Diroction Labo #</td> <td>501</td> <td>10/0 1</td>			0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00		Diroction Labo #	501	10/0 1
10         10         05         10<	Frt 1.		1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.85				5
130         344         150         343         150         344         150         344         150         344         150         344         150         344         150         344         150         344         150         344         150         344         150         344         150         344         150         344         150         344         150         345         150         350         180         350 <td></td> <td></td> <td>00.1</td> <td>1.00</td> <td>0.95</td> <td>1.00</td> <td>1.00</td> <td>0.95</td> <td>1.00</td> <td></td> <td>0.95</td> <td>1.00</td> <td></td> <td>Volume Lotal (vpn)</td> <td>239</td> <td></td>			00.1	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00		Volume Lotal (vpn)	239	
10         10<	·	,	544	1541	1750	3444	1532	1750	1601		1684	1585		Volume Left (vph)	160	
573         354         151         113         344         152         136         161         132         136         161         136         136         137         136 <td></td> <td></td> <td>00.1</td> <td>1.00</td> <td>0.06</td> <td>1.00</td> <td>1.00</td> <td>0.73</td> <td>1.00</td> <td></td> <td>0.31</td> <td>1.00</td> <td></td> <td>Volume Right (vph)</td> <td>5</td> <td></td>			00.1	1.00	0.06	1.00	1.00	0.73	1.00		0.31	1.00		Volume Right (vph)	5	
091         031         032         032         031         032         033 <td></td> <td>,</td> <td>544</td> <td>1541</td> <td>119</td> <td>3444</td> <td>1532</td> <td>1349</td> <td>1601</td> <td></td> <td>555</td> <td>1585</td> <td></td> <td>Hadj (s)</td> <td>0.1</td> <td></td>		,	544	1541	119	3444	1532	1349	1601		555	1585		Hadj (s)	0.1	
10         138         14         19         98         15         10         20			1.91	0.92	0.92	0.91	0.91	0.92	0.92	0.92	0.91	0.92	0.91	Departure Headway (s)	5.0	
0         1         0         0         1         0         0         1         0			738	74	179	918	115	120	0	203	55	0	38	Degree Utilization, X	0.33	
46         173         50         179         91         50         120			0	24	0	0	19	0	176	0	0	33	0	Capacity (veh/h)	683	
2%         3%         2%         3%<			738	20	179	918	96	120	77	C	5	LC.	0	Control Delay (s)	10.4	
n         i	1.10		3%	2%	2%	%9	3%	2%	2%	2%	%9	2%	3%	Approach Delay (s)	10.4	
Perm         NA         Perm         NA         Perm         NA         Perm         NA           4         4         3         8         2         2         6         6           89.0         89.0         99.0         108.3         109.3         109.3         193         177         177         177           90.0         90.0         109.3         109.3         109.3         109.3         187         187         187           90.0         90.0         109.3         109.3         109.3         109.3         103         137         177         177           90.0         90.0         109.3         109.3         109.3         109.3         103         137         137         137           7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0           3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0           7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0           8.0         0.3         0.05         0			0	4	0	0	m	0	0	0	0	0	0	Approach LOS		A
4         4         5         8         2         6         6           4         4         8         8         2         13         17         17         17           900         900         900         1993         1083         1083         193         17         187         187           900         900         900         1993         1093         17         17         17         17           900         900         1903         1093         103         013         013         013         013         013           70		e	L .		n+nt	NA	Perm	Perm	NA		Perm	NA	1	Intersection Summary		
4         4         8         2         6         5           890         890         1083         1083         1083         177         177         177         177         177           900         900         900         1093         1093         1093         1093         1093         117         177         177         177         177           70         70         964         064         078         178         078         078         137         187         187         187           70					<u>.</u> ~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	5	5	~			9		Delav		
890         890         890         1083         1083         177         171         177         171 </td <td>Permitted Phases</td> <td>4</td> <td></td> <td>4</td> <td>~</td> <td></td> <td>~</td> <td>2</td> <td></td> <td></td> <td>9</td> <td></td> <td></td> <td>Level of Service</td> <td></td> <td></td>	Permitted Phases	4		4	~		~	2			9			Level of Service		
900         900         900         1093         1093         187         187         187         187           0.64         0.78         0.78         0.78         0.73         0.13         0.13         0.13         0.13           30         30         30         30         30         30         30         30         30         30           30         30         30         30         30         30         30         30         30         30           30         30         30         30         30         30         30         30         30         30           301         303         30         30         30         30         30         30         30         30           013         0.76         0.05         0.65         0.34         0.06         0.07         0.01         0.01           013         0.76         0.05         0.65         0.34         0.06         0.07         0.07         0.07           013         0.76         0.05         0.65         0.34         0.06         0.07         0.01         0.01         0.01           010         100         100 <td>(S)</td> <td></td> <td>39.0</td> <td></td> <td>108.3</td> <td>108.3</td> <td>108.3</td> <td>17.7</td> <td>17.7</td> <td></td> <td>17.7</td> <td>17.7</td> <td></td> <td>Intersection Capacity Utilizat</td> <td>ation</td> <td></td>	(S)		39.0		108.3	108.3	108.3	17.7	17.7		17.7	17.7		Intersection Capacity Utilizat	ation	
0.64         0.64         0.64         0.78         0.78         0.73         0.13         0.13         0.13           7.0         7.0         4.5         7.0         7.0         7.0         7.0         7.0         7.0         7.0           3.8         2.37         9.00         2.36         5.88         1.96         1.80         2.13         7.0         7.0         7.0         7.0           0.09         2.01         0.27         0.27         5.36         0.33         0.05         0.07         0.07         0.07         0.01         0.00         0.00         0.02         0.01         0			0.06		109.3	109.3	109.3	18.7	18.7		18.7	18.7		Analvsis Period (min)		
70         70<			0.64		0.78	0.78	0.78	0.13	0.13		0.13	0.13				
30         30<	,	·	7.0	7.0	4.5	7.0	7.0	7.0	7.0		7.0	7.0				
368         2778         990         276         268         1196         180         213         74           0.09         c0.49         c007         0.27         0.02         c0.10         100         100         100         100         100         100         100         100         100         100         100         100         100         100			3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0				
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$		ſ	PTC	000	776	2688	1106	180	213		VL.	211	1			
0.09         0.03         0.43         0.06         0.09         0.01           0.13         0.76         0.05         0.65         0.34         0.08         0.67         0.13         0.14           0.13         0.75         0.05         0.65         0.34         0.08         0.67         0.13         0.03           0.10         1.00         1.00         1.00         1.00         1.00         1.00         1.00           0.7         2.5         0.1         5.2         0.3         0.1         9.0         0.3         32.7           0.15         2.0         9.3         1.0         1.0	(	0	0.49		c0.07	0.27		2	0.02			0.00				
013         076         005         0.65         0.34         0.08         0.67         013         0.74           98         17.5         9.2         33.6         57.7         53.5         58.3           103         100         100         100         100         100         100           0.7         2.5         0.1         5.2         0.3         0.1         9.0         0.3           0.7         2.5         0.1         5.2         0.3         0.1         9.0         0.3         2.7           105         200         9.3         38.4         4.9         3.7         66.7         53.7         91.0           19.5         9.3         9.4         4.9         3.7         66.7         53.7         91.0           19.5         9.3         9.4         4.9         3.7         66.7         53.7         91.0           19.5         9.4         A         A         E         D         F         F           19.5         9.4         3.7         66.7         53.7         91.0         F         F           19.5         9.4         A         A         E         D         F </td <td>-</td> <td></td> <td></td> <td>0.03</td> <td>0.43</td> <td></td> <td>0.06</td> <td>0.09</td> <td></td> <td></td> <td>c0.10</td> <td></td> <td></td> <td></td> <td></td> <td></td>	-			0.03	0.43		0.06	0.09			c0.10					
98         17.5         9.2         33.2         4.6         3.6         57.7         53.5         58.3           1.00         1.00         1.00         1.00         1.00         1.00         1.00           0.7         2.5         0.1         3.0         1.00         1.00         1.00         1.00           0.7         2.5         0.1         3.0         1.00         1.00         1.00         1.00           10.5         2.03         3.1         9.0         0.3         3.7         91.0           10.5         2.0         3.3         1.4         3.7         6.7         5.3         91.0           10.5         2.0         9.3         7.4         6.7         5.7         91.0           19.3         A         A         A         E         D         F         P           19.3         A         A         A         E         D         F         P           2.1         HCM 2000 Level of Service         C         C         C         C         D           2.11         HCM 2000 Level of Service         C         C         C         C         C           2.11         HCM			0.76	0.05	0.65	0.34	0.08	0.67	0.13		0.74	0.02				
1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00           0.7         2.5         0.1         5.2         0.3         0.1         9.0         0.3         32.7           105         2.0         9.3         8.1         9.0         0.3         32.7         91.0           105         2.0         9.3         8.1         6.7         53.7         91.0         7           19.3         0.1         9.8         5.8         58.5         58.5         7         91.0           19.3         9.8         A         A         A         E         E         58.5         7         91.0           21.1         HCM 2000 Level of Service         2.1.1         HCM 2000 Level of Service         C         7         91.0           21.1         HCM 2000 Level of Service         7         140.0         5.5         15.5			17.5	9.2	33.2	4.6	3.6	57.7	53.5		58.3	52.7				
0.7 25 0.1 52 0.3 0.1 90 0.3 32.7 10.5 200 9.3 38.4 4.9 3.7 6.7 53.7 91.0 19.3 0.8 A E 58.5 19.3 9.8 58.5 10.0 2.1 HCM 2000 Level of Service C 21.1 HCM 2000 Level of Servi			00.1	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00				
105         200         9.3         38.4         4.9         3.7         6.7         53.7         91.0           B         C         A         D         A         A         E         D         F           19.3         C         A         D         A         A         E         D         F           19.3         A         A         A         A         A         E         D         F           B         A         A         A         A         C         S6.5         B         F           B         A         A         A         A         C         C         C         C           active0.75         Sum of lost time (s)         Service         C         C         C           action         87.0%         CU Level of Service         C         C         C         C           140.0         Sum of lost time (s)         ICU Level of Service         C         C         C         C			2.5	0.1	5.2	0.3	0.1	0.6	0.3		32.7	0.0				
B         C         A         D         A         E         D         F           19.3         98         98         58.5 <td></td> <td></td> <td>20.0</td> <td>9.3</td> <td>38.4</td> <td>4.9</td> <td>3.7</td> <td>66.7</td> <td>53.7</td> <td></td> <td>91.0</td> <td>52.8</td> <td></td> <td></td> <td></td> <td></td>			20.0	9.3	38.4	4.9	3.7	66.7	53.7		91.0	52.8				
19.3         9.8         58.5           B         A         E           B         A         E           Compact of Service         C           Pacily ratio         0.75         Level of Service           140.0         Sum of lost time (s)         15.5           15         15         15	Level of Service	в	ပ	A	۵	A	A	ш	۵		ш	۵				
B         A         E           acity ratio         21.1         HCM 2000 Level of Service         C           acity ratio         0.75         Sum of lost time (s)         15.5           acition         87.0%         CU Level of Service         C	Approach Delay (s)	-,	19.3			9.8			58.5			75.4				
21.1     HCM 2000 Level of Service       pacity ratio     0.75       1     140.0       2ation     87.0%       15     ICU Level of Service	Approach LOS		в			A			ш			ш				
21.1         HCM 2000 Level of Service           pacity ratio         0.75         Num of lost time (s)           )         140.0         Sum of lost time (s)           zation         87.0%         ICU Level of Service           15         ICU Level of Service	Intersection Summary															
pacity ratio 0.75 140.0 Sum of lost time (s) 2 ation 87.0% ICU Level of Service 15	HCM 2000 Control Delay			21.1	E	:M 2000 I	evel of S	ervice		ပ			1			
h (s) 140.0 Sum of lost time (s) Utilization 87.0% ICU Level of Service 15	HCM 2000 Volume to Capacity rat	i		0.75												
Utilization 87.0% 1 15 10	Actuated Cycle Length (s)		-,-	40.0	Su	m of lost	time (s)			15.5						
q	Intersection Capacity Utilization		8	7.0%	U D	J Level o	Service			ш						
c Critical Lane Group	Analysis Period (min)			15												
	c Critical Lane Group															

HCM Unsignalized Intersection Capacity Analysis

6: Mississauga Rd & Lake St	Lake	st	-	Ì							08/21	08/21/2017
	•	t	1	1	ŧ	~	4	+	*	۶	-	$\mathbf{F}$
lovement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
ane Configurations		÷			¢			¢			¢	
ign Control		Stop			Stop			Stop			Stop	
affic Volume (vph)	147	73	0	2	93	2	0	35	2	10	25	163
uture Volume (vph)	147	73	0	2	93	2	0	35	ß	10	25	163
eak Hour Factor	0.92	0.92	0.92	0.66	0.92	0.66	0.92	0.66	0.66	0.66	0.66	0.92
ourly flow rate (vph)	160	79	0	œ	101	∞	0	53	8	15	8	177
irection, Lane #	EB 1	WB 1	NB 1	SB 1								
olume Total (vph)	239	117	61	230								
olume Left (vph)	160	œ	0	15								
olume Right (vph)	0	œ	∞	177								
	0.17	0.02	0.66	-0.32								
eparture Headway (s)	5.0	5.0	5.8	4.6								
egree Utilization, x	0.33	0.16	0.10	0.29								
	683	665	568	729								
ontrol Delay (s)	10.4	8.9	9.4	9.5								
pproach Delay (s)	10.4	8.9	9.4	9.5								
pproach LOS	8	A	A	A								
tersection Summary												
elay			9.7									
evel of Service			A									
tersection Capacity Utilization			43.9%	D	ICU Level of Service	<sup>5</sup> Service			A			
nalysis Period (min)			15									

Future Total Reduced Auto Driver Mode Split 08/09/2017 AM Peak UR

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Future Total Reduced Auto Driver Mode Split 08/09/2017 AM Peak LJR

HCM Unsignalized Intersection Capacity Analysis 24: Mississauga Rd & Port St W	section or the section of the sectio	on Ca t W	apacity	Analy	<u>.s</u>						08/2.	08/21/2017
1		t	1	\$	Ļ	~	<	+	٠	۶	-	$\mathbf{k}$
Movement El	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
		¢			÷			¢			¢	
	114	51	0	0	6	50	0	192	2	45	203	22
Future Volume (Veh/h) 1	114	51	0	0	6	50	0	192	2	45	203	22
Sign Control		Stop			Stop			Free			Free	
		%0			%0			%0			%0	
Peak Hour Factor 0.		0.92	0.92	0.73	0.92	0.73	0.92	0.73	0.73	0.73	0.73	0.92
ate (vph)	124	55	0	0	10	68	0	263	7	62	278	24
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)											135	
pX, platoon unblocked												
	754	684	290	708	692	266	302			270		
vC1, stage 1 conf vol												
ol												
ed vol	754	684	290	708	692	266	302			270		
		6.5	6.2	7.1	6.5	6.3	4.1			4.2		
stage (s)												
	3.5	4.0	3.3	3.5	4.0	3.4	2.2			2.3		
	56	84	100	100	79	91	100			95		
cM capacity (veh/h) 2	279	353	749	299	349	753	1259			1265		
Direction, Lane # EB 1		WB 1	NB 1	SB1								
Volume Total 1	179	78	270	364								
	124	0	0	62								
e Right	0	68	7	24								
		656	1259	1265								
		0.12	0.00	0.05								
ith (m)	29.0	3.2	0.0	1.2								
lay (s)	33.7	11.2	0.0	1.8								
		8		A								
/ (S)	33.7	11.2	0.0	1.8								
Approach LOS	D	8										
Intersection Summary												
Average Delay			8.5									
Intersection Capacity Utilization			50.6% 15	ICU	ICU Level of Service	Service			A			
			2									

	1	Ť	Ļ	~	۶	•	
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		÷	¢\$		×		
Traffic Volume (veh/h)	ß	49	131	36	59	38	
Future Volume (Veh/h)	2	49	131	36	59	38	
Sign Control		Free	Free		Stop		
Grade		%0	%0		%0		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	2	53	142	39	64	41	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		None	None				
Median storage veh)							
Upstream signal (m)							
pX, platoon unblocked							
vC, conflicting volume	181				224	162	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	181				224	162	
tC, single (s)	4.1				6.4	6.2	
IC, 2 stage (s)							
tF (s)	2.2				3.5	3.3	
p0 queue free %	100				92	95	
cM capacity (veh/h)	1394				761	883	
Direction, Lane #	EB 1	WB 1	SB 1				
Volume Total	58	181	105				
Volume Left	2	0	64				
Volume Right	0	39	41				
cSH	1394	1700	804				
Volume to Capacity	0.00	0.11	0.13				
Queue Length 95th (m)	0.1	0.0	3.6				
Control Delay (s)	0.7	0.0	10.1				
Lane LOS	A		8				
Approach Delay (s)	0.7	0.0	10.1				
<pre>vpproach LOS</pre>			8				
ntersection Summary							
Average Delay			3.2				
ntersection Capacity Utilization	u		71 20%	2	I loud l	ICIII ovel of Corvice	V
			0/0-1 7	2	רבעבו חו	Sel VICE	А

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Future Total Reduced Auto Driver Mode Split 08/09/2017 AM Peak LJR

	1	t	۲	\$	Ļ	~	4	-	۰.	۶	-	7
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		¢			¢			¢			¢	
Traffic Volume (veh/h)	0	63	9	17	14	0	32	9	101	0	<del>,</del>	0
Future Volume (Veh/h)	0	63	9	17	14	0	32	9	101	0		0
Sign Control		Free			Free			Stop			Stop	
Grade		%0			%0			%0			%0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	68	7	18	15	0	35	7	110	0	-	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX. platoon unblocked												
vC, conflicting volume	15			75			123	122	72	236	126	15
vC1. stage 1 conf vol												
vC2, stage 2 conf vol												Ľ
vCu, unblocked vol	15			75			123	122	72	236	126	15
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			66			96	66	89	100	100	100
cM capacity (veh/h)	1603			1524			843	759	991	629	755	1065
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	75	33	152	-								
Volume Left	0	18	35	0								
Volume Right	7	0	110	0								
cSH	1603	1524	940	755								
Volume to Capacity	0.00	0.01	0.16	0.00								
Queue Length 95th (m)	0.0	0.3	4.6	0.0								
Control Delay (s)	0.0	4.1	9.6	9.8								
Lane LOS		A	A	A								
Approach Delay (s)	0.0	4.1	9.6	9.8								
Approach LOS			A	A								
Intersection Summary												
Average Delay			6.1									
Intersection Capacity Utilization	tion		30.0%	Q	ICU Level of Service	<sup>5</sup> Service			A			
Analysis Period (min)			15									

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HCM Unsignalized Intersection Capacity Analysis 68: Avenue A & Port St W	ersec st W	tion C	apacity	/ Anal)	/sis						08/2	08/21/2017
	-	t	1	\$	Ŧ	~	4	+	٠	۶	-	$\rightarrow$
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		¢			¢			¢			¢	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	63	20		2	10	63	9	89	13	12	96	12
Future Volume (vph)	63	20	-	2	10	63	9	89	13	12	96	12
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	68	22		2	11	68	7	<i>L</i> 6	14	13	104	13
Direction, Lane # E	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	91	81	118	130								
Volume Left (vph)	89	2	7	13								
Volume Right (vph)		68	14	13								
	0.18	-0.46	-0.03	-0.01								
(s)	4.7	4.1	4.4	4.4								
Degree Utilization, x	0.12	0.09	0.15	0.16								
Capacity (veh/h)	607	808	773	769								
Control Delay (s)	8.4	7.5	8.2	8.3								
Approach Delay (s)	8.4	7.5	8.2	8.3								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			8.1									
Level of Service			A									
Intersection Capacity Utilization			27.8%	Ū	ICU Level of Service	Service			A			
Analysis Period (min)			15									

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Future Total Reduced Auto Driver Mode Split 08/09/2017 AM Peak LJR

HCM Unsignalized Intersection Capacity Analysis 69: Lake St & Port St W	tersec W	tion Cá	apacity	/ Analy	sis	0	08/21/2017	HCM U 70: Lak
	5	~	-	٠	٠	-		
Movement	WBL	WBR	NBT	NBR	SBL	SBT		Movement
Lane Configurations	×		4			¢\$		Lane Confi
Traffic Volume (veh/h)	9	19	40	32	2	22		Traffic Volu
Future Volume (Veh/h)	9	19	40	32	2	22		Future Volt
Sign Control	Stop		Free			Free		Sign Contri
Grade	%0		%0			0%		Grade
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		Peak Hour
Hourly flow rate (vph)	7	21	43	35	2	24		Hourly flow
Pedestrians								Pedestrian
Lane Width (m)								Lane Width
Walking Speed (m/s)								Walking Sp
Percent Blockage								Percent Blo
Right turn flare (veh)								Right turn f
Median type			None			None		Median typ
Median storage veh)								Median sto
Upstream signal (m)								Upstream :
pX, platoon unblocked								pX, platoor
vC, conflicting volume	88	09			78			vC, conflict
vC1, stage 1 conf vol								vC1, stage
vC2, stage 2 conf vol								vC2, stage
vCu, unblocked vol	88	09			78			vCu, unblo
tC, single (s)	6.4	6.2			4.1			tC, single (
tC, 2 stage (s)								tC, 2 stage
tF (s)	3.5	3.3			2.2			tF (s)
p0 queue free %	66	8			100			p0 queue fi
cM capacity (veh/h)	911	1005			1520			cM capacit
Direction, Lane # //	WB 1	NB 1	SB 1					Direction, L
Volume Total	28	78	26					Volume To
Volume Left	7	0	2					Volume Le
Volume Right	21	35	0					Volume Rig
cSH	980	1700	1520					cSH
Volume to Capacity	0.03	0.05	0.00					Volume to
Queue Length 95th (m)	0.7	0.0	0.0					Queue Len
Control Delay (s)	8.8	0.0	0.6					Control De
Lane LOS	A		A					Lane LOS
Approach Delay (s)	8.8	0.0	0.6					Approach [
Approach LOS	A							Approach I
Intersection Summary								Intersection
Average Delay			2.0					Average D
Intersection Capacity Utilization			14.1%	ICU	ICU Level of Service	Service A		Intersection
Analysis Period (min)			15					Analysis Pe

HCM Unsignalized Intersection Capacity Analysis

now unsignanced intersection capacity Analysis 0: Lake St & Lakeshore Rd W	ersec		apacity	/ Analy	SIS		08/21/2017	
	t	1	\$	Ŧ	4	*		
ovement	EBT	EBR	WBL	WBT	NBL	NBR		
ane Configurations	ŧ	×.		ŧ		×		I I
affic Volume (veh/h)	1615	44	0	980	0	79		
uture Volume (Veh/h)	1615	44	0	980	0	79		
ign Control	Free			Free	Stop			
rade	%0			%0	%0			
eak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
ourly flow rate (vph)	1755	48	0	1065	0	86		
edestrians								
ane Width (m)								1
(alking Speed (m/s)								
ercent Blockage								
e (ven)				:				
	None			None				
edian storage ven)	010			1				
pstream signal (m)	342			118				
K, platoon unblocked					0.92			
C, conflicting volume			1803		2288	878		
C1, stage 1 conf vol								
C2, stage 2 conf vol			1 000			0.00		
Cu, unblocked vol			1803		2227	878		
;, single (s)			4.1		6.8	6.9		
, 2 stage (s)						:		
(s)			2.2		3.5	3.3		1
) queue free %			100		100	70		
// capacity (veh/h)			338		34	291		
irection, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1		
olume Total	878	878	48	532	532	86		
olume Left	0	0	0	0	0	0		
olume Right	0	0	48	0	0	86		
ЭН	1700	1700	1700	1700	1700	291		
olume to Capacity	0.52	0.52	0.03	0.31	0.31	0.30		
ueue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	9.6		
ontrol Delay (s)	0.0	0.0	0.0	0.0	0.0	22.4		
ane LOS						U		
pproach Delay (s)	0.0			0.0		22.4		
pproach LOS						C		
tersection Summary								
verage Delay			0.7					
tersection Capacity Utilization			56.2%	ICI	ICU Level of Service	Service	в	
nalysis Period (min)			61					

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Future Total Reduced Auto Driver Mode Split 08/09/2017 AM Peak

Monenci         Eli         Mil	HCM Unsignalized Intersection Capacity Analysis 71: Lake St & Avenue B	ntersec le B	tion C	apacity	/ Analy	sis		08/21/2017	HCM Unsignalized Inte 73: Private Rd & Lakes
eta         Ell         Ell         NI         NI         SI         SI           Outmer (vehn)         6         13         246         9         32         0           Outmer (vehn)         6         138         246         9         32         0           Outmer (vehn)         6         138         246         9         32         0           Out out elle (veh)         7         0.20         0.20         0.20         0.20         0.20           Out elle (veh)         7         2.02         0.20         0.20         0.20         0.20           Out elle (veh)         7         2.02         0.20         0.20         0.20         0.20           Out elle (veh)         7         2.02         0.20         0.20         0.20         0.20           Out elle (veh)         7         2.02         0.20         0.20         0.20         0.20           Out elle (veh)         1.20         2.02         1.0         2.02         0.20         0.20           Out elle (veh)         1.20         2.02         1.0         2.22         2.22         0.22           Out elle (veh)         1.21         2.22         2.22		1	Ť	Ŧ	~	۶	~		
Moment (enth)         6         1         7         4         1           Vunner (enth)         6         188         266         9         32         0           Vunner (enth)         7         8         7         9         32         0           Inter Flate         5         7         10         35         0         35         0           Inter Flate         0         203         032         032         032         032         032           Specification         10         35         0         35         0         35         0           Strong enth         nicitation         10         35         0         35         0         35         0           Strong enth         nicitation         10         35         0         22         33	Movement	EBL	EBT	WBT	WBR	SBL	SBR		Movement
Monume (veh)         6         188         246         9         32         0           Nonner (veh)         6         188         246         9         32         0           Nonner (veh)         7         203         025         025         025         035           Res         7         203         025         025         025         035           Res         7         204         10         35         0         0           Res         7         204         10         35         0         0           Res         7         204         10         35         0         0           Res         None         None         None         None         None         None         None           Res         7         40         27         40         27         0	Lane Configurations		ţ	÷		¥			Lane Configurations
Autome (veht)         6         188         246         9         22         0           antol         Fies         500         00         35         0         360           four factor         0.32         0.92         0.92         0.92         0.92         0.92           four factor         1         2.01         2.07         0.02         0.92         0.92         0.92           Speed (ms)         5         0         35         0         35         0         35         0           Streed (ms)         None         None         None         None         490         212         35         30           Streed (ms)         211         4.90         212         490         212         33	Traffic Volume (veh/h)	9	188	246	6	32	0		Traffic Volume (veh/h)
Intel         Free         Stop           Corr Factor         0.92	Future Volume (Veh/h)	9	188	246	6	32	0		Future Volume (Veh/h)
Out Reter         0.9         0.9         0.92         0.91	Sign Control		Free	Free		Stop			Sign Control
Hour Factor         0.92         0.92         0.92         0.92         0.92           Montale (m)         7         2.04         2.67         10         35         0           Montale (m)         Montale (m) </td <td>Grade</td> <td></td> <td>%0</td> <td>%0</td> <td></td> <td>%0</td> <td></td> <td></td> <td>Grade</td>	Grade		%0	%0		%0			Grade
Inversion         7         204         267         10         35         0           with (m) with (m) with (m)         9 Special (motion)         None         None         None         None           9 Special motions         None         None         None         None         None           0 Special motions         None         None         None         490         222           10 Special motions         271         490         222         490         222           ans grading value         271         490         222         490         222           apper control         271         271         35         767         490           apper control         271         271         35         767	Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		Peak Hour Factor
tities (Adi (m) (Adi (m)	Hourly flow rate (vph)	7	204	267	10	35	0		Hourly flow rate (vph)
Midt (m)         Midt (m)           GSead (ms)         None         None         None           HB (cds)         None         None         None           Nthate (en)         None         None         None           an signal (m)         100         271         490         272           ans signal (m)         271         490         272         20           ans signal (m)         271         490         272         20           alge 1 cont vol         271         490         272         20           alge 2 cont vol         271         490         272         20         20           alge 1 cont vol         271         490         272         20         20         20           alge 5 cont vol         271         490         272         20         20         20           alge 5 cont vol         271         27         33         33         20         20         20         20           alge 5         21         23         33         33         20         20         21         21         21         21         21         21         21         21         21         21         21	Pedestrians								Pedestrians
and Backerge         Mone         None	Lane Width (m)								Lane Width (m)
In Blockage         None         None         None           Intype         None         None         None           Intype         10 mode         277         490         272           Intype         277         490         272         490         273           Introduction         277         490         272         490         272           Introduction         277         490         272         490         272           Introduction         271         490         272         490         272           Introduction         271         490         272         490         273           Introduction         271         490         272         490         273           Introduction         271         490         272         490         273           Introduction         271         64         62         33         33         33           Introduction         271         53         701         64         62         66         67         67         67         67         67         67         67         67         67         67         67         67         67         67	Walking Speed (m/s)								Walking Speed (m/s)
In the (et)         More         None         None           n type         n type         n type         n type           ans stragge vb)         ans stragge vb)         ans stragge vb)         ans stragge vb)           ans stragge vb)         217         490         272           ans transpace         217         490         272           ans transpace         217         490         272           ans transpace         217         6.4         6.2           ans transpace         33         33         33           ans transpace         33         33         300           ans transpace         33         300         300           ans transpace         33         300         300           ans transpace         33         300         300           and transpace         31         211         211         211           and transpace         30         3100         300         310           and trans transpace	Percent Blockage								Percent Blockage
It Upe         None         None         None           nistograph (n) anon unblocked mitigation         217         490         212           ages to not volute mitigation         217         490         212           anon unblocked         217         490         212           anon unblocked         21         33         33           anon unblocked         22         33         33           anon unblocked         23         33         33           anot (veht)         128         53         100           anot (veht)         128         53         70           anot (veht)         128         100         33           anot (veht)         128         12         12           anot (veht)         128         12         12           anot (veht)         128         100         35           anot (veht)         128         12         12	Right turn flare (veh)								Right turn flare (veh)
n signage veh) am signal (n) an signal (n) an signal (n) an signal (n) alge 1 control = 211 = 490 = 212 alge 2 control = 211 = 490 = 212 alge (s) = 4,1 = 6,4 = 6,2 alge (s) = 2,1 = 2,1 = 6,4 = 6,2 alge (s) = 2,3 = 3,5 = 3,3 = 3,3 alge (s) = 2,3 = 3,3 = 3,3 alge (s) = 2,1 =	Median type		None	None					Median type
am signal (m) and untilocked milling voru age 1 our vol age 1 our vol age 2 our vol age 2 our vol biocked vol 277 + 490 272 9 (s) 41 - 64 62 age (s) - 1 age (s) -	Median storage veh)								Median storage veh)
ation unlocked and failog vulume 217 490 212 abge 2 corf vol 217 35 33 30 abge 2 corf vol 1286 533 7 67 abge 2 corf vol 218 21 211 211 211 213 35 e fail 211 211 211 35 e fail 211 211 313 5 e fail 211 211 313 5 e fail 01 01 01 0 07 e fail 01 01 01 0 07 e leaf 17 0 35 e leaf 17 0 35 e leaf 17 0 35 e fail 00 122 c corf vol 17 e leaf 17 0 12 e fail 00 122 c corf vol 12 c corf vol 12	Upstream signal (m)								Upstream signal (m)
Initiality volume         277         490         272           abge 1 cont vol         277         490         272           abge 1 cont vol         277         490         272           abge 1 cont vol         277         6.4         6.2           abge 1 cont vol         277         6.4         6.2           abge 1 cont vol         277         6.4         6.2           abge 1 cont vol         27         6.3         7.67           abge 1 cont vol         28         7.67         5.3           abge 1 cont vol         28         7.67         5.3           abge 1 cont vol         28         7.67         5.3           abge 1 cont vol         28         7.67         5.5           abge 1 cont vol         28         7.67         5.5           abge 1 cont vol         27         20         5.5         7.67           abge 1 cont vol         27         20         5.5         7.67           abge 1 cont vol	pX, platoon unblocked								pX, platoon unblocked
lage 1 conf vol       lage 2 conf vol       nibocket vol       nibocket vol       nibocket vol       atge (s)       31       ge (s)       22       35       36       33       34       35       35       35       36       33       33       34       35       35       36       37       38       10       29       11       21       211       211        213       214       217       218       117       218       110       21       213       214       213       214       213       214       213       214       214       215       216       217       218       210       211       213       214       215       216       217       218       210       210       2	vC, conflicting volume	277				490	272		vC, conflicting volume
Lage 2 conf vol     277     490     272       Indocked vol     277     6.4     6.2       Indocked vol     277     6.4     6.2       Indocked vol     27     3.5     3.3       Indocked vol     22     3.5     3.6       Indocked vol     12.86     5.35     7.67       Indocked vol     211     211     211     211       Indocked vol     211     211     3.6     1.00       Indocked vol     10     0.1     0     1.6       Indocked vol     211     211     3.5     1.00       Indocked vol     211     211     3.6     1.00       Indocked vol     213     211     2.17     3.5       Indocked vol     21     21     2.17     3.5       Indocked vol     23     1.00     2.1     2.1       Indocked vol     23     1.00     2.2     3.5       Indocked vol     23     1.00     2.2     3.5       Indocked vol     23     1.00     2.2     3.5	vC1, stage 1 conf vol								vC1, stage 1 conf vol
mbiocked vol         277         490         272           age (s)         4.1         6.4         6.2           age (s)         2.2         3.5         3.3           aue free %         99         93         100           pacity (ve/h/h)         1.286         3.5         3.6           pacity (ve/h/h)         1.286         5.35         7.67           pacity (ve/h/h)         1.280         5.35         7.67           pacity (ve/h/h)         1.286         5.35         7.67           e flad         2.1         0.3         0.0         0.7           e leaf         2.1         0.6         0.7         0.7           c locaticly         0.1         0.0         0.1         0.7           of a back(s)         0.1         0.0         1.2         0.7           of a back(s)         0.3         0.0         1.2         0.7	vC2, stage 2 conf vol								vC2, stage 2 conf vol
gle (s) 4.1 6.4 6.2 as 3 3 as 3 a and 6.4 6.2 as 3 3 and 6.4 6.2 as 3 3 and 6.4 6.4 6.4 as 3 3 and 6.4 6.4 6.4 as 3 and 6.4 6.4 6.4 as 3 and	vCu, unblocked vol	277				490	272		vCu, unblocked vol
lage (s) are free % 22 35 33 sue free % 99 93 100 pacify (ve/ht) 1286 535 767 pacify (ve/ht) 1286 535 767 action 1 211 277 35 e frait 211 277 35 e frait 211 277 35 e frait 211 277 35 e frait 271 278 e frait 271 277 35 e frait 271 278 e frait 278 e f	tC, single (s)	4.1				6.4	6.2		tC, single (s)
untere %         22         35         33           pacify (ethr)         28         93         100           pacify (ethr)         128         535         767           e Total #         1         211         217         35           e Total #         7         0         35         4           e Right         0         10         0.6         0           e Right         0.01         0.16         0.7         5.35           e Capacity         0.01         0.16         0.7         5.35           e Capacity         0.01         0.16         0.7         5.35           e Capacity         0.01         0.16         0.7         5.35           act DElay (s)         0.3         0.0         1.2         5.3           act DS         0.3         0.0         1.2         5.3         5.3           act DS         0.3         0.0         1.2         5.3         5.3           act DS	tC, 2 stage (s)								tC, 2 stage (s)
99 93 100 1286 535 767 211 277 35 7 20 35 0 10 0 0.3 0.0 17 0.3 0.0 12 0.3 0.0 12	tF (s)	2.2				3.5	3.3		tF (s)
1286 5.35 767 EB1 WB1 SB1 5.3 767 211 277 35 0 10 0 0 10 0 0.0 10 0.07 0.1 0.16 0.07 0.1 0.16 0.07 0.1 0.12 0.3 0.0 1.2 0.3 0.0 0.2 0.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	p0 queue free %	66				93	100		p0 queue free %
EB1         WB1         SB1           211         277         35           7         0         35           0         10         0           1286         1700         535           0.01         0.16         0.07           0.1         0.0         17           0.3         0.0         122           0.3         0.0         122           0.3         0.0         122           0.3         0.0         122           0.3         0.0         122           0.3         0.0         122           0.3         0.0         122           0.3         0.0         122           0.3         0.0         12.2           0.3         0.0         12.2           0.3         0.0         12.4           0.4         B         12.4           0.5         12.4         A           0.7         13.4         A           15         13.4         A	cM capacity (veh/h)	1286				535	767		cM capacity (veh/h)
211 277 35 7 0 35 0 10 0 1286 1700 535 0.01 0.16 0.07 0.1 0.0 1.7 0.3 0.0 1.2 A 0.0 122 A 0.0 122 0.3 0.0 122 A 0.0 122 A 122 A 122 A 12 A 12 A 12 A 15 A 15 A 15 A 15 A 15 A 15 A 15 A 15	Direction, Lane #	EB 1	WB 1	SB 1					Direction, Lane #
7 0 35 126 10 0 0 101 0.16 0.07 0.1 0.17 0.3 0.0 122 A B 0.3 0.0 122 0.3 0.0 122 0.3 0.0 122 A CU Level of Service A 15 15 15 15 15 15 15 15 15 15	Volume Total	211	277	35					Volume Total
20 10 0 200 1.0 0.3 0.1 0.0 1.7 0.3 0.0 122 A B 0.3 0.0 122 0.3 0.0 122 0.3 0.0 122 A CULevel of Service A 15 15 15 15 15 15 15 15 15 15	Volume Left	7	0	35					Volume Left
1286 1700 535 0.01 0.16 0.07 0.3 0.0 1.2 A B 0.3 0.0 12.2 0.3 0.0 12.2 B 24.7% ICU Level of Service A 15	Volume Right	0	10	0					Volume Right
0.01 0.16 0.07 0.1 00 1.7 0.3 0.0 12.2 A B 0.3 0.0 12.2 0.1 1	cSH	1286	1700	535					CSH
0.1 00 1.7 0.3 0.0 12.2 0.3 0.0 12.2 0.3 0.0 12.2 0.3 0.0 12.2 0.3 0.0 12.2 0.3 0.0 12.2 0.9 ICU Level of Service A 15 IS	Volume to Capacity	0.01	0.16	0.07					Volume to Capacity
0.3 0.0 12.2 A B 0.3 0.0 12.2 B 0.9 24.7% ICU Level of Service A 15	Queue Length 95th (m)	0.1	0.0	1.7					Queue Length 95th (m)
A B 0.3 0.0 12.2 B 0.9 24.7% ICU Level of Service A 15	Control Delay (s)	0.3	0.0	12.2					Control Delay (s)
0.3 0.0 12.2 B 0.9 24.7% ICU Level of Service A 15	I ane I OS	A		œ					I ane I OS
B 0.9 ICU Level of Service A 15	Approach Delav (s)	0.3	0.0	12.2					Approach Delav (s)
0.9 24.7% ICU Level of Service A 15	Approach LOS			в					Approach LOS
0.9 24.7% ICU Level of Service A 15	Interaction Cummons								Intercetion Cummeru
0.9 CU Level of Service A 15 15 15									
2	Average Delay Intersection Capacity Utilizatio Analysis Deviced (min)	E		0.9 24.7% 15	ICU	Level of			Average Delay Intersection Capacity Utilization Analysis Boriod (min)
				2					

Itersection Capacity Analysis

3: Private Rd & Lakeshore Rd W	shore	Rd W	(		2		08/21/2017
	t	1	\$	Ŧ	*	*	
ovement	EBT	EBR	WBL	WBT	NBL	NBR	
ane Configurations	ŧ	ĸ		ŧ		×	
affic Volume (veh/h)	1791	33	0	1089	0	24	
uture Volume (Veh/h)	1791	33	0	1089	0	24	
gn Control	Free			Free	Stop		
rade	%0			%0	%0		
eak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
ourly flow rate (vph)	1947	36	0	1184	0	26	
edestrians							
ane Width (m)							
'alking Speed (m/s)							
ercent Blockage							
ght turn flare (veh)							
edian type	None			None			
edian storage veh)							
ostream signal (m)	133			137			
A platoon unblocked     A			0.64		0.64	0.64	
<ol><li>conflicting volume</li></ol>			1983		2539	974	
<ol><li>stage 1 conf vol</li></ol>							
22, stage 2 conf vol							
Cu, unblocked vol			1405		2277	0	
, single (s)			4.1		6.8	6.9	
, 2 stage (s)							
(s)			2.2		3.5	3.3	
) queue tree %			100		100	96	
// capacity (veh/h)			307		22	691	
rection, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	
olume Total	974	974	36	592	592	26	
olume Left	0	0	0	0	0	0	
olume Right	0	0	36	0	0	26	
H.	1700	1700	1700	1700	1700	691	
olume to Capacity	0.57	0.57	0.02	0.35	0.35	0.04	
ueue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.9	
ontrol Delay (s)	0.0	0.0	0.0	0.0	0:0	10.4	
ane LOS						в	
oproach Delay (s)	0.0			0.0		10.4	
oproach LOS						в	
tersection Summary							
verage Delay			0.1				
tersection Capacity Utilization			59.5%	ICI	ICU Level of Service	Service	В
nalysis Period (min)			15				

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Future Total Reduced Auto Driver Mode Split 08/09/2017 AM Peak LJR

A         BI         Ch         A         A         A         A         BI	NBI NBI NBI 218 0 1200 1200 1200 1300 1300 1300 1300 13	NBR 88 178 185 178 185 1900 1900 1900 1900 1000 1900 1900 1000 1900 1001 100 1002 001 0051 001 1002 001 002 00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
E8L         E81         E81         E81         MBI         WBI         MBI         MBI <th>NBL         NB1         NB1           1         1         1           218         0         2           35         3.7         6.0           10.00         10.00         1000           10.00         10.00         0.85           0.55         1.00         0.63           1122         1601         0.02           0         1152         1601           0.53         1.00         0.85           0.53         1.00         0.85           0.53         0.02         0.22           0.70         2.8         2.6           2.33.0         33.0         33.0           33.0         33.0         33.0           33.0         33.0         2.7           33.0         33.0         2.7           33.0         2.7         3.0           2.7         7.0         7.0           2.05         0.12         0.01           2.07         0.1         0.0           2.03         0.10         1.00           2.03         0.10         1.00           2.04         0.10         1.00           2.05</th> <th></th> <th>SB1 3.7 3.7 5.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00</th>	NBL         NB1         NB1           1         1         1           218         0         2           35         3.7         6.0           10.00         10.00         1000           10.00         10.00         0.85           0.55         1.00         0.63           1122         1601         0.02           0         1152         1601           0.53         1.00         0.85           0.53         1.00         0.85           0.53         0.02         0.22           0.70         2.8         2.6           2.33.0         33.0         33.0           33.0         33.0         33.0           33.0         33.0         2.7           33.0         33.0         2.7           33.0         2.7         3.0           2.7         7.0         7.0           2.05         0.12         0.01           2.07         0.1         0.0           2.03         0.10         1.00           2.03         0.10         1.00           2.04         0.10         1.00           2.05		SB1 3.7 3.7 5.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	218 0 218 0 218 0 218 0 218 0 100 1900 1900 0 100 100 085 0.60 100 1755 100 1755 100 022 092 092 237 0 0 146 022 092 092 237 0 0 146 233 100 233 0 233 0 234 0 124 13 115 160 100 021 0 021 0 020 0 00 0 020 0 000 0000 0 000 000000		→ 1900 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	218         0           218         0           35         37           35         37           35         37           35         37           100         100           100         100           1100         160           0.95         1.00           1155         1601           0.92         1912           0.92         146           0.92         0.92           237         44           233         416           233         33.0           34.0         0           233         33.0           34.0         0.14           27.0         23.0           33.0         33.0           34.0         0.24           0.12         0.24           27.0         33.0           33.0         33.0           33.0         33.0           33.0         27.0           33.0         27.0           33.0         27.0           33.0         27.0           33.0         27.0           27.0         27.0      <		0 0 3.7 3.7 5.0 6.0 1.00 1.100 1.100 1.100 1.100 1.100 1.100 1.100 1.100 0.2 2% 20 0 0 0 33.0 0 0 33.0
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	218 0 0 100 135 5 5 6 0 6 0 100 1100 100 155 6 0 6 0 100 155 100 155 100 1755 1601 1755 1601 1755 1601 1122 237 0 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		0 3.7 3.7 6.0 6.0 1.00 1.00 1.00 1.00 1.00 1.00 0.2 0 0 0 8.2 8.2 8.2 8.2 8.2 8.2 0 0 0 0 0 8.2 8.2 8.2 8.2 8.2 8.2 8.2 8.2 8.2 8.2
	1900         1900         1900         1900         1900         1900         1900         1900         1900         1900         100         1100         0.85         3.7         3.7         3.7         3.7         3.6         3.7         3.7         3.7         3.7         3.7         3.6         3.7         3.0         3.1         3.0         3.1         3.0         3.1         100         11152         1601         100         1146         3.2         3.0         3.2         3.0         3.3         0.2         3.0         3.3         3.0         3.3		1900 3.7 6.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 2.0 0 0 0 0 0 3.7 0.85 1.00 1.00 0.85 0.92 0
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	3.5 3.7 3.6 160 1.60 6.0 1.60 0.85 1.00 0.85 1.00 0.85 1.00 1752 1.00 1752 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 0.92 0.92 0.02 0.03 3.0 3.0 3.0 3.0 0.24 0.12 0.24 0.12 0.24 0.12 0.24 0.12 0.24 0.12 0.24 0.12 0.24 0.12 0.24 0.12 0.24 0.12 0.24 0.12 0.25 1.00 0.21 0.00 0.21 0.00 0.22 0.00 0.21 0.00 0.22 0.00 0.21 0.00 0.22 0.00 0.22 0.00 0.24 0.00 0.25 0.00 0.20 0.00 0.0		3.7 6.0 1.00 0.85 0.85 1.00 1.00 1.00 1.00 0 0 0 0 0 0 0 0 0 0
	6.0         6.0         6.0           1.00         1.00         1.00           1.00         1.00         1.01           1.155         1.01         1.61           0.92         1.02         1.61           0.92         1.01         1.62           1.152         1.61         0.92           0.92         0.92         0.92           237         4.4         2%           233         2.1         0           0         0         0           11152         2.33         3.1           233         3.1         0.1           233         3.1         0.1           234.0         0.24         0.24           34.0         0.24         0.24           37.0         3.3         3.3           37.0         3.3         0.3           27.0         3.3         0.3           27.0         0.1         0.1           20.1         0.1         0.1           20.3         1.0         1.0           20.4         1.0         1.0           20.7         1.0         1.0      1.00         1.0		6.0 1.00 0.15 0.1585 1.100 1.100 0.92 0 0 0 0 0 0 0 0 0 0 0 0 0 33.0 0 0 2%
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	1100 1100 1100 1100 1100 1100 1100 110		1:00 1:00 1:00 1:00 1:585 1:585 1:585 0:92 0 0 0 0 0 0 0 0 0 0 0 0 0
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	100 0.85 1750 100 1750 100 1750 100 063 1.00 0 22 237 26 0 146 237 47 233 47 233 24 233 24 233 24 240 340 330 330 330 330 330 330 240 24 7.0 7.0 240 24 7.0 7.0 0.21 7.0 0.22 7.0 0.28 7.0 0.28 7.0 0.28 7.0 0.28 7.0 0.29 7.0 0.29 7.0 0.20 0.0 0.21 7.0 0.21 7.0 0.01 7.0 0.21		0.85 1.00 1.00 1.00 0.92 0 0.92 2% 82 2% 82 2% 82 33.0 33.0
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	0.95         1.00           1750         1.601           0.51         1.601           0.52         0.92           0.72         0.92           0.72         0.72           0.72         0.74           0.74         0           0.75         2.37           146         2.33           27         2.7           28         2.4           29.33         3.0           21.0         0.146           22.33         3.0           33.0         3.0           34.0         3.3           37.0         3.3           37.0         3.3           37.0         3.3           37.0         3.3           37.0         3.3           37.0         3.3           37.0         3.3           37.0         3.3           37.0         3.3           37.0         3.3           37.0         3.3           37.0         3.3           37.0         3.3           37.0         3.3           37.0         3.3           37.0         1.0		1.000 1.000 1.000 1.000 1.022 0 0 0 0 0 0 0 0 0 33.0 82 2% 50 33.0
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	1750 1601 1152 1601 1152 100 1152 237 0 237 0 237 0 237 14 237 2% 2% 2% 2% 2% 2% 2% 0 0 0 233 33.0 34.0 2.3 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3		1585 1.00 1.100 0.92 50 82 82 82 82 82 0 0 0 83 33 0 82 82 82 82 82 82 82 82 82 82 82 82 82
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	100         100           1122         1601           072         072           072         072           072         072           073         072           074         233           075         26           076         072           077         074           078         273           079         233           074         240           233.0         33.0           33.0         33.0           24.0         24.0           27.0         7.0           7.0         7.0           7.0         7.0           7.0         7.0           7.0         7.0           7.0         7.0           7.0         7.0           7.0         7.0           7.0         1.00           7.0         1.00           7.0         1.00           7.0         7.0           7.0         7.0           7.0         7.0           7.0         7.0           7.0         7.0           7.0         7.0 <t< td=""><td></td><td>1.00 1585 0.92 60 82 82 82 82 82 82 82 0 6 83 0 6 83 0 0 82 82 82 82 82 82 82 82 82 82 82 82 82</td></t<>		1.00 1585 0.92 60 82 82 82 82 82 82 82 0 6 83 0 6 83 0 0 82 82 82 82 82 82 82 82 82 82 82 82 82
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	1152         1601           072         072           072         072           073         47           237         47           238         23           239         240           231         27           232         233           233         240           233         233.0           233.0         233.0           233.0         330.0           233.0         330.0           34.0         34.0           37.0         7.0           37.0         7.0           37.0         7.0           37.0         7.0           37.0         7.0           27.9         388           0.12         0.03           20.7         0.01           20.7         0.1           70.1         7.0           20.7         0.1           70.1         7.0           20.7         0.1           70.1         7.0           20.7         0.1           20.7         0.1           20.7         0.1      20.7         0.1      20		1585 0.92 50 82 82 82 82 82 82 82 83 0 6 83 33.0
	0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92		0.92 C 50 0 82 82 82 0 0 0 33.0 6 33.0 6
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	237 0 0 146 237 2% 2% 2% 2% 2% 0 0 0 2 330 330 34.0 0.24 3.0 3.3 3.0 3.3 3.0 3.0 3.0 3.0 3.0 3.0		50 50 0 82 82 0 82 0 83 0 83 0 83 0 83 0 82 82 82 82 82 82 82 82 82 82 82 82 82
m (vph)         0         0         35         0         0         28         0           w (vph)         110         1451         155         334         1480         197         237           (%)         2.8         3.8         155         334         1480         197         237           (%)         2.8         3.8         3.8         3.8         3.8         28           (%)         0         0         4         0         4         0         4         0           (%)         2.8         3.8         3.8         3.8         3.2         3.3	237 237 2% 2% 2% 0 240 3.0 2.4 7.0 3.0 2.4 7.0 2.27 5.05 5.05 5.05 5.05 5.05 5.05 5.05 5.0		50 82 82 82 82 83 0 83 0 83 0 83 0 83 0 8
w (vph)         110         1451         155         334         1480         197         237           (#h)         2%         2%         2%         5%         3%         2%         3%         2%           (#h)         Dem         NA         Perm         pm-pl         NA         Perm         Perm<	237 2% 2% 28 28 33.0 23 3.0 23 3.0 27 27 27 27 00.2 100 27 27 27 27 27 27 27 27 27 27 27 27 27		82 2% 0 83.0 6 83.0
(%)         2%         3%         2%         2%         6%         3%         2%         2%           (#hr)         0         0         4         0         0         4         0         4         0         4         0         4         0         4         0         4         0         4         0         4         0         4         0         4         0         0         4         0         0         4         0         0         4         0         0         4         0         0         4         0         0         4         0         0         4         0         0         4         0         0         4         0         0         4         0         0         0         4         0         0         0         4         0	2% Perm Perm 2 3 3 3 3 3 3 3 3 3 3 3 3 3		2% NA 33.0 8
(#/r)         0         0         4         0         4         0           (#/r)         Perm         NA         Perm         Pm         Perm	0 Perm 33.0 22 33.0 279 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21		
Perm         NA         Perm         NA         Perm         Per	Perm 33.0 2 34.0 3 34.0 3 34.0 3 279 0 279 0 0.85 50.6 4 1.00 1 1.00 1 1.00 1 1.00 1 1.1.00 1 1.1.00 1 1.1.00 1 1.1.00 1 50.5 4	Perm 6 33.0 34.0 0.24	
es 4 4 3 8 8 2 es 6(5) 644 644 644 930 930 930 330 3 f(5(5) 644 644 644 930 940 940 340 3 f(5(5) 644 644 644 930 940 940 340 3 f(5) 654 654 954 940 940 940 340 3 f(5) 70 70 70 45 70 70 70 f(6) 30 30 30 30 30 30 30 30 041 0055 719 366 2312 1024 279 041 0016 045 013 021 033 010 0045 013 021 033 030 300 100 100 100 100 100 10 100 100 100 100 100 100 100 100 100 100 10 100 100 100 100 100 100 100 100 100 10 100 100 100 100 100 100 100 100 100	279 33.0 34.0 34.0 34.0 279 279 279 279 279 279 279 279 279 279	6 33.0 34.0 0.24	
es 4 4 8 8 2 , (5(s) 644 644 930 930 930 330 3 , (6(s) 644 644 930 940 940 940 340 5 , (5) 654 654 654 940 940 940 940 340 5 , (5) 7,0 7,0 7,0 7,0 7,0 7,0 7 , (5) 3,0 3,0 3,0 3,0 3,0 3,0 3,0 3,0 3,0 0 , (5) 3,0 3,0 3,0 3,0 3,0 3,0 3,0 7 , (5) 155 719 0,56 0,13 0,21 0,24 7 , (6) 0,34 0,10 0,10 1,0 1,0 1,0 1,0 1,0 1,0 1,0 1	2 2 340 3 340 2 70 7 70 7 70 7 70 7 70 7 71.3 4 100 1 100 1 100 1 100 7 71.3 4	6 33.0 34.0 0.24	
	33.0 33.0 33.0 33.0 34.0 30.24 00.27 0.27 2.279 0.21 0.21 0.21 0.21 0.21 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.0	33.0 34.0 0.24	
.g(s)         65.4 <t< td=""><td>34.0 3 0.24 (0 2.4 (0 3.0 3.0 279 (0 279 (0 279 (0 0.85 (0 0.85 (0 0.85 (0 0.85 (0 0.85 (0 0.85 (0 1.00 1 1.00 1 7.13 (0 7.03 (0) 1 2.03 (0) 1</td><td>34.0 0.24</td><td></td></t<>	34.0 3 0.24 (0 2.4 (0 3.0 3.0 279 (0 279 (0 279 (0 0.85 (0 0.85 (0 0.85 (0 0.85 (0 0.85 (0 0.85 (0 1.00 1 1.00 1 7.13 (0 7.03 (0) 1 2.03 (0) 1	34.0 0.24	
Bilo         047         047         047         047         067         067         057         057         024         0           (s)         7.0	0.24 (0 7.0 7.0 7.0 2.79 0.21 0.21 0.021 0.025 0.025 7.05 71.3 20.7 71.3 20.7 71.3 20.7	0.24	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	7.0 3.0 2.79 2.79 0.21 0.021 0.025 5.0.6 2.0.7 71.3 2.0.7 71.3 E		0
on (s)         30 <th< td=""><td>3.0 279 2.79 0.21 0.85 50.6 1.00 71.3 71.3 E</td><td>7.0</td><td></td></th<>	3.0 279 2.79 0.21 0.85 50.6 1.00 71.3 71.3 E	7.0	
vph)         150         1655         719         366         2312         1024         279           0         0.41         0.010         0.045         0.13         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.25         0.21         0.25         0.25         0.25         0.25         0.25         0.25         0.25         0.25         0.25         0.25         0.25         0.25         0.25         0.25         0.25         0.25         0.26         0.25         0.26         0.25         0.26         0.20         0.26         0.26         0.20 <td>279 0.21 0.85 50.6 1.00 20.7 71.3 E</td> <td>3.0</td> <td>3.0</td>	279 0.21 0.85 50.6 1.00 20.7 71.3 E	3.0	3.0
0.41         c0.16         0.43           0.34         0.10         c0.45         0.13         0.21           0.33         0.82         0.19         0.13         0.85           dr         30.2         3.31         22.1         9.9         0.40         0.85           dr         30.2         3.31         22.1         45.9         13.3         8.7         0.50           dv         1.00         1.00         1.00         1.00         1.00         1.00         1.00           dv, d2         26.9         6.9         0.7         26.3         1.4         0.4         20.7           dv         26.3         1.00         1.00         1.00         1.00         1.00         1.00           dv         26.3         1.2         26.3         1.4         0.4         20.7           dv         2         40.5         2.2         12.2         14.6         1.13         13           dv         2         3.37         2.2         2.3         2.3         4.7         2.4           dv         3.37         2.2         2.2         2.3         2.4         5.4         5.4         5.4         5.4	0.21 0.85 50.6 1.00 20.7 71.3 E	219	9 384
0.34         0.10         0.045         0.13         0.21           d1         0.73         0.88         0.22         0.91         0.68           d1         30.2         33.7         22.1         45.9         13.8         70.6           d1         100         1.00         1.00         1.00         1.00         1.00         1.00           ay, d2         26.9         6.9         0.7         26.3         1.4         0.4         20.7           ay, d2         27.2         40.5         22.8         72.2         14.6         9.1         713           a         E         D         C         E         B         A         E           a)         39.7         22.4         72.2         14.6         9.1         713           b         E         D         C         E         B         A         E           a)         39.7         23.4         23.4         20.7         20.4         20.7           b         C         E         B         A         C         C         C         C         C         C         C         C         C         C         C         C	0.21 0.85 50.6 1.00 71.3 E		0.05
0.73         0.88         0.22         0.91         0.64         0.19         0.85           d1         30.2         33.7         22.1         459         133         8.7         50.6           By, d2         26.9         6.9         0.7         26.3         1.00         1.00         1.00         1.00           By, d2         26.9         6.9         0.7         26.3         1.4         0.4         20.7           By, d2         25.2         8         72.2         146         9.1         713           By         57.2         40.5         22.8         72.2         146         9.1         713           By         57.2         40.5         22.8         72.2         146         9.1         713           By         5         2         2         2.2         2.3         2.3         9.1         713           By         5         2         2         2.3         2.4         5.7         5.7           (5)         9.1         7.2         2.3         2.4         5.7         5.3         5.3         5.3         5.3         5.3         5.3         5.3         5.3         5.3         5.3 </td <td>0.85 50.6 20.7 71.3 E</td> <td>c0.22</td> <td></td>	0.85 50.6 20.7 71.3 E	c0.22	
d1 30.2 33.7 22.1 45.9 13.3 8.7 50.6 dot 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.	50.6 1.00 71.3 E	0.93	
dor 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	1.00 20.7 E	51.8	
ay, d2     26.9     6.9     0.7     26.3     1.4     0.4     20.7       572     40.5     22.8     72.2     146     9.1     71.3       5     E     D     C     E     B     A     E       6     37.7     23.4     23.4     23.4     20.7     23.4       7     9.7     7.3     23.4     C     Table 1       7     0.7     23.4     2.4     2.4       7     10     2.7     2.4     2.4	20.7 71.3 E	1.00	
57.2 40.5 22.8 72.2 14.6 9.1 71.3 5 E D C E B A E (s) 39.7 23.4 mary	71.3 E	40.7	
<ul> <li>E D C E B A E</li> <li>(s) 39.7 23.4 C</li> <li>D C</li> </ul>	ш	92.4	~
r (s) 39.7 23.4 D C mmary	57.9 E	ш	
mary D C	ш		72.8
tersection Summary			ш
HCM 2000 Control Delav 36.6 HCM 2000 Level of Service	Level of Service		
pacity ratio 0.93			
		15.5	
ntersection Capacity Utilization 93.1% ICU Level of Service	of Service	ш	
Analysis Period (min) 15			

HCM Unsignalized Intersection Capacity Analysis

16: Mississauga Rd & Lake St	Lake	St									08/2	08/21/2017
	-	Ť	1	\$	ŧ	~	4	-	٠	۶	-	$\mathbf{F}$
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		¢			¢			¢			¢	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	156	92	0	0	103	ъ	0	10	ъ	0	25	170
Future Volume (vph)	156	92	0	0	103	£	0	10	£	0	25	170
Peak Hour Factor	0.92	0.92	0.92	0.66	0.92	0.66	0.92	0.66	0.66	0.66	0.66	0.92
Hourly flow rate (vph)	170	100	0	0	112	~	0	15	∞	0	38	185
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	270	120	23	223								
Volume Left (vph)	170	0	0	0								
Volume Right (vph)	0	~	œ	185								
Hadj (s)	0.16	0.01	0.35	-0.41								
Departure Headway (s)	4.8	4.9	5.5	4.5								
Degree Utilization, x	0.36	0.16	0.04	0.28								
Capacity (veh/h)	710	691	586	742								
Control Delay (s)	10.5	8.8	8.7	9.2								
Approach Delay (s)	10.5	8.8	8.7	9.2								
Approach LOS	в	A	A	A								
Intersection Summary												
Delay			<i>P.</i> 7									
Level of Service			A									
Intersection Capacity Utilization			38.6%	10	J Level o	ICU Level of Service			A			
Analysis Period (min)			<u>4</u> [									

Future Total Reduced Auto Driver Mode Split 08/09/2017 PM Peak

Synchro 9 Report Page 1

Future Total Reduced Auto Driver Mode Split 08/09/2017 PM Peak LJR

Momental large confidence large large large large large confisions         Mole         Mo	HCM Unsignalized Intersection Capacity Analysis 24: Mississauga Rd & Port St W	tersed & Port	stion C St W	apacity	/ Analy	/sis						08/2	08/21/2017
EB         EN         EN         NN         NN         NN         NN         SN		•	Ť	1	\$	Ļ	~	4	+	۰.	۶	-	$\mathbf{k}$
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Lane Configurations		¢			¢			¢			¢	
	Traffic Volume (veh/h)	52	23	0	2	46	45	0	181	0	65	200	67
Stop         Stop         Stop         Stop         Stop         Free         Free           0%	Future Volume (Veh/h)	52	23	0	2	46	45	0	181	0	65	200	<u>7</u>
	Sign Control		Stop			Stop			Free			Free	
	Grade		%0			%0			%0			%0	
57     25     0     7     50     62     0     248     0     89     274       135     14     14     14     14     135     135     135     135       13     13     13     13     13     13     135     135       13     13     13     13     13     13     135       13     13     15     15     15     13     13       13     14     15     15     14     13     14       13     15     15     15     10     10     10       13     15     15     10     10     10     10       14     13     16     10     10     10     10       15     14     28     10     23     24     23       16     15     28     10     24     23     24       17     16     28     28     10     23     23       18     19     28     24     23     23     23       19     28     28     24     23     23     23       11     12     28     24     23     23     23       11 <td>Peak Hour Factor</td> <td>0.92</td> <td>0.92</td> <td>0.92</td> <td>0.73</td> <td>0.92</td> <td>0.73</td> <td>0.92</td> <td>0.73</td> <td>0.73</td> <td>0.73</td> <td>0.73</td> <td>0.92</td>	Peak Hour Factor	0.92	0.92	0.92	0.73	0.92	0.73	0.92	0.73	0.73	0.73	0.73	0.92
None         None         None         None         N           9         752         326         765         805         248         379         248           71         6.5         6.2         7.1         6.5         6.3         4.1         4.2           71         6.5         6.2         7.1         6.5         6.3         4.1         4.2           71         6.5         6.2         7.1         6.5         6.3         4.1         4.2           74         92         100         98         83         92         100         93	Hourly flow rate (vph)	57	25	0	7	50	62	0	248	0	89	274	105
None         None <th< td=""><td>Pedestrians</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>	Pedestrians												
None         None         None         None           a         840         752         326         765         805         248         379         248           7.1         6.5         6.2         7.1         6.5         6.3         4.1         4.2           7.1         6.5         6.2         7.1         6.5         6.3         4.1         4.2           7.1         6.5         6.2         7.1         6.5         6.3         4.1         4.2           7.3         3.5         4.0         3.4         2.2         9.3         9.3         9.3           7.4         92         100         98         83         9.2         100         9.3         9.3           7.4         92         7.1         6.5         6.3         4.1         4.2         9.3           7.1         6.5         7.1         6.5         6.3         4.1         7.2         9.3           7.1         8.1         7.15         2.17         16.5         6.3         4.1         4.2           7.1         8.1         7.12         1179         7.12         1179         7.3           7.1         8.3	Lane Width (m)												
None National Solution National Solution National Nationa	Walking Speed (m/s)												
None N 840 752 326 765 805 248 379 248 71 6.5 6.2 7.1 6.5 6.3 4.1 23 71 6.5 6.2 7.1 6.5 6.3 4.1 239 72 7 92 100 98 83 92 1179 1289 73 7 92 100 98 73 72 1179 1289 71 7 0 89 00 18 71 7 0 89 00 18 71 88 00 18 71 88 00 18 71 164 00 2.1 71 164 00 2.1	Percent Blockage												
Mone         None         None <th< td=""><td>Right turn flare (veh)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>	Right turn flare (veh)												
1         310         752         326         765         805         248         379         248           7.1         6.5         6.2         7.1         6.5         6.3         4.1         4.2           7.1         6.5         6.2         7.1         6.5         6.3         4.1         4.2           7.1         6.5         6.2         7.1         6.5         6.3         4.1         4.2           74         92         100         98         83         92         100         93           74         92         100         98         83         92         100         93           74         92         103         93         59         100         93         93           74         92         103         98         92         100         93         93           71         194         00         105         119         119         94           73         119         248         468         77         119         93           71         164         00         105         10         105         10           73         117         168	Median type								None			None	
B40         752         326         765         805         248         379         248           71         65         62         71         65         63         71         64         73           71         65         62         71         65         63         71         65         74         74           71         65         62         71         65         63         71         64         73           73         35         40         33         35         40         34         23         35           76         316         715         287         294         772         1179         42           71         65         73         35         40         34         22         23           71         7         72         1179         1179         1129         33           82         119         281         77         1179         1299         33           71         164         0.0         118         1179         1299         1299           711         164         0.0         2.1         2.1         2.1         2.1	Median storage veh)												
840     752     326     765     805     248     379       840     752     326     765     805     248     379       71     6.5     6.2     7.1     6.5     6.3     4.1       71     6.5     6.2     7.1     6.5     6.3     4.1       73     316     715     287     294     772     1179       74     92     100     98     83     92     100       74     92     100     98     88     92     100       74     92     100     98     88     92     100       75     7     0     98     772     1179     1<7	Upstream signal (m)											135	
$ \begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	pX, platoon unblocked												
840     752     326     765     805     248     379       7.1     6.5     6.2     7.1     6.5     6.3     4.1       3.5     4.0     3.3     3.5     4.0     3.4     1       7.1     6.5     6.2     7.1     6.5     6.3     4.1       3.5     4.0     3.3     3.5     4.0     3.4     2.2       7     9     103     3.5     4.0     3.4     2.2       7.1     6.15     2.87     2.94     7.2     1179       21     7     0     89     4.0     3.4     100       57     7     0     89     4.172     1179       53     4.19     2.88     4.68     4.68       60     4.8     4.68     4.68       57     7     0     89     4.68       53     4.17     1.19     1.28     1.19       11.7     8.8     0.0     1.8     4.68       6.34     0.33     1.19     1.28       7     16.4     0.0     2.1       7     16.4     0.0     2.1       7     16.4     0.0     2.1       7     16.4     0.0 <t< td=""><td>vC, conflicting volume</td><td>840</td><td>752</td><td>326</td><td>765</td><td>805</td><td>248</td><td>379</td><td></td><td></td><td>248</td><td></td><td></td></t<>	vC, conflicting volume	840	752	326	765	805	248	379			248		
840     752     326     765     805     248     379       7.1     6.5     6.2     7.1     6.5     6.3     4.1       7.1     6.5     6.2     7.1     6.5     6.3     4.1       35     4.0     3.3     3.5     4.0     3.4     2.2       74     92     100     98     83     92     100       216     316     105     287     294     772     1179       82     119     248     468     772     1179     1       57     7     0     98     408     468       57     7     0     105     98     418       60     2.34     0.21     0.00     105       0.34     0.21     0.00     108       0.34     0.21     0.00     2.1       21.7     16.4     0.0     2.1       21.7     16.4     0.0     2.1       21.7     16.4     0.0     2.1       21.7     16.4     0.0     2.1       7     117     8.8     0.0       117     8.8     0.0     2.1       21.7     16.4     0.0     2.1       117	vC1, stage 1 conf vol												
840     752     326     765     805     248     379       71     65     62     71     65     63     41       74     92     100     98     83     92     100       71     65     63     712     1179     1       74     92     100     98     83     92     100       71     11     281     281     712     1179     1       81     11     281     281     7     1179     1       61     13     161     281     7     10       62     0     105     8     105     1       63     0.21     0.34     0.21     8     1       71     164     0.0     21     4       71     164     0.0     21     4       71     164     0.0     21     4       73     164     0.0     21     4       71     164     0.0     21     4       71     164     0.0     21     4       73     164     0.0     21     4       73     164     0.0     21     4    16     0     23	vC2, stage 2 conf vol												
7.1     6.5     6.2     7.1     6.5     6.3     4.1       35     4.0     33     35     4.0     34     22       74     92     100     98     83     92     100       216     316     715     287     294     772     1179       216     316     715     287     294     772     1179       21     92     19     288     468       57     2     0     105       6     239     433     1179     1289       73     117     88     00     105       73     117     88     00     13       73     16.4     00     2.1       73     16.4     0.0     2.1       71     16.4     0.0     2.1       73     16.4     0.0     2.1       71     16.4     0.0     2.1       71     16.4     0.0     2.1       73     16.4     0.0     2.1       74     3.1     3.1     3.1       75     16.4     0.0     2.1       70     5.7     4.3     3.1       71     16.4     0.0     2.1 <t< td=""><td>vCu, unblocked vol</td><td>840</td><td>752</td><td>326</td><td>765</td><td>805</td><td>248</td><td>379</td><td></td><td></td><td>248</td><td></td><td></td></t<>	vCu, unblocked vol	840	752	326	765	805	248	379			248		
35     40     33     35     40     34     22       74     92     100     98     83     92     100       216     316     715     287     294     772     1179       EB1     WB1     NB1     SB1     294     772     1179       6     219     248     468       77     0     89     66       73     117     248     468       73     0     105     6       73     0.27     0.00     007       70     106     007     10       73     0.27     0.00     071       717     16.4     0.0     21       717     16.4     0.0     21       717     16.4     0.0     21       717     16.4     0.0     21       717     16.4     0.0     21       717     16.4     0.0     21       717     16.4     0.0     21       717     16.4     0.0     21       717     16.4     0.0     21       71     16.4     0.0     21       71     16.4     0.0     21       71     16.4 <td>tC, single (s)</td> <td>7.1</td> <td>6.5</td> <td>6.2</td> <td>7.1</td> <td>6.5</td> <td>6.3</td> <td>4.1</td> <td></td> <td></td> <td>4.2</td> <td></td> <td></td>	tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.3	4.1			4.2		
35     40     33     35     40     34     22       74     92     100     98     83     92     100       210     31     51     294     772     1179     1       82     119     248     468       57     7     0     89     105       57     7     0     89       61     117     84       73     107     105       73     0     105       73     0     105       73     0     105       73     0     105       73     0     105       73     0     10       71     164     00       217     164     00       217     164     00       217     164     00       217     164     00       10     21     164       11     164     00       217     164     00       10     21     164       10     21     164       10     21     164       10     21     164       10     21     164       10     21     164 <td>tC, 2 stage (s)</td> <td></td>	tC, 2 stage (s)												
74         92         100         98         83         92         100           216         316         715         287         294         712         1179           FB         WB1         NB1         SB1         712         1179           FS         119         248         468         715         1179           60         62         0         105         715         128           713         117         288         7         7         148           0.34         0.21         0.00         138         7         14         10           277         16.4         0.0         2.1         6         2         1         1           277         16.4         0.0         2.1         6         2         1         1           277         16.4         0.0         2.1         6         2         1         1           277         16.4         0.0         2.1         4         2         1         1           16         0.0         2.1         0.0         2.1         4         3         1           16.4         0.0         2.1	tF (s)	3.5	4.0	3.3	3.5	4.0	3.4	2.2			2.3		
216     316     715     287     294     772     1179       EB1     WB1     NB1     SB1     281     772     1179       82     119     248     468       57     1     0     89       57     0     89       53     433     1179     1289       0.34     0.27     0.00     007       (m)     11.7     88     0.0     18       239     433     1179     1289       0.34     0.27     0.00     0.1       27.7     1.6.4     0.0     2.1       27.7     1.6.4     0.0     2.1       10     2.7     1.6.4     0.0       11     2.7     1.6.4     0.0       27.7     1.6.4     0.0     2.1       10     C     3.1     3.1       11     1.6.4     0.0     2.1       10     C     3.1     3.1       11     1.6.4     0.0     2.1       11     1.6.4     0.0     2.1       11     1.6.4     0.0     2.1       11     1.6     0.0     2.1       11     1.6     0.0     2.1       12	p0 queue free %	74	92	100	98	83	92	100			93		
EB1         WB1         NB1         SB1           82         119         248         468           7         0         89         66           7         0         89         66           119         248         468         66           119         248         468         66           119         249         438         107         105           117         88         00         18         67           117         88         00         18         67           277         16.4         00         21         67           277         16.4         00         21         67           277         16.4         00         21         67           29         277         16.4         00         21           20         0         21         60         21           21         16.4         00         21         60           21         16.4         00         21         60           20         0         21         50         50         50           10         16         21         50	cM capacity (veh/h)	216	316	715	287	294	772	1179			1289		
82         119         248         468           57         7         0         89           0         6         105         117           11         8         0.01         0.05           11.7         88         0.0         118           11.7         88         0.0         18           11.7         144         0.0         2.1           20         2.1         1.4         0.2           21         16.4         0.0         2.1           21         16.4         0.0         2.1           21         16.4         0.0         2.1           21         16.4         0.0         2.1           21         16.4         0.0         2.1           21         16.4         0.0         2.1           21         16.4         0.0         2.1           21         16.4         0.0         2.1           21         16.4         0.0         2.1           21         16.4         0.0         2.1           22.1         16.4         0.0         2.1           21         5.1         5.1         5.1 </td <td>Direction, Lane #</td> <td>EB 1</td> <td>WB 1</td> <td>NB 1</td> <td>SB 1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
57         7         0         89           10         62         0         105           239         43         117         1289           117         88         0.0         18           117         88         0.0         18           277         16.4         0.0         2.1           (s)         277         16.4         0.0         2.1           (s)         277         16.4         0.0         2.1           mary         C         A         A         A           (s)         27.7         16.4         0.0         2.1           mary         C         2.3         16.4         0.0         2.1           mary         5.7         16.4         0.0         2.1         0.1         0.1           mary         5.7         16.0         2.1         0.0         0.1         0	Volume Total	82	119	248	468								
0         62         0         105           13y         0.33         437         1179         1289           14h         0.33         437         100         007           11.7         8.8         0.0         18           27.7         16.4         0.0         2.1           15         16.4         0.0         2.1           16         0         2.1         16.4           16.4         0.0         2.1         A           16.4         0         2.1         A           16.4         0         2.1         A           16.4         0         2.1         A           16.4         0         2.1         A           16.4         0.3         3.1         16.4           17.         16.4         0         2.1           mary         5.7         CU Level of Service           mi0         5.3         ICU Level of Service           mi0         5.5         ICU Level of Service	Volume Left	57	7	0	89								
239         433         1179         1289           ihy         0.34         0.27         0.00         0.07           ih(m)         11.1         18         0         18           27.7         16.4         0         2.1           b         C         A         A           (s)         27.7         16.4         0         2.1           D         C         A         A         A           (s)         27.7         16.4         0         2.1           mary         D         C         A         A           mary         5.7         10.4         0.0         2.1           mary         5.7         10.4         0.0         2.1	Volume Right	0	62	0	105								
ity 0.34 0.27 0.00 0.07 th (m) 11.7 88 0.0 1.8 27.7 16.4 0.0 2.1 5.7 16.4 0.0 2.1 6.0 2.1 and 2.1 5.7 16.4 0.0 2.1 and 2.1 5.7 16.4 0.0 2.1 and 2.1 5.7 16.4 0.0 2.1 and 2.1 5.7 16.4 0.0 2.1 16.4 0.0 2.1 16.4 0.0 2.1 16.4 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	cSH	239	433	1179	1289								
ith (m) 117 88 00 18 277 164 00 2.1 (s) 277 164 00 2.1 (s) 277 164 00 2.1 mary 5.7 mary 5.7 (ct) Utilization 50.3% (CU Level of Service min) 15 10 18	Volume to Capacity	0.34	0.27	0.00	0.07								
27.7 16.4 00 2.1 D C A S) 27.7 16.4 0.0 2.1 many 5.7 noty utilization 50.3% ICU Level of Service min) 15	Queue Length 95th (m)	11.7	8.8	0.0	1.8								
D         C         A           (s)         277         16.4         0.0         2.1           mary         C         2.1         5.7         10.0         5.7           mary         5.7         ICU Level of Service min)         15         5.7         15.1	Control Delay (s)	27.7	16.4	0.0	2.1								
elay (s) 27.7 16.4 0.0 2.1 OS D C 2.1 Summary 5.7 dapacity Utilization 50.3% ICU Level of Service food (min) 15	Lane LOS	۵	ပ		A								
D C mmary 5.7 5.7 5.3% ICU Level of Service (min) 15	Approach Delay (s)	27.7	16.4	0.0	2.1								
mary 5.7 sacity Utilization 50.3% ICU Level of Service (min) 15	Approach LOS	Ω	U										
5.7 aacity Ultization 50.3% ICU Level of Service (min) 15	Intersection Summary												
aacity Utilization 50.3% ICU Level of Service (min) 15	Average Delav			5.7									
	Intersection Capacity Utilization	Ę		50.3%	Ū	J Level of	Service			A			
	Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis 66: Lake St & Avenue A لر \* ŧ •

08/21/2017

		t	Ļ	1	٠	*	
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		4	£,		×		
Traffic Volume (veh/h)	35	142	56	64	56	5	
Future Volume (Veh/h)	35	142	56	64	56	5	
Sign Control		Free	Free		Stop		
		%0	%0		%0		
	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	38	154	61	70	61	5	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		None	None				
Median storage veh)							
Upstream signal (m)							
pX, platoon unblocked							
vC, conflicting volume	131				326	96	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	131				326	96	
tC, single (s)	4.1				6.4	6.2	
tC, 2 stage (s)							
tF (s)	2.2				3.5	3.3	
	<i>L</i> 6				91	66	
cM capacity (veh/h) 1	1454				651	960	
Direction, Lane # [	EB 1	WB 1	SB 1				
Volume Total	192	131	99				
Volume Left	38	0	61				
ne Right	0	70	2				
	1454	1700	667				
	0.03	0.08	0.10				
Queue Length 95th (m)	0.6	0.0	2.6				
Control Delay (s)	1.7	0.0	11.0				
Lane LOS	A		в				
Approach Delay (s)	1.7	0.0	11.0				
Approach LOS			ю				
Intersection Summary							
Average Delay			2.7				
Intersection Capacity Utilization			26.1%	ICU	ICU Level of Service	Service A	
Analysis Period (min)			15				

Synchro 9 Report Page 2

Future Total Reduced Auto Driver Mode Split 08/09/2017 PM Peak LJR

Future Total Reduced Auto Driver Mode Split 08/09/2017 PM Peak

MorenistiEIIEIIIE	HCM Unsignalized Intersection Capacity Analysis 67: Avenue B/Private Rd & Port St W	tersec Rd &	Port 9	apacit st W	/ Anal	/sis						08/2	08/21/2017
eff         EB         MB         MB         MB         MB         BA         SD         SD           onligne (eP(h))         0         29         3         14         66         15         6         46         0         11           onligne (eP(h))         0         29         39         14         66         0         11         11           otlowne (eP(h))         0         29         39         14         66         0         12         60         11         11           otlowne (eP(h))         0         32         39         39         14         50         30<		1	Ť	1	\$	ŧ	~	∢	-	۰.	۶	-	¥
Online (verbit)         O         29         29         74         60         15         60         45         0         11           Volume (verbit)         0         29         29         14         68         0         15         6         46         0         11           Volume (verbit)         0         29         292         093         093 </th <th>Movement</th> <th>EBL</th> <th>EBT</th> <th>EBR</th> <th>WBL</th> <th>WBT</th> <th>WBR</th> <th>NBL</th> <th>NBT</th> <th>NBR</th> <th>SBL</th> <th>SBT</th> <th>SBR</th>	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (verh)         0         29         29         74         66         0         15         6         46         0         11           outome (verh)         Free         0%         0%         0%         0%         0%         0%         0%           outome (verh)         0         29         29         092         093         093         093         093         093         094         0         11         0         10         11         093         094         00         10         00         10         003         003         003         003         003	Lane Configurations		¢			¢			¢			¢	
Volume (veh/h)         0         29         28         74         68         0         11           morei         Free         02         022         032         030         032         030           mor rate (veh)         0         22         032         030         032         030         032         030           fifth (m)         0         22         030         030         74         0         16         7         500         032         030           fifth (m)         0         12         14         0         16         7         50         03         03         12           fifth (m)         None         None         None         16         7         50         03         20 <td>Traffic Volume (veh/h)</td> <td>0</td> <td>29</td> <td>28</td> <td>74</td> <td>68</td> <td>0</td> <td>15</td> <td>9</td> <td>46</td> <td>0</td> <td>=</td> <td>0</td>	Traffic Volume (veh/h)	0	29	28	74	68	0	15	9	46	0	=	0
Intel         Free         Stop         Stop <t< td=""><td>Future Volume (Veh/h)</td><td>0</td><td>29</td><td>28</td><td>74</td><td>89</td><td>0</td><td>15</td><td>9</td><td>46</td><td>0</td><td>11</td><td>0</td></t<>	Future Volume (Veh/h)	0	29	28	74	89	0	15	9	46	0	11	0
0%         0%<	Sign Control		Free			Free			Stop			Stop	
0.92     0.92	Grade		%0			%0			%0			%0	
0     32     30     80     74     0     15     50     0     12       Nore     Nore     Nore     Nore     Nore     1     50     0     12       14     Nore     1     62     281     41     334     296       15     4.1     62     281     62     7.1     65     62     7.1       15     4.1     7.1     65     62     7.1     65     93     93     94       15     50     95     97     97     95     97     95     90     94       15     164     73     12     25     63     94     94     94       15     164     73     12     27     27     26     94       15     164     73     12     27     26     94       15     164     13     26     97     96     96       15     164     13     102     102     102     102       15     164     13     102     102     102     102       15     164     13     102     102     102     102       15     164     13     102     103 </td <td>Peak Hour Factor</td> <td>0.92</td>	Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
None         None         Sale         41         33         29           74         62         287         281         41         29           74         62         287         281         41         59           74         1         62         281         41         59           74         22         287         281         41         59           74         41         71         65         62         71         65           75         41         71         65         62         71         65           1506         151         65         55         71         65         99           1506         161         71         65         62         71         65           1506         161         65         55         102         56         99           1506         161         16         96         99         56         90         56           150         161         163         162         162         162         162         162         162         162         162         162         162         162         163         163	Hourly flow rate (vph)	0	32	30	80	74	0	16	2	50	0	12	0
None         None         None         41         41         33         29           74         62         287         281         41         26           74         62         287         281         41         56           74         41         7.1         65         62         7.1         65           100         11         41         7.1         65         62         7.1         65           1150         12         12         12         12         95         99         96         98           1150         12         12         12         12         12         12         12         12         12           1150         13         12	Pedestrians												
None         None         287         287         334         296           74         62         287         281         47         334         296           41         62         287         287         287         33         296           100         41         62         287         35         40         96           115         55         95         97         99         95         90         96           100         135         12         71         65         59         96         96         96           155         13         12         7         51         50         96	Lane Width (m)												
None         None         287         281         41         296           74         62         287         281         41         296           41         41         71         65         62         71         65           21         41         71         65         62         71         65           22         23         35         40         33         35         40           1526         154         71         65         62         71         65           152         53         95         95         95         95         96         94           1526         154         73         12         7         12         7         14         15         14         15         15         40         96         94         96         94         96         94         96         94         96         94         96         94         96         94         96         94         96         94         96         94         96         96         96         96         96         96         96         96         96         96         96         96         96	Walking Speed (m/s)												
None         None         Same         Same <th< td=""><td>Percent Blockage</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>	Percent Blockage												
None         None         Sale         287         31         33         296           74         -         62         287         281         41         34         296           41         -         62         287         281         41         34         296           100         -         -         62         287         287         287         296         98           1156         -         -         22         35         99         99         96         98         98           1156         -         -         22         35         40         33         40         98           115         -         -         22         35         99         99         99         98         98         98         98         98         98         96         98         96         98         96         98         96         98         96         98         96	Right turn flare (veh)												
74     62     287     281     47     334     296       71     62     287     281     47     334     296       41     41     71     65     62     71     65       152     22     235     40     33     35     40       152     154     73     154     62     99     95     100     98       153     154     73     12     71     62     99     99     96     94       155     154     73     12     71     62     97     99     96     94       155     164     73     12     71     62     97     95     102       155     164     73     12     71     65     97     95     102       156     133     12     71     65     97     95     102       156     13     23     05     00     96     133     102       157     13     12     71     65     97     102       158     13     13     13     132     102     103       159     113     96     113     13     14       150<	Median type		None			None							
74     62     287     281     47     34     296       74     62     287     281     47     34     296       41     41     71     62     287     21     65     65     71     65       100     122     22     35     40     33     35     40       120     120     95     97     99     99     96     98       150     154     73     12     12     12     12       62     154     73     12     12     12     12       63     164     13     12     12     12     12       64     13     23     05     00     13     13       60     13     23     05     102     10     14       61     96     113     13     14     14     14       60     13     23     05     102     14     14       61     41     96     113     13     14       60     13     24     13     14     14       61     41     96     113     14     14       62     13     13     13     14	Median storage veh)												
74     62     287     281     41     334     296       74     62     287     281     41     34     296       41     41     41     71     65     62     71     65       100     115     56     33     56     71     65     93       155     154     71     65     62     71     65       150     154     73     12     93     94       155     154     73     12     74     98       15     13     12     74     74     74       15     164     73     12     74     74       15     154     00     13     12     74       15     164     13     12     74     74       15     164     13     12     74     74       15     164     13     12     74     74       15     164     13     12     74     74       15     164     13     12     74     74       15     164     13     12     74     74       15     164     13     12     12     14       15 <td>Upstream signal (m)</td> <td></td>	Upstream signal (m)												
74         62         287         281         47         34         296           41         62         87         87         87         87         87         296           41         62         87         87         87         87         87         296           100         1520         22         235         97         99         95         90         98           1520         1541         62         71         65         62         71         65           1520         1541         841         591         97         99         99         98           1520         1541         841         581         1         1         1         1           1520         1541         848         584         1 <t< td=""><td>pX, platoon unblocked</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	pX, platoon unblocked												
74         62         287         281         47         334         296           4.1         4.1         7.1         6.5         6.2         7.1         6.5           22         22         35         40         33         35         40           1526         154         7.1         6.5         6.2         7.1         6.5           1526         154         99         99         595         102         500         504           62         154         7.3         12          4         6         50 </td <td>vC, conflicting volume</td> <td>74</td> <td></td> <td></td> <td>62</td> <td></td> <td></td> <td>287</td> <td>281</td> <td>47</td> <td>334</td> <td>296</td> <td>74</td>	vC, conflicting volume	74			62			287	281	47	334	296	74
14         62         281         281         41         34         296           41         41         71         65         62         71         65         62         71         65           122         22         23         35         40         33         35         40           120         95         154         659         595         102         560         584           1150         12         659         595         102         560         584           0         80         16         0         62         132         564         564           0         13         12         12         12         12         12         12         12           0         13         23         05         00         055         132         564         13         14           152         41         96         113         13         13         14	vC1, stage 1 conf vol												
74         62         287         281         47         334         296           4.1         4.1         7.1         6.5         6.2         7.1         6.5           100         100         95         97         99         95         100         98           1556         1541         6.9         95         1022         560         584           151         134         21         22         3.5         40         98         98           1526         1541         26         97         99         99         96         98           152         12         23         12         24         26         98         98           1526         1541         868         584         26         27         1         26           0.1         13         23         0.5         26         1         28         28           0.0         4.1         9.6         113         28         28         28         28         28         28         28         28         28         28         28         28         28         28         28         28         28         28	vC2, stage 2 conf vol												Ľ
4.1     4.1     7.1     6.5     6.2     7.1     6.5       22     95     97     97     99     95     100     98       1526     154     73     154     629     99     95     100     98       1526     154     73     154     629     99     99     96     98     98       1526     154     73     12     62     1022     560     584       1526     154     73     12     7     7     7     7       1526     154     73     12     7     7     7     7       1526     154     73     12     7     7     7     7       1526     154     73     12     7     7     7     7       1526     154     73     12     7     7     7     7       1526     153     84     584     7     7     7     7       153     13     23     05     01     13     7     7       153     23     05     01     13     7     7     7       154     4     13     7     7     7     7     7 <td>vCu, unblocked vol</td> <td>74</td> <td></td> <td></td> <td>62</td> <td></td> <td></td> <td>287</td> <td>281</td> <td>47</td> <td>334</td> <td>296</td> <td>74</td>	vCu, unblocked vol	74			62			287	281	47	334	296	74
22     22     22     35     40     33     35     40       102     55     154     55     97     99     93     93     98       1526     154     1541     629     99     99     99     99     98       EB1     WB1     NB1     SB1     629     102     560     584       62     154     73     12     62     12     60     584       0     86     584     0     0     13     23     05       0     13     23     05     00     02     13     1       0     13     23     05     01     13     1     1       0     41     96     113     1     1     1     1       0     41     96     113     1     1     1     1       0     41     96     113     1     1     1     1       0     41     96     113     1     1     1     1       13     23     13     1     1     1     1     1       14     96     113     1     1     1     1     1       15	tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
22         22         35         40         33         35         40           100         95         151         629         95         100         98           15         154         73         12         629         195         100         98           62         154         73         12         629         195         102         560         584           62         164         73         12         8         6         9         9         10         98           0         80         16         0         60         13         23         65         102         584         13         14         <	tC, 2 stage (s)												
100         95         97         99         95         100         98           1526         1541         629         955         1022         560         584           EB1         MB1         BB1         581         560         584         584           0         132         12         629         595         1022         560         584           132         0         50         00         584         595         584         595         584         595         59	tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
1526         1541         629         595         1022         560         584           EB1         WB1         NB1         SB1         629         595         1022         560         584           62         154         73         12         62         995         1022         560         584           62         154         73         12         0         0         13         23         0         0         13         23         0.5         0.0         13         23         0.5         0.0         13         23         0.5         0.0         11.3         14         13         14         13         14         13         14         14         14         14         14         14         14         14         14         14         14	p0 queue free %	100			95			<i>L</i> 6	66	95	100	98	100
EB1         WB1         SB1         SB1           62         154         73         12           0         0         50         0           30         0         50         0           1526         1541         848         584           0.00         0.05         0.09         0.02           0.00         1.3         2.3         0.5           0.0         1.3         2.3         0.5           0.0         1.3         2.3         0.5           0.0         4.1         9.6         11.3           0.0         4.1         9.6         11.3           0.0         4.1         9.6         11.3           1.3         2.49         1.3           1.49         1.13         1.3           1.51         4.1         9.6           1.3         4.9         1.3           1.49         1.13         1.3           1.51         4.9         1.3           1.51         4.9         1.3           1.51         4.9         1.3           1.51         4.9         1.3           1.51         4.9         1.	cM capacity (veh/h)	1526			1541			629	595	1022	560	584	988
62         154         73         12           0         80         16         0           30         0         50         0           152.8         1541         84         584           0.00         0.05         009         002           0.0         1.3         2.3         0.5           0.0         4.1         9.6         11.3           0.0         4.1         9.6         11.3           0.0         4.1         9.6         11.3           0.0         4.1         9.6         11.3           0.0         4.1         9.6         11.3           1.3         2.3         0.5           0.0         4.1         9.6         11.3           1.1         A         B         A           1.3         1.3         1.3         1.4           1.4         9.6         1.1.3         1.4           1.1         1.1         1.1         1.1           1.1         3.6         1.1.3         1.4	Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
0 80 16 0 1526 18 58 1526 18 8 58 0.00 0.05 0.09 0.02 0.0 4.1 9.6 11.3 0.0 4.1 9.6 11.3 0.0 4.1 9.6 11.3 1.3 1.3 0.0 4.1 9.6 11.3 1.3 1.3 1.3 1.3 1.3 1.3 1.5 CU Level of Service 15	Volume Total	62	154	73	12								
30 0 50 0 150 151 948 584 0.00 0.31 948 584 0.00 1.3 2.3 0.5 0.0 4.1 9.6 11.3 0.0 4.1 9.6 11.3 0.0 4.1 9.6 11.3 1.3 A 1.3 A 1.3 CU Level of Service 15	Volume Left	0	80	16	0								
1526 1541 848 584 0.00 0.05 0.09 0.02 0.0 1.3 2.3 0.5 0.0 4.1 9.6 11.3 0.0 4.1 9.6 11.3 A B 0.0 4.1 9.6 11.3 A B A B A B A B A B A B A CU Level of Service 15	Volume Right	30	0	20	0								
0.00 0.05 0.09 0.02 0.0 1.3 2.3 0.5 0.0 4.1 9.6 11.3 0.0 4.1 9.6 11.3 A B A B 4.9 A B A A B A B A B A B A B A B A B A B A	cSH	1526	1541	848	584								
00 13 23 05 0.0 4.1 9.6 11.3 0.0 4.1 9.6 11.3 0.0 4.1 9.6 11.3 A 18 A 18 A 18 A 10 A 10 Level of Service 15	Volume to Capacity	0.00	0.05	0.09	0.02								
0.0         4.1         9.6         11.3           (s)         A         A         B           (s)         0.0         4.1         9.6         11.3           mary         A         B         B         B         B           mary         4.9         B         B         B         B         B           mary         1.3         A         B	Queue Length 95th (m)	0.0	1.3	2.3	0.5								
(s) 0.0 4.1 9.6 11.3 A B mary 4.9 4.1 3.4 A B A B A B A B A B A B A B A B A B A B	Control Delay (s)	0.0	4.1	9.6	11.3								
r (s) 0.0 4.1 9.6 11.3 mmary A B active the service of the servi	Lane LOS		A	A	В								
A B mary 4.9 pacity Ultization 31.6% ICU Level of Service (min) 15	Approach Delay (s)	0.0	4.1	9.6	11.3								
mmary 4.9 pacity Utilization 31.6% ICU Level of Service (min) 15	Approach LOS			A	8								
4.9 activ Ullization 31.6% ICU Level of Service (min) 15	Intersection Summary												
pacity Utilization 31.6% ICU Level of Service ((min) 15	Average Delay			4.9									
	Intersection Capacity Utilization	_		31.6%	Q	U Level o	f Service			A			
	Analysis Period (min)			15									

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HCM Unsignalized Intersection Capacity Analysis 68: Avenue A & Port St W

68: Avenue A & Port St W	K										08/2	08/21/2017
	-	Ť	1	\$	ŧ		1	+	٠	۶	-	$\mathbf{F}$
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		¢			¢			¢			¢	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	29	14	9	11	20	29	ę	102	9	57	112	57
Future Volume (vph)	29	14	9	1	20	29	ŝ	102	9	57	112	57
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	32	15	7	12	22	32	co	111	7	62	122	62
Direction, Lane # E	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	54	99	121	246								
Volume Left (vph)	32	12	m	62								
	7	32	7	62								
	0.07	-0.22	0.00	-0.07								
Departure Headway (s)	4.9	4.6	4.5	4.3								
	0.07	0.08	0.15	0.29								
	674	717	770	810								
Control Delay (s)	8.3	8.0	8.3	9.0								
Approach Delay (s)	8.3	8.0	8.3	0.6								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			8.6									
Level of Service			A									
Intersection Capacity Utilization			32.8%	⊇	ICU Level of Service	<sup>5</sup> Service			A			
Analysis Period (min)			15									

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Future Total Reduced Auto Driver Mode Split 08/09/2017 PM Peak

Future Total Reduced Auto Driver Mode Split 08/09/2017 PM Peak LJR

WBL         WR         NBL         NBL         SSL         SIL         M           28         3         46         15         17         60         17         60           38         3         46         15         17         60         17         60           90         30         3         90         10         13         65         17         60           90         30         30         10         13         65         02         02         03         03           159         50         10         13         65         14         1         60         10						-		1071700	
WR         NBI         NBI         SBI		4	1	-		٠	•		
None     Free     1     60       03     03     03     03     03     03       03     03     03     03     03     03       03     03     03     03     03     03       03     03     03     03     03       03     03     03     03     03       03     03     03     03     03       04     03     03     03       19     58     66       19     58     66       19     58     133       25     100     153       01     00     03       03     10     153       10     10     156       11     50     13       12     64     65       13     5     13       13     6     13       14     53     13       15     10     136       16     13     13       17     13     13       18     11     13       19     5     11       10     136     13       11     13     13       12     11     14	Movement	WBL	WBR	NBT	NBR	SBL	SBT		Movement
0     28     3     46     15     17     60       509     076     076     075     075     075     075       003     030     05     092     092     092     075       003     030     05     092     092     092     075       010     000     18     65     06     06       159     58     66     4.1     66       159     58     66     4.1     66       011     191     59     153     22       35     33     153     95     01     17       36     882     100     153     95     11       011     00     010     153     95     11       011     00     011     95     01     17       011     00     011     135     11     135       011     010     010     11     135     11       011     01     01     11     11       01     01     01     135     11       01     01     01     13     13       01     11     13     13     13       01     11     11	Lane Configurations	≽		¢			¢.		Lane Configurations
1     200 200 0.05     3     46 0.05     15 0.02     17 0.02     60 0.02       0.02     0.02     0.02     0.02     0.02       0.03     0.02     0.92     0.92     0.92       0.04     18     65       159     58     66       64     6.2     4.1       63     16     13.5       35     33     2.2       82     100     1536       82     100       82     100       93     6       83     170       93     0       10     0.01       10     0.01       10     0.01       10     0.01       10     0.01       10     0.01       10     0.01       11     2.05       10     0.01       11     2.05       10     0.01       11     2.05       11     2.05       12     2.01       13     4       14     4       15     4       16     0.01       17     2.01       18     4       10     0.01       11     4	Traffic Volume (veh/h)	28	m	46	15	17	60		Traffic Volume (veh/
Sign         Free         Free           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         0.92         0.92           1         Anne         None         None         None           1         1         6         4         1           1         6         4         1         6           1         6         4         1         6           1         6         4         1         1           1         6         1         1         1           1         6         1         1         1           1         1         1         1         1         1           1         1         1         1         1         1           1         1         1         1         1         1           1         1         1         1         1         1           1         1         1         1         1         1           1         1         1         1	Future Volume (Veh/h)	28	ę	46	15	17	60		Future Volume (Veh
0%         0%         0%         0%           0.0         3         50         16         18         65           1         None         None         None         None           1         19         58         66         69         0.2           6.1         6.3         6.6         4.1         66         66           1.9         58         66         66         66         66           3.1         6         13         56         4.1         66           9.1         100         13         66         66         66         66           9.1         10.6         9.3         153.6         153.6         153.6         153.6           9.1         10         0.0         13         153.6         153.6         153.6           9.1         10         0.0         13         153.6         153.6         153.6         153.6           9.1         0.0         0.0         1.1         153.6         153.6         153.6         153.6           9.1         0.0         0.0         1.1         1.1         1.1         1.1         1.1           10.1	Sign Control	Stop		Free			Free		Sign Control
0.92     0.92     0.92     0.92     0.92     0.92     0.92       30     3     50     16     18     65       159     58     66       159     58     66       159     58     66       159     58     66       159     58     66       159     58     66       64     6.2     4.1       64     6.2     4.1       64     6.2     1.1       82     108     15.36       82     108     15.36       93     6     83       3     6     83       3     16     0       0     0.0     0.3       95     0.0     1.7       95     0.0     1.7       95     0.0     1.7       11     2.5     0.0       12     3.56     0.0       95     0.0     1.7       11     2.5     0.0       95     0.0     1.7       16     0.0     0.3       95     0.0     1.7       17     2.5     0.0	Grade	%0		%0			0%		Grade
30         3         50         16         18         65           More         None         None         None         None           159         58         66         66           159         58         66         66           159         58         66         66           159         58         66         4.1           64         6.2         4.1         66           82         1008         1536         95           33         6         88         1536           01         10         0.3         95           33         16         0         9           33         16         0         9           11         66         17         16           0         117         17         17           A         9         00         17         17           A         11         25         10         17           A         1         25         11         17           A         1         25         10         17           A         1         25         10         17	Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		Peak Hour Factor
Mone         Mone           a         159         58         66           159         58         66         66           159         58         66         66           159         58         66         66           159         58         66         66           159         58         66         66           153         33         2.2         99           153         99         1536         99           153         16         0         9           33         16         0         1336           33         16         0         13           10         0.04         0.01         9           10         0.01         1.7         1           95         0.0         1.7         1           17         A         A         A           17         A         A         A	Hourly flow rate (vph)	30	č	50	16	18	65		Hourly flow rate (vph
None         None         None           159         58         66           64         6.2         4.1           63         33         2.2           96         100         99           83         1536         1536           31         61         66           96         100         99           98         100         99           98         1536         1536           90         16         99           91         0         1536           92         100         1536           93         10         1536           93         10         1536           95         00         17           95         00         17           17         9         1           16         0.01         1           10         0.01         1           17         1         1           18         0         1           17         1         1           18         0         1           19         0         1           10         1	Pedestrians								Pedestrians
None         None         None           19         58         66           19         58         66           19         58         66           19         58         66           19         58         66           19         58         66           19         58         4.1           6.4         6.2         4.1           82         100         95           32         66         153.6           33         6         83           33         6         133.6           33         6         133.6           33         6         133.6           33         16         0           10         0.01         133.6           11         9         6           10         11         1           9         0.0         1.1           9         0.0         1.1           1         4         A           1         5         1.1           1         5         1.1           1         5         1.1           10         1.1	Lane Width (m)								Lane Width (m)
None         None         None           19         58         66           64         6.2         4.1           64         6.2         4.1           64         6.2         4.1           82         1008         15.36           35         3.3         2.2           96         99         99           97         108         15.36           103         0.1         13.3           104         0.01         0.0           10         0.0         1.3           95         0.0         1.7           9         0.0         1.7           9         0.0         1.7           9         0.0         1.7           9         0.0         1.7           9         0.0         1.7           10         0.0         0.1           9         0.0         1.7           10         0.0         1.3           10         0.0         1.4           10         0.0         1.4           10         1.7         1.1           10         1.1         1.1	Walking Speed (m/s)								Walking Speed (m/s
Mone         None         None           139         58         66           139         58         66           139         58         66           64         6.2         4.1           68         100         1536           35         33         66           82         1008         1536           33         6         83           33         6         83           33         6         83           33         16         0           33         16         0           33         16         0           34         17         13           95         0.0         1.7           9.5         0.0         1.7           9.5         0.0         1.7           9.5         0.0         1.7           0.1         7         1.1           9.5         0.0         1.7           9.5         0.0         1.7           9.5         0.0         1.7           9.5         0.0         1.7           9.5         0.0         1.7           1.1	Percent Blockage								Percent Blockage
None         None           159         58         66           159         58         66           159         58         66           64         62         4.1           63         100         1536           96         100         99           98         1700         1536           98         1700         1536           98         1700         1536           98         1700         1536           98         1700         1536           98         100         0.0           10         0.0         0.0           11         9         0.0           9         0.0         1.7           9.5         0.0         1.7           9.5         0.0         1.7           10         0.0         0.0           9.5         0.0         1.7           10         1.3         1.1           9.5         0.0         1.7           11         0.0         2.5           11         0.0         2.5           11         0.0         0.0           12	Right turn flare (veh)								Right turn flare (veh)
a     159     58     66       159     58     66       159     58     66       64     6.2     4.1       65     100     4.1       82     1008     1536       98     1536     99       98     170     1536       98     170     1536       98     170     1536       98     170     1536       98     170     1536       98     170     1536       98     170     1536       98     170     1536       98     170     1536       98     170     1536       9     0     17       9     0     17       9     0     17       9     0     17       9     0     17       9     0     17       9     0     17       9     0     17       9     0     17       9     0     17       9     0     17       10     0.0     17       10     17     18       10     17     18       10     17     18	Median type			None			None		Median type
159     58     66       139     58     66       64     62     4.1       64     62     4.1       64     62     4.1       35     3.3     2.2       96     100     1536       92     1008     1536       92     1008     1536       93     100     1536       93     100     1536       95     0.0     1.7       95     0.0     1.7       95     0.0     1.7       101     0.0     0.3       95     0.0     1.7       17     2.5     CU Level of Service	Median storage veh)								Median storage veh)
159     58     66       159     58     66       159     58     66       64     62     4.1       64     62     4.1       96     100     99       97     100     1536       98     170     1536       98     1700     1536       93     16     0       93     10     18       93     10     19       95     0.0     17       95     0.0     17       95     0.0     17       95     0.0     17       95     0.0     17       95     0.0     17       95     0.0     17       95     0.0     17       95     0.0     17       95     0.0     17       95     0.0     17       10     0.0     0.0       11     2.5     1.1       11     2.5     1.1       11     2.5     1.1	Upstream signal (m)								Upstream signal (n
139     58     66       159     58     66       64     6.2     4.1       64     6.2     4.1       64     6.2     4.1       96     100     99       96     100     99       97     98     1536       98     1700     1536       98     1700     1536       98     1700     1536       98     1700     1536       98     1700     1536       99     0.0     0.1       95     0.0     1.7       95     0.0     1.7       95     0.0     1.7       95     0.0     1.7       95     0.0     1.7       10     0.0     0.3       95     0.0     1.7       10     1.1     1.1       10     2.18%     CU Level of Service	pX, platoon unblocked								pX, platoon unbloc
159     58     66       64     62     4.1       64     62     4.1       35     3.3     2.2       96     1008     15.36       822     1008     15.36       WB1     NB1     SB1       33     66     83       33     66     83       33     66     83       33     10     18       10     0.1     9       0.1     0.1     10       9.5     0.0     1.7       9.5     0.0     1.7       17     A     A       2.5     CU Level of Service     A	vC, conflicting volume	159	58			99			vC, conflicting volum
159     58     66       6.4     6.2     4.1       35     3.3     2.2       96     100     99       82     1008     15.36       33     66     83       33     66     83       33     66     83       33     66     83       33     66     83       33     67     0.0       33     67     83       33     67     83       33     67     93       33     67     93       33     10     0.03       95     0.0     1.7       9.5     0.0     1.7       9.5     0.0     1.7       9.5     0.0     1.7       9.5     0.0     1.7       9.5     0.0     1.7       9.5     0.0     1.7       9.5     0.0     1.7       9.5     0.0     1.7       9.5     0.0     1.7       9.5     0.0     1.7       9.5     0.0     1.7	vC1, stage 1 conf vol								vC1, stage 1 conf vo
vol         159         58         66           6.4         6.2         4.1           6.8         3.3         2.2           6         100         99           (h)         8.2         100           8.2         100         15.36           #         WB         NB         53.4           #         WB         NB         53.6           #         WB         0.0         15.36           #         WB         1.8         53.6           3         1.6         0         15.36           3         1.6         0         15.36           53         6         1.8         15.36           3         1.6         0         1.53.6           53         6         1.8         1.53.6           51         1.0         1.3         1.6           51         1.0         1.3         1.6           51         0.0         1.7         1.7           51         0.0         1.7         1.7           61         0.0         0.0         0.1           62         0.0         1.7         1.7	vC2, stage 2 conf vol								vC2, stage 2 conf vo
6.4         6.2         4.1           6         9         99           hh)         8.22         100           8.5         3.3         2.2           #         WB1         NB1         5B1           #         WB1         NB1         5B1           3         6         83         3           3.3         6         83         3           3.3         16         0         136           95         100         1536         1700         1536           10         0.0         0.1         55         1.1           10         0.0         0.3         1.1         1.1         1.1           10         0.0         0.3         3         1.1         1.1           10         0.0         0.1         1.7         1.1         1.1           11         0.0         1.1         1.1         1.1         1.1           11         1.1         0.0         1.1         1.1         1.1           10         1.1         1.1         1.1         1.1         1.1           10         1.1         1.1         1.1         1.1	vCu, unblocked vol	159	58			99			vCu, unblocked vol
8     3.3     2.2       8     96     100     99       11)     8.22     108     15.36       #     WB1     NB1     5B1     15.36       3     16     18     16     18       13     16     18     16     16       14     10     0.01     1536     17.00       15     0.0     1.3     1.3     1.4       15     0.0     1.3     1.4       16     9.5     0.0     1.7       17     9.5     0.0     1.7       16     9.5     0.0     1.7       17     A     A     1.7       18     A     A     1.7       19     9.5     0.0     1.7       10     0.0     1.7     1.4       11     A     1.7     1.7       11     1.7     1.7     1.7       10     1.7     1.7       11     2.5     0.	tC, single (s)	6.4	6.2			4.1			tC, single (s)
a     3.5     3.3     2.2       b)     8.2     100     99       m)     8.2     103     1536       m     NB     NB     1536       m     3     6     8       3     0     18       3     16     0       8     700     136       9     0.04     0.01       10     0.0     0.3       5     0.0     1.7       6(s)     9.5     0.0       5)     9.5     0.0       6(s)     9.5     0.0       7     3.5     0.0       6(s)     9.5     0.0       7     3.5     0.0       7     3.5     0.0       7     3.5     0.0       6(s)     9.5     0.0       7     1.0     2.5       25     0.0     1.7       36(b)     1.1     2.5       37     2.5     CUL Level of Service	tC, 2 stage (s)								tC, 2 stage (s)
6         96         100         99           h(h)         822         108         1536           #         WB1         B1         B1         B1           3         0         18         1536           33         6         83         1536           31         16         0         133           33         16         0         18           33         16         0         136           936         1700         1536         100           10         0.04         0.01         10           916         0.01         17         10           95         0.0         1.7         17           10         0.0         0.3         17           10         9.5         0.0         1.7           10         9.5         0.0         1.7           10         9.5         0.0         1.7           10         9.5         0.0         1.7           10         1.7         1.7         1.8           11         1.0         1.7         1.8           11         1.0         1.7         1.8	tF (s)	3.5	3.3			2.2			tF (s)
hh)         822         1008         1536           #         WB1         NB1         SB1         1536           3         6         8         3         4         0           3         16         0         836         1700         1536           city         0.0         13         6         0         13           bh(m)         1.0         0.0         1.3         6         0           5h         0.0         1.7         13.4         1         0         1           5h         0.0         1.7         1         0.0         0.3         1         1         1         1           5h         0.0         1.7         A         A         A         A         1 <td< td=""><td>p0 queue free %</td><td>96</td><td>100</td><td></td><td></td><td>66</td><td></td><td></td><td>p0 queue free %</td></td<>	p0 queue free %	96	100			66			p0 queue free %
#         WB 1         NB 1         SB 1           33         66         83           3         10         18           3         16         0           3         10         13           61         0         001           836         1700         1536           61         0.0         0.0           51         0.0         0.3           10         0.0         0.3           10         0.0         0.3           10         0.0         1.7           10         0.1         1.7           11         0.1         1.1           12         0.0         1.7           13         A         A           14         A         A           15         0.0         1.7           17         A         A           18         A         A           17         1.3         2.5           25         CUL Level of Service         A	cM capacity (veh/h)	822	1008			1536			cM capacity (veh/h)
33     66     83       30     0     18       31     16     0       83     1700     1536       10     0.04     0.01       10     0.0     0.3       11     0     0       12     9.5     0.0       13     4       (5)     9.5     0.0       17     A       (5)     9.5     0.1       18     1.1     0.0       19     2.5     0.0       11     2.5     0.0       12     2.5     0.0       13     2.5       25     C.U Level of Service	Direction, Lane #	WB 1	NB 1	SB1					Direction, Lane #
30         0         18           3         16         0           83         1700         1536           161         0         0.01           170         10         0.01           19         9.5         0.0         1.7           10         0.0         0.3         3           11         0.0         0.3         3           12         9.5         0.0         1.7           13         9.5         0.0         1.7           18         1.0         0.0         3           19         9.5         0.0         1.7           18         0.0         1.7         3           18         0.0         1.7         3           19         9.5         0.0         1.7           10         9.5         0.0         1.7           10         2.5         0.0         1.7           112         2.5         0.0         1.7           10         2.5         0.0         1.7           10         2.5         0.0         1.7           10         2.5         0.0         1.7 <td< td=""><td>Volume Total</td><td>33</td><td>99</td><td>83</td><td></td><td></td><td></td><td></td><td>Volume Total</td></td<>	Volume Total	33	99	83					Volume Total
3         16         0           10         100         1536           11         0.04         0.01           10         0.0         0.3           11         0         0.3           12         0.0         1.7           13         9.5         0.0         1.7           14         A         A         A           15         0.0         1.7         A           16         1.7         A         A           17         A         A         A           17         A         A         A           17         A         A         A           16         A         A         A           17         A         A         A           17         A         A         A           16         A         A         A           17         A         A         A           17         A         A         A           17         A         A         A           18         CUL Level of Service         A         A	Volume Left	30	0	18					Volume Left
cty 836 1700 1536 (b) 10 00 03 (c) 9.5 0.0 1.7 (c) 1.7 (c) 2.5 (c) 1.1 (c) 2.5 (c) 1.1 (c) 2.5 (c) 1.2 (c) 1.1 (c) 2.5 (c) 1.2 (c)	Volume Right	č	16	0					Volume Right
icity         0.04         0.01           5Bh (m)         1.0         0.0         0.3           5Bh (m)         1.0         0.0         0.3           5         0.0         1.7         1.7           (s)         9.5         0.0         1.7           (s)         9.5         0.0         1.7           (s)         9.5         0.0         1.7           (s)         9.5         0.0         1.7           mary         2.5         2.0         1.7           ascity Utilization         2.6         CU Level of Service	cSH	836	1700	1536					cSH
55h (m)     1.0     0.3       5)     9.5     0.0     1.7       6)     9.5     0.0     1.7       (s)     9.5     0.0     1.7       (s)     9.5     0.0     1.7       mary     2.5     2.5       ascip Utilization     2.8%     CU Level of Service	Volume to Capacity	0.04	0.04	0.01					Volume to Capacity
<ul> <li>9.5 0.0 1.7</li> <li>A A</li> <li>(5) 9.5 0.0 1.7</li> <li>(6) 9.5 0.0 1.7</li> <li>A A</li> <li>A A</li></ul>	Queue Length 95th (m)	1.0	0.0	0.3					Queue Length 95th
(s) 9.5 0.0 1.7 A A 2.5 mmary 2.5 acity Utilization 20.8% ICU Level of Service A	Control Delay (s)	9.5	0.0	1.7					Control Delay (s)
(s)         9.5         0.0         1.7           A         A         A         A           mmary         2.5         2.5         A           acity Utilization         2.05%         ICU Level of Service         A	Lane LOS	A		4					Lane LOS
A mmary 2.5 activ Utilization 20.8% ICU Level of Service A	Approach Delay (s)	9.5	0.0	1.7					Approach Delay (s)
2.5 Utilization 20.8% ICU Level of Service A	Approach LOS	A							Approach LOS
2.5 2.5 Utilization 2.8% ICU Level of Service A	Intersection Summary								Intersection Summar
Utilization 20.8% ICU Level of Service A	Average Delav			2.5					Average Delav
	Intersection Capacity Utilizatio	-		20.8%		I level of			Intersection Canacit
<u>C</u>	Analysis Period (min)			ц Ц					Analysis Dariad (min

nalized Intersection Capacity Analysis

70: Lake St & Lakeshore Rd W	ore Rc	N					08/21/2017
	t	*	1	Ŧ	1	*	
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
ane Configurations	ŧ	×		ŧ		×	
Fraffic Volume (veh/h)	1517	98	0	1685	0	78	
uture Volume (Veh/h)	1517	98	0	1685	0	78	
Sign Control	Free			Free	Stop		
Grade	%0			%0	%0		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	1649	107	0	1832	0	85	
Dedestrians							
_ane Width (m)							
Valking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
	None			None			
Median storage veh)							
Jpstream signal (m)	342			118			
<ol> <li>platoon unblocked</li> </ol>					0.74		
/C, conflicting volume			1756		2565	824	
/C1, stage 1 conf vol							
/C2, stage 2 conf vol							
/Cu, unblocked vol			1756		2416	824	
C, single (s)			4.1		6.8	6.9	
C, 2 stage (s)							
F (s)			2.2		3.5	3.3	
00 queue free %			100		100	73	
cM capacity (veh/h)			352		20	316	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	
Volume Total	824	824	107	916	916	85	
Volume Left	0	0	0	0	0	0	
me Right	0	0	107	0	0	85	
	1700	1700	1700	1700	1700	316	
Volume to Capacity	0.48	0.48	0.06	0.54	0.54	0.27	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	8.5	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	20.5	
-ane LOS						ပ	
Approach Delay (s)	0.0			0.0		20.5	
Approach LOS						U	
ntersection Summary							
Average Delay			0.5				
ntersection Capacity Utilization		_,	53.4%	C	ICU Level of Service	Service	A
Analysis Period (min)			۹L				

Synchro 9 Report Page 6

Future Total Reduced Auto Driver Mode Split 08/09/2017 PM Peak

Future Total Reduced Auto Driver Mode Split 08/09/2017 PM Peak LJR

/ 1: Lake St & Avenue B						08/21/2017	/3: Private	/3: Private Rd & Lakeshore Rd W	DIG C	
7	1	ŧ	4	۶	•			I	(†	*
Aovement EI	EBL EBT	WBT	WBR	SBL	SBR		Movement	Ш	EBT E	EBR WBL
ane Configurations.	÷			×			Lane Configurations		ł	×.
raffic Volume (veh/h)	6 234		46	15	0		Traffic Volume (veh/h)		609	69
<sup>-</sup> uture Volume (Veh/h)	6 234			15	0		Future Volume (Veh/h)		609	69
Sign Control	Free	Free		Stop			Sign Control	Ē	Free	
				%0			Grade			
Deak Hour Factor 0.	0.92 0.92	0.92	0.92	0.92	0.92		Peak Hour Factor		0.92 0	0.92 0.92
Hourly flow rate (vph)	7 254		20	16	0		Hourly flow rate (vph)			75
Pedestrians							Pedestrians			
ane Width (m)							Lane Width (m)			
Valking Speed (m/s)							Walking Speed (m/s)	(m/s)		
Percent Blockage							Percent Blockage	Je		
Right turn flare (veh)							Right turn flare (veh)	(veh)		
Median type	None	None					Median type		None	
Median storage veh)							Median storage veh)	veh)		
Jpstream signal (m)							Upstream signal (m)		133	
oX, platoon unblocked							pX, platoon unblocked	locked		0.63
	298			541	273		vC, conflicting volume	olume		1824
/C1, stage 1 conf vol							vC1, stage 1 conf vol	nf vol		
/C2, stage 2 conf vol							vC2, stage 2 conf vol	nf vol		
ed vol	298			541	273		vCu, unblocked vol	lov		1120
	4.1			6.4	6.2		tC, single (s)			
stage (s)							tC, 2 stage (s)			
	2.2			3.5	3.3		fF (s)			2.2
	66			<u> </u>	100		p0 queue free %	~0		
cM capacity (veh/h) 12	1263			499	766		cM capacity (veh/h)	(h/h)		
Direction, Lane # EB	EB1 WB1	SB1					Direction, Lane #	#	EB1 E	EB 2 EB 3
/olume Total 2	261 298	16					Volume Total		874	874
	7 0	16					Volume Left		0	0
ne Right							Volume Right			
	63 1700	499					cSH			
	0.01 0.18						Volume to Capacity		0.51 0	
th (m)	0.0	0.8					Queue Length 95th (m)			0.0 0.0
lay (s)							Control Delay (s)			0.0
	A	8					Lane LOS			
/ (s)	0.3 0.0	7					Approach Delay (s)		0.0	
Approach LOS		8					Approach LOS			
ntersection Summary							Intersection Summary	nmary		
Average Delay		0.5					Average Delay			0.2
ntersection Capacity Utilization		27.1%		ICU Level of Service	f Service	A	Intersection Capacity Utilization	acity Utilization		55.2%
Analysis Doriod (min)		L t					Andraio Dariad (min)			1
		<u>_</u>						(uiu)		

acity Analysis

73: Private Rd & Lakeshore Rd W	shore	Rd W	<u> </u>	Ì			08/21/2017
-	t	1	1	Ŧ	-	×	
Vovement	EBT	EBR	WBL	WBT	NBL	NBR	
ane Configurations	ŧ	×		ŧ		×	
raffic Volume (veh/h)	1609	69	0	1865	0	65	
-uture Volume (Veh/h)	1609	69	0	1865	0	65	
Sign Control	Free			Free	Stop		
Grade	%0			%0	%0		
	0.92	0.92	0.92	0.92	0.92	0.92	
ate (vph):	1749	75	0	2027	0	71	
<sup>b</sup> edestrians							
ane Width (m)							
Valking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
	None			None			
Median storage veh)							
Jpstream signal (m)	133			137			
X, platoon unblocked			0.63		0.63	0.63	
/C, conflicting volume			1824		2762	874	
/C1, stage 1 conf vol							
/C2, stage 2 conf vol							
/Cu, unblocked vol			1120		2620	0	
C, single (s)			4.1		6.8	6.9	
C, 2 stage (s)							
F (s)			2.2		3.5	3.3	
00 queue free %			100		100	60	
cM capacity (veh/h)			388		12	678	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	
/olume Total	874	874	75	1014	1014	71	
/olume Left	0	0	0	0	0	0	
ne Right	0	0	75	0	0	71	
	1700	1700	1700	1700	1700	678	
/olume to Capacity	0.51	0.51	0.04	0.60	0.60	0.10	
Dueue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	2.8	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	10.9	
ane LOS						в	
Approach Delay (s)	0.0			0.0		10.9	
Approach LOS						в	
ntersection Summary							
Average Delay			0.2				
ntersection Capacity Utilization		μ,	55.2%	ICL	ICU Level of Service	Service	В
Analysis Period (min)			15				

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