



Three Grand River Crossings Municipal Class EA Transportation Study







Project Summary



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Executive Summary

Content

GM BluePlan Engineering Limited retained Paradigm Transportation Solutions Limited (Paradigm) to conduct this Transportation Study as part of the Schedule B Municipal Class Environmental Assessment for three crossings over the Grand River: Lorne Bridge, Brant's Crossing Bridge and the TH&B Crossing Bridge.

The EA is being carried out in two parts:

- Part One entails determining the preferred solution for the rehabilitation of the Lorne Bridge, including confirming structural components requiring rehabilitation, preparing staging/detour options during rehabilitation, and reviewing active transportation considerations; pending recommendations from the TH&B Crossing Bridge and Brant's Crossing Bridge Review (Part Two, as discussed below).
- ▶ Part Two entails an assessment on two pedestrian crossings: the TH&B Crossing Bridge and Brant's Crossing Bridge. The two pedestrian crossings must be studied for their need, connection to the trail system/parks, and rehabilitation/replacement/removal options.

Conclusions

Based on the investigations carried out, it is concluded that:

- Under existing conditions, the study intersections operate with acceptable levels of service and within capacity during the weekday AM and PM peak hours;
- During the rehabilitation of the Lorne Bridge, minor modifications to signal timing phasing will be required to support diverted traffic volumes;
- The existing operating characteristics and traffic volumes crossing the Lorne Bridge signify the need for separated cycling facilities, rather than a shared roadway facility;

Recommendations

Based on the findings of this study, it is recommended that:

► The southbound channelization at Colborne Street West/Brant Avenue/Icomm Drive during rehabilitation be removed to reduce



- conflicts between vehicles and pedestrians at Colborne Street West/Brant Avenue/Icomm Drive:
- ► The City of Brantford retain at least one of the existing active transportation crossings of the Grand River (i.e. Brant's Crossing Bridge or TH&B Crossing Bridge), based on the following:
 - To maintain the current lane arrangement and capacity along Colborne Street West, separated facilities do not appear feasible given the limited platform width across the Lorne Bridge.
 - Separated cycling facilities on the Lorne Bridge may introduce a gap in the cycling network as few of the study area roadways are identified as permitted bicycle routes; and
 - Brant's Crossing Bridge and the TH&B Crossing Bridge provide strong connectivity across the Grand River, without introducing conflict points with motor vehicle traffic.
- ► The City of Brantford consider signal timing modifications contained herein to support diverted traffic volumes during the Lorne Bridge rehabilitation. These measures are noted as follows, and deemed necessary only in the PM peak hour:
 - Veteran's Memorial Parkway & Mt. Pleasant Street: Implement a westbound protected-permissive left-turn phase within the existing intersection cycle length.

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1 Introduction

1.1 Overview

GM BluePlan Engineering Limited retained Paradigm Transportation Solutions Limited (Paradigm) to conduct this Transportation Study as part of the Schedule B Municipal Class Environmental Assessment for three crossings over the Grand River: Lorne Bridge, Brant's Crossing Bridge and the TH&B Crossing Bridge.

The EA is being carried out in two parts:

- Part One entails determining the preferred solution for the rehabilitation of the Lorne Bridge, including confirming structural components requiring rehabilitation, preparing staging/detour options during rehabilitation, and reviewing active transportation considerations; pending recommendations from the TH&B Crossing Bridge and Brant's Crossing Bridge Review (Part Two, as discussed below).
- ▶ Part Two entails an assessment on two pedestrian crossings: the TH&B Crossing Bridge and Brant's Crossing Bridge. The two pedestrian crossings must be studied for their need, connection to the trail system/parks, and rehabilitation/replacement/removal options.

Figure 1.1 illustrates the location of the subject site, study area, and three bridge crossings.

1.2 Purpose and Scope

The scope of this study comprises the following:

- Analyze base year conditions and deficiencies based on existing traffic volumes and impacts of the preferred solution with respect to staging and capacity. This includes analysis of existing capacity and level of service at intersections, screen line analyses, and link volume analyses;
- Identify impacts and benefits to all modes of transportation (transit, walking, cycling);
- Assess road safety performance and mitigation measures based on collision history, field investigation and predicative safety techniques;
- Assess active transportation facilities including the intersections of Brant Avenue/Icomm Drive/Colborne Street for cycling and

pedestrian crossing and safety connections to the waterfront trail system.

1.3 Study Area

The intersections analyzed as part of this study comprise the following:

- Mt. Pleasant Street and Veteran's Memorial Parkway;
- Mt. Pleasant Street and Colborne Street West;
- Colborne Street West and Gilkison Street;
- Colborne Street West and Brant Avenue/Icomm Drive;
- Icomm Drive and Market Street South;
- Icomm Drive/Greenwich Street and Clarence Street South; and
- Veteran's Memorial Parkway and Erie Avenue.



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2 Existing Conditions

2.1 Existing Road Network

The existing roadways in the study area include Veteran's Memorial Parkway, Mt. Pleasant Street, Colborne Street West, Gilkison Street, Brant Avenue, Icomm Drive, Market Street South, Clarence Street South and Greenwich Street. All these roadways operate under the jurisdiction of the City of Brantford and are described as follows:

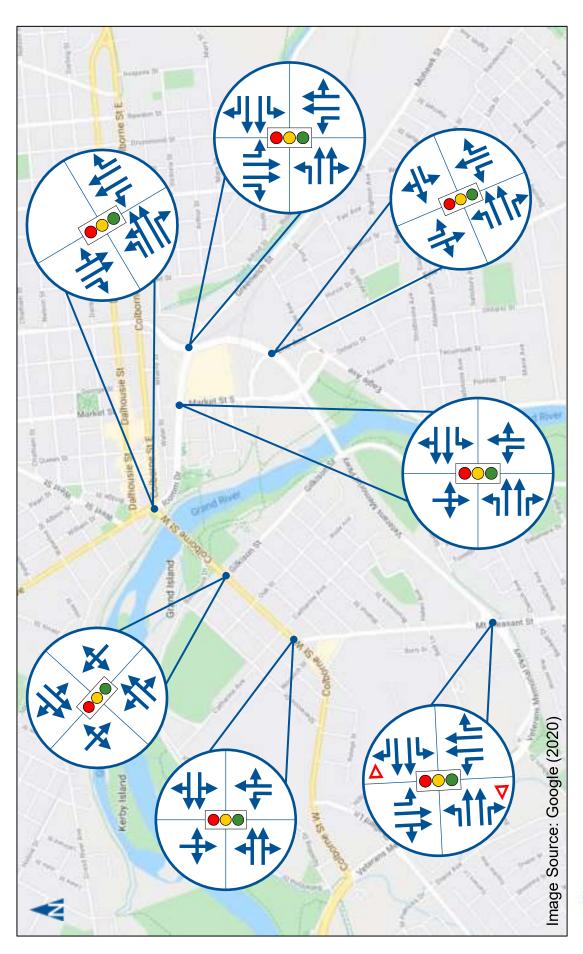
- Veteran's Memorial Parkway (from Mt. Pleasant Street to Clarence Street South) is an east-west, two-lane to four-lane, major arterial roadway with a semi-urban cross-section. The maximum posted speed limit is 70 km/h. Parking is prohibited on both sides of the road. West of Mt. Pleasant Street the road operates with a four-lane, divided cross-section, comprising two-lanes per direction. East of Mt. Pleasant Street, the road operates with a two-lane, undivided cross-section, comprising one travel lane per direction. The road is identified as a truck route, and represents one of two vehicular crossings of the Grand River.
- ▶ Mt. Pleasant Street (from Colborne Street West to Veteran's Memorial Parkway) is a north-south, four-lane, minor arterial with an urban cross-section. The maximum posted speed limit is 50 km/h. The road is identified as a truck route between Colborne Street West and Veteran's Memorial Parkway. The roadway comprises a four-lane, undivided cross-section, and parking is prohibited on both sides.
- ▶ Colborne Street West (from Mt. Pleasant Street to Brant Avenue) is an east-west, four-lane, minor arterial roadway with an urban cross-section. The maximum posted speed limit is 50 km/h. Parking is prohibited on both sides of the road. This road is identified as a truck route, and is one of two vehicular crossings of the Grand River. Across the Lorne Bridge, Colborne Street West operates with five-lanes: two westbound, and three eastbound.
- ▶ **Brant Avenue** is a north-south, four-lane, minor arterial roadway with an urban cross-section. The maximum posted speed limit is 50 km/h. South of Colborne Street West, Brant Avenue operates south with a four-lane, undivided cross-section, with two travel lanes per direction. Parking is not permitted on either side of the road.

Official Plan of the City of Brantford. Office Consolidation. February 28, 2020. Schedule 5-1 Transportation: Transportation Plan.



- ▶ **Icomm Drive** is an east-west, four-lane, minor arterial roadway that connects Colborne Street and Clarence Street South. The road comprises an urban cross-section, with two travel lanes per direction, separated by a centre median. The maximum posted speed limit is 50 km/h. Parking is not permitted on either side of the road.
- Greenwich Street is an easterly extension of Icomm Drive at Clarence Street South and is identified as a major collector in the City's Official Plan. The road comprises a two-lane, urban cross-section with one travel lane per direction. At Clarence Street South, the roadway widens to a four-lane cross-section to match Icomm Drive. The posted maximum speed limit is 50 km/h. Parking is prohibited on both sides of the road.
- ▶ Market Street South is a north-south, minor arterial that connects Icomm Drive and Veterans' Memorial Parkway. The road operates with a four-lane, undivided, urban cross-section with two travel lanes per direction. The posted maximum speed limit is 50 km/h. Parking is prohibited on both sides of the road in the study area.
- ▶ **Gilkison Street** is a north-south, minor collector that connects Colborne Street West and Mt. Pleasant Street. The road operates with a two-lane, urban cross-section, comprising one travel lane per direction. North of Colborne Street West, parking is permitted on both sides, unless otherwise indicated by signage. South of Colborne Street West, parking is permitted on the west side of the road, unless otherwise indicated by signage.
- ▶ Erie Avenue is a north-south, minor arterial that connects Mt. Pleasant Street to Eagle Avenue via Veteran's Memorial Parkway. The road operates with a two-lane, urban cross-section comprising one travel lane per direction. Parking is not permitted on either side of the road north of Veteran's Memorial Parkway. The posted maximum speed limit is 50 kilometres per hour. The road is identified as a Bike Route, and signs are installed alongside the road.

Figure 2.1 illustrates the existing lane configurations and traffic control.





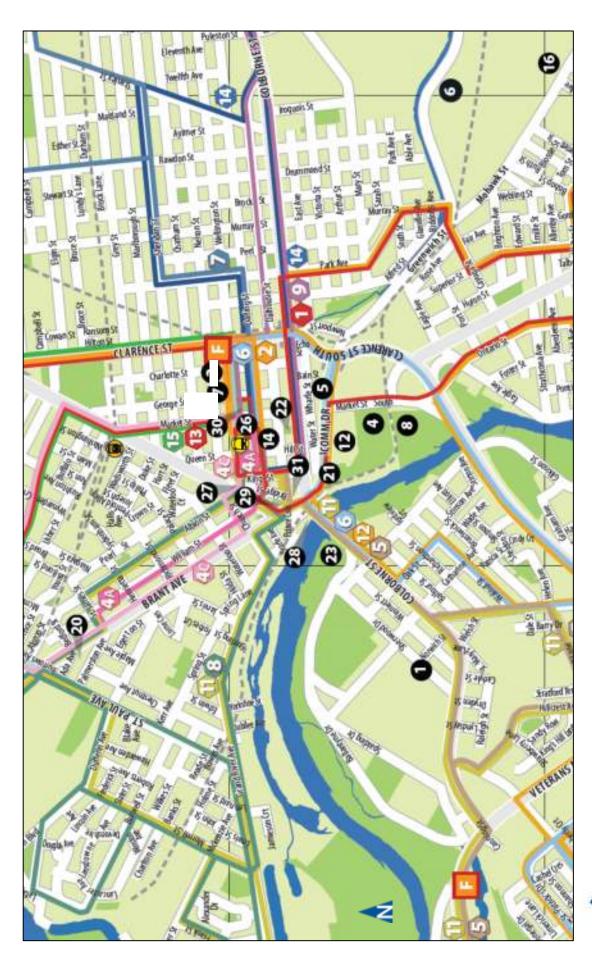
Existing Lane Configurations and Traffic Control

2.2 Transit Services

Brantford Transit (BT) is the public transit operator in the City of Brantford, and operates the following routes in the study area:

- ▶ Route 1 (Eagle Place) travels from the Transit Terminal to the Eagle Place Neighbourhood using Icomm Drive, Market Street and a variety of local neighbourhood roads. Service is provided Monday to Saturday from 6:00 AM to 8:30 PM, with 30-minute headways. Sunday service is provided from 8:00 AM to 7:00 PM with 60-minute headways.
- ▶ Route 5 (West Brant Oakhill) travels from the Transit Terminal to the West Brant/Oakhill area via Colborne Street West. A portion of the return trip uses Mt. Pleasant Street. Service is provided Monday to Saturday from 6:00 AM to 8:30 PM, with 30-minute headways. Sunday service is provided from 8:00 AM to 7:00 PM with 60-minute headways.
- ▶ Route 6 (West Brant Shellard) travels from the Transit
 Terminal to the West Brant Shellard area using Veteran's
 Memorial Parkway, Mt. Pleasant Street, Colborne Street and
 Icomm Drive. Service is provided Monday to Saturday from 6:00
 AM to 8:30 PM, with 30-minute headways. Sunday service is
 provided from 8:00 AM to 7:00 PM with 60-minute headways.
- Route 11 (West Brant Oakhill NWIA Holmedale) travels from the Transit Terminal, up Colborne Street West and loops through the West Brant Oakhill, Northwest Industrial Area and Holmedale areas using several roads including Dufferin Avenue, Morrell Street, and Grand River Avenue. Service is provided Monday to Saturday from 9:00 PM to 12:00 AM, with 60-minute headways.
- Route 12 (Eagle Place Shellard) travels from the Transit Terminal and loops through the Eagle Place and Shellard areas using Colborne Street West, Veteran's Memorial Parkway, Mt. Pleasant Street, and a variety of local roadway in each neighbourhood. Service is provided Monday to Saturday from 9:00 PM to 12:00 AM, with 60-minute headways.

Figure 2.2 illustrates the existing transit routes within the City of Brantford.





Existing Transit Services

2.3 Active Transportation

2.3.1 Pedestrian Facilities

Sidewalks are provided on both sides of all study roads, except Veteran's Memorial Parkway. A multi-use trail is provided on the south side of Veteran's Memorial Parkway, west and east of Mt. Pleasant Street. This trail facility connects to the LE & N Rail Trail along the former Lake Erie and Northern Electric Railway route.

Sidewalks on Colborne Street West include a landscaped buffer, or physical barrier (along the Lorne Bridge). These elements enhance the attractiveness of the pedestrian environment by decreasing potential conflict with vehicle traffic. Sidewalks on Icomm Drive also include a landscaped buffer.

During the site visit, Paradigm performed spot measurements along each sidewalk corridor. Average sidewalk widths varied between 1.3 metres (on Mt. Pleasant Street) and 2.0 metres (on Colborne Street East). The Accessibility for Ontarians with Disabilities Act (AODA) requires exterior paths to provide a minimum clear width of 1.5 metres, but this clear width can be reduced to 1.2 metres under select circumstances. Although portions of the sidewalk on Mt. Pleasant Street are less than 1.5 metres, a lack of obstructions on either side of the sidewalk provide a cleat width more than 1.5 metres.

All seven study intersections include pedestrian push buttons, pedestrian signal heads, and delineated crosswalks. However, the channelized southbound right-turn movement on Brant Avenue at Colborne Street West includes an uncontrolled pedestrian crossing.

2.3.2 Trails

The Veteran's Memorial Parkway (VMP) Trail operates adjacent to Veteran's Memorial Parkway. The VMP is a multi-use trail, accommodating pedestrians, cyclists, and other trail users. The VMP intersects with Graham Avenue, east of Veteran's Memorial Parkway.

The Dike Trail runs along the east bank of the Grand River connecting to Market Street and Eagle Avenue. The SC Johnson Trail runs along the north and east bank of the Grand River. This trail runs 14 kilometres between Paris and Brantford. In Paris, the trail connects to the Cambridge to Paris Rail Trail. In Brantford, the trail connects to the Dike Trail, and the Hamilton and Brantford Rail Trail.

Additional multi-use trails within the study area include Fordview Trail and SC Johnson Trail, portions of which form part of the Trans Canada

Trail. These trails circumvent the Grand River and at present, cross the Grand River over two dedicated structures between Colborne Street (Lorne Bridge) and Veteran's Memorial Parkway:

- Brant's Crossing Bridge: former railway bridge, readapted for pedestrian and cyclist use. The bridge was closed following a flooding and ice jam event in 2018. Based on structural investigations, the bridge was recommended to remain closed until repairs can take place to ensure its safe use by the public.; and
- TH&B Crossing Bridge: former railway bridge readapted for pedestrian and cyclists use. Currently in use.

Figure 2.3 illustrates the existing active transportation network in the City with respect to trails and cycling routes/facilities.

2.3.3 Cycling Facilities

Cycling facilities throughout the City comprise dedicated bike lanes, shared use lanes, or designated bike routes. These facilities are generally located on lower-tier roads and enhance connectivity to the City's trail network. Erie Avenue and Ballantyne Drive are identified as Bike Routes on the City's Trails Map. None of the other study area roads are designated cycling routes or include dedicated on-road cycling facilities.



Existing Active Transportation Network

Three Grand River Crossings Municipal Class EA – Transportation Study 190487

Figure 2.3

2.4 Traffic Volumes

Turning movement counts (TMC) quantify the volume, and type of vehicles travelling through an intersection. The TMC data is typically collected during peak travel periods to capture peak traffic volumes and patterns.

In March 2020, the Provincial and Federal governments enacted measures to reduce the spread of COVID-19. Provincial measures included the closure of non-essential businesses and schools. Federal measures included the closure of the International Border to the United States of America, except for essential travel, the City of Brantford provided historical turning movement counts at all six study intersections. **Table 2.1** summarizes the date of each turning movement count.

TABLE 2.1: TURNING MOVEMENT COUNT SUMMARY

Intersection	Date of Count
Veteran's Memorial Parkway and Mt. Pleasant Street	August 29, 2012
Colborne Street West and Mt. Pleasant Street	March 3, 2015
Colborne Street West and Gilkison Street	August 21, 2013
Colborne Street West and Brant Avenue/Icomm Drive	July 8, 2014
Icomm Drive and Market Street South	October 11, 2012
Icomm Drive/Greenwich Street and Clarence Street South	July 7, 2015
Veteran's Memorial Parkway and Erie Avenue	May 21, 2014

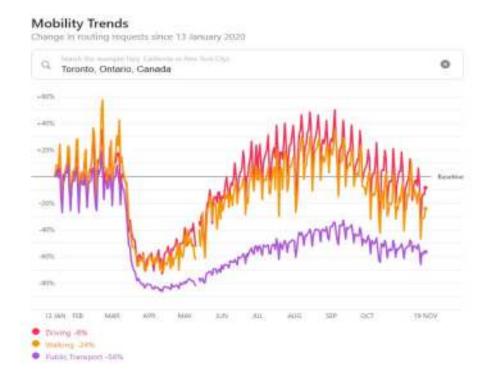
A comparison of these counts with 2017 traffic count data Paradigm had on file at a number of the study area intersections indicated significant changes to the traffic patterns has occurred between the respective years. The manipulation and growth of this data was considered to be unreliable given the various changes in patterns observed. As COVID-19 restrictions were relaxed and businesses were granted the ability to open for business a review of mobility trends for the City of Toronto was reviewed as no data for the City of Brantford or adjacent municipalities is available. The data is available through Apple² and indicates vehicle travel patterns have closely normalized to the baseline volumes prior to the pandemic outbreak.

Apple Inc. COVID-19 Mobility Trends Reports. Accessed 19 November 2020 from https://covid19.apple.com/mobility



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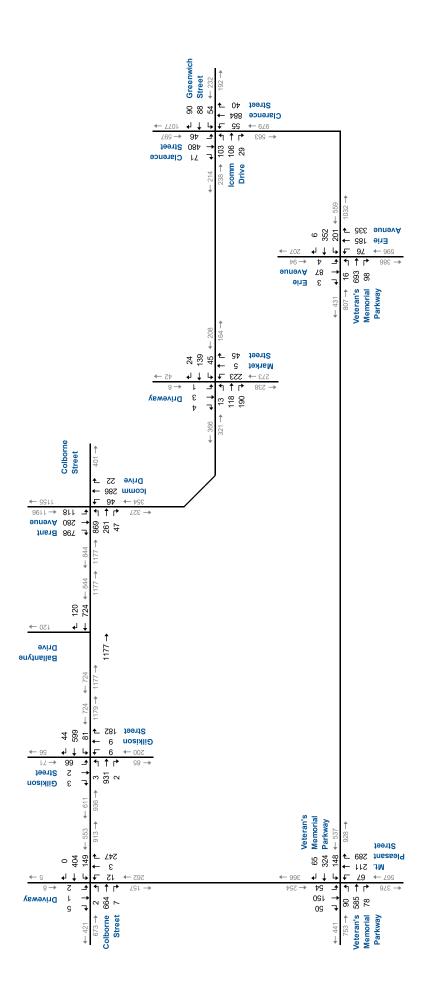
Mobility Trends, Toronto, Ontario



New traffic counts were completed for the study area intersections on November 4, 2020. All traffic movements, including pedestrian crossings were counted in 15-minute intervals and vehicles were classified by type. A review of the mobility trends indicates passenger vehicle traffic is 20% lower than the average volume observed prior to March 1, 2020. To account for this, the volumes have been adjusted to reflect typical average volumes.

It is recognized the public transportation is expected to be underrepresented within these volumes, however given the majority of trips during the peak hours are represented by passenger vehicles, the reduced volume will not have a significant impact on the operational assessment.

Appendix A contains the detailed turning movement count reports. **Figure 2.4** and **Figure 2.5** illustrate the base year traffic volumes. **Figure 2.6** and **Figure 2.7** illustrate the pedestrian volumes at each study intersection.

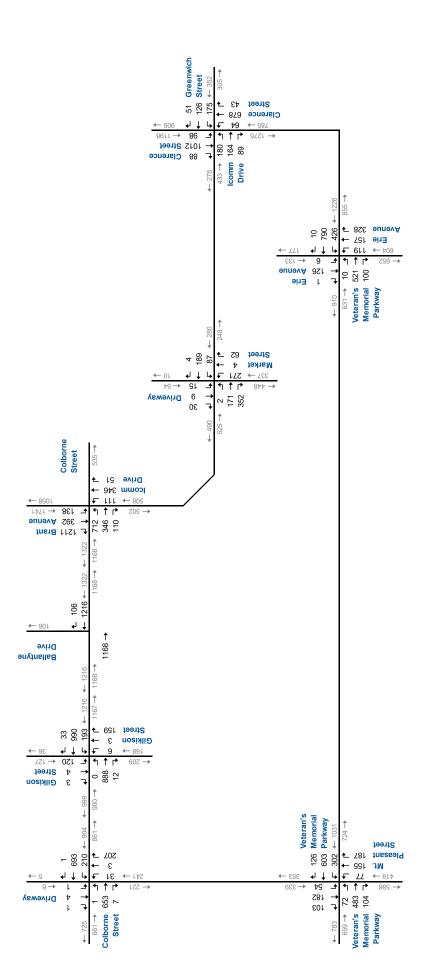


Base Year Traffic Volumes AM Peak Hour



Not to Scale

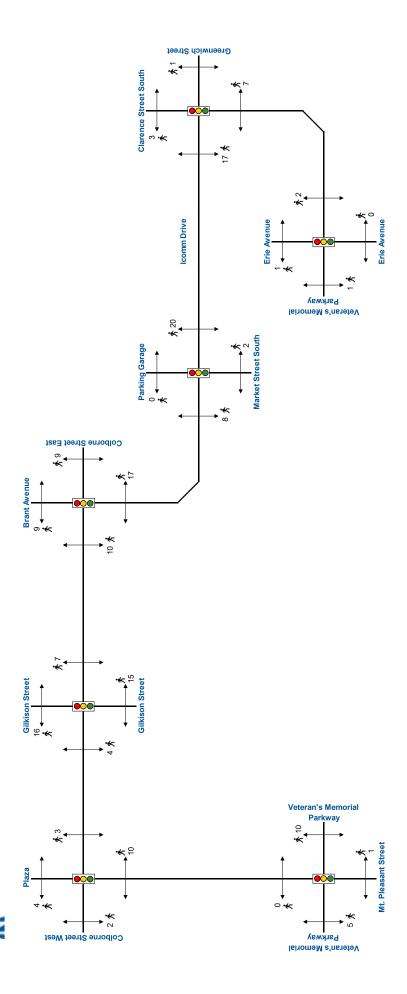
Grand Bivar Crossings Minicipal Class EA



Not to Scale



Base Year Traffic Volumes PM Peak Hour



Pedestrian Volumes AM Peak Hour



Not to Scale

Pedestrian Volumes PM Peak Hour



Not to Scale



2.5 Active Transportation Volumes

2.5.1 Pedestrian Volumes at Bridges

The City of Brantford provided pedestrian crossing counts of two bridges crossing the Grand River between Colborne Street and Veterans' Memorial Parkway; Brant's Crossing Bridge and TH&B Crossing Bridge.

Pedestrian crossing activity at the Brant's Crossing Bridge (Fordview) was collected between November 28, 2017, and January 5, 2018. During this time frame, the counter recorded:

Average: 113 pedestrians per day (ppd)

Maximum: 241 ppd on December 3, 2017

Minimum: 31 ppd on January 1, 2018

Additional data was provided at this location between January 22, 2018, and March 21, 2018. This counter captured pedestrian crossing across this bridge during the flood event, in which the bridge was closed on February 21, 2018. Data collected on this date has also been disregarded as the volumes showed anomaly in volumes. During this time frame, the counter recorded:

Average: 98 ppd

Maximum: 448 ppd on January 28, 2018

Minimum: 11 ppd on January 22, 2018

Pedestrian crossing activity at TH&B Crossing Bridge was collected between March 2018 and December 2018. During this period, the counter recorded:

Average: 35 ppd

Maximum: 219 ppd on March 16, 2018Minimum: 4 ppd on January 22, 2018

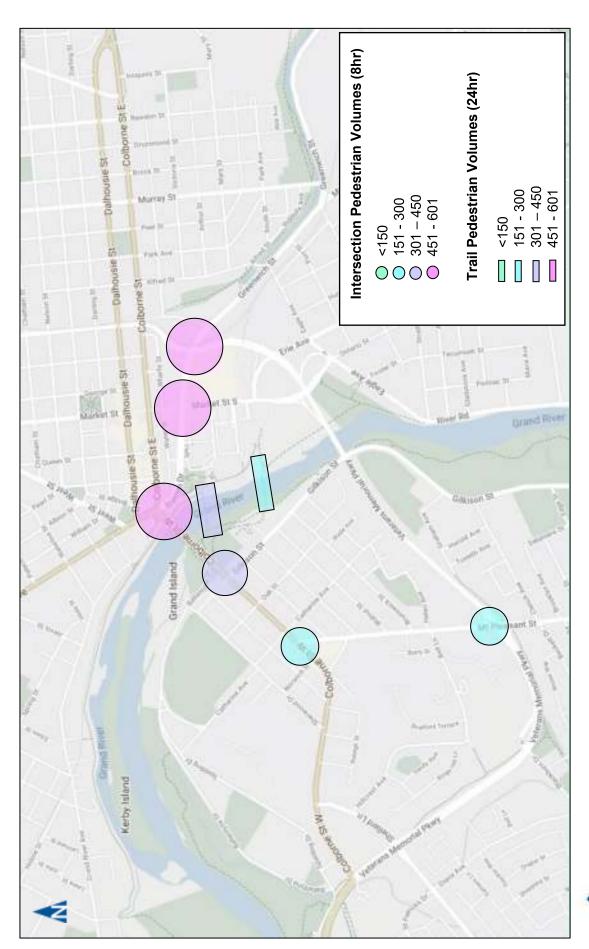
2.5.2 Pedestrian Volumes at Intersections

The traffic counts in November 2020 included pedestrian data for the study area intersections. A review of the mobility trends indicates pedestrian traffic is 21% lower than the average volume observed prior to March 1, 2020. To compensate for this, the pedestrian volumes have been adjusted to reflect typical average trend.

Based on a review of the traffic data supplied by the City of Brantford with adjustments made, the following is noted with regard to pedestrian activity at intersections:

- ► The intersection of Icomm Drive at Market Street South exhibited the highest pedestrian activity at 580 pedestrians. The intersections of Colborne Street at Brant Avenue and Icomm Drive at Clarence Street South exhibit similar volumes of 510 and 520 pedestrians across the eight-hour count period.
- ► The intersection of Veteran's Memorial Parkway and Mt. Pleasant Street exhibited the lowest pedestrian activity at 160 pedestrians.
- ► The intersections of Colborne Street at Mt. Pleasant Street and Colborne Street at Gilkison Street exhibited moderate pedestrian activity of 240 and 405 pedestrians.

Figure 2.8 illustrates the magnitude of pedestrian crossing activity within the study area.





2.5.3 Cycling Volumes at Intersections

The traffic counts undertaken in November 2020 and the counts provided by the City of Brantford did not include cycling data for the study area intersections. Given limited data, estimates of cycling demand were developed based on the Transportation Tomorrow Survey (TTS). The TTS survey randomly selects households in the Greater Golden Horseshoe (GGH) and is an important data source for transportation planning and is supported by the City of Brantford.

Unlike other data sources, such as regular traffic counts, which measure the change in magnitude of travel demand, the TTS provides information on the characteristics of these changes. As a transportation time series database, the TTS enables analysis on how factors such as flexible work hour programs, relocation of manufacturing employment, and aging population influence how people travel, how often, and the purpose of their trips. TTS data from year 2016³ (most recent survey) was available for Brantford and included in the *2020 Transportation Master Plan Update*. This data is comprised of modes of transportation originating in Brantford to destinations within and external to Brantford.

Daily cycling trips were reviewed for the entire City to produce a reasonable estimate of the cycling demand. Data from TTS is outlined in **Table 2.2**.

TABLE 2.2: 2016 TTS DATA (TRIP MODE)

City of Brantford – Mode Split (All Trips) 2016								
Mode	%							
Auto Driver	73.2%							
Auto Passenger	10.8%							
Walk	6.4%							
Other	6.3%							
Transit	2.7%							
Bicycle	0.6%							
Total	100.0%							

City of Brantford. 2020 Brantford Transportation Master Plan Update. March 2021.



Transportation Tomorrow Survey (TTS). 2016. Data Management Group, University of Toronto.

Utilizing the TTS data, an estimate of the number of cyclists that could occur along the study area roadways can be developed based on the annual average daily traffic (AADT) volumes. The projected number of daily cyclists along the study area roadways is outlined in **Table 2.3**.

Based on the data, Colborne Street between Brant Avenue and Gilkison Street could see approximately 145 cyclists per day.

TABLE 2.3: 2020 ESTIMATED CYCLING DEMAND

			2020 E	stimates
Roadway	Seg	AADT	Daily Cyclists	
	Brant Avenue	Ballantyne Drive	24,000	144
Colborne	Ballantyne Drive	Gilkison Street	24,000	144
Street	Gilkison Street	16,500	99	
Icomm Drive	Colborne Street	Market Street	9,500	57
Icomin Drive	Market Street	Clarence Street	6,500	39
Mt. Pleasant Street	Veteran's Memorial Parkway	Colborne Street	6,500	39

2.6 Traffic Operations

The quality of intersection operations at signalized and unsignalized intersections is evaluated in terms of level of service (LOS) and volume to capacity (v/c) as defined by the Highway Capacity Manual (HCM). LOS is evaluated based on the average control delay per vehicle and includes deceleration delay, queue move-up delay, stopped delay and final acceleration delay.

For signalized intersections, LOS ranges from LOS A (<10 seconds of average delay) to LOS F (>80 seconds of average delay). For unsignalized intersections, the LOS ranges from LOS A (<10 seconds of average delay) to LOS F (>50 seconds of average delay). Capacity is evaluated in terms of the ratio of demand flow to capacity with an atcapacity condition represented by a v/c ratio of 1.00 (i.e. volume demand equals capacity).

Under City of Brantford TIS Guidelines⁵, movements are considered critical:

- When v/c ratios for overall intersection operations, through movements, or shared through/turning movements exceeds 0.85;
- When v/c ratios for dedicated turning movements exceeds 0.95, or queue lengths for individual movements exceeds available lane storage; and/or
- ▶ When as unsignalized intersection operates with a movement or approach at LOS E, or worse.

The traffic operations in the study area have been evaluated using Synchro 10 with the following parameters:

- Existing lane configurations;
- Signal timing as provided by the City (and included in Appendix A for reference);
- Heavy vehicles percentages and pedestrian volumes as extracted from the turning movement counts; and
- Synchro default values for all other inputs.

Synchro implements the methodology of the Highway Capacity Manual (HCM). The intersection analysis considers three separate measures of performance:

- ► The level of service (LOS), based on the average delay for each turning movement, measured in seconds (s);
- ▶ The volume-to-capacity (v/c) ratio for each movement; and
- ▶ The 95th percentile queue length, in metres (m).

Table 2.4 and **Table 2.5** summarize the level of service conditions and indicate the study intersections are operating within capacity and with acceptable levels of service. **Appendix B** contains the detailed Synchro reports.

⁵ City of Brantford. *Transportation Impact Study Guidelines*. July 2014.



TABLE 2.4: EXISTING TRAFFIC OPERATIONS - AM PEAK HOUR

ਰ				Direction / Movement / Approach																
erio					Eastb	ound			West	ound			North	bound		Southbound				
Analysis Period	Intersection	Control Type	MOE	ц	Through	Right	Approach	рец	Through	Right	Approach	Teft	Through	Right	Approach	Teft	Through	Right	Approach	Overall
	1 - Veteran's Memorial Parkway & Mt. Pleasant Street	TCS	LOS Delay V/C Q Ex Avail.	A 7 0.16 15 140 125	A 8 0.29 44 -	A 7 0.06 7 25 19	A 8	B 18 0.44 46 40 -6	B 12 0.20 34 -	B 11 0.04 1 45 44	B 14	C 31 0.30 19 45 26	D 37 0.49 29 -	D 36 0.34 29 40 11	D 36	C 31 0.23 16 35 19	D 36 0.39 24 -	^ ^ ^ ^ ^ ^	C 35	C 20 0.43
	2 - Mt. Pleasant Street & Colborne Street West	TCS	LOS Delay V/C Q Ex Avail.	· · · · · ·	A 4 0.30 31 -	^ ^ ^ ^ ^ ^	A 4	V V V V V	A 2 0.37 1 -	^ ^ ^ ^ ^ ^ ^	A 2	C 32 0.09 7 -	C 33 0.20 21 -	^ ^ ^ ^ ^ ^	C 33	· · · · · ·	C 32 0.04 4 -	^ ^ ^ ^ ^ ^	C 32	A 8 0.37
	3 - Colborne Street West & Gilkison Street	TCS	LOS Delay V/C Q Ex Avail.	· · · · · · ·	C 21 0.62 91 -	>	C 21	· · · · · · · · · · · · · · · · · · ·	A 6 0.44 36 -	· · · · ·	A 6	· · · · · · · · · · · · · · · · · · ·	C 30 0.24 21 -	· · · · · · ·	C 30	V V V V V	D 54 0.72 27 -		D 54	B 17 0.61
Peak Hour	4 - Colborne Street West & Ballantyne Drive	TWSC	LOS Delay V/C Q Ex Avail.		UM		UM		UM	· · · · · ·	UM									
AMPea	5 - Colborne Street West & Brant Avenue/Icomm Drive	TCS	LOS Delay V/C Q Ex Avail.	C 28 0.73 85 200 115	C 22 0.57 62 -	E 69 0.04 2 5	C 26					B 11 0.14 10 115 105	B 13 0.21 25 -	B 13 0.02 1 215 214	B 12	V V V V V	C 22 0.52 46 -	A 2 0.56 0 -	A 8	B 17 0.74
	6 - Icomm Drive & Market Street South	TCS	LOS Delay V/C Q Ex Avail.	A 7 0.02 4 65 61	A 8 0.07 18 -	C 33 0.14 44 60 16	C 23	A 6 0.06 8 125 117	A 5 0.08 10 -	^ ^ ^ ^ ^ ^ ^	A 5	D 35 0.72 53 -	C 23 0.05 8 -	^ ^ ^ ^ ^ ^	C 33	· · · · · ·	C 23 0.00 0 -	^ ^ ^ ^ ^ ^	C 23	C 22 0.31
	7 - Icomm Drive/Greenwich Street & Clarence Street South	TCS	LOS Delay V/C Q Ex Avail.	C 22 0.57 16 75 59	B 14 0.24 8 -	^	B 18	C 31 0.34 18 35 17	C 30 0.18 13 -	C 29 0.06 12 3 -9	C 30	A 4 0.11 8 75 67	A 6 0.41 52 -	^ ^ ^ ^ ^	A 6	A 5 0.15 8 105 97	A 5 0.21 24 -	A 4 0.05 5 70 >	A 5	A 10 0.44
	8 - Veteran's Memorial Parkway & Erie Avenue	TCS	LOS Delay V/C Q Ex Avail.	A 9 0.03 5 50 45	B 12 0.38 61 -	A 10 0.07 8 50 42	B 12	A 6 0.45 26 85 59	A 5 0.17 22 - -	^ ^ ^ ^ ^	A 6	C 34 0.39 25 30 5	D 38 0.61 50 -	D 36 0.53 42 30 -12	D 36	C 31 0.02 3 30 27	C 33 0.30 27 - -	^	C 33	B 18 0.5

MOE - Measure of Effectiveness LOS - Level of Service Delay - Average Delay per Vehicle in Seconds Q - 95th Percentile Queue Length (m) Ex. - Existing Available Storage (m) Avail. - Available Storage (m) TCS - Traffic Control Signal TWSC - Two-Way Stop Control UM - Unopposed Movement <- Shared Left/Through Lane</p>>- Shared Right/Through Lane



TABLE 2.5: EXISTING TRAFFIC OPERATIONS - PM PEAK HOUR

ਰ				Direction / Movement / Approach																
erio					Eastb	ound			West	ound			North	bound		Southbound				
Analysis Period	Intersection	Control Type	MOE	ц	Through	Right	Approach	рец	Through	Right	Approach	Teft	Through	Right	Approach	рет	Through	Right	Approach	Overall
	1 - Veteran's Memorial Parkway & Mt. Pleasant Street	TCS	LOS Delay V/C Q Ex Avail.	A 7 0.16 11 140 129	A 7 0.23 32 -	A 6 0.07 7 25 18	A 7	C 26 0.73 106 40 -66	B 13 0.35 56 -	B 11 0.09 10 45 35	B 16	C 33 0.40 22 45 23	D 37 0.40 24 -	D 36 0.13 19 40 21	D 36	D 42 0.23 18 35 17	D 54 0.53 33 -	^ ^ ^ ^ ^ ^	D 52	C 22 0.63
	2 - Mt. Pleasant Street & Colborne Street West	TCS	LOS Delay V/C Q Ex Avail.	· · · · · ·	A 3 0.28 28 -	>	A 3	· · · · · · · · · · · · · · · · · · ·	A 1 0.56 2 -	>	A 1	D 37 0.25 16 -	F 89 0.17 34 -		F 82	· · · · · ·	D 37 0.05 4 -	v v v v v	D 37	B 13 0.56
	3 - Colborne Street West & Gilkison Street	TCS	LOS Delay V/C Q Ex Avail.	· · · · · ·	B 19 0.58 98 -	>	B 19	· · · · · · · · · · · · · · · · · · ·	B 13 0.84 102 -	>	B 13	· · · · · · · · · · · · · · · · · · ·	C 31 0.16 18 -		C 31	· · · · · ·	E 67 0.85 51 -	v v v v v	E 67	B 20 0.88
k Hour	4 - Colborne Street West & Ballantyne Drive	TWSC	LOS Delay V/C Q Ex Avail.		UM		UM		UM	> > > >	UM									
PM Peak Hour	5 - Colborne Street West & Brant Avenue/Icomm Drive	TCS	LOS Delay V/C Q Ex Avail.	B 16 0.60 107 200 93	B 14 0.57 76 -	A 5 0.11 3 5 2	B 14					C 23 0.34 26 115 89	C 22 0.24 44 -	E 65 0.04 6 215 209	C 27	V V V V V	C 28 0.66 66 -	A 5 0.84 0 -	B 12	B 15 1.02
	6 - Icomm Drive & Market Street South	TCS	LOS Delay V/C Q Ex Avail.	A 7 0.00 1 65 65	A 7 0.12 22 -	D 36 0.25 66 60 -6	C 27	A 8 0.14 15 125 110	A 8 0.10 15 -		A 8	D 39 0.78 68 -	C 23 0.05 9 -	>	D 36	· · · · · · ·	C 23 0.04 5 -	^ ^ ^ ^ ^ ^	C 23	C 25 0.43
	7 - Icomm Drive/Greenwich Street & Clarence Street South	TCS	LOS Delay V/C Q Ex Avail.	C 24 0.48 47 75 28	C 22 0.21 31 -	^	C 23	E 61 0.86 68 35 -33	C 30 0.19 19 -	C 29 0.04 5 3 -2	D 45	C 25 0.39 25 75 50	C 21 0.42 80 -	^ ^ ^ ^ ^	C 22	B 15 0.35 25 105 80	B 16 0.58 91 -	B 10 0.06 7 70 >	B 15	C 22 0.64
	8 - Veteran's Memorial Parkway & Erie Avenue	TCS	LOS Delay V/C Q Ex Avail.	B 12 0.04 4 50 46	B 14 0.32 49 -	B 12 0.07 9 50 41	B 14	B 13 0.72 52 85 33	A 2 0.35 19 -	>	A 6	D 41 0.63 37 30 -7	D 36 0.55 44 -	C 33 0.23 22 30 9	D 35	C 31 0.04 5 30 26	C 34 0.43 36 -	^	C 34	B 16 0.73

MOE - Measure of Effectiveness LOS - Level of Service Delay - Average Delay per Vehicle in Seconds Q - 95th Percentile Queue Length (m) Ex. - Existing Available Storage (m) Avail. - Available Storage (m) TCS - Traffic Control Signal TWSC - Two-Way Stop Control UM - Unopposed Movement <- Shared Left/Through Lane</p>>- Shared Right/Through Lane



3 Safety Performance Report

3.1 Collision Data

The City of Brantford provided collision information for the period of January 1, 2015, to December 31, 2019 (inclusive) at the following intersections:

- Mt. Pleasant Street and Veteran's Memorial Parkway;
- Mt. Pleasant Street and Colborne Street West;
- Colborne Street West and Gilkison Street;
- Colborne Street West and Brant Avenue/Icomm Drive;
- Icomm Drive and Market Street South; and
- ▶ Icomm Drive/Greenwich Street and Clarence Street South.

The data was provided in tabulated form, and included the following information: date and time, weather, impact type, presence of injuries, and road surface condition. Additional information for each driver was provided as follows: direction of travel, vehicle maneuver, vehicle type, and driver action. **Appendix C** contains the raw collision reports.

The collision reports have been reviewed as is. No modifications or adjustments have been made to correct any duplicate entries, or entries for which the collision record appears incorrect (i.e. rear end collision between a northbound and westbound driver).

3.1.1 All Collisions

Figure 3.1 illustrates a locational summary of the collisions within the study area. A total of 312 collisions were reported during the analysis period. Nearly half of all collisions (46%) occurred at either Colborne Street and Brant Avenue/Icomm Drive (72 collisions (23%)) or Icomm Drive/Greenwich Street and Clarence Street South (72 collisions (23%)).

Figure 3.2 illustrates a broad summary of key collisions statistics. The data indicates environmental conditions were likely not a contributing factor since approximately 80% of collisions occurred under clear conditions. Seventeen percent of collisions occurred under rain (9%) or snow (8%) with the remaining 3% occurring under drifting snow, fog, mist, dust, or smoke.

The most common impact types were rear end collisions (34%) and turning movement (24%). Most collisions (77%) were uncategorized, considered non-reportable, or resulted in personal damages only.

However, there was one fatal injury at Colborne Street/Gilkison Street, and 61 non-fatal collisions across all intersections.

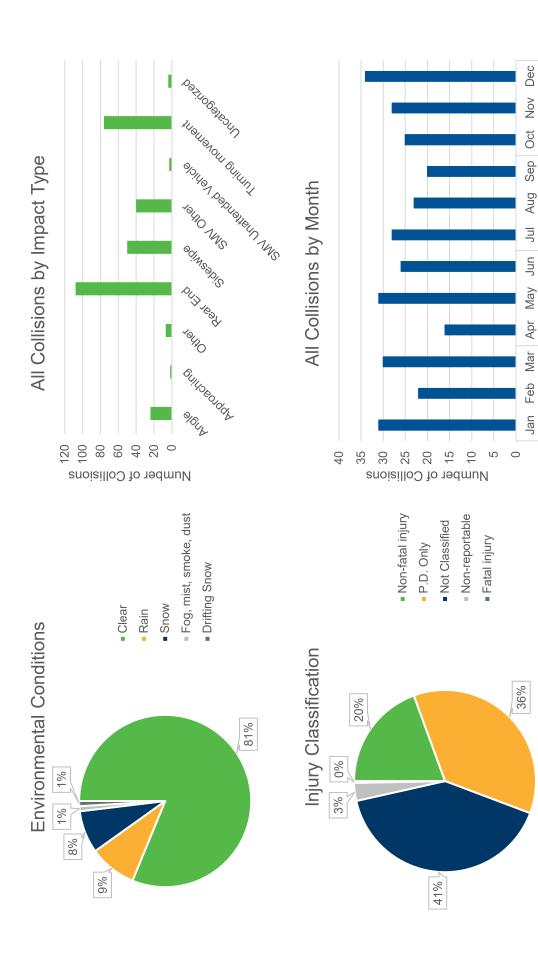
Out of all 312 collisions, six collisions involved a cyclist, all of which were deemed the fault of the cyclist. Seven other collisions involved a pedestrian. **Table 3.1** summarizes the total number of collisions involving vulnerable road users at each intersection.

TABLE 3.1: COLLISIONS WITH VULNERABLE ROAD USERS (2015-2019)

Intersection	Collision Type					
intersection	Cyclist	Pedestrian				
Veteran's Memorial Parkway and Mt. Pleasant Street	0	0				
Colborne Street West and Mt. Pleasant Street	1	1				
Colborne Street West and Gilkison Street	2	1				
Colborne Street West and Brant Avenue/Icomm Drive	1	1				
Icomm Drive and Market Street South	0	3				
Icomm Drive/Greenwich Street and Clarence Street South	2	1				
Total	6	7				

Total Collisions by Intersection (2015 to 2019)







Qtr4

Qtr3

Qtr2

Qtr1

paradigm

3.1.2 Veteran's Memorial Parkway & Mt. Pleasant Street

A total of 52 collisions were reported during the analysis period. The collision reports indicate environmental conditions were not a significant contributing factor as 80% of collisions occurred under clear conditions. **Figure 3.3** illustrates key elements of the review including impact type, classification of the collisions, monthly distribution, and environmental conditions.

The most common impact type was rear end (22 collisions), followed by single motor vehicle (SMV) other (12 collisions), and turning movement (11 collisions). None of the collisions involved a pedestrian or cyclist.

Seventy-five percent of the collisions resulted in personal damage only, were considered non-reportable or were otherwise uncategorized. The remaining 25% (13 collisions) resulted in non-fatal injuries. None of the collisions resulted in fatal injuries. Following too closely was noted as the most frequent driver action, contributing to 19% of collisions.

Collision frequency has remained relatively stable year over year, with an average of 0.9 collisions per month. Collision frequency is also relatively consistent per month, with the largest number of collisions occurring in July (8 collisions), January (7 collisions) and December (6 collisions).

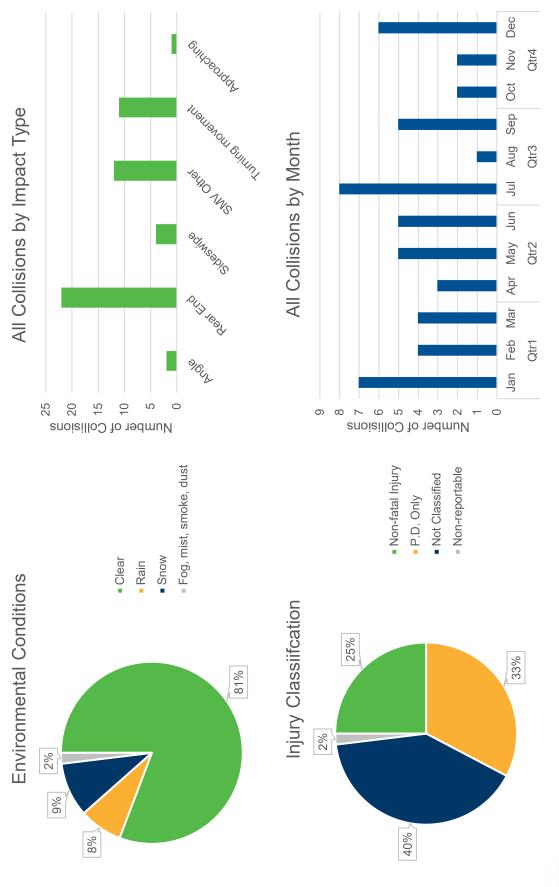
Notable trends at this intersection include the following:

- ▶ 62% of collisions that resulted in non-fatal injuries were classified as a turning movement collision, 75% of which involved a westbound vehicle turning left;
- Of these collisions that involved a westbound left-turning vehicle, 66% occurred on a weekday between 4:00 PM and 7:00 PM;
- ▶ All the rear-end collisions occurred under clear conditions; and
- ▶ 73% of rear-end collisions involved two eastbound vehicles, or two northbound vehicles.

The collision history at the intersection appears to indicate driver error as the most common contributing factor, largely through following too closely. Non-fatal injuries are largely associated with turning movement classified collisions, many of which involve a westbound left-turning vehicle and an eastbound through vehicle. Since a westbound advance left-turn phase is already provided at the intersection, these

collisions may be due to westbound left-turning vehicles clearing the intersection without yielding to oncoming traffic.

The traffic analyses summarized in **Section 2.6** indicate the westbound left-turn movement at this intersection operates with an acceptable level of service (LOS C or better). However, additional green time could be allocated to the westbound left-turn phase to increase the percentage of left-turning vehicles during the protected, rather than permissive phase of this movement.





Veteran's Memorial Parkway and Mt. Pleasant Street **Collision Review**

Three Grand River Crossings Municipal Class EA – Transportation Study 190487

3.1.3 3.1.3 Colborne Street West and Mt. Pleasant Street

A total of 32 collisions were reported during the five-year analysis period. The collision reports indicate environmental conditions were not a significant contributing factor since 85% of collisions occurred under clear conditions. **Figure 3.4** illustrates key elements of the review including impact type, classification of the collisions, monthly distribution, and environmental conditions.

The most common impact type was rear end (9 collisions), followed by turning movement (8 collisions) and SMV other (8 collisions). One collision involved a cyclist which resulted in non-fatal injuries. Another collision involved a pedestrian which also resulted in non-fatal injuries.

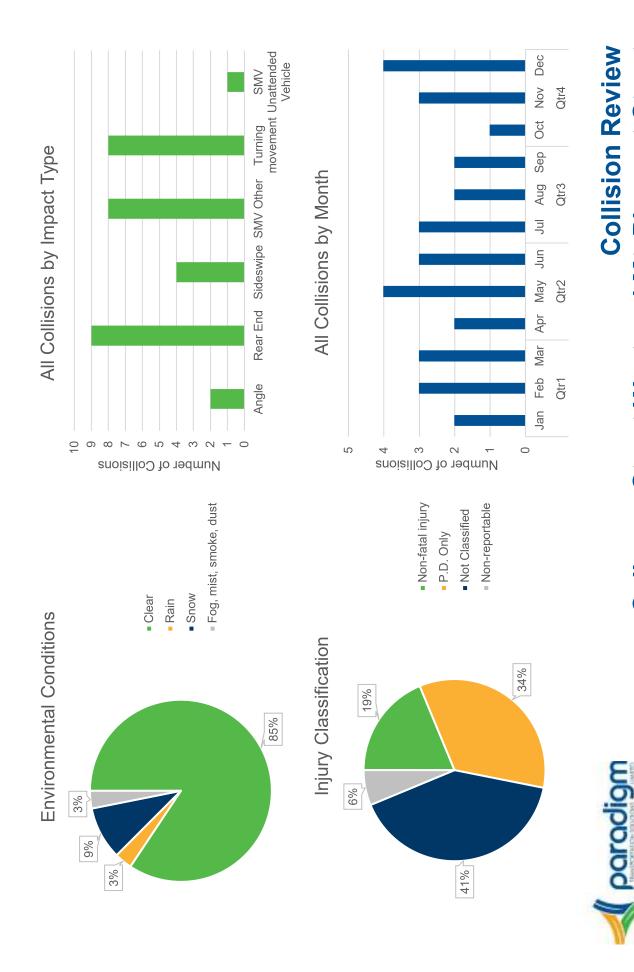
Eighty-one percent (26 collisions) resulted in personal damage only, were considered non-reportable or were otherwise uncategorized. The remaining six collisions resulted in non-fatal injuries. None of the collisions resulted in fatal injuries.

Collision frequency has remained relatively stable year over year, with an average of 0.5 collisions per month. A total of nine collisions occurred in 2017, representing the highest annual total among the five years under review. Collision frequency is also consistent month to month, with the largest number of collisions occurring in May (4 collisions) and December (4 collisions).

Notable trends at this intersection include the following:

- Non-fatal injuries were exclusively related to sideswipe, SMV other and turning movement collisions;
- ▶ 75% of sideswipe collisions involved two eastbound vehicles;
- ▶ 56% of rear-end collisions involved two westbound vehicles and 33% involved two northbound vehicles; and
- ► The respective collisions involving the cyclist and pedestrian occurred under clear conditions, and daytime lighting conditions.

The collision history at the intersection appears to indicate driver error as the most common contributing factor. The collision involving the cyclist indicates both the cyclist and motor vehicle operator failed to yield the right-of-way to each other. The collision involving a pedestrian indicates the motor vehicle operator completed an improper turn.





3.1.4 Colborne Street West and Gilkison Street

A total of 42 collisions were reported during the analysis period. The collision reports indicate environmental conditions were not a significant contributing factor since approximately 74% of collisions occurred under clear conditions. **Figure 3.5** illustrates key elements of the review including impact type, classification of the collisions, monthly distribution, and environmental conditions.

The most common impact type was rear end (18 collisions) and turning movement (13 collisions). Two collisions involved a cyclist, and one collision involved a pedestrian.

Seventy nine percent (33 collisions) were uncategorized or resulted in personal damages only. Nineteen percent (8 collisions) resulted in non-fatal injuries. A fatal collision occurred in November 2016 under clear and dry conditions. This collision did not involve a cyclist or pedestrian. Disobeying traffic control (8 collisions) and following too close (8 collisions) were noted as the most frequent driver action.

Annual collision frequencies have generally been decreasing from a peak of 13 collisions in 2016 to four collisions in 2019. Over the five-year review period, the intersection has averaged 0.7 collisions per month. A larger number of collisions were observed between April and September (28 collisions), as opposed to October to March (14 collisions).

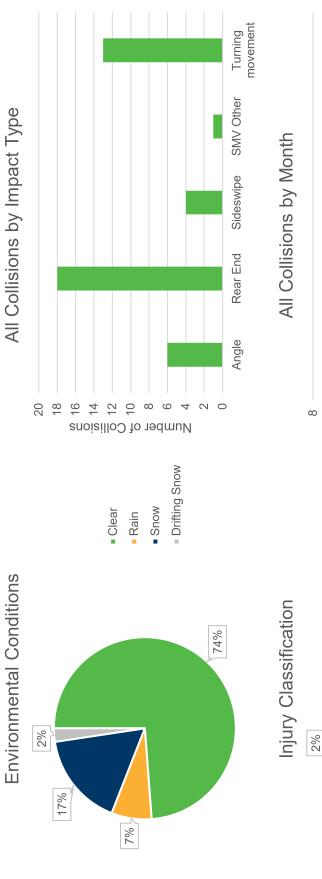
Notable trends at the intersection include the following:

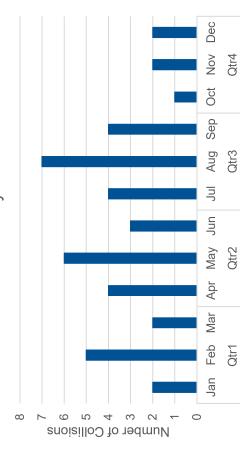
- ▶ 50% of the 18 observed rear-end collisions occurred during rain, snow or slush;
- ▶ 72% of the 18 observed rear-end collisions involved two westbound vehicles;
- ▶ 10 of the 13 turning movement collisions involved a left-turning vehicle, eight (80%) of which were eastbound or westbound left-turn maneuvers;
- Non-fatal injuries were primarily associated with angle and turning movement collisions;
- ► The two collisions involving cyclists occurred in September under dusk conditions; and
- ► The collision involving the pedestrian occurred in March, under clear, daytime conditions.

The collision data does not indicate a significant difference in rear-end collisions occurring during poor weather (rain or snow) or clear

conditions. This indicates driver behaviour is likely a key contributor to these collision types. However, rear-end collisions appear to be more likely between two westbound vehicles especially between 12:00 PM and 6:30 PM. This is likely the result of higher westbound traffic volumes at this intersection in the afternoon. The vehicle maneuvers included in the reports for westbound/westbound rear-end collisions do not clarify if a stopped vehicle was intending to turn left, or were stopped at the stop bar. Therefore, it is difficult to determine whether the lack of a dedicated westbound left-turn lane is a contributing factor in a large proportion of rear-end collisions at this intersection.

Notwithstanding, the larger proportion of eastbound and westbound left-turning vehicles involved in turning movement collisions at the intersection may be the result of the shared left-turn/through lane on the eastbound and westbound approaches to the intersection. Left-turning vehicles may be facing an opposing left-turning vehicle which impedes visibility of through traffic in the adjacent curb lanes.





Non-fatal injury

38%

19%

Not ClassifiedFatal injury

41%

- P.D. Only



Colborne Street West and Gilkison Street

3.1.5 Colborne Street West and Brant Avenue/Icomm Drive

A total of 72 collisions were reported during the five-year analysis period. The collision reports indicate environmental conditions were not likely a contributing factor since approximately 81% of collisions occurred under clear conditions. **Figure 3.6** illustrates key elements of the review including impact type, classification of the collisions, monthly distribution, and environmental conditions.

The most common impact type was rear end (30 collisions) and sideswipe (20 collisions), combining for 69% of all reported collisions. One collision involved a cyclist, and another involved a pedestrian.

Eighty-nine percent (64 collisions) resulted in personal damage only, were considered non-reportable, or otherwise uncategorized. The remaining 11% (8 collisions) resulted in non-fatal injuries. None of the 72 collisions resulted in fatal injuries. Improper lane change was identified as the most common driver action, contributing to 13 collisions.

Annual collision frequencies have remained generally consistent between 2015 and 2019, averaging 1.2 collisions per month. A total of 23 collisions occurred in 2017, representing 32% of all collisions during the five-year period. A larger number of collisions occurred between October and March (43 collisions), as opposed to April to September (29 collisions).

Notable trends at the intersection include the following:

- ▶ 60% of rear end collisions, and 70% of sideswipe collisions involved two southbound vehicles;
- ▶ 27% of rear end collisions, and 20% of sideswipe collisions involved two eastbound vehicles; and
- 28% of rear end collisions involving two southbound vehicles were the result of following too closely;
- ▶ 71% of sideswipe collisions involving two southbound vehicles were the result of an improper lane change; and
- ► The collisions involving cyclists or pedestrians occurred under clear conditions, but either at dusk or at night. The collision with the pedestrian involved an eastbound vehicle travelling straight through the intersection.

The collision history at the intersection indicates 32 collisions (44%) involve two southbound vehicles approaching the intersection and results in either a rear end or sideswipe collision. Improper lane changes and following too closely are the primary driver actions

contributing to these collisions. More notably, many of these collisions occurred before, during and after the PM peak hour at the intersection.

A review of the lane configuration on Brant Avenue between Dalhousie Street and Colborne Street indicates the curb lane becomes a right-turn lane. The centre lane remains a through lane, and a shared left/through lane is introduced approaching Colborne Street. Overhead lane configuration signs are installed 40 metres north of Dalhousie Street, directing motorists to the correct lane depending on their desired route (e.g., south via Icomm Drive or west via Colborne Street). Overhead signs are also provided on Dalhousie Street, with dedicated signs for the two left-turn lanes provided on the westbound approach.

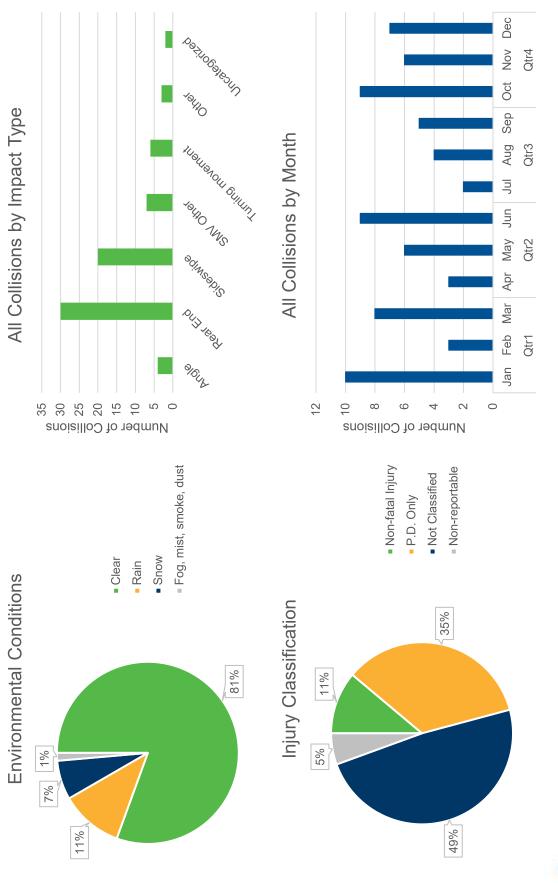
Driver confusion or inattentiveness is likely a key contributor to the pattern of sideswipe and rear end collisions at this location. This is exacerbated by the intersection spacing between Brant Avenue/Dalhousie Street and Brant Avenue/Icomm Drive/Colborne Street.

Based on field observations, the intersection does not include tracking pavement markings for the dual eastbound left turn movement. Ontario Traffic Manual (OTM) Book 12⁶ notes that "a dual LTL [left turn lane] shall require pavement marked 'tracking' lines for guidance of turning vehicles" (pg. 156). Consideration could also be given to modifying the existing shared eastbound left-turn/through lane to an exclusive left-turn lane, or exclusive through lane. This would seek to eliminate slip around maneuvers from through volumes who may be stuck behind a left-turning vehicle when waiting for a pedestrian to cross the north approach of the intersection.

The intersection also includes an uncontrolled pedestrian crossing of the southbound channelized right-turn movement. The collision history does not identify any collisions relating to the uncontrolled crossing; however, this can present a conflict between vehicles and pedestrians. The conflict is exacerbated by the high volume of right-turning traffic (approximately 1,200 vehicles in the PM peak hour, or one every three seconds) at this intersection. This volume of traffic provides very limited crossing opportunities for pedestrians. Removal of the channelization or conversion to a "smart channel" design may reduce conflicts between vehicles and pedestrians.

Ministry of Transportation, Ontario. Ontario Traffic Manual Book 12: Traffic Signals. March 2012.







Collision Review

Colborne Street West and Brant Avenue/Icomm Drive

3.1.6 Icomm Drive and Market Street South

A total of 42 collisions were reported during the five-year period reviewed. The collision reports indicate environmental conditions were not a contributing factor since approximately 81% of collisions occurred under clear conditions. **Figure 3.7** illustrates key elements of the review including impact type, classification of the collisions, monthly distribution, and environmental conditions.

The most common impact type was turning movement (15 collisions) followed by rear end (8 collisions), SMV other (7 collisions) and sideswipe (6 collisions). None of the collisions involved cyclists; however, two collisions involved municipal transit buses, and three collisions involved pedestrians.

Eighty-one percent (34 collisions) of the collisions resulted in personal damage, were considered non-reportable, or were otherwise uncategorized. The remaining 19% (8 collisions) resulted in non-fatal injuries. None of the collisions resulted in fatal injuries. Improper turn (11 collisions) was noted as the most frequent driver action, contributing to 26% of collisions.

Collision frequency has remained relatively stable at this intersection, with an average of 0.7 collisions per month. Fourteen collisions occurred in 2015, and 10 occurred in 2017. Seven or fewer collisions occurred in each of 2016, 2018 and 2019. A larger number of collisions occurred between October and March (33 collisions), as opposed to April to September (9 collisions).

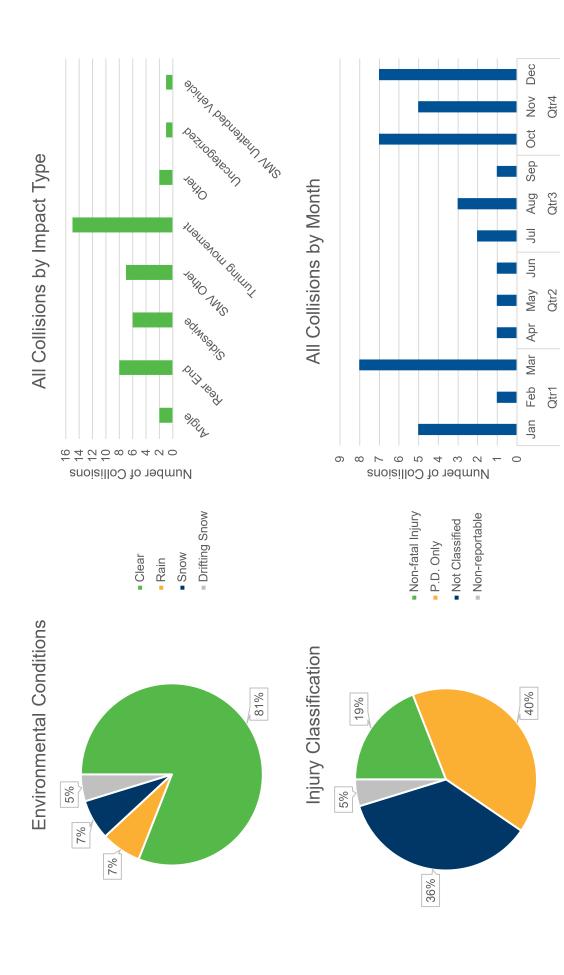
Notable trends at this intersection include the following:

- ► The three collisions involving pedestrians occurred on weekdays, during daylight hours, and under clear conditions;
- ► Two of the collisions involving pedestrians both involved a southbound vehicle turning right;
- ► The third collision involving a pedestrian involved a westbound vehicle turning left;
- ▶ 63% of rear-end collisions involved two northbound vehicles; and
- ▶ Both collisions involving a municipal bus were rear end collisions with both vehicles travelling north.

The collision history at the intersection appears to indicate driver error as the most common contributing factor. No clear trend is apparent among the high proportion of turning movement collisions, with all four directions of travel experiencing relatively similar collision frequencies.

Based on a review of the collision trends, the following could be considered at the intersection:

- Restricting right-turns on red to protect pedestrians crossing between the municipal parking garage and Elements Casino;
- Providing protected-permissive left-turn phasing on the north and southbound approaches;
- Clarify lane arrangements on the southbound approach, including the painting of lane arrows to communicate permitted movements to drivers exiting the municipal parking garage; and
- ▶ Refreshing pavement markings on all intersection approaches, and select lane arrows:
 - Removal of the through arrow in the westbound curb lane, or conversion of this pavement marking to a shared through/right-arrow;
 - Removal of the right-turn arrow in the northbound curb lane, and the repainting of a shared through/right-turn arrow.





Collision Review Icomm Drive and Market Street South

3.1.7 Icomm Drive/Greenwich Street and Clarence Street South

A total of 72 collisions were reported during the five-year period reviewed. The collision reports indicate environmental conditions were not a significant contributing factor since approximately 85% of collisions occurred under clear conditions. **Figure 3.8** illustrates key elements of the review including impact type, classification of the collisions, monthly distribution, and environmental conditions.

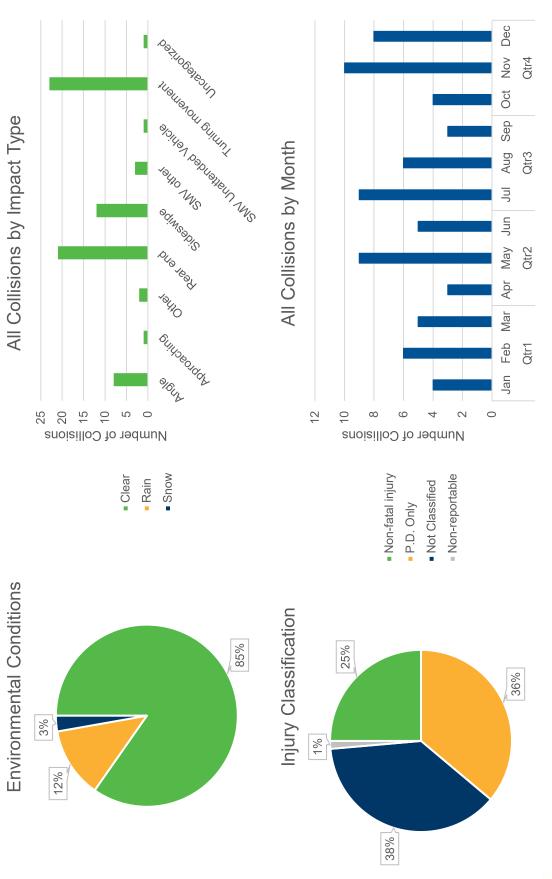
The most common impact type was turning movement (23 collisions) and rear end (21 collisions). Two collisions involved cyclists, and one collision involved a pedestrian.

Seventy-five percent of all collisions resulted in personal damage only, were considered non-reportable, or were otherwise uncategorized. The remaining 25% resulted in non-fatal injuries. None of the collisions resulted in fatal injuries. Improper turns, disobeying traffic control and following too closely were noted as the most frequent driver action, contributing to 51% of all collisions.

Collision frequency has remained relatively stable at this intersection, with an average of 1.2 collisions per month. Collision frequency is also relatively consistent throughout the year. No clear disparity in number of collisions was identified between October and March (37 collisions) as opposed to April to September (35 collisions). November represented the month with the highest number of collisions at 10.

Notable trends at this intersection include the following:

- All eight angle collisions involved a southbound (75%) or westbound (25%) vehicle disobeying the traffic control or failing to yield the right-of-way;
- All 21 rear end collisions involved two eastbound, two southbound, or two northbound vehicles;
- 38% of these rear-end collisions were noted to involve wet or icy roadway surface conditions;
- ▶ 48% of turning movement collisions involved a southbound vehicle, 82% of which were executing a left-turn;
- ▶ 66% of sideswipe collisions involved two southbound vehicles;
- ► The two collisions involving cyclists both occurred in August, under clear conditions. One collision occurred under nighttime lighting (10:06 PM), the other occurring during daytime (5:12 PM).





Icomm Drive/Greenwich Street and Clarence Street South **Collision Review**

Three Grand River Crossings Municipal Class EA – Transportation Study 190487

4 Active Transportation Assessment

4.1 Transportation Master Plan Framework

In March 2021, the City finalized its *Transportation Master Plan Update*. The TMP Update includes key goals and objectives for walking and cycling in the City. Specifically, the City's goal with respect to walking is to "be a complete, accessible and pedestrian-friendly community with networks that integrate with transit, paths and trails, neighbourhood amenities, parks, open space and schools." The three objectives of the TMP with respect to walking are as follows:

- Facilities provide a high level of pedestrian connectivity;
- Walking environment is safe for users; and
- Pedestrian accessibility, comfort, and mobility levels of users support walking as a preferred mode.

The City's goal with respect to cycling is to "provide safe and convenient bicycle routes suitable for all user types: utilitarian (commuting), recreational (personal or family discretionary), and sport (advanced, high level recreational)."

The five objectives of the TMP with respect to cycling are as follows:

- ▶ Ensure there is a continuous network of safe and direct routes;
- Ensure there is an ability to navigate the bicycle network with ease;
- Ensure end-of-trip facilities support cycling as a preferred mode of transportation;
- Ensure the cycling environment is safe; and
- Provide unique and specific design elements appropriate for the different types of users.

4.2 Existing Active Transportation Network

4.2.1 Pedestrian Facilities

Sidewalks are provided on both sides of all study roads, except Veteran's Memorial Parkway. However, a multi-use trail is provided on south side of Veteran's Memorial Parkway, west and east of Mt.

City of Brantford. 2020 Brantford Transportation Master Plan Update. March 2021.



Pleasant Street. This trail facility connects to the LE & N Rail Trail along the former Lake Erie and Northern Electric Railway route.

Additional multi-use trails within the study area include the Dike Trail, Fordview Trail and SC Johnson Trail, portions of which form part of the Trans Canada Trail. These trails circumvent the Grand River and at present, cross the Grand River over two dedicated structures between Colborne Street (Lorne Bridge) and Veteran's Memorial Parkway:

- Brant's Crossing Bridge: former railway bridge, readapted for pedestrian and cyclist use. The bridge was closed following a flooding and ice jam event in 2018. Based on structural investigations, the bridge was recommended to remain closed until repairs can take place to ensure its safe use by the public.;
- TH&B Crossing Bridge: former railway bridge readapted for pedestrian and cyclists use. Currently in use.

Sidewalks on Colborne Street West include a landscaped buffer, or physical barrier (along the Lorne Bridge). These elements enhance the attractiveness of the pedestrian environment by decreasing potential conflict with vehicle traffic. Sidewalks on Icomm Drive also include a landscaped buffer.

All seven study intersections include pedestrian push buttons, pedestrian signal heads, and delineated crosswalks. However, an uncontrolled pedestrian crossing exists at Colborne Street West/Brant Avenue/Icomm Drive across the channelized southbound right-turn movement. As noted in Section 3.1.5 the high volumes of vehicular traffic on this movement provide very limited crossing opportunities for pedestrians. The uncontrolled dual left-turn movement also presents a hazard to pedestrians crossing the north leg of the intersection.

4.2.2 Cycling Facilities

Cycling facilities throughout the City comprise dedicated bike lanes, shared use lanes, designated bike routes, or multi-use paths. These facilities are generally located on lower-tier roads and enhance connectivity to the City's trail network. None of the study area roads are designated cycling routes or include dedicated cycling facilities.

Cycling connectivity near the Lorne Bridge is accommodated through existing grade separated trails on the east and west sides of the Grand River. In conjunction with the Brant's Crossing Bridge, and TH&B Crossing Bridge these connections enable cyclists to cross the Grand River separated from vehicular traffic.

4.3 Cycling Facility Considerations

The rehabilitation of the Lorne Bridge, in conjunction with the damaged Brant's Crossing Bridge provide an opportunity to consider cycling facilities on the Lorne Bridge.

Ontario Traffic Manual (OTM) *Book 18 (Cycling Facilities)*⁸ is intended to provide "practical guidance on the planning, design and operation of cycling facilities in Ontario."

Book 18 includes a three-step Bicycle Facility Type Selection Process intended to guide the planning and design of cycling facilities. Step 1 is a high level facility pre-selection based on 85th percentile motor vehicle operating speeds and average daily traffic volumes. Book 18 includes a three-coloured nomograph that is divided into three types of operating environments:

- ▶ Shared Roadway (Blue): roadway environments with relatively low traffic volumes and low to moderate speeds. Types of bicycle facilities include shared roadways and signed bike routes with standard or wide travel lanes, with or without shared lane markings;
- Designated Cycling Operating Space (White): roadway environments with moderate to high speeds and low traffic volumes, or low speeds and moderate traffic volumes. Types of bicycle facilities in this category include paved shoulders, exclusive bicycle lanes, separated bicycle lanes and/or raised cycle tracks.
- Separated Facility or Alternate Route (Red): roadway environments with highs speeds and high traffic volumes. Under these conditions, alternate parallel corridors more conductive to cycling should be considered; however, if the roadway provides strong system connectivity, suitable facilities may include separated bicycle lanes, a raised cycle track, or a path in a roadway boulevard.

Figure 4.1 illustrates the Cycling Facility Pre-Selection Nomograph. Book 18 recommends a separated facility or alternate route for roadways with an AADT greater than 15,000 vehicles, and operating speeds greater than 50 km/h.

Given the estimated AADT of 24,000 vehicles on Colborne Street West, in conjunction with the posted speed limit of 50 km/h, separated bicycle facilities would be required across the Lorne Bridge. However,

⁸ Ministry of Transportation, Ontario. *Book 18: Cycling Facilities*. December 2013.



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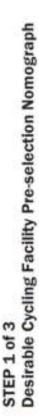
to maintain the current lane arrangement and capacity, separated facilities do not appear feasible given the limited platform width across the Lorne Bridge.

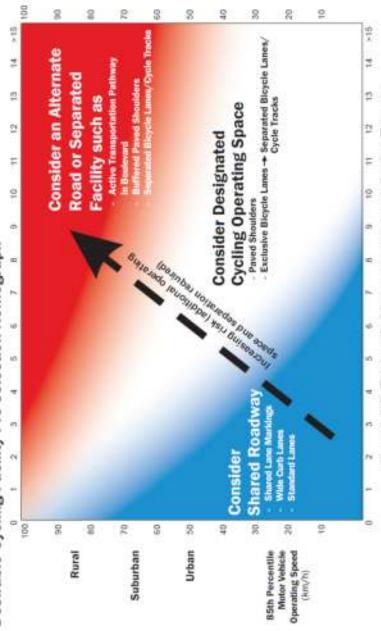
The City's *Transportation Master Plan Update*⁹ recommends a future extension of Oak Park Road from Hardy Road to Colborne Street West. When the Oak Park Road Extension is constructed, future vehicle demands across the Lorne Bridge are forecast to be reduced as trips destined to west Brantford would have an alternative route. This could provide an opportunity to reallocate road space across the Lorne Bridge for separated bicycle facilities. However, separated cycling facilities on the Lorne Bridge may introduce a gap in the cycling network as few of the study area roadways are identified as permitted bicycle routes. Installation of separated cycling facilities on the Lorne Bridge would need to occur in conjunction with a bicycle network planning study.

At this time, existing alternate cycling routes across the Grand River are recommended.

Gity of Brantford. *Transportation Master Plan Update.* March 2021.







Average Daily Traffic Volume (for 2 lane roadways, one in each direction) (Thousands)

Footsets: This remeigraph is the first of a free stap Neyck facility selection process, and should not be used by listelf as the justification for facility selection prev Steps 2 and 3s. The remeigraph samply helps proctitioners; pre-select a destartire outing facility from.

 The normagnaph has been adopted for the North Armenian context and is based on transactions examples and research for two lane madvage. It is, however, still applicable for enably later condenge, for those situations, designed should consider the operating assect basis condenge before visities and treffic risk of the well-deal traveling it the lane, incrediately adjacent to the confident facilities.

Consider is Separated Faultity or on Atlantate Road for randways with an MCF greater than 15,000 vehicles and an operating speed of greater then 50 limph. For runs and subsection becalism this increagability assumes good algoritms are provided for all runes, in urban press, there are typically more frequent conflict points of

To all road unites, in urban areas, there are opposely more frequent, conflict points at diseasers, conflict points at diseasers, indideads entening and interpretions toriporately un institutions reads), as well as an isoda segments with on sinest parionity. This leads to be considered when assessment are exposured in urban environments amount it will enhance the assessment of a suitable foulty type.

Source: OTM Book 18 Cycling Facilities. December 2013. pg. 30



Desirable Bicycle Facility Pre-Selection Nomograph

5 Preferred Design Concept

The preferred design concept during rehabilitation of the Lorne Bridge is maintaining one travel lane per direction. Lane capacity in the City's TransCAD model assumes a theoretical capacity of 800 vehicles per hour per lane.

Based on two travel lanes per direction across the bridge, the theoretical capacity of Colborne Street West across the Grand River is 1,600 vehicles per hour per lane. Using the TransCAD lane capacity assumptions, it is assumed each lane of travel during rehabilitation will accommodate up to 800 vehicles per hour.

5.1 Detour Route Assumptions

The City's *Transportation Master Plan Update*¹⁰ recommends a future extension of Oak Park Road from Hardy Road to Colborne Street West. At the time of writing of this Transportation Study, an Environmental Assessment was underway for this roadway extension. An extension of Oak Park Road would provide an additional crossing of the Grand River. Thus, existing and future capacity constraints on the Lorne Bridge may be lessened depending on when the Oak Park Road extension is completed, and the Lorne Bridge is rehabilitated.

However, the timing and completion of the Oak Park Road Extension is identified as a medium term project in the City's TMP, with an expected completion between 2026 and 2031. Since the timing of the Lorne Bridge rehabilitation is also unknown, the Oak Park Road Extension has not been included in the detour route assessment. This represents a conservative approach to the forecasting of detour traffic volumes on the study area roads.

Based on the estimated lane capacity in the City's TransCAD model, the detour route assumes a peak hour volume of 800 vehicles per hour, per lane, per direction on Colborne Street West. Observed vehicle trips above this capacity threshold have been reassigned on the study road network to utilize Veteran's Memorial Parkway.

The TMP Update summarized the key routing of eastbound and westbound vehicles movement across the Lorne Bridge in the PM peak hour. The analysis presented a generally equal distribution of vehicles trips along Paris Road, Brant Avenue, West Street, and Colborne Street East. Higher vehicle volumes were noted along Brant Avenue between Paris Road and Colborne Street West, since this roadway captures all traffic destined for Paris Road, Brant Avenue and



¹⁰ Ibid.

West Street. It is assumed that vehicles detouring across Veteran's Memorial Parkway will distribute 50% towards Brant Avenue and Paris Road (via Market Street), and 50% towards Colborne Street East and West Street (via Clarence Street). Eastbound detour traffic has been further refined, by equally distributing northbound Brant Avenue traffic via the northbound left turn at Market Street/Icomm Drive and the northbound left-turn at Clarence Street/Icomm Drive/Greenwich Drive.

In both peak hours, westbound vehicles currently traversing the Lorne Bridge via southbound Brant Street, are assumed to travel further south onto Icomm Drive, and turn right onto Market Street. From Market Street, these vehicles can enter westbound Veteran's Memorial Parkway to cross the Grand River. It is possible some drivers may continue to Icomm Drive, and turn right onto southbound Clarence Street South. However, the assignment of all trips to Market Street South represents a conservative approach along the most direct detour routing.

Figure 5.1 summarizes the respective eastbound and westbound detour routing along Veteran's Memorial Parkway.

5.1.1 Intersection Lane Configurations

The existing southbound right-turn movement from Brant Avenue onto Colborne Street West transitions into the westbound curb travel lane through a channelized right-turn facility. Northbound left-turning vehicles turn into the westbound travel lane adjacent to the curb lane. This lane configuration enables the southbound right-turn movement to effectively operate as a free flow condition, except in the presence of pedestrians in the crosswalk.

During the bridge rehabilitation, it has been assumed southbound right-turning traffic, and northbound left-turning traffic will share one westbound lane across the Lorne Bridge. In addition, the southbound right-turn movement will be modified to remove the right-turn channel. This is intended to increase pedestrian safety at the intersection during rehabilitation. Southbound right-turning vehicles will need to yield to pedestrians in the crosswalk, and/or northbound left-turning vehicles clearing the intersection. The Synchro model under the detour scenario has been modified accordingly to accommodate this revised lane arrangement.

Likewise, in the eastbound direction, the Lorne Bridge currently carries three travel lanes, which transition into an exclusive left-turn lane, shared left-turn/through lane, and exclusive through lane. A short exclusive right-turn lane is also provided on Colborne Street West at Brant Avenue/Icomm Drive.

During bridge rehabilitation, it has been assumed the eastbound approach on Colborne Street West at Brant Avenue/Icomm Drive will comprise two exclusive left-turn lanes, and a shared through/right-turn lane. The existing exclusive right-turn lane will support through movements and right-turning movements. This lane configuration responds to the 3:1 ratio of eastbound left-turn movements to combined through/right-turn movements on this approach in the AM peak hour.



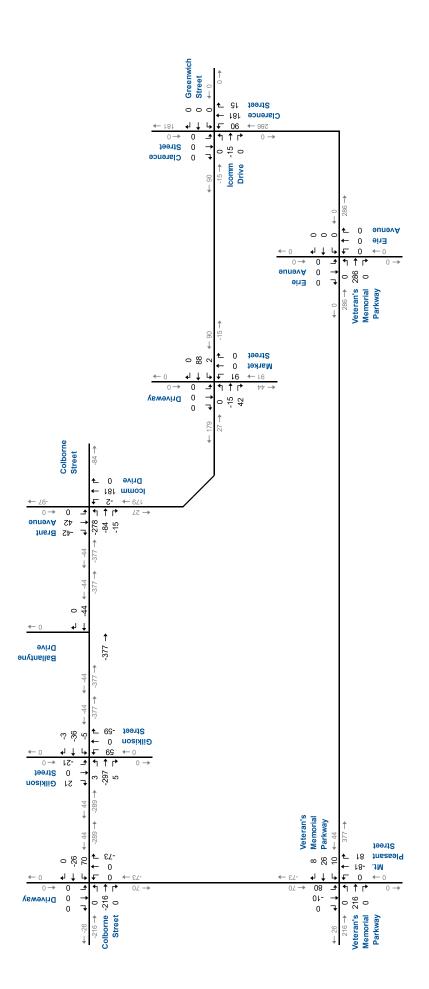


5.2 Detour Traffic Forecasts

Figure 5.2 and **Figure 5.3** illustrate the reassigned traffic volumes associated with the detour route assumptions illustrated in **Figure 5.1**.

Figure 5.4 and **Figure 5.5** illustrate the ultimate future traffic volumes at the study intersections during the bridge rehabilitation.

Detour Traffic Assignments AM Peak Hour

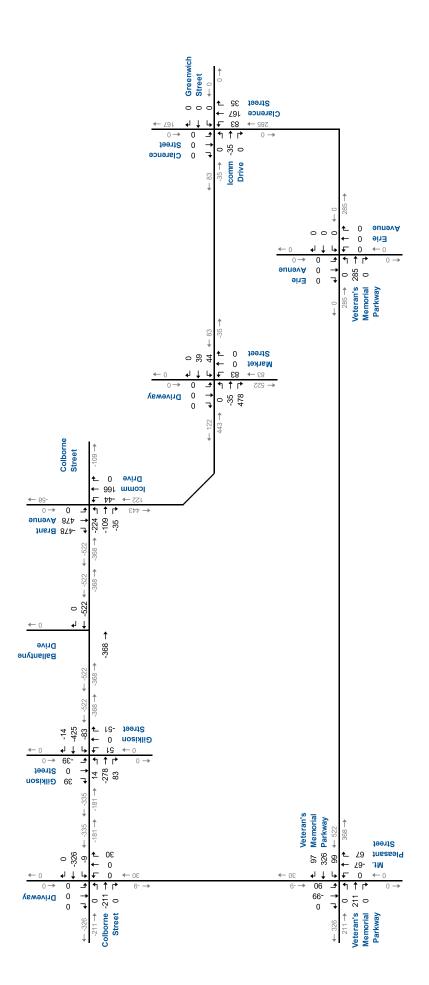


Not to Scale





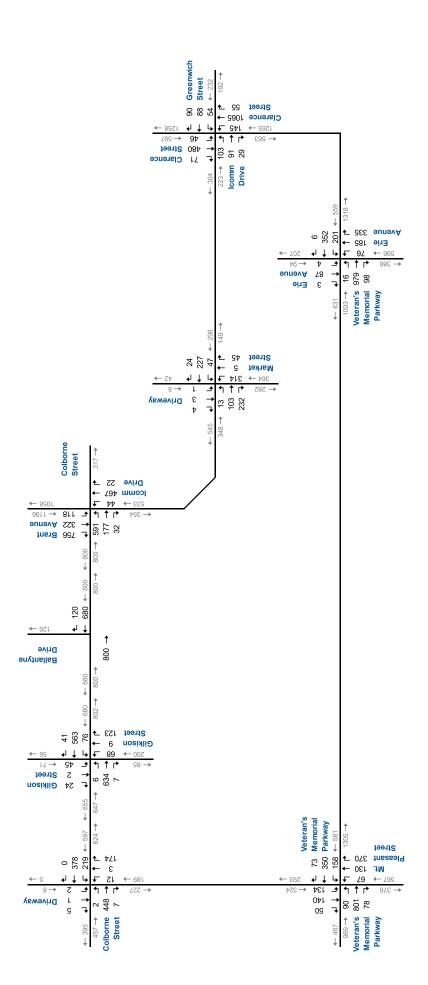
Detour Traffic Assignments PM Peak Hour



Not to Scale





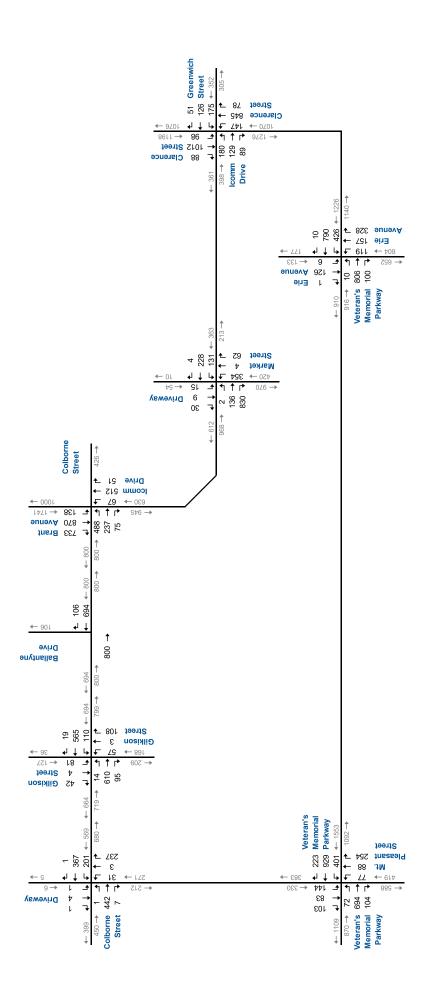


Not to Scale



Future Traffic Volumes (Detour) AM Peak Hour

Future Traffic Volumes (Detour)
PM Peak Hour



Not to Scale





6 Traffic Control Plans

6.1 Operations and Analyses

Traffic operations under the detour scenario have been reviewed using the detour routing, and lane configurations assumptions noted in **Section 5.1**. Based on discussions with City staff, several study intersections are part of directional coordination patterns. Therefore, signal timing plans and phase structures have not been altered from existing conditions.

Table 6.1 and **Table 6.2** summarize the level of service conditions under the detour scenario. The results indicate the study intersections are forecast to operate within capacity and with acceptable levels of service in the AM peak hour. In the PM peak hour, the following critical movements are noted:

Veteran's Memorial Parkway and Mt. Pleasant Street

► The westbound left-turn movement is forecast to operate at LOS F, with a v/c ratio of 1.28

Colborne Street West and Brant Avenue/Icomm Drive

➤ The southbound through movement is forecast to operate at LOS D, with a v/c ratio of 1.00, and queues that may impact operations at Brant Avenue/Dalhousie Street.

Traffic operations at Colborne Street West/Brant Avenue/Icomm Drive reflect the reassignment of approximately 500 southbound right-turn movements. The City could consider alternate lane arrangements on Brant Avenue; however, the existing roadway width and centre median limits the ability to provide an additional through lane while providing a dedicated right-turn lane. Alternatively, if the rehabilitation occurs when the Oak Park Road Extension is constructed, southbound vehicle demand during the weekday PM peak hour would likely be reduced providing for a reduction in the southbound queue length.

Icomm Drive and Market Street South

► The eastbound right-turn movement is forecast to operate at LOS F, with a v/c ratio of 0.59.

Appendix D contains the detailed Synchro reports.

TABLE 6.1: DETOUR TRAFFIC OPERATIONS – AM PEAK HOUR

1 - Veteran's Memorial Parkway & Mt. Pleasant Street	Control Type	MOE LOS Delay V/C Q Ex Avail.	B 12 0.20 18	B 15	B Right	Ф Approach	□ Left	Through These	Right puno	Approach	Left	Through ON	Right puno	Approach	Left	Through og	Right	Approach	Overall
1 - Veteran's Memorial Parkway & Mt. Pleasant Street 2 - Mt. Pleasant Street &	Type	LOS Delay V/C Q Ex	B 12 0.20	B 15	В			Through	Right	pproach	Left	rough	Right	proach	-eft	hguo	ght	oach	erall
Parkway & Mt. Pleasant Street 2 - Mt. Pleasant Street &	TCS	Delay V/C Q Ex	12 0.20	15		В	7			₹		11	4	Apı		Thr	ä	Аррі	٥٨
			140 122	0.48 75 - -	0.06 8 25 17	14	44 0.75 71 40 -31	B 19 0.28 40 -	B 17 0.05 3 45 42	C 25	C 24 0.21 16 45 29	C 28 0.18 18 -	D 45 0.79 78 40 -38	D 38	C 23 0.36 29 35 6	C 27 0.20 20 -	v v v v v	C 26	C 24 0.71
Colbottle Street West	TCS	LOS Delay V/C Q Ex Avail.	· · · · · · · · · · · · · · · · · · ·	A 3 0.20 18 -	^ ^ ^ ^ ^	A 3	< < < < < <	A 3 0.39 9 -	· · · · ·	A 3	C 33 0.09 7 -	C 33 0.14 18 -	^ ^ ^ ^ ^	C 33	· · · · · · ·	C 32 0.03 4 -	>	C 32	A 8 0.38
3 - Colborne Street West & Gilkison Street	TCS	LOS Delay V/C Q Ex	· · · · · · ·	B 17 0.43 56 -	· · · · · ·	B 17	· · · · · · · · · · · · · · · · · · ·	A 5 0.38 24 -	· · · · · ·	A 5	· · · · · · ·	D 39 0.66 41 -	· · · · · ·	D 39	V V V V	C 31 0.36 19 -	>	C 31	B 15 0.48
4 - Colborne Street West & Ballantyne Drive	TWSC	LOS Delay V/C Q Ex		UM		UM		UM	· · · · · · · · · · · · · · · · · · ·	UM									
5 - Colborne Street West & Brant Avenue/Icomm Drive	TCS	LOS Delay V/C Q Ex Avail.	D 39 0.90 149 200 51	B 15 0.30 33 -	· · · · · ·	C 33					A 9 0.15 6 115 109	B 11 0.36 31 -	· · · · · ·	B 11	A 0 0.00 0 25 25	C 24 0.62 53 -	C 26 0.54 36 -	C 25	C 24 0.76
6 - Icomm Drive & Market Street South	TCS	LOS Delay V/C Q Ex Avail.	A 9 0.02 4 65 61	B 11 0.07 17 -	D 53 0.17 50 60 10	D 39	A 9 0.07 11 125 114	A 9 0.15 20 -	<pre>></pre>	A 9	C 34 0.79 69 -	B 19 0.04 7 -	^ ^ ^ ^ ^ ^	C 32	· · · · · ·	B 19 0.00 0 -	>	B 19	C 27 0.40
7 - Icomm Drive/Greenwich Street & Clarence Street South	TCS	LOS Delay V/C Q Ex Avail.	C 22 0.57 17 75 58	B 14 0.21 7 -	^ ^ ^ ^ ^ ^	B 18	C 31 0.34 18 35 17	C 30 0.18 13 -	C 30 0.15 15 3 -12	C 30	A 6 0.28 21 75 54	A 7 0.50 69 -	^ ^ ^ ^ ^ ^	A 6	A 6 0.19 9 105 96	A 5 0.21 24 -	A 4 0.05 5 70 >	A 5	A 9 0.51
8 - Veteran's Memorial Parkway & Erie Avenue	TCS	LOS Delay V/C Q Ex Avail.	A 10 0.03 5 50 45	B 15 0.56 94 -	B 10 0.07 9 50 42	B 14	B 11 0.61 31 85 54	A 5 0.17 22 -	· · · · ·	A 8	C 33 0.37 25 30 5	D 36 0.58 50 -	D 42 0.71 57 30 -27	D 39	C 30 0.02 3 30 27	C 32 0.28 27 -	>	C 32	B 20 0.66
	3 - Colborne Street West & Gilkison Street 4 - Colborne Street West & Ballantyne Drive 5 - Colborne Street West & Brant Avenue/Icomm Drive 6 - Icomm Drive & Market Street South 7 - Icomm Drive/Greenwich Street & Clarence Street South 8 - Veteran's Memorial Parkway & Erie Avenue	Colborne Street West & Gilkison Street Colborne Street West & TWSC Colborne Street West & TCS Colborne Str	2 - Mt. Pleasant Street & Colborne Street West & Colborne Street West & Los Delay V/C Q Ex Avail. 3 - Colborne Street West & Colborne Street & Colborne Street West & Colborne Street West & Colborne Street & Colborne Street West & Colborne Street West & Colborne Street & Colborne Street West & Colborne Street West & Colborne Street & Colborne Street West & Colborne Street West & Colborne Street & Colborne Street West & Colborne Street West & Colborne Stre	2 - Mt. Pleasant Street & Colborne Street West & Colborne Street West & Avail. < Avail. < Avail. < Avail. < Brack	2 - Mt. Pleasant Street & Colborne Street West & Colborne Street West & Fix	2 - Mt. Pleasant Street & Colborne Street West & Colborne Street & Colborne Street West & Colborne Street West & Colborne Street & Colborne S	2 - Mt. Pleasant Street & Colborne Street West & Colborne Street West & Ex	2 - Mt. Pleasant Street & Colborne Street West & Colborne Street West & Ex	2 - Mt. Pleasant Street & Colborne Street West & Colborne Street West & Colborne Street West & Ex	2 - Mt. Pleasant Street & Colborne Street West & Colborne Street West & Colborne Street West & Colborne Street West & Ex	2 - Mt. Pleasant Street & Colborne Street West & Colborne Street & Colb	2 - Mt. Pleasant Street & Colborne Street West	2 - Mt. Pleasant Street & Colborne Street West & Colborne Street West & Colborne Street West & Ex	2 - Mt. Pleasant Street & Colborne Street West & Colborne Street Wes	2 - Mt. Pleasant Street & Colborne Street West & Colborne Street & Colborne Street West & Colborne Street West & Colborne Street & Colborne Street West & Colborne Street & Colborne Street West & Colborne Street & Colborne Street & Colborne Street & Col	2 - Mt. Pleasant Street & Colbome Street West & Colbome Street & Colbome Street West & Colbome Street West & C	2 - Mt. Pleasant Street West Colbome Street We	2-Mt. Pleasant Street & TGS	2-Mt. Pleasant Street & Colborne Street West & Colborne Street &

MOE - Measure of Effectiveness LOS - Level of Service Delay - Average Delay per Vehicle in Seconds Q - 95th Percentile Queue Length (m) Ex. - Existing Available Storage (m) Avail. - Available Storage (m) TCS - Traffic Control Signal TWSC - Two-Way Stop Control UM - Unopposed Movement <- Shared Left/Through Lane >- Shared Right/Through Lane



TABLE 6.2: DETOUR TRAFFIC OPERATIONS - PM PEAK HOUR

Þ										Directi	on / M	oveme	nt / App	oroach							
erio		Control Type		Eastbound					Westb	ound			North	bound			Southbound				
Analysis Period	Intersection		MOE	IJРТ	Through	Right	Approach	IJЭT	Through	Right	Approach	IJeŢ	Through	Right	Approach	IJeТ	Through	Right	Approach	Overall	
	1 - Veteran's Memorial Parkway & Mt. Pleasant Street	TCS	LOS Delay V/C Q Ex Avail.	A 10 0.26 13 140 128	A 9 0.35 53 -	A 7 0.08 9 25 16	A 9	F 170 1.28 174 40 -134	B 17 0.57 104 -	B 13 0.19 22 45 23	E 56	C 31 0.32 21 45 24	C 35 0.20 14 -	D 38 0.49 36 40 4	D 36	O 30 0.50 33 35 2	D 37 0.22 15 -	v v v v v	O 34	D 38 1.00	
	2 - Mt. Pleasant Street & Colborne Street West	TCS	LOS Delay V/C Q Ex Avail.	· · · · · ·	A 3 0.19 19 -	^ ^ ^ ^ ^	A 3	< < < < < <	A 2 0.35 10 -	>	A 2	C 34 0.24 12 -	D 49 0.19 1 -	>	D 48	· · · · · · ·	D 37 0.07 4 -	^ ^ ^ ^ ^	D 37	B 12 0.36	
	3 - Colborne Street West & Gilkison Street	TCS	LOS Delay V/C Q Ex Avail.	· · · · · · ·	B 18 0.50 74 -	^ ^ ^ ^ ^	B 18	< < < < < < < < < < < < < < < < < < <	A 8 0.40 45 -	>	A 8	< < < < < < < < < < < < < < < < < < <	D 36 0.50 34 -	>	D 36	· · · · · · ·	D 50 0.71 37 -	^ ^ ^ ^ ^	D 50	B 18 0.52	
PM Peak Hour	4 - Colborne Street West & Ballantyne Drive	TWSC	LOS Delay V/C Q Ex Avail.		UM		UM		UM	>	UM										
	5 - Colborne Street West & Brant Avenue/lcomm Drive	TCS	LOS Delay V/C Q Ex Avail.	C 27 0.74 119 200 81	C 26 0.71 117 -	· · · · · ·	C 27					C 26 0.36 m0.0 115 ####	C 23 0.34 69 -	>	C 24	A 0 0.00 0 25 25	D 54 1.00 155 -	C 23 0.52 27 -	D 41	C 34 0.85	
	6 - Icomm Drive & Market Street South	TCS	LOS Delay V/C Q Ex Avail.	A 9 0.00 0 65 65	A 9 0.11 8 -	F 188 0.59 80 60 -20	F 162	B 10 0.22 22 125 103	A 10 0.14 18 -	>	B 10	D 40 0.84 89 -	B 20 0.05 8 -		D 37	· · · · · ·	B 19 0.04 5 -	^ ^ ^ ^ ^ ^	B 19	F 98 0.66	
	7 - Icomm Drive/Greenwich Street & Clarence Street South	TCS	LOS Delay V/C Q Ex Avail.	C 29 0.49 49 75 26	C 29 0.18 26 -	· · · · · ·	C 29	E 58 0.84 67 35 -32	C 30 0.19 19 -	C 29 0.04 5 3	D 44	E 63 0.88 70 75 5	C 22 0.54 110 -	^	C 28	C 21 0.49 31 105 74	B 15 0.58 91 -	B 10 0.06 7 70 >	B 16	C 25 0.83	
	8 - Veteran's Memorial Parkway & Erie Avenue	TCS	LOS Delay V/C Q Ex Avail.	B 15 0.04 4 50 46	C 21 0.57 80 -	B 15 0.07 9 50 41	C 20	D 38 0.82 76 85 9	A 2 0.35 19 -	>	B 14	D 41 0.63 37 30 -7	D 36 0.55 44 -	C 34 0.37 32 30 -2	D 36	C 31 0.04 5 30 26	C 34 0.43 36 -	^ ^ ^ ^ ^	C 34	C 22 0.81	
MOF - M	Avall.				Lioua L	enath (r		>	TCC		Control			<- Sha		> V/Tlaus	-la I				

MOE - Measure of Effectiveness LOS - Level of Service Delay - Average Delay per Vehicle in Seconds Q - 95th Percentile Queue Length (m) Ex. - Existing Available Storage (m) Avail. - Available Storage (m) TCS - Traffic Control Signal TWSC - Two-Way Stop Control UM - Unopposed Movement <- Shared Left/Through Lane >- Shared Right/Through Lane



6.2 Operations and Analyses – With Improvements

Although the study intersections are part of a larger coordinated traffic signal network; independent intersection improvements have been reviewed. These measures are considered temporary in nature and are intended solely to accommodate detour traffic during bridge rehabilitation.

Intersection operations at Colborne Street West/Brant Street/Icomm Drive depend on the ultimate lane configuration of the southbound approach.

Operations at Icomm Drive and Market Drive represent a conservative estimate. A portion of detour traffic may use the eastbound right-turn at Clarence Street South, rather than at Market Street South. The preceding analyses forecast excess capacity at Clarence Street South to accommodate additional right-turning vehicles.

The westbound left-turn movement on Veteran's Memorial Parkway at Mt. Pleasant Street is forecast to operate beyond capacity (v/c > 1.00) in the PM peak hour. OTM Book 12 recommends the provision of a protected-permissive (advance) left-turn phase if opposing traffic volume and signal timing limit capacity during the permissive left-turn phase. **Appendix E** contains the detailed advance left-turn phase warrant.

The analysis indicates the westbound left-turn movement warrants a protected-permissive phase. It is recommended a protected-permissive left-turn phase be implemented within the existing 90 second cycle length. This phase would be concurrent with the existing eastbound protected-permissive left-turn phase at this intersection.

Table 6.3 summarizes traffic operations at Veteran's Memorial Parkway and Mt. Pleasant Street with a westbound left-turn protected-permissive phase. The analysis results forecast the intersection and all movements to operate with acceptable levels of service, and within capacity. **Appendix F** contains the detailed Synchro reports.

TABLE 6.3: DETOUR TRAFFIC OPERATIONS - PM PEAK HOUR (IMPROVEMENTS)

þ		Control Type		Direction / Movement / Approach																
Analysis Period	Intersection			Eastbound				Westbound				Northbound				Southbound				
			MOE	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Overall
~	1 - Veteran's Memorial	TCS	LOS Delay	B 19	C 32	C 23	C 30	B 18	B 16	B 12	B 16	C 33	D 37	D 37	D 36	D 41	D 53	> >	D 48	C 26
	Parkway & Mt. Pleasant Street		V/C Q Ex	0.28 11 140	0.71 83	0.07 9 25		0.69 98 40	0.54 95	0.19 21 45		0.36 22 45	0.24 15	0.18 22 40		0.55 42 35	0.25 20	^ ^ /		0.70
			Avail.	129	-	16		-58	-	24		23	-	18		-7	-	>		

MOE - Measure of Effectiveness LOS - Level of Service

Delay - Average Delay per Vehicle in Seconds

Q - 95th Percentile Queue Length (m) Ex. - Existing Available Storage (m) Avail. - Available Storage (m)

TCS - Traffic Control Signal TWSC - Two-Way Stop Control UM - Unopposed Movement

<- Shared Left/Through Lane >- Shared Right/Through Lane



6.3 Weekend Review

With the implementation of the Preferred Design Concept, the lane reductions on Colborne Street West between Gilkison Street and Brant Avenue/Icomm Drive diverts traffic to other routes, notably Veteran's Memorial Parkway. While this is imperative to maintaining good traffic flow along Colborne Street West, it is also imperative to ensure that traffic does not exceed capacity during the weekend time periods.

Figure 5.1 illustrated the potential traffic diversion routes resulting from the reduced lane capacity on Colborne Street West. It is expected that the majority of detour traffic will rely on Veteran's Memorial Parkway, given the lack of other Grand River crossings in the City.

At a screenline analysis level, eastbound and westbound capacity during the weekend was reviewed along Colborne Street West and Veterans Memorial Parkway. Existing traffic demand along these corridors for the weekend analysis was established based on Saturday traffic count conducted at Mt. Pleasant Road with Colborne Street West and Veterans Memorial Parkway in November 2020.

Existing eastbound and westbound travel trends along Colborne Street West were noted to be similar as the weekday PM peak hour. Future travel trends under the detour scenario for the weekend time period have been based off of the weekday PM peak hour assumptions. **Table 6.4** summarized the results.

Overall, traffic diversion during the weekend period indicates Veterans Memorial Parkway will see an increase in volumes, however at a screenline analysis, capacity is available to accommodate this additional traffic.

TABLE 6.4: SCREENLINE ANALYSIS

Eastbound/Westbound Traffic Screenline			Attri	butes	Exis	ting Detour Diffe		rence		
Number	Link/Screenline	Location	Dir.	Сар.	Vol.	v/c	Vol.	v/c	Vol.	%
Colborne Street	East of Mt.	EB	1600	740	0.46	584	0.37	-156	-21%	
1	West	Pleasant Street	WB	1600	838	0.52	527	0.33	-311	-37%
2	Colborne Street	West of Mt.	EB	1600	574	0.36	391	0.24	-183	-32%
2	West	Pleasant Street	WB	1600	706	0.44	389	0.24	-317	-45%
_	Veteran's	East of Mt.	EB	1600	780	0.49	1176	0.75	396	51%
3	Memorial Parkway	Pleasant Street	WB	1600	891	0.43	1041	0.65	350	51%
	Veteran's	West of Mt.	EB	1600	615	0.38	812	0.51	197	32%
4	Memorial Parkway	Pleasant Street	WB	1600	510	0.32	722	0.45	212	42%

7 Conclusions and Recommendations

7.1 Conclusions

Based on the investigations carried out, it is concluded that:

- Under existing conditions, the study intersections operate with acceptable levels of service and within capacity during the weekday AM and PM peak hours;
- During the rehabilitation of the Lorne Bridge, minor modifications to signal timing phasing will be required to support diverted traffic volumes;
- The existing operating characteristics and traffic volumes crossing the Lorne Bridge signify the need for separated cycling facilities, rather than a shared roadway facility;

7.2 Recommendations

Based on the findings of this study, it is recommended that:

- ➤ The southbound channelization at Colborne Street West/Brant Avenue/Icomm Drive during rehabilitation be removed to reduce conflicts between vehicles and pedestrians at Colborne Street West/Brant Avenue/Icomm Drive;
- ► The City of Brantford retain at least one of the existing active transportation crossings of the Grand River (i.e. Brant's Crossing Bridge or TH&B Crossing Bridge), based on the following:
 - To maintain the current lane arrangement and capacity along Colborne Street West, separated facilities do not appear feasible given the limited platform width across the Lorne Bridge.
 - Separated cycling facilities on the Lorne Bridge may introduce a gap in the cycling network as few of the study area roadways are identified as permitted bicycle routes; and
 - Brant's Crossing Bridge and the TH&B Crossing Bridge provide strong connectivity across the Grand River, without introducing conflict points with motor vehicle traffic.
- ► The City of Brantford consider signal timing modifications contained herein to support diverted traffic volumes during the Lorne Bridge rehabilitation. These measures are noted as follows, and deemed necessary only in the PM peak hour:

 Veteran's Memorial Parkway & Mt. Pleasant Street: Implement a westbound protected-permissive left-turn phase within the existing intersection cycle length.

Appendix A

Turning Movement Count Data and Signal Timing

Colborne St W @ Brant St **Morning Peak Diagram Specified Period One Hour Peak** From: 7:00:00 From: 8:00:00 To: 10:00:00 To: 9:00:00 Municipality: Brantford Weather conditions: Clear/Dry Site #: 000000004 Intersection: Brant St & Colborne St W Person(s) who counted: Cam TFR File #: Count date: 4-Nov-2020 ** Signalized Intersection ** Major Road: Brant St runs N/S North Leg Total: 2197 Heavys 17 41 Heavys 40 East Leg Total: 375 15 9 Trucks 9 17 North Entering: 1118 5 3 Trucks 9 East Entering: North Peds: Cars 720 242 98 1060 Cars 1030 East Peds: 9 \mathbb{X} Totals 746 Totals 1079 Peds Cross: 262 110 Peds Cross: Brant St Trucks Heavys Totals Heavys Trucks Cars Totals Cars 758 789 0 0 0 0 0 0 Colborne St W Heavys Trucks Cars Totals Colborne St 7 778 812 27 4 234 244 5 0 39 44 Cars Trucks Heavys Totals 353 38 11 1051 15 375 Icomm Dr X Peds Cross: Cars 281 Cars 38 Peds Cross: ⋈ 252 21 311 West Peds: 10 Trucks 5 Trucks 0 2 0 2 South Peds: 17 West Entering: 1100 Heavys 20 Heavys 5 0 18 South Entering: 331 13 Totals 306 West Leg Total: 1889 Totals 43 267 South Leg Total: 637 Comments

Colborne St W @ Brant St Mid-day Peak Diagram **Specified Period One Hour Peak** From: 11:00:00 From: 12:00:00 To: 13:00:00 To: 13:00:00 Municipality: Brantford Weather conditions: Clear/Dry Site #: 000000004 Intersection: Brant St & Colborne St W Person(s) who counted: Cam TFR File #: Count date: 4-Nov-2020 ** Signalized Intersection ** Major Road: Brant St runs N/S North Leg Total: 1923 Heavys 10 2 20 East Leg Total: 408 8 Heavys 20 2 23 North Entering: 1193 Trucks 15 Trucks 15 East Entering: North Peds: 11 Cars 754 281 115 1150 Cars 695 East Peds: 16 Totals 730 \mathbb{X} Totals 779 Peds Cross: 295 119 Peds Cross: ⋈ Brant St Trucks Heavys Totals Heavys Trucks Cars Totals Cars 17 822 849 0 0 0 0 0 Colborne St W Heavys Trucks Cars Totals Colborne St 471 494 12 11 2 242 245 3 0 75 78 Cars Trucks Heavys Totals 400 4 16 13 788 408 Icomm Dr X Peds Cross: Cars 356 Cars 68 335 Peds Cross: ⋈ 224 43 West Peds: 10 Trucks 6 Trucks 2 0 6 South Peds: 19 West Entering: 817 Heavys 11 Heavys 0 8 9 South Entering: 350 1 Totals 373 Totals 70 236 West Leg Total: 1666 44 South Leg Total: 723 Comments

Colborne St W @ Brant St **Specified Period Afternoon Peak Diagram One Hour Peak** From: 15:00:00 From: 16:15:00 To: 18:00:00 To: 17:15:00 Municipality: Brantford Weather conditions: Clear/Dry Site #: 000000004 Intersection: Brant St & Colborne St W Person(s) who counted: Cam TFR File #: Count date: 4-Nov-2020 ** Signalized Intersection ** Major Road: Brant St runs N/S North Leg Total: 2615 Heavys 6 0 6 Heavys 12 East Leg Total: 500 North Entering: 1627 Trucks 6 0 Trucks 7 East Entering: North Peds: 21 Cars 1120 365 129 1614 Cars 969 East Peds: 25 \mathbb{X} Totals 988 Peds Cross: Totals 1132 366 129 Peds Cross: Brant St Trucks Heavys Totals Heavys Trucks Cars Totals Cars 1222 1236 0 0 0 0 0 Colborne St W Heavys Trucks Cars Totals Colborne St 665 5 655 3 4 316 323 2 0 101 103 Cars Trucks Heavys Totals 10 9 1072 492 3 500 Icomm Dr X Peds Cross: Cars 466 Cars 102 Peds Cross: ⋈ 314 47 463 West Peds: Trucks 1 Trucks 1 1 4 South Peds: 28 West Entering: 1091 Heavys 2 7 0 8 South Entering: 475 Heavys 1 Totals 469 West Leg Total: 2327 Totals 104 South Leg Total: 944 Comments

Colborne St W @ Brant St

Total Count Diagram

Municipality: Brantford

Site #: 000000004

Intersection: Brant St & Colborne St W

TFR File #:

Count date: 4-Nov-2020 Weather conditions:

Clear/Dry

Person(s) who counted:

Major Road: Brant St runs N/S

Cam

** Signalized Intersection **

North Leg Total: 16608 North Entering: 9850 North Peds: 95 Peds Cross: ⋈

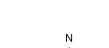
Heavys 109 19 59 Trucks 84 27 12 Cars 6539 2193 808 Totals 6732 2279 839

187 123 9540

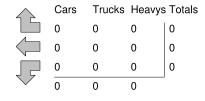
Heavys 149 East Leg Total: 3112 Trucks 105 East Entering: Cars 6504 East Peds: Totals 6758 Peds Cross:

Heavys Trucks Cars Totals 7065 7275



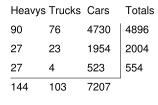


Brant St

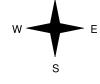


92 \mathbb{X}

Colborne St W









40

3024

X Peds Cross: West Peds: 102 West Entering: 7454 West Leg Total: 14729

Cars 2716 Trucks 31 Heavys 86 Totals 2833



Icomm Dr

Cars 526 1774 262 2562 Trucks 7 29 5 41 Heavys 10 59 2 71 Totals 543 1862 269

Peds Cross: ⋈ South Peds: 142 South Entering: 2674 South Leg Total: 5507

48

3112

Colborne St W @ Gilkison St **Specified Period Morning Peak Diagram One Hour Peak** From: 7:00:00 From: 8:00:00 To: 10:00:00 To: 9:00:00 Municipality: Brantford Weather conditions: Clear/Dry Site #: 000000003 Intersection: Colborne St W & Gilkison St Person(s) who counted: Cam TFR File #: Count date: 4-Nov-2020 ** Signalized Intersection ** Major Road: Colborne St W runs W/E North Leg Total: 118 Heavys 0 1 2 East Leg Total: 1778 Heavys 2 Trucks 0 North Entering: 66 1 Trucks 1 East Entering: 677 Cars 49 North Peds: 16 Cars 3 1 59 63 East Peds: 7 \mathbb{X} Peds Cross: Totals 3 61 Totals 52 Peds Cross: ⋈ Gilkison St Heavys Trucks Cars Totals Trucks Heavys Totals Cars 541 571 1 41 530 11 19 560 72 3 76 Colborne St W 641 23 Heavys Trucks Cars Totals Colborne St W 0 0 3 3 27 11 832 870 0 1 2 Cars Trucks Heavys Totals 28 1052 11 836 12 37 1101 Gilkison St X Cars 74 Peds Cross: Cars 8 Peds Cross: ⋈ 161 176 West Peds: Trucks 1 Trucks 0 0 0 South Peds: 15 West Entering: 875 Heavys 5 Heavys 0 9 10 South Entering: 186 1 Totals 80 West Leg Total: 1446 Totals 8 170 South Leg Total: 266 Comments

Colborne St W @ Gilkison St **Specified Period Mid-day Peak Diagram One Hour Peak** From: 11:00:00 From: 12:00:00 To: 13:00:00 To: 13:00:00 Municipality: Brantford Weather conditions: Clear/Dry Site #: 000000003 Intersection: Colborne St W & Gilkison St Person(s) who counted: Cam TFR File #: Count date: 4-Nov-2020 ** Signalized Intersection ** Major Road: Colborne St W runs W/E North Leg Total: 112 Heavys 0 0 0 Heavys 0 East Leg Total: 1605 5 Trucks 0 5 North Entering: 65 Trucks 2 East Entering: 776 North Peds: 20 Cars 5 51 60 Cars 45 East Peds: 6 \mathbb{X} Peds Cross: Totals 5 56 Totals 47 Peds Cross: ⋈ Gilkison St Heavys Trucks Cars Totals Trucks Heavys Totals Cars 14 628 653 0 39 616 13 11 640 95 1 97 Colborne St W 748 12 Heavys Trucks Cars Totals Colborne St W 0 5 5 14 15 632 661 16 18 Cars Trucks Heavys Totals 1 15 795 16 653 20 14 829 Gilkison St X Cars 115 Peds Cross: Cars 7 112 Peds Cross: ⋈ 122 West Peds: Trucks 2 Trucks 1 0 1 South Peds: 18 West Entering: 684 Heavys 2 Heavys 0 0 0 0 South Entering: 123 Totals 119 West Leg Total: 1337 Totals 8 112 South Leg Total: 242 Comments

Colborne St W @ Gilkison St **Specified Period Afternoon Peak Diagram One Hour Peak** From: 15:00:00 From: 16:30:00 To: 18:00:00 To: 17:30:00 Municipality: Brantford Weather conditions: Clear/Dry Site #: 000000003 Intersection: Colborne St W & Gilkison St Person(s) who counted: Cam TFR File #: Count date: 4-Nov-2020 ** Signalized Intersection ** Major Road: Colborne St W runs W/E North Leg Total: 157 Heavys 0 1 Heavys 0 East Leg Total: 2228 Trucks 0 0 North Entering: 121 0 Trucks 0 East Entering: 1149 North Peds: Cars 3 113 120 Cars 36 East Peds: 9 \mathbb{X} Peds Cross: Totals 3 114 Totals 36 Peds Cross: Gilkison St Heavys Trucks Cars Totals Trucks Heavys Totals Cars 923 937 0 31 916 9 5 930 185 188 Colborne St W 1132 Heavys Trucks Cars Totals Colborne St W 0 1 1 8 806 823 0 0 12 12 Cars Trucks Heavys Totals 1060 1079 8 819 10 Gilkison St X Peds Cross: Cars 4 Peds Cross: ⋈ Cars 201 141 149 West Peds: Trucks 2 Trucks 0 1 South Peds: 13 1 West Entering: 836 Heavys 1 Heavys 0 0 0 0 South Entering: 150 Totals 204 West Leg Total: 1773 Totals 4 142 South Leg Total: 354 Comments

Colborne St W @ Gilkison St

Total Count Diagram

Municipality: Brantford

Site #: 000000003

Intersection: Colborne St W & Gilkison St

TFR File #:

Peds Cross:

Peds Cross:

West Peds:

West Entering: 5981

West Leg Total: 11610

Count date: 4-Nov-2020 Weather conditions:

Clear/Dry

Person(s) who counted:

Cam

** Signalized Intersection **

North Leg Total: 900 Heavys 0 4 North Entering: 610 Trucks 1 17 North Peds: 121 Cars 30 23

534 587 Totals 31 24 555

Heavys 3 Trucks 6

Cars 281 Totals 290

Major Road: Colborne St W runs W/E

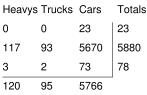
East Leg Total: 14047 East Entering: 6599 East Peds: 37 \mathbb{X} Peds Cross:

Heavys Trucks Cars Totals 5434 5629

⋈



Colborne St W



X

45



Cars 898 Trucks 7 Heavys 15 Totals 920



5

18



Gilkison St



Trucks Heavys Totals Cars 227 234 5357 90 100 5547 802 11 818 101 112

Colborne St W



Cars 47 31 988 1066 Trucks 3 6 9 Heavys 1 2 19 22 Totals 51 1013

Cars Trucks Heavys Totals 7192 116 140 7448

> Peds Cross: \bowtie South Peds: 130 South Entering: 1097 South Leg Total: 2017

Colborne St W @ Mt Pleasant St **Specified Period Morning Peak Diagram One Hour Peak** From: 7:00:00 From: 8:00:00 To: 10:00:00 To: 9:00:00 Municipality: Brantford Weather conditions: Clear/Dry Site #: 0000000002 Intersection: Colborne St W & Mt Pleasant St Person(s) who counted: Cam TFR File #: Count date: 4-Nov-2020 ** Signalized Intersection ** Major Road: Colborne St W runs W/E North Leg Total: 13 Heavys 0 0 0 Heavys 0 East Leg Total: 1371 Trucks 0 0 North Entering: 8 0 Trucks 0 East Entering: 517 North Peds: Cars 5 2 8 Cars 5 East Peds: 3 \mathbb{X} 2 Totals 5 Peds Cross: Totals 5 Peds Cross: Plaza Trucks Heavys Totals Heavys Trucks Cars Totals Cars 372 394 0 0 357 378 7 14 135 2 139 Colborne St W 492 Heavys Trucks Cars Totals Colborne St W 2 2 0 7 17 597 621 0 6 Cars Trucks Heavys Totals 17 8 605 819 26 854 Mt Pleasant St X Peds Cross: Cars 10 Peds Cross: ⋈ Cars 142 220 233 West Peds: Trucks 3 Trucks 0 2 2 South Peds: 10 West Entering: 630 Heavys 2 0 9 10 South Entering: 245 Heavys 1 Totals 147 Totals 11 West Leg Total: 1024 231 South Leg Total: 392 Comments

Colborne St W @ Mt Pleasant St **Specified Period Mid-day Peak Diagram One Hour Peak** From: 11:00:00 From: 11:45:00 To: 13:00:00 To: 12:45:00 Municipality: Brantford Weather conditions: Clear/Dry Site #: 0000000002 Intersection: Colborne St W & Mt Pleasant St Person(s) who counted: Cam TFR File #: Count date: 4-Nov-2020 ** Signalized Intersection ** Major Road: Colborne St W runs W/E North Leg Total: 14 Heavys 0 0 0 Heavys 0 East Leg Total: 1241 Trucks 0 0 North Entering: 11 0 Trucks 0 East Entering: 607 Cars 3 North Peds: Cars 8 0 11 East Peds: \mathbb{X} Totals 3 Peds Cross: Totals 8 3 0 Peds Cross: Plaza Trucks Heavys Totals Heavys Trucks Cars Totals Cars 495 514 0 453 472 11 8 130 1 134 Colborne St W 584 Heavys Trucks Cars Totals Colborne St W 0 1 1 7 11 470 488 0 0 10 10 Cars Trucks Heavys Totals 614 9 11 481 11 634 Mt Pleasant St X Peds Cross: Cars 34 Peds Cross: ⋈ Cars 143 144 179 West Peds: Trucks 3 Trucks 0 0 0 South Peds: West Entering: 499 Heavys 1 Heavys 0 0 2 2 South Entering: 181 Totals 147 West Leg Total: 1013 Totals 34 146 South Leg Total: 328 Comments

Colborne St W @ Mt Pleasant St **Specified Period Afternoon Peak Diagram One Hour Peak** From: 15:00:00 From: 15:15:00 To: 18:00:00 To: 16:15:00 Municipality: Brantford Weather conditions: Clear/Dry Site #: 0000000002 Intersection: Colborne St W & Mt Pleasant St Person(s) who counted: Cam TFR File #: Count date: 4-Nov-2020 ** Signalized Intersection ** Major Road: Colborne St W runs W/E North Leg Total: 11 Heavys 0 0 0 Heavys 0 East Leg Total: 1649 Trucks 0 0 North Entering: 6 0 Trucks 0 East Entering: 845 North Peds: 16 Cars 1 6 Cars 5 East Peds: 3 1 \mathbb{X} Totals 5 Peds Cross: Totals 1 4 1 Peds Cross: ⋈ Plaza Trucks Heavys Totals Heavys Trucks Cars Totals Cars 657 678 0 628 15 648 192 3 196 Colborne St W 821 Heavys Trucks Cars Totals Colborne St W 0 1 1 13 589 610 7 0 0 Cars Trucks Heavys Totals 778 13 597 15 11 804 Mt Pleasant St X Peds Cross: Cars 203 Cars 28 Peds Cross: ⋈ 188 219 West Peds: Trucks 1 Trucks 0 2 2 South Peds: 22 West Entering: 618 Heavys 3 0 3 4 South Entering: 225 Heavys 1 Totals 207 Totals 29 West Leg Total: 1296 193 South Leg Total: 432 Comments

Colborne St W @ Mt Pleasant St

Total Count Diagram

Municipality: Brantford

Site #: 0000000002

Intersection: Colborne St W & Mt Pleasant St

TFR File #:

Count date: 4-Nov-2020 Weather conditions:

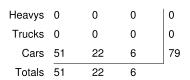
Clear/Dry

Person(s) who counted:

Cam

** Signalized Intersection **

North Leg Total: 116 North Entering: 79 North Peds: 54 Peds Cross: \bowtie





Heavys 0 Trucks 0 Cars 37 Totals 37

Major Road: Colborne St W runs W/E

East Leg Total: 10701 East Entering: 5106 East Peds: 18 \mathbb{X} Peds Cross:

101

Heavys Trucks Cars Totals 3967 4118











Trucks Heavys Totals Cars 0 3747 3895 66 82 1174 19 1206

Colborne St W

Heavys	Trucks	Cars	Totals
0	0	15	15
68	71	4030	4169
0	3	54	57
68	74	4099	



Colborne St W

4926



Trucks Heavys Totals 5595 5413 85 97

 \mathbb{X} Peds Cross: West Peds: 40 West Entering: 4241 West Leg Total: 8359

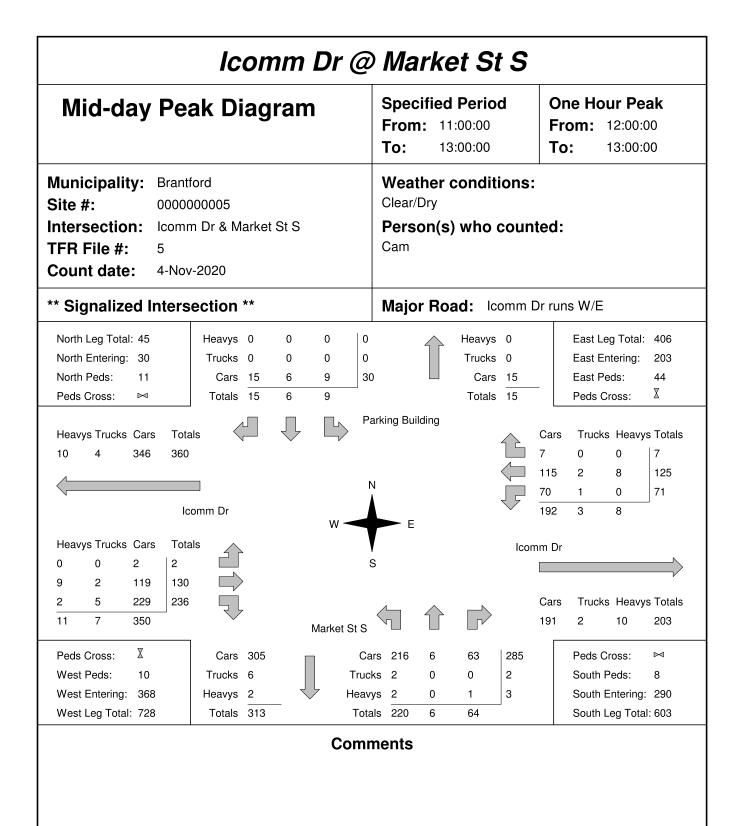
Cars 1250 Trucks 16 Heavys 19 Totals 1285

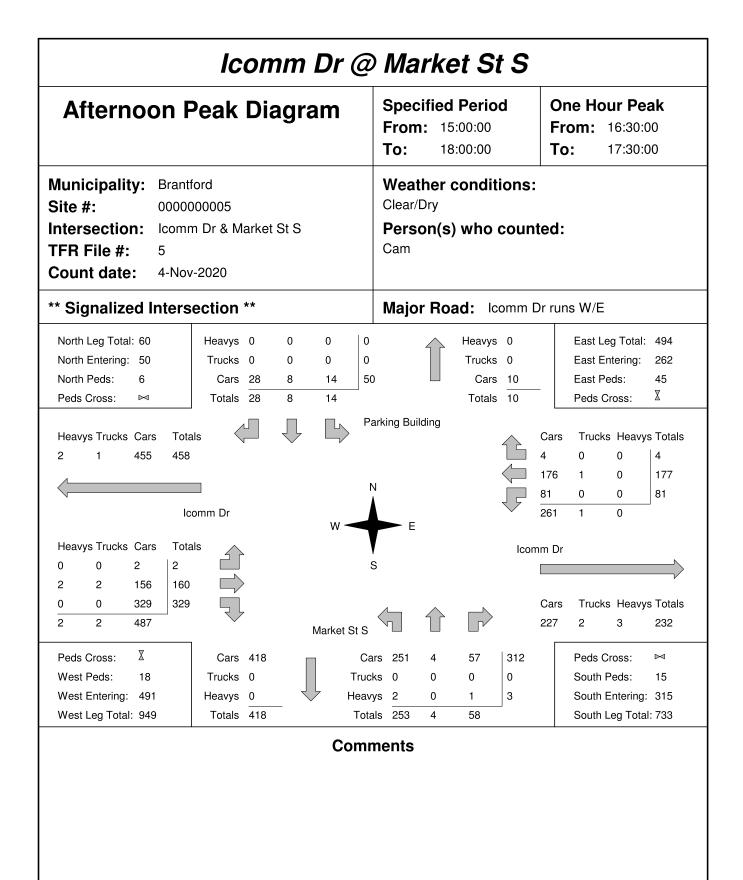
Mt Pleasant St

Cars 169 1377 1563 Trucks 1 14 15 Heavys 2 0 29 31 Totals 172 1420

Peds Cross: ⋈ South Peds: 88 South Entering: 1609 South Leg Total: 2894

Icomm Dr @ Market St S **Specified Period Morning Peak Diagram One Hour Peak** From: 7:00:00 From: 8:15:00 To: 10:00:00 To: 9:15:00 Municipality: Brantford Weather conditions: Clear/Dry Site #: 000000005 Intersection: Icomm Dr & Market St S Person(s) who counted: Cam TFR File #: Count date: 4-Nov-2020 ** Signalized Intersection ** Major Road: Icomm Dr runs W/E North Leg Total: 47 Heavys 0 0 0 Heavys 0 East Leg Total: 347 Trucks 0 0 North Entering: 8 0 Trucks 0 East Entering: 194 North Peds: Cars 4 3 8 Cars 39 East Peds: 20 1 \mathbb{X} Peds Cross: Totals 4 3 1 Totals 39 Peds Cross: Parking Building Trucks Heavys Totals Heavys Trucks Cars Totals Cars 324 342 22 120 8 130 42 0 42 Icomm Dr 184 8 Heavys Trucks Cars Totals Icomm Dr 12 0 0 12 10 3 97 110 178 13 2 163 Cars Trucks Heavys Totals 23 138 3 5 272 12 153 Market St S X Cars 200 245 Peds Cross: ⋈ Peds Cross: Cars 208 40 West Peds: Trucks 2 Trucks 0 0 0 South Peds: West Entering: 300 Heavys 13 Heavys 8 0 2 10 South Entering: 255 Totals 223 Totals 208 West Leg Total: 642 42 South Leg Total: 478 Comments





Icomm Dr @ Market St S

Total Count Diagram

Municipality: Brantford

Site #: 000000005

Intersection: Icomm Dr & Market St S

TFR File #:

Peds Cross:

Count date: 4-Nov-2020 Weather conditions:

Clear/Dry

Person(s) who counted:

Cam

Parking Building

** Signalized Intersection **

North Leg Total: 273 Heavys 0 Trucks 0 North Entering: 157 North Peds: 50

0 0 0 0 Cars 78 39 40 157 Totals 78 39 40

Heavys 0 Trucks 0 Cars 116 Totals 116

Major Road: Icomm Dr runs W/E

East Leg Total: 2953 East Entering: 1559 East Peds: 311 \mathbb{X} Peds Cross:

52

1038

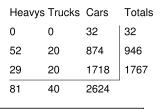
469

Heavys Trucks Cars Totals 2623 2731

⋈

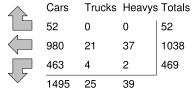


Icomm Dr









Icomm Dr

Market St S

Cars	Trucks	Heavys	Total
1318	20	56	1394

 \mathbb{X} Peds Cross: West Peds: 58 West Entering: 2745 West Leg Total: 5476

Cars 2220 Trucks 24 Heavys 31 Totals 2275

Cars 1565 2001 404 Trucks 14 0 14 Heavys 36 0 4 40 Totals 1615 408

Peds Cross: ⋈ South Peds: 60 South Entering: 2055 South Leg Total: 4330

Icomm Dr @ Clarence St S **Specified Period Morning Peak Diagram One Hour Peak** From: 7:00:00 From: 8:15:00 To: 10:00:00 To: 9:15:00 Municipality: Brantford Weather conditions: Clear/Dry Site #: 000000006 Intersection: Clarence St S & Icomm Dr Person(s) who counted: Cam TFR File #: Count date: 4-Nov-2020 ** Signalized Intersection ** Major Road: Clarence St S runs N/S North Leg Total: 1530 Heavys 2 1 8 Heavys 23 East Leg Total: 395 9 North Entering: 558 Trucks 0 9 0 Trucks 3 East Entering: 216 North Peds: 3 Cars 64 435 42 541 Cars 946 East Peds: 1 \mathbb{X} Totals 972 Peds Cross: Totals 66 449 43 Peds Cross: Clarence St S Totals Trucks Heavys Totals Heavys Trucks Cars Cars 189 199 2 50 77 3 82 78 4 84 Icomm Dr 201 Heavys Trucks Cars Totals Greenwich St 96 0 91 2 91 99 25 27 Cars Trucks Heavys Totals 1 12 9 3 207 167 179 Clarence St S X Peds Cross: Cars 538 Cars 48 891 Peds Cross: ⋈ 809 34 West Peds: 17 Trucks 12 Trucks 1 1 3 South Peds: 1 West Entering: 222 Heavys 10 Heavys 2 2 20 South Entering: 914 16 West Leg Total: 421 Totals 560 Totals 51 826 37 South Leg Total: 1474 Comments

Icomm Dr @ Clarence St S **Specified Period Mid-day Peak Diagram One Hour Peak** From: 11:00:00 From: 12:00:00 To: 13:00:00 To: 13:00:00 Municipality: Brantford Weather conditions: Clear/Dry Site #: 000000006 Intersection: Clarence St S & Icomm Dr Person(s) who counted: Cam TFR File #: Count date: 4-Nov-2020 ** Signalized Intersection ** Major Road: Clarence St S runs N/S North Leg Total: 1443 Heavys 0 0 5 Heavys 8 East Leg Total: 483 Trucks 2 11 North Entering: 662 1 Trucks 9 East Entering: 265 North Peds: Cars 63 533 50 646 Cars 764 East Peds: 7 \mathbb{X} Totals 781 Peds Cross: Totals 65 546 51 Peds Cross: \bowtie Clarence St S Totals Heavys Trucks Cars Trucks Heavys Totals Cars 195 206 57 90 7 98 108 1 110 Icomm Dr 254 Heavys Trucks Cars Totals Greenwich St 156 0 153 0 119 125 2 63 66 Cars Trucks Heavys Totals 10 2 206 335 8 218 Clarence St S X Cars 704 Peds Cross: Cars 42 Peds Cross: ⋈ 555 37 634 West Peds: 37 Trucks 11 Trucks 0 3 12 South Peds: 23 West Entering: 347 Heavys 7 4 2 7 South Entering: 653 Heavys 1 Totals 43 West Leg Total: 553 Totals 722 568 42 South Leg Total: 1375 Comments

Icomm Dr @ Clarence St S **Specified Period Afternoon Peak Diagram One Hour Peak** From: 15:00:00 From: 16:30:00 To: 18:00:00 To: 17:30:00 Municipality: Brantford Weather conditions: Clear/Dry Site #: 000000006 Intersection: Clarence St S & Icomm Dr Person(s) who counted: Cam TFR File #: Count date: 4-Nov-2020 ** Signalized Intersection ** Major Road: Clarence St S runs N/S North Leg Total: 1970 Heavys 0 0 East Leg Total: 615 Heavys 10 Trucks 0 3 North Entering: 1120 2 1 Trucks 11 East Entering: 330 North Peds: Cars 82 940 91 1113 Cars 829 East Peds: 0 \mathbb{X} Totals 850 Peds Cross: Totals 82 946 92 Peds Cross: Clarence St S Heavys Trucks Cars Totals Trucks Heavys Totals Cars 258 260 48 117 0 118 164 0 164 Icomm Dr 328 Heavys Trucks Cars Totals Greenwich St 168 1 165 0 152 153 0 82 83 Cars Trucks Heavys Totals 1 3 2 282 1 399 285 Clarence St S X Peds Cross: Cars 1186 Cars 59 Peds Cross: ⋈ 617 39 715 West Peds: 35 Trucks 3 Trucks 1 10 1 12 South Peds: 24 West Entering: 404 Heavys 4 Heavys 0 7 0 7 South Entering: 734 Totals 1193 West Leg Total: 664 Totals 60 634 40 South Leg Total: 1927 Comments

Icomm Dr @ Clarence St S

Total Count Diagram

Municipality: Brantford

Site #: 0000000006

Intersection: Clarence St S & Icomm Dr

TFR File #: 6

North Peds:

Peds Cross:

Count date: 4-Nov-2020

Weather conditions:

Clear/Dry

Person(s) who counted:

Cam

** Signalized Intersection **

53

⋈

 North Leg Total: 12287
 Heavys 3
 51
 9
 63

 North Entering: 5662
 Trucks 4
 42
 13
 59

Cars 499

Totals 506 4697 459

4604

437

Heavys 88 Trucks 58

Major Road: Clarence St S runs N/S

Cars 6479
Totals 6625

Heavys Trucks Cars Totals 38 25 1522 1585



Icomm Dr

Heavys Trucks Cars Totals 1009 21 2 986 30 8 861 899 381 10 398 58 20 2228

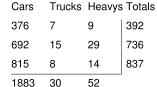




5540

Clarence St S





Greenwich St

Clarence St S

Cars Trucks Heavys Totals 1566 27 48 1641

Peds Cross:

West Peds: 203

West Entering: 2306

West Leg Total: 3891

 Cars
 5800

 Trucks
 60

 Heavys
 72

 Totals
 5932

 Cars
 331
 5117
 268
 5716

 Trucks
 6
 49
 6
 61

 Heavys
 6
 58
 9
 73

 Totals
 343
 5224
 283

Peds Cross:
South Peds: 138
South Entering: 5850
South Leg Total: 11782

Specified Period Morning Peak Diagram One Hour Peak From: 7:00:00 From: 8:00:00 To: 10:00:00 To: 9:00:00 Municipality: Brantford Weather conditions: Clear/Dry Site #: 000000001 Veterans Memorial Pkwy & Mt Pleas Person(s) who counted: Intersection: Cam TFR File #: Count date: 4-Nov-2020 ** Signalized Intersection ** Major Road: Veterans Memorial Pkwy runs W/E North Leg Total: 579 Heavys 0 2 6 East Leg Total: 1369 Heavys 14 2 North Entering: 237 Trucks 0 2 0 Trucks 1 East Entering: 502 North Peds: 0 Cars 47 134 48 229 Cars 327 East Peds: 10 \mathbb{X} Peds Cross: Totals 47 140 50 Totals 342 Peds Cross: Mt Pleasant St Heavys Trucks Cars Totals Trucks Heavys Totals Cars 388 413 61 285 14 303 127 11 138 Veterans Memorial Pkwy 472 26 Heavys Trucks Cars Totals Veterans Memorial Pkwy 84 7 0 77 4 529 547 3 0 70 73 Cars Trucks Heavys Totals 24 4 676 839 24 867 Mt Pleasant St X Cars 56 Peds Cross: ⋈ Peds Cross: Cars 331 190 262 508 West Peds: Trucks 2 Trucks 0 0 1 South Peds: West Entering: 704 Heavys 18 Heavys 7 6 8 21 South Entering: 530 Totals 63 West Leg Total: 1117 Totals 351 197 270 South Leg Total: 881

Mid-day Peak Diagram	Specified Period One Hour Peak From: 11:00:00 From: 12:00:00 To: 13:00:00 To: 13:00:00				
Municipality: Brantford Site #: 0000000001 Intersection: Veterans Memorial Pkwy & Mt Pleas TFR File #: 1 Count date: 4-Nov-2020	Weather conditions: Clear/Dry Person(s) who counted: Cam				
** Signalized Intersection **	Major Road: Veterans Memorial Pkwy runs W/E				
North Leg Total: 482 North Entering: 247 North Peds: 1 Peds Cross: Heavys 0					
6 4 352 362 1 2 56 59 9 6 446 Mt Pleasant St	Cars Trucks Heavys Totals 561 5 6 572				
West Peds: 9 Trucks 5 Trucks West Entering: 461 Heavys 4 Heavys 4	ars 44 116 157 317 Peds Cross: ks 0 0 1 1 South Peds: 3 rys 2 0 0 2 South Entering: 320 als 46 116 158 South Leg Total: 694				

Specified Period Afternoon Peak Diagram One Hour Peak From: 15:00:00 From: 16:00:00 To: To: 17:00:00 18:00:00 Municipality: Brantford Weather conditions: Clear/Dry Site #: 000000001 Veterans Memorial Pkwy & Mt Pleas Person(s) who counted: Intersection: Cam TFR File #: Count date: 4-Nov-2020 ** Signalized Intersection ** Major Road: Veterans Memorial Pkwy runs W/E North Leg Total: 646 Heavys 0 0 East Leg Total: 1640 Heavys 5 North Entering: 316 Trucks 0 0 Trucks 1 East Entering: 964 North Peds: Cars 96 168 50 314 Cars 324 East Peds: 8 0 \mathbb{X} Peds Cross: Totals 96 170 50 Totals 330 Peds Cross: ⋈ Mt Pleasant St Heavys Trucks Cars Totals Trucks Heavys Totals Cars 722 732 118 557 5 564 279 3 282 Veterans Memorial Pkwy 953 9 Heavys Trucks Cars Totals Veterans Memorial Pkwy 67 0 65 5 442 451 0 96 97 Cars Trucks Heavys Totals 6 5 603 664 6 676 Mt Pleasant St X Cars 543 Cars 69 Peds Cross: ⋈ Peds Cross: 142 172 383 West Peds: 16 Trucks 1 Trucks 0 1 2 South Peds: West Entering: 615 Heavys 5 Heavys 3 2 2 7 South Entering: 392 Totals 549 West Leg Total: 1347 Totals 72 145 175 South Leg Total: 941

Total Count Diagram

Municipality: Brantford

Site #: 000000001

Veterans Memorial Pkwy & Mt Pleas Intersection:

TFR File #:

Count date: 4-Nov-2020 Weather conditions:

Clear/Dry

Person(s) who counted:

Cam

** Signalized Intersection **

Major Road: Veterans Memorial Pkwy runs W/E

North Leg Total: 4326 North Entering: 2049 North Peds: Peds Cross: \bowtie

Heavys 8 3 31 20 15 Trucks 0 12 3 1117 Cars 470 416 2003 Totals 478 1149 422

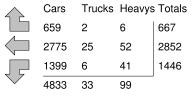
Heavys 47 Trucks 9 Cars 2221 Totals 2277 East Leg Total: 10098 East Entering: 4965 East Peds: 45 \mathbb{X} Peds Cross:

Heavys Trucks Cars Totals 26 3664 3776









Veterans Memorial Pkwy

Veterans Memorial Pkwy

Heavys	Trucks	Cars	Totals
24	2	457	483
49	28	3159	3236
12	4	491	507
85	34	4107	





Cars	Trucks	Heavys	Totals
5022	40	71	5133

 \mathbb{X} Peds Cross: West Peds: 58 West Entering: 4226 West Leg Total: 8002

Cars 3007 Trucks 22 Heavys 73 Totals 3102

Cars 419 Trucks 1 Heavys 26

2971 1105 1447 15 19 62 17 Totals 446 1127 1475

Peds Cross: ⋈ South Peds: 28 South Entering: 3048 South Leg Total: 6150

Colborne St W @ Mt Pleasant St **Specified Period Mid-day Peak Diagram One Hour Peak** From: 9:00:00 From: 13:30:00 To: 17:00:00 To: 14:30:00 Municipality: Brantford Weather conditions: Cloudy/Dry Site #: 0000000002 Intersection: Colborne St W & Mt Pleasant St Person(s) who counted: Cam TFR File #: Count date: 21-Nov-2020 ** Signalized Intersection ** Major Road: Colborne St W runs W/E North Leg Total: 27 Heavys 0 0 0 Heavys 0 East Leg Total: 1578 Trucks 0 0 North Entering: 19 0 Trucks 0 East Entering: 838 Cars 8 North Peds: Cars 12 5 2 19 East Peds: 2 \mathbb{X} 2 Totals 8 Peds Cross: Totals 12 5 Peds Cross: \bowtie Plaza Trucks Heavys Totals Heavys Trucks Cars Totals Cars 701 706 0 665 670 2 166 167 Colborne St W 832 Heavys Trucks Cars Totals Colborne St W 0 6 6 3 559 562 0 0 6 Cars Trucks Heavys Totals 3 734 571 3 740 Mt Pleasant St X Peds Cross: Cars 24 Peds Cross: ⋈ Cars 177 173 198 West Peds: Trucks 0 Trucks 0 0 0 South Peds: West Entering: 574 Heavys 1 Heavys 0 0 3 3 South Entering: 201 Totals 178 West Leg Total: 1280 Totals 24 176 South Leg Total: 379 Comments

Colborne St W @ Mt Pleasant St

Total Count Diagram

Municipality: Brantford

Site #: 0000000002

Intersection: Colborne St W & Mt Pleasant St

TFR File #:

Count date: 21-Nov-2020 Weather conditions:

Cloudy/Dry

Person(s) who counted:

Major Road: Colborne St W runs W/E

Cam

** Signalized Intersection **

North Leg Total: 148 Heavys 0 North Entering: 96 North Peds: 48 Peds Cross: \bowtie

0 0 0 Trucks 0 0 Cars 67 18 11 96 Totals 67 18 11



East Leg Total: 11189 Trucks 0 East Entering: 5501 Cars 52 East Peds: 9 \mathbb{X} Totals 52 Peds Cross:

Heavys Trucks Cars Totals 4609 4663





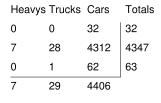


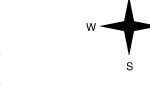
Colborne St W

5627

Cars	Trucks	Heavys	rotais
2	0	0	2
4333	26	27	4386
1107	3	3	1113
5442	29	30	

Colborne St W







		\rightarrow
Cars	Trucks	Heavys Totals

35

X Peds Cross: West Peds: West Entering: 4442 West Leg Total: 9105

Cars 1187 Trucks 4 Heavys 3 Totals 1194



Cars 209 18 1304 1531 Trucks 1 7 8 Heavys 0 0 19 19 Totals 210 1330

Peds Cross: ⋈ South Peds: 57 South Entering: 1558 South Leg Total: 2752

26

5688

Mid-day Peak Diagram	Specified Period One Hour Peak From: 9:00:00 From: 11:45:00 To: 17:00:00 To: 12:45:00
Municipality: Brantford Site #: 0000000001 Intersection: Veterans Memorial Pkwy & Mt F TFR File #: 1 Count date: 21-Nov-2020	Weather conditions: Cloudy/Dry Pleas Person(s) who counted: Cam
* Signalized Intersection **	Major Road: Veterans Memorial Pkwy runs W/
North Leg Total: 559 Heavys 0 0 0 North Entering: 278 Trucks 1 1 0 North Peds: 0 Cars 57 158 61 Peds Cross: ⋈ Totals 58 159 61 Heavys Trucks Cars Totals 3 3 504 510 Veterans Memorial Pkwy	0
Heavys Trucks Cars Totals 2	Veterans Memorial Pkwy S Cars Trucks Heavys Totals 776 3 1 780
Peds Cross: Sample Cars 434 West Peds: 1 Trucks 2 West Entering: 615 Heavys 2 West Leg Total: 1125 Totals 438	Cars 63 138 221 422 Peds Cross: ⋈ Trucks 0 1 0 1 South Peds: 1 Heavys 2 0 0 2 South Entering: 425 Totals 65 139 221 South Leg Total: 863

Total Count Diagram

Municipality: Brantford

Site #: 0000000001

Intersection: Veterans Memorial Pkwy & Mt Pleas

TFR File #: 1

Count date: 21-Nov-2020

Weather conditions:

Cloudy/Dry

Person(s) who counted:

Cam

** Signalized Intersection **

Major Road: Veterans Memorial Pkwy runs W/E

 Heavys
 2
 0
 0
 2

 Trucks
 1
 2
 3
 6

 Cars
 445
 1179
 490
 2114

 Totals
 448
 1181
 493

Heavys 18
Trucks 7
Cars 2088
Totals 2113

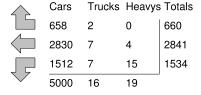
East Leg Total: 10558
East Entering: 5035
East Peds: 17
Peds Cross: \(\bar{x} \)

Heavys Trucks Cars Totals 22 8 3709 3739





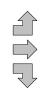




Veterans Memorial Pkwy

Veterans Memorial Pkwy

Heavys	Trucks	Cars	Totals
18	1	385	404
3	14	3425	3442
0	1	539	540
21	16	4349	'





Cars	Trucks	Heavys	Totals
5499	21	3	5523

Peds Cross:

West Peds: 26

West Entering: 4386

West Leg Total: 8125

 Cars
 3230

 Trucks
 10

 Heavys
 15

 Totals
 3255

 Cars
 434
 1045
 1584
 3063

 Trucks
 0
 4
 4
 8

 Heavys
 16
 0
 0
 16

 Totals
 450
 1049
 1588

Peds Cross:
South Peds: 13

South Entering: 3087

South Leg Total: 6342



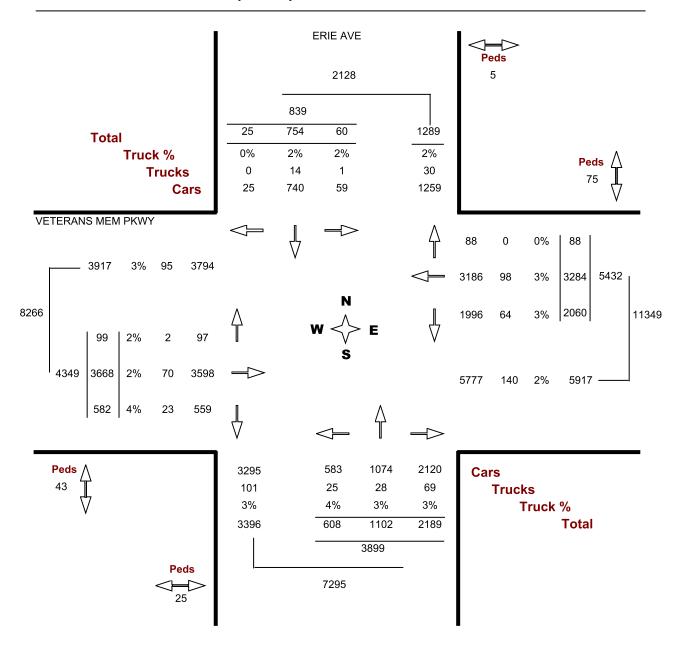
Turning Movements Count - Full Study Report

Location..... ERIE AVE @ VETERANS MEM PKWY

Municipality...... BRANTFORD

GeoID...... N1685

Count Date...... Wednesday, 21 May, 2014



March-03-21 Page 1 of 1



CITY OF BRANTFORD ENGINEERING DEPARTMENT TRAFFIC SIGNAL TIMING SHEET

INTERSECTION OF:

CLARENCE STREET @ ERIE AVENUE

PHASE	1 SB LT. CLARENCE	2 NB CLARENCE	3	4 EB ERIE	5	6 SB CLARENCI	7	8 WB ERIE
Min Green	7	10		7		10		7
Walk		7		7		7		7
PED CLEAF		20		18		20		18
h Extensi				3.0				3.0
Max 1	12	30		18		30		18
Max 2	15	35		20		35		20
Amber	3.0	4.0		4.0		4.0		4.0
d Clearan	1.0	2.0		2.0		2.0		2.0
RED REVER	2.0	2.0		2.0		2.0		2.0

CLARENCE STREET @ ERIE AVENUE

AM PLAN

Cycle Length 80	CoS	701	Offset	66	1
-----------------	-----	-----	--------	----	---

Phase 1	11	Phase 2	49	Phase 3	Phase 4	30
Phase 5		Phase 6	60	Phase 7	Phase 8	30

Phase	1	2	3	4	5	6	7	8
Coordinated								
Vehicle Recall								
Vehicle Max Recall								
Pedestrian Recall								

OFF PEAK PLAN

Cycle Length	80	CoS	702	Offset	76
--------------	----	-----	-----	--------	----

Phase 1	Phase 2	47	Phase 3	Phase 4	33
Phase 5	Phase 6	47	Phase 7	Phase 8	33

Phase	1	2	3	4	5	6	7	8
Coordinated								
Vehicle Recall								
Vehicle Max Recall								
Pedestrian Recall								

PM PEAK PLAN

Cycle Length	90	CoS	703	Offset	16
--------------	----	-----	-----	--------	----

Phase 1	16	Phase 2	45	Phase 3	Phase 4	29
Phase 5		Phase 6	61	Phase 7	Phase 8	29

Phase	1	2	3	4	5	6	7	8
-								
Coordinated								
Vehicle Recall								
Vehicle Max Recall								
Pedestrian Recall								

NIGHT PLAN (STEP 5)

Cycle Length	CoS	Offset
--------------	-----	--------

Phase	1	2		4	5	6	7	8
			10					
Coordinated	1		()) _				
Vehicle Recall			S					
Vehicle Max Recall								
Pedestrian Recall				11/				

STEP	PROGRAM	PLAN BEGINS	PLAN
STEP 1	1	06:00	1
STEP 2	1	09:00	2
STEP 3	1	14:30	3
STEP 4	1	18:00	2
STEP 5	1	22:15	5
STEP 6	2	09:00	3
STEP 7	2	18:00	2
STEP 8	2	22:15	5
STEP 9	3	09:00	3
STEP 10	3	18:00	5

Notes:

PROGRAM 1 - MONDAY TO FRIDAY

Program 2 - Saturday Program 3 - Sunday



CITY OF BRANTFORD ENGINEERING DEPARTMENT TRAFFIC SIGNAL TIMING SHEET

INTERSECTION OF:

CLARENCE STREET @ ICOMM DRIVE @ GREENWICH STREET

PHASE	1	2 NB CLARENCE	3	4 EB ICOMM	5	6 SB CLARENCI	7 EB LT.	8 WB GREENWICH
Min Green		10		7		10	7	7
Walk		7		7		7		7
Ped Cleaf		30		25		30		25
h Extensi				3.0				3.0
Max 1		30		18		30	1 1	18
Max 2		35		20		35	12	20
Amber		4.0		4.0		4.0	3.0	4.0
d Clearan		2.0		2.0		2.0	1.0	2.0
RED REVER		2.0		2.0		2.0	2.0	2.0

CLARENCE STREET @ ICOMM DRIVE @ GREENWICH STREET

AM PLAN

Cycle Length	80	CoS	701	Offset	75
--------------	----	-----	-----	--------	----

Phase 1	Phase 2	52	Phase 3	Phase 4	28
Phase 5	Phase 6	52	Phase 7	Phase 8	28

Phase	1	2	3	4	5	6	7	8
Coordinated								
Vehicle Recall								
Vehicle Max Recall								
Pedestrian Recall								

OFF PEAK PLAN

Cycle Length	80	CoS	702	Offset	78
--------------	----	-----	-----	--------	----

Phase 1	Phase 2	42	Phase 3		Phase 4	38
Phase 5	Phase 6	42	Phase 7	12	Phase 8	26

Phase	1	2	3	4	5	6	7	8
Coordinated								
Vehicle Recall								
Vehicle Max Recall								
Pedestrian Recall								

PM PEAK PLAN

Cycle Length	90	CoS	703	Offset	72	
--------------	----	-----	-----	--------	----	--

Phase 1	Phase 2	52	Phase 3		Phase 4	38
Phase 5	Phase 6	52	Phase 7	12	Phase 8	26

Phase	1	2	3	4	5	6	7	8
Coordinated								
Vehicle Recall								
Vehicle Max Recall								
Pedestrian Recall								

NIGHT PLAN (STEP 5)

Cycle Length		CoS		Offset				
					1 1		Ī	
Phase 1	Phase 2		Phase 3		Phase 4		1	
Phase 5		^	200		Phase 8		ı	
Phase 5	Fhase 8		Phase 7		Phase o			
		11/1	7	2				
Phase	1	2	// 3/>	4	5	6	7	8
	- N		1//					
Coordinated								
Vehicle Recall								
Vehicle Max Recall				$M \sim$				
Pedestrian Recall	10		1	11/				

STEP	PROGRAM	PLAN BEGINS	PLAN
STEP 1	1	06:00	1
STEP 2	1	09:00	2
STEP 3	1	14:30	3
STEP 4	1	18:00	2
STEP 5	1	22:15	5
STEP 6	2	09:00	3
STEP 7	2	18:00	2
STEP 8	2	22:15	5
STEP 9	3	09:00	3
STEP 10	3	18:00	5

Notes:

PROGRAM 1 - MONDAY TO FRIDAY

Program 2 - Saturday

PROGRAM 3 - SUNDAY



CITY OF BRANTFORD ENGINEERING DEPARTMENT TRAFFIC SIGNAL TIMING SHEET

INTERSECTION OF:

COLBORNE STREET @ BRANT AVENUE @ IUCOMM DRIVE

PHASE	1 SB LT. BRANT	2 NB BRANT	3	4 EB COLBORNE	5 NB LT. BRANT	6 SB BRANT	7	8
Min Green	7	10		7		10		
Walk		7		7		7		
PED CLEAF		18		25		20		
h Extensi				3.0				
Max 1	12	30		30		30		
Max 2	15	35		35		35		
Amber	3.0	4.0		4.0		4.0		
d Clearan	1.0	2.0		2.0		2.0		
led Rever	2.0	2.0		2.0		2.0		

COLBORNE STREET @ BRANT AVENUE @ ICOMM DRIVE

AM PLAN

Cycle Length	80	CoS	701	Offset	60	
--------------	----	-----	-----	--------	----	--

Phase 1	11	Phase 2	30	Phase 3	Phase 4	39
Phase 5	11	Phase 6	30	Phase 7	Phase 8	

Phase	1	2	3	4	5	6	7	8
Coordinated								
Vehicle Recall								
Vehicle Max Recall								
Pedestrian Recall								

OFF PEAK PLAN

Cycle Length	80	CoS	702	Offset	66
--------------	----	-----	-----	--------	----

Phase 1	11	Phase 2	31	Phase 3	Phase 4	38
Phase 5	11	Phase 6	31	Phase 7	Phase 8	

Phase	1	2	3	4	5	6	7	8
Coordinated								
Vehicle Recall								
Vehicle Max Recall								
Pedestrian Recall								

PM PEAK PLAN

Cycle Length	90	CoS	703	Offset	80	
--------------	----	-----	-----	--------	----	--

Phase 1	12	Phase 2	35	Phase 3	Phase 4	43
Phase 5	12	Phase 6	35	Phase 7	Phase 8	

Phase	1	2	3	4	5	6	7	8
Coordinated								
Vehicle Recall								
Vehicle Max Recall								
Pedestrian Recall								

NIGHT PLAN (STEP 5)

Cycle Length	75	CoS	705	Offset	46
--------------	----	-----	-----	--------	----

Phase 1	Phase 2	35	Phase 3	Phase 4	40
Phase 5	Phase 6	35	Phase 7	Phase 8	

Phase	1	2	3	4	5	6	7	8
Coordinated								
Vehicle Recall								
Vehicle Max Recall								
Pedestrian Recall								

STEP	PROGRAM	PLAN BEGINS	PLAN
STEP 1	1	06:00	1
STEP 2	1	09:00	2
STEP 3	1	14:30	3
STEP 4	1	18:00	2
STEP 5	1	22:15	5
STEP 6	2	09:00	3
STEP 7	2	18:00	2
STEP 8	2	22:15	5
STEP 9	3	09:00	3
STEP 10	3	18:00	5

Notes:

PROGRAM 1 - MONDAY TO FRIDAY

Program 2 - Saturday

PROGRAM 3 - SUNDAY



CITY OF BRANTFORD ENGINEERING DEPARTMENT TRAFFIC SIGNAL TIMING SHEET

INTERSECTION OF:

COLBORNE STREET WEST @ GILKISON STREET

PHASE	1 WB LT. COLBORNE	2 EB COLBORNE	3	4 NB GILKISON	5	6 wb colborne	7	8 SB GILKISON
Min Green	6	10		7		10		7
Walk		10		10		10		10
PED CLEAF		15		17		15		17
h Extensi				3.0				3.0
Max 1	1 1	30		18		30		18
Max 2	15	35		20		35		20
Amber	3.0	4.0		4.0		4.0		4.0
d Clearan	1.0	2.0		2.0		2.0		2.0
Red Rever	2.0	2.0		2.0		2.0		2.0

COLBORNE STREET WEST @ GILKISON STREET

AM PLAN

Cycle Length	80	CoS	701	Offset	0	
--------------	----	-----	-----	--------	---	--

Phase 1	10	Phase 2	46	Phase 3	Phase 4	24
Phase 5		Phase 6	56	Phase 7	Phase 8	24

Phase	1	2	3	4	5	6	7	8
Coordinated								
Vehicle Recall								
Vehicle Max Recall								
Pedestrian Recall								

OFF PEAK PLAN

Cycle Length	80	CoS	702	Offset	45
--------------	----	-----	-----	--------	----

Phase 1	10	Phase 2	43	Phase 3	Phase 4	21
Phase 5		Phase 6	53	Phase 7	Phase 8	21

Phase	1	2	3	4	5	6	7	8
Coordinated								
Vehicle Recall								
Vehicle Max Recall								
Pedestrian Recall								

PM PEAK PLAN

Cycle Length	90	CoS	703	Offset	76
--------------	----	-----	-----	--------	----

Phase 1	14	Phase 2	49	Phase 3	Phase 4	27
Phase 5		Phase 6	63	Phase 7	Phase 8	27

Phase	1	2	3	4	5	6	7	8
Coordinated								
Vehicle Recall								
Vehicle Max Recall								
Pedestrian Recall								

NIGHT PLAN (STEP 5)

Cycle Length		CoS		Offset				
Phase 1	Phase 2		hase 3		Phase 4			
Phase 5	Fibase 5			\	Phase 8			
	4							
Phone					· - ·			
Phase	1 1	2 4		4	5	6	7	8
			110	_				
Coordinated			V//))				
Coordinated Vehicle Recall			$\overset{\smile}{(}$					
			<u>*(C</u>					

STEP	PROGRAM	PLAN BEGINS	PLAN
STEP 1	1	06:00	1
STEP 2	1	09:00	2
STEP 3	1	14:30	3
STEP 4	1	18:00	2
STEP 5	1	22:15	5
STEP 6	2	09:00	3
STEP 7	2	18:00	2
STEP 8	2	22:15	5
STEP 9	3	09:00	3
STEP 10	3	18:00	5

Notes:

PROGRAM 1 - MONDAY TO FRIDAY

Program 2 - Saturday

PROGRAM 3 - SUNDAY



CITY OF BRANTFORD ENGINEERING DEPARTMENT TRAFFIC SIGNAL TIMING SHEET

INTERSECTION OF:

COLBORNE STREET WEST @ MOUNT PLEASANT STREET

PHASE	1 WB LT. COLBORNE	2 EB COLBORNE	3	4 NB MT PLEASANT	5	6 WB COLBORNE	7	8 SB PLAZA
Min Green	6	10		7		10		7
Walk		7		7		7		7
PED CLEAF		14		12		14		12
h Extensi				3.0				3.0
Max 1	1 1	30		18		30		18
Max 2	15	35		20		35		20
Amber	3.0	4.0		4.0		4.0		4.0
d Clearan	1.0	2.0		2.0		2.0		2.0
Red Rever	2.0	2.0		2.0		2.0		2.0

COLBORNE STREET WEST @ MOUNT PLEASANT STREET

AM PLAN

Cycle Length	80	CoS	701	Offset	35
--------------	----	-----	-----	--------	----

Phase 1	10	Phase 2	48	Phase 3	Phase 4	22
Phase 5		Phase 6	58	Phase 7	Phase 8	22

Phase	1	2	3	4	5	6	7	8
Coordinated								
Vehicle Recall								
Vehicle Max Recall								
Pedestrian Recall								

OFF PEAK PLAN

Cycle Length	80	CoS	702	Offset	42	
--------------	----	-----	-----	--------	----	--

Phase 1	10	Phase 2	47	Phase 3	Phase 4	23
Phase 5		Phase 6	57	Phase 7	Phase 8	23

Phase	1	2	3	4	5	6	7	8
Coordinated								
Vehicle Recall								
Vehicle Max Recall								
Pedestrian Recall								

PM PEAK PLAN

Cycle Length	90	CoS	703	Offset	16	
--------------	----	-----	-----	--------	----	--

Phase 1	10	Phase 2	52	Phase 3	Phase 4	28
Phase 5		Phase 6	62	Phase 7	Phase 8	28

Phase	1	2	3	4	5	6	7	8
Coordinated								
Vehicle Recall								
Vehicle Max Recall								
Pedestrian Recall								

NIGHT PLAN (STEP 5)

Cycle Length		CoS		Offset				
Phase 1	Phase 2		Phase 3		Phase 4			
Phase 5	Firase 5		Ph)ise7	\	Phase 8			
	4			NO.				
Dhasa					E	•	7	0
Phase	1 1	2		4	5	6	7	8
	1		4/1	f				
Coordinated	1 1							
Coordinated Vehicle Recall								
			<u> </u>	Ma				

STEP	PROGRAM	PLAN BEGINS	PLAN
STEP 1	1	06:00	1
STEP 2	1	09:00	2
STEP 3	1	14:30	3
STEP 4	1	18:00	2
STEP 5	1	22:15	5
STEP 6	2	09:00	3
STEP 7	2	18:00	2
STEP 8	2	22:15	5
STEP 9	3	09:00	3
STEP 10	3	18:00	5

Notes:

PROGRAM 1 - MONDAY TO FRIDAY

Program 2 - Saturday

PROGRAM 3 - SUNDAY



CITY OF BRANTFORD ENGINEERING DEPARTMENT TRAFFIC SIGNAL TIMING SHEET

INTERSECTION OF ICOMM DRIVE @ MARKET STREET

Phase	1 WB L.T. Icomm	2 WB Icomm	თ	4 NB Market	5	6 EB Icomm		8 SB Parkade
Min Green	7	10		7		10		7
Walk		7		7		7		7
Ped Clear		10		10		10		10
VEH EXTENSION				3.0				3.0
Max 1	7	30		18		30		18
Max 2		35		20		35		20
Amber	3.0	4.0		4.0		4.0	_	4.0
RED CLEARANCE	1.0	2.0		2.0		2.0		2.0

ICOMM DRIVE @ MARKET STREET

AM PLAN

Phase 1	Phase 2	40	Phase 3	Phase 4	40
Phase 5	Phase 6	40	Phase 7	Phase 8	40

Phase	1	2	3	4	5	6	7	8
Coordinated								
Vehicle Recall								
Vehicle Max Recall								
Pedestrian Recall								

OFF PEAK PLAN

Cycle Length	80	CoS	702	Offset	41
--------------	----	-----	-----	--------	----

Phase 1	Phase 2	47	Phase 3	Phase 4	33
Phase 5	Phase 6	47	Phase 7	Phase 8	33

Phase	1	2	3	4	5	6	7	8
Coordinated								
Vehicle Recall								
Vehicle Max Recall								
Pedestrian Recall								

PM PEAK PLAN (STEP 3)

Cycle Length	90	CoS	703	Offset	49	
--------------	----	-----	-----	--------	----	--

Phase 1	12	Phase 2	33	Phase 3	Phase 4	45
Phase 5		Phase 6	45	Phase 7	Phase 8	45

Phase	1	2	3	4	5	6	7	8
Coordinated								
Vehicle Recall								
Vehicle Max Recall								
Pedestrian Recall								

NIGHT PLAN (STEP 5)

Cycle Length	CoS	Offset	
--------------	-----	--------	--

Phase 1	Phase 2	Phase 3	Phase 4
Phase 5	Phase 6	Phase 7	Phase 8

Phase	1	2		3/)	4	5	6	7	8
		,	/	10					
Coordinated				77					
Vehicle Recall				10	1/2				
Vehicle Max Recall					1/1/2				
Pedestrian Recall	1.6				Y 1V/				

STEP	PROGRAM	PLAN BEGINS	PLAN
STEP 1	1	06:00	1
STEP 2	1	09:00	2
STEP 3	1	14:30	3
STEP 4	1	18:00	2
STEP 5	1	22:15	5
STEP 6	2	09:00	3
STEP 7	2	18:00	2
STEP 8	2	22:00	5
STEP 9	3	09:00	3
STEP 10	3	18:00	5

Notes:

PROGRAM 1 - MONDAY TO FRIDAY

Program 2 - Saturday Program 3 - Sunday



CITY OF BRANTFORD ENGINEERING DEPARTMENT TRAFFIC SIGNAL TIMING SHEET

INTERSECTION OF: VETERANS MEMORIAL PARKWAY @ MOUNT PLEASANT STREET

PHASE 1 2 3 4 5 6 7 8 NB WB LT MT SB EB MT NB LT EB LT MT WB MT PLEASANT PLEASANT PLEASANT PLEASANT V.M.P. V.M.P. V.M.P 10 10 Min Green 7 7 7 7 Walk 21 20 21 20 PED CLEAR 3.0 3.0 3.0 3.0 3.0 VEH EXTENSION 30 1 1 18 1 1 15 1 1 18 Max 1 30 12 20 15 20 12 20 Max 2 4.0 3.0 4.0 3.0 4.0 3.0 4.0 AMBER 2.0 1.0 2.0 1.0 2.0 1.0 2.0 RED CLEARANCE 2.0 2.0 2.0 2.0 2.0 2.0 2.0 RED REVERT

⁻ Inhibit Max Enabled

VETERANS MEMORIAL PARKWAY @ MOUNT PLEASANT STREET

AM PLAN (STEP 1)

Cycle Length	90	CoS	701	Offset	40
--------------	----	-----	-----	--------	----

Phase 1		Phase 2	48	Phase 3	11	Phase 4	31
Phase 5	13	Phase 6	35	Phase 7	11	Phase 8	31

Phase	1	2	3	4	5	6	7	8
Coordinated								
Vehicle Recall								
Vehicle Max Recall								
Pedestrian Recall								

OFF PEAK PLAN (STEP 2)

Cycle Length	80	CoS	702	Offset	3
--------------	----	-----	-----	--------	---

Phase 1	Phase 2	48	Phase 3	Phase 4	32
Phase 5	Phase 6	48	Phase 7	Phase 8	32

Phase	1	2	3	4	5	6	7	8
Coordinated								
Vehicle Recall								
Vehicle Max Recall								
Pedestrian Recall								

PM PEAK PLAN (STEP 3)

Cycle Length	90	CoS	703	Offset	5	
--------------	----	-----	-----	--------	---	--

Phase 1		Phase 2	57	Phase 3	11	Phase 4	25
Phase 5	16	Phase 6	41	Phase 7	11	Phase 8	25

Phase	1	2	3	4	5	6	7	8
Coordinated								
Vehicle Recall								
Vehicle Max Recall								
Pedestrian Recall								

NIGHT PLAN (STEP 5)

Phase 5

Phase 1 Phase 2 Phase 3 Phase 4	

Phase 8

STEP	PROGRAM	PLAN BEGINS	PLAN
STEP 1	1	06:00	1
STEP 2	1	09:00	2
STEP 3	1	14:30	3
STEP 4	1	18:00	2
STEP 5	1	22:00	5
STEP 6	2	09:00	3
STEP 7	2	18:00	2
STEP 8	2	22:00	5
STEP 9	3	09:00	3
STEP 10	3	18:00	5

Notes:

Program 1 - Monday to Friday

Program 2 - Saturday

Program 3 - Sunday

Appendix B

Base Year Traffic Operations Reports

Lanes, Volumes, Timings 1: Mt. Pleasant Street & Veteran's Memorial Parkway

Base Year: AM Peak Hour

Control ENT ENT MBI		1	†	*	-	ţ	4	•	←	*	۶	→	*
1		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
99	ations	<i>y</i> -	++	¥C.	je-	44	*	F	++	¥c.	je-	₩.	
100 286 78 448 324 65 67 211 289 54 150 1400 1500 1	(hdv)	96	285	28/	148	324	65	29	211	289	24	120	20
1900 1900	(vdv)	90	285	78	148	324	65	29	211	289	54	150	20
1400 250 400 450 450 450 450 350 400	<u> </u>	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
100 0.95 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 0.95 1.00 1.00 0.95 1	(m)	140.0		25.0	40.0		45.0	45.0		40.0	35.0		0.0
100 0.95 1.00 0.95 1		<u></u>		_	—		—	-		-	_		0
1.00 0.95 1.00 1.00 0.95 1.00	_	70.0			70.0			85.0			20.0		
10 10 10 10 10 10 10 10		1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
150 150				0.99	1.00			1.00		0.98	0.99	1.00	
1467 3505 1533 1467 3406 1585 3471 1568 1736 3361 1467 3505 1533 1721 3406 1583 1051 3471 1534 1105 3361 1467 3505 1533 721 3406 1583 1051 3471 1534 1105 3361 1468 14				0.850			0.850			0.850		0.963	
1671 3505 1553 1671 3406 1583 1626 3471 1568 1736 3361 874 3505 1533 721 3406 1583 1626 3471 1568 1736 3361 874 3505 1533 721 3406 1583 1051 3471 1534 1105 3361 875 70		0.950			0.950			0.950			0.950		
0.487 0.400 0.610 0.610 0.610 0.60		1671	3505	1553	1671	3406	1583	1626	3471	1568	1736	3361	0
No. 153 153 721 3406 1583 1051 3471 1534 1105 3361 110		0.497			0.410			0.616			609.0		
No.	_	874	3505	1533	721	3406	1583	1051	3471	1534	1105	3361	0
13 13 13 13 13 13 13 13	- P			Yes			Yes			Yes			Yes
Secondary Seco	2			82			133			282		20	
134 112 5.00 1.			20			20			20			20	
134 112 5 230 10 10 10 10 10 10 10			260.6			217.6			319.9			889.7	
10 10 10 10 10 10 10 10			13.4			11.2			23.0			64.1	
0.92				-	_			2		10	10		2
198 636 85 161 352 71 73 229 314 59 163 198 636 85 161 352 71 73 229 314 59 163 198 636 85 161 352 71 73 229 314 59 163 198 636 85 161 352 71 73 229 314 59 163 198 636 85 161 352 71 73 229 314 59 163 199 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190		0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
6) 86 636 85 161 352 71 73 229 314 59 163 100	(%	%8	3%	4%	8%	%9	7%	11%	4%	3%	4%	4%	%0
10 98 636 85 161 352 71 73 229 314 59 217 316		86	636	82	161	352	77	73	229	314	29	163	24
1 98 636 85 161 352 71 73 229 314 59 217 1 1 1 1 1 1 1 1 1	ffic (%)												
ition No	(vgv)	88	636	82	161	352	71	73	229	314	29	217	0
Left Left Right Left Right Left Right Left Right Left	ersection	2	2	2	8	8	2	8	2	8	2	8	8
100 100		Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
1.00 1.00			3.6	,		3.6			3.6			3.6	
Here 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,0			0.0			0.0			0.0			0.0	
1.00 1.00	(m)		4.8			4.8			4.8			4.8	
1,00	n Lane												
25 15 25 25 25 25 25 25 25 25 25 25 25 25 25		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
1	(h)	22		15	22		15	52		15	22		15
Left Thru Right Left Thru Right Left Thru Right Left Thru Color 100 20 20 100 20 20 100 20 20 100 20 20 100 20 20 100 20 20 100 20 20 100 20 20 100 20 20 100 20 20 100 20 20 20 100 20 20 20 20 20 20 20 20 20 20 20 20 2	tors	_	2	-	-	2	<u></u>	_	2	-	_	2	
20 100 2.0 2.0 100 2.0 2.0 10.0 2.0 2.0 10.0 2.0 2.0 10.0 2.0 2.0 10.0 2.0 2.0 10.0 2.0 2.0 10.0 2.0 2.0 10.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0	je.	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	(m)	2.0	10.0	5.0	2.0	10.0	5.0	5.0	10.0	5.0	5.0	10.0	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
20 06 2.0 2.0 0.6 2.0 2.0 0.6 2.0 0.6 2.0 2.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	(m)uc	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
C1+Ex C1-Ex C1+Ex	(F	2.0	9.0	2.0	2.0	9.0	2.0	2.0	9.0	2.0	2.0	9.0	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		CI+EX	CI+Ex	CI+EX	CI+Ex	CI+EX	CI+Ex	CI+Ex	CI+EX	CI+EX	CI+EX	CI+Ex	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Je.												
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	(s) pi	0.0	0:0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	e (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
94 94 94 0.6 0.6 0.6 CI+EX CI+EX CI-EX CI-	(s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
06 06 0.6 1 CHEX CHEX CHEX CH (s) 0.0 0.0 0.0	on(m)		9.4			9.4			9.4			9.4	
Nel CI+Ex CI+Ex CI+Ex CI-Ex CI	ا		9.0			9.0			9.0			9.0	
0.0 0.0			CI+EX			CI+EX			CI+EX			CI+EX	
0.0 0.0	nel												
	(s) pu		0.0			0.0			0.0			0.0	

190487 - Brantford Bridges EA PTSL

Synchro 10 Report Page 1

Lanes, Volumes, Timings 1: Mt. Pleasant Street & V.

vay	
ark	
orial	
⋝	
ran's	
Veteran's	
t & <	ı
street	

Base Year: AM Peak Hour

	1	†	<u> </u>	-	Ļ	4	•	—	•	۶	→	*
Lane Group	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	Α	Perm	Perm	¥	Perm	pm+pt	Α	Perm	pm+pt	Ā	
Protected Phases	2	2			9		က	∞		7	4	
Permitted Phases	2		2	9		9	∞		∞	4		
Detector Phase	2	2	2	9	9	9	က	∞	∞	7	4	
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0	10.0	7.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	11.0	34.0	34.0	34.0	34.0	34.0	11.0	33.0	33.0	11.0	33.0	
Total Split (s)	13.0	48.0	48.0	35.0	35.0	35.0	11.0	31.0	31.0	11.0	31.0	
Total Split (%)	14.4%	53.3%	53.3%	38.9%	38.9%	38.9%	12.2%	34.4%	34.4%	12.2%	34.4%	
Maximum Green (s)	9.0	45.0	45.0	29.0	29.0	29.0	7.0	25.0	25.0	7.0	25.0	
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	0.9	0.9	0.9	0.9	0.9	4.0	0.9	0.9	4.0	0.9	
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	
Walk Time (s)		7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)		21.0	21.0	21.0	21.0	21.0		20.0	20.0		20.0	
Pedestrian Calls (#/hr)		0	0	0	0	0		0	0		0	
Act Effct Green (s)	59.1	57.1	57.1	47.3	47.3	47.3	19.7	12.1	12.1	19.7	12.1	
Actuated g/C Ratio	99.0	0.63	0.63	0.53	0.53	0.53	0.22	0.13	0.13	0.22	0.13	
v/c Ratio	0.15	0.29	0.08	0.43	0.20	0.08	0.27	0.49	0.70	0.20	0.44	
Control Delay	7.9	8.9	2.5	22.0	14.3	0.5	25.9	38.9	15.1	24.6	29.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	7.9	8.9	2.5	22.0	14.3	0.5	25.9	38.9	15.1	24.6	29.3	
SOT	V	⋖	⋖	ပ	В	⋖	ပ	٥	Ф	ပ	ပ	
Approach Delay		8.1			14.7			25.3			28.3	
Approach LOS		V			В			O			O	
Intersection Summary												

Intersection Summary
Area Type:
Other
Oyce Length: 90
Actualed Cycle Length: 90
Offset (40,4%), Referenced to phase 2:EB1L and 6:WBTL, Start of Green
Natural Cycle Actualed-Coordinated
Maximum Vic Ratio. 0.70
Intersection Signal Delay: 16.8
Intersection Capacity Utilization 66.4% (Out Level of Service Analysis Period (min) 15

Intersection LOS: B ICU Level of Service C

Splits and Phases: 1: Mt. Pleasant Street & Veteran's Memorial Parkway -**€**82(8)

190487 - Brantford Bridges EA PTSL

Queues 1: Mt. Pleasant Street & Veteran's Memorial Parkway

Base Year: AM Peak Hour

217 217 0.44 29.3 0.0 29.3 14.9 23.6 865.7

59 0.20 24.6 0.0 24.6 8.1 15.7

314 314 0.70 15.1 15.1 15.1 5.3 28.7

229 0.49 38.9 0.0 38.9 20.8 29.4 295.9

73 0.27 25.9 0.0 25.9 10.1

71 71 0.08 0.5 0.0 0.0 0.1

352 0.20 14.3 0.0 14.3 18.2 33.5 193.6 WBL 161 0.43 22.0 0.0 22.0 18.3 46.2

85 0.08 2.5 0.0 2.5 0.0 6.5

636 0.29 8.9 0.0 8.9 25.7 43.7

98 0.15 7.9 0.0 7.9 6.1 15.2

969 0 0 0 0.22

40.0 629 0 0 0 0

45.0 274 0 0 0 0

45.0 894 0 0 0 0 0

40.0 378 0 0 0 0

140.0 655 0 0 0 0 0

Intersection Summary

25.0

Lane Group Flow (vph)
We Ratio
Control Delay
Queue Delay
Total Delay
Queue Length 50th (m)
Queue Length 50th (m)
Tum Bay Length (m)
Ium Bay Length (m)
Starvation Cap Reducth
Starvation Cap Reducth
Spillack Cap Reducth
Storage Cap Reducth
Reduced vic Ratio

2223 0.29

0.20

0.20

0.24

35.0

964

HCM Signalized Intersection Capacity Analysis 1: Mt. Pleasant Street & Veteran's Memorial Parkway

Base Year: AM Peak Hour

Movement	EBL EBT EBR WBI 90 585 78 148 90 585 78 148 90 586 78 148 1900 1900 1900 1900 1900 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,	レ / 1 へ	√	√	—	•	۶	→	*
1	90 588 78 148 99 586 78 148 148 99 586 78 148 148 140 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.	. EBT EBR			NBT	NBR	SBL	SBT	SBR
90 585 78 148 324 65 67 211 289 54 150 90 585 78 148 324 65 67 211 289 54 150 9100 1900 1900 1900 1900 1900 1900	90 588 78 148 90 588 78 148 1900 1900 1900 1900 1900 1900 1900 1900	k 44			#	*	<u>, </u>	₩.	
99 585 78 148 324 65 67 211 289 54 150 1900 1900 1900 1900 1900 1900 1900 190	99 588 78 148 1900 1900 1900 1900 1900 1900 1900 1900	585 78			211	289	54	150	20
1900 1900	1900 1900 1900 1900 1900 1900 1900 1900	585 78			211	289	54	150	20
1,00 0.95 1,00	1,00 0.95 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,0	1900 1900 1			1900	1900	1900	1900	1900
1,00	1.00 0.99 1.00 1.00 1.00 1.00 1.00 1.00	0.9 0.9			0.9	0.9	4.0	0.9	
100 100 109 100	100 100 0.99 100 100 100 100 100 100 100 100 100 1	0.95 1.00			0.95	1.00	1.00	0.95	
1,00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 0.99			1.00	0.98	1.00	1.00	
100 100 0.85 100 100 0.85 100 0.86 100 0.86 100 100 0.86 100	100 100 0.85 1100 0.95 1100 0.95 1100 0.95 1100 0.95 1100 0.95 1100 0.95 1100 0.95 1100 0.95 1100 0.95 1100 0.95 1100 0.95 1100 0.95 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	1.00 1.00			1.00	1.00	1.00	1.00	
0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 0.95 0.00 0.95 1.00 0.95 0.00 0.95 0.00 0.95 0.00 0.95 0.00 0.95 0.00 0.00	100 100	1.00 0.85			1.00	0.85	1.00	96:0	
1671 3505 1533 1671 3406 1583 1623 3471 1534 1728 3360 875 3505 1533 1671 3406 1583 1623 3471 1534 1108 875 3505 1533 122 3406 1583 1052 3471 1534 1108 3360 98 636 636 65 161 352 71 73 229 314 59 163 98 636 635 161 352 73 73 229 314 59 163 98 636 636 61 11 1 352 36 73 229 314 59 163 8% 3% 4% 8% 6% 2% 11% 4% 3% 4% 4% 9m+pt NA Perm P	1671 3505 1533 1671 0.50 1.00 1.00 1.00 1.00 875 3505 1533 722 0.92 0.92 0.92 0.92 0.98 6.36 85 161 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1.00 1.00			1.00	1.00	0.95	1.00	
100 100 0.04 1.00 0.06 1.00 0.06 1.00 0.06 1.00 0.06 1.00 0.06 1.00 0.06 0.	0.50	3505 1533			3471	1534	1728	3360	
875 3505 1533 722 3406 1583 1052 3471 1534 1108 3380 99 636 636 163 632 034 4% 4% 4% 8% 6% 2% 11% 4% 3% 4% 4% 4% 4% 4% 4% 4% 4% 4% 4% 4% 4% 4% 4% 4% 4% 4% 4% <td>875 3505 1533 772 98 636 636 65 161 98 636 63 53 161 98 636 33 161 98 636 33 161 98 636 33 161 98 636 33 161 98 636 63 163 2 2 2 6 2 2 2 6 6 3 3 63 3 63 457 6 40 60 60 60 60 6 00 1 00 1 00 100 1 0 0 1 0 0 100 1 0 0 1 0 0 100 1 0 0 1 0 0 100 1 0 0 1 0 0 100 1 0 0 1 0 0 100 1 0 0 1 0 0 100 1 0 0 1 0 0 100 1 0 0 1 0 0 100 1 0 0 1 0 0 100 1 0 0 1 0 0 100 1 0 0 1 0 0 100 1 0 0 0 0</td> <td>1.00 1.00</td> <td></td> <td></td> <td>1.00</td> <td>1.00</td> <td>0.61</td> <td>1.00</td> <td></td>	875 3505 1533 772 98 636 636 65 161 98 636 63 53 161 98 636 33 161 98 636 33 161 98 636 33 161 98 636 33 161 98 636 63 163 2 2 2 6 2 2 2 6 6 3 3 63 3 63 457 6 40 60 60 60 60 6 00 1 00 1 00 100 1 0 0 1 0 0 100 1 0 0 1 0 0 100 1 0 0 1 0 0 100 1 0 0 1 0 0 100 1 0 0 1 0 0 100 1 0 0 1 0 0 100 1 0 0 1 0 0 100 1 0 0 1 0 0 100 1 0 0 1 0 0 100 1 0 0 1 0 0 100 1 0 0 1 0 0 100 1 0 0 0 0	1.00 1.00			1.00	1.00	0.61	1.00	
0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	0.92 0.92 0.92 0.92 0.92 0.92 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93	3505 1533			3471	1534	1108	3360	
98 636 85 161 352 71 73 229 314 59 163 9 8 7 1 1 352 3 6 7 0 224 0 43 8 8 3 4 8 6 6 6 8 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	98 636 85 161 9 0 0 22 0 9 0 32 0 1 9 8% 3% 4% 8% 9% 3% 4% 8% 2 5 5 3 61 1 1 1 2 5 5 3 61 1 1 2 6 5 3 62 3 62 3 2 6 3 62 3 62 3 3 6 3 63 3 63	0.92 0.92			0.92	0.92	0.92	0.92	0.92
ph) 98 636 53 161 362 36 73 229 770 59 174 8% 3% 4% 6% 2% 11% 4% 3% 4% 4% 4% 5% 174 8% 3% 4% 6% 2% 11% 4% 3% 4% 4% 4% 4% 5% 174 bm+pt NA Perm Perm NA Perm pm+pt NA Perm pm+pt NA Perm Ph 1 17 121 c) 2 2 6 6 8 8 8 4 4 4 4 4 4 6 6 6 6 6 6 6 6 6	ph) 98 636 53 161 8% 3% 4% 8% 8% 164 Pm+pt NA Perm Perm Perm Perm Perm Perm Perm Perm	636 85			229	314	26	163	54
Ph	ph) 98 636 53 161 8% 3% 4% 8% 1	0 0 32 0	0		0	244	0	43	0
Section	8% 3% 4% 8% 8% 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	636 53	352	86 73	229	20	26	174	0
8% 3% 4% 8% 6% 2% 11% 4% 3% 4% 4% 4% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5%	Sw 3% 4% 8% 8% 3% 4% 8% 8% 3% 4% 8% 8% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9%	_				10	10		ω,
(s) 56.3 56.3 56.3 45.7 45.7 45.7 17.7 12.1 12.1 17.7 17.5 18.9 56.3 56.3 56.3 56.3 45.7 45.7 45.7 17.7 12.1 12.1 17.7 17.5 18.1 17.7 12.1 12.1 17.7 12.1 12.1 17.7 12.1 12.1	(s) 56.3 56.3 45.7 8 6.0	3% 4%			4%	3%	4%	4%	%0
S	(s) 56.3 56.3 46.7 45.7 (s) 56.3 56.3 46.7 45.7 (s) 56.3 56.3 6.3 46.7 45.7 (s) 56.3 56.3 6.3 45.7 (s) 56.3 56.3 46.7 40.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	NA Perm			¥	Perm	pm+pt	NA	
(s) 56.3 56.3 56.3 45.7 45.7 47.7 12.1 12.1 17.7 (s) 56.3 56.3 56.3 45.7 45.7 47.7 12.1 12.1 17.7 12.1 17.	(s) 56.3 56.3 56.3 45.7 (s) 56.3 56.3 46.7 (s) 56.3 56.3 46.7 (s) 56.3 56.3 46.7 (s) 56.3 56.3 46.7 (s) 56.3 56.3 56.3 46.7 (s) 56.2 56.3 56.3 56.3 46.7 (s) 56.2 56.3 56.3 56.3 56.3 56.3 56.3 56.3 56.3	2			∞		7	4	
(s) 56.3 56.3 45.7 45.7 45.7 17.7 12.1 17.7 (s) 56.3 56.3 56.3 45.7 45.7 45.7 17.7 12.1 12.1 17.7 (s) 56.3 56.3 56.3 56.3 45.7 45.7 45.7 17.7 12.1 12.1 17.7 (s) 56.3 56.3 56.3 56.3 56.3 56.3 56.3 56.3	(s) 56.3 56.3 45.7 s) 56.3 56.3 45.7 0.63 06.3 06.3 06.3 1.0 0.03 0.04 0.01 0.18 0.02 0.02 0.03 0.04 0.09 0.09 0.03 0.02 0.09 0.09 0.03 0.04 0.09 0.09 0.03 0.04 0.09 0.09 0.03 0.04 0.09 0.09 0.03 0.04 0.00 0.09 0.00 0.04 0.00 0.00 0.00 0.00 0.00 0.00	2				∞	4		
\$\text{s}\$ \text{563}	s) 56.3 56.3 45.7 0.63 0.63 0.63 0.53 0.51 1, 6.05 0.03 0.03 0.03 0.01 0.01 0.01 0.06 0.29 0.06 0.44 0.07 0.01 0.01 0.01 0.08 0.02 0.16 0.29 0.06 0.44 0.8 77 6.5 14.0 0.10 1.00 1.00 1.00 0.2 0.1 38 0.4 A A B 0.5 0.06 0.43 0.6 0.43 0.7 0.43 0.7 0.43 0.8 0.6 0.7 0.8 0.9 0.0 0.6 0.43 0.9 0.0 0.43 0.9 0.0 0.43 0.9 0.0 0.43 0.9 0.0 0.43 0.9 0.0 0.43 0.9 0.0 0.43 0.9 0.0 0.43 0.9 0.0 0.43 0.9 0.0 0.43 0.9 0.0 0.43 0.9 0.0 0.43	56.3 56.3			12.1	12.1	17.7	12.1	
0.63 0.63 0.63 0.51 0.51 0.51 0.20 0.13 0.13 0.20 0.13 0.63 0.63 0.63 0.61 0.61 0.62 0.13 0.13 0.20 0.13 0.30 0.30 0.30 0.30 0.30 0.30 0.3	0.63 0.63 0.63 0.63 0.61 0.63 0.63 0.63 0.63 0.64 0.60 0.60 0.60 0.60 0.60 0.60 0.60	56.3 56.3			17.1	12.1	17.7	12.1	
1,000 0,00	s) 3.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6	0.63 0.63 (_		0.13	0.13	0.20	0.13	
Signature Sign	s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	0.9 0.9			0.9	0.9	4.0	0.9	
605 2192 958 366 1729 803 242 466 206 256 101 0.01 0.018 0.02 0.07 0.02 0.07 0.01 101 0.018 0.03 0.02 0.02 0.07 0.04 0.03 0.04 101 0.09 0.06 0.44 0.20 0.04 0.30 0.49 0.34 0.23 102 0.16 0.29 0.06 0.44 0.20 0.04 0.30 0.49 0.34 0.23 103 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1	0.01 c0.18 366 366 0.02 0.02 0.02 0.03 0.02 0.04 0.04 0.04 0.04 0.04 0.04 0.04	3.0 3.0			3.0	3.0	3.0	3.0	
0.01 c0.18 c0.18 c0.10 c0.02 c0.07 c0.01 c0.01 c0.01 c0.01 c0.01 c0.02 c0.07 c0.03 c0.22 c0.04 c0.06 c0.03 c0.03 c0.22 c0.04 c0.06 c0.03 c0.02 c0.04 c0.06 c0.03 c0.02 c0.04 c0.05 c0.03 c0.04 c0.05 c0.04 c0.05 c0.03 c0.04 c0.05 c0.04 c	0.01 c0.18 0.09 0.03 c0.22 0.16 0.29 0.06 0.44 6.8 7.7 6.5 14.0 1.00 1.00 1.00 1.00 d2 0.1 0.3 0.1 38 6.9 8.0 6.6 17.8 A A A B A A B B A A B B A B B A B B B B B B B B B B B B	2192 958			466	206	256	451	
0.09 0.03 0.02 0.04 0.05 0.03 0.03 0.04 0.05 0.03 0.03 0.05 0.03 0.03 0.05 0.03 0.03	0.09 0.03 0.02 0.16 0.29 0.06 0.44 6.8 7.7 6.5 14.0 1.00 1.00 1.00 1.00 1.00 4.0 1.00 1.00 1.00 1.00 6.9 8.0 6.6 17.8 A A A B F T R A A B B T R A A B B B T R A A B B B T R A A B B B T R A A B B B T R A A B B B T R A A B B B T R A B B T R A B T R A B B T R A B B T R A B B T R A B B T R A B B T R A B B T R A B B T R A B B T R A B B T R A B B T R A B T R A B B T R A B B T R A B B T R A B B T R A B B T R A B B T R A B T R	c0.18			c0.02		0.01	0.05	
0.16 0.29 0.06 0.44 0.20 0.04 0.30 0.49 0.34 0.23 0.23 0.23 0.23 0.23 0.23 0.23 0.23	0.16 0.29 0.06 0.44 6.8 7.7 6.5 14.0 d2 0.1 0.3 0.1 3.8 6.9 8.0 6.6 17.8 A A A B A A B Belay 20.1 io Capacity ratio 0.43 ght (s) by Hillshood 6.44	0.03				0.02	0.03		
6.8 7.7 6.5 14.0 12. 11.2 30.4 36.1 35.3 30.1 1.00 1.00 1.00 1.00 1.00 1.00 1.	6.8 7.7 6.5 14.0 4.0 1.00 1.00 1.00 4.0 1.00 1.00 4.0 8.0 6.6 17.8 A A A B 7.8 A B 1.9 1.9 1.9 1.0 1.0 1.0 1.0 1.0	0.29 0.06			0.49	0.34	0.23	0.39	
1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	7.7 6.5			36.1	35.3	30.1	35.6	
202	0.2 0.1 0.3 0.1 3.5 0.1 3.5 0.1 3.5 0.1 3.5 0.1 3.5 0.1 0.2 0.2 0.1 0.2 0.2 0.1 0.2 0.2 0.1 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2	00.1			00.1	0.1	9.1	9.	
A A B B C D D C C C C C C C C C C C C C C C	17.9	0.0			0.0	0.1	0.0	0.0	
7.8 7.8 13.8 35.9 13.8 13.8 13.8 13.8 13.9 13.8 13.9 13	7.8 7.8 7.8 7.9 7.9 7.9 7.9 7.9 7.9 7.9 7.9 7.9 7.9	0.0 A			6.00	5.05	5.05 C. C.	- 20.	
Nation N	Iny A 20.1 Delay 20.1 In Capacity ratio 0.43 Bith (s) 69.0 In History 66.4%	8.7	13.8		35.9	2	>	34.9	
HCM 2000 Level of Service Long to Capacity ratio 0.43 Sum of lost time (s) 50.0	mmary 20.1 trol Delay 20.1 Ime to Capacity ratio 0.43 capit (s) 80.0 society Hilfradio 66.4%	. ⋖	а		٥			O	
20.1 HCM 2000 Level of Service 0.43 Sum of lost time (s) 66.4% ICU Level of Service 15	20.1 0.43 90.0 68.4%								
0.43 90.0 Sum of lost time (s) 66.4% ICU Level of Service 15	0.43 90.0 66.4%		CM 2000 Level	of Service		C			
90.0 Sum of lost time (s) 66.4% ICU Level of Service 15	90.0	0.43							
cation 66.4% ICU Level of Service	ation 66.4%	0.06	um of lost time	(S)		20.0			
-22		66.4%	U Level of Ser	vice		C			
	15	15							

Critical Lane Group

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Lanes, Volumes, Timings 2: Mt. Pleasant Street/Plaza & Colborne Street West

FBI FBI FBI WBI		1	†	*	-	ļ	4	•	—	•	٠	-	*
1900 1900	Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
1,000 1,00	Lane Configurations		đ.b			4		F	÷			4	
(iv) 1900 1900 1900 1900 1900 1900 1900 190	Traffic Volume (vph)	2	664	7	149	404	0	12	က	247	2	-	5
1900 1900 1900 1900 1900 1900 1900 1900	Future Volume (vph)	2	664	7	149	404	0	12	က	247	2	-	2
(%) (%) (%) (%) (%) (%) (%) (%)	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1,00	Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1:00
0.938 0.987 0.950 0.852 0.950	Ped Bike Factor		1.00			1.00		1.00	0.98			0.99	
1	ŧ		0.998						0.852			0.916	
(c) (%) (%) (%) (%) (%) (%) (%) (%) (%) (%	Fit Protected					0.987		0.950				0.988	
(c) (%) (%) (%) (%) (%) (%) (%) (%) (%) (%	Satd. Flow (prot)	0	3460	0	0	3387	0	1656	1519	0	0	1704	0
1	Flt Permitted		0.954			0.633		0.752				0.426	
New Year New Year New Year	Satd. Flow (perm)	0	3301	0	0	2170	0	1308	1519	0	0	734	0
) 5 5 6 6 7 6 6 7 6 7 6 8 8 8 9 7 7 2 8 8 9 7 8 8 9 7 8 8 9 7 8 9 8 9 7 8 9 9 8 9 7 8 9 9 9 9	Right Turn on Red			Yes			Yes			Yes			Yes
STATE STAT	Satd. Flow (RTOR)		2						268			2	
100 100	Link Speed (k/h)		20			20			20			20	
(c)	Link Distance (m) Travel Time (s)		277.2			409.8			64 1			110.5	
(vph) 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	Confl. Peds. (#/hr)	4		10	10		4	2		က	က	3	2
(c) (%) (%) 4% 14% 3% 6% 0% 9% 0% 5% 0% 1/2 (%) (%) (%) (%) (%) (%) (%) (%) (%) (%)	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
Color Colo	Heavy Vehicles (%)	%0	4%	14%	3%	%9	%0	%6	%0	2%	%0	%0	%0
(vgh) 0 732 0 0 601 0 13 271 0 0 0 (vgh) No	Adj. Flow (vph)	2	722	80	162	439	0	13	က	268	2	_	5
(vph) 0 732 0 601 0 13 271 0 0 rescrion No <	Shared Lane Traffic (%)												
No	Lane Group Flow (vph)	0	732	0	0	601	0	13	271	0	0	∞	0
Left	Enter Blocked Intersection	2	운	2	2	2	2	2	2	2	2	2	2
1,00	Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
100	Median Width(m)		0.0			0.0			7.2			7.2	
1,00	Link Offset(m)		0.0			0.0			0.0			0.0	
Color Colo	Crosswalk Width(m)		4.8			4.8			4.8			4.8	
1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00	Two way Left Turn Lane												
(m) 25 15 25	Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
The color of the	Turning Speed (k/h)	22		15	22		15	22		15	22		15
Color Colo	Number of Detectors	-	5		-	2		-	5		-	2	
m) 2.0 10.0 2.0 10.0 2.0 10.0 2.0 10.0 2.0 10.0 m)	Detector Template	Left	Thr		Left	Thru		Left	Thru		Left	Thru	
m) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
(m) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
2.0 0.6 2.0 0.6 2.0 0.6 2.0 3	Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
(s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Detector 1 Size(m)	7.0	0.0		7.0	0.0		7.0	0.0		7.0	0.0	
(s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Defector 1 Type	ž Š	Ę Ċ		Ę Ċ	ž Š		Ę Ċ	Ę Ċ		ž Š	ξ S	
(s) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.	Defector 1 Cylind (c)		c		c	C		0	0		C	c	
(s) Perm NA pm+pt NA Perm NA Perm	Defector 1 Caterra (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
(m) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
(s) Perm NA pm+pt NA Perm NA Perm 1 6 8 8 4 4 4 6 6 6 6 6 6 6 6 6 6 6 6 6 6	Detector 1 Deray (s)	2.5	0.0		0.0	0.0		9.0	0.0		0.0	0.0	
(s) Perm NA pm+pt NA Perm NA Perm CH-EX CI-EX CI	Defector 2 Sizo(m)		t 9			t 9			t (9			t (9	
(s) Perm NA pm+pt NA Perm NA Perm NA 2 6 8 8 4 4	Defector 2 Size(III)		2.5			25 2			2.5			5 2	
(s) 0.0 0.0 0.0 0.0 0.0 NA pm+pt NA Perm NA Perm 2 2 1 6 8 4 4	Detector 2 Type		<u> </u>			1 1 1			<u> </u>			ŽĮ.	
Perm NA pm+pt NA Perm NA Perm 2 1 6 8 8 4	Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
2 2 1 6 8	Turn Type	Perm	Ą		pm+pt	Ą		Perm	Ą		Perm	Ą	
α α	Protected Phases		2		_	9			∞			4	
0	Permitted Phases	2			9			∞			4		

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Lanes, Volumes, Timings 2: Mt. Pleasant Street/Plaza & Colborne Street West

Base Year: AM Peak Hour

Base Year: AM Peak Hour

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	2	2		-	9		∞	∞		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		0.9	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	27.0	27.0		10.0	27.0		25.0	25.0		25.0	25.0	
Total Split (s)	48.0	48.0		10.0	28.0		22.0	22.0		22.0	22.0	
Total Split (%)	%0.09	%0.09		12.5%	72.5%		27.5%	27.5%		27.5%	27.5%	
Maximum Green (s)	45.0	45.0		0.9	52.0		16.0	16.0		16.0	16.0	
Yellow Time (s)	4.0	4.0		3.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	5.0		1.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	
Total Lost Time (s)		0.9			0.9		0.9	0.9			0.9	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	14.0	14.0			14.0		12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	0	0			0		0	0		0	0	
Act Effct Green (s)		59.1			59.1		8.9	8.9			8.9	
Actuated g/C Ratio		0.74			0.74		0.11	0.11			0.11	
v/c Ratio		0.30			0.38		0.09	0.67			0.09	
Control Delay		4.2			2.5		31.2	13.2			24.0	
Queue Delay		0.0			0.0		0.0	0.0			0.0	
Total Delay		4.2			2.5		31.2	13.2			24.0	
FOS		V			∢		O	ш			ပ	
Approach Delay		4.2			2.5			14.0			24.0	
Approach LOS		V			A			В			ပ	
Intersection Summary												
	Other											
Cycle Length: 80												
Actuated Cycle Length: 80												
Offset: 35 (44%), Referenced to phase 2:EBTL, Start of Green	d to phase	2:EBTL, §	start of Gr	een								
Natural Cycle: 65												
Control Type: Actuated-Coordinated	dinated											
Maximum v/c Ratio: 0.67												
Intersection Signal Delay: 5.4	4			'n	Intersection LOS: A	LOS: A						
Intersection Capacity Utilization 65.2%	ion 65.2%			⊴	CU Level of Service C	Service	ပ					
Analysis Period (min) 15												

Splits and Phases: 2: Mt. Pleasant Street/Plaza & Colborne Street West



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Queues 2: Mt. Pleasant Street/Plaza & Colborne Street West

Base Year: AM Peak Hour

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Lane Group	EBT	WBT	NBL	NBT	SBT	
Lane Group Flow (vph)	732	601	13	271	8	
v/c Ratio	0:30	0.38	0.09	29.0	60:0	
Control Delay	4.2	2.5	31.2	13.2	24.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	4.2	2.5	31.2	13.2	24.0	
Queue Length 50th (m)	14.2	0.3	2.0	0.5	0.5	
Queue Length 95th (m)	30.8	6.0	9.9	20.5	4.1	
Internal Link Dist (m)	253.2	385.8		865.7	86.5	
Turn Bay Length (m)						
Base Capacity (vph)	2438	1602	261	518	150	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0:30	0.38	0.05	0.52	0.05	
Intersection Summary						

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HCM Signalized Intersection Capacity Analysis 2: Mt. Pleasant Street/Plaza & Colborne Street West

Base Year: AM Peak Hour

	4	†	<i>></i>	-	Į.	4	•	←	•	۶	→	*
Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		et b			₩ ₩		F	2			4	
Traffic Volume (vph)	2	664	7	149	404	0	12	က	247	2	Ψ.	5
Future Volume (vph)	2	664	7	149	404	0	12	က	247	2	-	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		0.9			0.9		0.9	0.9			0.9	
Lane Util. Factor		0.95			0.95		1.00	1.00			1.00	
Frpb, ped/bikes		1.00			1.00		1.00	0.98			0.99	
Flpb, ped/bikes		1.00			1.00		1.00	1.00			1.00	
F		1.00			1.00		1.00	0.85			0.92	
Flt Protected		1.00			0.99		0.95	1.00			0.99	
Satd. Flow (prot)		3461			3382		1652	1518			1702	
Flt Permitted		0.95			0.63		0.75	1.00			0.43	
Satd. Flow (perm)		3303			2171		1308	1518			733	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	722	∞	162	439	0	13	က	268	2	-	2
RTOR Reduction (vph)	0	-	0	0	0	0	0	238	0	0	4	0
Lane Group Flow (vph)	0	731	0	0	601	0	13	33	0	0	4	0
Confl. Peds. (#/hr)	4		9	9		4	2		က	က		2
Heavy Vehicles (%)	%0	4%	14%	3%	%9	%0	%6	%0	2%	%0	%0	%0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		-	9			∞			4	
Permitted Phases	2			9			∞			4		
Actuated Green, G (s)		59.1			59.1		8.9	8.9			8.9	
Effective Green, g (s)		59.1			59.1		8.9	8.9			8.9	
Actuated g/C Ratio		0.74			0.74		0.11	0.11			0.11	
Clearance Time (s)		0.9			0.9		0.9	0.9			0.9	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		2440			1603		145	168			81	
v/s Ratio Prot								c0.02				
v/s Ratio Perm		0.22			c0.28		0.01				0.00	
v/c Ratio		0.30			0.37		0.09	0.20			0.04	
Uniform Delay, d1		3.5			3.8		31.9	32.3			31.8	
Progression Factor		00.1			0.45		00.1	00.1			00.1	
Incremental Delay, d2		0.3			0.1		0.3	9.0			7.0	
Delay (s)		3.8			— —		32.2	32.9			32.0	
Level of Service		∢			∢		ပ	ပ			ပ	
Approach Delay (s)		3.8			1.8			32.8			32.0	
Approach LOS		∢			∢			ပ			O	
Intersection Summary												
HCM 2000 Control Delay			8.3	Ĭ	HCM 2000 Level of Service	Level of S	service		A			
HCM 2000 Volume to Capacity ratio	ity ratio		0.37									
Actuated Cycle Length (s)			80.0	ઝ	Sum of lost time (s)	time (s)			16.0			
Intersection Capacity Utilization	ion		65.2%	೨	U Level o	f Service			ပ			
Analysis Period (min)			15									
Critical Lane Group												

c Critical Lane Group

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Lanes, Volumes, Timings 3: Gilkison Street & Colborne Street West

nors	WBL 81 81 1900 0.95 0	44 599 44 599 44 11900 1	NBL 9 9	NBT ♣¢	NBR 182	SBL 66	SBT	SBR
3 931 2 3 931 2 3 931 2 3 931 2 3 931 2 2 1900 1900 1900 1900 1900 1900 1900	81 81 1900 0.95 0			(‡ °	182	99	4 ^	•
3 931 2 3 931 2 1900 1900 1900 0 0.95 0.95 0.95 0.95 0.95 0.95 0 0.953 0 0.95 0 409.8 29.5 15 0 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	0.95 0.95 0.95			•	182	99	^	c
3 931 2 2 1 300 1	0.95 0.95 0 0			ဘ			1	3
1900 1900 1900 1900 1900 1900 1900 1900	0.95			တ	182	99	5	က
0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95	0.09			1900	1900	1900	1900	1900
1,00 1,00 1,00 1,00 1,003 1,00	0 0		1:00	1:00	1.00	1.00	1.00	1.00
6) 3468 0 0 0.953 0 0 0.953 0 0 0.953 0 0 0.953 0 0 0.953 0 0 0.92 0.92 0.92 0.92 0.92 0.92 0.92	0 0			0.98			1.00	
0 3468 0 0.953 0 0.953 0 0.953 0 0.953 0 0.952 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.9	0 0			0.877			0.995	
0 3468 0 0 0.953 0 0.953 0 0.953 0 0.953 0 0 0.953 0 0 0.95 0 0.9	0 0			0.998			0.955	
0 9953 0 0 9953 0 0 9305 0 0 9305 0 0 9305 0 0 92 0 92 0 92 0 92 0 92 0 92 0 92	0		0	1400	0	0	1560	0
50 Yes 50	0	0.694		0.983			0.408	
\$ 100 0.00 0.00 0.00 0.00 0.00 0.00 0.00		2357 0	0	1379	0	0	664	0
50 409.8 29.5 16 0.92 0% 4% 50% 4% 50% 4% 50% 4% 50% 1017 0 1017 0 0 1017 0 0 101 0 0 0 0 0 0 0 0		Yes			Yes			Yes
409.8 29.8 16 29.8 16 0.82 0.82 0.92 0.92 0.92 0.94 50% 0.00 0.00 0.00 0.00 0.00 0.00 0.00		16		198			2	
409.8 29.5 16 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92		20		20			20	
16 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92		139.0		106.4			116.6	
16 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92		10.0		7.7			8.4	
6) 6) 7) 7) 8) 8) 1012 7 8) 1012 7 8) 1017 8 1017 10 1017 1017 1017 1017 1017	5 15	16	4		7	7		4
0% 4% 50% 3 1012 2 3 1012 2 3 1013 2 3 1014 0 0 1017 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	12 0.92	0.92 0.92	0.92	0.92	0.92	0.92	0.92	0.92
1017 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	% 2%	5% 5%	%0	13%	2%	3%	20%	%0
3 1012 2 5 0 1017 0 2 100 1017 0 2 0 00 00 2 0 0.6 2 0 0.6 2 0 0.6 2 0 0.6 2 0 0.6 2 0 0.6 2 0 0.6 2 0 0.6 2 0 0.6 2 0 0.6 2 0 0.6 2 0 0.6 2 0 0.6 2 0 0.6 2 0 0.6 3 4 48				0			0	
6) Circum No	2 88	651 48	10	10	198	72	2	က
o 1017 0 0 1017 0 0 1017 0 0 1017 0 0 1017 0 0 100 10								
no			0	218	0	0	11	0
Left Left Right 0.0 0.0 0.0 0.0 4.8 4.8 4.8 4.8 4.8 4.8 4.8 4.8 4.8 4.8				2	8	8	8	8
0.0 0.0 4.8 4.8 1.00	ht Left	Left Right	Left	Left	Right	Left	Left	Right
0.0 4.8 1.00 1.00 1.00 25 15 1 2 15 20 10.0 0.0 0.0 0.0 0.0		0.0		0.0			0.0	
1.00 1.00 1.00 2.0 1.00 0.00 0.00 0.00 0		0.0		0.0			0.0	
100 1.00 1.00 1.00 2.5 15 15 15 15 15 15 15 15 15 15 15 15 15		4.8		4.8			4.8	
100 100 100 100 100 100 100 100 100 100								
25 15 16 17 17 17 17 17 17 17 17 17 17 17 17 17	1.00	1.00 1.00	1.00	1.14	1.00	1.00	1.14	1.00
1 2 2 10 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		15	22		15	52		15
Left Thru 2.0 10.0 0.0 0.0 0.0 0.0 CI+Ex CI+Ex 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	_	2	_	2		_	2	
20 100 00 0.0 20 0.6 CHEX CHEX 00 0.0 00 0.0 94	Left	Thru	Left	Thru		Left	Thru	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	2.0	10.0	2.0	10.0		2.0	10.0	
0.0 0.0 0.6 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0	0.0	0.0	0.0		0.0	0.0	
20 0.6 ChEx ChEx 0.0 0.0 0.0 0.0 9.4 9.4	0.0	0.0	0.0	0.0		0.0	0.0	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	2.0	9.0	2.0	9.0		2.0	9.0	
0.0	CI+EX (CI+Ex	CI+EX	CI+EX		CI+EX	CI+EX	
0.0								
0.0	0.0	0.0	0.0	0.0		0.0	0.0	
0.0	0.0	0.0	0.0	0.0		0.0	0.0	
	0.0	0.0	0.0	0.0		0.0	0.0	
(L		9.4		9.4			9.4	
		9.0		9.0			9.0	
Detector 2 Type CI+Ex		Ol+Ex		CI+EX			CI+EX	
Detector 2 Channel								
Detector 2 Extend (s) 0.0		0.0		0.0			0.0	
	pm+pt	¥	Perm	NA		Perm	¥	
Phases 2	-	9		œ			4	

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Lanes, Volumes, Timings 3: Gilkison Street & Colborne Street West

Base Year: AM Peak Hour

Base Year: AM Peak Hour

	1	†	~	>	ļ	4	•	←	•	۶	→	•
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2			9			∞			4		
Detector Phase	2	7		~	9		œ	œ		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		0.9	10.0			7.0		7.0	7.0	
Minimum Split (s)	31.0	31.0		10.0	31.0			33.0		33.0	33.0	
Total Split (s)	46.0	46.0		10.0	26.0			24.0		24.0	24.0	
Total Split (%)	27.5%	24.5%		12.5%	%0.07		30.0%	30.0%		30.0%	30.0%	
Maximum Green (s)	40.0	40.0		0.9	20.0			18.0		18.0	18.0	
Yellow Time (s)	4.0	4.0		3.0	4.0			4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		1.0	5.0			2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		0.9			0.9			0.9			0.9	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		Max	C-Max		None	None		None	None	
Walk Time (s)	10.0	10.0			10.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	15.0	15.0			15.0		17.0	17.0		17.0	17.0	
Pedestrian Calls (#/hr)	0	0			0		0	0		0	0	
Act Effct Green (s)		40.0			55.4			12.6			12.6	
Actuated g/C Ratio		0.50			69.0			0.16			0.16	
v/c Ratio		0.62			0.45			0.57			0.73	
Control Delay		21.1			0.9			12.1			66.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		21.1			0.9			12.1			66.2	
FOS		O			⋖			ш			ш	
Approach Delay		21.1			0.9			12.1			66.2	
Approach LOS		ပ			¥			ш			ш	
Intersection Summary												
Area Type:	Other											
Cycle Length: 80												

Intersection LOS: B ICU Level of Service E Cycle Length: 80
Actuated Cycle Length. 80
Actuated Cycle Length. 80
Actuated Cycle: 75
Control Type: Actuated-Coordinated
Control Type: Actuated-Coordinated
Intersection Signal Delay, 16.2
Intersection Signal Delay, 16.2
Intersection Capacity Utilization 89.5%
Analysis Period (min) 15

Splits and Phases: 3: Gilkison Street & Colborne Street West



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Queues 3: Gilkison Street & Colborne Street West

Base Year: AM Peak Hour

	†	ļ	←	→	
Lane Group	EBT	WBT	NBT	SBT	
Lane Group Flow (vph)	1017	787	218	77	
v/c Ratio	0.62	0.45	0.57	0.73	
Control Delay	21.1	0.9	12.1	66.2	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	21.1	0.9	12.1	66.2	
Queue Length 50th (m)	74.7	20.2	2.8	11.6	
Queue Length 95th (m)	91.3	35.5	20.6	#27.3	
Internal Link Dist (m)	385.8	115.0	82.4	97.6	
Turn Bay Length (m)					
Base Capacity (vph)	1652	1757	463	150	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.62	0.45	0.47	0.51	

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

HCM Signalized Intersection Capacity Analysis 3: Gilkison Street & Colborne Street West

Base Year: AM Peak Hour

FB1		1	†	<u> </u>	/	Ļ	4	•	—	4	۶	→	*
1900 1900	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
1900 1900	Lane Configurations		f			₩			÷			4	
1900 1900	Traffic Volume (vph)	က	931	2	81	599	44	6	တ	182	99	5	S
1900 1900	Future Volume (vph)	e 6	931	2	84	299	44	6	o 6	182	99	2	3
100 100	Ideal Flow (vpnpl)	0061	0061	0061	0061	0061	1900	0061	0081	0061	0061	0061	0081
1.00	I ane I Iffi Factor		0.0			0.0			100			0.0	
1,00	Frpb, ped/bikes		1.00			1.00			0.98			1.00	
1,00 0.99 0.88 0.99 0.08 0.99 0.09 0.09 0.09 0.09 0.09 0.09 0.00 0.99 0.00 0.96 0.09 0.00 0.96 0.09	Flpb, ped/bikes		1.00			1.00			1.00			1.00	
1,00 0.99 1,00 0.99 1,00	T.		1.00			0.99			0.88			0.99	
1564 1564 1564 1564 1669	Flt Protected		1.00			0.99			1.00			96.0	
10.055	Satd. Flow (prot)		3467			3377			1400			1554	
Name	Flt Permitted		0.95			69.0			0.98			0.41	
F 0.92 0.	Satd. Flow (perm)		3305			2357			1380			664	
1	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
10	Adj. Flow (vph)	က	1012	2	88	651	48	10	10	198	72	2	က
h) 0 1017 0 0 782 0 0 51 0 0 75 16 4% 50% 5% 5% 0% 13% 5% 3% 50% 0% 13% 5% 0% 13% 5% 5% 0% 1 2	RTOR Reduction (vph)	0	0	0	0	2	0	0	167	0	0	2	0
16 15 15 16 4 7 <td>Lane Group Flow (vph)</td> <td>0</td> <td>1017</td> <td>0</td> <td>0</td> <td>782</td> <td>0</td> <td>0</td> <td>21</td> <td>0</td> <td>0</td> <td>75</td> <td>0</td>	Lane Group Flow (vph)	0	1017	0	0	782	0	0	21	0	0	75	0
0% 4% 50% 5% 5% 7% 5%	Confl. Peds. (#/hr)	16		15	15		16	4		7	7		4
Perm NA	Heavy Vehicles (%)	%0	4%	20%	2%	2%	2%	%0	13%	2%	3%	20%	%0
Perm NA pm+pt NA Perm NA Perm 2 1 6 8 4 2 6 8 4 40.0 55.4 12.6 4 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 7 6.0 6.0 6.0 6.0 8 7.0 6.0 6.0 6.0 8 7.0 7 6.0 6.0 8 7.0 7 6.0 6.0 8 7.0 7 7	Parking (#/hr)								0			0	
2 1 6 8 8 4 1 40.0 6 55.4 126 40.0 55.4 126 40.0 55.4 12.6 5.0 6.0 6.0 5.0 6.0 6.0 5.0 6.0 6.0 5.0 7 777 217 1.32 0.04 0.04 0.62 0.44 0.24 1.32 0.94 0.04 0.62 0.44 0.24 0.62 0.44 0.24 0.62 0.44 0.24 0.62 0.44 0.24 0.62 0.44 0.24 0.62 0.44 0.24 0.62 0.44 0.24 0.62 0.44 0.24 0.63 0.94 0.04 0.64 0.24 0.65 0.94 0.04 0.67 0.94 0.04 0.69 0.94 0.04 0.69 0.94 0.04 0.60 0.94 0.04 0.60 0.94 0.04 0.60 0.94 0.04 0.61 0.94 0.04 0.62 0.94 0.04 0.63 0.94 0.04 0.64 0.94 0.04 0.65 0.94 0.04 0.66 0.94 0.94 0.67 0.94 0.04 0.69 0.94 0.04 0.69 0.94 0.04 0.60 0.94 0.94 0.60 0.94 0.94 0.60 0.94 0.94 0.60 0.94 0.94 0.60 0.94 0.94 0.60 0.94 0.94 0.60 0.94 0.94 0.60 0.94 0.94 0.60 0.94 0.94 0.60 0.94 0.94 0.60 0.94 0.94 0.60 0	Tum Type	Perm	A		pm+pt	NA		Perm	Ν		Perm	N	
2	Protected Phases		2		_	9			∞			4	
100 100 126 127	Permitted Phases	2			9			∞			4		
126 120 126 120 126 120 126 120	Actuated Green, G (s)		40.0			55.4			12.6			12.6	
0.50	Effective Green, g (s)		40.0			55.4			12.6			12.6	
6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	Actuated g/C Ratio		0.50			69.0			0.16			0.16	
3.0 3.0 3.0 1652	Clearance Time (s)		0.9			0.9			0.9			0.9	
1652 1777 21	Vehicle Extension (s)		3.0			3.0			3.0			3.0	
c0.31 c0.06 c0.31 c0.04 c0 d62 0.44 0.24 0.62 0.44 0.24 14.4 5.4 29.5 1.32 0.94 1.00 20.7 5.8 30.1 C A A C C A A C A C A C A C A C A C A C	Lane Grp Cap (vph)		1652			1777			217			104	
2031 0.24 0.04 0.04 0.05 0.05 0.04 0.05 0.04 0.05 0.04 0.026 0.024	v/s Ratio Prot					90.00							
0.62 0.44 0.24 14.4 5.4 29.5 14.4 5.4 29.5 1.5 0.94 1.00 1.6 0.7 0.6 20.7 5.8 30.1 C A C C A A C C C A A C C A B Capacity ratio 0.61 Dilization 89.5% (DULevel of Service E) 15 0.01 evel of Service E 15 0.01 evel of Service E	v/s Ratio Perm		c0.31			0.24			0.04			c0.11	
144 554 295 132 0.94 100 2 1.32 0.94 100 2 20.7 0.65 2 20.7 5.8 30.1 2 20.7 5.	v/c Ratio		0.62			0.44			0.24			0.72	
132 0.94 1.00 2 1.6 0.7 0.6 20.7 5.8 30.1 2 20.7 5.8 30.1 2 20.7 A C A C C A C A C C A C A C C A B Capacity ratio 0.61 Display 17.3 HCM 2000 Level of Service B In(s) 80.0 Sum of lost time (s) 16.0 Unitization 89.5% ICD Level of Service E	Uniform Delay, d1		14.4			5.4			29.5			32.0	
20.7 5.8 0.6 0.6 0.7 0.6 0.6 0.7 0.6 0.6 0.7 0.6 0.6 0.7 0.6 0.6 0.7 0.6 0.6 0.7 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6	Progression Factor		1.32			0.94			1.00			1.00	
20.7 5.8 30.1 C A C C A 30.1 C A 30.1 C A C C A 30.1 C A C C C A S 30.1 C A C C C C C C C A B 30.1 C A C C C C C C C C C A B 30.1 C C C C C C C A B 30.1 C C C C C C C C A B 30.1 C C C C C C C C C C C C C C C C C C C	Incremental Delay, d2		9.1			0.7			9.0			21.9	
C A 30.1 20.7 5.8 30.1 C A A C A Capacity ratio 0.61 Ullization 89.5% (CULevel of Service E) 1.5	Delay (s)		20.7			2.8			30.1			24.0	
20.7 5.8 30.1 C A C A C A C A C A C In this state of Service B To service B	Level of Service		ပ			V			ပ			0	
C A C C A C A C A C A C A C A C A C A C	Approach Delay (s)		20.7			2.8			30.1			24.0	
17.3 HCM 2000 Level of Service 17.3 HCM 2000 Level of Service 16.1 16.5 16.1 16.5	Approach LOS		O			⋖			O			٥	
also 17.3 HCM 2000 Level of Service Capacity ratio 0.61 Sum of lost time (s) h (s) 80.0 Sum of lost time (s) Unitzation 89.5% ICU Level of Service 15 15	Intersection Summary												
Capacity ratio 0.61 In.(s) 8.00 Sum of lost time (s) Utilization 89.5% ICU Level of Service 15	HCM 2000 Control Delay			17.3	Ĭ	CM 2000	Level of S	Service		<u>ш</u>			
h (s) 80.0 Sum of lost time (s) Utilization 89.5% ICU Level of Service 15	HCM 2000 Volume to Capac	ity ratio		0.61									
Utilization 89.5% 15	Actuated Cycle Length (s)			80.0	S	ım of lost	time (s)			16.0			
	Intersection Capacity Utilizat	ion		89.5%	೦	U Level o	of Service			ш			
	Analysis Period (min)			15									

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Lanes, Volumes, Timings 4: Colborne Street West & Ballantyne Drive

Base Year: AM Peak Hour

HCM Unsignalized Intersection Capacity Analysis 4: Colborne Street West & Ballantyne Drive

Base Year: AM Peak Hour

EBT 1177 1177 Free 0% 0.92 1279

	1	†	ţ	4	٠	*	
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		++	₩.				
Traffic Volume (vph)	0	1177	724	120	0	0	
Future Volume (vph)	0	1177	724	120	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	
Fr			0.979				
Fit Protected							
Satd. Flow (prot)	0	3610	3534	0	0	0	
Flt Permitted							
Satd. Flow (perm)	0	3610	3534	0	0	0	
Link Speed (k/h)		20	20		20		
Link Distance (m)		139.0	290.1		218.0		
Travel Time (s)		10.0	20.9		15.7		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Heavy Vehicles (%)	%0	%0	%0	%0	%0	%0	
Adj. Flow (vph)	0	1279	787	130	0	0	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	1279	917	0	0	0	
Enter Blocked Intersection	8	8	2	2	8	No	
Lane Alignment	Left	Left	Left	Right	Left	Right	
Median Width(m)		3.6	3.6		0.0		
Link Offset(m)		0.0	0.0		0.0		
Crosswalk Width(m)		4.8	4.8		4.8		
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (k/h)	52			15	52	15	
Sign Control		Free	Free		Stop		
Intersection Summary							
Area Type: 0	Other						
Control Type: Unsignalized							
Intersection Capacity Utilization 35.9%	ion 35.9%			ಠ	J Level of	ICU Level of Service A	
Analysis Period (min) 15							

																																								A	
CDD	NGO.	c	-	o			0.92	0										458			458	6.9		3.3	100	555														Service	
00	ODE	_	> <	>	Stop	%0	0.92	0									0.79	1492			1094	8.9		3.5	100	167														ICLU Level of Service	5
MADD	NO.	120	021	2			0.92	130																			WB 2	392	0	130	1700	0.23	0.0	0.0						₫	į
TOW	AT.	107	47/	47/	Free	%0	0.92	787						None		290											WB 1	525	0	0	1700	0.31	0.0	0.0		0.0			00	35.9%	15
FOI	3	1177	1111	/	Free	%0	0.92	1279						None		139											EB 2	640	0	0	1700	0.38	0.0	0.0							
0	LDL	_	> c	>			0.92	0										917			917	4.1		2.2	100	752	EB 1	640	0	0	1700	0.38	0.0	0.0		0.0				u	Ę
Maximum	and Configurations	Troffic Volume (vob/h)	Tramic Volume (Ven/h)	Future volume (ven/n)	Sign Control	Grade	Peak Hour Factor	Hourly flow rate (vph)	Pedestrians	Lane Width (m)	Walking Speed (m/s)	Percent Blockage	Right turn flare (veh)	Median type	Median storage veh)	Upstream signal (m)	pX, platoon unblocked	vC, conflicting volume	vC1, stage 1 conf vol	vC2, stage 2 conf vol	vCu, unblocked vol	tC, single (s)	tC, 2 stage (s)	tF (s)	p0 queue free %	cM capacity (veh/h)	Direction, Lane #	Volume Total	Volume Left	Volume Right	cSH	Volume to Capacity	Queue Length 95th (m)	Control Delay (s)	Lane LOS	Approach Delay (s)	Approach LOS	Intersection Summary	Average Delay	Intersection Capacity Utilization	Analysis Period (min)

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190487 - Brantford Bridges EA PTSL

Lanes, Volumes, Timings 5: Icomm Drive & Colborne Street West

Main Condition Main
190 190
869 261 47 0 0 0 46 266 22 118 280 20
869 261 47 0 0 46 286 22 118 280 2000 1900 <
1900 1900
250 250 250 250 250 250 250 250 250 250
250 0.970 0.098 0.090 0.095 0.090 0.
100 100
1,000 0.99 1.00 1.00 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95
10.99 1.00 0.38
1569 0.950 0.950 0.960
1579 2225 4455 0 0 1612 3406 1615 0 3226 1419 0 0 0 688 3406 1582 0 0 3751 1419 0 0 0 688 3406 1582 0 2466 1419 0 0 0 688 3406 1582 0 2466 1419 0 0 0 688 3406 1582 0 2466 1419 0 0 0 688 3406 1582 0 2466 1419 0 0 0 0 0 0 0 0 0
1579 3225 1455 0 0 0 1612 3406 1615 0 3266 1 1569 3212 1419 0 0 0 688 3406 1582 0 2486 1 1569 3212 1419 0 0 0 688 3406 1582 0 2486 1 290.1
1569 3212 149 0 0 688 3406 1582 0 2466 14 14 14 14 15 14 14 15 14 14
1569 3212 1419 0 0 0 688 3406 1582 0 2486 1 50 50 50 50 50 50 50
Yes
Secondary Seco
Secondary
290.1 441.2 487.2 182.2 182.2 183.1 431.1 431.2 4 10.9 1 13.1 13.1 13.1 13.1 13.1 13.1 13.1
13.1 13.1
9 17 17 17 17 18 9 10 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9
0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92
14% 4% 11% 0% 0% 12% 6% 0% 11% 8% 545 284 51 0 0 50 311 24 128 394 56% 56% 10% 10% 10% 10% 10% 10% 172 757 51 0 0 50 311 24 128 394 180 180 180 180 180 180 180 180 190 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100
50% 50% 50% 51
50% 50%
17 17 17 17 17 17 17 17
Left Right Left Right Left Right Left Right Left Left Right Left Left Left Left Right Left Left Right Left Left Left Right Left Left Left Left Right Right Left Right Right Left Right Right Left Right
Left Left Right Right Left Right Left Right Right Left Right Left Right Right Left Right Rig
100
0.0 0.0 0.0 1.00 1.00 1.00 1.00 1.00 1.
1,00
1.00
1.00 1.00
25 15 25 15 25 15 25 15 25 15 26 100 20 20 100 20 100 20 100 20 100 20 100 20 <
Left Thru Right Left Thru Right Left Thru Sight Left Thru Right Left Thru Right Left Thru Sight Left Thru Right Left Thru Sight Left Thru Right Left Thru Right Left Thru Right Left Thru Sight Left Thru Right Left Thru Sight
Left Into Agnt Left I
20 100 2.0 2.0 2.0 10.0 2.0 2.0 10.0 2.0 2.0 10.0 2.0 2.0 10.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0
00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00
20 0.6 2.0 2.0 2.0 0.6 2.0 2.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
C1+EX C1+E
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
9.4 9.4 0.6 0.6 CI+Ex CI+Ex CI
0.6 0.6 CI+EX CI+EX CI 0.0 0.0 0.0 0.0
CI+Ex CI+Ex 0.0
0.0
0.0

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Lanes, Volumes, Timings 5: Icomm Drive & Colborne Street West

Base Year: AM Peak Hour

Lane Group Turn Type Protected Phases Permitted Phases Detector Phase Switch Phase Minimum Initial (s) Minimum Spitt (s) Total Spitt (%)	→ BB	†	1	١	ţ	*	,	4		_	-	
	EBL		•	•		/	•	—	•	*	→	*
	Dorm	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
	<u></u>	NA	Perm				pm+pt	NA	Perm	pm+pt	ΑN	Free
		4					2	2		-	9	
	4		4				2		2	9		Free
	4	4	4				2	2	2	~	9	
	7.0	7.0	7.0				7.0	10.0	10.0	7.0	10.0	
	38.0	38.0	38.0				11.0	31.0	31.0	11.0	31.0	
	39.0	39.0	39.0				11.0	30.0	30.0		30.0	
	48.8%	48.8%	48.8%				13.8%	37.5%	37.5%		37.5%	
	33.0	33.0	33.0				7.0	24.0	24.0		24.0	
	4.0	4.0	4.0				3.0		4.0		4.0	
	2.0	2.0	2.0				1.0		2.0		2.0	
Lost Time Adjust (s)	0.0	0.0	0.0				0.0	0.0	0.0		0.0	
Total Lost Time (s)	0.9	0.9	0.9				4.0	0.9	0.9		0.9	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0				3.0	3.0	3.0	3.0	3.0	
Recall Mode	Max	Max	Max				None	C-Max	C-Max	None	C-Max	
Walk Time (s)	2.0	7.0	7.0					7.0	7.0		7.0	
Flash Dont Walk (s)	25.0	25.0	25.0					18.0	18.0		18.0	
Pedestrian Calls (#/hr)	0	0	0					0	0		0	
Act Effct Green (s)	33.0	33.0	33.0				37.0	35.0	35.0		28.4	80.0
Actuated g/C Ratio	0.41	0.41	0.41				0.46	0.44	0.44		0.36	1.00
v/c Ratio	0.73	0.57	0.08				0.13	0.21	0.03		0.49	0.56
Control Delay	28.7	22.8	4.6				10.6	12.7	1.0		23.9	1.5
Queue Delay	0.0	0.0	0.0				0.0	0.0	0.0		0.0	0.0
Total Delay	28.7	22.8	4.6				10.6	12.7	1.0		23.9	1.5
ros	O	O	⋖				œ	Ω	⋖		O	⋖
Approach Delay		24.3						11.7			8.9	
Approach LOS		O						В			¥	
Intersection Summary												

Area Type:
Cycle Length: 80
Actuated Cycle Length: 80
Actuated Cycle Length: 80
Coffees (67 (5%), Referenced to phase 2.NBTL and 6:SBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/s Ratio: 0.73
Intersection Signal Delay: 15.9
Intersection Capacity Utilization 87.4%
Analysis Period (min) 15

Intersection LOS: B ICU Level of Service E

ď 5: Icomm Drive & Colborne Street West 00 SO Splits and Phases:

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Queues 5: Icomm Drive & Colborne Street West

Base Year: AM Peak Hour

867 0.56 1.5 0.0 1.5 0.0 0.0

A32 0.49 23.9 0.0 23.9 30.5 45.7

24 0.03 1.0 0.0 1.0 0.2 m0.9

311 0.21 12.7 0.0 12.7 22.9 25.1 463.2

50 0.13 10.6 0.0 10.6 5.6 9.8

51 0.08 4.6 0.0 4.6 0.4 m2.2

757 0.57 22.8 0.0 22.8 41.6 62.4 266.1

472 0.73 28.7 0.0 28.7 52.3 84.7

1545 0 0 0 0 0.56

882 0 0 0 0.49

215.0 745 0 0 0 0

1490

115.0 399

5.0

1324

200.0

Lane Group

Lane Group Flow (vph)

We Ratio
Control Delay
Queue Delay
Total Delay
Queue Length 50th (m)
Tum Bay Length (m)
Inmend Link Dist (m)
Tum Bay Length (m)
Slarvation Cap Reducth
Silnback Cap Reducth
Soliback Cap Reducth
Soliback Cap Reducth
Storage Cap Reducth
Reduced vic Ratio

0 0 0.73

0.21

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

Base Year: AM Peak Hour

HCM Signalized Intersection Capacity Analysis 5: Icomm Drive & Colborne Street West

Sep	NBT	118 118 118 128 128 128 128 128 128 128
No.	286 286 286 1900 6.0 1.00 1.00 1.00 3406 3406 3406 3406 3406 0.92 0.92	118 118 1900 118 128 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
869 261 47 0 0 0 46 889 261 47 0 0 0 0 46 1800 1900 1900 1900 1900 1900 1900 0.991 0.910 0.98 1.00 0.98 1.00 0.085 1.00 0.095 1.00 0	286 1900 6.0 6.0 1.00 1.00 1.00 1.00 3406 1.00 3406 0.92 3410	118 11800 1200 1200 1200 1200 1200 1200
869 261 47	286 1900 6.0 6.0 0.95 1.00 1.00 3406 1.00 3406 0.92 0.92	118 1000 10.92 128 10.92 118 118 6 10 6 2 6 2 6 2 6 2 6 2 7 3
1900 1900	1900 6.0 6.0 1.00 1.00 3406 1.00 3406 3406 3406 3406 3406 3406	1900 1128 2.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
6.0 6.0 6.0 4.0	6.0 0.95 1.00 1.00 1.00 3406 1.00 3406 1.00 3406 1.00 3406 1.00	0.92 2.00 0.92 0.00 0.00 0.00 0.00 0.00
100 100	0.95 1.00 1.00 1.00 3406 1.00 3406 0.92 0.92	0.92 2.2 2.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
1.00 1.00 0.98 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	1.00 1.00 1.00 3406 3406 1.00 3406 0.92 311	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
100 100	1.00 1.00 3406 1.00 3406 0.92 311	128 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
100 100 0.85 100 100 100 100 100 100 100 100 100 10	1.00 1.00 3406 1.00 3406 0.92 311	0.92 22 22 22 22 22 24 24 24 24 24 24 24 24
1956 3211 1419 1609 1609 310 1609 3211 1419 1609 3211 1419 1609 3211 1419 1609 3211 1419 1609 3211 1419 1609 3211 1419 1609 3211 1419 1609 3211 1419 1609 3211 1419 1609 3211 1419 1609 3211 1419 1	1.00 3406 1.00 3406 0.92 311	0.92 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
1569 3211 1419 1609 3	3406 1.00 3406 0.92 311	0.92 0 128 0 0 0 0 0 11% pm+pt
1955 0.97 1.00 0.41 1 1969 221 1419 0.92 0.92 0.92 0.92 0.92 1969 221 0.92 0.92 0.92 0.92 0.92 0.92 0.92 1969 221 0.92 0.92 0.92 0.92 0.92 0.92 0.92 1969 221 0.92 0.92 0.92 0.92 0.92 0.92 0.92 1970 222 0.92 0.92 0.92 0.92 0.92 0.92 0.92	1.00 3406 0.92 311	0.92 0.92 0.92 0.94 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92
1569 3211 1419 691 3 691 3 692 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.	3406 0.92 311	0.092 0 128 0 0 0 0 0 0 0 11% pm+pt 1 6
F 0.92 0.9	0.92 311 0	0.92 C 128 0 0 0 0 0 111% pm+pt 6 5
h) 945 284 51 0 0 0 50 h) 92	311	128 0 0 0 111% 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
h) 472 757 21 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
hh) 472 757 21 0 0 0 50 9 17 17 0 9 10 9 48 48 11% 0% 0% 0% 12% 1 4 4 4 4 1 4 5 1 330 330 330 330 350 350 350 3 1 330 330 330 330 350 350 3 1 330 330 330 330 350 350 3 1 30 30 30 30 30 30 30 30 30 1 30 30 30 30 30 30 30 30 1 40 64 04 04 001 001 001 001 001 001 001 001		0 9 111% pm+pt 6 1
9 17 17 9 10 9 4% 11% 0% 0% 12% 1 4 4 4 5 1 330 330 330 350 350 3 1 330 330 330 350 350 3 1 041 041 041 041 044 044 0 1 041 041 041 044 044 0 1 041 041 041 044 0 1 041 041 041 041 044 0 1 050 050 050 050 001 0 1 050 050 050 050 0 1 050 050 050 0 1 050 050 050 0 1 0	311	0 111% 1 6 6 2 2
4% 4% 4% 11% 0% 0% 0% 12% Perm NA Perm pm+pt 2 2 3		11% pm+pt 1 6 6
Perm NA Perm pm+pt Perm NA Perm Perm Print Perm	%9	pm+pt 1 6 2 2 2 0
4 4 4 5 5 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6	pt NA Perm	- 9
33 33 33 33 35		ဖ
8) 330 330 350 350 930 330 330 350 350 930 330 330 350 041 041 041 041 044 60 60 60 60 40 647 1324 585 350 071 024 0.01 0.05 0.73 0.24 0.01 0.05 0.73 0.54 0.01 0.05 2 58 15 0.14 0.05 C C E 0.0		
330 330 330 350 350 350 360 360 601 601 601 601 601 601 601 601 601 6	35.0	
0.41 0.41 0.41 0.44 0.44 0.44 0.44 0.44	35.0	
60 60 60 40 10 30 3.0 3.0 10 3.0 3.0 10 3.0 3.0 10 3.0 3.0 10 5.0 5.0 10	0.44	
2 58 15 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.		
647 1324 585 350 1 6030 024 0.01 0.01 0.73 0.57 0.04 0.14 19.7 18.1 14.0 0.14 1.11 1.16 4.92 0.82 2.7.7 22.4 69.1 11.1 C. C. E. 0.0 C. C. E. 0.0	3.0	
2030 0.24 0.01 0.05 0.73 0.57 0.04 0.01 0.05 19.7 18.1 14.0 0.14 2 5.8 1.5 0.1 0.82 2 6.8 1.5 0.1 0.2 2 6.0 E 0.0 2 26.2 A A	50 1490 692	92 833
2 5.8 1.5 0.1 0.00 2 5.8 1.5 0.1 0.00 2 5.8 1.5 0.1 0.00 2 5.8 1.5 0.1 0.00 2 5.8 1.5 0.1 0.00 2 5.8 1.5 0.1 0.00 2 5.8 1.5 0.1 0.00 3 5.8 1.5 0.1 0.00	0.09	
2 5.8 1.5 0.04 0.14 1.17 1.16 4.92 0.82 2 5.8 1.5 0.1 0.2 2 7.7 22.4 69.1 11.1 2 7.7 22.4 69.1 11.1 2 7.7 22.4 69.1 11.1 2 7.7 22.4 69.1 11.1 2 8 26.2 A		
19.7 18.1 14.0 13.3 2 5.1 1.16 4.92 0.82 2 7.7 22.4 69.1 11.1 C C E 0.0 B 26.2 A A	0.21	
1.11 1.16 4.92 0.82 2 5.8 1.5 0.1 0.2 2 7.7 22.4 69.1 11.1 C C E 0.0 B C C A A	13.9	
2 58 15 0.1 0.2 27.7 22.4 69.1 11.1 C C E 0.0 B 26.2 A	0.88	
27.7 22.4 69.1 11.1 C C E B 26.2 0.0 C A	0.3	
C C E 0.0 B C C E A A C C C C A A C C C C C A A C C C C	1.1 12.5 12.8	8 22.0
26.2 0.0 C A	В	В
y 	12.4	8.3
4	В	
700		
HOW ZOUD CONTROL DEIAY 18:0 HOW ZOUD LEVEL OI SELVICE		В
pacity ratio 0.74		
	16.0	0:0
Intersection Capacity Utilization 87.4% ICU Level of Service		ш
Analysis Period (min) 15		

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190487 - Brantford Bridges EA PTSL

Lanes, Volumes, Timings 6: Market Street & Icomm Drive

Lane Group	EB	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	\$	¥.	r	₽		r	2			4	
Traffic Volume (vph)	13.	118	190	45	139	54	223	2	45	~	က	4
Future Volume (vph)	13	118	190	45	139	24	223	ις	45	—	က	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	65.0		0.09	125.0		0.0	0:0		0.0	0.0		0.0
Storage Lanes	0 20		-	- 0		>	- 22		>	0 2		0
laper Length (m)	33.0	100	6	700	100	200	0.7	00	60	0.7	200	0
Lane Util. Factor	90.1	0.82	00.0	8.6	0.95	0.95	00.0	00.1	9.1	0.35	00.0	0.95
Feu Dine ractor			0.55	3.	0.978		0.33	0.90			0.99	
Fit Protected	0.950		200	0.950	5		0.950	5			0.994	
Satd. Flow (prot)	1805	3223	1495	1805	3305	0	1736	1514	0	0	3281	0
Fit Permitted	0.640			0.671			0.752				0.937	
Satd. Flow (perm)	1216	3223	1473	1272	3305	0	1359	1514	0	0	3083	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			207		56			49			693	
Link Speed (k/h)		20			20			20			20	
Link Distance (m)		487.2			250.0			115.0			104.0	
Travel Time (s)		35.1			18.0			8.3			7.5	
Confl. Peds. (#/hr)			2	2			∞		20	20		∞
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	%0	12%	%8	%0	8%	%0	4%	%0	2%	%0	%0	%0
Adj. Flow (vph)	14	128	202	49	151	56	242	ω	49	~	က	4
Shared Lane Traffic (%)	:			!		•			•		•	
Lane Group Flow (vph)	4 :	178	707	46)/L	o ;	747	ž :	Э :	۰ :	× :	o :
Enter Blocked Intersection	2	<u>و</u>	2	<u>و</u>	2	2	2	2 .	2	2	2	2
Lane Alignment	E	Left	Right	Left	Let	Right	Left	Lett	Right	Left	Let	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1:00	1.00	1.00	1.00	1:00	1.00	1.00
Turning Speed (k/h)	52	•	15	72	•	15	52	·	12	52	•	15
Number of Detectors	- q	7 7	- 1	- q	7 7		- 4	7.		- q	7 7	
Detector Template	Left	nu o	Kignt	Len	nun 1004		Lett	Du 9		Left	nug V	
Leading Detector (m)	0.2	0.01	0.2	7.0	0.01		7.0	0.01		0.2	0.01	
I railing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	9.0	2.0	2:0	9.0		2:0	9.0		2.0	9.0	
Detector 1 Type	<u>÷</u>	CHEX CHEX CHEX CHEX CHEX CHEX CHEX CHEX	CHEC CHEC	CI+EX	CI+EX		CHEX	CH CH CH CH		Č. C.	CHE CHE CHE CHE CHE CHE CHE CHE CHE CHE	
Detector 1 Channel	c	d	c	d	d		d	c		ć	d	
Defector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		9.0			9.0			9.0			9.0	
Detector 2 Type		CI+EX			CI+Ex			CI+EX			CI+EX	
Detector 2 Channel												

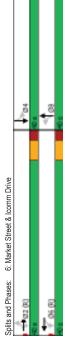
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Lanes, Volumes, Timings 6: Market Street & Icomm Drive

Base Year: AM Peak Hour

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	1	†	<i>></i>	>	Ļ	4	•	←	•	۶	→	*
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			9			∞			4	
Permitted Phases	2		2	9			∞			4		
Detector Phase	2	7	7	9	9		∞	∞		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0		23.0	23.0		23.0	23.0	
Total Split (s)	40.0		40.0	40.0	40.0		40.0	40.0		40.0	40.0	
Total Split (%)	20.0%		20.0%	20.0%	20.0%		%0.09	20.0%		%0.03	%0.09	
Maximum Green (s)	34.0		34.0	34.0	34.0		34.0	34.0		34.0	34.0	
Yellow Time (s)	4.0		4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0		2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	0.9		0.9	0.9	0.9		0.9	0.9			0.9	
Lead//Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	10.0	10.0	10.0	10.0	10.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)	48.2	48.2	48.2	48.2	48.2		19.8	19.8			19.8	
Actuated g/C Ratio	09:0	09:0	0.60	09.0	09:0		0.25	0.25			0.25	
v/c Ratio	0.02	0.07	0.21	90.0	0.09		0.72	0.13			0.01	
Control Delay	9.5	9.5	8.5	7.4	9.6		38.9	7.7			0.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay	9.5	9.5	8.5	7.4	9.6		38.9	7.7			0.0	
SOT	A	V	V	V	∢		Ω	V			⋖	
Approach Delay		8.9			0.9			33.2				
Approach LOS		⋖			⋖			O				
Intersection Summary												
Area Type:	Other											
Cycle Length: 80												

		and 6:WBTL, Start of Green				Intersection LOS: B	ICU Level of Service A		
Cycle Length: 80	Actuated Cycle Length: 80	Offset: 40 (50%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	Natural Cycle: 50	Control Type: Actuated-Coordinated	Maximum v/c Ratio: 0.72	Intersection Signal Delay: 16.3	Intersection Capacity Utilization 45.3%	Analysis Period (min) 15	



190487 - Brantford Bridges EA PTSL

Queues 6: Market Street & Icomm Drive

Base Year: AM Peak Hour 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1708 SB1 54 7.7 7.7 7.7 7.7 0.6 7.9 7.9 671 뛤 242 0.72 38.9 0.0 38.9 35.4 52.9 577 0 0 0 242 177 0.09 5.6 0.0 5.6 3.5 9.6 0.09 2000 WBT 49 0.06 7.4 7.4 7.4 2.3 8.0 125.0 766 0.21 207 0.21 8.5 0.0 8.5 20.8 43.9 969 128 0.07 9.5 0.0 9.5 5.7 17.6 1940 65.0 732 0 0 0 0 14 0.02 9.2 0.0 9.2 1.0 1.0 Lane Group Flow (vph)

WR Ratio
Control Dalay
Queue Delay
Total Delay
Queue Length 50th (m)
Queue Length 50th (m)
Infamal Link Dist (m)
Infamal Link Dist (m)
Sarvation Cap Reduch
Spillasek Cap Reduch
Spillasek Cap Reduch
Reduced vic Ratio

HCM Signalized Intersection Capacity Analysis 6: Market Street & Icomm Drive

Base Year: AM Peak Hour

6.0 0.95 0.99 0.93 0.99 0.99 0.94 0.94 0.94 %0 ₹ 19.8 0.25 6.0 3.0 763 0.00 0.00 22.7 1.00 0.0 0 8 % 0.92 49 0 20 5% 45 12.0 A 5 5 5 6.0 6.0 6.0 0.96 0.96 1.00 1.00 1.514 1.00 1.514 1.00 5 3 3 7 19.8 0.25 6.0 3.0 3.74 0.01 % ₹ 0.05 22.9 1.00 0.1 23.0 C C C C C NBT 223 223 1900 6.0 1.00 1.00 1.00 0.99 1716 0.95 1776 0.95 242 0.92 242 8 8 20.18 0.72 27.6 1.00 7.4 35.0 19.8 19.8 0.25 6.0 3.0 3.3 HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service 26 26 0 0 24 28 %0 % ₩ 48.2 48.2 0.60 6.0 3.0 3.0 991 6.7 6.7 0.1 0.1 5.4 A A 5.4 A A 48.2 48.2 0.60 6.0 3.0 766 0.06 0.06 6.6 0.83 0.2 5.6 A 21.6 0.31 80.0 45.3% 6.9 6.9 6.9 6.3 32.8 C 190 190 190 6.0 6.0 1.0 1.0 1.0 1473 1.0 1.0 207 207 207 8% 88 48.2 48.2 0.60 3.0 887 118 118 11900 6.0 6.0 6.0 1.00 1.00 1.00 3223 1.00 1.00 0.07 6.6 1.16 0.1 7.7 A A A C C 128 48.2 48.2 0.60 6.0 3.0 3.0 1941 0.04 ¥ 12% Intersection Summary
HOM 2000 Control Delay
HOM 2000 Volume to Capacity ratio
Actuated Cycle Length (s)
Intersection Capacity Utilization
Analysis Period (min) 0.02 6.4 6.4 0.0 6.6 6.6 13 13 1900 6.0 1.00 1.00 1.00 1.00 0.95 1805 0.64 4 48.2 48.2 0.60 6.0 3.0 %0 Traffic Volume (vph)
Traffic Volume (vph)
Ideal Flow (vpha)
Total Lost time (s)
Lane Unit Factor
Frob, pedbines
Frit
Frob, pedbines
Frit
Frob, pedbines
Frit
Frod Flow (prof)
Frit Protected
Satt. Flow (prof)
Frit Permitted
Satt. Flow (prof)
Frit Permitted
Satt. Flow (prof)
Frit Permitted
Cont. Peer Reduction (vph)
Lane Group Flow (vph)
Conf. Pees, (#m)
Heavy Vehicles (%) Permitted Phases
Actuated Green, G (s)
Effective Green, g (s)
Actuated green, g (s)
Actuated gr. Ratio
Clearance Time (s)
Vehicle Extension (s)
Lane Gpn Cap (vph)
w/s Ratio Prot
w/s Ratio Prot
w/s Ratio Prot Progression Factor Incremental Delay, d2 Delay (s) Level of Service Approach Delay (s) Approach LOS v/c Ratio Uniform Delay, d1 Protected Phases Furn Type

190487 - Brantford Bridges EA PTSL

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190487 - Brantford Bridges EA PTSL

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

Base Year: AM Peak Hour Lanes, Volumes, Timings 7: Clarence Street South & Icomm Drive/Greenwich Street

Configurations Fig. EBT EBR Well WET WEB NET		^	†	<u> </u>	-	Ļ	1	•	—	•	۶	→	*
103 106 29 54 88 90 55 884 40 46 480 103 106 29 54 88 90 55 884 40 46 480 103 106 29 54 88 90 55 884 40 46 480 104 105 106 1900 1900 1900 1900 1900 1900 1900 105 100 1500 1900 1900 1900 1900 1900 1900 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100	Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
100 166 29 54 88 90 55 884 40 46 480 1900 1900 1900 1900 1900 1900 1900 19	Lane Configurations	*	4₽		*	++	*	F	₩\$		*	++	*
103 106 29 54 88 90 55 884 40 46 480	Traffic Volume (vph)	103	106	53	25	88	8	22	884	40	46	480	71
1900 1000 1000	Future Volume (vph)	103	106	59	25	88	6	22	884	40	46	480	71
750 000 350 750 00 1050 700 700 1050 700 700 700 700 700 700 700 700 700	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
100 0.95 0.95 1.00 0.95 0.95 1.00 1.00 1	Storage Length (m)	75.0		0.0	35.0		30.0	75.0		0.0	105.0		70.0
300	Storage Lanes	—		0	_		—	_		0	_		_
1.00 0.95 0.95 1.00 0.95 1.00 1.00 0.95 0.95 1.00 0.95 1	Taper Length (m)	30.0			32.0			32.0			32.0		
1,00 1,00 1,00 0,99 0,99 1,00 1,00 0,99 0,99	Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	1.00
0.967 0.967 0.850 0.994 0.994 0.990	Ped Bike Factor	1.00	1:00		1.00		0.99	0.99	1.00		1.00		0.98
0.950 0.950 0.950 0.950 0.653	Ŧ		0.967				0.850		0.994				0.850
1779 3227 0 6161 3406 1538 1703 3507 0 1770 3505 1700	Fit Protected	0.950			0.950			0.950			0.950		
1250 3227 0 6559	Satd. Flow (prot)	1719	3227	0	1612	3406	1538	1703	3507	0	1770	3505	1568
1256 3227 0 1113 3406 1516 818 3507 0 492 3505 1 250	Flt Permitted	0.692			0.659			0.459			0.264		
Secondary Seco	Satd. Flow (perm)	1250	3227	0	1113	3406	1516	818	3507	0	492	3505	1532
2500 50 50 50 50 50 50 50 50 50 50 50 50	Right Turn on Red			Yes			Yes			Yes			Yes
Solution	Satd. Flow (RTOR)		32				88		6				77
1500 2500 25093 3816 2582 2582 186	Link Speed (k/h)		20			20			20			20	
18.0	Link Distance (m)		250.0			209.3			381.6			258.2	
3	Travel Time (s)		18.0			12.1			27.5			18.6	
98	Confl. Peds. (#/hr)	က		7	7		က	17		-	_		17
5% 8% 7% 12% 6% 5% 6% 2% 8% 2% 3% %) 112 145 32 59 96 96 00 961 43 50 522 %) 112 147 0 59 96 98 60 1004 0 50 522 sidion No	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
112 115 32 59 96 98 60 961 43 50 522 113 147 0 59 96 98 60 1004 0 50 522 12 147 0 59 96 98 60 1004 0 50 522 13 12 147 0 59 96 98 60 1004 0 50 522 14 15 147 0 140 140 140 140 140 140 140 140 15 15 15 15 15 15 15	Heavy Vehicles (%)	2%	%8	%/	12%	%9	2%	%9	2%	%8	2%	3%	3%
112 147 0 59 96 60 1004 0 50 522	Adj. Flow (vph)	112	112	32	20	8	88	9	961	43	20	522	12
11 14 0 59 96 98 60 1004 0 50 522	Shared Lane Traffic (%)			•	i		1			•	i		i
Color No No No No No No No	Lane Group Flow (vph)	112	147	0 :	26	96 :	නි :	9 :	1004	0 :	20	522	1
The control of the co	Enter Blocked Intersection	2	2	2	2	8	2	2	2	8	2	2	2
100 100	Lane Alignment	Leff	Left	Right	Left	Left	Right	Left	Lett	Right	Left	j j	Right
100 1,00 1,00 1,00 1,00 1,00 1,00 1,00	Median Width(m)		3.6			3.6			3.6			3.6	
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Link Offset(m)		0.0			0.0			0.0			0.0	
1.00 1.00	Crosswalk Width(m)		4.8			4.8			4.8			4.8	
100 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Two way Left Turn Lane												
25 15 25 15	Headway Factor	1.00	1.00	1.00	1:00	1:00	1:00	1.00	1.00	1:00	1:00	1.00	1.00
Left Thru Left Thru Right Left Thru Left Thru 20,000 0.00 0.00 0.00 0.00 0.00 0.00 0.	Turning Speed (k/h)	52		15	52		15	52		15	52		15
Left Thru Left Thru Right Left Thru Thru Left Thru	Number of Detectors	-	2		_	2		-	2		-	2	_
20 100 20 100 20 100 20 100 00 00 00 00 00 00 00 00 00 00 00 0	Detector Template	Left	뮡		Left	Thr	Right	Left	로		Left	Ā	Right
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0
) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
2.0 0.6 2.0 2.0 0.6 2.0 0.6 2.0 0.6 2.0 0.6 C.4	Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
C+EX C+EX C+EX C+EX C+EX C+EX C+EX C+EX	Detector 1 Size(m)	2.0	9.0		2.0	9.0	2.0	2.0	9.0		2.0	9.0	2.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Detector 1 Type	CI+EX	CI+EX		CI+EX	CI+EX	CI+EX	C+EX	CI+EX		CI+EX	CI+EX	CI+EX
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Detector 1 Channel	ć	c		c	ć	c	c	c		c	c	c
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Defector 1 Exterio (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Detector 1 Detay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	2.0	5.0
CI+EX CI+EX CI+EX CI	Detector 2 Prosition(III)		9. C			4.6			9. C			4. 6	
C-EX C-EX	Detector 2 Size(III)		2 2			5 2			2 2			2 2	
	Detector 2 Type		į 5			ž 5			ž Š			ž 5	
	Defector 2 Crialities		0			0			0				

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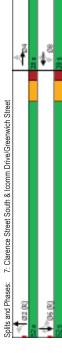
Lanes, Volumes, Timings 7: Clarence Street South & Icomm Drive/Greenwich Street

Base Year: AM Peak Hour

	1	†	<i>></i>	>	ţ	4	•	←	•	۶	→	•
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Tum Type	Perm	NA		Perm	N	Perm	Perm	AN		Perm	AN	Perm
Protected Phases		4			∞			2			9	
Permitted Phases	4			∞		∞	2			9		9
Detector Phase	4	4		∞	∞	∞	2	2		9	9	9
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	38.0	38.0		38.0	38.0	38.0	43.0	43.0		43.0	43.0	43.0
Total Split (s)	28.0	28.0		28.0	28.0	28.0	52.0	52.0		52.0	52.0	52.0
Total Split (%)	32.0%	35.0%		35.0%	35.0%	35.0%	%0.59	%0.59		%0.59	%0.59	65.0%
Maximum Green (s)	22.0	22.0		22.0	22.0	22.0	46.0	46.0		46.0	46.0	46.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0:0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	0.9	0.9		0.9	0.9	0.9	0.9	0.9		0.9	0.9	0.9
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	C-Max	C-Max		C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	25.0	25.0		25.0	25.0	25.0	30.0	30.0		30.0	30.0	30.0
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	0
Act Effct Green (s)	12.5	12.5		12.5	12.5	12.5	52.5	55.5		52.5	55.5	55.5
Actuated g/C Ratio	0.16	0.16		0.16	0.16	0.16	0.69	69.0		69:0	69.0	0.69
v/c Ratio	0.58	0.28		0.34	0.18	0.31	0.11	0.41		0.15	0.21	0.07
Control Delay	29.5	11.4		33.9	28.4	8.8	2.7	6.4		9.9	5.2	1.7
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	29.5	11.4		33.9	28.4	8.8	5.7	6.4		9.9	5.2	1.7
TOS	O	ш		O	ပ	¥	¥	⋖		∢	⋖	⋖
Approach Delay		19.2			22.1			6.3			4.9	
Approach LOS		Ф			ပ			⋖			⋖	

Intersection LOS: A ICU Level of Service D

Area Type:
Cycle Length: 80
Actuated Cycle Length: 80
Offset 76 (94-48). Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
Maximum v. 6 Ratio: 0.58
Intersection Signal Delay; 9.2
Intersection Capacity Utilization 75.2%
Analysis Period (min) 15



190487 - Brantford Bridges EA PTSL

Queues 7: Clarence Street South & Icomm Drive/Greenwich Street

Base Year: AM Peak Hour

77 77 0.07 1.7 0.0 0.0 4.5

522 0.21 5.2 0.0 0.0 5.2 13.2 24.4 234.2

SBL 50 0.15 6.6 6.6 6.6 2.3 8.0

1004 0.41 6.4 0.0 6.4 30.0 52.3 357.6

60 0.11 5.7 0.0 5.7 2.7 8.4

98 0.31 0.0 8.8 8.8 0.0 11.6

96 0.18 28.4 0.0 28.4 7.1 12.7 185.3

59 0.34 33.9 0.0 33.9 8.5 18.3

147 0.28 11.4 0.0 11.4 3.7 7.5 226.0

112 0.58 29.5 0.0 0.0 29.5 17.3

Lane Group

Lane Group Flow (vph)

We Ratio
Control Delay
Queue Delay
Total Delay
Queue Length 50th (m)
Aueue Length 50th (m)
Irm Bay Length (m)
Irm Bay Length (m)
Slarvation Cap Reduch
Silnback Cap Reduch
Soriage Cap Reduch
Soriage Cap Reduch
Rotage Cap Reduch
Soriage Cap Reduch

70.0 0 0 0 0 0

2432

341

2436

75.0 567

936

30.0 487 0 0 0 0

35.0 306 0 0 0 0.19

343 343 0 0 0 0 0.33

910 0 0 0 0.16

Intersection Summary

HCM Signalized Intersection Capacity Analysis 7: Clarence Street South & Icomm Drive/Greenwich Street

Base Year: AM Peak Hour

Movement													
March Marc	Movement	EBF	EBT	EBR	WBL	WBT	WBR	NB.	NBT	NBR	SBL	SBT	SBF
103 106 29 54 88 90 55 884 40 46 480 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 100 0.95 1.00 0.95 1.00 1.00 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.95 1.00 1.00 1.00 1.00 0.97 1.00 1.00 0.99 1.00 1.00 1.00 1.00 1.00 0.97 1.00 1.00 0.95 1.00 0.99 1.00 1.00 1.00 0.97 1.00 1.00 0.95 1.00 0.99 1.00 1.00 1.00 0.97 1.00 1.00 0.95 1.00 0.99 1.00 1.00 1.00 0.97 1.00 1.00 0.95 1.00 0.99 1.00 1.00 1.00 0.97 1.00 1.00 0.95 1.00 0.99 1.00 1.00 0.97 1.00 1.00 0.95 1.00 0.99 1.00 1.00 0.97 1.00 0.95 1.00 0.99 1.00 0.99 1.00 1.00 0.97 1.00 0.95 1.00 0.95 1.00 0.99 1.00 1.00 0.97 1.00 0.95 1.00 0.95 1.00 0.99 1.00 1.00 0.97 1.00 0.95 0.90 0.95 0.90 0.95 0.90 1.00 0.97 1.00 0.95 0.92 0.92 0.92 0.92 0.92 0.92 1.00 0.97 1.00 0.95 0.95 0.90 0.90 0.90 0.90 1.00 0.97 1.00 1.00 1.00 1.00 1.00 0.90 1.00 0.97 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.97 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.97 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.90 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.90 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.90 0.90 0.90 0.90 0.90 0.90 1.00 0.90 0.90 0.90 0.90 0.90 0.90 1.00 0.90 0.90 0.90 0.90 0.90 0.90 1.00 0.90 0.90 0.90 0.90 0.90 0.90 1.00 0.90 0.90 0.90 0.90 0.90 0.90 1.00 0.90 0.90 0.90 0.90 0.90 0.90 1.00 0.90 0.90 0.90 0.90 0.90 0.90 1.00 0.90 0.90 0.90 0.90 0.90 1.00 0.90 0.90	Lane Configurations	<u></u>	₩		je-	‡	¥	F	₩		, -	‡	~
103 106 29 54 88 90 55 884 40 46 480 100 1900 1900 1900 1900 1900 1900 1900 1900 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100	Traffic Volume (vph)	103	106	53	54	88	8	22	884	40	46	480	
1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1000	Future Volume (vph)	103	106	59	24	88	6	22	884	40	46	480	7
6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1,000 1,00	Total Lost time (s)	0.9	0.9		0.9	0.9	0.9	0.9	0.9		0.9	0.9	9.0
1,00	Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.0
1,00	Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.9
1,00	Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.99	1.00		1.00	1.00	1.0
100	Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.8
2228 1605 3406 1516 1694 3506 1769 3505 1700 0.06 1.00 1.00 1.00 0.46 1.00 0.26 1.00 0.32 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.9	Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.0
1,000	Satd. Flow (prot)	1716	3228		1605	3406	1516	1694	3206		1769	3505	153,
113 3406 1516 818 3506 492 3505 113 3406 1516 818 3506 492 3505 113 3406 1516 818 3506 492 3505 115 3 0 92 0 92 0 92 0 92 0 92 0 92 0 92 0	Flt Permitted	0.69	1.00		99.0	1.00	1.00	0.46	1.00		0.26	1.00	1.0
115 32 092 092 092 092 092 092 092 092 092 09	Satd. Flow (perm)	1249	3228		1113	3406	1516	818	3506		492	3505	153,
115 32 59 96 98 60 961 43 50 522 127 0 0 0 83 0 3 0 0 0 18% 7% 12% 6% 5% 6% 2% 8% 2% 3% 18% 7% 12% 6% 6% 6% 6% 6% 6% 6%	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.9
27 0 0 68 6 10 0	Adj. Flow (vph)	112	115	32	29	96	86	09	961	43	20	522	7
120	RTOR Reduction (vph)	0	27	0	0	0	83	0	က	0	0	0	7
8% 7% 12% 6% 5% 2% 8% 2% 3% 10 NA Perm NA NA NA NA NA NA NA NA NA <td>Lane Group Flow (vph)</td> <td>112</td> <td>120</td> <td>0</td> <td>29</td> <td>96</td> <td>15</td> <td>09</td> <td>1001</td> <td>0</td> <td>20</td> <td>522</td> <td>λí</td>	Lane Group Flow (vph)	112	120	0	29	96	15	09	1001	0	20	522	λí
8% 7% 12% 6% 5% 6% 2% 8% 2% 3% 1 NA Perm Perm NA Perm NA Perm NA Perm NA NA NA NA NA	Confl. Peds. (#/hr)	က		7	7		က	17		-	_		_
NA Perm NA	Heavy Vehicles (%)	2%	%8	%/	12%	%9	2%	%9	2%	8%	2%	3%	3
4 8 8 2 6 125 125 125 555 555 555 555 125 125 125 555 555 555 555 125 125 125 555 555 555 555 125 125 125 555 555 555 555 126 126 126 126 126 126 126 126 127 127 127 127 127 127 127 127 127 127 127 127 127 128 129 129 120 130 130 128 129 129 129 120 129 129 129 129 120 129 129 129 120 120 120 120 130 130 120 120 120 130 130 120 120 120 130 130 120 120 120 130 130 120 120 120 130 130 120 120 120 130 130 120 120 120 130 130 120 120 120 130 130 120 120 120 130 130 120 120 120 130 130 120 120 120 130 130 120 120 120 130 130 120 120 120 130 130 120 130 130 130 120 130 130 130 120 130 130 130 120 130 130 130 120 130 130 130 120 130 130 130 120 130 130 130 120 130 130 130 120 130 130 130 120 130 130 130 120 130 130 130 120 130 130 130 120 130 130 130 120 130 130 130 120 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130	Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Pern
125 125 125 555	Protected Phases		4			00			2			9	
125 125	Permitted Phases	4			∞		∞	2			9		_
125 125	Actuated Green, G (s)	12.5	12.5		12.5	12.5	12.5	52.5	52.5		55.5	55.5	55.
0.16 0.16 0.16 0.06 0.69 0.69 0.69 0.69 0.69 0.69 0.6	Effective Green, g (s)	12.5	12.5		12.5	12.5	12.5	52.5	55.5		55.5	55.5	55.
10	Actuated g/C Ratio	0.16	0.16		0.16	0.16	0.16	69.0	69.0		0.69	0.69	9.0
3.0 3.0	Clearance Time (s)	0.9	0.9		0.9	0.9	0.9	0.9	0.9		0.9	0.9	9.0
504 173 532 236 567 2432 341 2431	Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
0.04 0.05 0.05 0.07 0.07 0.07 0.07 0.07 0.07	Lane Grp Cap (vph)	195	204		173	532	236	292	2432		341	2431	106
0.05 0.07 0.07 0.07 0.07 0.07 0.07 0.024 0.034 0.18 0.06 0.11 0.41 0.15 0.21 0.226 0.01 0.04 0.10 0.10 0.02 0.13 0.04 0.10 0.10 0.10 0.02 0.1 0.2 0.1 0.04 0.5 0.0 0.2 0.1 0.2 0.1 0.04 0.5 0.0 0.2 0.1 0.2 0.1 0.04 0.5 0.0 0.2 0.2 0.1 0.2 0.1 0.04 0.5 0.0 0.2 0.2 0.1 0.2 0.1 0.04 0.5 0.0 0.2 0.2 0.1 0.2 0.1 0.04 0.5 0.0 0.2 0.2 0.1 0.04 0.5 0.0 0.2 0.2 0.1 0.04 0.2 0.1 0.04 0.2 0.1 0.04 0.2 0.1 0.04 0.2 0.1 0.04 0.2 0.1 0.04 0.2 0.1 0.04 0.2 0.1 0.04 0.2 0.1 0.04 0.2 0.1 0.04 0.2 0.1 0.04 0.2 0.1 0.04 0.2 0.04 0.2 0.1 0.04 0.2 0.1 0.04 0.2 0.1 0.04 0.2 0.04	v/s Ratio Prot		0.04			0.03			c0.29			0.15	
9.24 0.34 0.18 0.06 0.11 0.41 0.15 0.21 0.22 0.34 0.18 0.06 0.11 0.41 0.15 0.21 0.22 0.34 0.44 0.53 0.42 4.4 4.4 0.65 0.9 0.2 0.2 0.1 0.44 0.56 0.9 0.2 0.3 1.3 29.5 28.9 4.4 5.8 5.1 4.6 0.3 0.2 0.2 0.1 0.44 0.5 0.9 0.2 0.2 0.2 0.1 0.44 0.5 0.9 0.2 0.3 0.2 0.2 0.2 0.1 0.44 0.65 0.9 0.2 0.3 0.2 0.2 0.2 0.1 0.44 0.65 0.9 0.2 0.3 0.2 0.2 0.2 0.2 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3	v/s Ratio Perm	60.00			0.05		0.01	0.07			0.10		0.0
8 296 30.1 29.3 28.8 4.0 5.3 4.2 4.4 4.0 6.0 1.00 1.00 1.00 1.00 1.00 1.00 1.0	v/c Ratio	0.57	0.24		0.34	0.18	90.0	0.11	0.41		0.15	0.21	0.0
9 0.46 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Uniform Delay, d1	31.3	29.6		30.1	29.3	28.8	4.0	5.3		4.2	4.4	က်
0 0 2 12 0 2 0 1 0 4 0 5 0 9 0 2 1 3 9 3 1 3 2 9 5 2 8 9 4 4 5 8 5 1 4 6 6 1 1 7 5 2 9 7 2 1 2 6 1 1 2	Progression Factor	0.58	0.46		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.0
13.9 31.3 29.5 28.9 4.4 5.8 5.1 4.6 B C C C A A A A A A A A A A A A A A A A	Incremental Delay, d2	4.0	0.2		1.2	0.2	0.1	0.4	0.5		6.0	0.2	ö
17.5 29.7 6.77 17.5 29.7 5.7 B	Delay (s)	22.3	13.9		31.3	29.5	28.9	4.4	2.8		5.1	4.6	4.
17.5 29.7 5.7 B C A A 9.5 HCM 2000 Level of Service A 0.44 80.0 Sum of lost time (s) 12.0 75.2% ICU Level of Service D 15	Level of Service	ပ	ш		ပ	O	ပ	V	⋖		⋖	⋖	_
9.5 HCM 2000 Level of Service 0.44 80.0 Sum of lost time (s) 75.2% ICU Level of Service	Approach Delay (s)		17.5			29.7			2.7			4.6	
9.5 HCM 2000 Level of Service 0.44 80.0 Sum of lost time (s) 75.2% ICU Level of Service 15	Approach LOS		В			O			∢			∢	
9.5 HCM 2000 Level of Service 0.44 8.0.0 Sum of lost time (s) 75.2% ICU Level of Service 15	Intersection Summary												
0.44 80.0 Sum of lost time (s) 75.2% ICU Level of Service 15	HCM 2000 Control Delay			9.5	Ĭ	SM 2000	Level of S	Service		∢			
80.0 Sum of lost time (s) ration 75.2% ICU Level of Service 15	HCM 2000 Volume to Capa	acity ratio		0.44									
Utilization 75.2% ICU Level of Service 15	Actuated Cycle Length (s)			80.0	S	ım of lost	: time (s)			12.0			
Analysis Period (min) 15	Intersection Capacity Utiliza	ation		75.2%	೦	U Level o	of Service			۵			
	Analysis Period (min)			15									

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190487 - Brantford Bridges EA PTSL

190487 - Brantford Bridges EA PTSL

Base Year: AM Peak Hour Lanes, Volumes, Timings 8: Erie Avenue & Veteran's Memorial Parkway/Clarence Street South

→ → <i>→</i>	SBL SBT SBR	42	4 87 3	87	1900	30.0 0.0	1		1.00 1.00 1.00	1.00 1.00	0		1805 1819 0		947 1819 0	6	50	143.3	10.3		0.92 0	7	4 95 3	4 98		Left	3.6	0:0	4.8	100 100 100		1 2		_			2.0 0.6 CI:Fx CI:Fx				0.0 0.0	9.4	9.0	CI+EX	
•	NBR	W.	335	335		30.0	—		1.00	0.99			1553		1531	070				2	0.92		364	364		2				100		_	œ				2.0	ŽĮ.			0:0				
←	NBL NBT	_را	76 185		1900 1900	30.0	-		1.00 1.00	1.00			1671 1863		1220 1863		50	274.8	19.8		٥		83 201	83 201		Γ	3.6	0.0	4.8	100 100	25	1 2		2.0 10.0			2.0 0.6				0.0 0.0	9.4	9.0	C+EX	
✓	WBR				=	0.0	0		0.95				0		0 0						0	%0	_	c	Z	涩				100															
 	WBL WBT	Ļ	201 352		1900 1900	85.0	_		1.00 0.95	1.00	0.997		1703 3366		541 3366	_	50	381.6	27.5		0		218 383	218 390		Γ	3.6	0.0	8.4	100 100				_			2.0 0.6				0.0 0.0	9.4	9.0	Ċ÷Ē	
~	EBR		- 86		_	20.0	_		1.00		0.850		1495		1495	107					٥		107	107		2				1 00		-	œ	2.0		0:0	2.0	ŽĮ.	0.0		0.0				
1	EBL EBT	_ا	16 693		1900 1900	20.0	_		1.00 0.95	1.00			1805 3539		989 3539		50	353.8	25.5		0		17 /53	17 753		Г	3.6	0.0	4.8	100 100		1 2		_		0.0 0.0	2.0 0.6				0.0 0.0	9.4	9.0	CI+EX	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Storage Length (m)	Storage Lanes	Taper Length (m)	Lane Util. Factor	Ped Bike Factor	T.L	Fit Protected	Satd. Flow (prot)	Flt Permitted	Satd. Flow (perm)	Satd Flow (BTOP)	Link Speed (k/h)	Link Distance (m)	Travel Time (s)	Confl. Peds. (#/hr)	Peak Hour Factor	Heavy Vehicles (%)	Adj. Flow (vph)	Jane Groun Flow (vnh)	Enter Blocked Intersection	Lane Alignment	Median Width(m)	Link Offset(m)	Crosswalk Width(m)	Iwo way Left Tum Lane Headway Factor	Turning Speed (k/h)	Number of Detectors	Detector Template	Leading Detector (m)	Trailing Detector (m)	Detector 1 Position(m)	Detector 1 Size(m)	Defector 1 Channel	Detector 1 Extend (s)	Detector 1 Queue (s)	Detector 1 Delay (s)	Detector 2 Position(m)	Detector 2 Size(m)	Detector 2 Type	

Synchro 10 Report Page 27

Lanes, Volumes, Timings 8: Erie Avenue & Veteran's Memorial Parkway/Clarence Street South

Base Year: AM Peak Hour

ane Group EBL Turn Type Perm Protected Phases 2 Permetted Phases 2 Petertor Phase 2 Winthout Phase 10.0 Minimum Split (s) 10.0 Iorial Split (s) 33.0 Iorial Split (s) 49.0 Fall Assimum Green (s) 43.0	EBT	EBR									
Perm 2 2 2 2 100 490 5544% s) 430	AN		WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2 2 2 2 33.0 49.0 49.0 43.0 43.0 8)		Perm	pm+pt	ΑN		Perm	Ϋ́	Perm	Perm	¥	
2 2 2 2 2 33.0 49.0 49.0 43.0 43.0 8)	7		. ~	9			∞			4	
2 2 10.0 10.0 33.0 49.0 54.4% en (s) 43.0		2	9			8		∞	4		
(s) 10.0 (s) 33.0 49.0 54.4% en (s) 43.0	2	2	-	9		∞	∞	∞	4	4	
10.0 33.0 49.0 54.4% 43.0											
33.0 49.0 54.4% 43.0	10.0	10.0	7.0	10.0		7.0	7.0	7.0	7.0	7.0	
49.0 54.4% 43.0	33.0	33.0	11.0	33.0		31.0	31.0	31.0	31.0	31.0	
54.4%	49.0	49.0	11.0	0.09		30.0	30.0	30.0	30.0	30.0	
		24.4%	12.2%	%2.99		33.3%	33.3%	33.3%	33.3%	33.3%	
()	43.0	43.0	7.0	54.0		24.0	24.0	24.0	24.0	24.0	
	4.0	4.0	3.0	4.0		4.0	4.0	4.0	4.0	4.0	
	2.0	2.0	1.0	2.0		2.0	2.0	2.0	2.0	2.0	
(9	0.0	0.0	0.0	0.0		0.0	0:0	0.0	0.0	0.0	
lime (s)	0.9	0.9	4.0	0.9		0.9	0.9	0.9	0.9	0.9	
_ead/Lag	Lag	Lag	Lead								
	c	c	c	c		c	c	c	c	c	
0.8) USIN 3.0	3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	
C-IVIGX		C-Max	NOIR	C-IVIAX		Notice	Notice	Noise	Noise	Notice	
	0.7	0.7		0.7		0.7	0.7	0.7	0.7	0.7	
97.	50.0	20.0		70.0		18.0	18.0	18.0	18.0	18.0	
t/hr)	0	0		0		0	0	0	0	0	
	49.8	49.8	64.2	62.2		15.8	15.8	15.8	12.8	12.8	
g/C Ratio	0.55	0.55	0.71	69.0		0.18	0.18	0.18	0.18	0.18	
	0.38	0.12	0.44	0.17		0.39	0.61	0.74	0.02	0.31	
	13.1	3.1	8.2	2.7		36.3	41.5	18.9	27.0	32.3	
À	0:0	0.0	0.0	0:0		0:0	0:0	0.0	0.0	0:0	
otal Delay 11.8	13.1	3.1	8.2	2.7		36.3	41.5	18.9	27.0	32.3	
	ш	⋖	⋖	⋖		۵	□	ш	ပ	ပ	
4pproach Delay	11.8			9.9			28.1			32.1	
Approach LOS	В			V			O			O	
ntersection Summary											
Area Type: Other											
Sycle Length: 90											
Actuated Cycle Length: 90											
Offset: 66 (73%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	EBTL a	MP 9r	TL, Start	of Green							
Valual Cycle, 73											
John I Jye. Actuated-Cool dilitated Maximum v/c Ratio: 0.74											
ntersection Signal Delay: 16.1			ï	Intersection LOS: B	LOS: B						
ntersection Capacity Utilization 61.0%			2	ICU Level of Service B	f Service	<u>a</u>					
Analysis Period (min) 15											
Solits and Phases: 8: Erie Avenue & Vateran's Memorial Parkwav/Clarence Street South	/eteran's	Memoris	al Parkwa	v/Clarence	Strapt S	qi iç					
r	2			2000		-					



190487 - Brantford Bridges EA PTSL

Base Year: AM Peak Hour Queues 8: Erie Avenue & Veteran's Memorial Parkway/Clarence Street South

HCM Signalized Intersection Capacity Analysis 8: Erie Avenue & Veteran's Memorial Parkway/Clarence Street South

Base Year: AM Peak Hour

486 0 0 0.20

30.0 252 0 0 0 0

30.0 325 0 0 0 0 0

0.17

0 0 0 4.0

50.0 875 0 0 0 0.12

50.0 547 0 0 0 0 0

Intersection Summary

30.0

496

2326

85.0 493

1958

Lane Group Flow (vph)
vc Ratio
Control Delay
Queue Delay
Queue Length 50th (m)
Queue Length 50th (m)
Internal Link Dist (m)
Turn Bay Length (m)
Base Capacity (vph)
Siarvation Cap Reducth
Spillback Cap Reducth
Storage Cap Reducth
Rotinge Cap Reducth
Rotinge Cap Reducth
Rotinge Cap Reducth

98 0.31 32.3 0.0 32.3 15.6 26.5 19.3 4 0.02 27.0 0.0 27.0 0.6 3.2

364 0.74 118.9 0.0 118.9 115.4 41.7

201 201 0.61 41.5 41.5 34.6 50.4 250.8

83 0.39 36.3 0.0 36.3 13.7 13.7

390 0.17 5.7 0.0 5.7 10.7 22.2 357.6

218 0.44 8.2 0.0 8.2 10.5 26.0

107 107 0.12 3.1 0.0 0.0 8.4

753 0.38 13.1 0.0 13.1 38.1 60.8

17 0.03 11.8 0.0 11.8 1.3 5.2

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190487 - Brantford Bridges EA PTSL

Lanes, Volumes, Timings 1: Mt. Pleasant Street & Veteran's Memorial Parkway

Base Year: PM Peak Hour

Base Year: PM Peak Hour

Lanes, Volumes, Timings 1: Mt. Pleasant Street & Veteran's Memorial Parkway

¥

pm+pt

Perm

pm+pt

Perm

¥ 9

NBT ¥

BE

WBR

WBT

WBL

EBR

Ť EBT ¥

pm+pt 띮

Turn Type
Protected Phases
Permitted Phases
Detector Phase

7.0 33.0 25.0 25.0 27.8% 19.0 4.0 2.0 0.0 6.0 Lag

7.0 11.0 11.0 7.0 3.0 1.0 1.0 4.0 Lead

7.0 33.0 25.0 25.0 27.8% 19.0 4.0 2.0 6.0 6.0

7.0 33.0 25.0 27.8% 19.0 4.0 2.0 2.0 6.0 Lag

7.0 11.0 11.0 7.0 7.0 3.0 1.0 4.0 Lead

10.0 34.0 38.0 42.2% 4.0 2.0 2.0 6.0 Lag

10.0 34.0 38.0 38.0 32.0 4.0 2.0 6.0 6.0

10.0 34.0 38.0 38.0 32.0 4.0 2.0 6.0 6.0

10.0 34.0 54.0 60.0% 48.0 4.0 2.0 0.0 6.0

10.0 34.0 54.0 60.0% 48.0 4.0 2.0 0.0 6.0

7.0 11.0 16.0 17.8% 12.0 3.0 1.0 0.0 4.0 Lead

3.0 None 7.0 20.0

3.0 None 7.0 20.0

3.0 None 7.0 20.0

3.0 C-Max 7.0 21.0

3.0 None

Switch Phase
Minimum Initial (s)
Minimum Spit (s)
Total Spit (s)
I total Spit (%)
Maximum Green (s)
Allan Time (s)
Lost Time Adjust (s)
Total Lost Time (s)
Lead-Lag Optimize?
Vehicle Extension (s)
Recall Mode
Walk Time (s)
Flash Dort Walk (s)
Pedestrian Calls (#hn)
Act Effet Green (s)
Actualed giC Ratio
vic Ratio

3.0 None

3.0 None

0.02 0.62 38.6 0.0 38.6 D D D

18.4 0.20 0.20 34.0 0.0 0.0 C

0.10.8 0.12 0.56 11.6 0.0 11.6 B

18.4 0.20 0.35 29.1 0.0 29.1

49.1 0.55 0.15 3.2 0.0 3.2 A

49.1 0.55 0.70 29.7 0.0 C

0.00 0.00 0.00 0.00 0.00 A

58.4 0.65 0.23 7.7 7.7 A A A 6.8

60.4 0.67 0.15 7.3 0.0 7.3 A

Control Delay Queue Delay Total Delay LOS Approach Delay Approach LOS

49.1 0.55 0.34 14.1 14.1 B B

0.12 0.40 38.6 0.0 0.0 0.0 D D C

Control Cont		1	†	~	\	ţ	1	•	•	*	۶	-	*
1,00 1,00	Lane Group	EB	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
12	Lane Configurations	*	*	R.	r	*	¥C.	r	*	R.	r	*	
100 100	Traffic Volume (vph)	72	483	104	302	603	126	. 11	155	187	24	182	103
1900 1900	Future Volume (vph)	72	483	104	302	603	126	77	155	187	24	182	103
1400 150 400 450 450 450 450 350 450	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
100 0.95 1.00 1.00 1.00 1	Storage Length (m)	140.0		25.0	40.0		42.0	42.0		40.0	35.0		0.0
700 095 100 095 100 095 100 095 100 095 090 095 099 099 099 099 099 099 0	Storage Lanes	- :		-			<u> </u>	- ;		-			0
1,00 0,95 1,00 1,00 0,95 1,00 0,95 1,00 0,95 1,00 0,95 1,00 0,95 1,00 0,95 1,00 0,95 1,00 0,95 1,00 0,95 1,00 0,95 1,00 0,95 1,00 0,95 1,00 0,95 1,00 0,95 1,00 0,95 1,00 0,95 1,00 0,95 1,00 0,95 1,00 0,95 1,00	Taper Length (m)	70.0			70.0			82.0			20.0		
0.950 0.95	Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
1752 3539 1589 1787 3574 1599 1736 3539 1583 1805 3359 1583 1805 3359 1583 1805 3359 1583 1805 3359 1583 1805 3359 1583 1805 3359 1583 1805 3359 1805 1111	Ped Bike Factor			0.98	1.00			0.99		0.98	0.99	0.99	
1,550 1,55	T-L			0.850			0.850			0.850		0.946	
1772 3559 1599 1787 3574 1599 1736 3559 1583 1805 3359 3359	Flt Protected	0.950			0.950			0.950			0.950		
0.340	Satd. Flow (prot)	1752	3539	1599	1787	3574	1599	1736	3539	1583	1805	3359	0
No. 100 No.	Flt Permitted	0.340			0.457			0.464			0.646		
11	Satd. Flow (perm)	627	3539	1566	826	3574	1599	839	3539	1552	1220	3329	0
113	Right Turn on Red			Yes			Yes			Yes			Yes
134 9 112 16 889.7	Satd. Flow (RTOR)			113			137			203		=	
134 11.2 1	Link Speed (k/h)		70			20			20			20	
13.4 11.2 13.0 64.1 13.2 0.92	Link Distance (m)		260.6			217.6			319.9			889.7	
9 9 9 16 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	Travel Time (s)		13.4			11.2			23.0			64.1	
93% 2	Confl. Peds. (#/hr)			6	6			16		∞	∞		16
3% 2% 1% 1% 1% 1% 4% 2% 2% 2% 0% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1%	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
78 525 113 328 655 137 84 168 203 59 198 1	Heavy Vehicles (%)	3%	7%	1%	1%	1%	1%	4%	2%	2%	%0	1%	%0
%) 78 552 113 328 655 137 84 168 203 59 310 brid No	Adj. Flow (vph)	78	525	113	328	655	137	84	168	203	29	198	112
No	Shared Lane Traffic (%)												
Color No No No No No No No	Lane Group Flow (vph)	78	525	113	328	655	137	84	168	203	26	310	0
Left Left Right Left Right Left Left Right Rig	Enter Blocked Intersection	8	2	2	2	2	8	2	2	2	8	8	8
3.6 3.6	Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
100 100	Median Width(m)		3.6	,		3.6	,		3.6			3.6	
A 18 4.8 4.8 4.8 4.8 4.8 4.8 4.8 4.8 4.8 4.	Link Offset(m)		0.0			0.0			0:0			0.0	
1.00	Crosswalk Width(m)		4.8			4.8			4.8			4.8	
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Two way Left Turn Lane												
25 15 20 100 2.0 2.0 10.0 2.0 2.0 10.0 2.0 2.0 10.0 2.0 2.0 10.0 2.0 2.0 10.0 2.0 2.0 10.0 2.0 2.0 10.0 2.0 2.0 10.0 2.0 2.0 10.0 2.0 2.0 10.0 2.0 2.0 10.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0	Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1:00	1.00	1.00
1 2 1 1 2 1 1 1 2 1 1 1 1 1 1 1 1 1 1 1	Turning Speed (k/h)	52		15	22		15	52		15	22		15
Left Thru Right Thr	Number of Detectors	_	2	_	-	2	_	_	2	_	—	2	
20 100 2.0 2.0 10.0 2.0 2.0 10.0 2.0 2.0 10.0 2.0 2.0 10.0 2.0 2.0 10.0 2.0 2.0 10.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0	Detector Template	Left	맫	Right	Left	Thr	Right	Left	뢷	Right	Left	맫	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	
) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0:0	0.0	0.0	0.0	
2.0 0.6 2.0 2.0 0.6 2.0 2.0 0.6 2.0 2.0 0.6 2.0 2.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
CHÉK CI+ÉK C	Detector 1 Size(m)	2.0	9.0	2.0	2.0	9.0	2.0	2.0	9.0	2.0	2.0	9.0	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Detector 1 Type	CI+EX	CI+EX	CI+EX	CI+EX	CI+EX	CI+EX	CI+EX	CI+EX	CI+EX	CI+Ex	CI+EX	
00 00 00 00 00 00 00 00 00 00 00 00 00	Detector 1 Channel												
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Detector 1 Extend (s)	0.0	0:0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
(m) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
(m) 94 94 9.4 0.6 0.6 0.6 0.6 0.6 0.7 0.0 0.0 0.0	Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
06 06 0.6 OFFEX CI+EX CI+EX CI (s) 0.0 0.0	Detector 2 Position(m)		9.4			9.4			9.4			9.4	
nel CI+EX CI+EX CI+EX C) CI-EX C) CI-EX CI	Detector 2 Size(m)		9.0			9.0			9.0			9.0	
0.0 0.0 0.0	Detector 2 Type		CJ+EX			CI+EX			ĊĘ Ċ			CI+EX	
0.0 0.0	Detector 2 Channel												
	Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

190487 - Brantford Bridges EA PTSL

Area Type:
Cycle Length: 90
Actuared Cycle Length: 90
Actuared Cycle Length: 90
Offset 5 (6%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green Natural Cycle: 90
Control Type Actuated-Coordinated
Maximum v/c Ratio: 0.70 Intersection Capacity Utilization 78.8% Analysis Period (min) 15 Intersection Signal Delay: 18.6 Splits and Phases:

4 86 80

190487 - Brantford Bridges EA PTSL

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1: Mt. Pleasant Street & Veteran's Memorial Parkway

Intersection LOS: B ICU Level of Service D

Queues 1: Mt. Pleasant Street & Veteran's Memorial Parkway

Base Year: PM Peak Hour

310 0.62 38.6 0.0 38.6 20.1 32.5 865.7

59 0.20 34.0 0.0 34.0 9.7 m18.1

203 203 0.56 11.6 0.0 0.0 0.0 18.8

168 0.40 38.6 0.0 38.6 15.1 23.9 295.9

84 0.35 29.1 0.0 29.1 11.8 22.2

137 0.15 3.2 0.0 3.2 0.0

655 0.34 14.1 0.0 14.1 36.4 56.2

328 0.70 29.7 29.7 45.9 #105.6

0.11 11.9 0.0 0.0 0.0 6.7

525 0.23 7.7 0.0 7.7 20.0 31.6 236.6

78 0.15 7.3 0.0 7.3 4.7

796 0 0 0.39

0.20

intersection Summary

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

Queue shown is maximum after two cycles.

Wolume for 95th percentile queue is metered by upstream signal.

35.0 295 0

40.0 487 0

747

45.0 241

934 0

1949

40.0

25.0

140.0

Lane Group Flow (vph)
w/c Ratio
Control Delay
Queue Delay
Queue Length 50th (m)
Aueue Length 50th (m)
Internal Link Dist (m)
Internal Link Dist (m)
Internal Link Dist (m)
Sass Capacity (vph)
Siarvation Cap Reducth
Spillback Cap Reducth
Storiage Cap Reducth
Storiage Cap Reducth
Reduced v/o Ratio

2295

Base Year: PM Peak Hour

HCM Signalized Intersection Capacity Analysis 1: Mt. Pleasant Street & Veteran's Memorial Parkway

→	SBT	4₽	182	182	1900	0.9	0.95	0.99	1.00	0.95	1.00	3359	1.00	3359	0.92	198	86	212		1%	NA	4		10.8	10.8	0.12	0.9	3.0	403	c0.06		0.53	37.2	1.42	1.2	54.1		52.2	٥							
۶	SBL	r	24	24	1900	4.0	00.1	00.1	1.00	1.00	0.95	1798	0.65	1222	0.92	29	0	29	∞	%0	pm+pt	7	4	16.4	16.4	0.18	4.0	3.0	258	0.01	0.03	0.23	31.1	1.34	0.4	42.2	۵									
4	NBR	k _	187	187	1900	0.9	1.00	0.98	1.00	0.85	1.00	1552	1.00	1552	0.92	203	179	54	∞	2%	Perm p		œ	10.8	10.8	0.12	0.9	3.0	186		0.02	0.13	35.4	0.0	0.3	35.7	Ω				ပ		20.0	۵		
—	NBT	+	155	155	1900	0.9	0.95	00 5	1.00	1.00	1.00	3539	1.00	3539	0.92	168	0	168		2%	NA	∞		10.8	10.8	0.12	0.9	3.0	424	0.05		0.40	36.6	1.00	9.0	37.2	٥	35.8	٥							
√	NBL	F	77	77	1900	4.0	1.00	1:00	1.00	1.00	0.95	1728	0.46	845	0.92	84	0	84	16	4%	pm+pt	က	∞	16.4	16.4	0.18	4.0	3.0	208	c0.03	0.05	0.40	31.7	1.00	1.3	32.9	ပ				ervice					
1	WBR	% _	126	126	1900	0.9	1.00	1:00	1.00	0.85	1.00	1599	1.00	1599	0.92	137	92	72		1%	Perm p		9	47.5	47.5	0.53	0.9	3.0	843		0.05	0.09	10.5	1:00	0.2	10.7	Ф				HCM 2000 Level of Service		me (s)	Service		
ļ	WBT	‡	603	603	1900	0.9	0.95	1.00	1.00	1.00	1.00	3574	1.00	3574	0.92	655	0	655		1%	AA	9		47.5	47.5	0.53	0.9	3.0	1886	0.18		0.35	12.3	1.00	0.5	12.8	Ф	16.4	ш		M 2000 L		Sum of lost time (s)	Level of		
,	WBL	je-	302	302	1900	0.9	0.0	00:1	1.00	1.00	0.95	1780	0.46	857	0.92	328	0	328	တ	1%	Perm		9	47.5	47.5	0.53	0.9	3.0	452		c0.38	0.73	16.3	1.00	8.6	26.0	ပ				모		Sur	no No		
<i>></i>	EBR	* _	104	104	1900	0.9	1.00	0.98	1.00	0.85	1.00	1566	1.00	1566	0.92	113	4	72	တ	1%	Perm		2	9.73	9.73	0.64	0.9	3.0	1002		0.05	0.07	6.1	1.00	0.1	6.3	∢				22.1	0.63	0.06	78.8%	15	
t	EBT	ŧ	483	483	1900	0.9	0.95	1:00	1.00	1.00	1.00	3539	1.00	3539	0.92	525	0	525		2%	NA	2		9.73	9.73	0.64	0.9	3.0	2264	c0.15		0.23	8.9	1.00	0.2	7.1	∢	6.9	4					1-		
4	EBL	je-	72	72	1900	0.4	1:00	1:00	1.00	1:00	0.95	1752	0.34	627	0.92	78	0	78		3%	pm+pt	2	2	9.73	97.2	0.64	4.0	3.0	477	0.01	0.09	0.16	6.5	1:00	0.2	6.7	Υ					ratio				
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	lotal Lost time (s)	Lane Util. Factor	Frpb, ped/bikes	Flpb, ped/bikes	Ē	Flt Protected	Satd. Flow (prot)	Flt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Confl. Peds. (#/hr)	Heavy Vehicles (%)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	c Critical Lane Group

190487 - Brantford Bridges EA PTSL

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190487 - Brantford Bridges EA PTSL

Lanes, Volumes, Timings 2: Mt. Pleasant Street/Plaza & Colborne Street West

	1	1	~	>	ţ	4	•	-	4	٠	→	•
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		f			(r	÷			4	
Traffic Volume (vph)	~	653	7	210	693	-	31	က	207	_	4	_
Future Volume (vph)	-	653	7	210	693	-	31	က	207	-	4	_
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.0	0.0	9.	9:	8.5	1.00
Fed bike ractor		000			9.		0.33	0.98			00.1	
Fit Protected		0.000			0.989		0.950	2000			0 992	
Satd. Flow (prot)	0	3498	0	0	3474	0	1752	1547	0	0	1836	0
Flt Permitted		0.954			0.648		0.754				0.558	
Satd. Flow (perm)	0	3337	0	0	2272	0	1381	1547	0	0	1032	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2						225			-	
Link Speed (k/h)		20			20			20			20	
Link Distance (m)		2117			409.8			889.7			110.5	
Iravel Time (s)	46	70.0	c	c	29.5	10	L	- 7	c	c	8.0	L
Conll. Peds. (#/III)	0 0	0	77	77	0	0 0	0 0	0	0 0	0 0	0	0 0
Peak Hour Factor	0.92	26.0	78.0	700	20,0	0.92	26.0	78.0	700	78.0	78.0	0.92
neavy vericies (%)	°%	270	e α	92.6	376	0%	5.5 2.4	% ~	376 205	° -	% F	° C
Shared Lane Traffic (%)	-	2	0	077	3	-	5	0	277	-	٠	
Lane Group Flow (vph)	0	719	0	0	982	0	34	228	0	0	9	0
Enter Blocked Intersection	8	8	2	S	2	8	2	2	2	8	8	2
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1:00	1.00	1.00	1:00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	52	•	12	25	,	15	52	٠	15	25	•	15
Number of Detectors	- :	2		← :	2		- :	2		- .	2	
Detector Template	Lett	nu o		Let	l hru		Lett	Ihru		Let	l hru	
Leading Detector (m) Trailing Detector (m)	7.0	0.0		7.0	0.0		2.0	0.01		7.0	0.01	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	9.0		2.0	9.0		2.0	9.0		2.0	9.0	
Detector 1 Type	CI+EX	CI+Ex		CI+Ex	CI+EX		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.0			0.0 L			0.b			0.0 L	
Detector 2 Type		Ę Ċ Ċ			Σ÷Ε Ci-			Ę Ę			Ξ÷	
Detector 2 Channel		0			d			d			d	
Detector 2 Extend (s)	ď	0.0			0.0		٥	0.0			0.0	
Turn Type	E	ξ.		pm+pt	¥ ч		E	Υ		E	ž <	
Protected Filases	c	7		- (>		o	5		-	t	
ר פווווונכת ו וומספס	4			>			٥			r		

Synchro 10 Report Page 5

Lanes, Volumes, Timings 2: Mt. Pleasant Street/Plaza & Colborne Street West

Base Year: PM Peak Hour

Base Year: PM Peak Hour

EBL EBT WBL WBT WBR NBL NBT NBT NBT SBL SBL SBL SBL SBL SBL A 4 4	FEPT EBR WBL WBT WBR NBL NBT NBR SBL SBT		1	†	~	>	↓	4	•	←	•	۶	→	•
2 1 6 8 8 4 4 1 100 60 100 70 70 70 2 270 100 270 250 250 2 520 110 62.0 280 280 280 2 520 110 62.0 280 280 2 60 20 20 20 220 2 10 20 20 20 20 2 0 10 2.0 2.0 20 2 0 0 0 0 0 0 3 0 3 0 3 0 3 0 3 0 4 0 0 0 0 0 0 5 140 10 0 0 0 0 5 20 0 0 5 20 0 0 5	2 2 1 6 8 8 4 4 1 100 60 100 70 70 70 2 270 100 270 250 250 2 520 100 62.0 280 280 280 3 520 11.1% 31.1% 31.1% 4 10 85.0 220 220 220 2 0 1.0 2.0 20 20 2 0 0 0 0 0 0 0 2 0 0 0 0 0 0 2 0 0 0 0	Lane Group	EB	EBT	EBR	WBL	WBT	WBR	NB.	NBT	NBR	SBL	SBT	SBR
27.0 10.0 6.0 10.0 7.0 7.0 7.0 7.0 27.0 27.0 27.0 27.0	100 60 100 70 70 70 70 70 70 70 70 70 70 70 70 7	Detector Phase	2	2		-	9		∞	∞		4	4	
10.0 6.0 10.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0	10.0 6.0 10.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0	Switch Phase												
27.0 10.0 27.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25	27.0 10.0 27.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25	Minimum Initial (s)	10.0	10.0		0.9	10.0		7.0	7.0		7.0	7.0	
52.0 10.0 62.0 28.0 28.0 28.0 28.0 27.0 28.0 22.0 22.0 22.0 22.0 22.0 22.0 22	52.0 10.0 62.0 28.0 28.0 28.0 28.0 27.0 22.0 22.0 22.0 22.0 22.0 22.0 22	Minimum Split (s)	27.0	27.0		10.0	27.0		25.0	25.0		25.0	25.0	
\$ 57.8%	\$ 57.8% 111% 68.9% 311% 311% 3111% 311% 3111% 311% 3111% 311% 3111% 311% 3111% 311% 3111% 311% 311% 311% 311% 311% 311% 311% 311% 310% 320 220 220 220 220 220 220 220 220 220	Total Split (s)	52.0	52.0		10.0	62.0		28.0	28.0		28.0	28.0	
9 460 60 560 220 220 220 220 220 220 220 220 20 10 20 10 20 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	9 460 60 560 220 220 220 220 220 240 40 40 40 40 40 40 40 40 40 40 40 40 4	Total Split (%)	27.8%	27.8%		11.1%	%6.89		31.1%	31.1%		31.1%	31.1%	
9 4.0 4.0 4.0 4.0 4.0 4.0 4.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2	1 40	Maximum Green (s)	46.0	46.0		0.9	26.0		22.0	22.0		22.0	22.0	
20 20 20 20 20 20 20 20 20 20 20 20 20 2	20 20 20 20 20 20 20 20 20 20 20 20 20 2	Yellow Time (s)	4.0	4.0		3.0	4.0		4.0	4.0		4.0	4.0	
60 00 00 00 00 00 00 00 00 00 00 00 00 0	60 00 00 00 00 00 00 00 00 00 00 00 00 0	All-Red Time (s)	2.0	2.0		1.0	2.0		2.0	2.0		2.0	2.0	
60 60 60 60 60 60 60 60 60 60 60 60 60 6	6.0 6.0 6.0 6.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8	Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	
9 Lag Lead 2 30 30 30 30 30 30 2 C-Max None None None None None 120 2 7.0 7.0 7.0 7.0 7.0 7.0 14.0 14.0 12.0 12.0 12.0 69.1 69.1 89 89 0 0 69.1 69.1 89 89 0 0.77 0.10 0.10 0.77 0.10 0.10 2.6 0.2 0.2 0.2 3.6 1.1 39.5 22.3 A A A D C A 3.6 1.1 39.5 22.3 A A A D C A 3.6 1.1 39.5 22.3 A A A D C A 3.6 1.1 39.5 22.3 A A A D C A 3.6 1.1 39.5 22.3 A A A D C A 3.6 1.1 24.6 A A D C A 3.6 1.1 CALevel of Service C	9 Lag Lead 2 30 30 30 30 30 30 30 2 C-Max None None None None 120 2 7.0 7.0 7.0 7.0 7.0 2 69.1 69.1 69.1 89 89 0 0 69.1 69.1 69.1 69.1 60.0 2 69.1 69.1 69.1 69.1 69.1 2 6 7.0 7.0 7.0 7.0 7.0 2 6 8 9 0 0 2 6 9 1 8 9 8 9 0 3 6 1.1 39.5 22.3 A A A A A A A A A A A A A A A A A ICU Level of Service C	Total Lost Time (s)		0.9			0.9		0.9	0.9			0.9	
Se 2:EBTL, Start of Green Se C.Max C.Max C.Max C.Max C.Max C.Max C.Mone C.Mone	8 2.EBTL, Start of Green 8 2.30 3.0 3.0 3.0 3.0 3.0 3.0 9 2.46 9 2.20 9 2.20 9 2.20 9 3.0 9 3.0 9 0	Lead/Lag	Lag	Lag		Lead								
x C-Max None None None None None C-Max None None None None None None None None	x C-Max None None None None None C-Max None None None None None None None None	Lead-Lag Optimize?												
x C-Max None None None None None 1 10 10 10 10 10 10 10 10 10 10 10 10 1	x C-Max None None None None None None 1	Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
5 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 7.0 7.0 7.0 7.0	Recall Mode	C-Max	C-Max		None	None		None	None		None	None	
14.0 14.0 12.0 12.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	14.0 14.0 12.0 12.0 12.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Walk Time (s)	7.0	7.0			7.0		7.0	7.0		7.0	7.0	
69.1 69.1 8.9 8.9 8.9 69.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	69.1 8.9 8.9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Flash Dont Walk (s)	14.0	14.0			14.0		12.0	12.0		12.0	12.0	
69.1 69.1 8.9 8.9 0.77 0.77 0.10 0.28 0.56 0.56 3.6 1.1 39.5 22.3 0.0 0.0 0.0 0.0 3.6 1.1 39.5 22.3 A A A D C 3.6 1.1 24.6 A A A D C 3.6 1.1 24.6 A III 24	69.1 69.1 8.9 8.9 0.77 0.77 0.10 0.28 0.56 0.56 0.60 0.00 0.00 0.00 3.6 1.1 39.5 22.3 A A A D 24.6 A A A C C A A C C A A C C A A C C A A C C A A C C A A C C A A C C A C C C A C C C C	Pedestrian Calls (#/hr)	0	0			0		0	0		0	0	
0.77 0.70 0.10 0.28 0.56 0.25 0.64 3.6 1.1 39.5 22.3 3.6 1.1 39.5 22.3 3.6 1.1 39.5 22.3 4 A D C A A D C A A D C A A D C A A D C A A D C A A D C A A D C A A D C A A D C A A D C A A D C A A D C A A D C A A D C A	0.77 0.70 0.10 0.28 0.56 0.25 0.64 3.6 0.10 0.0 0.0 3.6 1.1 39.5 22.3 3.6 1.1 39.5 22.3 3.6 1.1 39.5 22.3 3.6 1.1 39.5 22.3 3.6 1.1 39.5 22.3 3.6 1.1 39.5 22.3 3.6 1.1 39.5 22.3 3.6 1.1 39.5 22.3 3.6 1.1 39.5 22.3 3.6 1.1 39.5 22.3 3.6 1.1 39.5 22.3 3.6 1.1 39.5 22.3 3.6 1.1 39.5 22.3 3.6 1.1 39.5 22.3 3.6 1.1 39.5 22.3 3.7 1.1 39.5 22.3 3.8 1.1 1.1 24.6 3.8 1.1 1.1 24.6 3.9 1.1 1.1 24.6 3.9 1.1 1.1 24.6 3.0 1.1 1.1 39.5 3.0 1.1 1.1 1.1 39.5 3.0 1.1 1.1 1.1 39.5 3.0 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1	Act Effct Green (s)		69.1			69.1		8.9	8.9			8.9	
9.28 0.56 0.25 0.64 3.6 1.1 39.5 22.3 0.0 0.0 0.0 3.6 1.1 39.5 22.3 A A D C A A D C A A D C A A D C A A D C A A D C A A D C A A D C A A D C A A D C A A D C A A D C A A D C A A D C A A D C A A D C A	0.28 0.56 0.25 0.64 3.6 1.1 39.5 22.3 0.0 0.0 0.0 3.6 1.1 39.5 22.3 A A D C A D C A A D C A A D C	Actuated g/C Ratio		0.77			0.77		0.10	0.10			0.10	
3.6 1.1 39.5 22.3 2.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	36 1.1 395 22.3 0.0 0.0 0.0 3.6 0.1 395 22.3 A A D C A D C A A D C A A D C Se 2:EBTL, Start of Green Intersection LOS: A ICU Level of Service C	v/c Ratio		0.28			0.56		0.25	0.64			90.0	
36 1.1 395 22.3 A A A D C C 36 1.1 395 22.3 A A A D C C C A A A D C C Se 2:EBTL, Start of Green Intersection LOS: A IOU Level of Service C	0.0 0.0 0.0 3.6 1.1 39.5 22.3 A A A D 24.6 A C C C C C C C C C C C C C C C C C C	Control Delay		3.6			1.7		39.5	22.3			33.7	
36 1.1 39.5 22.3 A A D C A D C A A D C A A D C A Intersection LOS: A IOU Level of Service C	36 1.1 39.5 22.3 A A D C A D C A D C A D C	Queue Delay		0.0			0.0		0.0	0.0			0.0	
8e 2:EBT, Start of Green Intersection LOS: A Intersection LOS: A IOU Level of Service C	3.6 1.1 24.6 A A D C A A C C Se 2:EBTL, Start of Green Intersection LOS: A ICU Level of Service C	Total Delay		3.6			1.		39.5	22.3			33.7	
3.6 1.1 24.6 A A C C se 2:EBTL, Start of Green Intersection LOS: A IOU Level of Service C	3.6 A A C C A C Se 2:EBTL, Start of Green Intersection LOS: A IOU Level of Service C	SOT		V			V		Ω	ပ			ပ	
A se 2:EBTL, Start of Green %	A se 2:EBTL, Start of Green %	Approach Delay		3.6			1.1			24.6			33.7	
se 2:EBTL, Start of Green	se 2:EBTL, Start of Green	Approach LOS		A			V			O			ပ	
se 2:EBTL, Start of Green	se 2:EBTL, Start of Green	Intersection Summary												
se 2:EBTL, Start of Green	se 2:EBTL, Start of Green	Area Type:	Other											
se 2:EBTL, Start of Green	se 2:EBTL, Start of Green	Cycle Length: 90												
se 2:EBTL, Start of Green	se 2.EBTL, Start of Green	Actuated Cycle Length: 90												
%	%	Offset: 16 (18%), Reference	ed to phase	2:EBTL, 8	Start of Gr	eeu								
- %	. %	Control Type: Actuated Cos	prolinated											
n 72.1%	nn 72.1%	Maximum v/c Ratio: 0.64	ol diligitati											
nn 72.1%	nn 72.1%	Intersection Signal Delay: 5	5.2			<u>=</u>	ersection	LOS: A						
		Intersection Capacity Utiliza	ation 72.1%			೦	U Level o	f Service	O					
		Analysis Period (min) 15												

Splits and Phases: 2: Mt. Pleasant Street/Plaza & Colborne Street West



190487 - Brantford Bridges EA PTSL

Queues 2: Mt. Pleasant Street/Plaza & Colborne Street West

Base Year: PM Peak Hour

HCM Signalized Intersection Capacity Analysis 2: Mt. Pleasant Street/Plaza & Colborne Street West

Base Year: PM Peak Hour

→	SBT	9	90.0	33.7	0.0	33.7	6.0	4.3	86.5		253	0	0	0	0.02		
←	NBT	228	0.64	22.3	0.0	22.3	0.0	34.0	865.7		548	0	0	0	0.42		eam signal.
•	NBL	34	0.25	39.5	0.0	39.5	6.3	15.8			337	0	0	0	0.10		d by upstr
ţ	WBT	982	0.56	1.1	0.0	1.1	1.8	m2.0	385.8		1744	0	0	0	0.56		s metered
†	EBT	719	0.28	3.6	0.0	3.6	14.5	28.3	253.2		2562	0	0	0	0.28		le queue i
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (m)	Queue Length 95th (m)	Internal Link Dist (m)	Turn Bay Length (m)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	Intersection Summary	m Volume for 95th percentile queue is metered by upstream signal

Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	3.6	1.1	39.5	22.3	33.7	
Queue Length 50th (m)	14.5	1.8	6.3	0.0	6.0	
Queue Length 95th (m)	28.3	m2.0	15.8	34.0	4.3	
Internal Link Dist (m)	253.2	385.8		865.7	86.5	
Turn Bay Length (m)						
Base Capacity (vph)	2562	1744	337	248	253	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.28	0.56	0.10	0.42	0.02	

Movement Lane Configurations Traffic Volume (voh)	EB	FOL	0							į		
Lane Configurations Traffic Volume (vph)	רטר	101	EBK	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)		Q			\$		je-	æ			4	
(-1)	-	653	7	210	693	-	31	က	207	_	4	_
Future Volume (vph)	-	653	7	210	693	-	31	က	207	-	4	_
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		0.9			0.9		0.9	0.9			0.9	
Lane Util. Factor		0.95			0.95		1.00	1.00			1:00	
Frpb, ped/bikes		1.00			1.00		1:00	0.98			1.00	
Flpb, ped/bikes		1.00			1.00		0.99	1.00			1.00	
		0.6			0.0		1.00	0.85			0.98	
Fit Protected		1.00			0.99		0.95	1.00			0.99	
Satd. Flow (prot)		3498			3463		1740	1547			1835	
Fit Permitted		0.95			0.05		1201	1.00			1032	
Peak-hour factor PHF	0 0	0 0	0 0	0 0	0.07	0 0 0	000	0 00	0.00	0 00	0 0	0 0
Adi. Flow (vph)	1	710	8	228	753	1	34	3 8	225	1 -	4	10.0
RTOR Reduction (vph)	0	0	0	0	0	0	0	203	0	0	-	0
Lane Group Flow (vph)	0	719	0	0	982	0	34	22	0	0	2	0
Confl. Peds. (#/hr)	16		22	22		16	2		က	က		5
Heavy Vehicles (%)	%0	3%	%0	2%	3%	%0	3%	%0	3%	%0	%0	%0
Turn Type	Perm	Α		pm+pt	N		Perm	¥		Perm	A	
Protected Phases		7		-	9			œ			4	
Permitted Phases	2			9			∞			4		
Actuated Green, G (s)		69.1			69.1		8.9	8.9			8.9	
Effective Green, g (s)		69.1			69.1		8.9	8.9			8.9	
Actuated g/C Ratio		0.77			0.77		0.10	0.10			0.10	
Clearance Time (s)		0.9			0.9		0.9	0.9			0.9	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vpn)		2563			1/43		136	752			102	
V/s Ixatio F10t		0 22			c0.43		CO 02	20.0			000	
v/c Ratio		0.28			0.56		0.25	0.17			0.05	
Uniform Delay, d1		3.1			4.3		37.5	37.2			36.7	
Progression Factor		1.00			0.09		96.0	2.38			1.00	
Incremental Delay, d2		0.3			0.2		1.0	0.5			0.2	
Delay (s)		3.4			9.0		37.1	89.0			36.9	
Level of Service		¥			∢		۵	ш			۵	
Approach Delay (s)		3.4			9.0			82.3			36.9	
Approach LOS		∢			∢			ட				
Intersection Summary												
HCM 2000 Control Delay			12.6	¥	SM 2000	HCM 2000 Level of Service	service		ш			
HCM 2000 Volume to Capacity ratio	ty ratio		0.56									
Actuated Cycle Length (s)			90.0	S	Sum of lost time (s)	time (s)			16.0			
Intersection Capacity Utilization	LC.		72.1%	೦	U Level o	ICU Level of Service			ပ			
Analysis Period (min)			15									

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190487 - Brantford Bridges EA PTSL

190487 - Brantford Bridges EA PTSL

Lanes, Volumes, Timings 3: Gilkison Street & Colborne Street West

ame Group EBL EBT and Caroup EBL EBT and Configurations (ph) 0 888 Uture Volume (vph) 0 888 deal Flow (vph) 0 988 deal Flow (vph) 1900 1900 and Uture Volume (vph) 1900 and Uture Volume (vph) 1900 and Uture Volume (vph) 1900 and Uture (vph) 1900 and Uture (vph) 1900 and Volume (vph) 1900 and Adjard Houries (vph) 1900 and Adjard (vph) 1900 and 2000 a	EBR 12 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	193 193 1900 0.95 0.95 2% 27 210 0 0 0 0 0 0 0	MBT 444 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	33 33 33 33 1900 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	NBL 86 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	NBT 3 3 3 3 3 3 1900 1.00 0.9872 0.9987 1430 17.7 7.7 7.0 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.	159 159 159 159 159 159 159 159 159 159	28L 120 120 1900 1.00 0 0 0 0 0,92 1%	SBT 4 4 4 4 4 4 1900 1.00 1.00 0.995 1.612 1.612 0.504 846 8.4 6.092 0.92 0.92 0.92	SBA 3 3 3 3 3 4 1900 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
1900 0 0 0.95 0.95 0 0 0 0,92 0% 0 0 (%) 0 ection No ection No ane		193 1900 0.95 0.95 0.92 2% 210 0 0 0 0 0 0	6 50 139.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 1	33 33 33 33 0.95 0 0 0 0 0 0 No No	1900 1.00 0 0 0 0 0 0 7 7	3 3 3 3 3 3 3 3 3 3 3 1900 1.000 0.987 0.988 0.987 1447 0.987 173 50 0.92 0.92 0.92 0.92 0.92 0.92	159 150 1,00	120 120 1900 1.00 0 0 0 0.92 1%	4 4 4 4 1900 1.00 0.997 0.997 0.995 1.504 8.46 8.4 8.4 8.4 8.4 8.4 8.4 8.4 8.4 8.4 8.4	1900 1.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 1900 0.95 0.95 0.92 0% 0 (%) 0 0 ection No ection No ane		193 1900 0.95 0.95 2% 270 210 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	990 990 1900 0.95 1.00 0.992 3523 3623 0.555 1969 6 50 139.0 10.0 10.0	33 33 33 33 33 33 33 33 33 33 33 33 34 34	1900 1.00 0 0 0 0 0,92 0% 7 7	3 1900 1.00 0.987 0.987 1447 0.987 1430 173 50 106.4 7.7	159 1900 1.000 1.000 Yes 0.92	120 1100 1.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1900 1.00 0.39 0.397 0.395 1612 1612 0.504 846 846 848 848 848 848 848 848 848 84	1900 1900 1,000 1,
1900 0.95 0.95 0.92 0.92 0.%) 0 0 (%) 0 10) 0 0 ection No		193 1900 0.95 0.92 2% 210 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	990 1,900 1,900 1,900 1,000 1,000 1,900 1,900 1,900 1,000 1,000 1,900 1,	33 0.95 0.95 0.92 0% 0% 0% No	1900 1.00 0 0 0 0% 0% 7 7	1900 1000 0.98 0.987 1447 0.987 1430 173 50 106.4 7.7	159 1900 1.00 7 Yes 8 8 0.92	120 1900 1.00 0 0 0 0.92 1%	1900 1.00 0.39 0.397 0.395 1612 1612 0.504 846 1 50 8.46 8.46	1900 1900 1.00 1.00 1.00 0.92 0.92
(95 0.95 0.95 0.95 0.95 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92		1900 0 0 0 2% 27, 210 0 0 0 0 0 0 0 0 N N N N N N N N N N N	0.95 0.95 0.096 0.992 3523 0.655 1969 6 6 6 70 139.0 10.0 1322 1322 1322 1076	1900 0.95 0.95 0.92 0% 0 No	1,00 1,00 0 0 0,92 0,% 7 7	1900 0.98 0.872 0.998 1447 1430 173 50 106.4 7.7	1.00 1.00 1.00 1.00 1.00 1.00 1.00	000 1.00 0 0 0 8 8 1%	1900 1.00 0.997 0.955 1612 0.504 846 116.6 8.4	1900 1.00 7 Yes 0.92 0% 3
(m)		0.95 0.92 2% 270 0 0 0 0 0 0	0.95 0.992 0.992 3523 3523 0.555 1969 6 6 6 70 139.0 10.0 1322 1322 1322 1322 1322	0.95 Ves 0.95 0.95 0.95 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	1.00 0 0 0 0 0% 0 0%	1.00 0.98 0.998 1447 0.987 1430 1430 173 50 106.4 7.7	76s Yes 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1.00 0.997 0.955 1612 0.504 846 846 8.4 8.4	1.00 Yes 0.992 0.992 3 3
(m) (n) (m) (m) (n) (n) (n) (n)		0 15 0.92 2% 270 210 0 0 0	1.00 0.096 0.092 3523 0.555 1969 6 50 139.0 10.0 10.0 1322 1322 10.0 10.0	0 0 Ves 36 36 No	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.98 0.872 0.998 1447 0.987 173 50 106.4 7.7 0.92	Yes 0 0 0 0.92 1%	0 0 0 8 8 %1 %1	0.99 0.997 0.955 1612 0.504 846 50 116.6 8.4	Ves 5 0.92 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%
(m) (n) (m) (n) (m) (n) (n) (n)		0 0 15 0.92 2% 270 210 0 0 No	0.996 0.992 3523 0.555 1969 6 50 139.0 10.0 10.0 10.0 1322 1322 10.0 10.0	0 0 7 Yes 13 0.92 0% 36 0 No No Right	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.872 0.998 1447 0.987 1430 106.4 7.7 0.92 0%	Yes 0 0 0 0.92 1%	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.997 0.955 1612 0.504 846 1 50 116.6 8.4	Ves 5 0.92 0% 3 3
o d d (0 0 0.92 2% 20 0 0 0 0 No	0.992 3523 0.555 1969 6 50 139.0 10.0 10.0 10.7 10.7 10.7 10.7 10.7 10	0 0 13 0.92 0% 36 No No Right	0 0 0.92 0.0%	0.998 1447 0.987 1430 106.4 7.7 0.92 0%	Yes 7 1% 1 1% 1 1% 1 1% 1 1% 1 1% 1 1% 1 1	0 0 0 8 8 1%	0.955 1612 0.504 846 116.6 8.4	7 Yes 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
(m) (m) (m) (m) (m) (m) (m) (m)		0 0.92 2% 2.10 0 0 0 0 No No	3523 0.555 1969 6 50 139.0 10.0 0.92 178 1076 1322 No	0 0 Vess 13 0.92 0% 0% 0 0 0 0 No No Right	0 0 0.92 0%	1447 0.987 1430 173 50 106.4 7.7 0.92 0%	Yes 00.92	0 0 0 8 8 1 % 1 %	1612 0.504 846 1 1 50 116.6 8.4	Yes 0.92 0% 3
Red		15 0.92 2% 270 210 0 0 No	0.555 1969 6 50 139.0 10.0 0.92 178 1076 1322 No	0 Yes 0.92 0% 36 No No Right	0 0.92 0.92 7 7	0.987 1430 173 50 106.4 7.7 0.92 0%	7es 0.92 1%	0 0.92 8 8 1%	0.504 846 1 50 116.6 8.4	Yes 0.92 0% 3
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		15 0.92 2% 210 0 0 No	1969 6 6 50 139.0 10.0 10.0 1322 No	7 Kes 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	0 0.92 0.92 7 7	1430 173 50 106.4 7.7 0.92 0%	7es 7es 0.92 1.%	0.92	846 1 50 116.6 8.4	7 Yes 0.92 0% 3
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		15 0.92 2% 210 0 0 No	6 50 139.0 10.0 1,00 1,00 1,00 1,00 1,00 1,00 1,	Yes 13 0.92 0.92 0.% 0.84 No No No Right	5 0.92 0% 7 7	173 50 106.4 7.7 0.92 0%	Yes 0.92 1.%	8 0.92 1%	1 50 116.6 8.4	Yes 0.92 0.92 3
13 0.92 0.92 0.00 No Left	0.0 0 0 N	15 0.92 2% 210 0 No Left	6 50 139.0 10.0 1,00 1,00 1,00 1,00 1,00 1,00 1,	13 0.92 0% 0 0 No Right	5 0.92 0%	173 50 106.4 7.7 0.92 0%	8 0.92 1%	0.92	50 116.6 8.4 0.92	0.92
13 0,92 0 % 0 0 0 1,00	0.0 0 0 N Rigi	15 0.92 2% 210 0 No Left	50 139.0 10.0 10.9 176 1322 No	13 0.92 0% 0 0 No Right	5 0.92 0% 7	50 106.4 7.7 0.92 0%	8 0.92 1%	0.92	50 116.6 8.4 0.92	5 0.92 0% 3
0.92 0.92 0.0 0 0 No Left	0.0 0 N Rigi	15 0.92 2% 210 0 No	139.0 10.0 0.92 1% 1076 1322 No	13 0.92 0% 36 No No Right	5 0.92 0%	106.4 7.7 0.92 0%	0.92	0.92	8.4 0.92	5 0.92 0% 3
13 0.92 0.92 0 0 0 0 1.00	0.0 0 0 1 Rigin	15 0.92 2% 210 0 No	10.0 0.92 1% 1076 1322 No	13 0.92 0% 36 0 No Right	5 0.92 0% 7	7.7 0.92 0% 0	0.92	0.92	8.4	5 0.92 0%
0.93 0.0% 0.0% 1.00 N	0.0 0 0.0 1 Rigin	15 0.92 2% 210 0 No No	1322 No	13 0.92 0% 36 0 0 No Right	0.92	0.92	0.92	8 0.92 1%	0.92	0.92
0.92 C 0.	0.0 0 N Rigl	0.92 2% 210 0 No No	0.92 1% 1076 1322 No	0.92 0% 36 0 0 No Right	0.92	0.92	1%	0.92	0.92	0.92
0% 0 0 Left 1,000	Rigi A	2% 210 0 No Left	1% 1076 1322 No	0% No Right	0 0	%0 %0	1%	1%		3
No O Left	Rigi	210 0 No Left	1076 1322 No	36 0 No Right	2 0	0			%0	n
No No Left	Rigi A	210 0 No Left	1076 1322 No	36 No Right	2 0	(0	က
Left No 0	Rig	No Left	1322 No	0 No Right	0	.ro	173	130	4	
No No 1	Rig N	No O	1322 No	No No Right	o ;					
Left 1.00	iŽ.	Left	운 년	No Right		183	0	0	137	0
Left ane 1.00 1		Left	4	Right	8	2	2	2	2	2
ane 1.00	0		Ē		Left	Left	Right	Left	Left	Right
ane 1.00 1			0.0			0.0			0.0	
ane 1.00 1	0		0.0			0.0			0.0	
1.00	œ		4.8			4.8			4.8	
1.00										
	-	1.00	1.00	1.00	1.00	1.14	1:00	1.00	1.14	1.00
urning Speed (k/h) 25	15	22		15	22		15	22		15
rs 1	2	_	2		-	2		<u></u>	2	
Left	5	Left	Thr		Left	T		Left	Thr	
) 2.0 1	0	2.0	10.0		2.0	10.0		2.0	10.0	
	0	0.0	0.0		0.0	0.0		0.0	0.0	
(m) 0:0	0	0.0	0.0		0.0	0.0		0.0	0.0	
	9	2.0	9.0		2.0	9.0		2.0	9.0	
CI+EX CI	×	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+EX	
jel										
Detector 1 Extend (s) 0.0 0.0	0	0.0	0.0		0.0	0.0		0.0	0.0	
0:0	0	0.0	0.0		0.0	0:0		0.0	0.0	
Detector 1 Delay (s) 0.0 0.0	0	0.0	0.0		0.0	0:0		0.0	0.0	
Detector 2 Position(m) 9.4	4		9.4			9.4			9.4	
Detector 2 Size(m) 0.6	9		9.0			9.0			9.0	
Detector 2 Type CI+Ex	×		CI+EX			CI+EX			CI+EX	
Detector 2 Extend (s) 0.0	0		0.0			0.0			0.0	
urn Type NA	A	pm+pt	¥		Perm	Α		Perm	Ϋ́	
Protected Phases 2	2	. ~	9			00			4	

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Lanes, Volumes, Timings 3: Gilkison Street & Colborne Street West

Base Year: PM Peak Hour

Base Year: PM Peak Hour

			•	•		,	_	-	_		٠	r
Lane Group	盟	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2			9			8			4		
Detector Phase	2	2		-	9		œ	∞		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		0.9	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	31.0	31.0		10.0	31.0		33.0	33.0		33.0	33.0	
Total Split (s)	49.0	49.0		14.0	63.0		27.0	27.0		27.0	27.0	
Total Split (%)	24.4%	24.4%		15.6%	%0.02		30.0%	30.0%		30.0%	30.0%	
Maximum Green (s)	43.0	43.0		10.0	57.0		21.0	21.0		21.0	21.0	
Yellow Time (s)	4.0	4.0		3.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		1.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0:0			0.0			0.0	
Total Lost Time (s)		0.9			0.9			0.9			0.9	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		Max	C-Max		None	None		None	None	
Walk Time (s)	10.0	10.0			10.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	15.0	15.0			15.0		17.0	17.0		17.0	17.0	
Pedestrian Calls (#/hr)	0	0			0		0	0		0	0	
Act Effct Green (s)		43.0			8.09			17.2			17.2	
Actuated g/C Ratio		0.48			0.68			0.19			0.19	
v/c Ratio		0.58			0.86			0.44			0.85	
Control Delay		19.6			15.4			9.5			73.8	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		19.6			15.4			9.5			73.8	
SOT		ш			ш			⋖			ш	
Approach Delay		19.6			15.4			9.5			73.8	
Approach LOS		ш			В			⋖			ш	
Intersection Summary												
Area Type: (Other											
Cycle Length: 90												
Actuated Cycle Length: 90												
Offset: 76 (84%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green Natural Cycle: 100	ed to phase	2:EBTL a	Ind 6:WB	TL, Start	of Green							
Control Type: Actuated-Coordinated	rdinated											
Maximum v/c Ratio: 0.86												
Intersection Signal Delay: 19.6	9.6 tion 102 2º	J		= 5	Intersection LOS: B	LOS: B	c					
					1	1	5					

Splits and Phases: 3: Gilkison Street & Colborne Street West

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Queues 3: Gilkison Street & Colborne Street West

Base Year: PM Peak Hour

	†	ţ	←	→	
Lane Group	EBT	WBT	NBT	SBT	
Lane Group Flow (vph)	978	1322	183	137	
v/c Ratio	0.58	98.0	0.44	0.85	
Control Delay	19.6	15.4	9.5	73.8	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	19.6	15.4	9.5	73.8	
Queue Length 50th (m)	59.1	57.3	1.5	23.5	
Queue Length 95th (m)	98.0	#102.2	18.2	#51.4	
Internal Link Dist (m)	385.8	115.0	82.4	92.6	
Turn Bay Length (m)					
Base Capacity (vph)	1688	1534	466	198	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.58	98.0	0.39	0.69	

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis 3: Gilkison Street & Colborne Street West

Base Year: PM Peak Hour

`	•	†	1	>	ļ	4	•	←	•	۶	→	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		₽			₩ ₩			4			4	
Traffic Volume (vph)	0	888	12	193	066	33	9	က	159	120	4	က
oh)	0	888	12	193	066	33	9	က	159	120	4	က
	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		0.9			0.9			0.9			0.9	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		1.00			1.00			0.98			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			0.99	
Frt		1.00			1.00			0.87			1.00	
Fit Protected		1.00			0.99			1.00			0.95	
Satd. Flow (prot)		3531			3522			1447			1603	
Flt Permitted		1.00			0.56			0.99			0.50	
Satd. Flow (perm)		3531			1971			1431			846	
or, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	365	13	210	1076	36	7	က	173	130	4	က
RTOR Reduction (vph)	0	-	0	0	2	0	0	140	0	0	-	0
Lane Group Flow (vph)	0	977	0	0	1320	0	0	43	0	0	136	0
Confl. Peds. (#/hr)	13		15	15		13	2		∞	∞		2
Heavy Vehicles (%)	%0	5%	%0	5%	1%	%0	%0	%0	1%	1%	%0	%0
Parking (#/hr)								0			0	
Turn Type		ΑĀ		pm+pt	Α		Perm	Ä		Perm	Α	
Protected Phases		2		-	9			œ			4	
Permitted Phases	7			9			∞			4		
Actuated Green, G (s)		43.0			8.09			17.2			17.2	
Effective Green, g (s)		43.0			8.09			17.2			17.2	
Actuated g/C Ratio		0.48			99.0			0.19			0.19	
Clearance Time (s)		0.9			0.9			0.9			0.9	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1687			1569			273			161	
v/s Ratio Prot		0.28			c0.13							
v/s Ratio Perm					c0.44			0.03			c0.16	
v/c Ratio		0.58			0.84			0.16			0.85	
Uniform Delay, d1		17.0			11.0			30.4			35.1	
Progression Factor		1.06			0.91			1:00			1.00	
Incremental Delay, d2		4.			3.4			0.3			31.4	
Delay (s)		19.4			13.4			30.6			66.5	
Level of Service		а			Ф			ပ			ш	
Approach Delay (s)		19.4			13.4			30.6			66.5	
Approach LOS		മ			В			ပ			ш	
Intersection Summary												
HCM 2000 Control Delay			19.6	ľ	HCM 2000 Level of Service	o fo laya	arvice		۵			
HCM 2000 Volume to Capacity ratio	ili,		0.88						1			
Actuated Cycle Length (s)			90.0	Sn	Sum of lost time (s)	time (s)			16.0			
Intersection Capacity Utilization		_	102.2%	⊇	ICU Level of Service	f Service			ഗ			
Analysis Period (min)			15									
c Critical Lane Group												

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Lanes, Volumes, Timings 4: Colborne Street West & Ballantyne Drive

	1	†	ļ	4	۶	•	
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		₩	4₽				
Traffic Volume (vph)	0	1168	1216	106	0	0	
Future Volume (vph)	0	1168	1216	106	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	
Ē			0.988				
Fit Protected							
Satd. Flow (prot)	0	3610	3567	0	0	0	
Flt Permitted							
Satd. Flow (perm)	0	3610	3567	0	0	0	
Link Speed (k/h)		20	20		20		
Link Distance (m)		139.0	290.1		218.0		
Travel Time (s)		10.0	20.9		15.7		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Heavy Vehicles (%)	%0	%0	%0	%0	%0	%0	
Adj. Flow (vph)	0	1270	1322	115	0	0	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	1270	1437	0	0	0	
Enter Blocked Intersection	2	2	2	2	2	No	
Lane Alignment	Left	Left	Left	Right	Left	Right	
Median Width(m)		3.6	3.6		0.0		
Link Offset(m)		0.0	0.0		0.0		
Crosswalk Width(m)		4.8	4.8		4.8		
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (k/h)	22			15	52	15	
Sign Control		Free	Free		Stop		
Intersection Summary							
Area Type: Ot	Other						
Control Type: Unsignalized							
Intersection Capacity Utilization 40.3%	n 40.3%			ਠ	J Level o	ICU Level of Service A	
Analysis Period (min) 15							

190487 - Brantford Bridges EA PTSL

Base Year: PM Peak Hour

HCM Unsignalized Intersection Capacity Analysis 4: Colborne Street West & Ballantyne Drive

Base Year: PM Peak Hour

																																					∢	
*	SBR		0 0			0.92	0										718			718	6.9		3.3	100	376												of Service	
≯ √	WBR SBL		106 0	Š	%0	0.5										08:0	2014			1766	6.8		3.5	100	61	WB 2	556	0	115	1700	0.33	0.0	0.0				ICU Level of Service	
ţ	WBT		1216			0.92							None		230											WB 1	881	0		1700		0.0		00	3		0.0	45
†	EBT	ŧ	1168		%0	0.92							None		139											EB 2	9	0				0.0						
1	EBL	urations	ne (veh/h) 0			actor 0.92	ate (vph) 0		(m)	ed (m/s)	kage	ire (veh)		age veh)	gnal (m)	unblocked	ng volume 1437	conf vol	conf vol	ced vol 1437	4.1				(veh/h) 479	ine # EB 1	1 635	0				th 95th (m) 0.0		(s) velo		Summary	Average Delay ntersection Capacity Utilization	ind /min)
	Movement	Lane Configurations	Traffic Volume (veh/h) Future Volume (Veh/h)	Sign Control	Grade	Peak Hour Factor	Hourly flow rate (vph)	Pedestrians	Lane Width (m)	Walking Speed (m/s)	Percent Blockage	Right turn flare (veh)	Median type	Median storage veh)	Upstream signal (m)	pX, platoon unblocked	vC, conflicting volume	vC1, stage 1 conf vol	vC2, stage 2 conf vol	vCu, unblocked vol	tC, single (s)	tC, 2 stage (s)	tF (s)	% eauf enenb 0d	cM capacity (veh/h)	Direction, Lane #	Volume Total	Volume Left	Volume Right	cSH	Volume to Capacity	Queue Length 95th (m)	Control Delay (s)	Lane LOS	Approach LOS	Intersection Summary	Average Delay Intersection Cal	Analysis Doring (min)

190487 - Brantford Bridges EA PTSL

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Lanes, Volumes, Timings 5: Icomm Drive & Colborne Street West

Lane Group Lane Configurations Traffic Volume (vph) Cedar Flow (vph) deal Flow (vphp) Storage Length (m)	EB											
figurations blume (vph) blume (vph) w (vphpl) ength (m) anes	בטר	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
olume (vph) olume (vph) w (vphpl) ength (m) anes	je-	€1.	¥C				F	44	¥C		₩.	*
olume (vph) v (vphpl) ength (m) anes	712	346	110	0	0	0	111	346	21	138	392	1211
v (vphpl) ength (m) anes	712	346	110	0	0	0	111	346	21	138	392	1211
ength (m) anes	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
anes	200.0		2.0	0.0		0.0	115.0		215.0	25.0		0.0
	_		-	0		0	-		_	_		_
aper Length (m)	25.0			7.5			25.0			25.0		
ane Util. Factor	0.91	0.91	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	0.95	1.00
Ped Bike Factor	0.98	0.99	96.0				1.00		96.0		1.00	0.99
			0.850						0.850			0.850
It Protected	0.950	0.975					0.950				0.987	
Satd. Flow (prot)	1610	3305	1583	0	0	0	1770	3505	1583	0	3563	1599
It Permitted	0.950	0.975					0.300				0.745	
Satd. Flow (perm)	1582	3276	1528	0	0	0	256	3505	1522	0	2679	1575
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			82						82			933
ink Speed (k/h)		20			20			20			20	
ink Distance (m)		290.1			441.2			487.2			182.2	
ravel Time (s)		20.9			31.8			35.1			13.1	
Confl. Peds. (#/hr)	21		28	28		21	10		25	25		10
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
leavy Vehicles (%)	7%	2%	2%	%0	%0	%0	7%	3%	2%	%0	%0	1%
Adj. Flow (vph)	774	376	120	0	0	0	121	376	22	120	426	1316
Shared Lane Traffic (%)	20%											
ane Group Flow (vph)	387	763	120	0	0	0	121	376	22	0	929	1316
Enter Blocked Intersection	2	9	8	8	8	8	2	2	2	8	8	S
ane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
ink Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
wo way Left Tum Lane												
Headway Factor	1:00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Furning Speed (k/h)	72	c	15	52		15	72	c	15	22	c	15
Detector Template	- He	Thru	Right				- He	Thru	Right	- J	Thri	Right
eading Detector (m)	2.0	10.0	2.0				2.0	10.0	2.0	2.0	10.0	2.0
railing Detector (m)	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	9.0	2.0				2.0	9.0	2.0	2.0	9.0	2.0
Detector 1 Type	CI+EX	CI+EX	CI+Ex				CI+Ex	CI+EX	CI+EX	CI+Ex	CI+EX	CI+EX
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4						9.4			9.4	
Detector 2 Size(m)		9.0						9.0			9.0	
Detector 2 Type		CI+Ex						CI+Ex			CI+Ex	
Detector 2 Channel		0						9			0	
Detector 2 Extend (s)		0.0						0.0			0.0	

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Lanes, Volumes, Timings 5: Icomm Drive & Colborne Street West

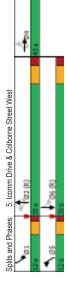
Base Year: PM Peak Hour

Base Year: PM Peak Hour

Participation Participatio		1	Ť	1	4	ţ	4	•	•	4	۶	—	¥
Perm NA Perm NBI WBI WBI NBI NBI NBI SBI SBI SBI SBI SBI SBI SBI SBI SBI S								-	-				
Perm NA Perm pm+pt NA Perm	-ane Group	EBI	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
4 4 4 5 2 2 1 6 6 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Furn Type	Perm	ΑN	Perm				pm+pt	¥	Perm	pm+pt	AN	Free
7.0 10.0 7.0 7.0 10.0 7.0 10.0 7.0 10.0 7.0 10.0 7.0 10.0 7.0 10.0 7.0 10.0 7.0 10.0 7.0 10.0 7.0 10.0 7.0 10.0 7.0 10.0 7.0 10.0 7.0 10.0 7.0 7.0 10.0 7.0	Protected Phases		4					2	2		~	9	
7.0 7.0 7.0 10.0 7.0 10.0 38.0 38.0 38.0 11.0 31.0 11.0 31.0 10.0 43.0 43.0 43.0 11.0 31.0 11.0 31.0 11.0 31.0 11.0 31.0 11.0 31.0 11.0 31.0 14.0 31.0 11.0 31.0 41.0 31.0 41.0 31.0 41.0 31.0 41.0 31.0 41.0 31.0 41.0 31.0 41.0 31.0 41.0 31.0 41.0 31.0 41.0 41.0 31.0 41.0 41.0 31.0 41.0	Permitted Phases	4		4				2		2	9		Free
7.0 7.0 7.0 10.0 7.0 10.0 38.0 38.0 38.0 11.0 32.0 32.0 32.0 32.0 32.0 32.0 4.0	Detector Phase	4	4	4				2	2	2	~	9	
7.0 7.0 7.0 7.0 7.0 7.0 7.0 10.0 10.0 7.0 10.0 10.0 10.0 7.0 10.0 10.0 7.0 10.0 10.0 43.0	Switch Phase												
380 380 380 110 31.0 31.0 110 31.0 110 31.0 140 31.0 140 31.0 31.0 31.0 31.0 31.0 31.0 31.0 31.0 35.0 <td>Minimum Initial (s)</td> <td>7.0</td> <td>7.0</td> <td>7.0</td> <td></td> <td></td> <td></td> <td>7.0</td> <td>10.0</td> <td>10.0</td> <td>7.0</td> <td>10.0</td> <td></td>	Minimum Initial (s)	7.0	7.0	7.0				7.0	10.0	10.0	7.0	10.0	
430 430 430 120 350 350 120 350 47.8% 47.9% 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 60.0 <td>Minimum Split (s)</td> <td>38.0</td> <td>38.0</td> <td>38.0</td> <td></td> <td></td> <td></td> <td>11.0</td> <td>31.0</td> <td>31.0</td> <td>11.0</td> <td>31.0</td> <td></td>	Minimum Split (s)	38.0	38.0	38.0				11.0	31.0	31.0	11.0	31.0	
47.8% 47.8% 47.8% 47.8% 47.8% 47.8% 47.8% 88.9% 13.3% 38.9% 47.0 37.0 37.0 20 20 20 40 60	Fotal Split (s)	43.0	43.0	43.0				12.0	35.0	35.0	12.0	35.0	
37.0 37.0 37.0 8.0 29.0 8.0 29.0 4.0 4.0 4.0 4.0 4.0 4.0 3.0 4.0 29.0 29.0 29.0 29.0 20.0	Fotal Split (%)	47.8%	47.8%	47.8%				13.3%	38.9%	38.9%	13.3%	38.9%	
40 40 40 40 30 40 30 40 30 40 40 30 40 40 50 60<	Maximum Green (s)	37.0	37.0	37.0				8.0	29.0	29.0	8.0	29.0	
20 20 20 10 20 10 20 60 60 60 00 00 00 00 60 60 60 40 60 60 60 80 60 60 10 60 60 60 80 60 60 120 120 60 60 80 80 30 30 30 30 30 30 80 70 70 70 70 70 70 70 70 80 70 80 80 80 80 80 80 80 80 80 80 80 80 80 80 80	rellow Time (s)	4.0	4.0	4.0				3.0	4.0	4.0	3.0	4.0	
0.0 0.0 <td>All-Red Time (s)</td> <td>2.0</td> <td>2.0</td> <td>2.0</td> <td></td> <td></td> <td></td> <td>1.0</td> <td>2.0</td> <td>2.0</td> <td>1.0</td> <td>2.0</td> <td></td>	All-Red Time (s)	2.0	2.0	2.0				1.0	2.0	2.0	1.0	2.0	
6.0 6.0 6.0 4.0 6.0 8.0 3.0 <td>ost Time Adjust (s)</td> <td>0:0</td> <td>0.0</td> <td>0.0</td> <td></td> <td></td> <td></td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td></td> <td>0.0</td> <td></td>	ost Time Adjust (s)	0:0	0.0	0.0				0.0	0.0	0.0		0.0	
30 30 30 30 30 30 30 30	Fotal Lost Time (s)	0.9	0.9	0.9				4.0	0.9	0.9		0.9	
3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	-ead/Lag							Lead	Lag	Lag	Lead	Lag	
30 30<	.ead-Lag Optimize?												
Max Max Max None C-Max C-Max None C-Max 7.0 7.0 7.0 7.0 7.0 7.0 7.0 2.0 2.5 0 7.0 7.0 7.0 7.0 7.0 2.0 0	/ehicle Extension (s)	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 7.0 7.0 7.0 7.0 7.0 18.3 18.3 18.3 18.3 18.3 18.3 18.3 18.3 18.3 18.3 18.3 18.3 18.3 18.3 18.3	Recall Mode	Max	Max	Max				None	C-Max	C-Max	None	C-Max	
250 250 250 180 180 180 180 370 370 370 370 430 430 410 410 292 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	Valk Time (s)	7.0	7.0	7.0					7.0	7.0		7.0	
37.0 37.0 37.0 43.0 40.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	lash Dont Walk (s)	25.0	25.0	25.0					18.0	18.0		18.0	
37.0 37.0 43.0 41.0 41.0 29.2 5 6 6 0	edestrian Calls (#/hr)	0	0	0					0	0		0	
041 041 041 041 048 046 046 032 1 060 057 048 046 046 032 1 168 141 24 226 224 72 306 168 141 24 226 224 72 306 18 B A C C A C C A C C A C C A C C A C C A C C A C C A C C C C A C C C A C C C C A C C C A C C C C A C C C C C C A C C C C C A C	Act Effct Green (s)	37.0	37.0	37.0				43.0	41.0	41.0		29.5	90.0
060 057 0.18 0.33 0.24 0.07 0.66 C 168 14.1 2.4 22.6 22.4 7.2 30.6 C 16.8 14.1 2.4 2.2.6 22.4 7.2 30.6 C 16.8 14.1 2.4 2.2 22.6 22.4 7.2 30.6 C 13.8 A C C A C B C C A C C A C C C C A C C C C A C C C A C C C C A C C C C A C C C C A C C C C A C C C C A C C C C C C A C	Actuated g/C Ratio	0.41	0.41	0.41				0.48	0.46	0.46		0.32	1.00
168 141 24 226 224 72 306 00 00 00 00 00 00 00 00 00 00 00 00 0	/c Ratio	09:0	0.57	0.18				0.33	0.24	0.07		99.0	0.84
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Control Delay	16.8	14.1	2.4				22.6	22.4	7.2		30.6	5.7
168 14.1 2.4 22.6 22.4 7.2 30.6 B B A C C A C 13.8 20.9 13.3 B C D D D D D D D D D D D D D D D D D D	λueue Delay	0.0	0.0	0.0				0.0	0.0	0.0		0.0	0.0
138 A C C A 138 138 20.9 A C C A Other	Fotal Delay	16.8	14.1	2.4				22.6	22.4	7.2		30.6	5.7
138 20.9 Y	SO-	Ф	Ф	⋖				ပ	O	∢		ပ	A
Other	Approach Delay		13.8						20.9			13.3	
ntersection Summary Area Type: Other Jycle Length: 90 Actuated Cycle Length: 90	Approach LOS		œ						O			В	
vrea Type: Other Syde Length: 90	ntersection Summary												
ydde Length: 90 Actualed Cycle Length: 90	Area Type:	Other											
Actuated Cycle Length: 90	Sycle Length: 90												
	Actuated Cycle Length: 90	0											

Oilsez, to (1936), Neterinceu lo pinase an Natural Cycle: 80 Control Type: Actuated-Coordinated Maximum v/c Ratio. 0.84 Intersection Signal Delay: 14.6 Intersection Capacity Utilization 83.3% Analysis Period (min) 15

Intersection LOS: B ICU Level of Service E



190487 - Brantford Bridges EA PTSL

Queues 5: Icomm Drive & Colborne Street West

HCM Signalized Intersection Capacity Analysis 5: Icomm Drive & Colborne Street West

Base Year: PM Peak Hour

Base Year: PM Peak Hour

			•	•			-	-			•	
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	_	€₩	¥C				F	‡	¥		₩	*
Traffic Volume (vph)	712	346	110	0	0	0	11	346	21	138	392	1211
Future Volume (vph)	712	346	110	0	0	0	111	346	21	138	392	1211
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	0.9	0.9	0.9				4.0	0.9	0.9		0.9	4.0
Lane Util. Factor	0.91	0.91	1.00				1.00	0.95	1.00		0.95	1.00
Frpb, ped/bikes	1.00	1:00	96.0				1.00	1.00	96.0		1.00	0.99
Flpb, ped/bikes	0.98	0.99	1.00				1.00	1.00	1.00		1.00	1.00
Έ	1.00	1:00	0.85				1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	0.98	1.00				0.95	1.00	1.00		0.99	1.00
Satd. Flow (prot)	1582	3277	1528				1768	3202	1522		3549	1575
Flt Permitted	0.95	0.98	1.00				0.30	1.00	1.00		0.74	1.00
Satd. Flow (perm)	1582	3277	1528				228	3505	1522		2678	1575
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	774	376	120	0	0	0	121	376	22	150	426	1316
RTOR Reduction (vph)	0	0	20	0	0	0	0	0	30	0	0	0
Lane Group Flow (vph)	387	763	2	0	0	0	121	376	52	0	929	1316
Confl. Peds. (#/hr)	21		28	28		21	10		25	22		10
Heavy Vehicles (%)	2%	5%	5%	%0	%0	%0	2%	3%	2%	%0	%0	1%
Turn Type	Perm	AN	Perm				pm+pt	¥	Perm	pm+pt	¥	Free
Protected Phases		4					2	2		-	9	
Permitted Phases	4		4				2		2	9		Free
Actuated Green, G (s)	37.0	37.0	37.0				41.0	41.0	41.0		29.2	90.0
Effective Green, g (s)	37.0	37.0	37.0				41.0	41.0	41.0		29.5	90.0
Actuated g/C Ratio	0.41	0.41	0.41				0.46	0.46	0.46		0.32	1.00
Clearance Time (s)	0.9	0.9	0.9				4.0	0.9	0.9		0.9	
Vehicle Extension (s)	3.0	3.0	3.0				3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	029	1347	628				328	1596	693		868	1575
v/s Ratio Prot							0.03	0.11				
v/s Ratio Perm	0.24	0.23	0.02				0.12		0.02		0.22	c0.84
v/c Ratio	09:0	0.57	0.11				0.34	0.24	0.04		99.0	0.84
Uniform Delay, d1	20.7	20.3	16.4				15.0	14.9	13.6		26.2	0.0
Progression Factor	0.63	0.61	0.30				1.52	1.46	4.81		1:00	1.00
Incremental Delay, d2	3.3	4. 0	0.3				0.5	0.3	0.1		1.9	5.4
Delay (s)	10.4 C	 5.5	2.6				23.3	1.77	5.5		78.1	4.0
Tevel of Service	۵	0 9	τ				د	ا د	ш		ې د	ζ
Approach Delay (s)		13.9			0.0			7.92			12.3	
Approach LOS		മ			∢			ပ			n	
Intersection Summary												
HCM 2000 Control Delay			15.0	王	HCM 2000 Level of Service	Level of S	Service		В			
HCM 2000 Volume to Capacity ratio	pacity ratio		1.02									
Actuated Cycle Length (s)	_		90.0	ഗ്	Sum of lost time (s)	time (s)			16.0			
Intersection Capacity Utilization	zation		83.3%	_	ICU Level of Service	f Service			ш			
Analysis Period (min)			15									
c Critical Lane Group												

190487 - Brantford Bridges EA PTSL

190487 - Brantford Bridges EA PTSL

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Lanes, Volumes, Timings 6: Market Street & Icomm Drive

Lane Group												
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	**	¥.	r	₩		r	£\$			tt P	
Traffic Volume (vph)	2	171	352	87	189	4	271	4	62	15	6	30
Future Volume (vph)	2	171	352	87	189	4	271	4	62	15	6	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	65.0		0.09	125.0		0.0	0:0		0.0	0.0		0.0
Storage Lanes	-		—	-		0	-		0	0		0
Taper Length (m)	32.0			25.0			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor	0.99		96.0	0.98	1.00		0.97	0.92			96:0	
E			0.850		0.997			0.858			0.916	
Fit Protected	0.950			0.950			0.950				0.987	
Satd. Flow (prot)	1805	3505	1615	1805	3562	0	1787	1476	0	0	3191	0
Flt Permitted	0.621			0.579			0.717				0.892	ľ
Satd. Flow (perm)	1166	3202	1558	1082	3562	0	1313	1476	0	0	2833	0
Kignt Turn on Ked			Yes		•	Yes		į	Yes		ć	Yes
Satd. Flow (RIOR)		í	383		i			/9			S 5	
Link Speed (k/h)		20			20			20			200	
Link Distance (m)		487.2			250.0			115.0			104.0	
Iravel Ime (s)		35.1			18.0	١		8.3			7.5	
Confl. Peds. (#/hr)	9 6	6	15	15	c	9 0	200	c	45	45	c	18
Feak Hour Factor	0.92	0.92	0.92	0.97	0.92	0.92	0.92	700	76.0	0.92	0.92	0.92
neavy vericles (70)	070	370	000	8 2	0 200	% O	% I	%_0	0.7	0 P	6 C	07%
Adj. Flow (vpii) Shared Lane Traffic (%)	7	200	S	S	507	+	627	t	õ	2	2	3
Lane Group Flow (vph)	2	186	383	92	500	0	295	71	0	0	29	0
Enter Blocked Intersection	2	2	2	2	8	2	8	2	2	2	2	2
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1:00	1:00	1.00	1.00	1.00
Turning Speed (k/h)	. 25	•	15	52	•	15	52	•	15	52	•	15
Number of Detectors		7	- : i	- :	7		- 3	7		← :	7	
Detector Template	Lett	nurg G	Kight	Lett	nun		Lett	nun (Lett	nun	
Leading Detector (m)	5.0	10.0 0.0	2.0	2.0	0.01		2.0	10.0		2.0	10.0	
I railing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.0 L	7.0	7.0	9. C		7.0	0.0 L		7.0	0.0 L	
Detector 1 Type	Ĕ Ċ	Č+ C+ C+	CH-EX	CI+EX	Č+EX		Ę Ċ	Č.		CI+EX	Ĕ Ċ	
Detector 1 Channel Detector 1 Extend (s)	00	0	00	00	0.0		00	00		00	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		9.0			9.0			9.0			9.0	
Detector 2 Type		CI+EX			CI+EX			C+EX			CI+EX	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lanes, Volumes, Timings 6: Market Street & Icomm Drive

Base Year: PM Peak Hour

Base Year: PM Peak Hour

	1	†	<i>></i>	-	Ļ	4	•	←	•	۶	→	*
Lane Group	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		-	9			∞			4	
Permitted Phases	2		2	9			∞			4		
Detector Phase	2	2	2	~	9		∞	∞		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	7.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	23.0	23.0	23.0	11.0	23.0		23.0	23.0		23.0	23.0	
Total Split (s)	33.0	33.0	33.0	12.0	45.0		45.0	45.0		45.0	45.0	
Total Split (%)	36.7%	36.7%	36.7%	13.3%	20.0%		20.0%	20.0%		20.0%	20.0%	
Maximum Green (s)	27.0	27.0	27.0	8.0	39.0		39.0	39.0		39.0	39.0	
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	1.0	2.0		2.0	5.0		2.0	2.0	
Lost Time Adjust (s)	0:0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	0.9	0.9	0.9	4.0	0.9		0.9	0.9			0.9	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	None	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	10.0	10.0	10.0		10.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0	0		0		0	0		0	0	
Act Effct Green (s)	42.1	42.1	42.1	54.0	52.0		26.0	26.0			26.0	
Actuated g/C Ratio	0.47	0.47	0.47	09:0	0.58		0.29	0.29			0.29	
v/c Ratio	0.00	0.11	0.41	0.13	0.10		0.78	0.15			0.07	
Control Delay	11.0	8.7	7.5	9.5	9.0		45.8	6.3			10.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay	11.0	8.7	7.5	9.5	9.0		42.8	6.3			10.7	
SOT	œ	⋖	⋖	⋖	V		۵	⋖			В	
Approach Delay		7.9			9.1			35.7			10.7	
Approach LOS		V			∢			Ω			В	
Intersection Summary												
	į											

Area Type:
Cycle Length: 90
Actuated Cycle Length: 90
Actuated Cycle Length: 90
Offset: 49 (54%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum vic Ratio. 0.78
Intersection Capacity Utilization 59.2%
Intersection Capacity Utilization 59.2%
Analysis Period (min) 15

Intersection LOS: B ICU Level of Service B

, to -8 √ Splits and Phases: 6: Market Street & Icomm Drive \$22 (S) ₹ 8880 0

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Queues 6: Market Street & Icomm Drive

Base Year: PM Peak Hour

59 0.07 10.7 10.7 1.7 5.4 80.0 1246 SBI 0.10 71 6.3 0.0 6.3 6.3 0.5 8.7 219 뛤 295 0.78 0.0 0.0 42.8 42.8 48.9 68.4 268 0 0 0 0.52 209 209 0.10 9.0 9.0 9.0 8.0 15.0 2058 Intersection Summary m Volume for 95th percentile queue is metered by upstream signal 95 9.2 9.2 0.0 9.2 6.6 15.4 717 383 0.41 7.5 0.0 7.5 41.5 66.3 932 186 0.11 8.7 0.0 8.7 6.7 m22.1 463.2 1640 65.0 545 0 0 0 0 0.00 11.0 11.0 0.2 0.5 Lane Group Flow (vph)

WR Ratio
Control Dalay
Queue Delay
Total Delay
Queue Length 50th (m)
Queue Length 50th (m)
Infamal Link Dist (m)
Infamal Link Dist (m)
Sarvation Cap Reduch
Spillasek Cap Reduch
Spillasek Cap Reduch
Reduced vic Ratio

HCM Signalized Intersection Capacity Analysis 6: Market Street & Icomm Drive

Base Year: PM Peak Hour

6.0 0.95 0.98 0.92 0.99 3134 0.89 0.89 0.92 38 %0 26.0 26.0 0.29 6.0 3.0 818 23.0 1.00 0.0 23.1 ¥ 15 0.92 67 0 0 45 2% 16.0 B 62 62 900 4 4 4 4 4 1.00 0.92 0.92 0.92 0.92 0.92 4 4 4 8 8 2 3 % ¥ 26.0 26.0 0.29 6.0 3.0 426 0.02 0.05 23.1 1.00 0.1 23.2 C C C C NBT 271 1900 6.0 1.00 1.00 1.00 0.95 1740 0.95 1740 0.92 295 0 295 18 26.0 26.0 0.29 6.0 3.0 3.79 0.78 29.4 1.00 9.7 39.1 HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service 0 0 9 % 208 % ¥ 52.0 52.0 0.58 0.05 3.0 3.0 0.06 0.10 8.5 0.90 0.1 7.7 A A A A A 52.0 0.58 4.0 3.0 3.0 681 0.07 0.07 0.14 8.6 0.91 0.91 0.25 14.9 2.40 0.7 0.7 D 24.8 0.43 90.0 59.2% 41.3 0.46 6.0 3.0 714 41.3 41.3 0.46 6.0 3.0 3.0 1608 0.05 0.12 13.9 0.51 0.1 7.2 A A 26.8 C ¥ 3% Intersection Summary
HOM 2000 Control Delay
HOM 2000 Volume to Capacity ratio
Actuated Cycle Length (s)
Intersection Capacity Utilization
Analysis Period (min) 6.0 1.00 1.00 0.99 1.00 0.95 1784 0.62 0.62 41.3 41.3 5.46 6.0 3.0 5.34 0.00 0.00 13.2 0.56 0.0 7.4 %0 Traffic Volume (vph)
Traffic Volume (vph)
Ideal Flow (vpha)
Total Lost time (s)
Lane Unit Factor
Frob, pedbines
Frit
Frob, pedbines
Frit
Frob, pedbines
Frit
Frod Flow (prof)
Frit Protected
Satt. Flow (prof)
Frit Permitted
Satt. Flow (prof)
Frit Permitted
Satt. Flow (prof)
Frit Permitted
Cont. Peer Reduction (vph)
Lane Group Flow (vph)
Conf. Pees, (#m)
Heavy Vehicles (%) Permitted Phases
Actuated Green, G (s)
Effective Green, g (s)
Actuated green, g (s)
Actuated gr. Ratio
Clearance Time (s)
Vehicle Extension (s)
Lane Gpn Cap (vph)
w/s Ratio Prot
w/s Ratio Prot
w/s Ratio Prot Progression Factor Incremental Delay, d2 Delay (s) Level of Service Approach Delay (s) Approach LOS v/c Ratio Uniform Delay, d1 Protected Phases Furn Type

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190487 - Brantford Bridges EA PTSL

Base Year: PM Peak Hour Lanes, Volumes, Timings 7: Clarence Street South & Icomm Drive/Greenwich Street

Part Colour		1	t	~	\	ţ	1	•	←	•	٠	-	*
180 184	Lane Group	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
180 164 89 175 126 51 64 678 43 98 1012 180 164 89 175 126 51 64 678 43 98 1012 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900	Lane Configurations	*	₽ ₽		r	‡	*	*	₩		r	*	*C_
180 164 89 175 126 678 678 43 98 1012	Traffic Volume (vph)	180	164	88	175	126	51	64	829	43	86	1012	88
1900 1900	Future Volume (vph)	180	164	88	175	126	21	64	678	43	86	1012	88
1,000 1,00	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
100 0.95 0.95 0.95 1.00 0.95 0.95 1.00 0.95 0.95 1.00 1.00 1	Storage Length (m)	75.0		0.0	35.0		30.0	75.0		0.0	105.0		70.0
100 0.95 0.99 1.00 0.96 1.00 1.00 0.95 0.99 1.00 0.90 0	Storage Lanes	20.0		0	75.0		-	7 0 20		0	7 25		_
1,000 0,00	laper Length (m)	30.0	0.05	0.05	33.0	0.05	0	33.0	0.05	0.05	33.0	0.05	1 00
10 10 10 10 10 10 10 10	Larle Util. racioi Ped Rike Factor	00.0	0 99	0.35	90.0	0.93	90.0	0.0	0.35	0.93	3.	0.93	0.0
1770 3347 0 1950 1787 3473 0 1787 3574 1781 1770 3474 0 1805 3574 1584 3493 1770 3473 0 1787 3574 1780 1787 3574 1780 1787 3574 1780 1787 3574 1780 1787 3574 1780 1787 3574 1780 1787 3574 1780 1787 3787 1780 1787 3787 1780 1780 1787 1780	Frt	0.55	0.947		0.50		0.850	8	0.991				0.850
1770 3347 0 1805 3574 1583 1770 3473 0 1787 3574 1 1012 3347 0 1092 3574 1554 339 3473 0 1787 3574 1 1012 3347 0 1092 3574 1554 339 3473 0 2306 2013 2013 2013 2013 2013 2013 180 24 24 24 24 275 275 275 2882 180 226 0.32 0.32 0.32 0.32 0.32 0.32 0.32 190 190 173 150 173 170 170 190 170 170 170 170 170 170 190 170 170 170 170 170 170 190 170 170 170 170 170 170 170 191 192 193 193 193 193 193 193 193 191 191 191 191 191 191 191 191 191 190 190 190 137 55 70 734 0 107 110 190 190 100 100 100 100 100 100 100 190 190 190 137 136 136 136 136 136 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190	Fit Protected	0.950			0.950			0.950			0.950		
0.546	Satd. Flow (prot)	1770	3347	0	1805	3574	1583	1770	3473	0	1787	3574	1615
1012 3347 0 1092 3574 1554 339 3473 0 576 3574 1 50	Flt Permitted	0.546			0.583			0.183			0.306		
Section Sect	Satd. Flow (perm)	1012	3347	0 9	1092	3574	1554	339	3473	0 5	276	3574	1555
Solution	Safd Flow (PTOP)		7	6			2 2 2 2 3 4		-	20			20 00
Section Sect	Link Sneed (k/h)		5 6			05	3		20			50	3
18.0 18.0 18.1 18.0 18.1 18.0 18.1 18.0 18.1 18.0 18.1	Link Distance (m)		250.0			209.3			381.6			258.2	
S	Travel Time (s)		18.0			15.1			27.5			18.6	
092 092 092 092 092 092 092 092 092 092	Confl. Peds. (#/hr)	∞		24	54		∞	32					35
196 178	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
(2)(%) 196 178 97 190 137 55 70 734 47 107 1100 section No	Heavy Vehicles (%)	2%	1%	1%	%0	1%	2%	2%	3%	3%	1%	1%	%0
Section No	Adj. Flow (vph)	196	178	97	190	137	22	2	737	47	107	1100	96
Section No	Shared Lane Iramic (%)	00	247	c	90	404	į	9	104	c	404	77	S
Section No.	Lane Group Flow (vph)	196	5/2	0 1	06L	13/	င္ပင္	2 -	84 7	0 1	70L	1100	95
Left Kight Left	Enter Blocked Intersection	2 -	2 -	2 :	۶	8 °	2 =	۶	2 :	<u>ا</u> ج	۶	۶ -	§ :
100 100	Lane Alignment	Lett	Left	Kight	Left	Left	Kight	Lett	Left	Kight	Left	Lett	Kight
1	link Offsot(m)		0.0			0.0			0.0			0.0	
100 100	Crosewalk Width(m)		ο. α α			0.0			0.0 0.0			0.0	
1.00 1.00	Two way Left Turn Lane		5			, 0			1 ,			0	
1	Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
1	Turning Speed (k/h)	22		15	52		15	22		15	52		15
Left Thu Left Thu Right Thu Thu Right Thu Thu Right Thu Th	Number of Detectors	_	2		_	2	-	-	2		_	2	_
10 10 10 10 10 10 10 10	Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
(m) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0
(m) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.	Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Color Colo	Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Detector 1 Size(m)	2.0	9.0		2.0	9.0	2.0	2.0	9.0		2:0	9.0	2.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Detector 1 Type	Č+EX	CH-EX		CI+EX	CI+EX	Ĕ Š	Ċ Ċ C	C+EX		CI+EX	CHEX CHEX	CI+EX
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Detector 1 Extend (e)	0	0		0	0	0	0	0		0	00	0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Defector 1 Onene (s)	0.0	0.0		0.0	0.0	0.0	9 0	0.0		0.0	0.0	0.0
94 94 94 94 94 94 94 94 94 94 94 94 94 9	Defector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
0.6 0.6 0.6 0.6 CI+EX CI+EX CI-EX CI	Detector 2 Position(m)		9.4			9.4			9.4			9.4	
CI+EX CI+EX CI+EX CI+ s) 0.0 0.0 0.0	Detector 2 Size(m)		9.0			9.0			9.0			9.0	
00 00 00 (s	Detector 2 Type		CI+EX			CI+EX			CI+EX			CI+EX	
0.0 0.0 0.0	Detector 2 Channel												
	Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

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Lanes, Volumes, Timings 7: Clarence Street South & Icomm Drive/Greenwich Street

Base Year: PM Peak Hour

	4		,	١	ļ	4	1	4	4	7	-	
	\	Ť	>	-	,	/	1	_	L	•	+	*
Lane Group	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Tum Type	pm+pt	Α		Perm	¥	Perm	Perm	Α		Perm	AN	Perm
Protected Phases	7	4			∞			2			9	
Permitted Phases	4			∞		∞	2			9		9
Detector Phase	7	4		∞	∞	∞	2	2		9	9	9
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0					10.0	10.0	10.0
Minimum Split (s)	11.0	38.0		38.0	38.0					43.0	43.0	43.0
Total Split (s)	12.0	38.0		26.0						52.0		52.0
Total Split (%)	13.3%	42.2%		28.9%			27.8%	2		22.8%	27.8%	57.8%
Maximum Green (s)	8.0	32.0		20.0						46.0		46.0
Yellow Time (s)	3.0	4.0		4.0						4.0		4.0
All-Red Time (s)	1.0	2.0		2.0						2.0		2.0
Lost Time Adjust (s)	0:0	0.0		0.0						0.0		0.0
Total Lost Time (s)	4.0	0.9		0.9	0.9	0.9				0.9		0.9
Lead/Lag	Lead			Lag								
Lead-Lag Optimize?	Yes			Yes								
Vehicle Extension (s)	3.0	3.0		3.0				3.0		3.0	3.0	3.0
Recall Mode	None	None		None			_	C-Max		C-Max	C-Max	C-Max
Walk Time (s)		7.0		7.0				7.0		7.0	7.0	7.0
Flash Dont Walk (s)		25.0		25.0				30.0		30.0	30.0	30.0
Pedestrian Calls (#/hr)		0		0				0		0	0	0
Act Effct Green (s)	32.3	30.3		18.3				47.7		47.7	47.7	47.7
Actuated g/C Ratio	0.36	0.34		0.20				0.53		0.53	0.53	0.53
v/c Ratio	0.46	0.24		98.0				0.42		0.35	0.58	0.11
Control Delay	24.5	18.3		68.1			29.6	22.0		17.2	16.3	2.9
Queue Delay	0.0	0.0		0.0				0.0		0.0	0.0	0.0
Total Delay	24.5	18.3		68.1				22.0		17.2	16.3	2.9
SOT	O	а		ш	ပ			ပ		æ	œ	V
Approach Delay		20.9			45.0			22.6			15.4	
Approach LOS		O			Ω			O			В	
Intersection Summary												

Area Type:
Cycle Length: 90
Actualed Cycle Length: 90
Actualed Cycle Length: 90
Actualed Cycle Length: 90
Actualed Cycle: 25
Control Type: Actualed-Coordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 22.1
Intersection Capacity Utilization 87.2%
Analysis Period (min) 15

Intersection LOS: C ICU Level of Service E

Spilis and Phases: 7: Clarence Street South & Icomm Drive/Greenwich Street 00 90

190487 - Brantford Bridges EA PTSL

Queues 7: Clarence Street South & Icomm Drive/Greenwich Street

Base Year: PM Peak Hour

96 0.11 2.9 0.0 2.9 2.9 7.3

1100 0.58 16.3 0.0 16.3 70.6 90.9 234.2

SBL 107 0.35 17.2 0.0 17.2 111.1

784 0.42 22.0 0.0 22.0 69.4 69.4 79.5 357.6

70 0.39 29.6 0.0 29.6 11.8 m25.4

55 0.14 3.8 0.0 3.8 0.0 5.0

137 137 0.19 29.7 0.0 29.7 10.6 18.6 18.6

WBL 190 0.86 68.1 0.0 68.1 32.8 #68.3

275 0.24 18.3 0.0 18.3 9.8 30.7 226.0

196 0.46 0.0 0.0 24.5 17.4 47.2

70.0 868 0 0 0 0

1893

305

30.0

35.0

Lane Group Flow (vph)
We Ratio
Control Delay
Queue Delay
Total Delay
Queue Length 50th (m)
Queue Length 50th (m)
Innternal Link Dist (m)
Inn Bay Length (m)
Base Capacity (vph)
Base Capacity (vph)
Base Capacity (vph)
Slarvation Cap Reducth
Sprillack Cap Reducth
Sorage Cap Reducth

794

0.58

0.42 1845

intersection Summary

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

Queue shown is maximum after two cycles.

Wolume for 95th percentile queue is metered by upstream signal.

75.0 179 0 0 0 0

1222 0 0 0 0 0.23

75.0 430 0 0 0 0

HCM Signalized Intersection Capacity Analysis 7: Clarence Street South & Icomm Drive/Greenwich Street

Base Year: PM Peak Hour

Movement		4	†	~	-	ļ	4	•	—	•	۶	→	*
164 89 175 126 678 678 43 98 1012 164 89 175 126 51 64 678 43 98 1012 160 1900 1900 1900 1900 1900 1900 1900 160 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 190	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
164 89 175 126 51 64 678 43 98 1012 164 89 175 126 51 64 678 43 98 1012 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 10	Lane Configurations	<u>, , , , , , , , , , , , , , , , , , , </u>	₩		×	‡	¥C	jr.	₩		×	‡	*-
164 88 175 126 51 64 678 43 98 1012 1900 1900 1900 1900 1900 1900 1900 1900 6 0	Traffic Volume (vph)	180	164	88	175	126	51	64	829	43	88	1012	88
1900 1900	Future Volume (vph)	180	164	88	175	126	51	64	829	43	86	1012	88
6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
100 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 1	Total Lost time (s)	4.0	0.9		0.9	0.9	0.9	0.9	0.9		0.9	0.9	0.9
100 0.99 1.00 1	Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00
1,00	Frpb, ped/bikes	1.00	0.99		1.00	1:00	0.98	1.00	1.00		1:00	1.00	96:0
100 0.95 1.00 0.085 1.00 0.99 1.00	Flpb, ped/bikes	1.00	1.00		0.99	1.00	1.00	1.00	1.00		1.00	1.00	1.00
100	Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
3347 1780 3574 1554 1762 3473 1787 3574 100 0.100 1.00 1.00 0.10 0.10 0.131 1.00 0.31 1.00 0.31 1.00 0.32 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.9	Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
100	Satd. Flow (prot)	1765	3347		1780	3574	1554	1762	3473		1787	3574	1555
1337 1092 3374 1554 339 3473 576 3574 1092 03	Flt Permitted	0.55	1.00		0.58	1.00	1.00	0.18	1.00		0.31	1.00	1.00
178 97 992 092 092 092 092 092 092 092 093	Satd. Flow (perm)	1014	3347		1092	3574	1554	339	3473		576	3574	1555
178 97 190 137 55 70 737 47 100 241 24 24 8 35 0 0 0 0 176 176 176 177 1700 176 176 176 177 1700 177 177 1700 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178 178	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
14	Adj. Flow (vph)	196	178	26	130	137	22	20	737	47	107	1100	96
241 0 190 137 11 70 779 0 107 1100 1% 24 24 24 28 35 3% 1% 1% 1 MA Perm NA Perm Perm NA Perm Perm Perm NA Perm Perm Perm Perm	RTOR Reduction (vph)	0	34	0	0	0	44	0	2	0	0	0	45
1% 24 24 28 35 3% 1%<	Lane Group Flow (vph)	196	241	0	190	137	Ξ	2	779	0	107	1100	21
176, 176, 176, 176, 276, 376, 376, 377, 176, 176, 176, 176, 177, 177, 177, 1	Confl. Peds. (#/hr)	ω ;		54	24		ω ;	32					32
NA Perm NA	Heavy Vehicles (%)	2%	1%	1%	%0	1%	2%	2%	3%	3%	1%	1%	%0
4 8 8 2 6 6	Turn Type	pm+pt	N N		Perm	¥.	Perm	Perm	¥		Perm	¥	Perm
18	Protected Phases	7	4			∞			2			9	
30.3 18.3 18.3 18.3 47.7 <td< td=""><td>Permitted Phases</td><td>4</td><td></td><td></td><td>∞</td><td></td><td>∞</td><td>2</td><td></td><td></td><td>9</td><td></td><td>9</td></td<>	Permitted Phases	4			∞		∞	2			9		9
30.3 18.3 18.3 18.3 18.4 17.7 47.7	Actuated Green, G (s)	30.3	30.3		18.3	18.3	18.3	47.7	47.7		47.7	47.7	47.7
0.34	Effective Green, g (s)	30.3	30.3		18.3	18.3	18.3	47.7	47.7		47.7	47.7	47.7
1,000 0,00	Actuated g/C Ratio	0.34	0.34		0.20	0.20	0.20	0.53	0.53		0.53	0.53	0.53
3.0 3.0	Clearance Time (s)	4.0	0.9		0.9	0.9	0.9	0.9	0.9		0.9	0.9	0.9
1126 222 726 315 179 1840 305 1894 0.07	Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
0.07	Lane Grp Cap (vph)	408	1126		222	726	315	179	1840		305	1894	824
10	v/s Ratio Prot	c0.04	0.07			0.04			0.22			c0.31	
21.3 34,6 29.7 28.8 12.5 12.8 12.2 14.4 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	v/s Ratio Perm	0.12			c0.17		0.01	0.21			0.19		0.03
1,13 346 297 288 125 128 122 144 1,05	v/c Ratio	0.48	0.21		0.86	0.19	0.04	0.39	0.42		0.35	0.58	90:0
105	Uniform Delay, d1	22.4	21.3		34.6	29.7	28.8	12.5	12.8		12.2	14.4	10.3
0.1 28.1 0.1 0.0 5.9 0.7 3.2 1.3 2.2.4 60.7 29.8 28.8 25.1 21.4 15.4 15.7 23.0 C C C C C B B B C C C C C B B B C C C C C C B B B C C C C C C B B B C C C C C C B B B C C C C C C B B B C C C C C C B B B C C C C C C B B B C C C C C C B B B C C C C C C B B B B C C C C C C B B B C C C C C C B B B C C C C C C B B B B C C C C C C B B B B B C C C C C C B B B B B C C C C C C B B B B B C C C C C C B B B B B B C C C C C C C B B B B B B C C C C C C C B B B B B B B C C C C C C C C B B B B B B B C C C C C C C C C B B B B B B B C C C C C C C C B B B B B B B C C C C C C C C B B B B B B B C C C C C C C C B B B B B B B B C C C C C C C C C B B B B B B B B C C C C C C C C B B B B B B B B C C C C C C C C B B B B B B B B B C C C C C C C C C B B B B B B B B B C C C C C C C C C C B B B B B B B B C C C C C C C C B	Progression Factor	1.02	1.05		1.00	1:00	1:00	1.53	1.62		1.00	1.00	1.00
22.4 60.7 288 28.8 25.1 21.4 15.4 15.7 2.3	Incremental Delay, d2	6.0	0.1		26.1	0.1	0.0	5.9	0.7		3.2	1.3	0.1
22.1 HCM 2000 Level of Service C C C B S C C C C B C C C C B C C C C C	Delay (s)	23.7	22.4		2.09	29.8	28.8	25.1	21.4		15.4	15.7	10.4
23.0 45.0 21.7 C D C C C 22.1 HCM 2000 Level of Service C 0.64 Sum of lost time (s) 16.0 87.2% ICU Level of Service E 15	Level of Service	ပ	ပ		ш	ပ	ပ	ပ	O		В	В	മ
C D C C 1 22.1 HCM 2000 Level of Service C C C 0.04 90.0 Sum of lost time (s) 16.0 87.2% ICU Level of Service E 15	Approach Delay (s)		23.0			45.0			21.7			15.3	
22.1 HCM 2000 Level of Service 0.64 90.0 Sum of lost time (s) 87.2% ICU Level of Service 15	Approach LOS		O			Ω			O			മ	
22.1 HCM 2000 Level of Service 0.64 0.0 Sum of lost time (s) 87.2% ICU Level of Service 15	Intersection Summary												
0.64 90.0 Sum of lost time (s) 87.2% ICU Level of Service 15	HCM 2000 Control Delay			22.1	I	CM 2000	Level of	Service		ပ			
90.0 Sum of lost time (s) 87.2% ICU Level of Service 15	HCM 2000 Volume to Capa	city ratio		0.64									
87.2% ICU Level of Service 15	Actuated Cycle Length (s)			0.06	Ō	um of lost	time (s)			16.0			
Analysis Period (min) 15	Intersection Capacity Utiliza	tion		87.2%	2	:U Level o	of Service			ш			
	Analysis Period (min)			15									

Critical Lane Group

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Base Year: PM Peak Hour Lanes, Volumes, Timings 8: Erie Avenue & Veteran's Memorial Parkway/Clarence Street South

→ ■
₹:
10 521 100
1900 1
50.0 50.0
20.0
1.00 0.95 1.00
0.97
1805 3539 1615
0.326
2000
109
20
353.8
25.5
260 260 260
2%
266
266
left left Right
3.6
0:0
4.8
007
1 2 1
Thru R
_
0:0
0.0 0.0 0.0
9.0
CI+Ex CI+Ex CI+Ex
c c
0:0
9.4
9:0
CI+EX
0:0

Lanes, Volumes, Timings 8: Erie Avenue & Veteran's Memorial Parkway/Clarence Street South

Base Year: PM Peak Hour

	1	†	<u>/</u>	>	ļ	4	•	—	•	۶	→	*
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2		-	9			∞			4	
Permitted Phases	2		2	9			∞		∞	4		
Detector Phase	2	5	2	~	9		∞	∞	∞	4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	7.0	10.0		7.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	33.0	33.0	33.0	11.0	33.0		31.0	31.0	31.0	31.0	31.0	
Total Split (s)	45.0	45.0	45.0	16.0	61.0		29.0	29.0	29.0	29.0	29.0	
Total Split (%)	20.0%	20.0%	20.0%	17.8%	%8'.29		32.2%	32.2%	32.2%	32.2%	32.2%	
Maximum Green (s)	39.0	39.0	39.0	12.0	55.0		23.0	23.0	23.0	23.0	23.0	
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	1.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	0.9	0.9	0.9	4.0	0.9		0.9	0.9	0.9	0.9	0.9	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max		C-Max		None	None	None	None	None	
Walk Time (s)	7.0	7.0	7.0		7.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	20.0	20.0	20.0		20.0		18.0	18.0	18.0	18.0	18.0	
Pedestrian Calls (#/hr)	0	0	0		0		0	0	0	0	0	
Act Effct Green (s)	45.2	45.2	45.2	64.7	62.7		15.3	15.3	15.3	15.3	15.3	
Actuated g/C Ratio	0.50	0.50	0.50	0.72	0.70		0.17	0.17	0.17	0.17	0.17	
v/c Ratio	0.04	0.32	0.13	0.70	0.35		0.63	0.55	0.64	0.04	0.43	
Control Delay	15.0	12.1	3.7	15.4	1.9		47.3	39.6	9.0	28.0	36.3	
Queue Delay	0.0	0:0	0.0	0.0	0:0		0.0	0.0	0.0	0.0	0.0	
Total Delay	15.0	12.1	3.7	15.4	1.9		47.3	39.6	9.0	28.0	36.3	
TOS	ш	В	V	В	∢		۵	۵	¥	ပ	۵	
Approach Delay		13.3			9.9			24.5			35.9	
Approach LOS		В			⋖			ပ			٥	
Intersection Summary												
Area Tyne:	Other											

Intersection LOS: B ICU Level of Service E Area Type: Other
Cyde Length: 90
Actualed Cyde Length: 90
Offset: 16 (19%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 80
Maximum vic Ratio: 0.70
Intersection Signal Delay: 13.9
Intersection Capacity Utilization 83.7%
Analysis Period (min) 15 Splits and Phases: 8: Erie Avenue & Veteran's Memorial Parkway/Clarence Street South



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Base Year: PM Peak Hour Queues 8: Erie Avenue & Veteran's Memorial Parkway/Clarence Street South

Base Year: PM Peak Hour HCM Signalized Intersection Capacity Analysis 8: Erie Avenue & Veteran's Memorial Parkway/Clarence Street South

126 126 126 6.0 6.0 1.00 1.00 1.00 11.00 11.00

6.0 6.0 1.00 1.00 1.00 0.95 1.781 0.57

328 328 328 6.0 6.0 1.00 0.97 1.00 1.55 1.00 1.55 3.57 2.26 6.1 1.6

30.0 308 0 0 0 0 0

310 310 0 0 0 0

2488

85.0 662

50.0

vic Ratio
Control Dalay
Queue Delay
Total Delay
Queue Length 50th (m)
Queue Length 95th (m)
Internal Link Dist (m)
Inm Bay Length (m)
Base Capacity (vph)
Base Capacity (vph)
Slanvation Cap Reduch
Sprillack Cap Reduch
Soriage Cap Reduch
Reduced vic Ratio

0.35

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

Queue shown is maximum after two cycles.

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

Intersection Summary

129 0.63 47.3 0.0 47.3 22.3 37.0

870 0.35 1.9 0.0 1.9 6.4 18.6 357.6

463 0.70 15.4 0.0 15.4 21.5 m#52.3

566 0.32 15.1 0.0 15.1 31.7 48.6 329.8

11 0.04 15.0 0.0 15.0 1.0 4.4

109 0.13 3.7 0.0 3.7 0.0 9.2

BE

WBT

WBL /

Lane Group Flow (vph)

0.92

0.92

138 % ¥

16 %0

Perm

15.3 0.17 6.0 3.0 3.19 0.07

15.3 0.17 6.0 3.0 182

15.3 15.3 0.17 6.0 3.0 264

0.43 33.5 1.00 0.9 34.4

0.04 0.23 32.3 1.00 0.4 32.7

1.00 0.1 31.3

0.01

S

В 16.0 E

—	NBT	*	157	157	1900	0.9	1:0	90 !	1.00	00.5	1.00	1845	1.00	1845	0.92	= <	171		3%	NA	∞		15.3	15.3	0.17	0.9	3.0	313	60.08	0.55	34.2	1.00	1.9	36.1	0	35.2								
•	NBL	jr-	119	119	1900	0.9	1.00	9 :	0.99	00.1	0.95	1738	99.0	1208	0.92	671	120	6	3%	Perm		∞	15.3	15.3	0.17	0.9	3.0	205	11	0.63	34.7	1.00	5.9	40.6	۵				ervice					
1	WBR		10	10	1900										0.92	_ <	o	,	%0																				HCM 2000 Level of Service		time (s)	Service		
Ļ	WBT	₩	790	790	1900	0.9	0.95	00 5	1.00	00.1	1.00	3268	1.00	3268	0.92	000	- 869	8	1%	NA	9		62.7	62.7	0.70	0.9	3.0	2485	0.24	0.35	5.5	0.26	0.3	1.7	∢	2.5	∢		:M 2000 L		Sum of lost time (s)	J Level of		
\	WBL	je-	426	426	1900	4.0	0.1	00 5	1:00	00.1	0.95	1750	0.38	969	0.92	504	463	_	3%	pm+pt	-	9	62.7	62.7	0.70	4.0	3.0	644	00.11	0.70	6.2	1.50	3.2	12.5	മ						Su	⊴		
*	EBR	¥.	100	100	1900	0.9	1.00	0.97	1.00	0.85	1.00	1564	1.00	1564	0.92	50.0	7. 7.	2	%0	Perm		2	45.1	45.1	0.50	0.9	3.0	/83	000	0.02	11.6	1.00	0.2	11.8	മ				15.8	0.73	0.06	83.7%	15	
†	EBT	ŧ	521	521	1900	0.9	0.95	9 :	1.00	00.5	1.00	3236	1.00	3539	0.92	000	266	8	2%	NA	2		45.1	45.1	0.50	0.9	3.0	1773	0 .i	0.32	13.3	1.00	0.5	13.8	<u>а</u>	13.5	В							
1	EBL	<u>,-</u>	-01	10	1900	0.9	1.00	9.1	1.00	00.1	0.95	1805	0.33	619	0.92	_ <	÷ =		%0	Perm		2	45.1	45.1	0.50	0.9	3.0	310	000	0.02	11.4	1.00	0.2	11.6	മ					/ ratio		_		
															ш	2	· 6	÷					_										2					_	elav	Capacit	(s) th	Utilizatio		육
		urations	ne (vph)	me (vph)	(ldydx	me (s)	actor	kes.	kes			prot)		perm)	actor, PH	pri) Iofion (vn	Flow (vn	. (#/hr)	(%) selo		hases	hases	een, G (s	een, g (s)	Ratio	ime (s)	(s) uoisue	ap (vph)	10.		av. d1	Factor	Delay, d'		vice	elay (s)	SO	Summar	Control D	Volume to	rcle Leng	Capacity	riod (min)	ane Gro
	Aovement	-ane Configurations	raffic Volume (vph)	Future Volume (vph)	deal Flow (vphpl)	Fotal Lost time (s)	ane Util. Factor	-rpb, ped/bikes	Flpb, ped/bikes		-It Protected	Satd. Flow (prot)	FIt Permitted	Satd. Flow (perm	Peak-hour factor, PHF	Adj. Flow (vpir) PTOP Bediretion (vmb)	ane Groun Flow (vnh)	Confl. Peds. (#/hr)	Heavy Vehicles (%)	urn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Jearance Time (s)	ehicle Extension (s	ane Grp Cap (vph)	//s Ratio Prot	//c Ratio	Jniform Delay, d1	Progression Factor	ncremental Delay, d2	Jelay (s)	evel of Service	Approach Delay (s)	Approach LOS	ntersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	ntersection Capacity Utilization	Analysis Period (min)	Critical Lane Group
	Ĭ	2	Ĕ	교	ğ		La L	드		도	Ξ	တို	Ē	ၯၟ႞	Pe .	2 6		3 3	Ŧ	12	ď.	Pe	Ρ	Ш	δ.	: Č	ÿ .	e F	2	7/1	5	Ā	ĭ	۵۱	- Fe	Α	Α	Ī	IΞ	¥	AC	<u>T</u>	Ā	ပ
	_					_				_																																		
→	SBT								119.3		4	0			0.29																													
	SBL SBT	7	0.04	28.0				4.5 36.4	•				0		0.03 0.29																													
<u> </u>		7	0.04	28.0		28.0	[:		`		2/3	0		0																														

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Appendix C

Intersection Collision Data





Collision Details Report

From: January 1, 2015 **To:** December 31, 2019

Stratement Impact Type Classification Divo Coing alread Automobile Total Coilisions	Location		@ VEIEKAN	S MEM PKWY			Municip		KANIFORD	
Salido S	Traffic C	ontrol Traffic signal					Total C		2	
2017-May-29, Man, 00-21 Clear SMV other Nor-fatal injury South Dry Going ahead Automobile Station wagon Sulform wagon Sulfor	Collision ID	Date/Day/Time	Impact Type		ion Surface Cond'n	Vehicle Manoeuv	er Vehicle type	First Event	Driver Action	No. Ped
Part	019556	2017-May-29, Mon,00:21 Clear	SMV other	Non-fatal injury South		Going ahead	Automobile, station wagon	Ran off road	Lost control	
2017-Jun-21, Wed,17:30 Clear Rear end North Dry Coing ahead Automobile Silva S	Comment	ï			Dry					
North North East Dry Going ahead Automobile station wagon wehide ents: Store Substitution Clear Sideswipe P.D. only East Dry Turning left Pick-up truck Curb mobile station wagon wehide ents: Store Substitution Clear Sideswipe P.D. only East Dry Turning left	023133	2017-Jun-21, Wed,17:30 Clear	Rear end	North	Dry	Going ahead	Automobile,	Other motor	Following too close	
2017-Jun-21, Wed_21:30 Clear SMV other East Sush Sush Coing ahead Automobile Automobile Automobile Automobile Automobile Other motor movement East Sush Coing ahead Automobile Other motor vehicle station wagon Vehicle or South Dy Overtaking Pick-up truck Other motor vehicle or South Dy Stopped Automobile Other motor vehicle or Station wagon Vehicle or South Dy Stopped Automobile Other motor vehicle or Station wagon	Comment	ï		North)		
2016-Feb-03, Wed,18.05 Snow Turning Non-fatal injury West Slush Turning left Automobile, Station wagon Slush Coing ahead Automobile, Other motor wagon Select South Dry Stopped Delivery van South South Dry Stopped Delivery van Subrice motor wagon Webicle wagon	023250	2017-Jun-21, Wed,21:30 Clear	SMV other	East	Dry	Going ahead	Automobile,	Animal - wild	Driving properly	
2016-Feb-03, Wed, 18:05 Snow movement station wagon well-default well-default well-default well-default well-default wagon well-default well-defau	Comment	;;								
South Dry Stopped Automobile, Other motor South Dry Stopped Station wagon Automobile, Other motor Other	5-003426		Turning	Non-fatal injury West	Slush	Turning left	Automobile,	Other motor	Improper turn	
2015-Mar-13, Fri,22:-15 Clear Rear end South Dry Overtaking Pick-up truck Other motor vehicle 2015-Jan-10, Sat,11:00 Clear Rear end East Dry Stopped Automobile, Pick-up truck Other motor vehicle 2015-Jan-10, Sat,11:00 Clear Rear end North Dry Going ahead station wagon Automobile, Pehicle Other motor vehicle 2015-Apr-21, Tue,08:00 Clear SMV other P.D. only North Dry Slowing or stopping Automobile, Period or station wagon Curb or motor or station wagon Curb or motor or station wagon	Comment	ÿ.		East	Slush	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
\$1 South Signature Box Stopped Stopped Automobile, Station wagon Other motor wehicle wehicle \$2015-Jan-10, Sat, 11:00 Clear Rear end North Dry Stopped Automobile, Station wagon Wehicle wehicle wehicle \$2015-Apr-21, Tue,08:00 Clear Rear end North Dry Going ahead Automobile, Station wagon Wehicle motor wehicle \$2015-Apr-25, Sat, 15:08 Clear SMV other P.D. only North Dry Slowing or stopping Automobile, Station wagon Ran off road Station wagon \$2015-All-28, Tue, 21:31 Clear Sideswipe P.D. only East Dry Turning left Pick-up truck Curb \$2015-All-28, Tue, 21:31 Clear Sideswipe P.D. only East Dry Automobile, Station wagon Welride \$2015-All-28, Tue, 21:31 Clear Sideswipe P.D. only East Dry Merging Automobile, Automobile, Station wagon Other motor Welride	5-007443	2015-Mar-13, Fri,22:15	Rear end	South		Overtaking	Pick-up truck	Other motor vehicle	Other	
Station wagon East Dry Stopped Automobile, station wagon Other motor weblide Automobile, station wagon Other motor weblide 2015-Apr-21, Tue,08:00 Clear Rear end North Dry Going ahead Automobile, station wagon Other motor weblide 2015-Apr-21, Tue,08:00 Clear SMV other P.D. only North Dry Slowing or stopping Automobile, station wagon Automobile, station wagon Automobile, station wagon Curb 2015-May-27, Wed,14:00 Clear SMV other P.D. only East Dry Turning left Pick-up truck Curb 2015-May-27, Wed,14:00 Clear Sideswipe East Dry Merging Automobile, attain wagon Curb 2015-May-21:31 Clear Sideswipe East Dry Merging Automobile, attain wagon Other motor vehicle	comment	ö		South		Stopped	Delivery van	Other motor vehicle	Driving properly	
East North Dry Going ahead Automobile, Other motor station wagon Slowing or Stopping Automobile, SMV other P.D. only North Dry Going ahead Station wagon vehicle vehicle states and station wagon station station wagon station wagon station wagon station wagon station statio	5-00974		Rear end	East	Dry	Stopped	Automobile,	Other motor	Driving properly	
2015-Apr-21, Tue,08:00 Clear Rear end North Dry Going ahead Automobile, station wagon wagon wabled station wagon wabled station wagon wabled wabled bassenger van Other motor Automobile, wablide wabled Solowing or stopping Automobile, wablide station wagon wabled watonobile, other motor station wagon wabled wa	omment	;s		East			station wagon			
North Dry Going ahead Passenger van Orther Dry Going ahead Passenger van Vehicle vehicle SMV other P.D. only East Dry Turning left Pick-up truck Curb Dry Going ahead Automobile, Sideswipe East Dry Going ahead Automobile, Other motor station wagon vehicle station wagon vehicle station wagon vehicle station wagon vehicle	5-011831	2015-Apr-21, Tue,08:00	Rear end	North	Dry	Going ahead	Automobile,	Other motor	Other	
2015-Apr-25, Sat, 15.08 Clear SMV other P.D. only North Dry Slowing or stopping Automobile, Station wagon SMV other SMV other SMV other Sideswipe SMV other Sideswipe SMV other Sideswipe SMV other SMV other Sideswipe SMV other	comment	S		North	Dry	Going ahead	Passenger van	Other motor vehicle	Driving properly	
Dry Turning left Pick-up truck Curb SMV other P.D. only East Dry Turning left Pick-up truck Curb Dry Turning left Pick-up truck Curb Dry Merging Automobile, Other motor station wagon vehicle station wagon vehicle station wagon vehicle station wagon vehicle	5-012295	2015-Apr-25, Sat,15:08	SMV other		Dry	Slowing or stoppi	ng Automobile,	Ran off road	Lost control	
2015-May-27, Wed, 14:00 Clear SMV other Sideswipe East Dry Turning left Pick-up truck Curb Curb St. 2015-Jul-28, Tue, 21:31 Clear Sideswipe East Dry Going ahead Automobile, Other motor Station wagon vehicle station wagon vehicle station wagon vehicle station wagon vehicle	Comment	ï			Dry					
2015-Jul-28, Tue,21:31 Clear Sideswipe East Dry Merging Automobile, Other motor station wagon vehicle station wagon vehicle	5-016387		SMV other		Dry	Turning left	Pick-up truck	Curb	Improper turn	
2015-Jul-28, Tue,21:31 Clear Sideswipe East Dry Merging Automobile, Other motor station wagon vehicle sist Dry Going ahead Automobile, Other motor station wagon vehicle	Comment	:6			Dry					
East Dry Going ahead Automobile, Other motor station wagon vehicle	5-024514	2015-Jul-28, Tue,21:31	Sideswipe	East	Dry	Merging	Automobile, station wagon	Other motor vehicle	Driving properly	
	Comment	ï		East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	

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15-032882 2015-Sep-29, Tue,16:00 Rain	Turning	P.D. only	West	Wet	Going ahead	Automobile,	Other motor	Driving properly
Comments:			East	Wet	Turning left	Automobile, station wagon	Other motor vehicle	Improper turn
15-03426 2015-Feb-03, Tue, 18:05 Snow	Turning	Non-fatal injury	jury West	Slush	Turning left	Automobile,	Other motor	Improper turn
Comments:			East	Slush	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
15-038267 2015-Nov-10, Tue,17:55 Rain	SMV other	P.D. only	East	Wet	Going ahead	Automobile, station wagon	Skidding/sliding	Driving properly
Comments:				Wet		•		
15-041788 2015-Dec-07, Mon,17:54 Clear	Turning	Non-fatal injury West	y West	Dry	Turning left	Automobile,	Other motor	Improper turn
Comments:			East	Dry	Going ahead	Pick-up truck	Other motor vehicle	Disobeyed traffic control
16-001788 2016-Jan-16, Sat,04:40 Rain	SMV other	Non-reportable West	• West	92 <u> </u>	Turning right	Automobile,	Skidding/sliding	Driving properly
Comments:				<u>o</u>				
16-009935 2016-Mar-22, Tue,05:55 Clear	SMV other		East	Dry	Going ahead	Automobile, station wagon	Animal - wild	Driving properly
Comments:)		
16-015764 2016-May-06, Fri,19:50 Clear	Rear end		East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:			East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
16-017451 2016-May-20, Fri,15:31 Clear	Rear end	P.D. only	East	Dry	Going ahead	Pick-up truck	Other motor vehicle	Following too close
Comments:			East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
16-027846 2016-Jul-31, Sun,20:00 Clear	Turning movement		East	Dry	Turning right	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:			East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
16-035571 2016-Sep-22, Thu,16:25 Clear	Sideswipe	Non-fatal injury East	y East	Dry	Changing lanes	Truck-other	Other motor vehicle	Improper lane change
Comments:			East	Dry	Going ahead	Pick-up truck	Other motor vehicle	Driving properly
16-044605 2016-Nov-26, Sat,05:10 Clear	SMV other	P.D. only	East	Wet	Going ahead	Automobile, station wagon	Animal - wild	Driving properly
Comments:				Wet				
17-002567 2017-Jan-22, Sun,14:33 Fog, mist, smoke, dust	SMV other t	P.D. only	West	Wet	Turning right	Automobile, station wagon	Ran off road	Speed too fast for condition
Comments:				Wet		1		

17-003381 2/	2017-Jan-28, Sat,22:43	Snow	SMV other	P.D. only	East I	Loose snow	Merging	Automobile, station wagon		Driving properly
17-024160 24	2017-Jun-29, Thu,16:00	Clear	Turning movement	Non-fatal injury N	ury North [Dry	Turning left Going ahead	Automobile, station wagon Automobile, station wagon	Other motor vehicle Other motor vehicle	Failed to yield right-of- way Driving properly
17-025953 2 Comments:	2017-Jul-11, Tue,21:20	Clear	Turning movement	Non-fatal injury West		Dry	Turning left Going ahead	Automobile, station wagon Automobile, station wagon station wagon	Other motor vehicle Other motor vehicle	Failed to yield right-of- way Driving properly
17-035680 2 Comments:	2017-Sep-16, Sat,00:45	Clear	Rear end		North I	Dry	Going ahead Stopped	Automobile, station wagon Automobile, station wagon	Other motor vehicle Other motor vehicle	Following too close Driving properly
17-47896 2	2017-Dec-15, Fri,14:15	Snow	Angle	Non-fatal injury East Sout	ے	Loose snow	Slowing or stopping Passenger van Going ahead Automobile, station wagon	y Passenger van Automobile, station wagon	Other motor vehicle Other motor vehicle	Speed too fast for condition Driving properly
17-48886 2 Comments:	2017-Dec-23, Sat,08:00	Snow	SMV other	· >	West	<u>90</u>	Turning right	Automobile, station wagon	Curb	Driving properly
18-016970 2	2018-May-07, Mon,15:30 Clear) Clear	Turning movement	Non-fatal injury North South		Dry Dry	Turning left Going ahead	Automobile, station wagon Automobile, station wagon	Other motor vehicle	Failed to yield right-of- way Driving properly
18-020828 2	2018-Jun-01, Fri,19:40	Clear	Rear end	ш Ш	East [Dry	Going ahead Stopped	Automobile, station wagon Automobile, station wagon	Other motor vehicle Other motor vehicle	Following too close Driving properly
18-023377 20 Comments:	2018-Jun-18, Mon,12:49	Rain	SMV other	Non-fatal injury East		Wet		Automobile, station wagon	Tree, shrub, stump	Lost control
18-026598 2	2018-Jul-10, Tue,07:52	Clear	Rear end	ш ш	East [Dry Dry	Overtaking Stopped	Automobile, station wagon Automobile, station wagon	Other motor vehicle Other motor vehicle	Driving properly Driving properly
18-028609 2	2018-Jul-24, Tue,10:00	Clear	Rear end	2 2	North I	Dry	Going ahead Stopped	Automobile, station wagon Automobile, station wagon	Other motor vehicle Other motor vehicle	Driving properly Driving properly

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18-028701	2018-Jul-24, Tue,22:53 Clear	Turning	P.D. only	South	Dry	Turning left	Pick-up truck	Other motor	Improper turn
Comments:	ж			East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
18-029104	2018-Jul-25, Wed,15:30 Clear	Sideswipe		East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				East	ury	Cnanging lanes	Automobile, station wagon	Otner motor vehicle	Improper lane cnange
18-03511	2018-Jan-27, Sat,00:14 Clear	Rear end	Non-fatal injury West	ry West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Following too close
Comments:				West		Slowing or stopping		Other motor vehicle	Driving properly
18-040330	2018-Oct-12, Fri,07:50 Clear	Angle		North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Failed to yield right-of- wav
Comments:				West	Dry	Going ahead	Pick-up truck	Other motor vehicle	Driving properly
18-040502	2018-Oct-13, Sat,10:45 Clear	Sideswipe		West	Dry	Going ahead	Passenger van	Other motor vehicle	Other
Comments:				West	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
18-07636	2018-Feb-27, Tue,06:28 Clear	Turning movement	Non-fatal injury West	ry West	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Improper turn
Comments:	16			East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
18-10187	2018-Mar-17, Sat,17:30 Clear	Rear end		North	Dry	Slowing or stopping Pick-up truck	g Pick-up truck	Other motor vehicle	Following too close
Comments:	26			North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
19-001467	2019-Jan-11, Fri,16:28 Clear	Rear end		West	Dry	Slowing or stopping Automobile, station wage	y Automobile, station wagon	Other motor vehicle	Driving properly
Comments:	**			West	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
19-002705	2019-Jan-21, Mon,06:30 Clear	Rear end		North	<u>l</u> Ce	Going ahead	Automobile, station wagon	Other motor vehicle	Speed too fast for condition
Comments:				North	Wet	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
19-004201	2019-Feb-01, Fri,08:50 Clear	Rear end		East	Dry	Slowing or stopping Automobile, station wago	g Automobile, station wagon	Skidding/sliding	Following too close
Comments:				East	Dry	Stopped	Passenger van	Other motor vehicle	Driving properly
19-10201	2019-Mar-21, Thu,15:50 Clear	Rear end	P.D. only	West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Following too close
Comments:	16			West	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly

19-11925	2019-Apr-02, Tue,13:30	Clear	Rear end	P.D. only	West	Dry	Going ahead	Automobile,		Following too close
Comments:	:				West	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
19-25025	2019-Jul-03, Wed,12:45	Clear	Rear end	P.D. only	North	Dry	Stopped	Automobile,	Other motor	Driving properly
Comments:	s: Two vehicles involved, second page missing	econd page mis	ssing		North			Unknown		
19-32262	2019-Aug-21, Wed,06:15 Clear	Clear	Rear end	P.D. only	East	Dry	Going ahead	Automobile,	Other motor	Other
Comments:	:				East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
19-36945	2019-Sep-20, Fri,18:00	Clear	Approaching	P.D. only	West	Dry	Stopped	Pick-up truck	Other motor vehicle	Driving properly
Comments:	:s				East	Dry		Unknown	Other motor vehicle	
19-37668	2019-Sep-28, Sat,10:30	Clear	Rear end	P.D. only	East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Following too close
Comments:	:: :				East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
19-48365	2019-Dec-20, Fri,09:55	Clear	Rear end	P.D. only	South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:	;;				South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
19-48545	2019-Dec-19, Thu,18:18 Clear	Clear	Turning movement	Non-fatal injury West	ry West	Dry	Turning left	Delivery van	Other motor vehicle	Failed to yield right-of- way
Comments:	;;				East	Dry	Going ahead	Passenger van	Other motor vehicle	Driving properly
19-48635	2019-Dec-20, Fri,09:55	Clear	Rear end	P.D. only	East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Speed too fast for condition
Comments:	: ;				East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly

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Collision Details Report

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To: December 31, 2019 From: January 1, 2015

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Location		COLBORNE ST W @ MOUNT PLEASANT ST	OUNI PLEAS	SANISI				Municip	Municipality Bl	BKANIFOKD	
Traffic Co	Traffic Control Traffic signal	ınal						Total Co	Total Collisions 32	CI	
Collision ID	Date/Day/Time	Environment	Impact Type	Classification	Direction	Direction Surface Cond'n	Vehicle Manoeuver Vehicle type	· Vehicle type	First Event	Driver Action	No. Ped
004453	2017-Feb-06, Mon,08:30 Clear	:30 Clear	Sideswipe		East	Dry	Changing lanes	Automobile, station wagon	Other motor vehicle	Improper lane change	
Comments:	;;				East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
013659	2017-Apr-16, Sun,17:40	40 Clear	Rear end		North	Dry	Stopped	Automobile,	Other motor	Driving properly	
Comments:	::				North			Station Wag			
016939	2017-May-11, Thu,15:20 Clear	.20 Clear	Rear end	P.D. only	West	Dry	Going ahead	Truck - closed	Other motor vehicle	Following too close	
Comments:	:6				West	Dry	Slowing or stopping Automobile, station wago	y Automobile, station wagon	Other motor vehicle	Driving properly	
017327	2017-May-14, Sun,06:45 Clear	:45 Clear	SMV other	P.D. only	North	Dry	Going ahead	Automobile, station wagon	Pole (utility, power)	Lost control	
Comments:	;;							•			
15-017635	2015-Jun-05, Fri,21:30	0 Clear	Turning movement	Non-fatal injury North	/ North	Dry	Turning right	Automobile, station wagon	Cyclist	Failed to yield right-of- way	
Comments:	:				West	Dry	Going ahead	Bicycle	Other motor vehicle	Failed to yield right-of- way	
15-018323	2015-Jun-11, Thu,17:23 Clear	23 Clear	Turning movement	Non-fatal injury	lury West	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly	
Comments:	::				East	Dry	Going ahead	Pick-up truck	Other motor vehicle	Improper turn	
15-021147	2015-Jul-03, Fri,16:34	. Clear	SMV other	Non-fatal injury North	/ North	Dry	Turning right	Automobile, station wagon	Pedestrian	Improper turn	
Comments:	:					Dry					
15-021155	2015-Jul-03, Fri,17:25	. Clear	Rear end		West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
Comments:	;;				West	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	
15-033986	2015-Oct-08, Thu,07:48	48 Clear	Sideswipe		East	Dry	Changing lanes	Passenger van	Other motor vehicle	Driving properly	
Comments:	:6				East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	

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16-007711 2016-Mar-04, Fri,21:17 Clear	Turning movement	P.D. only	South	Dry	Going ahead	Pick-up truck	Other motor vehicle	Following too close
Comments:			South		Turning right	Automobile, station wagon	Other motor vehicle	Driving properly
16-010707 2016-Mar-29, Tue,05:00 Clear	SMV unattendedP.D. only vehicle	edP.D. only	North	Dry	Going ahead	Automobile, station wagon	Unattended vehicle	Lost control
Comments:			North	Dry	Parked	Automobile, station wagon	Other motor vehicle	
16-019069 2016-May-31, Tue,15:04 Clear	SMV other	Non-reportable East	le East	Dry	Going ahead	Automobile,	Ran off road	Lost control
Comments:				Dry				
16-036118 2016-Sep-26, Mon,14:00 Rain	SMV other	Non-fatal injury West	ry West	Wet	Going ahead	Automobile,	Pedestrian	Driving properly
Comments:				Wet				
16-043298 2016-Nov-16, Wed,10:12 Clear	Sideswipe	Non-fatal injury North	ry North	Wet	Changing lanes	Passenger van	Other motor vehicle	Improper lane change
Comments:			North	Wet	Slowing or stopping Automobile, station wago	J Automobile, station wagon	Other motor vehicle	Driving properly
16-048790 2016-Dec-29, Thu,13:52 Snow	Angle	P.D. only	South	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Failed to yield right-of- way
Comments:			West	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
17-005857 2017-Feb-17, Fri,13:59 Clear	SMV other	P.D. only	South	Dry	Turning left	Automobile, station wagon	Ran off road	Lost control
Comments:				Dry		•		
17-029752 2017-Aug-04, Fri,13:00 Clear	Rear end		East	Dry	Going ahead	Automobile,	Other motor	Driving properly
Comments:			East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
17-034699 2017-Sep-09, Sat,12:22 Clear	Turning	Non-fatal injury East	ry East	Dry	Going ahead	Automobile,	Other motor	Disobeyed traffic
Comments:			East	Dry	Turning right	Passenger van	Other motor vehicle	Driving properly
17-44392 2017-Nov-17, Fri,07:10 Clear	Rear end		North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:			North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
17-45082 2017-Nov-23, Thu,16:00 Clear	SMV other	Non-reportable West	le West	Dry	Turning left	Automobile, station wagon	Pedestrian	
Comments:				Dry		,		
18-017656 2018-May-11, Fri,18:30 Clear	Sideswipe		East	Dry	Changing lanes	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:			East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly

18-022915	2018-Jun-15, Fri,07:00 Clear	Angle		West	Dry	Going ahead	Automobile,	Other motor	Disobeyed traffic
Comments:				North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
18-025898 Comments:	2018-Jul-05, Thu,14:15 Clear:	SMV other		North	Dry Dry	Turning right	Automobile, station wagon Other	Pedestrian	Driving properly
18-030875 Comments:	2018-Aug-08, Wed,18:00 Clear	Rear end		West	Dry	Going ahead Stopped	Automobile, station wagon Automobile, station wagon	Other motor vehicle Other motor vehicle vehicle	Following too close Driving properly
18-049365 Comments:	2018-Dec-13, Thu,19:30 Fog, mist, smoke, dust ::	ist, Turning dust movement		North South	Wet	Turning left Going ahead	Automobile, station wagon Automobile, station wagon	Other motor vehicle Other motor vehicle vehicle	Driving properly Driving properly
18-05627 Comments:	2018-Feb-11, Sun,17:05 Snow	Rear end		West	lce Wet	Slowing or stopping Automobile, station wagg Stopped Automobile, station wagg	ng Automobile, station wagon Automobile, station wagon	Skidding/sliding Other motor vehicle	Driving properly Driving properly
18-11540 Comments:	2018-Mar-28, Wed,17:30 Clear:	Turning movement		East West	Dry	Turning left Going ahead	Automobile, station wagon Automobile, station wagon	Other motor vehicle Other motor vehicle vehicle	Failed to yield right-of- way Driving properly
19-001232 Comments:	2019-Jan-09, Wed,19:10 Clear:	Turning movement	P.D. only	East West	Dry Dry	Turning left Going ahead	Automobile, station wagon Pick-up truck	Other motor vehicle Other motor vehicle vehicle	Improper turn Driving properly
19-001949 Comments:	2019-Jan-15, Tue,14:16 Clear:	SMV other	P.D. only	South	Dry Dry	Turning left	Automobile, station wagon	Pedestrian	Failed to yield right-of- way
19-12084 Comments :	19-12084 2019-Apr-03, Wed,07:40 ClearComments: Vehicle 2 info missing from report	Rear end rt	P.D. only	North	Dry Dry	Stopped	Automobile, station wagon Automobile, station wagon	Other motor vehicle	Driving properly
19-46282 Comments:	2019-Dec-02, Mon,08:00 Snow:	Rear end	P.D. only	West	Wet	Slowing or stopping Pick-up truck Stopped Automobile, station wagor	ng Pick-up truck Automobile, station wagon	Other motor vehicle Other motor vehicle vehicle	Following too close
BR- 18049098 Comments:	2018-Dec-12, Wed,18:00 Clear :	Turning movement	P.D. only	South	Dry	Turning left Going ahead	Pick-up truck Automobile, station wagon	Other motor vehicle	Failed to yield right-of- way Driving properly

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Collision Details Report

To: December 31, 2019

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No. Ped Failed to yield right-of-way Failed to yield right-of-way Following too close Following too close Following too close Disobeyed traffic control Driving properly Improper turn BRANTFORD **Driver Action** Other 42 Skidding/sliding From: January 1, 2015 Other motor vehicle Other motor vehicle Other motor vehicle Total Collisions.... Other motor vehicle Other motor Other motor Other motor Other motor Other motor Municipality..... First Event vehicle vehicle vehicle vehicle vehicle Municipal transit bus Automobile, station wagon Slowing or stopping Passenger van Automobile, station wagon Passenger van Automobile, station wagon station wagon Vehicle Manoeuver Vehicle type Slowing or stopping Pick-up truck Slowing or stopping Pick-up truck Pick-up truck Slowing or stopping Automobile, Going ahead Going ahead Going ahead Going ahead Going ahead **Turning right Turning right Turning left Turning left** Stopped Stopped Stopped Stopped Stopped Classification Direction Surface Cond'n Wet Wet Wet Dry ΟŊ Dry ΡŊ Dry Dry Dα Dry Dry Dα ΟŊ Dry Dry Dry $\overline{\mathsf{D}}$ North South North North West West West East West West West West West East East East East East P.D. only P.D. only P.D. only Impact Type COLBORNE ST W @ GILKISON ST Turning movement Turning movement Turning movement Sideswipe Rear end Rear end Rear end Rear end Angle Environment 2015-Jan-18, Sun,18:47 Snow Clear Clear 2015-Jun-11, Thu,08:50 Clear Clear 2017-Jun-18, Sun,14:55 Clear 2015-May-09, Sat, 21:15 Clear 2015-May-28, Thu,11:40 Clear Rain **Fraffic Control....** Traffic signal 2015-Jul-06, Mon,14:50 2015-May-08, Fri,14:00 2015-Apr-24, Fri,16:13 2015-Jul-24, Fri,15:20 Collision ID Date/Day/Time Location 15-012155 Comments: Comments: Comments: Comments: Comments: Comments: Comments: Comments: Comments: 15-018270 15-016493 15-021552 15-023912 15-014287 15-017031 15-01803 022568

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15-029238	2015-Sep-02, Wed,12:15 Clear	Sideswipe	Non-fatal inju	lury West	Dry	Changing lanes	Pick-up truck	Other motor	Improper lane change
Comments:	25			West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
15-030221	2015-Sep-09, Wed,16:15 Clear	Rear end	P.D. only	West	Dry	Changing lanes	Passenger van	Other motor	Following too close
Comments:	2:			West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
15-036778	2015-Oct-28, Wed,17:00 Rain	Rear end		West	Wet	Stopped	Automobile,	Other motor	Driving properly
Comments:	ió			West					
15-04815	2015-Feb-17, Tue,12:55 Clear	Turning	P.D. only	East	Dry	Turning left	Automobile,	Other motor	Failed to yield right-of-
Comments:	:5			West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Disobeyed traffic control
16-005568	2016-Feb-16, Tue,08:26 Snow	Rear end	P.D. only	South	Loose snow	Going ahead	Automobile, station wagon	Other motor vehicle	Speed too fast for condition
Comments:	::			South	Packed snow	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
16-005584	2016-Feb-16, Tue,08:45 Snow	Rear end		West	Slush	Stopped	Automobile,	Other motor	Driving properly
Comments:	:			West					
16-008518	2016-Mar-11, Fri,07:50 Clear	Turning	Non-fatal inju	ury East	Dry	Turning left	Automobile,	Other motor vehicle	Failed to yield right-of- wav
Comments:	:8			West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
16-011362	2016-Apr-02, Sat,13:15 Snow	Rear end		West	Wet	Slowing or stopping Automobile, station wago	g Automobile, station wagon	Skidding/sliding	Driving properly
Comments:	;;			West	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
16-012422	2016-Apr-10, Sun,18:15 Snow	Rear end	P.D. only	West	Slush	Slowing or stopping Pick-up truck	g Pick-up truck	Other motor vehicle	Following too close
Comments:	::			West	Slush	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
16-014618	2016-Apr-27, Wed,19:10 Clear	Sideswipe	P.D. only	West	Dry	Changing lanes	Pick-up truck	Other motor vehicle	Improper lane change
Comments:	:8			West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
16-024567	2016-Jul-08, Fri,18:09 Clear	Turning movement	P.D. only	North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Disobeyed traffic control
Comments:				South	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly

16-024568 2016-Jul-08, Fri,18:19 Clear	Turning	P.D. only	West	Dry	Going ahead	Unknown	Other motor	Disobeyed traffic
Comments:			East	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly
16-029188 2016-Aug-09, Tue,18:10 Clear	Angle	Non-fatal injury East	y East	Dry	Going ahead	Automobile,	Other motor	Disobeyed traffic
Comments:			South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
16-029276 2016-Aug-08, Mon,21:30 Clear	Rear end		East	Dry	Stopped	Automobile,	Other motor	Driving properly
Comments:			East					
16-029849 2016-Aug-14, Sun,00:46 Clear	Angle	P.D. only	West	Wet	Changing lanes	Automobile,	Other motor	Improper lane change
Comments:			South	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
16-031172 2016-Aug-22, Mon,12:31 Clear	Rear end	Non-fatal injury West	y West	Dry	Going ahead	Automobile,	Other motor vehicle	Following too close
Comments:			West	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
16-42051 2016-Nov-07, Mon,22:42 Clear	Turning movement	Fatal injury	West	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Other
Comments:			East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
17-001760 2017-Jan-15, Sun,13:35 Clear	Rear end	P.D. only	West	Dry	Changing lanes	Automobile, station wagon	Other motor vehicle	Improper lane change
Comments:			West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
17-019598 2017-May-28, Sun,12:45 Clear	Sideswipe		West	Dry	Changing lanes	Automobile, station wagon	Other motor vehicle	Improper lane change
Comments:			West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
17-029622 2017-Aug-03, Thu,18:10 Clear	Turning movement		North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:			North	Dry	Turning right	Automobile, station wagon	Other motor vehicle	Driving properly
17-034959 2017-Aug-28, Mon,14:30 Clear	Rear end		East	Dry	Slowing or stopping Automobile, station wage	g Automobile, station wagon	Other motor vehicle	Following too close
Comments:			East					
17-035434 2017-Sep-14, Thu,21:35 Clear	Turning movement	Non-fatal injury West	y West	Dry	Going ahead	Bicycle	Other motor vehicle	Disobeyed traffic control
Comments:			North	Dry	Turning right	Pick-up truck	Cyclist	Driving properly

September-02-20

17-45645	2017-Nov-27, Mon,17:30 Clear	Clear	Turning		East	Dry	Turning left	Automobile,	Other motor	Other
Comments:					West	Dry	Going ahead	Pick-up truck	Other motor vehicle	Driving properly
17-47031	2017-Dec-08, Fri,13:52	Clear	Angle	Non-fatal injury East	ry East	Dry	Going ahead	Automobile, station wagon	Other motor	Disobeyed traffic control
Comments:					North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
17-48905	2017-Dec-23, Sat,11:15	Snow	Angle		South	Slush	Turning left	Automobile,	Skidding/sliding	Speed too fast for condition
Comments:	22				West	Slush	Stopped	Pick-up truck	Other motor vehicle	Driving properly
18-016320	2018-May-03, Thu,13:06 Clear	Clear	Turning movement	P.D. only	West	Dry	Turning left	Delivery van	Other motor vehicle	Failed to yield right-of- way
Comments:					East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
18-017625	2018-May-11, Fri,14:50	Clear	Angle	Non-fatal injury East	ry East	Dry	Stopped	Pick-up truck	Other motor vehicle	Following too close
Comments:					North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
18-05024	2018-Feb-07, Wed,10:25 Snow	Snow	Rear end		West	Slush	Slowing or stopping Automobile, station wage	y Automobile, station wagon	Skidding/sliding	Lost control
Comments:					West	Loose snow	Slowing or stopping		Other motor vehicle	Driving properly
18-05311	2018-Feb-09, Fri,15:20	Drifting Snow	Rear end	P.D. only	West	Slush		Automobile, station wagon	Other motor vehicle	Speed too fast for condition
Comments:					West	Slush	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
19-09900	2019-Mar-19, Tue,15:00	Clear	SMV other	P.D. only	North	Dry	Turning right	Automobile, station wagon	Pedestrian	Driving properly
Comments:	.,)		
19-20765	2019-Jun-04, Tue,18:20	Clear	Rear end	P.D. only	West	Dry	Stopped	Automobile,	Other motor	Driving properly
Comments	Comments: Two vehicles in this collision, second page missing	sion, second paς	ge missing		West	Dry		Unknown		
19-31556	2019-Aug-16, Fri,16:45	Rain	Rear end	P.D. only	East	Wet	Slowing or stopping Automobile, station wage	y Automobile, station wagon	Skidding/sliding	Lost control
Comments:					East	Wet	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
19-36235	2019-Sep-18, Wed,22:12 Clear	Clear	Turning movement	Non-fatal injury South	ry South	Dry	Going ahead	Bicycle	Other motor vehicle	Disobeyed traffic control
Comments:					South	Dry	Turning left	Automobile, station wagon	Cyclist	Driving properly

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Collision Details Report

To: December 31, 2019

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No. Ped Failed to yield right-of-way Improper lane change Following too close Speed too fast for condition
Driving properly Following too close Driving properly Improper turn Improper turn BRANTFORD **Driver Action** Other 72 From: January 1, 2015 Other motor vehicle Other motor vehicle Total Collisions.... Other motor vehicle Ran off road Other motor vehicle Other motor Other motor Other motor Other motor First Event Municipality..... vehicle vehicle vehicle Automobile, station wagon Passenger van Automobile, station wagon Slowing or stopping Automobile, station wagon Slowing or stopping Truck - tractor Truck - closed Truck - tractor Vehicle Manoeuver Vehicle type Delivery van Truck - open Changing lanes Changing lanes Going ahead Going ahead Going ahead Going ahead Turning right Turning right Turning left Turning left Turning left Stopped Stopped Stopped Stopped Classification Direction Surface Cond'n Wet Wet Wet Wet Dη Wet ΟŊ Dry Dry Dry Dry Dα ΡŊ ΡŊ Dry $\overline{\mathsf{D}}$ $\overline{\mathsf{D}}$ D South South South South South South South South South Non-reportable South Non-reportable South East East Non-reportable East East East East P.D. only Environment Impact Type SMV other Sideswipe Sideswipe COLBORNE ST W @ ICOMM DR Sideswipe Rear end Rear end Rear end Rear end Other 2017-Mar-27, Mon,20:55 Fog, mist, smoke, dust Clear Clear 2015-Jan-06, Tue, 18:03 Clear 15-010215 2015-Apr-07, Tue,13:45 Clear 2015-May-26, Tue, 15:58 Clear 2017-Mar-09, Thu, 18:43 Clear 15-002161 2015-Jan-22, Thu,10:16 Clear 2017-May-01, Mon, 20:00 Rain **Fraffic Control....** Traffic signal 2017-Jun-30, Fri,15:15 2015-Jan-16, Fri,17:20 Collision ID Date/Day/Time -ocation Comments: Comments: Comments: Comments: Comments: Comments: Comments: Comments: Comments: 15-016278 15-000579 15-01666 008454 010738 024309 015538

September-01-20

15-018468 2015-Jun-12, Fri,21:20 Clear	Angle	Non-fatal injury South	y South	Dry	Going ahead	Passenger van	Other motor	Disobeyed traffic
Comments:			East	Dry	Going ahead	Passenger van	Other motor vehicle	Driving properly
15-018955 2015-Jun-16, Tue,16:00 Clear	Rear end		East	Dry	Going ahead	Passenger van	Other motor vehicle	Other
Comments:			East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
15-020729 2015-Jun-30, Tue,15:55 Clear	Turning movement		East	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:			East	Wet	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly
15-027786 2015-Aug-21, Fri,00:00 Clear	Sideswipe	P.D. only	South	Dry	Going ahead	Truck - closed	Other motor vehicle	Improper lane change
Comments:			South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
15-034269 2015-Oct-10, Sat,08:50 Clear	Turning movement		North	Dry	Turning left	Passenger van	Other motor vehicle	Other
Comments:					Going ahead			
15-035041 2015-Oct-16, Fri,12:15 Clear	Rear end		North	Dry	Going ahead	Pick-up truck	Other motor vehicle	Driving properly
Comments:			North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
15-039346 2015-Nov-18, Wed,21:15 Rain	Sideswipe	P.D. only	South	Wet	Changing lanes	Automobile, station wagon	Other motor vehicle	Improper lane change
Comments:			South	Wet	Going ahead	Pick-up truck	Other motor vehicle	Driving properly
15-043630 2015-Dec-23, Wed,14:18 Clear	Sideswipe	P.D. only	South	Dry	Going ahead	Automobile,	Other motor	Improper lane change
Comments:			South	Dry	Going ahead	Passenger van	Other motor vehicle	Driving properly
15-08749 2015-Mar-25, Wed,06:49 Clear	Other	P.D. only	North	Dry	Turning left	Automobile, station wagon	Ran off road	Lost control
Comments:				Dry				
16-002897 2016-Jan-25, Mon,09:00 Clear	Rear end	Non-fatal injury East	y East	Dry	Going ahead	Automobile,	Other motor	Following too close
Comments:			East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
16-017665 2016-May-21, Sat,20:27 Clear	SMV other	P.D. only	West	Dry	Going ahead	Automobile,	Concrete guide	Lost control
Comments:				Dry				

16-022373 2016-Jun-23, Thu,14:30 Rain	Rear end	S	South V	Wet	Slowing or stopping Pick-up truck	g Pick-up truck	Other motor	Driving properly
Comments:		So	South V	Wet	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
16-022572 2016-Jun-23, Thu,14:30 Clear Comments:		S	South	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
16-025098 2016-Jul-12, Tue,17:11 Clear Comments:	SMV other	P.D. only East		Dry	Going ahead	Automobile, station wagon	Other	Driving properly
16-034201 2016-Sep-13, Tue,11:10 Clear Comments:	Angle	Non-fatal injury South		Dry	Going ahead Going ahead	Automobile, station wagon Automobile, station wagon	Other motor vehicle Other motor vehicle	Disobeyed traffic control Driving properly
16-036014 2016-Sep-25, Sun,17:55 Clear Comments:	Sideswipe	Non-fatal injury South South		Dry Wet	Going ahead Going ahead	Pick-up truck Motorcycle	Other motor vehicle Other motor vehicle	Driving properly Driving properly
16-040551 2016-Oct-27, Thu,13:10 Rain Comments:	Rear end	<u>2</u> 2	North V	Wet	Slowing or stopping Pick-up truck Stopped Automobile, station wagor	g Pick-up truck Automobile, station wagon	Other motor vehicle Other motor vehicle	Speed too fast for condition Driving properly
16-044268 2016-Nov-23, Wed,17:40 Clear Comments:	Rear end	East East		Dry Dry	Going ahead Stopped	Automobile, station wagon Automobile, station wagon	Other motor vehicle Other motor vehicle vehicle	Following too close Driving properly
16-048900 2016-Dec-30, Fri,10:50 Clear Comments:	Rear end	N N	North D	Dry Wet	Slowing or stopping Automobile, station wage Stopped Automobile, station wage	g Automobile, station wagon Automobile, station wagon	Skidding/sliding Other motor vehicle	Following too close Following too close
17-003680 2017-Jan-31, Tue,08:45 Snow Comments:	Rear end	os os	South S South S	Slush	Slowing or stopping Automobile, station wagor Stopped Automobile, station wagor	g Automobile, station wagon Automobile, station wagon	Skidding/sliding Other motor vehicle	Speed too fast for condition Driving properly
17-008270 2017-Mar-07, Tue,14:30 Clear Comments:	Other	Ea	East V West V	Wet Wet	Changing lanes Reversing	Automobile, station wagon Tow truck	Other motor vehicle Other motor vehicle	Driving properly Driving properly
17-008290 2017-Mar-07, Tue,14:20 Clear Comments:	Sideswipe	East East		Wet Wet	Stopped Pick-up truci Slowing or stopping Automobile, station wago	Pick-up truck g Automobile, station wagon	Other motor vehicle Other motor vehicle	Failed to yield right-of- way Driving properly

17-008454 2017-Mar-09, Thu,06:43 Clear	Sideswipe	P.D. only	South	Dry	Changing lanes	Delivery van	Other motor	Failed to yield right-of-
Comments:			South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Following too close
17-014720 2017-Apr-25, Tue,08:10 Rain	Turning movement		North	Wet	Turning left	Automobile, station wagon	Other motor vehicle	Improper turn
Comments:			South	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
17-020139 2017-May-31, Wed,21:51 Clear	Sideswipe		South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:			South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
17-024229 2017-Jun-30, Fri,04:02 Rain	Angle	Non-fatal inju	lury South	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Speed too fast for condition
Comments:			East	Wet	Going ahead	Pick-up truck	Other motor vehicle	Speed too fast for condition
17-028382 2017-Jul-27, Thu,00:00 Clear	SMV other	Non-reportable East	ole East	Dry	Going ahead	Passenger van	Pedestrian	Driving properly
Comments:				Dry				
17-032515 2017-Aug-24, Thu,12:15 Clear	Sideswipe		West	Dry	Going ahead	Automobile,	Other motor	Improper lane change
Comments:			West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
17-033123 2017-Aug-28, Mon,14:10 Clear	Rear end		South	Dry	Going ahead	Passenger van	Other motor	Following too close
Comments:			South					
17-035371 2017-Sep-14, Thu,15:20 Clear	SMV other	P.D. only	West	Dry	Turning left	Automobile, station wagon	Other	Other
Comments:			West	Dry	Turning left	Automobile, station wagon	Curb	Other
17-036978 2017-Sep-25, Mon,16:16 Clear	Rear end	P.D. only	East	Dry	Going ahead	Passenger van	Other motor vehicle	Driving properly
Comments:			East	Dry	Stopped	Passenger van	Other motor vehicle	Driving properly
17-038219 2017-Oct-03, Tue,20:00 Clear	Sideswipe		South	Dry	Going ahead	Motorcycle	Other motor vehicle	Improper lane change
Comments:			South	Dry	Stopped	Automobile, station wagon		Driving properly
17-038274 2017-Oct-03, Tue,15:30 Clear	Rear end		South	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:			South)		
17-039940 2017-Oct-14, Sat,15:55 Clear	Rear end		South	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:			South					

17-040562 2017-Oct-20, Fri,16:00 Clear	Rear end		South	Dry	Going ahead	Automobile,	Other motor	Following too close
Comments:			South	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
17-45990 2017-Nov-30, Thu,16:13 Clear	Sideswipe	P.D. only	East	Wet	Changing lanes	Automobile, station wagon	Other motor vehicle	Improper lane change
Comments:			East	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
17-47898 2017-Dec-15, Fri,14:30 Snow	Rear end		South	Slush	Going ahead	Automobile, station wagon	Skidding/sliding	Speed too fast for condition
Comments:			South	Loose snow	Stopped	Truck-other	Other motor vehicle	Driving properly
17-49568 2017-Dec-29, Fri,14:45 Clear	Sideswipe	P.D. only	South	Wet	Changing lanes	Truck - closed	Other motor vehicle	Improper lane change
Comments:			South	Wet	Going ahead	Truck - closed	Other motor vehicle	Driving properly
18-019273 2018-May-22, Tue,15:35 Clear	SMV other	Non-fatal injury South	/ South	Dry	Turning right	Truck - closed		Driving properly
Comments:				Dry	Overtaking			
18-033785 2018-Aug-29, Wed,12:05 Clear	Turning movement	P.D. only	North	Dry	Turning left	Pick-up truck	Other motor vehicle	Improper turn
Comments:			South	Dry	Going ahead	Truck - dump	Other motor vehicle	Driving properly
18-03880 2018-Jan-29, Mon,15:36 Snow	Rear end		South	lce	Slowing or stopping Automobile, station wago	g Automobile, station wagon	Skidding/sliding	Following too close
Comments:			South	lce	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
18-040099 2018-Oct-10, Wed,18:30 Clear	Turning movement	Non-fatal injury West	/ West	Dry	Turning right	Automobile, station wagon	Cyclist	Failed to yield right-of- way
Comments:			East	Dry	Going ahead	Bicycle	Other motor vehicle	Other
18-044078 2018-Nov-06, Tue,11:42 Clear			South	Dry	Stopped	Pick-up truck	Other motor vehicle	Driving properly
Comments:								
18-04774 2018-Feb-05, Mon,06:20 Clear	Rear end	Non-fatal injury East	/East	lce	Slowing or stopping Automobile, station wage	g Automobile, station wagon	Other motor vehicle	Other
Comments:			East	lce	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
18-04794 2018-Feb-05, Mon,08:40 Clear	Rear end		South	lce	Slowing or stopping Pick-up truck	g Pick-up truck	Skidding/sliding	Speed too fast for condition
Comments:			South	lce	Stopped	Passenger van	Other motor vehicle	Driving properly
18-049236 2018-Dec-13, Thu,23:30 Clear	Rear end		South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:			South					

18-10196	2018-Mar-18, Sun,16:30	Clear	Sideswipe		South	Dry	Changing lanes	Automobile,	Other motor	Improper lane change
Comments:	:6				South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
19-001563	2019-Jan-11, Fri,19:00	Clear	Rear end		South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:	;;				South	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
19-002482	2019-Jan-19, Sat,19:24	Snow	Rear end	P.D. only	South	Loose snow	Going ahead	Automobile,	Other motor	Lost control
Comments:	;;				South	Loose snow	Stopped	Pick-up truck	Other motor vehicle	Driving properly
19-003490	2019-Jan-19, Sat,16:45	Snow	Rear end		South	Loose snow	Slowing or stopping Pick-up truck	Pick-up truck	Skidding/sliding	Speed too fast for condition
Comments:	:				South	Loose snow	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
19-003515	2019-Jan-26, Sat,19:30	Clear	Sideswipe		South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Improper lane change
Comments:	:s				South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
19-004059	2019-Feb-01, Fri,06:30	Clear	SMV other		East	lce	Slowing or stopping Automobile, station wago	Automobile, station wagon	Skidding/sliding	Driving properly
Comments:	;;									
19-11230	2019-Mar-29, Fri,08:45	Clear	Rear end	P.D. only	South	Dry	Going ahead	Passenger van	Other motor vehicle	Following too close
Comments:	;;				South	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
19-15369	2019-Apr-29, Mon,15:00 Rain	Rain	Rear end	P.D. only	North	Wet	Slowing or stopping Automobile, station wage	Automobile, station wagon	Skidding/sliding	Following too close
Comments:	::				North	Wet	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
19-19902	2019-May-25, Sat,14:00	Clear	Turning movement	P.D. only	East	Dry	Turning left	Delivery van	Other motor vehicle	Driving properly
Comments:	;;				East	Dry	Turning left	Passenger van	Other motor vehicle	Driving properly
19-22151	2019-Jun-14, Fri,09:40	Clear	Sideswipe	P.D. only	West	Dny	Stopped	Automobile, station wagon	Other motor vehicle	Failed to yield right-of- way
Comments:	: :				North	Dry	Going ahead	Pick-up truck	Other motor vehicle	Driving properly
19-22812	2019-Jun-18, Tue,19:40	Clear	Sideswipe	P.D. only	South	Dry	Changing lanes	Passenger van	Other motor vehicle	Improper lane change
Comments:	::				South	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly

19-34993 2019-Sep-10, Tue,16:10 Clear	Sideswipe	P.D. only	East	Dry	Changing lanes	Automobile,	Other motor	Improper lane change
Comments:			East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
19-40450 2019-Oct-17, Thu,19:18 Clear	Rear end	P.D. only	East	Dry	Stopped	Automobile,	Other motor	Driving properly
Comments:			East	Dry				
19-44755 2019-Nov-20, Wed,13:45 Clear	Rear end	P.D. only	South	Dry	Going ahead	Automobile,	Other motor	Failed to yield right-of-
Comments:			South	Dry	Stopped	Nagara Nagara	Other motor vehicle	way
19-44994 2019-Nov-21, Thu,08:30 Clear	Rear end	P.D. only	East	Wet	Slowing or stopping Pick-up truck	g Pick-up truck	Other motor	Following too close
Comments:			East	Wet	Stopped		Other motor vehicle	
19-47373 2019-Dec-10, Tue, 14:40 Clear	Sideswipe	P.D. only	South	Dry	Changing lanes	Pick-up truck	Other motor	Improper lane change
Comments:			South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
19-49785 2019-Dec-30, Mon,00:17 Rain	Angle	P.D. only	South	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Disobeyed traffic control
Comments: D1 HTA 200(1)(A) PART3, D1 HTA 144(18) PART 3	t(18) PART 3		East	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly

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Collision Details Report

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To: December 31, 2019 From: January 1, 2015

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Location		ICOMM DR @ MARKET ST S	STS					Municip	Municipality B	BRANTFORD	
Traffic Co	Traffic Control Traffic signal	=						Total Co	Total Collisions 4	42	
Collision ID	Date/Day/Time	Environment	Impact Type	Classification	Direction	Direction Surface Cond'n	Vehicle Manoeuver Vehicle type	r Vehicle type	First Event	Driver Action	No. Ped
008646	2017-Mar-10, Fri,16:28	Drifting Snow	Rear end	P.D. only	North	<u>o</u>	Slowing or stopping	g Automobile, station wagon	Other motor vehicle	Lost control	
Comments:					North	Loose snow	Stopped	Municipal transit bus	Other motor vehicle	Driving properly	
026188	2017-Jul-13, Thu,12:59	Clear	Turning movement	Non-fatal injury West		Dry	Turning left	Automobile, station wagon	Other motor vehicle	Improper turn	
Comments:					East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
15-002178	2015-Jan-22, Thu,12:10	Clear	Sideswipe		West	Dry	Going ahead	Pick-up truck	Other motor vehicle	Driving properly	
Comments:					West						
15-012286	2015-Apr-25, Sat,10:25	Clear	Turning movement		East	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly	
Comments:					North	Dry	Going ahead	Passenger van	Other motor vehicle	Driving properly	
15-019271	2015-Jun-18, Thu,18:30	Clear	Rear end	P.D. only	North	Dry	Slowing or stopping Automobile, station wago	g Automobile, station wagon	Other motor vehicle	Following too close	
Comments:					North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	
15-02178	2015-Jan-22, Thu,12:10	Clear	Sideswipe		East	Dry	Going ahead	Pick-up truck	Other motor vehicle	Driving properly	
Comments:					East						
15-021915	2015-Jul-09, Thu,12:48	Clear	SMV other	Non-fatal injury West		Dry	Turning right	Automobile, station wagon	Pedestrian	Failed to yield right-of- way	
Comments:						Dry					
15-025567	2015-Aug-05, Wed,10:25 Clear	; Clear	Turning movement		North	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Other	
Comments:					North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
15-035078	2015-Oct-16, Fri,16:00	Clear	Rear end		North	Wet	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	
Comments:					North			1			

15-035541 2	2015-Oct-20, Tue,15:10 Clear	Sideswipe		East	Dry	Going ahead	Automobile,	Other motor	Driving properly
Comments:				East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
15-040511 2	2015-Nov-27, Fri,17:30 Rain	Turning movement		North	Wet	Turning left	Pick-up truck	Other motor vehicle	Driving properly
						con g and a			
15-041394 2	2015-Dec-04, Fri,15:57 Clear	Turning movement	P.D. only	West	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Failed to yield right-of- way
Comments:				East	Dry	Going ahead	Passenger van	Other motor vehicle	Driving properly
15-042613 2	2015-Dec-14, Mon,15:20 Rain	Sideswipe		East	Wet	Turning left	Automobile,	Other motor	
Comments:				East			1000 Maga		
15-06750 2	2015-Mar-06, Fri,22:25 Clear	Other	P.D. only	East	Dry	Turning right	Unknown	Other motor	Improper turn
Comments:				West	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly
15-07076 2	2015-Mar-08, Sun,13:30 Clear	Other		West	Dry	Making "U" turn	Automobile,	Other motor	Other
Comments:				South	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
15-07104 2	2015-Mar-10, Tue,14:12 Clear	SMV other	Non-fatal injury East	y East	Dry	Going ahead	Automobile,	Ran off road	Lost control
Comments:					Dry				
16-008170 2	2016-Mar-08, Tue,00:15 Clear	Rear end		East	Dry	Slowing or stopping	g Automobile, station wagen	Other motor	
Comments:				East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
16-008454 2	2016-Mar-08, Tue,17:30 Clear	Rear end		North	Dry	Slowing or stopping Automobile, station wage	g Automobile, station wagen	Other motor	Driving properly
Comments:				North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
16-029297 2	2016-Aug-10, Wed,13:03 Clear	SMV other	Non-fatal injury South	y South	Dry	Turning right	Automobile, station wagon	Pedestrian	Failed to yield right-of- way
Comments:					Dry)		,
16-038832 2	2016-Oct-15, Sat,12:30 Clear	Turning		East	Dry	Going ahead	Automobile, station wagon	Other motor	Improper turn
Comments:				West	Dry	Turning left	Pick-up truck	Other motor vehicle	Driving properly
16-041196 2	2016-Nov-01, Tue,03:16 Clear	SMV unattended P.D. only vehicle	edP.D. only	West	Dry	Turning right	Automobile, station wagon	Unattended vehicle	Improper turn
Comments:					Dry	Parked	Automobile, station wagon	Other motor vehicle	

16-047924	2016-Dec-31, Sat,23:55	Snow	Turning	P.D. only	East	Wet	Going ahead	Automobile,	Other motor	Driving properly
Comments:	ä				South	Wet	Turning left	Passenger van	Other motor vehicle	Failed to yield right-of- way
17-001767	2017-Jan-15, Sun,11:35	Clear	Angle	Non-fatal inju	ury West	Dry	Going ahead	Passenger van	Other motor vehicle	Disobeyed traffic control
Comments:	::				South	Dry	Going ahead	Pick-up truck		Driving properly
17-004731	2017-Feb-08, Wed,14:00 Clear	Clear	SMV other	P.D. only	South	Dry	Turning right	Truck - tractor	Pole (utility,	Improper turn
Comments:						Dry				
17-008646	2017-Mar-10, Fri,16:28	Driffing Snow	Rear end	P.D. only	North	<u>o</u>	Slowing or stopping Automobile,	y Automobile,	Other motor	Lost control
Comments:	:				North	Loose snow	Stopped	Municipal transit bus	Other motor vehicle	Driving properly
17-40586	2017-Oct-20, Fri,20:08	Clear	Turning	Non-reportab	ble North	Dry	Turning left	Automobile,	Other motor	Improper turn
Comments:	:				South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
17-40804	2017-Oct-22, Sun,00:00	Clear	Sideswipe	Non-reportable North	ole North	Dry	Changing lanes	Automobile,	Other motor	Improper lane change
Comments:	:				North		Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
17-44921	2017-Nov-18, Sat, 19:01	Rain			North	Wet	Turning right	Automobile,	Other motor	Driving properly
Comments:	ä				East	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
17-45696	2017-Oct-28, Sat,17:30	Clear	Sideswipe	P.D. only	East	Dry	Going ahead	Passenger van	Other motor	Improper lane change
Comments:	u				East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
17-46058	2017-Dec-01, Fri,08:43	Clear	SMV other	Non-fatal inju	lury West	Dry	Turning left	Automobile, station wagon	Pedestrian	Improper turn
Comments:	:					Dry				
18-00966	2018-Jan-08, Mon,18:58	Snow	SMV other	P.D. only	South	Slush	Turning right	Truck - tractor	Pole (utility,	Improper turn
Comments:	:					Slush				
18-019147	2018-May-21, Mon,17:41 Clear	Clear	SMV other	Non-fatal inju	ury East	Dry	Turning right	Passenger van	Curb	Exceeding speed limit
Comments:						Dry				
18-031191	2018-Aug-11, Sat,16:40	Clear	Turning movement	P.D. only	South	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Disobeyed traffic control
Comments:					South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly

18-045537	2018-Nov-15, Thu,16:20 Snow	Turning movement		South	Slush	Turning right	Automobile, station wagon	Other motor vehicle	Speed too fast for condition
Comments:	:6			North	Slush	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
18-11383	2018-Mar-26, Mon,17:30 Clear	Rear end		South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Following too close
Comments:	:6			South	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
19-01240	2019-Jan-09, Wed,19:56 Clear	Turning movement	P.D. only	South	Dry	Turning left	Pick-up truck	Other motor vehicle	Improper turn
Comments:	s: D1 HTA 154(1)(A) 9104953Z			South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
19-36000	2019-Sep-16, Mon,15:30 Clear	Rear end	P.D. only	East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:	:6			East	Dry		Unknown	Other motor vehicle	
19-40062	2019-Oct-15, Tue,19:40 Clear	Turning movement	P.D. only	North	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Following too close
Comments:	io			North	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly
19-45745	2019-Nov-27, Wed,20:50 Clear	Turning	P.D. only	East	Dry	Turning left	Pick-up truck	Other motor	
Comments:	;			East	Dry	Going ahead		Other motor vehicle	
19-47220	2019-Dec-09, Mon,11:55 Clear	Turning	P.D. only	East	Dry	Turning right	Pick-up truck	Other motor	Disobeyed traffic control
Comments:	s: D1 HTA 130(1)			South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
BR- 18048553	2018-Dec-07, Fri,17:15 Clear	Angle	Non-fatal injury West	y West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:	;;			South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
BR- 18048830	2018-Dec-10, Mon,17:20 Clear	Turning movement	P.D. only	West	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Improper turn
Comments:	20			East	Dry	Turning right	Automobile, station wagon	Other motor vehicle	Improper turn

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Collision Details Report

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No. Ped **To:** December 31, 2019 Following too close Disobeyed traffic control Driving properly Improper turn Improper turn Improper turn Improper turn BRANTFORD **Driver Action** Lost control Other 72 From: January 1, 2015 Other motor vehicle Other motor vehicle Other motor vehicle Total Collisions.... Other motor vehicle Unattended vehicle Other motor Other motor First Event Municipality..... vehicle vehicle Other Automobile, station wagon Automobile, station wagon Passenger van Automobile, station wagon Vehicle Manoeuver Vehicle type Pick-up truck Pick-up truck Pick-up truck Going ahead **Turning right Turning right** Going ahead Turning left Turning left Stopped Stopped Parked Classification Direction Surface Cond'n Wet ΟŊ ΡŊ Dry ΡŊ Dry $\overline{\mathsf{D}}$ Dry Dry Dry Dry D $\overline{\mathsf{D}}$ D Dry Dry $\overline{\mathsf{D}}$ South South South South North North South Non-fatal injury South North North Non-fatal injury South North North West West East East P.D. only SMV unattended P.D. only vehicle P.D. only P.D. only P.D. only Environment Impact Type Approaching Turning movement Turning movement SMV other Rear end Rear end Rear end CLARENCE ST S @ ICOMM DR Angle Clear 2017-May-11, Thu, 10:25 Clear 2015-May-27, Wed,05:32 Clear Clear Clear Clear 15-029926 2015-Sep-07, Mon,10:18 Clear 2017-May-29, Mon,00:00 Clear 15-017946 2015-Jun-08, Mon,11:00 Rain Traffic Control.... Traffic signal 15-020700 2015-Jun-30, Tue, 10:42 15-022828 2015-Jul-16, Thu, 19:08 2017-Apr-28, Fri,15:48 2015-Jul-11, Sat,15:50 Collision ID Date/Day/Time Location Comments: Comments: Comments: Comments: Comments: Comments: Comments: Comments: Comments: 15-016342 15-022195 015162 016897 019668

15-035079	2015-Oct-16, Fri,17:00	Clear	Turning movement	Non-fatal injury South	y South	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Failed to yield right-of- way
Comments:	:2				West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
15-036527	2015-Oct-27, Tue,11:00	Clear	Turning movement		East	Dry	Turning right	Passenger van	Other motor vehicle	Driving properly
Comments:	::						Going ahead			
15-03713	2015-Feb-06, Fri,12:40	Clear	Angle		South	Dry	Going ahead	Pick-up truck	Other motor vehicle	Disobeyed traffic control
Comments:	22				West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
15-038105	2015-Nov-09, Mon,09:04 Clear	Clear	Turning movement	P.D. only	South	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Failed to yield right-of- way
Comments:	:2				North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
15-039624	2015-Nov-20, Fri,19:42	Clear	Angle	P.D. only	West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Failed to yield right-of- wav
Comments:	22				South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Failed to yield right-of- way
15-040161	2015-Nov-25, Wed,08:30 Clear) Clear	Turning movement		South	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:	:2				North	Dry	Going ahead	Pick-up truck	Other motor vehicle	Driving properly
15-042830	2015-Dec-16, Wed,19:28 Clear) Clear	Turning movement	Non-fatal injury East	y East	Wet	Turning left	Automobile, station wagon	Other motor vehicle	Improper turn
Comments:	22				West	Wet	Going ahead	Pick-up truck	Other motor vehicle	Driving properly
15-05189	2015-Feb-20, Fri,15:42	Clear	Sideswipe		South	Dry	Changing lanes	Automobile, station wagon	Other motor vehicle	Improper lane change
Comments:	122				South	Dry	Going ahead	Passenger van	Other motor vehicle	Driving properly
15-05913	2015-Feb-27, Fri,10:20	Clear	Rear end	P.D. only	East	Dry	Going ahead	Truck - closed	Other motor vehicle	Following too close
Comments:	:2				East	Dry	Slowing or stopping Automobile, station wagg	Automobile, station wagon	Other motor vehicle	Driving properly
16-007180	2016-Feb-27, Sat,21:30	Clear	Rear end		East	Dny	Stopped	Automobile, station wagon	Other motor	Driving properly
Comments:	:2				East			0		
16-009328	2016-Mar-17, Thu,21:42	Clear	Turning movement	Non-fatal injury South	y South	Dry	Going ahead	Passenger van	Other motor vehicle	Disobeyed traffic control
Comments:	12				East	Dry	Turning left	Automobile, station wagon		Driving properly

16-009666 2016-Mar-20, Sun,13:10 Clear	Other	Non-reportable East	Dry	Reversing	Automobile,	Other motor	Other
Comments:		East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
16-010163 2016-Mar-24, Thu,14:10 Rain	Rear end	Non-fatal injury North	Wet	Going ahead	Pick-up truck	Other motor vehicle	Disobeyed traffic control
Comments:		North	Wet	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
16-014582 2016-Apr-21, Thu,14:45 Rain	SMV other	South	. Wet	Going ahead	Automobile, station wagon	Other	Driving properly
Comments:							
16-016312 2016-May-11, Wed,11:30 Clear	Rear end	Non-fatal injury East	Dny	Going ahead	Pick-up truck	Other motor vehicle	Following too close
Comments:		East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
16-019639 2016-Jun-03, Fri,19:00 Clear	Rear end	East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	
Comments:		East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
16-019641 2016-Jun-04, Sat,14:35 Clear	Sideswipe	North	Dry	Changing lanes	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:		North	Dry	Going ahead	Pick-up truck	Other motor vehicle	Driving properly
16-021082 2016-Jun-14, Tue, 17:57 Clear	Sideswipe	South	ρου Dny	Going ahead	Pick-up truck	Other motor vehicle	Driving properly
Comments:		South	Dry n	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
16-023758 2016-Jul-02, Sat,20:29 Clear	Angle	P.D. only South	Dry n	Going ahead	Automobile, station wagon	Other motor vehicle	Disobeyed traffic control
Comments:		East	Dry	Going ahead	Pick-up truck	Other motor vehicle	Driving properly
16-027022 2016-Jul-26, Tue,12:30 Clear	Angle	Non-fatal injury South	Dry n	Going ahead	Automobile, station wagon	Other motor vehicle	Disobeyed traffic control
Comments:		West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
16-027513 2016-Jul-29, Fri,13:00 Clear	Sideswipe	P.D. only South	Dry (Changing lanes	Automobile,	Other motor	Improper passing
Comments:		South	Dry n	Going ahead	Pick-up truck	Other motor vehicle	Driving properly
16-028515 2016-Aug-05, Fri,08:59 Clear	Turning movement	P.D. only South	Dry (Turning left	Automobile, station wagon	Other motor vehicle	Improper turn
Comments:		North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly

16-030856 2016-Aug-19, Fri,20:30	30 Clear	Rear end	Ш	East	Dry	Slowing or stopping Automobile,	g Automobile,	Other motor	Driving properly
Comments:			ш	East					
16-031812 2016-Aug-26, Fri,22:06	06 Clear	Angle	Non-fatal injury West		Dry	Going ahead	Bicycle	Other motor vehicle	Disobeyed traffic control
Comments:			S	South	Dry	Going ahead	Automobile, station wagon	Cyclist	Driving properly
16-035987 2016-Sep-25, Sun,14:00	:00 Clear	Sideswipe	2	North	Dry	Going ahead	Automobile,	Other motor vehicle	Driving properly
Comments:			2	North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
16-047144 2016-Dec-15, Thu,13:30	:30 Clear	Sideswipe	S	South	Loose snow	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:			S	South	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
16-047147 2016-Dec-15, Thu,14:32	:32 Clear	Turning movement	2	North	Wet	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:						Going ahead			
16-048890 2016-Dec-29, Thu,20:00	:00 Snow	Rear end	S	South	lce	Slowing or stopping Automobile, station wage	g Automobile, station wagon	Skidding/sliding	Driving properly
Comments:			S	South	Loose snow	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
17-001081 2017-Jan-09, Mon,19:45	:45 Clear	Turning movement	Non-fatal injury East		Dry	Turning left	Automobile, station wagon	Other motor vehicle	Improper turn
Comments:			Λ	West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
17-010262 2017-Mar-23, Thu,15:40 Clear	.40 Clear	Turning movement	Non-fatal injury East		Dry	Turning left	Automobile, station wagon	Other motor vehicle	Failed to yield right-of- way
Comments:			2	North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
17-011056 2017-Mar-29, Wed,12:45 Clear	2:45 Clear	Sideswipe	P.D. only	West	Dry	Going ahead	Truck - closed	Other motor vehicle	Improper passing
Comments:			Λ	West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
17-027033 2017-Jul-18, Tue,17:00	00 Clear	Rear end	2	North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Following too close
Comments:			2	North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
17-038541 2017-Oct-06, Fri,15:36	6 Clear	Turning movement	P.D. only S	South	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Improper turn
Comments:			2	North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly

Other motor vehicle	17-42362 2017-Nov-02, Thu,13:00 Rain	Angle	Non-fatal injury South	Wet	Going ahead	Automobile,	Other motor	Disobeyed traffic
10 10 10 10 10 10 10 10	Comments:		West	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
15. 15.				Dry		Automobile,		Improper turn
2017-Nov-09, Thu, 17:55 Rain Rear end Non-fatal injury South Wet South South Wet Goling ahead Raten motor vehicle Automotoble Picture motor vehicle Automotoble Picture motor vehicle Automotoble Picture motor vehicle Automotoble Picture motor vehicle Picture ve	Comments:			Dry		Automobile, station wagon		Driving properly
South West Going ahead Pick-up truck Other motor Pick-up truck Other motor Other mot		Rear end	Non-fatal injury South	Wet	Slowing or stoppir	ng Automobile,	Other motor	Following too close
12-11-11-11-11-11- 12-11- 12-11- 12- 12	Comments:		South	Wet	Going ahead	Pick-up truck	Other motor vehicle	Driving properly
String Bridge East South S		Rear end	East	Slush	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly
2018-Jan-05, Fri,08:00 Clear Sideswipe South Dry Changing lanead Pick-up truck vahicden vagon Other motor vahicden vagon 2018-May-10, Thu,13:15 Clear Sideswipe South Dry Going ahead Automobile, vahicden vagon Other motor vahicden vagon 2018-May-10, Thu,13:15 Clear Sideswipe South Dry Going ahead Automobile, Automobile, Automobile, Other motor validen vagon Other motor validen vagon 2018-May-10, Thu,13:15 Clear Sideswipe South Dry Going ahead Automobile, Other motor validen va	Comments:		East	Slush	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly
Stotle-May-07, Mon,10.45 Clear Sideswipe South Dry Going ahead Pick-up truck Other motor whice whice whice whice whice and was which and was which are an analysis of the motor whice and was which and was which are an analysis of the motor and an analysis of the motor which are an analysis of the motor which are an analysis of the motor and an analysis of the motor which are an analysis of the motor and an analysis of the motor which are an analysis of the motor and an analysis of the motor analysis of the motor and an analysis of the motor analysis of the motor analys	2018-Jan-05, Fri,09:00	Sideswipe	South	Dry	Changing lanes	Passenger van	Other motor vehicle	Following too close
2018-May-07, Mon,10-45 Clear Sideswipe South Dry Going ahead Automobile, station wagon Other motor vehicle station wagon Vehicle Vehicle st	Comments:		South	Dry	Stopped	Pick-up truck	Other motor vehicle	Driving properly
South South Dry Turning left Automobile, station wagon Other motor vehicle station wagon Automobile, other motor vehicle station wagon Other motor vehicle station wagon Automobile, other motor vehicle station wagon Other motor vehicle vehicle station wagon Automobile, other motor vehicle station wagon Other motor vehicle station wagon Automobile, other motor vehicle station wagon Other motor vehicle station wagon Automobile, other motor vehicle station wagon Other motor vehicle station wagon Automobile, other motor vehicle station wagon Other motor vehicle station wagon Automobile, other motor vehicle station wagon Other motor vehicle station wagon Automobile, other motor vehicle station wagon Other motor vehicle station wagon Automobile, other motor vehicl		Sideswipe	South	Dry	Going ahead	Automobile,	Other motor	Driving properly
2018-May-10, Thu,13:15 Clear Sideswipe South Dry Turning left Automobile, station wagon wellice w	Comments:		South					
South 2018-May-10, Thu, 13:15 Clear Sideswipe May-10, Thu, 13:15 Clear Sideswipe South Met South Met Dry Going ahead Station wagon wehicle station wagon station wagon wehicle station we were station were station weak we weak we were station wagon we were station we were station were station were station	2018-May-10, Thu,13:15	Sideswipe	South	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly
Station May-10, Thu, 13:15 Clear Sideswipe South South Dry Going ahead station wagon station wagon wehicle well-shall shall s	Comments:		South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
South Wet Going ahead Automobile. Other motor station wagon wehicle station wagon well well movement Rear end Rear end P.D. only South Dry Going ahead Automobile. Other motor station wagon wehicle well movement North Dry Going ahead Automobile. Other motor station wagon well well end well and well are movement North Dry Going ahead Automobile. Other motor station wagon well end well and well are movement North Dry Stopped Automobile. Other motor station wagon well end well are more station wagon well end well and well are more station wagon well end well end well are more station wagon well are more station wagon well end wel	2018-May-10, Thu,13:15	Sideswipe	South	Dry	Going ahead	Automobile,	Other motor	Driving properly
East East Dry Stopped Automobile, Station wagon Rear end Beast Dry South Dry South Month Lisub Clear Rear end North South North Rear end Sub-Jul-16, Mon, 11:00 Clear SMV other Non-fatal injury West Station wagon Reatend Site of Sub-Jul-16 and Stopped Station wagon Stopped Station wagon Reatend SMV other Non-fatal injury West Dry Stowing or stopping Automobile, Station wagon Stopped Station wagon Reatend SMV other Non-fatal injury West Dry Stowing or stopping Automobile, Station wagon Sta	Comments:		South	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
East 2018-Jul-06, Fri,13:15 Clear Turning P.D. only South Dry Turning left Automobile, Other motor station wagon vehicle station vehicle station wagon vehicle station vehicl	2018-Jan-14, Sun,09:00	Rear end	East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
2018-Jul-06, Fri, 13:15 Clear Turning P.D. only South Dry Turning left Automobile, Station wagon Vehicle Station Webster Station wagon Vehicle Station Webster Station wagon Vehicle Station Webster S	Comments:		East)		
Station wagon Rear end North Dry Going ahead Automobile, Other motor station wagon vehicle station wagon vehicle Stother Mon-11:00 Clear Rear end North Dry Stopped Automobile, Other motor station wagon vehicle station wagon Pedestrian SMV other Non-fatal injury West Dry Slowing or stopping Automobile, Pedestrian station wagon Wagon Wagon Wagon Wagon Wagon Wagon Wa	2018-Jul-06, Fri,13:15	Turning movement		Dry	Turning left	Automobile, station wagon	Other motor vehicle	Improper turn
2018-Jul-16, Mon,11:00 Clear Rear end North Dry Stopped Automobile, Other motor station wagon vehicle North North Dry Stopped Automobile, Other motor vehicle SMV other Mon-fatal injury West Dry Slowing or stopping Automobile, Redestrian station wagon station wagon	Comments:		North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
North 2018-Aug-30, Thu,15:00 Clear SMV other Non-fatal injury West Dry Slowing or stopping Automobile, Pedestrian station wagon Dry	2018-Jul-16, Mon,11:00	Rear end	North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
2018-Aug-30, Thu,15:00 Clear SMV other Non-fatal injury West Dry Slowing or stopping Automobile, Pedestrian station wagon Dry	Comments:		North)		
Dry	2018-Aug-30, Thu,15:00	SMV other	Non-fatal injury West	Dry	Slowing or stoppir	ng Automobile, station waqon	Pedestrian	Disobeyed traffic control
	Comments:			Dry				

18-037929 20	2018-Sep-25, Tue,20:41 Rain	Rear end	P.D. only	North	Wet	Slowing or stopping Automobile,	g Automobile, station wagon	Other motor	Following too close
Comments:				North	Loose snow	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
18-044246 20	2018-Nov-07, Wed,19:22 Clear	Turning movement	P.D. only	South	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Improper turn
Comments:				North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
18-046476 20	2018-Nov-23, Fri,07:50 Clear	Turning movement	Non-fatal injury South	y South	Dry	Turning left	Pick-up truck	Other motor vehicle	Improper turn
Comments:				North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
18-047621 20	2018-Dec-01, Sat,19:05 Rain	Turning movement	Non-fatal injury South	y South	Wet	Turning left	Passenger van	Other motor vehicle	Failed to yield right-of- way
Comments:				North	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
18-050550 20	2018-Dec-23, Sun,13:00 Clear	Rear end		East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
19-003543 20	2019-Jan-27, Sun,23:30 Snow	Other		East	Loose snow	Reversing	Pick-up truck	Other motor vehicle	Driving properly
Comments:				West	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
19-04438 20	2019-Feb-03, Sun,14:15 Clear	Turning movement	P.D. only	North	Dry	Going ahead	Pick-up truck	Other motor vehicle	Driving properly
Comments: VE	vehicle 2 info missing from collision report	rt			Dry				
19-06795 20	2019-Feb-21, Thu,17:45 Clear	Turning movement	P.D. only	North	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Improper turn
Comments:				South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
19-13146 20	2019-Apr-12, Fri,21:21 Clear	Sideswipe	P.D. only	West	Dry	Slowing or stopping Pick-up truck	g Pick-up truck	Other motor vehicle	
Comments:				West	Dry	Stopped	Automobile, station wagon	Other motor vehicle	
19-15648 20	2019-May-01, Wed,15:20 Clear	Turning movement	P.D. only	South	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Improper turn
Comments:				North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
19-18702 20	2019-May-22, Wed,16:50 Rain	Rear end	P.D. only	South	Wet	Going ahead	Pick-up truck	Other motor vehicle	Following too close
Comments: The	This was a three vehicle collision			South	Wet	Slowing or stopping Automobile, station wago	g Automobile, station wagon	Other motor vehicle	Driving properly

19-27615 2019-Jul-21, Sun,18:00 Clear	Angle	Non-fatal injury South	ry South	Dry	Going ahead	Automobile,	Other motor	Disobeyed traffic
Comments: D1 HTA 144(18) 9017419Z			East	Dry	Going ahead	Automobile, station wagon	Vernice Other motor vehicle	Driving properly
19-33030 2019-Aug-27, Tue,23:35 Clear	Rear end	P.D. only	South	Dry	Going ahead	Automobile,	Other motor	Following too close
Comments:			South	Dry	Slowing or stopping Automobile, station wage	otation magon station wagon	Other motor vehicle	Driving properly
19-33579 2019-Aug-31, Sat,17:12 Clear	Turning	Non-fatal injury East	ry East	Dry	Turning left	Bicycle	Other motor vehicle	Improper turn
Comments:			West	Dry	Going ahead	Pick-up truck	Cyclist	Driving properly
19-40261 2019-Oct-16, Wed,20:00 Rain	Rear end	P.D. only	South	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Following too close
Comments:			South	Wet	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
19-44655 2019-Nov-19, Tue,17:25 Clear	Turning	P.D. only	West	Dry	Turning left	Passenger van	Other motor	
Comments:			East		Going ahead		Other motor vehicle	
19-46087 2019-Nov-30, Sat,13:40 Clear	Rear end	P.D. only	North	Dry	Going ahead	Passenger van Other motor vehicle	Other motor vehicle	
Comments:			North	Dry	Stopped	Pick-up truck	Other motor vehicle	
19-48982 2019-Dec-22, Sun,19:51 Clear	Turning movement	P.D. only	West	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Improper turn
Comments:			East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly

Appendix D

Detour Traffic Operations Reports

Detour: AM Peak Hour Lanes, Volumes, Timings 1: Mt. Pleasant Street & Veteran's Memorial Parkway

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tions (v(ph)) 90 801 (v(ph)) 90 90 00 00 00 00 00 00 00 00 00 00 00		3406 3406 3406 3406 3406 11.2 0.92 6% 380	73 73 73 73 73 1900 45.0 1.00 0.850 1583 7 es 133 7 es 133	67 67 1900 45.0 45.0 1.00 1.00 1.00 1.00 1.00 5 0.623 1062 1062 1062 1178 5	130 130 130 1900 3471 3471 3471 0.95 4% 14%	370 370 370 370 1900 40.0 0.98 0.850 1584 Yes 162 10 0.92 3%	134 134 134 1900 35.0 1.00 0.99 0.620 1123 1123	140 140 140 1900 0.95 1.00 0.961 3355 54 54 64.1 0.92	50 50 0.0 0.0 0 0 Ves 7 Ves 54 0.92 0.92
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(m) 140.0 In 140.0 In 140.0 In 167.1 In 16		0.95 3406 3406 70 70 11.2 0.92 6% 380	1.00 1.00 0.850 1.583 1.583 1.583 1.39 0.92 2% 7.9	45.0 1.00 1.00 1.00 0.950 0.623 1062 0.623 1062 1178 5	0.95 3471 3471 50 319.9 23.0 0.92 4% 141	1 1.00 0.986 0.868 0.868 1.568 1.624 Yes 162 1.92 3% 40.92 3% 40.92	35.0 1.00 1.00 0.99 0.950 1736 0.620 1123	0.95 1.00 0.961 3355 3355 54 50 889.7 64.1 0.92	0.0 0 0 0 0 0.95 0.95 0.95 54
nn) 70,0 0,955		0.95 3406 3406 70 70 11.2 0.92 6% 380	1.00 0.850 0.850 1583 768 133 0.92 2% 79	85.0 1.00 1.00 0.950 0.623 1062 0.623 1062 73	0.95 3471 3471 50 319.9 23.0 0.92 4% 141	1.00 0.98 0.850 1568 1534 Yes 162 10 0.92 3%	0.95 0.95 0.950 0.050 1736 0.620 1123	0.95 1.00 0.961 3355 3355 54 54 50 64.1 0.92	0 0.95 0.95 0.95 0.95 0.95 0.95 0.92 0.92 0.92 0.92 0.92 0.92 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93
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0.950 1671 3505 1674 3505 1 0.464 816 3505 1 260.6 13.4 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92		3406 3406 217.6 11.2 0.92 6% 380	0.850 1583 1583 Yes 133 0.92 2% 79	0.950 1626 0.623 1062 5 0.92 11% 73	3471 3471 50 319.9 23.0 0.92 4%	1568 1534 Yes 162 10 0.92 3%	0.950 1736 0.620 1123 10 0.92	3355 3355 3356 54 50 889.7 64.1 0.92 4%	0 0 Yes 5 0.92 0% 54
0.950 0.950 0.464 816 816 260.6 13.4 0.92 0.92 0.92 8% 8% 8% 8% 8% 13.4 13.4 13.4 13.4 13.4 13.4 13.4 13.4 13.4 13.6 13		3406 3406 70 217.6 11.2 0.92 6% 380	1583 1583 Yes Yes 133 0.92 2% 79	0.950 1626 0.623 1062 5 0.92 111% 73	3471 50 319.9 23.0 0.92 4% 141	1568 1534 Yes 162 10 0.92 3%	0.950 1736 0.620 1123 10	3355 3355 54 50 889.7 64.1 0.92 4%	7 Yes 0.92 0.92 0% 54
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0.464 816 3505 1 70 260.6 13.4 0.92 0.92 0.92 8% 3% 3% 3% 3% 3% 3% 3% 3% 3% 3% 3% 3% 3%		3406 70 217.6 11.2 0.92 6% 380	1583 Yes 133 0.92 2% 79	0.623 1062 5 0.92 11% 73	3471 50 319.9 23.0 0.92 4%	1534 Yes 162 10 0.92 3%	0.620 1123 10 0.92	3355 54 50 889.7 64.1 0.92 4%	7 Yes 5 0.92 0% 54
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70 260.6 13.4 0.92 0.92 1 8% 3% 3% 19 871 1) 98 871 10 No No No Left F 1.00 1.00 25 25 25 20 10.0 0.0 0.0		70 217.6 11.2 0.92 6% 380	Yes 133 0.92 2% 79	5 0.92 11% 73	50 319.9 23.0 0.92 4% 141	Yes 162 10 0.92 3% 402	10 0.92	54 50 889.7 64.1 0.92 4%	Yes 0.92 0.92 0% 54
70 260.6 13.4 0.92 0.92 4 8% 3% 3% 3% 1) 98 871 10 No		70 217.6 11.2 0.92 6% 380	0.92 2% 79 70	5 0.92 11% 73	50 319.9 23.0 0.92 4% 141	162 10 0.92 3% 402	10 0.92	54 50 889.7 64.1 0.92 4%	5 0.92 0% 54
260.6 13.4 13.4 13.4 13.8 13.8 14.8 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10		70 217.6 11.2 0.92 6% 380	0.92 2% 79	5 0.92 11% 73	50 319.9 23.0 0.92 4% 141	10 0.92 3% 402	10 0.92	50 889.7 64.1 0.92 4%	5 0.92 0% 54
260.6 13.4 13.4 13.4 13.4 13.6 13.6 13.6 13.6 13.6 13.6 13.6 13.6		217.6 11.2 0.92 6% 380	0.92 2% 79	5 0.92 11% 73	319.9 23.0 0.92 4% 141	10 0.92 3% 402	10 0.92	64.1 64.1 0.92 4%	5 0.92 0% 54
13.4 0.92 0.92 C 8% 3% 98 871 0) 98 871 ction No		0.95 6% 380	0.92 2% 79	5 0.92 11% 73	23.0 0.92 4% 141	10 0.92 3% 402	10 0.92	64.1 0.92 4%	5 0.92 0% 54
(6) 8% 3% 3% 8% 3% 8% 3% 8% 3% 8% 3% 8% 3% 8% 3% 8% 3% 8% 3% 8% 3% 8% 3% 3% 8% 3% 3% 8% 3% 8% 3% 8% 3% 8% 3% 8% 3% 8% 3% 8% 3% 3% 3% 3% 3% 8% 3% 3% 3% 3% 3% 3% 3% 3% 3% 3% 3% 3% 3%		0.92 6% 380	0.92 2% 79	5 0.92 11% 73	0.92 4%	10 0.92 3% 402	10	0.92	0.92 0% 54
(%) 98 871 98 871 98 871 1) 98 871 1) 98 871 100 No		0.92 6% 380	0.92 2% 79	0.92	0.92 4% 141	3%	0.92	0.92	0.92
8% 3% 3% 3% 3% 3% 3% 3% 3% 3% 3% 3% 3% 3%		380	79	73	4%	3%		4%	0%
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(6) (7) (8) (8) (8) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9			02			100	146	701	
otton (1) 98 871 ction (No No No No No 100 ction (100 100 ction (1			70						
ation No	85 172	380	2	73	141	402	146	206	0
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3.6 0.0 4.8 1.00 1.00 2.5 2.5 1 1 2 1 2 0 10.0 0.0 0.0	ht Left	Left	Right	Left	Left	Right	Left	Left	Right
1.00 0.00 25 25 25 25 20 0.00 0.00 0.00 0		3.6			3.6	,)		3.6	,
1.00 1.00 1.00 2.5 2.5 1.00 2.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		0.0			0.0			0.0	
ne 1.00 1.00 25 25 1 2 Left Thru 2.0 10.0 0.0 0.0 0.0		4.8			4.8			4.8	
1,00 1,00 25 25 1.0 2 1.01 1.01 1.01 1.01 1.01 1.01 1.0									
25 1 2 Left Thru 2.0 10.0 0.0 0.0	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
1 2 Leff Thru 2.0 10.0 0.0	15 25		15	52		15	22		15
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2.0 10.0 0.0	ht Left	Thr	Right	Left	Thr	Right	Left	Thr	
0.0 0.0		10.0	2.0	2.0	10.0	2.0	2.0	10.0	
00	0.0	0.0	0.0	0:0	0.0	0.0	0.0	0.0	
0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m) 2.0 0.6 2.0	0 2.0	9.0	2.0	2.0	9.0	2.0	2.0	9.0	
CI+Ex CI+Ex CI	Ö	CI+EX	CI+Ex	CI+Ex	CI+EX	CI+EX	CI+EX	CI+EX	
lec lec		i	i	i	i	i	i	i	
s) 0.0 0.0 (s		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0 0.0	0.0 0.0	0.0	0:0	0:0	0.0	0.0	0.0	0:0	
0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
m)		9.4			9.4			9.4	
		9.0			9.0			9.0	
ö		Ci+EX			CI+EX			CI+EX	
Detector 2 Channel									
or 2 Extend (s) 0.0		0.0			0.0			0.0	

Lanes, Volumes, Timings 1: Mt. Pleasant Street & Veteran's Memorial Parkway

Detour: AM Peak Hour

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Lane Group	EBE	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	A	Perm	Perm	N	Perm	pm+pt	AN	Perm	pm+pt	N	
Protected Phases	2	2			9		က	∞		7	4	
Permitted Phases	2		2	9		9	∞		80	4		
Detector Phase	2	2	2	9	9	9	က	∞	∞	7	4	
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0	10.0	7.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	11.0	34.0	34.0	34.0	34.0	34.0	11.0	33.0	33.0	11.0	33.0	
Total Split (s)	13.0	48.0	48.0	35.0	35.0	35.0	11.0	31.0	31.0	11.0	31.0	
Total Split (%)	14.4%	53.3%	53.3%	38.9%	38.9%	38.9%	12.2%	34.4%	34.4%	12.2%	34.4%	
Maximum Green (s)	9.0	45.0	45.0	29.0	29.0	29.0	7.0	25.0	25.0	7.0	25.0	
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	0.9	0.9	0.9	0.9	0.9	4.0	0.9	0.9	4.0	0.9	
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	
Walk Time (s)		7.0	7.0	7.0	7.0	7.0		7.0	7.0		0.7	
Flash Dont Walk (s)		21.0	21.0	21.0	21.0	21.0		20.0	20.0		20.0	
Pedestrian Calls (#/hr)		0	0	0	0	0		0	0		0	
Act Effct Green (s)	49.3	47.3	47.3	37.5	37.5	37.5	28.7	19.7	19.7	29.5	21.9	
Actuated g/C Ratio	0.55	0.53	0.53	0.42	0.42	0.42	0.32	0.22	0.22	0.33	0.24	
v/c Ratio	0.19	0.47	0.10	0.72	0.27	0.11	0.19	0.19	0.87	0.35	0.24	
Control Delay	12.4	15.5	3.6	47.3	20.3	1.2	18.5	27.5	39.3	21.3	20.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0:0	0.0	0.0	0.0	
Total Delay	12.4	15.5	3.6	47.3	20.3	1.2	18.5	27.5	39.3	21.3	20.3	
ros	œ	ш	V		O	⋖	ш	O	Ω	ပ	ပ	
Approach Delay		14.3			25.3			34.1			20.7	
Approach LOS		ш			O			O			O	

Area Type:

Orde Length: 90
Actuated Cycle Length: 90
Offset 40 (44%). Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 90
Control Type Actuated-Coordinated
Maximum v's Ratio. 0:87
Intersection (2apacity Utilization 68.4%
Intersection Capacity Utilization 68.4%
Analysis Period (min) 15

Intersection LOS: C ICU Level of Service C

Splits and Phases: 1: Mt. Pleasant Street & Veteran's Memorial Parkway \$ 05.80 → a2 (R)

190487 - Brantford Bridges EA PTSL

Synchro 10 Report Page 1

Queues 1: Mt. Pleasant Street & Veteran's Memorial Parkway

HCM Signalized Intersection Capacity Analysis 1: Mt. Pleasant Street & Veteran's Memorial Parkway

Detour: AM Peak Hour

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Detour: AM Peak Hour

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	
Lane Group Flow (vph)	86	871	82	172	380	79	73	141	402	146	206	
v/c Ratio	0.19	0.47	0.10	0.72	0.27	0.11	0.19	0.19	0.87	0.35	0.24	
Control Delay	12.4	15.5	3.6	47.3	20.3	1.2	18.5	27.5	39.3	21.3	20.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	12.4	15.5	3.6	47.3	20.3	1.2	18.5	27.5	39.3	21.3	20.3	
Queue Length 50th (m)	8.3	51.6	0.0	27.4	25.1	0.0	8.5	10.8	42.7	17.7	11.7	
Queue Length 95th (m)	18.0	74.6	7.7	#70.7	39.9	5.6	16.4	17.7	#78.2	29.2	19.9	
Internal Link Dist (m)		236.6			193.6			295.9			865.7	
Turn Bay Length (m)	140.0		25.0	40.0		45.0	45.0		40.0	35.0		
Base Capacity (vph)	532	1843	846	238	1419	737	382	964	543	415	920	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.18	0.47	0.10	0.72	0.27	0.11	0.19	0.15	0.74	0.35	0.21	

Fig.		-											
100 100	Movement	EBL	EBI	EBK	WBL	WBI	WBK	NBL	NB.	NBK	SBL	SBI	SBR
801 78 158 350 73 67 130 370 134 140 1900 1900 1900 1900 1900 1900 1900	Lane Configurations	<u>_</u>	ŧ	k _	<u>_</u>	‡	*_	•	‡	*	,	^	
801 78 158 350 73 67 130 370 134 140 100 1900 1900 1900 1900 1900 1900 1900 100 1900 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100	Traffic Volume (vph)	6	801	78	158	320	73	29	130	370	134	140	20
1900 1900	Future Volume (vph)	90	801	78	158	320	73	29	130	370	134	140	20
Color Colo	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
10.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 1.00 0.95 1.00 1.00 1.00 0.95 1.00	Total Lost time (s)	4.0	0.9	0.9	0.9	0.9	0.9	4.0	0.9	0.9	4.0	0.9	
1,00 0.99 1,00 1,00 1,00 1,00 0.98 1,00	Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	
1,00	Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	
1,00 0.88 1,00 1.00 0.88 1,00 0.88 1,00 0.89 1,00 0.99	Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
100 100 0.95 100 100 0.95 100 100 0.95 100 100 0.95 100 100 0.95 100 100 0.95 100 100 0.95 100 100 0.95 100 100 0.95 100 100 0.95 100 100 0.95 100 100 0.95 100 100 0.95 100 100 0.95 100 100 0.95 100 100 0.95 100 0.95 100 0.95 100 0.95	Ft	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	96.0	
3505 1533 1671 3406 1583 1662 3471 1534 1727 3354 100 100 0.03 1.00 1.00 1.00 1.00 1.00 2	Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
100 100 0.33 100 100 0.62 100 0.62 100 0.62 100 0.63 103 0.93 0.92 0	Satd. Flow (prot)	1671	3505	1533	1671	3406	1583	1622	3471	1534	1727	3354	
Signo 1533 573 3406 1583 1063 3471 1534 1128 3354 8	Flt Permitted	0.46	1.00	1.00	0.33	1.00	1.00	0.62	1.00	1.00	0.62	1.00	
String S	Satd. Flow (perm)	816	3505	1533	573	3406	1583	1063	3471	1534	1128	3354	
S71 S5 172 380 79 73 141 402 146 152 S87 44 172 380 37 37 34 41 402 146 155 S88 44 172 380 37 37 34 41 402 46 S88 44 172 380 37 37 34 48 48 48 S89 44 172 380 37 37 34 48 48 48 S80 48 88 68 28 118 48 38 48 48 S80 46 46 46 46 46 46 46 4	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
871 44 172 380 32 141 277 146 165 871 44 172 380 32 73 141 277 146 165 873 4% 6% 2% 11% 4% 3% 4% 4% 1 NA Perm Perm NA Perm pm+pt NA Perm P	Adj. Flow (vph)	86	871	82	172	380	79	73	141	402	146	152	32
871 44 172 380 32 73 141 277 146 165 3 3% 4% 6% 2% 11% 4% 3% 4% 4% 4% 4% 1 NA Perm Perm NA Perm pm+pt NA Perm pm+pt NA Perm Prm+pt NA Perm P	RTOR Reduction (vph)	0	0	41	0	0	47	0	0	125	0	41	0
3.% 4.% 8.% 6.% 2.% 11% 4.% 6.% <td>Lane Group Flow (vph)</td> <td>86</td> <td>871</td> <td>4</td> <td>172</td> <td>380</td> <td>32</td> <td>73</td> <td>141</td> <td>277</td> <td>146</td> <td>165</td> <td>0</td>	Lane Group Flow (vph)	86	871	4	172	380	32	73	141	277	146	165	0
3% 4% 8% 6% 2% 11% 4% 3% 4% 6% 6%	Confl. Peds. (#/hr)			-	-			2		9	10		5
NA Perm Perm NA Perm pm+pt NA Perm pm+pt	Heavy Vehicles (%)	%8	3%	4%	8%	%9	2%	11%	4%	3%	4%	4%	%0
465 465 465 465 465 465 465 465 465 465 465 465 465 465 359 359 369 261 205 205 289 465 465 359 359 359 261 205 205 289 605 60 60 60 60 60 60 60 60 60 40 40 10 30	Turn Type	pm+pt	NA	Perm	Perm	A	Perm	pm+pt	NA	Perm	pm+pt	NA	
1	Protected Phases	2	2			9		က	œ		7	4	
465 465 359 359 359 261 205 205 289 465 465 359 359 359 261 205 205 289 465 465 359 359 359 261 205 205 289 465 60 60 60 60 40 009 029 023 023 032 60 60 60 60 60 60 40 009 30 30 30 30 100 30 30 30 30 30 30 30 30 30 30 100 50 50 50 50 50 50 50 50 50 100 100 100 100 100 100 100 100 100 10	Permitted Phases	2		2	9		9	∞		∞	4		
465 465 359 359 359 359 251 205 205 209 20 20 20 20 20 20 20 20 20 20 20 20 20	Actuated Green, G (s)	46.5	46.5	46.5	35.9	35.9	35.9	26.1	20.5	20.5	28.9	21.9	
0.52 0.52 0.40 0.40 0.40 0.29 0.23 0.23 0.32 0.32 0.32 0.32 0.32 0.32	Effective Green, g (s)	46.5	46.5	46.5	35.9	35.9	35.9	26.1	20.5	20.5	28.9	21.9	
60 60 60 60 60 60 40 60 40 60 80 40 60 80 80 80 80 80 80 80 80 80 80 80 80 80	Actuated g/C Ratio	0.52	0.52	0.52	0.40	0.40	0.40	0.29	0.23	0.23	0.32	0.24	
180 30 30 30 30 30 30 30	Clearance Time (s)	4.0	0.9	0.9	0.9	0.9	0.9	4.0	0.9	0.9	4.0	0.9	
1810 792 228 1388 631 343 799 349 408 0.025	Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
0.025 0.01 0.04 0.03 0.03 0.01 0.04 0.03 0.03 0.03 0.03 0.03 0.05 0.05 0.05	Lane Grp Cap (vph)	484	1810	792	228	1358	631	343	790	349	408	816	
0.03 c.030 0.05 c.018 0.09 0.048 0.06 c.075 0.28 0.05 0.05 c.0.18 0.09 0.048 0.06 c.075 0.28 0.05 0.21 0.18 0.79 0.36 0.100 1.00 1.00 1.00 1.00 1.00 1.00 1.0	v/s Ratio Prot	0.01	c0.25			0.11		0.01	0.04		c0.03	0.05	
0 048 0.06 0.75 0.28 0.05 0.21 0.18 0.79 0.38 14.0 1.08 1.00 1.00 1.00 1.00 1.00 1.00 1.	v/s Ratio Perm	0.09		0.03	c0.30		0.02	0.05		c0.18	0.09		
140 108 233 183 166 238 280 227 1100 100 1.00 1.00 1.00 1.00 1.00 1.00	v/c Ratio	0.20	0.48	90:0	0.75	0.28	0.02	0.21	0.18	0.79	0.36	0.20	
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Uniform Delay, d1	11.3	14.0	10.8	23.3	18.3	16.6	23.8	28.0	32.8	22.7	27.1	
2 0.9 0.1 20.5 0.5 0.1 0.3 0.1 11.7 0.5 14.9 11.0 43.7 18.8 16.7 24.1 28.1 44.5 23.2 B B C D C D C D C D C D C D C D C D C D	Progression Factor	1.00	1:00	1.00	1.00	1.00	1.00	1.00	1.00	1:00	1.00	1.00	
149 110 437 188 167 24.1 28.1 44.5 23.2 143 25.3 88.3 C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D	Incremental Delay, d2	0.2	0.0	0.1	20.5	0.5	0.1	0.3	0.1	11.7	0.5	0.1	
14.3 25.3 38.3	Delay (s)	11.5	14.9	11.0	43.7	18.8	16.7	24.1	28.1	44.5	23.2	27.2	
14.3 25.3 38.3 B C D D 24.0 HCM 2000 Level of Service C 0.71 Sum of lost time (s) 20.0 68.4% ICU Level of Service C 15.00	Level of Service	В	ш	ш		œ	œ	ပ	ပ		ပ	ပ	
24.0 HCM 2000 Level of Service 0.71 Sum of lost time (s) 68.4% ICU Level of Service 1.5	Approach Delay (s)		14.3			25.3			38.3			25.6	
24.0 HCM 2000 Level of Service 0.71 Sum of lost time (s) 68.4% ICU Level of Service 1.5	Approach LOS		а			ပ			Ω			ပ	
24.0 HCM 2000 Level of Service 0.71 Sum of lost time (s) 68.4% ICU Level of Service	Intersection Summary												
0.71 90.0 Sum of lost time (s) 68.4% ICU Level of Service 15	HCM 2000 Control Delay			24.0	Ĭ	CM 2000	Level of	Service		ပ			
90.0 Sum of lost time (s) cation 68.4% ICU Level of Service 15.	HCM 2000 Volume to Capa	acity ratio		0.71									
Utilization 68.4% ICU Level of Service	Actuated Cycle Length (s)			90.0	ઝ	um of los	time (s)			20.0			
7	Intersection Capacity Utiliza	ation		68.4%	೨	U Level	of Service	a		ပ			
	Analysis Period (min)			15									

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Intersection Summary

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

Queue shown is maximum after two cycles.

Lanes, Volumes, Timings 2: Mt. Pleasant Street/Plaza & Colborne Street West

Feb. Eep. Eep. Web.		4	†	~	>	ļ	4	•	←	•	۶	→	•
1,00	Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
h) 2 448 7 219 378 0 12 3 h) 1900 1900 1900 1900 1900 1900 1900 190	Lane Configurations		(4		r	£,			€\$	
1,000 1,00	Traffic Volume (vph)	2	448	7	219	378	0	12	က	174	2	-	5
1900 1900	Future Volume (vph)	2	448	7	219	378	0	12	က	174	2	-	2
(%) (%) (%) (%) (%) (%) (%) (%)	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
(%) (%) (%) (%) (%) (%) (%) (%) (%) (%)	Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.5	1.00	1.00	1.00	1.00	1.0
(%) 10.395 10.395 10.395 10.3458 10.3458 10.3458 10.3458 10.329 10.353 10.354 10.355 1	Fed Bike Factor		00.1			30.1		3.1	0.98			0.99	
(%) 1 3 4% 1 3 78 1 4 8 7 8 8 8 7 1 5 7 8 8 1 1 7 7 1 1 7 7 1 1 8 7	FIT		0.998			0000		010	709.0			0.910	
(%) (%) (%) (%) (%) (%) (%) (%)	FIL FIOIECIEU	c	0.470	c	c	2020	c	0.950	777	c	c	0.300	
(c/k)	Satd. Flow (prot)	>	0450	5	>	0.655	0	000	0.0	>	0	1704	
) S S S S S S S S S S S S S S S S S S S	Satd. Flow (perm)	0	3299	0	0	2250	0	1308	1519	0	0	1320	0
189 2772 295	Right Turn on Red	,		Yes	,		Yes			Yes	,		Yes
Signature	Satd. Flow (RTOR)		က						189			2	
10	Link Speed (k/h)		20			20			20			20	
10 10 10 10 10 10 10 10	Link Distance (m)		277.2			409.8			889.7			110.5	
(%) 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	Travel Time (s)		20.0			29.5			64.1			8.0	
0.92	Confl. Peds. (#/hr)	4		10	10		4	2		က	က		2
(c) 0% 4% 14% 3% 6% 0% 9% 0% 0% 0% 0% 0% 0% 0% 0% 0% 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
(c)(%) 0 497 8 238 411 0 13 3 (c)(%) 0 497 0 0 649 0 13 192 (c)(%) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Heavy Vehicles (%)	%0	4%	14%	3%	%9	%0	%6	%0	2%	%0	%0	%0
Columbia	Adj. Flow (vph)	2	487	8	238	411	0	13	က	189	2	<u>_</u>	5
yph) 0 497 0 649 0 13 192 1section Left Thu Left Thu 1) 25 15 25 15 25 10 0.0 0.0 1) 25 15 25 15 25 10 0.0	Shared Lane Traffic (%)												
Color No	Lane Group Flow (vph)	0 :	497	0	0	649	0	13	192	0	0	∞ :	0 :
Color Colo	Enter Blocked Intersection	8	2	2	2 :	<u>و</u>	2 :	2	ટ :	<u>ا</u>	<u>و</u> :	2 :	2
100 0.0	Lane Alignment	Lett	Let	Kight	Let	Let C	Kight	Lett	Let	Kight	Let	Let 1	Kight
100 100	Median Width(m)		0.0			0.0			7.7			7.7	
Lane	Link Offset(m)		0.0			0.0			0.0			0.0	
Color Colo	Crosswalk Width(m)		8.8			4.8			8.8			4.8	
100 100 100 100 100 100 100 100 100 100	Two way Left Turn Lane												
1	Headway Factor	1.00	1.00	1:00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
m) 20 100 20 100 20 100 100 100 100 100 10	Turning Speed (k/h)	52	•	15	25		15	52		15	25	•	15
(m) 100 100 100 100 100 100 100 100 100 10	Number of Detectors		5		- .	2			2		- .	2	
m) 2.0 10.0 2.0 10.0 2.0 1 m) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Detector Template	Let	Thru		Left	Thru		Left	Thru		Left	Thru	
(m) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.	Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
(s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Irailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
(s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
(s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Detector I Size(m)	0.2	0.0		0.2	0.0		7.0	0.0		0.2	0.0	
(s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Detector 1 Type	Ę.	Ċ Ċ		Č.	Ĕ Ċ		Ċ÷ C÷	Č+ĘX		Č.	Ť Č	
(s) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.	Defector Chairmen	0	0		0	0		0	0		0	0	
(m) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
(m) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
(w) 9.4 9.4 (o) 0.6 (o) 0.6 (o) 0.6 (o) 0.6 (o) 0.0 (o	Detector 1 Detay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
(s) Perm NA pm+pt NA Perm 2 1 6	Detector 2 Position(m)		4. O			9.4			4.0			4.0	
(s) 0.0 0.0 0.0 Perm NA Perm 2 1 6 0.0	Detector 2 Tyne		CH-EX			CHY.			CHY.			2 1 1 1 1 1	
(s) 0.0 0.0 Perm NA pm+pt NA Perm 2 1 6	Detector 2 Channel					i			i			i	
Perm NA pm+pt NA Perm	Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
2 1 6	Turn Type	Perm	ΑA		pm+pt	Ā		Perm	Ν		Perm	ΑĀ	
c	Protected Phases		2		_	9			œ			4	
9 7	Permitted Phases	2			9			∞			4		

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Lanes, Volumes, Timings 2: Mt. Pleasant Street/Plaza & Colborne Street West

Detour: AM Peak Hour

Detour: AM Peak Hour	7 7 7
2: Mt. Pleasant Street/Plaza & Colborne Street West	,

	1	†	>	>	Ļ	4	•	←	•	۶	-	*
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	2	2		-	9		∞	∞		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		0.9	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	27.0	27.0		10.0	27.0		25.0	25.0		25.0	25.0	
Total Split (s)	48.0	48.0		10.0	28.0		22.0	22.0		22.0	22.0	
Total Split (%)	%0.09	%0.09		12.5%	72.5%		27.5%	27.5%		27.5%	27.5%	
Maximum Green (s)	45.0	45.0		0.9	52.0		16.0	16.0		16.0	16.0	
Yellow Time (s)	4.0	4.0		3.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		1:0	2.0		2.0	5.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0:0			0.0	
Total Lost Time (s)		0.9			0.9		0.9	0.9			0.9	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	14.0	14.0			14.0		12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	0	0			0		0	0		0	0	
Act Effct Green (s)		9.69			9.69		8.4	8.4			8.4	
Actuated g/C Ratio		0.74			0.74		0.10	0.10			0.10	
v/c Ratio		0.20			0.39		0.09	0.59			90.0	
Control Delay		3.5			3.6		32.5	13.3			23.3	
Queue Delay		0.0			0.0		0.0	0.0			0.0	
Total Delay		3.5			3.6		32.5	13.3			23.3	
ROS		V			V		O	В			ပ	
Approach Delay		3.5			3.6			14.5			23.3	
Approach LOS		⋖			∢			В			ပ	
Intersection Summary												
	Other											
Cycle Length: 80												
Actuated Cycle Length: 80												
Offset: 35 (44%), Referenced to phase 2:EBTL, Start of Green	to phase	2:EBTL, §	Start of Gr	een								
Natural Cycle: 65												
Control Type: Actuated-Coordinated	dinated											
Maximum v/c Ratio: 0.59												
Intersection Signal Delay: 5.3				프	Intersection LOS: A	LOS: A						
Intersection Capacity Utilization 61.1% Analysis Period (min) 15	on 61.1%			⊡	CU Level of Service B	Service	œ					

Splits and Phases: 2: Mt. Pleasant Street/Plaza & Colborne Street West

4 az (8) , es

190487 - Brantford Bridges EA PTSL

Queues 2: Mt. Pleasant Street/Plaza & Colborne Street West

HCM Signalized Intersection Capacity Analysis 2: Mt. Pleasant Street/Plaza & Colborne Street West

Detour: AM Peak Hour

Detour: AM Peak Hour

	†	ļ	•	←	→	
Lane Group	EBT	WBT	NBL	NBT	SBT	
Lane Group Flow (vph)	497	649	13	192	8	
v/c Ratio	0.20	0.39	0.09	0.59	90'0	
Control Delay	3.5	3.6	32.5	13.3	23.3	
Queue Delay	0.0	0.0	0.0	0:0	0.0	
Total Delay	3.5	3.6	32.5	13.3	23.3	
Queue Length 50th (m)	8.8	4.7	2.0	0.5	0.5	
Queue Length 95th (m)	18.1	8.5	8.9	18.2	4.2	
Internal Link Dist (m)	253.2	385.8		865.7	86.5	
Turn Bay Length (m)						
Base Capacity (vph)	2458	1676	261	455	268	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.20	0.39	0.05	0.42	0.03	
Intersection Summary						
IIIIeiseciioii Suiiiiiaiy						

Movement												
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Lane Configurations		4			(je.	£,			4	
Traffic Volume (vph)	2	448	7	219	378	0	12	က	174	2	-	
Future Volume (vph)	2	448	7	219	378	0	12	က	174	2	-	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		0.9			0.9		0.9	0.9			0.9	
Lane Util. Factor		0.95			0.95		1.00	1.00			1.00	
Frpb, ped/bikes		1.00			1.00		1.00	0.98			0.99	
Flpb, ped/bikes		1.00			1.00		1.00	1.00			1.00	
Frt		1.00			1.00		1.00	0.85			0.92	
Fit Protected		1.00			0.98		0.95	1.00			0.99	
Satd. Flow (prot)		3456			3372		1652	1520			1702	
Flt Permitted		0.95			99.0		0.75	1.00			0.77	
Satd. Flow (perm)		3296			2251		1308	1520			1320	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	487	∞	238	411	0	13	က	189	2	~	
RTOR Reduction (vph)	0	-	0	0	0	0	0	169	0	0	4	
Lane Group Flow (vph)	0	496	0	0	649	0	13	23	0	0	4	
Confl. Peds. (#/hr)	4		9	9		4	2		က	က		
Heavy Vehicles (%)	%0	4%	14%	3%	%9	%0	%6	%0	2%	%0	%0	%0
Turn Type	Perm	AN		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		7		-	9			œ			4	
Permitted Phases	2			9			∞			4		
Actuated Green, G (s)		9.69			9.69		8.4	8.4			8.4	
Effective Green, g (s)		9.69			9.69		8.4	8.4			8.4	
Actuated g/C Ratio		0.75			0.75		0.11	0.11			0.11	
Clearance Time (s)		0.9			0.9		0.9	0.9			0.9	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		2455			1676		137	159			138	
v/s Ratio Prot								c0.02				
v/s Ratio Perm		0.15			c0.29		0.01				0.00	
v/c Ratio		0.20			0.39		0.09	0.14			0.03	
Uniform Delay, d1		3.1			3.7		32.4	32.5			32.1	
Progression Factor		1.00			0.73		1.00	1.00			1.00	
Incremental Delay, d2		0.2			0.1		0.3	0.4			0.1	
Delay (s)		3.2			2.8		32.7	32.9			32.2	
Level of Service		⋖			⋖		ပ	ပ			ပ	
Approach Delay (s)		3.2			5.8			32.9			32.2	
Approach LOS		∢			∢			O			O	
Intersection Summary												
HCM 2000 Control Delay			7.7	ĭ	3M 2000	HCM 2000 Level of Service	service		∢			
HCM 2000 Volume to Capacity ratio	ty ratio		0.38									
Actuated Cycle Length (s)			80.0	S	Sum of lost time (s)	time (s)			16.0			
Intersection Capacity Utilization	on		61.1%	೦	U Level o	ICU Level of Service			Ф			
Analysis Period (min)			15									

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Lanes, Volumes, Timings 3: Gilkison Street & Colborne Street West

	١	Ť	~	•			-	-	-			
-ane Group	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
ane Configurations		₽			€			€\$			4	
Fraffic Volume (vph)	9	634	7	9/	563	41	89	6	123	45	5	24
-uture Volume (vph)	9	634	7	9/	563	41	89	6	123	45	2	24
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
ane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1:00	1:00	1.00	1:00
Ped Bike Factor		1.00			00.1			0.99			0.99	
-		0.998			0.991			0.917			0.954	
It Protected					0.994			0.983			0.969	
Satd. Flow (prot)	0	3446	0	0	3377	0	0	1470	0	0	1524	0
-It Permitted		0.948			0.798			0.863			0.601	
Satd. Flow (perm)	0	3267	0	0	2709	0	0	1289	0	0	943	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			16			93			56	
ink Speed (k/h)		20			20			20			20	
Link Distance (m)		409.8			139.0			106.4			116.6	
Fravel Time (s)		29.5			10.0			7.7			8.4	
Confl. Peds. (#/hr)	9		15	15		16	4		7	7		4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	%0	4%	20%	2%	2%	2%	%0	13%	2%	3%	20%	%0
arking (#/hr)			•				·	>		:	0	
Adj. Flow (vph)	_	689	00	83	612	42	74	9	134	49	2	56
Shared Lane Traffic (%)	c	707	c	c	240	c	c	070	c	c	1.	_
arie Gloup Flow (vpri)	2	5 2	2	2	9 2	2	2	0 N	2	2	2 2	2 8
ane Alignment	g d	# d	Sign that	- #g	- #a	Picht tdoig	- #a	- #g	Bio t	₽ 	- #a	Bight This
Median Width(m)	į	00	100	Ĭ	000	5	i	00	5	Ĭ	000	, ,
ink Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.14	1.00	1:00	1.14	1.00
Furning Speed (k/h)	52		15	52		15	52		15	52		15
Number of Detectors	_	2		_	2		_	2		-	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
 eading Detector (m) 	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
railing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	9.0		5.0	9.0		2.0	9.0		2:0	9.0	
Detector 1 Type	Ċ÷ Ci-	CI+EX		CI+EX	CJ+EX		CI+EX	CI+EX		CI+EX	CI+EX	
Detector 1 Channel	c	c		0	c		c	c		c	c	
Defector 1 Exterior(s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Defector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)	3	9.6		2	9.6		3	9.4		2	9.6	
Detector 2 Size(m)		9.0			9.0			9.0			9.0	
Detector 2 Type		CI+EX			CI+EX			CI+EX			CI+EX	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Furn Type	Perm	A		pm+pt	¥		Perm	A		Perm	ΑN	

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Lanes, Volumes, Timings 3: Gilkison Street & Colborne Street West

Detour: AM Peak Hour

Detour: AM Peak Hour

	1	†	*	>	ţ	4	•	←	•	۶	→	\searrow
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NB.	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2			9			8			4		
Detector Phase	2	2		-	9		∞	∞		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		0.9	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	31.0	31.0		10.0	31.0		33.0	33.0		33.0	33.0	
Total Split (s)	46.0	46.0		10.0	26.0		24.0	24.0		24.0	24.0	
Total Split (%)	27.5%	27.5%		12.5%	%0:02		30.0%	30.0%		30.0%	30.0%	
Maximum Green (s)	40.0	40.0		0.9	20.0		18.0	18.0		18.0	18.0	
Yellow Time (s)	4.0	4.0		3.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		1.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		0.9			0.9			0.9			0.9	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		Max	C-Max		None	None		None	None	
Walk Time (s)	10.0	10.0			10.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	15.0	15.0			15.0		17.0	17.0		17.0	17.0	
Pedestrian Calls (#/hr)	0	0			0		0	0		0	0	
Act Effct Green (s)		40.0			54.8			13.2			13.2	
Actuated g/C Ratio		0.50			0.68			0.16			0.16	
v/c Ratio		0.43			0.38			0.75			0.44	
Control Delay		17.7			4.9			34.0			28.1	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		17.7			4.9			34.0			28.1	
SOT		ш			¥			ပ			ပ	
Approach Delay		17.7			4.9			34.0			28.1	
Approach LOS		В			⋖			O			O	
Intersection Summary												
Area Type:	Other											
Cycle Length: 80												
Actuated Cycle Length: 80	0											
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	d to phase 2:	EBTL and	6:WBTL	Start of	Green							
Natural Cvcle: 75												

Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum vic Ratio: 0.75
Intersection Signal Delay: 14.8
Intersection Capacity Utilization 71.3%
Analysis Period (min) 15

Intersection LOS: B ICU Level of Service C

Splits and Phases: 3: Gilkison Street & Colborne Street West ₹ 0×60 010

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Queues 3: Gilkison Street & Colborne Street West

HCM Signalized Intersection Capacity Analysis 3: Gilkison Street & Colborne Street West

Detour: AM Peak Hour

EBT N 704 704 17.7 17.7 0.0	WBT N 740 4.9 3 4.9 3	NBT 218 0.75 34.0 0.0	SBT 77 77 78 28.1	
EBT 704 (vph) 704 0.43 17.7 0.0			SBT 77 744 88.1	
low (vph) 704 0.43 17.7 0.0			7.7 7.7 7.4 8.1	
0.43 17.7 0.0).44 28.1	
17.7 0.0			28.1	
0.0		0.0		
		0 5	0.0	
Fotal Delay 17.7). †	28.1	
Queue Length 50th (m) 45.2 1	19.6	18.7	7.2	
Queue Length 95th (m) 56.0 2	24.3 4	40.7	19.2	
nternal Link Dist (m) 385.8 119	115.0 8	82.4	92.6	
Turn Bay Length (m)				
Base Capacity (vph) 1634 19	1935	362	232	
Starvation Cap Reductn 0	0	0	0	
Spillback Cap Reductn 0	0	0	0	
Storage Cap Reductn 0	0	0	0	
Reduced v/c Ratio 0.43 0	0.38	09.0	0.33	

Morement EB1 EB1 EB1 WB1 WB1 WB1 NB1		i	t	•	•		/		-	_	k	٠	,
Color Colo	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
6 634 7 76 563 41 68 9 123 45 2 190 1900 1900 1900 1900 1900 1900 1900 190 1900 1900 1900 1900 1900 1900 100 1900 1900 1900 1900 1900 1900 1 00 100 1 100 100 1900 1900 1 00 1 1 1 1 1 1 1 1	Lane Configurations		स्			4			4			4	
1900 1900	Traffic Volume (vph)	9	634	7	9/	563	41	89	တ	123	45	2	54
1900 1900	Future Volume (vph)	9	634	7	9/	563	41	89	တ	123	45	2	24
6.0 6.0 6.0 6.0 6.0 10.0 10.0 10.0 10.0	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1,00	Total Lost time (s)		0.9			0.9			0.9			0.9	
1,00	Lane Util. Factor		0.95			0.95			1.00			1.00	
1,00	Frpb, ped/bikes		1.00			1.00			0.99			0.99	
1,00 0,99 0,92 0,95	Flpb, ped/bikes		1.00			1.00			1.00			1.00	
100 0.99 0.98 0.97 3445 3376 1469 1521 0.95 0.92 0.92 0.92 0.92 0.92 0.92 0.92 7 689 8 8 612 45 74 10 134 49 2 16 15 15 15 16 10 134 10 134 49 2 16 17 15 15 15 16 14 10 134 49 2 16 17 15 15 15 16 14 10 10 0 55 16 17 17 17 17 13 10 13 13 19 15 15 15 15 15 13 13 10 10 10 13 13 13 13 10 10 10 10 10 10 10 10 13 10 10 10 10 10 13 10 10 10 10 10 13 10 10 10 10 13 10 10 10 10 13 10 10 10 10 10 10 10 10 10	Ŧ		1.00			0.99			0.92			0.95	
1445 3376 1469 1521 1526 1521 1528 166 1521 1526 152 168 1521 1289 943 1521 1526 15 15 15 16 4 17 134 49 2 15 15 15 15 16 4 17 134 49 2 15 15 15 16 4 17 134 49 2 15 15 15 16 4 17 134 49 2 15 15 15 16 4 17 134 49 2 15 15 15 16 4 17 134 49 2 15 15 15 16 4 17 134 49 2 15 15 15 16 4 17 134 49 2 15 15 15 16 4 17 7 7 7 15 15 15 16 4 17 7 7 7 15 15 15 16 17 134 134 134 15 15 15 16 17 134 134 132 15 15 15 16 17 134 134 132 15 15 15 15 15 15 132 15 15 15 15 15 134 132 15 15 15 15 15 134 15 15 15 15 15 134 15 15 15 15 15 15 15 15	Fit Protected		1.00			0.99			0.98			0.97	
305F 080 0.86 0.66 0.92 0.92 0.92 0.92 0.92 0.92 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.92 0.9	Satd. Flow (prot)		3445			3376			1469			1521	
1289 3267	Flt Permitted		0.95			0.80			98.0			09.0	
0.92 0.92 <th< td=""><td>Satd. Flow (perm)</td><td></td><td>3267</td><td></td><td></td><td>2711</td><td></td><td></td><td>1289</td><td></td><td></td><td>943</td><td></td></th<>	Satd. Flow (perm)		3267			2711			1289			943	
7 689 8 83 612 45 74 10 134 49 2 2 0 1 10 703 10 0 75 0 0 1 70 0 0 55 0 0 1 70 0 0 55 0 0 1 70 0 0 55 0 0 1 70 0 0 55 0 0 1 70 0 0 0 55 0 0 1 70 0 0 0 55 0 0 1 70 0 0 0 55 0 0 0 1 70 0 0 0 55 0 0 0 1 70 0 0 0 55 0 0 0 1 70 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
1	Adj. Flow (vph)	_	689	∞ .	83	612	42	74	9	134	46	5	56
Arm (b) 0 7/3 0 7/3 0 7/3 0 7/3 0 7/3 0 5% 5% 6% 1% 7 8 8 8 9 8 9	RTOR Reduction (vph)	0	-	0	0	വ	0	0	28	0	0	22	٠,
s(%) 0% 4% 50% 50% 60% 7 7 7 7 7 7 7 7 8 8 7 8 9 <t< td=""><td>Lane Group Flow (vph)</td><td>0 !</td><td>203</td><td>0 !</td><td>0 !</td><td>735</td><td>0 !</td><td>0</td><td>140</td><td>0 1</td><td>0 </td><td>22</td><td></td></t<>	Lane Group Flow (vph)	0 !	203	0 !	0 !	735	0 !	0	140	0 1	0	22	
se/s) Perm NA pm+pt NA Perm N	Confl. Peds. (#/hr)	16		15	15		16	4		_	_		7
Ses Perm NA Pmrh pt NA Perm O Ses 2 1 6 8 4 Ses 2 6 8 8 4 Ses 2 6 6 8 8 4 In (5) 40.0 54.8 8 4 4 In (5) 40.0 54.8 132 4 132 4 132 4 132 4 132 60 <t< td=""><td>Heavy Vehicles (%)</td><td>%0</td><td>%4</td><td>20%</td><td>2%</td><td>2%</td><td>2%</td><td>%0</td><td>13%</td><td>2%</td><td>%</td><td>20%</td><td>8</td></t<>	Heavy Vehicles (%)	%0	%4	20%	2%	2%	2%	%0	13%	2%	%	20%	8
NA	Parking (#/nr) ∓							(0				
2 1 6 8 8 4 4 40.0 54.8 13.2 40.0 54.8 13.2 40.0 54.8 13.2 60 6.0 6.0 3.0 3.0 3.0 1946 21.2 60.5 6.0 60.5 6.0 1.31 60.8 0.46 1.31 0.80 1.100 0.8 0.4 7.5 17.4 4.6 38.9 8 A D 17.4 4.6 38.9 8 B 60.8 0.4 7.5 17.3 HCM 2000 Level of Service B 60.8 0.4 75.5 17.1 4.6 38.9 8 A D 17.3 HCM 2000 Level of Service C 15.3 HCM 2000 Level of Service C	Tum Type	Perm	¥°		bm+pt	≨°		Perm	≨°		Perm	₹.	
2 6 8 8 4 400 548 132 4 400 548 132 4 60 66 0.66 0.16 50 60 60 60 30 30 30 60 602 0.21 212 61 605 0.27 0.11 0.66 1.10 6043 0.28 0.66 1.10 0.66 1.10 6 0.27 0.21 1.00 0.66 1.10 0.66 1.10 6 0.43 0.80 1.00 0.66 1.00 1.00 0.66 1.00 1.74 4.6 38.9 A D A D A D A D A D A D A D A D A D A D A D A D A D A D A D<	Protected Phases		2		-	9			∞			4	
40.0 54.8 13.2 40.0 54.8 13.2 0.50 0.68 0.16 6.0 6.0 6.0 6.0 3.0 3.0 1633 1946 212 50.25 0.21 0.011 50.27 0.21 0.011 6.27 0.21 0.06 1.27 5.4 31.3 1.31 0.80 1.00 0.8 0.4 7.5 B A A B A B 17.4 A.6 38.9 B A A B A B 0.48 A D 8.0 Sum of lost time (s) 15.0 77.3% ICU Level of Service C 15.3 C C	Permitted Phases	2			9			∞			4		
400 54.8 13.2 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 3.0 3.0 3.0 3.0 1633 1946 212 5.0 2.12 2.12 6.0 6.0 6.0 6.0 6.0 6.0 1.27 5.4 31.3 1.27 5.4 31.3 1.31 0.80 1.00 0.8 0.4 7.5 1.74 4.6 38.9 B A D 15.3 HCM 2000 Level of Service B 0.48 5.4 38.9 B A D 15.3 HCM 2000 Level of Service C 80.0 Sum of lost time (s) 16.0 77.3% ICU Level of Service C 15 15 C	Actuated Green, G (s)		40.0			24.8			13.2			13.2	
0.50 0.68 0.16 0.16 0.0 0.68 0.16 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Effective Green, g (s)		40:0			24.8			13.2			13.2	
6.0 6.0 6.0 1633 3.0 3.0 1633 6.056 212 0.021 0.011 0.43 0.38 0.66 12.7 5.4 31.3 1.31 0.80 1.00 1.74 4.6 38.9 B A D D 15.3 HCM 2000 Level of Service B 0.48 Sum of lost time (s) 16.0 77.3% ICU Level of Service C 15.3 1.3	Actuated g/C Ratio		0.50			0.68			0.16			0.16	
153 1946 212	Clearance Time (s)		0.9			0.9			0.9			0.9	
1633 1946 212 0.005 0.005 0.02 0.015 0.43 0.38 0.66 1.27 5.4 31.3 1.27 5.4 31.3 1.31 0.80 1.00 0.8 0.4 7.5 17.4 4.6 38.9 B A D 15.3 HCM 2000 Level of Service B 0.48 0.048 8.00 Sum of lost time (s) 16.0 77.3% ICU Level of Service C	Vehicle Extension (s)		3.0			3.0			3.0			3.0	
C0.22 0.01 0.43 0.38 0.66 12.7 5.4 31.3 1.31 0.80 1.00 0.8 0.4 7.5 17.4 4.6 38.9 B A D 17.3 HCM 2000 Level of Service B 0.48 A D A D A 1.00 0.80 Sum of lost time (s) 16.0 77.3% I/OU Level of Service C	Lane Grp Cap (vph)		1633			1946			212			155	
C022 0.21 c0.11 0.43 0.38 0.66 1.27 5.4 31.3 1.31 0.80 1.00 0.8 0.4 7.5 1.74 4.6 38.9 B 4.6 38.9 B A D 1.74 A 6 38.9 B A B D 1.74 A 6 38.9 B A B D 1.74 A 6 38.9 B A 15.3 HCM 2000 Level of Service B 0.48 0.48 COLlevel of Service C C 71.3% ICU Level of Service C C 15.00	v/s Ratio Prot					c0.05							
043 0.38 0.66 12.7 5.4 31.3 1.31 0.80 1.00 0.8 0.4 7.5 17.4 46 38.9 B A D 15.3 HCM 2000 Level of Service B 0.48 0.00 Sum of lost time (s) 16.0 77.13% ICU Level of Service C	v/s Ratio Perm		c0.22			0.21			c0.11			90.0	
127 5.4 31.3 1.31 0.80 1.00 1.08 0.4 7.5 17.4 4.6 38.9 B A D D 17.4 4.6 38.9 B A D D 17.4 4.6 38.9 B A D D 15.3 HCM 2000 Level of Service B 0.48 8.00 Sum of lost time (s) 16.0 77.1.3% ICU Level of Service C	v/c Ratio		0.43			0.38			99.0			0.36	
131 0.80 1.00 0.8 0.4 7.5 17.4 4.6 38.9 B A D D 17.4 A.6 38.9 B A D D 15.3 HCM 2000 Level of Service B 0.48 Sum of lost time (s) 16.0 77.3% ICU Level of Service C	Uniform Delay, d1		12.7			5.4			31.3			29.6	
0.8	Progression Factor		1.31			0.80			1.00			1.00	
174 4.6 38.9 B A B B 174 4.6 38.9 B A B B 15.3 HCM 2000 Level of Service B 16.0 Sum of lost time (s) 16.0 71.3% ICU Level of Service C	Incremental Delay, d2		0.8			0.4			7.5			1.4	
17.4	Delay (s)		17.4			4.6			38.9			31.0	
174 4.6 38.9 B A D 15.3 HCM 2000 Level of Service B 0.48 Sum of lost time (s) 16.0 77.3% ICU Level of Service C 15	Level of Service		മ			⋖			۵			ပ	
B A D 15.3 HCM 2000 Level of Service B 0.48 80.0 Sum of lost time (s) 16.0 71.3% ICU Level of Service C 15.3	Approach Delay (s)		17.4			4.6			38.9			31.0	
15.3 HCM 2000 Level of Service 0.48 80.0 Sum of lost time (s) 71.3% ICU Level of Service 15	Approach LOS		Ф			⋖			۵			O	
15.3 HCM 2000 Level of Service 0.48 8.00 Sum of lost time (s) 71.3% ICU Level of Service 15	Intersection Summary												
0.48 80.0 Sum of lost time (s) 71.3% ICU Level of Service 15	HCM 2000 Control Delay			15.3	 	2M 2000	Level of 5	Service		ш			
80.0 Sum of lost time (s) 71.3% ICU Level of Service 15	HCM 2000 Volume to Capac	city ratio		0.48									
71.3%	Actuated Cycle Length (s)			80.0	Sı	um of lost	time (s)			16.0			
Analysis Period (min) 15	Intersection Capacity Utilizat	tion		71.3%	೦	U Level c	of Service			O			
	Analysis Period (min)			15									

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Lanes, Volumes, Timings 4: Colborne Street West & Ballantyne Drive

Detour: AM Peak Hour

	۸	†	ļ	4	۶	•	
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		\$	<u> </u>				
Traffic Volume (vph)	0	800	089	120	0	0	
Future Volume (vph)	0	800	089	120	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	
Fr			0.980				
Flt Protected							
Satd. Flow (prot)	0	3610	1862	0	0	0	
Flt Permitted							
Satd. Flow (perm)	0	3610	1862	0	0	0	
Link Speed (k/h)		20	20		20		
Link Distance (m)		139.0	290.1		218.0		
Travel Time (s)		10.0	20.9		15.7		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Heavy Vehicles (%)	%0	%0	%0	%0	%0	%0	
Adj. Flow (vph)	0	870	739	130	0	0	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	870	869	0	0	0	
Enter Blocked Intersection	8	S	S	8	8	%	
Lane Alignment	Left	Left	Left	Right	Left	Right	
Median Width(m)		3.6	3.6		0.0		
Link Offset(m)		0.0	0.0		0.0		
Crosswalk Width(m)		4.8	4.8		4.8		
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (k/h)	52			15	52	15	
Sign Control		Free	Free		Stop		
Intersection Summary							
Area Type: Ott	Other						
Control Type: Unsignalized							
Intersection Capacity Utilization 46.4%	n 46.4%			ರ	J Level of	ICU Level of Service A	
Analysis Period (min) 15							

190487 - Brantford Bridges EA PTSL

HCM Unsignalized Intersection Capacity Analysis 4: Colborne Street West & Ballantyne Drive

Detour: AM Peak Hour

0.92 804 804 330 SBR 0 Stop 0% 0.92 0 000 3.5 100 214 0.88 0.92 120 869 869 0 130 1700 0.51 0.0 0.0 46.4% 15 680 680 680 0.92 739 0.0 None 290 None 435 0 0 1700 0.26 0.0 ### EBT 800 800 800 0.92 0.92 870 139 Ť 435 0 0 1700 0.26 0.0 0.92 0.0 4.1 2.2 100 784 Average Delay Intersection Capacity Utilization Analysis Period (min) Direction, Lane #
Volume Total
Volume Left
SSH
Volume Right
SCH
Volume In Step (m)
Queue Length Steft (m)
Control Delay (s)
Lane LOS Lane Configurations
Traffic Volume (vehin)
Sign Control
Grade
Feak Hour Factor
Hourly flow rate (veh)
Pedestrians
Lane Width (m)
Person signal (m)
Person signal (m)
Pex, Isage I confivol
C. C. conflicting volume
C.C. stage I conf vol
C.C. stage I conf vol
C.C. stage I conf vol
C.C. stage I confivol
C.C. stage I conf Approach Delay (s) Approach LOS

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ICU Level of Service

Lanes, Volumes, Timings 5: Icomm Drive & Colborne Street West

FBL FBT FBR WBL WBT WBR NBL NBT NBR SBL 591 177 32 0 0 44 467 22 118 591 177 32 0 0 44 467 22 118 591 177 32 0 0 44 467 22 118 591 177 32 0 0 44 467 22 118 591 177 32 0 0 44 467 22 118 590 100 100 100 100 150 150 150 150 100 100 100 100 100 100 100 150 178 176 0 0 0 0 110 178 176 0 0 0 0 0 178 176 0 0 0 0 0 178 176 0 0 0 0 0 179 170 170 170 170 170 170 170 170 170 170 170 172 174 176 0 0 0 0 175 175 175 0 0 176 176 0 0 0 0 177 17 17 0 0 0 180 170 170 170 170 170 180 180 170 170 170 170 180 170 170 170 170 170 180 170 170 170 170 170 170 180 170 170 170 170 170 170 180 170 170 170 170 170 170 180 170 170 170 170 170 170 180 170 170 170 170 170 170 180 170 170 170 170 170 170 180 180 180 180 180 180 180 180 180 180 180 180 180 180 180 180 180 180 180 180 180 180 180 180 180	FBL FBT FBR WBL WBT WBR NBL NBT	FBL FBT FBR WBL WBT WBR NBL NBT NBR NBT NBT NBR NBT		1	†	1	>	ţ	4	<	←	4	٠	→	*
17 17 18 18 18 18 18 18	17 17 22 0 0 44 467 22 118 591 177 32 0 0 0 44 467 22 118 591 177 32 0 0 0 44 467 22 118 591 177 32 0 0 0 44 467 22 118 592 177 32 0 0 0 44 467 22 118 520 1900 1900 1900 1900 1900 1900 1900 1900 500 1900 1900 1900 1900 1900 1900 1900 520 100 100 100 100 100 100 100 0 520 100 100 100 100 100 100 100 520 1724 1760 0 0 0 0 1612 3385 0 0 520 1724 1760 0 0 0 0 1612 3385 0 0 520 1724 1760 0 0 0 0 1612 3385 0 0 520 1724 1760 0 0 0 0 1612 3385 0 0 520 1724 1760 0 0 0 0 1612 3485 0 0 520 1724 1760 0 0 0 0 0 1612 3485 0 0 520 1724 1760 0 0 0 0 0 0 520 1724 1760 0 0 0 0 0 520 1724 1760 0 0 0 0 0 520 1724 172	10 10 10 10 10 10 10 10	Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Sept 177 32	991 177 32 0 0 0 44 467 22 118 1900 1900 1900 1900 1900 1900 1900 1900	Section Sect	Lane Configurations	-	æ					-	₩.			₹.	*
1900 1900	1900 1900	1900 1900	Traffic Volume (vph)	291	177	32	0	0	0	44	467	22	118	322	756
1900 1900 1900 1900 1900 1900 1900 1900	1900 1900 1900 1900 1900 1900 1900 1900	1900 1900 1900 1900 1900 1900 1900 1900	Future Volume (vph)	291	177	32	0	0	0	44	467	22	118	322	756
250	250	25.0	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
250 100 100 100 100 100 100 100 100 100 1	250 100 100 100 100 100 100 100 100 100 1	250 100 100 100 100 100 100 095 095 100 095 095 100 09	Storage Lengtn (m)	700.0		0.0	0.0		0.0	0.611		0.612	72.0		0.0
1.00 1.00 1.00 1.00 1.00 1.00 0.95 0.95 0.95 0.99 0.99 0.99 0.99 0	1.00 1.00 1.00 1.00 1.00 1.00 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0	1.00 1.00 1.00 1.00 1.00 1.00 0.95 0.95 0.95 0.99 0.99 0.99 0.99 0	Storage Lanes	7 0		0	0 2 5		0	- c		0	0 90		_
0.950 0.950	0.950 1.050 1.754 1.754 1.760 1.050 1.050 1.754 1.754 1.760 1.050	0.950 0.977 0.950 0.957 0.950 0.957 0.950 0.957 0.950 0.957	l aper Lengtin (m)	700	4 00	0	C: E	00 1	00	1 00	0.05	0.05	0.05	0.05	00
0.950 0.950 1726 1760 0 0 0 1612 385 0 0 0 1612 386 0 0 0 0 0 1612 385 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1736 1760 0 0 0 0 0 0 0 0 0	0.977 0.980 0.990 0.900	Ped Rike Factor	0 66	0.0	8.	8.	8.	3	0 00	1 00	0.33	0.93	1.00	9.0
1736	0.950 1736 1760 0 0 0 1612 3385 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.950 1736 1760 0 0 0 1612 3385 0 0.950 1724 1760 0 0 0 0 1612 3385 0 1724 1760 0 0 0 0 0 1612 3385 0 1724 1760 0 0 0 0 0 0 1612 3385 0 1724 1724 172	14 H	8	0.977					9	0.993			2	0.850
1736 1760 0 0 0 1612 3385 0 0 0 0 5050 1724 1760 0 0 0 0 631 3385 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1736 1760 0 0 0 1612 3385 0 0 0 0 950 1724 1760 0 0 0 0 631 3385 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1736 1760 0 0 0 1612 3385 0 0 0.950 1724 7760 0 0 0 0 631 385 0 0.950 1724 7760 0 0 0 631 385 0 1724 7760 0 0 0 0 631 385 0 1724 7760 0 0 0 0 631 385 0 0.92 290.1 29 17 17 17 18 9 10 10 10 10 10 10 10 10 10 10 10 10 10	Fit Protected	0.950						0.950				0.987	
0.950 1724 1760 0 0 0 0 631 338 0 0 0 1724 1760 0 0 0 0 631 338 0 0 0 1724 1760 0 0 0 0 631 338 0 0 0 1725 1724 1760 0 0 0 0 631 338 0 0 0 172 172 172 172 182 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.950 1724 1760 0 0 0 0 631 3385 0 0 0 0 1724 1760 0 0 0 0 631 3385 0 0 0 0 0 631 3385 0 0 0 0 0 631 3385 0 0 0 0 0 0 631 3385 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.950 1724 1760 0 0 0 0 0375 1724 1760 0 0 0 0 0 0375 1724 1760 0 0 0 0 0 0375 1724 1760 0 0 0 0 0375 1724 1760 0 0 0 0 0 0375 1724 1760 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Satd. Flow (prot)	1736	1760	0	0	0	0	1612	3385	0	0	3275	1568
1724 1760 0 0 0 0 631 3385 0 0 2 2	1724 1760 0 0 631 3385 0 0 14	1724 1760	Flt Permitted	0.950						0.375				0.697	
14 Yes Yes 6 Yes 50 50 50 50 2901 4412 4872 18 20.9 17 17 9 10 35.1 18 9 17 17 9 10 35.1 18 9 17 17 9 10 35.1 18 4% 4% 11% 0% 0% 0% 12% 6% 0% 11% 642 192 35 0 0 0 0 48 532 0 0 0 10 642 227 0 0 0 0 0 48 532 0 0 0 10 642 227 0 0 0 0 0 0 0 10 100 100 100 100 100 100 100 100 100 10 100 100 100 100 100 100 100 100 10 10	14 Nes	14 Yes Yes Yes Fe Fe Fe Fe Fe Fe Fe	Satd. Flow (perm)	1724	1760	0	0	0	0	631	3385	0	0	2309	1512
59.1 441.2 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	590.1 441.2 50 50 50 50 50 50 50 50 50 50 50 50 50	50	Right Turn on Red			Yes			Yes			Yes			Yes
290.1 4412 4872 188 290.1 7 17 18 9 10 35.1 9 9 1 18 18 18 18 18 18 18 18 18 18 18 18 1	Solution	290.1 441.2 50 50 50 50 50 50 50 50 50 50 50 50 50	Satd. Flow (RTOR)		14						9				822
201 4412 4872 1872 1872 1872 1872 1872 1872 1872 1	290.1 441.2 487.2 487.2 20.9 20.9 3.6.1 9 9 9 9 10 8.7.2 8.7	290.1 4412 487.2 209 1 7 17 0 9 10 35.1 9 0.02 0.92 0.92 0.92 0.92 0.92 0.92 0.9	Link Speed (k/h)		20			20			20			20	
20.9 17 17 17 19 9 10 9 10 9 10 9 10 9 10 9	20.9 17 17 18 9 10 9 9 9 10 10 10 10 10 10 10 10 10 10 10 10 10	20.9	Link Distance (m)		290.1			441.2			487.2			182.2	
9 17 17 17 17 19 10 10 10 10 10 10 10 10 10 10 10 10 10	9 17 17 17 18 18 18 18 18 18 18 18 18 18 18 18 18	9 17 17 17 18 17 18 17 18 17 18 17 18 17 18 17 18 18 18 18 18 18 18 18 18 18 18 18 18	Travel Time (s)		20.9			31.8			35.1			13.1	
92 092 092 092 092 092 092 092 092 092 0	9, 642 032 032 032 032 032 032 032 032 032 03	92 032 032 032 032 032 032 032 032 032 03	Confl. Peds. (#/hr)	6		17	17		6	10		6	6		9
## 4% 4% 11% 0% 0% 12% 6% 0% 11% ## 4% 11% 0% 0% 0% 12% 6% 0% 11% ## 642 192 35 0 0 0 48 532 0 0 0 48 ## 642 227 0 0 0 0 48 532 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	## 4% 4% 11% 0% 0% 12% 6% 0% 11% ## 4% 41% 11% 0% 0% 0% 12% 6% 0% 11% ## 522 0 0 0 0 48 532 0 0 0 ## 536 0 0 0 48 532 0 0 0 ## 536 0 0 0 0 0 0 0 0 0 0 0 0 ## 536 0 0 0 0 0 0 0 0 0 0 0 0 0 ## 536 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	4% 4% 11% 0% 0% 0% 12% 6% 0% 1 4 508 24 6% 0% 1 1 5 5 0 0 0 4 8 508 24 6 6 5 0 0 0 4 8 508 24 6 6 5 0 0 0 4 8 508 24 6 6 5 0 0 0 0 0 0 0 0 0 0 0 0 0 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
842 192 35 0 0 48 508 24 128 35 0 0 6 48 508 24 128 35 0 0 6 48 502 27 128 35 0 0 0 48 532 0 0 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	842 192 35 0 0 0 48 508 24 128 (b) 642 227 0 0 0 0 48 532 0 0 cdion No	842 192 35 0 0 0 48 508 24 (h) 642 227 0 0 0 0 48 532 0 ccion No	Heavy Vehicles (%)	4%	4%	11%	%0	%0	%0	12%	%9	%0	11%	%8	3%
642 227 0 0 0 0 48 532 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	642 227 0 0 0 0 0 48 532 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	642 227 0 0 0 0 48 532 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Adj. Flow (vph)	642	192	32	0	0	0	48	208	24	128	320	822
bit of the control of	ne circin No	bit of the control of	Shared Lane Traffic (%)		į	,				:		,	,	į	
Color No	retion No	redion No	Lane Group Flow (vph)	642	227	0 :	0 :	0 :	o :	48	232	0 :	0 :	478	822
Teff Leff Right Right Leff Right Right Leff Right Ri	The control of the co	Left Left Right Left Thru Co.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Enter Blocked Intersection	2	2	2	2	2	2	2	2	2	2	2	2
3.6 3.6 3.6 3.6 3.6 3.6 3.6 3.6 3.6 3.6	3.6 3.6 3.6 3.6 3.6 3.6 3.6 3.6 3.6 3.6	ane 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Lane Alignment	Left	reft.	Right	Left	ref	Right	Left	reft	Right	Left	Tet:	Right
100	100 1.00 1.00 1.00 1.00 1.00 1.00 1.00	nne	Median Width(m)		3.6			3.6			3.6			3.6	
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	100 1.00 1.00 1.00 1.00 1.00 1.00 1.00	100 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Link Offset(m)		0.0			0.0			0.0			0.0	
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	100 100 100 100 100 100 100 100 100 100	Crosswalk Width(m)		4.8			4.8			4.8			4.8	
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	100 100 100 100 100 100 100 100 100 100	100 100 100 100 100 100 100 100 100 100	Two way Left Turn Lane												
25 15 25 15	25 15 25 15	25 15 20 20 20 20 20 20 20 20 20 20 20 20 20	Headway Factor	1:00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1:00	1.00	1.00	1.00
1	1	Left Thru Loft Thru 2.0 100 0.0	Turning Speed (k/h)	22		15	52		15	52		15	52		5
Left Thru 2.0 100 0.0 0.0 0	Left Thru Left Co. 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Left Thru 2.0 10.0 2.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Number of Detectors		2					-	2		-	2	_
20 100 2.0 100 2.0 10.0 2.0 10.0 2.0 10.0 2.0 10.0 2.0 10.0 2.0 10.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0	2.0 10.0 2.0 10.0 2.0 10.0 2.0 10.0 2.0 10.0 2.0 10.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0	2.0 10.0 2.0 10.0 2.0 10.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Detector Template	Left	Thr.					Left	Thr.		reft.	The s	Right
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	00 00 00 00 00 00 00 00 00 00 00 00 00	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Leading Detector (m)	2.0	10.0					2.0	10.0		2.0	10.0	2.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	00 00 00 00 00 00 00 00 00 00 00 00 00	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Trailing Detector (m)	0:0	0.0					0.0	0.0		0.0	0.0	0.0
2.0 0.6 2.0 CHEX CHEX CHEX CHEX CHEX COHEX	Clex Clex Clex Clex Clex Clex Clex Clex	2.0 0.6 0.6 0.6 0.6 0.6 0.0 0.0 0.0 0.0 0	Detector 1 Position(m)	0.0	0:0					0.0	0.0		0.0	0.0	0.0
Ci+EX Ci+EX Ci+EX Ci+EX Ci+EX Ci+EX Ci-EX Ci 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	CHEX CHEX CHEX CHEX CHEX CHEX CHEX CHEX	Ci+EX	Detector 1 Size(m)	2.0	9.0					2.0	9.0		2.0	9.0	2.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Detector 1 Type	C+EX	CI+EX					C+EX	CI+EX		CI+EX	CHEX	CI+EX
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Detector 1 Channel	c	c					c	c		0	0	c
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Defector 1 Externa (s)	2.0	9.0					200	0.0		0.0	0.00	0.0
(m) 9.4 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	(m) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	(m) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Defector 1 Queue (s)	0.0	0.0					0.0	0.0		0.0	0.0	0.0
(II) 3.4 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6	(ii) 94 94 0.6 0.6 0.6 0.0 0.0 0.0 0.0 0.0 0.0 0.0	('') 0.6 CI+EX CI-EX CI-	Detector 1 Detay (s)	0.0	0.0					0.0	0.0		0.0	0.0	0.0
	CI+EX CI+EX CI+EX (1) (1) (1) (2) (3) (3) (4) (4) (5) (5) (5) (6) (6) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7	(s) 0.0	Detector 2 Position(m)		4. 0						4. 0			4. 6	
**************************************	00 00	O.0	Defector 2 Size(III)		0.0						0.0			0.0	
	0:0	0.0	Detector 2 Type		<u>¥</u>						Σ 5			ž Š	
	0.0	0.0	Detector 2 Cylinder		c						c			C	

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Lanes, Volumes, Timings 5: Icomm Drive & Colborne Street West

Detour: AM Peak Hour

EBL EBT EBR WBL WBT NBL NBT NBR SBL ABL NBT NBR SBL ABL NBT NBR NBL NBT NBR SBL ABL NBT NBT SBL ABL NBT NBT SBL ABL NB													
EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SS 4 4 4 4 5 5 2 1 (s) 7.0 7.0 7.0 10.0 7.0 (s) 38.0 38.0 7.0 7.0 10.0 7.0 (s) 38.0 38.0 7.0 7.0 10.0 7.0 (s) 38.0 38.0 7.0 11.0 31.0 11.0 (s) 38.0 38.0 11.0 31.0 11.0 31.0 (s) 48.8 48.8 58.8 13.8 7.0 11.0 31.0 (s) 38.0 38.0 11.0 31.0 11.0 31.0 (s) 48.8 48.8 78.8 13.8 7.0 11.0 31.0 (s) 40.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 (s) 6.0 6.0 0.0 0.0 0.0 0.0 0.0 0.0 (s) 8.4 10 0.0 0.0 0.0 0.0 0.0 0.0 (s) 8.4 10 0.0 0.0 0.0 0.0 0.0 (s) 8.4 10 0.0 0.0 0.0 0.0 0.0 (s) 8.4 10 0.0 0.0 0.0 (s) 8.4 10 0.0 0.0 0.0 (s) 8.4 10 0.0		1	†	>	>	\downarrow	4	•	←	•	۶	-	*
Ferm NA pm+pt NA pm+pt NA pm+pt ses 4 4 4 5 2 1 1 5 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Lane Group	EBI	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
ess 4 4 5 5 2 1 ess 4 4 4 6 5 2 6 ess 4 4 4 6 5 2 6 ess 4 4 4 6 5 2 7 1 (s) 380 380 110 300 110 390 390 390 110 300 110 (s) 380 330 110 300 110 et (s) 20 20 10 30 10 10 20 et (s) 60 60 60 40 60 et (s) 60 60 60 10 60 et (s) 8, 48, 48, 48, 48, 48, 48, 48, 48, 48,	Turn Type	Perm	NA					pm+pt	NA		pm+pt	NA	Perm
(s) 7.0 7.0 7.0 10.0 7.0 10.0 7.0 10.0 7.0 10.0 7.0 10.0 7.0 10.0 7.0 10.0 7.0 10.0 7.0 10.0 7.0 10.0 7.0 10.0 7.0 10.0 7.0 10.0 7.0 10.0 7.0 10.0 7.0 10.0 7.0 10.0 7.0 10.0 10	Protected Phases		4					2	2		~	9	
(s) 7.0 7.0 10	Permitted Phases	4						2			9		9
(s) 7.0 7.0 10.0 7.0 10.0 7.0 10.0 10.0 3.0 38.0 38.0 38.0 11.0 31.0 11.0 31.0 11.0 31.0 11.0 31.0 11.0 31.0 11.0 31.0 11.0 31.0 11.0 31.0 11.0 31.0 11.0 31.0 11.0 31.0 11.0 31.0 11.0 31.0 3	Detector Phase	4	4					2	2		~	9	œ.
(s) 7.0 7.0 7.0 7.0 10.0 7.0 (s) 38.0 11.0 31.0 11.0 31.0 11.0 31.0 11.0 31.0 11.0 31.0 3	Switch Phase												
(s) 380 380 110 110 110 110 110 110 110 110 110 1	Minimum Initial (s)	7.0	7.0					7.0	10.0		7.0	10.0	10.0
110 300 110	Minimum Split (s)	38.0	38.0					11.0	31.0		11.0	31.0	31.0
188% 188% 188% 138% 375% 138%	Total Split (s)	39.0	39.0					11.0	30.0		11.0	30.0	30.0
hn (s) 330 330 7.0 240 7.0 10 10 2.0	Total Split (%)	48.8%	48.8%					13.8%	37.5%		13.8%	37.5%	37.5%
4,0 4,0 3,0 3,0 4,0 3,0 4,0 3,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0	Maximum Green (s)	33.0	33.0					7.0	24.0		7.0	24.0	24.0
10 2.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1	Yellow Time (s)	4.0	4.0					3.0	4.0		3.0	4.0	4.0
(s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	All-Red Time (s)	2.0	2.0					1.0	2.0		1.0	2.0	5.0
(s) 3.0 6.0 Lead Lag Lead Lag Lead (s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Lost Time Adjust (s)	0.0	0.0					0.0	0.0			0.0	0.0
(s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Total Lost Time (s)	0.9	0.9					4.0	0.9			0.9	9.0
(s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Lead/Lag							Lead	Lag		Lead	Lag	Ľać
(s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 4.0 6.4 4.0 B B A B B B B B B B B B B B B B B B B	Lead-Lag Optimize?												
Max Max None C-Max Non	Vehicle Extension (s)	3.0	3.0					3.0	3.0		3.0	3.0	3.0
70 70 70 70 70 70 70 70 70 70 70 70 70 7	Recall Mode	Max	Max					None	C-Max		None	C-Max	C-Max
(hr) 25.0 25.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18	Walk Time (s)	7.0	7.0						7.0			7.0).
(hr) 30 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Flash Dont Walk (s)	25.0	25.0						18.0			18.0	18.0
33.0 33.0 37.0 35.0 0.4 0.41 0.44 0.44 0.44 0.44 0.13 0.36 0.13 0.36 0.13 0.36 0.10 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Pedestrian Calls (#/hr)	0	0						0			0	
Ratio 0.41 0.41 0.44 0.44 0.44 0.30 0.31 0.36 0.13 0.36 0.13 0.36 0.10 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Act Effct Green (s)	33.0	33.0					37.0	35.0			28.4	28.4
0.90 0.31 0.36 0.36 0.39 0.36 0.36 0.36 0.36 0.00 0.00 0.00 0.00	Actuated g/C Ratio	0.41	0.41					0.46	0.44			0.36	0.36
406 140 82 11.1 0.0 0.0 0.0 406 14.0 8.2 11.1 D B A B 33.7 10.9 S C B	v/c Ratio	06.0	0.31					0.13	0.36			0.58	0.77
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Control Delay	40.6	14.0					8.2	11.1			25.9	7.5
40.6 14.0 8.2 11.1 D B A B y 33.7 10.9 C B	Queue Delay	0.0	0.0					0.0	0.0			0.0	0.0
у 33.7 A B С В А В 10.9 С В	Total Delay	40.6	14.0					8.2	11.1			25.9	7.5
у 33.7 10.9 С В	TOS	О	В					¥	В			O	٩.
C	Approach Delay		33.7						10.9			14.6	
Intersection Summary	Approach LOS		O						В			В	
	Intersection Summary												

Area Type:
Cycle Length: 80
Actuated Cycle Length: 80
Actuated Cycle Length: 80
Coffee; 60 (75%), Referenced to phase 2.NBTL and 6:SBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/s Ratio: 0.90
Intersection Signal Delay: 19.8
Intersection Capacity Utilization 89.4%
Analysis Period (min) 15

Intersection LOS: B ICU Level of Service E

₫ 5: Icomm Drive & Colborne Street West 08.00 Splits and Phases:

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Queues 5: Icomm Drive & Colborne Street West

Detour: AM Peak Hour

	4	†	•	←	→	*	
Lane Group	EBL	EBT	NBL	NBT	SBT	SBR	
Lane Group Flow (vph)	642	227	48	532	478	822	
v/c Ratio	0.00	0.31	0.13	0.36	0.58	0.77	
Control Delay	40.6	14.0	8.2	11.1	25.9	7.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	40.6	14.0	8.2	11.1	25.9	7.9	
Queue Length 50th (m)	2.99	14.9	3.7	31.5	35.2	0.0	
Queue Length 95th (m)	#148.7	33.3	m5.8	30.9	52.6	35.9	
Internal Link Dist (m)		266.1		463.2	158.2		
Turn Bay Length (m)	200.0		115.0				
Base Capacity (vph)	711	734	377	1484	819	1067	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.90	0.31	0.13	0.36	0.58	0.77	

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

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

HCM Signalized Intersection Capacity Analysis 5: Icomm Drive & Colborne Street West

Detour: AM Peak Hour

	1	†	~	>	ţ	4	•	-	*	۶	→	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	r	÷z					F	₩			€1₩	*
Traffic Volume (vph)	591	177	32	0	0	0	4	467	22	118	322	756
Future Volume (vph)	591	177	32	0	0	0	4	467	22	118	322	756
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	0.9	0.9					4.0	0.9			0.9	0.9
Lane Util. Factor	1:00	1.00					1.00	0.95			0.95	1.00
Frpb, ped/bikes	1.00	1.00					1.00	1.00			1.00	96.0
Flpb, ped/bikes	0.99	1.00					1.00	1.00			1.00	1.00
Ft	1.00	0.98					1.00	0.99			1.00	0.85
Fit Protected	0.95	1.00					0.95	1.00			0.99	1.00
Satd. Flow (prot)	1724	1760					1608	3386			3268	1512
Flt Permitted	0.95	1.00					0.38	1.00			0.70	1.00
Satd. Flow (perm)	1724	1760					635	3386			2309	1512
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adi. Flow (vph)	642	192	32	0	0	0	48	208	24	128	320	822
RTOR Reduction (vph)	0	∞	0	0	0	0	0	က	0	0	0	547
Lane Group Flow (vph)	642	219	0	0	0	0	48	529	0	0	478	275
Confl. Peds. (#/hr)	6		17	17		6	10		တ	6		10
Heavy Vehicles (%)	4%	4%	11%	%0	%0	%0	12%	%9	%0	11%	%8	3%
Turn Type	Perm	ΑA					pm+pt	¥		pm+pt	NA	Perm
Protected Phases		4					2	2		-	9	
Permitted Phases	4						2			9		9
Actuated Green, G (s)	33.0	33.0					35.0	35.0			26.8	26.8
Effective Green, g (s)	33.0	33.0					35.0	35.0			26.8	26.8
Actuated g/C Ratio	0.41	0.41					0.44	0.44			0.34	0.34
Clearance Time (s)	0.9	0.9					4.0	0.9			0.9	0.9
Vehicle Extension (s)	3.0	3.0					3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	711	726					328	1481			773	206
v/s Ratio Prot		0.12					0.01	c0.16				
v/s Ratio Perm	c0.37						90.0				c0.21	0.18
v/c Ratio	0:30	0.30					0.15	0.36			0.62	0.54
Uniform Delay, d1	22.0	15.8					13.3	15.0			22.3	21.6
Progression Factor	1.05	98.0					0.62	0.70			1:00	1.00
Incremental Delay, d2	15.7	1.0					0.2	9.0			1.5	4.2
Delay (s)	38.8	14.6					8.5	1.1			23.8	25.8
Level of Service	۵	ш					∢	ш			ပ	O
Approach Delay (s)		32.5			0.0			10.9			25.1	
Approach LOS		O			∢			ш			ပ	
Intersection Summary												
HCM 2000 Control Delay			24.4	I H	HCM 2000 Level of Service	evel of S	Service		O			
HCM 2000 Volume to Capacity ratio	ity ratio		97.0									
Actuated Cycle Length (s)			80.0	S	Sum of lost time (s)	ime (s)			16.0			
Intersection Capacity Utilization	ion		89.4%	ਠ	CU Level of Service	Service			ш			
Analysis Period (min)			15									
c Critical Lane Group												

c Critical Lane Group

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Lanes, Volumes, Timings 6: Market Street & Icomm Drive

	\	Ť	/-	*	,	/		—	•	۶	→	*
ane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
ane Configurations	×	**	¥C.	r	# ‡		r	£			t.	
raffic Volume (vph)	13	103	232	47	227	24	314	ည	45	_	က	4
-uture Volume (vph)	13	103	232	47	227	24	314	2	45	-	က	4
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	65.0		0.09	125.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	-		-	_		0	_		0	0		0
aper Length (m)	35.0			25.0			7.5			7.5		
ane Util. Factor	1:00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor			0.99	1.00			0.99	96.0			0.99	
			0.850		0.986			0.864			0.925	
-It Protected	0.950	0000	101	0.950	0,00	•	0.950		•	•	0.994	•
Satd. Flow (prot)	1805	3223	1495	1805	3319	0	1736	1514	0	0	3281	0
It Permitted	0.584	cocc	4470	0.681	0,000	c	0.752	4544	c	c	0.941	C
Satu: Flow (perm)	2	2772	Vos	1671	9218) V	1328	10 4	> \ ²	0	2030))
Satd Flow (RTOR)			252		17	3		40	3		517	3
ink Speed (k/h)		20			20			20			20	
ink Distance (m)		487.2			250.0			115.0			104.0	
ravel Time (s)		35.1			18.0			8.3			7.5	
Confl. Peds. (#/hr)			2	2			00		20	20		∞
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
leavy Vehicles (%)	%0	12%	%8	%0	%8	%0	4%	%0	2%	%0	%0	%0
4dj. Flow (vph)	14	112	252	21	247	26	341	2	46	-	က	4
Shared Lane Traffic (%)												
ane Group Flow (vph)	4	112	252	21	273	0	341	25	0	0	∞	0
Enter Blocked Intersection	2	2	8	8	8	8	8	2	8	8	8	S
ane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
nedian Width(m)		3.6			3.6			3.6			3.6	
ink Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
wo way Left Turn Lane												
Headway Factor	1:00	1.00	1.00	1.00	1.00	1:00	1.00	1.00	1.00	0.1	1:00	1.00
urning Speed (k/h)	52		15	52		15	52		15	52		15
Number of Detectors		2	_	-	2		-	2		-	2	
Detector Template	Left	뮡	Right	Left	Thr		Left	뮡		Left	Thr	
eading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
railing Detector (m)	0.0	0.0	0:0	0:0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	9.0	2.0	2.0	9.0		2.0	9.0		2.0	9.0	
Detector 1 Type	CI+EX	CI+EX	CI+EX	CI+EX	CI+EX		CH-EX	CH-EX		CI+EX	CI+EX	
Detector 1 Channel	C		0	0	0		0	0		0	0	
Defector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		9.0			9.0			9.0			9.0	
Detector 2 Type		CI+EX			CI+EX			CI+EX			CI+EX	
Detector 2 Channel												

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Lanes, Volumes, Timings 6: Market Street & Icomm Drive

Detour: AM Peak Hour

Detour: AM Peak Hour

February		•				١,	١.		١		١,	-	-
FBI FBI FBI WBI		^	Ť	>	-	ļ	1	•	-	4	۶	→	*
hasess 2 2 6 6 8 8 8 4 ase 2 2 2 6 6 6 8 8 8 4 ase 2 2 2 6 6 6 8 8 8 4 ase 2 2 2 6 6 6 8 8 8 4 ase 2 2 2 6 6 6 8 8 8 4 ase 2 2 2 6 6 6 8 8 8 4 ase 2 2 2 2 6 6 6 8 8 8 4 ase 2 2 2 2 6 6 6 8 8 8 4 ase 2 2 2 2 6 6 6 8 8 8 4 bit(s) 100 100 100 100 100 700 70 70 bit(s) 230 230 230 230 230 230 230 s) 100 400 400 400 400 400 400 400 bit(s) 100 100 100 100 100 100 100 100 c) 3 40 340 340 340 340 340 340 340 bit(s) 200 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Lane Group	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
hases 2 2 6 6 8 8 4 4 ase 2 2 2 6 6 6 8 8 8 4 4 ase 2 2 2 2 6 6 6 8 8 8 4 4 ase 3 2 2 2 2 6 6 6 8 8 8 8 4 4 ase 3 2 2 2 2 2 6 6 6 8 8 8 8 4 4 ase 3 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Turn Type	Perm	Ϋ́	Perm	Perm	¥		Perm	Α		Perm	NA	
Hasses 2 2 6 6 6 8 8 4 4 Hasses 2 2 2 6 6 6 8 8 8 4 4 Hasses 2 2 2 6 6 6 8 8 8 4 4 Hasses 2 2 2 6 6 6 8 8 8 4 4 Hasses 2 2 2 6 6 6 6 8 8 8 4 4 Hasses 2 2 2 2 6 6 6 6 8 8 8 4 4 Hasses 2 2 2 2 6 6 6 6 7 70 Hall (s) 100 100 100 100 100 100 70 70 Hall (s) 200 20 20 20 20 20 20 Hall (s) 200 200 200 200 200 200 Hall (s) 200 20 20 20 20 20 20 20 Hall (s) 20 20 20 20 20 20 20 20 Hall (s) 20 20 20 20 20 20 20 Hall (s) 20 20 20 20 20 20 Hall (s) 20 20 20 20 20 20 Hall (s) 20	Protected Phases		7			9			œ			4	
state 2 2 2 6 6 6 8 8 4 4 state (s) 230 230 230 230 230 230 230 230 230 s) 100 100 100 100 100 70 70 70 70 s) 100 400 400 400 400 400 400 400 400 s) 5 40 500% 500% 500% 500% 500% 500% 500%	Permitted Phases	2		2	9			∞			4		
ses (iii) ses (iiii) ses (iiii) ses (iiii) ses (iiii) ses (iiii) ses (iiii) ses (iiiii) ses (iiiiii) ses (iiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii	Detector Phase	2	2	2	9	9		∞	∞		4	4	
trie (s) 10.0 10.0 10.0 10.0 7.0 7.0 7.0 pil (s) 10.0 10.0 10.0 10.0 10.0 10.0 10.0 7.0 pil (s) 23.0 23.0 23.0 23.0 23.0 23.0 23.0 23.0	Switch Phase												
pilit (s) 230 230 230 230 230 230 230 230 230 230	Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	
s) 400 400 400 400 400 400 400 400 400 40	Minimum Split (s)	23.0	23.0	23.0	23.0	23.0		23.0	23.0		23.0	23.0	
%) 50,0% 50,	Total Split (s)	40.0	40.0	40.0	40.0	40.0		40.0	40.0		40.0	40.0	
Secondary 340 340 340 340 340 340 340 340 340 340	Total Split (%)	20.0%	20.0%	20.0%	20.0%	20.0%		20.0%	20.0%		%0.03	20.0%	
State Stat	Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		34.0	34.0		34.0	34.0	
e (s) 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0	Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
rine (s) 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
ime (s) 6.0 6.0 6.0 6.0 6.0 6.0 6.0 for primize? 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	
primize? 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Total Lost Time (s)	0.9	0.9	0.9	0.9	0.9		0.9	0.9			0.9	
primize? substitution of the property of the	Lead/Lag												
es C-Max C-Max C-Max C-Max Mone None None None None None None None N	Lead-Lag Optimize?												
e C-Max C-Max C-Max C-Max None None None Walk (s) 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0	Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
(s) 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0	Recall Mode	C-Max	С-Мах	C-Max	C-Max	C-Max		None	None		None	None	
Walk (s) 100 100 100 100 100 100 100 100 100 10	Walk Time (s)	7.0	7.0	7.0	7.0	2.0		7.0	7.0		7.0	7.0	
Calls (#hr) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Flash Dont Walk (s)	10.0	10.0	10.0	10.0	10.0		10.0	10.0		10.0	10.0	
een (s) 42.5 42.5 42.5 42.5 25.5 2 C Ratio 0.53 0.53 0.53 0.53 0.53 0.53 0.53 0.53	Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
C Ratio 0.53 0.53 0.53 0.53 0.53 0.53 0.53 0.53	Act Effct Green (s)	42.5	42.5	42.5	42.5	42.5		25.5	25.5			25.5	
ay 126 128 0.07 0.15 0.79 0.10 0.09 o.00 0.02 0.07 0.28 0.07 0.15 0.79 0.10 0.00 o.00 0.00 0.00 0.00 0.00 0.00	Actuated g/C Ratio	0.53	0.53	0.53	0.53	0.53		0.32	0.32			0.32	
y 126 128 113 110 375 59 y 0.00	v/c Ratio	0.05	0.07	0.28	0.07	0.15		0.79	0.10			0.01	
yy 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Control Delay	12.6	12.8	11.9	11.3	10.0		37.5	5.9			0.0	
12.6 12.8 11.3 10.0 37.5 5.9 lelay	Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	
belay B B B B B D A Summary Colher Th: 80 Colle Lingth: 80 Colle Actuated-Coordinated (r Ratio: 0.79 Capacity Utilization 48.2% The Abases: 6: Market Street & Icomm Drive	Total Delay	12.6	12.8	11.9	11.3	10.0		37.5	5.9			0.0	
12.2	SOT	В	Ф	Ф	ш	Ф		۵	⋖			⋖	
Summary Other It: 80 Ook Length: 80 50%, Referenced to phase 2:EBTL and 6:WBTL, Start of Green et. 500 Earlier Coordinated of Ratio: 0.79 Signal Delay: 19.0 Intersection LOS: B Intersection L	Approach Delay		12.2			10.2			33.2				
Summary Other th: 80 Other 030%), Referenced to phase 2:EBTL and 6:WBTL, State: 50 te. Actuated-Coordinated for Ratio: 0.7 Signal Delay: 9.0 Capacity Utilization 48.2% ricd (min) 15	Approach LOS		ш			В			O				
th: 80 Other Other Owe, Referenced to phase 2:EBTL and 6:WBTL, Sta 1e: 50 e: Actualed-Coordinated fo Ratio: 0.79 Signal Delay 19.0 Capacity Utilization 48.2% riod (min) 15	Intersection Summary												
th: 80 36.%), Referenced to phase 2:EBTL and 6:WBTL, Sta 36.%), Referenced to phase 2:EBTL and 6:WBTL, Sta 36.%), Referenced to phase 2:EBTL and 6:WBTL, Sta 36.0.79 Signal Delay. 19.0 Signal Delay. 19.0 Figure 10.11		Other											
Actuated Cycle tength: 80 Actuated Cycle tength: 80 Natural Cycle: 50 Control Type: Actuated-Coordinated Maximum vic Ratic 0.79 Intersection Capacity Utilization 48.2% Analysis Period (min) 15 Splits and Phases: 6: Market Street & Icomm Drive	Cycle Length: 80												
Offset: 40 (50%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green Natural Cycle. 50. Maximum vic Ratic. 0.79 Intersection Gapacity Utilization 48.2% Analysis Period (min) 15 Splits and Phases: 6: Market Street & Icomm Drive	Actuated Cycle Length: 80												
8 Icomm Drive	Offset: 40 (50%), Reference	ed to phase	2:EBTL	and 6:WB	TL, Start	of Green							
& Icomm Drive	Natural Cycle. 30	-											
& Ioomm Drive	Control Type: Actuated-Coo	ordinated											
& Icomm Drive	Maximum v/c Ratio: 0.79				-		0						
& Icomm Drive	Intersection Signal Delay: 18	9.0			⊆ 9	tersection	LOS: B						
n) 15 6: Market Street & Icomm Drive	Intersection Capacity Utilizal	ition 48.2%			٥	n Level o	1 Service	<					
6: Market Street & Icomm Drive	Analysis Period (min) 15												
		rket Street	& Icomm	Drive									
	-					4							

190487 - Brantford Bridges EA PTSL 7 08.80

Queues 6: Market Street & Icomm Drive

Detour: AM Peak Hour

0.00 0.00 0.00 0.00 0.00 0.00 0.00

54 0.10 5.9 0.0 5.9 0.5 6.8 6.8

341 0.79 37.5 0.0 37.5 48.8 68.6

273 273 0.15 10.0 10.0 10.0 9.7 20.0 226.0

51 51 11.3 0.0 0.0 3.6 11.1

252 0.28 11.9 0.0 11.9 29.4 50.1

112 0.07 12.8 0.0 12.8 7.5 m16.6 463.2

14 0.02 12.6 0.0 12.6 1.6 m3.8

SBT

Æ

1613

671

277

1772

125.0 686

90.0

Lane Group Flow (vph)
We Ratio
Control Delay
Queue Delay
Total Delay
Queue Length 50th (m)
Queue Length 50th (m)
Infernal Link Dist (m)
Inm Bay Length (m)
Base Capacity (vph)
Base Capacity (vph)
Base Capacity (vph)
Slavation Cap Reducth
Sprillack Cap Reducth
Sorage Cap Reducth

0 0.59

1713 0 0 0 0 0.07

65.0 590 0 0 0 0

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

Detour: AM Peak Hour

HCM Signalized Intersection Capacity Analysis 6: Market Street & Icomm Drive

	1	†	>	>	Ļ	4	•	←	•	۶	→	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	\$	¥.	<u>, </u>	₩\$		<i>y</i> -	÷			€	
Traffic Volume (vph)	13	103	232	47	227	54	314	2	45	_	က	4
Future Volume (vph)	13	103	232	47	227	24	314	2	45	-	က	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	0.9	0.9	0.9	0.9	0.9		0.9	0.9			0.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00			0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	96.0			0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.99	1.00			1:00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	98.0			0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.99	
Satd. Flow (prot)	1805	3223	1473	1801	3318		1716	1514			3269	
Flt Permitted	0.58	1.00	1.00	0.68	1.00		0.75	1.00			0.94	
Satd. Flow (perm)	1109	3223	1473	1291	3318		1359	1514			3094	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	14	112	252	21	247	56	341	2	49	-	က	4
RTOR Reduction (vph)	0	0	118	0	∞	0	0	33	0	0	2	0
Lane Group Flow (vph)	14	112	134	21	265	0	341	21	0	0	က	0
Confl. Peds. (#/hr)			2	5			∞		20	20		∞
Heavy Vehicles (%)	%0	12%	%8	%0	%8	%0	4%	%0	2%	%0	%0	%0
Turn Type	Perm	AA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		5			9			∞			4	
Permitted Phases	2		2	9			∞			4		
Actuated Green, G (s)	42.5	42.5	42.5	42.5	42.5		25.5	25.5			25.5	
Effective Green, g (s)	42.5	42.5	42.5	42.5	42.5		25.5	25.5			25.5	
Actuated g/C Ratio	0.53	0.53	0.53	0.53	0.53		0.32	0.32			0.32	
Clearance Time (s)	0.9	0.9	0.9	0.9	0.9		0.9	0.9			0.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	289	1712	782	685	1762		433	482			986	
v/s Ratio Prot		0.03			0.08			0.01				
v/s Ratio Perm	0.01		60.00	0.04			c0.25				0.00	
v/c Ratio	0.02	0.07	0.17	0.07	0.15		0.79	0.04			0.00	
Uniform Delay, d1	8.9	9.1	9.7	9.5	9.6		24.8	18.8			18.6	
Progression Factor	1.04	1.14	5.34	0.94	0.94		1.00	1.00			1.00	
Incremental Delay, d2	0.1	0.1	0.4	0.2	0.2		9.5	0.0			0.0	
Delay (s)	9.3	10.5	52.1	8.8	9.5		34.0	18.9			18.6	
Level of Service	V	Ф	۵	∢	∢		O	ш			В	
Approach Delay (s)		38.2			9.1			31.9			18.6	
Approach LOS					⋖			ပ			മ	

Intersection Summary
HCM 2000 Control Delay
HCM 2000 Volume to Capacity ratio
Actuated Cycle Length (s)
Intersection Capacity Utilization
Analysis Period (min)
c Critical Lane Group

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12.0 A

HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service

27.3 0.40 80.0 48.2%

190487 - Brantford Bridges EA PTSL

Detour: AM Peak Hour Lanes, Volumes, Timings 7: Clarence Street South & Icomm Drive/Greenwich Street

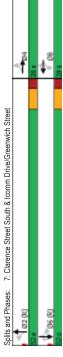
Configurations Fig. Fig. Fig. Wile		1	†	*	\	ţ	4	•	←	•	۶	→	*
1	dno	田田	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
103 91 29 54 88 90 145 1065 55 46 480 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 100 100 1900 1900 1900 1900 1900 1900 100 100 100 1900 1900 1900 1900 1900 100 100 100 1900 1900 1900 1900 1900 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 10	nfigurations	*	4₽		<i>y</i> -	++	¥.	*	₩\$		<i>y</i> -	++	*
103 91 29 54 88 90 145 1065 55 46 480 100 1900 1900 1900 1900 1900 1900 1900 1900 100 1900 1900 1900 1900 1900 1900 1900 100 100 100 100 1900 1900 1900 1900 100 100 100 100 1900 1900 1900 1900 100 100 100 100 1900 1900 1900 1900 100 100 100 100 1900 1900 1900 1900 100 100 100 100 1900 1900 1900 1900 1900 100 100 100 100 1900 1900 1900 1900 100 100 100 1900 1900 1900 1900 1900 100 100 100 1900 1900 1900 1900 1900 100 100 100 1900 1900 1900 1900 100 100 100 1900 1900 1900 1900 100 100 100 100 100 100 100 100 100 100 100 100	olume (vph)	103	91	53	25	88	06	145	1065	22	46	480	71
1900 1900	olume (vph)	103	91	59	25	88	90	145	1065	22	46	480	71
750 0.0 350 750 0.0 105.0 0.	v (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
100 0.95 0.95 1.00 1.00 1	ength (m)	75.0		0.0	35.0		30.0	75.0		0.0	105.0		70.0
100 0.95 0	anes	- 3		0	- ;		-	- :		0	- ;		_
1,00	ngth (m)	30.0			32.0			32.0			32.0		
1.00 1.00 1.00 0.995	Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	1.00
1719 213 0.950	Factor	1.00	1:00		1.00		0.99	0.99	1.00		1.00		0.98
1719 3213 0 0.950 0.			0.963				0.850		0.993				0.850
1719 2213 0 1612 3406 1538 1703 3502 0 1770 3505 1250 3213 0 1612 3406 1516 818 3502 0 1770 3505 1250 3213 0 1130 3406 1516 818 3502 0 1770 3505 2500 2003 2093 2093 381.6 2582 3	ted	0.950			0.950			0.950			0.950		
1550 3213 0.669 0.459 0.459 0.199	w (prot)	1719	3213	0	1612	3406	1538	1703	3502	0	1770	3505	1568
1250 3213 0 1130 3406 1516 818 3502 0 371 3505 3	tted	0.692			0.669			0.459			0.199		
1	w (perm)	1250	3213	0	1130	3406	1516	818	3502	0	371	3505	1532
10 10 10 10 10 10 10 10	n on Red			Yes			Yes			Yes			Yes
Secondary Seco	w (RTOR)		32				74		=				77
186 187	ed (k/h)		20			20			20			20	
180 180 151 180	ance (m)		250.0			209.3			381.6			258.2	
3 7 7 3 17 1 1 1 1 1 1 1 1	me (s)		18.0			15.1			27.5			18.6	
10.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.93 0.92 0.93	eds. (#/hr)	က		7	7		က	17		-	_		17
5% 8% 7% 12% 6% 5% 6% 2% 8% 2% 3% 3% 1/12 99 32 59 96 98 158 1158 60 50 502 522 100	ur 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
112 99 32 59 96 98 158 1158 60 50 522	ehicles (%)	2%	%8	42%	12%	%9	2%	%9	7%	%8	2%	3%	3%
112 131	v (vph)	112	66	32	29	96	86	158	1158	09	20	522	77
112 131 0 59 96 98 158 1218 0 50 522 141	-ane Traffic (%)												
tion No	oup Flow (vph)	112	131	0	29	96	86	158	1218	0	20	522	77
Left Left Right Left Right Left Right Left Ri	ocked Intersection	8	2	2	S	S	8	8	8	8	8	8	2
3.6 3.6	gnment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
0.0 0.0	Vidth(m)		3.6			3.6			3.6			3.6	
1,00	et(m)		0.0			0.0			0.0			0:0	
1.00	lk Width(m)		4.8			4.8			4.8			4.8	
100 100 100 100 100 100 100 100 100 100	Left Tum Lane												
25 15 25 15	/ Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
1 2 2	Speed (k/h)	22		15	52		15	52		15	52		15
Left Thru Left Thru Right Left Thru Left Thru Co. 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	of Detectors	_	2		_	2	_	_	2		_	2	_
20 100 20 100 2 0 100 2 0 100 0 0 0 0 0	Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Detector (m)	2.0	10.0		2.0	10.0	5.0	2.0	10.0		2.0	10.0	2.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
20 0.6 2.0 0.6 2.0 0.6 2.0 0.6 2.0 0.6 2.0 0.6 C-FX CI+EX CI-EX CI	1 Position(m)	0:0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
C1+EX C1+E	1 Size(m)	2.0	9.0		2.0	9.0	2.0	2.0	9.0		2.0	9.0	2.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	1 Type	C+EX	CI+EX		CI+EX	CI+EX	CI+EX	CI+EX	CI+EX		CI+EX	CI+EX	CI+EX
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	1 Channel												
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
9.4 9.4 9.4 0.6 0.6 0.6 CI+EX CI+EX CI-EX CI-	1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0:0	0.0		0.0	0.0	0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	2 Position(m)		9.4			9.4			9.4			9.4	
CI+EX CI+EX CI+EX 8) 0.0 0.0 0.0	2 Size(m)		9.0			9.0			9.0			9.0	
s) 0.0 0.0 0.0 (s	2 Type		CI+EX			CI+EX			CI+EX			CI+EX	
0.0 0.0	2 Channel												
	2 Extend (s)		0.0			0.0			0.0			0:0	

Lanes, Volumes, Timings 7: Clarence Street South & Icomm Drive/Greenwich Street

Detour: AM Peak Hour

	1	†	~	-	ţ	4	•	←	•	۶	→	•
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	N		Perm	NA	Perm	Perm	NA		Perm	N	Perm
Protected Phases		4			∞			2			9	
Permitted Phases	4			∞		∞	2			9		9
Detector Phase	4	4		∞	∞	∞	2	2		9	9	9
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	38.0	38.0		38.0	38.0	38.0	43.0	43.0		43.0	43.0	43.0
Total Split (s)	28.0	28.0		28.0	28.0	28.0	52.0	52.0		52.0	52.0	52.0
Total Split (%)	32.0%	32.0%		35.0%	35.0%	35.0%	%0.59	%0.59		%0.59	%0.59	65.0%
Maximum Green (s)	22.0	22.0		22.0	22.0	22.0	46.0	46.0		46.0	46.0	46.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0:0		0.0	0.0	0.0
Total Lost Time (s)	0.9	0.9		0.9	0.9	0.9	0.9	0.9		0.9	0.9	0.9
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	С-Мах	C-Max		C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		0.7	7.0	7.0
Flash Dont Walk (s)	25.0	25.0		25.0	25.0	25.0	30.0	30.0		30.0	30.0	30.0
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	0
Act Effct Green (s)	12.5	12.5		12.5	12.5	12.5	55.5	55.5		52.5	55.5	55.5
Actuated g/C Ratio	0.16	0.16		0.16	0.16	0.16	69.0	69.0		69.0	69.0	0.69
v/c Ratio	0.58	0.25		0.34	0.18	0.33	0.28	0.50		0.19	0.21	0.07
Control Delay	29.5	11.2		33.6	28.4	13.4	7.2	7.1		7.9	5.2	1.7
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0:0		0.0	0.0	0.0
Total Delay	29.5	11.2		33.6	28.4	13.4	7.2	7.1		7.9	5.2	1.7
SOT	ပ	В		ပ	ပ	М	⋖	¥		¥	¥	A
Approach Delay		19.6			23.8			7.1			2.0	
Approach LOS		ш			O			∀			⋖	

Intersection LOS: A ICU Level of Service C Area Type:
Cycle Length. 80
Actuated Cycle Length: 80
Actuated Cycle Length: 80
Offset 75 (94%). Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
Maximum vic Ratio: 0.58
Intersection Signal Delay: 95
Intersection Capacity Utilization 69.9%
Analysis Period (min) 15



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Queues 7: Clarence Street South & Icomm Drive/Greenwich Street

Detour: AM Peak Hour

HCM Signalized Intersection Capacity Analysis 7: Clarence Street South & Icomm Drive/Greenwich Street

Detour: AM Peak Hour

	4	†	>	ļ	4	•	←	۶	→	*	
Lane Group	田田	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Group Flow (vph)	112	131	29	96	86	158	1218	20	522	11	l
v/c Ratio	0.58	0.25	0.34	0.18	0.33	0.28	0.50	0.19	0.21	0.07	
Control Delay	29.5	11.2	33.6	28.4	13.4	7.2	7.1	7.9	5.2	1.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0:0	
Total Delay	29.5	11.2	33.6	28.4	13.4	7.2	7.1	7.9	5.2	1.7	
Queue Length 50th (m)	9.4	3.2	8.5	7.1	3.4	8.0	39.7	2.4	13.2	0.0	
Queue Length 95th (m)	17.3	7.3	18.3	12.7	15.1	21.2	68.5	8.9	24.4	4.5	
Internal Link Dist (m)		226.0		185.3			357.6		234.2		
Turn Bay Length (m)	75.0		35.0		30.0	75.0		105.0		70.0	
Base Capacity (vph)	343	906	310	936	470	299	2433	257	2432	1086	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.33	0.14	0.19	0.10	0.21	0.28	0.50	0.19	0.21	0.07	
											ì
Intersection Summary											

Movement EBL EBT EBR Lane Configurations Tartific Volume (vph) 103 91 29 125 1	MBL WBT 54 88 54 88 54 88 54 88 60 1900 60 0.05 1.00 0.09 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.09 59 96 59 96 7 7 6% Perm NA Perm NA 12.8 8 8			00.92 60 60 0 0 0 0 0 0 8%	SBL 46 46 46 46 1900 6.0 1.00 1.00 1.00 1.00 1.00 1.00 1.0		SBR 71 71 71 71 1900 6.0 6.0 6.0 10.09 11.00 15.32 77 77 77 74 24 53 53 83 86 86 86 86 86 86 86 86 86 86 86 86 86
103 91 103 91 1090 1900 190 6.0 6.0 100 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.249 3.214 0.69 1.00 1.249 3.214 0.69 1.00 1.249 3.214 0.69 1.00 1.249 3.214 0.69 1.00 1.249 3.214 1.249 3.214 1.25 1.25 1.25 1.25 1.25 1.25 1.25 1.25 1.25 1.25 1.26 6.0				55 55 55 1900 0.92 0 0 0 0 0 1 1 8%			717 717 71900 6.0 6.0 0.98 717 777 777 24 53 53 73 85 53 66 66
103 91 103 91 1900 19 6.0 6.0 1.00 0.95 1.00 0.96 1.00 0.96 1.00 0.96 1.24 3.214 0.89 1.00 1.24 3.214 0.89 1.00 1.24 3.214 0.89 1.00 1.24 3.214 0.87 1.00 1.25 1.00 1.27 1.04 3.8 8 7 4 4 4 4 12.5 1.25 1.25 1.25 1.25 1.25 1.25 1.25 1.25 1.26 0.16 0.16				55 55 1900 0.92 60 0 0 0 1 1 8%			71 71 1900 6.0 6.0 0.98 1.00 1.00 77 77 77 77 77 77 77 77 73 83 83 83 85 85 85 85 85 85 85 85 85 85 85 85 85
1900 1900 1900 1900 1900 1900 1900 1900				55 1900 0.92 60 0 0 0 1 1 8%			71 6.0 6.0 0.98 0.98 1.00 1.00 77 77 77 77 77 77 73 83 83 83 83 85 53
1900 1900 190 100 1900 190 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.04 32.14 0.69 32.14 0.69 0.92 0.92 1.12 99 0.92 0.8% 7 112 104 2 8% 7 112 104 112 104 125 12.5 12.5 12.5 12.5 12.5 12.5 12.5 3.0 3.0				0000 60 60 0 0 0 1 8%			6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0
6.0 6.0 6.0 1.00 0.95 1.00 0.95 1.00 0.96 0.95 1.00 0.96 0.95 1.00 0.96 1.00 1.249 3214 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92				0.92 60 0 0 1 1 8 %			6.0 0.98 0.98 1.00 1.00 1.00 1.20 24 24 24 23 37 17 17 17 17 17 17 17 17 17 17 17 17 17
100 0.95 1.00 1.00 1.00 1.00 1.00 0.96 0.95 1.00 17.16 3.214 0.69 1.00 12.49 3.214 0.87 7 112 104 3 8% 7 Perm NA 4 4 12.5 12.5 12.5 12.5 12.5 12.5 12.5 12.5 3.0 3.0				0.92 60 60 0 0 1 1 8%			1.00 0.98 1.00 1.00 1.00 1.00 1.00 24 77 77 77 77 77 77 77 77 77 77 77 77 77
1.00 1.00 1.00 1.00 1.00 0.96 0.95 1.00 1.249 3214 0.69 0.92 0.92 0.92 0.92 0.92 112 99 0.92 0.92 0.92 0.92 112 104 112 104 112 104 12 5 12 5 12.5 12.5 12.5 12.5 12.5 12.5 3.0 3.0				0.92 60 0 0 1 1 8%			0.98 0.85 1.00 1.00 1.00 1.00 24 77 77 77 73 73 83 83 83 83 85 85 85 85 85
100 100 1.00 0.96 0.95 1716 3214 1716 3214 0.92 0.92 0.1 112 0.92 0.1 112 104 3 8% 7 Perm NA 4 4 12.5 12.5 12.5 12.5 0.16 0.16 0.16 0.16				0.92 60 0 0 0 1 1 8%			1.00 0.85 1.00 1532 1732 77 77 77 73 53 83% 86 66 66 65 55.5
100 0.96 1716 3214 1716 3214 1249 3214 10.92 0.92 0.1 112 104 3 8% 7 Perm NA 4 4 12.5 12.5 12.5 12.5 12.6 0.16 6.0 3.0 3.0				0.92 60 0 0 1 1 8%			0.85 1.00 1.00 1.00 77 77 77 73 53 33% Perm
1716 3214 0.69 1.00 1249 3214 0.92 0.92 0.9 112 0.9 112 104 3 8% 7 Perm NA 4 4 12.5 12.5 12.5 12.5 12.5 12.5 3.0 3.0				0.92 60 0 0 1 1 8%			1.00 1.00 1.00 1.00 24 24 53 17 3% Perm
1716 3214 0.69 1.00 1729 3214 0.92 0.92 0.1 112 99 112 104 3 8% 7 5% 8% 7 Perm NA 4 4 4 4 12.5 12.5 12.5 12.5 12.5 12.5 0.16 0.16 6.0 3.0 3.0				0.92 60 0 0 0 1 8%			1532 1.00 1532 0.92 77 24 53 17 17 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8
0.69 1.00 1249 3214 0.92 0.92 0.1 112 0.94 3 5% 8% 7 Perm NA 4 4 12.5 12.5 12.5 12.5 0.16 0.16 6.0 3.0 3.0				0.92 60 0 0 0 1 1 8%			1.00 1.532 0.92 77 24 53 17 3% Perm
1249 3214 0.92 0.92 0.1 112 0.4 3 8% 7 Perm NA 4 4 12.5 12.5 12.5 12.5 0.16 0.16 6.0 3.0 3.0				0.92 60 0 0 1 1 8%			1532 0.92 77 77 24 53 17 3% Perm 6
0.92 0.92 0.97 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.				0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.92 50 0 50 50 1 2% Perm		0.92 77 24 24 53 17 3% Perm 6 6
112 99 1 12 104 3 8% 7			` `	60 0 0 1 8%	50 0 50 1 2% Perm		77 24 53 17 17 3% Perm 6
10 27 112 104 3 5% 8% 7 8 7 Perm NA 4 4 12.5 12.5 12.5 12.5 0.16 0.16 6.0 3.0 3.0		Δ.		0 0 1 8%	0 50 1 2% Perm		24 53 17 17 3% Perm
h) 112 104 3 5% 8% 7 5% 8% 7 Perm NA 4 4 4 12.5 12.5 12.5 12.5 0.16 0.16 6.00 3.0 3.0		<u>a</u>	`	0 + %	50 1 2% Perm		53 17 3% Perm 6 55.5
5% 8% 5% 8% Perm NA 4 12.5 12.5 12.5 12.5 12.6 0.16 6.00 3.0 3.0		ď.		8%	2% Perm		17 3% Perm 6 55.5
5% 8% Perm NA 4 4 4 12.5 12.5 0.16 0.16 6.0 3.0 3.0		<u>a</u> .		%8	2% Perm		3% Perm 6 55.5
Perm 4 4 12.5 12.5 0.16 6.0 6.0 3.0		ш.			Perm		Perm 6 55.5
12.5 12.5 0.16 6.0 3.0					Œ	9	55.5
) 12.5 0.16 6.0 3.0					ď		55.5
) 12.5 12.5 0.16 6.0 3.0					0		55.5
12.5 0.16 6.0 3.0					55.5	55.5	
0.16 6.0 s) 3.0	12.5 12.5	12.5 55.5	5 55.5		55.5	55.5	55.5
6.0 s) 3.0					69.0	69.0	0.69
3.0	0.9 0.9	0.9 0.9	0.9 0		0.9	0.9	0.9
		3.0 3.0			3.0	3.0	3.0
Lane Grp Cap (vph) 195 502	176 532	236 567	7 2428		257	2431	1062
						0.15	
v/s Ratio Perm c0.09	0.05	0.02 0.19			0.13		0.03
0.57			0		0.19	0.21	0.05
31.3	30.1 29.3				4.3	4.4	3.9
0.58					1.00	1.00	1.00
ital Delay, d2 4.0	1.1 0.2	0.3 1.2	2 0.7		1.7	0.2	0.1
22.3 14	31.2 29.5				0.9	4.6	4.0
ပ	0	O	A A		¥	∢	×
Approach Delay (s) 18.1	29.9		6.4			4.6	
Approach LOS B	O		A			∢	
Intersection Summary							
HCM 2000 Control Delay 9.4	HCM 2000 L	HCM 2000 Level of Service	o.	¥			
HCM 2000 Volume to Capacity ratio 0.51							
Actuated Cycle Length (s) 80.0	Sum of lost time (s)	ime (s)		12.0			
Intersection Capacity Utilization 69.9%	ICU Level of Service	Service		ပ			
Analysis Period (min)							

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Detour: AM Peak Hour Lanes, Volumes, Timings 8: Erie Avenue & Veteran's Memorial Parkway/Clarence Street South

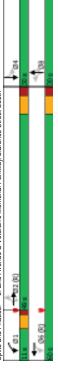
Fig. 1979 Fig. 2013 Fig. 2014 Fig.		4	1	~	\	Į.	4	•	←	•	•	→	*
1		EBL	EBT	EBY T	WBL	WBT	WBR	E P	NBT	NBR.	SBL	SBT	SBR
16 979 98 201 352 6 76 186 335 4 87 1000 1900 1900 1900 1900 1900 1900 1900 1900 1000 0.95 1.00 1.00 0.95 1.00 1.00 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 1.00 0.95 1.00 1.00 1.00 1.00 1.00 0.95 1.00 1.00 1.00 1.00 1.00 0.95 1.00 1.00 1.00 1.00 1.00 0.95 1.00 1.00 1.00 1.00 1.00 0.95 1.00 0.95 0.95 0.95 1.00 0.90 0.90 0.90 0.90 0.90 1.00 0.90 0.90 0.90 0.90 1.00 0.90 0.90 0.90 0.90 1		- 9	679	- %	- 100	357	œ	- 92	- 285	335	- 4	1 2	c.
1900 1900		16	979	86	201	352	9	92	185	335	4	87	က
500 500 500 300 300 500 10 10 0.0 10 10 10 500 100 0.95 0.95 100 100 100 100 100 0.850 0.997 0.950		1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
50.0 0.0 0.0 40.0 1.00 1		20.0		20.0	85.0		0.0	30.0		30.0	30.0		0.0
1.00 0.95 1.00 1.00 0.95 0.95 1.00		20.0		-	0.0		•	40.0		-	55.0		•
1.00		1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
1805 1805		1.00				1.00		1.00		0.99	1.00	1.00	
0.950 1819 1819 <th< td=""><td></td><td></td><td></td><td>0.850</td><td></td><td>0.997</td><td></td><td></td><td></td><td>0.850</td><td></td><td>0.995</td><td></td></th<>				0.850		0.997				0.850		0.995	
1805 3539 1495 1703 3366 0 1671 1863 1553 1805 1819 989 3539 1495 330 3366 0 1220 1863 1531 959 1819 50 20 20 20 20 20 20 20		0.950			0.950			0.950			0.950		
0.621 0.684 0.684 0.694 0.511 969 189 0.511 969 189 989 3539 498 330 3366 0 120 1863 1531 969 1819 50 50 50 50 50 27.5 198 25 20 <td></td> <td>1805</td> <td>3539</td> <td>1495</td> <td>1703</td> <td>3366</td> <td>0</td> <td>1671</td> <td>1863</td> <td>1553</td> <td>1805</td> <td>1819</td> <td>0</td>		1805	3539	1495	1703	3366	0	1671	1863	1553	1805	1819	0
No.		0.521			0.184			0.694			0.511		
Yes		686	3539	1495	330	3366	0	1220	1863	1531	696	1819	0
106				Yes			Yes			Yes			Yes
Secondary Seco				106		4				200		7	
1933 1931.6 1433			20			20			20			20	
15.5			353.8			381.6			274.8			143.3	
1			25.5			27.5			19.8			10.3	
092 092 <td></td> <td>_</td> <td></td> <td></td> <td></td> <td></td> <td>-</td> <td>-</td> <td></td> <td>2</td> <td>2</td> <td></td> <td>_</td>		_					-	-		2	2		_
0% 2% 8% 6% 7% 0% 2% 4% 0% 4% 17 1064 107 218 383 7 83 201 364 4 98 No		0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
17 1064 107 218 383 7 83 201 364 4 95 No No No No No No No		%0	7%	%8	%9	%/	%0	%8	7%	4%	%0	4%	%0
1064 107 218 390 0 83 201 364 4 98 108		17	1064	107	218	383	7	83	201	364	4	92	က
17 1064 107 218 390 0 83 201 364 4 98 No No No No No No No	<u></u>												
No		17	1064	107	218	390	0	83	201	364	4	88	0
Left Left Right Left Right Left Right Left Left Right Left Right Left Left Right Left Right Left Left Right Left	tion	2	2	2	2	8	2	2	2	2	8	2	8
3.6 3.6 <td></td> <td>Left</td> <td>Left</td> <td>Right</td> <td>Left</td> <td>Left</td> <td>Right</td> <td>Left</td> <td>Left</td> <td>Right</td> <td>Left</td> <td>Left</td> <td>Right</td>		Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
100 100 100 100 100 100 100 100 100 100			3.6			3.6			3.6			3.6	
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00			0:0			0.0			0.0			0.0	
100 100 100 100 100 100 100 100 100 100			4.8			4.8			4.8			4.8	
1.00 1.00	Ф												
15 25 15 25 15 25 15 25 15 25 15 25 15 25 15 25 15 25 15 25 15 25 15 25 15 25 15 25 15 25 15 25 15 25 15 25 2		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1:00	1.00	1.00	1.00
Thru Right Leff Thru		22		15	52		15	22		15	52		15
Thru Right Left Thru Left Thru Left Thru Right Left Thru Left Thru Left Thru Right Left Thru Left Thru Right Left Thru Left Thru Right Left Thru Left Thru Left Thru Right Left Thru Right Left Thru Left Thru Right Left Thru Left Thru Right Left Thru Lef		_	2	-	-	2		_	2	-	_	2	
10.0 2.0 2.0 10.0 2.0 10.0 2		Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
0.6 2.0 2.0 0.6 2.0 0.6 2.0 2.0 2.0 CleEK		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
CHEK CHEK CHEK CHEK CHEK CHEK CHEK CHEK		2.0	9.0	2.0	2.0	9.0		2.0	9.0	2.0	2.0	9.0	
00 00 00 00 00 00 00 00 00 00 00 00 00		CI+EX	CI+EX	CI+EX	CI+EX	CI+EX		CI+EX	CI+EX	CI+EX	CI+EX	CI+EX	
0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0													
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		0.0	0.0	0:0	0.0	0.0		0:0	0.0	0.0	0.0	0.0	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
9.4 9.4 0.6 0.6 CI+Ex CI+Ex CI- 0.0 0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
06 06 CI+EX CI+EX CI-			9.4			9.4			9.4			9.4	
CI+Ex CI+Ex CI-			9.0			9.0			9.0			9.0	
0.0 0.0			CI+Ex			CI+Ex			CI+Ex			CI+Ex	
0.0 0.0													
			0.0			0.0			0:0			0.0	

Lanes, Volumes, Timings 8: Erie Avenue & Veteran's

	Detour: /	
	enue & Veteran's Memorial Parkway/Clarence Street South	
	Parkway	
	Memorial	
,	enue & Veteran's Memorial Pa	
	venue & '	

Earles, Volumes, Intimitys 8: Erie Avenue & Veteran's Memorial Parkway/Clarence Street South	Veteran's	s Mem	orial P	arkwa)	//Clare	nce St	reet S	outh		Detour	Detour: AM Peak Hour	Hour
	1	1	~	>	↓	4	€	←	•	۶	→	*
Lane Group	EBE	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Tum Type	Perm	N	Perm	pm+pt	N		Perm	N	Perm	Perm	NA	
Protected Phases		2		-	9			∞			4	
Permitted Phases	2		2	9			∞		∞	4		
Detector Phase	2	7	7	-	9		∞	œ	∞	4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	7.0	10.0		7.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	33.0	33.0	33.0	11.0	33.0		31.0	31.0	31.0	31.0	31.0	
Total Split (s)	49.0	49.0	49.0	11.0	0.09		30.0	30.0	30.0	30.0	30.0	
Total Split (%)	54.4%	54.4%	24.4%	12.2%	%2.99		33.3%	33.3%	33.3%	33.3%	33.3%	
Maximum Green (s)	43.0	43.0	43.0	7.0	54.0		24.0	24.0	24.0	24.0	24.0	
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0		2.0	1.0	5.0		2.0	5.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	0.9		0.9	4.0	0.9		0.9	0.9	0.9	0.9	0.9	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Max	С-Мах	С-Мах	None	C-Max		None	None	None	None	None	
Walk Time (s)	7.0	7.0	7.0		0.7		7.0	7.0	7.0	7.0	0.7	
Flash Dont Walk (s)	20.0	20.0	20.0		20.0		18.0	18.0	18.0	18.0	18.0	
Pedestrian Calls (#/hr)	0	0	0		0		0	0	0	0	0	
Act Effct Green (s)	48.7	48.7	48.7	63.2	61.2		16.8	16.8	16.8	16.8	16.8	
Actuated g/C Ratio	0.54	0.54	0.54	0.70	0.68		0.19	0.19	0.19	0.19	0.19	
v/c Ratio	0.03	0.56	0.12	09:0	0.17		0.37	0.58	0.81	0.02	0.29	
Control Delay	12.3	16.0	3.2	14.3	6.1		34.6	39.1	29.7	26.0	31.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0:0	0:0	0.0	0.0	0.0	
Total Delay	12.3	16.0	3.2	14.3	6.1		34.6	39.1	29.7	26.0	31.0	
SOT	ш	В	¥	В	¥		ပ	□	ပ	ပ	ပ	
Approach Delay		14.8			9.0			33.2			30.8	
Approach LOS		ш			⋖			ပ			O	
Intersection Summary												
Area Type:	Other											
Cycle Length: 90												

Intersection LOS: B ICU Level of Service C Cycle Length: 90
Actuated Cycle Length: 90
Actuated Cycle Length: 90
Actuated Cycle Length: 90
Actuated Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio. 0.81
Intersection Signal Delay: 18.8
Intersection Capacity Utilization 68.9%
Analysis Period (min) 15 Splits and Phases: 8: Erie Avenue & Veteran's Memorial Parkway/Clarence Street South



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Queues 8: Erie Avenue & Veteran's Memorial Parkway/Clarence Street South

Detour: AM Peak Hour

HCM Signalized Intersection Capacity Analysis 8: Erie Avenue & Veteran's Memorial Parkway/Clarence Street South

Detour: AM Peak Hour

98 98 0.29 31.0 0.0 31.0 15.3 16.3 486 0 0 0.20 26.0 26.0 0.0 26.0 26.0 3.2 30.0 258 0 0 0 0 30.0 364 364 0.81 29.7 29.7 28.9 28.9 57.1 201 201 0.58 39.1 39.1 33.9 50.4 250.8 496 NBL 83 0.37 34.6 0.0 34.6 13.4 24.6 30.0 325 0 0 0 0 0 390 0.17 6.1 0.0 6.1 11.3 22.2 357.6 2291 218 0.60 14.3 0.0 14.3 11.3 85.0 362 0 0 0 0 / 107 107 0.12 3.2 0.0 3.2 0.1 8.5 50.0 856 0 0 0 0.13 1064 0.56 16.0 0.0 16.0 64.8 94.1 329.8 1913 0 0 0 0.56 50.0 534 0 0 0 0 17 17 12.3 0.0 0.0 12.3 1.4 5.2 Lane Group Flow (vph)
We Ratio
Control Delay
Queue Delay
Total Delay
Queue Length 50th (m)
Queue Length 50th (m)
Innternal Link Dist (m)
Inn Bay Length (m)
Base Capacity (vph)
Base Capacity (vph)
Base Capacity (vph)
Slarvation Cap Reducth
Sprillack Cap Reducth
Sorage Cap Reducth

Figurations (which) 16 979 98 201 352 6 76 185 335 4 87 4 (which) 16 979 98 201 352 6 76 185 335 4 87 4 (which) 16 979 98 201 352 6 76 185 335 4 87 4 (which) 16 979 98 201 352 6 76 185 335 4 87 4 (which) 16 979 98 201 352 6 76 185 335 4 87 4 87 4 (which) 16 979 98 201 352 6 76 185 335 4 87 4 87 4 (which) 16 979 98 201 352 6 76 185 335 4 87 4 87 4 87 4 87 4 87 4 87 4 87 4 8	Moromont		TOJ		IQ/M	TQ/W	W/DD	ā	HON	OGIN	GO	CDT	CDD
100 100	Configurations	4	3	í	4	4	VION	NDL M	4	í k	7 N	-	
190 190	Lane Comigurations	- ç	E	- 8	- 5	1 €	c	- 6	- 5	<u>.</u> .		<u>*</u> 1	•
1900 1900	I raffic Volume (vph)	16	979	88	201	325	9	9/	185	335	4	8/	n
1900 1900	Future Volume (vph)	16	979	86	201	352	9	92	185	332	4	87	က
6.0 6.0 4.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1,00 1,00	Total Lost time (s)	0.9	0.9	0.9	4.0	0.9		0.9	0.9	0.9	0.9	0.9	
1,00 1,00	Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	
1,00	Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.99	1.00	1.00	
1.00 0.88 1.00 1.00 1.00 0.85 1.00 0.85 1.00 1.00 0.85 1.00 1.00 0.85 1.00 1.00 0.85 1.00 1.00 0.85 1.00 0.85 1.00 1.00 0.85 1.00 0.85 1.00 0.85 1.00 0.85 1.00 0.85 1.00 0.19 0.19 0.19 0.19 0.19 0.19 0.19	Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
100 100 0.95 1.00 0.95 0.92 0.	Ft	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	
3539 1495 1703 3367 1670 1863 1531 1802 1820 2 1/00 1,00 0.18 1,00 0.08 1,00 100	Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
100 100 018 100 069 100 100 051 100 051 100 053 1495 329 3367 1219 1883 1531 970 1820 092 092 092 092 092 092 092 092 092 0	Satd. Flow (prot)	1803	3539	1495	1703	3367		1670	1863	1531	1802	1820	
3539 1495 329 3367 1219 1863 1531 970 1820 1 094 0.92 0.	Flt Permitted	0.52	1.00	1.00	0.18	1.00		69.0	1.00	1.00	0.51	1.00	
1064 1082 0.92 <t< td=""><td>Satd. Flow (perm)</td><td>066</td><td>3539</td><td>1495</td><td>329</td><td>3367</td><td></td><td>1219</td><td>1863</td><td>1531</td><td>970</td><td>1820</td><td></td></t<>	Satd. Flow (perm)	066	3539	1495	329	3367		1219	1863	1531	970	1820	
1064 107 218 383 7 83 201 364 4 1064 58 218 389 0 0 0 0 163 0 1	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
1064 58 218 389 0 83 201 201 4 96 22% 8% 6% 7% 0% 8% 2% 4% 0% 4% 2 2 2 2 2 48.6 612 612 612 168 168 168 168 168 48.6 48.6 612 612 612 168 168 168 168 168 48.6 48.6 612 612 610 19 0.19 0.19 0.19 5 0.54 0.54 0.66 0.68 0.19 0.19 0.19 0.19 6 0.0 6.0 0.00 0.12 0.01 1011 807 355 2289 227 347 286 181 339 6 0.06 0.07 0.61 0.17 0.37 0.58 0.71 0.02 1 12 0.2 3.1 0.2 1.0 1.00 1.00 1.00 1.00 1 12 0.2 3.1 0.2 1.0 2.3 7.8 0.0 0.5 1 14.8 10.1 11.3 54 33.0 35.7 42.0 299 31.9 1 14.8 10.1 11.3 54 33.0 35.7 42.0 299 31.9 1 14.8 10.1 11.3 54 33.0 35.7 42.0 299 31.9 1 14.8 10.1 11.3 54 33.0 35.7 42.0 299 31.9 1 14.8 10.1 11.3 54 33.0 35.7 42.0 299 31.9 1 14.8 10.1 11.3 54 33.0 35.7 42.0 299 31.9 1 14.8 10.1 11.3 54 33.0 35.7 42.0 299 31.9 1 15.8 B B A C C B D C C C C C C C C C C C C C C C C	Adi. Flow (vph)	17	1064	107	218	383	7	83	201	364	4	92	c
1064 58 218 389 0 83 201 201 4 96 2.8 8% 6% 7% 0% 8% 2% 4% 2% 4% 1 NA Perm pm+pt NA Perm NA	RTOR Reduction (vph)	0	0	49	0	_	0	0	0	163	0	2	0
2% 8% 6% 7% 0% 8% 2% 4% 0% 4% 1 0.0	Lane Group Flow (vph)	17	1064	28	218	389	0	83	201	201	4	96	0
2% 8% 6% 7% 0% 8% 2% 4% 0% 4% 1 A Perm Perm Perm Perm Perm A 4% 2 6 6 6 8 8 4<	Confl. Peds. (#/hr)	-					-	-		7	2		_
NA Perm pm+pt NA Perm NA Perm Perm NA Perm Perm NA Perm NA Perm Perm Perm NA Perm Perm Perm Perm Perm Perm Perm Perm	Heavy Vehicles (%)	%0	2%	8%	%9	7%	%0	8%	2%	4%	%0	4%	%0
2 1 6 8 8 4 486 486 612 612 612 168 168 168 168 486 486 612 612 612 168 168 168 168 1 054 056 068 0.68 0.68 0.69 60 <td>Turn Type</td> <td>Perm</td> <td>NA</td> <td>Perm</td> <td>pm+pt</td> <td>NA</td> <td></td> <td>Perm</td> <td>NA</td> <td>Perm</td> <td>Perm</td> <td>NA</td> <td></td>	Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA	Perm	Perm	NA	
486 486 61.2 6	Protected Phases		2		-	9			∞			4	
486 486 612 612 612 168 <td>Permitted Phases</td> <td>2</td> <td></td> <td>2</td> <td>9</td> <td></td> <td></td> <td>∞</td> <td></td> <td>∞</td> <td>4</td> <td></td> <td></td>	Permitted Phases	2		2	9			∞		∞	4		
486 486 612 612 168	Actuated Green, G (s)	48.6	48.6	48.6	61.2	61.2		16.8	16.8	16.8	16.8	16.8	
0.54 0.54 0.68 0.68 0.19 0.19 0.19 0.19 0.19 0.19 0.10	Effective Green, g (s)	48.6	48.6	48.6	61.2	61.2		16.8	16.8	16.8	16.8	16.8	
6.0 6.0 4.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6	Actuated g/C Ratio	0.54	0.54	0.54	99.0	99.0		0.19	0.19	0.19	0.19	0.19	
191 807 355 2289 227 347 285 181 1911 807 355 2289 227 347 285 181 0.30 0.006 0.12 0.07 0.13 0.00 0.56 0.07 0.61 0.17 0.37 0.58 0.71 0.02 1.2 0.2 3.1 0.2 1.0 1.00 1.00 1.00 1.2 0.2 3.1 0.2 1.0 2.3 7.8 0.0 1.4 3 1.1 3 5.4 3.3 3.57 4.2 2.9 1.4 1.1 1.3 5.4 3.3 3.57 4.2 2.9 1.5 B B B A C B B C C B C C C C C C C C C C	Clearance Time (s)	0.9	0.9	0.9	4.0	0.9		0.9	0.9	0.9	0.9	0.9	
1911 807 355 2289 227 347 288 181 0.30	Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
0.30	Lane Grp Cap (vph)	534	1911	807	355	2289		227	347	285	181	339	
9 0.04 c0.36 0.07 c0.13 0.00 9 0.05 0.07 0.06 0.07 0.02 9 0.05 0.07 0.06 0.07 0.02 9 0.05 0.07 0.02 0.02 9 0.04 c0.36 0.07 0.02 9 0.04 c0.36 0.07 0.02 9 0.05 0.07 0.02 9 0.05 0.07 0.02 9 0.05 0.07 0.02 9 0.05 0.07 0.02 9 0.05 0.07 0.02 9 0.07 0.0	v/s Ratio Prot		0:30		90.00	0.12			0.11			0.05	
0.56 0.07 0.61 0.17 0.37 0.58 0.71 0.02 1 136 9.9 8.1 5.2 3.19 33.4 34.3 29.9 1 12 0.2 3.1 0.2 1.0 1.00 1.00 1.00 1 2 0.2 3.1 0.2 1.0 2.3 7.8 0.0 1 48 10.1 11.3 5.4 3.3 3.5 7.42 2.9 1 8 B A C 3.9 C 1 8 A C 3.9 C 1 9 A D D C 1 1 1 1 5.4 3.3 3.5 7.42 2.9 2 8 A C 3.9 C 3 9 A D D C 4 3 A D D C 5 9 0 Sum of lost time (s) C 6 9 0 Sum of lost time (s) C 1 1 1 1 1 1 1 1 1	v/s Ratio Perm	0.02		0.04	c0.36			0.07		c0.13	0.00		
7 136 99 81 52 319 334 343 299 7 100 100 100 100 100 100 100 100 100 10	v/c Ratio	0.03	0.56	0.07	0.61	0.17		0.37	0.58	0.71	0.02	0.28	
100 100 100 100 100 100 100 100 100 100	Uniform Delay, d1	9.7	13.6	6.6	8.1	2.5		31.9	33.4	34.3	29.9	31.4	
1 12 0.2 3.1 0.2 1.0 2.3 7.8 0.0 1.4 1.1 1.3 5.4 3.0 35.7 42.0 29.9 1.4 14.3 7.5 38.9 D D C C 14.3 A D D C C 14.3 A D D C C C C C C C C C C C C C C C C C	Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
148 10.1 11.3 5.4 33.0 35.7 42.0 29.9 14.3 7.5 8.9 D C C C C C C C C C C C C C C C C C C	Incremental Delay, d2	0.1	1.2	0.2	3.1	0.2		1.0	2.3	7.8	0.0	0.5	
14.3 7.5 38.9 C 14.3 7.5 38.9 D 14.3 A	Delay (s)	8.6	14.8	10.1	11.3	5.4		33.0	35.7	45.0	29.9	31.9	
14.3 7.5 38.9 B A D 19.6 HCM 2000 Level of Service B 0.66 90.0 Sum of lost time (s) 16.0 68.9% ICU Level of Service C 15	Level of Service	V	മ	മ	ш	V		ပ	۵	_	ပ	ပ	
B A D 19.6 HCM 2000 Level of Service 0.66 50.0 Sum of lost time (s) 68.9% ICU Level of Service 15	Approach Delay (s)		14.3			7.5			38.9			31.8	
19.6 HCM 2000 Level of Service 0.66 90.0 Sum of lost time (s) 68.9% ICU Level of Service 15	Approach LOS		В			4			٥			O	
19.6 HCM 2000 Level of Service 0.66 90.0 Sum of lost time (s) 68.9% ICU Level of Service 15	Intersection Summary												
0.66 90.0 Sum of lost time (s) 68.9% ICU Level of Service 15	HCM 2000 Control Delay			19.6	Ĭ	OM 2000	level of S	Service		œ			
90.0 Sum of lost time (s) 68.9% ICU Level of Service 15	HCM 2000 Volume to Capaci	tv ratio		99.0									
ration 68.9% ICU Level of Service 15	Actuated Cycle Length (s)	,		90.0	ઝ	um of lost	time (s)			16.0			
15	Intersection Capacity Utilization	lo		%6.89	2	U Level o	f Service			O			
c Critical Jana Groun	Analysis Period (min)			15									
	Critical Lane Group												

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190487 - Brantford Bridges EA PTSL

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

Detour: PM Peak Hour Lanes, Volumes, Timings 1: Mt. Pleasant Street & Veteran's Memorial Parkway

Part		1	†	<i>></i>	-	ţ	4	•	←	•	۶	→	•
1, 10 1, 1	ie Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
72 694 104 401 929 223 77 88 244 144 88 1900	ne Configurations	<i>y</i> -	ŧ	*_	<i>y</i> -	‡	*-	۳	+	¥	<u>,-</u>	₩.	
100 1500 1000 1000 1500 1	ffic Volume (vph)	72	694	104	401	929	223	11	88	254	144	83	103
1900 1900	ure Volume (vph)	72	694	104	401	929	223	77	88	254	144	83	103
1400 250 400 450 450 400 350 400	al Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
100 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 0	rage Length (m)	140.0		25.0	40.0		45.0	45.0		40.0	35.0		0.0
100 0.95 1.00 0.95 1	age Lanes	_		-	_		_	_		_	-		0
1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 0.98	er Length (m)	70.0			70.0			85.0			20.0		
1752 3539 1599 1787 3574 1599 1786 3639 1639 1039 1787 3574 1599 1787 3539 1599 1787 3574 1599 1788 3539 1582 1790 3245 1788 1889 1788 1889	e Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
1752 3539 1599 1787 3574 1599 1736 3539 1583 1589 1787 3574 1599 1736 3539 1589 1787 3574 1599 1736 3539 1589 1787 3245 1787 3245 3245 1787 3245	Bike Factor			0.98	1.00			0.99		0.98	0.99	0.98	
1752 3539 1599 1787 3574 1599 1738 3539 1580 2245 1738 3539 1580 3245 1738 3539 1580 3245 1738 3539 1580 3245 1738 3539 1580 3245 1738 3539 1580 3245 1738 3539 1580 3245 1738 3539 1580 3245 1738 3539 1580 3245 1738 3539 1580 1738 3539 1580 1738 3539 1580 1738 3545 1738				0.850			0.850			0.850		0.917	
1752 3539 1599 1787 3574 1599 1738 3539 1583 1805 3245 1785 2539 1585 1582 170 3245 1785 274 1899 1738 3539 1582 170 3245 1785 274 1899 1788 3539 1582 170 3245 1785 274 1899 1738 1805 280	Protected	0.950			0.950			0.950			0.950		
0.185 0.186 0.366 0.625 0.620 0.62	i. Flow (prot)	1752	3539	1599	1787	3574	1599	1736	3539	1583	1805	3245	0
10 10 10 10 10 10 10 10	ermitted	0.185			0.366			0.625			0.620		
112 113 114 115	I. Flow (perm)	341	3539	1566	989	3574	1599	1128	3539	1552	1170	3245	0
101 101 187 102 112 113	nt Turn on Red			Yes			Yes			Yes			Yes
Secondary Seco	i. Flow (RTOR)			101			187			202		112	
134 112 230 849.7 144 145 146 14	Speed (k/h)		20			02			20			550	
134 9 112 153 8 64.1 134 9 9 112 153 8 8 8 138 236 232 032 032 032 032 032 032 236 226 178 178 178 178 178 248 278 278 178 202 138 754 113 436 1010 242 84 96 276 157 90 138 754 113 436 1010 242 84 96 276 157 90 140 No No No No No No No N	Distance (m)		260.6			217.6			319.9			889.7	
10,000	el Time (s)		13.4			11.2			23.0			64.1	
0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	fl Peds (#/hr)			6	σ			16		00	000		16
3% 2% 1% 1% 1% 1% 4% 2% 2% 2% 0% 1% 1% 1% 1% 1% 1% 1	k 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
18 754 113 436 1010 242 84 96 276 157 90 18 754 113 436 1010 242 84 96 276 157 202 19 No	vy Vehicles (%)	3%	2%	1%	1%	1%	1%	4%	2%	2%	%0	1%	%0
1	Flow (vph)	78	754	113	436	1010	242	84	96	276	157	06	112
78 754 113 436 1010 242 84 96 276 157 202 Left Left Right Right Left Right Ri	ed Lane Traffic (%)												
Left Left Right Right Left Right Left Right Right Left Right Rig	Group Flow (vph)	78	754	113	436	1010	242	84	96	276	157	202	0
Left Left Right Left Right Left Right Left Ri	r Blocked Intersection	8	2	2	2	2	8	2	2	2	2	8	8
3.6 3.6	- Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
0.0 0.0	ian Width(m)		3.6	>		3.6	>		3.6	·		3.6)
1.00	Offset(m)		0.0			0.0			0.0			0:0	
1.00	swalk Width(m)		4.8			4.8			4.8			4.8	
1.00 1.00	way Left Turn Lane												
25 15 25 15	dway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
1	ing Speed (k/h)	52		15	52		15	52		15	22		15
Left Thru Right Left Thru Right Left Thru Right Left Thru Color 100 20 20 20 100 20 20 20 100 20 20 20 100 20 20 20 20 20 20 20 100 20 20 20 20 20 20 20 20 20 20 20 20 2	iber of Detectors	_	2	-	_	2	_	_	2	_	~	2	
20 100 20 20 100 20 20 100 20 20 20 00 00 00 00 00 00 00 00 00 0	ctor Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	ling Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	
00 00 00 00 00 00 00 00 00 00 00 00 00	ina Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
2,0	ector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.4 C)	ector 1 Size(m)	2.0	9.0	2.0	2.0	9.0	2.0	2.0	9.0	2.0	2.0	9.0	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	ctor 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	ector 1 Channel												
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	ector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	ector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
9.4 9.4 9.4 9.4 0.6 0.6 0.0 0.0 0.0	ector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.6 0.6 0.6 0.6 0.6 0.0 0.0 0.0 0.0 0.0	ector 2 Position(m)		9.4			9.4			9.4			9.4	
CI+Ex CI+Ex CI+Ex CI-	ector 2 Size(m)		9.0			9.0			9.0			9.0	
0.0 0.0 0.0	ector 2 Type		CI+EX			CI+Ex			CI+Ex			CI+EX	
0.0 0.0 0.0	ector 2 Channel												
	ector 2 Extend (s)		0.0			0.0			0.0			0.0	

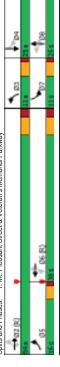
Lanes, Volumes, Timings 1: Mt. Pleasant Street & Veteran's Memorial Parkway

Detour: PM Peak Hour

	1	†	<u> </u>	/	ļ	1	•	←	4	۶	→	*
Lane Group	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Tum Type	pm+pt	Α	Perm	Perm	¥	Perm	pm+pt	Α	Perm	pm+pt	A	
Protected Phases	ις	2			9		က	∞		7	4	
Permitted Phases	2		2	9		9	∞		∞	4		
Detector Phase	S	2	2	9	9	9	က	∞	∞	7	4	
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0	10.0	7.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	11.0	34.0	34.0	34.0	34.0	34.0	11.0	33.0	33.0	11.0	33.0	
Total Split (s)	16.0	54.0	54.0	38.0	38.0	38.0	11.0	25.0	25.0	11.0	25.0	
Total Split (%)	17.8%	%0.09	%0.09	42.2%	42.2%	42.2%	12.2%	27.8%	27.8%	12.2%	27.8%	
Maximum Green (s)	12.0	48.0	48.0	32.0	32.0	32.0	7.0	19.0	19.0	7.0	19.0	
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1:0	2.0	2.0	2.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	0.9	0.9	0.9	0.9	0.9	4.0	0.9	0.9	4.0	0.9	
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	
Walk Time (s)		7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)		21.0	21.0	21.0	21.0	21.0		20.0	20.0		20.0	
Pedestrian Calls (#/hr)		0	0	0	0	0		0	0		0	
Act Effct Green (s)	57.7	22.7	55.7	46.4	46.4	46.4	20.3	11.3	11.3	21.1	13.5	
Actuated g/C Ratio	0.64	0.62	0.62	0.52	0.52	0.52	0.23	0.13	0.13	0.23	0.15	
v/c Ratio	0.23	0.34	0.11	1.24	0.55	0.26	0.28	0.22	0.74	0.49	0.35	
Control Delay	9.0	9.5	2.8	153.8	18.0	5.3	26.2	34.8	23.7	30.5	18.7	
Queue Delay	0:0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	9.0	9.5	2.8	153.8	18.0	5.3	26.2	34.8	23.7	30.5	18.7	
SOT	⋖	⋖	⋖	ш	В	⋖	ပ	O	O	ပ	В	
Approach Delay		8.7			51.3			26.5			23.9	
Approach LOS		V			٥			O			O	
Intersection Summary												

Intersection LOS: C ICU Level of Service E Intersection Summary
Area Type:
Cycle Length: 90
Actuated Cycle Length: 90
Actuated Cycle Length: 90
Actuated Cycle: 150
Control Type: 4504 Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum vic Ratio: 1.24
Intersection Signal Delay: 33.5
Intersection Capacity Utilization 82.8%
Analysis Period (min) 15

Splits and Phases: 1: Mt. Pleasant Street & Veteran's Memorial Parkway



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Queues 1: Mt. Pleasant Street & Veteran's Memorial Parkway

vic Ratio
Control Dalay
Queue Delay
Total Delay
Queue Length 50th (m)
Queue Length 95th (m)
Internal Link Dist (m)
Inm Bay Length (m)
Base Capacity (vph)
Base Capacity (vph)
Slarvation Cap Reduch
Sprillack Cap Reduch
Soriage Cap Reduch
Reduced vic Ratio

HCM Signalized Intersection Capacity Analysis 1: Mt. Pleasant Street & Veteran's Memorial Parkway Detour: PM Peak Hour

Detour: PM Peak Hour

144 144 1900 4.0 1.00 1.00 1.00 1.00 0.95 177 177 1173 0.62

•	B		_		. 190	4	1.0	0.	0.9	0.	0.0	172	9.0	113	0.9	ω		ω	_	4	hmd			17.	17.	0.2	4	6	25	0.0	0.0	0.3	30	1.0	0	3			
4	WBR	¥.	223	577	1900	0.9	1.00	1:00	1.00	0.85	1.00	1599	1.00	1599	0.92	242	94	148		1%	Perm		9	44.7	44.7	0.50	0.9	3.0	794		0.09	0.19	12.6	1.00	0.5	13.1	ш		
Ļ	WBT	44	929	878	1900	0.9	0.95	1.00	1:00	0.1	1.00	3574	1.00	3574	0.92	1010	0	1010		1%	NA	9		44.7	44.7	0.50	0.9	3.0	1775	0.28		0.57	15.9	1.00	1.3	17.2	ω ;	29.5	ш
\	WBL	r	401	401	1900	0.9	1.00	1.00	1:00	0.1	0.95	1782	0.37	989	0.92	436	0	436	တ	1%	Perm		9	44.7	44.7	0.50	0.9	3.0	340		c0.64	1.28	22.6	1.00	147.7	170.4	ш		
>	EBR	ĸ.	104	104	1900	0.9	1.00	0.98	1.00	0.85	1.00	1566	1.00	1566	0.92	113	33	74	တ	1%	Perm		2	54.9	54.9	0.61	0.9	3.0	922		0.02	0.08	7.2	1.00	0.2	7.3	⋖		
†	EBT	44	694	694	1900	0.9	0.95	1.00	1.00	1.00	1.00	3539	1.00	3539	0.92	754	0	754		2%	NA	2		54.9	54.9	0.61	0.9	3.0	2158	20.21		0.35	8.7	1.00	0.4	9.1	∢	0.6	⋖
•	EBL	r	72	7.1	1900	4.0	1.00	1.00	1.00	1:00	0.95	1752	0.18	341	0.92	78	0	78		3%	pm+pt	2		54.9				- 1	302		0.14	0.26	0.6	1.00	0.4	9.2	٧		
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vpn)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Frpb, ped/bikes	Flpb, ped/bikes	Ē	Flt Protected	Satd. Flow (prot)	Flt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Confl. Peds. (#/hr)	Heavy Vehicles (%)		Protected Phases			s)		Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS
																																							_
→	SBT	202	0.35	18.7	0.0	18.7	6.3	14.6	865.7		773	0	0	0	0.26																								
۶	SBL	157	0.49	30.5	0.0	30.5	20.5	33.4		35.0	323	0	0	0	0.49																								
•	NBR	276	0.74	23.1	0.0	23.7	12.8	36.0		40.0	487	0	0	0	0.57																								
←	NBT	96	0.22	λ4.α	0.0	34.8	8.5	14.3	295.9		747	0	0	0	0.13																								
€	NBL	84	0.28	79.7	0.0	26.2	12.0	20.6		45.0	301	0	0	0	0.28																								
4	WBR	242	0.26	5.3	0.0	5.3	4.8	21.7		42.0	914	0	0	0	0.26																								
Ļ	WBT	1010	0.55	18.0	0.0	18.0	97.9	104.2	193.6		1840	0	0	0	0.55																								
>	WBL	436	1.24	153.8	0.0	153.8	~99.7	#173.7		40.0	353	0	0	0	1.24		9	Ď.		ne loliger																			
<u>/</u>	EBR	113	0.11							25.0	1008	0	0	0	0.11		infinite infinit	ally IIIIIII	7000	ene may																			
†	EBT	754	0.34	9.5	0.0	9.2	30.3	53.1	236.6		2191	0	0	0	0.34		thoore	oriolog	cycles.	acity, qu	cycles.																		
4	EBL	78	0.23	9.0	0.0	9.0	4.5	12.5		140.0	407	0	0	0	0.19			duene is	allel IWO	offer two	alici two																		
	Lane Group	Lane Group Flow (vph)	//c Ratio	control Delay	Queue Delay	Total Delay	Queue Length 50th (m)	Queue Length 95th (m)	Internal Link Dist (m)	Turn Bay Length (m)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	Intersection Summary	Volume execute connects around in theoretically infinite	Outric shours in maximum	Queue silowii is maximum arter two cycles.	Origin shown is maximim after two evolus	Quede Silowii is IIIaAiiiiuiii																		

13.5 13.5 0.15 6.0 3.0 3.0 486 0.03

12.1 12.1 0.13 6.0 3.0 208

12.1 12.1 0.13 6.0 3.0 475 0.03

20.5 20.5 0.23 4.0 3.0 3.0 3.15 0.05 0.50 29.4 0.98 1.2 30.1

% ¥

% ₩

157 % % 0.22 33.6 1.09 0.2 36.9 D

0.07 0.49 36.1 1.00 1.8 37.9 D

0.20 34.7 1.00 0.2 34.9 C C C

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HCM 2000 Level of Service

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Sum of lost time (s) ICU Level of Service

38.3 1.00 90.0 82.8%

HCM 2000 Control Delay
HCM 2000 Volume to Capacity ratio
Actuated Cyale Length (s)
Intersection Capacity Ultization
Analysis Period (min)
C Critical Lane Group

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Lanes, Volumes, Timings 2: Mt. Pleasant Street/Plaza & Colborne Street West

	1	†	~	>	ţ	4	•	-	4	٠	→	•
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		f			(r	÷			4	
Traffic Volume (vph)	-	442	7	201	367	-	31	က	237	-	4	_
Future Volume (vph)	-	442	7	201	367	-	31	က	237	-	4	_
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.0	0.0	9.	0.0	9.5	1.00
red bike racioi		00.0			9.		0.33	0.30			00.1	
Fit Protected		0.000			0.983		0.950	2000			0.992	
Satd. Flow (prot)	0	3497	0	0	3457	0	1752	1547	0	0	1836	0
Flt Permitted		0.954			0.661		0.754				0.393	
Satd. Flow (perm)	0	3336	0	0	2314	0	1381	1547	0	0	727	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		က						258			_	
Link Speed (k/h)		20			20			50			20	
Link Distance (m)		7.117			409.8			889.7			110.5	
Confl Dode (#lbr)	4	70.07	22	22	C:67	ą	u	- 40	c	c	0.0	Ľ
Doak Hour Factor	0 0	0 0	77	77	0 00	0 0	0 0	0 0	0 0	0 0	0 0	0 00
Heavy Vehicles (%)	0.25	3%	%0	2%	3%	0%0	3%	%0	3%	%0	%0	7%0
Adi. Flow (vph)	-	480	, w	218	333	-	34	e (n	258	-	4	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	489	0	0	618	0	34	261	0	0	9	0
Enter Blocked Intersection	2	S	2	8	2	8	8	2	8	8	8	8
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1:00	1.00	1.00	1.00	1.00	1.00	1.00	0 !	1.00	1.00
Turning Speed (k/h)	52	•	12	25	,	15	52	٠	15	52	•	15
Number of Detectors	- :	2		- .	2		- :	2		- .	2	
Detector Template	Lett	nu o		Lett	l hru		Lett	Ihru		Lett	nun 1904	
Leading Detector (m) Trailing Detector (m)	7.0	0.0		0.0	0.0		2.0	0.01		7.0	0.01	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	9.0		2.0	9.0		2.0	9.0		2.0	9.0	
Detector 1 Type	CI+EX	CI+Ex		CI+Ex	CI+EX		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.0			0.0 L			0.b			0.6 L	
Detector 2 Type		Ę Ċ Ċ			Σ÷Ε Ci-			Ę Ę			Ę Ċ	
Detector 2 Channel		ć			ć			c			c	
Detector 2 Extend (s)		0.0			0.0			0.0		į	0.0	
Turn Type	E	ξ.		pm+pt	¥ ч		E	Υ		E Le	<u> </u>	
Protected Filases	c	7		- u	>		α	>		-	r	
ר לווווונכט ו וומסכס	4			٥			٥			+		

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Lanes, Volumes, Timings 2: Mt. Pleasant Street/Plaza & Colborne Street West

Detour: PM Peak Hour

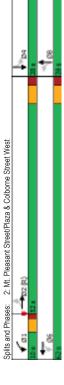
Detour: PM Peak Hour

	\	Ť	~	-	,	/		_		•	*
Lane Group	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SB
Detector Phase	2	2		1	9		8	8		4	7
Switch Phase											
Minimum Initial (s)	10.0	10.0		0.9	10.0		7.0	7.0		7.0	7.(
Minimum Split (s)	27.0	27.0		10.0	27.0		25.0	25.0		25.0	22.
Total Split (s)	52.0	52.0		10.0	62.0		28.0	28.0		28.0	28.0
Total Split (%)	27.8%	27.8%		11.1%	%6.89		31.1%	31.1%		31.1%	31.1%
Maximum Green (s)	46.0	46.0		0.9	26.0		22.0	22.0		22.0	22.(
Yellow Time (s)	4.0	4.0		3.0	4.0		4.0	4.0		4.0	4.0
All-Red Time (s)	2.0	2.0		1.0	2.0		2.0	2.0		2.0	5.0
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0
Total Lost Time (s)		0.9			0.9		0.9	0.9			9.0

3.0 None 7.0 12.0 3.0 Vone 7.0 7.0 0.10 0.10 0.67 15.9 0.0 15.9 B 3.0 None 7.0 7.0 12.0 0.10 0.10 0.24 36.4 0.0 3.0 None 7.0 14.0 0 68.9 0.77 0.35 2.4 2.4 A A Area Type:
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 16 (18%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum vic Ratio: 0.67
Intersection Signal Delay: 6.2
Intersection Capacity Utilization 64.3%
Control Type: Actuated Cycle Cy 3.0 None Lead 3.0 3.0 C-Max C-Ma Lag Lag LeadLag
Lead-Lag Optimize?
Vehicle Extension (s)
Recall Mode
Walk Time (s)
Flash Dort Walk (s)
Pedestrian Calls (#hr)
Act Effct Green (s)
Actuated g/C Ratio
Vin Ratio
Control Delay
Queue Delay
Total Delay
Los
Approach Delay
Approach LOS Intersection Summary

3.0 None 7.0 12.0 0.10 0.10 0.08 34.5 C 34.5 C

Intersection LOS: A ICU Level of Service C



190487 - Brantford Bridges EA PTSL

Queues 2: Mt. Ple

HCM Signalized Intersection Capacity Analysis 2: Mt. Pleasant Street/Plaza & Colborne Street West

Detour: PM Peak Hour

2: Mt. Pleasant Street/Plaza & Colborne Street West	et/Plaz	a & Cc	olborne	Street	t West	Detour: PM Peak Hour	2: Mt
	†	↓	•	-	→		
Lane Group	EBT	WBT	BE	NBT	SBT		Movem
Lane Group Flow (vph)	489	618	34	261	9		Lane C
v/c Ratio	0.19	0.35	0.24	29.0	0.08		Traffic
Control Delay	3.3	2.4	36.4	15.9	34.5		Future
Queue Delay	0.0	0.0	0.0	0.0	0.0		Ideal FI
Total Delay	3.3	2.4	36.4	15.9	34.5		Total Lo
Queue Length 50th (m)	9.0	6.7	6.1	0.0	6.0		Lane U
Queue Length 95th (m)	19.2	10.4	11.7	1.2	4.3		Frpb, p
Internal Link Dist (m)	253.2	385.8		865.7	86.5		Flpb, pe
Turn Bay Length (m)							Ŧ
Base Capacity (vph)	2554	1771	337	573	178		FIt Prot
Starvation Cap Reductn	0	0	0	0	0		Satd.
Spillback Cap Reductn	0	0	0	0	0		FIt Perr
Storage Cap Reductn	0	0	0	0	0		Satd. F
Reduced v/c Ratio	0.19	0.35	0.10	0.46	0.03		Peak-
Infersection Summary							Adj. Flo
							RTOR

Movement EBI EBI WBI WB		١	Ť	/-	-		/		-		ķ.	٠	,
Homework 4Th ATh AT	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
(yph) 1 442 7 201 367 1 31 3 237 1 4 4 1	Lane Configurations		t			(*	£			4	
(v/ph) 1 442 7 201 367 1 31 3 237 1 44 1	Traffic Volume (vph)	-	442	7	201	367	-	31	က	237	~	4	_
(c) (e) (e) (e) (e) (e) (e) (e) (e) (e) (e	Future Volume (vph)	-	442	7	201	367	-	31	က	237	-	4	_
(c) (e) (e) (e) (e) (e) (e) (e) (e) (e) (e	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
100 0.95 0.95 1.00 1	Total Lost time (s)		0.9			0.9		0.9	0.9			0.9	
s 100 100 0.98 100 100 0.98 100 100 0.98 100 100 0.99 100 0.99 100 100 0.99 100 0.99 100 100 0.99 100 100 0.99 100 0.99 100 100 0.99 100 0	Lane Util. Factor		0.95			0.95		1.00	1.00			1.00	
1,00	Frpb, ped/bikes		1.00			1.00		1.00	0.98			1.00	
1,00 1,00 0.85 0.96	Flpb, ped/bikes		1.00			0.99		0.99	1.00			1.00	
100 0.98 0.95 1.00 0.99 1.00 0.99 1.00 1.00 0.99 1.00 1	Frt		1.00			1.00		1.00	0.85			0.98	
th 3495 3437 1740 1547 1835 m) 3349 2349 1740 1547 1835 m) 3337 0.95 0.95 0.92 0.92 0.93 m) 1 480 8 218 399 1 3 258 1 4 m (vph) 0 488 0 0 0 0 0 0 1 4 1 4 0 1 0 <t< td=""><td>Fit Protected</td><td></td><td>1.00</td><td></td><td></td><td>0.98</td><td></td><td>0.95</td><td>1.00</td><td></td><td></td><td>0.99</td><td></td></t<>	Fit Protected		1.00			0.98		0.95	1.00			0.99	
March Marc	Satd. Flow (prot)		3495			3437		1740	1547			1835	
my) 3337 2312 1881 1547 728 128	Flt Permitted		0.95			99.0		0.75	1.00			0.39	
PHF 0.92	Satd. Flow (perm)		3337			2312		1381	1547			728	
(%) 1 480 8 218 399 1 34 3 258 1 4 ww (vph) 0 4 0 0 0 0 0 0 0 1 ww (vph) 0 488 0 0 618 0 4 22 0 0 5 f(%) 0% 3% 0% 3% 0% 3% 0% 0% f(%) 0% 3% 0% 3% 0% 3% 0% 0% f(%) 0% 3% 0% 3% 0% 3% 0% 0% f(%) 0% 0% 3% 0% 3% 0% 0% 0% f(%) 6% 6 8 9 91 91 4 4 4 f(%) 6% 6% 91 91 91 91 91 91 f(%) 6% 6%	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Adj. Flow (vph)	-	480	∞	218	338	-	34	3	258	-	4	_
0 488 0 618 0 34 29 0 0 5 16 32 22 22 22 16 6 33 3 3 9 0% 5% 0%	RTOR Reduction (vph)	0	-	0	0	0	0	0	232	0	0	_	0
16 22 22 16 5 3 3 0% 3% 0% 3% 0% 3% 0% 0% Perm NA Perm NA Perm NA Perm NA 2 68.9 2% 0% 3% 0% 0% 0% 68.9 68.9 68.9 9.1	Lane Group Flow (vph)	0	488	0	0	618	0	34	53	0	0	2	0
0% 3% 0% 3% 0% 0% Perm NA A	Confl. Peds. (#/hr)	16		22	22		16	2		က	က		5
Perm NA pm+pt NA Perm NA Perm 2 1 6 8 4 4 66.9 68.9 68.9 9.1 9.1 8 4 66.9 68.9 9.1 9	Heavy Vehicles (%)	%0	3%	%0	2%	3%	%0	3%	%0	3%	%0	%0	%0
2 1 6 8 8 4 68.9 68.9 9.1 9.1 6 68.9 68.9 9.1 9.1 6 68.9 68.9 9.1 9.1 0.10 68.9 68.9 9.1 9.1 0.10 67.7 0.77 0.10 0.10 60 60 60 3.0 3.0 3.0 3.0 3.0 3.0 6.0	Turn Type	Perm	Α		pm+pt	¥		Perm	ΑN		Perm	ΑN	
2 68.9 68.9 8.1 9.1 68.9 68.9 9.1 9.1 68.9 68.9 9.1 9.1 9.1 68.9 68.9 9.1 9.1 9.1 6.0 0.77 0.77 0.10 0.10 6.0	Protected Phases		5		_	9			œ			4	
68.9 68.9 9.1 9.1 68.9 68.9 68.9 1.0 10.0 68.9 68.9 9.1 9.1 9.1 68.9 68.9 9.1 9.1 9.1 68.9 68.9 9.1 9.1 9.1 68.9 68.9 9.1 9.1 9.1 68.9 68.9 9.1 9.1 9.1 6.0 9.1 9.1 6.0 9.1 9.1 6.0 9.1 9.1 9.1 9.1 9.1 9.1 9.1 9.1 9.1 9.1	Permitted Phases	2			9			∞			4		
68.9 68.9 9.1 9.1 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6	Actuated Green, G (s)		68.9			68.9		9.1	9.1			9.1	
0.77 0.77 0.10 0.10 6.0 6.0 6.0 6.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 0.15 c0.27 c0.02 0.19 0.35 0.24 0.19 2.9 3.4 37.3 37.1 0.0 0.51 0.89 1.32 0.2 0.1 0.8 1.32 0.2 0.1 1.8 34.3 49.4 A A A C D 3.1 1.8 34.3 49.4 A A A C D 3.1 1.8 47.7 A A A C D 3.1 1.8 1.8 1.7 A A A C D 3.1 1.8 1.8 1.7 A A C D 3.1 1.8 1.8 1.7 A A C D 3.1 1.8 1.8 1.7 A A C D 5.0 0.36 0.36 0.36 5.0 0.36 0.36 0.36 5.0 0.36 0.36 0.36 0.36 5.0 0.36 0.36 0.36 0.36 0.36 0.36 0.36 0.	Effective Green, g (s)		68.9			68.9		9.1	9.1			9.1	
6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	Actuated g/C Ratio		0.77			0.77		0.10	0.10			0.10	
2554 1769 3.0 3.0 2554 1769 139 156 0.15 0.027 0.02 0.19 0.35 0.24 0.19 0.2 0.51 0.89 1.32 0.2 0.51 0.89 1.32 1.0 0.51 0.89 1.32 A A A A A C D 3.1 A A A A C D 3.2 A A A A A A A A A A A A A A A A A A A	Clearance Time (s)		0.9			0.9		0.9	0.9			0.9	
2554 1769 139 156 0.15 0.027 0.02 0.19 0.35 0.24 0.19 0.29 3.4 37.3 37.1 1.00 0.51 0.89 1.32 0.2 0.1 0.9 0.6 3.1 1.8 34.3 49.4 A A C D A A A C D A A A C D A A A C D A A A C D C D C D C D C D C D C D C D C D C D	Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
0.15 c0.27 c0.02 0.02 0.19 0.35 0.24 0.19 0.35 0.24 0.19 0.35 0.24 0.19 0.51 0.89 1.32 0.2 0.11 0.8 0.13 0.2 0.11 0.8 0.13 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	Lane Grp Cap (vph)		2554			1769		139	156			73	
0.15 60.27 60.02 0.19 0.35 60.24 0.19 2.9 3.4 37.3 37.1 1.00 0.51 0.89 1.32 0.1 0.89 1.32 0.1 0.9 0.6 0.1 0.9 0.6 3.1 1.8 C D 3.1 1.8 C D A A A C D 3.1 1.8 A T.7 A A C D 3.1 1.8 C D A T.7 A D A A C D 3.1 1.8 C D A T.7 A D A A C D A T.7 A D B T.7	v/s Ratio Prot								0.02				
0.19 0.35 0.24 0.19 2.9 3.4 37.3 37.1 1.00 0.51 0.89 1.32 0.2 0.1 0.9 0.6 3.1 1.8 34.3 49.4 A A A A A D 12.0 HCM2000 Level of Service B activatio 0.36 Sum of lost time (s) 16.0 cation 64.3% ICU Level of Service C 15.0 1.0 Level of Service C 15.0 1.0 Level of Service C	v/s Ratio Perm		0.15			c0.27		c0.02				0.01	
2.9 3.4 37.3 37.1 1.00 0.51 0.89 1.32 0.2 0.1 0.9 0.6 3.1 1.8 34.3 49.4 A A A C D A A A A D A A A A B D-acty ratio 0.36 2ation 64.3% ICU Level of Service C 15.0 Sum of lost time (s) 16.0	v/c Ratio		0.19			0.35		0.24	0.19			0.07	
1.00 0.51 0.89 1.32 0.2 0.1 0.89 1.32 0.3 1 1.8 34.3 49.4 A A A C D 3.1 A A A C D A A A D A A B C D A A B C D Cation 64.3% ICU Level of Service C 15.0 Sum of lost time (s) 16.0 Cation 64.3% ICU Level of Service C	Uniform Delay, d1		2.9			3.4		37.3	37.1			36.6	
0.2 0.1 0.9 0.6 3.1 1.8 34.3 49.4 A A A A C D 3.1 1.8 47.7 A A A A D C D A 47.7 A HCM 2000 Level of Service B socity ratio 0.36 Sum of lost time (s) 16.0 zation 64.3% ICU Level of Service C 15.0 16.0 16.0	Progression Factor		1.00			0.51		0.89	1.32			1.00	
3.1 1.8 34.3 49.4 A A C D 3.1 1.8 47.7 A A D 12.0 HCM 2000 Level of Service B cation 64.3% ICU Level of Service C 15.0 Sum of lost time (s) 16.0 15.0 16.0	Incremental Delay, d2		0.2			0.1		0.9	9.0			0.4	
A A C D 3.1 1.8 4.77 A A A D A A D A A D A A B D A A B D A C D A A B D A B D A C D A A B D A C D A A B D A C D A A B D A C D A A B D A C D A C D A C D A C D A C D A C D Cation 64.3% ICU Level of Service C 15.0 16.0 16.0 16.0 16.0 16.0 16.0 16.0 16	Delay (s)		3.1			 		34.3	49.4			37.0	
3.1 1.8 47.7 A A A D D 12.0 HCM 2000 Level of Service B 2.0 Sum of lost time (s) 16.0 2.2 cation 64.3% ICU Level of Service C 15.1 1.8 47.7 15.2 1.0 HCM 2000 Level of Service C 15.3 1.0 HCM 2000 Level of Service C	Level of Service		∢ ;			∢ !		ပ	0 !			٥	
A A A A D 12.0 HCM 2000 Level of Service acity ratio 0.36 Sum of lost time (s) 22ion 64.3% ICU Level of Service 15	Approach Delay (s)		 -						47.7			37.0	
12.0 HCM 2000 Level of Service 0.36 Sum of lost time (s) 2ation 64.3% ICU Level of Service 15	Approach LOS		∢			∢			۵			Ω	
12.0 HCM 2000 Level of Service 0.36 Sum of lost time (s) 2ation 64.3% ICU Level of Service 15	Intersection Summary												
oacity ratio 0.36 Sum of lost time (s) 20.0 Sum of lost time (s) zation 64.3% ICU Level of Service 15 15	HCM 2000 Control Delay			12.0	Ĭ	SM 2000	Level of S	Service		В			
90.0 Sum of lost time (s) zation 64.3% ICU Level of Service 15	HCM 2000 Volume to Capar	city ratio		0.36									
Utilization 64.3% ICU Level of Service 15	Actuated Cycle Length (s)			0.06	S	ım of lost	time (s)			16.0			
Analysis Period (min) 15	Intersection Capacity Utiliza	tion		64.3%	೦	U Level o	f Service			ပ			
	Analysis Period (min)			15									

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190487 - Brantford Bridges EA PTSL

Lanes, Volumes, Timings 3: Gilkison Street & Colborne Street West

ane Group ane Configurations Traffic Volume (vph)	EBL	EBT	EBR	WBL	WBT	WBR	Idia	NBT	NBR	SBL	CBT	0
e Configurations ffic Volume (vph)							NBL	IND			ומס	VBK
fic Volume (vph)		t t			4			4			4	
in Volume (voh)	14	610	92	110	292	19	25	က	108	81	. 4	42
II a voluina (vpi.i)	14	610	92	110	565	19	22	က	108	81	4	42
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
ane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1:00	1.00	1.00
ed Bike Factor		0.99			1.00			0.99			0.99	
		0.980			966.0			0.913			0.955	
Fit Protected		0.999			0.992			0.983			696.0	
Satd. Flow (prot)	0	3454	0	0	3523	0	0	1505	0	0	1564	0
Flt Permitted		0.934			0.657			0.846			0.631	
Satd. Flow (perm)	0	3229	0	0	2330	0	0	1294	0	0	1015	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		56			9			94			56	
ink Speed (k/h)		20			20			20			20	
ink Distance (m)		409.8			139.0			106.4			116.6	
ravel Time (s)		29.5			10.0			7.7			8.4	
Confl. Peds. (#/hr)	13		15	15		13	2		∞	∞		2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	%0	2%	%0	7%	1%	%0	%0	%0	1%	1%	%0	%0
Parking (#/hr)								0			0	
Adj. Flow (vph)	15	663	103	120	614	21	62	က	117	88	4	46
Shared Lane Traffic (%)												
ane Group Flow (vph)	0	781	0	0	755	0	0	182	0	0	138	0
Enter Blocked Intersection	%	%	8	8	8	8	8	2	8	8	8	S
ane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0:0			0.0	
ink Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
wo way Left Turn Lane												
leadway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.14	1.00	1.00	1.14	1.00
urning Speed (k/h)	22		15	52		15	22		15	22		15
Jumber of Detectors	-	2		_	2		—	2		-	2	
Detector Template	Left	Thru		Left	Thru		Left	Thr		Left	Thr	
eading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
railing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	9.0		2.0	9.0		2.0	9.0		2.0	9.0	
Detector 1 Type	CI+EX	CI+Ex		CI+Ex	CI+EX		CI+EX	CI+Ex		CI+EX	CI+EX	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0:0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		9.0			9.0			9.0			9.0	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
um Type	Perm	¥.		pm+pt	Ϋ́		Perm	A		Perm	¥	
Protected Phases		2		_	9			00			4	

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Lanes, Volumes, Timings 3: Gilkison Street & Colborne Street West

Detour: PM Peak Hour

Detour: PM Peak Hour

Lame Group EBL EBT EBR WBL WBT NBR NBL NBT NBR SBL SBT SBL SBT SBL SBT SBL SBT SBL SBT SBL AB		1	†	~	>	↓	4	•	←	•	۶	→	•
Phases 2 6 6 8 8 4 4 hasse 2 2 1 6 6 8 8 4 4 hasse 2 2 1 6 6 8 8 8 4 4 hasse 2 2 1 1 6 8 8 8 4 4 hasse 2 2 1 1 6 8 8 8 4 4 hasse 2 2 1 1 6 8 8 8 4 4 hasse 2 2 1 1 6 8 8 8 4 4 hasse 3 2 2 1 1 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
hase 2 2 1 6 6 8 8 4 4 hase 2 2 2 1 6 6 8 8 8 4 4 hase 2 2 2 1 6 6 8 8 8 4 4 hitlat (s) 100 100 6 0 100 70 70 70 70 70 70 70 70 70 70 70 70 7	Permitted Phases	2			9			∞			4		
State Stat	Detector Phase	2	2		~	9		œ	œ		4	4	
100 100	Switch Phase												
Spilit (s) 310 310 310 310 310 330 330 330 (s) 430 430 430 430 270 270 270 (s) 544% 544% 140% 140 570 210 210 210 (s) 430 430 430 40 40 210 210 210 (s) 430 430 430 40 40 40 40 40 (s) 40 40 40 30 40 40 40 40 40 (s) 20 20 10 20 20 20 20 20 (s) 20 20 10 20 20 20 20 20 (s) 20 20 10 20 20 20 20 (s) 20 20 10 20 20 20 (s) 20 20 10 20 20 20 (s) 20 20 10 20 20 (s) 20 20 10 20 20 (s) 20 20 10 20 (s) 20 20 20 20 20 20 20 2	Minimum Initial (s)	10.0	10.0		0.9	10.0		7.0	7.0		7.0	7.0	
(%) 490 490 140 630 270 270 270 (%) 670 670 270 670 270 670 270 670 270 670 270 670 270 670 270 670 270 670 270 670 270 670 270 670 270 670 270 670 270 670 270 670 270 670 270 670 670 670 670 670 670 670 670 670 6	Minimum Split (s)	31.0	31.0		10.0	31.0		33.0	33.0		33.0	33.0	
Green (s) 544% 544% 7156% 7107% 3107	Total Split (s)	49.0	49.0		14.0	63.0		27.0	27.0			27.0	
Green (s) 430 430 100 570 210 210 210 100 e1(s) 430 430 100 570 210 210 210 100 e1(s) 40 40 40 40 40 40 40 40 40 40 40 40 40	Total Split (%)	24.4%	24.4%		15.6%	%0.02		30.0%	30.0%			30.0%	
Time (s)	Maximum Green (s)	43.0	43.0		10.0	57.0		21.0	21.0			21.0	
Adjust (s) 2.0 2.0 1.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 4.0 2.0 2.0 2.0 4.0 2.0 2.0 2.0 2.0 4.0 2.0 2.0 2.0 2.0 4.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2	Yellow Time (s)	4.0	4.0		3.0	4.0		4.0	4.0			4.0	
Adjust (s) 0.0 0.0 0.0 Time (s) 6.0 6.0 6.0 Time (s) 1.0 1.0 0.0 Definize? 3.0 3.0 3.0 3.0 3.0 3.0 Stension (s) 1.0 1.0 1.0 1.0 1.0 Stension (s) 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.0 Stension (s) 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.0 Stension (s) 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5	All-Red Time (s)	2.0	2.0		1:0	2.0		2.0	2.0		2.0	2.0	
Time (s) 6.0 6.0 6.0	Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Lag	Total Lost Time (s)		0.9			0.9			0.9			0.9	
30 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3	Lead/Lag	Lag	Lag		Lead								
C-Max C-Max None None None None 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.	Lead-Lag Optimize?												
CMax CMax Nav CMax None None None 100 100 100 100 100 100 100 100 100 10	Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
100 100 100 100 100 100 100 100 150 150	Recall Mode	C-Max	C-Max			C-Max		None	None		None	None	
150 150 150 170 170 170 0 0 0 0 0 0 0 0 0 0 0 0 0	Walk Time (s)	10.0	10.0			10.0		10.0	10.0		10.0	10.0	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Flash Dont Walk (s)	15.0	15.0			15.0		17.0	17.0		17.0	17.0	
43.0 63.5 14.5 0.48 0.71 0.16 0.50 0.41 0.63 17.6 6.5 26.8 B A C 17.6 6.5 26.8 C Tr.6 6.5 26.8 B A C C Other Other ordinated intersection LOS; B ation 71.3% ICU Level of Service C	Pedestrian Calls (#/hr)	0	0			0		0	0		0	0	
0.48 0.71 0.16 0.50 0.41 0.63 1.76 6.5 26.8 0.0 0.0 0.0 1.76 6.5 26.8 8 A C C TT 6 6.5 26.8 A C C Other ed to phase 2:EBTL and 6:WBTL, Start of Grean ordinated intersection LOS: B stion 71.3% ICU Level of Service C	Act Effct Green (s)		43.0			63.5			14.5			14.5	
0.50 0.41 0.63 17.6 0.53 28.8 17.0 0.0 0.0 17.6 6.5 26.8 28.8 A C T A C Other Other ed to phase 2:EBTL and 6:WBTL, Start of Green ordinated Intersection LOS: B ation 71.3% ICU Level of Service C	Actuated g/C Ratio		0.48			0.71			0.16			0.16	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	v/c Ratio		0.50			0.41			0.63			0.75	
0.0 0.0 0.0 17.6 6.5 26.8 6 17.6 6.5 26.8 6 17.6 6.5 26.8 A C Other ordinated Intersection LOS: B Inc. Level of Service C	Control Delay		17.6			6.5			26.8			52.1	
17.6 6.5 26.8	Queue Delay		0.0			0.0			0.0			0.0	
B	Total Delay		17.6			6.5			26.8			52.1	
17.6 6.5 26.8 52 B A C Other ed to phase 2:EBTL and 6:WBTL, Start of Green ordinated i6.5 Intersection LOS: B ation 71.3% ICU Level of Service C	ros		മ			⋖			ပ			0	
Other Other ordinated Intersection LOS: B Intersection LOS: B ICU Level of Service C	Approach Delay		17.6			6.5			26.8			52.1	
Other ed to phase 2:EBTL and 6:WBTL, Star ordinated 16.5 18	Approach LOS		ш			∢			O			۵	
Other ed to phase 2:EBTL and 6:WBTL, Stan ordinated 16.5 11	Intersection Summary												
ed to phase 2:EBTL and 6:WBTL, Star ordinated 16.5		Other											
ed to phase 2:EBTL and 6:WBTL, Star ordinated 16.5	Cycle Length: 90												
Aeferenced to phase 2:EBTL and 6:WBTL, Stanuated-Coordinated o: 0.78 I Delay: 16.5 I Villization 71.3%	Actuated Cycle Length: 90												
uated-Coordinated o: 0.75 I Delay: 16.5 I Willization 71.3%	Offset: 76 (84%), Referenced	d to phase	2:EBTL a	nd 6:WB	TL, Start o	of Green							
%	Natural Cycle: 75												
171.3%	Control Type: Actuated-Coor	rdinated											
171.3%	Maximum v/c Ratio: 0.75												
1.3 /0	Intersection Signal Delay: 16	5.5 tion 71 3%			<u>=</u> =	ersection	LOS: B	ر					
	Intersection Capacity Officat	0/ C.1 / 11011			2	o revelo	201 100	د					

Splits and Phases: 3: Gilkison Street & Colborne Street West



190487 - Brantford Bridges EA PTSL

Queues 3: Gilkison Street & Colborne Street West

HCM Signalized Intersection Capacity Analysis 3: Gilkison Street & Colborne Street West

Detour: PM Peak Hour

Detour: PM Peak Hour

	†	ţ	←	→	
Lane Group	EBT	WBT	NBT	SBT	
Lane Group Flow (vph)	781	755	182	138	
v/c Ratio	0.50	0.41	0.63	0.75	
Control Delay	17.6	6.5	26.8	52.1	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	17.6	6.5	26.8	52.1	
Queue Length 50th (m)	42.9	22.1	14.5	19.6	
Queue Length 95th (m)	73.7	44.7	33.8	37.4	
Internal Link Dist (m)	385.8	115.0	82.4	97.6	
Turn Bay Length (m)					
Base Capacity (vph)	1556	1839	374	526	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.50	0.41	0.49	0.54	
O more of the control					
Intersection Summary					

FEL FET FER WBL WBT WBR NBL NBT NBR SBL		4	†	1	-	Ļ	1	•	—	•	۶	→	*
140 95 110 646 19 57 3 108 81 4 4 610 95 110 566 19 57 3 108 81 4 4 610 95 110 566 19 57 3 108 81 4 4 610 95 110 566 190 1900	Movement	EBL	EBT	EBR	WBL	WBT	WBR	BE	NBT	NBR	SBL	SBT	SBR
100 95 110 565 19 57 3 108 81 4 1	Lane Configurations		đħ			47			4			4	
100 95 110 565 19 57 3 108 81 4 100 1900 1900 1900 1900 1900 1900 1900 100 1900 1900 1900 1900 1900 1900 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 1	Traffic Volume (vph)	14	610	92	110	565	19	22	က	108	81	4	42
1900 1900	Future Volume (vph)	14	610	92	110	265	19	22	က	108	81	4	42
0.09 0.09 0.09 0.09 0.09 0.09 0.09 0.09	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
0.95 0.95 0.095 1.00	l otal Lost time (s)		0.9			0.9			0.0			0.9	
0.99 1.00 0.99 0.99 0.99 0.99 0.99 0.99	Lane Util. Factor		0.95			0.95			0.1			1.00	
1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00	Frpb, ped/bikes		0.99			1.00			0.99			0.99	
0.98	Flpb, ped/bikes		1.00			1.00			1.00			1.00	
3454 0.999 0.98 0.98 0.997 0.98 0.997 0.998 0.993 0.998 0.998 0.998 0.998 0.998 0.998 0.998 0.998 0.998 0.998 0.998 0.998 0.992 0.99	Frt		0.98			1.00			0.91			0.95	
3454 3520 1504 1568 0.93 0.66 0.85 0.063 3.231 0.66 0.85 0.02 0.09 2. 0,92 0.92 0.92 0.92 0.92 0.92 2. 0,92 0.92 0.92 0.92 0.92 0.92 0.92 3. 0,92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 4. 0 0 2 0 0 7.9 0 0 2.2 5. 663 143 6 143 6 8 8 4 4 6. 767 0 767 0 0 7.9 0 116 0<	Flt Protected		1.00			0.99			0.98			0.97	
0.93 0.666 0.85 0.85 0.65 0.65 0.65 0.65 0.65 0.65 0.65 0.6	Satd. Flow (prot)		3454			3520			1504			1558	
2331 1205 1015 1015 1016 1016 1016 1016 1016 10	Flt Permitted		0.93			99.0			0.85			0.63	
2 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.9	Satd. Flow (perm)		3231			2333			1295			1015	
663 103 120 614 21 62 3 117 88 4 767 0 0 2 0 79 0 0 22 8 15 15 13 5 0 116 0 116 8 2% 1% 0% 0% 1% 1% 0% 1 5 14 0 0 116 0 116 1 6 63 14 0 0 14 0 0 430 635 14 0 14 0 14 0 14 0 14 0 14 0 14 0 14 0 14 0 14 0 0 14 0	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
14 0 0 5 2 0 0 73 0 0 79 0 0 105 2 767 0 0 753 10 0 103 0 0 116 2 2% 0% 2% 1% 0% 0% 1% 1% 1% 0% 1 NA pm+pt NA Perm NA Perm NA 145 2 6 63.5 145 0.016 3 0 0.71 0.16 0.16 3 0 0.21 0.05 0.07 1543 0.007 0.008 0.011 0 50 0.007 0.008 0.011 0 50 0.007 0.008 0.011 0 50 0.007 0.008 0.011 1 1 0.05 0.007 0.05 0.008 0.011 0 50 0.007 0.008 0.001 1 1 0.05 0.007 0.008 0.001 1 1 1 0.05 0.008 0.001 1 1 1 0.05 0.008 0.001 1 1 1 0.05 0.008 0.001 1 1 1 0.05 0.008 0.001 1 1 1 0.05 0.008 0.001 1 1 1 0.05 0.009 0.008 0.001 1 1 1 0.05 0.008 0.000 1 1 1 1 0.05 0.008 0.000 1 1 1 1 0.05 0.008 0.000 1 1 1 1 0.05 0.008 0.000 1 1 1 1 0.05 0.008 0.000 1 1 1 1 0.05 0.000 1 1 1 1 0.05 0.000 1 1 1 1 0.05 0.000 1 1 1 1 0.05 0.000 1 1 1 1 0.05 0.000 1 1 1 1 0.05 0.000 1 1 1 1 0.05 0.000 1 1 1 1 0.05 0.000 1 1 1 1 0.000 1 1 1 1 0.000 1 1 1 1 0.000 1 1 1 1 0.000 1 1 1 1 0.000 1 1 1 1 0.000 1 1 1 1 0.000 1 1 1 1 0.000 1 1 1 1 0.000 1 1 1 1 0.000 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Adj. Flow (vph)	15	663	103	120	614	21	62	က	117	88	4	46
767 0 753 0 103 0 116 8 76 0.5 13 5 0 0 116 1 16 13 5 0 176 176 0 1 1 1 0 0 176 175 0 0 0 116 0<	RTOR Reduction (vph)	0	14	0	0	2	0	0	79	0	0	22	S
3 15 15 15 15 16 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 9 </td <td>Lane Group Flow (vph)</td> <td>0</td> <td>292</td> <td>0</td> <td>0</td> <td>753</td> <td>0</td> <td>0</td> <td>103</td> <td>0</td> <td>0</td> <td>116</td> <td>0</td>	Lane Group Flow (vph)	0	292	0	0	753	0	0	103	0	0	116	0
2.% 0.% 2.% 1.% 0.% 0.% 1.% 1.% 0.% 1 NA pm+pt NA Perm NA Perm NA 2 6 83.5 8 4 4 4 4 43.0 6 83.5 14.5 14.5 14.5 14.5 14.5 43.0 63.5 14.5	Confl. Peds. (#/hr)	13	ò	15	15	7	13	2 2	ò	ω ξ	∞ ξ	č	5 52
NA pm+pt NA Perm NA	Heavy venicles (%) Parking (#/hr)	%n	0/,7	%	%7	<u>~</u>	%n	%0	% C	%_	%	% C	% O
2 1 6 8 8 4 43.0 63.5 14.5 14.5 43.0 63.5 14.5 14.5 0.48 0.71 0.16 0.16 0.00 0.71 0.16 0.0 0.50 0.40 0.50 0.50 17.3 HCM 2000 Level of Service C C C C C C C C C C C C C C C C C C C	Turn Type	Perm	Δ Z		tu+ma	Ą		Perm	Ą		Perm	AN	
2 6 6 8 8 4 4 4 43.0 65.5 8 14.5 4 43.0 63.5 14.5 14.5 0.48 0.771 0.16 0.16 0.04 0.771 0.16 0.16 0.024 0.027 0.08 0.00 0.050 0.40 0.05 0.40 17.3 HCM 2000 Level of Service B 0.52 Sum of lost time (s) 16.0 0.53 Sum of lost time (s) 16.0 0.54 C. U Level of Service C	Protected Phases		2		<u>-</u>	9			∞			4	
43.0 63.5 14.5 43.0 63.5 14.5 0.48 0.71 0.16 6.0 6.0 6.0 6.0 6.0 6.0 5.3 3.0 6.0 1543 1863 208 c0.07 0.08 0 c0.24 0.21 0.08 0 0.50 0.40 0.50 0 1.0 1.0 1.0 1.9 1.1 5.5 34.4 3 1.1 0.5 1.9 1.9 1.7 6.3 36.3 A 1.7 A D A 1.7 A A D 0.52 Sum of lost time (s) 16.0 7.1.3% ICU Level of Service C 15% C C	Permitted Phases	2			9			∞			4		
43.0 63.5 14.5 6.0 0.71 0.16 6.0 6.0 6.0 3.0 3.0 3.0 1543 1863 208 6.07 0.08 0.0 0.50 0.40 0.50 0.50 0.50 0.40 0.50 0.50 1.04 1.06 1.00 0.50 1.1 0.5 1.9 0.5 17.9 6.3 36.3 2.0 17.3 HCM 2000 Level of Service B D 15. 1.00 1.00 1.0 17.3 A D B 17.3 1.01 Level of Service B 0.52 9.0 Sum of lost time (s) 16.0 15. 15. 1.0 0.5 17.3% ICU Level of Service C C	Actuated Green, G (s)		43.0			63.5			14.5			14.5	
0.48 0.71 0.16 0.16 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Effective Green, g (s)		43.0			63.5			14.5			14.5	
6.0 6.0 6.0 6.0 1543 3.0 3.0 3.0 1543 0.007 2.08 2024 0.027 0.08 cc 0.50 0.40 0.50 0.0 15.1 5.5 34.4 5.1 1.1 0.5 1.00 1.9 1.7 9 6.3 36.3 86.3 B A D D 17.3 HCM 2000 Level of Service B 0.52 Sum of lost time (s) 16.0 15.1 3% ICU Level of Service C 15.1 3% 1CU Level of Service C	Actuated g/C Ratio		0.48			0.71			0.16			0.16	
1543 1863 208 208 204 2024 2021 208 208 2024 2021	Clearance Time (s)		0.9			0.9			0.9			0.9	
1543 1863 208 co.24 co.07 co.24 0.21 0.08 0.50 0.40 0.50 1.61 5.5 34.4 1.04 1.06 1.00 1.14 0.5 34.4 1.19 0.5 34.4 1.19 0.5 34.4 1.19 0.5 34.4 1.19 0.5 34.4 1.19 0.5 34.4 1.10	Vehicle Extension (s)		3.0			3.0			3.0			3.0	
0.024 0.007 0.008 0.00 0.50 0.40 0.50 0.50 16.1 5.5 34.4 1.04 1.06 1.00 1.1 0.5 34.4 1.1 0.5 1.0 1.2 6.3 36.3 B A D 17.3 HCM 2000 Level of Service B 0.52 Sum of lost time (s) 16.0 71.3% I/U Level of Service C	Lane Grp Cap (vph)		1543			1863			208			163	
c024 0.21 0.08 cc 656 0.40 0.55 0.65 0.65 0.65 0.65 0.65 0.65 0.6	v/s Ratio Prot					c0.02							
050 040 0.50 16.1 5.5 34.4 104 1.06 1.00 1.1 0.5 1.9 17.9 6.3 36.3 B A D B 17.3 HCM 2000 Level of Service B 0.52 90.0 Sum of lost time (s) 16.0 77.13% ICU Level of Service C	v/s Ratio Perm		c0.24			0.21			0.08			00.11	
16.1 5.5 34.4 1.04 1.06 1.00 1.1 0.5 1.9 17.3 HCM 2000 Level of Service B 0.52 90.0 Sum of lost time (s) 16.0 71.3% ICU Level of Service C	v/c Ratio		0.50			0.40			0.50			0.71	
1.04 1.06 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Uniform Delay, d1		16.1			5.5			34.4			32.8	
1.1 0.5 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3	Progression Factor		P			90.1			0.1			1.00	
17.9 6.3 36.3 17.9 6.3 86.3 86.3 86.3 86.3 86.3 86.3 86.3	Incremental Delay, dz		- ;			0.5			S			13.7	
17.3 HCM 2000 Level of Service B 16.0 71.3% ICU Level of Service C 15.3 16.0 16.0 16.0 16.0 16.0 16.0 16.0 16.0	Delay (s)		17.9			6.3			36.3			49.5	
17.3 HCM 2000 Level of Service B 0.52 9.00 Sum of lost time (s) 16.0 71.3% I/OU Level of Service C 15.00 16.	Level of Service		14 B			V C			0 26 3			J 40 k	
17.3 HCM 2000 Level of Service B 0.52 Sum of lost time (s) 16.0 71.3% ICU Level of Service C 15.3% ICU	Approach LOS					S. Q			S. C			5.6	
17.3 HCM 2000 Level of Service 0.52 9.0 Sum of lost time (s) 71.3% ICU Level of Service 15	Approach E00		נ			ξ.			د			د	
17.3 HCM 2000 Level of Service 0.52 0.0 Sum of lost time (s) 71.3% ICU Level of Service 15	Intersection Summary												
0.52 90.0 Sum of lost time (s) 71.3% ICU Level of Service 15	HCM 2000 Control Delay			17.3	Ξ	CM 2000	Level of S	Service		Ф			
90.0 Sum of lost time (s) zation 71.3% ICU Level of Service 15	HCM 2000 Volume to Capac	city ratio		0.52									
Utilization 71.3% ICU Level of Service 15	Actuated Cycle Length (s)			90.0	ß	ım of lost	time (s)			16.0			
	Intersection Capacity Utilizal	tion		71.3%	೦	U Level o	of Service			ပ			
	Analysis Period (min)			15									

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Lanes, Volumes, Timings 4: Colborne Street West & Ballantyne Drive

•	SBR		0	0	1900	1.00			0		0				0.92	%0	0		0	No No	Right					1.00	15					Service A	
۶	SBL		0	0	1900	1.00			0		0	20	218.0	15.7	0.92	%0	0		0			0.0	0.0	4.8		1.00	22	Stop				ICU Level of Service A	
4	WBR		106	106	1900	1.00			0		0				0.92	%0	115		0	2	Right					1.00	15					⊇	
Ļ	WBT	*	694	694	1900	1.00	0.982		1866		1866	20	290.1	20.9	0.92	%0	754		869	S	Left	7.2	0.0	4.8		1.00		Free					
†	EBT	44	800	800	1900	0.95			3610		3610	20	139.0	10.0	0.92	%0	870		870	2	Left	7.2	0.0	4.8		1.00		Free					
1	EBL		0	0	1900	1.00			0		0				0.92	%0	0		0	2	Left					1.00	22			Other		on 46.3%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Lane Util. Factor	FT	Flt Protected	Satd. Flow (prot)	Flt Permitted	Satd. Flow (perm)	Link Speed (k/h)	Link Distance (m)	Travel Time (s)	Peak Hour Factor	Heavy Vehicles (%)	Adj. Flow (vph)	Shared Lane Traffic (%)	Lane Group Flow (vph)	Enter Blocked Intersection	Lane Alignment	Median Width(m)	Link Offset(m)	Crosswalk Width(m)	Two way Left Turn Lane	Headway Factor	Turning Speed (k/h)	Sign Control	Intersection Summary	Area Type: O	e: Unsignalized	Intersection Capacity Utilization 46.3%	Analysis Period (min) 15

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HCM Unsignalized Intersection Capacity Analysis 4: Colborne Street West & Ballantyne Drive

Detour: PM Peak Hour

Detour: PM Peak Hour

Movement EBI WBI SBR Lane Configurations ↑↑↑ ↑ Lane Configurations ↑↑↑ ↑ Tadin's Volume (velin) 0 694 106 0 Sign Control 0.92 0.92 0.92 0.92 Sign Control 0.92 0.92 0.92 0.92 Clear Extension 0.92 0.92 0.92 0.92 Leavel (mix) 0.92 0.92 0.92 0.92 Leavel (mix) 0.93 0.92 0.92 0.92 A percent Booksage 8 8 1.24 8.12 Median kyee None None None None Median kyee None None 1.246 8.12 Median kyee 1 1.39 2.90 0.87 Median kyee 1 1.246 8.12 1.246 8.12 Median kyee 1 1.39 2.90 0.87 1.246 8.12 Median kyee		^	Ť	Ļ	1	۶	*	
Configurations	Movement	EBE	EBT	WBT	WBR	SBL	SBR	
Fronting (vehith) 0 800 694 106 0 0 0 0 694 106 0 0 0 694 106 0 0 0 694 106 0 0 0 694 106 0 0 0 694 106 0 0 0 694 106 0 0 0 694 106 0 0 0 0 694 106 0 0 0 0 694 106 0 0 0 0 0 694 106 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Lane Configurations		‡	*				
s Volume (Vehrh) 0 800 694 106 0 0 0 0 ontrol Free Free Shop	Traffic Volume (veh/h)	0	800	694	106	0	0	
Solutol Free Free Stop Hour Feator 0.92 0.92 0.92 0.92 Aflow rate (vph) 0 870 754 115 0 0 strains Aflow rate (vph) 0 870 754 115 0 0 strains Aflow rate (vph) 0 870 754 115 0 0 the Bockage Int Blockage Int Block	Future Volume (Veh/h)	0	800	694	106	0	0	
thour Fector 0,92 0,92 0,92 0,92 0,92 0,92 0,92 0,92	Sign Control		Free	Free		Stop		
Hour Factor 0.92 0.92 0.92 0.92 0.92 0.92 I floar stet (vph) 0 870 754 115 0 0 Width (m) 19 0 870 754 115 0 0 Width (m) 19 0 870 0.92 In Blockage Int Blockag	Grade		%0	%0		%0		
Handrich (right) 0 870 754 115 0 0 1 14 14 14 14 14 14 14 14 14 14 14 14 1	Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
width (m) Width (m) width (m) Width (m) width (m) None None nat Blockage None None am signal (m) 139 290 0.87 am signal (m) 139 290 0.87 atage 1 conf vol 869 1246 812 stage 1 conf vol 869 982 812 stage 1 conf vol 4.1 6.8 6.9 stage 6 (s) 2.2 3.5 3.3 aue free % 100 100 100 pacify (veh/n) 784 2.77 3.26 pacify (veh/n) 784 2.17 3.26 stage (s) 0 0 100 100 pacify (veh/n) 784 2.17 3.26 stage (s) 0 0 0 0 ion, Lane # EB 1 EB 2 WB 1 1 is Exight 0 0 0 0 ion, Lane # 0 <	Hourly flow rate (vph)	0	870	754	115	0	0	
Width (m) Width (m) 10 Speed (ms) None Furn flackage None None stages web) 139 139 290 139 290 139 290 139 290 139 290 139 290 140 1246 151 35 152 3.3 153 2.2 1549 5.2 1549 5.3 1549 5.3 1549 5.3 1549 5.3 1549 5.3 1549 5.3 1549 5.3 1549 5.3 1549 5.3 1549 5.3 1549 5.3 1549 5.3 1549 5.3 1549 5.3 1549 5.3 1549 5.3 154 5.1 154 <td>Pedestrians</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Pedestrians							
og Speed (m/s) nt Blockage nt Blockage nt Blockage nt Alfrage (weh) nstorage with attorn volume strage 2 cord vol nthocked vol strage 2 cord vol nthocked vol strage (s) 2, 2, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3,	Lane Width (m)							
turn flace (veh) In the veh	Walking Speed (m/s)							
Interface (veh) In type and signal (m) and	Percent Blockage							
In type	Right turn flare (veh)							
ana signate veh) ana signate veh) ana signate (m) ana sin space (m) ana space (m) an	Median type		None	None				
sem signal (m) 139 290 0.87 station Carbon color colo	Median storage veh)							
atron unblocked 869 1246 812 millicity olune 869 1246 812 millicity olune 869 1246 812 millicity olune 869 882 812 millicity olune 869 882 812 millicity olune 869 882 812 millicity olune 978 883 889 millicity olune 978 989 millicity olune 978 millicity olune 978 millicity olune 978 millicity olune 978 millic	Upstream signal (m)		139	290				
rigiliciting volume 869 1246 812 stage I conf vol see 869 869 812 stage Conf vol 869 869 812 stage Conf vol 869 869 812 stage (s) 4.1 6.8 6.9 stage (s) 2.2 3.5 3.3 sue free % 100 100 100 pacity (vehr) 784 869 100 ion, Lane # EB 1 EB 2 WB 1 217 326 ion, Lane # 435 869 869 869 ie Loft 0 0 0 115 ie Loft 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	pX, platoon unblocked					0.87		
itage 1 conf vol itage 2 conf vol itage 2 conf vol itage 2 conf vol itage 3 812 itage (s) 4.1 6.8 6.9 itage (s) 4.1 6.8 6.9 itage (s) 4.1 6.8 6.9 itage (s) 2.2 3.3 itage (s) 3.5 3.3 itage (s) 3.6 3.0 itage (s) 4.3 4.3 869 itage (s) 0 0 0 0 0 itage (s) 115 itage (s) 115 itage (s) 0.0 0.0 0.0 itage 2 conf of 115 itage (s) 0.0 0.0 0.0 itage 2 conf of 115 itage 2 conf of 115 itage (s) 0.0 0.0 0.0 itage 2 conf of 115 itage (s) 0.0 0.0 0.0 itage 2 conf of 115 itage 3 conf of 115 itage 2 conf of 115 itage 2 conf of 115 itage 3 conf of 115 itage 3 conf of 115 itage 3 conf of 115 itage 2 conf of 115 itage 3 conf of 115 itage 4 conf of 115 itage 2 conf of 115 itage 2 conf of 115 itage 3 conf of 115 itage 3 conf of 115 itage 3 conf of 115 itage 4 conf of 115 itage 4 conf of 115 itage 2 conf of 115 itage 2 conf of 115 itage 3 conf of 115 itage 4 conf of 115 itage 4 conf of 115 itage 2 conf of 115 itage 2 conf of 115 itage 3 conf of 115 itage 4 conf of 115 itage 2 conf of 115 itage 3 conf of 115 itage 4 conf of 115 itage 2 conf of 115 itage 3 conf of 115 itage 4 conf of 115 itage 2 conf of 115 ita	vC, conflicting volume	698				1246	812	
tiage 2 cont vol 869 982 812 niblocked vol 869 982 812 niblocked vol 4.1 6.8 6.9 stage (s) 4.1 6.8 6.9 stage (s) 2.2 3.5 3.3 acut free % 100 100 100 acut free % 100 100 100 ion Lane # EB 1 EB 2 WB 1 2.7 3.26 ion Lane # EB 1 EB 2 WB 1 3.26 9.00 115 8.69 9.00 9.00 1.00 9.	vC1, stage 1 conf vol							
rubiocked val 869 982 812 stage (s) 4.1 6.8 6.9 stage (s) 2.2 3.5 3.3 sue free % 100 100 100 pacity (vehr)n 784 EB 1 EB 2 WB 1 217 326 fron_Lane # EB 1 EB 2 WB 1 217 326 fron_Lane # CB 1 CB 2 CB 2	vC2, stage 2 conf vol							
gge (s) 4.1 6.8 6.9 stage (s) 2.2 3.5 3.3 3.4 are free % 100 2.2 100 100 100 100 100 100 100 100 100 10	vCu, unblocked vol	698				982	812	
stage (s) 2.2 3.5 3.3 aue free % 100 100 100 100 pacify (vehr) 784 217 326 pacify (vehr) 784 435 436 436 ie Total 435 435 869 869 869 ie Left 0 0 0 0 0 115 869 <td>tC, single (s)</td> <td>4.1</td> <td></td> <td></td> <td></td> <td>8.9</td> <td>6.9</td> <td></td>	tC, single (s)	4.1				8.9	6.9	
le free % 100 100 100 100 100 100 100 100 100 1	tC, 2 stage (s)							
100 100	tF (s)	2.2				3.5	3.3	
apacity (veh/h) 784 217 326 ition, Lane # EB 1 EB 2 WB 1 217 326 ne Total 435 435 869 69 60 6	p0 queue free %	100				100	100	
tion, Lane # EB 1 EB 2 WB 1 ne Total 435 869 869 ne Left 0 0 0 ne Right 1700 1700 1705 ne to Capacity 0.26 0.26 0.51 ne Length 95th (m) 0.0 0.0 0.0 LOS 0.0 0.0 0.0 LOS 0.0 0.0 0.0 ased Delay (s) 0.0 0.0 0.0 ased Delay (s) 0.0 0.0 0.0 ased Delay 0.0	cM capacity (veh/h)	784				217	326	
ne Total 435 435 869 ne Left 0 0 0 ne Right 0 0 115 re Right 1700 1700 1700 ne to Capacity 0.26 0.26 0.51 ne to Capacity 0.00 0.0 0.0 co Longlay (s) 0.0 0.0 0.0 and Delay (s) 0.0 0.0 and Delay (s) 0.0 0.0 and LOS acction Summary 0.0 acction Capacity Utilization 46.3% (CU Level of Service section Capacity Utilization 15 15 15 15 15 15 15 15 15 15 15 15 15	Direction, Lane #	EB 1	EB 2	WB 1				
ne Left 0 0 0 15 ne Right 0 0 115 ne Right 1700 1770	Volume Total	435	435	698				
ne Right 100 115 ne to Capacity 1700 1700 1700 ne to Capacity 0.26 0.26 0.51 te Length 95th (m) 0.0 0.0 0.0 LOS ach Delay (s) 0.0 0.0 0.0 and Delay (s) 0.0 0.0 0.0 and Delay (s) 0.0 0.0 0.0 and Delay (s) 0.0 0.0 0.0 0.0 and Delay (s) 0.0 0.0 0.0 0.0 and Delay (s) 0.0 0.0 0.0 0.0 0.0 and Delay (s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Volume Left	0	0	0				
ne to Capacity 1700 1700 1700 1700 1700 1700 1700 170	Volume Right	0	0	115				
0.26 0.26 0.51 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1iizaton 46.3% ICU Level of Service	cSH	1700	1700	1700				
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1lization 46.3% ICU Level of Service	Volume to Capacity	0.26	0.26	0.51				
0.0 0.0 0.0 0.0 0.0 v 0.0 Utilization 46.3% ICU Level of Service	Queue Length 95th (m)	0.0	0.0	0.0				
0.0 0.0 r 0.0 Utilization 46.3% ICU Level of Service	Control Delay (s)	0.0	0.0	0.0				
0.0 0.0 (0.0 0.0 Utilization 46.3% ICU Level of Service 15	Lane LOS							
0.0 Utilization 46.3% ICU Level of Service 15	Approach Delay (s)	0.0		0.0				
, 0.0 Utilization 46.3% ICU Level of Service 15	Approach LOS							
0.0 Utilization 46.3% ICU Level of Service 15	Intersection Summary							
Utilization 46.3% ICU Level of Service 15	Average Delay			0.0				
	Intersection Capacity Utilizal	tion		46.3%	ਹ	J Level o	Service .	∢
	Analysis Period (min)			15				

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Lanes, Volumes, Timings 5: Icomm Drive & Colborne Street West

ane Configurations	0 1900 0.0 0 7.5 1.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	MBT WBR 0	N 111 111 111 111 111 111 111 111 111 1	0.95 0.95 0.987 0.987 0.987 0.987 3442 13 50 487.2 35.1 0.92	51 51 1900 215.0 0 0 0.95	138 138 1900 25.0 0 25.0	\$BT 474 870 870	SBR 733
488 237 488 237 488 237 488 237 488 237 488 237 1900 1900 200.0 200.0 0.95 0.95 0.95 0.95 0.95 0.99 0.972 0.95 0.99 0.972 0.95 0.99 0.972 0.95 0.99 0.972 0.95 0.99 0.972 0.95 0.99 0.972 0.95 0.99 0.972 0.95 0.99 0.96 0.90 0.00 0.00 0.00 0.00 0.00	0 0.0 0.0 0.0 1.00 1.00 0 0 0 0 0 0 0 0			↑↑↑ 512 512 512 1900 0.95 0.99 0.987 3442 3442 3442 50 487.2 35.1	51 1900 215.0 0 0 0 0 0	138 1900 25.0 0 25.0	870 870	733
488 237 1900 1900 1900 1900 1900 1900 1900 190	0.0 0.0 0.0 7.5 1.00 0 0 0 0 0 0 0,92 0,92 0,92 0,92 0,92			512 1900 0.95 0.98 0.987 3442 3442 13 50 487.2 35.1	51 1900 215.0 0 0 0 0 0	138 1900 25.0 0 25.0	870 870	733
488 237 2000 2000 1000 1000 1000 1000 0.98 0.99 0.98 0.99 1681 1683 1681 1683 0.982 0.982 0.982 0.982 0.982 0.982 0.982 0.982 200 0.982 200 0.982 200 0.982 200 0.982 200 0.982 200 0.982 200 0.982 200 0.982 200 0.982 200 0.982 200 0.982 200 0.00	1900 0.0 0.0 7.5 1.00 0 0 0 0,92 0,92 0,92 0,92 0,92			0.95 0.987 0.987 3442 3442 13 50 487.2 35.1	51 1900 215.0 0 0 0 0 0	138 1900 25.0 0 25.0	870	
25.0 20.0 20.0 25.0 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.92 20.9 20.0	1900 0.0 0.0 1.00 0 0 28 0.92 0.92 0.92			0.95 0.99 0.99 0.99 3442 3442 13 50 487.2 35.1	1900 215.0 0 0.95	1900 25.0 0 25.0		733
200.0 200.0 25.0 0.95 0.95 0.99 0.950 0.989 0.950 0.990 0.990 0.950 0.990 0.950 0.900 0.95	0.0 7.55 1.00 0 0 0.92 0.92 0.92 0.92			0.95 0.987 3442 3442 13 50 487.2 35.1	0.95	25.0 0 25.0	1900	1900
25.0 0.95 0.95 1.0 0.95 0.99 1.0 0.950 0.989 1.681 1690 1.950 0.982 1.0 0.950 0.989 1.0 0.950 0.989 1.0 0.92 0.92 0.9 20.9 2.0 20.9 2.0 20.9 2.0 20.9 2.0 1.00 1.00 1.00 1.0 0.0 0.0 0.0 0.0	1,00 1,00 0 0 0,92 0,92 0,92		0.0	0.95 0.987 0.987 3442 3442 13 50 487.2 35.1	0.95	25.0		0.0
25.0 0.98 0.99 1.09 0.98 0.99 0.99 0.950 0.999 1681 1683 1.099 0.950 0.999 1651 1683 1.099 20.0	1.30 0 0 0 28 0.92 0%		0.0	0.95 0.987 3442 3442 3442 13 50 487.2 35.1	0.95	0.02		
0.950 0.999 0.999 0.990 0.900	288 0.92 0% 0%			0.99 0.987 3442 3442 13 50 487.2 35.1	0 0	200	200	5
0.950 0.989 0.972 0.989 0.999	28 0.92 0.92 0.00			0.987 3442 3442 13 50 487.2 35.1	0 0	0.93	0.90	00.0
(b) 1681 1689 1689 1681 1689 1689 1689 1689	28 0.92 0%			3442 3442 13 50 487.2 35.1	0 0		3	0.30
(67) (1681 1690 (1691 1690 (1691 1690 (1691 1690 (170 170	0 28 0.92 0%			3442 3442 13 50 487.2 35.1	0 0		0 993	9
0.950 0.989 1651 1683 1651 1683 144 7 290.1 20.9 27 20.9 29.8 28 530 258 530 258 530 258 530 258 540 435 18% 435 18% 435 18% 435 18% 435 18% 22% 50 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	28 0.92 0%		_	3442 13 50 487.2 35.1	0	C	3585	1599
1651 1683 Y 144 150 150 150 150 150 150 150 150 150 150	0 58 0.92 0 0			3442 13 50 487.2 35.1	0		0.752	
14 75 50 50 50 50 50 50 50 50 50 50 50 50 50	28 0.92 0			13 50 487.2 35.1 0.92		0	2708	1539
14 14 14 14 15 15 15 15 15 15 15 15 15 15 15 15 15	28 0.92 0%			13 50 487.2 35.1	Yes			Yes
290.1 290.1 20.9 20.9 20.9 20.9 20.9 20.9 20.0 20.0	28 0.92 0%			50 487.2 35.1 0.92				797
290.1 20.9 20.9 20.9 20.9 20.9 20.9 20.0	28 0.92 0%			35.1 0.92			20	
20.9 21 20.9 28 28 28 28 3530 258 36 36 36 36 36 36 36 36 36 37 38 38 38 38 38 38 38 38 38 38 38 38 38	0.92 0% 0			35.1			182.2	
21 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92				0.92			13.1	
2% 2% 350 258 6) 18% 28% 350 258 830 258 830 258 830 258 830 258 830 258 830 258 830 258 830 250 20 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0			21 10	0.92	25	25		10
2% 2% 3 500 258 18% 435 435 19 435 435 435 435 100 0.0 100 1.00 1.00 100 1.00 1.00 100 0.0 100 0.0 10			12 0.92		0.92	0.92	0.92	0.92
18% 18% 18% 18% 18% 18% 18% 18% 18% 18%		0	0% 2%	3%	5%	%0	%0	1%
(b) 18% 435 (c) 436 (d) 636 (d			0 73	222	22	150	946	797
25 100 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0								
rion No				612	0	0	1096	797
Left Left Rig 3.6 3.6 3.6 3.6 4.8 4.8 4.8 4.8 4.8 4.8 4.8 4.8 4.8 4.8			No No	2	2	8	2	2
3.6 0.0 4.8 1.00 1.00 1. 25 1 2 1 2 2.0 10.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	ht Left	Left Right	nt Left	Left	Right	Left	Left	Right
100 1.00 1.00 1.00 1.00 1.00 1.00 1.00		3.6		3.6			3.6	
1.00 1.00 1.100 1.		0.0		0.0			0.0	
1.00 1.00 1.02 25 2 2.0 10.00 0.00 0.00 0.00 0.00 0.00 0.		4.8		4.8			4.8	
1.00 1.00 1.10 1.00 1.10 1.00 1.10 1.10								
25 Left Thu 20 10.0 0.0 0.0 20 0.0 2.0 0.0 CA-EX CA-EX 0.0 0.0 0.0 0.0	-	1.00 1.00	-	1:00	1.00	1.00	1.00	1.00
CH T C C C C C C C C C C C C C C C C C C	15 25		15 25	d	12	72	d	£,
2.0 0.0 0.0 0.0 0.0 0.0			- 4	7 The		- a	7 The:	- 4
CC			Tell C	100		Cell	0 0	וואני
CI+EX CI-			0.4	200		0.0	9 0	9 0
C: 2.0 C: EX C: 0.0			0.0	0.0		0.0	0.0	0.0
CI+EX CI-			0.0			0.0	0.0	0.0
C+EX			2.0			7.7	0.5 ا	7.0
0.0			Č+EX	CI+EX		CI+EX	Č+EX	Č+EX
0.0								
0.0			0.0			0.0	0.0	0.0
			0.0	0.0		0.0	0.0	0.0
0.0			0.0	0.0		0.0	0.0	0.0
(m)				9.4			9.4	
(h				9.0			9.0	
Detector 2 Type CI+Ex				Ċ+E			CI+EX	
Detector 2 Extend (s) 0.0				0.0			0.0	

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Lanes, Volumes, Timings 5: Icomm Drive & Colborne Street West

Detour: PM Peak Hour

Detour: PM Peak Hour

Lane Group EBI EBI EBI WBI WBI WBI NBI		1	†	/	>	↓	4	•	←	•	۶	→	•
Perm NA Print NA Print NA Print NA 4 4 5 2 6 6 4 4 4 5 2 1 6 4 4 4 5 2 1 6 4 4 4 5 2 1 6 5 2 1 6 6 5 2 1 6 6 5 2 1 6 6 5 2 1 6 6 5 2 1 6 6 5 2 1 6 6 5 2 1 6 6 5 2 1 6 6 5 2 1 6 6 5 2 1 6 6 5 2 1 6 6 5 2 2 1 6 6 2 2 2 2 7 3 3 3 3 7 3 3 3 7 2 3 3 7 2 3 3 8 3 3 3 9 4 4 4 10 2 2 3 10 2 3 10 2 3 10 3 3	Lane Group	EBE	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
4 4 4 6 1 6 4 10.0 7.0 10.0 7.0 10.0 7.0 10.0 4 40.0 41	Tum Type	Perm	Α					pm+pt	ΑN		pm+pt	Α	Perm
4 1 6 100 100 100 100 100 100 100 100 4	Protected Phases		4					2	7		-	9	
7.0 7.0 7.0 7.0 1.0 38.0 38.0 38.0 11.0 31.0 11.0 31.0 38.0 38.0 38.0 11.0 31.0 11.0 31.0 38.0 38.0 38.0 11.0 41.0 11.0 31.0 38.0 38.0 38.0 11.0 41.0 11.0 31.0 32.0 32.0 32.0 7.0 35.0 7.0 35.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	Permitted Phases	4						2			9		9
7.0 7.0 7.0 1.0 7.0 10.0 38.0 38.0 38.0 11.0 41.0 11.0 31.0 38.0 38.0 38.0 11.0 41.0	Detector Phase	4	4					2	2		-	9	9
7.0 7.0 7.0 7.0 1.0 <td>Switch Phase</td> <td></td>	Switch Phase												
38.0 38.0 38.0 38.0 38.0 11.0 31.0 11.0 31.0 31.0 31.0 31.0 31.0 31.0 31.0 31.0 31.0 31.0 41.0 <td< td=""><td>Minimum Initial (s)</td><td>7.0</td><td>7.0</td><td></td><td></td><td></td><td></td><td>7.0</td><td>10.0</td><td></td><td>7.0</td><td>10.0</td><td>10.0</td></td<>	Minimum Initial (s)	7.0	7.0					7.0	10.0		7.0	10.0	10.0
38.0 38.0 110 41.0 41.0 41.0 41.0 41.0 41.0 41.0 41.0 41.0 41.0 41.0 41.0 41.0 41.0 41.0 41.0 41.0 41.0 41.0 45.6% 42.8% 40.9 40.0 40.0 60.0 <td< td=""><td>Minimum Split (s)</td><td>38.0</td><td>38.0</td><td></td><td></td><td></td><td></td><td>11.0</td><td>31.0</td><td></td><td>11.0</td><td>31.0</td><td>31.0</td></td<>	Minimum Split (s)	38.0	38.0					11.0	31.0		11.0	31.0	31.0
422% 422% 422% 456 456	Total Split (s)	38.0	38.0					11.0	41.0		11.0	41.0	41.0
32.0 32.0 32.0 7.0 35.0 7.0 35.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 5.0 6.0<	Total Split (%)	42.2%	42.2%					12.2%	45.6%		12.2%	45.6%	45.6%
4,0 4,0 4,0 4,0 3,0 4,0 3,0 4,0 3,0 4,0 6,0 7,0 7,0 7,0 7,0 7,0 7,0 7,0 7,0 7,0 7,0 8,0 8,0 8,0 8,0 8,0 8,0 <td>Maximum Green (s)</td> <td>32.0</td> <td>32.0</td> <td></td> <td></td> <td></td> <td></td> <td>7.0</td> <td>35.0</td> <td></td> <td>7.0</td> <td>35.0</td> <td>35.0</td>	Maximum Green (s)	32.0	32.0					7.0	35.0		7.0	35.0	35.0
2.0 2.0 1.0 2.0 1.0 2.0 6.0 6.0 6.0 4.0 6.0 6.0 6.0 6.0 4.0 6.0 6.0 1.0 3.0 3.0 3.0 3.0 6.0 Nax Max Max None C-Max None C-Max 7.0 7.0 7.0 7.0 7.0 7.0 8.0 25.0 25.0 48.0 46.0 7.0 0 10 20 0	Yellow Time (s)	4.0	4.0					3.0	4.0		3.0	4.0	4.0
0.0 0.0	All-Red Time (s)	2.0	2.0					1.0	2.0		1.0	2.0	5.0
6.0 6.0 6.0 4.0 6.0 6.0 lead 1.0 6.0 6.0 6.0 lead 1.0 6.0	Lost Time Adjust (s)	0.0	0.0					0.0	0.0			0.0	0.0
180 180	Total Lost Time (s)	0.9	0.9					4.0	0.9			0.9	0.9
3.0 3.0	Lead/Lag							Lead	Lag		Lead	Lag	Lag
30 30 30 30 30 30 30 30 30 30 30 30 30	Lead-Lag Optimize?												
Max Max Max Max Max None C-Max None C-Max	Vehicle Extension (s)	3.0	3.0					3.0	3.0		3.0	3.0	3.0
7.0 0.0 0.0 <td>Recall Mode</td> <td>Max</td> <td>Max</td> <td></td> <td></td> <td></td> <td></td> <td>None</td> <td>C-Max</td> <td></td> <td>None</td> <td>C-Max</td> <td>C-Max</td>	Recall Mode	Max	Max					None	C-Max		None	C-Max	C-Max
70 25.0 25.0 25.0 18.0 19.0 1	Walk Time (s)	7.0	7.0						7.0			7.0	7.0
salls (#fht) 0 0 0 serif (s) 32.0 32.0 48.0 46.0 37.2 serif (s) 32.0 32.0 48.0 46.0 37.2 s Ratio 0.36 0.53 0.54 0.41 0.41 y 28.2 25.8 21.0 22.9 50.8 y 0.0 0.0 0.0 0.0 y 28.2 25.8 21.0 22.9 50.8 y 0.0 0.0 0.0 0.0 0.0 y 27.0 27.0 27.0 D y 27.0 27.7 31.9 y 27.0 27.7 C C C C C C C C C C C C C C C C C C C C C C C C C	Flash Dont Walk (s)	25.0	25.0						18.0			18.0	18.0
Featle 32.0 32.0 32.0 37.2 F Ratio 0.36 0.36 0.36 0.53 0.51 0.41 F Ratio 0.36 0.32 0.32 0.32 0.98 0.98 y 28.2 25.8 21.0 22.9 50.8 0.0 y 0.0 0.0 0.0 0.0 0.0 0.0 0.0 y 28.2 25.8 21.0 22.9 50.8 50.8 50.8 50.8 50.8 y 0	Pedestrian Calls (#/hr)	0	0						0			0	0
S Patric 0.36 0.36 0.53 0.51 0.41 y 0.74 0.72 0.32 0.35 0.98 y 2.82 2.58 2.10 2.29 50.8 y 2.82 2.58 0.0 0.0 0.0 C C C C D slay 2.70 2.27 31.9 S C C C C C C C C C C C C C C C C C C C C C C C	Act Effct Green (s)	32.0	32.0					48.0	46.0			37.2	37.2
y 0.74 0.72 0.32 0.36 0.98 y 282 25.8 210 22.9 50.8 y 0.0 0.0 0.0 0.0 0.0 x 28.2 25.8 210 22.9 50.8 x C C C D D y 27.0 27.0 22.7 31.9 x C C C C C C C C C C C C C C C C C	Actuated g/C Ratio	0.36	0.36					0.53	0.51			0.41	0.41
y 28.2 25.8 21.0 22.9 50.8 y 0.0 0.0 0.0 0.0 0.0 x 28.2 25.8 21.0 22.9 50.8 x 0.0 0.0 0.0 0.0 0.0 y 28.2 25.8 27.0 D D x 27.0 27.7 31.9 x C C C C C C C	v/c Ratio	0.74	0.72					0.32	0.35			0.98	0.72
y 0.0	Control Delay	28.2	25.8					21.0	22.9			20.8	0.9
28.2 25.8 21.0 22.9 50.8 C C C C C D C C D D 22.7 31.9 S C C D D 22.7 31.9 S C C C C C C D D 22.7 31.9 S C C C C C C C C C C C C C C C C C C	Queue Delay	0.0	0.0					0.0	0.0			0.0	0.0
S C C C C C C C C C C C C C C C C C C C	Total Delay	28.2	25.8					21.0	22.9			20.8	0.9
27.0 22.7 C C	TOS	O	O					O	O			Ω	⋖
Approach LOS C C C	Approach Delay		27.0						22.7			31.9	
	Approach LOS		O						O			O	

Intersection Summary
Area Type:
Cycle Length: 90
Actualed Cycle: Length: 90
Actualed Cycle: Length: 90
Offset: 80 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actualed-Coordinated
Maximum v/c Ratio: 0.98
Intersection Signal Delay, 28.9
Intersection Capacity Utilization 92.8%
Intersection Capacity Utilization 92.8%
Analysis Period (min) 15

Splits and Phases: 5: Icomm Drive & Colborne Street West

190487 - Brantord Bridges EA PTSL

Queues 5: Icomm Drive & Colborne Street West

HCM Signalized Intersection Capacity Analysis 5: Icomm Drive & Colborne Street West

Detour: PM Peak Hour

Detour: PM Peak Hour

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Lane Group	EBL	EBT	NBL	NBT	SBT	SBR	
Lane Group Flow (vph)	435	435	73	612	1096	797	
v/c Ratio	0.74	0.72	0.32	0.35	0.98	0.72	
Control Delay	28.2	25.8	21.0	22.9	20.8	0.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	28.2	25.8	21.0	22.9	20.8	6.0	
Queue Length 50th (m)	72.9	7.07	0.3	52.3	~114.6	0.0	
Queue Length 95th (m)	#119.0	116.6	m0.0	69.3	#154.8	26.7	
Internal Link Dist (m)		266.1		463.2	158.2		
Turn Bay Length (m)	200.0		115.0				
Base Capacity (vph)	287	209	230	1765	1119	1103	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.74	0.72	0.32	0.35	0.98	0.72	
:							

— Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Wolume for 95th percentile queue is melered by upstream signal.

_	Movement	_											
	Lane Configurations	K	4					F	*			₩.	*
	Traffic Volume (vph)	488	237	75	0	0	0	29	512	21	138	870	733
	Future Volume (vph)	488	237	75	0	0	0	29	512	21	138	870	733
	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
	Total Lost time (s)	0.9	0.9					4.0	0.9			0.9	9.9
	Lane Util. Factor	0.95	0.95					1.00	0.95			0.95	1.00
	Frpb, ped/bikes	1.00	0.99					1.00	0.99			1.00	96.0
	Flpb, ped/bikes	0.98	1.00					1.00	1.00			1.00	1.00
	王	1.00	0.97					1.00	0.99			1.00	0.85
	Flt Protected	0.95	0.99					0.95	1.00			0.99	1.00
	Satd. Flow (prot)	1651	1683					1769	3441			3576	1539
	Flt Permitted	0.95	0.99					0.11	1.00			0.75	1.00
	Satd. Flow (perm)	1651	1683					206	3441			2708	1539
	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
	Adj. Flow (vph)	530	258	82	0	0	0	73	222	22	150	946	797
	RTOR Reduction (vph)	0	6	0	0	0	0	0	9	0	0	0	475
	Lane Group Flow (vph)	435	426	0	0	0	0	73	909	0	0	1096	322
	Confl. Peds. (#/hr)	21		28	28		21	10		22	25		10
	Heavy Vehicles (%)	2%	2%	2%	%0	%0	%0	2%	3%	2%	%0	%0	1%
	Turn Type	Perm	Ϋ́					pm+pt	Ϋ́		pm+pt	ΑN	Perm
	Protected Phases		4					2	5		~	9	
	Permitted Phases	4						5			9		9
	Actuated Green, G (s)	32.0	32.0					46.0	46.0			36.4	36.4
	Effective Green, g (s)	32.0	32.0					46.0	46.0			36.4	36.4
	Actuated g/C Ratio	0.36	0.36					0.51	0.51			0.40	0.40
	Clearance Time (s)	0.9	0.9					4.0	0.9			0.9	0.9
	Vehicle Extension (s)	3.0	3.0					3.0	3.0			3.0	3.0
	Lane Grp Cap (vph)	287	298					202	1758			1095	622
	v/s Ratio Prot							0.02	00.18				
	v/s Ratio Perm	c0.26	0.25					0.16				c0.40	0.21
	v/c Ratio	0.74	0.71					0.36	0.34			1:00	0.52
	Uniform Delay, d1	25.4	25.0					14.8	13.1			26.8	20.2
	Progression Factor	0.79	0.78					1.70	1.74			1:00	1.00
	Incremental Delay, d2	7.2	6.2					1:0	0.5			27.4	3.1
	Delay (s)	27.3	25.8					26.2	23.2			54.2	23.3
	Level of Service	ပ	O					O	ပ			۵	O
	Approach Delay (s)		56.6			0.0			23.5			41.2	
	Approach LOS		O			∢			O			٥	
	Intersection Summary												
	HCM 2000 Control Delay			34.0	유	HCM 2000 Level of Service	Level of 5	Service		O			
	HCM 2000 Volume to Capacity ratio	ty ratio		0.85									
	Actuated Cycle Length (s)			0.06	Su	Sum of lost time (s)	time (s)			16.0			
	Intersection Capacity Utilization	uo		92.8%	ਠ	ICU Level of Service	f Service			ш			
	Analysis Period (min)			15									

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190487 - Brantford Bridges EA PTSL

Synchro 10 Report Page 18

Lanes, Volumes, Timings 6: Market Street & Icomm Drive

		1	•	•		,	-	-	_		•	7
Lane Group	EBF	EBT	EBR	WBL	WBT	WBR	R	NBT	NBR	SBL	SBT	SBR
ane Configurations	*	ŧ	*-	r	₩		r	2			4	
Fraffic Volume (vph)	2	136	830	131	228	4	354	4	62	15	တ	30
-uture Volume (vph)	2	136	830	131	228	4	354	4	62	15	6	30
ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	65.0		0.09	125.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	_		-	_		0	_		0	0		0
Faper Length (m)	32.0			25.0			7.5			7.5		
ane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor	0.99		96:0	0.98	1.00		0.97	0.92			96.0	
Ħ.			0.850		0.998			0.858			0.916	
It Protected	0.950			0.950			0.950				0.987	
Satd. Flow (prot)	1805	3505	1615	1805	3566	0	1787	1476	0	0	3191	0
It Permitted	0.596			0.589			0.717				968.0	
Satd. Flow (perm)	1120	3202	1558	1100	3566	0	1313	1476	0	0	2846	0
Right Turn on Red			Yes		•	Yes		į	Yes		:	Yes
satd. Flow (RTOR)			894		7			/9			33	
ink Speed (k/h)		20			20			20			20	
Link Distance (m)		487.2			250.0			115.0			104.0	
ravel Time (s)		32.1			18.0			.3 .3			7.5	
Confl. Peds. (#/hr)	9		15	15		9	18		45	45		9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	%0	3%	%0	%0	1%	%0	1%	%0	2%	%0	%0	%0
Adj. Flow (vph)	2	148	905	142	248	4	382	4	29	9	9	83
Shared Lane Traffic (%)	•					•		i	١	•	1	
ane Group Flow (vph)	2 :	148	305	142	252	0 :	382	Ε.	0	0 :	26	0 :
=nter Blocked Intersection	2	2	2	8	2	2	2	2	2	8	2	2
ane Alignment	Left	Left	Right	Left	Fet	Right	Left	Left	Right	Left	Let	Right
Median Width(m)		3.6			3.6			3.6			3.6	
ink Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Iwo way Left Turn Lane												
Headway Factor	1:00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Furning Speed (k/h)	52		15	22		12	52		15	22		15
Number of Detectors	_	2	_	_	2		_	2		_	2	
Detector Template	Left	뮡	Right	Left	Thro		Left	Thr		Left	Thr	
eading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Frailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	9.0	2.0	2.0	9.0		2.0	9.0		2.0	9.0	
Detector 1 Type	CI+EX	CI+EX	CI+EX	CI+EX	CI+EX		CI+EX	CI+EX		CI+EX	CI+EX	
Detector 1 Channel	c	c	ć	ć	c		c	0		c	ć	
Defector 1 Dugito (s)	0.0	0.0	9 0	0.0	0.0		0.0	0.0		0.0	0.0	
Defector 1 Gueue (s)	9.0	9.0	9 6	0.0	9.0		9.0	9.0		9 6	0.0	
Defector 1 Delay (s)	2.0	ο δ	5	5.	0.0		5.	ο ο		5.	0.0	
Defector 2 Size(m)		9			90			9.0			9.0	
Detector 2 Type		ZI-FI			2 1 1			CI+F			CI-FE	
Defector 2 Channel		2			5			<u> </u>			<u> </u>	
CONTRACTOR TO CONTRACTOR												

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Lanes, Volumes, Timings 6: Market Street & Icomm Drive

Detour: PM Peak Hour

Lane Group Turn Type Protected Phases	١	†	1	-	Ļ	1	•	—	•	۶	→	*
Turn Type Protected Phases	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	Perm	¥	Perm	pm+pt	Ą		Perm	N A		Perm	ΑĀ	
		2		-	9			00			4	
Permitted Phases	2		2	9			∞			4		
Detector Phase	2	2	2	-	9		∞	∞		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	7.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	23.0	23.0	23.0	11.0	23.0		23.0	23.0		23.0	23.0	
Fotal Split (s)	33.0	33.0	33.0	12.0	45.0		45.0	45.0		45.0	45.0	
Fotal Split (%)	36.7%	36.7%	36.7%	13.3%	%0.03		%0.09	20.0%		20.0%	%0.09	
Maximum Green (s)	27.0	27.0	27.0	8.0	39.0		39.0	39.0		39.0	39.0	
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	1.0	2.0		2.0	2.0		2.0	2.0	
ost Time Adjust (s)	0:0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	0.9	0.9	0.9	4.0	0.9		0.9	0.9			0.9	
Lead/Lag	Lag	Lag	Lag	Lead								
_ead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	С-Мах	None	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	10.0	10.0	10.0		10.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0	0		0		0	0		0	0	
Act Effct Green (s)	34.2	34.2	34.2	48.6	46.6		31.4	31.4			31.4	
Actuated g/C Ratio	0.38	0.38	0.38	0.54	0.52		0.35	0.35			0.35	
//c Ratio	0.00	0.11	0.79	0.21	0.14		0.84	0.13			90.0	
Control Delay	11.0	9.7	17.4	11.7	11.1		43.3	5.2			9.0	
Queue Delay	0.0	0.0	0:0	0.0	0.0		0.0	0.0			0.0	
Fotal Delay	11.0	9.7	17.4	11.7	11.1		43.3	5.2			9.0	
SO-	В	⋖	ш	В	В		۵	⋖			∢	
Approach Delay		16.3			11.3			37.4			9.0	
Approach LOS		ш			В			۵			V	
ntersection Summary												
Area Type:	Other											
Cycle Length: 90												
Actuated Cycle Length: 90												
Offset: 49 (54%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	ed to phase	2:EBTL	and 6:WB	TL, Start	of Green							
Vatural Cycle: 75												
Control Type: Actuated-Coordinated	ordinated											
Maximum v/c Ratio: 0.84												
ntersection Signal Delay: 20.0 ntersection Capacity Utilization 83.1%	20.0 ation 83.1%			드	Intersection LOS: B	LOS: B	ш					
Analysis Period (min) 15												
Splits and Phases: 6: Ma	6: Market Street & Icomm Drive	k Icomm	Drive									
	(4)				À	,						
18	8				9	t						
ļ		ı	ı		١		ı		ı	ı		١
₩ 06 (R)					ř	20						

190487 - Brantford Bridges EA PTSL

Queues 6: Market Street & Icomm Drive

Detour: PM Peak Hour

HCM Signalized Intersection Capacity Analysis 6: Market Street & Icomm Drive

Detour: PM Peak Hour

	4	†	<i>></i>	-	ţ	•	←	→	
Lane Group	EBF	EBT	EBR	WBL	WBT	NBL	NBT	SBT	
Lane Group Flow (vph)	2	148	902	142	252	385	71	29	
v/c Ratio	0.00	0.11	0.79	0.21	0.14	0.84	0.13	90.0	
Control Delay	11.0	9.7	17.4	11.7	11.1	43.3	5.2	9.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	11.0	9.7	17.4	11.7	11.1	43.3	5.2	9.0	
Queue Length 50th (m)	0.2	6.4	134.5	11.2	10.6	62.4	0.5	1.5	
Queue Length 95th (m)	m0.2	m9.8	m130.7	m21.6	m18.3	89.0	8.0	2.0	
Internal Link Dist (m)		463.2			226.0		91.0	80.0	
Turn Bay Length (m)	65.0		0.09	125.0					
Base Capacity (vph)	425	1330	1145	663	1848	268	229	1251	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.00	0.11	0.79	0.21	0.14	0.68	0.10	0.05	
Intersection Summary									
m Volume for 95th percentile queue is metered by upstream signal	le aueue i	s meter	san va be	eam sign	lal.				
			and form		į				

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

EBL EBT		MBT WBR ↑↑↑ 228 4 4 228 4 4 228 14 1900 1900 6.0 1.00 1.00 1.00 3564 1.00 1.0		1900 1900 1900 1900 1900 1900 1900 1900	NBR 62 62 62 62 62 62 62 62 62 67 67 67 67 67 845 2% F	SBL 15 15 15 1900 1 0 0 0 0 0 0 0 45 0%	SBT SBR 9 9 9 9 30 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9
136 136 136 136 136 136 130 130 130 130 130 130 130 130				4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4			
2 136 1900 1900 6.0 6.0 1.00 0.95 1.00 0.99 1.00 0.99 1.00 1.00 0.99 1.00 1.00 1.00 0.99 1.00 1.00 1.00 0.99 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 2 148 6 0 0 8 3% Perm NA F 34.1 34.1 34.1 34.1 34.1 34.1 34.1 34.1 34.1 34.1 36.0 0.38 6.0 0.38 6.0 0.38 6.0 0.38 0.38 0.38 6.0 0.38				1900 1900 1900 1900 1900 1900 1900 1900			
136 1900 1900 6 0 6 0 1,000 1,				4 60 60 60 60 60 60 60 60 60 60 60 60 60			
1900 1900 1900 1900 1900 1900 1900 1900				1900 1000 1000 1000 1000 1000 1000 1000			
60 60 1.00 0.35 1.00 1.00 0.39 1.00 1.00 0.35 1.00 1.00 0.35 1.00 1.119 3505 0.092 1.00 1.119 3505 0.092 2 148 6 6 0 0.0% 3% 0.0% 3% 0		050		0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00			
1.00 0.95 1.00 1.09 0.99 1.00 0.99 1.00 0.92 0.92 0.60 1.09 0.60 1.09 0.60 1.09 0.83 3% 0.83 3% 0.83 3.41 0.84 341 0.84		0		1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00			
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00		0.0		0.92 1.00 1.00 1.00 1.00 1.00 4 4 4 4 4 4 27 0.92 0.92 0.92 1.00 0.92 1.00 0.92 1.00 0.92 1.00 0.92 1.00 0.92 1.00 0.93 1.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0			
0.39 1.00 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 1.119 3505 1.00 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0		0 0		1.00 1.00 1.00 1.00 1.47 4 4 4 4 27 0.92 0.92 0.92			
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	i d	0		0.86 1.00 1477 1477 0.92 4 4 44 27 27 0% NA NA			
10095 1000 1768 3055 1000 1119 3505 1092 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0	<u>a</u>	0)		1.00 1.00 1.00 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4			
1786 3505 1060 1,000 1119 3505 0,92 0,92 2 148 6 0 0 2 148 6 0 3% Perm NA F 2 2 2 2 34.1 34.1 34.1 34.1 34.1 34.1 34.1 34.1 34.1 34.1 34.1 34.1 34.1 34.1 37.0 0.38 6 6 0 6 0 6 0 6 0 6 0 6 0 6 0 6 0 6 0 6	i di	0	7 7 7	1.00 1.00 1.00 0.92 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4			
0.66 1.00 0.92 2 148 0.92 2 148 0.09 3% 0.0% 3% 0.0% 3% 2 2 48 0.3 34.1 34.1 0.38 0.38 6.0 6.0 3.0 3.0	<u> </u>	00		1.00 1.00 0.92 4 44 44 27 0% NA NA			
1119 3505 0.92 0.92 0.92 0.92 0 0 0 0 0 0 0 3 6 3% Perm NA F 2 2 2 2 34.1 34.1 34.1 34.1 36.0 38 0.38 0.38 0.38 0.38 0.38 0.38 0.38	<u> </u>	0.0		0.92 4 4 44 27 0% 0% NA			
0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	<u>ā</u>	0.0		0.92 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4			
2 148 0 0 0 2 148 6 6 0% 3% Perm NA F 34.1 34.1 34.1 34.1 0.38 0.38 6.0 6.0	<u>a</u>	0		0% 8 15 15 15 15 15 15 15 15 15 15 15 15 15			10 21 38 38 0% NA 4
0 0 5 2 148 3 6 3.0 3% 0 9% 3% 0 9% 3% 0 30 3.0 5 141 3-11 3-11 3-11 3-11 3-11 3-11 3-11 3	la la	Ō		27 27 8 NA 8 8			21 38 0% NA 4
2 148 3 6 0% 3% 0 Perm NA Pe 2 2 34.1 34.1 3 34.1 34.1 3 34.1 34.1 3 34.1 34.1 3 34.1 34.1 3 34.1 34.1 3 34.1 34.1 3	l d	Ö		0% NA 8		0 45 0%	38 0% NA 4
6 6 60 60 60 60 60 60 60 60 60 60 60 60	md 7	Ö		00 NA 8 2		45 0% erm	0% A 4
0% 3% Perm NA 2 2 34.1 34.1 34.1 34.1 34.1 34.1 34.1 34.1	md ,			%0 NA 8 2		0%	%0 4 4
Perm NA 2 2 2 34.1 34.1 34.1 34.1 6.0 6.0 6.0 3.0 3.0 3.0	g	NA 6 46.6	Perm 8 31.4	NA 8		erm	NA 4
2 2 34.1 34.1 34.1 34.1 0.38 0.38 6.0 6.0 3.0 3.0		6 46.6	31.4	φ 7			4
2 34.1 34.1 34.1 34.1 0.38 0.38 6.0 6.0 3.0 3.0		46.6	31.4	7			
34.1 34.1 34.1 34.1 0.38 0.38 6.0 6.0 3.0 3.0		46.6	31.4	7 70		4	
34.1 34.1 0.38 0.38 6.0 6.0 3.0 3.0				4.15			31.4
0.38 0.38 6.0 6.0 s) 3.0 3.0		46.6	31.4	31.4			31.4
6.0 6.0 3.0		0.52	0.35	0.35			0.35
3.0 3.0	.0 4.0	0.9	0.9	0.9			0.9
		3.0	3.0	3.0			3.0
(vph) 423		1845	457	515			992
0.04	Ŭ	20.0		0.02			
Ü	60.00		c0.29				0.01
0.00		0.14	0.84	0.05			0.04
		11.3	27.0	19.4			19.3
0.51 (_	0.87	1:00	1.00			1.00
tal Delay, d2 0.0 0.1		0.1	13.2	0.0			0.0
8.9	9 10.4	6.6	40.2	19.5			19.3
A	F B	A	٥	В			В
Approach Delay (s) 140.0		10.1		37.0			19.3
Approach LOS		В		٥			Ω
Intersection Summary							
HCM 2000 Control Delay 86.		HCM 2000 Level of Service	f Service		ட		
pacity ratio							
Actuated Cycle Length (s) 90.0		Sum of lost time (s)	_		16.0		
Intersection Capacity Utilization 83.1%		ICU Level of Service	e		ш		
Analysis Period (min)	5						

190487 - Brantford Bridges EA PTSL

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190487 - Brantford Bridges EA PTSL

Detour: PM Peak Hour Lanes, Volumes, Timings 7: Clarence Street South & Icomm Drive/Greenwich Street

Tame Group EBI EBT anne Group 7 4-6 Traffic Volume (vph) 180 129 ruture Volume (vph) 1800 1300 ruture Volume (vph) 1800 1900 storage Length (m) 75.0 1900 storage Length (m) 75.0 100 storage Length (m) 30.0 10 ame Util: Factor 0.99 0.99 Frit 0.950 312 anne Util: Factor 0.99 0.99 Frit 0.950 312 Sald Side Factor 0.95 312 and District (m) 0.95 312 Sald Flow (perm) 1006 3312 Sald Flow (perm) 1008 3312 Sald Flow (perm) 1008 312 John (perm) 1008 312 John (perm) 1008 312 John (perm) 109 140 John (perm) 106 27 John (perm) 109	89 89 89 89 89 00 00 00 00 00 00 00 00 00 00 00 00 00			MWBR 51 51 51 51 1900 30.0 1.00 0.98 0.850 1554 Yes 85 85 85	NBI 147 147 1907 1907 1000 1.00 1.00 1.00 1.00 1.00 1.35 3.5 3.5 3.5 3.5 3.5 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	445 445 845 845 845 9459 3469 16 50 27.5 37.5 37.5 918	78 78 1900 0.00 0.95 0.95 0.95 3% 85 85	98 98 98 98 1900 105.0 1.00 1.00 1.00 1.00 1.00 4.10	1012 1012 1900 1900 3574 3574	SBR 88 88 88 1900 70.0 1.00 0.96 0.850 1615
(%) (%) (%) (%) (%) (%) (%) (%)					147 147 147 150 150 150 150 150 150 150 160 160 160 160 160 160 160 160 160 16	445 845 845 845 1900 0.987 3459 3459 3459 20.92 3816 27.5 0.92 37.5	78 78 1900 0.0 0 0 0 0 Yes 85	98 98 98 98 1900 105.0 1.00 1.00 1.787 0.218 410	1012 1012 1012 1900 3574 3574	88 88 88 1900 70.0 1.00 0.96 0.850 1615
180 180 1900 75.0 1 0.09 0.99 0.950 1770 0.950 1770 0.950 1770 0.950 1770 0.970 0.970 0.					147 147 15.0 1.100 1.000	845 845 1900 0.987 3459 3459 16 50 27.5 0.92 381.6 27.5 10.92	78 78 1900 0.0 0 0 0 0 7 es 2 3% 85	98 98 1900 105.0 105.0 1.00 1.00 1.787 0.218 410	1012 1012 1900 3574 3574 50	88 88 88 70:0 1900 10:0 0.96 0.850 1615
180 1900 75 0 1 0 1,00 0.950 1770 0.544 1008 8 8 8 0.54 1008 196 196 196 196 196					147 1900 75.0 1.00 1.00 1.00 1.00 1.177 3.	845 1900 0.95 0.987 3459 3459 3459 27.5 0.92 37.5 0.92 37.5	78 1900 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	98 1900 105.0 1.00 1.00 1.787 0.218 410 0.92	1012 1900 0.95 3574 3574 50	1900 70.0 1.00 0.96 0.850 1615
1900 75.0 1.00 1.00 0.95 1.770 0.954 1.008 8 8 0.92 2% 196 196 196 196 196 196					75.0 75.0 1.00 1.00 1.00 1.00 1.77 1.77 35 35 0.92 2%	0.95 0.987 3459 3459 3459 16 50 381.6 27.5 0.92 3% 918	0.0 0.0 0 0 0 0 0 0 0 0 0 0 0 3% 85	1900 105.0 1.00 1.00 1.00 1.787 0.218 410	0.95 3574 3574 50	70.0 70.0 1.00 0.96 0.850 1615
75.0 1.00 1.00 0.99 0.950 1770 0.544 1008 8 8 0.92 2% 196 ph) 196 section No					35.0 1.00 1.00 1.00 1.00 1.770 0.184 341 35 0.92 2%	0.987 3459 3459 3459 360 381.6 27.5 0.92 3% 918	0.00 0 00 0 Yes 7 Yes 3% 85	105.0 1.00 1.00 1.00 1.787 0.218 410 0.92	3574 3574 3574 50	70.0 1.00 0.96 0.850 1615
(%) 2% (%) 196					35.0 1.00 1.00 1.00 0.950 0.950 341 35 0.92 2%	0.987 3459 3459 3459 360 381.6 27.5 0.92 3% 918	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	35.0 1.00 1.00 0.950 1787 0.218 410	3574 3574 50	1.00 0.96 0.850 1615
100 100 100 100 100 100 100 100 100 100					35.0 1.00 1.00 0.950 0.950 341 341 35 0.92 2%	0.957 3459 3459 3459 16 50 27.5 0.92 3% 918	0.95 Ves 7 Yes 3% 85 85	35.0 1.00 0.950 0.218 410 0.92	3574	1.00 0.96 0.850 1615
0.99 0.950 0.950 0.950 0.950 0.954 0.054 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92					1.00 1.00 1.770 0.184 341 35 0.92 2% 160	0.987 3459 3459 3459 50 50 27.5 0.92 3% 918	0.92 Yes 3% 85 85	1.00 0.950 1787 0.218 410 0.92	3574	1.00 0.96 0.850 1615
0.99 0.950 0.950 0.950 0.950 0.950 0.544 0.97 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92					35 0.950 0.184 341 35 0.92 2% 160	3459 3459 3459 360 50 381.6 27.5 0.92 3% 918	0 Ves 3% 85	0.950 1787 0.218 410 0.92 1%	3574	0.96 0.850 1615 1555
0.950 1770 0.544 1008 8 0.92 2% 196 196 No Left					35 0.950 0.184 341 35 0.92 2% 160	3459 3459 3459 16 50 381.6 27.5 0.92 3% 918	0 Ves 3% 85	0.950 1787 0.218 410 0.92 1%	3574	0.850 1615 1555
0.950 1770 0.544 1008 8 0.92 2% 196 196 No Leff			3574 3574 50 50 15.1		0.950 1770 0.184 341 35 0.92 2% 160	3459 3459 16 50 381.6 27.5 0.92 3% 918	0 0 7 85 85	0.950 1787 0.218 410 0.92 1%	3574	1615
0.544 1008 8 0.92 2% 196 No Left			3574 3574 50 50 15.1		35 0.92 2% 160	3459 3459 16 50 381.6 27.5 0.92 3% 918	0 0 Yes 0.92 3% 85	0.92 0.92 1%	3574	1615
0.544 0.92 2% 196 0.92 196 196 196			3574 50 209.3 15.1		341 341 35 0.92 2% 160	3459 16 50 381.6 27.5 0.92 3% 918	7es 7es 3% 85	0.218 410 0.92 1%	3574	1555
1008 8 0.92 2% 196 196 No			3574 50 209.3 15.1	1554 Yes 85 80.92 2% 55	35 0.92 2% 160	3459 16 50 381.6 27.5 0.92 3% 918	7es Yes 3% 85	0.92	3574	1555
0.92 2% 2% 196 196 No Left	Yes 24 0.92 1% 97		50 209.3	Yes 85 85 0.92 2% 55	35 0.92 2% 160	16 50 381.6 27.5 0.92 3% 918	Yes 0.92 3% 85	0.92	20	
0.92 2% 2% 196 No Left	24 0.92 1% 97		50 209.3 15.1	85 8 0.92 2% 55	35 0.92 2% 160	16 50 381.6 27.5 0.92 3% 918	0.92 3% 85	0.92	20	Yes
8 0.92 2% 196 196 No Left	24 0.92 1% 97		50 209.3 15.1	8 0.92 2% 55	35 0.92 2% 160	50 381.6 27.5 0.92 3% 918	0.92 3% 85	0.92	20	96
0.92 2% 196 196 No Left	24 0.92 1% 97		15.1	8 0.92 2% 55	35 0.92 2% 160	381.6 27.5 0.92 3% 918	0.92 3% 85	0.92		
8 0.92 2% 196 196 No Left	24 0.92 1% 97	24 0.92 0% 190	15.1	8 0.92 2% 55	35 0.92 2% 160	27.5 0.92 3% 918	0.92 3% 85	0.92	258.2	
8 0.92 2% 196 196 No No Left	24 0.92 1% 97	24 0.92 0% 190		8 0.92 2% 55	35 0.92 2% 160	0.92 3% 918	0.92 3% 85	0.92	18.6	
0.92 (2% 196 196 No Left	0.92 1% 97	0.92 0% 190		0.92 2% 55	0.92 2% 160	3% 918	0.92 3% 85	0.92		35
2% 196 196 No Left	1% 97	190	0.92	2%	160	918	3%	1%	0.92	0.92
196 196 No Left	97	190	1%	22	160	918	82		1%	%0
196 No Left			137			1003		107	1100	96
196 No Left						1003				
No	0	190	137	22	160	200	0	107	1100	96
Left	2	8	8	8	2	2	8	8	8	2
	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
			3.6			3.6			3.6	
			0.0			0.0			0.0	
			4.8			4.8			4.8	
wo way Left Turn Lane										
leadway Factor 1.00 1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
urning Speed (k/h) 25	15	52		15	52		15	52		15
Number of Detectors 1 2		-	2	_	-	2		_	2	_
ľ		Left	Thru	Right	Left	Thru		Left	Thru	Right
2.0		2.0	10.0	5.0	2.0	10.0		2.0	10.0	2.0
0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m) 0.0 0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m) 2.0 0.6		2.0	9.0	2.0	2.0	9.0		2.0	9.0	2.0
Detector 1 Type CI+Ex CI+Ex	U	CI+EX (CI+EX (CI+EX (CI+EX	CI+EX		CI+EX	CI+EX	CHEX
Detector 1 Channel										
0:0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
0:0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
(m)			9.4			9.4			9.4	
n)			9.0			9.0			9.0	
Detector 2 Type CI+Ex			CI+Ex			CI+Ex			CI+EX	
Detector 2 Extend (s) 0.0			0.0			0.0			0.0	

Lanes, Volumes, Timings 7: Clarence Street South & Icomm Drive/Greenwich Street

Detour: PM Peak Hour

	1	†	/	-	↓	1	•	←	•	۶	-	•
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	AA		Perm	ΑN	Perm	Perm	ΝΑ		Perm	Ν	Perm
Protected Phases	7	4			∞			2			9	
Permitted Phases	4			∞		∞	2			9		9
Detector Phase	7	4		∞	∞	∞	2	7		9	9	9
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	11.0	38.0		38.0	38.0	38.0	43.0	43.0		43.0	43.0	43.0
Total Split (s)	12.0	38.0		26.0	26.0	26.0	52.0	52.0		52.0	52.0	52.0
Total Split (%)	13.3%	42.2%		28.9%	28.9%	28.9%	27.8%	27.8%		22.8%	27.8%	27.8%
Maximum Green (s)	8.0	32.0		20.0	20.0	20.0	46.0	46.0		46.0	46.0	46.0
Yellow Time (s)	3.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	5.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	0.9		0.9	0.9	0.9	0.9	0.9		0.9	0.9	0.9
Lead/Lag	Lead			Lag	Lag	Lag						
-ead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	C-Max	C-Max		C-Max	C-Max	C-Max
Walk Time (s)		7.0		7.0	7.0	7.0	7.0	7.0		0.7	7.0	7.0
Flash Dont Walk (s)		25.0		25.0	25.0	25.0	30.0	30.0		30.0	30.0	30.0
Pedestrian Calls (#/hr)		0		0	0	0	0	0		0	0	0
Act Effct Green (s)	32.0	30.0		18.0	18.0	18.0	48.0	48.0		48.0	48.0	48.0
Actuated g/C Ratio	0.36	0.33		0.20	0.20	0.20	0.53	0.53		0.53	0.53	0.53
v/c Ratio	0.46	0.21		0.84	0.19	0.15	0.88	0.54		0.49	0.58	0.11
Control Delay	30.1	23.0		65.1	29.8	3.8	69.5	22.5		24.0	16.1	2.9
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	30.1	23.0		65.1	29.8	3.8	69.5	22.5		24.0	16.1	2.9
SO-	ပ	ပ		ш	ပ	¥	ш	O		ပ	В	⋖
Approach Delay		26.2			43.6			29.0			15.8	
Approach LOS		O			٥			O			В	

Area Type:
Cycle Length: 90
Actuated Cycle Length: 90
Offset 72 (80%). Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 165
Control Type: Actuated-Coordinated
Maximum v. Ratio: 0.88
Intersection Signal Delay; 25.1
Intersection Spacity Utilization 86.8%
Analysis Period (min) 15

Intersection LOS: C ICU Level of Service E

₫ Spilis and Phases: 7: Clarence Street South & Icomm Drive/Greenwich Street 09 90

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Queues 7: Clarence Street South & Icomm Drive/Greenwich Street

HCM Signalized Intersection Capacity Analysis 7: Clarence Street South & Icomm Drive/Greenwich Street

Detour: PM Peak Hour

Detour: PM Peak Hour

	•	†	\	ļ	4	•	←	۶	→	•	
Lane Group	田田	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Group Flow (vph)	196	237	190	137	22	160	1003	107	1100	96	
v/c Ratio	0.46	0.21	0.84	0.19	0.15	0.88	0.54	0.49	0.58	0.11	
Control Delay	30.1	23.0	65.1	29.8	3.8	69.5	22.5	24.0	16.1	2.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	30.1	23.0	65.1	29.8	3.8	69.5	22.5	24.0	16.1	2.9	
Queue Length 50th (m)	20.1	8.6	32.5	10.6	0.0	31.0	92.8	12.2	9.07	0.0	
Queue Length 95th (m)	48.8	26.3	1.99#	18.6	2.0	8.69#	109.5	31.1	90.9	7.3	
Internal Link Dist (m)		226.0		185.3			357.6		234.2		
Turn Bay Length (m)	75.0		35.0		30.0	75.0		105.0		70.0	
Base Capacity (vph)	426	1210	251	794	411	181	1851	218	1905	873	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.46	0.20	92.0	0.17	0.13	0.88	0.54	0.49	0.58	0.11	

FBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBT MBT								-	-	-			
March Marc	Movement	EB	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
180 129 88 175 126 51 147 845 78 98 1012 190 1900	Lane Configurations	<u></u>	₽		<u>, </u>	*	*-	F	₩.		×	‡	~
180 129 89 175 126 51 147 845 78 98 1012 100 1900 1900 1900 1900 1900 1900 1900 1900 100 100 100 1900 1900 1900 1900 1900 1900 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 101 101 101 1131 3574 1554 345 346 3574 100 100 101 101 101 1131 3574 1554 345 346 346 346 346 101 101 101 101 101 101 100 110 100 100 101 101 101 101 101 101 100 101 100 100 101 101 101 101 101 101 100 100 100 100 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101	Traffic Volume (vph)	180	129	88	175	126	51	147	845	8/	98	1012	.88
1900 1900	Future Volume (vph)	180	129	88	175	126	51	147	845	78	86	1012	88
1,00 0.95 0.0 0.	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1,00 0.95	Total Lost time (s)	4.0	0.9		0.9	0.9	0.9	0.9	0.9		0.9	0.9	0.9
1,00	Lane Util. Factor	1.00	0.95		0.1	0.95	1.00	1.00	0.95		0.1	0.95	1.00
1,00	Frpb, ped/bikes	1.00	0.39		1.00	1:00	0.98	1.00	1.00		9:	1:00	0.96
1,00 0.94 1,00 0.05 1,00 0.95	Flpb, ped/bikes	1.00	1.00		0.99	1.00	1.00	1.00	1.00		1.00	1.00	1.00
1786 3314 179 3574 1564 1762 3460 1787 3574 1787 1788 3414 1789 3574 1564 1780 3460 1787 3574 1564 1780 3460 1787 3574 1564 1780 3460 1787 3574 1564 3460 1787 3574 1780 3460 1787 1387 1780 3460 1787 1780 3574 3780 3780 3780 3780 3780 3780 3780 3780 3780 3780 3780 3780 3780 3780 3	FIT	00.1	0.94		00.1	8.6	0.00	00.1	0.99		00.1	9.1	0.00
1,000 1,00	Cotd Elou (arot)	1765	2244		1770	2574	1554	1762	2460		1707	00.1	1555
Fig. 202 0.9	Elt Dermitted	0.57	100		080	100	100	0 18	100		000	100	500
He oge oge oge oge oge oge oge oge oge og	Satd. Flow (perm)	1011	3311		1131	3574	1554	342	3460		410	3574	1555
196	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
196 34 0 0 0 0 0 0 0 0 0	Adj. Flow (vph)	196	140	6	190	137	22	160	918	82	107	1100	96
156 203	RTOR Reduction (vph)	0	34	0	0	0	44	0	7	0	0	0	45
National Contraction National Contractional Contraction National Contractional Contractional Contractional Contraction National Contractional Contractional Contractional Contraction National Contractional Contracti	Lane Group Flow (vph)	196	203	0	190	137	#	160	966	0	107	1100	51
2% 1% 1% 0% 1% 2% 3% 3% 1% 1% pm+pt NA Perm NA Perm NA Perm NA 4 4 8 8 2 6	Confl. Peds. (#/hr)	∞		24	54		∞	32					35
pm+pt NA Perm NA Perm Perm NA	Heavy Vehicles (%)	2%	1%	1%	%0	1%	2%	2%	3%	3%	1%	1%	%0
5) 7 4 8 8 2 6 5) 30.0 30.0 30.0 18.0 18.0 18.0 48	Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
S	Protected Phases	7	4			∞			2			9	
Sign	Permitted Phases	4			∞		∞	2			9		Ψ.
300 300 180 180 180 480 480 480 480 480 480 480 480 480 4	Actuated Green, G (s)	30.0	30.0		18.0	18.0	18.0	48.0	48.0		48.0	48.0	48.0
0.33 0.33 0.20 0.20 0.20 0.53 0.53 0.53 0.53 0.53 0.53 0.53 0.5	Effective Green, g (s)	30.0	30.0		18.0	18.0	18.0	48.0	48.0		48.0	48.0	48.0
1,000 0,00	Actuated g/C Ratio	0.33	0.33		0.20	0.20	0.20	0.53	0.53		0.53	0.53	0.53
3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Clearance Time (s)	4.0	0.9		0.9	0.9	0.9	0.9	0.9		0.9	0.9	0.9
March Marc	Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	<u>ج</u>
CO 04 0.06 0.04 0.04 0.29 0.29 0.26 0.17 0.01 0.047 0.29 0.26 0.18 0.18 0.18 0.18 0.18 0.18 0.18 0.18	Lane Grp Cap (vph)	404	1103		226	714	310	182	1845		218	1906	826
0.12 0.017 0.01 0.04 0.08 0.54 0.49 0.49 0.48 0.44 0.49 0.04 0.08 0.54 0.49 0.26 0.49 0.18 0.04 0.08 0.54 0.49 0.26 0.49 0.26 0.49 0.08 0.54 0.49 0.04 0.08 0.54 0.49 0.04 0.08 0.54 0.49 0.40 0.09 0.40 0.08 0.50 0.09 0.40 0.00 0.00 0.00 0.00 0.00 0.0	v/s Ratio Prot	c0.04	90:0			0.04			0.29			0.31	
0.49 0.18 0.84 0.19 0.04 0.88 0.54 0.49 0.49 0.18 0.84 0.19 0.04 0.88 0.54 0.49 0.49 0.22,6 21.3 3.46 2.59 2.90 1.85 1.38 1.3.3 2.22 0.3 0.1 2.3 5 0.1 0.0 36.0 0.9 7.7 2.9.7 2.9.7 58.2 30.1 2.9.1 63.3 2.18 21.0 C C C E C E C C E C C 2.9.7 43.9 2.50 HCM 2000 Level of Service C C C C C C C C C C C C C C C C C C C	v/s Ratio Perm	0.12			c0.17		0.01	c0.47			0.26		0.03
22.6 21.3 34.6 29.9 29.0 18.5 13.8 13.3 13.2 12.6 12.3 14.6 29.9 29.0 18.5 13.8 13.3 13.2 12.0 12.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1	v/c Ratio	0.49	0.18		0.84	0.19	0.04	0.88	0.54		0.49	0.58	90.0
127 139 1.00 1.00 1.48 1.52 1.00 1.00 1.00 1.48 1.52 1.00 1.00 0.00 0.1 1.00 1.00 1.00 1.00	Uniform Delay, d1	22.6	21.3		34.6	29.9	29.0	18.5	13.8		13.3	14.2	10.1
2 0.9 0.1 23.5 0.1 0.0 36.0 0.9 7.7 2.7 2.9 2.9 2.2 5.2 30.1 2.9 1 63.3 21.8 21.0 C C C C 2.0 C C C C C C C C C C C C C C C C C C C	Progression Factor	1.27	1.39		0.1	1:00	1:00	1.48	1.52		1:00	1.00	1:00
29.7 29.7 58.2 30.1 29.1 63.3 21.8 21.0 C C E C C E C C 3.7 43.9 27.5 D C D C C C C C C C C C C C C C C C C C	Incremental Delay, d2	6.0	0.1		23.5	0.1	0.0	36.0	0.9		7.7	1.3	0.1
C C E C C E C C C C C C C C C C C C C C	Delay (s)	29.7	29.7		58.2	30.1	29.1	63.3	21.8		21.0	15.4	10.3
29.7 43.9 27.5 C D C C C C C C C C C C C C C C C C C	Level of Service	O	O		ш	0	O	ш	O		ပ	Ω .	ш
y C D C belay 25.0 HCM 2000 Level of Service C o Capacity ratio 0.83 Wind Signature (s) 16.0 htt (s) 90.0 Sum of lost time (s) 16.0 Vibilization 86.8% ICU Level of Service E	Approach Delay (s)		29.7			43.9			27.5			15.5	
alay 25.0 HCM 2000 Level of Service 1.65 Capacity ratio 0.83 Sum of lost time (s) 0.00 Utilization 86.8% ICU Level of Service 86.8%	Approach LOS		O						O			മ	
alay 25.0 HCM 2000 Level of Service Capacity ratio 0.83 Sum of lost time (s) h (s) 90.0 Sum of lost time (s) Utilization 86.8% IOU Level of Service 1 10.0 10.0	Intersection Summary												
Capacity ratio 0.83 Sum of lost time (s) 90.0 Sum of lost time (s) Utilization 86.8% IOU Level of Sarvice	HCM 2000 Control Delay			25.0	Ĭ	CM 2000	Level of 8	Service		O			
h (s) 90.0 Sum of lost time (s) Utilization 8.8% ICU Level of Service	HCM 2000 Volume to Cap.	acity ratio		0.83									
Utilization 86.8% ICU Level of Service	Actuated Cycle Length (s)			0.06	S	um of lost	time (s)			16.0			
A	Intersection Capacity Utiliz	zation		%8.98	2	U Level o	of Service			ш			
Analysis Perod (min)	Analysis Daried (min)			40									

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190487 - Brantford Bridges EA PTSL

Intersection Summary

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

Queue shown is maximum after two cycles.

Detour: PM Peak Hour Lanes, Volumes, Timings 8: Erie Avenue & Veteran's Memorial Parkway/Clarence Street South

	→ E	† E	/► #	VB ≪	↓ IMM	√ WBW	√ 8	← ISN	₹	<u></u> → 8	→ I88	→ 88
1		*	į.	1	*	ì	1	*	*	1	5	
-0		908	-01	426	280	10	119	157	328	9	126	_
10		908	100	426	790	10	119	157	328	9	126	-
1900		1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
50.0			20.0	82.0		0.0	30:0		30.0	30.0		0.0
20.0				0.0		,	40.0			55.0		•
1.00		0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
			0.97	1.00			0.99		0.97	0.99	1.00	
			0.850		0.998				0.850		0.999	
	•	0	17.07	0.950	0010	c	0.950	107	7700	0.950	7070	c
0.326		3539	1615	7020	3208	0	7471	1845	1599	1805	18/9	0
	C.	3530	1564	381	3568	0	1208	1845	1553	1070	1879	C
	•	2	Yes	3		Yes	2	2	Yes	5	5	Yes
			109		က				311			
		20			20			20			20	
35	35	353.8			381.6			274.8			143.3	
2	N	25.5			27.5			19.8			10.3	
			7	7			6		16	16		6
	o.	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
		2%	%0	3%	1%	%0	3%	3%	1%	%0	1%	%0
7	∞	928	109	463	829	=	129	171	357	7	137	-
	٩	9	9	7	1	c	9	į	1	,	9	ď
~	×	9/9	<u> </u>	403	8/0	o :	671	<u> </u>	32/	- 1	25	> :
	1	2	2	و -	0 P	S :	9 9	<u>و</u>	2	0 4 -	9 ·	2
Left		Lett	Kight	Left	Lett	Kight	Left	Lett	Kight	Lett	Lett	Kight
		0.0			0.0			0.0			0.0	
		0.0			0.0			0.0			0.0	
		2			P			9			2	
1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
22			15	22		15	52		15	52		15
-		2	-	-	2		-	2	-	-	2	
	-	맫	Right	Left	Thru		Left	Thru	Right	Left	Thru	
	_	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	
0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
0:0		0.0	0:0	0:0	0.0		0.0	0:0	0:0	0.0	0.0	
		9.0	2.0	2.0	9.0		2.0	9.0	2.0	2.0	9.0	
CI+EX CI-	ਠੱ	CI+Ex	CI+EX	CI+EX	CI+Ex		CI+EX	CI+EX	CI+EX	CI+Ex	CI+EX	
		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
0:0		0:0	0:0	0:0	0:0		0.0	0:0	0:0	0.0	0.0	
0:0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
		9.4			9.4			9.4			9.4	
		9.0			9.0			9.0			9.0	
	0	CI+EX			Ċ÷Ę			Č+EX			Ċ÷ Č	
					0			0			0	
	- 1	0.0			0:0			0:0			0.0	-

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Lanes, Volumes, Timings 8: Erie Avenue & Veteran's Memorial Parkway/Clarence Street South

Detour: PM Peak Hour

	1	†	<u>/</u>	/	Ļ	4	•	—	•	۶	→	•
ane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	0,
ım Type	Perm	NA	Perm	pm+pt	NA		Perm	NA	Perm	Perm	Ν	
otected Phases		2		-	9			œ			4	

	١	t	•	•		,		-	_	k	•	7
Lane Group	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	Ν		Perm	AN	Perm	Perm	NA	
Protected Phases		2		-	9			∞			4	
Permitted Phases	2		2	9			∞		∞	4		
Detector Phase	2	2	2	-	9		∞	∞	∞	4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	7.0	10.0		7.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	33.0	33.0	33.0	11.0	33.0		31.0	31.0	31.0	31.0	31.0	
Total Split (s)	45.0	45.0	45.0	16.0	61.0		29.0	29.0	29.0	29.0	29.0	
Total Split (%)	20.0%	20.0%	20.0%	17.8%	%8.79		32.2%	32.2%	32.2%	32.2%	32.2%	
Maximum Green (s)	39.0	39.0	39.0	12.0	22.0		23.0	23.0	23.0	23.0	23.0	
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	1.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	0.9	0.9	0.9	4.0	0.9		0.9	0.9	0.9	0.9	0.9	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	None	C-Max		None	None	None	None	None	
Walk Time (s)	7.0	7.0	7.0		7.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	20.0	20.0	20.0		20.0		18.0	18.0	18.0	18.0	18.0	
Pedestrian Calls (#/hr)	0	0	0		0		0	0	0	0	0	
Act Effct Green (s)	39.0	39.0	39.0	64.7	62.7		15.3	15.3	15.3	15.3	15.3	
Actuated g/C Ratio	0.43	0.43	0.43	0.72	0.70		0.17	0.17	0.17	0.17	0.17	
v/c Ratio	0.04	0.57	0.15	0.81	0.35		0.63	0.55	0.69	0.04	0.43	
Control Delay	15.4	21.0	3.8	33.8	2.1		47.3	39.6	13.2	28.0	36.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	15.4	21.0	3.8	33.8	2.1		47.3	39.6	13.2	28.0	36.3	
SOT	ω	O	∢	ပ	A		۵	۵	ω	ပ	۵	
Approach Delay		19.1			13.1			26.8			35.9	
Approach LOS		മ			മ			O			٥	
Internation Cummon,												

WBTL, Start of Green

Control Type: Aduated-Coordinated Maximum v/c Ratio: 0.81 Intersection Sgrat Delay, 18.9 Intersection Capacity Utilization 83.7% Analysis Penod (min) 15

Intersection LOS: B ICU Level of Service E

Splits and Phases: 8: Erie Avenue & Veteran's Memorial Parkway/Clarence Street South ± 4. ë

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Queues 8: Erie Avenue & Veteran's Memorial Parkway/Clarence Street South

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Detour: PM Peak Hour

HCM Signalized Intersection Capacity Analysis 8: Erie Avenue & Veteran's Memorial Parkway/Clarence Street South Detour: PM Peak Hour

Movement		`	Ť	-	-	,	/		_	•	۶	•	*
	Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
10 806 100 426 790 10 119 157 328 6 126 100 1900 1900 1900 1900 1900 1900 1900	Lane Configurations	*	‡	*-	*	₩.		jr.	*	*-	<i>y</i> -	2	
10 806 100 426 790 10 119 157 328 6 126 100 100 190	Traffic Volume (vph)	10	908	100	426	790	10	119	157	328	9	126	_
1900 1900	Future Volume (vph)	9	908	100	426	790	9	119	157	328	9	126	_
100 0.95 0.00 0.95 1.00 1.00 0.90 1.00 1	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
100 0.95 1.00 1.00 0.95 1.00 1	l otal Lost time (s)	0.0	0.0	0.0	4.0	0.0		0.0	0.0	0.0	0.0	0.0	
1,00	Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	
100	Frpb, ped/bikes	1:00	1.00	0.97	1.00	0.00		1.00	00.1	0.97	00.1	0.1	
1905 1700	Flpb, ped/bikes	9.5	9.6	1.00	9.5	9.6		0.99	0.1	1.00	0.99	0.1	
1905 3539 1564 1752 3568 1738 1845 1553 1781 1879 1870 100 0.251 100 1	Fit Protected	0.00	0.0	100	0.00	8.6		0.95	001	100	0.95	0.0	
0.33 1.00 1.00 0.21 1.00 0.66 1.00 1.00 0.57 1.00 (1.93 1.00 1.00 0.21 1.00 0.66 1.00 1.00 0.57 1.00 (1.93 1.95 1.95 1.95 1.95 1.95 1.95 1.95 1.95	Satd. Flow (prot)	1805	3539	1564	1752	3568		1738	1845	1553	1781	1879	
Fig. 3539 1564 381 3568 1208 1845 1553 1071 1879 Fig. 3539 1564 381 3568 1208 1208 1563 1071 1879 Fig. 352 0.92 0.92 0.92 0.92 0.92 0.92 0.92 Fig. 352 0.92 0.92 0.92 0.92 0.92 0.92 Fig. 353 0.94 0.95 0.92 0.92 0.92 0.92 Fig. 354 0.96 0.96 0.96 0.96 0.96 Fig. 356 0.96 0.96 0.96 0.96 Fig. 357 0.96 0.96 0.96 0.96 Fig. 358 0.96 0.96 0.96 0.96 Fig. 359 0.96 0.96 0.97 0.17 0.17 0.17 Fig. 350 0.95 0.93 0.94 0.95 0.93 0.95 Fig. 350 0.95 0.95 0.95 0.95 0.95 Fig. 350 0.95 0.95 0.95 0.95 0.95 Fig. 350 0.95 0.95 0.95 0.95 0.95 Fig. 360 0.95 0.95 0.95 0.95 0.95 Fig. 370 0.95 0.95 0.95 0.95 Fig. 370 0.95 0.95 0.95 0.95 Fig. 370 0.95 0.95 0.	Flt Permitted	0.33	1.00	1.00	0.21	1.00		99.0	1.00	1.00	0.57	1.00	
He (192 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.	Satd. Flow (perm)	619	3539	1564	381	3568		1208	1845	1553	1071	1879	
11 876	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
National Color Nati	Adj. Flow (vph)	1	876	109	463	829	11	129	171	357	7	137	_
bi) 11 876 47 463 869 0 129 171 99 7 7 7 7 9 9 16 16 16 16 16 16 16 16 16 16 16 16 16	RTOR Reduction (vph)	0	0	62	0	_	0	0	0	258	0	0	
0% 2% 7 7 1% 9% 3% 1% <td>Lane Group Flow (vph)</td> <td>=</td> <td>876</td> <td>47</td> <td>463</td> <td>698</td> <td>0</td> <td>129</td> <td>171</td> <td>ගු :</td> <td>_ :</td> <td>138</td> <td></td>	Lane Group Flow (vph)	=	876	47	463	698	0	129	171	ගු :	_ :	138	
Perm MA Perm pm+pt NA Perm NA Perm Perm NA Perm Perm Perm NA Perm Perm	Confl. Peds. (#/hr) Heavy Vehicles (%)	%0	%6	\ %0	3%	7%	%0	50 %	3%	9 %	9 %	%	n %
s) 390 390 627 627 15.3 15.3 15.3 15.3 15.3 15.3 15.3 15.3	Turn Tyne	Perm	NA N	Perm	pm+nt	NA N	S	Perm	N AN	Perm	Perm	NA N	٥
Sample S	Protected Phases		2		-	9			œ			4	
San San Say	Permitted Phases	2		2	9			80		8	4		
390 390 390 627 627 153 153 153 153 153 60 60 60 60 40 60 60 60 60 60 60 60 60 60 60 60 60 60	Actuated Green, G (s)	39.0	39.0	39.0	62.7	62.7		15.3	15.3	15.3	15.3	15.3	
0.43 0.43 0.43 0.70 0.70 0.17 0.17 0.17 0.17 0.17 0.17	Effective Green, g (s)	39.0	39.0	39.0	62.7	62.7		15.3	15.3	15.3	15.3	15.3	
1,000 1,00	Actuated g/C Ratio	0.43	0.43	0.43	0.70	0.70		0.17	0.17	0.17	0.17	0.17	
10	Clearance Time (s)	0.9	0.9	0.9	4.0	0.9		0.9	0.9	0.9	0.9	0.9	
268 1533 6/7 565 2485 205 313 294 182 0.02 0.25 0.018 0.24 0.09 0.01 0.04 0.57 0.07 0.82 0.35 0.63 0.55 0.37 0.04 0.04 0.57 0.07 0.82 0.35 0.63 0.55 0.37 0.04 1.07 1.00 1.00 2.18 0.28 1.00 1.00 1.00 1.00 1.00 1.00 2.18 0.28 1.00 1.00 1.00 1.00 1.00 1.00 2.18 0.28 1.00 1.00 1.00 1.00 1.00 1.00 2.18 0.28 1.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1	Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
0.02 0.03 0.03 0.03 0.01 0.09 0.01 0.02 0.03 0.03 0.03 0.03 0.03 0.03 0.03	Lane Grp Cap (vph)	268	1533	229	565	2485		202	313	264	182	319	
0.04 0.07 0.03 0.03 0.03 0.01 0.01 0.01 0.01 0.01	v/s Katio Prot		0.25	0	00.18	0.24			0.09	0	3	0.07	
147 192 149 137 5.5 10.0 104 13.1 13.1 14.1 14.2 14.9 14.0 13.1 5.5 10.0 10.0 13.1 13.1 13.1 14.1 14.2 14.9 14.0 13.1 5.5 13.1 3.1 13.1 13.1 13.1 13.1 1	v/s Katio Perm	0.02]	0.03	00.33	ı		00.11	i.	0.06	0.01	9	
14.7 19.2 14.9 13.7 5.3 34.7 14.0 15.2 14.9 13.1 5.2 14.0 15.0 15.0 15.0 15.0 15.0 15.0 15.0 15	v/c Katio	0.04	0.57	0.0	0.82	U.35		0.63	0.55	0.37	0.04	0.43	
1,00 1,00 1,00 2,10 1,00	Uniform Delay, d'I	14.7	19.2	9.4	13.7	2.5		34.7	34.2	33.1	31.2	33.5	
150 100 101	Progression ractor	00.	00.1	9.5	7.5	0.20		00.4	0.1	2 5	9.5	00.	
B	niciental Delay, uz Delav (s)	15.0	20.8	15.1	37.5	2.0		40.6	36.1	34.0	31.3	34.4	
X 14.2 35.9 Y B D Ay 21.6 HCM 2000 Level of Service C hth (s) 90.0 Sum of lost time (s) 16.0 hullization 83.7% ICU Level of Service E 1 billization 45 ICU Level of Service E	Level of Service	2 00	0	<u> </u>	2	2 ≪				2	2	0	
Y B D Y 21.6 HCM 2000 Level of Service C o Capacity ratio 0.81 C C inth (s) 90.0 Sum of lost time (s) 16.0 u Vilization 83.7% ICU Level of Service E 1 15 16.0	Approach Delay (s)		20.1	1		14.2		ı	35.9			34.3	
21.6 HCM 2000 Level of Service 0.81 Sum of lost time (s) 83.7% ICU Level of Service 15	Approach LOS		ပ			В			٥			ပ	
21.6 HCM 2000 Level of Service 0.81 Sum of lost time (s) 83.7% ICU Level of Service 15	Intersection Summary												
0.81 90.0 Sum of lost time (s) 83.7% ICU Level of Service 15	HCM 2000 Control Delay			21.6	Î	CM 2000	Level of 5	Service		O			
90.0 Sum of lost time (s) 83.7% ICU Level of Service 15	HCM 2000 Volume to Capa	city ratio		0.81									
83.7% ICU Level of Service 15	Actuated Cycle Length (s)			90.0	S	um of lost	time (s)			16.0			
Analysis Parind (min) 15	Intersection Capacity Utiliza	ation		83.7%	0	U Level o	of Service			ш			
(IIIII) polio I cio di più	Analysis Darind (min)			15									

480 0 0 0.29

0.57

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

Queue shown is maximum after two cycles.

The control of the percentile queue is metered by upstream signal.

30.0 273 0 0 0 0.03

30.0

471

30.0

2488

85.0 574

50.0

1533

Lane Group Flow (vph)
vc Ratio
Control Delay
Queue Delay
Queue Length 50th (m)
Queue Length 50th (m)
Internal Link Dist (m)
Turn Bay Length (m)
Base Capacity (vph)
Siarvation Cap Reducth
Spillback Cap Reducth
Storage Cap Reducth
Rotinge Cap Reducth
Rotinge Cap Reducth
Rotinge Cap Reducth

268 268 0 0 0 0

138 0.43 36.3 36.3 36.3 36.3 36.4 19.3 0.04 28.0 0.0 28.0 1.1 4.5

357 357 0.69 13.2 0.0 7.3 7.3 31.6

171 171 0.55 39.6 0.0 39.6 29.0 44.2 44.2

NBL 129 0.63 47.3 0.0 47.3 22.3 37.0

870 0.35 2.1 2.1 7.0 18.6 357.6

WBL 463 0.81 33.8 0.0 33.8 44.9 m#76.3

109 0.15 3.8 0.0 0.0 0.0 9.2

876 0.57 21.0 0.0 21.0 61.3 80.2 329.8

11 15.4 15.4 15.4 11.1 4.4

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Appendix E

Protected-Permissive Left Turn Warrant

Protected-Permissive Left-Turn Phase Warrant (pm+pt)

Project: Three Grand River Crossings Municipal Class EA Transportation Study

Project Number: 190487

Intersection: Veteran's Memorial Parkway at Mt. Pleasant Street

Direction: Westbound

$$c = 1400 \left(\frac{G}{C}\right) - f v_0 + L_{ta}$$

Variable	Value
G (green time)	32 seconds
C (cycle length)	90 seconds
f	0.5
vo (opposing volume)	798 vehicles
L_{ta} = 7200/cycle length	80
c (Estimated Capacity)	179 vehicles
Forecast Left-Turn Volume	401 vehicles

Is "Forecast Left-Turn Volume" greater than "Estimated Capacity"? YES

Therefore, a protected-permissive left-turn phase is recommended.

Appendix F

Detour Traffic Operations Reports - Improvements

Lanes, Volumes, Timings

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Parkwa
Memorial
/eteran's l
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Street
Pleasant
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Detour: PM Peak Hour (Improvements)

	4	†	<u> </u>	-	↓	4	•	←	•	۶	→	*
ane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
ane Configurations	<u>r</u>	¥	¥C	r	‡	*-	۳	‡	*-	r	₩	
raffic Volume (vph)	72	694	104	401	929	223	11	88	254	144	83	103
-uture Volume (vph)	72	694	104	401	929	223	22	8	554	144	83	103
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
storage Length (m)	140.0		25.0	40.0		42.0	42.0		40.0	32.0		0.0
Storage Lanes	_		_	_		-	_		_	_		0
aper Length (m)	70.0			70.0			82.0			20.0		
ane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor			0.98	1.00			0.99		0.98	0.99	0.98	
			0.850			0.850			0.850		0.917	
It Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	3539	1599	1787	3574	1599	1736	3539	1583	1805	3245	0
It Permitted	0.284			0.181			0.625			209.0		
satd. Flow (perm)	524	3539	1566	340	3574	1599	1128	3539	1552	1145	3245	0
Right Turn on Red			Yes			Yes			Yes			Yes
atd. Flow (RTOR)			133			178			276		112	
ink Speed (k/h)		02			02			20			20	
ink Distance (m)		260.6			217.6			319.9			889.7	
ravel Time (s)		13.4			11.2			23.0			64.1	
Confl. Peds. (#/hr)			6	6			16		∞	∞		16
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
leavy Vehicles (%)	3%	7%	1%	1%	1%	1%	4%	2%	2%	%0	1%	%0
Adj. Flow (vph)	78	754	113	436	1010	242	84	96	276	157	06	112
Shared Lane Traffic (%)												
ane Group Flow (vph)	78	754	113	436	1010	242	84	96	276	157	202	0
Enter Blocked Intersection	8	2	2	2	8	8	2	2	2	8	8	S
ane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
ledian Width(m)		3.6			3.6			3.6			3.6	
ink Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
wo way Left Turn Lane												
leadway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
urning Speed (k/h)	52		15	22		15	22		15	52		15
Number of Detectors	_	2	-	-	2	_		2	_	_	2	
Detector Template	Left	Thru	Right	Left	Thr	Right		Thr	Right	Left	Thr	
eading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0		10.0	2.0	2.0	10.0	
railing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0:0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	9.0	2.0	2.0	9.0	2.0		9.0	2.0	2.0	9.0	
Detector 1 Type	CHE CHE	CI+EX	CHEX	CHEX	CI+EX	CI+EX	ਠਂ	CI+EX	CI+EX	CI+EX	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Defector 2 Position(m)		9.4			9 4			9.4			9.4	
Detector 2 Size(m)		9.0			9.0			9.0			9.0	
Detector 2 Type		CI+EX			CI+Ex			CI+Ex			CI+Ex	
or 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
			l	l		l		l	l	l		١

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Lanes, Volumes, Timings 1: Mt. Pleasant Street & Veteran's Memorial Parkway

Detour: PM Peak Hour (Improvements)

Lane Group		1	†	*	-	Ļ	1	•	—	•	۶	→	*
ses 5 2 1 6 6 8 8 77 ses 5 2 2 1 6 6 8 8 77 ses 5 2 2 1 6 6 8 8 77 ses 5 2 2 1 6 6 8 8 77 ses 5 2 2 1 6 6 8 8 77 ses 5 2 2 1 6 6 8 8 77 ses 5 2 2 1 6 6 8 8 77 ses 5 2 2 1 6 6 8 8 77 ses 5 2 2 1 6 6 8 8 77 ses 5 2 2 1 6 6 8 8 77 ses 5 2 2 1 6 6 8 8 77 ses 5 2 2 1 6 6 8 8 77 ses 5 2 2 1 6 6 6 8 8 77 ses 5 2 2 1 6 6 6 8 8 77 ses 5 2 2 1 6 6 6 8 8 77 ses 5 2 2 1 6 6 6 8 8 77 ses 6 2 2 2 1 110 340 330 330 110 set 6 3 3 8 8 7 70 set 6 3 2 2 2 1 10 2 10 set 8 2 2 2 2 1 10 2 10 set 8 2 2 2 2 2 10 set 8 2 2 2 2 2 10 set 8 2 2 2 2 2 10 set 8 2 2 2 2 2 2 2 2 set 8 2 2 2 2 2 2 2 set 8 2 2 2 2 2 2 2 set 8 2 2 2 2 2 2 2 set 8 2 2 2 2 2 2 set 9 2 2	Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
See	Turn Type	pm+pt	Α	Perm	pm+pt	AN	Perm	pm+pt	NA	Perm	pm+pt	NA	
(s) 7.0 10.0 10.0 7.0 10.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0	Protected Phases	2	5		~	9		က	∞		7	4	
(s) 7.0 10.0 7.0 10.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0	Permitted Phases	2		2	9		9	∞		∞	4		
(s) 7.0 10.0 10.0 7.0 10.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0	Detector Phase	2	2	2	~	9	9	က	∞	∞	7	4	
(s) 770 100 100 770 100 770 770 770 770 770	Switch Phase												
(s) 110 340 340 110 340 340 110 330 330 110 110 340 340 340 110 340 340 340 110 340 340 340 110 340 340 340 110 340 340 340 110 340 340 340 110 340 340 340 110 340 340 340 110 340 340 340 110 340 340 340 340 340 340 240 240 240 240 240 240 240 240 240 2	Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	7.0	7.0	7.0	7.0	
11,0 34,0 34,0 35,0 35,0 11,0 33,0 33,0 11,0 12,2,3 37,8,8 37,8,8 38,9,8 38,9,8 12,2,8 37,8,8 38,9,8 12,2,8 37,8,8 37,8,8 38,9,8 12,2,8 37,8,8 38,9,8 12,2,8 37,8 37,8 38,9,8 12,2,8 37,9 37,0 27,0	Minimum Split (s)	11.0	34.0	34.0	11.0	34.0	34.0	11.0	33.0	33.0	11.0	33.0	
12.2% 37.8% 37.8% 13.3% 38.9% 38.9% 12.2% 36.7% 36.7% 12.2% 37.9	Total Split (s)	11.0		34.0	12.0	35.0	35.0	11.0	33.0	33.0	11.0	33.0	
State	Total Split (%)	12.2%		37.8%	13.3%	38.9%	38.9%	12.2%	36.7%	36.7%	12.2%	36.7%	
30 4.0 4.0 3.0 4.0 3.0 4.0 3.0 4.0 3.0 4.0 3.0 4.0 3.0 4.0 3.0 4.0 3.0 4.0 4.0 3.0 4.0 4.0 2.0 1.0 2.0 1.0 2.0 1.0 2.0 1.0 2.0 1.0 2.0 1.0 2.0 1.0 2.0 1.0 2.0 1.0 2.0 1.0 2.0 1.0 2.0 1.0 2.0 1.0 2.0 1.0 2.0 1.0 2.0 1.0 2.0 1.0 2.0 2.0 1.0 2.0 2.0 1.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2	Maximum Green (s)	7.0		28.0	8.0	29.0	29.0	7.0	27.0	27.0	7.0	27.0	
10 20 20 10 20 20 10 20 20 10 20 20 10 20 20 10 40 60 60 60 60 60 60 60 60 60 60 60 60 60	Yellow Time (s)	3.0		4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	
100 0.0	All-Red Time (s)	1.0		2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	
(s) 30 40 60 60 4.0 60 60 4.0 60 60 4.0 60 60 4.0 6.0 6.0 4.0 (s) 1640 Lead Legg Legg Lead Legg Legg Lead Legg Legg Legg Legg Legg Legg Legg Leg	Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
(s) 30 30 129 Lead Lag Lead Lead Lag Lead Lag Lead Lead Lag Lead Lead Lag Lead Lead Lead Lead Lead Lead Lead Lead	Total Lost Time (s)	4.0	0.9	0.9	4.0	0.9	0.9	4.0	0.9	0.9	4.0	0.9	
(s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
(s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Lead-Lag Optimize?												
None C-Max C-Max None C-Max C-Max None None None None None None C-Max C-Max None None None None None None None None	Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
1,0 1,0	Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	
STA 210 210 210 210 200 200	Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		2.0	
Hith) 37.4 28.0 28.6 8.8 48.5 48.5 18.2 9.2 9.2 19.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Flash Dont Walk (s)		21.0	21.0		21.0	21.0		20.0	20.0		20.0	
37.4 28.0 28.0 48.5 48.5 18.2 9.2 9.2 19.0 0.0 0.0 0.2 0.3 0.2 0.3 0.2 0.3 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	
io 0.42 0.31 0.31 0.66 0.54 0.50 0.10 0.10 0.10 0.21 0.24 0.54 0.54 0.54 0.54 0.54 0.54 0.54 0.5	Act Effct Green (s)	37.4	28.0	28.0	59.8	48.5	48.5	18.2	9.5	9.5	19.0	11.4	
024 0.68 0.20 0.68 0.52 0.26 0.31 0.27 0.68 0.54 1.08 1.08 1.08 1.08 1.08 1.08 1.08 1.08	Actuated g/C Ratio	0.45	0.31	0.31	99.0	0.54	0.54	0.20	0.10	0.10	0.21	0.13	
108 310 39 200 159 50 291 381 138 419 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 108 110 39 200 159 50 291 381 138 419 B C A C B A C 291 381 138 419 C B A C 21 381 138 419 C B B C A C B B D 26.1 154 C 21.7 B C C many Other	v/c Ratio	0.24	0.68	0.20	0.68	0.52	0.26	0.31	0.27	0.68	0.54	0.40	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Control Delay	10.8	31.0	3.9	20.0	15.9	2.0	29.1	38.1	13.8	41.9	27.7	
10.8 31.0 3.9 20.0 15.9 5.0 29.1 38.1 13.8 41.9 B C A C B A C D B D 26.1 15.4 21.7 C B C C C C C C C C C C C C C C C C C	Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
B C A C B A C D B D 26.1 15.4 21.7 C B C B A C D B D many Other	Total Delay	10.8	31.0	3.9	20.0	15.9	2.0	29.1	38.1	13.8	41.9	27.7	
26.1 15.4 21.7 C B C C Many Other	SOT	В	O	⋖	ပ	В	⋖	ပ	Ω	ш	Ω	ပ	
mary Other	Approach Delay		26.1			15.4			21.7			33.9	
mary	Approach LOS		O			В			O			O	
	Intersection Summary												
Cycle Length: 90	Area Type:	Other											
	Cycle Lenath: 90												

Actuated Cycle Length: 90
Offset 5 (6%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.68
Intersection Start Delay: 21.1
Intersection Capacity Utilization 81.2%
Analysis Period (min) 15

Intersection LOS: C ICU Level of Service D

Splits and Phases: 1: Mt. Pleasant Street & Veteran's Memorial Parkway



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Queues 1: Mt. Pleasant Street & Veteran's Memorial Parkway

Detour: PM Peak Hour (Improvements)

Lane Group EBL EBT EBR WBI WBT NBI NBI NBI NBI SBI SBI Lane Group Flow (vph) 78 754 113 436 1010 242 84 96 276 157 202 v. Ratio 0.24 0.68 0.20 0.68 0.20 0.68 0.31 0.72 0.68 0.50 0.6 0.31 0.27 0.68 0.50 0.0		\	Ť	*	•		,	_	-	_		•
78 754 113 436 1010 242 84 96 276 157 678 62 024 068 0.20 0.28 0.31 0.27 0.68 0.54 0.00 0.00 0.00 0.00 0.00 0.00 0.00	Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
0.24 0.68 0.20 0.68 0.52 0.26 0.31 0.27 0.68 0.54 10.8 31.0 31.0 31.0 0.0 15.9 50.291 38.1 13.8 41.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Lane Group Flow (vph)	78	754	113	436	1010	242	84	96	276	157	202
10.8 31.0 3.9 20.0 15.9 50 29.1 38.1 13.8 41.9 10.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	v/c Ratio	0.24	89.0	0.20	0.68	0.52	0.26	0.31	0.27	89.0	0.54	0.40
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Control Delay	10.8	31.0	3.9	20.0	15.9	2.0	29.1	38.1	13.8	41.9	27.7
10.8 31.0 3.9 20.0 15.9 50 29.1 38.1 13.8 41.9 41.2 62.7 0.0 391.1 593.3 5.3 12.4 8.7 0.0 25.7 11.1 83.3 9.0 #98.4 95.2 20.9 22.2 15.1 21.6 42.4 8.7 0.0 25.7 11.1 83.3 9.0 #98.4 95.2 20.9 22.2 15.1 21.6 42.4 8.7 0.0 25.7 140.0 25.7 140.0 25.7 140.0 25.0 40.0 25.0 12.2 15.1 21.6 42.4 8.7 0.0 25.0 12.2 15.1 21.6 42.4 42.0 25.4 140.0 25.0 10.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4.2 62.7 0.0 39.1 59.3 5.3 12.4 8.7 0.0 25.7 11.1 83.3 9.0 #98.4 95.2 20.9 22.2 15.1 21.6 42.4 140.0 236.6 40.0 45.0 225.0 40.0 35.0 319 1101 57.8 64.0 1927 94.4 275 1061 658 293 1 0 <td< td=""><td>Total Delay</td><td>10.8</td><td>31.0</td><td>3.9</td><td>20.0</td><td>15.9</td><td>2.0</td><td>29.1</td><td>38.1</td><td>13.8</td><td>41.9</td><td>27.7</td></td<>	Total Delay	10.8	31.0	3.9	20.0	15.9	2.0	29.1	38.1	13.8	41.9	27.7
11.1 83.3 9.0 #98.4 95.2 20.9 22.2 15.1 21.6 42.4 82.4 140.0 22.6 40.0 95.2 20.9 22.2 15.1 21.6 42.4 82.4 140.0 25.0 40.0 92.7 45.0 45.0 96.0 90.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Queue Length 50th (m)	4.2	62.7	0.0	39.1	59.3	5.3	12.4	8.7	0.0	25.7	8.3
140.0 256. 40.0 45.0 45.0 40.0 55.0 40.0 35.0 40.0 319.1 45.0 45.0 40.0 35.0 40.0 35.0 40.0 319.1 45.0 45.0 40.0 35.0 40.0 319.0 40.0 310.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0	Queue Length 95th (m)	11.1	83.3	9.0	#98.4	95.2	20.9	22.2	15.1	21.6	45.4	19.8
140.0 25.0 40.0 45.0 45.0 45.0 35.0 35.0 35.0 35.0 35.0 35.0 35.0 3	Internal Link Dist (m)		236.6			193.6			295.9			865.7
319 1101 578 640 1927 944 275 1061 658 293 1	Turn Bay Length (m)	140.0		25.0	40.0		45.0	45.0		40.0	35.0	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Base Capacity (vph)	319	1101	218	640	1927	944	275	1061	658	293	1051
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
0.24 0.68 0.20 0.68 0.52 0.26 0.31 0.09 0.42 0.54 Image avosants consortive minima who homes	Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
0.24 0.68 0.20 0.68 0.52 0.26 0.31 0.09 0.42 0.54 in a expendit consortiv mining what has homer	Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Intersection Summary # GFh nercentia volume avvoante canacitiv rulaia may be lonner	Reduced v/c Ratio	0.24	0.68	0.20	0.68	0.52	0.26	0.31	60.0	0.42	0.54	0.19
# 95th nerventile volume exceeds canacity cuere may be longer	Intersection Summary											
י ספור ספורים מספים משמים לי מפתח המשתיים לי מחשים בי ישור של היים מחשים בי ישור היים היים מיים בי ישור היים היים מיים היים מיים היים מיים מיים	# 95th percentile volume e	exceeds car	acity, que	eue may	be longer							

HCM Signalized Intersection Capacity Analysis 1: Mt. Pleasant Street & Veteran's Memorial Parkway

Detour: PM Peak Hour (Improvements)

	1	†	1	/	Į.	4	•	←	*	۶	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	\$	ĸ.	r	*	*	F	*	*-	r	₩	
Traffic Volume (vph)	72	694	104	401	929	223	11	88	254	144	83	103
Future Volume (vph)	72	694	104	401	929	223	77	88	254	144	83	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	0.9	0.9	4.0	0.9	0.9	4.0	0.9	0.9	4.0	0.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1:00	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00	
꿆	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.92	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1752	3539	1566	1787	3574	1599	1723	3539	1552	1798	3245	
Flt Permitted	0.28	1.00	1.00	0.18	1.00	1.00	0.62	1.00	1.00	0.61	1.00	
Satd. Flow (perm)	523	3539	1566	340	3574	1599	1133	3539	1552	1148	3245	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adi. Flow (vph)	28	754	113	436	1010	242	84	96	276	157	06	112
RTOR Reduction (vph)	0	0	79	0	0	82	0	0	245	0	86	0
Lane Group Flow (vph)	78	754	32	436	1010	157	84	96	31	157	104	0
Confl. Peds. (#/hr)			6	6			16		∞	∞		16
Heavy Vehicles (%)	3%	2%	1%	1%	1%	1%	4%	2%	2%	%0	1%	%0
Turn Type	pm+pt	NA	Perm	pm+pt	N	Perm	pm+pt	AN	Perm	pm+pt	NA	
Protected Phases	S	7		~	9		က	œ		7	4	
Permitted Phases	2		2	9		9	∞		∞	4		
Actuated Green, G (s)	33.2	27.2	27.2	57.0	47.0	47.0	15.6	10.0	10.0	18.4	11.4	
Effective Green, g (s)	33.2	27.2	27.2	22.0	47.0	47.0	15.6	10.0	10.0	18.4	11.4	
Actuated g/C Ratio	0.37	0:30	0:30	0.63	0.52	0.52	0.17	0.11	0.11	0.20	0.13	
Clearance Time (s)	4.0	0.9	0.9	4.0	0.9	0.9	4.0	0.9	0.9	4.0	0.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	274	1069	473	630	1866	832	233	393	172	285	411	
v/s Ratio Prot	0.02	0.21		c0.20	0.28		0.02	0.03		c0.04	0.03	
v/s Ratio Perm	0.09		0.02	c0.24		0.10	0.04		0.02	c0.07		
v/c Ratio	0.28	0.71	0.07	0.69	0.54	0.19	0.36	0.24	0.18	0.55	0.25	
Uniform Delay, d1	18.8	27.8	22.4	14.7	14.3	11.4	32.3	36.5	36.3	31.2	35.5	
Progression Factor	00.1	00 !	00 !	00.1	0.1	9.	99 :	1:00	9.1	1.24	1.49	
Incremental Delay, d2	9.0	3.9	0.3	3.3	-	0.5	1.0	0.3	0.5	2.3	0.3	
Delay (s)	19.3	31.8	22.7	18.0	15.5	11.9	33.3	36.9	36.8	41.0	53.2	
Level of Service	മ	ပ	O	В	В	Ф	O	۵	۵	_	۵	
Approach Delay (s)		29.7			15.6			36.2			47.9	
Approach LOS		O			ш			٥			٥	
Intersection Summary												
HCM 2000 Control Delay			25.5	Ĭ	HCM 2000 Level of Service	Level of	Service		O			
HCM 2000 Volume to Capacity ratio	ity ratio		0.70									
Actuated Cycle Length (s)			0.06	ઝ	Sum of lost time (s)	time (s)			20.0			
Intersection Capacity Utilization	ion		81.2%	೨	CU Level of Service	f Service			Ω			
Analysis Period (min)			15									
c Critical Lane Group												

c Critical Lane Group

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