



paradigm
TRANSPORTATION SOLUTIONS LIMITED

388 Main Street East Town of Milton, ON Traffic Impact & Parking Study

Paradigm Transportation Solutions Limited

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Project Summary



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Project Summary



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Executive Summary

Content

Paradigm Transportation Solutions Limited (Paradigm) was retained to conduct this Transportation Impact Study (TIS) and parking study for a proposed residential development at 388 Main Street East in the Town of Milton.

Official Plan Amendment and Zoning By-law Amendment applications are required to permit the proposed development.

This study determines the impacts of the development traffic on the surrounding road network and identifies the recommended improvements, if necessary, to accommodate the site-generated traffic.

Development Concept

The subject site is on the south side of Main Street and bounded by Prince Street and Bruce Street, at the municipal address 388 Main Street East in Milton, Ontario. The applicant proposes an 18-storey tower and six-storey podiums with ground-floor retail space. The proposed building includes approximately 815 m² (8,773 sq.ft.) of commercial space and 570 high-rise residential units. All parking is proposed to be accommodated underground via access from Pearl Street. Build-out is anticipated to occur by Year 2029.

Vehicle access is proposed by private driveway connections to Bruce Street and Pearl Street.

Conclusions

The main findings and conclusions of this study are as follows:

Traffic Impact Study

- ▶ **Study Area:** The intersections assessed in this study include:
 - Main Street East & Ontario Street (signalized);
 - Main Street East & Bruce Street (unsignalized);
 - Main Street East at Prince Street (unsignalized);
 - Pearl Street at Bruce Street (unsignalized);
 - Ontario Street at Pearl Street (unsignalized); and
 - Up to two proposed driveways to Pearl Street and Bruce Street.



- ▶ **Existing Traffic Conditions:** Critical movements are observed at the westbound left-turn lane, operating at LOS D, with queues extending beyond the available storage by up to 25 metres in the weekday AM peak hour and 40 metres in the weekday PM peak hour. The through-right lane also experiences delays in the LOS D range during the PM peak.
- ▶ **Trip Generation:** The site's trip generation is estimated to be approximately 170 weekday AM and 242 weekday PM peak-hour trips. With the consideration of internal trips, the site is forecast to generate 166 weekday AM and 216 weekday PM peak-hour trips.
- ▶ **Background Traffic Conditions:** Under the 2034 Background horizon, critical movements are forecast at the intersection of Main Street East at Ontario Street during the weekday peak hours. These include the eastbound left, westbound through-right, northbound left, northbound through-right, and southbound through-right lanes, with many movements operating at v/c ratios above 0.95 and/or experiencing queues that exceed the available storage. The westbound left-turn lane is also projected to operate with delays in the LOS F range during the weekday peak hours.

The southbound approach of the Main Street East at Prince Street/ 377 Main Street East intersection is also expected to experience critical movements, operating in the LOS D range during the weekday PM peak hour.

Similar operational issues are forecast under the 2039 Background horizon, with further degradation for approaches experiencing critical movements.

Total Traffic Conditions: Site-generated traffic is generally forecast to add less than 10 seconds of delay to the study area's intersections. Similar capacity issues are forecast under the 2034 and 2039 Total horizon to the future Background horizons, with a slight increase in delays and queue lengths with the inclusion of site-generated traffic.

The site driveway approaches to Bruce Street and Pearl Street are all forecast to operate with acceptable levels of service.

- ▶ **Remedial Measures:** To alleviate capacity issues at the intersection of Main Street East at Ontario Street, the Town may consider optimizing the signal timings to provide additional green time for left-turning vehicles. The Town should also promote alternative modes of transportation to reduce the number of vehicle trips in the study area.



No remedial measures are necessary for the northbound and southbound approaches at the intersection of Main Street East at Prince Street/ 377 Main Street East. While the minor road approaches are characterized by LOS D, the approaches operate within capacity, and this is not unusual where a minor road operating under stop control intersects with a major road.

Parking Study

- ▶ Despite Zoning Bylaw 89-2022 stipulating 1.00 parking space per residential unit, the Province of Ontario passed Bill 185 on June 6, 2024, which amends the Planning Act. This bill limits the ability of official plans and zoning bylaws to require property owners to provide or maintain parking facilities in protected major transit station areas and certain surrounding areas.
- ▶ Specifically, Bill 185 states that no official plan or zoning bylaw can require owners or occupants to provide vehicular parking—except for bicycles—on land not part of a highway in Protected major transit station areas.
- ▶ The proposed development is located within a Protected Major Transit Station Area in the Town of Milton, meaning that the requirement for vehicular parking is zero.
- ▶ Despite the impact of Bill 185, it is crucial to accommodate practical parking demand for the proposed development to ensure its marketability and functionality.
- ▶ A review of actual parking demands indicates a maximum need of 0.81 to 0.86 resident parking spaces per unit and 0.14 to 0.21 visitor spaces. These figures align with the Town's current parking demands for areas outside a Parking Management Transportation Study Area (PMTSA).
- ▶ For sites within a PMTSA, a parking rate of 0.73 spaces per unit is more appropriate, considering the excellent transit and pedestrian access. The recommended parking standards are:
 - Resident: 0.58 spaces per unit
 - Residential Visitor: 0.15 spaces per unit



Recommendations

Based on the findings of this study, the following is recommended:

- ▶ The site's TDM program should be implemented and monitored over time to help manage its transportation and parking impacts.
- ▶ The site's loading area should be reoriented to an east-west orientation to improve access for large design vehicles.
- ▶ The site's underground parking garage should have some sections adjacent to the central ramp terminal to operation in a one-way direction to reduce potential conflicts.
- ▶ The Town should consider converting the eastbound and southbound right-turn slip lanes to conventional right-turn lanes to improve the pedestrian crossing environment.
- ▶ The Town is recommended to monitor the traffic volumes of Main Street East at Ontario Street and adjust the signal timings as required.



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1 Introduction

Paradigm Transportation Solutions Limited (Paradigm) to conduct this Transportation Impact Study (TIS) and Parking Study for a proposed residential development of 388 Main Street East in the Town of Milton. **Figure 1.1** illustrates the site location.

Official Plan Amendment and Zoning By-law Amendment applications are required to permit the proposed development.

The scope of the study includes:

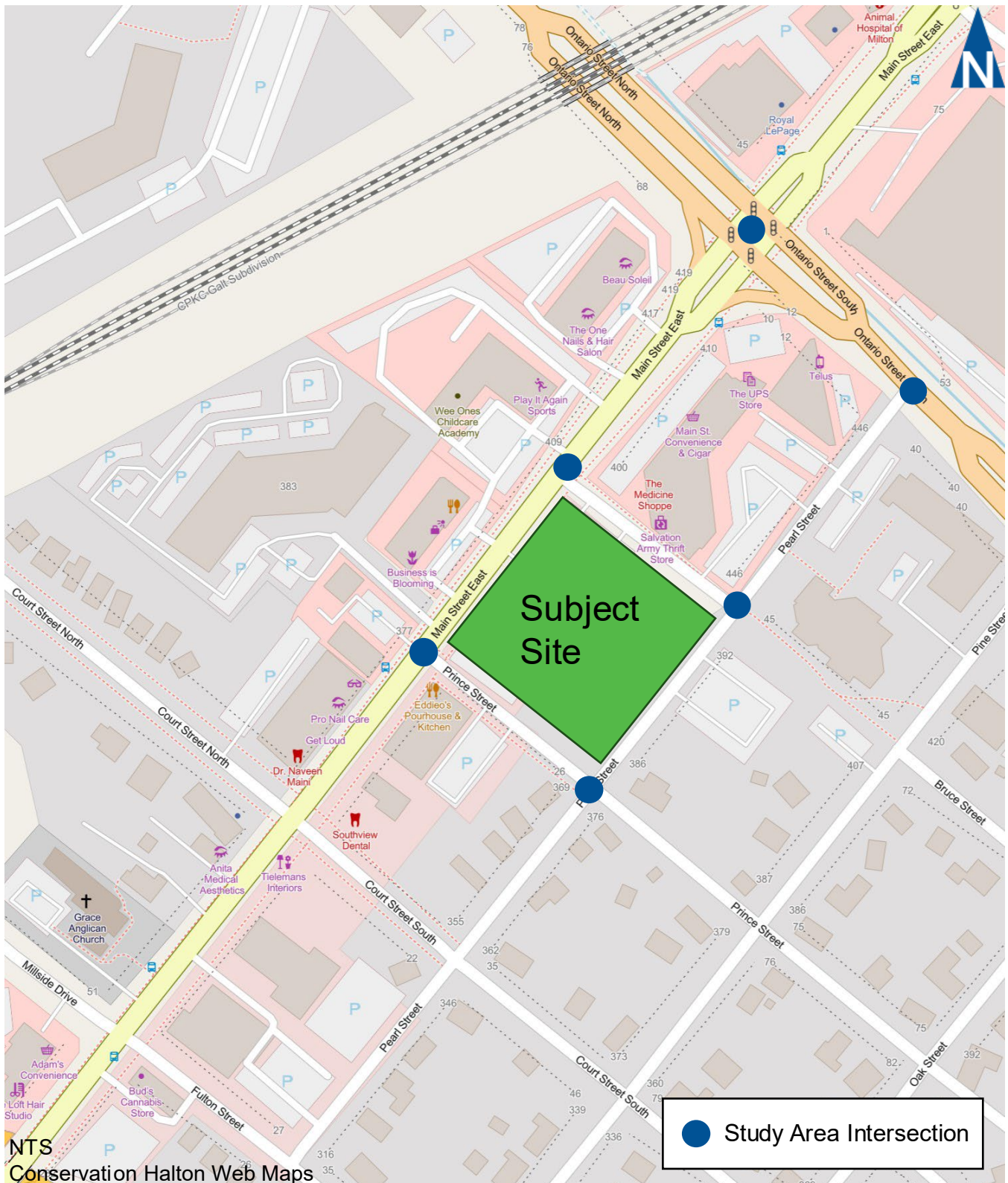
- ▶ Assessment of the current traffic conditions within the study area;
- ▶ Estimates of background traffic growth;
- ▶ Estimates of additional traffic generated by the subject site;
- ▶ Analyses of the impact of the future traffic on the surrounding road network;
- ▶ Recommendations necessary to mitigate this future traffic in a satisfactory manner; and
- ▶ Review the proposed parking supply and determine its adequacy compared to estimated parking demands.

Pre-study consultation was conducted with the Town of Milton in September 2024. **Appendix A** contains the pre-study consultation material.

The intersections assessed in this study include:

- ▶ Main Street East & Ontario Street (signalized);
- ▶ Main Street East & Bruce Street (unsignalized);
- ▶ Main Street East at Prince Street (unsignalized);
- ▶ Pearl Street at Bruce Street (unsignalized);
- ▶ Ontario Street at Pearl Street (unsignalized); and
- ▶ Up to two proposed driveways to Pearl Street and Bruce Street.





2 Existing Conditions

2.1 Roadway

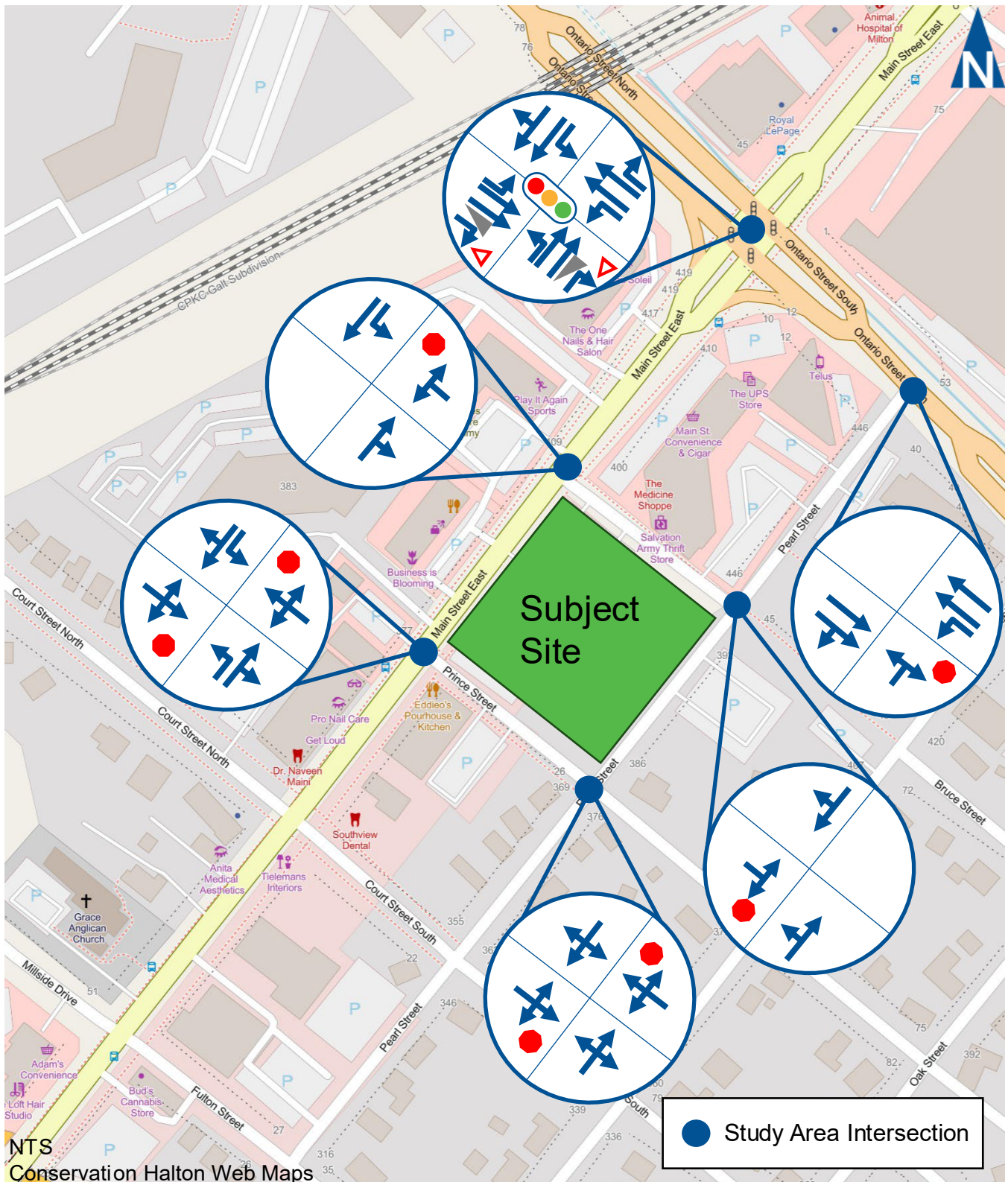
The roadways¹ of interest within the study area include:

- ▶ **Main Street East** is an east-west multi-purpose arterial with a three-lane cross-section west of Ontario Street, and a four-lane cross to the east, with a posted speed limit of 50 km/h. Active transportation facilities, including sidewalks on both sides of the road. There are no dedicated cycling facilities along this roadway within the study area.
- ▶ **Ontario Street** is a north-south multi-purpose arterial with a five-lane cross-section north of Main Street East and a four-lane cross-section to the south, with a posted speed limit of 50 km/h within the study area. Active transportation facilities, including sidewalks on both sides of the road. There are no dedicated cycling facilities along this roadway within the study area.
- ▶ **Bruce Street** is a north-south local roadway with a two-lane cross-section and an assumed statutory speed limit of 50 km/h. Active transportation facilities include sidewalks on the road's east side. There are no dedicated cycling facilities along this roadway within the study area.
- ▶ **Pearl Street** is an east-west local roadway with a two-lane cross-section and an assumed statutory speed limit of 50 km/h. Active transportation facilities, including sidewalks on both sides of the road. There are no dedicated cycling facilities along this roadway within the study area.
- ▶ **Prince Street** is a north-south local roadway with a two-lane cross-section and an assumed statutory speed limit of 50 km/h. Active transportation facilities include sidewalks on the road's west side. There are no dedicated cycling facilities along this roadway within the study area.

Figure 2.1 illustrates the lane configurations and traffic control at the study area intersections.

¹ Regional Municipality of Halton – Regional Road Network, December 2021





2.2 Pedestrian and Cycling Network

Pedestrian infrastructure typically consists of sidewalks or multi-use paths parallel to the roadway.

Cycling infrastructure typically consists of on-street and off-street facilities. On-street facilities comprise cycling lanes, signed cycling routes, and paved shoulders. Off-street facilities are in the form of multi-use or informal trails.

Concerning the study area's active transportation facilities, sidewalks are provided on at least one side of the road at Main Street East, Ontario Street, Bruce Street, Prince Street, and Pearl Street. There are no other cycling facilities within the study area.

2.3 Transit

2.3.1 Milton Transit

Milton Transit is the public transit operator in the Town of Milton.

Figure 2.2 illustrates the existing transit network relative to the location of the subject site. The following route provides direct connections to the site:

- ▶ **Route 2 (Main)** operates in a loop from the Milton Crossroads Centre to the Milton GO Station and back. Weekday service is provided from 5:25 AM to 10:15 PM, with 30 to 45 minutes headways. On Saturdays, service is provided from 7:00 AM to 7:30 PM with a headway of 30 minutes.
- ▶ **Route 6 (Scott)** operates in a loop from the Milton GO Station to the Savoline & Pringle stop and back. Weekday service is provided from 5:25 AM to 10:15 PM, with headways varying between 15 to 60 minutes. On Saturdays, service is provided from 7:30 AM to 7:00 PM with a headway of 60 minutes.
- ▶ **Route 7 (Harrison)** operates in a loop from the Milton GO Station to the Dymott & Savoline stop and back. Weekday service is provided from 5:25 AM to 10:15 PM with headways between 15 to 60 minutes. On Saturdays, service is provided from 8:00 AM to 7:30 PM with a headway of 60 minutes.
- ▶ **Route 9/9A (Ontario South)** operates in a loop from the Milton GO Station to the Farmstead & Britannia stop and back. Weekday service is provided from 5:25 AM to 10:15 PM with 30 to 60 minutes headways. On Saturdays, service is provided from 7:30 AM to 7:00 PM with a headway of 60 minutes.



- ▶ **Route 53 (School Extra)** provides a dedicated bus service for students travelling between Milton GO and Elsie MacGill Secondary School from September to June on instructional school days. The weekday service departs from Milton GO at 7:50 AM, heading to the school, with a return trip from Elsie MacGill Secondary School to Milton GO at 3:25 PM.

The bus stops serving these routes are conveniently located near the site access intersections, making it easily accessible for development residents. Routes 2, 6, and 53 can be found at the intersection of Main Street East at Court Street South and Main Street East at Ontario Street, both less than 130 metres (2-minute walk) from the subject site. Routes 7 and 9/9A can be accessed from the intersection of Pine Street at Ontario Street, approximately 140 metres south of Main Street East.

2.3.2 GO Transit Service

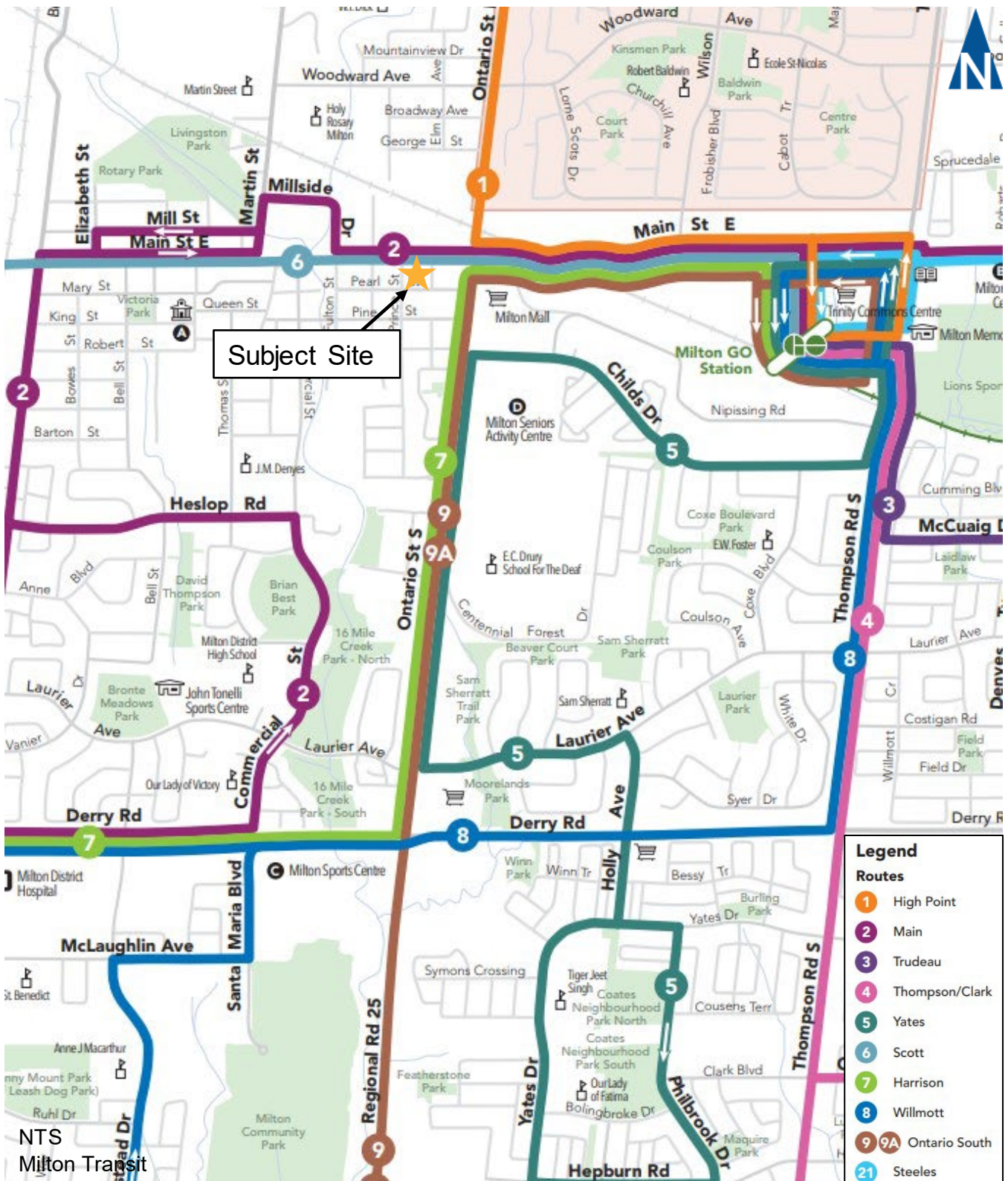
The Milton GO station is located about 1.6 kilometres east of the subject site and approximately a 20-minute walk or seven-minute transit ride on Routes 2, 6 and 52. Since this GO line provides train service to Mississauga and Downtown Toronto, it is expected that the subject site will attract residents that will use both City transit and inter-regional transit for commuting purposes

2.4 Traffic Volumes

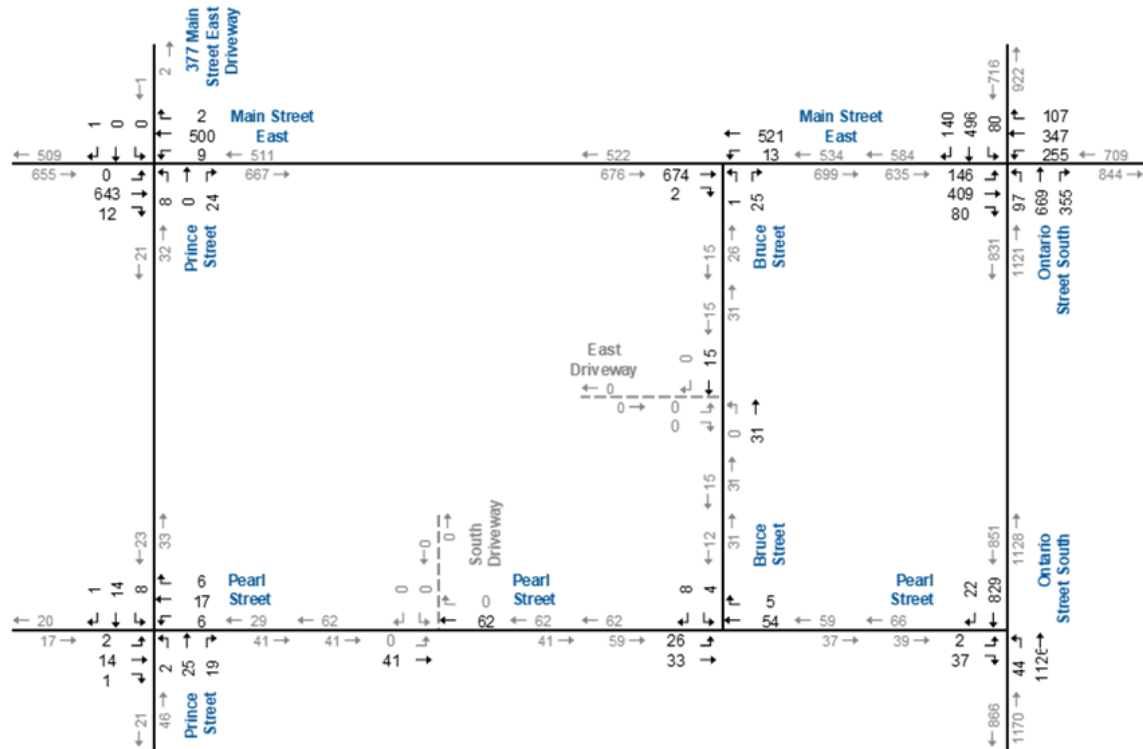
Paradigm collected Turning Movement Counts (TMC) data at the study area intersections in October 2024. **Appendix B** contains the existing count data.

Figure 2.3 illustrates the existing peak-hour traffic volumes.

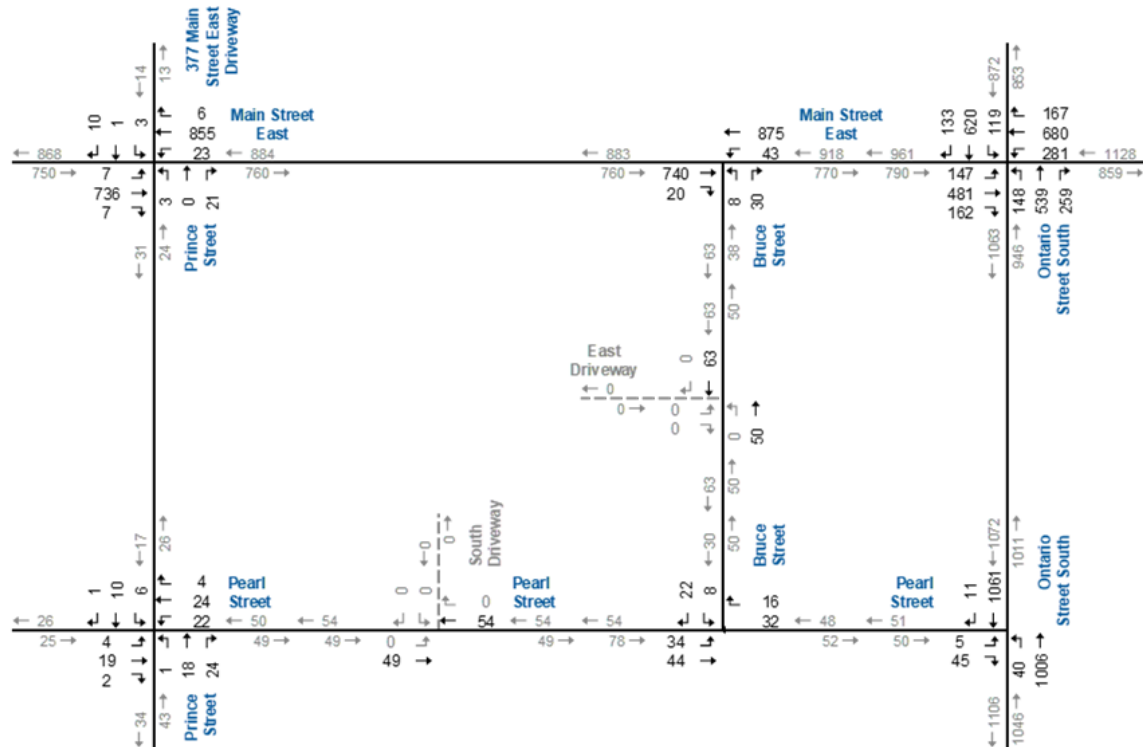




AM PEAK HOUR



PM PEAK HOUR



NTS



Existing Year Traffic Volumes

388 Main Street East, Milton
240515

Figure 2.3

2.5 Traffic Operations

Intersection level of service (LOS) is a recognized method of quantifying traffic flow efficiency at intersections. It is based on the delay experienced by individual vehicles executing the various movements. The delay is related to the number of vehicles desiring to make a movement, compared to the estimated capacity for that movement. The capacity is based on several criteria related to the opposing traffic flows. The highest possible rating is LOS A, where the average total delay is equal to or less than 10.0 seconds per vehicle. When the average delay exceeds 80 seconds at signalized intersections (50 seconds at unsignalized), the movement is considered to have a LOS F and remedial measures are usually implemented if feasible.

The operations of the study area intersections were evaluated under existing traffic volumes using Synchro 11 and HCM 2000 procedures. The intersection analysis considered the following measures of performance:

- ▶ The LOS for each turning movement. LOS is based on the average control delay per vehicle;
- ▶ The volume to capacity ratio (v/c) for each intersection; and
- ▶ 95th percentile queue length (metres) using Synchro.

Under The Halton Region's TIS Guidelines², the following criteria indicate critical conditions and signify that mitigation measures may need to be considered:

- ▶ At signalized intersections,
 - Movements increased to v/c 0.85 or above; and
 - Movements increased to v/c 0.95 or above for exclusive turning movements.
- ▶ At unsignalized intersections,
 - LOS, based on average delay per vehicle, on individual movements, is expected to operate at a LOS "D" or worse.
- ▶ At all intersections,
 - An exclusive turning movement in which the 95th percentile queue will exceed the available storage space.

² Halton Region, *Transportation Impact Study Guidelines*, January 2015



Table 2.1 summarizes the existing level of service conditions.

Weekday AM Peak Hour

- ▶ Main Street East at Ontario Street (signalized):
 - The westbound left-turn lane currently operates with delays in the LOS D range with a v/c ratio less than 0.85. The 95th percentile queue length exceeds the available storage by less than 25 m.

Weekday PM Peak Hour

- ▶ Main Street East at Ontario Street (signalized):
 - The westbound left-turn lane operates with delays in the LOS D range with a v/c ratio greater than 0.85. The 95th percentile queue length exceeds the available storage by 40 m.
 - The westbound through-right lane operates with delays in the LOS D range with a v/c ratio greater than 0.85.

Appendix C contains the detailed Synchro reports.



TABLE 2.1: EXISTING INTERSECTION OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Prince Street/377 Main Street East Driveway & Main Street East	TWSC	LOS Delay V/C Q Stor. Avail.	A 0 0.00 0 30 30	A 0 0.43 0 - -	> > > > > >	A 0	A 9 0.01 0 30 30	A 0 0.33 0 - -	> > > > > >	A 0	< < < < < <	C 15 0.09 3 - -	> > > > > >	C 15	< < < < < <	B 12 0.00 0 - -	> > > > > >	B 12	
	Bruce Street & Main Street East	TWSC	LOS Delay V/C Q		A 0 0.44 0	> > > >	A 0	< < < <	A 0 0.02 0		A 0	B 15 0.07 2	> > > >	B 15						
	Ontario Street South & Main Street East	TCS	LOS Delay V/C Q Stor. Avail.	C 24 0.47 34 40 6	D 38 0.72 67 - -	> > > > > >	C 35	D 40 0.83 64 40 -24	C 34 0.62 61 - -	> > > > > >	D 36	B 17 0.34 22 70 48	C 26 0.57 87 20 - 50	C 22 0.25 70 50	C 24	B 17 0.31 19 50 31	C 26 0.58 81 - -	> > > > > >	C 25	C 29 0.69
	Ontario Street South & Pearl Street	TWSC	LOS Delay V/C Q Stor. Avail.	B 11 0.07 2 - -		> > > > > >	B 11					A 10 0.06 1 20 19	A 0 0.36 0 - -		A 0	A 0 0.36 0 - -	> > > > > >	A 0		
	Pearl Street & Bruce Street	TWSC	LOS Delay V/C Q	< < <	A 4 0.04 1		A 4		A 0 0.08 0	> > >	A 0					A 10 0.03 1		> > >	A 10	
	Prince Street & Pearl Street	TWSC	LOS Delay V/C Q	< < <	A 1 0.00 0	> > >	A 1	< < <	A 2 0.01 0	> > >	A 2	< < <	A 9 0.08 2	> > >	A 9	< < <	A 10 0.04 1	> > >	A 10	
PM Peak Hour	Prince Street/377 Main Street East Driveway & Main Street East	TWSC	LOS Delay V/C Q Stor. Avail.	B 11 0.01 0 30 30	A 0 0.46 0 - -	> > > > > >	A 0	A 10 0.03 1 30 29	A 0 0.54 0 - -	> > > > > >	A 0	< < < < < <	C 16 0.07 2 - -	> > > > > >	C 16	< < < < < <	C 19 0.06 1 - -	> > > > > >	C 19	
	Bruce Street & Main Street East	TWSC	LOS Delay V/C Q		A 0 0.47 0	> > > >	A 0	< < <	A 2 0.06 1		A 2	C 17 0.12 3	> > >	C 17						
	Ontario Street South & Main Street East	TCS	LOS Delay V/C Q Stor. Avail.	C 28 0.61 33 40 7	D 36 0.69 84 - -	> > > > > >	C 35	D 52 0.91 80 40 -40	D 44 0.87 120 - -	> > > > > >	D 46	C 25 0.58 35 70 35	C 30 0.50 73 70 -	C 26 0.18 19 70 51	C 28	C 21 0.36 28 50 22	C 34 0.69 104 - -	> > > > > >	C 32	D 36 0.80
	Ontario Street South & Pearl Street	TWSC	LOS Delay V/C Q Stor. Avail.	B 13 0.10 3 - -		> > > > > >	B 13					B 10 0.06 1 20 19	A 0 0.30 0 - -		A 0	A 0 0.43 0 - -	> > > > > >	A 0		
	Pearl Street & Bruce Street	TWSC	LOS Delay V/C Q	< < <	A 3 0.03 1		A 3		A 0 0.04 0	> > >	A 0					A 9 0.05 1		> > >	A 9	
	Prince Street & Pearl Street	TWSC	LOS Delay V/C Q	< < <	A 1 0.00 0	> > >	A 1	< < <	A 3 0.02 0	> > >	A 3	< < <	A 10 0.06 2	> > >	A 10	< < <	B 10 0.03 1	> > >	B 10	

MOE - Measure of Effectiveness

LOS - Level of Service

Delay - Average Delay per Vehicle in Seconds

V/C - Volume to Capacity Ratio

Q - 95th Percentile Queue Length (m)

Stor. - Existing Storage (m)

Avail. - Available Storage (m)

TCS - Traffic Control Signal

TWSC - Two-Way Stop Control

< / > - Shared with through movement



3 Development Concept

3.1 Development Description

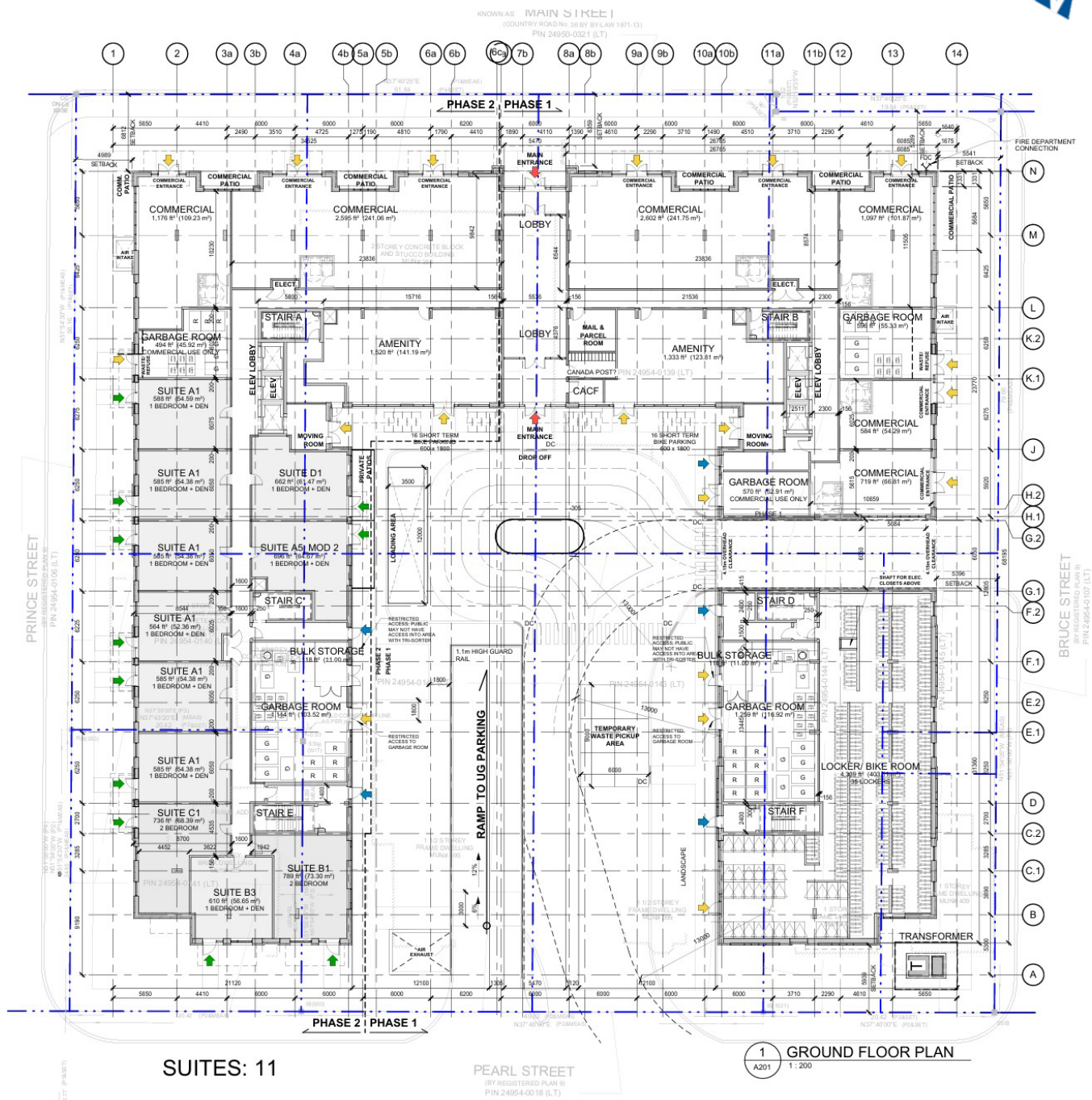
The subject site is on the south side of Main Street and bounded by Prince Street and Bruce Street, at the municipal address 388 Main Street East in Milton. The applicant proposes an 18-storey tower with 570 residential units and six-storey podiums with 815 m² (8,773 sq. ft) of ground floor retail space. Vehicle access is proposed by private driveway connections to Bruce Street and Pearl Street. All parking is proposed to be accommodated underground via access from Pearl Street. **Figure 3.1** illustrates the site concept plan.

The East Driveway is proposed as a full-move driveway to Bruce Street located approximately 28 m (curb edge to curb edge) south of the Main Street East and Pearl Street intersection. The East Driveway will primarily function as a loading area and a designated pick-up and drop-off zone for passenger vehicles.

The South Driveway is proposed as a full-move driveway to Pearl Street that provides access to the underground parking, located approximately 31 m (curb edge to curb edge) west from the intersection of Bruce Street at Pearl Street and 25 m (curb edge to curb edge) east of the intersection of Prince Street at Pearl Street. Access to the waste pick-up area is proposed to be adjacent to the east of the South Driveway. While the temporary waste pick-up area provides a connection to the East Driveway, as the primary purpose of the access is to facilitate waste collection vehicles, passenger vehicles are not expected to use this roadway.

Build-out is anticipated by Year 2029, timing subject to change from market conditions.





3.2 Driveway Review

The proposed driveway connections to Pearl Street and Bruce Street have been assessed to determine whether the location may affect design issues and/or safety-related concerns and whether an alternative location should be considered from a design perspective. The critical design issues concerning the driveway location are discussed in the sections below.

3.2.1 Driveway Design Review

Driveways play a crucial role in ensuring the efficient operation of the road network and providing safe, orderly access to development. Driveway designs vary depending on the land use to accommodate the primary vehicles it serves. According to the Transportation Association of Canada (TAC) Geometric Design Guide³, a two-way driveway for residential land uses requires a width between 2.0 m and 7.3 m. The proposed East Driveway, with a width of approximately 6.0 m, and the South Driveway, at 6.6 m, meet the required standards to accommodate vehicle access to the site. Additionally, the temporary waste pick-up driveway, located just east of the South Driveway, is designed with a width of 8.4 meters, which satisfies the TAC standards for residential land use.

The TAC design guide specifies a minimum driveway curb radius of 3.0 metres for residential land uses. The site concept plan indicates an approximate curb radius of 4.2 metres for the South driveway, supporting efficient vehicle entry and exit without obstructions. The waste pick-up driveway is designed with a larger curb radius of approximately 6.4 meters, allowing heavy vehicles to access the site effectively. Although not illustrated in the current site plan, the East driveway is expected to have a minimum curb radius that satisfies the guidelines outlined in the TAC.

3.2.2 Sight Distance

The driveway connections to Bruce Street and Pearl Street were assessed to ensure they provide sufficient sightlines, ensuring safe and efficient traffic flow. A design speed of 10 kilometres per hour over the posted and/or assumed speed is typically utilized for two-lane roadways to calculate the required stopping sight distance (SSD) for traffic approaching the proposed driveways and intersection sight distance (ISD) for traffic exiting the proposed driveway.

³ Geometric Design Guide for Canadian Roads, Transportation Association of Canada, 2017



SSD is the distance required for a vehicle approaching an intersection from either direction to perceive, react and come to a complete stop to avoid colliding with an object on the road; in this respect, SSD can be considered the minimum visibility criterion for the safe operation of an unsignalized intersection.

ISD is based on the time required for perception, reaction, and completion of the desired turning maneuver (typically, a left-turn) once the driver on a minor street approach (or driveway) decides to execute the maneuver. The calculation for the critical ISD includes the time to (1) turn left and clear the near half of the intersection without conflicting with the vehicles approaching from the left; and (2) upon turning left, accelerate to the operating speed on the roadway without causing approaching vehicles on the main road to unduly reduce their speed. In this context, ISD can be considered the desirable visibility criterion for the operation of an unsignalized intersection.

Based on the guidelines, a SSD of 85 metres and a ISD of 130 metres is required.

The sections of Bruce Street and Pearl Street are both relatively straight and flat, and consequently, there are no sight distance issues concerning the road geometry and provides adequate viewing distance to the nearby intersections. The East Driveway offers clear sightlines to the intersections of Main Street East and Pearl Street, ensuring adequate visibility to support safe turning maneuvers. Similarly, the South Driveway provides unobstructed sightlines to Bruce Street and Prince Street, confirming that the available sight distances are sufficient for safe and efficient vehicle movements.

3.2.3 Corner Clearance

Corner clearance is the distance from an intersection to the nearest access upstream or downstream. Corner clearance is measured from the near curb of the cross roadway to the near edge of the access throat. It consists of three components: the curb return radius at the intersection, the length of the tangent, and the curb return radius or flare dimension at the driveway. Inadequate corner clearance between accesses and intersections along a major road, such as a major arterial, can create operational issues.

The TAC Geometric Design Guide has been reviewed to determine the sufficiency of the corner clearance from major and minor intersections. As stipulated by TAC, the suggested corner clearances for major intersections are 15 metres upstream and downstream from an unsignalized intersection.



The proposed East Driveway is at least 25 metres from Main Street East and 40 metres from Pearl Street, exceeding the corner clearances stipulated by TAC. The proposed South Driveway is located at least 20 metres from Prince Street and at least 40 metres from Bruce Street.

The temporary waste pick-up area driveway is located at least 30 metres from Prince Street and at least 20 metres from Bruce Street.

3.3 Heavy Vehicle Circulation

A vehicle access and circulation review has been performed to assess the subject site's parking and circulation.

The site circulation has been assessed using a Transportation Association of Canada (TAC)⁴ TAC Medium Single Unit (MSU), Halton Front End Loader, and TAC Passenger Car.

Appendix D contains reduced-scale vehicle turning movement diagrams for the site's parking spaces and drive aisles. The diagrams were produced using the site concept plan, and AutoTURN swept path analysis software.

Based on the analysis, the following is noted:

- ▶ **Loading Space** The loading space is noted to be located at the west end of the primary drop-off area for the development. An MSU was modelled, and it was found that, given the location, it is not possible for the MSU to be positioned within the loading space. The proposed centre island would also need mountable rather than a barrier curb to accommodate the MSU's turning radius.
- **Modifications:** Repositioning the loading space to be oriented east-west is recommended to accommodate an MSU.

⁴ 2.4 – *Design Vehicles*, Geometric Design Guide for Canadian Roads, Transportation Association of Canada, June 2017.



- ▶ Waste Collection Waste Collection will be completed through a connection to Pearl Street, adjacent to the driveway proposed for the underground parking structure. A Halton Region Front End Loader was modelled with the vehicle entering off Pearl Street through a right-turn movement and exiting through Bruce Street through a left-turn movement.
 - Modifications: None
- ▶ Parking Structure: The parking structure is accessed through a driveway connection to Pearl Street. The ramp within the underground is positioned relatively centrally within the parking structure and requires vehicles to make a 180 degree while exiting/entering the ramp from the drive aisle to the west.
 - Modifications: Drive-aisles adjacent to the ramp terminal should operate one-way clockwise to avoid conflicts between vehicles accessing the ramp terminal around the 180-degree bend.



3.4 Trip Generation

The Institute of Transportation Engineers (ITE) Trip Generation manual⁵ provides rates and equations to estimate the peak-hour traffic volumes generated by the proposed development. The following land-use codes were used to estimate the weekday AM and PM peak-hour traffic volumes that the development will generate:

- ▶ Multifamily Housing (High-Rise) (LUC 222); and
- ▶ Strip Retail Plaza (<40k) (LUC 822).

3.4.1 Internal Capture

The ITE Trip Generation Handbook describes a multi-use development as a single project that consists of two or more ITE land use classifications in which trips can be made between land uses without using the off-site roadway system. Sharing trips between compatible land uses is an internal capture without travelling off-site.

Based on this information, the proposed development is considered a multi-use development with compatible commercial uses likely to share – or capture – trips that do not require vehicular travel outside the Site.

The ITE Trip Generation Handbook has been utilized to account for internal trips within the development. By way of example, some portion of the traffic destined to and from the retail uses located within the Site will likely originate from the on-site residential units, requiring only a walking trip. The detailed calculations are provided in **Appendix E**.

ITE data suggests an internal capture rate of 1-18% for the peak hours.

3.4.2 Net Trip Generation Estimates

Table 3.1 summarizes the projected trip generation associated with the build-out of the development. As noted earlier, these estimates were based on the standardized ITE rates with internal credits.

The site's trip generation is estimated to be approximately 170 weekday AM and 242 weekday PM peak-hour trips. With the consideration of internal trips, the site is forecast to generate 166 weekday AM and 216 weekday PM peak-hour trips.

⁵ Institute of Transportation Engineers, *Trip Generation Manual*, 11th ed., (Washington DC: ITE, 2021).



TABLE 3.1: TRIP GENERATION

ITE Land Use Code / Number of Units	Trips	AM Peak Hour				PM Peak Hour			
		Rate	In	Out	Sum	Rate	In	Out	Sum
222 - Multifamily Housing (High-Rise) - 570 Units	Total	--	38	106	144	--	106	65	171
	Internal	1%	1	1	2	8%	9	4	13
	New	99%	37	105	142	92%	97	61	158
822 - Strip Retail Plaza (<40k) - 8,773 sq.ft	Total	--	16	10	26	--	35	36	71
	Internal	8%	1	1	2	18%	4	9	13
	New	8%	15	9	24	82%	31	27	58
Total	Total	--	54	116	170	--	141	101	242
	Internal	2%	2	2	4	11%	13	13	26
	New	98%	52	114	166	89%	128	88	216

Equations

LUC 222 Eqn Per Unit AM $T = 0.31(X) + 22.85$ | PM $T = 0.43(X) + 20.55$

LUC 822 Eqn Per Unit AM $T = 0.44(X) - 11.61$ | PM $T = 0.39(X) + 0.34$

3.4.3 Trip Distribution and Assignment

The directional distribution of traffic approaching and departing the development is a function of several variables: population densities, existing travel patterns, and the efficiency of the roadways leading to the Site. The estimated distribution is based on the Transportation Tomorrow Survey⁶ (TTS) review with the zone containing the subject site (4125). **Table 3.2** summarizes the estimated trip distribution.

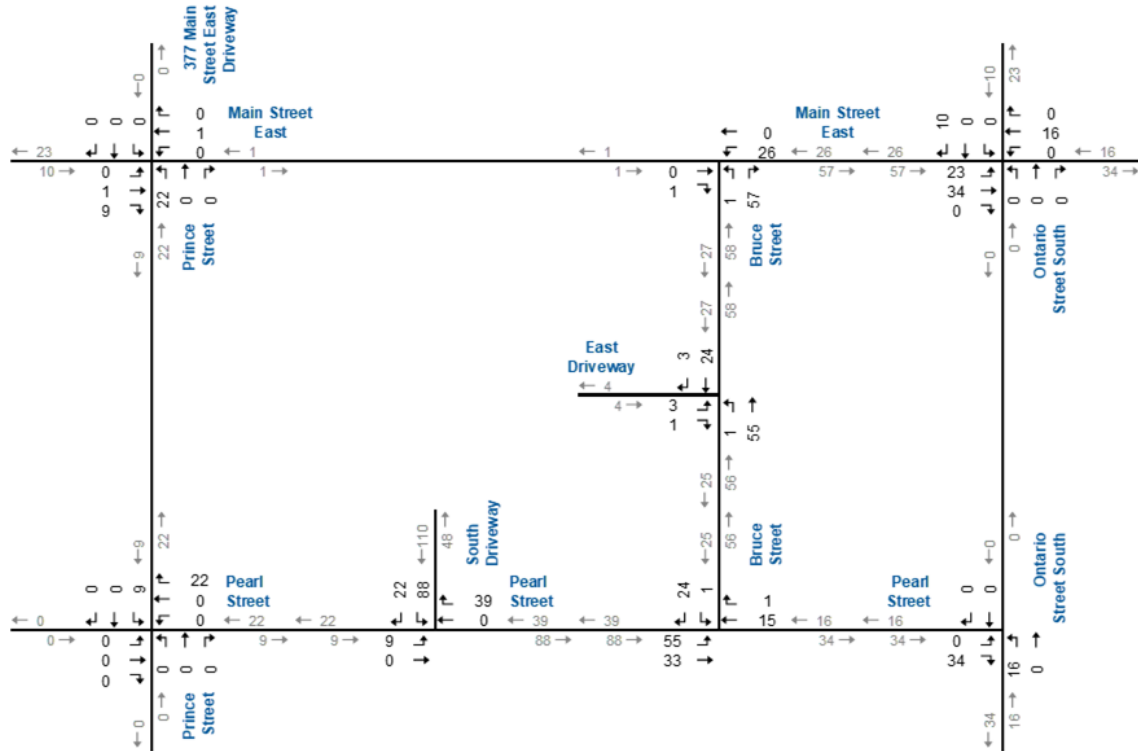
TABLE 3.2: TRIP DISTRIBUTION

Origin/Destination	Route	Percentage (%)
North via	Ontario Street	20%
South via	Ontario Street	30%
East via	Main Street East	30%
West via	Main Street East	20%
Total		100%

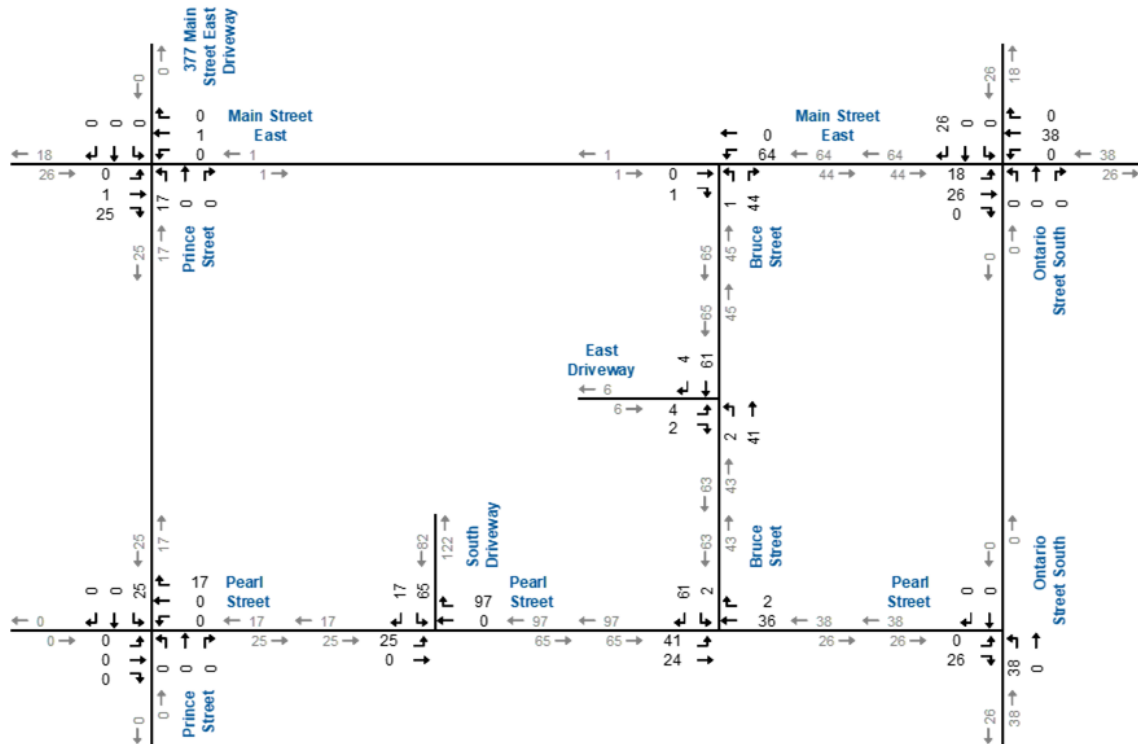
⁶ Transportation Tomorrow Survey, Data Management Group, 2016



AM PEAK HOUR



PM PEAK HOUR



NTS



Forecast Site Generated Traffic

388 Main Street East, Milton
240515

Figure 3.2

4 Future Conditions

The assessment of future conditions in this section includes the following components:

- ▶ Background traffic forecast;
- ▶ Total traffic forecast;
- ▶ Level of service analysis for background traffic (pre-development) and
- ▶ Level of service analysis for total traffic (post-development).

This study assesses two horizon years – five-years from the opening date (Year 2034) and ten-years from the opening date (Year 2039).

4.1 Forecast Traffic Volumes

Future traffic volumes near the subject lands are estimated to consist of:

- ▶ Site-traffic contributions generated by the following other area background developments:
 - **155 Nipissing Road**⁷ – Estimated to consist of 266 high-rise residential units with 146 m² (1,572 sq. ft) of ground floor retail space. The site is generally located on the north side of Nipissing Road, between Thompson Road South at Ontario Street South;
 - **101 Nipissing Road** – Estimated to consist of 677 high-rise residential units. The site is on the northwest corner of the Barrick Road and Coronation Drive intersection. The site is generally located on the north side of Nipissing Road, between Thompson Road South at Ontario Street South; and
 - **141 & 151 Nipissing Road** - Estimated to consist of 588 high-rise residential units with 557 m² (5,996 sq. ft) of ground floor retail space. The site is generally located on the north side of Nipissing Road, between Thompson Road South at Ontario Street South.
- ▶ Generalized background traffic growth. A growth rate of 2.0% compounded per annum, as identified during pre-study consultation; and

⁷ BA Group, *155 Nipissing Road Proposed Residential Development Urban Transportation Considerations*, January 2023



- ▶ Traffic generated by the subject lands.

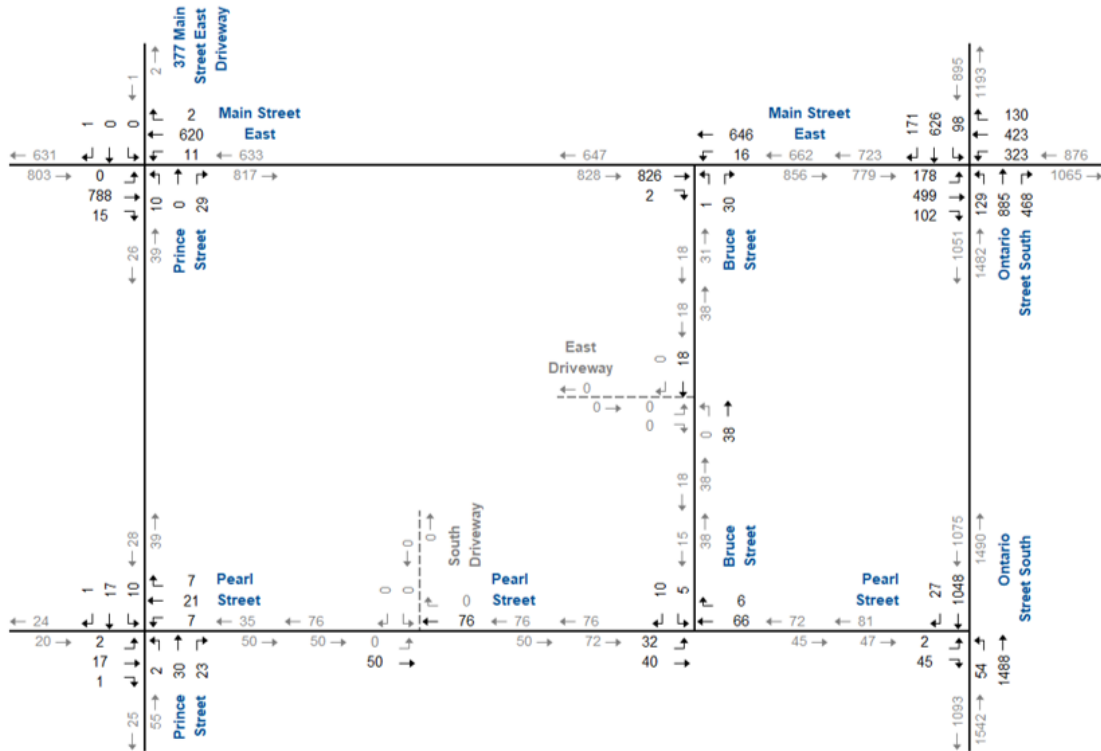
Appendix F contains the components of the background traffic forecasts.

The future traffic volumes are illustrated in the following figures:

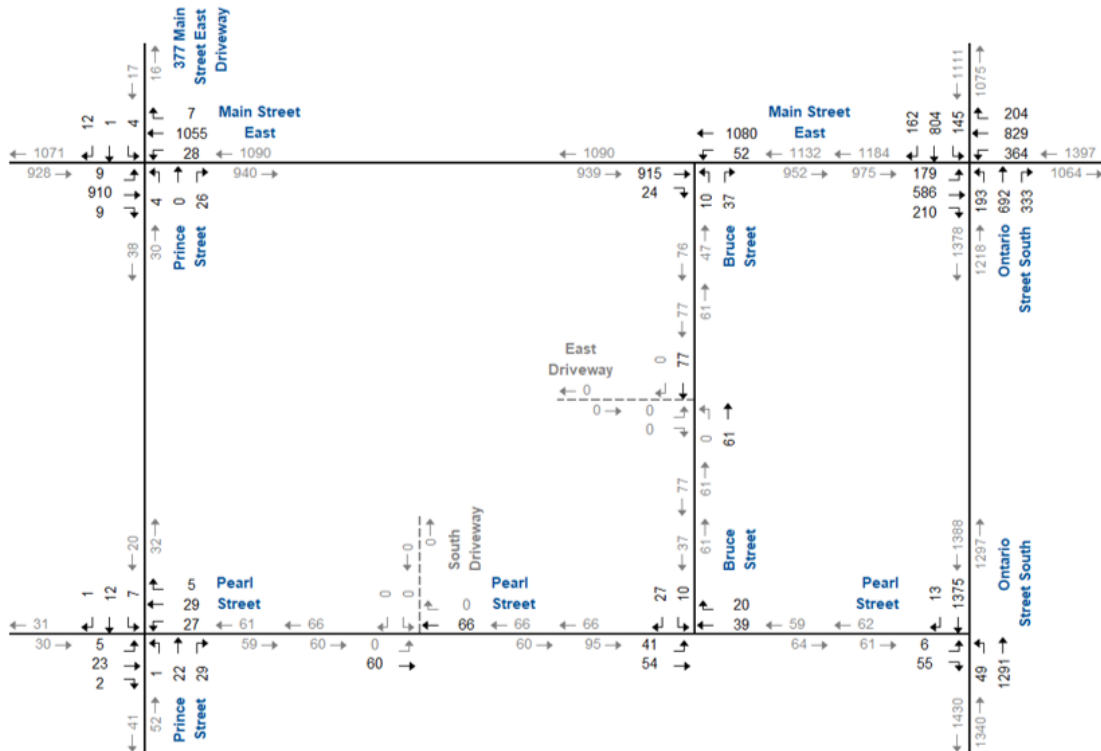
- ▶ **Figure 4.1** illustrates the 2034 horizon background (pre-development) traffic volumes.
- ▶ **Figure 4.2** illustrates the 2034 horizon total (post-development) traffic volumes.
- ▶ **Figure 4.3** illustrates the 2039 horizon background (pre-development) traffic volumes.
- ▶ **Figure 4.4** illustrates the 2039 horizon total (post-development) traffic volumes.



AM PEAK HOUR



PM PEAK HOUR



NTS

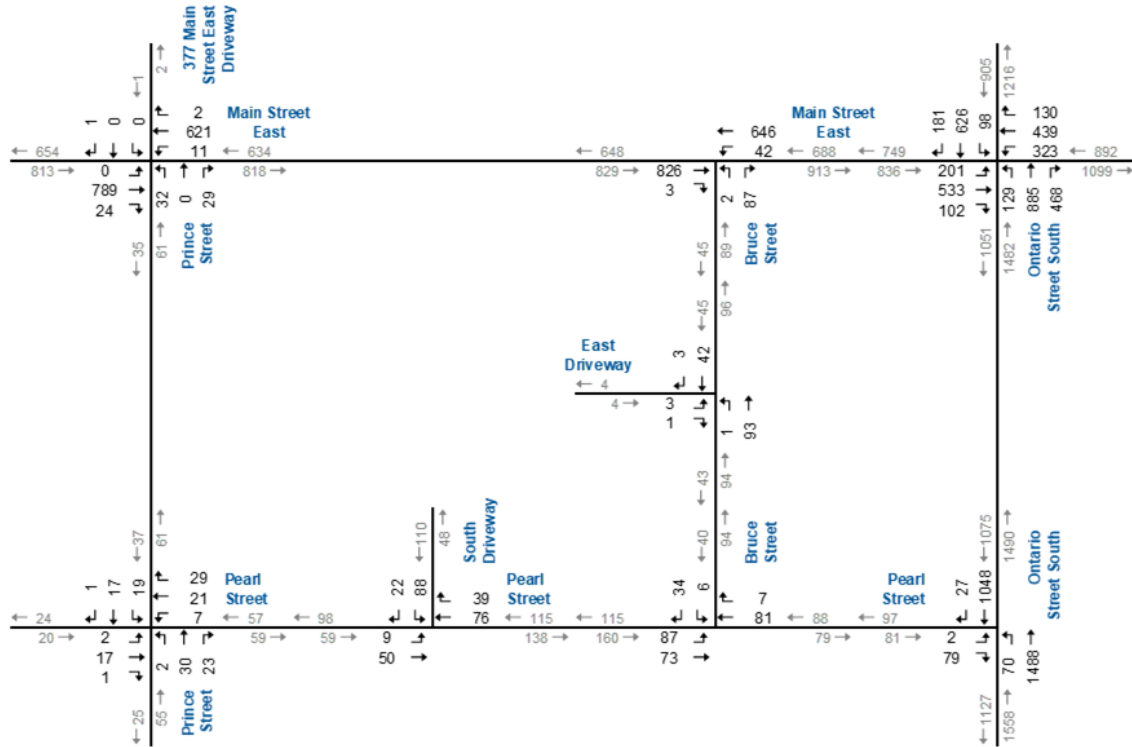


Background Traffic 2034 Horizon

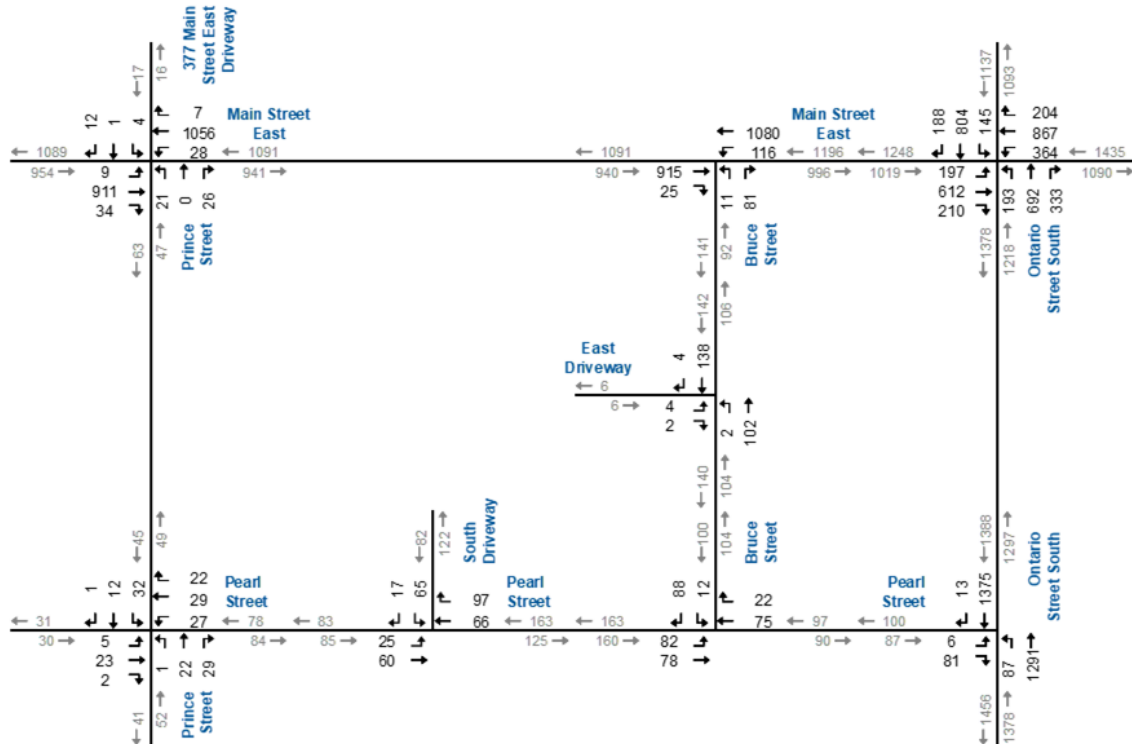
388 Main Street East, Milton
240515

Figure 4.1

AM PEAK HOUR



PM PEAK HOUR



NTS

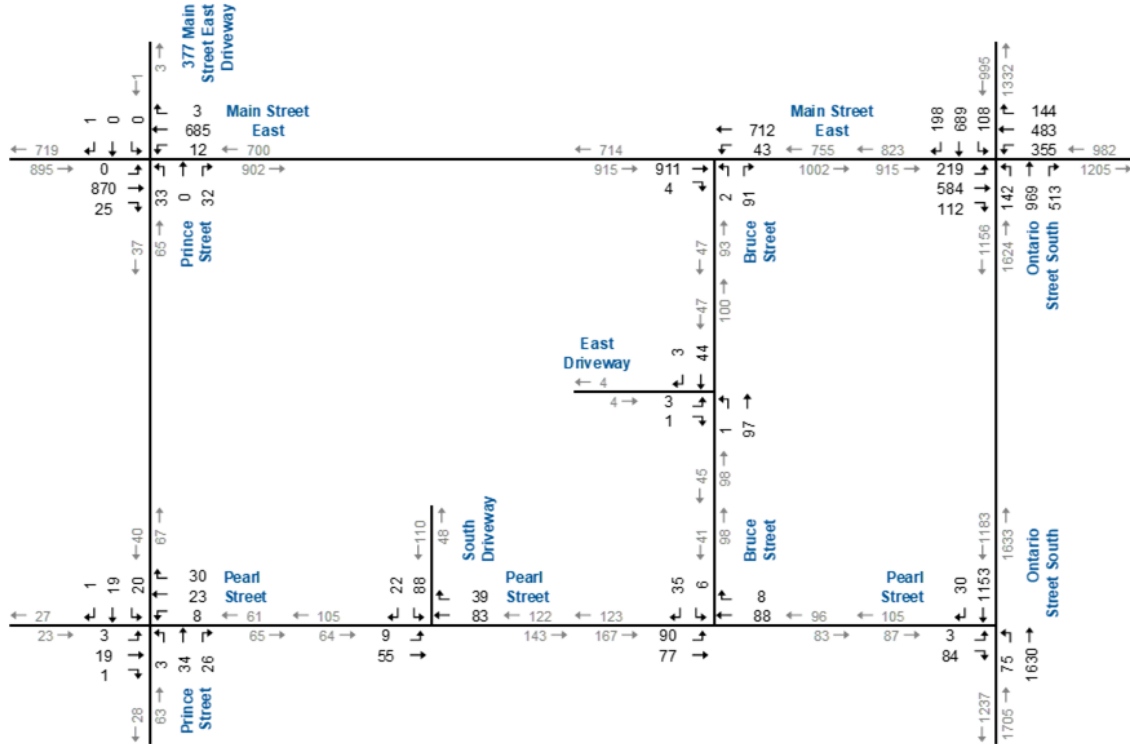


Total Traffic 2034 Horizon

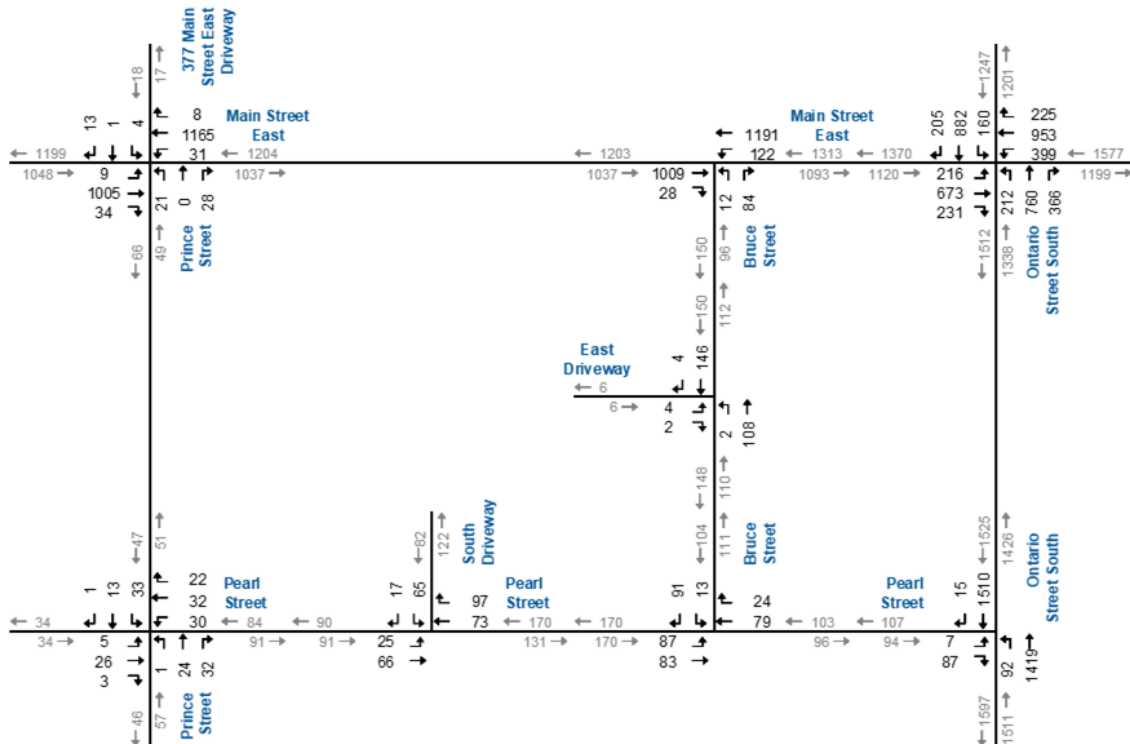
388 Main Street East, Milton
240515

Figure 4.2

AM PEAK HOUR



PM PEAK HOUR



NTS



Total Traffic 2039 Horizon

388 Main Street East, Milton
240515

Figure 4.4

4.2 Future 2034 Horizon

The study area intersection operations analyses followed the same methodology used for existing conditions. No changes to the existing lane configurations are assumed.

4.2.1 Background Traffic Operations

Table 4.1 summarizes the 2034 horizon background traffic level of service conditions, and the critical movements are summarized below:

Weekday AM Peak Hour

- ▶ Main Street East at Ontario Street (signalized):
 - The westbound left-turn lane is forecast to operate with delays in the LOS F range with a v/c ratio greater than 1.00. The 95th percentile queue length is forecast to exceed the available storage by less than 60 m.

Weekday PM Peak Hour

- ▶ Main Street East at Ontario Street (signalized):
 - The eastbound left-turn 95th percentile queue length is forecast to exceed the available storage by 5 m.
 - The westbound left-turn lane is forecast to operate with delays in the LOS F range with a v/c ratio greater than 1.00. The 95th percentile queue length is forecast to exceed the available storage by less than 100 m.
 - The westbound through-right lane is forecast to operate with delays in the LOS D range with a v/c ratio of 0.95.
 - The northbound left-turn lane is projected to operate at LOS E with a v/c ratio greater than 0.95. The 95th percentile queue length is forecast to exceed the available storage by less than 5 m.
 - The southbound through-right lane is forecast to operate at LOS D with a v/c ratio greater than 0.85.

Appendix G contains the detailed Synchro 11 reports.



TABLE 4.1: 2034 BACKGROUND TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Prince Street/377 Main Street East Driveway & Main Street East	TWSC	LOS Delay V/C Stor. Avail.	A 0 0.00 0 30 30	A 0 0.47 0 - -	> > > >	A 0	A 10 0.01 0 30 30	A 0 0.37 0 - -	> > > >	A 0	< < < < < <	C 17 0.11 3 -	> > > >	C 17	< < < < < <	B 12 0.00 0 -	> > > >	B 12	
	Bruce Street & Main Street East	TWSC	LOS Delay V/C Q		A 0 0.49 0	> > > >	A 0	< < < <	A 0 0 0.02 1		A 0	C 16 0.09 2	> > > >	C 16						
	Ontario Street South & Main Street East	TCS	LOS Delay V/C Q Stor. Avail.	C 26 0.56 37 40 3	D 41 0.77 76 - -	> > > >	D 37	F 91 1.05 98 40 -58	D 37 0.68 69 -	> > > >	E 57	B 19 0.46 27 70 43	C 29 0.69 115 - 25	C 27	C 20 0.43 22 50 28	C 31 0.69 101 -	> > > >	C 30	D 36 0.85	
	Ontario Street South & Pearl Street	TWSC	LOS Delay V/C Q Stor. Avail.	B 12 0.08 2 - -		> > > >	B 12					A 10 0.07 2 20 18	A 0 0.44 0 -		A 0		A 0 0.41 0 -	> > > >	A 0	
	Pearl Street & Bruce Street	TWSC	LOS Delay V/C Q	< < < <	A 3 0.02 1		A 3		A 0 0.04 0	> > > >	A 0				A 9 0.02 0		> > > >	A 9		
	Prince Street & Pearl Street	TWSC	LOS Delay V/C Q	< < < <	A 1 0.00 0	> > > >	A 1	< < < <	A 2 0.00 0	> > > >	A 2	< < < <	A 9 0.06 2	> > > >	A 9	< < < <	A 10 0.03 1	> > > >	A 10	
PM Peak Hour	Prince Street/377 Main Street East Driveway & Main Street East	TWSC	LOS Delay V/C Stor. Avail.	B 13 0.02 1 30 29	A 0 0.54 0 - -	> > > >	A 0	B 10 0.04 1 30 29	A 0 0.62 0 -	> > > >	A 0	< < < <	C 20 0.11 3 -	> > > >	C 20	< < < <	C 25 0.09 2 -	> > > >	C 25	
	Bruce Street & Main Street East	TWSC	LOS Delay V/C Q		A 0 0.55 0	> > > >	A 0	< < < <	A 2 0.07 2		A 2	C 21 0.18 5	> > > >	C 21						
	Ontario Street South & Main Street East	TCS	LOS Delay V/C Q Stor. Avail.	C 34 0.72 45 40 -5	D 37 0.75 103 - -	> > > >	D 37	F 158 1.24 136 40 -96	D 54 0.95 162 -	> > > >	F 81	E 78 0.96 72 70 -2	C 35 0.64 92 70 49	C 28 0.22 21 70 -	D 40	C 25 0.53 33 50 17	D 46 0.88 145 -	> > > >	D 43	D 52 1.12
	Ontario Street South & Pearl Street	TWSC	LOS Delay V/C Q Stor. Avail.	C 19 0.20 6 - -		> > > >	C 19					B 12 0.08 2 20 18	A 0 0.38 0 -		A 0		A 0 0.54 0 -	> > > >	A 0	
	Pearl Street & Bruce Street	TWSC	LOS Delay V/C Q	< < < <	A 3 0.03 1		A 3		A 0 0.03 0	> > > >	A 0				A 9 0.04 1		> > > >	A 9		
	Prince Street & Pearl Street	TWSC	LOS Delay V/C Q	< < < <	A 1 0.00 0	> > > >	A 1	< < < <	A 3 0.02 0	> > > >	A 3	< < < <	A 10 0.06 2	> > > >	A 10	< < < <	A 10 0.03 1	> > > >	A 10	

MOE - Measure of Effectiveness

LOS - Level of Service

Delay - Average Delay per Vehicle in Seconds

V/C - Volume to Capacity Ratio

Q - 95th Percentile Queue Length (m)

Stor. - Existing Storage (m)

Avail. - Available Storage (m)

TCS - Traffic Control Signal

TWSC - Two-Way Stop Control

< / > - Shared with through movement



4.2.2 Total Traffic Operations

Table 4.2A-B summarizes the 2034 horizon total traffic level of service conditions.

Weekday AM Peak Hour

- ▶ Main Street East at Ontario Street (signalized):
 - The eastbound left-turn 95th percentile queue length is forecast to exceed the available storage by less than 5 m.
 - The westbound left-turn lane is forecast to operate with a v/c ratio greater than 1.00. The 95th percentile queue length is forecast to exceed the available storage by less than 65 m.

Weekday PM Peak Hour

- ▶ Main Street East at Ontario Street (signalized):
 - The eastbound left-turn 95th percentile queue length is forecast to exceed the available storage by less than 20 m.
 - The westbound left-turn lane is forecast to operate with delays in the LOS F range with a v/c ratio greater than 1.00. The 95th percentile queue length is forecast to exceed the available storage by less than 100 m.
 - The westbound through-right lane is forecast to operate with delays in the LOS E range with a v/c ratio greater than 0.95.
 - The northbound left-turn lane is projected to operate at LOS F with a v/c ratio greater than 0.95. This lane's 95th percentile queue length is forecast to exceed the available storage by less than 5 m.
 - The southbound through-right lane is projected to operate with delays in the LOS D range with a v/c ratio greater than 0.85.
- ▶ Main Street East at Prince Street/ 377 Main Street East Driveway (unsignalized):
 - The northbound approach is forecast to experience delays in the LOS D range with a v/c ratio of 0.23. Although classified as a critical movement, this approach is expected to operate well within capacity (i.e. a v/c ratio of 0.23).

The site driveway approaches to Bruce Street and Pearl Street are both forecast to operate with acceptable levels of service. Delays for both driveways are forecast to operate with delays of LOS B or better with v/c ratios less than 0.15. The 95th percentile queue length is



expected to be less than one vehicle for both driveways during the weekday peak hours.

Appendix H contains the detailed Synchro 11 reports.



TABLE 4.2A: 2034 TOTAL TRAFFIC OPERATIONS – AM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																	Overall
				Eastbound				Westbound				Northbound				Southbound					
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach		
AM Peak Hour	Prince Street/377 Main Street East Driveway & Main Street East	TWSC	LOS Delay V/C Q Stor. Avail.	A 0 0.00 0 30	A 0 0.48 0 - -	> > > >	A 0	A 10 0.01 0 30	A 0 0.37 0 - -	> > > >	A 0	< < < <	C 19 0.19 5 - -	> > > >	C 19	< < < <	B 12 0.00 0 - -	> > > >	B 12		
	Bruce Street & Main Street East	TWSC	LOS Delay V/C Q	< < <	A 0 0.49 0	> > >	A 0	< < <	A 1 0.05 1	> > >	A 1	C 18 0.24 8	> > >	C 18	< < <	B 12 0.00 0 - -	> > >	B 12			
	Ontario Street South & Main Street East	TCS	LOS Delay V/C Q Stor. Avail.	C 28 0.62 42 40 -2	D 41 0.78 81 - -	> > > >	D 38	F 99 1.07 103 40 -63	D 37 0.68 71 - -	> > > >	E 59	B 19 0.48 28 70 42	C 30 0.70 118 - 21	C 26 0.41 49 70 21	C 28	C 21 0.44 22 50 28	C 32 0.71 105 - -	> > > >	C 31	D 37 0.87	
	Ontario Street South & Pearl Street	TWSC	LOS Delay V/C Q Stor. Avail.	B 11 0.12 3 - -	< < < <	> > > >	B 11	< < <	A 0 0.05 0	> > >	A 0	B 10 0.09 2 20 18	A 0 0.44 0 - -	> > >	A 1	< < <	A 0 0.41 0 - -	> > >	A 0		
	Pearl Street & Bruce Street	TWSC	LOS Delay V/C Q	< < <	A 4 0.06 2	> > >	A 4	< < <	A 0 0.05 0	> > >	A 0	< < <	A 9 0.06 2	> > >	A 9	< < <	A 10 0.05 1	> > >	A 10		
	Prince Street & Pearl Street	TWSC	LOS Delay V/C Q	< < <	A 1 0.00 0	> > >	A 1	< < <	A 0 0.07 0	> > >	A 0	< < <	A 9 0.06 2	> > >	A 9	< < <	A 10 0.05 1	> > >	A 10		
	Pearl Street & South Driveway	TWSC	LOS Delay V/C Q	< < <	A 1 0.01 0	> > >	A 1	< < <	A 0 0.07 0	> > >	A 0	< < <	A 9 0.06 2	> > >	A 9	< < <	A 10 0.05 1	> > >	A 10		
	Bruce Street & East Driveway	TWSC	LOS Delay V/C Q	A 9 0.00 0	< < <	> > >	A 9	< < <	A 0 0.07 0	> > >	A 0	< < <	A 9 0.06 2	> > >	A 9	< < <	A 10 0.05 1	> > >	A 10		

MOE - Measure of Effectiveness

LOS - Level of Service

Delay - Average Delay per Vehicle in Seconds

V/C - Volume to Capacity Ratio

Q - 95th Percentile Queue Length (m)

Stor. - Existing Storage (m)

Avail. - Available Storage (m)

TCS - Traffic Control Signal

TWSC - Two-Way Stop Control

</> - Shared with through movement



TABLE 4.2B: 2034 TOTAL TRAFFIC OPERATIONS – PM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	Prince Street/377 Main Street East Driveway & Main Street East	TWSC	LOS Delay V/C Stor. Avail.	B 13 0.02 1 30 29	A 0 0.56 0 0.09 2 0.															

MOE - Measure of Effectiveness

LOS - Level of Service

Delay - Average Delay per Vehicle in Seconds

V/C - Volume to Capacity Ratio

Q - 95th Percentile Queue Length (m)

Stor. - Existing Storage (m)

Avail. - Available Storage (m)

TCS - Traffic Control Signal

TWSC - Two-Way Stop Control

< / > - Shared with through movement



4.3 Future 2039 Horizon

The study area intersection operations analyses followed the same methodology used for existing conditions. No changes to the existing lane configurations are assumed.

4.3.1 Background Traffic Operations

Table 4.3 summarizes the 2039 horizon background traffic level of service conditions.

Weekday AM Peak Hour

- ▶ Main Street East at Ontario Street (signalized):
 - The westbound left-turn lane is forecast to operate with delays in the LOS F range with a v/c ratio greater than 1.00. The 95th percentile queue length is forecast to exceed the available storage by less than 100 m.
 - The northbound right-turn 95th percentile queue is forecast to exceed the available storage by less than 5 m.

Weekday PM Peak Hour

- ▶ Main Street East at Ontario Street (signalized):
 - The eastbound left-turn 95th percentile queue is forecast to exceed the available storage by less than 20 m.
 - The westbound left-turn lane is forecast to operate with delays in the LOS F range with a v/c ratio greater than 1.00. The 95th percentile queue length is forecast to exceed the available storage by 125 m.
 - The westbound through-right lane is forecast to operate with delays in the LOS E range with a v/c ratio greater than 1.00.
 - The northbound left-turn lane is projected to operate at LOS F with a v/c ratio of 1.00. The 95th percentile queue length is forecast to exceed the available storage by less than 15 m.
 - The southbound through-right lane is forecast to operate at LOS E with a v/c ratio greater than 0.95.
- ▶ Main Street East at Prince Street/ 377 Main Street East Driveway (unsignalized):
 - The southbound approach is expected to operate in the LOS D range with a v/c ratio of less than 0.15. While it is classified as a critical movement, it is noted that the



approach will operate well within capacity (i.e. a v/c ratio of 0.11).

Appendix G contains the detailed Synchro 11 reports.



TABLE 4.3: 2039 BACKGROUND TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Prince Street/377 Main Street East Driveway & Main Street East	TWSC	LOS Delay V/C Q Stor. Avail.	A 0 0 0 30 30	A 0 0.52 0 - -	> > > >	A 0	A 10 0.02 0 30 30	A 0 0.40 0 - -	> > > >	A 0	< C 18 0.14 4 - -	< < > >	C 18	< B 13 0.00 0 - -	> > > >	B 13			
	Bruce Street & Main Street East	TWSC	LOS Delay V/C Q		A 0 0.54 0	> > >	A 0	< A 1 0.02 1			A 1	C 17 0.11 3	> > >	C 17						
	Ontario Street South & Main Street East	TCS	LOS Delay V/C Q Stor. Avail.	C 27 0.62 40 40 0	D 40 0.78 85 - -	> > > >	D 38	F 136 1.18 122 40 -82	D 37 0.71 77 - -	> > > >	E 74	C 24 0.59 31 70 39	D 36 0.81 144 71 -1	C 33	C 23 0.53 25 50 25	D 36 0.79 126 - -	> > > >	C 34	D 43 0.97	
	Ontario Street South & Pearl Street	TWSC	LOS Delay V/C Q Stor. Avail.	B 14 0.12 3 - -		> > > >	B 14					B 10 0.08 2 20 18	A 0 0.48 0 - -		A 0		A 0 0.45 0 - -	> > > >	A 0	
	Pearl Street & Bruce Street	TWSC	LOS Delay V/C Q	< < < <	A 3 0.02 1		A 3		A 0 0.05 0	> > > >	A 0					A 9 0.02 0		> > > >	A 9	
	Prince Street & Pearl Street	TWSC	LOS Delay V/C Q	< < < <	A 1 0.00 0	> > > >	A 1	< A 2 0.01 0	> > > >	A 2	< A 9 0.07 2	> > > >	A 9	< A 10 0.04 1	> > > >	A 10				
PM Peak Hour	Prince Street/377 Main Street East Driveway & Main Street East	TWSC	LOS Delay V/C Q Stor. Avail.	B 14 0.02 1 30 29	A 0 0.60 0 - -	> > > >	A 0	B 11 0.05 1 30 29	A 0 0.69 0 - -	> > > >	A 0	< C 23 0.14 4 - -	< < > >	C 23	< D 31 0.11 3 - -	> > > >	D 31			
	Bruce Street & Main Street East	TWSC	LOS Delay V/C Q		A 0 0.61 0	> > >	A 0	< A 4 0.09 2			A 4	D 26 0.23 7	> > >	D 26						
	Ontario Street South & Main Street East	TCS	LOS Delay V/C Q Stor. Avail.	D 39 0.77 58 40 -18	D 40 0.82 117 - -	> > > >	D 40	F 258 1.47 165 40 -125	E 80 1.05 190 - -	> > > >	F 126	F 111 1.07 82 70 -12	D 37 0.71 102 70 37	C 30 0.31 33 70 37	D 47	C 30 0.65 36 50 14	E 60 0.98 170 - -	> > > >	E 56	E 71 1.29
	Ontario Street South & Pearl Street	TWSC	LOS Delay V/C Q Stor. Avail.	D 29 0.31 10 - -		> > > >	D 29					B 13 0.11 3 20 17	A 0 0.42 0 - -		A 0		A 0 0.59 0 - -	> > > >	A 0	
	Pearl Street & Bruce Street	TWSC	LOS Delay V/C Q	< < < <	A 3 0.03 1		A 3		A 0 0.04 0	> > > >	A 0					A 9 0.04 1		> > > >	A 9	
	Prince Street & Pearl Street	TWSC	LOS Delay V/C Q	< < < <	A 1 0.00 0	> > > >	A 1	< A 3 0.02 1	> > > >	A 3	< A 10 0.07 2	> > > >	A 10	< B 10 0.03 1	> > > >	B 10				

MOE - Measure of Effectiveness

LOS - Level of Service

Delay - Average Delay per Vehicle in Seconds

V/C - Volume to Capacity Ratio

Q - 95th Percentile Queue Length (m)

Stor. - Existing Storage (m)

Avail. - Available Storage (m)

TCS - Traffic Control Signal

TWSC - Two-Way Stop Control

</> - Shared with through movement



4.3.2 Total Traffic Operations

Table 4.4A-B summarizes the 5-year horizon total traffic level of service conditions.

Weekday AM Peak Hour

- ▶ Main Street East at Ontario Street (signalized):
 - The eastbound left-turn 95th percentile queue length is forecast to exceed the available storage by 5 m.
 - The westbound left-turn lane is forecast to operate with a v/c ratio greater than 1.00. The 95th percentile queue length is forecast to exceed the available storage by less than 90 m.
 - The northbound right-turn 95th percentile queue length is forecast to exceed the available storage by 5 m.

Weekday PM Peak Hour

- ▶ Main Street East at Ontario Street (signalized):
 - The eastbound left-turn 95th percentile queue length is forecast to exceed the available storage by less than 30 m.
 - The westbound left-turn lane is forecast to operate with delays in the LOS F range with a v/c ratio greater than 1.00. The 95th percentile queue length is forecast to exceed the available storage by less than 130 m.
 - The westbound through-right lane is forecast to operate with delays in the LOS F range with a v/c ratio greater than 1.00.
 - The northbound left-turn lane is projected to operate at LOS F with a v/c ratio of 1.00. This lane's 95th percentile queue length is forecast to exceed the available storage by less than 15 m.
 - The southbound through-right lane is projected to operate with delays in the LOS E range with a v/c ratio of 1.00.
- ▶ Main Street East at Prince Street/ 377 Main Street East Driveway (unsignalized):
 - The northbound approach is forecast to degrade to delays in the LOS D range with a v/c ratio less than 0.30.
 - The southbound approach is forecast to operate in the LOS D range with a v/c ratio less than 0.15.

The site driveway approaches to Bruce Street and Pearl Street are projected to operate with acceptable service levels. Delays for both



driveways are forecast to be LOS B or better with v/c ratios of less than 0.15. The 95th percentile queue length is expected to be less than one vehicle for both driveways during the weekday peak hours.

Appendix H contains the detailed Synchro 11 reports.



TABLE 4.4A: 2039 TOTAL TRAFFIC OPERATIONS – AM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																	Overall
				Eastbound				Westbound				Northbound				Southbound					
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach		
AM Peak Hour	Prince Street/377 Main Street East Driveway & Main Street East	TWSC	LOS Delay V/C Stor. Avail.	A 0 0.00 0 30	A 0 0.53 0 - -	> > > >	A 0	A 10 0.02 0 30	A 0 0.40 0 - -	> > > >	A 0	< < < <	C 21 0.22 7 - -	> > > >	C 21	< < < <	B 13 0.00 0 - -	> > > >	B 13		
	Bruce Street & Main Street East	TWSC	LOS Delay V/C Q		A 0 0.54 0	> > > >	A 0	< < < <	A 2 0.06 2		A 2	C 21 0.29 9	> > > >	C 21							
	Ontario Street South & Main Street East	TCS	LOS Delay V/C Q Stor. Avail.	C 30 0.69 45 40 -5	D 40 0.79 90 - -	> > > >	D 38	F 144 1.20 126 40 -86	D 37 0.71 79 - -	> > > >	E 76	C 25 0.61 33 70 37	D 38 0.83 147 70 -5	C 31 0.55 75 70 -	C 35	C 24 0.55 25 50 25	D 38 0.81 132 - -	> > > >	D 36	D 45 0.99	
	Ontario Street South & Pearl Street	TWSC	LOS Delay V/C Q Stor. Avail.	B 13 0.17 5 - -		> > > >	B 13					B 11 0.10 3 20 17	A 0 0.48 0 - -		A 1		A 0 0.45 0 - -	> > > >	A 0		
	Pearl Street & Bruce Street	TWSC	LOS Delay V/C Q	< < < <	A 4 0.06 2		A 4		A 0 0.06 0	> > > >	A 0					A 9 0.05 1		> > > >	A 9		
	Prince Street & Pearl Street	TWSC	LOS Delay V/C Q	< < < <	A 1 0.00 0	> > > >	A 1	< < < <	A 1 0.01 0	> > > >	A 1	< < < <	A 9 0.07 2	> > > >	A 9	< < < <	A 10 0.05 1	> > > >	A 10		
	Pearl Street & South Driveway	TWSC	LOS Delay V/C Q	< < < <	A 1 0.01 0		A 1		A 0 0.07 0	> > > >	A 0					A 10 0.13 4		> > > >	A 10		
	Bruce Street & East Driveway	TWSC	LOS Delay V/C Q	A 9 0.00 0		> > > >	A 9					< < < <	A 0 0.00 0		A 0		A 0 0.03 0	> > > >	A 0		

MOE - Measure of Effectiveness

LOS - Level of Service

Delay - Average Delay per Vehicle in Seconds

V/C - Volume to Capacity Ratio

Q - 95th Percentile Queue Length (m)

Stor. - Existing Storage (m)

Avail. - Available Storage (m)

TCS - Traffic Control Signal

TWSC - Two-Way Stop Control

< / > - Shared with through movement



TABLE 4.4B: 2039 TOTAL TRAFFIC OPERATIONS – PM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																	Overall
				Eastbound				Westbound				Northbound				Southbound					
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach		
PM Peak Hour	Prince Street/377 Main Street East Driveway & Main Street East	TWSC	LOS Delay V/C Stor. Avail.	B 14 0.02 1 30 29	A 0 > > > >	> > > >	A 0	B 11 0.05 1 30 29	A 0 > > > >	> > > >	A 0	< < < < <	D 35 0.29 9 > >	> > > >	D 35	< < < < <	D 31 0.11 3 > >	> > > >	D 31		
	Bruce Street & Main Street East	TWSC	LOS Delay V/C Q	> > > >	A 0 0.61 0 > >	> > > >	A 0	< < < <	A 8 0.19 5 > >	> > > >	A 8	D 32 0.42 16 > > >	> > > >	D 32							
	Ontario Street South & Main Street East	TCS	LOS Delay V/C Stor. Avail.	D 46 0.83 68 40 -28	D 41 0.84 121 - >	> > > >	D 42	F 275 1.51 169 40 -129	F 93 1.09 200 - >	> > > >	F 139	F 113 1.07 83 70 -13	D 38 0.71 102 70 36	C 31 0.32 34 70 36	D 48	C 30 0.65 36 50 14	E 67 1.01 177 - >	> > > >	E 62	E 77 1.30	
	Ontario Street South & Pearl Street	TWSC	LOS Delay V/C Stor. Avail.	D 31 0.41 15 - >	> > > >	> > > >	D 31					B 14 0.18 5 20 15	A 0 0.42 0 - >		B 1		A 0 0.59 0 - >	> > > >	A 0		
	Pearl Street & Bruce Street	TWSC	LOS Delay V/C Q	< < < <	A 4 0.06 2 >		A 4		A 0 0.06 0 >	> > >	A 0					A 10 0.12 3 >		> > >	A 10		
	Prince Street & Pearl Street	TWSC	LOS Delay V/C Q	< < < <	A 1 0.00 0 >	> > >	A 1	< < < <	A 3 0.02 1 >	> > >	A 3	< < < <	A 10 0.07 2 >	> > >	A 10	< < < <	B 11 0.07 2 >	> > >	B 11		
	Pearl Street & South Driveway	TWSC	LOS Delay V/C Q	< < < <	A 2 0.02 0 >		A 2		A 0 0.10 0 >	> > >	A 0					B 10 0.11 3 >		> > >	B 10		
	Bruce Street & East Driveway	TWSC	LOS Delay V/C Q	A 10 0.01 0 >	> > >	> > >	A 10					< < <	A 0 0.00 0 >		A 0		A 0 0.09 0 >	> > >	A 0		

MOE - Measure of Effectiveness

LOS - Level of Service

Delay - Average Delay per Vehicle in Seconds

V/C - Volume to Capacity Ratio

Q - 95th Percentile Queue Length (m)

Stor. - Existing Storage (m)

Avail. - Available Storage (m)

TCS - Traffic Control Signal

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< / > - Shared with through movement



5 Remedial Measures

The following section discusses the potential remedial measures that could be considered to better accommodate the forecast traffic volumes in the study area.

5.1 Assessment of Impacts

5.1.1 Main Street East at Ontario Street

At the Main Street East at Ontario Street intersection, during the weekday AM peak hour, the westbound left-turn lane operates at LOS D with a 95th percentile queue exceeding the available storage by less than 25 metres. During the weekday PM peak hour, the same lane experiences delays in the LOS D range with a v/c ratio above 0.85 and queue lengths exceeding storage by 40 metres. The westbound through-right lane also operates at LOS D with a v/c ratio greater than 0.85.

By the 2034 and 2039 Background horizons (without the proposed development), intersection conditions are expected to deteriorate significantly. During the weekday AM peak hour, the westbound left-turn lane is projected to operate at LOS F with a v/c ratio over 1.00 and queues exceeding storage by up to 60 meters. In the weekday PM peak hour, the westbound left-turn and through-right lanes are anticipated to reach LOS D-F, with v/c ratios above 0.95 and queues exceeding storage by up to 100 meters.

The eastbound left-turn lane is forecast to exceed storage by 5 meters and 20 meters under the 2034 and 2039 Background horizons. The northbound left-turn lane is projected to exceed storage by less than 5 meters during the PM peak hour, operating at LOS E with v/c ratio greater than 0.95, and degrading to LOS F by 2039. Similarly, the northbound right-turn lane in the AM peak hour is expected to exceed storage by a similar margin.

Finally, the southbound through-right lanes are forecast to operate at LOS D with v/c ratios exceeding 0.85 by 2034 and degrade to LOS E under the 2039 background horizon during the PM peak hours.

Similar capacity issues are forecast under the 2034 and 2039 Total horizon (with the development) to the future Background horizons, with marginally increased delays and queue lengths due to site-generated traffic. The proposed development is expected to add less than 10 seconds of delay per approach, indicating minimal additional impact on overall traffic conditions in the study area. Most of the critical



movements can be attributed to the existing high traffic volumes at Main Street East at Ontario Street.

As there appears to be limited right-of-way to expand the roadway platform, there are limitations on what can be completed geometrically to the intersection. A review of the intersection, however, does indicate that some modifications could be considered that could improve the pedestrian crossing environment.

The intersection is built with right-turn slip lanes for the eastbound and southbound approaches. The problem with slip lanes is they are designed for unimpeded vehicular movement. Instead, intersection design should be designed to discourage high-speed turns while accommodating large trucks and buses. The slip lanes could be removed by constructing a more conventional right-turn lane/taper, providing an improved and safer pedestrian crossing environment. In addition to the roadway modifications, the signal timings should be further reviewed and optimized to provide enhanced operations for changing traffic volumes in the future.

5.1.2 Prince Street/ 377 Main Street East at Main Street East

Under the 2034 and 2039 Background horizons, southbound movements are forecast to operate in the LOS D range during the weekday PM peak hours at the Prince Street and 377 Main Street East Driveway at Main Street East intersection. Under the 2034 and 2039 Total horizons, the northbound approach is also forecast to operate in the LOS D range during the weekday PM peak hour. However, the delay results from high traffic volumes along Main Street East, creating additional delays to the northbound and southbound approach. Both roadways are expected to operate within capacity with v/c ratios less than 0.30 and 95th percentile queues less than two vehicles during the weekday PM peak hours.



5.2 Sensitivity Analysis

A sensitivity analysis has been undertaken to assess the identified improvements noted above at the study area intersections for the 2039 Total weekday AM and PM peak hours. The following improvements and assumptions have been assumed:

- ▶ Main Street East at Ontario Street: Southbound and Eastbound right-turn slip lanes have been converted to a right-turn taper. Signal timing adjustments with optimized cycle length and splits for the weekday peak hours.

Table 5.1 summarizes the results of the sensitivity analysis.

Adjusting the signal timings is expected to improve the intersection performance slightly, with the v/c ratio projected to be below 1.00 for all movements during the weekday peak hours.

Appendix I contains the detailed Synchro reports.



TABLE 5.1: SENSITIVITY ANALYSIS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Ontario Street South & Main Street East	TCS	LOS Delay	C 31	D 43	C 33	D 39	D 50	D 37	>	D 42	C 21	D 36	C 30	C 33	C 30	C 33	C 26	C 31	D 36
			V/C	0.65	0.77	0.07		0.92	0.69	>		0.49	0.80	0.49		0.62	0.64	0.24		0.88
			Q	45	82	13		102	81	>		32	134	63		27	93	32		
			Stor.	40	-	15		40	-	>		70	-	70		50	-	15		
			Avail.	-5	-	2		-62	-	>		38	-	7		23	-	-17		
PM Peak Hour	Ontario Street South & Main Street East	TCS	LOS Delay	E 67	D 38	C 32	D 42	E 64	E 56	>	E 58	E 65	D 38	C 30	D 40	D 44	D 53	C 32	D 49	D 48
			V/C	0.93	0.69	0.27		0.98	0.98	>		0.92	0.72	0.26		0.75	0.91	0.21		1.01
			Q	76	93	35		121	184	>		74	102	25		44	140	28		
			Stor.	40	-	15		40	-	>		70	-	70		50	-	15		
			Avail.	-36	-	-20		-81	-	>		-4	-	45		6	-	-13		

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LOS - Level of Service

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V/C - Volume to Capacity Ratio

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Stor. - Existing Storage (m)

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TCS - Traffic Control Signal

< / > - Shared with through movement



5.3 Main Street East ROW

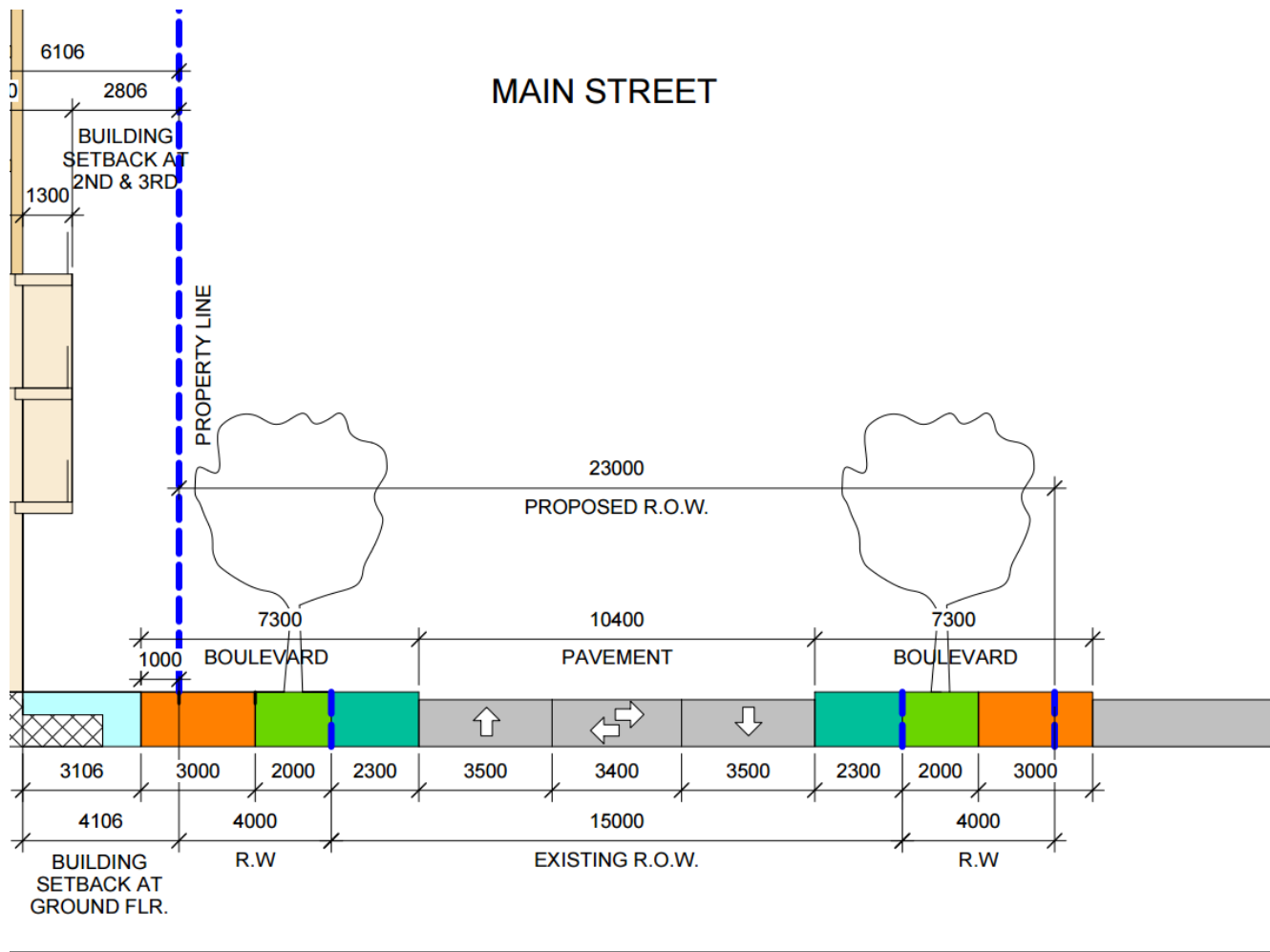
Main Street East has a right-of-way (ROW) of approximately 19 metres at Bruce Street and narrows to 15 metres at Prince Street. The Town's Official Plan identifies Main Street as a Multi-Purpose Arterial with a 35m right-of-way (ROW).

As part of this assessment, the functional design requirements associated with Main Street East were undertaken to determine appropriate ROW dimensions driven by the functional needs of the ROW components. Main Street East is classified as a multi-purpose arterial roadway per the Town's Official Plan. The function of these roadways is to facilitate a mix of functions or major and minor arterials as well as accommodate active transportation.

As **Table 4.4** for 2039 outlines, the operational assessment provides some insight into the capacity requirements along Main Street East from Bruce Street to Prince Street. The primary metric for assessing network capacity constraints is evaluating the volume-to-capacity (v/c) ratio, which represents the volume that travels along a roadway within the peak hour divided by the roadway's capacity. At a high level, the analysis reveals that the current three-lane cross-section along Main Street East remains within capacity in the future 2039 horizon, indicated by a v/c ratio no greater than 0.69. Based on this assessment, additional lane widths are not required along Main Street East.

Based on the above, the proposed ROW along Main Street East have made allowance for vehicular lane configurations consistent with anticipated vehicular volumes associated with the general level of intensification within the study area. The scale of the Future Midtown public streets illustrated in **Figure 5.1** also balances the non-vehicular space required to appropriately accommodate and encourage active transportation modes to serve the local day-to-day needs of residents, visitors, employees, and commuters.





NTS



Main Street East Proposed ROW

Table 5.2 summarizes the key ROW components and associated dimensions. It indicates that the proposed ROW for Main Street East devotes 60% of the ROW dimension to non-vehicular activities or uses.

TABLE 5.2: PROPOSED ROW COMPONENTS

Street Element	Main Street East
Overall ROW Dimension	23 m
Vehicular Section	
Curb-to-Curb	10.4m
# of Lanes	3
Typ. Lane Width	3.4 m - 3.5 m
Boulevard Section	
Total (One Side)	7.3 m
Sidewalk Width	3.0 m
Cycle Lane	2.3 m
Landscape	2.0 m
% Total Boulevard Space Within ROW	63%

5.3.1 MMLOS Evaluation

As the traffic simulation models only consider the LOS provided for vehicles based on delay and capacity, an alternate approach is needed to evaluate how well the system serves pedestrians, cyclists and transit users. Modal performance for walking and bicycling is determined by using the Ontario Traffic Council (OTC) Multi-Modal Level of Service Guidelines (MMLOS Guidelines), which estimate how safe and comfortable people will feel based on different street design conditions, motor vehicle traffic qualities, and separation from traffic.

These tools highlight how specific street improvements can improve the level of service by mode and meet the goals of completing streets. Baseline assessments utilize the current roadway elements, whereas future assessments assume that the components proposed within the 23-metre ROW are implemented.

The MMLOS evaluation did not focus on transit level-of-service due to the types of improvements evaluated. Transit assessments consider various factors, including bus frequency, transit priority features, and the relative speed of transit vehicles to auto traffic. The alternatives evaluated do not propose transit route realignments or transit priority features as part of this project; thus, existing conditions and level of transit service would not change.



The OTC guidelines provide facility descriptions to determine base targets. However, these descriptions are intended to determine the best fit for the road facility rather than fully encapsulating all road characteristics. As Main Street East is classified as a multi-purpose arterial, it falls under the "Neighbourhood Main Street" category that entails the following elements:

- ▶ Balances mobility and access
- ▶ Moves moderate to high volumes of cycling, transit and vehicle movements
- ▶ Balances priority of all modes
- ▶ Traditionally "auto-oriented" land use, but often subject to intensification or redevelopment
- ▶ Likely to have mixed but predominantly commercial land use

The methods for evaluating LOS use both time-based (i.e., operational) and non-time-based (i.e., design) measures. Operational measures indicate the priority for mobility of travellers by each mode, typically reflecting conditions during peak hours. **Table 5.3** summarizes the LOS by mode for Main Street East between Bruce Street and Prince Street.

The evaluation of the mid-block segment shows an acceptable LOS for pedestrians and a high LOS for cyclists and trucks with the proposed ROW components. On this basis, the proposed 23-metre ROW would satisfy the MMLOS criteria for the roadway topology of a "Neighbourhood Main Street."

TABLE 5.3: MMLOS SERVICE SUMMARY

Condition	LOS By Mode Main Street East (Bruce Street to Prince Street)		
	Neighbourhood Main Street "Target"	Baseline Assessment (15 m ROW)	Future Assessment (23 m ROW)
Peds	C	D	C
Facility Width (m)	2.1 - 2.5	1.1	2.0
Buffer Width (m)	1.6 - 2.0	1	2.0
Distance Between Controlled Crossings (m)	231 - 260	211	211
Bikes	C	N/A	A
Facility Width (m)	2.2 - 2.4	N/A	1.8
Buffer Width (m)	Physical Measure (0.50 -1.00)	N/A	0.50 (assumed)
Conflicts with Other Modes	One Low and One Moderate	N/A	One Low and One Low
Trucks	D	D	C
Width of Curb Lane (m)	3.4-3.6	3.2	3.5
Car Level of Service	D	A	A



6 Parking

6.1 Zoning By-Law Requirements

Zoning By-Law Amendment 89-2022⁸ is in effect for the site as part of the Urban Growth Centre Mixed-Use Zone (UGC-MU). This Zoning By-Law Amendment establishes a parking requirement of 0.8 spaces per dwelling unit, along with the greater of 0.2 visitor parking spaces per unit or 1.0 space per 30 m² of gross floor area for permitted non-residential uses in mixed-use buildings.

As the visitor parking requirements result in a higher total, it was selected for this study. Therefore, to comply with the Town's By-Law, 570 parking spaces are required. The proposed site provides 417 parking spaces, equating to a rate of 0.73 per dwelling unit.

Table 6.1 summarizes the minimum parking calculations for the development under the Town of Milton's Zoning By-Law Amendment.

TABLE 6.1 TOWN OF MILTON PARKING REQUIREMENTS

Land Use	Rate	Zoning By-law Calculation
Apartment units (570 units)	0.8 spaces per unit	456 spaces
Visitor parking	0.2 spaces per unit - 114 spaces	114 spaces
	1.0 space per 30 m ² GFA - 27 spaces	
Mandated Parking Supply		570 spaces
Proposed Parking Supply		417 spaces
Surplus/Deficit		-153 spaces (27%)

6.2 Bill 185

Notwithstanding the applicability of Zoning Bylaw 89-2022 to the proposed development, the Province of Ontario recently passed (June 6, 2024) Bill 185. Bill 185, among other things, amends the Planning Act of Ontario.

Provisions in Bill 185, amending the Planning Act, limit the ability of official plans and zoning bylaws to contain policies requiring an owner to provide or maintain parking facilities within protected major transit

⁸ Town of Milton, By-Law No. 0.89-2022, September 2022



station areas, certain other areas surrounding and including an existing or planned higher-order station or stop, and other prescribed areas.

Bill 185 says (paraphrased) that no official plan may contain any policy that has the effect of requiring, and that a zoning by-law may not require, an owner or occupant of a building or structure to provide and maintain parking facilities, other than parking facilities for bicycles, on land that is not part of a highway and that is located within:

- ▶ A protected major transit station area;
- ▶ An area delineated in the official plan of the municipality surrounding and including an existing or planned higher order transit station or stop, within which area the official plan policies identify the minimum number of residents and jobs, collectively, per hectare that are planned to be accommodated; or
- ▶ Any other area prescribed for the purposes of this clause.

The proposed development is located within the Protected Major Transit Station Area as defined by the Town of Milton. The impact of Bill 185 renders any requirement for vehicular parking for lands within a PMTSA, within the Town of Milton and Comprehensive Zoning Bylaw as having 'no effect' (i.e., the requirement for vehicular parking is zero if a Site is within a PMTSA).

Application of Bill 185 and the provisions which amend the Planning Act result in vehicular parking requirements of zero parking spaces per unit (i.e., 0 parking spaces/unit) for both the resident parking and visitor parking components and the non-residential land use components of the development proposal.

As a result, the practical needs for vehicular parking have been documented in the section noted below as input into current parking demand trends experienced at other high-rise developments in the Town of Milton.



6.3 Proposed Parking Supply

Notwithstanding the discussion around the Zoning Bylaw parking requirements and the effects of Bill 185 on the parking requirements for the proposed development, a practical parking demand will need to be accommodated for the development to be marketable and function appropriately.

A review of actual parking demands likely generated by the development has been considered to assess them independently and separately from a review of the Zoning By-Law requirements.

The "real" demands established for the subject site are based upon a review of parking demand data collected by Paradigm. The specified demand considers several influencing factors, including market demands and study area attributes.

All-day parking utilization surveys were conducted on Tuesday, October 31, 2017, Wednesday, November 1, 2017, and Saturday, November 4, 2017, at 33 Whitmer Street and 100 Millside Drive in the Town of Milton. Given the low turnover at residential land uses, the parking utilization surveys were carried out in 15-minute increments.

Table 6.2 summarizes this assessment. **Appendix J** contains the parking survey data.

- ▶ **33 Whitmer Street** currently operates as a six-storey building with 148 residential units. The subject site contains approximately 149 residential and 38 visitor parking spaces.

The parking surveys confirm that out of the 187 parking spaces provided, at most, 127 were used by residents and 31 spaces by visitors. The survey's maximum parking demand was calculated at 0.84 spaces per unit for residents and 0.21 spaces per unit for visitors. Applying this parking rate to the subject site, 477 parking spaces would be required for residents and 119 for visitors.

- ▶ **100 Millside Drive** currently operates as a sixteen-storey building with 154 residential units. The subject site contains approximately 144 parking spaces for residents and visitors.

The parking surveys show that out of the 144 parking spaces provided, at most 71 spaces were used by residents and 22 by visitors. The survey's maximum parking demand was calculated at 0.81 spaces per unit for residents and 0.14 spaces per unit for visitors. Applying this parking rate to the subject site, 460 parking spaces would be required for residents and 80 for visitors.



TABLE 6.2: PARKING UTILIZATION SURVEYS

Day of the Week	Type	33 Whitmer Street			100 Millside Drive		
		Max Parking	Utilization	Parking Rate	Max Parking	Utilization	Parking Rate
Tuesday	Resident	125	67%	0.84	125	87%	0.81
	Visitor	26	14%	0.18	22	15%	0.14
Wednesday	Resident	124	66%	0.84	122	85%	0.79
	Visitor	30	16%	0.20	22	15%	0.14
Saturday	Resident	127	68%	0.86	123	85%	0.80
	Visitor	31	17%	0.21	22	15%	0.14

The parking survey results indicate that the maximum parking demand ranges from 0.81 to 0.86 resident parking spaces per unit and between 0.14 and 0.21 visitor parking spaces. The surveyed sites align with the Town's current parking demand as outlined in the Zoning By-Law and would be appropriate for sites outside of a PMTSA.

However, with respect to a site located within a PMTSA, such as the proposed development, a parking rate of 0.73 spaces per unit would be suitable for the site's parking demands, given the excellent existing and future transit and pedestrian/cycling nature of the proposed development. The following parking standards should be considered:

- ▶ Resident: 0.58 spaces per unit
- ▶ Residential Visitor: 0.15 spaces per unit



7 Transportation Demand Management

Based on best practices and policy objectives, there is merit for a further reduction through a Transportation Demand Management (TDM) program.

A TDM plan aims to reduce the development's overall traffic and parking impacts by implementing strategies to affect the demand side of the transportation equation. TDM strategies include incentives and disincentives that increase people's likelihood of changing travel behaviour. Strategies include financial incentives, time incentives, new or enhanced commuter services, information dissemination, and alternative marketing services. Such methods include providing information on modes accessible to the site, bike parking, and the proper amount of parking.

The TDM plan has been formulated to extend reasonable and practical strategies that encourage residents and visitors to take alternative modes of transportation. The strategies identified are expected to improve transportation access and connectivity for the proposed development.

7.1 Potential TDM Measures

The parking justification outlined in **Section 6** has indicated that the development's parking supply can accommodate the estimated parking demand. The development will implement the proposed strategies identified herein to reduce the number of auto-trips made to/from the Development:

7.1.1 Transportation Information

Knowing which modes are available and accessible is a significant part of mode choice. As a component of a resident welcome packet, information on transportation options and links to the appropriate website should be conveyed to all prospective residents.

Available information should include schedules for local and regional transit services, bicycle and trail networks and the location of retail and recreational establishments.

7.1.2 Cycling

By providing additional opportunities and safeguards for residents that choose to travel to/from the development through cycling, sustainable transportation and a reduction in automobile trips and parking requirements are expected to occur.



The Town of Milton's Zoning By-Law Amendment 89-2022 provides guidelines regarding the amount of bicycle parking that should be provided. Based on the Town's By-Law requirements:

- ▶ Bicycle parking shall be provided at a rate of 1.0 long-term spaces per unit; and
- ▶ 0.05 short-term spaces per unit.

Based on the rates, the site should provide at least 570 bicycle parking spaces and 29 short-term bicycle parking spaces to support a reduced parking supply.

7.1.3 Walking

Similar to cycling, providing a safe and attractive environment for residents walking to/from the development will contribute to sustainable transportation.

The site plan indicates that a concrete walkway at least 1.5 metres in width will be provided adjacent to the building's frontage, connecting to the existing sidewalk along Main Street East, Bruce Street, and Pearl Street.

The proposed development generally satisfies the City's TDM policy for walking.

7.1.4 Parking

A parking management plan recognizes the need to provide adequate parking but values strategies that result in more efficient use of parking resources and reduce the amount of parking needed at a particular location.

Rather than establish generous parking requirements to satisfy the maximum potential demand that may occur, parking management allows contingency-based planning, which means that various solutions are identified which can be deployed if needed.

The single most significant contributor to the ubiquitous use of the SOV is the oversupply of inexpensive parking. By limiting parking supply, the developer provides a key ingredient in managing parking demand at the site. Reducing parking supply to match but not exceed the expected demand can positively influence the selection of alternative travel modes.

As the development promotes using other modes of transportation through limited on-site parking to meet the projected demand, the



development plays a significant role in setting an example for residents and visitors to consider non-automotive travel.

7.1.5 Unbundled Parking

Implementing a paid parking operation is one of the most effective TDM strategies for encouraging alternative travel habits. Occupants are not forced to pay for parking they do not need; consumers can adjust their parking supply to reflect their needs. To further encourage apartment building residents to utilize sustainable travel modes, parking is recommended to be unbundled from the cost of the units.

This is an essential factor as residents are notified at the project's onset that parking is proposed to be provided as an additional cost instead of the price to rent a unit. If residents are significantly considering changing their travel behaviour, the cost of renting a parking space could contribute to this change.



8 Conclusions and Recommendations

8.1 Conclusions

The main findings and conclusions of this study are as follows:

Traffic Impact Study

- ▶ **Study Area:** The intersections assessed in this study include:
 - Main Street East & Ontario Street (signalized);
 - Main Street East & Bruce Street (unsignalized);
 - Main Street East at Prince Street (unsignalized);
 - Pearl Street at Bruce Street (unsignalized);
 - Ontario Street at Pearl Street (unsignalized); and
 - Up to two proposed driveways to Pearl Street and Bruce Street.
- ▶ **Existing Traffic Conditions:** Critical movements are observed at the westbound left-turn lane, operating at LOS D, with queues extending beyond the available storage by up to 25 metres in the weekday AM peak hour and 40 metres in the weekday PM peak hour. The through-right lane also experiences delays in the LOS D range during the PM peak.
- ▶ **Trip Generation:** The site's trip generation is estimated to be approximately 170 weekday AM and 242 weekday PM peak-hour trips. With the consideration of internal trips, the site is forecast to generate 166 weekday AM and 216 weekday PM peak-hour trips.
- ▶ **Background Traffic Conditions:** Under the 2034 Background horizon, critical movements are forecast at the intersection of Main Street East at Ontario Street during the weekday peak hours. These include the eastbound left, westbound through-right, northbound left, northbound through-right, and southbound through-right lanes, with many movements operating at v/c ratios above 0.95 and/or experiencing queues that exceed the available storage. The westbound left-turn lane is also projected to operate with delays in the LOS F range during the weekday peak hours.

The southbound approach of the Main Street East at Prince Street/ 377 Main Street East intersection is also expected to experience critical movements, operating in the LOS D range during the weekday PM peak hour.



Similar operational issues are forecast under the 2039 Background horizon, with further degradation for approaches experiencing critical movements.

Total Traffic Conditions: Site-generated traffic is generally forecast to add less than 10 seconds of delay to the study area's intersections. Similar capacity issues are forecast under the 2034 and 2039 Total horizon to the future Background horizons, with a slight increase in delays and queue lengths with the inclusion of site-generated traffic.

The site driveway approaches to Bruce Street and Pearl Street are all forecast to operate with acceptable levels of service.

Remedial Measures: To alleviate capacity issues at the intersection of Main Street East at Ontario Street, the Town may consider optimizing the signal timings to provide additional green time for left-turning vehicles. The Town should also consider converting the eastbound and southbound right turn slip lanes to a conventional right turn lane to improve the pedestrian crossing environment.

No remedial measures are necessary for the northbound and southbound approaches at the intersection of Main Street East at Prince Street/ 377 Main Street East. While the minor road approaches are characterized by LOS D, the approaches operate within capacity, and this is not unusual where a minor road operating under stop control intersects with a major road.

Parking Study

- ▶ Despite Zoning Bylaw 89-2022 stipulating 1.00 parking space per residential unit, the Province of Ontario passed Bill 185 on June 6, 2024, which amends the Planning Act. This bill limits the ability of official plans and zoning bylaws to require property owners to provide or maintain parking facilities in protected major transit station areas and certain surrounding areas.
- ▶ Specifically, Bill 185 states that no official plan or zoning bylaw can require owners or occupants to provide vehicular parking—except for bicycles—on land not part of a highway in Protected major transit station areas.
- ▶ The proposed development is located within a Protected Major Transit Station Area in the Town of Milton, meaning that the requirement for vehicular parking is zero.
- ▶ Despite the impact of Bill 185, it is crucial to accommodate practical parking demand for the proposed development to ensure its marketability and functionality.



- ▶ A review of actual parking demands indicates a maximum need of 0.81 to 0.86 resident parking spaces per unit and 0.14 to 0.21 visitor spaces. These figures align with the Town's current parking demands for areas outside a Parking Management Transportation Study Area (PMTSA).
- ▶ For sites within a PMTSA, a parking rate of 0.73 spaces per unit is more appropriate, considering the excellent transit and pedestrian access. The recommended parking standards are:
 - Resident: 0.58 spaces per unit
 - Residential Visitor: 0.15 spaces per unit

8.2 Recommendations

Based on the findings of this study, the following is recommended:

- ▶ The site's TDM program should be implemented and monitored over time to help manage its transportation and parking impacts.
- ▶ The site's loading area should be reoriented to an east-west orientation to improve access for large design vehicles.
- ▶ The site's underground parking garage should have some sections adjacent to the central ramp terminal to operate in a one-way direction to reduce potential conflicts.
- ▶ The Town should consider converting the eastbound and southbound right-turn slip lanes to conventional right-turn lanes to improve the pedestrian crossing environment.
- ▶ The Town is recommended to monitor the traffic volumes of Main Street East at Ontario Street and adjust the signal timings as required.



Appendix A

Terms of Reference



RE: 240515 - 388 Main Street East, Milton - TIS & PS - Terms of Reference

From Chris.Toews@milton.ca <Chris.Toews@milton.ca>

Date Fri 2024-10-18 2:57 PM

To Brian Kim <bkim@ptsl.com>

Cc Adam Makarewicz <amakarewicz@ptsl.com>

 1 attachments (4 KB)

Attachments.html;

The Town of Milton Secure Email

Expires November 17, 2024

155 Nipissing Road - Urban Transportation ...023.pdf

18 MB

[Download Attachments](#)

The only way to send sensitive information with email. [www.milton.ca]The Town of Milton

Good morning Brian,

Thanks for sending this over for our review, and your extended patience for us to get you our comments. See below the Town's comments **in red**.

Feel free to let me know if there are any questions.

Have a great weekend!

Kind regards,
Chris



Chris Toews

Transportation Planning Technologist

150 Mary Street., Milton ON, L9T 6Z5

905-878-7252 ext. 2502

www.milton.ca

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From: Brian Kim <bkim@ptsl.com>
Sent: Thursday, October 10, 2024 12:04 PM
To: Chris Toews <Chris.Toews@milton.ca>
Cc: Adam Makarewicz <amakarewicz@ptsl.com>
Subject: Re: 240515 - 388 Main Street East, Milton - TIS & PS - Terms of Reference

Hi Chris,

I hope you're doing well.

Just wanted to follow up to see if the Town had any comments on the proposed scope.

Thank you,

Brian Kim
Transportation Consultant



5A-150 Pinebush Road, Cambridge ON, N1R 8J8
p: 905.381.2229 x301
e: bkim@ptsl.com
w: www.ptsl.com

Paradigm operates on a four-day workweek. Our offices are closed on Fridays.

From: Brian Kim
Sent: September 23, 2024 5:44 PM
To: Chris.Toews@milton.ca <Chris.Toews@milton.ca>
Cc: Adam Makarewicz <amakarewicz@ptsl.com>
Subject: 240515 - 388 Main Street East, Milton - TIS & PS - Terms of Reference

Hi Chris,

Paradigm Transportation Solutions Limited has been retained to conduct a Traffic Impact and Parking Study for the proposed development at 388 Main Street East in the Town of Milton. The subject site is located generally south of Main Street and bounded by Prince Street and Bruce Street. The applicant is proposing a 16 and 18-storey tower with six (6) storey podiums supporting ground floor commercial. The proposed building includes approximately 402 square metres of commercial space and 568 residential units. All parking is proposed to be accommodated underground via access from Pearl Street.

Build-out and occupancy is expected to occur by year 2029. A copy of the concept plan is attached.

We'd like to prepare our report based on the following scope, subject to your comments:

Traffic Impact

Study Area Intersections: - **Acceptable**

- Main Street East at Ontario Street (signalized);
- Main Street East at Bruce Street (unsignalized);
- Main Street East at Prince Street (unsignalized);
- Pearl Street at Prince Street (unsignalized);
- Pearl Street at Bruce Street (unsignalized);
- Ontario Street at Pearl Street (unsignalized); and
- Proposed driveway connections to Pearl Street and Bruce Street.

Analysis Periods: - **Acceptable**

- Weekday AM peak hour; and
- Weekday PM peak hour.

Existing Data: - **Acceptable**

- TMCs to be collected by Paradigm.

Horizon Years - **Acceptable**

- Existing conditions;
- 5-Years from the build-out date (Year 2034); and
- 10-Years from the build-out date (Year 2039).

Analysis - **Acceptable**

- Synchro 11, HCM 2000 analysis
- SimTraffic queuing analysis (five 60-minute simulation with 15 minutes of seed time)

Background Traffic

- Generalized growth rate of 2% per annum – **Acceptable**.
- **Please identify any adjacent development applications to include in the traffic forecast.**
- **The Milton Major Transit Station Area Transportation Plan (MTSA) will need to be considered to develop local road forecasts. A TIS for 155 Nipissing Road was recently completed and considers all current planned developments in the study area. See attached for your reference. Please note, the 560 Main Street development included as a background development in the attached TIS is no longer proceeding at this time. This development is to be excluded from the background traffic volumes. The attached TIS provides all necessary references in the report to adjust traffic volumes accordingly.**
The 155 Nipissing Road TIS did not include Main Street East and Ontario Street South as a study area intersection, however the impact these background developments will have on this intersection will need to be considered for this analysis.
Figure 8 (Total Rounded Background Development Traffic Volumes) and Figure 13 (Site Traffic Volumes) from the attached TIS can be referenced. Appendix D contains background development traffic figures.
Inbound (southbound)/outbound (northbound) traffic volumes from the Ontario Street South and Childs Drive intersection can be carried to/from the Main Street East and Ontario Street South intersection, and distributed to the corresponding intersection turning movements based on existing travel patterns.
The above should be accounted for in the 2034/2039 horizon year background development traffic scenarios included in the TIS prepared for the subject development.

Road Network Improvements

- None, unless identified – **None currently planned. However, as the report will determine the proposed development's impact on the existing road network, the TIS will need to identify roadway and/or access improvements, if necessary, to ensure acceptable levels of service.**

Trip Generation - **Acceptable**

- ITE Trip Generation Data 11th Edition estimates
- No modal split reductions.

Site Traffic Distribution - **Acceptable**

- Existing travel patterns

Parking Study - **Acceptable**

- ITE Parking Generation Manual 6th Edition
- Proxy site data collected by Paradigm for similar land uses.

Access and Circulation Review

- ACR will be conducted to ensure compliance of the proposed development plan with review agency requirements and applicable industry guidelines. - **Acceptable**
- Include a full swept path analysis of the site, including all design vehicles anticipated to utilize the site (i.e., passenger, loading, waste collection, emergency).
- Referencing the TAC manual, please conduct a detailed and comprehensive Site Access Review including, but not limited to, the following:
 - Determine if the proposed site access location meets TAC minimum standards for crossing sight distance, stopping sight distance, decision sight distance, turning sight distance, etc.
 - Corner clearance from adjacent intersections
 - Spacing between adjacent driveways
 - Spacing considerations for opposing driveways
 - Ensure design conformance of the site access(es) to OPSD standards including width, radii, grades, etc.
 - Gap analysis
 - Determination whether the proposed site access is feasible from a safety and traffic operations perspective and why
 - A list of any potential or required mitigation measures to support the access (if site access determined to be feasible) OR a proposed new site access location(s)

Report

- Report documenting the study methodologies, findings, conclusions, and recommendations.
- Provide a comprehensive TDM Plan outlining measures to support parking reductions for the site, with a description of each TDM initiative and its function.
- Ensure each component, and format of the TIS report conforms to the Town of Milton's Terms of Reference: Traffic Impact Study Guidelines, see link below for reference.

<https://www.milton.ca/en/business-and-development/resources/Development/Terms-of-Reference---Traffic-Impact-Study.pdf>

Thank you,

Brian Kim

Transportation Consultant



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Appendix B

Existing Traffic Data



Main Street E & Prince Street - TMC

Tue Oct 8, 2024

Full Length (7 AM-10 AM, 11 AM-2 PM, 3 PM-6 PM)

All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 1233747, Location: 43.516808, -79.879279, Site Code: 240515



Provided by: Paradigm Transportation Solutions Limited
5A-150 Pinebush Road,
Cambridge, ON, N1R 8J8, CA

Leg Direction	Main Street E Eastbound							Main Street E Westbound							Prince Street Northbound						
Time	HL	L	T	R	U	App	Ped*	L	T	BR	R	U	App	Ped*	L	BL	T	R	U	App	Ped*
2024-10-08 7:00AM	0	0	104	0	0	104	0	0	58	0	0	0	58	1	0	0	0	1	0	1	1
7:15AM	0	0	118	1	0	119	1	2	70	0	0	0	72	0	0	0	0	5	0	5	2
7:30AM	0	0	170	2	0	172	0	1	57	0	0	0	58	0	2	0	0	5	0	7	2
7:45AM	0	0	167	3	0	170	0	3	158	1	0	0	162	8	3	0	1	8	0	12	6
Hourly Total	0	0	559	6	0	565	1	6	343	1	0	0	350	9	5	0	1	19	0	25	11
8:00AM	0	1	153	4	0	158	0	4	162	0	3	0	169	2	1	0	0	4	0	5	3
8:15AM	0	1	151	3	0	155	0	1	123	1	1	0	126	1	2	0	0	6	0	8	1
8:30AM	0	1	115	0	0	116	0	0	103	0	2	0	105	0	1	0	0	3	0	4	1
8:45AM	0	2	122	0	0	124	0	0	158	1	5	0	164	0	0	0	0	1	0	1	1
Hourly Total	0	5	541	7	0	553	0	5	546	2	11	0	564	3	4	0	0	14	0	18	6
9:00AM	0	4	112	0	0	116	0	0	124	0	4	0	128	3	1	0	0	3	1	5	3
9:15AM	0	1	127	3	0	131	0	1	114	1	2	0	118	0	0	0	0	1	0	1	0
9:30AM	1	1	118	1	0	121	0	3	111	2	0	0	116	0	1	0	0	2	0	3	1
9:45AM	1	2	110	0	0	113	0	2	125	0	2	0	129	5	1	0	0	0	0	1	7
Hourly Total	2	8	467	4	0	481	0	6	474	3	8	0	491	8	3	0	0	6	1	10	11
11:00AM	2	2	138	2	0	144	0	1	95	0	1	0	97	1	0	0	0	4	0	4	6
11:15AM	2	0	115	0	0	117	0	3	118	2	4	0	127	2	1	0	0	8	0	9	5
11:30AM	2	3	154	2	0	161	0	0	125	1	2	0	128	7	0	0	0	2	0	2	3
11:45AM	3	1	144	2	0	150	0	1	132	3	4	0	140	5	0	0	0	3	0	3	0
Hourly Total	9	6	551	6	0	572	0	5	470	6	11	0	492	15	1	0	0	17	0	18	14
12:00PM	3	0	151	2	0	156	0	1	140	1	3	0	145	1	0	0	0	5	0	5	3
12:15PM	0	1	145	0	0	146	0	0	138	3	3	0	144	2	1	0	0	3	0	4	8
12:30PM	0	4	140	1	0	145	0	3	156	1	4	0	164	0	1	0	0	4	0	5	0
12:45PM	1	3	151	2	0	157	0	0	141	1	4	0	146	1	1	0	0	4	0	5	4
Hourly Total	4	8	587	5	0	604	0	4	575	6	14	0	599	4	3	0	0	16	0	19	15
1:00PM	2	0	132	1	0	135	0	1	124	2	3	0	130	6	0	0	0	1	0	1	3
1:15PM	2	0	122	4	0	128	1	5	140	4	2	0	151	2	0	0	0	3	0	3	1
1:30PM	1	0	148	8	0	157	0	0	127	2	1	0	130	3	1	0	0	6	0	7	2
1:45PM	1	2	140	2	0	145	0	1	146	2	1	0	150	2	0	0	0	2	0	2	1
Hourly Total	6	2	542	15	0	565	1	7	537	10	7	0	561	13	1	0	0	12	0	13	7
3:00PM	1	0	146	1	0	148	0	6	182	3	3	0	194	3	0	0	0	4	0	4	11
3:15PM	1	3	187	1	0	192	0	0	189	1	4	0	194	3	1	0	0	5	0	6	5
3:30PM	4	4	164	4	0	176	1	4	158	1	6	0	169	1	2	0	0	4	0	6	6
3:45PM	0	1	176	1	0	178	1	3	199	1	2	0	205	0	0	0	0	9	0	9	8
Hourly Total	6	8	673	7	0	694	2	13	728	6	15	0	762	7	3	0	0	22	0	25	30
4:00PM	1	3	171	2	0	177	0	2	183	1	1	0	187	3	0	0	1	3	0	4	6
4:15PM	3	1	160	0	0	164	0	3	191	0	6	0	200	4	1	0	0	3	0	4	9
4:30PM	1	2	176	1	0	180	0	3	193	0	2	0	198	9	0	0	0	8	0	8	5
4:45PM	1	1	179	2	0	183	0	7	225	1	8	0	241	4	1	0	0	6	0	7	6
Hourly Total	6	7	686	5	0	704	0	15	792	2	17	0	826	20	2	0	1	20	0	23	26
5:00PM	1	0	197	2	0	200	0	8	224	3	6	0	241	1	0	0	0	4	0	4	7
5:15PM	1	2	191	2	0	196	0	5	188	0	2	0	195	2	0	0	0	6	0	6	5
5:30PM	4	0	166	1	0	171	0	3	218	2	1	0	224	2	2	0	1	4	0	7	3
5:45PM	0	1	161	0	0	162	0	7	196	0	7	0	210	1	0	0	0	4	0	4	4
Hourly Total	6	3	715	5	0	729	0	23	826	5	16	0	870	6	2	0	1	18	0	21	19
Total	39	47	5321	60	0	5467	4	84	5291	41	99	0	5515	85	24	0	3	144	1	172	139
% Approach	0.7%	0.9%	97.3%	1.1%	0%	-	-	1.5%	95.9%	0.7%	1.8%	0%	-	-	14.0%	0%	1.7%	83.7%	0.6%	-	-
% Total	0.3%	0.4%	46.7%	0.5%	0%	47.9%	-	0.7%	46.4%	0.4%	0.9%	0%	48.4%	-	0.2%	0%	0%	1.3%	0%	1.5%	-
Motorcycles	1	0	6	0	0	7	-	0	4	0	0	0	4	-	0	0	0	1	0	1	-
% Motorcycles	2.6%	0%	0.1%	0%	0%	0.1%	-	0%	0.1%	0%	0%	0%	0.1%	-	0%	0%	0%	0.7%	0%	0.6%	-
Lights	37	46	5191	56	0	5330	-	83	5139	39	99	0	5360	-	23	0	3	141	1	168	-
% Lights	94.9%	97.9%	97.6%	93.3%	0%	97.5%	-	98.8%	97.1%	95.1%	100%	0%	97.2%	-	95.8%	0%	100%	97.9%	100%	97.7%	-

Leg Direction	Main Street E Eastbound							Main Street E Westbound							Prince Street Northbound						
Time	HL	L	T	R	U	App	Ped*	L	T	BR	R	U	App	Ped*	L	BL	T	R	U	App	Ped*
Single-Unit Trucks	1	1	47	4	0	53	-	1	46	2	0	0	49	-	1	0	0	2	0	3	-
% Single-Unit Trucks	2.6%	2.1%	0.9%	6.7%	0%	1.0%	-	1.2%	0.9%	4.9%	0%	0%	0.9%	-	4.2%	0%	0%	1.4%	0%	1.7%	-
Articulated Trucks	0	0	12	0	0	12	-	0	14	0	0	0	14	-	0	0	0	0	0	0	-
% Articulated Trucks	0%	0%	0.2%	0%	0%	0.2%	-	0%	0.3%	0%	0%	0%	0.3%	-	0%	0%	0%	0%	0%	0%	-
Buses	0	0	63	0	0	63	-	0	85	0	0	0	85	-	0	0	0	0	0	0	-
% Buses	0%	0%	1.2%	0%	0%	1.2%	-	0%	1.6%	0%	0%	0%	1.5%	-	0%	0%	0%	0%	0%	0%	-
Bicycles on Road	0	0	2	0	0	2	-	0	3	0	0	0	3	-	0	0	0	0	0	0	-
% Bicycles on Road	0%	0%	0%	0%	0%	0%	-	0%	0.1%	0%	0%	0%	0.1%	-	0%	0%	0%	0%	0%	0%	-
Pedestrians	-	-	-	-	-	-	4	-	-	-	-	-	-	76	-	-	-	-	-	-	114
% Pedestrians	-	-	-	-	-	-	100%	-	-	-	-	-	-	89.4%	-	-	-	-	-	-	82.0%
Bicycles on Crosswalk	-	-	-	-	-	-	0	-	-	-	-	-	-	9	-	-	-	-	-	-	25
% Bicycles on Crosswalk	-	-	-	-	-	-	0%	-	-	-	-	-	-	10.6%	-	-	-	-	-	-	18.0%

* Pedestrians and Bicycles on Crosswalk. BL: Bear left, BR: Bear right, HL: Hard left, HR: Hard right, L: Left, R: Right, T: Thru, U: U-Turn

Main Street E & Prince Street - TMC

Tue Oct 8, 2024

Full Length (7 AM-10 AM, 11 AM-2 PM, 3 PM-6 PM)

All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 1233747, Location: 43.516808, -79.879279, Site Code: 240515



Provided by: Paradigm Transportation Solutions Limited
5A-150 Pinebush Road,
Cambridge, ON, N1R 8J8, CA

Leg Direction	Driveway Southbound							Northwest Southeastbound							
Time	L	T	R	HR	U	App	Ped*	HL	BL	BR	HR	U	App	Ped*	Int
2024-10-08 7:00AM	0	0	1	0	0	1	0	0	1	0	0	0	1	0	165
7:15AM	6	0	4	0	0	10	2	0	0	0	0	0	0	3	206
7:30AM	2	0	1	0	0	3	1	0	0	0	0	0	0	1	240
7:45AM	0	0	1	0	0	1	9	0	0	0	0	0	0	8	345
Hourly Total	8	0	7	0	0	15	12	0	1	0	0	0	1	12	956
8:00AM	7	0	1	0	0	8	2	0	0	0	1	0	1	3	341
8:15AM	2	1	1	0	0	4	4	0	0	0	0	0	0	6	293
8:30AM	8	0	2	0	0	10	2	0	0	0	0	0	0	6	235
8:45AM	7	0	4	0	0	11	7	0	0	0	0	0	0	8	300
Hourly Total	24	1	8	0	0	33	15	0	0	0	1	0	1	23	1169
9:00AM	6	0	4	0	0	10	2	0	0	0	0	0	0	1	259
9:15AM	1	0	1	0	0	2	1	0	0	0	0	0	0	4	252
9:30AM	4	0	3	0	0	7	4	1	0	0	0	0	1	4	248
9:45AM	3	0	2	0	0	5	4	0	0	0	0	0	0	6	248
Hourly Total	14	0	10	0	0	24	11	1	0	0	0	0	1	15	1007
11:00AM	1	0	2	0	0	3	5	0	1	0	0	0	1	6	249
11:15AM	2	0	2	0	0	4	6	0	1	0	1	0	2	8	259
11:30AM	6	0	1	0	0	7	5	0	1	0	4	0	5	5	303
11:45AM	2	0	0	0	0	2	7	0	3	0	2	0	5	4	300
Hourly Total	11	0	5	0	0	16	23	0	6	0	7	0	13	23	1111
12:00PM	2	1	2	0	0	5	7	0	2	0	1	0	3	10	314
12:15PM	1	0	1	0	0	2	5	0	2	0	3	0	5	4	301
12:30PM	2	0	0	0	0	2	7	0	2	0	1	0	3	7	319
12:45PM	4	0	2	0	0	6	1	0	0	0	0	0	0	0	314
Hourly Total	9	1	5	0	0	15	20	0	6	0	5	0	11	21	1248
1:00PM	2	0	0	0	0	2	4	0	2	0	0	0	2	8	270
1:15PM	1	0	2	0	0	3	1	0	2	1	1	0	4	4	289
1:30PM	4	1	4	0	0	9	6	0	3	0	3	0	6	7	309
1:45PM	1	0	3	0	0	4	7	0	1	0	4	0	5	8	306
Hourly Total	8	1	9	0	0	18	18	0	8	1	8	0	17	27	1174
3:00PM	3	0	3	0	0	6	5	0	3	0	2	0	5	6	357
3:15PM	2	0	3	0	0	5	3	0	1	0	3	0	4	6	401
3:30PM	0	0	1	0	0	1	1	0	2	0	0	0	2	2	354
3:45PM	3	0	2	0	0	5	2	0	1	0	4	0	5	4	402
Hourly Total	8	0	9	0	0	17	11	0	7	0	9	0	16	18	1514
4:00PM	5	0	0	0	0	5	4	0	2	2	0	0	4	1	377
4:15PM	3	0	1	0	0	4	5	0	0	0	2	0	2	6	374
4:30PM	0	0	1	0	0	1	4	0	0	0	2	0	2	5	389
4:45PM	3	0	1	0	0	4	4	0	0	0	2	0	2	2	437
Hourly Total	11	0	3	0	0	14	17	0	2	2	6	0	10	14	1577
5:00PM	2	0	3	0	0	5	1	0	1	0	3	0	4	2	454
5:15PM	0	0	0	0	0	0	3	0	1	0	1	0	2	3	399
5:30PM	3	0	0	0	0	3	3	0	1	1	4	0	6	4	411
5:45PM	5	0	1	0	0	6	3	0	1	0	0	0	1	2	383
Hourly Total	10	0	4	0	0	14	10	0	4	1	8	0	13	11	1647
Total	103	3	60	0	0	166	137	1	34	4	44	0	83	164	11403
% Approach	62.0%	1.8%	36.1%	0%	0%	-	-	1.2%	41.0%	4.8%	53.0%	0%	-	-	-
% Total	0.9%	0%	0.5%	0%	0%	1.5%	-	0%	0.3%	0%	0.4%	0%	0.7%	-	-
Motorcycles	0	0	0	0	0	0	-	0	0	0	0	0	0	-	12
% Motorcycles	0%	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	0%	-	0.1%
Lights	102	3	59	0	0	164	-	1	33	3	42	0	79	-	11101
% Lights	99.0%	100%	98.3%	0%	0%	98.8%	-	100%	97.1%	75.0%	95.5%	0%	95.2%	-	97.4%

Leg Direction	Driveway Southbound							Northwest Southeastbound							
Time	L	T	R	HR	U	App	Ped*	HL	BL	BR	HR	U	App	Ped*	Int
Single-Unit Trucks	1	0	1	0	0	2	-	0	1	0	1	0	2	-	109
% Single-Unit Trucks	1.0%	0%	1.7%	0%	0%	1.2%	-	0%	2.9%	0%	2.3%	0%	2.4%	-	1.0%
Articulated Trucks	0	0	0	0	0	0	-	0	0	0	0	0	0	-	26
% Articulated Trucks	0%	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	0%	-	0.2%
Buses	0	0	0	0	0	0	-	0	0	0	0	0	0	-	148
% Buses	0%	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	0%	-	1.3%
Bicycles on Road	0	0	0	0	0	0	-	0	0	1	1	0	2	-	7
% Bicycles on Road	0%	0%	0%	0%	0%	0%	-	0%	0%	25.0%	2.3%	0%	2.4%	-	0.1%
Pedestrians	-	-	-	-	-	-	112	-	-	-	-	-	-	141	
% Pedestrians	-	-	-	-	-	-	81.8%	-	-	-	-	-	-	86.0%	-
Bicycles on Crosswalk	-	-	-	-	-	-	25	-	-	-	-	-	-	23	
% Bicycles on Crosswalk	-	-	-	-	-	-	18.2%	-	-	-	-	-	-	14.0%	-

* Pedestrians and Bicycles on Crosswalk. BL: Bear left, BR: Bear right, HL: Hard left, HR: Hard right, L: Left, R: Right, T: Thru, U: U-Turn

Main Street E & Prince Street - TMC

Tue Oct 8, 2024

Full Length (7 AM-10 AM, 11 AM-2 PM, 3 PM-6 PM)

All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 1233747, Location: 43.516808, -79.879279, Site Code: 240515



Provided by: Paradigm Transportation Solutions Limited

5A-150 Pinebush Road,
Cambridge, ON, N1R 8J8, CA

[N] Driveway

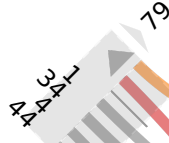
Total: 316

In: 166 Out: 150

60 3 103

75 62

[NW] Northwest
Total: 163
In: 83 Out: 80



1

85

79

39

47

5321

60

3

63

24

3

144

76

42

43

99

41

5291

84

11117

5515

5602

152

172

324

152

172

324

152

172

324

152

172

324

152

172

324

152

172

324

[W] Main Street E

Total: 10886
In: 5467 Out: 5419

Out: 152 In: 172

Total: 324

[S] Prince Street

[E] Main Street E

Total: 11117
In: 5515 Out: 5602

Main Street E & Prince Street - TMC

Tue Oct 8, 2024

AM Peak (7:30 AM - 8:30 AM)

All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 1233747, Location: 43.516808, -79.879279, Site Code: 240515



Provided by: Paradigm Transportation Solutions Limited
5A-150 Pinebush Road,
Cambridge, ON, N1R 8J8, CA

Leg Direction	Main Street E Eastbound							Main Street E Westbound							Prince Street Northbound						
Time	HL	L	T	R	U	App	Ped*	L	T	BR	R	U	App	Ped*	L	BL	T	R	U	App	Ped*
2024-10-08 7:30AM	0	0	170	2	0	172	0	1	57	0	0	0	58	0	2	0	0	5	0	7	2
7:45AM	0	0	167	3	0	170	0	3	158	1	0	0	162	8	3	0	1	8	0	12	6
8:00AM	0	1	153	4	0	158	0	4	162	0	3	0	169	2	1	0	0	4	0	5	3
8:15AM	0	1	151	3	0	155	0	1	123	1	1	0	126	1	2	0	0	6	0	8	1
Total	0	2	641	12	0	655	0	9	500	2	4	0	515	11	8	0	1	23	0	32	12
% Approach	0%	0.3%	97.9%	1.8%	0%	-	-	1.7%	97.1%	0.4%	0.8%	0%	-	-	25.0%	0%	3.1%	71.9%	0%	-	-
% Total	0%	0.2%	52.6%	1.0%	0%	53.7%	-	0.7%	41.0%	0.2%	0.3%	0%	42.2%	-	0.7%	0%	0.1%	1.9%	0%	2.6%	-
PHF	-	0.500	0.941	0.750	-	0.951	-	0.563	0.772	0.500	0.333	-	0.762	-	0.667	-	0.250	0.719	-	0.667	-
Motorcycles	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0	0	0	0	0	-
% Motorcycles	0%	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	0%	-
Lights	0	2	624	11	0	637	-	9	478	2	4	0	493	-	8	0	1	23	0	32	-
% Lights	0%	100%	97.3%	91.7%	0%	97.3%	-	100%	95.6%	100%	100%	0%	95.7%	-	100%	0%	100%	100%	0%	100%	-
Single-Unit Trucks	0	0	2	1	0	3	-	0	4	0	0	0	4	-	0	0	0	0	0	0	-
% Single-Unit Trucks	0%	0%	0.3%	8.3%	0%	0.5%	-	0%	0.8%	0%	0%	0%	0.8%	-	0%	0%	0%	0%	0%	0%	-
Articulated Trucks	0	0	2	0	0	2	-	0	1	0	0	0	1	-	0	0	0	0	0	0	-
% Articulated Trucks	0%	0%	0.3%	0%	0%	0.3%	-	0%	0.2%	0%	0%	0%	0.2%	-	0%	0%	0%	0%	0%	0%	-
Buses	0	0	12	0	0	12	-	0	17	0	0	0	17	-	0	0	0	0	0	0	-
% Buses	0%	0%	1.9%	0%	0%	1.8%	-	0%	3.4%	0%	0%	0%	3.3%	-	0%	0%	0%	0%	0%	0%	-
Bicycles on Road	0	0	1	0	0	1	-	0	0	0	0	0	0	-	0	0	0	0	0	0	-
% Bicycles on Road	0%	0%	0.2%	0%	0%	0.2%	-	0%	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	0%	-
Pedestrians	-	-	-	-	-	-	0	-	-	-	-	-	-	10	-	-	-	-	-	-	10
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	90.9%	-	-	-	-	-	-	83.3%
Bicycles on Crosswalk	-	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-	-	-	-	-	2
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	9.1%	-	-	-	-	-	-	16.7%

* Pedestrians and Bicycles on Crosswalk. BL: Bear left, BR: Bear right, HL: Hard left, HR: Hard right, L: Left, R: Right, T: Thru, U: U-Turn

Main Street E & Prince Street - TMC

Tue Oct 8, 2024

AM Peak (7:30 AM - 8:30 AM)

All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 1233747, Location: 43.516808, -79.879279, Site Code: 240515



Provided by: Paradigm Transportation Solutions Limited
5A-150 Pinebush Road,
Cambridge, ON, N1R 8J8, CA

Leg Direction	Driveway Southbound							Northwest Southeastbound							
Time	L	T	R	HR	U	App	Ped*	HL	BL	BR	HR	U	App	Ped*	Int
2024-10-08 7:30AM	2	0	1	0	0	3	1	0	0	0	0	0	0	1	240
7:45AM	0	0	1	0	0	1	9	0	0	0	0	0	0	8	345
8:00AM	7	0	1	0	0	8	2	0	0	0	1	0	1	3	341
8:15AM	2	1	1	0	0	4	4	0	0	0	0	0	0	6	293
Total	11	1	4	0	0	16	16	0	0	0	1	0	1	18	1219
% Approach	68.8%	6.3%	25.0%	0%	0%	-	-	0%	0%	0%	100%	0%	-	-	-
% Total	0.9%	0.1%	0.3%	0%	0%	1.3%	-	0%	0%	0%	0.1%	0%	0.1%	-	-
PHF	0.393	0.250	1.000	-	-	0.500	-	-	-	-	0.250	-	0.250	-	0.885
Motorcycles	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0
% Motorcycles	0%	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	0%	-	0%
Lights	11	1	4	0	0	16	-	0	0	0	1	0	1	-	1179
% Lights	100%	100%	100%	0%	0%	100%	-	0%	0%	0%	100%	0%	100%	-	96.7%
Single-Unit Trucks	0	0	0	0	0	0	-	0	0	0	0	0	0	-	7
% Single-Unit Trucks	0%	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	0%	-	0.6%
Articulated Trucks	0	0	0	0	0	0	-	0	0	0	0	0	0	-	3
% Articulated Trucks	0%	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	0%	-	0.2%
Buses	0	0	0	0	0	0	-	0	0	0	0	0	0	-	29
% Buses	0%	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	0%	-	2.4%
Bicycles on Road	0	0	0	0	0	0	-	0	0	0	0	0	0	-	1
% Bicycles on Road	0%	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	0%	-	0.1%
Pedestrians	-	-	-	-	-	-	13	-	-	-	-	-	-	14	
% Pedestrians	-	-	-	-	-	-	81.3%	-	-	-	-	-	-	77.8%	-
Bicycles on Crosswalk	-	-	-	-	-	-	3	-	-	-	-	-	-	4	
% Bicycles on Crosswalk	-	-	-	-	-	-	18.8%	-	-	-	-	-	-	22.2%	-

* Pedestrians and Bicycles on Crosswalk. BL: Bear left, BR: Bear right, HL: Hard left, HR: Hard right, L: Left, R: Right, T: Thru, U: U-Turn

Main Street E & Prince Street - TMC

Tue Oct 8, 2024

AM Peak (7:30 AM - 8:30 AM)

All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 1233747, Location: 43.516808, -79.879279, Site Code: 240515



Provided by: Paradigm Transportation Solutions Limited

5A-150 Pinebush Road,
Cambridge, ON, N1R 8J8, CA

[N] Driveway

Total: 23

In: 16 Out: 7

4 1 11

10

6

[NW] Northwest
Total: 3
In: 1 Out: 2

8
10

[W] Main Street E

Total: 1168
In: 655 Out: 513

2
641
12

5
4
2
500
9
6
[E] Main Street E
In: 515
Total: 1190
Out: 675

Out: 22 In: 32
Total: 54

[S] Prince Street

Main Street E & Prince Street - TMC

Tue Oct 8, 2024

Midday Peak (12 PM - 1 PM)

All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 1233747, Location: 43.516808, -79.879279, Site Code: 240515



Provided by: Paradigm Transportation Solutions Limited
5A-150 Pinebush Road,
Cambridge, ON, N1R 8J8, CA

Leg Direction	Main Street E Eastbound							Main Street E Westbound							Prince Street Northbound						
Time	HL	L	T	R	U	App	Ped*	L	T	BR	R	U	App	Ped*	L	BL	T	R	U	App	Ped*
2024-10-08 12:00PM	3	0	151	2	0	156	0	1	140	1	3	0	145	1	0	0	0	5	0	5	3
12:15PM	0	1	145	0	0	146	0	0	138	3	3	0	144	2	1	0	0	3	0	4	8
12:30PM	0	4	140	1	0	145	0	3	156	1	4	0	164	0	1	0	0	4	0	5	0
12:45PM	1	3	151	2	0	157	0	0	141	1	4	0	146	1	1	0	0	4	0	5	4
Total	4	8	587	5	0	604	0	4	575	6	14	0	599	4	3	0	0	16	0	19	15
% Approach	0.7%	1.3%	97.2%	0.8%	0%	-	-	0.7%	96.0%	1.0%	2.3%	0%	-	-	15.8%	0%	0%	84.2%	0%	-	-
% Total	0.3%	0.6%	47.0%	0.4%	0%	48.4%	-	0.3%	46.1%	0.5%	1.1%	0%	48.0%	-	0.2%	0%	0%	1.3%	0%	1.5%	-
PHF	0.333	0.500	0.972	0.625	-	0.962	-	0.333	0.921	0.500	0.875	-	0.913	-	0.750	-	-	0.800	-	0.950	-
Motorcycles	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0	0	0	0	0	-
% Motorcycles	0%	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	0%	-
Lights	4	7	578	5	0	594	-	4	562	5	14	0	585	-	3	0	0	16	0	19	-
% Lights	100%	87.5%	98.5%	100%	0%	98.3%	-	100%	97.7%	83.3%	100%	0%	97.7%	-	100%	0%	0%	100%	0%	100%	-
Single-Unit Trucks	0	1	4	0	0	5	-	0	5	1	0	0	6	-	0	0	0	0	0	0	-
% Single-Unit Trucks	0%	12.5%	0.7%	0%	0%	0.8%	-	0%	0.9%	16.7%	0%	0%	1.0%	-	0%	0%	0%	0%	0%	0%	-
Articulated Trucks	0	0	1	0	0	1	-	0	3	0	0	0	3	-	0	0	0	0	0	0	-
% Articulated Trucks	0%	0%	0.2%	0%	0%	0.2%	-	0%	0.5%	0%	0%	0%	0.5%	-	0%	0%	0%	0%	0%	0%	-
Buses	0	0	4	0	0	4	-	0	5	0	0	0	5	-	0	0	0	0	0	0	-
% Buses	0%	0%	0.7%	0%	0%	0.7%	-	0%	0.9%	0%	0%	0%	0.8%	-	0%	0%	0%	0%	0%	0%	-
Bicycles on Road	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0	0	0	0	0	-
% Bicycles on Road	0%	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	0%	-
Pedestrians	-	-	-	-	-	-	0	-	-	-	-	-	-	2	-	-	-	-	-	-	14
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	50.0%	-	-	-	-	-	-	93.3%
Bicycles on Crosswalk	-	-	-	-	-	-	0	-	-	-	-	-	-	2	-	-	-	-	-	-	1
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	50.0%	-	-	-	-	-	-	6.7%

* Pedestrians and Bicycles on Crosswalk. BL: Bear left, BR: Bear right, HL: Hard left, HR: Hard right, L: Left, R: Right, T: Thru, U: U-Turn

Main Street E & Prince Street - TMC

Tue Oct 8, 2024

Midday Peak (12 PM - 1 PM)

All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 1233747, Location: 43.516808, -79.879279, Site Code: 240515



Provided by: Paradigm Transportation
Solutions Limited
5A-150 Pinebush Road,
Cambridge, ON, N1R 8J8, CA

Leg Direction	Driveway Southbound							Northwest Southeastbound							
Time	L	T	R	HR	U	App	Ped*	HL	BL	BR	HR	U	App	Ped*	Int
2024-10-08 12:00PM	2	1	2	0	0	5	7	0	2	0	1	0	3	10	314
12:15PM	1	0	1	0	0	2	5	0	2	0	3	0	5	4	301
12:30PM	2	0	0	0	0	2	7	0	2	0	1	0	3	7	319
12:45PM	4	0	2	0	0	6	1	0	0	0	0	0	0	0	314
Total	9	1	5	0	0	15	20	0	6	0	5	0	11	21	1248
% Approach	60.0%	6.7%	33.3%	0%	0%	-	-	0%	54.5%	0%	45.5%	0%	-	-	-
% Total	0.7%	0.1%	0.4%	0%	0%	1.2%	-	0%	0.5%	0%	0.4%	0%	0.9%	-	-
PHF	0.563	0.250	0.625	-	-	0.625	-	-	0.750	-	0.417	-	0.550	-	0.978
Motorcycles	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0
% Motorcycles	0%	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	0%	-	0%
Lights	8	1	5	0	0	14	-	0	5	0	5	0	10	-	1222
% Lights	88.9%	100%	100%	0%	0%	93.3%	-	0%	83.3%	0%	100%	0%	90.9%	-	97.9%
Single-Unit Trucks	1	0	0	0	0	1	-	0	1	0	0	0	1	-	13
% Single-Unit Trucks	11.1%	0%	0%	0%	0%	6.7%	-	0%	16.7%	0%	0%	0%	9.1%	-	1.0%
Articulated Trucks	0	0	0	0	0	0	-	0	0	0	0	0	0	-	4
% Articulated Trucks	0%	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	0%	-	0.3%
Buses	0	0	0	0	0	0	-	0	0	0	0	0	0	-	9
% Buses	0%	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	0%	-	0.7%
Bicycles on Road	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0
% Bicycles on Road	0%	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	0%	-	0%
Pedestrians	-	-	-	-	-	-	17	-	-	-	-	-	-	18	-
% Pedestrians	-	-	-	-	-	-	85.0%	-	-	-	-	-	-	85.7%	-
Bicycles on Crosswalk	-	-	-	-	-	-	3	-	-	-	-	-	-	3	-
% Bicycles on Crosswalk	-	-	-	-	-	-	15.0%	-	-	-	-	-	-	14.3%	-

* Pedestrians and Bicycles on Crosswalk. BL: Bear left, BR: Bear right, HL: Hard left, HR: Hard right, L: Left, R: Right, T: Thru, U: U-Turn

Main Street E & Prince Street - TMC

Tue Oct 8, 2024

Midday Peak (12 PM - 1 PM)

All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 1233747, Location: 43.516808, -79.879279, Site Code: 240515



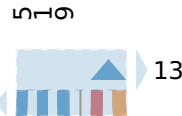
Provided by: Paradigm Transportation Solutions Limited

5A-150 Pinebush Road,
Cambridge, ON, N1R 8J8, CA

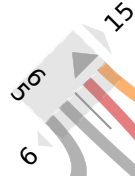
[N] Driveway

Total: 37

In: 15 Out: 22



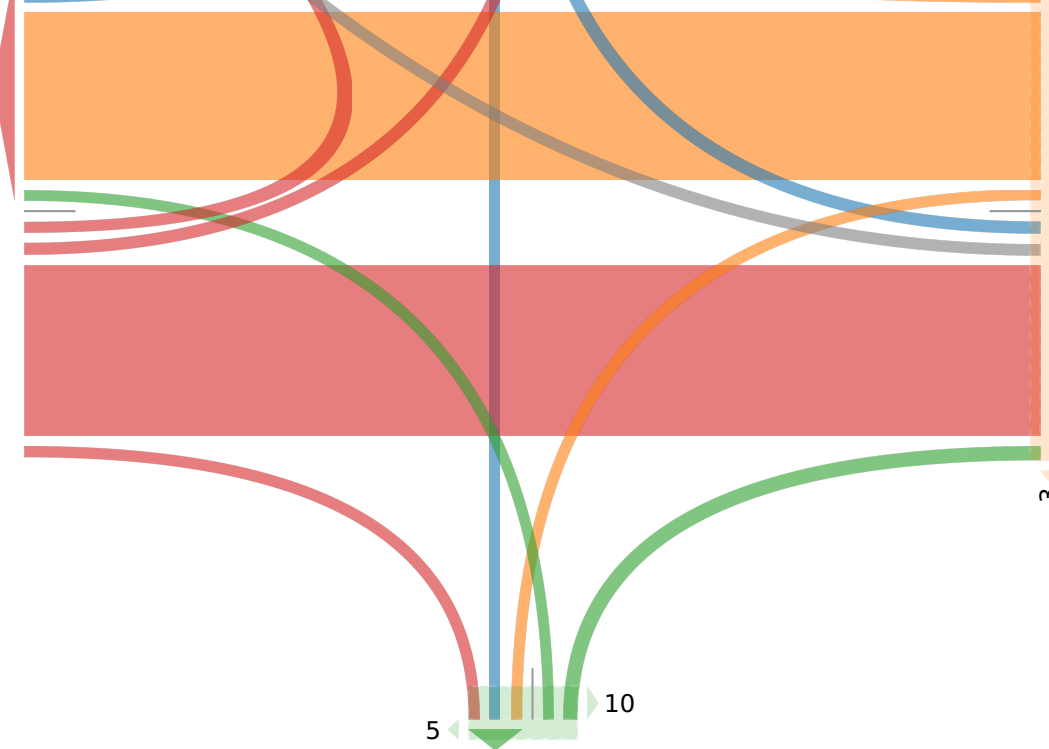
[NW] Northwest
Total: 21
In: 11 Out: 10



[W] Main Street E

Total: 1192
In: 604 Out: 588

4
8
587
5



14
6

575

4

Out: 618 In: 599
Total: 1217

[E] Main Street E

Out: 10 In: 19
Total: 29

[S] Prince Street

Main Street E & Prince Street - TMC

Tue Oct 8, 2024

PM Peak (4:45 PM - 5:45 PM) - Overall Peak Hour

All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 1233747, Location: 43.516808, -79.879279, Site Code: 240515



Provided by: Paradigm Transportation Solutions Limited
5A-150 Pinebush Road,
Cambridge, ON, N1R 8J8, CA

Leg Direction	Main Street E Eastbound							Main Street E Westbound							Prince Street Northbound						
Time	HL	L	T	R	U	App	Ped*	L	T	BR	R	U	App	Ped*	L	BL	T	R	U	App	Ped*
2024-10-08 4:45PM	1	1	179	2	0	183	0	7	225	1	8	0	241	4	1	0	0	6	0	7	6
5:00PM	1	0	197	2	0	200	0	8	224	3	6	0	241	1	0	0	0	4	0	4	7
5:15PM	1	2	191	2	0	196	0	5	188	0	2	0	195	2	0	0	0	6	0	6	5
5:30PM	4	0	166	1	0	171	0	3	218	2	1	0	224	2	2	0	1	4	0	7	3
Total	7	3	733	7	0	750	0	23	855	6	17	0	901	9	3	0	1	20	0	24	21
% Approach	0.9%	0.4%	97.7%	0.9%	0%	-	-	2.6%	94.9%	0.7%	1.9%	0%	-	-	12.5%	0%	4.2%	83.3%	0%	-	-
% Total	0.4%	0.2%	43.1%	0.4%	0%	44.1%	-	1.4%	50.3%	0.4%	1.0%	0%	53.0%	-	0.2%	0%	0.1%	1.2%	0%	1.4%	-
PHF	0.438	0.375	0.929	0.875	-	0.936	-	0.719	0.948	0.500	0.531	-	0.933	-	0.375	-	0.250	0.833	-	0.857	-
Motorcycles	0	0	2	0	0	2	-	0	1	0	0	0	1	-	0	0	0	0	0	0	-
% Motorcycles	0%	0%	0.3%	0%	0%	0.3%	-	0%	0.1%	0%	0%	0%	0.1%	-	0%	0%	0%	0%	0%	0%	-
Lights	6	3	721	7	0	737	-	23	844	5	17	0	889	-	3	0	1	20	0	24	-
% Lights	85.7%	100%	98.4%	100%	0%	98.3%	-	100%	98.7%	83.3%	100%	0%	98.7%	-	100%	0%	100%	100%	0%	100%	-
Single-Unit Trucks	1	0	4	0	0	5	-	0	2	1	0	0	3	-	0	0	0	0	0	0	-
% Single-Unit Trucks	14.3%	0%	0.5%	0%	0%	0.7%	-	0%	0.2%	16.7%	0%	0%	0.3%	-	0%	0%	0%	0%	0%	0%	-
Articulated Trucks	0	0	2	0	0	2	-	0	0	0	0	0	0	-	0	0	0	0	0	0	-
% Articulated Trucks	0%	0%	0.3%	0%	0%	0.3%	-	0%	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	0%	-
Buses	0	0	3	0	0	3	-	0	6	0	0	0	6	-	0	0	0	0	0	0	-
% Buses	0%	0%	0.4%	0%	0%	0.4%	-	0%	0.7%	0%	0%	0%	0.7%	-	0%	0%	0%	0%	0%	0%	-
Bicycles on Road	0	0	1	0	0	1	-	0	2	0	0	0	2	-	0	0	0	0	0	0	-
% Bicycles on Road	0%	0%	0.1%	0%	0%	0.1%	-	0%	0.2%	0%	0%	0%	0.2%	-	0%	0%	0%	0%	0%	0%	-
Pedestrians	-	-	-	-	-	-	0	-	-	-	-	-	-	7	-	-	-	-	-	-	18
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	77.8%	-	-	-	-	-	-	85.7%
Bicycles on Crosswalk	-	-	-	-	-	-	0	-	-	-	-	-	-	2	-	-	-	-	-	-	3
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	22.2%	-	-	-	-	-	-	14.3%

* Pedestrians and Bicycles on Crosswalk. BL: Bear left, BR: Bear right, HL: Hard left, HR: Hard right, L: Left, R: Right, T: Thru, U: U-Turn

Main Street E & Prince Street - TMC

Tue Oct 8, 2024

PM Peak (4:45 PM - 5:45 PM) - Overall Peak Hour

All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 1233747, Location: 43.516808, -79.879279, Site Code: 240515



Provided by: Paradigm Transportation Solutions Limited
5A-150 Pinebush Road,
Cambridge, ON, N1R 8J8, CA

Leg Direction	Driveway Southbound								Northwest Southeastbound								
Time	L	T	R	HR	U	App	Ped*		HL	BL	BR	HR	U	App	Ped*		Int
2024-10-08 4:45PM	3	0	1	0	0	4	4		0	0	0	2	0	2	2		437
5:00PM	2	0	3	0	0	5	1		0	1	0	3	0	4	2		454
5:15PM	0	0	0	0	0	0	3		0	1	0	1	0	2	3		399
5:30PM	3	0	0	0	0	3	3		0	1	1	4	0	6	4		411
Total	8	0	4	0	0	12	11		0	3	1	10	0	14	11		1701
% Approach	66.7%	0%	33.3%	0%	0%	-	-		0%	21.4%	7.1%	71.4%	0%	-	-		-
% Total	0.5%	0%	0.2%	0%	0%	0.7%	-		0%	0.2%	0.1%	0.6%	0%	0.8%	-		-
PHF	0.667	-	0.333	-	-	0.600	-		-	0.750	0.250	0.625	-	0.583	-		0.937
Motorcycles	0	0	0	0	0	0	-		0	0	0	0	0	0	-		3
% Motorcycles	0%	0%	0%	0%	0%	0%	-		0%	0%	0%	0%	0%	0%	-		0.2%
Lights	8	0	4	0	0	12	-		0	3	1	9	0	13	-		1675
% Lights	100%	0%	100%	0%	0%	100%	-		0%	100%	100%	90.0%	0%	92.9%	-		98.5%
Single-Unit Trucks	0	0	0	0	0	0	-		0	0	0	1	0	1	-		9
% Single-Unit Trucks	0%	0%	0%	0%	0%	0%	-		0%	0%	0%	10.0%	0%	7.1%	-		0.5%
Articulated Trucks	0	0	0	0	0	0	-		0	0	0	0	0	0	-		2
% Articulated Trucks	0%	0%	0%	0%	0%	0%	-		0%	0%	0%	0%	0%	0%	-		0.1%
Buses	0	0	0	0	0	0	-		0	0	0	0	0	0	-		9
% Buses	0%	0%	0%	0%	0%	0%	-		0%	0%	0%	0%	0%	0%	-		0.5%
Bicycles on Road	0	0	0	0	0	0	-		0	0	0	0	0	0	-		3
% Bicycles on Road	0%	0%	0%	0%	0%	0%	-		0%	0%	0%	0%	0%	0%	-		0.2%
Pedestrians	-	-	-	-	-	-	8		-	-	-	-	-	-	10		
% Pedestrians	-	-	-	-	-	-	72.7%		-	-	-	-	-	-	90.9%		-
Bicycles on Crosswalk	-	-	-	-	-	-	3		-	-	-	-	-	-	1		
% Bicycles on Crosswalk	-	-	-	-	-	-	27.3%		-	-	-	-	-	-	9.1%		-

* Pedestrians and Bicycles on Crosswalk. BL: Bear left, BR: Bear right, HL: Hard left, HR: Hard right, L: Left, R: Right, T: Thru, U: U-Turn

Main Street E & Prince Street - TMC

Tue Oct 8, 2024

PM Peak (4:45 PM - 5:45 PM) - Overall Peak Hour

All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 1233747, Location: 43.516808, -79.879279, Site Code: 240515



Provided by: Paradigm Transportation Solutions Limited

5A-150 Pinebush Road,
Cambridge, ON, N1R 8J8, CA

[N] Driveway

Total: 33

In: 12 Out: 21

48

11

[NW] Northwest
Total: 27
In: 14 Out: 13

10

1

[W] Main Street E

Total: 1622
In: 750 Out: 872

7

3

733

7

17

6

855

23

In: 901
Total: 1665
Out: 764

[E] Main Street E

3

6

Out: 31 In: 24
Total: 55

[S] Prince Street

9

3

1

20

12



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@pts1.com

Count Name: Main Street E & Bruce Street
Site Code: 240515
Start Date: 10/08/2024
Page No: 1

Turning Movement Data

Start Time	Main Street E Eastbound					Main Street E Westbound					Bruce Street Northbound					Int. Total
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
7:00 AM	106	1	0	0	107	1	59	0	0	60	0	0	0	1	0	167
7:15 AM	128	0	0	0	128	1	72	0	0	73	0	0	0	1	0	201
7:30 AM	179	1	0	0	180	1	63	0	0	64	0	1	0	3	1	245
7:45 AM	172	1	0	0	173	3	164	0	0	167	0	4	0	4	4	344
Hourly Total	585	3	0	0	588	6	358	0	0	364	0	5	0	9	5	957
8:00 AM	163	0	0	0	163	1	166	0	0	167	0	8	0	4	8	338
8:15 AM	160	0	0	0	160	8	128	0	0	136	1	12	0	1	13	309
8:30 AM	124	0	0	0	124	2	105	0	0	107	0	3	0	0	3	234
8:45 AM	125	2	0	0	127	4	161	0	1	165	1	1	0	0	2	294
Hourly Total	572	2	0	0	574	15	560	0	1	575	2	24	0	5	26	1175
9:00 AM	117	3	0	0	120	2	129	0	0	131	0	4	0	2	4	255
9:15 AM	126	2	0	0	128	1	116	0	0	117	0	1	0	0	1	246
9:30 AM	124	4	0	0	128	3	120	0	0	123	0	5	0	1	5	256
9:45 AM	113	2	0	0	115	3	126	0	0	129	1	4	0	1	5	249
Hourly Total	480	11	0	0	491	9	491	0	0	500	1	14	0	4	15	1006
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	145	5	0	0	150	7	95	0	0	102	3	4	0	4	7	259
11:15 AM	122	6	0	0	128	4	130	0	0	134	0	10	0	4	10	272
11:30 AM	161	2	0	0	163	3	133	0	0	136	1	8	0	1	9	308
11:45 AM	152	7	0	0	159	7	136	0	0	143	2	6	0	1	8	310
Hourly Total	580	20	0	0	600	21	494	0	0	515	6	28	0	10	34	1149
12:00 PM	158	2	0	0	160	5	146	0	0	151	1	12	0	4	13	324
12:15 PM	152	2	0	0	154	6	148	0	0	154	2	3	0	5	5	313
12:30 PM	144	6	0	0	150	4	163	0	0	167	2	5	0	0	7	324
12:45 PM	156	6	0	0	162	6	141	0	0	147	2	6	0	4	8	317
Hourly Total	610	16	0	0	626	21	598	0	0	619	7	26	0	13	33	1278
1:00 PM	135	2	0	0	137	5	127	0	0	132	1	10	0	1	11	280
1:15 PM	123	5	0	0	128	8	147	0	0	155	2	6	0	1	8	291
1:30 PM	153	6	0	0	159	3	125	0	0	128	3	5	0	0	8	295
1:45 PM	135	6	0	0	141	6	148	0	0	154	2	4	0	0	6	301
Hourly Total	546	19	0	0	565	22	547	0	0	569	8	25	0	2	33	1167
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	150	5	0	0	155	4	197	0	0	201	3	4	0	8	7	363
3:15 PM	183	7	0	0	190	7	193	0	1	200	2	12	0	6	14	404
3:30 PM	168	6	0	0	174	6	171	0	0	177	3	11	0	3	14	365
3:45 PM	179	11	0	0	190	9	191	0	0	200	3	10	0	5	13	403

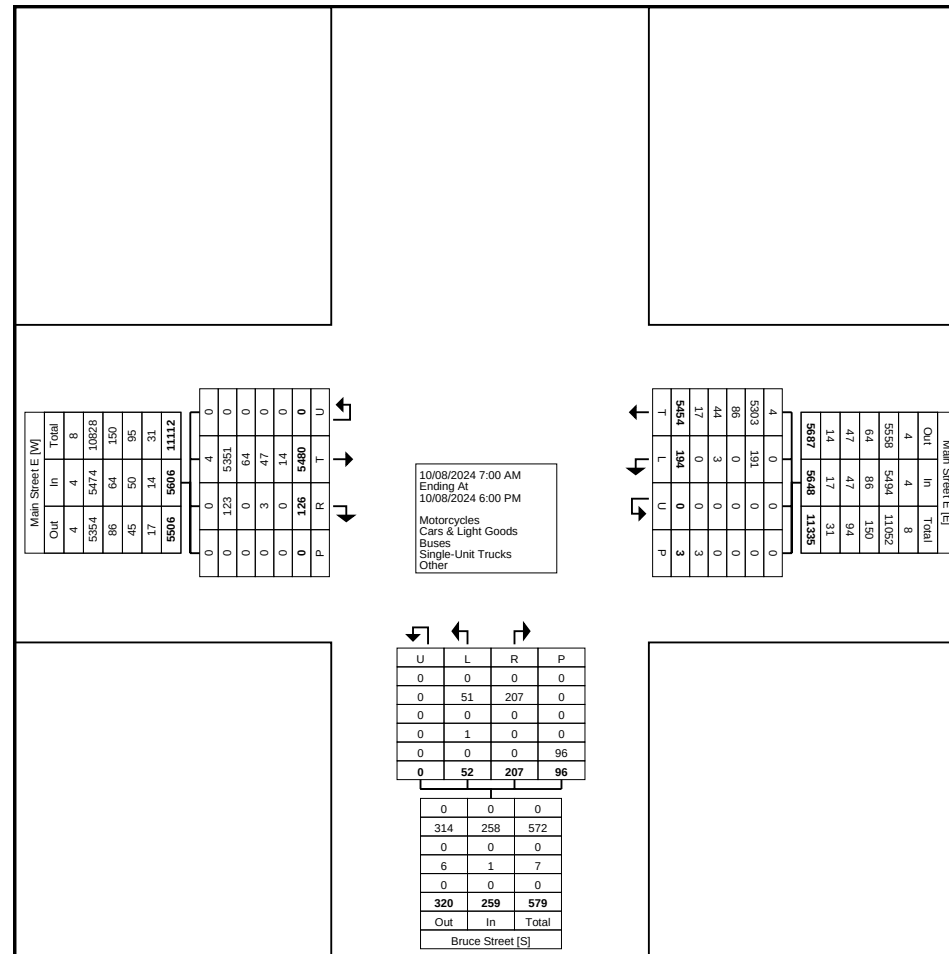
Hourly Total	680	29	0	0	709	26	752	0	1	778	11	37	0	22	48	1535
4:00 PM	173	2	0	0	175	10	183	0	0	193	5	10	0	1	15	383
4:15 PM	168	1	0	0	169	2	191	0	0	193	2	0	0	4	2	364
4:30 PM	174	3	0	0	177	8	197	0	0	205	1	5	0	4	6	388
4:45 PM	180	6	0	0	186	17	236	0	0	253	3	11	0	4	14	453
Hourly Total	695	12	0	0	707	37	807	0	0	844	11	26	0	13	37	1588
5:00 PM	197	4	0	0	201	8	228	0	1	236	3	8	0	7	11	448
5:15 PM	192	5	0	0	197	5	196	0	0	201	1	6	0	4	7	405
5:30 PM	171	5	0	0	176	13	215	0	0	228	1	5	0	5	6	410
5:45 PM	172	0	0	0	172	11	208	0	0	219	1	3	0	2	4	395
Hourly Total	732	14	0	0	746	37	847	0	1	884	6	22	0	18	28	1658
Grand Total	5480	126	0	0	5606	194	5454	0	3	5648	52	207	0	96	259	11513
Approach %	97.8	2.2	0.0	-	-	3.4	96.6	0.0	-	-	20.1	79.9	0.0	-	-	-
Total %	47.6	1.1	0.0	-	48.7	1.7	47.4	0.0	-	49.1	0.5	1.8	0.0	-	2.2	-
Motorcycles	4	0	0	-	4	0	4	0	-	4	0	0	0	-	0	8
% Motorcycles	0.1	0.0	-	-	0.1	0.0	0.1	-	-	0.1	0.0	0.0	-	-	0.0	0.1
Cars & Light Goods	5351	123	0	-	5474	191	5303	0	-	5494	51	207	0	-	258	11226
% Cars & Light Goods	97.6	97.6	-	-	97.6	98.5	97.2	-	-	97.3	98.1	100.0	-	-	99.6	97.5
Buses	64	0	0	-	64	0	86	0	-	86	0	0	0	-	0	150
% Buses	1.2	0.0	-	-	1.1	0.0	1.6	-	-	1.5	0.0	0.0	-	-	0.0	1.3
Single-Unit Trucks	47	3	0	-	50	3	44	0	-	47	1	0	0	-	1	98
% Single-Unit Trucks	0.9	2.4	-	-	0.9	1.5	0.8	-	-	0.8	1.9	0.0	-	-	0.4	0.9
Articulated Trucks	13	0	0	-	13	0	14	0	-	14	0	0	0	-	0	27
% Articulated Trucks	0.2	0.0	-	-	0.2	0.0	0.3	-	-	0.2	0.0	0.0	-	-	0.0	0.2
Bicycles on Road	1	0	0	-	1	0	3	0	-	3	0	0	0	-	0	4
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.1	-	-	0.1	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	23	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	24.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	3	-	-	-	-	73	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	76.0	-	-



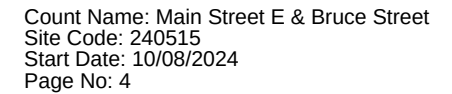
Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@pts1.com

Count Name: Main Street E & Bruce Street
Site Code: 240515
Start Date: 10/08/2024
Page No: 3



Turning Movement Data Plot

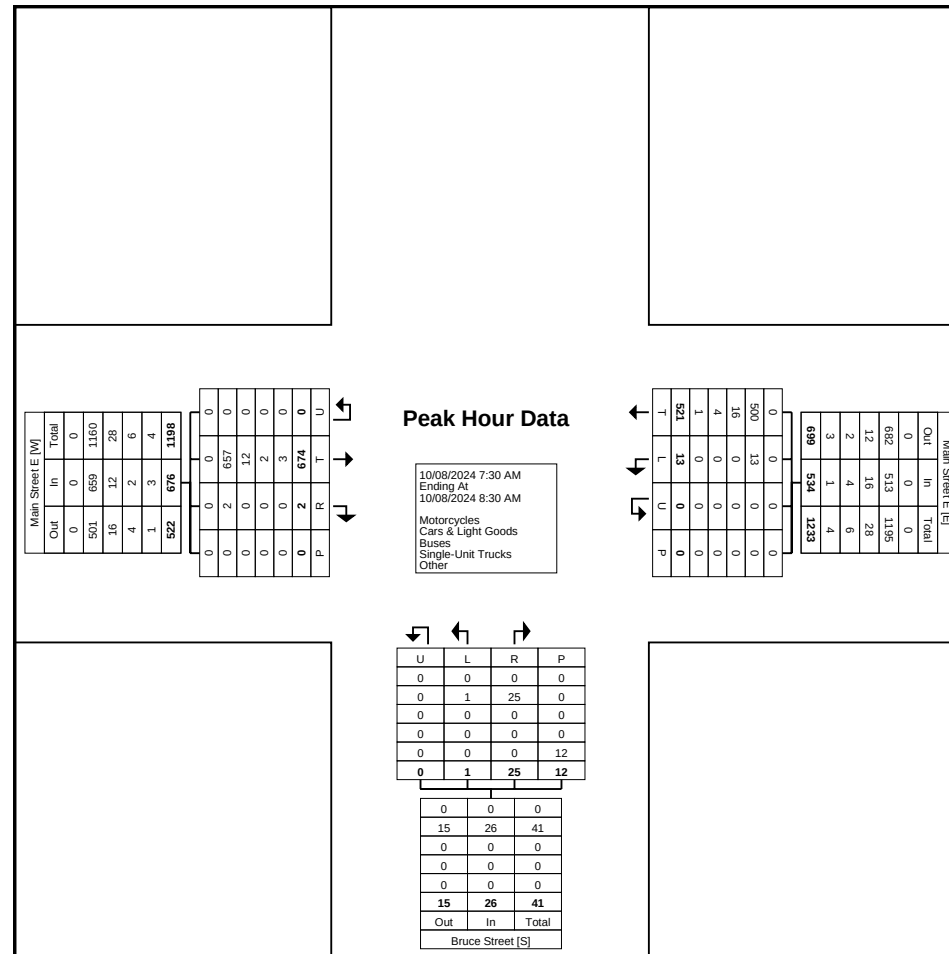


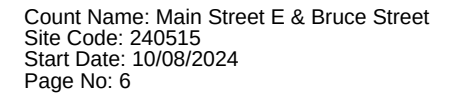


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Count Name: Main Street E & Bruce Street
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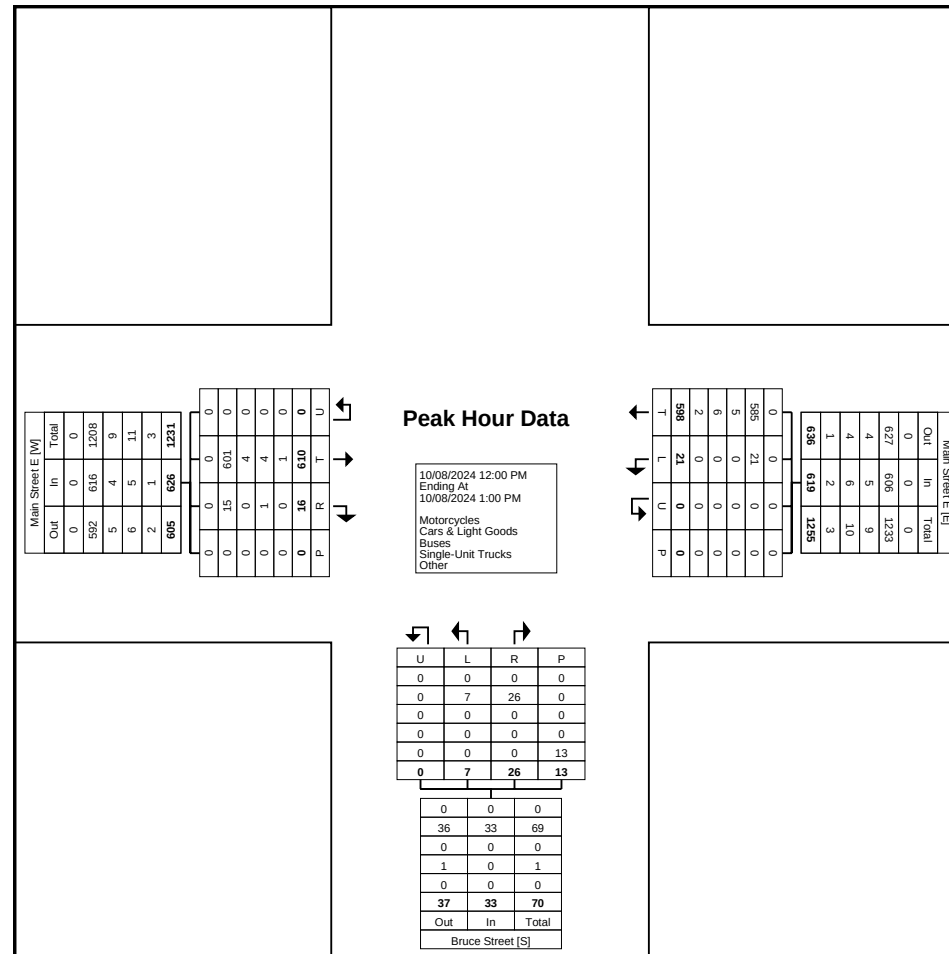




Paradigm Transportation Solutions Limited
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Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsll.com

Count Name: Main Street E & Bruce Street
Site Code: 240515
Start Date: 10/08/2024
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Turning Movement Peak Hour Data Plot (12:00 PM)



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
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Count Name: Main Street E & Bruce Street
Site Code: 240515
Start Date: 10/08/2024
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Turning Movement Peak Hour Data (4:45 PM)

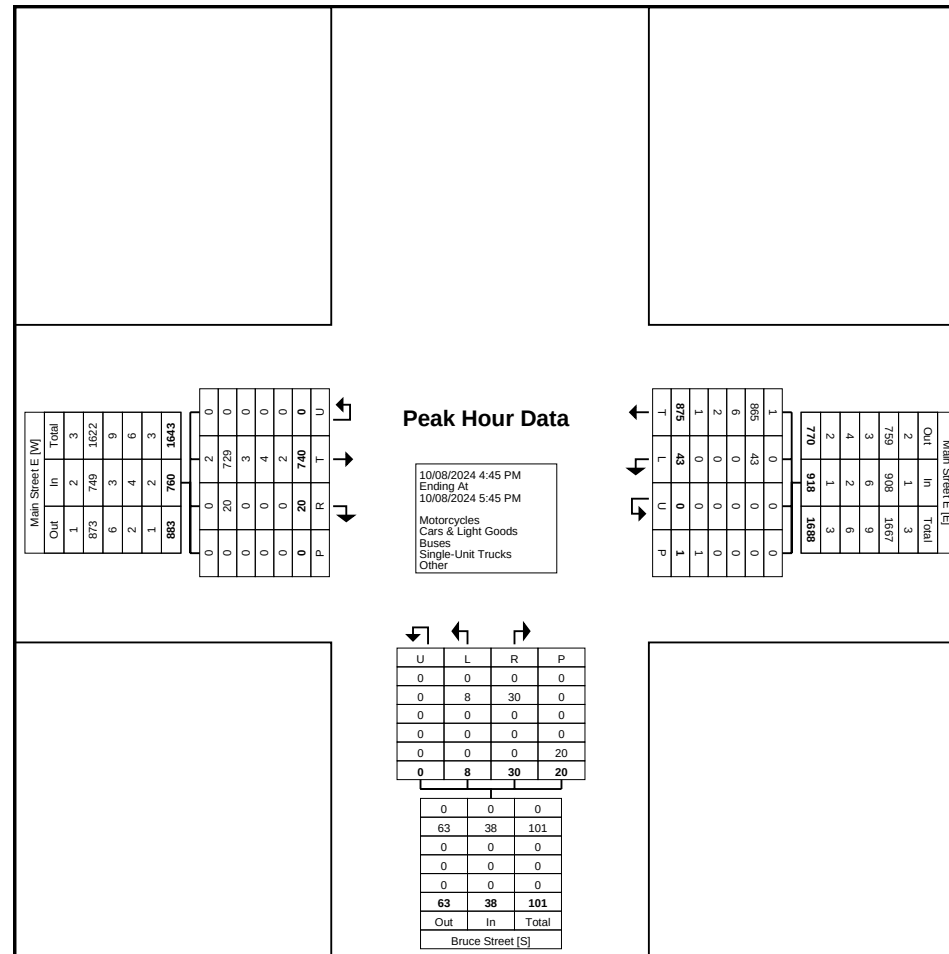
Start Time	Main Street E Eastbound					Main Street E Westbound					Bruce Street Northbound					Int. Total
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
4:45 PM	180	6	0	0	186	17	236	0	0	253	3	11	0	4	14	453
5:00 PM	197	4	0	0	201	8	228	0	1	236	3	8	0	7	11	448
5:15 PM	192	5	0	0	197	5	196	0	0	201	1	6	0	4	7	405
5:30 PM	171	5	0	0	176	13	215	0	0	228	1	5	0	5	6	410
Total	740	20	0	0	760	43	875	0	1	918	8	30	0	20	38	1716
Approach %	97.4	2.6	0.0	-	-	4.7	95.3	0.0	-	-	21.1	78.9	0.0	-	-	-
Total %	43.1	1.2	0.0	-	44.3	2.5	51.0	0.0	-	53.5	0.5	1.7	0.0	-	2.2	-
PHF	0.939	0.833	0.000	-	0.945	0.632	0.927	0.000	-	0.907	0.667	0.682	0.000	-	0.679	0.947
Motorcycles	2	0	0	-	2	0	1	0	-	1	0	0	0	-	0	3
% Motorcycles	0.3	0.0	-	-	0.3	0.0	0.1	-	-	0.1	0.0	0.0	-	-	0.0	0.2
Cars & Light Goods	729	20	0	-	749	43	865	0	-	908	8	30	0	-	38	1695
% Cars & Light Goods	98.5	100.0	-	-	98.6	100.0	98.9	-	-	98.9	100.0	100.0	-	-	100.0	98.8
Buses	3	0	0	-	3	0	6	0	-	6	0	0	0	-	0	9
% Buses	0.4	0.0	-	-	0.4	0.0	0.7	-	-	0.7	0.0	0.0	-	-	0.0	0.5
Single-Unit Trucks	4	0	0	-	4	0	2	0	-	2	0	0	0	-	0	6
% Single-Unit Trucks	0.5	0.0	-	-	0.5	0.0	0.2	-	-	0.2	0.0	0.0	-	-	0.0	0.3
Articulated Trucks	2	0	0	-	2	0	0	0	-	0	0	0	0	-	0	2
% Articulated Trucks	0.3	0.0	-	-	0.3	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Road	0	0	0	-	0	0	1	0	-	1	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.1	-	-	0.1	0.0	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	7	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	35.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	1	-	-	-	-	13	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	65.0	-	-



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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Count Name: Main Street E & Bruce Street
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Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@pts1.com

Count Name: Main Street E & Ontario Street
Site Code: 240515
Start Date: 10/08/2024
Page No: 1

Turning Movement Data

Start Time	Main Street E Eastbound						Main Street E Westbound						Ontario Street Northbound						Ontario Street Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	12	93	10	0	1	115	36	38	13	0	0	87	6	99	70	0	0	175	25	63	11	0	0	99	476
7:15 AM	22	81	11	0	1	114	42	48	13	0	1	103	7	113	87	0	1	207	23	95	11	0	0	129	553
7:30 AM	20	146	7	0	0	173	29	40	12	0	2	81	15	131	98	0	3	244	24	80	10	0	3	114	612
7:45 AM	26	128	10	0	4	164	68	98	31	0	2	197	20	176	123	0	5	319	19	107	40	0	6	166	846
Hourly Total	80	448	38	0	6	566	175	224	69	0	5	468	48	519	378	0	9	945	91	345	72	0	9	508	2487
8:00 AM	54	96	16	0	1	166	70	100	24	0	1	194	25	186	94	0	3	305	24	130	46	0	1	200	865
8:15 AM	40	108	23	0	4	171	69	87	33	0	3	189	27	174	79	0	0	280	24	148	31	1	4	204	844
8:30 AM	26	77	31	0	0	134	48	62	19	0	4	129	25	133	59	0	1	217	13	111	23	0	3	147	627
8:45 AM	19	85	18	0	1	122	37	95	24	0	2	156	53	155	47	0	1	255	24	100	35	0	3	159	692
Hourly Total	139	366	88	0	6	593	224	344	100	0	10	668	130	648	279	0	5	1057	85	489	135	1	11	710	3028
9:00 AM	29	83	26	0	6	138	40	83	36	0	3	159	35	129	47	0	3	211	22	108	28	0	3	158	666
9:15 AM	21	87	26	0	5	134	32	109	15	0	3	156	20	126	57	0	2	203	26	94	24	0	1	144	637
9:30 AM	26	88	19	0	0	133	45	93	20	0	2	158	29	110	36	0	1	175	16	77	19	0	3	112	578
9:45 AM	17	86	28	0	3	131	32	113	20	0	5	165	25	85	41	0	4	151	26	90	26	0	2	142	589
Hourly Total	93	344	99	0	14	536	149	398	91	0	13	638	109	450	181	0	10	740	90	369	97	0	9	556	2470
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	18	112	24	0	4	154	36	78	19	0	3	133	19	92	36	0	4	147	19	83	17	0	2	119	553
11:15 AM	31	90	20	0	0	141	40	87	27	0	3	154	25	97	51	0	4	173	23	108	22	0	6	153	621
11:30 AM	31	109	31	0	1	171	41	84	27	0	2	152	33	119	59	0	3	211	25	80	26	0	2	131	665
11:45 AM	31	95	36	0	4	162	39	88	26	0	2	153	37	106	45	0	3	188	31	96	27	0	2	154	657
Hourly Total	111	406	111	0	9	628	156	337	99	0	10	592	114	414	191	0	14	719	98	367	92	0	12	557	2496
12:00 PM	27	101	44	0	0	172	43	88	37	0	1	168	42	99	49	0	1	190	28	87	26	0	3	141	671
12:15 PM	30	98	37	1	2	166	56	102	28	0	5	186	41	94	38	0	5	173	25	79	21	0	1	125	650
12:30 PM	30	99	27	0	0	156	49	106	38	1	1	194	40	89	48	0	2	177	33	75	34	0	3	142	669
12:45 PM	28	84	47	1	3	160	38	87	34	0	2	159	32	117	44	0	5	193	22	109	28	0	2	159	671
Hourly Total	115	382	155	2	5	654	186	383	137	1	9	707	155	399	179	0	13	733	108	350	109	0	9	567	2661
1:00 PM	25	96	31	0	2	152	45	83	30	0	1	158	30	90	57	1	2	178	34	95	26	0	3	155	643
1:15 PM	17	77	38	0	2	132	41	100	29	0	1	170	28	106	39	0	3	173	16	96	29	0	5	141	616
1:30 PM	29	83	41	0	4	153	44	73	26	0	1	143	33	94	44	0	0	171	19	74	23	0	2	116	583
1:45 PM	21	106	32	0	2	159	47	109	32	0	3	188	29	111	59	0	2	199	22	113	21	0	6	156	702
Hourly Total	92	362	142	0	10	596	177	365	117	0	6	659	120	401	199	1	7	721	91	378	99	0	16	568	2544
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	29	93	38	0	0	160	47	132	52	0	4	231	42	130	54	0	6	226	21	128	33	0	3	182	799
3:15 PM	40	106	40	0	3	186	58	150	53	0	3	261	35	133	81	0	7	249	24	142	33	0	3	199	895
3:30 PM	30	102	41	0	1	173	52	123	28	0	2	203	37	138	60	0	5	235	24	119	24	0	0	167	778

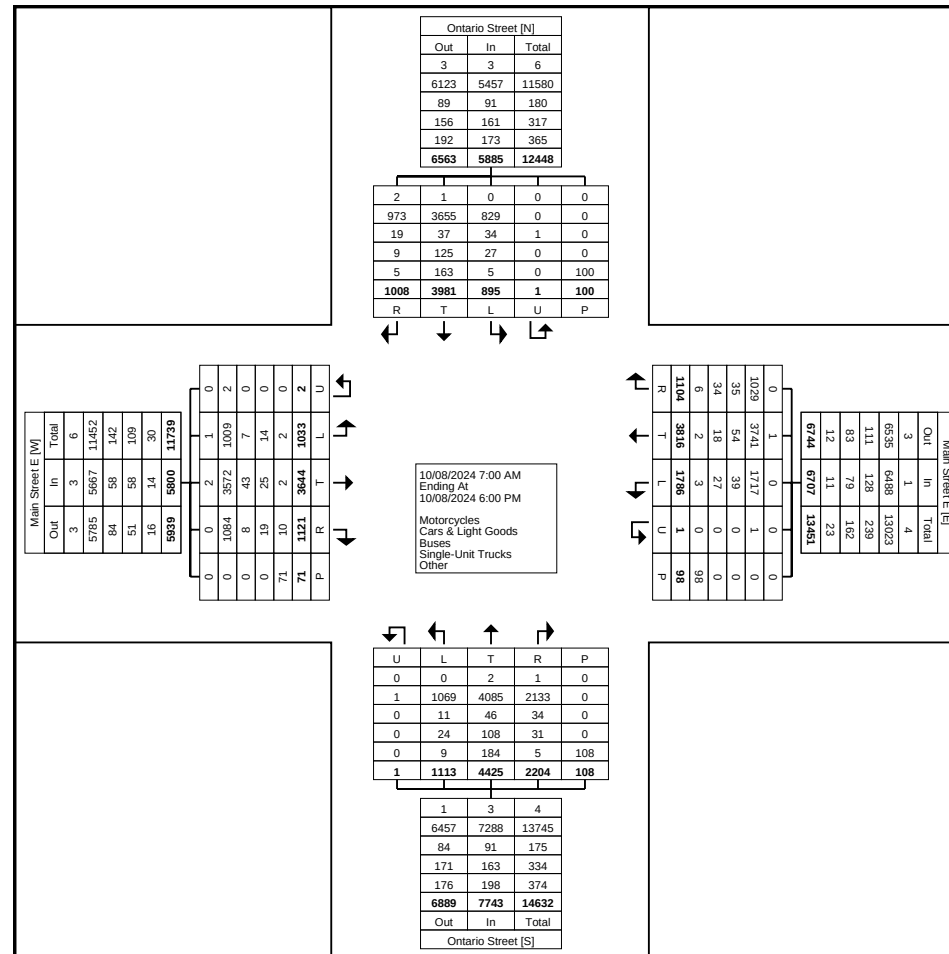
3:45 PM	35	108	31	0	4	174	45	129	34	0	4	208	36	130	86	0	0	252	40	144	37	0	2	221	855
Hourly Total	134	409	150	0	8	693	202	534	167	0	13	903	150	531	281	0	18	962	109	533	127	0	8	769	3327
4:00 PM	31	110	52	0	5	193	56	126	37	0	4	219	35	138	62	0	12	235	25	132	39	0	3	196	843
4:15 PM	30	103	44	0	4	177	61	132	38	0	5	231	39	140	48	0	5	227	23	137	32	0	4	192	827
4:30 PM	40	119	43	0	1	202	52	146	48	0	2	246	34	126	58	0	8	218	31	129	28	0	2	188	854
4:45 PM	46	125	35	0	3	206	70	187	41	0	5	298	38	124	38	0	7	200	34	133	33	0	3	200	904
Hourly Total	147	457	174	0	13	778	239	591	164	0	16	994	146	528	206	0	32	880	113	531	132	0	12	776	3428
5:00 PM	29	127	48	0	0	204	72	168	46	0	6	286	40	136	83	0	0	259	32	156	38	0	6	226	975
5:15 PM	35	116	45	0	0	196	70	159	42	0	6	271	24	124	72	0	0	220	31	184	33	0	5	248	935
5:30 PM	37	113	34	0	0	184	69	166	38	0	1	273	46	155	66	0	0	267	22	147	29	0	2	198	922
5:45 PM	21	114	37	0	0	172	67	147	34	0	3	248	31	120	89	0	0	240	25	132	45	0	1	202	862
Hourly Total	122	470	164	0	0	756	278	640	160	0	16	1078	141	535	310	0	0	986	110	619	145	0	14	874	3694
Grand Total	1033	3644	1121	2	71	5800	1786	3816	1104	1	98	6707	1113	4425	2204	1	108	7743	895	3981	1008	1	100	5885	26135
Approach %	17.8	62.8	19.3	0.0	-	-	26.6	56.9	16.5	0.0	-	-	14.4	57.1	28.5	0.0	-	-	15.2	67.6	17.1	0.0	-	-	-
Total %	4.0	13.9	4.3	0.0	-	22.2	6.8	14.6	4.2	0.0	-	25.7	4.3	16.9	8.4	0.0	-	29.6	3.4	15.2	3.9	0.0	-	22.5	-
Motorcycles	1	2	0	0	-	3	0	1	0	0	-	1	0	2	1	0	-	3	0	1	2	0	-	3	10
% Motorcycles	0.1	0.1	0.0	0.0	-	0.1	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.2	0.0	-	0.1	0.0
Cars & Light Goods	1009	3572	1084	2	-	5667	1717	3741	1029	1	-	6488	1069	4085	2133	1	-	7288	829	3655	973	0	-	5457	24900
% Cars & Light Goods	97.7	98.0	96.7	100.0	-	97.7	96.1	98.0	93.2	100.0	-	96.7	96.0	92.3	96.8	100.0	-	94.1	92.6	91.8	96.5	0.0	-	92.7	95.3
Buses	7	43	8	0	-	58	39	54	35	0	-	128	11	46	34	0	-	91	34	37	19	1	-	91	368
% Buses	0.7	1.2	0.7	0.0	-	1.0	2.2	1.4	3.2	0.0	-	1.9	1.0	1.0	1.5	0.0	-	1.2	3.8	0.9	1.9	100.0	-	1.5	1.4
Single-Unit Trucks	14	25	19	0	-	58	27	18	34	0	-	79	24	108	31	0	-	163	27	125	9	0	-	161	461
% Single-Unit Trucks	1.4	0.7	1.7	0.0	-	1.0	1.5	0.5	3.1	0.0	-	1.2	2.2	2.4	1.4	0.0	-	2.1	3.0	3.1	0.9	0.0	-	2.7	1.8
Articulated Trucks	2	1	10	0	-	13	3	2	6	0	-	11	9	184	5	0	-	198	5	162	4	0	-	171	393
% Articulated Trucks	0.2	0.0	0.9	0.0	-	0.2	0.2	0.1	0.5	0.0	-	0.2	0.8	4.2	0.2	0.0	-	2.6	0.6	4.1	0.4	0.0	-	2.9	1.5
Bicycles on Road	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	1	1	0	-	2	3
% Bicycles on Road	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.1	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	13	-	-	-	-	-	21	-	-	-	-	-	13	-	-	-	-	-	20	-	-
% Bicycles on Crosswalk	-	-	-	-	18.3	-	-	-	-	-	21.4	-	-	-	-	-	12.0	-	-	-	-	-	20.0	-	-
Pedestrians	-	-	-	-	58	-	-	-	-	-	77	-	-	-	-	-	95	-	-	-	-	-	80	-	-
% Pedestrians	-	-	-	-	81.7	-	-	-	-	-	78.6	-	-	-	-	-	88.0	-	-	-	-	-	80.0	-	-



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Turning Movement Data Plot



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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Count Name: Main Street E & Ontario Street
Site Code: 240515
Start Date: 10/08/2024
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Turning Movement Peak Hour Data (7:45 AM)

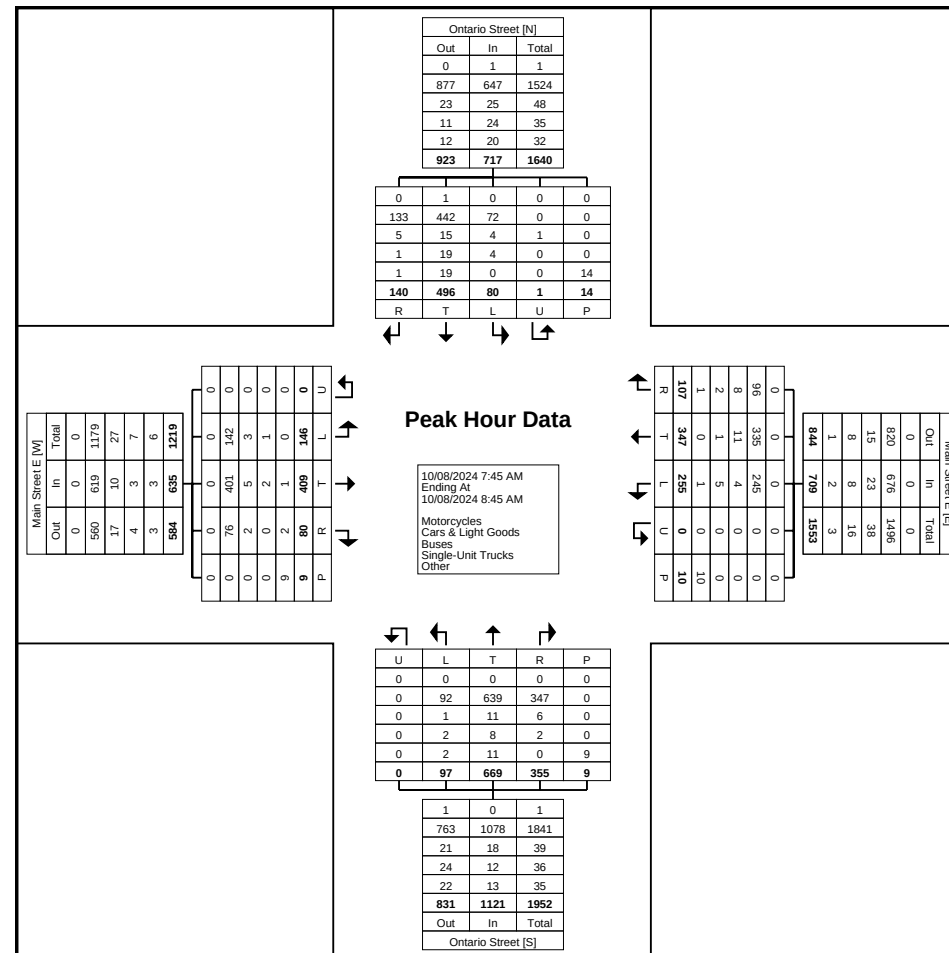
Start Time	Main Street E Eastbound						Main Street E Westbound						Ontario Street Northbound						Ontario Street Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:45 AM	26	128	10	0	4	164	68	98	31	0	2	197	20	176	123	0	5	319	19	107	40	0	6	166	846
8:00 AM	54	96	16	0	1	166	70	100	24	0	1	194	25	186	94	0	3	305	24	130	46	0	1	200	865
8:15 AM	40	108	23	0	4	171	69	87	33	0	3	189	27	174	79	0	0	280	24	148	31	1	4	204	844
8:30 AM	26	77	31	0	0	134	48	62	19	0	4	129	25	133	59	0	1	217	13	111	23	0	3	147	627
Total	146	409	80	0	9	635	255	347	107	0	10	709	97	669	355	0	9	1121	80	496	140	1	14	717	3182
Approach %	23.0	64.4	12.6	0.0	-	-	36.0	48.9	15.1	0.0	-	-	8.7	59.7	31.7	0.0	-	-	11.2	69.2	19.5	0.1	-	-	-
Total %	4.6	12.9	2.5	0.0	-	20.0	8.0	10.9	3.4	0.0	-	22.3	3.0	21.0	11.2	0.0	-	35.2	2.5	15.6	4.4	0.0	-	22.5	-
PHF	0.676	0.799	0.645	0.000	-	0.928	0.911	0.868	0.811	0.000	-	0.900	0.898	0.899	0.722	0.000	-	0.879	0.833	0.838	0.761	0.250	-	0.879	0.920
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	1
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.2	0.0	0.0	-	0.1	0.0
Cars & Light Goods	142	401	76	0	-	619	245	335	96	0	-	676	92	639	347	0	-	1078	72	442	133	0	-	647	3020
% Cars & Light Goods	97.3	98.0	95.0	-	-	97.5	96.1	96.5	89.7	-	-	95.3	94.8	95.5	97.7	-	-	96.2	90.0	89.1	95.0	0.0	-	90.2	94.9
Buses	3	5	2	0	-	10	4	11	8	0	-	23	1	11	6	0	-	18	4	15	5	1	-	25	76
% Buses	2.1	1.2	2.5	-	-	1.6	1.6	3.2	7.5	-	-	3.2	1.0	1.6	1.7	-	-	1.6	5.0	3.0	3.6	100.0	-	3.5	2.4
Single-Unit Trucks	1	2	0	0	-	3	5	1	2	0	-	8	2	8	2	0	-	12	4	19	1	0	-	24	47
% Single-Unit Trucks	0.7	0.5	0.0	-	-	0.5	2.0	0.3	1.9	-	-	1.1	2.1	1.2	0.6	-	-	1.1	5.0	3.8	0.7	0.0	-	3.3	1.5
Articulated Trucks	0	1	2	0	-	3	1	0	1	0	-	2	2	11	0	0	-	13	0	19	1	0	-	20	38
% Articulated Trucks	0.0	0.2	2.5	-	-	0.5	0.4	0.0	0.9	-	-	0.3	2.1	1.6	0.0	-	-	1.2	0.0	3.8	0.7	0.0	-	2.8	1.2
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	7	-	-	-	-	-	3	-	-	-	-	-	6	-	-	-	-	-	5	-	-
% Bicycles on Crosswalk	-	-	-	-	77.8	-	-	-	-	-	30.0	-	-	-	-	-	66.7	-	-	-	-	-	35.7	-	-
Pedestrians	-	-	-	-	2	-	-	-	-	-	7	-	-	-	-	-	3	-	-	-	-	-	9	-	-
% Pedestrians	-	-	-	-	22.2	-	-	-	-	-	70.0	-	-	-	-	-	33.3	-	-	-	-	-	64.3	-	-



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@pts1.com

Count Name: Main Street E & Ontario Street
Site Code: 240515
Start Date: 10/08/2024
Page No: 5



Turning Movement Peak Hour Data Plot (7:45 AM)



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Main Street E & Ontario Street
Site Code: 240515
Start Date: 10/08/2024
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Turning Movement Peak Hour Data (12:00 PM)

Start Time	Main Street E Eastbound						Main Street E Westbound						Ontario Street Northbound						Ontario Street Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
12:00 PM	27	101	44	0	0	172	43	88	37	0	1	168	42	99	49	0	1	190	28	87	26	0	3	141	671
12:15 PM	30	98	37	1	2	166	56	102	28	0	5	186	41	94	38	0	5	173	25	79	21	0	1	125	650
12:30 PM	30	99	27	0	0	156	49	106	38	1	1	194	40	89	48	0	2	177	33	75	34	0	3	142	669
12:45 PM	28	84	47	1	3	160	38	87	34	0	2	159	32	117	44	0	5	193	22	109	28	0	2	159	671
Total	115	382	155	2	5	654	186	383	137	1	9	707	155	399	179	0	13	733	108	350	109	0	9	567	2661
Approach %	17.6	58.4	23.7	0.3	-	-	26.3	54.2	19.4	0.1	-	-	21.1	54.4	24.4	0.0	-	-	19.0	61.7	19.2	0.0	-	-	-
Total %	4.3	14.4	5.8	0.1	-	24.6	7.0	14.4	5.1	0.0	-	26.6	5.8	15.0	6.7	0.0	-	27.5	4.1	13.2	4.1	0.0	-	21.3	-
PHF	0.958	0.946	0.824	0.500	-	0.951	0.830	0.903	0.901	0.250	-	0.911	0.923	0.853	0.913	0.000	-	0.949	0.818	0.803	0.801	0.000	-	0.892	0.991
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	114	376	151	2	-	643	178	376	128	1	-	683	148	356	172	0	-	676	102	312	109	0	-	523	2525
% Cars & Light Goods	99.1	98.4	97.4	100.0	-	98.3	95.7	98.2	93.4	100.0	-	96.6	95.5	89.2	96.1	-	-	92.2	94.4	89.1	100.0	-	-	92.2	94.9
Buses	0	4	0	0	-	4	2	4	0	0	-	6	0	3	0	0	-	3	2	0	0	0	-	2	15
% Buses	0.0	1.0	0.0	0.0	-	0.6	1.1	1.0	0.0	0.0	-	0.8	0.0	0.8	0.0	-	-	0.4	1.9	0.0	0.0	-	-	0.4	0.6
Single-Unit Trucks	1	2	3	0	-	6	5	3	7	0	-	15	5	18	5	0	-	28	3	19	0	0	-	22	71
% Single-Unit Trucks	0.9	0.5	1.9	0.0	-	0.9	2.7	0.8	5.1	0.0	-	2.1	3.2	4.5	2.8	-	-	3.8	2.8	5.4	0.0	-	-	3.9	2.7
Articulated Trucks	0	0	1	0	-	1	1	0	2	0	-	3	2	22	2	0	-	26	1	19	0	0	-	20	50
% Articulated Trucks	0.0	0.0	0.6	0.0	-	0.2	0.5	0.0	1.5	0.0	-	0.4	1.3	5.5	1.1	-	-	3.5	0.9	5.4	0.0	-	-	3.5	1.9
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	11.1	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	5	-	-	-	-	-	8	-	-	-	-	-	13	-	-	-	-	-	9	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	88.9	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Turning Movement Peak Hour Data Plot (12:00 PM)



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Main Street E & Ontario Street
Site Code: 240515
Start Date: 10/08/2024
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Turning Movement Peak Hour Data (4:45 PM)

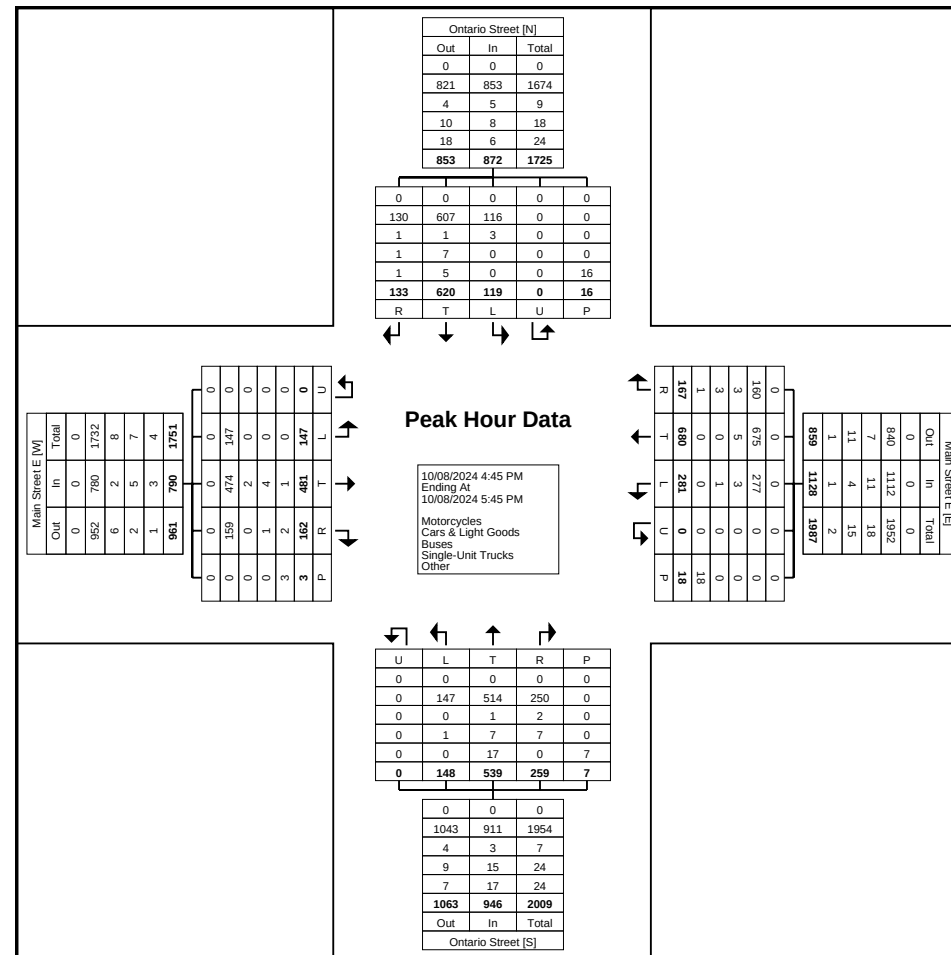
Start Time	Main Street E Eastbound						Main Street E Westbound						Ontario Street Northbound						Ontario Street Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
4:45 PM	46	125	35	0	3	206	70	187	41	0	5	298	38	124	38	0	7	200	34	133	33	0	3	200	904
5:00 PM	29	127	48	0	0	204	72	168	46	0	6	286	40	136	83	0	0	259	32	156	38	0	6	226	975
5:15 PM	35	116	45	0	0	196	70	159	42	0	6	271	24	124	72	0	0	220	31	184	33	0	5	248	935
5:30 PM	37	113	34	0	0	184	69	166	38	0	1	273	46	155	66	0	0	267	22	147	29	0	2	198	922
Total	147	481	162	0	3	790	281	680	167	0	18	1128	148	539	259	0	7	946	119	620	133	0	16	872	3736
Approach %	18.6	60.9	20.5	0.0	-	-	24.9	60.3	14.8	0.0	-	-	15.6	57.0	27.4	0.0	-	-	13.6	71.1	15.3	0.0	-	-	-
Total %	3.9	12.9	4.3	0.0	-	21.1	7.5	18.2	4.5	0.0	-	30.2	4.0	14.4	6.9	0.0	-	25.3	3.2	16.6	3.6	0.0	-	23.3	-
PHF	0.799	0.947	0.844	0.000	-	0.959	0.976	0.909	0.908	0.000	-	0.946	0.804	0.869	0.780	0.000	-	0.886	0.875	0.842	0.875	0.000	-	0.879	0.958
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	147	474	159	0	-	780	277	675	160	0	-	1112	147	514	250	0	-	911	116	607	130	0	-	853	3656
% Cars & Light Goods	100.0	98.5	98.1	-	-	98.7	98.6	99.3	95.8	-	-	98.6	99.3	95.4	96.5	-	-	96.3	97.5	97.9	97.7	-	-	97.8	97.9
Buses	0	2	0	0	-	2	3	5	3	0	-	11	0	1	2	0	-	3	3	1	1	0	-	5	21
% Buses	0.0	0.4	0.0	-	-	0.3	1.1	0.7	1.8	-	-	1.0	0.0	0.2	0.8	-	-	0.3	2.5	0.2	0.8	-	-	0.6	0.6
Single-Unit Trucks	0	4	1	0	-	5	1	0	3	0	-	4	1	7	7	0	-	15	0	7	1	0	-	8	32
% Single-Unit Trucks	0.0	0.8	0.6	-	-	0.6	0.4	0.0	1.8	-	-	0.4	0.7	1.3	2.7	-	-	1.6	0.0	1.1	0.8	-	-	0.9	0.9
Articulated Trucks	0	0	2	0	-	2	0	0	1	0	-	1	0	17	0	0	-	17	0	4	0	0	-	4	24
% Articulated Trucks	0.0	0.0	1.2	-	-	0.3	0.0	0.0	0.6	-	-	0.1	0.0	3.2	0.0	-	-	1.8	0.0	0.6	0.0	-	-	0.5	0.6
Bicycles on Road	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	1	1	0	-	2	3
% Bicycles on Road	0.0	0.2	0.0	-	-	0.1	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.2	0.8	-	-	0.2	0.1
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	5	-	-	-	-	-	1	-	-	-	-	-	5	-	-
% Bicycles on Crosswalk	-	-	-	-	33.3	-	-	-	-	-	27.8	-	-	-	-	-	14.3	-	-	-	-	-	31.3	-	-
Pedestrians	-	-	-	-	2	-	-	-	-	-	13	-	-	-	-	-	6	-	-	-	-	-	11	-	-
% Pedestrians	-	-	-	-	66.7	-	-	-	-	-	72.2	-	-	-	-	-	85.7	-	-	-	-	-	68.8	-	-



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@pts1.com

Count Name: Main Street E & Ontario Street
Site Code: 240515
Start Date: 10/08/2024
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Turning Movement Peak Hour Data Plot (4:45 PM)



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@pts1.com

Count Name: Pearl Street & Bruce Street
Site Code: 240515
Start Date: 10/08/2024
Page No: 1

Turning Movement Data

Start Time	Pearl Street Eastbound					Pearl Street Westbound					Bruce Street Southbound					Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
7:00 AM	0	0	0	0	0	2	0	0	0	2	0	1	0	2	1	3
7:15 AM	0	0	0	0	0	2	1	0	0	3	0	0	0	0	0	3
7:30 AM	1	1	0	0	2	5	1	0	0	6	1	1	0	0	2	10
7:45 AM	3	0	0	0	3	5	1	0	0	6	1	1	0	0	2	11
Hourly Total	4	1	0	0	5	14	3	0	0	17	2	3	0	2	5	27
8:00 AM	8	6	0	0	14	16	0	0	0	16	0	1	0	0	1	31
8:15 AM	12	24	0	1	36	26	1	0	0	27	3	5	0	0	8	71
8:30 AM	3	3	0	2	6	7	3	0	1	10	0	1	0	0	1	17
8:45 AM	1	2	0	0	3	6	1	0	0	7	0	1	0	0	1	11
Hourly Total	24	35	0	3	59	55	5	0	1	60	3	8	0	0	11	130
9:00 AM	2	3	0	0	5	1	2	0	1	3	2	0	0	0	2	10
9:15 AM	1	3	0	0	4	2	2	0	0	4	0	1	0	1	1	9
9:30 AM	3	3	0	0	6	5	3	0	0	8	1	4	0	0	5	19
9:45 AM	3	5	0	0	8	0	3	0	0	3	2	3	0	0	5	16
Hourly Total	9	14	0	0	23	8	10	0	1	18	5	8	0	1	13	54
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	3	1	0	0	4	1	0	0	0	1	3	3	0	0	6	11
11:15 AM	2	4	0	0	6	3	6	0	1	9	2	0	0	0	2	17
11:30 AM	2	2	0	0	4	5	2	0	0	7	4	4	0	0	8	19
11:45 AM	6	5	0	0	11	6	3	0	2	9	2	3	0	0	5	25
Hourly Total	13	12	0	0	25	15	11	0	3	26	11	10	0	0	21	72
12:00 PM	1	3	0	0	4	5	3	0	1	8	4	7	1	0	12	24
12:15 PM	4	2	0	0	6	1	4	0	0	5	3	3	0	1	6	17
12:30 PM	2	1	0	0	3	5	5	0	0	10	3	4	0	0	7	20
12:45 PM	3	2	0	0	5	4	3	0	0	7	4	6	0	0	10	22
Hourly Total	10	8	0	0	18	15	15	0	1	30	14	20	1	1	35	83
1:00 PM	2	4	0	0	6	6	4	0	0	10	5	2	0	0	7	23
1:15 PM	3	3	0	0	6	3	3	0	1	6	0	6	0	0	6	18
1:30 PM	1	4	0	1	5	3	2	0	0	5	7	2	0	0	9	19
1:45 PM	5	4	0	1	9	6	0	0	0	6	1	4	0	0	5	20
Hourly Total	11	15	0	2	26	18	9	0	1	27	13	14	0	0	27	80
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	1	3	0	0	4	11	2	0	0	13	0	4	0	0	4	21
3:15 PM	11	21	0	1	32	14	5	0	0	19	2	6	0	3	8	59
3:30 PM	14	13	0	0	27	6	4	0	0	10	3	6	0	1	9	46
3:45 PM	1	7	0	0	8	7	4	0	0	11	2	4	0	1	6	25

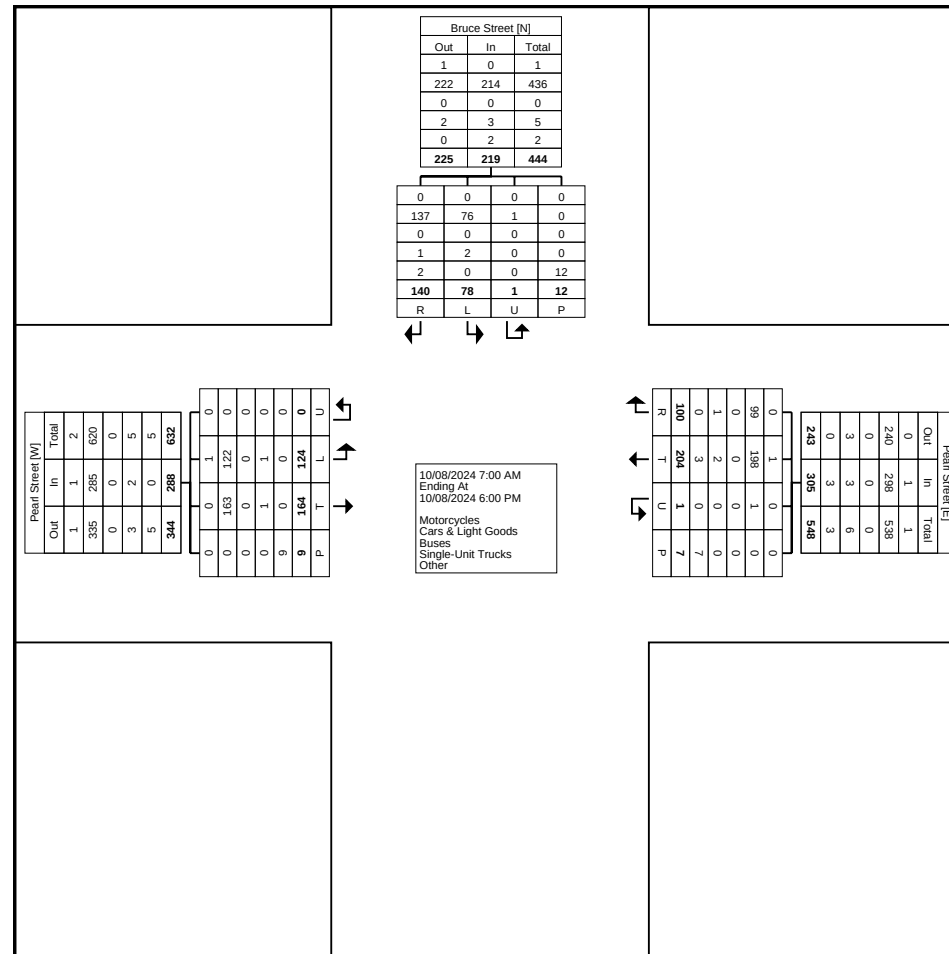
Hourly Total	27	44	0	1	71	38	15	0	0	53	7	20	0	5	27	151
4:00 PM	8	3	0	0	11	5	3	0	0	8	1	6	0	0	7	26
4:15 PM	3	3	0	0	6	2	3	0	0	5	1	6	0	0	7	18
4:30 PM	1	2	0	1	3	5	4	0	0	9	5	5	0	1	10	22
4:45 PM	7	10	0	0	17	7	4	0	0	11	4	12	0	0	16	44
Hourly Total	19	18	0	1	37	19	14	0	0	33	11	29	0	1	40	110
5:00 PM	2	4	0	0	6	4	7	0	0	11	0	8	0	0	8	25
5:15 PM	3	4	0	0	7	8	7	0	0	15	2	6	0	0	8	30
5:30 PM	1	6	0	1	7	5	3	0	0	8	5	7	0	1	12	27
5:45 PM	1	3	0	1	4	5	1	1	0	7	5	7	0	1	12	23
Hourly Total	7	17	0	2	24	22	18	1	0	41	12	28	0	2	40	105
Grand Total	124	164	0	9	288	204	100	1	7	305	78	140	1	12	219	812
Approach %	43.1	56.9	0.0	-	-	66.9	32.8	0.3	-	-	35.6	63.9	0.5	-	-	-
Total %	15.3	20.2	0.0	-	35.5	25.1	12.3	0.1	-	37.6	9.6	17.2	0.1	-	27.0	-
Motorcycles	1	0	0	-	1	1	0	0	-	1	0	0	0	-	0	2
% Motorcycles	0.8	0.0	-	-	0.3	0.5	0.0	0.0	-	0.3	0.0	0.0	0.0	-	0.0	0.2
Cars & Light Goods	122	163	0	-	285	198	99	1	-	298	76	137	1	-	214	797
% Cars & Light Goods	98.4	99.4	-	-	99.0	97.1	99.0	100.0	-	97.7	97.4	97.9	100.0	-	97.7	98.2
Buses	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Buses	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Single-Unit Trucks	1	1	0	-	2	2	1	0	-	3	2	1	0	-	3	8
% Single-Unit Trucks	0.8	0.6	-	-	0.7	1.0	1.0	0.0	-	1.0	2.6	0.7	0.0	-	1.4	1.0
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Road	0	0	0	-	0	3	0	0	-	3	0	2	0	-	2	5
% Bicycles on Road	0.0	0.0	-	-	0.0	1.5	0.0	0.0	-	1.0	0.0	1.4	0.0	-	0.9	0.6
Bicycles on Crosswalk	-	-	-	1	-	-	-	-	0	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	11.1	-	-	-	-	0.0	-	-	-	-	16.7	-	-
Pedestrians	-	-	-	8	-	-	-	-	7	-	-	-	-	10	-	-
% Pedestrians	-	-	-	88.9	-	-	-	-	100.0	-	-	-	-	83.3	-	-



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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Count Name: Pearl Street & Bruce Street
Site Code: 240515
Start Date: 10/08/2024
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Turning Movement Data Plot



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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Count Name: Pearl Street & Bruce Street
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Start Date: 10/08/2024
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Turning Movement Peak Hour Data (7:45 AM)

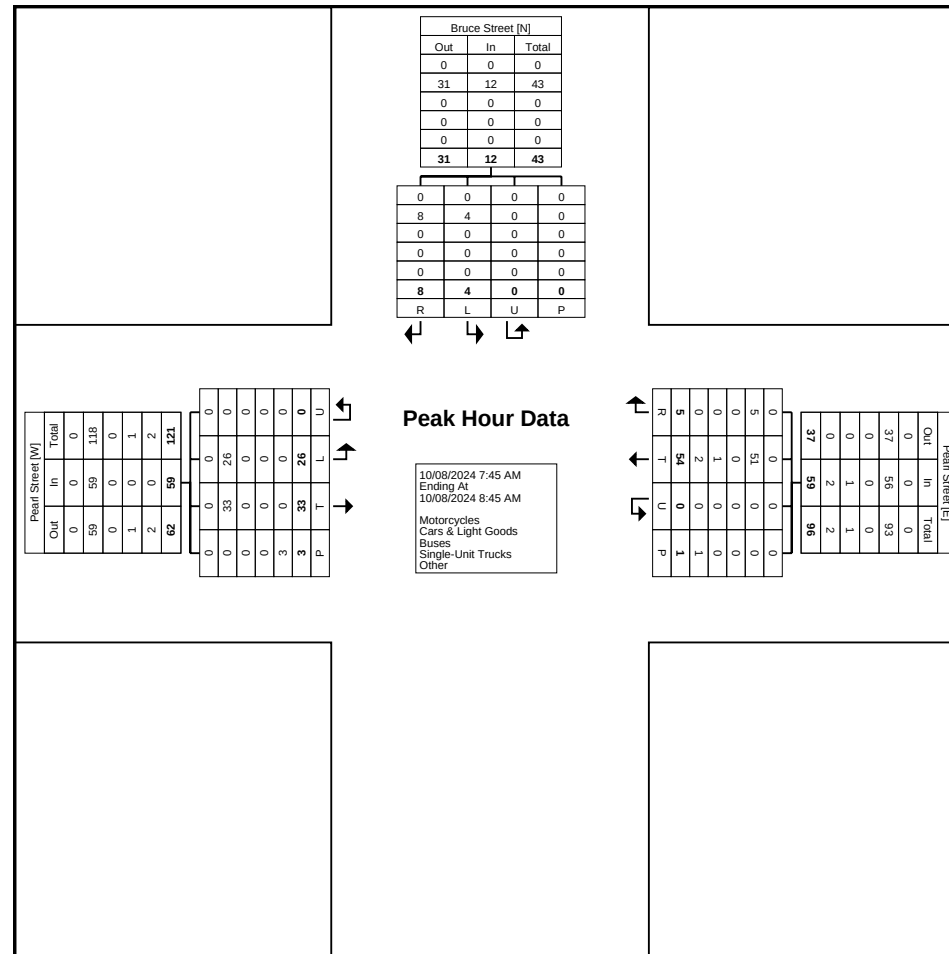
Start Time	Pearl Street Eastbound					Pearl Street Westbound					Bruce Street Southbound					Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
7:45 AM	3	0	0	0	3	5	1	0	0	6	1	1	0	0	2	11
8:00 AM	8	6	0	0	14	16	0	0	0	16	0	1	0	0	1	31
8:15 AM	12	24	0	1	36	26	1	0	0	27	3	5	0	0	8	71
8:30 AM	3	3	0	2	6	7	3	0	1	10	0	1	0	0	1	17
Total	26	33	0	3	59	54	5	0	1	59	4	8	0	0	12	130
Approach %	44.1	55.9	0.0	-	-	91.5	8.5	0.0	-	-	33.3	66.7	0.0	-	-	-
Total %	20.0	25.4	0.0	-	45.4	41.5	3.8	0.0	-	45.4	3.1	6.2	0.0	-	9.2	-
PHF	0.542	0.344	0.000	-	0.410	0.519	0.417	0.000	-	0.546	0.333	0.400	0.000	-	0.375	0.458
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	26	33	0	-	59	51	5	0	-	56	4	8	0	-	12	127
% Cars & Light Goods	100.0	100.0	-	-	100.0	94.4	100.0	-	-	94.9	100.0	100.0	-	-	100.0	97.7
Buses	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Buses	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Single-Unit Trucks	0	0	0	-	0	1	0	0	-	1	0	0	0	-	0	1
% Single-Unit Trucks	0.0	0.0	-	-	0.0	1.9	0.0	-	-	1.7	0.0	0.0	-	-	0.0	0.8
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	-	0	2	0	0	-	2	0	0	0	-	0	2
% Bicycles on Road	0.0	0.0	-	-	0.0	3.7	0.0	-	-	3.4	0.0	0.0	-	-	0.0	1.5
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	-	-	-
Pedestrians	-	-	-	3	-	-	-	-	1	-	-	-	-	0	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	-	-	-



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@pts1.com

Count Name: Pearl Street & Bruce Street
Site Code: 240515
Start Date: 10/08/2024
Page No: 5



Turning Movement Peak Hour Data Plot (7:45 AM)



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@pts1.com

Count Name: Pearl Street & Bruce Street
Site Code: 240515
Start Date: 10/08/2024
Page No: 6

Turning Movement Peak Hour Data (11:45 AM)

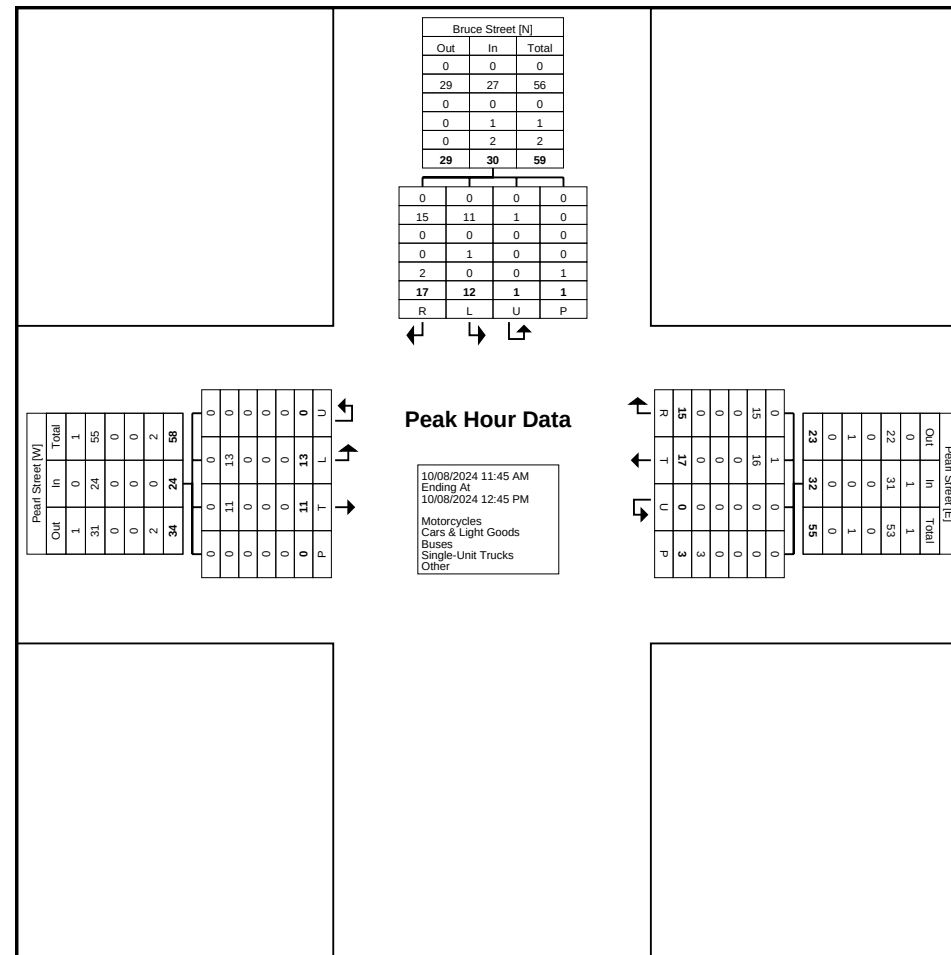
Start Time	Pearl Street Eastbound					Pearl Street Westbound					Bruce Street Southbound					Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
11:45 AM	6	5	0	0	11	6	3	0	2	9	2	3	0	0	5	25
12:00 PM	1	3	0	0	4	5	3	0	1	8	4	7	1	0	12	24
12:15 PM	4	2	0	0	6	1	4	0	0	5	3	3	0	1	6	17
12:30 PM	2	1	0	0	3	5	5	0	0	10	3	4	0	0	7	20
Total	13	11	0	0	24	17	15	0	3	32	12	17	1	1	30	86
Approach %	54.2	45.8	0.0	-	-	53.1	46.9	0.0	-	-	40.0	56.7	3.3	-	-	-
Total %	15.1	12.8	0.0	-	27.9	19.8	17.4	0.0	-	37.2	14.0	19.8	1.2	-	34.9	-
PHF	0.542	0.550	0.000	-	0.545	0.708	0.750	0.000	-	0.800	0.750	0.607	0.250	-	0.625	0.860
Motorcycles	0	0	0	-	0	1	0	0	-	1	0	0	0	-	0	1
% Motorcycles	0.0	0.0	-	-	0.0	5.9	0.0	-	-	3.1	0.0	0.0	0.0	-	0.0	1.2
Cars & Light Goods	13	11	0	-	24	16	15	0	-	31	11	15	1	-	27	82
% Cars & Light Goods	100.0	100.0	-	-	100.0	94.1	100.0	-	-	96.9	91.7	88.2	100.0	-	90.0	95.3
Buses	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Buses	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Single-Unit Trucks	0	0	0	-	0	0	0	0	-	0	1	0	0	-	1	1
% Single-Unit Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	8.3	0.0	0.0	-	3.3	1.2
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	2	0	-	2	2
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	11.8	0.0	-	6.7	2.3
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	3	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	100.0	-	-



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
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Count Name: Pearl Street & Bruce Street
Site Code: 240515
Start Date: 10/08/2024
Page No: 7



Turning Movement Peak Hour Data Plot (11:45 AM)



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@pts1.com

Count Name: Pearl Street & Bruce Street
Site Code: 240515
Start Date: 10/08/2024
Page No: 8

Turning Movement Peak Hour Data (3:15 PM)

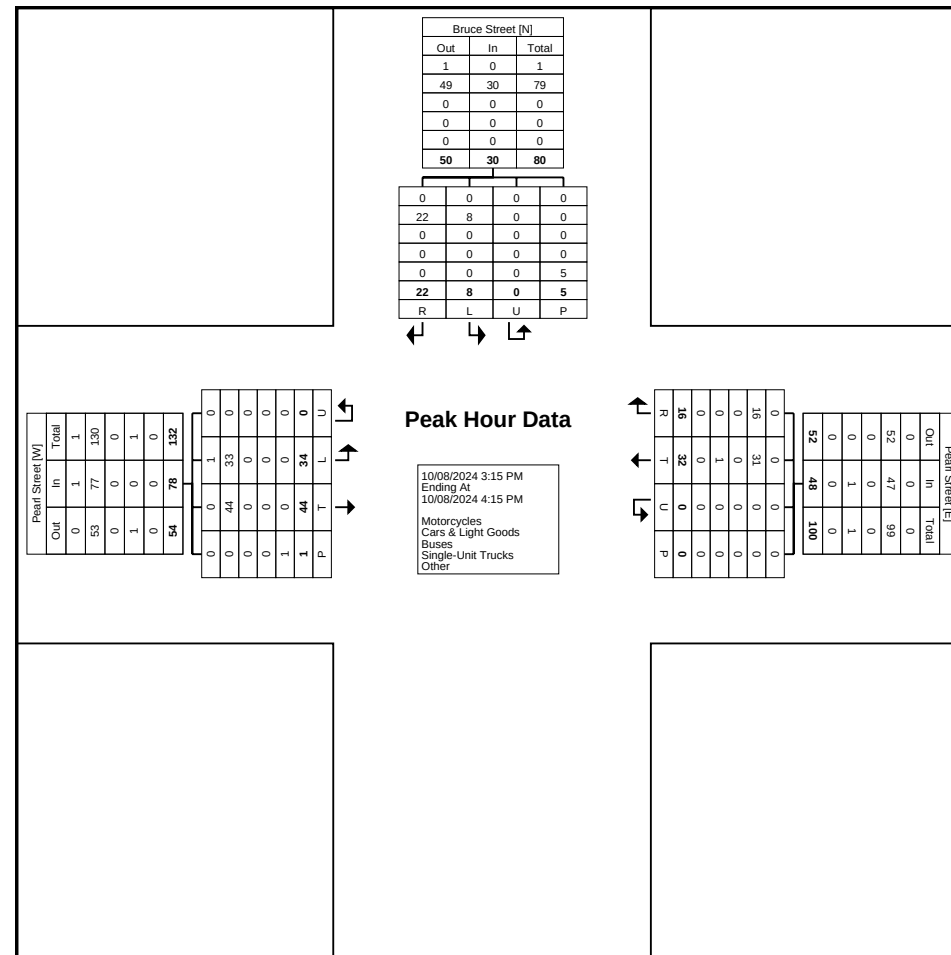
Start Time	Pearl Street Eastbound					Pearl Street Westbound					Bruce Street Southbound					Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
3:15 PM	11	21	0	1	32	14	5	0	0	19	2	6	0	3	8	59
3:30 PM	14	13	0	0	27	6	4	0	0	10	3	6	0	1	9	46
3:45 PM	1	7	0	0	8	7	4	0	0	11	2	4	0	1	6	25
4:00 PM	8	3	0	0	11	5	3	0	0	8	1	6	0	0	7	26
Total	34	44	0	1	78	32	16	0	0	48	8	22	0	5	30	156
Approach %	43.6	56.4	0.0	-	-	66.7	33.3	0.0	-	-	26.7	73.3	0.0	-	-	-
Total %	21.8	28.2	0.0	-	50.0	20.5	10.3	0.0	-	30.8	5.1	14.1	0.0	-	19.2	-
PHF	0.607	0.524	0.000	-	0.609	0.571	0.800	0.000	-	0.632	0.667	0.917	0.000	-	0.833	0.661
Motorcycles	1	0	0	-	1	0	0	0	-	0	0	0	0	-	0	1
% Motorcycles	2.9	0.0	-	-	1.3	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.6
Cars & Light Goods	33	44	0	-	77	31	16	0	-	47	8	22	0	-	30	154
% Cars & Light Goods	97.1	100.0	-	-	98.7	96.9	100.0	-	-	97.9	100.0	100.0	-	-	100.0	98.7
Buses	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Buses	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Single-Unit Trucks	0	0	0	-	0	1	0	0	-	1	0	0	0	-	0	1
% Single-Unit Trucks	0.0	0.0	-	-	0.0	3.1	0.0	-	-	2.1	0.0	0.0	-	-	0.0	0.6
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	1	-	-	-	-	0	-	-	-	-	5	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	100.0	-	-



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
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Count Name: Pearl Street & Bruce Street
Site Code: 240515
Start Date: 10/08/2024
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Turning Movement Peak Hour Data Plot (3:15 PM)



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsll.com

Count Name: Pearl Street & Ontario Street
Site Code: 240515
Start Date: 10/08/2024
Page No: 1

Turning Movement Data

Start Time	Pearl Street Eastbound					Ontario Street Northbound					Ontario Street Southbound					Int. Total
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	0	0	0	0	0	1	177	1	0	179	109	0	0	0	109	288
7:15 AM	0	0	0	0	0	3	213	0	0	216	141	0	0	0	141	357
7:30 AM	1	1	0	0	2	5	267	0	0	272	111	2	0	0	113	387
7:45 AM	0	1	0	0	1	4	339	0	0	343	194	3	0	0	197	541
Hourly Total	1	2	0	0	3	13	996	1	0	1010	555	5	0	0	560	1573
8:00 AM	0	5	0	1	5	14	304	0	0	318	212	6	0	0	218	541
8:15 AM	2	24	0	2	26	18	278	0	0	296	233	12	0	0	245	567
8:30 AM	0	7	0	1	7	8	205	0	0	213	190	1	0	0	191	411
8:45 AM	0	3	0	1	3	7	260	0	0	267	155	3	0	0	158	428
Hourly Total	2	39	0	5	41	47	1047	0	0	1094	790	22	0	0	812	1947
9:00 AM	0	6	0	0	6	3	193	0	0	196	173	2	0	0	175	377
9:15 AM	0	5	0	2	5	6	197	0	0	203	160	2	0	0	162	370
9:30 AM	1	4	0	1	5	7	172	0	0	179	130	6	0	0	136	320
9:45 AM	1	6	0	0	7	6	154	0	0	160	149	1	0	0	150	317
Hourly Total	2	21	0	3	23	22	716	0	0	738	612	11	0	0	623	1384
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	3	3	0	4	6	3	130	0	0	133	146	1	1	0	148	287
11:15 AM	1	5	0	3	6	8	163	0	0	171	170	3	0	0	173	350
11:30 AM	0	10	0	3	10	6	183	0	0	189	163	1	0	0	164	363
11:45 AM	1	9	0	0	10	10	176	0	0	186	173	6	0	0	179	375
Hourly Total	5	27	0	10	32	27	652	0	0	679	652	11	1	0	664	1375
12:00 PM	2	8	0	0	10	5	202	0	0	207	178	5	0	0	183	400
12:15 PM	0	8	0	0	8	7	185	0	0	192	180	3	0	0	183	383
12:30 PM	2	8	0	0	10	13	185	0	0	198	155	5	0	0	160	368
12:45 PM	0	6	0	0	6	4	188	1	0	193	195	3	0	0	198	397
Hourly Total	4	30	0	0	34	29	760	1	0	790	708	16	0	0	724	1548
1:00 PM	3	8	0	3	11	8	172	0	0	180	172	5	1	0	178	369
1:15 PM	0	3	0	0	3	2	178	0	0	180	181	2	0	0	183	366
1:30 PM	0	11	0	2	11	7	189	1	0	197	160	1	0	0	161	369
1:45 PM	2	9	0	0	11	5	194	0	0	199	192	3	0	0	195	405
Hourly Total	5	31	0	5	36	22	733	1	0	756	705	11	1	0	717	1509
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	1	7	0	4	8	10	237	0	0	247	217	5	0	0	222	477
3:15 PM	1	22	0	0	23	11	253	0	0	264	249	8	0	1	257	544
3:30 PM	3	13	0	2	16	10	240	0	0	250	221	4	0	1	225	491
3:45 PM	2	13	0	0	15	8	248	0	0	256	217	4	0	0	221	492

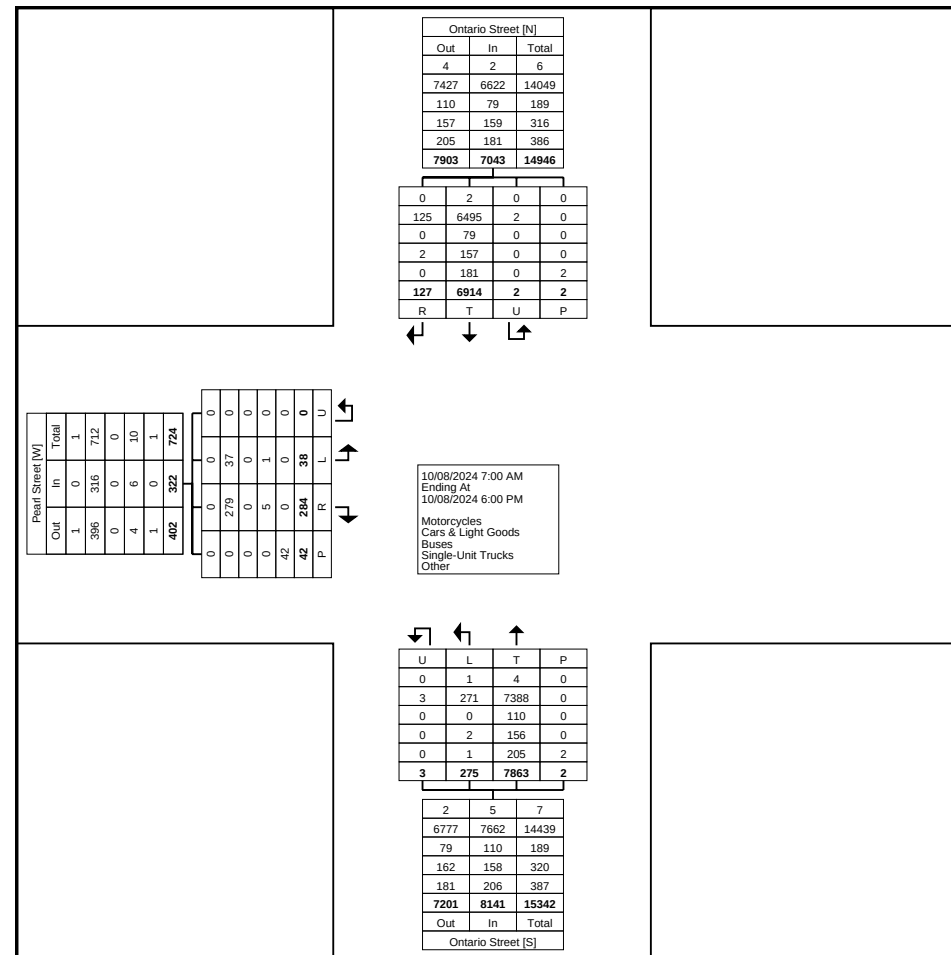
Hourly Total	7	55	0	6	62	39	978	0	0	1017	904	21	0	2	925	2004
4:00 PM	1	8	0	0	9	7	246	0	2	253	247	6	0	0	253	515
4:15 PM	0	8	0	3	8	6	244	0	0	250	232	4	0	0	236	494
4:30 PM	5	4	0	0	9	13	261	0	0	274	218	4	0	0	222	505
4:45 PM	1	14	0	4	15	10	224	0	0	234	230	5	0	0	235	484
Hourly Total	7	34	0	7	41	36	975	0	2	1011	927	19	0	0	946	1998
5:00 PM	3	13	0	2	16	13	247	0	0	260	279	2	0	0	281	557
5:15 PM	0	8	0	2	8	13	227	0	0	240	293	3	0	0	296	544
5:30 PM	1	14	0	0	15	7	275	0	0	282	255	4	0	0	259	556
5:45 PM	1	10	0	2	11	7	257	0	0	264	234	2	0	0	236	511
Hourly Total	5	45	0	6	50	40	1006	0	0	1046	1061	11	0	0	1072	2168
Grand Total	38	284	0	42	322	275	7863	3	2	8141	6914	127	2	2	7043	15506
Approach %	11.8	88.2	0.0	-	-	3.4	96.6	0.0	-	-	98.2	1.8	0.0	-	-	-
Total %	0.2	1.8	0.0	-	2.1	1.8	50.7	0.0	-	52.5	44.6	0.8	0.0	-	45.4	-
Motorcycles	0	0	0	-	0	1	4	0	-	5	2	0	0	-	2	7
% Motorcycles	0.0	0.0	-	-	0.0	0.4	0.1	0.0	-	0.1	0.0	0.0	0.0	-	0.0	0.0
Cars & Light Goods	37	279	0	-	316	271	7388	3	-	7662	6495	125	2	-	6622	14600
% Cars & Light Goods	97.4	98.2	-	-	98.1	98.5	94.0	100.0	-	94.1	93.9	98.4	100.0	-	94.0	94.2
Buses	0	0	0	-	0	0	110	0	-	110	79	0	0	-	79	189
% Buses	0.0	0.0	-	-	0.0	0.0	1.4	0.0	-	1.4	1.1	0.0	0.0	-	1.1	1.2
Single-Unit Trucks	1	5	0	-	6	2	156	0	-	158	157	2	0	-	159	323
% Single-Unit Trucks	2.6	1.8	-	-	1.9	0.7	2.0	0.0	-	1.9	2.3	1.6	0.0	-	2.3	2.1
Articulated Trucks	0	0	0	-	0	0	202	0	-	202	179	0	0	-	179	381
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	2.6	0.0	-	2.5	2.6	0.0	0.0	-	2.5	2.5
Bicycles on Road	0	0	0	-	0	1	3	0	-	4	2	0	0	-	2	6
% Bicycles on Road	0.0	0.0	-	-	0.0	0.4	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	2	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	4.8	-	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	40	-	-	-	-	2	-	-	-	-	2	-	-
% Pedestrians	-	-	-	95.2	-	-	-	-	100.0	-	-	-	-	100.0	-	-



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsI.com

Count Name: Pearl Street & Ontario Street
Site Code: 240515
Start Date: 10/08/2024
Page No: 3



Turning Movement Data Plot

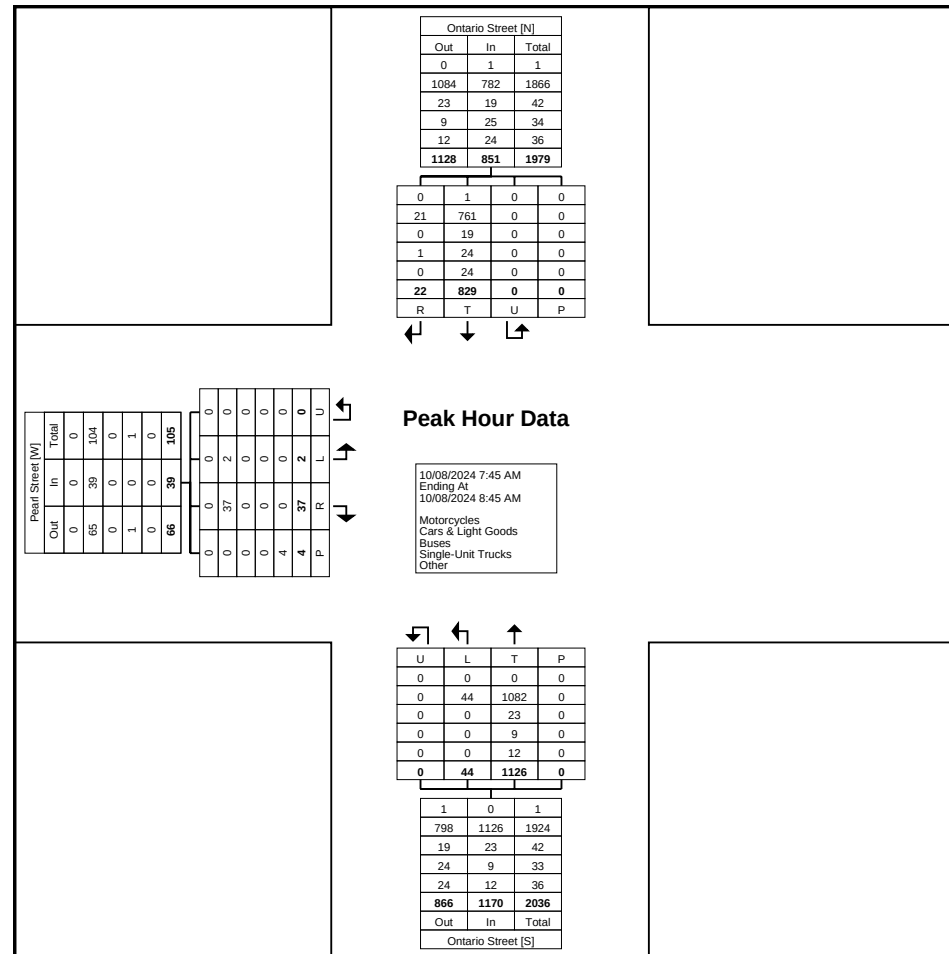
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Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cdowness@pts1.com

Count Name: Pearl Street & Ontario Street
Site Code: 240515
Start Date: 10/08/2024
Page No: 5



Turning Movement Peak Hour Data Plot (7:45 AM)

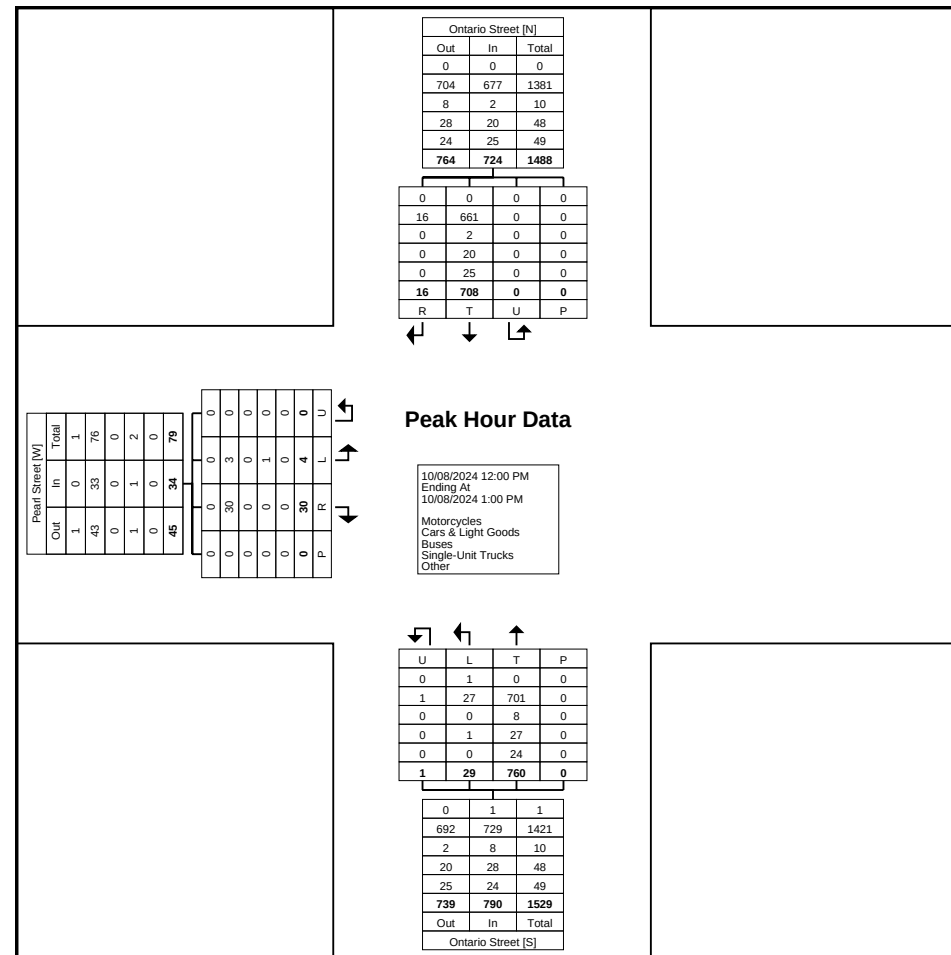
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Count Name: Pearl Street & Ontario Street
Site Code: 240515
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Page No: 7



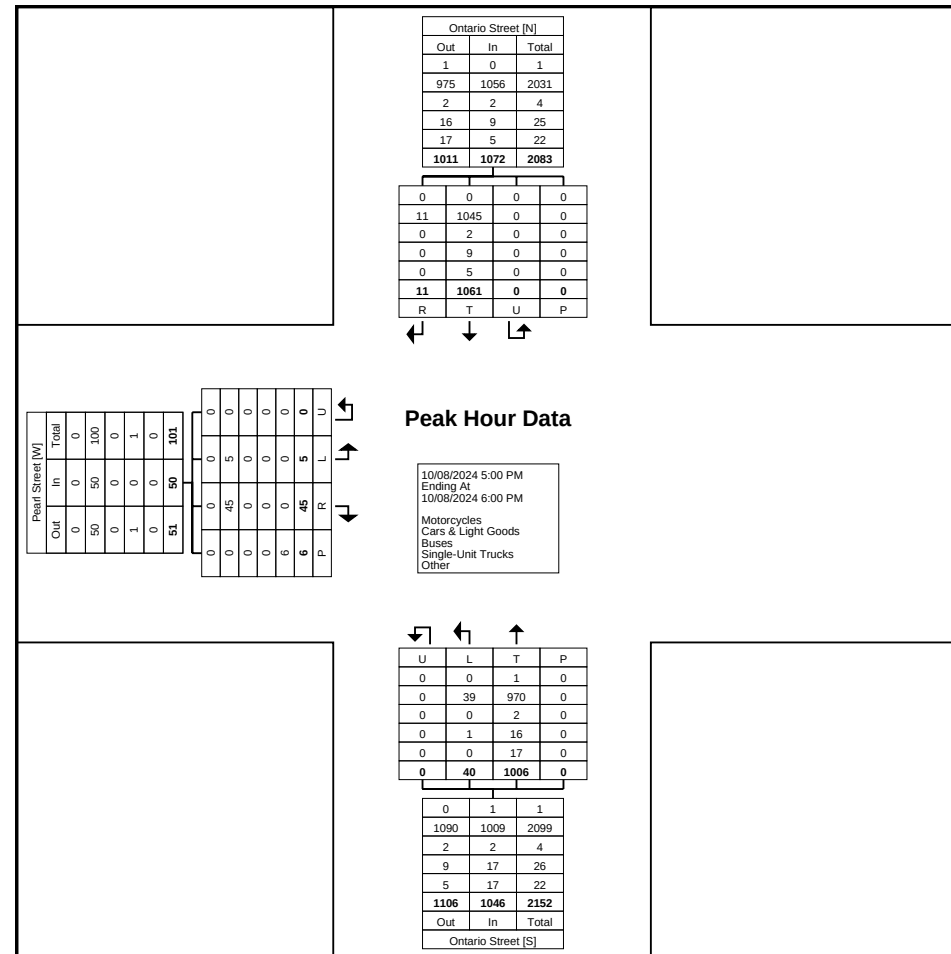
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Count Name: Pearl Street & Ontario Street
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Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsI.com

Count Name: Pearl Street & Prince Street
Site Code: 240515
Start Date: 10/08/2024
Page No: 1

Turning Movement Data

Start Time	Pearl Street Eastbound						Pearl Street Westbound						Prince Street Northbound						Prince Street Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	0	1	0	0	1	1	2	1	0	0	1	3	0	2	0	0	0	2	0	0	0	0	0	0	6
7:15 AM	0	2	0	0	2	2	0	1	0	0	0	1	0	4	1	0	0	5	0	1	1	0	2	2	10
7:30 AM	0	3	0	0	1	3	1	1	1	0	0	3	0	6	0	0	1	6	1	2	0	0	1	3	15
7:45 AM	2	1	0	0	1	3	0	3	3	0	0	6	1	7	1	0	0	9	1	4	1	0	0	6	24
Hourly Total	2	7	0	0	5	9	3	6	4	0	1	13	1	19	2	0	1	22	2	7	2	0	3	11	55
8:00 AM	0	4	0	0	2	4	2	5	0	0	0	7	1	7	6	0	2	14	3	6	0	0	0	9	34
8:15 AM	0	6	1	0	1	7	3	8	2	0	0	13	0	5	12	0	4	17	3	2	0	0	0	5	42
8:30 AM	0	0	0	0	0	0	1	4	1	0	0	6	0	3	4	0	1	7	0	0	0	0	0	0	13
8:45 AM	0	1	1	0	1	2	2	3	3	0	0	8	0	2	3	0	2	5	0	0	1	0	0	1	16
Hourly Total	0	11	2	0	4	13	8	20	6	0	0	34	1	17	25	0	9	43	6	8	1	0	0	15	105
9:00 AM	0	2	0	0	0	2	0	0	0	0	0	0	0	3	0	0	0	3	1	0	0	0	0	1	6
9:15 AM	0	2	0	0	0	2	0	2	0	0	0	2	0	1	1	0	0	2	1	2	0	0	0	3	9
9:30 AM	0	1	0	0	1	1	4	3	0	0	0	7	0	2	1	0	0	3	1	1	0	0	0	2	13
9:45 AM	0	7	0	0	2	7	0	2	1	0	0	3	0	0	1	0	0	1	0	0	2	0	0	2	13
Hourly Total	0	12	0	0	3	12	4	7	1	0	0	12	0	6	3	0	0	9	3	3	2	0	0	8	41
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	0	2	0	0	0	2	0	3	0	0	0	3	0	4	2	0	0	6	0	2	0	0	0	2	13
11:15 AM	0	2	0	0	1	2	1	2	0	0	3	3	0	10	3	0	1	13	0	1	0	0	0	1	19
11:30 AM	0	0	0	0	0	0	4	3	1	0	0	8	1	4	2	0	1	7	0	2	0	0	0	2	17
11:45 AM	0	2	0	0	2	2	3	2	1	0	0	6	1	1	7	0	0	9	1	2	2	0	0	5	22
Hourly Total	0	6	0	0	3	6	8	10	2	0	3	20	2	19	14	0	2	35	1	7	2	0	0	10	71
12:00 PM	0	1	0	0	0	1	6	5	2	0	0	13	0	5	2	0	0	7	0	2	1	0	0	3	24
12:15 PM	0	1	0	0	2	1	2	2	0	0	2	4	1	4	5	0	0	10	0	0	0	0	0	0	15
12:30 PM	1	0	0	0	1	1	3	5	2	0	0	10	0	2	1	0	0	3	1	1	1	0	0	3	17
12:45 PM	1	3	0	0	0	4	4	3	2	0	0	9	0	2	2	0	0	4	0	1	0	0	0	1	18
Hourly Total	2	5	0	0	3	7	15	15	6	0	2	36	1	13	10	0	0	24	1	4	2	0	0	7	74
1:00 PM	0	4	0	0	0	4	2	7	0	0	0	9	0	1	2	0	0	3	0	1	0	0	0	1	17
1:15 PM	0	2	0	0	0	2	4	3	3	0	0	10	0	1	3	0	0	4	3	5	0	0	0	8	24
1:30 PM	0	1	1	0	0	2	1	3	1	0	0	5	0	3	2	0	0	5	2	9	0	1	0	12	24
1:45 PM	0	6	1	0	0	7	6	4	0	0	0	10	0	3	3	0	0	6	2	0	0	0	0	2	25
Hourly Total	0	13	2	0	0	15	13	17	4	0	0	34	0	8	10	0	0	18	7	15	0	1	0	23	90
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	1	2	0	0	0	3	4	4	0	0	0	8	0	4	2	0	1	6	2	3	1	0	0	6	23
3:15 PM	0	9	1	0	0	10	6	7	2	0	2	15	1	5	9	0	2	15	0	2	0	0	2	2	42
3:30 PM	1	4	1	0	0	6	7	5	1	0	0	13	0	3	10	0	0	13	6	2	0	0	3	8	40

3:45 PM	2	2	0	0	0	4	6	5	1	0	1	12	0	6	3	0	17	9	0	3	0	0	0	3	28
Hourly Total	4	17	2	0	0	23	23	21	4	0	3	48	1	18	24	0	20	43	8	10	1	0	5	19	133
4:00 PM	1	4	0	0	0	5	3	7	0	0	0	10	0	4	2	0	1	6	0	3	1	0	0	4	25
4:15 PM	0	3	0	0	2	3	5	3	1	0	0	9	0	3	1	0	0	4	2	3	0	0	0	5	21
4:30 PM	1	2	0	0	0	3	3	7	0	0	0	10	0	9	4	0	2	13	0	3	1	0	0	4	30
4:45 PM	0	5	0	0	2	5	8	10	0	0	0	18	0	6	5	0	17	11	1	5	1	1	0	8	42
Hourly Total	2	14	0	0	4	16	19	27	1	0	0	47	0	22	12	0	20	34	3	14	3	1	0	21	118
5:00 PM	0	3	1	0	2	4	8	4	0	0	0	12	0	3	0	0	0	3	1	7	2	0	1	10	29
5:15 PM	0	4	0	0	2	4	6	8	0	0	0	14	2	4	2	0	0	8	1	4	0	0	0	5	31
5:30 PM	0	2	0	0	2	2	5	7	1	0	0	13	0	5	1	0	0	6	2	3	2	0	0	7	28
5:45 PM	0	3	0	0	1	3	4	5	0	0	0	9	0	4	0	0	0	4	1	6	1	0	0	8	24
Hourly Total	0	12	1	0	7	13	23	24	1	0	0	48	2	16	3	0	0	21	5	20	5	0	1	30	112
Grand Total	10	97	7	0	29	114	116	147	29	0	9	292	8	138	103	0	52	249	36	88	18	2	9	144	799
Approach %	8.8	85.1	6.1	0.0	-	-	39.7	50.3	9.9	0.0	-	-	3.2	55.4	41.4	0.0	-	-	25.0	61.1	12.5	1.4	-	-	-
Total %	1.3	12.1	0.9	0.0	-	14.3	14.5	18.4	3.6	0.0	-	36.5	1.0	17.3	12.9	0.0	-	31.2	4.5	11.0	2.3	0.3	-	18.0	-
Motorcycles	0	0	0	0	-	0	1	2	0	0	-	3	1	1	1	0	-	3	0	0	0	0	-	0	6
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.9	1.4	0.0	-	-	1.0	12.5	0.7	1.0	-	-	1.2	0.0	0.0	0.0	0.0	-	0.0	0.8
Cars & Light Goods	10	95	6	0	-	111	113	142	28	0	-	283	7	134	102	0	-	243	35	87	16	2	-	140	777
% Cars & Light Goods	100.0	97.9	85.7	-	-	97.4	97.4	96.6	96.6	-	-	96.9	87.5	97.1	99.0	-	-	97.6	97.2	98.9	88.9	100.0	-	97.2	97.2
Buses	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	1
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	0.7	0.0	-	-	0.3	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.1
Single-Unit Trucks	0	2	0	0	-	2	0	1	1	0	-	2	0	1	0	0	-	1	1	1	2	0	-	4	9
% Single-Unit Trucks	0.0	2.1	0.0	-	-	1.8	0.0	0.7	3.4	-	-	0.7	0.0	0.7	0.0	-	-	0.4	2.8	1.1	11.1	0.0	-	2.8	1.1
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Road	0	0	1	0	-	1	2	1	0	0	-	3	0	2	0	0	-	2	0	0	0	0	-	0	6
% Bicycles on Road	0.0	0.0	14.3	-	-	0.9	1.7	0.7	0.0	-	-	1.0	0.0	1.4	0.0	-	-	0.8	0.0	0.0	0.0	0.0	-	0.0	0.8
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	11.1	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	29	-	-	-	-	-	8	-	-	-	-	-	52	-	-	-	-	-	9	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	88.9	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Turning Movement Data Plot



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@pts1.com

Count Name: Pearl Street & Prince Street
Site Code: 240515
Start Date: 10/08/2024
Page No: 4

Turning Movement Peak Hour Data (7:30 AM)

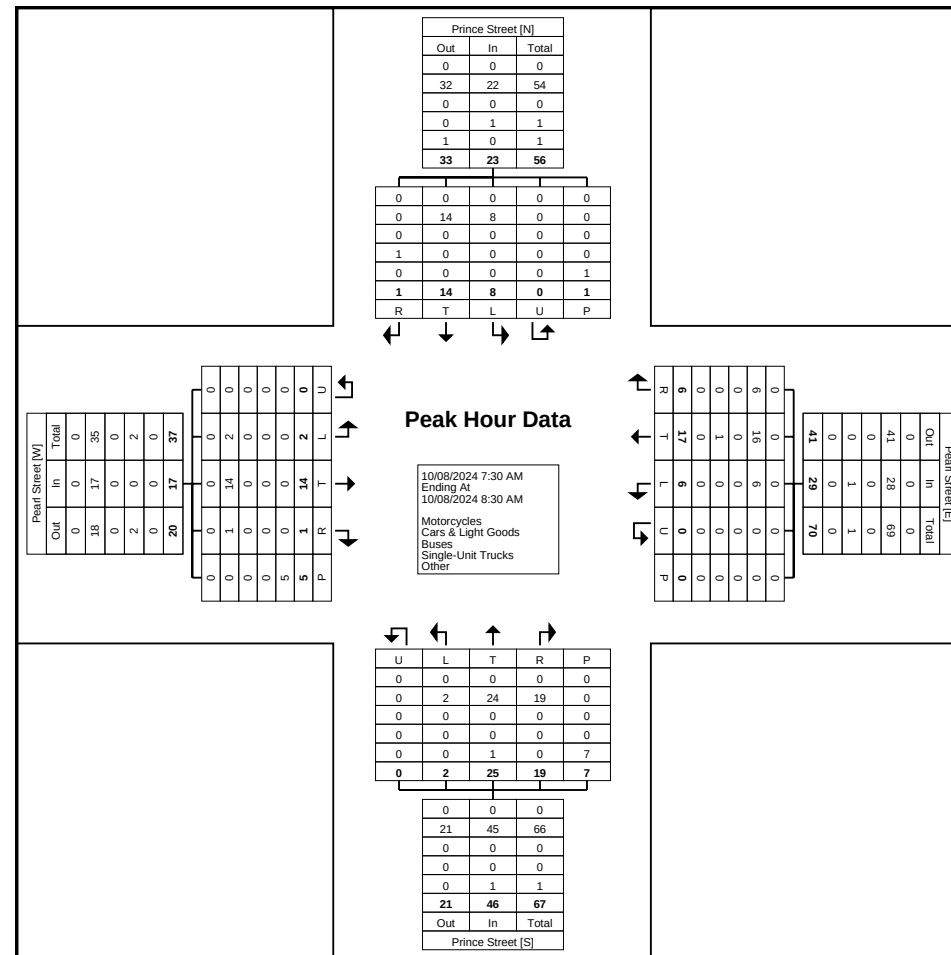
Start Time	Pearl Street Eastbound						Pearl Street Westbound						Prince Street Northbound						Prince Street Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:30 AM	0	3	0	0	1	3	1	1	1	0	0	3	0	6	0	0	1	6	1	2	0	0	1	3	15
7:45 AM	2	1	0	0	1	3	0	3	3	0	0	6	1	7	1	0	0	9	1	4	1	0	0	6	24
8:00 AM	0	4	0	0	2	4	2	5	0	0	0	7	1	7	6	0	2	14	3	6	0	0	0	9	34
8:15 AM	0	6	1	0	1	7	3	8	2	0	0	13	0	5	12	0	4	17	3	2	0	0	0	5	42
Total	2	14	1	0	5	17	6	17	6	0	0	29	2	25	19	0	7	46	8	14	1	0	1	23	115
Approach %	11.8	82.4	5.9	0.0	-	-	20.7	58.6	20.7	0.0	-	-	4.3	54.3	41.3	0.0	-	-	34.8	60.9	4.3	0.0	-	-	-
Total %	1.7	12.2	0.9	0.0	-	14.8	5.2	14.8	5.2	0.0	-	25.2	1.7	21.7	16.5	0.0	-	40.0	7.0	12.2	0.9	0.0	-	20.0	-
PHF	0.250	0.583	0.250	0.000	-	0.607	0.500	0.531	0.500	0.000	-	0.558	0.500	0.893	0.396	0.000	-	0.676	0.667	0.583	0.250	0.000	-	0.639	0.685
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	2	14	1	0	-	17	6	16	6	0	-	28	2	24	19	0	-	45	8	14	0	0	-	22	112
% Cars & Light Goods	100.0	100.0	100.0	-	-	100.0	100.0	94.1	100.0	-	-	96.6	100.0	96.0	100.0	-	-	97.8	100.0	100.0	0.0	-	-	95.7	97.4
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Single-Unit Trucks	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	0	0	1	0	-	1	2
% Single-Unit Trucks	0.0	0.0	0.0	-	-	0.0	0.0	5.9	0.0	-	-	3.4	0.0	0.0	0.0	-	-	0.0	0.0	0.0	100.0	-	-	4.3	1.7
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	4.0	0.0	-	-	2.2	0.0	0.0	0.0	-	-	0.0	0.9
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	5	-	-	-	-	-	0	-	-	-	-	-	7	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

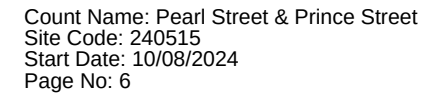


Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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Count Name: Pearl Street & Prince Street
Site Code: 240515
Start Date: 10/08/2024
Page No: 5



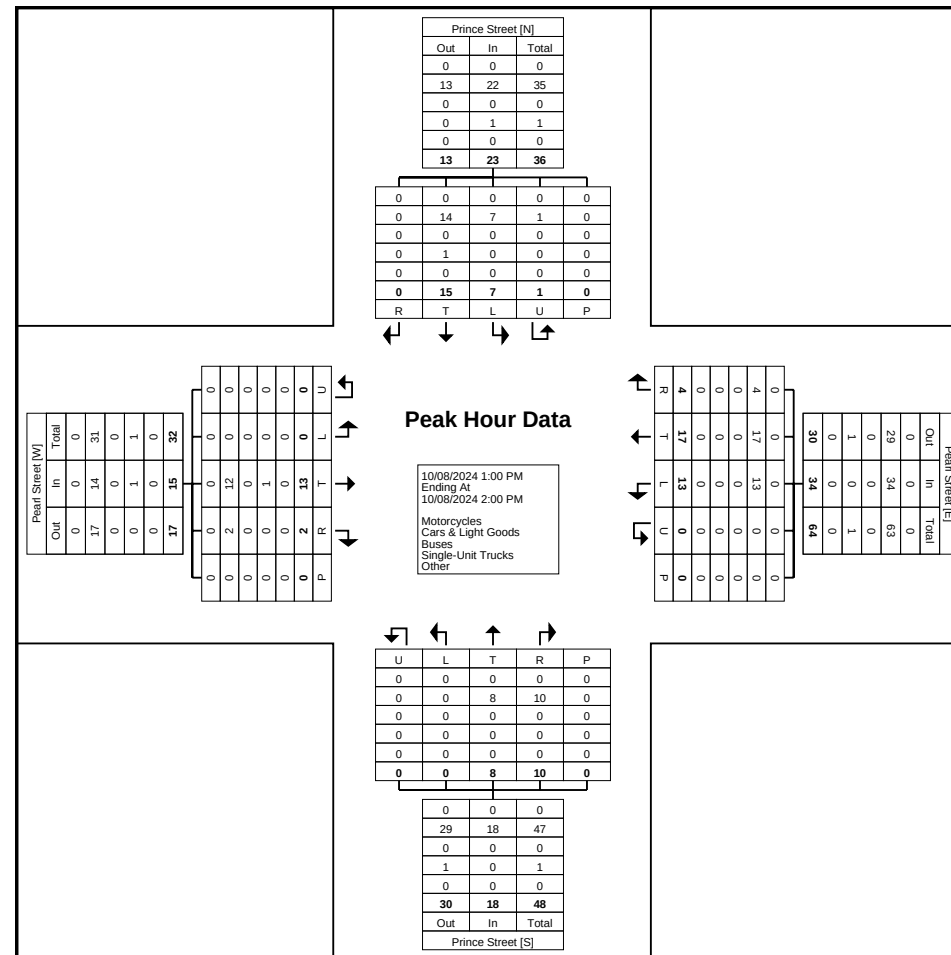




Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
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Count Name: Pearl Street & Prince Street
Site Code: 240515
Start Date: 10/08/2024
Page No: 7





Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@pts1.com

Count Name: Pearl Street & Prince Street
Site Code: 240515
Start Date: 10/08/2024
Page No: 8

Turning Movement Peak Hour Data (3:15 PM)

Start Time	Pearl Street Eastbound						Pearl Street Westbound						Prince Street Northbound						Prince Street Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
3:15 PM	0	9	1	0	0	10	6	7	2	0	2	15	1	5	9	0	2	15	0	2	0	0	2	2	42
3:30 PM	1	4	1	0	0	6	7	5	1	0	0	13	0	3	10	0	0	13	6	2	0	0	3	8	40
3:45 PM	2	2	0	0	0	4	6	5	1	0	1	12	0	6	3	0	17	9	0	3	0	0	0	3	28
4:00 PM	1	4	0	0	0	5	3	7	0	0	0	10	0	4	2	0	1	6	0	3	1	0	0	4	25
Total	4	19	2	0	0	25	22	24	4	0	3	50	1	18	24	0	20	43	6	10	1	0	5	17	135
Approach %	16.0	76.0	8.0	0.0	-	-	44.0	48.0	8.0	0.0	-	-	2.3	41.9	55.8	0.0	-	-	35.3	58.8	5.9	0.0	-	-	-
Total %	3.0	14.1	1.5	0.0	-	18.5	16.3	17.8	3.0	0.0	-	37.0	0.7	13.3	17.8	0.0	-	31.9	4.4	7.4	0.7	0.0	-	12.6	-
PHF	0.500	0.528	0.500	0.000	-	0.625	0.786	0.857	0.500	0.000	-	0.833	0.250	0.750	0.600	0.000	-	0.717	0.250	0.833	0.250	0.000	-	0.531	0.804
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	0	0	0	0	-	0	1
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	4.2	-	-	2.3	0.0	0.0	0.0	-	-	0.0	0.7
Cars & Light Goods	4	19	1	0	-	24	22	24	4	0	-	50	1	18	23	0	-	42	6	10	1	0	-	17	133
% Cars & Light Goods	100.0	100.0	50.0	-	-	96.0	100.0	100.0	100.0	-	-	100.0	100.0	100.0	95.8	-	-	97.7	100.0	100.0	100.0	-	-	100.0	98.5
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Single-Unit Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Single-Unit Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	1	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	50.0	-	-	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	0.7
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	33.3	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	20	-	-	-	-	-	5	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	66.7	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Turning Movement Peak Hour Data Plot (3:15 PM)

Appendix C

Base Year Traffic Operation Reports



Lanes, Volumes, Timings

101: Prince Street/Private Driveway & Main Street East

AM - Existing Year Traffic Volumes

(240415) 388 Main Street East TIS & PS

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱			↱			↱	
Traffic Volume (vph)	0	643	12	9	500	2	8	0	24	0	0	1
Future Volume (vph)	0	643	12	9	500	2	8	0	24	0	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997			0.999			0.899			0.865	
Flt Protected				0.950				0.988				
Satd. Flow (prot)	1900	1838	0	1805	1825	0	0	1688	0	0	1644	0
Flt Permitted				0.950				0.988				
Satd. Flow (perm)	1900	1838	0	1805	1825	0	0	1688	0	0	1644	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		52.0			98.6			94.0			40.6	
Travel Time (s)		3.7			7.1			6.8			2.9	
Confl. Peds. (#/hr)	18		12	12		18			11	11		
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	3%	8%	0%	4%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	722	13	10	562	2	9	0	27	0	0	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	735	0	10	564	0	0	36	0	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			0.0			0.0	
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		Yes			Yes							
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	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 51.9%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

101: Prince Street/Private Driveway & Main Street East

AM - Existing Year Traffic Volumes

(240415) 388 Main Street East TIS & PS

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱			↱			↱	
Traffic Volume (veh/h)	0	643	12	9	500	2	8	0	24	0	0	1
Future Volume (Veh/h)	0	643	12	9	500	2	8	0	24	0	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	0	722	13	10	562	2	9	0	27	0	0	1
Pedestrians				11				12			18	
Lane Width (m)				3.6				3.6			3.6	
Walking Speed (m/s)				1.2				1.2			1.2	
Percent Blockage				1				1			2	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh		2			2							
Upstream signal (m)				229								
pX, platoon unblocked	0.84						0.84	0.84		0.84	0.84	0.84
vC, conflicting volume	582			747			1324	1342	752	1361	1348	581
vC1, stage 1 conf vol							740	740		601	601	
vC2, stage 2 conf vol							583	602		760	747	
vCu, unblocked vol	413			747			1291	1313	752	1335	1320	411
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			97	100	93	100	100	100
cM capacity (veh/h)	962			862			331	333	406	299	328	536
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	0	735	10	564	36	1						
Volume Left	0	0	10	0	9	0						
Volume Right	0	13	0	2	27	1						
cSH	1700	1700	862	1700	384	536						
Volume to Capacity	0.00	0.43	0.01	0.33	0.09	0.00						
Queue Length 95th (m)	0.0	0.0	0.3	0.0	2.5	0.0						
Control Delay (s)	0.0	0.0	9.2	0.0	15.3	11.7						
Lane LOS			A		C	B						
Approach Delay (s)	0.0		0.2		15.3	11.7						
Approach LOS					C	B						
Intersection Summary												
Average Delay			0.5									
Intersection Capacity Utilization			51.9%		ICU Level of Service				A			
Analysis Period (min)			15									

Lanes, Volumes, Timings
102: Bruce Street & Main Street East

AM - Existing Year Traffic Volumes
(240415) 388 Main Street East TIS & PS

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	674	2	13	521	1	25
Future Volume (vph)	674	2	13	521	1	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt					0.870	
Flt Protected				0.999	0.998	
Satd. Flow (prot)	1863	0	0	1827	1650	0
Flt Permitted				0.999	0.998	
Satd. Flow (perm)	1863	0	0	1827	1650	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	98.6			35.5	41.7	
Travel Time (s)	7.1			2.6	3.0	
Confl. Peds. (#/hr)		12	12			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	0%	0%	4%	0%	0%
Adj. Flow (vph)	749	2	14	579	1	28
Shared Lane Traffic (%)						
Lane Group Flow (vph)	751	0	0	593	29	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane	Yes					
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	47.9%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
102: Bruce Street & Main Street East

AM - Existing Year Traffic Volumes
(240415) 388 Main Street East TIS & PS

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (veh/h)	674	2	13	521	1	25
Future Volume (Veh/h)	674	2	13	521	1	25
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	749	2	14	579	1	28
Pedestrians					12	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage (veh)	2					
Upstream signal (m)				130		
pX, platoon unblocked					0.83	
vC, conflicting volume			763		1369	762
vC1, stage 1 conf vol					762	
vC2, stage 2 conf vol					607	
vCu, unblocked vol			763		1342	762
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			98		100	93
cM capacity (veh/h)			850		367	404
Direction, Lane #						
Volume Total	751	593	29			
Volume Left	0	14	1			
Volume Right	2	0	28			
cSH	1700	850	403			
Volume to Capacity	0.44	0.02	0.07			
Queue Length 95th (m)	0.0	0.4	1.9			
Control Delay (s)	0.0	0.4	14.6			
Lane LOS		A	B			
Approach Delay (s)	0.0	0.4	14.6			
Approach LOS		B				
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			47.9%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
103: Ontario Street South & Main Street East

AM - Existing Year Traffic Volumes
(240415) 388 Main Street East TIS & PS

	↖	→	↘	↙	←	↖	↗	↘	↙	↖	↗	↘	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖		↖	↖		↖	↖	↖	↖	↖		
Traffic Volume (vph)	146	409	80	255	347	107	97	669	355	80	496	140	
Future Volume (vph)	146	409	80	255	347	107	97	669	355	80	496	140	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (m)	40.0		105.0	40.0		0.0	70.0		70.0	50.0		0.0	
Storage Lanes	1		1	1		0	1		1	1		0	
Taper Length (m)	7.5			7.5			7.5			7.5			
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	0.95	
Ped Bike Factor	0.99	1.00		1.00			0.99		0.98	1.00		1.00	
Frt		0.975			0.965				0.850		0.967		
Flt Protected	0.950			0.950			0.950			0.950			
Satd. Flow (prot)	1752	3422	0	1736	3283	0	1719	3471	1583	1641	3167	0	
Flt Permitted	0.356			0.278			0.296			0.277			
Satd. Flow (perm)	652	3422	0	506	3283	0	534	3471	1546	477	3167	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		21			38				386		34		
Link Speed (k/h)		50			50				50		50		
Link Distance (m)		94.8			102.2				95.4		91.4		
Travel Time (s)		6.8			7.4				6.9		6.6		
Confl. Peds. (#/hr)	14		9	9		14	9		10	10		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 (%)	3%	2%	5%	4%	4%	10%	5%	4%	2%	10%	11%	5%	
Adj. Flow (vph)	159	445	87	277	377	116	105	727	386	87	539	152	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	159	532	0	277	493	0	105	727	386	87	691	0	
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No	
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right	
Median Width(m)		3.6			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	25		15	25		15	25		15	
Number of Detectors	1	2		1	2		1	2	1	1	2		
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru		
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0		
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0		
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0		
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6		
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			9.4		
Detector 2 Size(m)		0.6			0.6			0.6			0.6		
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		

Lanes, Volumes, Timings
103: Ontario Street South & Main Street East

AM - Existing Year Traffic Volumes
(240415) 388 Main Street East TIS & PS

	↖	→	↘	↙	←	↖	↗	↘	↙	↖	↗	↘	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Turn Type	D.P+P	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		
Protected Phases	3	8		7	4		5	2		1	6		
Permitted Phases	4			4			2		2	6			
Detector Phase	3	8		7	4		5	2	2	1	6		
Switch Phase													
Minimum Initial (s)	5.0	15.0		5.0	15.0		5.0	15.0	15.0	5.0	15.0		
Minimum Split (s)	10.0	35.0		10.0	35.0		10.0	35.0	35.0	10.0	35.0		
Total Split (s)	16.0	41.0		16.0	41.0		12.0	41.0	41.0	12.0	41.0		
Total Split (%)	14.5%	37.3%		14.5%	37.3%		10.9%	37.3%	37.3%	10.9%	37.3%		
Maximum Green (s)	12.0	34.0		12.0	34.0		8.0	34.0	34.0	8.0	34.0		
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0		
All-Red Time (s)	0.0	3.0		0.0	3.0		0.0	3.0	3.0	0.0	3.0		
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	4.0	7.0		4.0	7.0		4.0	7.0	7.0	4.0	7.0		
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0		
Recall Mode	None	None		None	None		None	Max	Max	None	Max		
Walk Time (s)		7.0			7.0			7.0	7.0		7.0		
Flash Dont Walk (s)		21.0			21.0			21.0	21.0		21.0		
Pedestrian Calls (#/hr)		0			0			0	0		0		
Act Effect Green (s)	34.7	19.7		36.3	21.3		43.4	34.4	34.4	43.3	34.3		
Actuated g/C Ratio	0.37	0.21		0.39	0.23		0.47	0.37	0.37	0.46	0.37		
v/c Ratio	0.44	0.72		0.78	0.63		0.30	0.57	0.47	0.28	0.58		
Control Delay	22.2	39.2		37.9	34.6		15.7	27.0	4.8	15.6	26.2		
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0		
Total Delay	22.2	39.2		37.9	34.6		15.7	27.0	4.8	15.6	26.2		
LOS	C	D		D	C		B	C	A	B	C		
Approach Delay		35.3			35.8			19.0			25.0		
Approach LOS		D			D			B			C		

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 93.2

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 27.3

Intersection LOS: C

Intersection Capacity Utilization 77.6%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 103: Ontario Street South & Main Street East

↖	↖	↖	↖
12 s	41 s	16 s	41 s
↖	↖	↖	↖
12 s	41 s	16 s	41 s

Queues
103: Ontario Street South & Main Street East

AM - Existing Year Traffic Volumes
(240415) 388 Main Street East TIS & PS

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	159	532	277	493	105	727	386	87	691
v/c Ratio	0.44	0.72	0.78	0.63	0.30	0.57	0.47	0.28	0.58
Control Delay	22.2	39.2	37.9	34.6	15.7	27.0	4.8	15.6	26.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.2	39.2	37.9	34.6	15.7	27.0	4.8	15.6	26.2
Queue Length 50th (m)	19.8	49.3	37.4	43.0	10.0	59.4	0.0	8.2	54.0
Queue Length 95th (m)	33.7	67.2	#64.1	60.7	21.7	87.1	20.3	18.6	81.1
Internal Link Dist (m)		70.8		78.2		71.4			67.4
Turn Bay Length (m)	40.0		40.0		70.0		70.0	50.0	
Base Capacity (vph)	396	1271	356	1231	352	1279	813	323	1186
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.42	0.78	0.40	0.30	0.57	0.47	0.27	0.58

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
103: Ontario Street South & Main Street East

AM - Existing Year Traffic Volumes
(240415) 388 Main Street East TIS & PS

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SEB
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SEB
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (vph)	146	409	80	255	347	107	97	669	355	80	496	140
Future Volume (vph)	146	409	80	255	347	107	97	669	355	80	496	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.0		4.0	7.0		4.0	7.0	7.0	4.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.96		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1749	3424		1734	3284		1718	3471	1549	1640	3168	
Flt Permitted	0.36	1.00		0.28	1.00		0.30	1.00	1.00	0.28	1.00	
Satd. Flow (perm)	655	3424		507	3284		535	3471	1549	478	3168	
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)	159	445	87	277	377	116	105	727	386	87	539	152
RTOR Reduction (vph)	0	17	0	0	29	0	0	0	245	0	22	0
Lane Group Flow (vph)	159	515	0	277	464	0	105	727	141	87	669	0
Confl. Peds. (#/hr)	14		9	9		14	9		10	10		9
Heavy Vehicles (%)	3%	2%	5%	4%	4%	10%	5%	4%	2%	10%	11%	5%
Turn Type	D.P+P	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	4			4			2		2	6		
Actuated Green, G (s)	31.6	19.7		33.2	21.3		40.5	34.4	34.4	40.3	34.3	
Effective Green, g (s)	31.6	19.7		33.2	21.3		40.5	34.4	34.4	40.3	34.3	
Actuated g/C Ratio	0.34	0.21		0.35	0.23		0.43	0.37	0.37	0.43	0.36	
Clearance Time (s)	4.0	7.0		4.0	7.0		4.0	7.0	7.0	4.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	340	717		334	744		307	1270	566	279	1155	
v/s Ratio Prot	0.05	0.15		c0.10	0.14		c0.02	0.21		0.02	c0.21	
v/s Ratio Perm	0.11			c0.19			0.13		0.09	0.11		
v/c Ratio	0.47	0.72		0.83	0.62		0.34	0.57	0.25	0.31	0.58	
Uniform Delay, d1	23.0	34.6		23.9	32.7		16.6	23.9	20.8	16.7	24.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.0	3.5		15.5	1.6		0.7	1.9	1.1	0.6	2.1	
Delay (s)	24.0	38.0		39.5	34.4		17.3	25.8	21.8	17.3	26.2	
Level of Service	C	D		D	C		B	C	C	B	C	
Approach Delay (s)		34.8			36.2			23.8			25.2	
Approach LOS		C			D			C			C	

Intersection Summary

HCM 2000 Control Delay	29.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	94.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	77.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
104: Ontario Street South & Pearl Street

AM - Existing Year Traffic Volumes
(240415) 388 Main Street East TIS & PS

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	2	37	44	1126	829	22
Future Volume (vph)	2	37	44	1126	829	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	20.0			0.0
Storage Lanes	1	0	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor						
Frt	0.871				0.996	
Frt Protected	0.998		0.950			
Satd. Flow (prot)	1652	0	1805	3471	3332	0
Frt Permitted	0.998		0.950			
Satd. Flow (perm)	1652	0	1805	3471	3332	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	125.8			99.0	95.4	
Travel Time (s)	9.1			7.1	6.9	
Confl. Peds. (#/hr)			4			4
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	4%	8%	5%
Adj. Flow (vph)	2	41	48	1237	911	24
Shared Lane Traffic (%)						
Lane Group Flow (vph)	43	0	48	1237	935	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
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)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 41.1%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
104: Ontario Street South & Pearl Street

AM - Existing Year Traffic Volumes
(240415) 388 Main Street East TIS & PS

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	2	37	44	1126	829	22
Future Volume (Veh/h)	2	37	44	1126	829	22
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	2	41	48	1237	911	24
Pedestrians	4					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)					95	
pX, platoon unblocked	0.86	0.86	0.86			
vC, conflicting volume	1642	472	939			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1413	46	592			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	95	94			
cM capacity (veh/h)	106	871	848			
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	43	48	618	618	607	328
Volume Left	2	48	0	0	0	0
Volume Right	41	0	0	0	0	24
cSH	651	848	1700	1700	1700	1700
Volume to Capacity	0.07	0.06	0.36	0.36	0.36	0.19
Queue Length 95th (m)	1.7	1.4	0.0	0.0	0.0	0.0
Control Delay (s)	10.9	9.5	0.0	0.0	0.0	0.0
Lane LOS	B	A				
Approach Delay (s)	10.9	0.4			0.0	
Approach LOS	B					
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			41.1%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
105: Pearl Street & Bruce Street

AM - Existing Year Traffic Volumes
(240415) 388 Main Street East TIS & PS

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Volume (vph)	26	33	54	5	4	8
Future Volume (vph)	26	33	54	5	4	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.988		0.912	
Flt Protected		0.978			0.983	
Satd. Flow (prot)	0	1858	1843	0	1703	0
Flt Permitted		0.978			0.983	
Satd. Flow (perm)	0	1858	1843	0	1703	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		49.0	125.8		50.0	
Travel Time (s)		3.5	9.1		3.6	
Confl. Peds. (#/hr)					1	3
Peak Hour Factor	0.46	0.46	0.46	0.46	0.46	0.46
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%
Adj. Flow (vph)	57	72	117	11	9	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	129	128	0	26	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
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)	25			15	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 20.8%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
105: Pearl Street & Bruce Street

AM - Existing Year Traffic Volumes
(240415) 388 Main Street East TIS & PS

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Volume (veh/h)	26	33	54	5	4	8
Future Volume (Veh/h)	26	33	54	5	4	8
Sign Control	Free	Free	Free	Free	Stop	Stop
Grade	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.46	0.46	0.46	0.46	0.46	0.46
Hourly flow rate (vph)	57	72	117	11	9	17
Pedestrians		3	1			
Lane Width (m)		3.6	3.6			
Walking Speed (m/s)		1.2	1.2			
Percent Blockage		0	0			
Right turn flare (veh)						
Median type	None	None				
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	128				310	126
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	128				310	126
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				99	98
cM capacity (veh/h)	1470				660	928
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	129	128	26			
Volume Left	57	0	9			
Volume Right	0	11	17			
cSH	1470	1700	814			
Volume to Capacity	0.04	0.08	0.03			
Queue Length 95th (m)	1.0	0.0	0.8			
Control Delay (s)	3.5	0.0	9.6			
Lane LOS	A		A			
Approach Delay (s)	3.5	0.0	9.6			
Approach LOS			A			
Intersection Summary						
Average Delay		2.5				
Intersection Capacity Utilization		20.8%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings
106: Prince Street & Pearl Street

AM - Existing Year Traffic Volumes
(240415) 388 Main Street East TIS & PS

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	2	14	1	6	17	6	2	25	19	8	14	1
Future Volume (vph)	2	14	1	6	17	6	2	25	19	8	14	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.994			0.972			0.944			0.996	
Flt Protected		0.994			0.990			0.998			0.982	
Satd. Flow (prot)	0	1877	0	0	1767	0	0	1790	0	0	1804	0
Flt Permitted		0.994			0.990			0.998			0.982	
Satd. Flow (perm)	0	1877	0	0	1767	0	0	1790	0	0	1804	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		56.3			48.9			56.6			94.0	
Travel Time (s)		4.1			3.5			4.1			6.8	
Confl. Peds. (#/hr)	1		7	7		1	5					5
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Heavy Vehicles (%)	0%	0%	0%	0%	6%	0%	0%	0%	0%	0%	0%	100%
Adj. Flow (vph)	3	20	1	9	25	9	3	36	28	12	20	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	24	0	0	43	0	0	67	0	0	33	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		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	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization 17.9%	ICU Level of Service A											
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis
106: Prince Street & Pearl Street

AM - Existing Year Traffic Volumes
(240415) 388 Main Street East TIS & PS

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	2	14	1	6	17	6	2	25	19	8	14	1	
Future Volume (Veh/h)	2	14	1	6	17	6	2	25	19	8	14	1	
Sign Control	Free			Free			Stop			Stop			
Grade	0%			0%			0%			0%			
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	
Hourly flow rate (vph)	3	20	1	9	25	9	3	36	28	12	20	1	
Pedestrians	5			7			1			1			
Lane Width (m)	3.6			3.6			3.6			3.6			
Walking Speed (m/s)	1.2			1.2			1.2			1.2			
Percent Blockage	0			1			0						
Right turn flare (veh)													
Median type	None			None									
Median storage (veh)													
Upstream signal (m)													
pX, platoon unblocked													
vC, conflicting volume	35	28			97			86	28	121	82	36	
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	35	28			97			86	28	121	82	36	
tC, single (s)	4.1	4.1			7.1			6.5	6.2	7.1	6.5	7.2	
tC, 2 stage (s)													
tF (s)	2.2	2.2			3.5			4.0	3.3	3.5	4.0	4.2	
p0 queue free %	100	99			100			95	97	98	98	100	
cM capacity (veh/h)	1588	1589			854			796	1047	798	800	811	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1									
Volume Total	24	43	67	33									
Volume Left	3	9	3	12									
Volume Right	1	9	28	1									
cSH	1588	1589	888	799									
Volume to Capacity	0.00	0.01	0.08	0.04									
Queue Length 95th (m)	0.0	0.1	2.0	1.0									
Control Delay (s)	0.9	1.6	9.4	9.7									
Lane LOS	A	A	A	A									
Approach Delay (s)	0.9	1.6	9.4	9.7									
Approach LOS			A	A									
Intersection Summary													
Average Delay	6.2												
Intersection Capacity Utilization	17.9%			ICU Level of Service			A						
Analysis Period (min)	15												

Lanes, Volumes, Timings

101: Prince Street/Private Driveway & Main Street East

PM - Existing Year Traffic Volumes

(240415) 388 Main Street East TIS & PS

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	7	736	7	23	855	6	3	0	21	3	1	10	
Future Volume (vph)	7	736	7	23	855	6	3	0	21	3	1	10	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (m)	30.0		0.0	30.0		0.0	0.0		0.0	0.0		0.0	
Storage Lanes	1		0	1		0	0		0	0		0	
Taper Length (m)	7.5			7.5			7.5			7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor													
Frt		0.999			0.999			0.881			0.901		
Flt Protected	0.950			0.950				0.994			0.990		
Satd. Flow (prot)	1583	1898	0	1805	1877	0	0	1664	0	0	1579	0	
Flt Permitted	0.950			0.950				0.994			0.990		
Satd. Flow (perm)	1583	1898	0	1805	1877	0	0	1664	0	0	1579	0	
Link Speed (k/h)		50			50			50			50		
Link Distance (m)		52.0			98.6			55.2			40.6		
Travel Time (s)		3.7			7.1			4.0			2.9		
Confl. Peds. (#/hr)	11		21	21		11			9	9			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	
Heavy Vehicles (%)	14%	0%	1%	0%	1%	17%	0%	0%	0%	0%	0%	10%	
Adj. Flow (vph)	7	783	7	24	910	6	3	0	22	3	1	11	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	7	790	0	24	916	0	0	25	0	0	15	0	
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No	
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right	
Median Width(m)		3.6			3.6			0.0			0.0		
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		Yes			Yes								
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	25		15	25		15	25		15	
Sign Control		Free			Free			Stop			Stop		
Intersection Summary													
Area Type:	Other												
Control Type:	Unsignalized												
Intersection Capacity Utilization	58.0%												
Analysis Period (min)	15												
ICU Level of Service B													

HCM Unsignalized Intersection Capacity Analysis

101: Prince Street/Private Driveway & Main Street East

PM - Existing Year Traffic Volumes

(240415) 388 Main Street East TIS & PS

														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations														
Traffic Volume (veh/h)	7	736	7	23	855	6	3	0	21	3	1	10		
Future Volume (Veh/h)	7	736	7	23	855	6	3	0	21	3	1	10		
Sign Control	Free			Free			Stop			Stop				
Grade	0%			0%			0%			0%				
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94		
Hourly flow rate (vph)	7	783	7	24	910	6	3	0	22	3	1	11		
Pedestrians				9			21			11				
Lane Width (m)				3.6			3.6			3.6				
Walking Speed (m/s)				1.2			1.2			1.2				
Percent Blockage				1			2			1				
Right turn flare (veh)														
Median type	TWLTL			TWLTL										
Median storage veh	2			2										
Upstream signal (m)				229										
pX, platoon unblocked	0.70							0.70	0.70	0.70	0.70	0.70		
vC, conflicting volume	927				811				1791	1796	816	1800	1797	
vC1, stage 1 conf vol										822	822	972	972	
vC2, stage 2 conf vol										970	975	828	825	
vCu, unblocked vol	678				811				1917	1925	816	1930	1926	
tC, single (s)	4.2				4.1				7.1	6.5	6.2	7.1	6.5	
tC, 2 stage (s)										6.1	5.5	6.1	5.5	
tF (s)	2.3				2.2				3.5	4.0	3.3	3.5	4.0	
p0 queue free %	99				97				99	100	94	99	100	
cM capacity (veh/h)	594				810				205	220	370	201	219	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1								
Volume Total	7	790	24	916	25	15								
Volume Left	7	0	24	0	3	3								
Volume Right	0	7	0	6	22	11								
cSH	594	1700	810	1700	338	270								
Volume to Capacity	0.01	0.46	0.03	0.54	0.07	0.06								
Queue Length 95th (m)	0.3	0.0	0.7	0.0	1.9	1.4								
Control Delay (s)	11.1	0.0	9.6	0.0	16.5	19.1								
Lane LOS	B	A		C		C								
Approach Delay (s)	0.1	0.2		16.5		19.1								
Approach LOS			C		C	C								
Intersection Summary														
Average Delay	0.6													
Intersection Capacity Utilization	58.0%													
Analysis Period (min)	15													
ICU Level of Service														
B														

Lanes, Volumes, Timings
102: Bruce Street & Main Street East

PM - Existing Year Traffic Volumes
(240415) 388 Main Street East TIS & PS

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	740	20	43	875	8	30
Future Volume (vph)	740	20	43	875	8	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.996				0.892	
Flt Protected				0.998	0.990	
Satd. Flow (prot)	1874	0	0	1878	1678	0
Flt Permitted				0.998	0.990	
Satd. Flow (perm)	1874	0	0	1878	1678	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	98.6			35.5	41.7	
Travel Time (s)	7.1			2.6	3.0	
Confl. Peds. (#/hr)		20	20			1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	0%	0%	1%	0%	0%
Adj. Flow (vph)	779	21	45	921	8	32
Shared Lane Traffic (%)						
Lane Group Flow (vph)	800	0	0	966	40	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane	Yes					
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	91.4%			ICU Level of Service F		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
102: Bruce Street & Main Street East

PM - Existing Year Traffic Volumes
(240415) 388 Main Street East TIS & PS

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (veh/h)	740	20	43	875	8	30
Future Volume (Veh/h)	740	20	43	875	8	30
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	779	21	45	921	8	32
Pedestrians				1	20	
Lane Width (m)				3.6	3.6	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	2	
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage (veh)	2					
Upstream signal (m)				130		
pX, platoon unblocked					0.67	
vC, conflicting volume			820		1820	810
vC1, stage 1 conf vol					810	
vC2, stage 2 conf vol					1011	
vCu, unblocked vol			820		1979	810
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			94		97	91
cM capacity (veh/h)			804		236	376
Direction, Lane #						
	EB 1	WB 1	NB 1			
Volume Total	800	966	40			
Volume Left	0	45	8			
Volume Right	21	0	32			
cSH	1700	804	336			
Volume to Capacity	0.47	0.06	0.12			
Queue Length 95th (m)	0.0	1.4	3.2			
Control Delay (s)	0.0	1.6	17.1			
Lane LOS		A	C			
Approach Delay (s)	0.0	1.6	17.1			
Approach LOS		C				
Intersection Summary						
Average Delay			1.2			
Intersection Capacity Utilization		91.4%		ICU Level of Service	F	
Analysis Period (min)		15				

Lanes, Volumes, Timings

103: Ontario Street South & Main Street East

PM - Existing Year Traffic Volumes

(240415) 388 Main Street East TIS & PS

	↖	→	↘	↙	←	↖	↗	↘	↙	↖	↗	↘	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖		↖	↖		↖	↖	↖	↖	↖	↖	
Traffic Volume (vph)	147	481	162	281	680	167	148	539	259	119	620	133	
Future Volume (vph)	147	481	162	281	680	167	148	539	259	119	620	133	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (m)	40.0		105.0	40.0		0.0	70.0		70.0	50.0		0.0	
Storage Lanes	1		1	1		0	1		1	1		0	
Taper Length (m)	7.5			7.5			7.5			7.5			
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	0.95	
Ped Bike Factor	1.00	0.99		1.00	0.99		1.00	0.99		0.97	0.99	1.00	
Frt		0.962			0.970			0.850			0.973		
Flt Protected	0.950			0.950			0.950			0.950			
Satd. Flow (prot)	1805	3412	0	1770	3426	0	1787	3438	1553	1752	3434	0	
Flt Permitted	0.132			0.222			0.208			0.357			
Satd. Flow (perm)	250	3412	0	412	3426	0	391	3438	1502	653	3434	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		44			28				270		24		
Link Speed (k/h)		50			50				50		50		
Link Distance (m)		94.8			102.2				95.4		91.4		
Travel Time (s)		6.8			7.4				6.9		6.6		
Confl. Peds. (#/hr)	16		7	7		16	3		18	18		3	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	
Heavy Vehicles (%)	0%	1%	2%	2%	1%	4%	1%	5%	4%	3%	2%	2%	
Adj. Flow (vph)	153	501	169	293	708	174	154	561	270	124	646	139	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	153	670	0	293	882	0	154	561	270	124	785	0	
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No	
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right	
Median Width(m)		3.6			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	25		15	25		15	25		15	
Number of Detectors	1	2		1	2		1	2		1	2		
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru		
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0		
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0		
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0		
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6		
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			9.4		
Detector 2 Size(m)		0.6			0.6			0.6			0.6		
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		

Lanes, Volumes, Timings

103: Ontario Street South & Main Street East

PM - Existing Year Traffic Volumes

(240415) 388 Main Street East TIS & PS

	↖	→	↘	↙	←	↖	↗	↘	↙	↖	↗	↘	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Turn Type	D.P+P	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		
Protected Phases	3	8		7	4		5	2		1	6		
Permitted Phases	4			4			2		2	6			
Detector Phase	3	8		7	4		5	2	2	1	6		
Switch Phase													
Minimum Initial (s)	5.0	15.0		5.0	15.0		5.0	15.0	15.0	5.0	15.0		
Minimum Split (s)	10.0	35.0		10.0	35.0		10.0	35.0	35.0	10.0	35.0		
Total Split (s)	16.0	41.0		16.0	41.0		12.0	41.0	41.0	12.0	41.0		
Total Split (%)	14.5%	37.3%		14.5%	37.3%		10.9%	37.3%	37.3%	10.9%	37.3%		
Maximum Green (s)	12.0	34.0		12.0	34.0		8.0	34.0	34.0	8.0	34.0		
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0		
All-Red Time (s)	0.0	3.0		0.0	3.0		0.0	3.0	3.0	0.0	3.0		
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	4.0	7.0		4.0	7.0		4.0	7.0	7.0	4.0	7.0		
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0		
Recall Mode	None	None		None	None		None	Max	Max	None	Max		
Walk Time (s)		7.0			7.0			7.0	7.0		7.0		
Flash Dont Walk (s)		21.0			21.0			21.0	21.0		21.0		
Pedestrian Calls (#/hr)		0			0			0	0		0		
Act Effect Green (s)	43.5	28.4		45.1	30.2		45.1	34.3	34.3	44.9	34.1		
Actuated g/C Ratio	0.42	0.27		0.43	0.29		0.43	0.33	0.33	0.43	0.33		
v/c Ratio	0.60	0.70		0.88	0.87		0.56	0.50	0.40	0.34	0.69		
Control Delay	27.9	35.8		48.2	44.8		26.5	31.1	5.4	20.1	34.3		
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0		
Total Delay	27.9	35.8		48.2	44.8		26.5	31.1	5.4	20.1	34.3		
LOS	C	D		D	D		C	C	A	C	C		
Approach Delay		34.4			45.7			23.3			32.4		
Approach LOS		C			D			C			C		

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 104.5

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 34.5

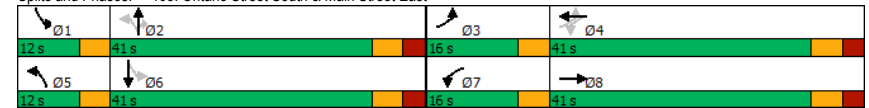
Intersection LOS: C

Intersection Capacity Utilization 85.1%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 103: Ontario Street South & Main Street East



Queues
103: Ontario Street South & Main Street East

PM - Existing Year Traffic Volumes
(240415) 388 Main Street East TIS & PS

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	153	670	293	882	154	561	270	124	785
v/c Ratio	0.60	0.70	0.88	0.87	0.56	0.50	0.40	0.34	0.69
Control Delay	27.9	35.8	48.2	44.8	26.5	31.1	5.4	20.1	34.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.9	35.8	48.2	44.8	26.5	31.1	5.4	20.1	34.3
Queue Length 50th (m)	19.0	63.4	39.8	92.1	19.6	52.7	0.0	15.5	77.4
Queue Length 95th (m)	33.2	83.6	#80.2	119.5	34.6	72.7	19.0	28.5	103.6
Internal Link Dist (m)		70.8		78.2		71.4			67.4
Turn Bay Length (m)	40.0		40.0		70.0		70.0	50.0	
Base Capacity (vph)	287	1144	334	1137	276	1127	673	366	1137
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.59	0.88	0.78	0.56	0.50	0.40	0.34	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
103: Ontario Street South & Main Street East

PM - Existing Year Traffic Volumes
(240415) 388 Main Street East TIS & PS

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (vph)	147	481	162	281	680	167	148	539	259	119	620	133
Future Volume (vph)	147	481	162	281	680	167	148	539	259	119	620	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.0		4.0	7.0		4.0	7.0	7.0	4.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	0.97		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1804	3413		1769	3428		1787	3438	1504	1748	3436	
Flt Permitted	0.13	1.00		0.22	1.00		0.21	1.00	1.00	0.36	1.00	
Satd. Flow (perm)	252	3413		413	3428		392	3438	1504	656	3436	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	153	501	169	293	708	174	154	561	270	124	646	139
RTOR Reduction (vph)	0	32	0	0	20	0	0	0	181	0	16	0
Lane Group Flow (vph)	153	638	0	293	862	0	154	561	89	124	769	0
Confl. Peds. (#/hr)	16		7	7		16	3		18	18		3
Heavy Vehicles (%)	0%	1%	2%	2%	1%	4%	1%	5%	4%	3%	2%	2%
Turn Type	D.P+P	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	4			4			2		2	6		
Actuated Green, G (s)	40.4	28.4		42.2	30.2		42.2	34.3	34.3	41.8	34.1	
Effective Green, g (s)	40.4	28.4		42.2	30.2		42.2	34.3	34.3	41.8	34.1	
Actuated g/C Ratio	0.39	0.27		0.40	0.29		0.40	0.33	0.33	0.40	0.33	
Clearance Time (s)	4.0	7.0		4.0	7.0		4.0	7.0	7.0	4.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	249	928		322	991		264	1129	494	343	1122	
v/s Ratio Prot	0.06	0.19		c0.10	0.25		c0.04	0.16		0.03	c0.22	
v/s Ratio Perm	0.18			c0.26			0.19		0.06	0.12		
v/c Ratio	0.61	0.69		0.91	0.87		0.58	0.50	0.18	0.36	0.69	
Uniform Delay, d1	23.6	34.0		24.0	35.2		21.5	28.1	25.0	20.4	30.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.4	2.1		28.0	8.3		3.3	1.6	0.8	0.7	3.4	
Delay (s)	28.1	36.2		52.0	43.5		24.8	29.7	25.8	21.1	33.9	
Level of Service	C	D		D	D		C	C	C	C	C	
Approach Delay (s)		34.7			45.6			27.9			32.2	
Approach LOS		C			D			C			C	

Intersection Summary

HCM 2000 Control Delay	35.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	104.4	Sum of lost time (s)	22.0
Intersection Capacity Utilization	85.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
104: Ontario Street South & Pearl Street

PM - Existing Year Traffic Volumes
(240415) 388 Main Street East TIS & PS

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				 	 	
Traffic Volume (vph)	5	45	40	1006	1061	11
Future Volume (vph)	5	45	40	1006	1061	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	20.0			0.0
Storage Lanes	1	0	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor						
Frt	0.878				0.999	
Flt Protected	0.995		0.950			
Satd. Flow (prot)	1660	0	1752	3471	3571	0
Flt Permitted	0.995		0.950			
Satd. Flow (perm)	1660	0	1752	3471	3571	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	125.8			99.0	95.4	
Travel Time (s)	9.1			7.1	6.9	
Confl. Peds. (#/hr)			6			6
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	3%	4%	1%	0%
Adj. Flow (vph)	5	46	41	1037	1094	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	51	0	41	1037	1105	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
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)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	43.2%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
104: Ontario Street South & Pearl Street

PM - Existing Year Traffic Volumes
(240415) 388 Main Street East TIS & PS

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	5	45	40	1006	1061	11
Future Volume (Veh/h)	5	45	40	1006	1061	11
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	5	46	41	1037	1094	11
Pedestrians	6					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)					95	
pX, platoon unblocked	0.82	0.82	0.82			
vC, conflicting volume	1706	558	1111			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1416	11	688			
tC, single (s)	6.8	6.9	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	95	94			
cM capacity (veh/h)	100	872	728			
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	51	41	518	518	729	376
Volume Left	5	41	0	0	0	0
Volume Right	46	0	0	0	0	11
cSH	497	728	1700	1700	1700	1700
Volume to Capacity	0.10	0.06	0.30	0.30	0.43	0.22
Queue Length 95th (m)	2.7	1.4	0.0	0.0	0.0	0.0
Control Delay (s)	13.1	10.2	0.0	0.0	0.0	0.0
Lane LOS	B	B				
Approach Delay (s)	13.1	0.4			0.0	
Approach LOS	B					
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			43.2%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
105: Pearl Street & Bruce Street

PM - Existing Year Traffic Volumes
(240415) 388 Main Street East TIS & PS

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	34	44	32	16	8	22
Future Volume (vph)	34	44	32	16	8	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.955		0.901	
Flt Protected		0.979			0.987	
Satd. Flow (prot)	0	1860	1779	0	1690	0
Flt Permitted		0.979			0.987	
Satd. Flow (perm)	0	1860	1779	0	1690	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		49.0	125.8		50.0	
Travel Time (s)		3.5	9.1		3.6	
Confl. Peds. (#/hr)	5			5		1
Peak Hour Factor	0.66	0.66	0.66	0.66	0.66	0.66
Heavy Vehicles (%)	0%	0%	3%	0%	0%	0%
Adj. Flow (vph)	52	67	48	24	12	33
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	119	72	0	45	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
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)	25			15	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	21.2%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
105: Pearl Street & Bruce Street

PM - Existing Year Traffic Volumes
(240415) 388 Main Street East TIS & PS

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	34	44	32	16	8	22
Future Volume (Veh/h)	34	44	32	16	8	22
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.66	0.66	0.66	0.66	0.66	0.66
Hourly flow rate (vph)	52	67	48	24	12	33
Pedestrians		1			5	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	77				236	66
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	77				236	66
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				98	97
cM capacity (veh/h)	1528				728	998
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	119	72	45			
Volume Left	52	0	12			
Volume Right	0	24	33			
cSH	1528	1700	908			
Volume to Capacity	0.03	0.04	0.05			
Queue Length 95th (m)	0.8	0.0	1.2			
Control Delay (s)	3.4	0.0	9.2			
Lane LOS	A		A			
Approach Delay (s)	3.4	0.0	9.2			
Approach LOS			A			
Intersection Summary						
Average Delay				3.5		
Intersection Capacity Utilization	21.2%			ICU Level of Service	A	
Analysis Period (min)	15					

Lanes, Volumes, Timings
106: Prince Street & Pearl Street

PM - Existing Year Traffic Volumes
(240415) 388 Main Street East TIS & PS

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	19	2	22	24	4	1	18	24	6	10	1
Future Volume (vph)	4	19	2	22	24	4	1	18	24	6	10	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.987			0.989			0.925			0.994	
Flt Protected		0.992			0.978			0.999			0.982	
Satd. Flow (prot)	0	1860	0	0	1838	0	0	1756	0	0	1855	0
Flt Permitted		0.992			0.978			0.999			0.982	
Satd. Flow (perm)	0	1860	0	0	1838	0	0	1756	0	0	1855	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		56.3			48.9			56.6			38.8	
Travel Time (s)		4.1			3.5			4.1			2.8	
Confl. Peds. (#/hr)	5		20	20		5			3	3		
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	5	24	3	28	30	5	1	23	30	8	13	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	32	0	0	63	0	0	54	0	0	22	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		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	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	19.2%				ICU Level of Service A							
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
106: Prince Street & Pearl Street

PM - Existing Year Traffic Volumes
(240415) 388 Main Street East TIS & PS

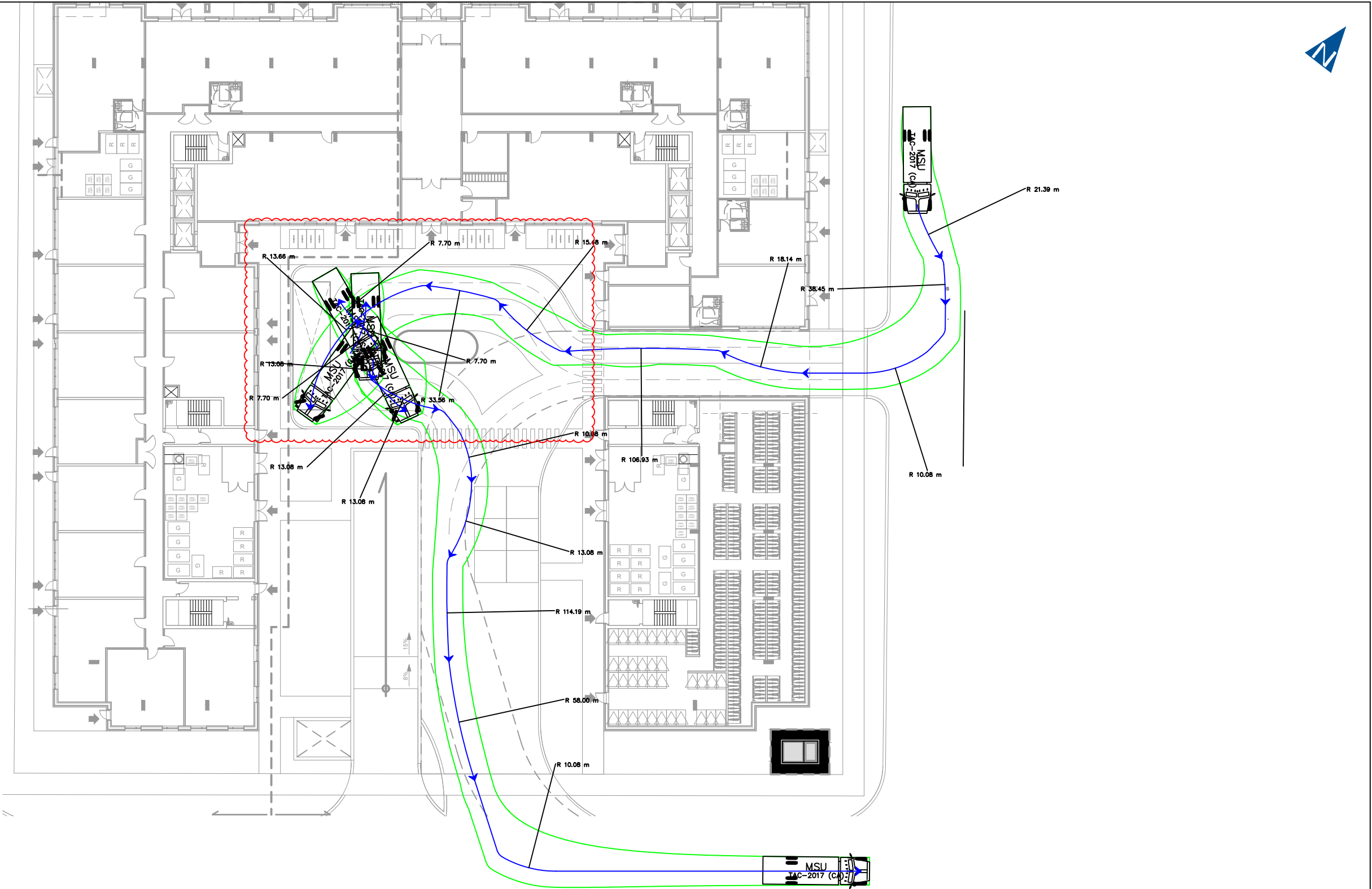
														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations														
Traffic Volume (veh/h)	4	19	2	22	24	4	1	18	24	6	10	1		
Future Volume (Veh/h)	4	19	2	22	24	4	1	18	24	6	10	1		
Sign Control	Free				Free				Stop					
Grade	0%				0%				0%					
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80		
Hourly flow rate (vph)	5	24	2	28	30	5	1	22	30	8	12	1		
Pedestrians					3				20					
Lane Width (m)					3.6				3.6					
Walking Speed (m/s)					1.2				1.2					
Percent Blockage					0				2					
Right turn flare (veh)														
Median type	None				None									
Median storage (veh)														
Upstream signal (m)														
pX, platoon unblocked														
vC, conflicting volume	40				46				150	151	48	172	150	38
vC1, stage 1 conf vol														
vC2, stage 2 conf vol														
vCu, unblocked vol	40				46				150	151	48	172	150	38
tC, single (s)	4.1				4.1				7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)														
tF (s)	2.2				2.2				3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100				98				100	97	97	99	98	100
cM capacity (veh/h)	1576				1549				772	713	1007	725	715	1036
Direction, Lane #	EB 1	WB 1	NB 1	SB 1										
Volume Total	31	63	53	21										
Volume Left	5	28	1	8										
Volume Right	2	5	30	1										
cSH	1576	1549	856	729										
Volume to Capacity	0.00	0.02	0.06	0.03										
Queue Length 95th (m)	0.1	0.4	1.6	0.7										
Control Delay (s)	1.2	3.4	9.5	10.1										
Lane LOS	A	A	A	B										
Approach Delay (s)	1.2	3.4	9.5	10.1										
Approach LOS					A				B					
Intersection Summary														
Average Delay					5.7									
Intersection Capacity Utilization					19.2%				ICU Level of Service A					
Analysis Period (min)					15									

Appendix D

AutoTURN Analysis



THIS AUTOTURN SWEEP PATH ANALYSIS HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.



NO.	DATE	INITIAL	REVISION DETAIL

DESIGN VEHICLE:

MSU

meters

Width : 2.60
Track : 2.60
Lock to Lock Time : 6.0
Steering Angle : 40.2

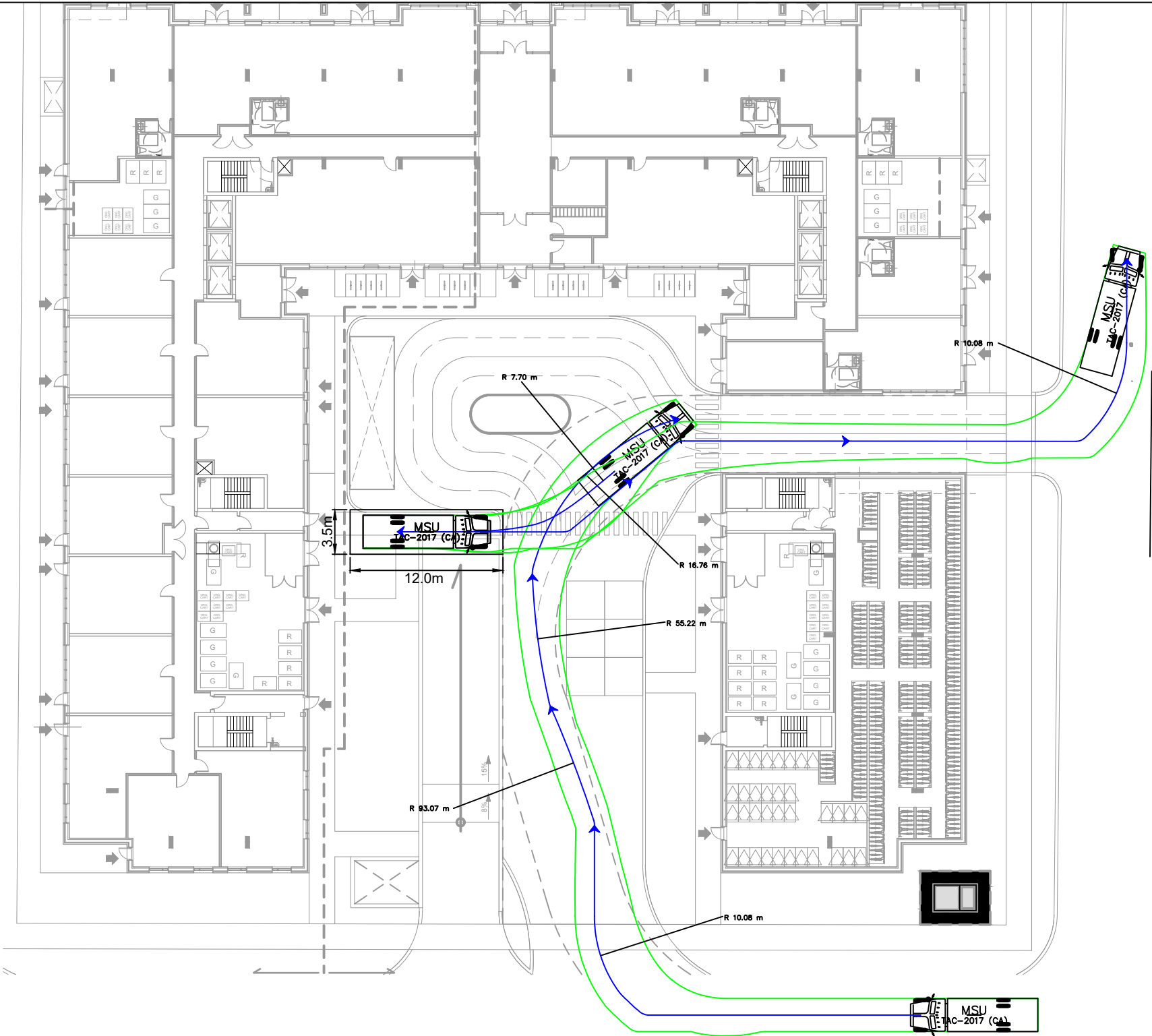
AUTOTURN ASSESSMENT

388 MAIN STREET

TOWN OF MILTON

PROJECT NO.: 240515	DATE: DEC 2024	SCALE: 1:400	DRAWING NO.: 01
DESIGN: LC	DRAWN: LC	CHECK: AMa	

THIS AUTOTURN SWEEP PATH ANALYSIS HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.



NO.	DATE	INITIAL	REVISION DETAIL

DESIGN VEHICLE:

MSU

Width : 2.60
Track : 2.60
Lock to Lock Time : 6.0
Steering Angle : 40.2

meters

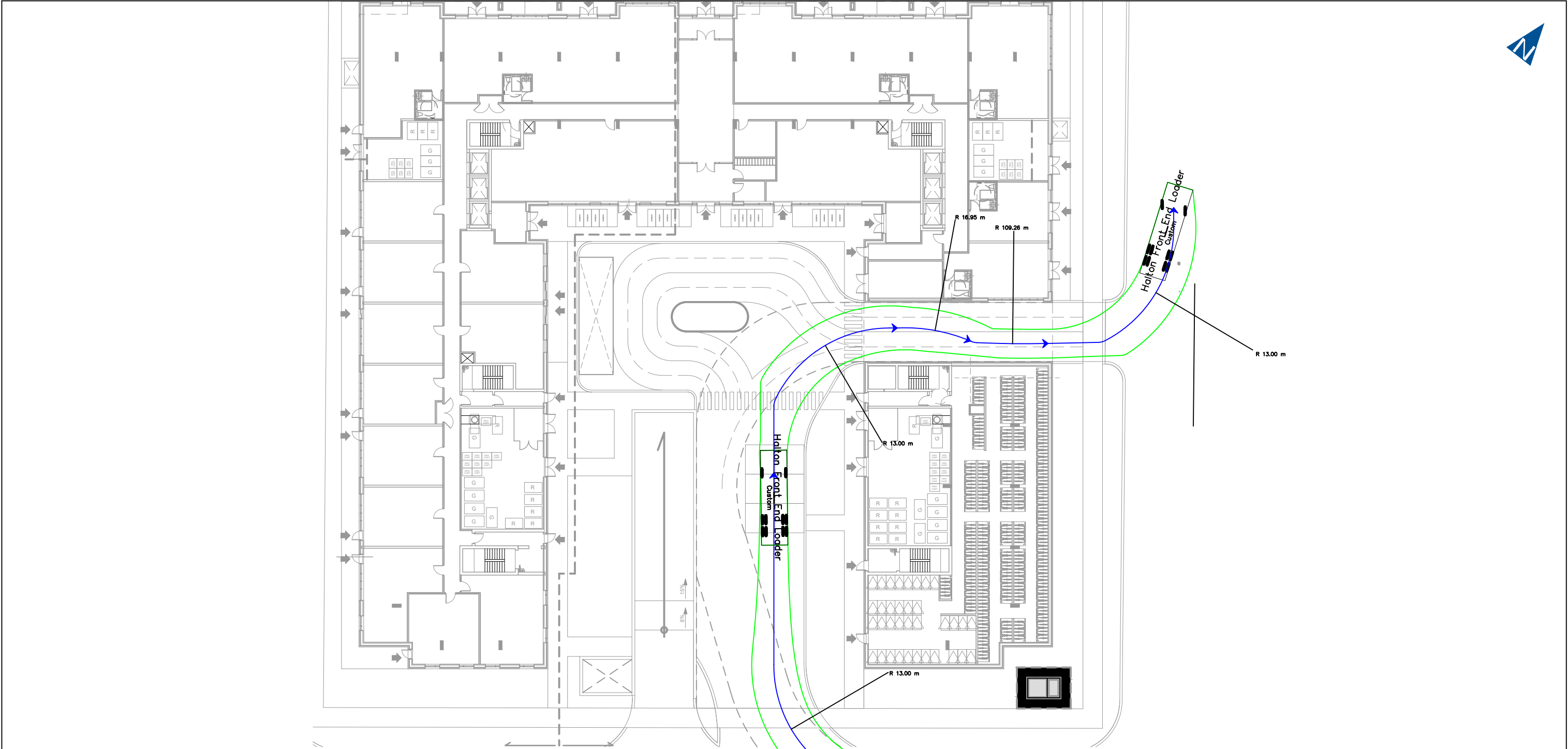
AUTOTURN ASSESSMENT

388 MAIN STREET

TOWN OF MILTON

PROJECT NO.: 240515	DATE: DEC 2024	SCALE: 1:400	DRAWING NO.: 02
DESIGN: LC	DRAWN: LC	CHECK: AMa	

THIS AUTOTURN SWEEP PATH ANALYSIS HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.



NO.	DATE	INITIAL	REVISION DETAIL

DESIGN VEHICLE:

Halton Front End Loader

Width : 2.70
Track : 2.70
Lock to Lock Time : 6.0
Steering Angle : 28.0

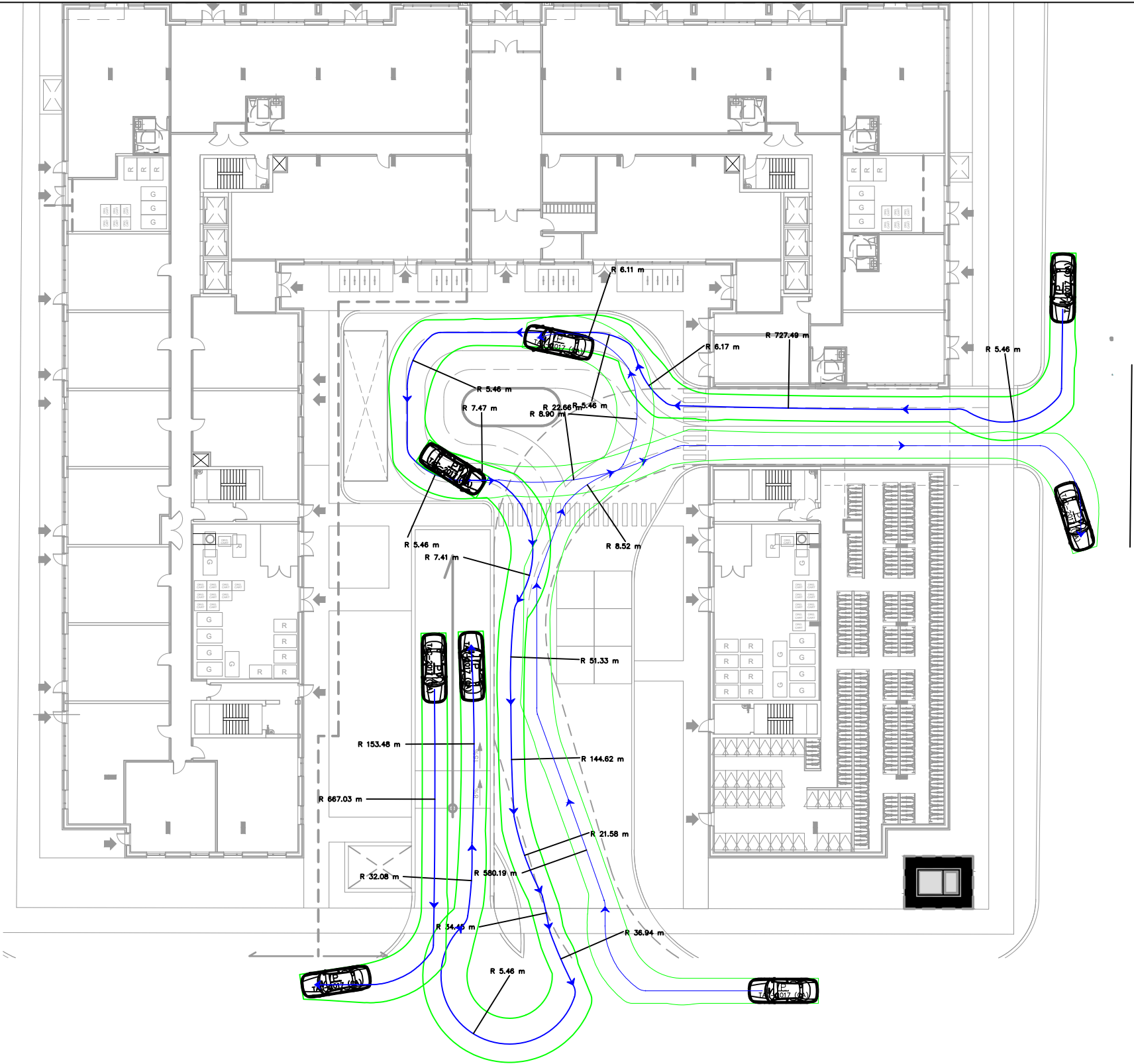
AUTOTURN ASSESSMENT

388 MAIN STREET

TOWN OF MILTON

PROJECT NO.: 240515	DATE: DEC 2024	SCALE: 1:400	DRAWING NO.: 03
DESIGN: LC	DRAWN: LC	CHECK: AMa	

THIS AUTOTURN SWEEP PATH ANALYSIS HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.



NO.	DATE	INITIAL	REVISION DETAIL

DESIGN VEHICLE:

P

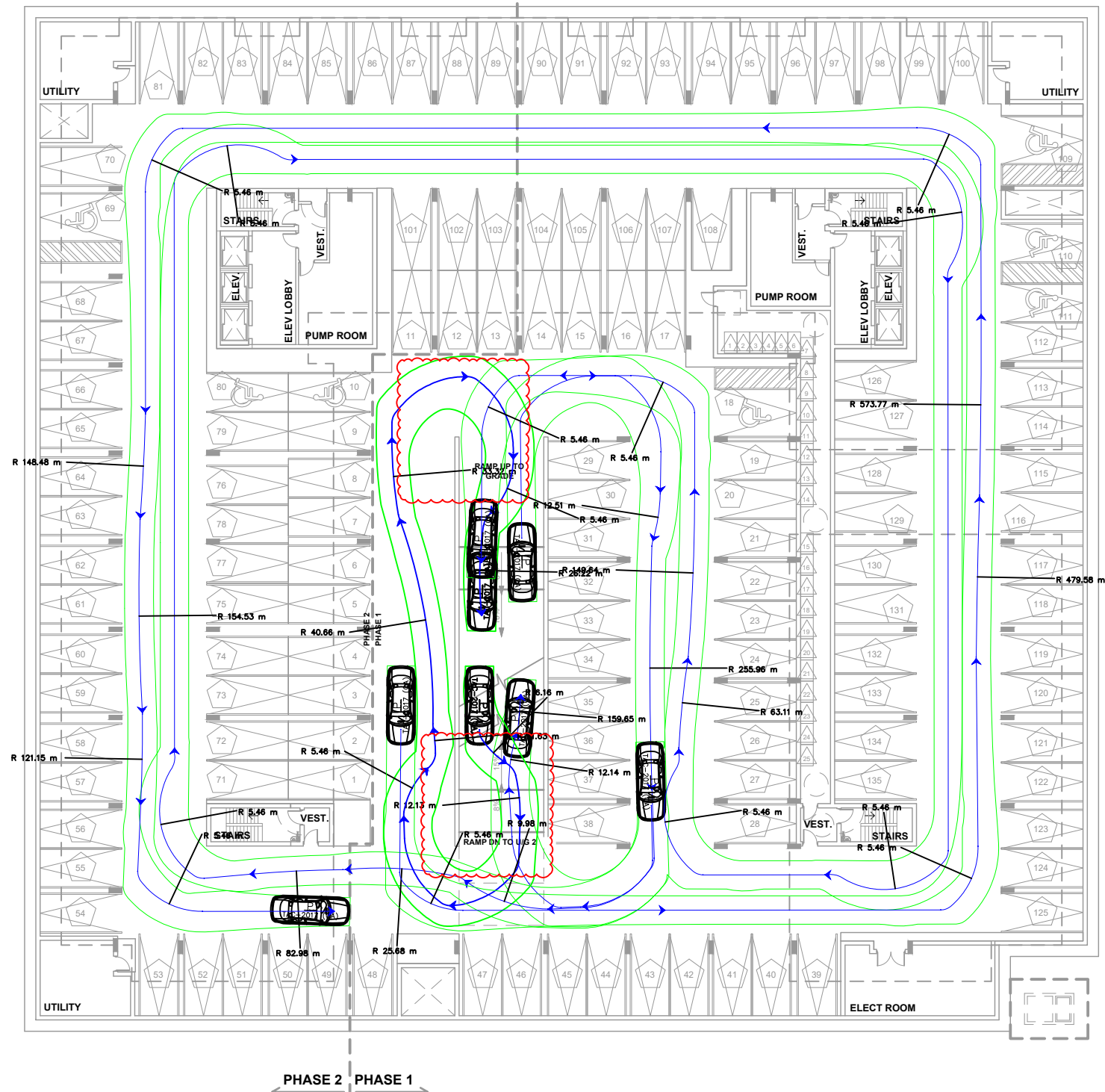
Width : 2.00
Track : 2.00
Lock to Lock Time : 6.0
Steering Angle : 35.9

AUTOTURN ASSESSMENT 388 MAIN STREET TOWN OF MILTON

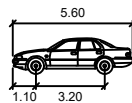
PROJECT NO.: 240515	DATE: DEC 2024	SCALE: 1:400	DRAWING NO.: 04
DESIGN: LC	DRAWN: LC	CHECK: AMa	



PHASE 2 PHASE 1
UNDERGROUND LEVEL 3



DESIGN VEHICLE:



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

**AUTOTURN ASSESSMENT
388 MAIN STREET
TOWN OF MILTON**



PROJECT NO.: 240515

DATE: DEC 2024

SCALE: 1:400

DRAWING NO.:

DESIGN: LC

DRAWN: LC

CHECK: AMa

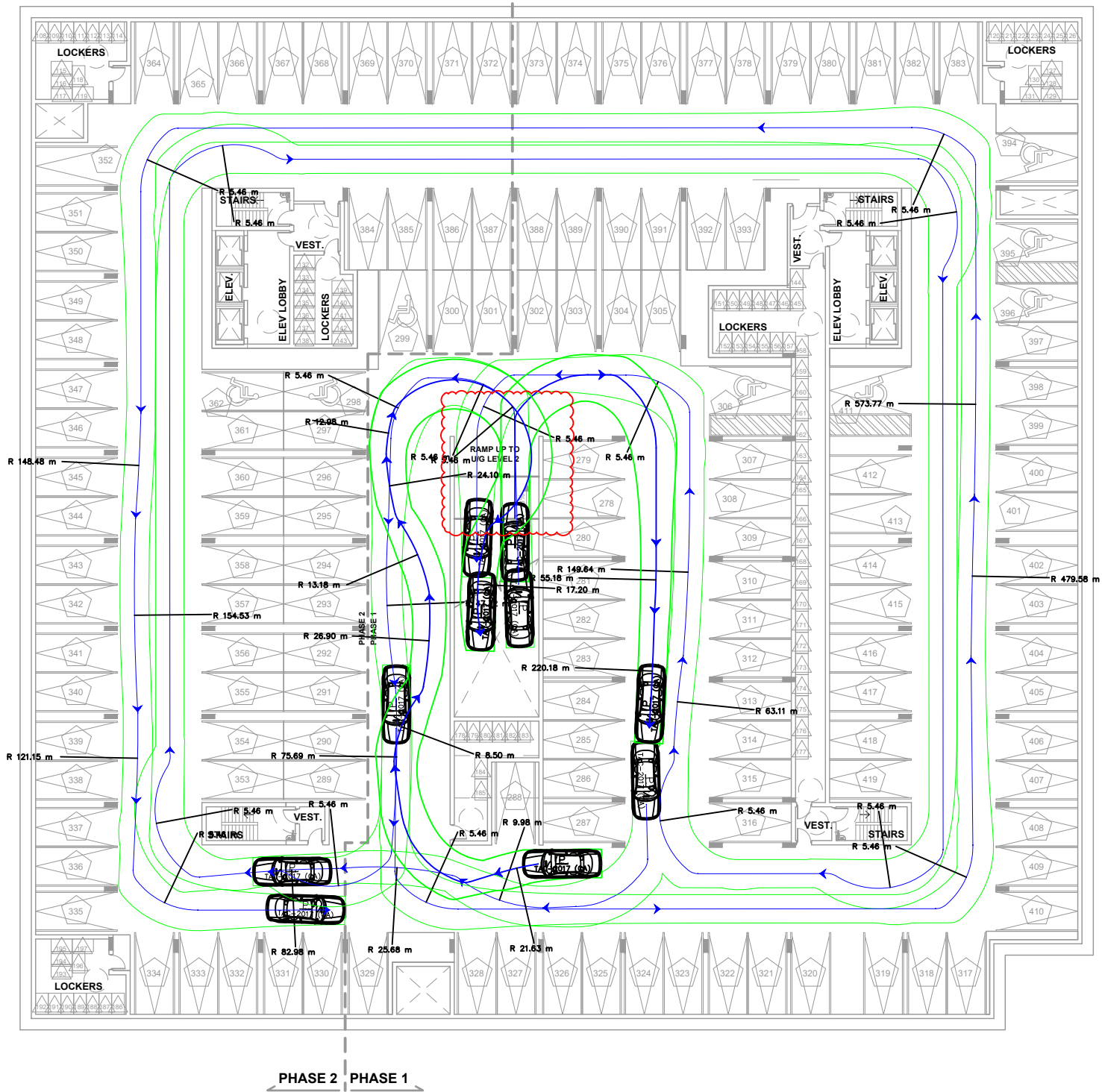
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NO.	DATE	INITIAL	REVISION DETAIL

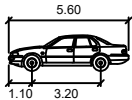
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PHASE 2 PHASE 1
UNDERGROUND LEVEL 1



DESIGN VEHICLE:



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

AUTOTURN ASSESSMENT
388 MAIN STREET
TOWN OF MILTON



PROJECT NO.: 240515

DATE: DEC 2024

SCALE: 1:400

DRAWING NO.:

DESIGN: LC

DRAWN: LC

CHECK: AMa

07

NO.	DATE	INITIAL	REVISION DETAIL

Appendix E

ITE Internal Capture



Project Name:	(240515) 388 Main Street E
Analysis Period:	AM Street Peak Hour

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends						
Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	16	16	1.00	10	10
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	38	38	1.00	106	106
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	3		1	0	1	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	2	1	21	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		5	0	0	0	0
Retail	0		0	0	1	0
Restaurant	0	1		0	2	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	3	0	0		0
Hotel	0	1	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)						
Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	0	0	0	0	0	0
Retail	1	15	16	15	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	37	38	37	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)						
Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	0	0	0	0	0	0
Retail	1	9	10	9	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	105	106	105	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	0	0	0	0	0

¹Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

²Person-Trips

³Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

Project Name:	(240515) 388 Main Street E
Analysis Period:	PM Street Peak Hour

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends						
Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	35	35	1.00	36	36
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	106	106	1.00	65	65
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	1		10	1	9	2
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	3	27	14	0		2
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		3	0	0	4	0
Retail	0		0	0	49	0
Restaurant	0	18		0	17	0
Cinema/Entertainment	0	1	0		4	0
Residential	0	4	0	0		0
Hotel	0	1	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)						
Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	0	0	0	0	0	0
Retail	4	31	35	31	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	9	97	106	97	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)						
Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	0	0	0	0	0	0
Retail	9	27	36	27	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	4	61	65	61	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	0	0	0	0	0

¹Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

²Person-Trips

³Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

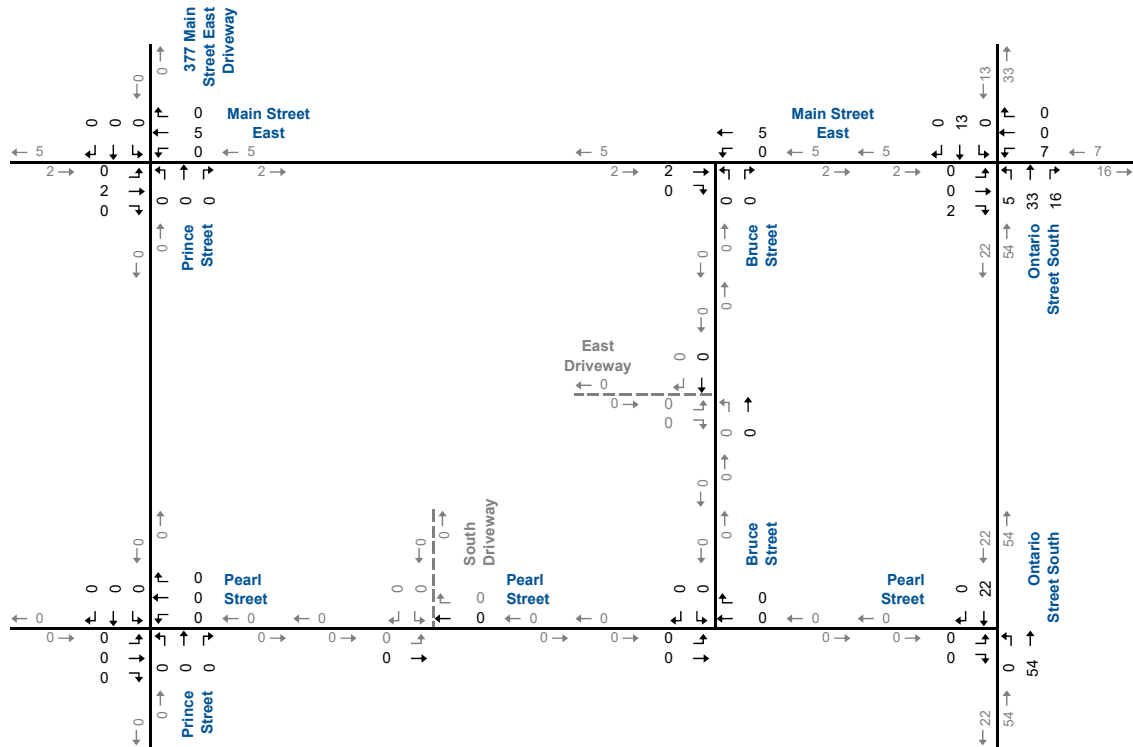
*Indicates computation that has been rounded to the nearest whole number.

Appendix F

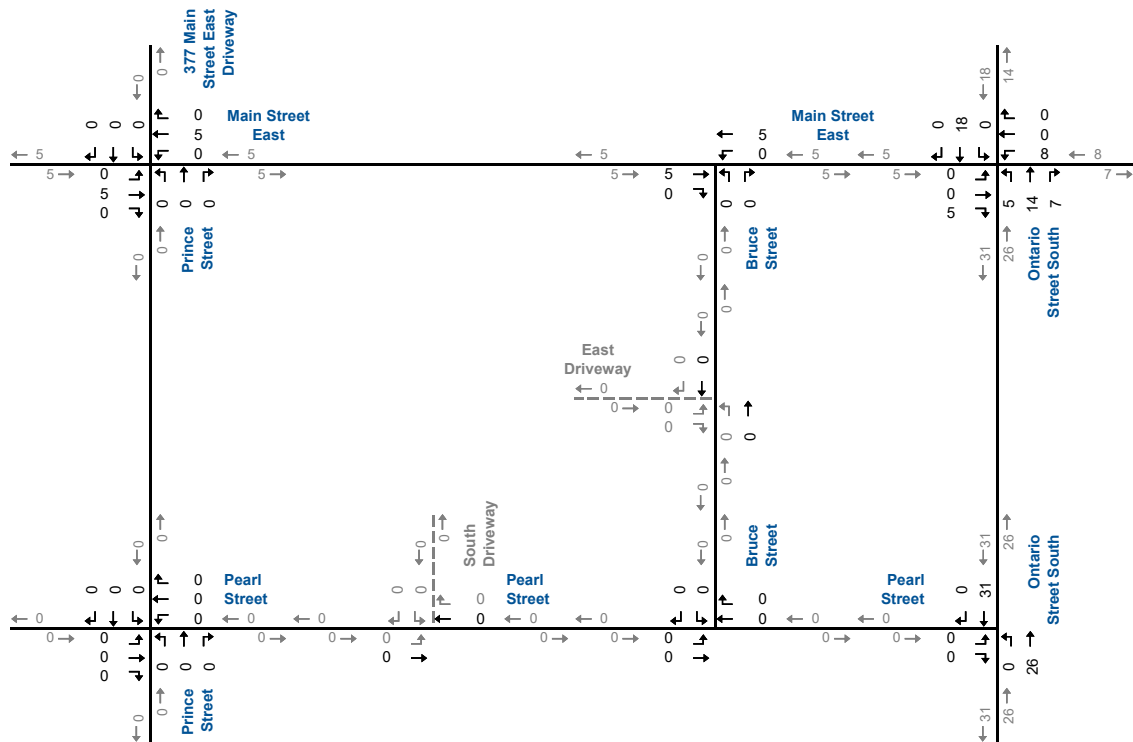
Background Development Traffic Forecasts



AM PEAK HOUR



PM PEAK HOUR



NTS

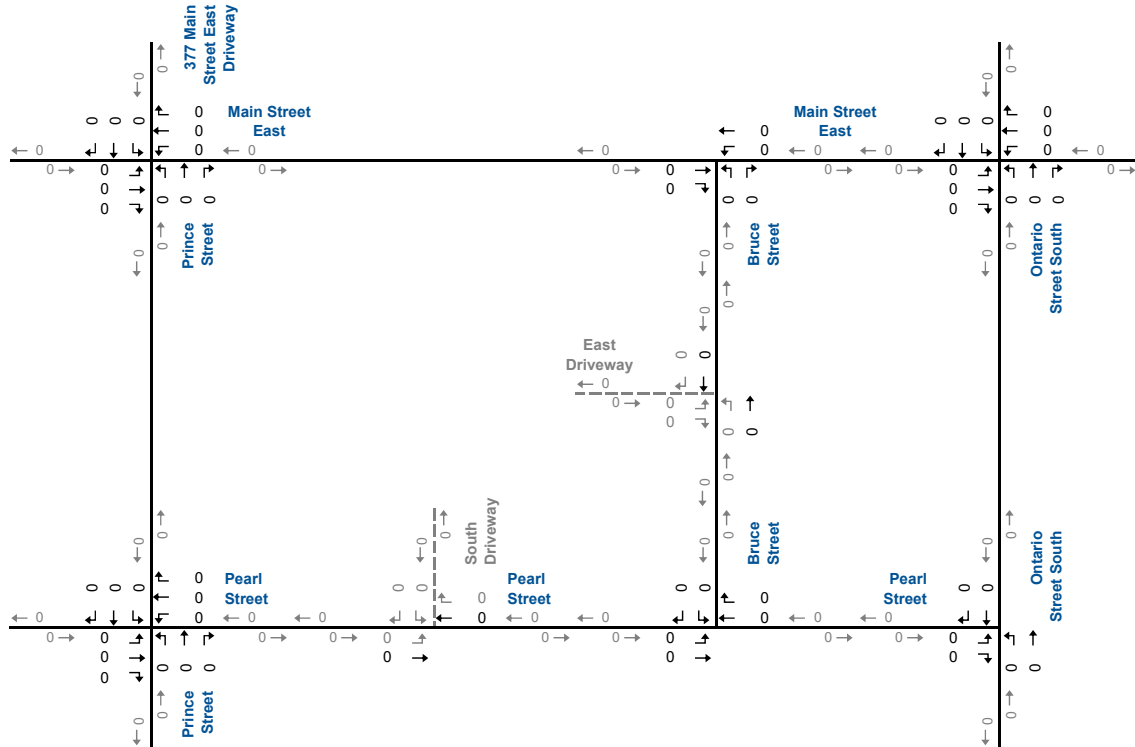


101 Nipissing Road Traffic Volumes

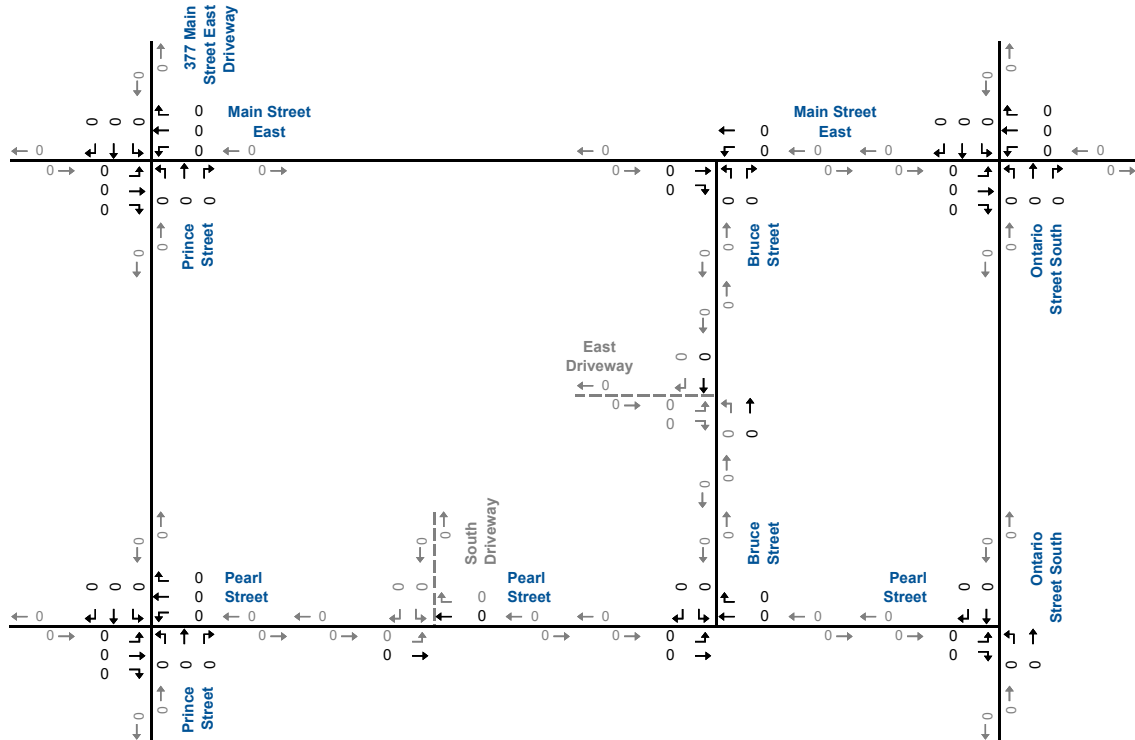
388 Main Street East, Milton
240515

Appendix F

AM PEAK HOUR



PM PEAK HOUR

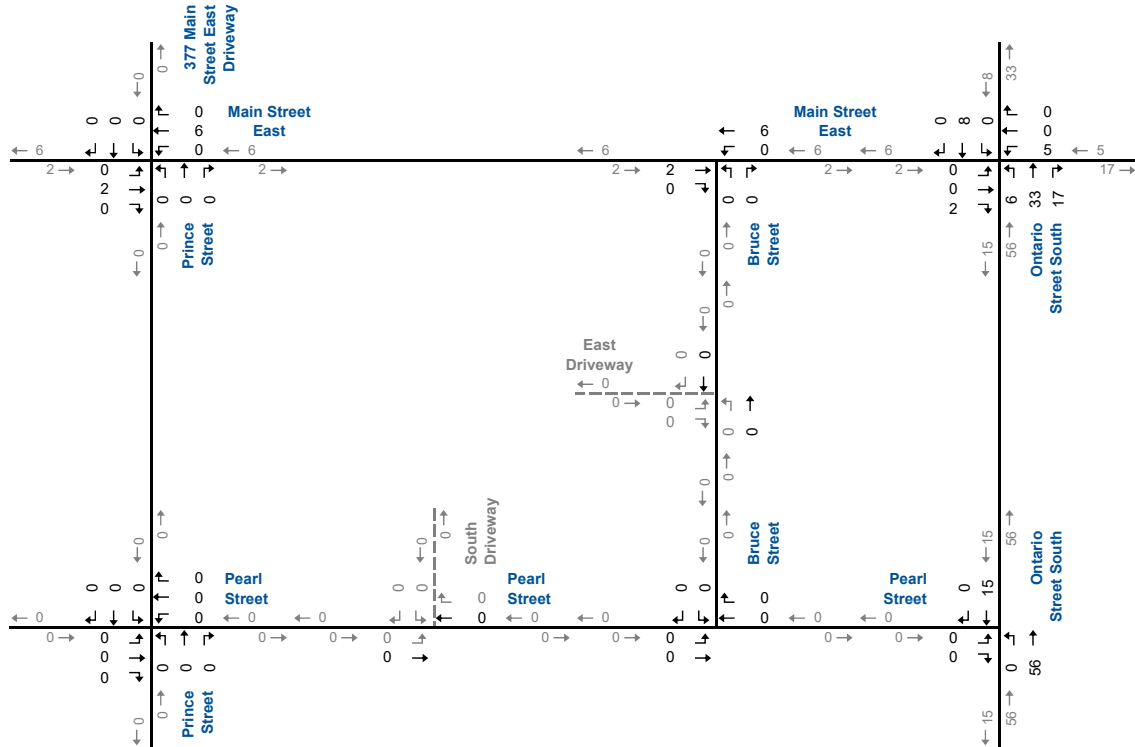


NTS

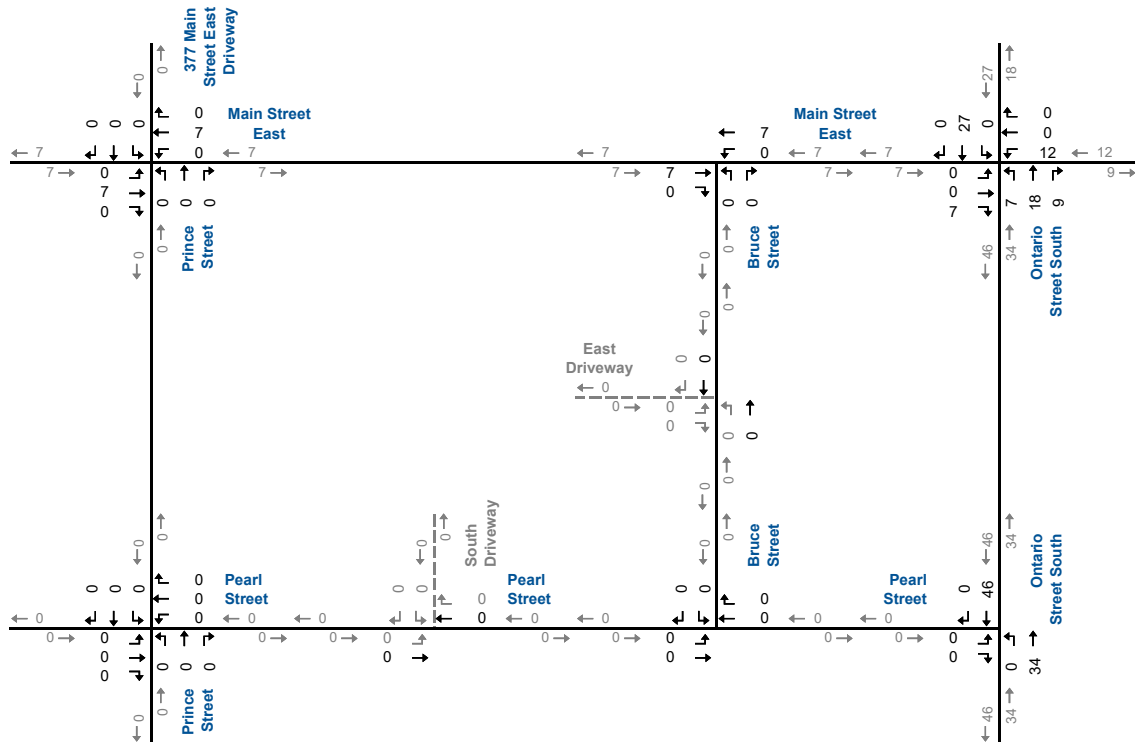


130 Thompson Road Traffic Volumes

AM PEAK HOUR



PM PEAK HOUR

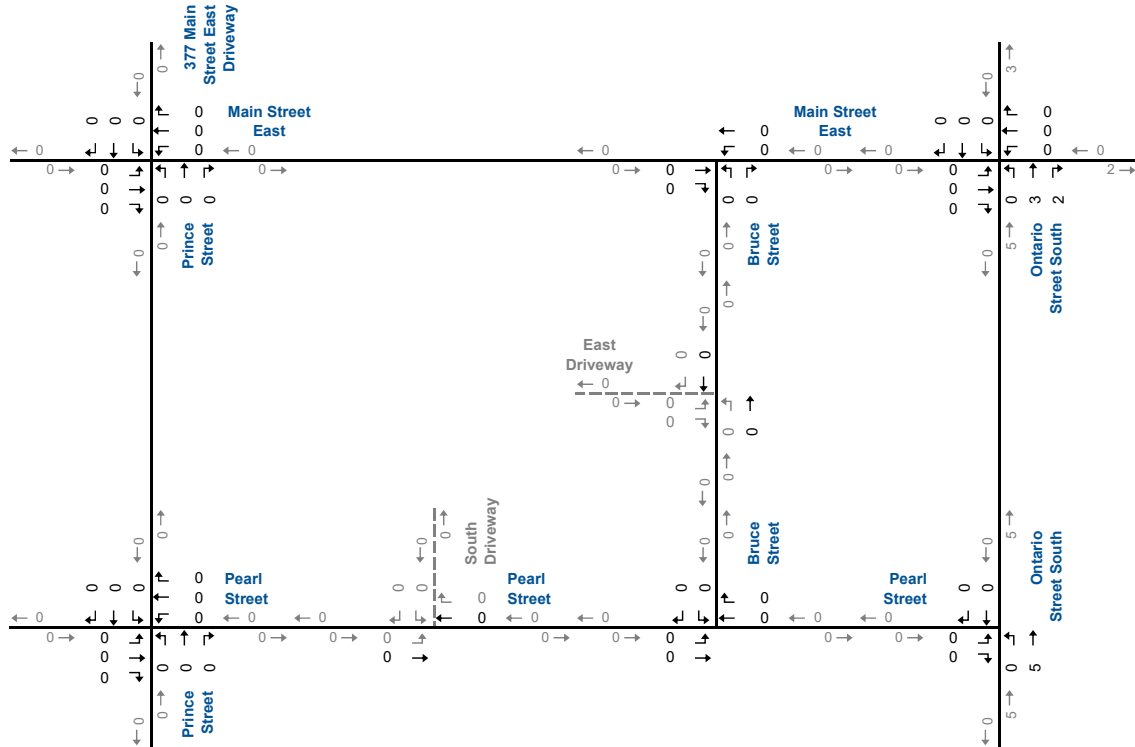


NTS

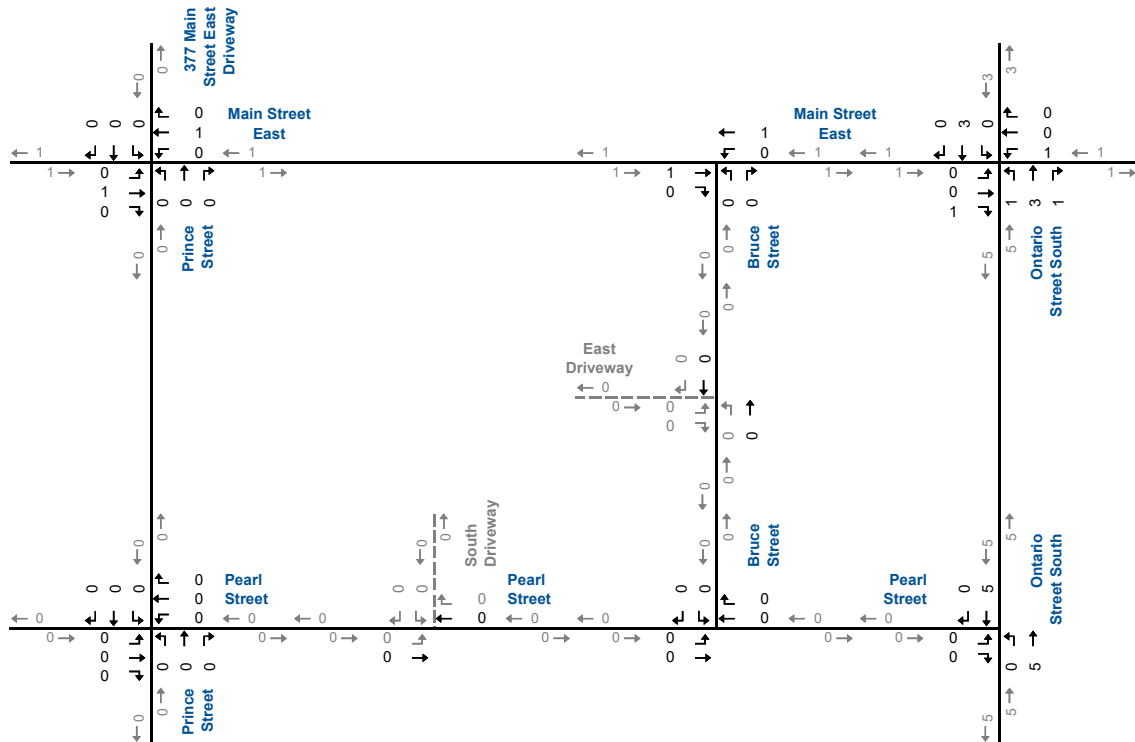


141 Nipissing Road Traffic Volumes

AM PEAK HOUR



PM PEAK HOUR



NTS



155 Nipissing Road Traffic Volumes

Appendix G

Background Traffic Operation Reports



Lanes, Volumes, Timings AM - Background Traffic 2034 Horizon
101: Prince Street/Private Driveway & Main Street East (240415) 388 Main Street East TIS & PS

	←	→	↙	↘	←	↙	↘	→	↙	↘	→	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↙	↘		↙	↘			↘			↘		
Traffic Volume (vph)	0	788	15	11	620	2	10	0	29	0	0	1	
Future Volume (vph)	0	788	15	11	620	2	10	0	29	0	0	1	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (m)	30.0		0.0	30.0		0.0	0.0		0.0	0.0		0.0	
Storage Lanes	1		0	1		0	0		0	0		0	
Taper Length (m)	7.5			7.5			7.5			7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor													
Frt		0.997						0.900				0.865	
Flt Protected				0.950				0.987					
Satd. Flow (prot)	1900	1837	0	1805	1827	0	0	1688	0	0	1644	0	
Flt Permitted				0.950				0.987					
Satd. Flow (perm)	1900	1837	0	1805	1827	0	0	1688	0	0	1644	0	
Link Speed (k/h)		50			50			50			50		
Link Distance (m)		52.0			98.6			94.0			40.6		
Travel Time (s)		3.7			7.1			6.8			2.9		
Confl. Peds. (#/hr)	18		12	12		18			11	11			
Peak Hour 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	
Heavy Vehicles (%)	0%	3%	8%	0%	4%	0%	0%	0%	0%	0%	0%	0%	
Adj. Flow (vph)	0	788	15	11	620	2	10	0	29	0	0	1	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	803	0	11	622	0	0	39	0	0	1	0	
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No	
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right	
Median Width(m)		3.6			3.6			0.0			0.0		
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		Yes			Yes								
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	25		15	25		15	25		15	
Sign Control		Free			Free			Stop			Stop		
Intersection Summary													
Area Type:	Other												
Control Type:	Unsignalized												
Intersection Capacity Utilization 60.0%	ICU Level of Service B												
Analysis Period (min) 15													

HCM Unsignalized Intersection Capacity Analysis AM - Background Traffic 2034 Horizon
101: Prince Street/Private Driveway & Main Street East (240415) 388 Main Street East TIS & PS

															
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR			
Lane Configurations															
Traffic Volume (veh/h)	0	788	15	11	620	2	10	0	29	0	0	1			
Future Volume (Veh/h)	0	788	15	11	620	2	10	0	29	0	0	1			
Sign Control		Free			Free			Stop			Stop				
Grade		0%			0%			0%			0%				
Peak Hour 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			
Hourly flow rate (vph)	0	788	15	11	620	2	10	0	29	0	0	1			
Pedestrians					11			12			18				
Lane Width (m)					3.6			3.6			3.6				
Walking Speed (m/s)					1.2			1.2			1.2				
Percent Blockage					1			1			2				
Right turn flare (veh)															
Median type		TW	LT		TW	LT									
Median storage veh		2			2										
Upstream signal (m)					229										
pX, platoon unblocked	0.83						0.83	0.83		0.83	0.83	0.83			
vC, conflicting volume	640			815			1450	1470	818	1489	1476	639			
vC1, stage 1 conf vol							808	808		661	661				
vC2, stage 2 conf vol							643	662		828	815				
vCu, unblocked vol	459			815			1440	1463	818	1487	1471	458			
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2			
tC, 2 stage (s)							6.1	5.5		6.1	5.5				
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3			
p0 queue free %	100			99			97	100	92	100	100	100			
cM capacity (veh/h)	905			813			298	304	372	267	298	494			
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1									
Volume Total	0	803	11	622	39	1									
Volume Left	0	0	11	0	10	0									
Volume Right	0	15	0	2	29	1									
cSH	1700	1700	813	1700	350	494									
Volume to Capacity	0.00	0.47	0.01	0.37	0.11	0.00									
Queue Length 95th (m)	0.0	0.0	0.3	0.0	3.0	0.0									
Control Delay (s)	0.0	0.0	9.5	0.0	16.6	12.3									
Lane LOS			A		C	B									
Approach Delay (s)	0.0		0.2		16.6	12.3									
Approach LOS					C	B									
Intersection Summary															
Average Delay				0.5											
Intersection Capacity Utilization			60.0%		ICU Level of Service				B						
Analysis Period (min)			15												

Lanes, Volumes, Timings
102: Bruce Street & Main Street East

AM - Background Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (vph)	826	2	16	646	1	30
Future Volume (vph)	826	2	16	646	1	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt					0.869	
Flt Protected				0.999	0.998	
Satd. Flow (prot)	1863	0	0	1827	1648	0
Flt Permitted				0.999	0.998	
Satd. Flow (perm)	1863	0	0	1827	1648	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	98.6			35.5	41.7	
Travel Time (s)	7.1			2.6	3.0	
Confl. Peds. (#/hr)		12	12			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	0%	4%	0%	0%
Adj. Flow (vph)	826	2	16	646	1	30
Shared Lane Traffic (%)						
Lane Group Flow (vph)	828	0	0	662	31	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane	Yes					
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 56.9%	ICU Level of Service B					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
102: Bruce Street & Main Street East

AM - Background Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (veh/h)	826	2	16	646	1	30
Future Volume (Veh/h)	826	2	16	646	1	30
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	826	2	16	646	1	30
Pedestrians					12	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage (veh)	2					
Upstream signal (m)				130		
pX, platoon unblocked					0.80	
vC, conflicting volume			840		1517	839
vC1, stage 1 conf vol					839	
vC2, stage 2 conf vol					678	
vCu, unblocked vol			840		1521	839
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			98		100	92
cM capacity (veh/h)			796		329	365
Direction, Lane #						
Volume Total	828	662	31			
Volume Left	0	16	1			
Volume Right	2	0	30			
cSH	1700	796	364			
Volume to Capacity	0.49	0.02	0.09			
Queue Length 95th (m)	0.0	0.5	2.2			
Control Delay (s)	0.0	0.5	15.8			
Lane LOS		A	C			
Approach Delay (s)	0.0	0.5	15.8			
Approach LOS		C				
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			56.9%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes, Volumes, Timings
103: Ontario Street South & Main Street East

AM - Background Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS

	↖	→	↗	↖	←	↖	↖	↖	↖	↖	↖	↖
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖		↖	↖		↖	↖	↖	↖	↖	
Traffic Volume (vph)	178	499	102	323	423	130	129	885	468	98	626	171
Future Volume (vph)	178	499	102	323	423	130	129	885	468	98	626	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		105.0	40.0		0.0	70.0		70.0	50.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor	0.99	1.00		1.00			1.00		0.98	1.00		1.00
Frt		0.975			0.965				0.850		0.968	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	3421	0	1736	3283	0	1719	3471	1583	1641	3170	0
Flt Permitted	0.299			0.230			0.217			0.201		
Satd. Flow (perm)	548	3421	0	419	3283	0	392	3471	1546	346	3170	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		23			38				385		33	
Link Speed (k/h)		50			50				50		50	
Link Distance (m)		94.8			102.2				95.4		91.4	
Travel Time (s)		6.8			7.4				6.9		6.6	
Confl. Peds. (#/hr)	14		9	9		14	9		10	10		9
Peak Hour 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
Heavy Vehicles (%)	3%	2%	5%	4%	4%	10%	5%	4%	2%	10%	11%	5%
Adj. Flow (vph)	178	499	102	323	423	130	129	885	468	98	626	171
Shared Lane Traffic (%)												
Lane Group Flow (vph)	178	601	0	323	553	0	129	885	468	98	797	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			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	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	
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			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lanes, Volumes, Timings
103: Ontario Street South & Main Street East

AM - Background Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS

	↖	→	↗	↖	←	↖	↖	↖	↖	↖	↖	↖
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	D.P+P	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	4			4			2		2	6		
Detector Phase	3	8		7	4		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	15.0		5.0	15.0		5.0	15.0	15.0	5.0	15.0	
Minimum Split (s)	10.0	35.0		10.0	35.0		10.0	35.0	35.0	10.0	35.0	
Total Split (s)	16.0	41.0		16.0	41.0		12.0	41.0	41.0	12.0	41.0	
Total Split (%)	14.5%	37.3%		14.5%	37.3%		10.9%	37.3%	37.3%	10.9%	37.3%	
Maximum Green (s)	12.0	34.0		12.0	34.0		8.0	34.0	34.0	8.0	34.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.0	3.0		0.0	3.0		0.0	3.0	3.0	0.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	7.0		4.0	7.0		4.0	7.0	7.0	4.0	7.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	Max	Max	None	Max	
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		21.0			21.0			21.0	21.0		21.0	
Pedestrian Calls (#/hr)		0			0			0	0		0	
Act Effect Green (s)	37.0	21.9		38.2	23.1		45.9	36.6	36.6	44.6	34.1	
Actuated g/C Ratio	0.38	0.22		0.39	0.24		0.47	0.37	0.37	0.46	0.35	
v/c Ratio	0.52	0.77		0.99	0.69		0.45	0.68	0.57	0.38	0.71	
Control Delay	24.2	41.2		74.0	36.6		19.6	30.8	8.7	18.8	31.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	24.2	41.2		74.0	36.6		19.6	30.8	8.7	18.8	31.3	
LOS	C	D		E	D		B	C	A	B	C	
Approach Delay		37.3			50.4			22.8			29.9	
Approach LOS		D			D			C			C	
Queue Length 50th (m)	22.5	57.2		~45.9	50.3		13.2	79.9	11.2	9.8	68.3	
Queue Length 95th (m)	37.1	76.3		#98.3	68.8		27.2	115.3	44.7	21.6	101.0	
Internal Link Dist (m)		70.8			78.2			71.4			67.4	
Turn Bay Length (m)	40.0			40.0			70.0		70.0	50.0		
Base Capacity (vph)	361	1206		325	1168		292	1296	818	265	1125	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.49	0.50		0.99	0.47		0.44	0.68	0.57	0.37	0.71	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 97.9

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 33.2

Intersection Capacity Utilization 85.5%

Intersection LOS: C

ICU Level of Service E

Lanes, Volumes, Timings
103: Ontario Street South & Main Street East

AM - Background Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 103: Ontario Street South & Main Street East

Ø1	Ø2	Ø3	Ø4
12 s	41 s	16 s	41 s
Ø5	Ø6	Ø7	Ø8
12 s	41 s	16 s	41 s

HCM Signalized Intersection Capacity Analysis
103: Ontario Street South & Main Street East

AM - Background Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	178	499	102	323	423	130	129	885	468	98	626	171
Future Volume (vph)	178	499	102	323	423	130	129	885	468	98	626	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.0		4.0	7.0		4.0	7.0	7.0	4.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Flpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.96		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1750	3420		1734	3283		1718	3471	1548	1640	3170	
Flt Permitted	0.30	1.00		0.23	1.00		0.22	1.00	1.00	0.20	1.00	
Satd. Flow (perm)	551	3420		420	3283		392	3471	1548	347	3170	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	178	499	102	323	423	130	129	885	468	98	626	171
RTOR Reduction (vph)	0	18	0	0	29	0	0	0	242	0	21	0
Lane Group Flow (vph)	178	583	0	323	524	0	129	885	226	98	776	0
Confl. Peds. (#/hr)	14		9	9		14	9		10	10		9
Heavy Vehicles (%)	3%	2%	5%	4%	4%	10%	5%	4%	2%	10%	11%	5%
Turn Type	D.P+P	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	4			4			2			2	6	
Actuated Green, G (s)	33.9	21.9		35.1	23.1		44.4	36.6	36.6	41.2	35.0	
Effective Green, g (s)	33.9	21.9		35.1	23.1		44.4	36.6	36.6	41.2	35.0	
Actuated g/C Ratio	0.34	0.22		0.36	0.23		0.45	0.37	0.37	0.42	0.35	
Clearance Time (s)	4.0	7.0		4.0	7.0		4.0	7.0	7.0	4.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	320	758		309	768		281	1287	574	226	1124	
v/s Ratio Prot	0.06	0.17		c0.13	0.16		c0.04	c0.25		0.03	0.24	
v/s Ratio Perm	0.13			c0.24			0.17			0.15	0.15	
v/c Ratio	0.56	0.77		1.05	0.68		0.46	0.69	0.39	0.43	0.69	
Uniform Delay, d1	24.1	36.0		27.5	34.5		17.4	26.2	22.9	18.9	27.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.1	4.7		63.5	2.5		1.2	3.0	2.0	1.3	3.5	
Delay (s)	26.1	40.8		91.0	37.0		18.6	29.2	24.9	20.2	30.7	
Level of Service	C	D		F	D		B	C	C	C	C	
Approach Delay (s)		37.4			56.9			26.9			29.5	
Approach LOS		D			E			C			C	
Intersection Summary												
HCM 2000 Control Delay		36.0										
HCM 2000 Volume to Capacity ratio		0.85										
Actuated Cycle Length (s)		98.7			Sum of lost time (s)			22.0				
Intersection Capacity Utilization		85.5%			ICU Level of Service			E				
Analysis Period (min)		15										

c Critical Lane Group

Lanes, Volumes, Timings
104: Ontario Street South & Pearl Street

AM - Background Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	2	45	54	1488	1048	27
Future Volume (vph)	2	45	54	1488	1048	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	20.0			0.0
Storage Lanes	1	0	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor						
Frt	0.871				0.996	
Frt Protected	0.998		0.950			
Satd. Flow (prot)	1652	0	1805	3471	3332	0
Frt Permitted	0.998		0.950			
Satd. Flow (perm)	1652	0	1805	3471	3332	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	125.8			99.0	95.4	
Travel Time (s)	9.1			7.1	6.9	
Confl. Peds. (#/hr)			4			4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	4%	8%	5%
Adj. Flow (vph)	2	45	54	1488	1048	27
Shared Lane Traffic (%)						
Lane Group Flow (vph)	47	0	54	1488	1075	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
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)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 51.1%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
104: Ontario Street South & Pearl Street

AM - Background Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	2	45	54	1488	1048	27
Future Volume (Veh/h)	2	45	54	1488	1048	27
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	2	45	54	1488	1048	27
Pedestrians	4					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)					95	
pX, platoon unblocked	0.81	0.81	0.81			
vC, conflicting volume	1918	542	1079			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1669	0	638			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	95	93			
cM capacity (veh/h)	67	884	774			
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	47	54	744	744	699	376
Volume Left	2	54	0	0	0	0
Volume Right	45	0	0	0	0	27
cSH	582	774	1700	1700	1700	1700
Volume to Capacity	0.08	0.07	0.44	0.44	0.41	0.22
Queue Length 95th (m)	2.1	1.8	0.0	0.0	0.0	0.0
Control Delay (s)	11.7	10.0	0.0	0.0	0.0	0.0
Lane LOS	B	A				
Approach Delay (s)	11.7	0.4			0.0	
Approach LOS	B					
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			51.1%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
105: Pearl Street & Bruce Street

AM - Background Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	32	40	66	6	5	10
Future Volume (vph)	32	40	66	6	5	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.989		0.910	
Flt Protected		0.978			0.984	
Satd. Flow (prot)	0	1858	1845	0	1701	0
Flt Permitted		0.978			0.984	
Satd. Flow (perm)	0	1858	1845	0	1701	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		49.0	125.8		50.0	
Travel Time (s)		3.5	9.1		3.6	
Confl. Peds. (#/hr)					1	3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%
Adj. Flow (vph)	32	40	66	6	5	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	72	72	0	15	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
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)	25			15	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	21.5%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
105: Pearl Street & Bruce Street

AM - Background Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Volume (veh/h)	32	40	66	6	5	10
Future Volume (Veh/h)	32	40	66	6	5	10
Sign Control	Free	Free	Free	Stop	Stop	Stop
Grade	0%	0%	0%	0%	0%	0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	32	40	66	6	5	10
Pedestrians	3	1				
Lane Width (m)	3.6	3.6				
Walking Speed (m/s)	1.2	1.2				
Percent Blockage	0	0				
Right turn flare (veh)						
Median type	None	None				
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	72				174	72
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	72				174	72
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				99	99
cM capacity (veh/h)	1541				803	993
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	72	72	15			
Volume Left	32	0	5			
Volume Right	0	6	10			
cSH	1541	1700	921			
Volume to Capacity	0.02	0.04	0.02			
Queue Length 95th (m)	0.5	0.0	0.4			
Control Delay (s)	3.4	0.0	9.0			
Lane LOS	A		A			
Approach Delay (s)	3.4	0.0	9.0			
Approach LOS			A			
Intersection Summary						
Average Delay			2.4			
Intersection Capacity Utilization			21.5%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
106: Prince Street & Pearl Street

AM - Background Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	2	17	1	7	21	7	2	30	23	10	17	1
Future Volume (vph)	2	17	1	7	21	7	2	30	23	10	17	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.993			0.973			0.944			0.995	
Flt Protected		0.995			0.990			0.998			0.982	
Satd. Flow (prot)	0	1877	0	0	1767	0	0	1790	0	0	1792	0
Flt Permitted		0.995			0.990			0.998			0.982	
Satd. Flow (perm)	0	1877	0	0	1767	0	0	1790	0	0	1792	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		56.3			48.9			56.6			94.0	
Travel Time (s)		4.1			3.5			4.1			6.8	
Confl. Peds. (#/hr)	1		7	7		1	5					5
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	0%	6%	0%	0%	0%	0%	0%	0%	100%
Adj. Flow (vph)	2	17	1	7	21	7	2	30	23	10	17	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	20	0	0	35	0	0	55	0	0	28	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		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	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization 19.1%	ICU Level of Service A											
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis
106: Prince Street & Pearl Street

AM - Background Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	17	1	7	21	7	2	30	23	10	17	1
Future Volume (Veh/h)	2	17	1	7	21	7	2	30	23	10	17	1
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour 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
Hourly flow rate (vph)	2	17	1	7	21	7	2	30	23	10	17	1
Pedestrians	5			7			7			1		
Lane Width (m)	3.6			3.6			3.6			3.6		
Walking Speed (m/s)	1.2			1.2			1.2			1.2		
Percent Blockage	0			1			1			0		
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	29	25			82			72	24	99	68	30
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	29	25			82			72	24	99	68	30
tC, single (s)	4.1	4.1			7.1			6.5	6.2	7.1	6.5	7.2
tC, 2 stage (s)												
tF (s)	2.2	2.2			3.5			4.0	3.3	3.5	4.0	4.2
p0 queue free %	100	100			100			96	98	99	98	100
cM capacity (veh/h)	1596	1593			878			813	1051	835	816	817
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	20	35	55	28								
Volume Left	2	7	2	10								
Volume Right	1	7	23	1								
cSH	1596	1593	901	823								
Volume to Capacity	0.00	0.00	0.06	0.03								
Queue Length 95th (m)	0.0	0.1	1.6	0.8								
Control Delay (s)	0.7	1.5	9.3	9.5								
Lane LOS	A	A	A	A								
Approach Delay (s)	0.7	1.5	9.3	9.5								
Approach LOS			A	A								
Intersection Summary												
Average Delay	6.1											
Intersection Capacity Utilization	19.1%			ICU Level of Service			A					
Analysis Period (min)	15											

Lanes, Volumes, Timings AM - Background Traffic 2039 Horizon
 101: Prince Street/Private Driveway & Main Street East (240415) 388 Main Street East TIS & PS

	←	→	↙	↘	↖	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↘		↖	↘			↕			↕	
Traffic Volume (vph)	0	869	16	12	684	3	11	0	32	0	0	1
Future Volume (vph)	0	869	16	12	684	3	11	0	32	0	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997			0.999			0.900			0.865	
Flt Protected				0.950				0.987				
Satd. Flow (prot)	1900	1838	0	1805	1825	0	0	1688	0	0	1644	0
Flt Permitted				0.950				0.987				
Satd. Flow (perm)	1900	1838	0	1805	1825	0	0	1688	0	0	1644	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		52.0			98.6			94.0			40.6	
Travel Time (s)		3.7			7.1			6.8			2.9	
Confl. Peds. (#/hr)	18		12	12		18			11	11		
Peak Hour 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
Heavy Vehicles (%)	0%	3%	8%	0%	4%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	869	16	12	684	3	11	0	32	0	0	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	885	0	12	687	0	0	43	0	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			0.0			0.0	
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		Yes			Yes							
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	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization 64.5%	ICU Level of Service C											
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis AM - Background Traffic 2039 Horizon
 101: Prince Street/Private Driveway & Main Street East (240415) 388 Main Street East TIS & PS

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	0	869	16	12	684	3	11	0	32	0	0	1	
Future Volume (Veh/h)	0	869	16	12	684	3	11	0	32	0	0	1	
Sign Control	Free			Free			Stop			Stop			
Grade	0%			0%			0%			0%			
Peak Hour 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	
Hourly flow rate (vph)	0	869	16	12	684	3	11	0	32	0	0	1	
Pedestrians				11			12			18			
Lane Width (m)				3.6			3.6			3.6			
Walking Speed (m/s)				1.2			1.2			1.2			
Percent Blockage				1			1			2			
Right turn flare (veh)													
Median type	TWLTL			TWLTL									
Median storage veh	2			2									
Upstream signal (m)	229												
pX, platoon unblocked	0.81							0.81	0.81	0.81	0.81	0.81	
vC, conflicting volume	705				897				1598	1618	900	1640	
vC1, stage 1 conf vol										889	889	728	
vC2, stage 2 conf vol										709	729	912	
vCu, unblocked vol	514				897				1622	1646	900	1673	
tC, single (s)	4.1				4.1				7.1	6.5	6.2	7.1	
tC, 2 stage (s)										6.1	5.5	6.1	
tF (s)	2.2				2.2				3.5	4.0	3.3	4.0	
p0 queue free %	100				98				96	100	90	100	
cM capacity (veh/h)	843				758				265	274	334	232	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1							
Volume Total	0	885	12	687	43	1							
Volume Left	0	0	12	0	11	0							
Volume Right	0	16	0	3	32	1							
cSH	1700	1700	758	1700	313	449							
Volume to Capacity	0.00	0.52	0.02	0.40	0.14	0.00							
Queue Length 95th (m)	0.0	0.0	0.4	0.0	3.8	0.1							
Control Delay (s)	0.0	0.0	9.8	0.0	18.3	13.0							
Lane LOS				A	C		B						
Approach Delay (s)	0.0				0.2	18.3	13.0						
Approach LOS				C		B							
Intersection Summary													
Average Delay				0.6									
Intersection Capacity Utilization	64.5%			ICU Level of Service			C						
Analysis Period (min)	15												

Lanes, Volumes, Timings
102: Bruce Street & Main Street East

AM - Background Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	911	3	17	712	1	34
Future Volume (vph)	911	3	17	712	1	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt					0.869	
Flt Protected				0.999	0.999	
Satd. Flow (prot)	1863	0	0	1827	1649	0
Flt Permitted				0.999	0.999	
Satd. Flow (perm)	1863	0	0	1827	1649	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	98.6			35.5	41.7	
Travel Time (s)	7.1			2.6	3.0	
Confl. Peds. (#/hr)		12	12			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	0%	4%	0%	0%
Adj. Flow (vph)	911	3	17	712	1	34
Shared Lane Traffic (%)						
Lane Group Flow (vph)	914	0	0	729	35	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane	Yes					
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	61.1%			ICU Level of Service B		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
102: Bruce Street & Main Street East

AM - Background Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (veh/h)	911	3	17	712	1	34
Future Volume (Veh/h)	911	3	17	712	1	34
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	911	3	17	712	1	34
Pedestrians					12	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage (veh)	2					
Upstream signal (m)				130		
pX, platoon unblocked					0.77	
vC, conflicting volume			926		1670	924
vC1, stage 1 conf vol					924	
vC2, stage 2 conf vol					746	
vCu, unblocked vol			926		1721	924
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			98		100	90
cM capacity (veh/h)			739		294	326
Direction, Lane #						
Volume Total	914	729	35			
Volume Left	0	17	1			
Volume Right	3	0	34			
cSH	1700	739	325			
Volume to Capacity	0.54	0.02	0.11			
Queue Length 95th (m)	0.0	0.6	2.9			
Control Delay (s)	0.0	0.6	17.4			
Lane LOS		A	C			
Approach Delay (s)	0.0	0.6	17.4			
Approach LOS		C				
Intersection Summary						
Average Delay		0.6				
Intersection Capacity Utilization		61.1%		ICU Level of Service	B	
Analysis Period (min)		15				

Lanes, Volumes, Timings
103: Ontario Street South & Main Street East

AM - Background Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS

	↖	→	↗	↖	←	↖	↖	↖	↖	↖	↖	↖
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖		↖	↖		↖	↖	↖	↖	↖	
Traffic Volume (vph)	196	550	112	355	467	144	142	969	513	108	689	188
Future Volume (vph)	196	550	112	355	467	144	142	969	513	108	689	188
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		105.0	40.0		0.0	70.0		70.0	50.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor	0.99	1.00		1.00			1.00		0.98	1.00		1.00
Frt		0.975			0.965				0.850		0.968	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	3421	0	1736	3283	0	1719	3471	1583	1641	3170	0
Flt Permitted	0.264			0.206			0.173			0.134		
Satd. Flow (perm)	484	3421	0	375	3283	0	312	3471	1546	231	3170	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		22			38				353		33	
Link Speed (k/h)		50			50				50		50	
Link Distance (m)		94.8			102.2				95.4		91.4	
Travel Time (s)		6.8			7.4				6.9		6.6	
Confl. Peds. (#/hr)	14		9	9		14	9		10	10		9
Peak Hour 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
Heavy Vehicles (%)	3%	2%	5%	4%	4%	10%	5%	4%	2%	10%	11%	5%
Adj. Flow (vph)	196	550	112	355	467	144	142	969	513	108	689	188
Shared Lane Traffic (%)												
Lane Group Flow (vph)	196	662	0	355	611	0	142	969	513	108	877	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			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	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	
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			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lanes, Volumes, Timings
103: Ontario Street South & Main Street East

AM - Background Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS

	↖	→	↗	↖	←	↖	↖	↖	↖	↖	↖	↖
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	D.P+P	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	4			4			2		2	6		
Detector Phase	3	8		7	4		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	15.0		5.0	15.0		5.0	15.0	15.0	5.0	15.0	
Minimum Split (s)	10.0	35.0		10.0	35.0		10.0	35.0	35.0	10.0	35.0	
Total Split (s)	16.0	41.0		16.0	41.0		12.0	41.0	41.0	12.0	41.0	
Total Split (%)	14.5%	37.3%		14.5%	37.3%		10.9%	37.3%	37.3%	10.9%	37.3%	
Maximum Green (s)	12.0	34.0		12.0	34.0		8.0	34.0	34.0	8.0	34.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.0	3.0		0.0	3.0		0.0	3.0	3.0	0.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	7.0		4.0	7.0		4.0	7.0	7.0	4.0	7.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	Max	Max	None	Max	
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		21.0			21.0			21.0	21.0		21.0	
Pedestrian Calls (#/hr)		0			0			0	0		0	
Act Effect Green (s)	39.1	24.1		40.1	25.0		45.2	34.3	34.3	44.7	34.1	
Actuated g/C Ratio	0.39	0.24		0.40	0.25		0.45	0.34	0.34	0.45	0.34	
v/c Ratio	0.60	0.79		1.13	0.72		0.57	0.81	0.67	0.51	0.80	
Control Delay	26.1	41.7		116.2	37.4		25.2	37.6	14.1	24.4	36.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	26.1	41.7		116.2	37.4		25.2	37.6	14.1	24.4	36.0	
LOS	C	D		F	D		C	D	B	C	D	
Approach Delay		38.2			66.4			29.1			34.8	
Approach LOS		D			E			C			C	
Queue Length 50th (m)	25.0	64.8		-62.7	57.3		15.4	93.8	24.8	11.5	81.1	
Queue Length 95th (m)	40.4	85.1		#122.0	76.6		31.2	#143.7	70.9	24.6	#126.4	
Internal Link Dist (m)		70.8			78.2			71.4			67.4	
Turn Bay Length (m)	40.0			40.0			70.0		70.0	50.0		
Base Capacity (vph)	346	1179		313	1143		254	1190	762	217	1101	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.57	0.56		1.13	0.53		0.56	0.81	0.67	0.50	0.80	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 100.1

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.13

Intersection Signal Delay: 40.2

Intersection Capacity Utilization 91.2%

Intersection LOS: D

ICU Level of Service F

Lanes, Volumes, Timings
103: Ontario Street South & Main Street East

AM - Background Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 103: Ontario Street South & Main Street East

 Ø1	 Ø2	 Ø3	 Ø4
12 s	41 s	16 s	41 s
 Ø5	 Ø6	 Ø7	 Ø8
12 s	41 s	16 s	41 s

HCM Signalized Intersection Capacity Analysis
103: Ontario Street South & Main Street East

AM - Background Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	196	550	112	355	467	144	142	969	513	108	689	188
Future Volume (vph)	196	550	112	355	467	144	142	969	513	108	689	188
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.0		4.0	7.0		4.0	7.0	7.0	4.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Flpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.96		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1750	3420		1735	3283		1719	3471	1548	1641	3170	
Flt Permitted	0.26	1.00		0.21	1.00		0.17	1.00	1.00	0.13	1.00	
Satd. Flow (perm)	486	3420		376	3283		312	3471	1548	231	3170	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	196	550	112	355	467	144	142	969	513	108	689	188
RTOR Reduction (vph)	0	17	0	0	29	0	0	0	232	0	22	0
Lane Group Flow (vph)	196	645	0	355	582	0	142	969	281	108	855	0
Confl. Peds. (#/hr)	14		9	9		14	9		10	10		9
Heavy Vehicles (%)	3%	2%	5%	4%	4%	10%	5%	4%	2%	10%	11%	5%
Turn Type	D.P+P	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	4			4			2		2	6		
Actuated Green, G (s)	36.1	24.1		37.0	25.0		42.3	34.4	34.4	41.7	34.1	
Effective Green, g (s)	36.1	24.1		37.0	25.0		42.3	34.4	34.4	41.7	34.1	
Actuated g/C Ratio	0.36	0.24		0.37	0.25		0.42	0.34	0.34	0.42	0.34	
Clearance Time (s)	4.0	7.0		4.0	7.0		4.0	7.0	7.0	4.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	315	823		301	819		242	1192	531	203	1079	
v/s Ratio Prot	0.07	0.19		c0.14	0.18		c0.05	c0.28		0.04	0.27	
v/s Ratio Perm	0.16			c0.29			0.20		0.18	0.18		
v/c Ratio	0.62	0.78		1.18	0.71		0.59	0.81	0.53	0.53	0.79	
Uniform Delay, d1	23.6	35.6		26.6	34.3		19.9	29.9	26.4	20.4	29.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.8	4.9		109.7	2.9		3.6	6.1	3.8	2.7	6.0	
Delay (s)	27.4	40.5		136.3	37.2		23.5	36.0	30.1	23.1	35.8	
Level of Service	C	D		F	D		C	D	C	C	D	
Approach Delay (s)		37.5			73.6			33.1			34.4	
Approach LOS		D			E			C			C	
Intersection Summary												
HCM 2000 Control Delay		43.1			HCM 2000 Level of Service				D			
HCM 2000 Volume to Capacity ratio		0.97										
Actuated Cycle Length (s)		100.1			Sum of lost time (s)				22.0			
Intersection Capacity Utilization		91.2%			ICU Level of Service				F			
Analysis Period (min)		15										

c Critical Lane Group

Lanes, Volumes, Timings
104: Ontario Street South & Pearl Street

AM - Background Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	3	50	59	1630	1153	30
Future Volume (vph)	3	50	59	1630	1153	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	20.0			0.0
Storage Lanes	1	0	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor						
Frt	0.873				0.996	
Flt Protected	0.997		0.950			
Satd. Flow (prot)	1654	0	1805	3471	3332	0
Flt Permitted	0.997		0.950			
Satd. Flow (perm)	1654	0	1805	3471	3332	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	125.8			99.0	95.4	
Travel Time (s)	9.1			7.1	6.9	
Confl. Peds. (#/hr)			4			4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	4%	8%	5%
Adj. Flow (vph)	3	50	59	1630	1153	30
Shared Lane Traffic (%)						
Lane Group Flow (vph)	53	0	59	1630	1183	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
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)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 55.1%	ICU Level of Service B					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
104: Ontario Street South & Pearl Street

AM - Background Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	3	50	59	1630	1153	30
Future Volume (Veh/h)	3	50	59	1630	1153	30
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	3	50	59	1630	1153	30
Pedestrians	4					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)					95	
pX, platoon unblocked	0.78	0.78	0.78			
vC, conflicting volume	2105	596	1187			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1848	0	667			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	94	92			
cM capacity (veh/h)	48	845	722			
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	53	59	815	815	769	414
Volume Left	3	59	0	0	0	0
Volume Right	50	0	0	0	0	30
cSH	436	722	1700	1700	1700	1700
Volume to Capacity	0.12	0.08	0.48	0.48	0.45	0.24
Queue Length 95th (m)	3.3	2.1	0.0	0.0	0.0	0.0
Control Delay (s)	14.4	10.4	0.0	0.0	0.0	0.0
Lane LOS	B	B				
Approach Delay (s)	14.4	0.4			0.0	
Approach LOS	B					
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization 55.1%				ICU Level of Service		B
Analysis Period (min)			15			

Lanes, Volumes, Timings
105: Pearl Street & Bruce Street

AM - Background Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (vph)	35	44	73	7	5	11
Future Volume (vph)	35	44	73	7	5	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.988		0.907	
Flt Protected		0.978			0.985	
Satd. Flow (prot)	0	1858	1844	0	1697	0
Flt Permitted		0.978			0.985	
Satd. Flow (perm)	0	1858	1844	0	1697	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		49.0	125.8		50.0	
Travel Time (s)		3.5	9.1		3.6	
Confl. Peds. (#/hr)					1	3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%
Adj. Flow (vph)	35	44	73	7	5	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	79	80	0	16	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
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)	25			15	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 21.9%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
105: Pearl Street & Bruce Street

AM - Background Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (veh/h)	35	44	73	7	5	11
Future Volume (Veh/h)	35	44	73	7	5	11
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	35	44	73	7	5	11
Pedestrians		3	1			
Lane Width (m)		3.6	3.6			
Walking Speed (m/s)		1.2	1.2			
Percent Blockage		0	0			
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	80				192	80
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	80				192	80
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				99	99
cM capacity (veh/h)	1531				783	984
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	79	80	16			
Volume Left	35	0	5			
Volume Right	0	7	11			
cSH	1531	1700	911			
Volume to Capacity	0.02	0.05	0.02			
Queue Length 95th (m)	0.6	0.0	0.4			
Control Delay (s)	3.4	0.0	9.0			
Lane LOS	A		A			
Approach Delay (s)	3.4	0.0	9.0			
Approach LOS			A			
Intersection Summary						
Average Delay			2.4			
Intersection Capacity Utilization			21.9%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
106: Prince Street & Pearl Street

AM - Background Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	3	19	1	8	23	8	3	34	26	11	19	1
Future Volume (vph)	3	19	1	8	23	8	3	34	26	11	19	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.994			0.972			0.944			0.996	
Flt Protected		0.994			0.990			0.998			0.983	
Satd. Flow (prot)	0	1877	0	0	1766	0	0	1790	0	0	1802	0
Flt Permitted		0.994			0.990			0.998			0.983	
Satd. Flow (perm)	0	1877	0	0	1766	0	0	1790	0	0	1802	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		56.3			48.9			56.6			94.0	
Travel Time (s)		4.1			3.5			4.1			6.8	
Confl. Peds. (#/hr)	1		7	7		1	5					5
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	0%	6%	0%	0%	0%	0%	0%	0%	100%
Adj. Flow (vph)	3	19	1	8	23	8	3	34	26	11	19	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	23	0	0	39	0	0	63	0	0	31	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		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	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization 19.1%	ICU Level of Service A											
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis
106: Prince Street & Pearl Street

AM - Background Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	19	1	8	23	8	3	34	26	11	19	1
Future Volume (Veh/h)	3	19	1	8	23	8	3	34	26	11	19	1
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour 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
Hourly flow rate (vph)	3	19	1	8	23	8	3	34	26	11	19	1
Pedestrians	5						7			1		
Lane Width (m)	3.6						3.6			3.6		
Walking Speed (m/s)	1.2						1.2			1.2		
Percent Blockage	0						1			0		
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	32	27			91			80	26	112	77	33
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	32	27			91			80	26	112	77	33
tC, single (s)	4.1	4.1			7.1			6.5	6.2	7.1	6.5	7.2
tC, 2 stage (s)												
tF (s)	2.2	2.2			3.5			4.0	3.3	3.5	4.0	4.2
p0 queue free %	100	99			100			96	98	99	98	100
cM capacity (veh/h)	1592	1591			863			803	1049	812	806	814
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	23	39	63	31								
Volume Left	3	8	3	11								
Volume Right	1	8	26	1								
cSH	1592	1591	892	808								
Volume to Capacity	0.00	0.01	0.07	0.04								
Queue Length 95th (m)	0.0	0.1	1.8	1.0								
Control Delay (s)	1.0	1.5	9.3	9.6								
Lane LOS	A	A	A	A								
Approach Delay (s)	1.0	1.5	9.3	9.6								
Approach LOS			A	A								
Intersection Summary												
Average Delay	6.2											
Intersection Capacity Utilization	19.1%			ICU Level of Service			A					
Analysis Period (min)	15											

Lanes, Volumes, Timings PM - Background Traffic 2034 Horizon
101: Prince Street/Private Driveway & Main Street East (240415) 388 Main Street East TIS & PS

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱			↕			↕	
Traffic Volume (vph)	9	910	9	28	1055	7	4	0	26	4	1	12
Future Volume (vph)	9	910	9	28	1055	7	4	0	26	4	1	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5		7.5			7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.999			0.999			0.883			0.905	
Flt Protected	0.950			0.950				0.993			0.988	
Satd. Flow (prot)	1583	1898	0	1805	1877	0	0	1666	0	0	1587	0
Flt Permitted	0.950			0.950				0.993			0.988	
Satd. Flow (perm)	1583	1898	0	1805	1877	0	0	1666	0	0	1587	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		52.0			98.6			55.2			40.6	
Travel Time (s)		3.7			7.1			4.0			2.9	
Confl. Peds. (#/hr)	11		21	21		11			9	9		
Peak Hour 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
Heavy Vehicles (%)	14%	0%	1%	0%	1%	17%	0%	0%	0%	0%	0%	10%
Adj. Flow (vph)	9	910	9	28	1055	7	4	0	26	4	1	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	9	919	0	28	1062	0	0	30	0	0	17	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			0.0			0.0	
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		Yes			Yes							
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	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization 68.5%	ICU Level of Service C											
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis PM - Background Traffic 2034 Horizon
101: Prince Street/Private Driveway & Main Street East (240415) 388 Main Street East TIS & PS

															
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR			
Lane Configurations															
Traffic Volume (veh/h)	9	910	9	28	1055	7	4	0	26	4	1	12			
Future Volume (Veh/h)	9	910	9	28	1055	7	4	0	26	4	1	12			
Sign Control	Free			Free			Stop			Stop					
Grade	0%			0%			0%			0%					
Peak Hour 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			
Hourly flow rate (vph)	9	910	9	28	1055	7	4	0	26	4	1	12			
Pedestrians				9			21			11					
Lane Width (m)				3.6			3.6			3.6					
Walking Speed (m/s)				1.2			1.2			1.2					
Percent Blockage				1			2			1					
Right turn flare (veh)															
Median type	TWLTL			TWLTL											
Median storage veh	2			2											
Upstream signal (m)	229														
pX, platoon unblocked	0.63							0.63	0.63			0.63	0.63	0.63	
vC, conflicting volume	1073				940				2077	2082	944	2088	2084	1070	
vC1, stage 1 conf vol										954	954			1126	1126
vC2, stage 2 conf vol										1124	1129			963	958
vCu, unblocked vol	822				940				2416	2425	944	2434	2426	817	
tC, single (s)	4.2				4.1				7.1	6.5	6.2	7.1	6.5	6.3	
tC, 2 stage (s)										6.1	5.5			6.1	5.5
tF (s)	2.3				2.2				3.5	4.0	3.3	3.5	4.0	3.4	
p0 queue free %	98				96				97	100	92	97	99	95	
cM capacity (veh/h)	473				725				148	166	313	147	167	228	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1									
Volume Total	9	919	28	1062	30	17									
Volume Left	9	0	28	0	4	4									
Volume Right	0	9	0	7	26	12									
cSH	473	1700	725	1700	272	198									
Volume to Capacity	0.02	0.54	0.04	0.62	0.11	0.09									
Queue Length 95th (m)	0.5	0.0	1.0	0.0	2.9	2.2									
Control Delay (s)	12.8	0.0	10.2	0.0	19.8	24.9									
Lane LOS	B			B			C			C					
Approach Delay (s)	0.1			0.3			19.8			24.9					
Approach LOS							C			C					
Intersection Summary															
Average Delay				0.7											
Intersection Capacity Utilization				68.5%			ICU Level of Service			C					
Analysis Period (min)	15														

Lanes, Volumes, Timings
102: Bruce Street & Main Street East

PM - Background Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	915	24	52	1080	10	37
Future Volume (vph)	915	24	52	1080	10	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.997				0.894	
Flt Protected				0.998	0.989	
Satd. Flow (prot)	1876	0	0	1878	1680	0
Flt Permitted				0.998	0.989	
Satd. Flow (perm)	1876	0	0	1878	1680	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	98.6			35.5	41.7	
Travel Time (s)	7.1			2.6	3.0	
Confl. Peds. (#/hr)		20	20			1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	0%	1%	0%	0%
Adj. Flow (vph)	915	24	52	1080	10	37
Shared Lane Traffic (%)						
Lane Group Flow (vph)	939	0	0	1132	47	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane	Yes					
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	109.5%			ICU Level of Service H		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
102: Bruce Street & Main Street East

PM - Background Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	↖
Traffic Volume (veh/h)	915	24	52	1080	10	37
Future Volume (Veh/h)	915	24	52	1080	10	37
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	915	24	52	1080	10	37
Pedestrians				1	20	
Lane Width (m)				3.6	3.6	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	2	
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage (veh)	2					
Upstream signal (m)				130		
pX, platoon unblocked					0.61	
vC, conflicting volume			959		2131	948
vC1, stage 1 conf vol					947	
vC2, stage 2 conf vol					1184	
vCu, unblocked vol			959		2534	948
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			93		94	88
cM capacity (veh/h)			713		173	313
Direction, Lane #						
Volume Total	939	1132	47			
Volume Left	0	52	10			
Volume Right	24	0	37			
cSH	1700	713	267			
Volume to Capacity	0.55	0.07	0.18			
Queue Length 95th (m)	0.0	1.9	5.0			
Control Delay (s)	0.0	2.5	21.3			
Lane LOS		A	C			
Approach Delay (s)	0.0	2.5	21.3			
Approach LOS		C				
Intersection Summary						
Average Delay			1.8			
Intersection Capacity Utilization			109.5%		ICU Level of Service	H
Analysis Period (min)			15			

Lanes, Volumes, Timings

103: Ontario Street South & Main Street East

PM - Background Traffic 2034 Horizon

(240415) 388 Main Street East TIS & PS

	↖	→	↗	↘	←	↖	↗	↘	↙	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖↗		↖	↖↗	↖	↖	↖↗	
Traffic Volume (vph)	179	586	210	364	829	204	193	692	333	145	804	162
Future Volume (vph)	179	586	210	364	829	204	193	692	333	145	804	162
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		105.0	40.0		0.0	70.0		70.0	50.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor	1.00	0.99		1.00	0.99		1.00	0.99		0.97	0.99	1.00
Frt		0.960			0.970				0.850		0.975	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3404	0	1770	3426	0	1787	3438	1553	1752	3442	0
Flt Permitted	0.119			0.171			0.117			0.254		
Satd. Flow (perm)	226	3404	0	318	3426	0	220	3438	1502	466	3442	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		48			28				333		22	
Link Speed (k/h)		50			50				50		50	
Link Distance (m)		94.8			102.2				95.4		91.4	
Travel Time (s)		6.8			7.4				6.9		6.6	
Confl. Peds. (#/hr)	16		7	7		16	3		18	18		3
Peak Hour 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
Heavy Vehicles (%)	0%	1%	2%	2%	1%	4%	1%	5%	4%	3%	2%	2%
Adj. Flow (vph)	179	586	210	364	829	204	193	692	333	145	804	162
Shared Lane Traffic (%)												
Lane Group Flow (vph)	179	796	0	364	1033	0	193	692	333	145	966	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			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	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	
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			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lanes, Volumes, Timings

103: Ontario Street South & Main Street East

PM - Background Traffic 2034 Horizon

(240415) 388 Main Street East TIS & PS

	↖	→	↗	↘	←	↖	↗	↘	↙	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	D.P+P	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	4			4			2		2	6		
Detector Phase	3	8		7	4		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	15.0		5.0	15.0		5.0	15.0	15.0	5.0	15.0	
Minimum Split (s)	10.0	35.0		10.0	35.0		10.0	35.0	35.0	10.0	35.0	
Total Split (s)	16.0	41.0		16.0	41.0		12.0	41.0	41.0	12.0	41.0	
Total Split (%)	14.5%	37.3%		14.5%	37.3%		10.9%	37.3%	37.3%	10.9%	37.3%	
Maximum Green (s)	12.0	34.0		12.0	34.0		8.0	34.0	34.0	8.0	34.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.0	3.0		0.0	3.0		0.0	3.0	3.0	0.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	7.0		4.0	7.0		4.0	7.0	7.0	4.0	7.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	Max	Max	None	Max	
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		21.0			21.0			21.0	21.0		21.0	
Pedestrian Calls (#/hr)		0			0			0	0		0	
Act Effect Green (s)	47.5	32.5		48.7	33.7		45.1	34.1	34.1	44.9	34.0	
Actuated g/C Ratio	0.44	0.30		0.45	0.31		0.42	0.31	0.31	0.41	0.31	
v/c Ratio	0.70	0.76		1.20	0.95		0.94	0.64	0.48	0.51	0.88	
Control Delay	35.3	37.5		141.5	54.8		72.2	35.5	5.6	25.2	45.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	35.3	37.5		141.5	54.8		72.2	35.5	5.6	25.2	45.7	
LOS	D	D		F	D		E	D	A	C	D	
Approach Delay		37.1			77.4			33.1			43.0	
Approach LOS		D			E			C			D	
Queue Length 50th (m)	22.5	79.4		~75.0	117.2		26.4	70.7	0.0	19.3	106.8	
Queue Length 95th (m)	#45.0	102.8		#135.8	#162.5		#72.3	91.9	20.9	32.7	#145.2	
Internal Link Dist (m)		70.8			78.2			71.4			67.4	
Turn Bay Length (m)		40.0			40.0			70.0		50.0		
Base Capacity (vph)	275	1099		303	1092		206	1081	700	288	1093	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.65	0.72		1.20	0.95		0.94	0.64	0.48	0.50	0.88	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 108.5

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.20

Intersection Signal Delay: 49.5

Intersection Capacity Utilization 99.8%

Intersection LOS: D

ICU Level of Service F

Lanes, Volumes, Timings
103: Ontario Street South & Main Street East

PM - Background Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 103: Ontario Street South & Main Street East

 Ø1	 Ø2	 Ø3	 Ø4
12 s	41 s	16 s	41 s
 Ø5	 Ø6	 Ø7	 Ø8
12 s	41 s	16 s	41 s

HCM Signalized Intersection Capacity Analysis
103: Ontario Street South & Main Street East

PM - Background Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	179	586	210	364	829	204	193	692	333	145	804	162
Future Volume (vph)	179	586	210	364	829	204	193	692	333	145	804	162
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.0		4.0	7.0		4.0	7.0	7.0	4.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	0.97		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	3406		1769	3428		1787	3438	1502	1750	3441	
Flt Permitted	0.12	1.00		0.17	1.00		0.12	1.00	1.00	0.25	1.00	
Satd. Flow (perm)	225	3406		319	3428		221	3438	1502	468	3441	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	179	586	210	364	829	204	193	692	333	145	804	162
RTOR Reduction (vph)	0	34	0	0	19	0	0	0	228	0	15	0
Lane Group Flow (vph)	179	762	0	364	1014	0	193	692	105	145	951	0
Confl. Peds. (#/hr)	16		7	7		16	3		18	18		3
Heavy Vehicles (%)	0%	1%	2%	2%	1%	4%	1%	5%	4%	3%	2%	2%
Turn Type	D.P+P	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	4			4			2		2	6		
Actuated Green, G (s)	44.5	32.5		45.7	33.7		42.1	34.1	34.1	41.9	34.0	
Effective Green, g (s)	44.5	32.5		45.7	33.7		42.1	34.1	34.1	41.9	34.0	
Actuated g/C Ratio	0.41	0.30		0.42	0.31		0.39	0.31	0.31	0.39	0.31	
Clearance Time (s)	4.0	7.0		4.0	7.0		4.0	7.0	7.0	4.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	249	1020		294	1064		201	1080	472	274	1078	
v/s Ratio Prot	0.07	0.22		c0.14	0.30		c0.07	0.20		0.04	0.28	
v/s Ratio Perm	0.22			c0.38			c0.30		0.07	0.17		
v/c Ratio	0.72	0.75		1.24	0.95		0.96	0.64	0.22	0.53	0.88	
Uniform Delay, d1	24.6	34.3		25.1	36.6		26.2	31.9	27.4	23.1	35.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	9.5	3.0		132.8	17.3		51.9	2.9	1.1	1.8	10.4	
Delay (s)	34.2	37.3		157.9	53.9		78.1	34.9	28.5	24.9	45.8	
Level of Service	C	D		F	D		E	C	C	C	D	
Approach Delay (s)		36.7			81.0			40.0			43.1	
Approach LOS		D			F			D			D	
Intersection Summary												
HCM 2000 Control Delay			52.2		HCM 2000 Level of Service					D		
HCM 2000 Volume to Capacity ratio			1.12									
Actuated Cycle Length (s)			108.5		Sum of lost time (s)					22.0		
Intersection Capacity Utilization			99.8%		ICU Level of Service					F		
Analysis Period (min)			15									

c Critical Lane Group

Lanes, Volumes, Timings
104: Ontario Street South & Pearl Street

PM - Background Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	6	55	49	1291	1375	13
Future Volume (vph)	6	55	49	1291	1375	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	20.0			0.0
Storage Lanes	1	0	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor						
Frt	0.878				0.999	
Frt Protected	0.995		0.950			
Satd. Flow (prot)	1660	0	1752	3471	3571	0
Frt Permitted	0.995		0.950			
Satd. Flow (perm)	1660	0	1752	3471	3571	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	125.8			99.0	95.4	
Travel Time (s)	9.1			7.1	6.9	
Confl. Peds. (#/hr)			6			6
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	3%	4%	1%	0%
Adj. Flow (vph)	6	55	49	1291	1375	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	61	0	49	1291	1388	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
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)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 51.1%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
104: Ontario Street South & Pearl Street

PM - Background Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	6	55	49	1291	1375	13
Future Volume (Veh/h)	6	55	49	1291	1375	13
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	6	55	49	1291	1375	13
Pedestrians	6					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)					95	
pX, platoon unblocked	0.75	0.75	0.75			
vC, conflicting volume	2131	700	1394			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1835	0	846			
tC, single (s)	6.8	6.9	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	87	93	92			
cM capacity (veh/h)	47	809	579			
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	61	49	646	646	917	471
Volume Left	6	49	0	0	0	0
Volume Right	55	0	0	0	0	13
cSH	311	579	1700	1700	1700	1700
Volume to Capacity	0.20	0.08	0.38	0.38	0.54	0.28
Queue Length 95th (m)	5.7	2.2	0.0	0.0	0.0	0.0
Control Delay (s)	19.4	11.8	0.0	0.0	0.0	0.0
Lane LOS	C	B				
Approach Delay (s)	19.4	0.4			0.0	
Approach LOS	C					
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			51.1%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
105: Pearl Street & Bruce Street

PM - Background Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	41	54	39	20	10	27
Future Volume (vph)	41	54	39	20	10	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.954		0.901	
Flt Protected		0.979			0.987	
Satd. Flow (prot)	0	1860	1777	0	1690	0
Flt Permitted		0.979			0.987	
Satd. Flow (perm)	0	1860	1777	0	1690	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		49.0	125.8		50.0	
Travel Time (s)		3.5	9.1		3.6	
Confl. Peds. (#/hr)	5			5		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	3%	0%	0%	0%
Adj. Flow (vph)	41	54	39	20	10	27
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	95	59	0	37	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
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)	25			15	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	22.1%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
105: Pearl Street & Bruce Street

PM - Background Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	41	54	39	20	10	27
Future Volume (Veh/h)	41	54	39	20	10	27
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	41	54	39	20	10	27
Pedestrians		1			5	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	64				190	55
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	64				190	55
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				99	97
cM capacity (veh/h)	1545				779	1012
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	95	59	37			
Volume Left	41	0	10			
Volume Right	0	20	27			
cSH	1545	1700	937			
Volume to Capacity	0.03	0.03	0.04			
Queue Length 95th (m)	0.7	0.0	1.0			
Control Delay (s)	3.3	0.0	9.0			
Lane LOS	A		A			
Approach Delay (s)	3.3	0.0	9.0			
Approach LOS			A			
Intersection Summary						
Average Delay	3.4					
Intersection Capacity Utilization	22.1%			ICU Level of Service	A	
Analysis Period (min)	15					

Lanes, Volumes, Timings
106: Prince Street & Pearl Street

PM - Background Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	5	23	2	27	29	5	1	22	29	7	12	1
Future Volume (vph)	5	23	2	27	29	5	1	22	29	7	12	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.991			0.989			0.925			0.993	
Flt Protected		0.992			0.978			0.999			0.983	
Satd. Flow (prot)	0	1868	0	0	1838	0	0	1756	0	0	1855	0
Flt Permitted		0.992			0.978			0.999			0.983	
Satd. Flow (perm)	0	1868	0	0	1838	0	0	1756	0	0	1855	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		56.3			48.9			56.6			38.8	
Travel Time (s)		4.1			3.5			4.1			2.8	
Confl. Peds. (#/hr)	5		20	20		5			3	3		
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	5	23	2	27	29	5	1	22	29	7	12	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	30	0	0	61	0	0	52	0	0	20	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		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	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization 20.0%	ICU Level of Service A											
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis
106: Prince Street & Pearl Street

PM - Background Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	5	23	2	27	29	5	1	22	29	7	12	1	
Future Volume (Veh/h)	5	23	2	27	29	5	1	22	29	7	12	1	
Sign Control	Free			Free			Stop			Stop			
Grade	0%			0%			0%			0%			
Peak Hour 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	
Hourly flow rate (vph)	5	23	2	27	29	5	1	22	29	7	12	1	
Pedestrians					3	20				5			
Lane Width (m)					3.6	3.6				3.6			
Walking Speed (m/s)					1.2	1.2				1.2			
Percent Blockage					0	2				0			
Right turn flare (veh)													
Median type	None				None								
Median storage (veh)													
Upstream signal (m)													
pX, platoon unblocked													
vC, conflicting volume	39	45			146			147	47	168	146	36	
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	39	45			146			147	47	168	146	36	
tC, single (s)	4.1	4.1			7.1			6.5	6.2	7.1	6.5	6.2	
tC, 2 stage (s)													
tF (s)	2.2	2.2			3.5			4.0	3.3	3.5	4.0	3.3	
p0 queue free %	100	98			100			97	97	99	98	100	
cM capacity (veh/h)	1577	1550			777			718	1008	731	719	1037	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1									
Volume Total	30	61	52	20									
Volume Left	5	27	1	7									
Volume Right	2	5	29	1									
cSH	1577	1550	857	735									
Volume to Capacity	0.00	0.02	0.06	0.03									
Queue Length 95th (m)	0.1	0.4	1.5	0.7									
Control Delay (s)	1.2	3.3	9.5	10.0									
Lane LOS	A	A	A	B									
Approach Delay (s)	1.2	3.3	9.5	10.0									
Approach LOS				A	B								
Intersection Summary													
Average Delay				5.7									
Intersection Capacity Utilization				20.0%	ICU Level of Service			A					
Analysis Period (min)				15									

Lanes, Volumes, Timings PM - Background Traffic 2039 Horizon
101: Prince Street/Private Driveway & Main Street East (240415) 388 Main Street East TIS & PS

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	1004	9	31	1164	8	4	0	28	4	1	13
Future Volume (vph)	9	1004	9	31	1164	8	4	0	28	4	1	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0	30.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5		7.5			7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.999			0.999			0.882			0.902	
Flt Protected	0.950			0.950				0.994			0.989	
Satd. Flow (prot)	1583	1898	0	1805	1877	0	0	1666	0	0	1581	0
Flt Permitted	0.950			0.950				0.994			0.989	
Satd. Flow (perm)	1583	1898	0	1805	1877	0	0	1666	0	0	1581	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		52.0			98.6			55.2			40.6	
Travel Time (s)		3.7			7.1			4.0			2.9	
Confl. Peds. (#/hr)	11		21	21		11			9	9		
Peak Hour 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
Heavy Vehicles (%)	14%	0%	1%	0%	1%	17%	0%	0%	0%	0%	0%	10%
Adj. Flow (vph)	9	1004	9	31	1164	8	4	0	28	4	1	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	9	1013	0	31	1172	0	0	32	0	0	18	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			0.0			0.0	
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		Yes			Yes							
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	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type: Unsignalized												
Intersection Capacity Utilization 74.3%												
ICU Level of Service D												
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis PM - Background Traffic 2039 Horizon
101: Prince Street/Private Driveway & Main Street East (240415) 388 Main Street East TIS & PS

														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations														
Traffic Volume (veh/h)	9	1004	9	31	1164	8	4	0	28	4	1	13		
Future Volume (Veh/h)	9	1004	9	31	1164	8	4	0	28	4	1	13		
Sign Control	Free			Free			Stop			Stop				
Grade	0%			0%			0%			0%				
Peak Hour 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		
Hourly flow rate (vph)	9	1004	9	31	1164	8	4	0	28	4	1	13		
Pedestrians					9		21				11			
Lane Width (m)					3.6		3.6				3.6			
Walking Speed (m/s)					1.2		1.2				1.2			
Percent Blockage					1		2				1			
Right turn flare (veh)														
Median type	TWLTL			TWLTL										
Median storage veh	2			2										
Upstream signal (m)	229													
pX, platoon unblocked	0.60							0.60	0.60			0.60	0.60	0.60
vC, conflicting volume	1183					1034		2287	2292	1038	2300	2293	1179	
vC1, stage 1 conf vol							1048	1048				1241	1241	
vC2, stage 2 conf vol							1240	1245				1059	1052	
vCu, unblocked vol	975					1034		2805	2814	1038	2826	2815	968	
tC, single (s)	4.2					4.1		7.1	6.5	6.2	7.1	6.5	6.3	
tC, 2 stage (s)							6.1	5.5				6.1	5.5	
tF (s)	2.3					2.2		3.5	4.0	3.3	3.5	4.0	3.4	
p0 queue free %	98					95		96	100	90	97	99	93	
cM capacity (veh/h)	396					668		114	134	276	116	136	178	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1								
Volume Total	9	1013	31	1172	32	18								
Volume Left	9	0	31	0	4	4								
Volume Right	0	9	0	8	28	13								
cSH	396	1700	668	1700	234	157								
Volume to Capacity	0.02	0.60	0.05	0.69	0.14	0.11								
Queue Length 95th (m)	0.6	0.0	1.2	0.0	3.7	3.1								
Control Delay (s)	14.3	0.0	10.7	0.0	22.8	31.0								
Lane LOS	B			B			C			D				
Approach Delay (s)	0.1			0.3			22.8			31.0				
Approach LOS	C D													
Intersection Summary														
Average Delay	0.8													
Intersection Capacity Utilization	74.3%													
Analysis Period (min)	15													
ICU Level of Service D														

Lanes, Volumes, Timings
102: Bruce Street & Main Street East

PM - Background Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1009	27	58	1191	11	40
Future Volume (vph)	1009	27	58	1191	11	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.996				0.894	
Flt Protected				0.998	0.989	
Satd. Flow (prot)	1874	0	0	1878	1680	0
Flt Permitted				0.998	0.989	
Satd. Flow (perm)	1874	0	0	1878	1680	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	98.6			35.5	41.7	
Travel Time (s)	7.1			2.6	3.0	
Confl. Peds. (#/hr)		20	20			1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	0%	1%	0%	0%
Adj. Flow (vph)	1009	27	58	1191	11	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1036	0	0	1249	51	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane	Yes					
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	120.2%			ICU Level of Service H		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
102: Bruce Street & Main Street East

PM - Background Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	↖
Traffic Volume (veh/h)	1009	27	58	1191	11	40
Future Volume (Veh/h)	1009	27	58	1191	11	40
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1009	27	58	1191	11	40
Pedestrians				1	20	
Lane Width (m)				3.6	3.6	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	2	
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage (veh)	2					
Upstream signal (m)				130		
pX, platoon unblocked					0.59	
vC, conflicting volume			1056		2350	1044
vC1, stage 1 conf vol					1042	
vC2, stage 2 conf vol					1307	
vCu, unblocked vol			1056		2946	1044
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			91		92	86
cM capacity (veh/h)			656		137	276
Direction, Lane #						
	EB 1	WB 1	NB 1			
Volume Total	1036	1249	51			
Volume Left	0	58	11			
Volume Right	27	0	40			
cSH	1700	656	226			
Volume to Capacity	0.61	0.09	0.23			
Queue Length 95th (m)	0.0	2.3	6.7			
Control Delay (s)	0.0	3.6	25.5			
Lane LOS		A	D			
Approach Delay (s)	0.0	3.6	25.5			
Approach LOS			D			
Intersection Summary						
Average Delay			2.5			
Intersection Capacity Utilization		120.2%		ICU Level of Service	H	
Analysis Period (min)		15				

Lanes, Volumes, Timings

103: Ontario Street South & Main Street East

PM - Background Traffic 2039 Horizon

(240415) 388 Main Street East TIS & PS

	↖	→	↗	↘	←	↖	↗	↘	↙	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖↗		↖	↖↗	↖	↖↗	↖↗	
Traffic Volume (vph)	198	647	231	399	915	225	212	760	366	160	882	179
Future Volume (vph)	198	647	231	399	915	225	212	760	366	160	882	179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		105.0	40.0		0.0	70.0		70.0	50.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor		0.99		1.00			1.00		0.97	0.99		1.00
Frt		0.961			0.970				0.850		0.975	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3408	0	1770	3426	0	1787	3438	1553	1752	3442	0
Flt Permitted	0.118			0.134			0.118			0.208		
Satd. Flow (perm)	224	3408	0	249	3426	0	222	3438	1502	382	3442	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		47			28				320		22	
Link Speed (k/h)		50			50				50		50	
Link Distance (m)		94.8			102.2				95.4		91.4	
Travel Time (s)		6.8			7.4				6.9		6.6	
Confl. Peds. (#/hr)	16		7	7		16	3		18	18		3
Peak Hour 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
Heavy Vehicles (%)	0%	1%	2%	2%	1%	4%	1%	5%	4%	3%	2%	2%
Adj. Flow (vph)	198	647	231	399	915	225	212	760	366	160	882	179
Shared Lane Traffic (%)												
Lane Group Flow (vph)	198	878	0	399	1140	0	212	760	366	160	1061	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			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	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	
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			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lanes, Volumes, Timings

103: Ontario Street South & Main Street East

PM - Background Traffic 2039 Horizon

(240415) 388 Main Street East TIS & PS

	↖	→	↗	↘	←	↖	↗	↘	↙	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	D.P+P	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	4			4			2		2	6		
Detector Phase	3	8		7	4		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	15.0		5.0	15.0		5.0	15.0	15.0	5.0	15.0	
Minimum Split (s)	10.0	35.0		10.0	35.0		10.0	35.0	35.0	10.0	35.0	
Total Split (s)	16.0	41.0		16.0	41.0		12.0	41.0	41.0	12.0	41.0	
Total Split (%)	14.5%	37.3%		14.5%	37.3%		10.9%	37.3%	37.3%	10.9%	37.3%	
Maximum Green (s)	12.0	34.0		12.0	34.0		8.0	34.0	34.0	8.0	34.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.0	3.0		0.0	3.0		0.0	3.0	3.0	0.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	7.0		4.0	7.0		4.0	7.0	7.0	4.0	7.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	Max	Max	None	Max	
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		21.0			21.0			21.0	21.0		21.0	
Pedestrian Calls (#/hr)		0			0			0	0		0	
Act Effect Green (s)	48.3	33.3		49.0	34.0		45.1	34.1	34.1	45.0	34.0	
Actuated g/C Ratio	0.44	0.30		0.45	0.31		0.41	0.31	0.31	0.41	0.31	
v/c Ratio	0.76	0.82		1.44	1.05		1.03	0.71	0.53	0.62	0.98	
Control Delay	40.5	40.7		239.6	78.0		96.9	37.8	8.4	30.9	59.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	40.5	40.7		239.6	78.0		96.9	37.8	8.4	30.9	59.5	
LOS	D	D		F	E		F	D	A	C	E	
Approach Delay		40.7			119.9			39.1			55.8	
Approach LOS		D			F			D			E	
Queue Length 50th (m)	25.2	91.1		~103.4	~146.8		~33.3	79.8	7.4	21.5	122.8	
Queue Length 95th (m)	#57.6	116.7		#165.4	#190.3		#82.5	102.4	33.2	35.8	#170.2	
Internal Link Dist (m)		70.8			78.2			71.4			67.4	
Turn Bay Length (m)	40.0			40.0			70.0		70.0	50.0		
Base Capacity (vph)	274	1092		278	1085		205	1070	688	257	1086	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.72	0.80		1.44	1.05		1.03	0.71	0.53	0.62	0.98	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 109.3

Natural Cycle: 110

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.44

Intersection Signal Delay: 67.4

Intersection Capacity Utilization 107.8%

Intersection LOS: E

ICU Level of Service G

Lanes, Volumes, Timings
103: Ontario Street South & Main Street East

PM - Background Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 103: Ontario Street South & Main Street East

 Ø1	 Ø2	 Ø3	 Ø4
12 s	41 s	16 s	41 s
 Ø5	 Ø6	 Ø7	 Ø8
12 s	41 s	16 s	41 s

HCM Signalized Intersection Capacity Analysis
103: Ontario Street South & Main Street East

PM - Background Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	198	647	231	399	915	225	212	760	366	160	882	179
Future Volume (vph)	198	647	231	399	915	225	212	760	366	160	882	179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.0		4.0	7.0		4.0	7.0	7.0	4.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Flpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	0.97		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	3406		1769	3428		1787	3438	1502	1751	3441	
Flt Permitted	0.12	1.00		0.13	1.00		0.12	1.00	1.00	0.21	1.00	
Satd. Flow (perm)	224	3406		249	3428		221	3438	1502	384	3441	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	198	647	231	399	915	225	212	760	366	160	882	179
RTOR Reduction (vph)	0	33	0	0	19	0	0	0	220	0	15	0
Lane Group Flow (vph)	198	845	0	399	1121	0	212	760	146	160	1046	0
Confl. Peds. (#/hr)	16		7	7		16	3		18	18		3
Heavy Vehicles (%)	0%	1%	2%	2%	1%	4%	1%	5%	4%	3%	2%	2%
Turn Type	D.P+P	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	4			4			2		2	6		
Actuated Green, G (s)	45.3	33.3		46.0	34.0		42.0	34.0	34.0	42.0	34.0	
Effective Green, g (s)	45.3	33.3		46.0	34.0		42.0	34.0	34.0	42.0	34.0	
Actuated g/C Ratio	0.41	0.30		0.42	0.31		0.38	0.31	0.31	0.38	0.31	
Clearance Time (s)	4.0	7.0		4.0	7.0		4.0	7.0	7.0	4.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	256	1037		271	1066		199	1069	467	247	1070	
v/s Ratio Prot	0.08	0.25		c0.16	0.33		c0.08	0.22		0.05	0.30	
v/s Ratio Perm	0.24			c0.46			c0.33		0.10	0.20		
v/c Ratio	0.77	0.82		1.47	1.05		1.07	0.71	0.31	0.65	0.98	
Uniform Delay, d1	25.6	35.2		26.8	37.6		28.4	33.3	28.7	24.1	37.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	13.5	5.0		231.6	42.1		82.2	4.0	1.7	5.7	22.6	
Delay (s)	39.2	40.2		258.4	79.7		110.6	37.3	30.5	29.8	59.9	
Level of Service	D	D		F	E		F	D	C	C	E	
Approach Delay (s)		40.0			126.0			47.1			55.9	
Approach LOS		D			F			D			E	
Intersection Summary												
HCM 2000 Control Delay		71.2			HCM 2000 Level of Service				E			
HCM 2000 Volume to Capacity ratio		1.29										
Actuated Cycle Length (s)		109.3			Sum of lost time (s)				22.0			
Intersection Capacity Utilization		107.8%			ICU Level of Service				G			
Analysis Period (min)		15										

c Critical Lane Group

Lanes, Volumes, Timings
104: Ontario Street South & Pearl Street

PM - Background Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	7	61	54	1419	1510	15
Future Volume (vph)	7	61	54	1419	1510	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	20.0			0.0
Storage Lanes	1	0	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor						
Frt	0.879				0.999	
Frt Protected	0.995		0.950			
Satd. Flow (prot)	1662	0	1752	3471	3571	0
Frt Permitted	0.995		0.950			
Satd. Flow (perm)	1662	0	1752	3471	3571	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	125.8			99.0	95.4	
Travel Time (s)	9.1			7.1	6.9	
Confl. Peds. (#/hr)			6			6
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	3%	4%	1%	0%
Adj. Flow (vph)	7	61	54	1419	1510	15
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	0	54	1419	1525	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
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)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 55.7%	ICU Level of Service B					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
104: Ontario Street South & Pearl Street

PM - Background Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	7	61	54	1419	1510	15
Future Volume (Veh/h)	7	61	54	1419	1510	15
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	7	61	54	1419	1510	15
Pedestrians	6					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)					95	
pX, platoon unblocked	0.71	0.71	0.71			
vC, conflicting volume	2341	768	1531			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2071	0	928			
tC, single (s)	6.8	6.9	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	77	92	89			
cM capacity (veh/h)	30	770	512			
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	68	54	710	710	1007	518
Volume Left	7	54	0	0	0	0
Volume Right	61	0	0	0	0	15
cSH	219	512	1700	1700	1700	1700
Volume to Capacity	0.31	0.11	0.42	0.42	0.59	0.30
Queue Length 95th (m)	10.2	2.8	0.0	0.0	0.0	0.0
Control Delay (s)	28.7	12.9	0.0	0.0	0.0	0.0
Lane LOS	D	B				
Approach Delay (s)	28.7	0.5			0.0	
Approach LOS	D					
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization 55.7%				ICU Level of Service	B	
Analysis Period (min)			15			

Lanes, Volumes, Timings
105: Pearl Street & Bruce Street

PM - Background Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	46	59	43	22	11	30
Future Volume (vph)	46	59	43	22	11	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.954		0.901	
Flt Protected		0.979			0.987	
Satd. Flow (prot)	0	1860	1777	0	1690	0
Flt Permitted		0.979			0.987	
Satd. Flow (perm)	0	1860	1777	0	1690	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		49.0	125.8		50.0	
Travel Time (s)		3.5	9.1		3.6	
Confl. Peds. (#/hr)	5			5		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	3%	0%	0%	0%
Adj. Flow (vph)	46	59	43	22	11	30
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	105	65	0	41	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
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)	25			15	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	22.6%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
105: Pearl Street & Bruce Street

PM - Background Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (veh/h)	46	59	43	22	11	30
Future Volume (Veh/h)	46	59	43	22	11	30
Sign Control	Free	Free	Free	Stop	Stop	Stop
Grade	0%	0%	0%	0%	0%	0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	46	59	43	22	11	30
Pedestrians		1			5	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type	None	None				
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	70				210	60
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	70				210	60
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				99	97
cM capacity (veh/h)	1537				756	1006
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	105	65	41			
Volume Left	46	0	11			
Volume Right	0	22	30			
cSH	1537	1700	924			
Volume to Capacity	0.03	0.04	0.04			
Queue Length 95th (m)	0.7	0.0	1.1			
Control Delay (s)	3.4	0.0	9.1			
Lane LOS	A		A			
Approach Delay (s)	3.4	0.0	9.1			
Approach LOS			A			
Intersection Summary						
Average Delay			3.4			
Intersection Capacity Utilization			22.6%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
106: Prince Street & Pearl Street

PM - Background Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	5	26	3	30	32	5	1	24	32	8	13	1
Future Volume (vph)	5	26	3	30	32	5	1	24	32	8	13	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.988			0.990			0.924			0.994	
Flt Protected		0.993			0.978			0.999			0.982	
Satd. Flow (prot)	0	1864	0	0	1840	0	0	1754	0	0	1855	0
Flt Permitted		0.993			0.978			0.999			0.982	
Satd. Flow (perm)	0	1864	0	0	1840	0	0	1754	0	0	1855	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		56.3			48.9			56.6			38.8	
Travel Time (s)		4.1			3.5			4.1			2.8	
Confl. Peds. (#/hr)	5		20	20		5			3	3		
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	5	26	3	30	32	5	1	24	32	8	13	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	34	0	0	67	0	0	57	0	0	22	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		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	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization 22.0%	ICU Level of Service A											
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis
106: Prince Street & Pearl Street

PM - Background Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	26	3	30	32	5	1	24	32	8	13	1
Future Volume (Veh/h)	5	26	3	30	32	5	1	24	32	8	13	1
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour 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
Hourly flow rate (vph)	5	26	3	30	32	5	1	24	32	8	13	1
Pedestrians					3					20	5	
Lane Width (m)					3.6					3.6	3.6	
Walking Speed (m/s)					1.2					1.2	1.2	
Percent Blockage					0					2	0	
Right turn flare (veh)												
Median type	None				None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	42				49				160	160	50	184
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	42				49				160	160	50	184
tC, single (s)	4.1				4.1				7.1	6.5	6.2	7.1
tC, 2 stage (s)												
tF (s)	2.2				2.2				3.5	4.0	3.3	3.5
p0 queue free %	100				98				100	97	97	99
cM capacity (veh/h)	1573				1545				760	705	1004	708
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	34	67	57	22								
Volume Left	5	30	1	8								
Volume Right	3	5	32	1								
cSH	1573	1545	848	717								
Volume to Capacity	0.00	0.02	0.07	0.03								
Queue Length 95th (m)	0.1	0.5	1.7	0.8								
Control Delay (s)	1.1	3.4	9.6	10.2								
Lane LOS	A	A	A	B								
Approach Delay (s)	1.1	3.4	9.6	10.2								
Approach LOS			A	B								
Intersection Summary												
Average Delay				5.7								
Intersection Capacity Utilization	22.0%			ICU Level of Service			A					
Analysis Period (min)	15											

Appendix H

Total Traffic Operation Reports



Lanes, Volumes, Timings

AM - Total Traffic 2034 Horizon

101: Prince Street/Private Driveway & Main Street East(240415) 388 Main Street East TIS & PS

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	789	24	11	621	2	32	0	29	0	0	1
Future Volume (vph)	0	789	24	11	621	2	32	0	29	0	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.996						0.936			0.865	
Flt Protected				0.950				0.974				
Satd. Flow (prot)	1900	1835	0	1805	1827	0	0	1732	0	0	1644	0
Flt Permitted				0.950				0.974				
Satd. Flow (perm)	1900	1835	0	1805	1827	0	0	1732	0	0	1644	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		52.0			98.6			94.0			40.6	
Travel Time (s)		3.7			7.1			6.8			2.9	
Confl. Peds. (#/hr)	18		12	12		18			11	11		
Peak Hour 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
Heavy Vehicles (%)	0%	3%	8%	0%	4%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	789	24	11	621	2	32	0	29	0	0	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	813	0	11	623	0	0	61	0	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			0.0			0.0	
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		Yes			Yes							
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	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	61.2%											
Analysis Period (min)	15											
	ICU Level of Service B											

HCM Unsignalized Intersection Capacity Analysis

AM - Total Traffic 2034 Horizon

101: Prince Street/Private Driveway & Main Street East(240415) 388 Main Street East TIS & PS

																
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR				
Lane Configurations																
Traffic Volume (veh/h)	0	789	24	11	621	2	32	0	29	0	0	1				
Future Volume (Veh/h)	0	789	24	11	621	2	32	0	29	0	0	1				
Sign Control	Free			Free			Stop			Stop						
Grade	0%			0%			0%			0%						
Peak Hour 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				
Hourly flow rate (vph)	0	789	24	11	621	2	32	0	29	0	0	1				
Pedestrians					11					12			18			
Lane Width (m)					3.6					3.6			3.6			
Walking Speed (m/s)					1.2					1.2			1.2			
Percent Blockage					1					1			2			
Right turn flare (veh)																
Median type	TWLTL			TWLTL												
Median storage veh	2			2												
Upstream signal (m)				229												
pX, platoon unblocked	0.83							0.83	0.83	0.83	0.83	0.83				
vC, conflicting volume	641				825				1457	1476	824	1491	1487	640		
vC1, stage 1 conf vol							813	813				662	662			
vC2, stage 2 conf vol							644	663				829	825			
vCu, unblocked vol	459				825				1448	1471	824	1489	1484	458		
tC, single (s)	4.1				4.1				7.1	6.5	6.2	7.1	6.5	6.2		
tC, 2 stage (s)							6.1	5.5				6.1	5.5			
tF (s)	2.2				2.2				3.5	4.0	3.3	3.5	4.0	3.3		
p0 queue free %	100				99				89	100	92	100	100	100		
cM capacity (veh/h)	904				806				297	303	369	266	296	493		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1										
Volume Total	0	813	11	623	61	1										
Volume Left	0	0	11	0	32	0										
Volume Right	0	24	0	2	29	1										
cSH	1700	1700	806	1700	327	493										
Volume to Capacity	0.00	0.48	0.01	0.37	0.19	0.00										
Queue Length 95th (m)	0.0	0.0	0.3	0.0	5.4	0.0										
Control Delay (s/veh)	0.0	0.0	9.5	0.0	18.5	12.3										
Lane LOS				A	C	B										
Approach Delay (s/veh)	0.0				0.2	18.5	12.3									
Approach LOS							C	B								
Intersection Summary																
Average Delay				0.8												
Intersection Capacity Utilization				61.2%	ICU Level of Service				B							
Analysis Period (min)				15												

Lanes, Volumes, Timings
102: Bruce Street & Main Street East

AM - Total Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	826	3	42	646	2	87
Future Volume (vph)	826	3	42	646	2	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt					0.868	
Flt Protected				0.997	0.999	
Satd. Flow (prot)	1863	0	0	1826	1648	0
Flt Permitted				0.997	0.999	
Satd. Flow (perm)	1863	0	0	1826	1648	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	98.6			35.5	41.7	
Travel Time (s)	7.1			2.6	3.0	
Confl. Peds. (#/hr)		12	12			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	0%	4%	0%	0%
Adj. Flow (vph)	826	3	42	646	2	87
Shared Lane Traffic (%)						
Lane Group Flow (vph)	829	0	0	688	89	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane	Yes					
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	80.6%			ICU Level of Service D		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis 102: Bruce Street & Main Street East

AM - Total Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰			↱	↰	↱
Traffic Volume (veh/h)	826	3	42	646	2	87
Future Volume (Veh/h)	826	3	42	646	2	87
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	826	3	42	646	2	87
Pedestrians					12	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type	TWLT			None		
Median storage veh	2					
Upstream signal (m)				130		
pX, platoon unblocked					0.79	
vC, conflicting volume			841		1570	840
vC1, stage 1 conf vol					840	
vC2, stage 2 conf vol					730	
vCu, unblocked vol			841		1588	840
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			95		99	76
cM capacity (veh/h)			795		312	365
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	829	688	89			
Volume Left	0	42	2			
Volume Right	3	0	87			
cSH	1700	795	363			
Volume to Capacity	0.49	0.05	0.24			
Queue Length 95th (m)	0.0	1.3	7.6			
Control Delay (s/veh)	0.0	1.4	18.1			
Lane LOS		A	C			
Approach Delay (s/veh)	0.0	1.4	18.1			
Approach LOS			C			
Intersection Summary						
Average Delay			1.6			
Intersection Capacity Utilization			80.6%	ICU Level of Service		D
Analysis Period (min)			15			

Lanes, Volumes, Timings

103: Ontario Street South & Main Street East

AM - Total Traffic 2034 Horizon

(240415) 388 Main Street East TIS & PS

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	201	533	102	323	439	130	129	885	468	98	626	181
Future Volume (vph)	201	533	102	323	439	130	129	885	468	98	626	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		105.0	40.0		0.0	70.0		70.0	50.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor	0.99	1.00		1.00	0.99		1.00		0.98	1.00	0.99	
Frt		0.976			0.966				0.850		0.966	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	3426	0	1736	3288	0	1719	3471	1583	1641	3164	0
Flt Permitted	0.289			0.215			0.208			0.197		
Satd. Flow (perm)	530	3426	0	391	3288	0	375	3471	1546	340	3164	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		21			36				373		35	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		94.8			102.2			95.4			91.4	
Travel Time (s)		6.8			7.4			6.9			6.6	
Confl. Peds. (#/hr)	14		9	9		14	9		10	10		9
Peak Hour 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
Heavy Vehicles (%)	3%	2%	5%	4%	4%	10%	5%	4%	2%	10%	11%	5%
Adj. Flow (vph)	201	533	102	323	439	130	129	885	468	98	626	181
Shared Lane Traffic (%)												
Lane Group Flow (vph)	201	635	0	323	569	0	129	885	468	98	807	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			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	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+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			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lanes, Volumes, Timings

103: Ontario Street South & Main Street East

AM - Total Traffic 2034 Horizon

(240415) 388 Main Street East TIS & PS

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	D.P+P	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	4			4			2		2	6		
Detector Phase	3	8		7	4		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	15.0		5.0	15.0		5.0	15.0	15.0	5.0	15.0	
Minimum Split (s)	10.0	35.0		10.0	35.0		10.0	35.0	35.0	10.0	35.0	
Total Split (s)	16.0	41.0		16.0	41.0		12.0	41.0	41.0	12.0	41.0	
Total Split (%)	14.5%	37.3%		14.5%	37.3%		10.9%	37.3%	37.3%	10.9%	37.3%	
Maximum Green (s)	12.0	34.0		12.0	34.0		8.0	34.0	34.0	8.0	34.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.0	3.0		0.0	3.0		0.0	3.0	3.0	0.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	7.0		4.0	7.0		4.0	7.0	7.0	4.0	7.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	Max	Max	None	Max	
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	
Flash Don't Walk (s)		21.0			21.0			21.0	21.0		21.0	
Pedestrian Calls (#/hr)		0			0			0	0		0	
Act Effect Green (s)	38.1	23.1		39.0	24.0		45.9	36.6	36.6	44.6	34.1	
Actuated g/C Ratio	0.38	0.23		0.39	0.24		0.46	0.37	0.37	0.45	0.34	
v/c Ratio	0.59	0.78		1.02	0.69		0.46	0.69	0.58	0.39	0.73	
Control Delay (s/veh)	25.9	41.5		80.7	36.8		20.6	31.7	9.5	19.6	32.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	25.9	41.5		80.7	36.8		20.6	31.7	9.5	19.6	32.5	
LOS	C	D		F	D		C	C	A	B	C	
Approach Delay (s/veh)		37.8			52.7			23.7			31.1	
Approach LOS		D			D			C			C	
Queue Length 50th (m)	25.7	61.5		~47.8	52.4		13.5	81.6	13.2	10.1	70.8	
Queue Length 95th (m)	41.6	81.3		#102.7	71.0		28.0	117.5	49.2	22.3	104.7	
Internal Link Dist (m)		70.8			78.2			71.4			67.4	
Turn Bay Length (m)	40.0			40.0			70.0		70.0	50.0		
Base Capacity (vph)	357	1192		317	1155		282	1281	806	260	1111	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.56	0.53		1.02	0.49		0.46	0.69	0.58	0.38	0.73	
Intersection Summary												
Area Type:	Other											
Cycle Length:	110											
Actuated Cycle Length:	99.1											
Natural Cycle:	90											
Control Type:	Semi Act-Uncoord											
Maximum v/c Ratio:	1.02											
Intersection Signal Delay (s/veh):	34.5						Intersection LOS: C					
Intersection Capacity Utilization	86.2%						ICU Level of Service E					

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 103: Ontario Street South & Main Street East

 Ø1	 Ø2	 Ø3	 Ø4
12 s	41 s	16 s	41 s
 Ø5	 Ø6	 Ø7	 Ø8
12 s	41 s	16 s	41 s

HCM Signalized Intersection Capacity Analysis

103: Ontario Street South & Main Street East

AM - Total Traffic 2034 Horizon

(240415) 388 Main Street East TIS & PS

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	201	533	102	323	439	130	129	885	468	98	626	181
Future Volume (vph)	201	533	102	323	439	130	129	885	468	98	626	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.0		4.0	7.0		4.0	7.0	7.0	4.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.97		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1750	3426		1735	3288		1718	3471	1548	1640	3166	
Flt Permitted	0.29	1.00		0.22	1.00		0.21	1.00	1.00	0.20	1.00	
Satd. Flow (perm)	533	3426		393	3288		376	3471	1548	341	3166	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	201	533	102	323	439	130	129	885	468	98	626	181
RTOR Reduction (vph)	0	16	0	0	27	0	0	0	236	0	23	0
Lane Group Flow (vph)	201	619	0	323	542	0	129	885	232	98	784	0
Confl. Peds. (#/hr)	14		9	9		14	9		10	10		9
Heavy Vehicles (%)	3%	2%	5%	4%	4%	10%	5%	4%	2%	10%	11%	5%
Turn Type	D.P+P	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	4			4			2		2	6		
Actuated Green, G (s)	35.1	23.1		36.0	24.0		44.4	36.6	36.6	41.2	35.0	
Effective Green, g (s)	35.1	23.1		36.0	24.0		44.4	36.6	36.6	41.2	35.0	
Actuated g/C Ratio	0.35	0.23		0.36	0.24		0.44	0.37	0.37	0.41	0.35	
Clearance Time (s)	4.0	7.0		4.0	7.0		4.0	7.0	7.0	4.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	322	792		302	789		271	1271	567	221	1109	
v/s Ratio Prot	0.07	0.18		c0.13	0.16		c0.04	c0.25		0.03	0.25	
v/s Ratio Perm	0.15			c0.26			0.17		0.15	0.16		
v/c Ratio	0.62	0.78		1.07	0.69		0.48	0.70	0.41	0.44	0.71	
Uniform Delay, d1	24.2	36.0		27.3	34.5		18.0	26.9	23.6	19.4	28.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.7	5.0		71.4	2.5		1.3	3.2	2.2	1.4	3.8	
Delay (s)	27.9	41.1		98.7	37.0		19.3	30.1	25.8	20.9	31.8	
Level of Service	C	D		F	D		B	C	C	C	C	
Approach Delay (s/veh)		37.9			59.4			27.8			30.6	
Approach LOS		D			E			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			37.3			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.87									
Actuated Cycle Length (s)			99.9			Sum of lost time (s)			22.0			
Intersection Capacity Utilization			86.2%			ICU Level of Service			E			
Analysis Period (min)			15									

c Critical Lane Group

Lanes, Volumes, Timings
104: Ontario Street South & Pearl Street

AM - Total Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	2	79	70	1488	1048	27
Future Volume (vph)	2	79	70	1488	1048	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	20.0			0.0
Storage Lanes	1	0	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor						
Frt	0.868				0.996	
Flt Protected	0.999		0.950			
Satd. Flow (prot)	1648	0	1805	3471	3332	0
Flt Permitted	0.999		0.950			
Satd. Flow (perm)	1648	0	1805	3471	3332	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	125.8			99.0	95.4	
Travel Time (s)	9.1			7.1	6.9	
Confl. Peds. (#/hr)			4			4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	4%	8%	5%
Adj. Flow (vph)	2	79	70	1488	1048	27
Shared Lane Traffic (%)						
Lane Group Flow (vph)	81	0	70	1488	1075	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
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)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	52.8%			ICU Level of Service A		
Analysis Period (min)	15					

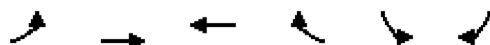
HCM Unsignalized Intersection Capacity Analysis 104: Ontario Street South & Pearl Street

AM - Total Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	79	70	1488	1048	27
Future Volume (Veh/h)	2	79	70	1488	1048	27
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	2	79	70	1488	1048	27
Pedestrians	4					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)	95					
pX, platoon unblocked	0.81	0.81	0.81			
vC, conflicting volume	1950	542	1079			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1702	0	626			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	91	91			
cM capacity (veh/h)	62	880	779			
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	81	70	744	744	699	376
Volume Left	2	70	0	0	0	0
Volume Right	79	0	0	0	0	27
cSH	664	779	1700	1700	1700	1700
Volume to Capacity	0.12	0.09	0.44	0.44	0.41	0.22
Queue Length 95th (m)	3.3	2.4	0.0	0.0	0.0	0.0
Control Delay (s/veh)	11.2	10.1	0.0	0.0	0.0	0.0
Lane LOS	B	B				
Approach Delay (s/veh)	11.2	0.5			0.0	
Approach LOS	B					
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			52.8%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
105: Pearl Street & Bruce Street

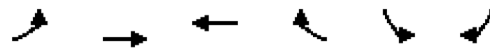
AM - Total Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	87	73	81	7	6	34
Future Volume (vph)	87	73	81	7	6	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.989		0.885	
Flt Protected		0.974			0.993	
Satd. Flow (prot)	0	1851	1845	0	1670	0
Flt Permitted		0.974			0.993	
Satd. Flow (perm)	0	1851	1845	0	1670	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		49.0	125.8		50.0	
Travel Time (s)		3.5	9.1		3.6	
Confl. Peds. (#/hr)					1	3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%
Adj. Flow (vph)	87	73	81	7	6	34
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	160	88	0	40	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
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)	25			15	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	26.3%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis 105: Pearl Street & Bruce Street

AM - Total Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	87	73	81	7	6	34
Future Volume (Veh/h)	87	73	81	7	6	34
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	87	73	81	7	6	34
Pedestrians		3	1			
Lane Width (m)		3.6	3.6			
Walking Speed (m/s)		1.2	1.2			
Percent Blockage		0	0			
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	88				333	88
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	88				333	88
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	94				99	97
cM capacity (veh/h)	1520				628	974
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	160	88	40			
Volume Left	87	0	6			
Volume Right	0	7	34			
cSH	1520	1700	900			
Volume to Capacity	0.06	0.05	0.04			
Queue Length 95th (m)	1.5	0.0	1.1			
Control Delay (s/veh)	4.3	0.0	9.2			
Lane LOS	A		A			
Approach Delay (s/veh)	4.3	0.0	9.2			
Approach LOS			A			
Intersection Summary						
Average Delay			3.7			
Intersection Capacity Utilization			26.3%	ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings
106: Prince Street & Pearl Street

AM - Total Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	17	1	7	21	29	2	30	23	19	17	1
Future Volume (vph)	2	17	1	7	21	29	2	30	23	19	17	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.993			0.931			0.944			0.996	
Flt Protected		0.995			0.994			0.998			0.975	
Satd. Flow (prot)	0	1877	0	0	1720	0	0	1790	0	0	1797	0
Flt Permitted		0.995			0.994			0.998			0.975	
Satd. Flow (perm)	0	1877	0	0	1720	0	0	1790	0	0	1797	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		56.3			48.9			56.6			94.0	
Travel Time (s)		4.1			3.5			4.1			6.8	
Confl. Peds. (#/hr)	1		7	7		1	5					5
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	0%	6%	0%	0%	0%	0%	0%	0%	100%
Adj. Flow (vph)	2	17	1	7	21	29	2	30	23	19	17	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	20	0	0	57	0	0	55	0	0	37	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		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	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	21.5%											
Analysis Period (min)	15											
ICU Level of Service A												

HCM Unsignalized Intersection Capacity Analysis

106: Prince Street & Pearl Street

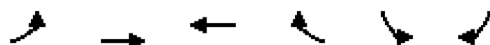
AM - Total Traffic 2034 Horizon

(240415) 388 Main Street East TIS & PS

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	17	1	7	21	29	2	30	23	19	17	1
Future Volume (Veh/h)	2	17	1	7	21	29	2	30	23	19	17	1
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour 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
Hourly flow rate (vph)	2	17	1	7	21	29	2	30	23	19	17	1
Pedestrians	5						7			1		
Lane Width (m)	3.6						3.6			3.6		
Walking Speed (m/s)	1.2						1.2			1.2		
Percent Blockage	0						1			0		
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	51	25			93			94	25	110	80	42
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	51	25			93			94	25	110	80	42
tC, single (s)	4.1	4.1			7.1			6.5	6.2	7.1	6.5	7.2
tC, 2 stage (s)												
tF (s)	2.2	2.2			3.5			4.0	3.3	3.5	4.0	4.2
p0 queue free %	100	100			100			96	98	98	98	100
cM capacity (veh/h)	1567	1593			864			791	1051	821	805	804
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	20	57	55	37								
Volume Left	2	7	2	19								
Volume Right	1	29	23	1								
cSH	1567	1593	885	813								
Volume to Capacity	0.00	0.00	0.06	0.05								
Queue Length 95th (m)	0.0	0.1	1.6	1.1								
Control Delay (s/veh)	0.7	0.9	9.3	9.6								
Lane LOS	A	A	A	A								
Approach Delay (s/veh)	0.7	0.9	9.3	9.6								
Approach LOS	A			A								
Intersection Summary												
Average Delay	5.5											
Intersection Capacity Utilization	21.5%			ICU Level of Service					A			
Analysis Period (min)	15											

Lanes, Volumes, Timings
107: Pearl Street & South Driveway

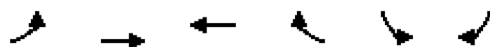
AM - Total Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	9	50	76	39	88	22
Future Volume (vph)	9	50	76	39	88	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.954		0.973	
Flt Protected		0.992			0.962	
Satd. Flow (prot)	0	1848	1777	0	1744	0
Flt Permitted		0.992			0.962	
Satd. Flow (perm)	0	1848	1777	0	1744	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		48.9	49.0		35.8	
Travel Time (s)		3.5	3.5		2.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	9	50	76	39	88	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	59	115	0	110	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
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)	25			15	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	22.7%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis 107: Pearl Street & South Driveway

AM - Total Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	9	50	76	39	88	22
Future Volume (Veh/h)	9	50	76	39	88	22
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	9	50	76	39	88	22
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	115				164	96
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	115				164	96
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				89	98
cM capacity (veh/h)	1474				822	961
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	59	115	110			
Volume Left	9	0	88			
Volume Right	0	39	22			
cSH	1474	1700	847			
Volume to Capacity	0.01	0.07	0.13			
Queue Length 95th (m)	0.1	0.0	3.6			
Control Delay (s/veh)	1.2	0.0	9.9			
Lane LOS	A		A			
Approach Delay (s/veh)	1.2	0.0	9.9			
Approach LOS			A			
Intersection Summary						
Average Delay			4.1			
Intersection Capacity Utilization			22.7%	ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings
108: Bruce Street & East Driveway

AM - Total Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	3	1	1	93	42	3
Future Volume (vph)	3	1	1	93	42	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.966	0.991				
Flt Protected	0.964	0.999				
Satd. Flow (prot)	1735	0	0	1861	1846	0
Flt Permitted	0.964	0.999				
Satd. Flow (perm)	1735	0	0	1861	1846	0
Link Speed (k/h)	50	50				
Link Distance (m)	34.5	50.0				
Travel Time (s)	2.5	3.0				
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	3	1	1	93	42	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	4	0	0	94	45	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6	0.0				
Link Offset(m)	0.0	0.0				
Crosswalk Width(m)	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)	25	15	25	15		
Sign Control	Stop	Free			Free	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilization 15.7%				ICU Level of Service A		
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis 108: Bruce Street & East Driveway

AM - Total Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	1	1	93	42	3
Future Volume (Veh/h)	3	1	1	93	42	3
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	3	1	1	93	42	3
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	139	44	45			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	139	44	45			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	854	1027	1563			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	4	94	45			
Volume Left	3	1	0			
Volume Right	1	0	3			
cSH	892	1563	1700			
Volume to Capacity	0.00	0.00	0.03			
Queue Length 95th (m)	0.1	0.0	0.0			
Control Delay (s/veh)	9.1	0.1	0.0			
Lane LOS	A	A				
Approach Delay (s/veh)	9.1	0.1	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		0.3				
Intersection Capacity Utilization		15.7%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings

AM - Total Traffic 2039 Horizon

101: Prince Street/Private Driveway & Main Street East(240415) 388 Main Street East TIS & PS

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	870	25	12	685	3	33	0	32	0	0	1
Future Volume (vph)	0	870	25	12	685	3	33	0	32	0	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.996			0.999			0.934			0.865	
Flt Protected				0.950				0.975				
Satd. Flow (prot)	1900	1835	0	1805	1825	0	0	1730	0	0	1644	0
Flt Permitted				0.950				0.975				
Satd. Flow (perm)	1900	1835	0	1805	1825	0	0	1730	0	0	1644	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		52.0			98.6			94.0			40.6	
Travel Time (s)		3.7			7.1			6.8			2.9	
Confl. Peds. (#/hr)	18		12	12		18			11	11		
Peak Hour 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
Heavy Vehicles (%)	0%	3%	8%	0%	4%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	870	25	12	685	3	33	0	32	0	0	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	895	0	12	688	0	0	65	0	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			0.0			0.0	
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		Yes			Yes							
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	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	65.7%											
Analysis Period (min)	15											
ICU Level of Service C												

HCM Unsignalized Intersection Capacity Analysis

AM - Total Traffic 2039 Horizon

101: Prince Street/Private Driveway & Main Street East(240415) 388 Main Street East TIS & PS

																		
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR						
Lane Configurations																		
Traffic Volume (veh/h)	0	870	25	12	685	3	33	0	32	0	0	1						
Future Volume (Veh/h)	0	870	25	12	685	3	33	0	32	0	0	1						
Sign Control	Free			Free			Stop			Stop								
Grade	0%			0%			0%			0%								
Peak Hour 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						
Hourly flow rate (vph)	0	870	25	12	685	3	33	0	32	0	0	1						
Pedestrians					11			12			18							
Lane Width (m)					3.6			3.6			3.6							
Walking Speed (m/s)					1.2			1.2			1.2							
Percent Blockage					1			1			2							
Right turn flare (veh)																		
Median type	TWLTL				TWLTL													
Median storage veh	2				2													
Upstream signal (m)					229													
pX, platoon unblocked	0.81						0.81	0.81			0.81	0.81						
vC, conflicting volume	706				907			1605	1625	906	1642	1636						
vC1, stage 1 conf vol							895	895			729	729						
vC2, stage 2 conf vol							710	730			913	907						
vCu, unblocked vol	515				907			1630	1654	906	1676	1668						
tC, single (s)	4.1				4.1			7.1	6.5	6.2	7.1	6.5						
tC, 2 stage (s)							6.1	5.5			6.1	5.5						
tF (s)	2.2				2.2			3.5	4.0	3.3	3.5	4.0						
p0 queue free %	100				98			87	100	90	100	100						
cM capacity (veh/h)	842				751			263	273	331	232	265						
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1												
Volume Total	0	895	12	688	65	1												
Volume Left	0	0	12	0	33	0												
Volume Right	0	25	0	3	32	1												
cSH	1700	1700	751	1700	293	449												
Volume to Capacity	0.00	0.53	0.02	0.40	0.22	0.00												
Queue Length 95th (m)	0.0	0.0	0.4	0.0	6.7	0.1												
Control Delay (s/veh)	0.0	0.0	9.9	0.0	20.8	13.0												
Lane LOS			A			C			B									
Approach Delay (s/veh)	0.0			0.2			20.8			13.0								
Approach LOS					C					B								
Intersection Summary																		
Average Delay				0.9														
Intersection Capacity Utilization				65.7%	ICU Level of Service				C									
Analysis Period (min)				15														

Lanes, Volumes, Timings
102: Bruce Street & Main Street East

AM - Total Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰			↱	↰	↱
Traffic Volume (vph)	911	4	43	712	2	91
Future Volume (vph)	911	4	43	712	2	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.999				0.868	
Flt Protected				0.997	0.999	
Satd. Flow (prot)	1861	0	0	1825	1648	0
Flt Permitted				0.997	0.999	
Satd. Flow (perm)	1861	0	0	1825	1648	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	98.6			35.5	41.7	
Travel Time (s)	7.1			2.6	3.0	
Confl. Peds. (#/hr)		12	12			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	0%	4%	0%	0%
Adj. Flow (vph)	911	4	43	712	2	91
Shared Lane Traffic (%)						
Lane Group Flow (vph)	915	0	0	755	93	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane	Yes					
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	85.1%			ICU Level of Service E		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis 102: Bruce Street & Main Street East

AM - Total Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	911	4	43	712	2	91
Future Volume (Veh/h)	911	4	43	712	2	91
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	911	4	43	712	2	91
Pedestrians					12	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type	TWLT			None		
Median storage veh	2					
Upstream signal (m)				130		
pX, platoon unblocked					0.77	
vC, conflicting volume			927		1723	925
vC1, stage 1 conf vol					925	
vC2, stage 2 conf vol					798	
vCu, unblocked vol			927		1791	925
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			94		99	72
cM capacity (veh/h)			738		278	326
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	915	755	93			
Volume Left	0	43	2			
Volume Right	4	0	91			
cSH	1700	738	324			
Volume to Capacity	0.54	0.06	0.29			
Queue Length 95th (m)	0.0	1.5	9.3			
Control Delay (s/veh)	0.0	1.5	20.5			
Lane LOS		A	C			
Approach Delay (s/veh)	0.0	1.5	20.5			
Approach LOS			C			
Intersection Summary						
Average Delay			1.7			
Intersection Capacity Utilization			85.1%	ICU Level of Service		E
Analysis Period (min)			15			

Lanes, Volumes, Timings

103: Ontario Street South & Main Street East

AM - Total Traffic 2039 Horizon

(240415) 388 Main Street East TIS & PS

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	219	584	112	355	483	144	142	969	513	108	689	198
Future Volume (vph)	219	584	112	355	483	144	142	969	513	108	689	198
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		105.0	40.0		0.0	70.0		70.0	50.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor	0.99	1.00		1.00	0.99		1.00		0.98	1.00	1.00	
Frt		0.976			0.966				0.850		0.967	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	3426	0	1736	3288	0	1719	3471	1583	1641	3167	0
Flt Permitted	0.257			0.194			0.164			0.128		
Satd. Flow (perm)	471	3426	0	353	3288	0	296	3471	1546	221	3167	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		21			37				343		35	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		94.8			102.2			95.4			91.4	
Travel Time (s)		6.8			7.4			6.9			6.6	
Confl. Peds. (#/hr)	14		9	9		14	9		10	10		9
Peak Hour 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
Heavy Vehicles (%)	3%	2%	5%	4%	4%	10%	5%	4%	2%	10%	11%	5%
Adj. Flow (vph)	219	584	112	355	483	144	142	969	513	108	689	198
Shared Lane Traffic (%)												
Lane Group Flow (vph)	219	696	0	355	627	0	142	969	513	108	887	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			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	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+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			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lanes, Volumes, Timings
103: Ontario Street South & Main Street East

AM - Total Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	D.P+P	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	4			4			2		2	6		
Detector Phase	3	8		7	4		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	15.0		5.0	15.0		5.0	15.0	15.0	5.0	15.0	
Minimum Split (s)	10.0	35.0		10.0	35.0		10.0	35.0	35.0	10.0	35.0	
Total Split (s)	16.0	41.0		16.0	41.0		12.0	41.0	41.0	12.0	41.0	
Total Split (%)	14.5%	37.3%		14.5%	37.3%		10.9%	37.3%	37.3%	10.9%	37.3%	
Maximum Green (s)	12.0	34.0		12.0	34.0		8.0	34.0	34.0	8.0	34.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.0	3.0		0.0	3.0		0.0	3.0	3.0	0.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	7.0		4.0	7.0		4.0	7.0	7.0	4.0	7.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	Max	Max	None	Max	
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	
Flash Don't Walk (s)		21.0			21.0			21.0	21.0		21.0	
Pedestrian Calls (#/hr)		0			0			0	0		0	
Act Effect Green (s)	40.5	25.5		41.2	26.2		45.2	34.3	34.3	44.8	34.1	
Actuated g/C Ratio	0.40	0.25		0.41	0.26		0.44	0.34	0.34	0.44	0.34	
v/c Ratio	0.66	0.80		1.16	0.72		0.59	0.83	0.68	0.53	0.82	
Control Delay (s/veh)	28.6	41.7		125.3	37.3		27.3	39.0	15.2	25.8	37.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	28.6	41.7		125.3	37.3		27.3	39.0	15.2	25.8	37.8	
LOS	C	D		F	D		C	D	B	C	D	
Approach Delay (s/veh)		38.6			69.1			30.5			36.5	
Approach LOS		D			E			C			D	
Queue Length 50th (m)	28.3	69.1		~66.0	59.3		16.2	97.3	28.2	12.1	85.3	
Queue Length 95th (m)	44.9	90.2		#125.7	79.0		#32.6	#147.1	75.1	25.2	#131.7	
Internal Link Dist (m)		70.8			78.2			71.4			67.4	
Turn Bay Length (m)	40.0			40.0			70.0		70.0	50.0		
Base Capacity (vph)	342	1164		306	1128		244	1173	749	210	1086	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.64	0.60		1.16	0.56		0.58	0.83	0.68	0.51	0.82	
Intersection Summary												
Area Type:	Other											
Cycle Length:	110											
Actuated Cycle Length:	101.6											
Natural Cycle:	90											
Control Type:	Semi Act-Uncoord											
Maximum v/c Ratio:	1.16											
Intersection Signal Delay (s/veh):	41.9						Intersection LOS: D					
Intersection Capacity Utilization	92.2%						ICU Level of Service F					

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 103: Ontario Street South & Main Street East

 Ø1	 Ø2	 Ø3	 Ø4
12 s	41 s	16 s	41 s
 Ø5	 Ø6	 Ø7	 Ø8
12 s	41 s	16 s	41 s

HCM Signalized Intersection Capacity Analysis

103: Ontario Street South & Main Street East

AM - Total Traffic 2039 Horizon

(240415) 388 Main Street East TIS & PS

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	219	584	112	355	483	144	142	969	513	108	689	198
Future Volume (vph)	219	584	112	355	483	144	142	969	513	108	689	198
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.0		4.0	7.0		4.0	7.0	7.0	4.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.97		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1750	3426		1735	3287		1719	3471	1547	1641	3166	
Flt Permitted	0.26	1.00		0.19	1.00		0.16	1.00	1.00	0.13	1.00	
Satd. Flow (perm)	473	3426		354	3287		296	3471	1547	221	3166	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	219	584	112	355	483	144	142	969	513	108	689	198
RTOR Reduction (vph)	0	16	0	0	27	0	0	0	227	0	23	0
Lane Group Flow (vph)	219	680	0	355	600	0	142	969	286	108	864	0
Confl. Peds. (#/hr)	14		9	9		14	9		10	10		9
Heavy Vehicles (%)	3%	2%	5%	4%	4%	10%	5%	4%	2%	10%	11%	5%
Turn Type	D.P+P	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	4			4			2		2	6		
Actuated Green, G (s)	37.5	25.5		38.1	26.1		42.2	34.3	34.3	41.8	34.1	
Effective Green, g (s)	37.5	25.5		38.1	26.1		42.2	34.3	34.3	41.8	34.1	
Actuated g/C Ratio	0.37	0.25		0.38	0.26		0.42	0.34	0.34	0.41	0.34	
Clearance Time (s)	4.0	7.0		4.0	7.0		4.0	7.0	7.0	4.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	318	860		296	845		233	1172	522	198	1063	
v/s Ratio Prot	0.08	0.20		c0.14	0.18		c0.05	c0.28		0.04	0.27	
v/s Ratio Perm	0.18			c0.31			0.21		0.18	0.18		
v/c Ratio	0.69	0.79		1.20	0.71		0.61	0.83	0.55	0.55	0.81	
Uniform Delay, d1	23.7	35.5		26.5	34.3		20.7	30.9	27.3	21.1	30.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	6.1	5.0		117.6	2.8		4.5	6.7	4.1	3.1	6.8	
Delay (s)	29.8	40.5		144.1	37.0		25.2	37.6	31.4	24.2	37.6	
Level of Service	C	D		F	D		C	D	C	C	D	
Approach Delay (s/veh)		38.0			75.7			34.6			36.1	
Approach LOS		D			E			C			D	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			44.5			HCM 2000 Level of Service			D			
HCM 2000 Volume to Capacity ratio			0.99									
Actuated Cycle Length (s)			101.5			Sum of lost time (s)			22.0			
Intersection Capacity Utilization			92.2%			ICU Level of Service			F			
Analysis Period (min)			15									

c Critical Lane Group

Lanes, Volumes, Timings
104: Ontario Street South & Pearl Street

AM - Total Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	3	84	75	1630	1153	30
Future Volume (vph)	3	84	75	1630	1153	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	20.0			0.0
Storage Lanes	1	0	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor						
Frt	0.870				0.996	
Flt Protected	0.998		0.950			
Satd. Flow (prot)	1650	0	1805	3471	3332	0
Flt Permitted	0.998		0.950			
Satd. Flow (perm)	1650	0	1805	3471	3332	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	125.8			99.0	95.4	
Travel Time (s)	9.1			7.1	6.9	
Confl. Peds. (#/hr)			4			4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	4%	8%	5%
Adj. Flow (vph)	3	84	75	1630	1153	30
Shared Lane Traffic (%)						
Lane Group Flow (vph)	87	0	75	1630	1183	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
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)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	57.1%			ICU Level of Service B		
Analysis Period (min)	15					

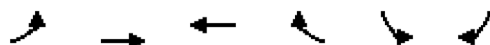
HCM Unsignalized Intersection Capacity Analysis 104: Ontario Street South & Pearl Street

AM - Total Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	84	75	1630	1153	30
Future Volume (Veh/h)	3	84	75	1630	1153	30
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	3	84	75	1630	1153	30
Pedestrians	4					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)	95					
pX, platoon unblocked	0.77	0.77	0.77			
vC, conflicting volume	2137	596	1187			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1882	0	652			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	93	90	90			
cM capacity (veh/h)	44	840	727			
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	87	75	815	815	769	414
Volume Left	3	75	0	0	0	0
Volume Right	84	0	0	0	0	30
cSH	518	727	1700	1700	1700	1700
Volume to Capacity	0.17	0.10	0.48	0.48	0.45	0.24
Queue Length 95th (m)	4.8	2.8	0.0	0.0	0.0	0.0
Control Delay (s/veh)	13.3	10.5	0.0	0.0	0.0	0.0
Lane LOS	B	B				
Approach Delay (s/veh)	13.3	0.5			0.0	
Approach LOS	B					
Intersection Summary						
Average Delay	0.7					
Intersection Capacity Utilization	57.1%			ICU Level of Service		B
Analysis Period (min)	15					

Lanes, Volumes, Timings
105: Pearl Street & Bruce Street

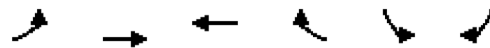
AM - Total Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	90	77	88	8	6	35
Future Volume (vph)	90	77	88	8	6	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.989		0.885	
Flt Protected		0.974			0.993	
Satd. Flow (prot)	0	1851	1845	0	1670	0
Flt Permitted		0.974			0.993	
Satd. Flow (perm)	0	1851	1845	0	1670	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		49.0	125.8		50.0	
Travel Time (s)		3.5	9.1		3.6	
Confl. Peds. (#/hr)					1	3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%
Adj. Flow (vph)	90	77	88	8	6	35
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	167	96	0	41	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
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)	25			15	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	26.7%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis 105: Pearl Street & Bruce Street

AM - Total Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	90	77	88	8	6	35
Future Volume (Veh/h)	90	77	88	8	6	35
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	90	77	88	8	6	35
Pedestrians		3	1			
Lane Width (m)		3.6	3.6			
Walking Speed (m/s)		1.2	1.2			
Percent Blockage		0	0			
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	96				350	95
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	96				350	95
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	94				99	96
cM capacity (veh/h)	1510				612	965
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	167	96	41			
Volume Left	90	0	6			
Volume Right	0	8	35			
cSH	1510	1700	890			
Volume to Capacity	0.06	0.06	0.05			
Queue Length 95th (m)	1.5	0.0	1.2			
Control Delay (s/veh)	4.3	0.0	9.2			
Lane LOS	A		A			
Approach Delay (s/veh)	4.3	0.0	9.2			
Approach LOS			A			
Intersection Summary						
Average Delay			3.6			
Intersection Capacity Utilization			26.7%	ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings
106: Prince Street & Pearl Street

AM - Total Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	19	1	8	23	30	3	34	26	20	19	1
Future Volume (vph)	3	19	1	8	23	30	3	34	26	20	19	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.994			0.934			0.944			0.997	
Flt Protected		0.994			0.993			0.998			0.976	
Satd. Flow (prot)	0	1877	0	0	1723	0	0	1790	0	0	1804	0
Flt Permitted		0.994			0.993			0.998			0.976	
Satd. Flow (perm)	0	1877	0	0	1723	0	0	1790	0	0	1804	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		56.3			48.9			56.6			94.0	
Travel Time (s)		4.1			3.5			4.1			6.8	
Confl. Peds. (#/hr)	1		7	7		1	5					5
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	0%	6%	0%	0%	0%	0%	0%	0%	100%
Adj. Flow (vph)	3	19	1	8	23	30	3	34	26	20	19	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	23	0	0	61	0	0	63	0	0	40	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		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	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	21.6%											
Analysis Period (min)	15											
ICU Level of Service A												

HCM Unsignalized Intersection Capacity Analysis

106: Prince Street & Pearl Street

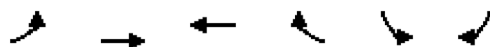
AM - Total Traffic 2039 Horizon

(240415) 388 Main Street East TIS & PS

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	19	1	8	23	30	3	34	26	20	19	1
Future Volume (Veh/h)	3	19	1	8	23	30	3	34	26	20	19	1
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour 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
Hourly flow rate (vph)	3	19	1	8	23	30	3	34	26	20	19	1
Pedestrians	5						7			1		
Lane Width (m)	3.6						3.6			3.6		
Walking Speed (m/s)	1.2						1.2			1.2		
Percent Blockage	0						1			0		
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	54			27			102	103	27	124	88	44
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	54			27			102	103	27	124	88	44
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	7.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	4.2
p0 queue free %	100			99			100	96	98	97	98	100
cM capacity (veh/h)	1563			1591			849	781	1049	798	795	801
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	23	61	63	40								
Volume Left	3	8	3	20								
Volume Right	1	30	26	1								
cSH	1563	1591	876	796								
Volume to Capacity	0.00	0.01	0.07	0.05								
Queue Length 95th (m)	0.0	0.1	1.9	1.3								
Control Delay (s/veh)	1.0	1.0	9.4	9.8								
Lane LOS	A	A	A	A								
Approach Delay (s/veh)	1.0	1.0	9.4	9.8								
Approach LOS			A	A								
Intersection Summary												
Average Delay				5.7								
Intersection Capacity Utilization				21.6%	ICU Level of Service				A			
Analysis Period (min)				15								

Lanes, Volumes, Timings
107: Pearl Street & South Driveway

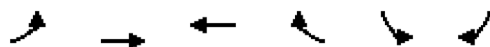
AM - Total Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	9	55	83	39	88	22
Future Volume (vph)	9	55	83	39	88	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.957		0.973	
Flt Protected		0.993			0.962	
Satd. Flow (prot)	0	1850	1783	0	1744	0
Flt Permitted		0.993			0.962	
Satd. Flow (perm)	0	1850	1783	0	1744	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		48.9	49.0		35.8	
Travel Time (s)		3.5	3.5		2.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	9	55	83	39	88	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	64	122	0	110	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
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)	25			15	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	23.4%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis 107: Pearl Street & South Driveway

AM - Total Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	9	55	83	39	88	22
Future Volume (Veh/h)	9	55	83	39	88	22
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	9	55	83	39	88	22
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	122				176	103
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	122				176	103
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				89	98
cM capacity (veh/h)	1465				809	953
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	64	122	110			
Volume Left	9	0	88			
Volume Right	0	39	22			
cSH	1465	1700	834			
Volume to Capacity	0.01	0.07	0.13			
Queue Length 95th (m)	0.1	0.0	3.6			
Control Delay (s/veh)	1.1	0.0	10.0			
Lane LOS	A		A			
Approach Delay (s/veh)	1.1	0.0	10.0			
Approach LOS			A			
Intersection Summary						
Average Delay			3.9			
Intersection Capacity Utilization			23.4%	ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings
108: Bruce Street & East Driveway

AM - Total Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	3	1	1	97	44	3
Future Volume (vph)	3	1	1	97	44	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.966	0.991				
Flt Protected	0.964	0.999				
Satd. Flow (prot)	1735	0	0	1861	1846	0
Flt Permitted	0.964	0.999				
Satd. Flow (perm)	1735	0	0	1861	1846	0
Link Speed (k/h)	50	50				
Link Distance (m)	34.5	50.0				
Travel Time (s)	2.5	3.0				
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	3	1	1	97	44	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	4	0	0	98	47	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6	0.0				
Link Offset(m)	0.0	0.0				
Crosswalk Width(m)	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)	25	15	25	15		
Sign Control	Stop	Free			Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	15.9%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis 108: Bruce Street & East Driveway

AM - Total Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	1	1	97	44	3
Future Volume (Veh/h)	3	1	1	97	44	3
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	3	1	1	97	44	3
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	145	46	47			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	145	46	47			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	847	1024	1560			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	4	98	47			
Volume Left	3	1	0			
Volume Right	1	0	3			
cSH	886	1560	1700			
Volume to Capacity	0.00	0.00	0.03			
Queue Length 95th (m)	0.1	0.0	0.0			
Control Delay (s/veh)	9.1	0.1	0.0			
Lane LOS	A	A				
Approach Delay (s/veh)	9.1	0.1	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization		15.9%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings

PM - Total Traffic 2034 Horizon

101: Prince Street/Private Driveway & Main Street East(240415) 388 Main Street East TIS & PS

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	911	34	28	1056	7	21	0	26	4	1	12
Future Volume (vph)	9	911	34	28	1056	7	21	0	26	4	1	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.995			0.999			0.925			0.905	
Flt Protected	0.950			0.950				0.978			0.988	
Satd. Flow (prot)	1583	1890	0	1805	1877	0	0	1719	0	0	1587	0
Flt Permitted	0.950			0.950				0.978			0.988	
Satd. Flow (perm)	1583	1890	0	1805	1877	0	0	1719	0	0	1587	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		52.0			98.6			55.2			40.6	
Travel Time (s)		3.7			7.1			4.0			2.9	
Confl. Peds. (#/hr)	11		21	21		11			9	9		
Peak Hour 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
Heavy Vehicles (%)	14%	0%	1%	0%	1%	17%	0%	0%	0%	0%	0%	10%
Adj. Flow (vph)	9	911	34	28	1056	7	21	0	26	4	1	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	9	945	0	28	1063	0	0	47	0	0	17	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			0.0			0.0	
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		Yes			Yes							
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	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 70.2% ICU Level of Service C

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

PM - Total Traffic 2034 Horizon

101: Prince Street/Private Driveway & Main Street East(240415) 388 Main Street East TIS & PS

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	911	34	28	1056	7	21	0	26	4	1	12
Future Volume (Veh/h)	9	911	34	28	1056	7	21	0	26	4	1	12
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour 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
Hourly flow rate (vph)	9	911	34	28	1056	7	21	0	26	4	1	12
Pedestrians				9			21			11		
Lane Width (m)				3.6			3.6			3.6		
Walking Speed (m/s)				1.2			1.2			1.2		
Percent Blockage				1			2			1		
Right turn flare (veh)												
Median type	TWLTL			TWLTL								
Median storage veh	2			2								
Upstream signal (m)				229								
pX, platoon unblocked	0.63							0.63	0.63	0.63	0.63	0.63
vC, conflicting volume	1074				966				2092	2097	958	2091
vC1, stage 1 conf vol							967	967				1127
vC2, stage 2 conf vol							1125	1130				964
vCu, unblocked vol	824				966				2438	2447	958	2437
tC, single (s)	4.2				4.1				7.1	6.5	6.2	7.1
tC, 2 stage (s)							6.1	5.5				6.1
tF (s)	2.3				2.2				3.5	4.0	3.3	3.5
p0 queue free %	98				96				86	100	92	97
cM capacity (veh/h)	472				708				147	165	307	147
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	9	945	28	1063	47	17						
Volume Left	9	0	28	0	21	4						
Volume Right	0	34	0	7	26	12						
cSH	472	1700	708	1700	207	197						
Volume to Capacity	0.02	0.56	0.04	0.63	0.23	0.09						
Queue Length 95th (m)	0.5	0.0	1.0	0.0	6.8	2.2						
Control Delay (s/veh)	12.8	0.0	10.3	0.0	27.5	25.0						
Lane LOS	B		B		D	C						
Approach Delay (s/veh)	0.1		0.3		27.5	25.0						
Approach LOS					D	C						
Intersection Summary												
Average Delay				1.0								
Intersection Capacity Utilization				70.2%	ICU Level of Service			C				
Analysis Period (min)				15								

Lanes, Volumes, Timings
102: Bruce Street & Main Street East

PM - Total Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰			↱	↰	↱
Traffic Volume (vph)	915	25	116	1080	11	81
Future Volume (vph)	915	25	116	1080	11	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.996				0.881	
Flt Protected				0.995	0.994	
Satd. Flow (prot)	1874	0	0	1874	1664	0
Flt Permitted				0.995	0.994	
Satd. Flow (perm)	1874	0	0	1874	1664	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	98.6			35.5	41.7	
Travel Time (s)	7.1			2.6	3.0	
Confl. Peds. (#/hr)		20	20			1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	0%	1%	0%	0%
Adj. Flow (vph)	915	25	116	1080	11	81
Shared Lane Traffic (%)						
Lane Group Flow (vph)	940	0	0	1196	92	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane	Yes					
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	128.9%			ICU Level of Service H		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis 102: Bruce Street & Main Street East

PM - Total Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	915	25	116	1080	11	81
Future Volume (Veh/h)	915	25	116	1080	11	81
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	915	25	116	1080	11	81
Pedestrians				1	20	
Lane Width (m)				3.6	3.6	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	2	
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh	2					
Upstream signal (m)	130					
pX, platoon unblocked					0.60	
vC, conflicting volume				960	2260	949
vC1, stage 1 conf vol				948		
vC2, stage 2 conf vol				1312		
vCu, unblocked vol				960	2768	949
tC, single (s)				4.1	6.4	6.2
tC, 2 stage (s)				5.4		
tF (s)				2.2	3.5	3.3
p0 queue free %				84	92	74
cM capacity (veh/h)				713	131	313
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	940	1196	92			
Volume Left	0	116	11			
Volume Right	25	0	81			
cSH	1700	713	269			
Volume to Capacity	0.55	0.16	0.34			
Queue Length 95th (m)	0.0	4.6	11.7			
Control Delay (s/veh)	0.0	5.5	25.2			
Lane LOS			A D			
Approach Delay (s/veh)	0.0	5.5	25.2			
Approach LOS	D					
Intersection Summary						
Average Delay				4.0		
Intersection Capacity Utilization				128.9%	ICU Level of Service	H
Analysis Period (min)				15		

Lanes, Volumes, Timings

103: Ontario Street South & Main Street East

PM - Total Traffic 2034 Horizon

(240415) 388 Main Street East TIS & PS

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	197	612	210	364	867	204	193	692	333	145	804	188
Future Volume (vph)	197	612	210	364	867	204	193	692	333	145	804	188
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		105.0	40.0		0.0	70.0		70.0	50.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor	1.00	0.99		1.00	0.99		1.00		0.97	0.99	1.00	
Frt		0.962			0.971				0.850		0.972	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3412	0	1770	3431	0	1787	3438	1553	1752	3430	0
Flt Permitted	0.117			0.163			0.117			0.252		
Satd. Flow (perm)	222	3412	0	303	3431	0	220	3438	1502	462	3430	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		45			27				333		27	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		94.8			102.2			95.4			91.4	
Travel Time (s)		6.8			7.4			6.9			6.6	
Confl. Peds. (#/hr)	16		7	7		16	3		18	18		3
Peak Hour 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
Heavy Vehicles (%)	0%	1%	2%	2%	1%	4%	1%	5%	4%	3%	2%	2%
Adj. Flow (vph)	197	612	210	364	867	204	193	692	333	145	804	188
Shared Lane Traffic (%)												
Lane Group Flow (vph)	197	822	0	364	1071	0	193	692	333	145	992	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			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	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+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			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Synchro 11 Report

Lanes, Volumes, Timings

103: Ontario Street South & Main Street East

PM - Total Traffic 2034 Horizon

(240415) 388 Main Street East TIS & PS

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	D.P+P	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	4			4			2		2	6		
Detector Phase	3	8		7	4		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	15.0		5.0	15.0		5.0	15.0	15.0	5.0	15.0	
Minimum Split (s)	10.0	35.0		10.0	35.0		10.0	35.0	35.0	10.0	35.0	
Total Split (s)	16.0	41.0		16.0	41.0		12.0	41.0	41.0	12.0	41.0	
Total Split (%)	14.5%	37.3%		14.5%	37.3%		10.9%	37.3%	37.3%	10.9%	37.3%	
Maximum Green (s)	12.0	34.0		12.0	34.0		8.0	34.0	34.0	8.0	34.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.0	3.0		0.0	3.0		0.0	3.0	3.0	0.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	7.0		4.0	7.0		4.0	7.0	7.0	4.0	7.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	Max	Max	None	Max	
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	
Flash Don't Walk (s)		21.0			21.0			21.0	21.0		21.0	
Pedestrian Calls (#/hr)		0			0			0	0		0	
Act Effect Green (s)	48.3	33.3		49.0	34.0		45.1	34.1	34.1	44.9	34.0	
Actuated g/C Ratio	0.44	0.30		0.45	0.31		0.41	0.31	0.31	0.41	0.31	
v/c Ratio	0.76	0.77		1.23	0.99		0.94	0.64	0.48	0.51	0.91	
Control Delay (s/veh)	40.6	38.2		151.9	61.3		74.2	35.9	5.6	25.6	49.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	40.6	38.2		151.9	61.3		74.2	35.9	5.6	25.6	49.0	
LOS	D	D		F	E		E	D	A	C	D	
Approach Delay (s/veh)		38.6			84.3			33.7			46.0	
Approach LOS		D			F			C			D	
Queue Length 50th (m)	25.1	83.4		~77.8	124.0		26.4	70.9	0.0	19.4	110.8	
Queue Length 95th (m)	#57.5	107.4		#138.2	#172.3		#72.3	91.9	20.9	32.7	#151.6	
Internal Link Dist (m)		70.8			78.2			71.4			67.4	
Turn Bay Length (m)	40.0			40.0			70.0		70.0	50.0		
Base Capacity (vph)	273	1092		297	1086		205	1073	698	284	1085	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.72	0.75		1.23	0.99		0.94	0.64	0.48	0.51	0.91	
Intersection Summary												
Area Type:	Other											
Cycle Length:	110											
Actuated Cycle Length:	109.3											
Natural Cycle:	90											
Control Type:	Semi Act-Uncoord											
Maximum v/c Ratio:	1.23											
Intersection Signal Delay (s/veh):	52.8						Intersection LOS: D					
Intersection Capacity Utilization	101.3%						ICU Level of Service G					

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 103: Ontario Street South & Main Street East

 Ø1	 Ø2	 Ø3	 Ø4
12 s	41 s	16 s	41 s
 Ø5	 Ø6	 Ø7	 Ø8
12 s	41 s	16 s	41 s

HCM Signalized Intersection Capacity Analysis

103: Ontario Street South & Main Street East

PM - Total Traffic 2034 Horizon

(240415) 388 Main Street East TIS & PS

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	197	612	210	364	867	204	193	692	333	145	804	188
Future Volume (vph)	197	612	210	364	867	204	193	692	333	145	804	188
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.0		4.0	7.0		4.0	7.0	7.0	4.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	0.97		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	3411		1769	3433		1787	3438	1502	1750	3429	
Flt Permitted	0.12	1.00		0.16	1.00		0.12	1.00	1.00	0.25	1.00	
Satd. Flow (perm)	223	3411		303	3433		221	3438	1502	464	3429	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	197	612	210	364	867	204	193	692	333	145	804	188
RTOR Reduction (vph)	0	31	0	0	19	0	0	0	229	0	19	0
Lane Group Flow (vph)	197	791	0	364	1052	0	193	692	104	145	973	0
Confl. Peds. (#/hr)	16		7	7		16	3		18	18		3
Heavy Vehicles (%)	0%	1%	2%	2%	1%	4%	1%	5%	4%	3%	2%	2%
Turn Type	D.P+P	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	4			4			2		2	6		
Actuated Green, G (s)	45.3	33.3		46.1	34.1		42.1	34.1	34.1	41.9	34.0	
Effective Green, g (s)	45.3	33.3		46.1	34.1		42.1	34.1	34.1	41.9	34.0	
Actuated g/C Ratio	0.41	0.30		0.42	0.31		0.39	0.31	0.31	0.38	0.31	
Clearance Time (s)	4.0	7.0		4.0	7.0		4.0	7.0	7.0	4.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	254	1039		288	1071		199	1072	468	270	1066	
v/s Ratio Prot	0.08	0.23		c0.14	0.31		c0.07	0.20		0.04	0.28	
v/s Ratio Perm	0.24			c0.39			c0.30		0.07	0.17		
v/c Ratio	0.78	0.76		1.26	0.98		0.97	0.65	0.22	0.54	0.91	
Uniform Delay, d1	25.2	34.4		24.9	37.3		27.0	32.4	27.8	23.5	36.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	13.8	3.3		143.5	23.2		54.4	3.0	1.1	2.1	13.3	
Delay (s)	38.9	37.7		168.5	60.5		81.4	35.4	28.9	25.5	49.5	
Level of Service	D	D		F	E		F	D	C	C	D	
Approach Delay (s/veh)		38.0			87.9			40.9			46.4	
Approach LOS		D			F			D			D	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			55.6			HCM 2000 Level of Service			E			
HCM 2000 Volume to Capacity ratio			1.13									
Actuated Cycle Length (s)			109.3			Sum of lost time (s)			22.0			
Intersection Capacity Utilization			101.3%			ICU Level of Service			G			
Analysis Period (min)			15									

c Critical Lane Group

Lanes, Volumes, Timings
104: Ontario Street South & Pearl Street

PM - Total Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	6	81	87	1291	1375	13
Future Volume (vph)	6	81	87	1291	1375	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	20.0			0.0
Storage Lanes	1	0	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor						
Frt	0.874				0.999	
Flt Protected	0.997		0.950			
Satd. Flow (prot)	1656	0	1752	3471	3571	0
Flt Permitted	0.997		0.950			
Satd. Flow (perm)	1656	0	1752	3471	3571	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	125.8			99.0	95.4	
Travel Time (s)	9.1			7.1	6.9	
Confl. Peds. (#/hr)			6			6
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	3%	4%	1%	0%
Adj. Flow (vph)	6	81	87	1291	1375	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	87	0	87	1291	1388	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
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)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	58.6%			ICU Level of Service B		
Analysis Period (min)	15					

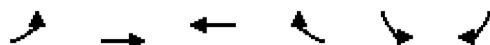
HCM Unsignalized Intersection Capacity Analysis 104: Ontario Street South & Pearl Street

PM - Total Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	81	87	1291	1375	13
Future Volume (Veh/h)	6	81	87	1291	1375	13
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	6	81	87	1291	1375	13
Pedestrians	6					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)					95	
pX, platoon unblocked	0.74	0.74	0.74			
vC, conflicting volume	2207	700	1394			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1922	0	816			
tC, single (s)	6.8	6.9	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	84	90	85			
cM capacity (veh/h)	38	798	586			
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	87	87	646	646	917	471
Volume Left	6	87	0	0	0	0
Volume Right	81	0	0	0	0	13
cSH	333	586	1700	1700	1700	1700
Volume to Capacity	0.26	0.15	0.38	0.38	0.54	0.28
Queue Length 95th (m)	8.2	4.2	0.0	0.0	0.0	0.0
Control Delay (s/veh)	19.6	12.2	0.0	0.0	0.0	0.0
Lane LOS	C	B				
Approach Delay (s/veh)	19.6	0.8			0.0	
Approach LOS	C					
Intersection Summary						
Average Delay			1.0			
Intersection Capacity Utilization			58.6%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes, Volumes, Timings
105: Pearl Street & Bruce Street

PM - Total Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS



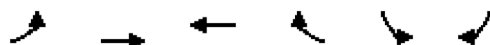
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	82	78	75	22	12	88
Future Volume (vph)	82	78	75	22	12	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.969		0.881	
Flt Protected		0.975			0.994	
Satd. Flow (prot)	0	1852	1799	0	1664	0
Flt Permitted		0.975			0.994	
Satd. Flow (perm)	0	1852	1799	0	1664	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		49.0	125.8		50.0	
Travel Time (s)		3.5	9.1		3.6	
Confl. Peds. (#/hr)	5			5		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	3%	0%	0%	0%
Adj. Flow (vph)	82	78	75	22	12	88
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	160	97	0	100	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
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)	25			15	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	28.4%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis

105: Pearl Street & Bruce Street

PM - Total Traffic 2034 Horizon

(240415) 388 Main Street East TIS & PS



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	82	78	75	22	12	88
Future Volume (Veh/h)	82	78	75	22	12	88
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	82	78	75	22	12	88
Pedestrians		1			5	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	102				333	92
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	102				333	92
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	95				98	91
cM capacity (veh/h)	1497				627	966
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	160	97	100			
Volume Left	82	0	12			
Volume Right	0	22	88			
cSH	1497	1700	907			
Volume to Capacity	0.05	0.06	0.11			
Queue Length 95th (m)	1.4	0.0	3.0			
Control Delay (s/veh)	4.1	0.0	9.5			
Lane LOS	A		A			
Approach Delay (s/veh)	4.1	0.0	9.5			
Approach LOS			A			
Intersection Summary						
Average Delay			4.5			
Intersection Capacity Utilization			28.4%	ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings
106: Prince Street & Pearl Street

PM - Total Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	23	2	27	29	22	1	22	29	32	12	1
Future Volume (vph)	5	23	2	27	29	22	1	22	29	32	12	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.991			0.962			0.925			0.997	
Flt Protected		0.992			0.983			0.999			0.966	
Satd. Flow (prot)	0	1868	0	0	1797	0	0	1756	0	0	1830	0
Flt Permitted		0.992			0.983			0.999			0.966	
Satd. Flow (perm)	0	1868	0	0	1797	0	0	1756	0	0	1830	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		56.3			48.9			56.6			38.8	
Travel Time (s)		4.1			3.5			4.1			2.8	
Confl. Peds. (#/hr)	5		20	20		5			3	3		
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	5	23	2	27	29	22	1	22	29	32	12	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	30	0	0	78	0	0	52	0	0	45	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		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	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	24.9%						ICU Level of Service A					
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis

106: Prince Street & Pearl Street

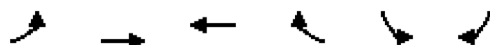
PM - Total Traffic 2034 Horizon

(240415) 388 Main Street East TIS & PS

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	23	2	27	29	22	1	22	29	32	12	1
Future Volume (Veh/h)	5	23	2	27	29	22	1	22	29	32	12	1
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour 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
Hourly flow rate (vph)	5	23	2	27	29	22	1	22	29	32	12	1
Pedestrians					3		20				5	
Lane Width (m)					3.6		3.6				3.6	
Walking Speed (m/s)					1.2		1.2				1.2	
Percent Blockage					0		2				0	
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	56			45			155	164	47	176	154	45
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	56			45			155	164	47	176	154	45
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			100	97	97	96	98	100
cM capacity (veh/h)	1555			1550			767	702	1008	722	711	1026
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	30	78	52	45								
Volume Left	5	27	1	32								
Volume Right	2	22	29	1								
cSH	1555	1550	847	724								
Volume to Capacity	0.00	0.02	0.06	0.06								
Queue Length 95th (m)	0.1	0.4	1.6	1.6								
Control Delay (s/veh)	1.2	2.6	9.5	10.3								
Lane LOS	A	A	A	B								
Approach Delay (s/veh)	1.2	2.6	9.5	10.3								
Approach LOS			A	B								
Intersection Summary												
Average Delay				5.9								
Intersection Capacity Utilization				24.9%	ICU Level of Service				A			
Analysis Period (min)				15								

Lanes, Volumes, Timings
107: Pearl Street & South Driveway

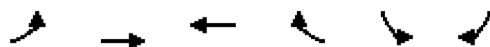
PM - Total Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	25	60	66	97	65	17
Future Volume (vph)	25	60	66	97	65	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.920		0.972	
Flt Protected		0.986			0.962	
Satd. Flow (prot)	0	1837	1714	0	1742	0
Flt Permitted		0.986			0.962	
Satd. Flow (perm)	0	1837	1714	0	1742	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		48.9	49.0		35.8	
Travel Time (s)		3.5	3.5		2.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	60	66	97	65	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	85	163	0	82	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
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)	25			15	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	28.6%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis 107: Pearl Street & South Driveway

PM - Total Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	25	60	66	97	65	17
Future Volume (Veh/h)	25	60	66	97	65	17
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	25	60	66	97	65	17
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	163				225	115
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	163				225	115
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				91	98
cM capacity (veh/h)	1416				750	938
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	85	163	82			
Volume Left	25	0	65			
Volume Right	0	97	17			
cSH	1416	1700	783			
Volume to Capacity	0.02	0.10	0.10			
Queue Length 95th (m)	0.4	0.0	2.8			
Control Delay (s/veh)	2.3	0.0	10.1			
Lane LOS	A		B			
Approach Delay (s/veh)	2.3	0.0	10.1			
Approach LOS			B			
Intersection Summary						
Average Delay			3.1			
Intersection Capacity Utilization			28.6%	ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings
108: Bruce Street & East Driveway

PM - Total Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	4	2	2	102	138	4
Future Volume (vph)	4	2	2	102	138	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.955				0.996	
Flt Protected	0.968			0.999		
Satd. Flow (prot)	1722	0	0	1861	1855	0
Flt Permitted	0.968			0.999		
Satd. Flow (perm)	1722	0	0	1861	1855	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	34.5			50.0	41.7	
Travel Time (s)	2.5			3.6	3.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	4	2	2	102	138	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	6	0	0	104	142	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	17.5%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis 108: Bruce Street & East Driveway

PM - Total Traffic 2034 Horizon
(240415) 388 Main Street East TIS & PS

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	4	2	2	102	138	4
Future Volume (Veh/h)	4	2	2	102	138	4
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	4	2	2	102	138	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	246	140	142			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	246	140	142			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	100	100			
cM capacity (veh/h)	741	908	1441			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	6	104	142			
Volume Left	4	2	0			
Volume Right	2	0	4			
cSH	790	1441	1700			
Volume to Capacity	0.01	0.00	0.08			
Queue Length 95th (m)	0.2	0.0	0.0			
Control Delay (s/veh)	9.6	0.2	0.0			
Lane LOS	A	A				
Approach Delay (s/veh)	9.6	0.2	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		0.3				
Intersection Capacity Utilization		17.5%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings

PM - Total Traffic 2039 Horizon

101: Prince Street/Private Driveway & Main Street East(240415) 388 Main Street East TIS & PS

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	1005	34	31	1165	8	21	0	28	4	1	13
Future Volume (vph)	9	1005	34	31	1165	8	21	0	28	4	1	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.995			0.999			0.923			0.902	
Flt Protected	0.950			0.950				0.979			0.989	
Satd. Flow (prot)	1583	1890	0	1805	1877	0	0	1717	0	0	1581	0
Flt Permitted	0.950			0.950				0.979			0.989	
Satd. Flow (perm)	1583	1890	0	1805	1877	0	0	1717	0	0	1581	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		52.0			98.6			55.2			40.6	
Travel Time (s)		3.7			7.1			4.0			2.9	
Confl. Peds. (#/hr)	11		21	21		11			9	9		
Peak Hour 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
Heavy Vehicles (%)	14%	0%	1%	0%	1%	17%	0%	0%	0%	0%	0%	10%
Adj. Flow (vph)	9	1005	34	31	1165	8	21	0	28	4	1	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	9	1039	0	31	1173	0	0	49	0	0	18	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			0.0			0.0	
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		Yes			Yes							
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	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	76.2%											
Analysis Period (min)	15											
ICU Level of Service D												

HCM Unsignalized Intersection Capacity Analysis

PM - Total Traffic 2039 Horizon

101: Prince Street/Private Driveway & Main Street East(240415) 388 Main Street East TIS & PS

														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations														
Traffic Volume (veh/h)	9	1005	34	31	1165	8	21	0	28	4	1	13		
Future Volume (Veh/h)	9	1005	34	31	1165	8	21	0	28	4	1	13		
Sign Control	Free			Free			Stop			Stop				
Grade	0%			0%			0%			0%				
Peak Hour 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		
Hourly flow rate (vph)	9	1005	34	31	1165	8	21	0	28	4	1	13		
Pedestrians					9					21			11	
Lane Width (m)					3.6					3.6			3.6	
Walking Speed (m/s)					1.2					1.2			1.2	
Percent Blockage					1					2			1	
Right turn flare (veh)														
Median type	TWLTL			TWLTL										
Median storage veh	2			2										
Upstream signal (m)				229										
pX, platoon unblocked	0.61							0.61	0.61			0.61	0.61	0.61
vC, conflicting volume	1184				1060				2302	2307	1052	2302	2320	1180
vC1, stage 1 conf vol							1061	1061			1242	1242		
vC2, stage 2 conf vol							1241	1246			1060	1078		
vCu, unblocked vol	983				1060				2812	2821	1052	2812	2842	976
tC, single (s)	4.2				4.1				7.1	6.5	6.2	7.1	6.5	6.3
tC, 2 stage (s)							6.1	5.5			6.1	5.5		
tF (s)	2.3				2.2				3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	98				95				82	100	90	97	99	93
cM capacity (veh/h)	398				653				114	134	271	116	135	178
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1								
Volume Total	9	1039	31	1173	49	18								
Volume Left	9	0	31	0	21	4								
Volume Right	0	34	0	8	28	13								
cSH	398	1700	653	1700	170	157								
Volume to Capacity	0.02	0.61	0.05	0.69	0.29	0.11								
Queue Length 95th (m)	0.6	0.0	1.2	0.0	9.0	3.0								
Control Delay (s/veh)	14.3	0.0	10.8	0.0	34.6	30.9								
Lane LOS	B			B			D	D						
Approach Delay (s/veh)	0.1			0.3			34.6	30.9						
Approach LOS							D	D						
Intersection Summary														
Average Delay			1.2											
Intersection Capacity Utilization			76.2%		ICU Level of Service				D					
Analysis Period (min)			15											

Lanes, Volumes, Timings
102: Bruce Street & Main Street East

PM - Total Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1009	28	122	1191	12	84
Future Volume (vph)	1009	28	122	1191	12	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.996				0.882	
Flt Protected				0.995	0.994	
Satd. Flow (prot)	1874	0	0	1874	1666	0
Flt Permitted				0.995	0.994	
Satd. Flow (perm)	1874	0	0	1874	1666	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	98.6			35.5	41.7	
Travel Time (s)	7.1			2.6	3.0	
Confl. Peds. (#/hr)		20	20			1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	0%	1%	0%	0%
Adj. Flow (vph)	1009	28	122	1191	12	84
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1037	0	0	1313	96	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane	Yes					
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	140.5%			ICU Level of Service H		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis 102: Bruce Street & Main Street East

PM - Total Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1009	28	122	1191	12	84
Future Volume (Veh/h)	1009	28	122	1191	12	84
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1009	28	122	1191	12	84
Pedestrians				1	20	
Lane Width (m)				3.6	3.6	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	2	
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh	2					
Upstream signal (m)	130					
pX, platoon unblocked					0.59	
vC, conflicting volume	1057			2478	1044	
vC1, stage 1 conf vol					1043	
vC2, stage 2 conf vol					1435	
vCu, unblocked vol	1057			3169	1044	
tC, single (s)	4.1			6.4	6.2	
tC, 2 stage (s)					5.4	
tF (s)	2.2			3.5	3.3	
p0 queue free %	81			88	70	
cM capacity (veh/h)	655			101	276	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	1037	1313	96			
Volume Left	0	122	12			
Volume Right	28	0	84			
cSH	1700	655	227			
Volume to Capacity	0.61	0.19	0.42			
Queue Length 95th (m)	0.0	5.4	15.7			
Control Delay (s/veh)	0.0	7.7	32.0			
Lane LOS	A		D			
Approach Delay (s/veh)	0.0	7.7	32.0			
Approach LOS	D					
Intersection Summary						
Average Delay	5.4					
Intersection Capacity Utilization	140.5%			ICU Level of Service		H
Analysis Period (min)	15					

Lanes, Volumes, Timings

103: Ontario Street South & Main Street East

PM - Total Traffic 2039 Horizon

(240415) 388 Main Street East TIS & PS

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	216	673	231	399	953	225	212	760	366	160	882	205
Future Volume (vph)	216	673	231	399	953	225	212	760	366	160	882	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		105.0	40.0		0.0	70.0		70.0	50.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor		0.99		1.00	0.99				0.97	0.99	1.00	
Frt		0.962			0.971				0.850		0.972	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3412	0	1770	3431	0	1787	3438	1553	1752	3430	0
Flt Permitted	0.118			0.123			0.118			0.207		
Satd. Flow (perm)	224	3412	0	229	3431	0	222	3438	1502	380	3430	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		45			27				316		26	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		94.8			102.2			95.4			91.4	
Travel Time (s)		6.8			7.4			6.9			6.6	
Confl. Peds. (#/hr)	16		7	7		16	3		18	18		3
Peak Hour 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
Heavy Vehicles (%)	0%	1%	2%	2%	1%	4%	1%	5%	4%	3%	2%	2%
Adj. Flow (vph)	216	673	231	399	953	225	212	760	366	160	882	205
Shared Lane Traffic (%)												
Lane Group Flow (vph)	216	904	0	399	1178	0	212	760	366	160	1087	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			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	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+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			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lanes, Volumes, Timings

103: Ontario Street South & Main Street East

PM - Total Traffic 2039 Horizon

(240415) 388 Main Street East TIS & PS

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	D.P+P	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	4			4			2		2	6		
Detector Phase	3	8		7	4		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	15.0		5.0	15.0		5.0	15.0	15.0	5.0	15.0	
Minimum Split (s)	10.0	35.0		10.0	35.0		10.0	35.0	35.0	10.0	35.0	
Total Split (s)	16.0	41.0		16.0	41.0		12.0	41.0	41.0	12.0	41.0	
Total Split (%)	14.5%	37.3%		14.5%	37.3%		10.9%	37.3%	37.3%	10.9%	37.3%	
Maximum Green (s)	12.0	34.0		12.0	34.0		8.0	34.0	34.0	8.0	34.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.0	3.0		0.0	3.0		0.0	3.0	3.0	0.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	7.0		4.0	7.0		4.0	7.0	7.0	4.0	7.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	Max	Max	None	Max	
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	
Flash Don't Walk (s)		21.0			21.0			21.0	21.0		21.0	
Pedestrian Calls (#/hr)		0			0			0	0		0	
Act Effect Green (s)	48.6	33.6		49.0	34.0		45.1	34.0	34.0	45.0	34.0	
Actuated g/C Ratio	0.44	0.31		0.45	0.31		0.41	0.31	0.31	0.41	0.31	
v/c Ratio	0.81	0.84		1.47	1.09		1.03	0.71	0.54	0.63	1.00	
Control Delay (s/veh)	46.7	42.0		256.4	90.3		97.6	37.9	8.7	31.1	65.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	46.7	42.0		256.4	90.3		97.6	37.9	8.7	31.1	65.9	
LOS	D	D		F	F		F	D	A	C	E	
Approach Delay (s/veh)		42.9			132.3			39.4			61.4	
Approach LOS		D			F			D			E	
Queue Length 50th (m)	29.2	95.3		~106.7	~156.4		~33.3	79.8	8.1	21.5	~128.6	
Queue Length 95th (m)	#68.2	121.4		#168.7	#200.1		#82.5	102.4	34.2	35.8	#176.6	
Internal Link Dist (m)		70.8			78.2			71.4			67.4	
Turn Bay Length (m)	40.0			40.0			70.0		70.0	50.0		
Base Capacity (vph)	273	1089		271	1083		205	1067	684	256	1082	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.79	0.83		1.47	1.09		1.03	0.71	0.54	0.63	1.00	
Intersection Summary												
Area Type:	Other											
Cycle Length:	110											
Actuated Cycle Length:	109.6											
Natural Cycle:	110											
Control Type:	Semi Act-Uncoord											
Maximum v/c Ratio:	1.47											
Intersection Signal Delay (s/veh):	73.1						Intersection LOS: E					
Intersection Capacity Utilization	109.3%						ICU Level of Service H					

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 103: Ontario Street South & Main Street East

 Ø1	 Ø2	 Ø3	 Ø4
12 s	41 s	16 s	41 s
 Ø5	 Ø6	 Ø7	 Ø8
12 s	41 s	16 s	41 s

HCM Signalized Intersection Capacity Analysis

103: Ontario Street South & Main Street East

PM - Total Traffic 2039 Horizon

(240415) 388 Main Street East TIS & PS

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	216	673	231	399	953	225	212	760	366	160	882	205
Future Volume (vph)	216	673	231	399	953	225	212	760	366	160	882	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.0		4.0	7.0		4.0	7.0	7.0	4.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	0.97		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	3411		1769	3432		1787	3438	1502	1751	3429	
Flt Permitted	0.12	1.00		0.12	1.00		0.12	1.00	1.00	0.21	1.00	
Satd. Flow (perm)	224	3411		230	3432		221	3438	1502	382	3429	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	216	673	231	399	953	225	212	760	366	160	882	205
RTOR Reduction (vph)	0	31	0	0	19	0	0	0	218	0	18	0
Lane Group Flow (vph)	216	873	0	399	1159	0	212	760	148	160	1069	0
Confl. Peds. (#/hr)	16		7	7		16	3		18	18		3
Heavy Vehicles (%)	0%	1%	2%	2%	1%	4%	1%	5%	4%	3%	2%	2%
Turn Type	D.P+P	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	4			4			2		2	6		
Actuated Green, G (s)	45.6	33.6		46.0	34.0		42.0	34.0	34.0	42.0	34.0	
Effective Green, g (s)	45.6	33.6		46.0	34.0		42.0	34.0	34.0	42.0	34.0	
Actuated g/C Ratio	0.42	0.31		0.42	0.31		0.38	0.31	0.31	0.38	0.31	
Clearance Time (s)	4.0	7.0		4.0	7.0		4.0	7.0	7.0	4.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	260	1045		265	1064		198	1066	465	246	1063	
v/s Ratio Prot	0.09	0.26		c0.16	0.34		c0.08	0.22		0.05	0.31	
v/s Ratio Perm	0.26			c0.47			c0.33		0.10	0.20		
v/c Ratio	0.83	0.84		1.51	1.09		1.07	0.71	0.32	0.65	1.01	
Uniform Delay, d1	25.9	35.4		28.3	37.8		28.8	33.5	28.9	24.2	37.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	19.7	5.9		246.2	55.3		84.0	4.1	1.8	6.0	29.0	
Delay (s)	45.5	41.3		274.5	93.1		112.7	37.5	30.7	30.3	66.8	
Level of Service	D	D		F	F		F	D	C	C	E	
Approach Delay (s/veh)		42.1			139.0			47.6			62.1	
Approach LOS		D			F			D			E	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			77.2			HCM 2000 Level of Service			E			
HCM 2000 Volume to Capacity ratio			1.30									
Actuated Cycle Length (s)			109.6			Sum of lost time (s)			22.0			
Intersection Capacity Utilization			109.3%			ICU Level of Service			H			
Analysis Period (min)			15									

c Critical Lane Group

Lanes, Volumes, Timings
104: Ontario Street South & Pearl Street

PM - Total Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	7	87	92	1419	1510	15
Future Volume (vph)	7	87	92	1419	1510	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	20.0			0.0
Storage Lanes	1	0	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor						
Frt	0.875				0.999	
Flt Protected	0.996		0.950			
Satd. Flow (prot)	1656	0	1752	3471	3571	0
Flt Permitted	0.996		0.950			
Satd. Flow (perm)	1656	0	1752	3471	3571	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	125.8			99.0	95.4	
Travel Time (s)	9.1			7.1	6.9	
Confl. Peds. (#/hr)			6			6
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	3%	4%	1%	0%
Adj. Flow (vph)	7	87	92	1419	1510	15
Shared Lane Traffic (%)						
Lane Group Flow (vph)	94	0	92	1419	1525	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
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)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	63.1%			ICU Level of Service B		
Analysis Period (min)	15					

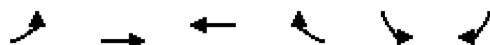
HCM Unsignalized Intersection Capacity Analysis 104: Ontario Street South & Pearl Street

PM - Total Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	7	87	92	1419	1510	15
Future Volume (Veh/h)	7	87	92	1419	1510	15
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	7	87	92	1419	1510	15
Pedestrians	6					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)	95					
pX, platoon unblocked	0.71	0.71	0.71			
vC, conflicting volume	2417	769	1531			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2176	0	924			
tC, single (s)	6.8	6.9	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	70	89	82			
cM capacity (veh/h)	23	768	513			
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	94	92	710	710	1007	518
Volume Left	7	92	0	0	0	0
Volume Right	87	0	0	0	0	15
cSH	228	513	1700	1700	1700	1700
Volume to Capacity	0.41	0.18	0.42	0.42	0.59	0.30
Queue Length 95th (m)	15.1	5.2	0.0	0.0	0.0	0.0
Control Delay (s/veh)	31.4	13.5	0.0	0.0	0.0	0.0
Lane LOS	D	B				
Approach Delay (s/veh)	31.4	0.8	0.0			
Approach LOS	D					
Intersection Summary						
Average Delay			1.3			
Intersection Capacity Utilization	63.1%		ICU Level of Service		B	
Analysis Period (min)			15			

Lanes, Volumes, Timings
105: Pearl Street & Bruce Street

PM - Total Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS



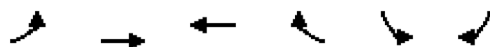
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	87	83	79	24	13	91
Future Volume (vph)	87	83	79	24	13	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.969		0.882	
Flt Protected		0.975			0.994	
Satd. Flow (prot)	0	1852	1800	0	1666	0
Flt Permitted		0.975			0.994	
Satd. Flow (perm)	0	1852	1800	0	1666	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		49.0	125.8		50.0	
Travel Time (s)		3.5	9.1		3.6	
Confl. Peds. (#/hr)	5			5		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	3%	0%	0%	0%
Adj. Flow (vph)	87	83	79	24	13	91
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	170	103	0	104	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
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)	25			15	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	29.2%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis

105: Pearl Street & Bruce Street

PM - Total Traffic 2039 Horizon

(240415) 388 Main Street East TIS & PS



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	87	83	79	24	13	91
Future Volume (Veh/h)	87	83	79	24	13	91
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	87	83	79	24	13	91
Pedestrians		1			5	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	108				353	97
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	108				353	97
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	94				98	91
cM capacity (veh/h)	1489				608	960
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	170	103	104			
Volume Left	87	0	13			
Volume Right	0	24	91			
cSH	1489	1700	895			
Volume to Capacity	0.06	0.06	0.12			
Queue Length 95th (m)	1.5	0.0	3.1			
Control Delay (s/veh)	4.1	0.0	9.5			
Lane LOS	A		A			
Approach Delay (s/veh)	4.1	0.0	9.5			
Approach LOS			A			
Intersection Summary						
Average Delay			4.5			
Intersection Capacity Utilization			29.2%	ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings
106: Prince Street & Pearl Street

PM - Total Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	26	3	30	32	22	1	24	32	33	13	1
Future Volume (vph)	5	26	3	30	32	22	1	24	32	33	13	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.988			0.965			0.924			0.997	
Flt Protected		0.993			0.982			0.999			0.966	
Satd. Flow (prot)	0	1864	0	0	1800	0	0	1754	0	0	1830	0
Flt Permitted		0.993			0.982			0.999			0.966	
Satd. Flow (perm)	0	1864	0	0	1800	0	0	1754	0	0	1830	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		56.3			48.9			56.6			38.8	
Travel Time (s)		4.1			3.5			4.1			2.8	
Confl. Peds. (#/hr)	5		20	20		5			3	3		
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	5	26	3	30	32	22	1	24	32	33	13	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	34	0	0	84	0	0	57	0	0	47	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		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	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	26.1%						ICU Level of Service A					
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis

106: Prince Street & Pearl Street

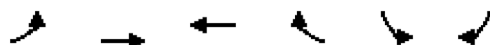
PM - Total Traffic 2039 Horizon

(240415) 388 Main Street East TIS & PS

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	26	3	30	32	22	1	24	32	33	13	1
Future Volume (Veh/h)	5	26	3	30	32	22	1	24	32	33	13	1
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour 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
Hourly flow rate (vph)	5	26	3	30	32	22	1	24	32	33	13	1
Pedestrians					3		20				5	
Lane Width (m)					3.6		3.6				3.6	
Walking Speed (m/s)					1.2		1.2				1.2	
Percent Blockage					0		2				0	
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	59			49			168	177	51	193	167	48
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	59			49			168	177	51	193	167	48
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			100	97	97	95	98	100
cM capacity (veh/h)	1551			1545			750	690	1004	699	698	1022
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	34	84	57	47								
Volume Left	5	30	1	33								
Volume Right	3	22	32	1								
cSH	1551	1545	838	703								
Volume to Capacity	0.00	0.02	0.07	0.07								
Queue Length 95th (m)	0.1	0.5	1.7	1.7								
Control Delay (s/veh)	1.1	2.7	9.6	10.5								
Lane LOS	A	A	A	B								
Approach Delay (s/veh)	1.1	2.7	9.6	10.5								
Approach LOS			A	B								
Intersection Summary												
Average Delay				5.9								
Intersection Capacity Utilization				26.1%	ICU Level of Service				A			
Analysis Period (min)				15								

Lanes, Volumes, Timings
107: Pearl Street & South Driveway

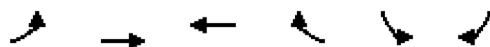
PM - Total Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	25	66	73	97	65	17
Future Volume (vph)	25	66	73	97	65	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.923		0.972	
Flt Protected		0.986			0.962	
Satd. Flow (prot)	0	1837	1719	0	1742	0
Flt Permitted		0.986			0.962	
Satd. Flow (perm)	0	1837	1719	0	1742	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		48.9	49.0		35.8	
Travel Time (s)		3.5	3.5		2.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	66	73	97	65	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	91	170	0	82	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
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)	25			15	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	29.3%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis 107: Pearl Street & South Driveway

PM - Total Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	25	66	73	97	65	17
Future Volume (Veh/h)	25	66	73	97	65	17
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	25	66	73	97	65	17
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	170				238	122
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	170				238	122
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				91	98
cM capacity (veh/h)	1407				737	930
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	91	170	82			
Volume Left	25	0	65			
Volume Right	0	97	17			
cSH	1407	1700	770			
Volume to Capacity	0.02	0.10	0.11			
Queue Length 95th (m)	0.4	0.0	2.8			
Control Delay (s/veh)	2.2	0.0	10.2			
Lane LOS	A		B			
Approach Delay (s/veh)	2.2	0.0	10.2			
Approach LOS			B			
Intersection Summary						
Average Delay			3.0			
Intersection Capacity Utilization			29.3%	ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings
108: Bruce Street & East Driveway

PM - Total Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	4	2	2	108	146	4
Future Volume (vph)	4	2	2	108	146	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.955				0.996	
Flt Protected	0.968			0.999		
Satd. Flow (prot)	1722	0	0	1861	1855	0
Flt Permitted	0.968			0.999		
Satd. Flow (perm)	1722	0	0	1861	1855	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	34.5			50.0	41.7	
Travel Time (s)	2.5			3.6	3.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	4	2	2	108	146	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	6	0	0	110	150	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	17.9%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis 108: Bruce Street & East Driveway

PM - Total Traffic 2039 Horizon
(240415) 388 Main Street East TIS & PS

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	4	2	2	108	146	4
Future Volume (Veh/h)	4	2	2	108	146	4
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	4	2	2	108	146	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	260	148	150			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	260	148	150			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	100	100			
cM capacity (veh/h)	728	899	1431			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	6	110	150			
Volume Left	4	2	0			
Volume Right	2	0	4			
cSH	777	1431	1700			
Volume to Capacity	0.01	0.00	0.09			
Queue Length 95th (m)	0.2	0.0	0.0			
Control Delay (s/veh)	9.7	0.1	0.0			
Lane LOS	A	A				
Approach Delay (s/veh)	9.7	0.1	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		0.3				
Intersection Capacity Utilization		17.9%		ICU Level of Service		A
Analysis Period (min)		15				

Appendix I

Sensitivity Analysis Operation Reports



Lanes, Volumes, Timings
103: Ontario Street South & Main Street East

AM - 2039 Total Traffic 2039 Sensitivity
(240415) 388 Main Street East TIS & PS

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	219	584	112	355	483	144	142	969	513	108	689	198
Future Volume (vph)	219	584	112	355	483	144	142	969	513	108	689	198
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		15.0	40.0		0.0	70.0		70.0	50.0		15.0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.98	1.00	0.99		1.00		0.98	1.00		0.98
Frt			0.850		0.966				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	3539	1538	1736	3288	0	1719	3471	1583	1641	3252	1538
Flt Permitted	0.318			0.206			0.256			0.140		
Satd. Flow (perm)	583	3539	1504	375	3288	0	462	3471	1546	241	3252	1504
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			119		36				380			119
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		94.8			102.2			95.4			91.4	
Travel Time (s)		6.8			7.4			6.9			6.6	
Confl. Peds. (#/hr)	14		9	9		14	9		10	10		9
Peak Hour 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
Heavy Vehicles (%)	3%	2%	5%	4%	4%	10%	5%	4%	2%	10%	11%	5%
Adj. Flow (vph)	219	584	112	355	483	144	142	969	513	108	689	198
Shared Lane Traffic (%)												
Lane Group Flow (vph)	219	584	112	355	627	0	142	969	513	108	689	198
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			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	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
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
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	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+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
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lanes, Volumes, Timings
103: Ontario Street South & Main Street East

AM - 2039 Total Traffic 2039 Sensitivity
(240415) 388 Main Street East TIS & PS

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4			2		2	6		6
Detector Phase	3	8	8	7	4		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0		5.0	15.0	15.0	5.0	15.0	15.0
Minimum Split (s)	10.0	35.0	35.0	10.0	35.0		10.0	35.0	35.0	10.0	35.0	35.0
Total Split (s)	18.0	35.0	35.0	22.0	39.0		12.0	43.0	43.0	10.0	41.0	41.0
Total Split (%)	16.4%	31.8%	31.8%	20.0%	35.5%		10.9%	39.1%	39.1%	9.1%	37.3%	37.3%
Maximum Green (s)	14.0	28.0	28.0	18.0	32.0		8.0	36.0	36.0	6.0	34.0	34.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	0.0	3.0	3.0	0.0	3.0		0.0	3.0	3.0	0.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.0	7.0	4.0	7.0		4.0	7.0	7.0	4.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Don't Walk (s)		21.0	21.0		21.0			21.0	21.0		21.0	21.0
Pedestrian Calls (#/hr)		0	0		0			0	0		0	0
Act Effct Green (s)	37.8	22.3	22.3	46.9	27.4		46.9	36.1	36.1	43.3	34.3	34.3
Actuated g/C Ratio	0.36	0.21	0.21	0.45	0.26		0.45	0.35	0.35	0.42	0.33	0.33
v/c Ratio	0.62	0.77	0.27	0.89	0.70		0.47	0.81	0.65	0.60	0.64	0.34
Control Delay (s/veh)	26.5	45.7	7.2	47.4	37.4		22.6	37.8	12.3	32.9	33.8	13.6
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 (s/veh)	26.5	45.7	7.2	47.4	37.4		22.6	37.8	12.3	32.9	33.8	13.6
LOS	C	D	A	D	D		C	D	B	C	C	B
Approach Delay (s/veh)		36.4			41.0			28.4			29.7	
Approach LOS		D			D			C			C	
Queue Length 50th (m)	28.3	62.2	0.0	50.6	60.8		17.3	99.2	20.4	12.9	66.5	12.1
Queue Length 95th (m)	44.8	81.8	12.8	#102.2	81.4		32.3	#134.4	62.8	#27.2	93.0	32.5
Internal Link Dist (m)		70.8			78.2			71.4			67.4	
Turn Bay Length (m)	40.0		15.0	40.0			70.0		70.0	50.0		15.0
Base Capacity (vph)	378	954	492	404	1038		305	1203	784	181	1072	575
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	0.58	0.61	0.23	0.88	0.60		0.47	0.81	0.65	0.60	0.64	0.34

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 104

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.89

Intersection Signal Delay (s/veh): 33.1

Intersection LOS: C

Intersection Capacity Utilization 88.8%

ICU Level of Service E

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 103: Ontario Street South & Main Street East



HCM Signalized Intersection Capacity Analysis

103: Ontario Street South & Main Street East

AM - 2039 Total Traffic 2039 Sensitivity
(240415) 388 Main Street East TIS & PS

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	219	584	112	355	483	144	142	969	513	108	689	198
Future Volume (vph)	219	584	112	355	483	144	142	969	513	108	689	198
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.0	7.0	4.0	7.0		4.0	7.0	7.0	4.0	7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00	0.98	1.00	1.00	0.98
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
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1749	3539	1505	1735	3287		1718	3471	1547	1641	3252	1505
Flt Permitted	0.32	1.00	1.00	0.21	1.00		0.26	1.00	1.00	0.14	1.00	1.00
Satd. Flow (perm)	586	3539	1505	376	3287		463	3471	1547	242	3252	1505
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	219	584	112	355	483	144	142	969	513	108	689	198
RTOR Reduction (vph)	0	0	88	0	27	0	0	0	248	0	0	80
Lane Group Flow (vph)	219	584	24	355	600	0	142	969	265	108	689	118
Confl. Peds. (#/hr)	14		9	9		14	9		10	10		9
Heavy Vehicles (%)	3%	2%	5%	4%	4%	10%	5%	4%	2%	10%	11%	5%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4			2		2	6		6
Actuated Green, G (s)	34.9	22.4	22.4	43.9	27.4		43.9	36.1	36.1	40.3	34.3	34.3
Effective Green, g (s)	34.9	22.4	22.4	43.9	27.4		43.9	36.1	36.1	40.3	34.3	34.3
Actuated g/C Ratio	0.34	0.22	0.22	0.42	0.26		0.42	0.35	0.35	0.39	0.33	0.33
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0		4.0	7.0	7.0	4.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	336	762	324	387	865		289	1204	536	174	1072	496
v/s Ratio Prot	0.08	0.17		c0.15	0.18		c0.04	c0.28		c0.04	0.21	
v/s Ratio Perm	0.14		0.02	c0.23			0.17		0.17	0.20		0.08
v/c Ratio	0.65	0.77	0.07	0.92	0.69		0.49	0.80	0.49	0.62	0.64	0.24
Uniform Delay, d1	26.4	38.3	32.5	23.5	34.5		19.9	30.8	26.8	22.9	29.6	25.3
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.5	4.6	0.1	26.0	2.4		1.3	5.8	3.2	6.7	3.0	1.1
Delay (s)	30.9	43.0	32.6	49.5	37.0		21.2	36.5	30.0	29.6	32.6	26.5
Level of Service	C	D	C	D	D		C	D	C	C	C	C
Approach Delay (s/veh)		38.8			41.5			33.1			31.1	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			35.6			HCM 2000 Level of Service			D			
HCM 2000 Volume to Capacity ratio			0.88									
Actuated Cycle Length (s)			104.0			Sum of lost time (s)			22.0			
Intersection Capacity Utilization			88.8%			ICU Level of Service			E			
Analysis Period (min)			15									

c Critical Lane Group

Lanes, Volumes, Timings
103: Ontario Street South & Main Street East

PM - 2039 Total Traffic Sensitivity
(240415) 388 Main Street East TIS & PS

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	216	673	231	399	953	225	212	760	366	160	882	205
Future Volume (vph)	216	673	231	399	953	225	212	760	366	160	882	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		15.0	40.0		0.0	70.0		70.0	50.0		15.0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.98	1.00	0.99		1.00		0.97	0.99		0.98
Frt			0.850		0.971				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3574	1583	1770	3431	0	1787	3438	1553	1752	3539	1583
Flt Permitted	0.133			0.203			0.118			0.234		
Satd. Flow (perm)	252	3574	1552	377	3431	0	222	3438	1502	429	3539	1559
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			159		28				353			159
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		94.8			102.2			95.4			91.4	
Travel Time (s)		6.8			7.4			6.9			6.6	
Confl. Peds. (#/hr)	16		7	7		16	3		18	18		3
Peak Hour 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
Heavy Vehicles (%)	0%	1%	2%	2%	1%	4%	1%	5%	4%	3%	2%	2%
Adj. Flow (vph)	216	673	231	399	953	225	212	760	366	160	882	205
Shared Lane Traffic (%)												
Lane Group Flow (vph)	216	673	231	399	1178	0	212	760	366	160	882	205
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			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	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
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
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	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+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
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lanes, Volumes, Timings
103: Ontario Street South & Main Street East

PM - 2039 Total Traffic Sensitivity
(240415) 388 Main Street East TIS & PS

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4			2		2	6		6
Detector Phase	3	8	8	7	4		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0		5.0	15.0	15.0	5.0	15.0	15.0
Minimum Split (s)	10.0	35.0	35.0	10.0	35.0		10.0	35.0	35.0	10.0	35.0	35.0
Total Split (s)	14.0	37.0	37.0	22.0	45.0		14.0	41.0	41.0	10.0	37.0	37.0
Total Split (%)	12.7%	33.6%	33.6%	20.0%	40.9%		12.7%	37.3%	37.3%	9.1%	33.6%	33.6%
Maximum Green (s)	10.0	30.0	30.0	18.0	38.0		10.0	34.0	34.0	6.0	30.0	30.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	0.0	3.0	3.0	0.0	3.0		0.0	3.0	3.0	0.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.0	7.0	4.0	7.0		4.0	7.0	7.0	4.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Don't Walk (s)		21.0	21.0		21.0			21.0	21.0		21.0	21.0
Pedestrian Calls (#/hr)		0	0		0			0	0		0	0
Act Effect Green (s)	43.0	30.0	30.0	55.0	38.0		47.0	34.0	34.0	39.0	30.0	30.0
Actuated g/C Ratio	0.39	0.27	0.27	0.50	0.35		0.43	0.31	0.31	0.35	0.27	0.27
v/c Ratio	0.90	0.69	0.43	0.96	0.98		0.89	0.72	0.52	0.71	0.91	0.38
Control Delay (s/veh)	63.9	40.2	13.6	57.6	56.8		61.5	38.2	6.5	42.0	53.7	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	63.9	40.2	13.6	57.6	56.8		61.5	38.2	6.5	42.0	53.7	11.0
LOS	E	D	B	E	E		E	D	A	D	D	B
Approach Delay (s/veh)		39.3			57.0			33.2			45.2	
Approach LOS		D			E			C			D	
Queue Length 50th (m)	29.9	71.7	12.4	58.5	134.9		30.5	79.8	2.0	22.3	101.6	7.8
Queue Length 95th (m)	#76.1	92.8	34.8	#120.7	#184.2		#74.5	102.4	25.0	#44.0	#139.5	27.5
Internal Link Dist (m)		70.8			78.2			71.4			67.4	
Turn Bay Length (m)	40.0		15.0	40.0			70.0		70.0	50.0		15.0
Base Capacity (vph)	239	974	538	416	1203		237	1062	708	224	965	540
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	0.90	0.69	0.43	0.96	0.98		0.89	0.72	0.52	0.71	0.91	0.38

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.98

Intersection Signal Delay (s/veh): 44.4

Intersection LOS: D

Intersection Capacity Utilization 100.3%

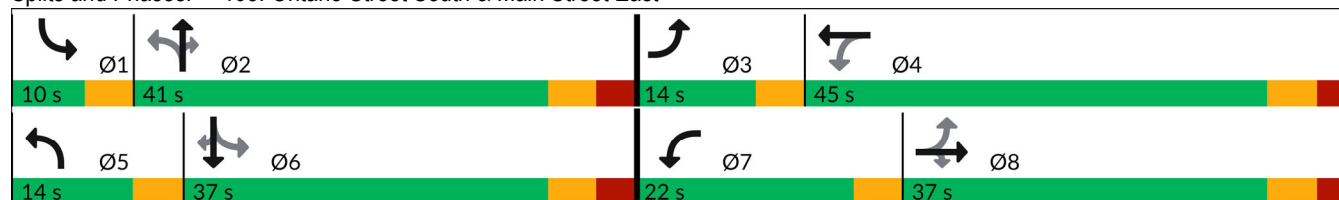
ICU Level of Service G

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 103: Ontario Street South & Main Street East



HCM Signalized Intersection Capacity Analysis 103: Ontario Street South & Main Street East

PM - 2039 Total Traffic Sensitivity
(240415) 388 Main Street East TIS & PS

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	216	673	231	399	953	225	212	760	366	160	882	205
Future Volume (vph)	216	673	231	399	953	225	212	760	366	160	882	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.0	7.0	4.0	7.0		4.0	7.0	7.0	4.0	7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00	0.97	1.00	1.00	0.98
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
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1805	3574	1552	1769	3432		1787	3438	1502	1750	3539	1559
Flt Permitted	0.13	1.00	1.00	0.20	1.00		0.12	1.00	1.00	0.23	1.00	1.00
Satd. Flow (perm)	253	3574	1552	377	3432		221	3438	1502	430	3539	1559
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	216	673	231	399	953	225	212	760	366	160	882	205
RTOR Reduction (vph)	0	0	116	0	18	0	0	0	244	0	0	116
Lane Group Flow (vph)	216	673	115	399	1160	0	212	760	122	160	882	89
Confl. Peds. (#/hr)	16		7	7		16	3		18	18		3
Heavy Vehicles (%)	0%	1%	2%	2%	1%	4%	1%	5%	4%	3%	2%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4			2		2	6		6
Actuated Green, G (s)	40.0	30.0	30.0	52.0	38.0		44.0	34.0	34.0	36.0	30.0	30.0
Effective Green, g (s)	40.0	30.0	30.0	52.0	38.0		44.0	34.0	34.0	36.0	30.0	30.0
Actuated g/C Ratio	0.36	0.27	0.27	0.47	0.35		0.40	0.31	0.31	0.33	0.27	0.27
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0		4.0	7.0	7.0	4.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	233	974	423	406	1185		230	1062	464	212	965	425
v/s Ratio Prot	0.08	0.19		c0.16	0.34		c0.08	0.22		0.04	0.25	
v/s Ratio Perm	0.25		0.07	c0.30			c0.28		0.08	0.20		0.06
v/c Ratio	0.93	0.69	0.27	0.98	0.98		0.92	0.72	0.26	0.75	0.91	0.21
Uniform Delay, d1	28.3	35.8	31.4	23.7	35.6		26.2	33.7	28.6	30.1	38.8	30.9
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	39.1	2.1	0.4	39.9	20.9		38.4	4.1	1.4	14.1	14.4	1.1
Delay (s)	67.4	38.0	31.8	63.6	56.5		64.7	37.8	30.0	44.2	53.2	32.0
Level of Service	E	D	C	E	E		E	D	C	D	D	C
Approach Delay (s/veh)		42.4			58.3			39.9			48.6	
Approach LOS		D			E			D			D	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			48.0			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			1.01									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			22.0			
Intersection Capacity Utilization			100.3%			ICU Level of Service			G			
Analysis Period (min)			15									

c Critical Lane Group

Appendix J

Parking Survey Data



33 Whitmer Street - 148 Residential Units										Overall	1.04	
										Visitor - Max Observed	0.19	
										Resident - Max Observe	0.84	
TIME ENDING	Saturday November 4 2017			Tuesday October 31 2017			Wednesday November 1 2017			Average		
	Visitor	Residential	Total	Visitor	Residential	Total	Visitor	Residential	Total	Visitor	Residential	Total
16:15	2	96	98	1	90	91	3	80	83	2	89	91
16:30	2	98	100	2	91	93	3	85	88	2	91	94
16:45	2	100	102	2	95	97	3	83	86	2	93	95
17:00	2	103	105	2	97	99	3	86	89	2	95	98
17:15	2	102	104	2	99	101	3	91	94	2	97	100
17:30	2	105	107	2	99	101	3	93	96	2	99	101
17:45	2	107	109	2	105	107	3	96	99	2	103	105
18:00	4	104	108	5	104	109	6	95	101	5	101	106
18:15	4	105	109	5	111	116	6	103	109	5	106	111
18:30	6	110	116	5	115	120	7	106	113	6	110	116
18:45	7	114	121	5	113	118	7	106	113	6	111	117
19:00	8	117	125	7	116	123	9	110	119	8	114	122
19:15	8	120	128	8	116	124	9	110	119	8	115	124
19:30	8	119	127	9	118	127	10	112	122	9	116	125
19:45	11	117	128	11	122	133	12	116	128	11	118	130
20:00	13	114	127	14	122	136	15	115	130	14	117	131
20:15	18	117	135	15	120	135	18	112	130	17	116	133
20:30	20	120	140	18	118	136	20	111	131	19	116	136
20:45	21	117	138	19	117	136	21	114	135	20	116	136
21:00	23	120	143	20	114	134	23	113	136	22	116	138
21:15	25	121	146	21	118	139	24	118	142	23	119	142
21:30	27	121	148	24	120	144	27	119	146	26	120	146
21:45	29	123	152	24	122	146	28	121	149	27	122	149
22:00	31	127	158	26	125	151	30	124	154	29	125	154

33 Whitmer Street is that are located within the southeast corner of Main Street West and Whitmer Street in Milton, Ontario. This development is made up of a six-storey buildings with a total of 148 residential units varying from 1 bedroom to 2 bedrooms. There is 149 residential parking spaces and 38 visitor parking spaces.

100 Millside Drive - 154 Residential Units										Overall	0.97	
										Visitor - Max Observed	0.13	
										Resident - Max Observe	0.83	
TIME ENDING	Saturday November 4 2017			Tuesday October 31 2017			Wednesday November 1 2017			Average		
	Visitor	Residential	Total	Visitor	Residential	Total	Visitor	Residential	Total	Visitor	Residential	Total
16:15	16	92	108	11	85	96	10	84	94	12	87	99
16:30	15	95	110	14	91	105	10	87	97	13	91	104
16:45	16	96	112	16	91	107	12	90	102	15	92	107
17:00	16	96	112	17	95	112	12	95	107	15	95	110
17:15	18	97	115	18	93	111	13	97	110	16	96	112
17:30	17	100	117	16	93	109	14	95	109	16	96	112
17:45	17	99	116	16	92	108	16	98	114	16	96	113
18:00	20	100	120	16	89	105	21	98	119	19	96	115
18:15	18	102	120	16	90	106	20	97	117	18	96	114
18:30	17	104	121	17	91	108	20	98	118	18	98	116
18:45	16	105	121	17	94	111	18	101	119	17	100	117
19:00	17	109	126	18	94	112	19	101	120	18	101	119
19:15	18	112	130	18	97	115	21	102	123	19	104	123
19:30	21	113	134	18	98	116	18	106	124	19	106	125
19:45	20	113	133	18	103	121	22	106	128	20	107	127
20:00	21	116	137	18	104	122	20	109	129	20	110	129
20:15	21	116	137	19	108	127	19	112	131	20	112	132
20:30	21	118	139	21	112	133	18	114	132	20	115	135
20:45	20	121	141	22	116	138	19	115	134	20	117	138
21:00	22	122	144	21	116	137	18	115	133	20	118	138
21:15	20	121	141	19	117	136	17	120	137	19	119	138
21:30	20	122	142	19	119	138	18	122	140	19	121	140
21:45	21	123	144	19	122	141	17	123	140	19	123	142
22:00	21	123	144	19	125	144	16	122	138	19	123	142

100 Millside Drive is located within the northeast corner of Martin Street and Millside Drive in Milton, Ontario. This development is made up of a sixteen-storey buildings with a total of 154 residential units .