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2025-07-07
Project: 250248

Blake Lyon
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RE: RESOLUTION OF OLT ACCESS ISSUES – TRAFFIC BRIEF
200 JOHN STREET E. AND 588 CHARLOTTE STREET – NIAGARA-ON-THE-LAKE

In the October 11, 2024, Decision brought forth by the OLT, they identified a few issues related to access through the panhandle. The following generally summarizes those issues:

- The Tribunal found that interpreting the panhandle access as simply a "driveway" was faulty, given that it would serve a proposed subdivision of up to 196 lots and function as a street.
- The Tribunal accepted the opinions of the three other transportation experts who disagreed with our proposal, recommending a larger curb radius (9 metres) than the proposed 4.5 metre east-side radius for the exit lane, especially considering John Street East is a Collector Road. Furthermore, concerns were raised that a tighter 4.5 metre radius would necessitate larger vehicles crossing into the oncoming lane when exiting onto John Street East.
- The Decision also identified that the Transportation Association of Canada guideline suggests a 15 metre separation between the near edge of the crossroad and the near edge of the adjacent driveway.
- The Tribunal considered the requirements of section 51(24)(e) of the Planning Act, which requires regard for the number, width, location, grades, elevations, and adequacy of highways linking the proposed subdivision with the established system, specifically concerning safety.

The Applicant proposes to amend the access to resolve the issues identified above as best as possible, in accordance with the OLT Decision. This report aims to review the revised access proposed to understand if the issues identified above have been resolved and the overall impacts the proposed development will have from a transportation operations and planning perspective.

Addressing OLT Issues

To address the OLT issues, the applicant proposes a private road with a 7-metre pavement width that would be shifted to the west limit of the 20.1-metre-wide panhandle. The 7-metre pavement width is consistent with the road cross-section as previously proposed and contained in the 200 John Street East, Town of Niagara-on-the-Lake – Transportation Impact Assessment, February 2024, prepared by Paradigm.

The proposed design includes 9 metres of radius on both the east and west sides of the private road and a 3.9 metres tangent section between the east-side radius and the existing west-side flare of the westerly driveway at 210 John Street East. The 9 metre radii are consistent with the Town's Municipal Engineering Standards. The larger radius will reduce the extent to which heavier trucks will have to encroach into the westbound lane on John Street East while making a right turn from the private roadway.

The shift of the roadway to the west property line of the panhandle would provide a separation of 14.8 metres between the east edge of the private driveway and the west edge of the westerly driveway at 210 John Street East.

While the proposed corner clearance of 14.8 metres is 0.2 metres less than the OLT Decision of 15 metres, the design still meets the functional objectives of TAC's guidance, especially regarding sightline protection, operational safety, and vehicle manoeuvrability, and aligns with the intent of the requirement.

Overall, the proposed redesign of the panhandle access generally addresses the issues identified by the OLT and satisfies the intent of section 51(24)(e).

Appendix A illustrates a schematic of the private street connecting to John Street, with relevant dimensions noted.

Access Design Review

To assist in determining the appropriateness of the access locations, the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (GDGCR)[1] was reviewed, as well as the Town of Niagara-On-The-Lake Municipal Engineering Standards (MES)[2].

The specific design of the Private Street against the TAC GDGCR and MES guidelines as well as the OLT Decision criteria, is based on the following elements:

- Separation from municipal intersection (TAC GDGCR)
  - Corner clearance is the distance from an intersection to the nearest access upstream or downstream of it. Corner clearance is measured from the near curb of

[1] Geometric Design Guide for Canadian Roads, Transportation Association of Canada, 2017
[2] Niagara-on-the-Lake, Municipal Engineering Standards, January 2018

the cross roadway to the near edge of the access throat. It consists of three components: the curb return radius at the intersection, a length of 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. Based on TAC GDGCR guidelines a corner clearance of 20 metres is suggested.

- Separation from adjacent driveway (OLT Decision)
  - It is good design practice to provide a tangent separation between the curb return of the public roadway intersection and the first driveway. Even a short separation helps reduce the impact of overlapping conflict zones and promotes collision-free operation.

    Short tangent separations are acceptable for residential land uses where driveway and roadway traffic volumes are generally low. Based on the OLT Decision, a separation distance of 15.0 m is suggested for the private street, located away from the west driveway to 210 John Street East.
- Access width (MES/TAC GDGCR)
  - The width of a street is measured parallel to the road since turns are generally oriented at right angles. Lane widths are dependent on the design speed, the volume of traffic the roadway is intended to carry, and the number and types of heavy vehicles on the roadway. In urban situations, the need to accommodate pedestrians and cyclists also comes into play. The lane widths used by various agencies across the country vary substantially.
  - The MES identifies a roadway width of 8 metres (4 metres travel lanes) for a typical urban local residential street.
  - TAC GDGCR, however, provides a design domain guideline that is presented as values within a recommended range of values intended to represent the range of optimal design. The recommended lane width for an urban roadway with a speed limit of 60 km/h or less is 3.0m – 3.7m. This would equate to a roadway width of 6.0m – 7.4m
- Access clear throat length (TAC GDGCR)
  - For a major driveway to operate effectively, both from the roadside and internally, it is desirable to provide a non-conflicting storage zone within the driveway. Failure to provide sufficient throat distance results in frequent blocking on on-site circulation roads, which can, in turn, create queues of entering vehicles.
  - TAC GDGCR outlines a clear throat length of 25 metres should be provided before the first conflict point.

- Access curb radius (OLT Decision)
  - "The curb return style driveway incorporates curb-cuts and sidewalk ramps to accommodate the pedestrian crossing, alerting both drivers and pedestrians of the potential conflict zone. The higher vehicle speeds encouraged by the smooth turning radii defined by the curb return, however, may be a disadvantage to pedestrians wanting to cross the driveway. Based on the OLT Decisions, a curb radius of 9 metres should be included in the overall design of the Private Street.

Table 1 summarizes the Town's access requirements.

TABLE 1: ACCESS REVIEW SUMMARY

Criteria	Reference	Guidelines	Private Street Values
[1]Seperation From Municipal Intersections	TAC GDGCR	20.0m	310m (west)
[2]Seperation From Adjacent Driveways	OLT Decision	15.0m	14.8m (east)
[3A]Access Width	MES	8.0m	7.0m
[3B]Access Width	TAC GDGCR	6.0m - 7.4m	7.0m
[4]Clear Throat Length	TAC GDGCR	25.0m	178m
[5]Access Curb Radius	OLT Decision	9.0 m	9.0m (east) 9.0m (west)

Notes

1. TAC Geometric Design Guide for Canadian Roads, June 2017, Figure 8.8.2
2. OLT-22-003603/23-00494 Decision, October 11, 2024 [Paragraph 103]
3A. Niagara-on-the-Lake MES, November 2020, Appendix 2-Cross Section 1
3B. TAC Geometric Design Guide for Canadian Roads, June 2017, Table 4.2.3
4. TAC Geometric Design Guide for Canadian Roads, June 2017, Table 8.9.3
5. OLT-22-003603/23-00494 Decision, October 11, 2024 [Paragraph 108]

Traffic Projections

Traffic projections at the private street connection to John Street consider the addition of traffic generated by the development, as well as general growth in the area. The traffic projections for the assessment incorporated:

- Existing Traffic Volumes: 8-hour turning movement counts conducted in August 2022 during typical weekday and Saturday conditions.
- Development Trip Generation: Calculated using Institute of Transportation Engineers (ITE) Trip Generation Manual rates.
- Trip Distribution and Assignment: Based on TTS travel model analysis and existing traffic patterns
- Background Growth: General growth rate of 2% per annum applied for a five-year horizon, as well as traffic from other planned developments (144 & 176 John Street), has been incorporated.

Traffic Data

Turning Movement Counts (TMC) are used to quantify the movement of vehicles to assess intersection operations. Existing traffic counts at an intersection or road section form the foundation for analysis. The traffic counts are usually collected during peak periods at an intersection to complete the level of service analysis.

As Niagara-on-the-Lake is primarily impacted by summer tourist traffic, base year traffic volumes along John Street East have been established through a summer traffic count completed in August 2022 for weekday and Saturday conditions at the intersection of John Street East and Charlotte Street. Given that the count data is three years old, the counts were factored to be representative of 2025 volumes using a 2% annual growth rate.

Figure 1 (Attached) displays the Weekday and Saturday peak hour turning movement traffic volumes. **Appendix B** contains the detailed traffic counts for the study area intersections.

Development Trip Estimates

Regarding the proposed number of units, a concept plan is not currently available; therefore, a unit count threshold has been assumed. The lower end of the threshold considers 120 residential units, as presented in the Town's demonstration plan at the OLT Hearing. The higher end considers 196 residential units, as shown in a previous development application by the Applicant.

The Institute of Transportation Engineers (ITE) Trip Generation Manual[3] was used to calculate the site trip generation. The following Land Use Code (LUC) is used to estimate the site's trip generation:

- **Land Use Code (LUC) 210 – Single-Family Detached Housing** – A single-family detached housing site includes any single-family detached home on an individual lot. A typical site surveyed is a suburban subdivision.

The trip generation estimates are based on peak trips corresponding to the adjacent street traffic's AM and PM peak hours. To remain conservative, semi-detached units and townhouses were assumed to have the same trip generation as single-family detached housing, and no trip reductions were applied to account for increased pedestrian and cycling activity. **Table 2** summarizes the trip generation estimates for the peak hours.

Based on the projections, a total of up to 137 AM, 187 PM, and 178 Saturday new vehicle trips are forecast to be generated by the proposed development during the respective peak hours using the fitted curve equation.

[3] Trip Generation Manual 11th Edition Institute of Transportation Engineers Washington DC 2021

TABLE 2: TRIP GENERATION ESTIMATES

Land Use Code	Units	AM Peak Hour				PM Peak Hour				Sat. Peak Hour			
		Rate	In	Out	Total	Rate	In	Out	Total	Rate	In	Out	Total
210 - Single-Family Detached Housing (Units)	196	Eqn.[a]	34	103	**137**	Eqn.[b]	118	69	**187**	Eqn.[c]	96	82	**178**
	120	Eqn.[a]	22	66	**88**	Eqn.[b]	74	44	**118**	Eqn.[c]	61	52	**113**

Development Trip Assignment

The estimated distribution was developed using the Transportation Tomorrow Survey[4] (TTS) data for the zone containing and surrounding the subject site (6044).

The TTS data can be found in **Appendix C**. The trip distribution is shown in **Table 3**. Using the trip generation data and the trip distribution, the site traffic was assigned to the adjacent road network.

Figure 2 (Attached) illustrates the site traffic for full build-out.

TABLE 3: TRIP DISTRIBUTION ESTIMATES

Direction (To/From)	Travel Route	%
North	Queen's Parade King Street	2% 11%
South	Niagara River Parkway King Street	45% 2%
West	John Street	15%
East	Niagara Street	25%
	Total	**100%**

Background Traffic (Excluding Proposed Development)

To forecast the 2030 generalized background traffic volumes, a growth rate of 2.0% per annum was applied to the base year traffic volumes. In addition, the following background developments have been included in estimating the background traffic:

- The potential development at 144 &176 John Street East is assumed to consist of a hotel with 202 rooms, a conference centre, a 4,736 square foot restaurant and an 18,201 square foot spa.

[4] Transportation Tomorrow Survey 2016, University of Toronto Data Management Group.

Projections for this development are provided in **Appendix D** and have been developed as part of the 200 John Street East, Town of Niagara-on-the-Lake – Transportation Impact Assessment, February 2024, prepared by Paradigm.

The background traffic projections include a general growth rate applied to the base year traffic volumes and traffic associated with the potential development of 144 & 176 John Street East.

Figure 3 (Attached) displays the Weekday and Saturday peak hour turning movement traffic volumes for the Background projections (2030).

Total Traffic (Including Proposed Development)

The total traffic projections include a general growth rate applied to the base year's traffic volumes, as well as traffic associated with the potential development of 144 and 176 John Street East, and traffic related to the build-out of the proposed residential development. **Figure 4 (Attached)** displays the Weekday and Saturday peak hour turning movement traffic volumes for the Total projections (2030).

Traffic Operations

Intersection level of service (LOS) is a recognized method of quantifying the average delay experienced by drivers at intersections. It is based on the delay related to the number of vehicles desiring to make a through or turning movement, compared to the estimated capacity for that movement.

The capacity is based on several criteria, including but not limited to vehicle headways, intersection geometry, vehicle composition, opposing traffic flows, and signal timing for signalized intersections. Capacity is evaluated in terms of the ratio of demand flow to capacity, with an at-capacity condition represented by a volume-to-capacity (v/c) ratio of 1.00 (i.e., volume demand equals capacity).

The highest possible rating is LOS A, in which the average total delay is equal to or less than 10 seconds per vehicle. When the average delay exceeds 80 seconds for signalized intersections and 50 seconds for unsignalized intersections, the movement is classified as LOS F, and improvements are usually implemented if feasible. LOS E is generally used as a guideline for determining road improvement needs on through lanes. At the same time, LOS F may be acceptable for left-turn movements at peak times, depending on capacity and safety considerations. It is also recognized that the guidelines for determining when improvements are necessary can vary in different municipalities.

Niagara Region Capacity Criteria

The Niagara Region *Transportation Impact Assessment Guidelines* (July 24, 2023) identify the following criteria for critical movements at unsignalized intersections[5]

- At unsignalized intersections, movements are expected to operate at LOS D or worse and/or where the estimated 95th percentile queue length for an individual movement exceeds the available queuing space.

Operational Analysis

An operational analysis was conducted to evaluate vehicle conditions during weekday morning and evening peak-hour traffic at the Private Street to John Street East intersection using Synchro software, which applies the Highway Capacity Manual (HCM) methods.

Table 4 summarizes the operational analysis results, including the LOS, average delay in seconds, degree utilization, and 95th percentile queue lengths in metres for the weekday AM/PM and Saturday peak hours. Any critical movements are highlighted in the results table. **Appendix E** contains the Synchro analysis outputs. The following is noted:

- The results indicate that the Private Street connection to John Street East is projected to operate with acceptable operations and minimal delay for all peak hours under the lower or higher unit count threshold.

[5] Niagara Region, *Transportation Impact Assessment Guidelines*, July 24, 2023, p12.

Table 4: Operational Assessment

Analysis Period	Intersection	Unit Threshold	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	John Street East at Private Street	196	TWSC	LOS		A	A	**A**	A	A		**A**	A		A	**A**					**A**
				Delay		0	0	**0**	2	2		**2**	10		10	**10**					**5**
				V/C		0.04	0.04		0.01	0.01			0.12		0.12						
				Q		0	0		0	0			3		3						
		120	TWSC	LOS		A	A	**A**	A	A		**A**	A		A	**A**					**A**
				Delay		0	0	**0**	2	2		**2**	9		9	**9**					**4**
				V/C		0.04	0.04		0.01	0.01			0.08		0.08						
				Q		0	0		0	0			2		2						
PM	John Street East at Private Street	196	TWSC	LOS		A	A	**A**	A	A		**A**	B		B	**B**					**A**
				Delay		0	0	**0**	3	3		**3**	11		11	**11**					**3**
				V/C		0.10	0.10		0.04	0.04			0.10		0.10						
				Q		0	0		1	1			3		3						
		120	TWSC	LOS		A	A	**A**	A	A		**A**	A		A	**A**					**A**
				Delay		0	0	**0**	2	2		**2**	10		10	**10**					**2**
				V/C		0.08	0.08		0.03	0.03			0.06		0.06						
				Q		0	0		1	1			2		2						
SAT	John Street East at Private Street	196	TWSC	LOS		A	A	**A**	A	A		**A**	B		B	**B**					**A**
				Delay		0	0	**0**	2	2		**2**	11		11	**11**					**3**
				V/C		0.13	0.13		0.04	0.04			0.14		0.14						
				Q		0	0		1	1			4		4						
		120	TWSC	LOS		A	A	**A**	A	A		**A**	B		B	**B**					**A**
				Delay		0	0	**0**	1	1		**1**	11		11	**11**					**2**
				V/C		0.12	0.12		0.02	0.02			0.08		0.08						
				Q		0	0		1	1			2		2						

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

Left-Turn Lane

The need for auxiliary left turn lanes at the study area intersections follows the requirements and procedures detailed in the Ministry of Transportation Geometric Design Manual[6]. Warrants have been calculated for the 2030 total traffic conditions and the Private Street connection to John Street East. The warrant was calculated using the nomographs for left-turn lanes on a two-lane undivided highway at an unsignalized intersection with a design speed of 10 km/h over the posted speed limit (60 km/h).

Table 5 summarizes the results of the left-turn lane warrant analyses. The following is noted:

- A separate turn lane along John Street East is not warranted at the Private Street under the lower or higher unit threshold.

TABLE 5: LEFT-TURN LANE WARRANT

Criteria	2030 Total Traffic (Higher Unit Count Threshold) John Street East at Private Street		
Approach Direction Design Speed	Westbound 60 km/h		
Peak Hour	AM	PM	Saturday
Advancing Volume	58	164	204
Opposing Volumes	66	150	203
Left Turning Traffic	16	55	45
% of Left Turning Traffic	27.6%	33.5%	22.1%
Figure Used*	9A-8 (30%)	9A-9 (35%)	9A-8 (25%)
Warranted	**No**	**No**	**No**
Storage Length Required	-	-	-

Emergency Access

The development's primary vehicular access is proposed via a panhandle connection to John Street East, which will serve as the main entry and exit point for both residents and visitors. Additionally, a secondary access point is proposed through Charlotte Street, intended solely for emergency use.

Keeping the panhandle connection to John Street East as the main access addresses the primary vehicle entry needs. However, a development of this size should also include a second access point for emergency response. If the John Street access is blocked due to an incident, construction, or weather, first responders would have no alternative route into or out of the subdivision. The Charlotte Street access resolves this issue.

[6] Geometric Design Manual for Ontario Highways, Ministry of Transportation of Ontario, Queen's Printer for Ontario, 1986

The proposed Charlotte Street access is limited in scope and specifically designed to serve emergency services. It features a 6.0-metre-wide route with a 12-metre turning radius, complying with the geometric and operational standards outlined in the Ontario Building Code for fire routes. The access is intended to be physically secured through bollards, chains, or other mechanisms to ensure it is not used for general traffic.

Regarding the physical impact, the Charlotte Street access raises some heritage concerns that require mitigation. Specifically, this includes relocating a mailbox, selectively trimming a tree, and partially removing a small section of the boundary wall. Although these impacts are not insignificant, they are manageable. It is also important to highlight that the Town's heritage planning assessments do not dismiss the Charlotte Street access entirely. Instead, they recommend a further multidisciplinary review to understand better and address the impacts, suggesting that this option remains feasible.

Given the technical feasibility, the Charlotte Street emergency access arrangement represents a balanced and prudent solution. It is recommended that the Charlotte Street emergency access be approved as part of the overall subdivision plan, subject to final coordination with the Town's Fire Department and appropriate heritage mitigation strategies.

Conclusions

The revised access design for the proposed development at 200 John Street East addresses the Ontario Land Tribunal's (OLT) concerns related to the panhandle configuration, safety, and functionality effectively. The design amendments include a 7-meter private roadway shifted westward within the 20.1-meter panhandle and 9-meter curb radii on both sides. These changes align with the Town of Niagara-on-the-Lake Municipal Engineering Standards and the Transportation Association of Canada's Geometric Design Guidelines for Canadian Roadways.

Although the proposed corner clearance of 14.8 meters is 0.2 meters less than the OLT Decision of 15 meters, the design meets the functional objectives outlined in TAC's guidance, particularly regarding sightline protection, operational safety, and vehicle maneuverability. This aligns with the intent of the required standards.

A traffic impact analysis has been conducted based on a residential unit threshold between 120 and 196 units. The findings indicate that the proposed private street connection with John Street East will operate at acceptable levels of service during all peak periods under the 2030 horizon. Additionally, a left-turn lane warrant analysis concludes that an auxiliary left-turn lane along John Street East is not necessary at the private street connection.

Furthermore, the inclusion of a secondary emergency-only access via Charlotte Street complies with provincial planning and safety standards. This emergency access will be configured to meet the Fire Route dimensional standards or seek relief from the Town's Fire Chief for any minor dimensional adjustments necessary to avoid impacting mature trees and plantings along the narrow strip leading to Charlotte Street.

Overall, the proposed modifications provide a safe, efficient, and policy-consistent access strategy that aligns with the OLT's decision regarding vehicle access and supports the development's transportation needs.

PARADIGM TRANSPORTATION SOLUTIONS LIMITED

Adam J. Makarewicz
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Senior Project Manager

Professional Engineers
Ontario

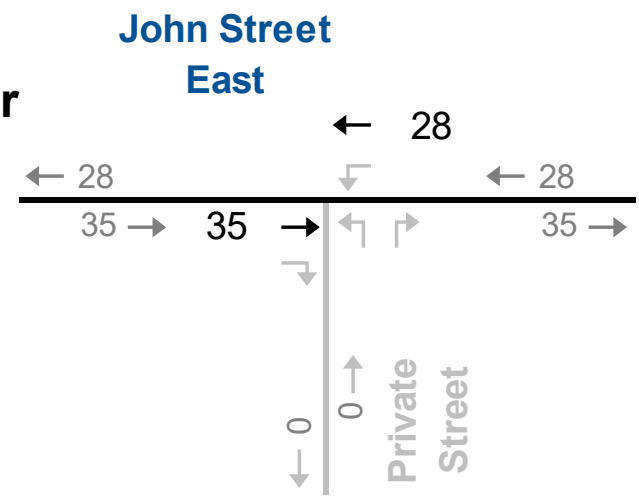
Licensed Engineering Technologist

Name: A. J. MAKAREWICZ
Number: 100574092
Limitations: Development of traffic impact and transportation planning studies, and reporting recommendations for associated transportation system improvements. **2025-07-07**

Association of Professional Engineers of Ontario

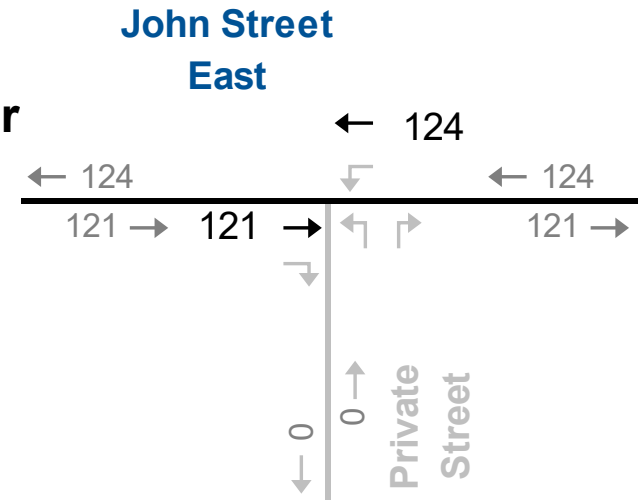
Attachments

Weekday AM Peak Hour



Weekday PM Peak Hour

Saturday PM Peak Hour



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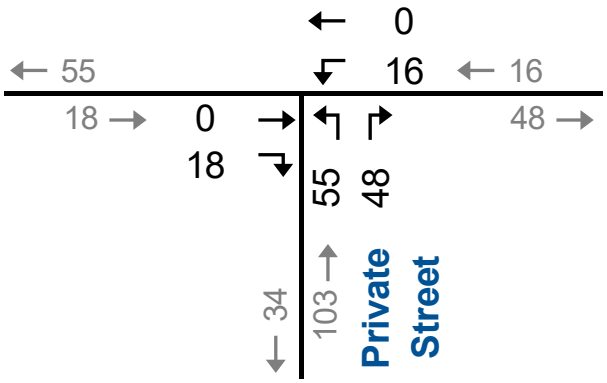
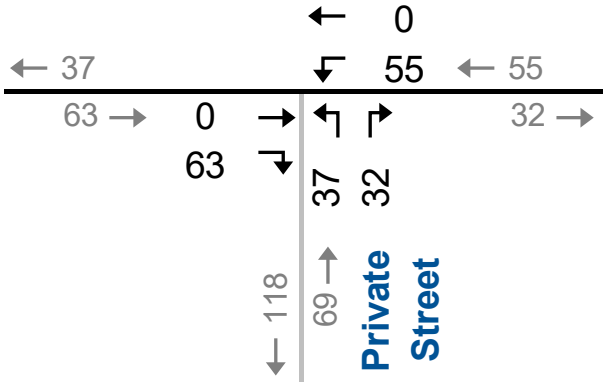
Summer Base Year Traffic Volumes

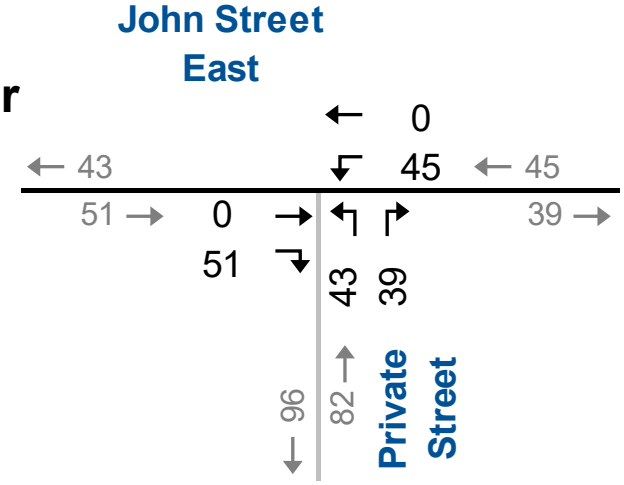
Weekday AM Peak Hour



Weekday PM Peak Hour

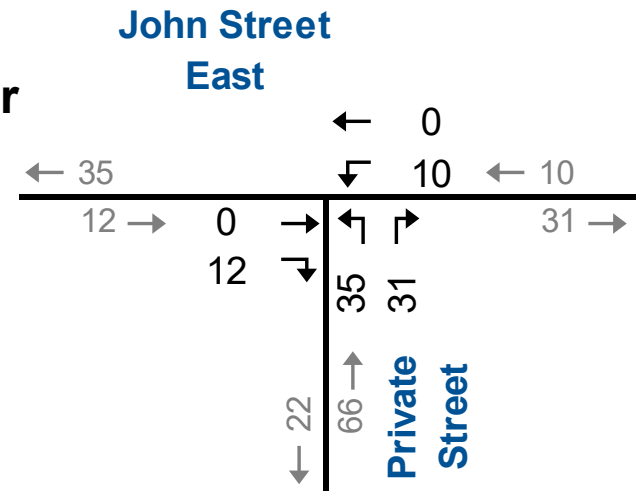


Saturday PM Peak Hour

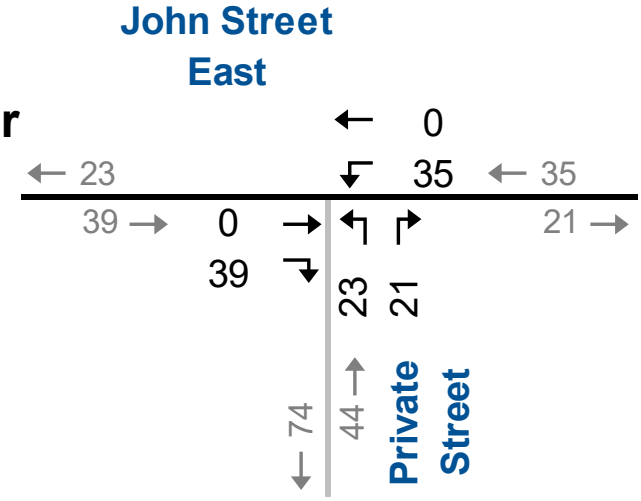


Site Generated Traffic Volumes (Higher Unit Count)

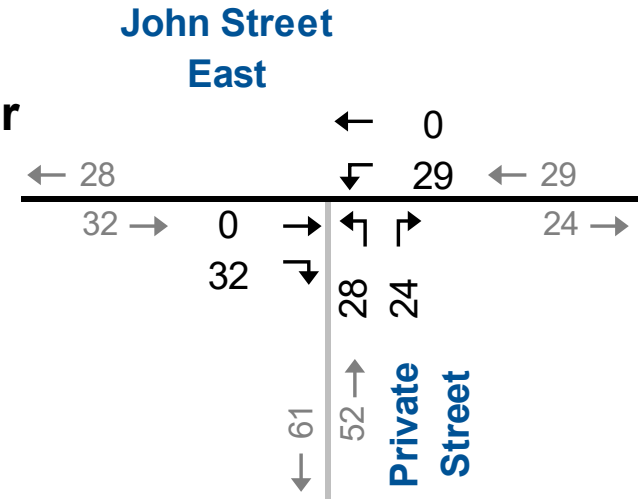
Weekday AM Peak Hour



Weekday PM Peak Hour

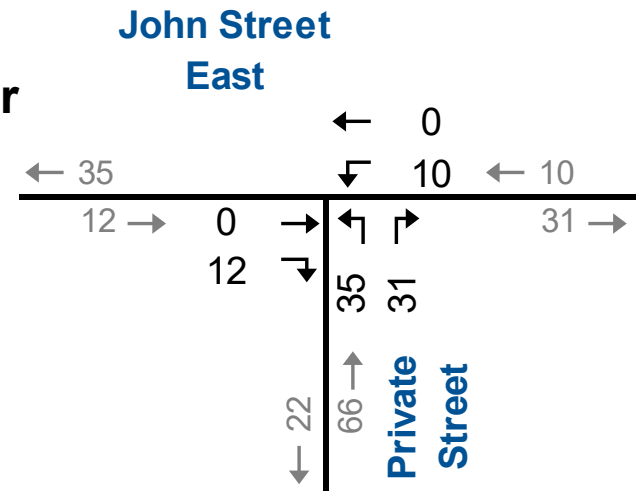


Saturday PM Peak Hour



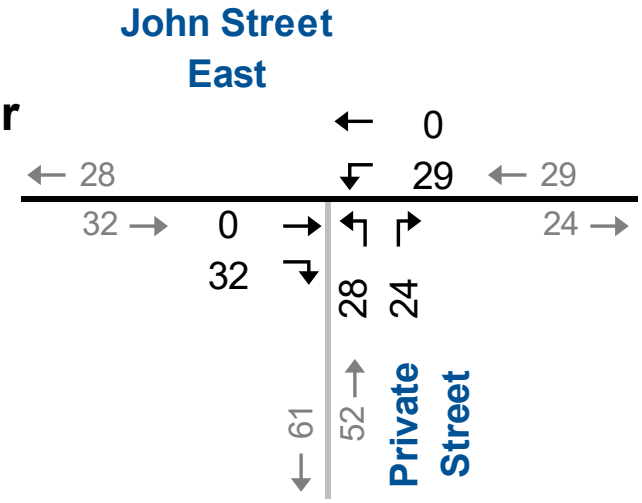
Site Generated Traffic Volumes (Lower Unit Count)

Weekday AM Peak Hour



Weekday PM Peak Hour

Saturday PM Peak Hour



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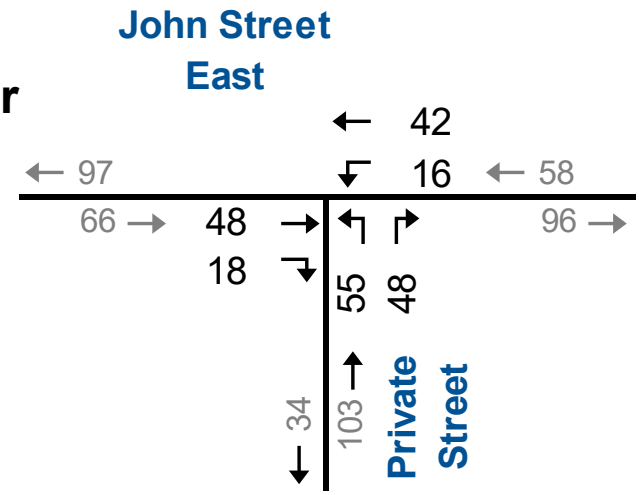
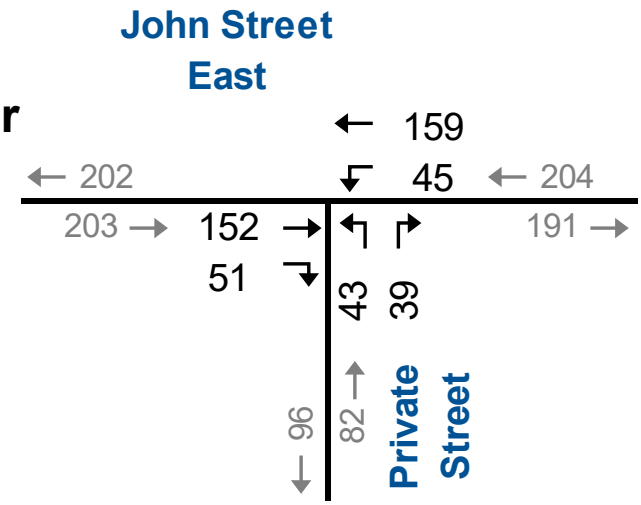
Summer 2030 Background Traffic Volumes

Weekday AM Peak Hour



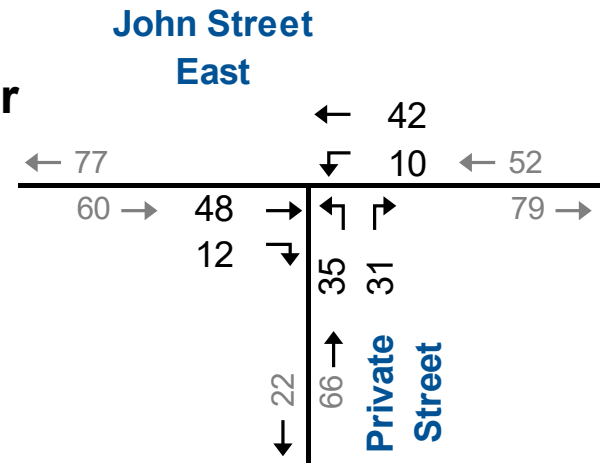
Weekday PM Peak Hour

Saturday PM Peak Hour

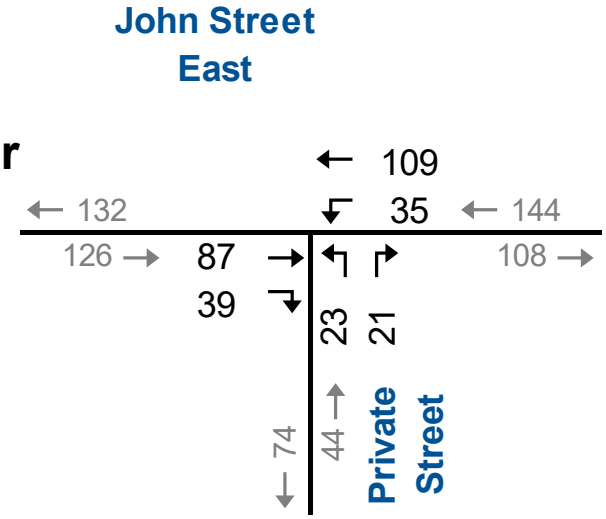


Summer 2030 Total Traffic Volumes (Higher Unit Count)

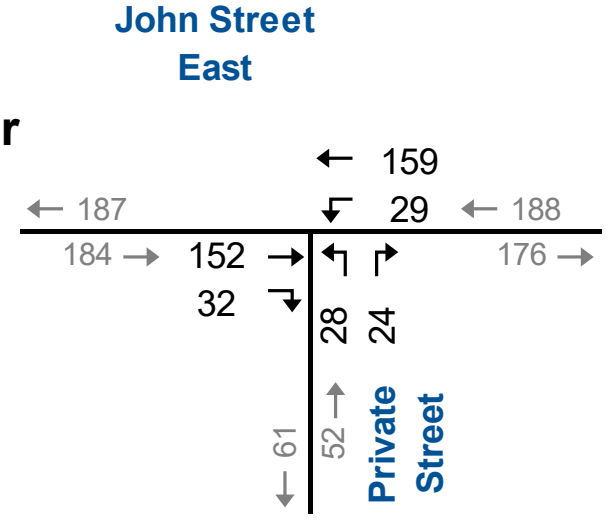
Weekday AM Peak Hour



Weekday PM Peak Hour



Saturday PM Peak Hour



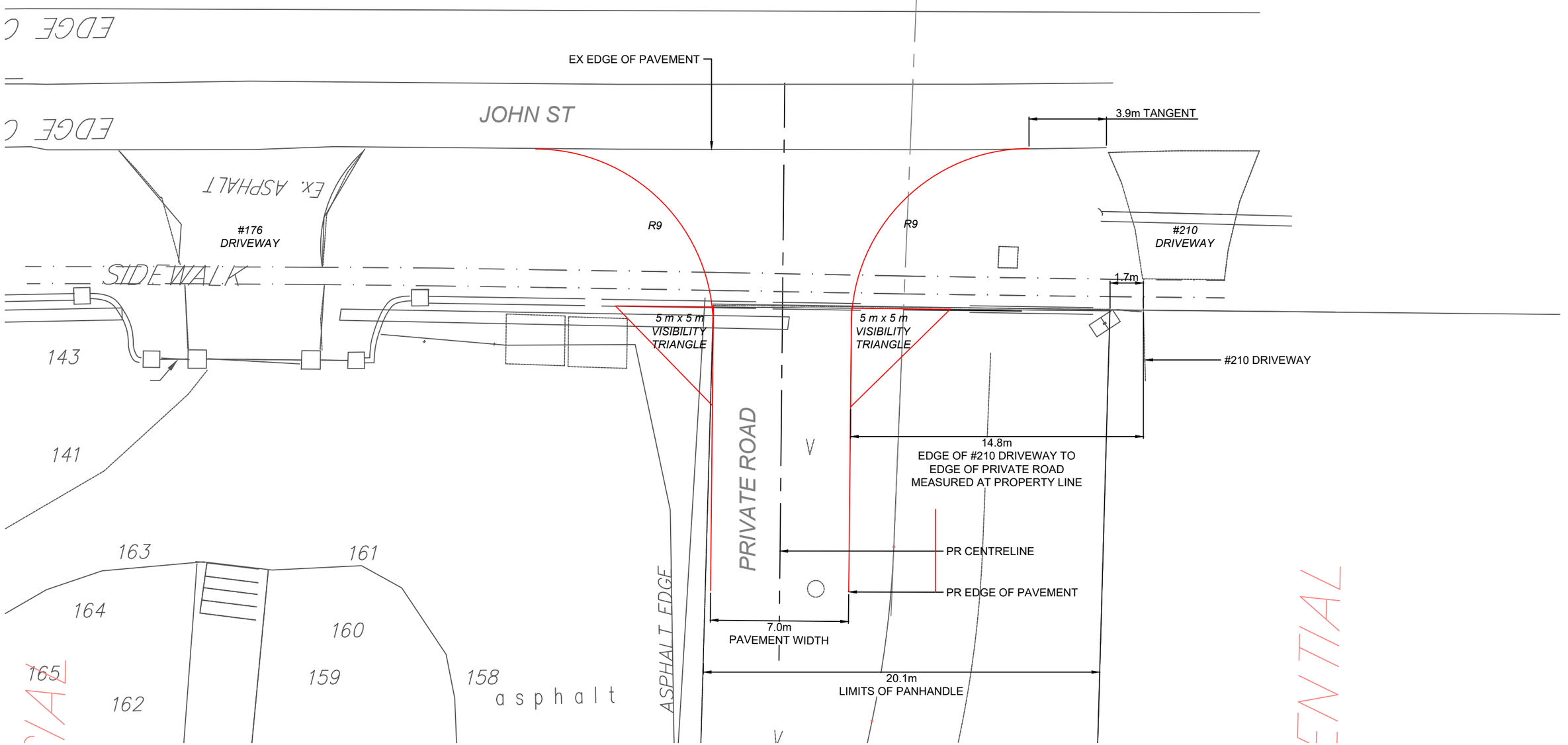
paradigm TRANSPORTATION SOLUTIONS LIMITED

Summer 2030 Total Traffic Volumes (Lower Unit Count)

Appendix A

PRIVATE STREET SCHEMATIC

WITHOUT PREJUDICE



THIS AUTOTURN SWEPT 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

PROPOSED PRIVATE ROAD LAYOUT
BASED ON OLT DECISION
200 JOHN STREET EAST
TOWN OF NIAGARA-ON-THE-LAKE

paradigm TRANSPORTATION SOLUTIONS LIMITED

PROJECT NO.: 230116	DATE: MAY 2025	SCALE: 1:200	DRAWING NO.:
DRAWN: SC	DESIGN: SC	CHECK: SE	01

Appendix B

TRAFFIC DATA

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Charlotte Street & John Street E - Saturday
Site Code: 220385
Start Date: 08/20/2022

Turning Movement Data

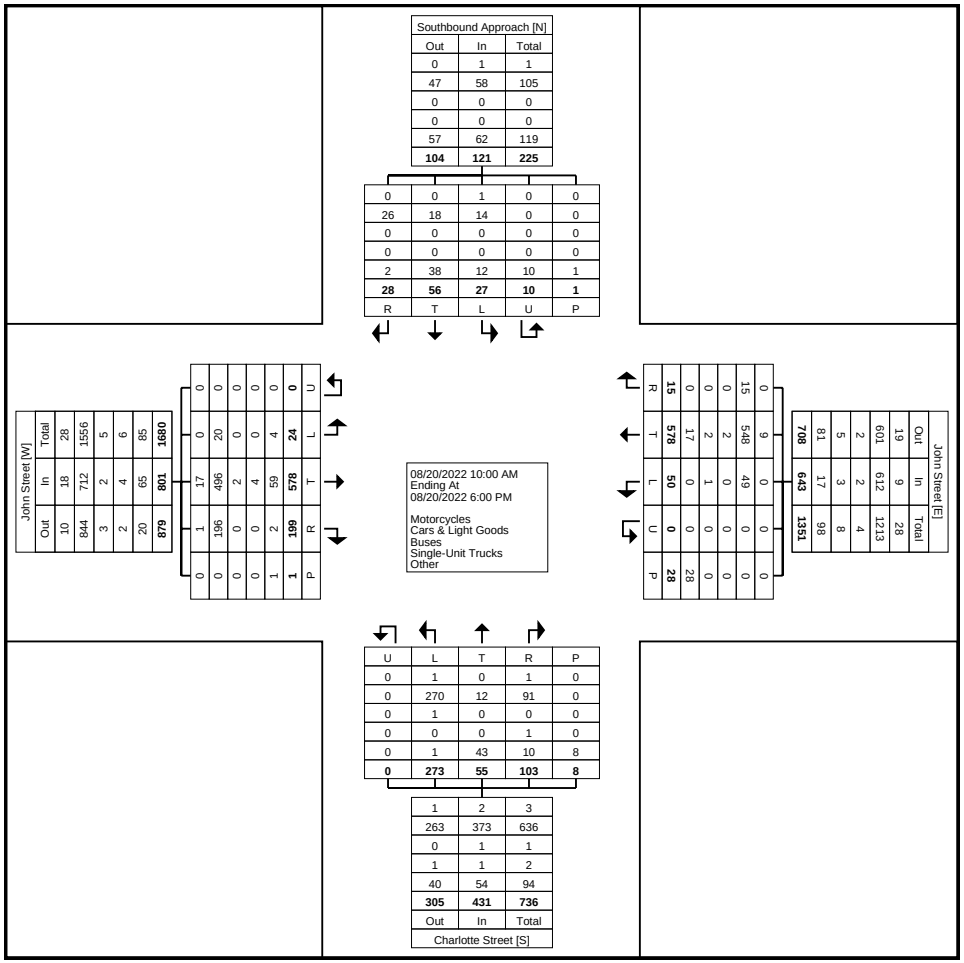
Start Time	John Street Eastbound						John Street Westbound						Charlotte Street Northbound						Southbound Approach Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
10:00 AM	0	16	5	0	0	21	2	6	0	0	3	8	10	8	0	0	1	18	0	3	1	0	0	4	51
10:15 AM	0	10	6	0	0	16	0	11	1	0	1	12	8	3	0	0	0	11	0	0	3	0	0	3	42
10:30 AM	1	16	4	0	0	21	0	8	0	0	1	8	12	1	3	0	0	16	0	2	0	0	0	2	47
10:45 AM	0	16	7	0	0	23	0	11	0	0	0	11	10	1	2	0	1	13	1	4	1	0	0	6	53
Hourly Total	1	58	22	0	0	81	2	36	1	0	5	39	40	13	5	0	2	58	1	9	5	0	0	15	193
11:00 AM	0	17	8	0	1	25	2	15	0	0	2	17	13	3	5	0	0	21	8	2	1	0	0	11	74
11:15 AM	0	14	13	0	0	27	1	14	0	0	0	15	7	0	2	0	0	9	0	1	0	0	0	1	52
11:30 AM	3	11	5	0	0	19	0	12	1	0	0	13	10	4	3	0	0	17	0	1	0	0	0	1	50
11:45 AM	0	18	5	0	0	23	2	9	0	0	2	11	15	0	3	0	0	18	0	2	1	1	0	4	56
Hourly Total	3	60	31	0	1	94	5	50	1	0	4	56	45	7	13	0	0	65	8	6	2	1	0	17	232
12:00 PM	0	19	10	0	0	29	4	16	0	0	0	20	4	0	2	0	0	6	1	3	2	0	0	6	61
12:15 PM	0	14	10	0	0	24	1	25	0	0	4	26	7	2	2	0	0	11	2	2	0	0	0	4	65
12:30 PM	0	18	5	0	0	23	0	13	0	0	0	13	6	1	7	0	0	14	0	0	0	0	0	0	50
12:45 PM	1	13	6	0	0	20	0	17	1	0	0	18	7	5	4	0	0	16	1	3	1	0	0	5	59
Hourly Total	1	64	31	0	0	96	5	71	1	0	4	77	24	8	15	0	0	47	4	8	3	0	0	15	235
1:00 PM	0	22	4	0	0	26	3	12	0	0	0	15	6	1	0	0	0	7	0	0	0	0	0	0	48
1:15 PM	2	18	4	0	0	24	1	9	1	0	2	11	5	1	4	0	0	10	1	0	1	0	0	2	47
1:30 PM	2	26	5	0	0	33	3	22	1	0	1	26	12	0	3	0	0	15	1	3	0	3	0	7	81
1:45 PM	3	17	3	0	0	23	1	26	0	0	0	27	6	2	4	0	0	12	0	0	1	0	0	1	63
Hourly Total	7	83	16	0	0	106	8	69	2	0	3	79	29	4	11	0	0	44	2	3	2	3	0	10	239
2:00 PM	0	21	6	0	0	27	1	17	0	0	0	18	8	0	5	0	1	13	0	3	0	0	0	3	61
2:15 PM	0	19	6	0	0	25	3	20	0	0	1	23	7	1	0	0	0	8	0	1	3	0	0	4	60
2:30 PM	3	22	6	0	0	31	1	21	0	0	0	22	6	1	5	0	0	12	0	0	1	0	0	1	66
2:45 PM	1	23	5	0	0	29	3	27	2	0	1	32	10	3	8	0	3	21	1	3	2	0	0	6	88
Hourly Total	4	85	23	0	0	112	8	85	2	0	2	95	31	5	18	0	4	54	1	7	6	0	0	14	275
3:00 PM	0	23	10	0	0	33	4	27	0	0	0	31	13	0	5	0	0	18	1	2	1	0	0	4	86
3:15 PM	0	21	7	0	0	28	2	27	0	0	1	29	5	0	5	0	0	10	1	3	0	0	0	4	71
3:30 PM	0	24	8	0	0	32	1	23	1	0	0	25	10	2	2	0	0	14	0	0	1	0	0	1	72
3:45 PM	1	12	4	0	0	17	3	28	1	0	5	32	11	1	10	0	0	22	1	1	1	1	0	4	75
Hourly Total	1	80	29	0	0	110	10	105	2	0	6	117	39	3	22	0	0	64	3	6	3	1	0	13	304
4:00 PM	1	18	5	0	0	24	3	22	0	0	1	25	9	0	5	0	0	14	2	1	2	0	0	5	68
4:15 PM	0	15	9	0	0	24	0	17	2	0	1	19	7	0	3	0	2	10	2	1	0	0	0	3	56
4:30 PM	2	24	4	0	0	30	1	29	0	0	0	30	10	3	1	0	0	14	0	0	1	0	0	1	75
4:45 PM	1	18	9	0	0	28	3	15	0	0	0	18	9	2	1	0	0	12	0	5	1	0	0	6	64
Hourly Total	4	75	27	0	0	106	7	83	2	0	2	92	35	5	10	0	2	50	4	7	4	0	0	15	263

5:00 PM	0	24	1	0	0	25	0	21	1	0	0	22	6	0	1	0	0	7	2	2	1	0	0	5	59
5:15 PM	1	15	6	0	0	22	3	20	0	0	1	23	10	0	4	0	0	14	1	1	0	0	0	2	61
5:30 PM	0	19	5	0	0	24	0	22	2	0	0	24	5	7	2	0	0	14	0	4	0	4	0	8	70
5:45 PM	2	15	8	0	0	25	2	16	1	0	1	19	9	3	2	0	0	14	1	3	2	1	1	7	65
Hourly Total	3	73	20	0	0	96	5	79	4	0	2	88	30	10	9	0	0	49	4	10	3	5	1	22	255
Grand Total	24	578	199	0	1	801	50	578	15	0	28	643	273	55	103	0	8	431	27	56	28	10	1	121	1996
Approach %	3.0	72.2	24.8	0.0	-	-	7.8	89.9	2.3	0.0	-	-	63.3	12.8	23.9	0.0	-	-	22.3	46.3	23.1	8.3	-	-	-
Total %	1.2	29.0	10.0	0.0	-	40.1	2.5	29.0	0.8	0.0	-	32.2	13.7	2.8	5.2	0.0	-	21.6	1.4	2.8	1.4	0.5	-	6.1	-
Motorcycles	0	17	1	0	-	18	0	9	0	0	-	9	1	0	1	0	-	2	1	0	0	0	-	1	30
% Motorcycles	0.0	2.9	0.5	-	-	2.2	0.0	1.6	0.0	-	-	1.4	0.4	0.0	1.0	-	-	0.5	3.7	0.0	0.0	0.0	-	0.8	1.5
Cars & Light Goods	20	496	196	0	-	712	49	548	15	0	-	612	270	12	91	0	-	373	14	18	26	0	-	58	1755
% Cars & Light Goods	83.3	85.8	98.5	-	-	88.9	98.0	94.8	100.0	-	-	95.2	98.9	21.8	88.3	-	-	86.5	51.9	32.1	92.9	0.0	-	47.9	87.9
Buses	0	2	0	0	-	2	0	2	0	0	-	2	1	0	0	0	-	1	0	0	0	0	-	0	5
% Buses	0.0	0.3	0.0	-	-	0.2	0.0	0.3	0.0	-	-	0.3	0.4	0.0	0.0	-	-	0.2	0.0	0.0	0.0	0.0	-	0.0	0.3
Single-Unit Trucks	0	4	0	0	-	4	1	2	0	0	-	3	0	0	1	0	-	1	0	0	0	0	-	0	8
% Single-Unit Trucks	0.0	0.7	0.0	-	-	0.5	2.0	0.3	0.0	-	-	0.5	0.0	0.0	1.0	-	-	0.2	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	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	4	59	2	0	-	65	0	17	0	0	-	17	1	43	10	0	-	54	12	38	2	10	-	62	198
% Bicycles on Road	16.7	10.2	1.0	-	-	8.1	0.0	2.9	0.0	-	-	2.6	0.4	78.2	9.7	-	-	12.5	44.4	67.9	7.1	100.0	-	51.2	9.9
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	2	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	3.6	-	-	-	-	-	25.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	27	-	-	-	-	-	6	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	96.4	-	-	-	-	-	75.0	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Charlotte Street & John Street E - Saturday
Site Code: 220385
Start Date: 08/20/2022



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Charlotte Street & John Street E - Saturday
Site Code: 220385
Start Date: 08/20/2022

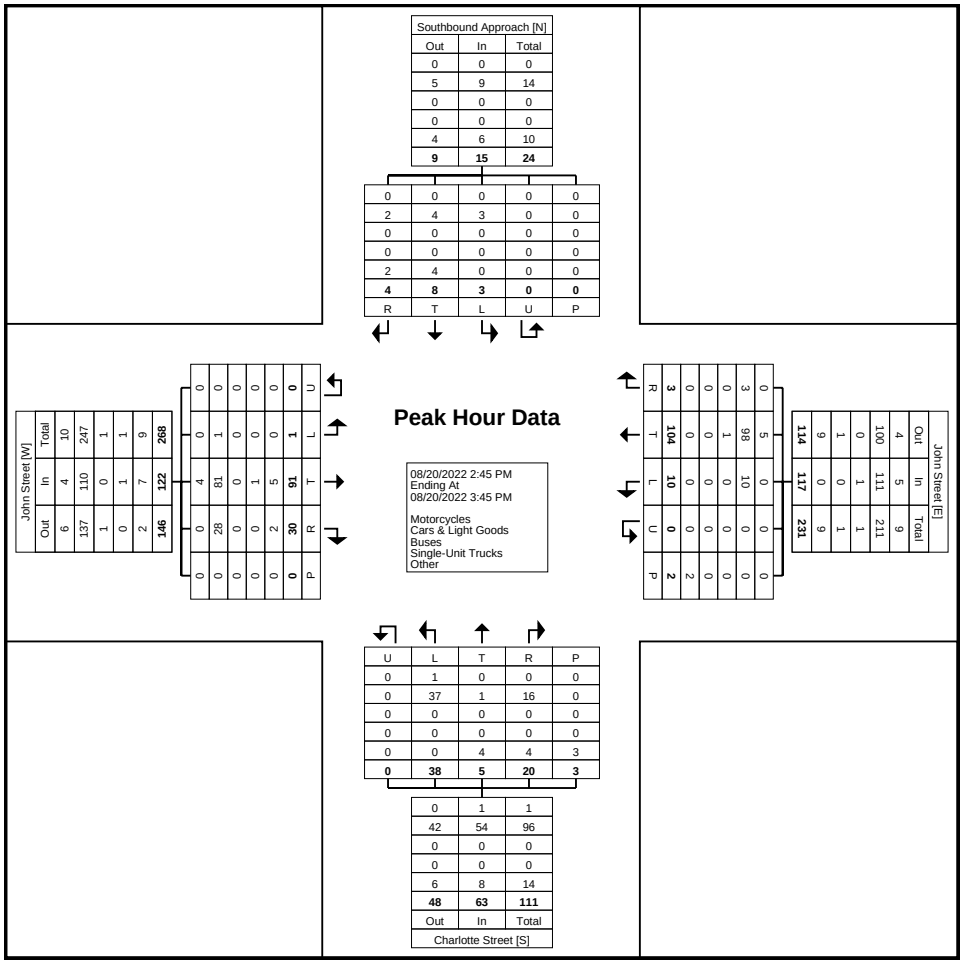
Turning Movement Peak Hour Data (2:45 PM)

Start Time	John Street Eastbound						John Street Westbound						Charlotte Street Northbound						Southbound Approach 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	
2:45 PM	1	23	5	0	0	29	3	27	2	0	1	32	10	3	8	0	3	21	1	3	2	0	0	6	88
3:00 PM	0	23	10	0	0	33	4	27	0	0	0	31	13	0	5	0	0	18	1	2	1	0	0	4	86
3:15 PM	0	21	7	0	0	28	2	27	0	0	1	29	5	0	5	0	0	10	1	3	0	0	0	4	71
3:30 PM	0	24	8	0	0	32	1	23	1	0	0	25	10	2	2	0	0	14	0	0	1	0	0	1	72
Total	1	91	30	0	0	122	10	104	3	0	2	117	38	5	20	0	3	63	3	8	4	0	0	15	317
Approach %	0.8	74.6	24.6	0.0	-	-	8.5	88.9	2.6	0.0	-	-	60.3	7.9	31.7	0.0	-	-	20.0	53.3	26.7	0.0	-	-	-
Total %	0.3	28.7	9.5	0.0	-	38.5	3.2	32.8	0.9	0.0	-	36.9	12.0	1.6	6.3	0.0	-	19.9	0.9	2.5	1.3	0.0	-	4.7	-
PHF	0.250	0.948	0.750	0.000	-	0.924	0.625	0.963	0.375	0.000	-	0.914	0.731	0.417	0.625	0.000	-	0.750	0.750	0.667	0.500	0.000	-	0.625	0.901
Motorcycles	0	4	0	0	-	4	0	5	0	0	-	5	1	0	0	0	-	1	0	0	0	0	-	0	10
% Motorcycles	0.0	4.4	0.0	-	-	3.3	0.0	4.8	0.0	-	-	4.3	2.6	0.0	0.0	-	-	1.6	0.0	0.0	0.0	-	-	0.0	3.2
Cars & Light Goods	1	81	28	0	-	110	10	98	3	0	-	111	37	1	16	0	-	54	3	4	2	0	-	9	284
% Cars & Light Goods	100.0	89.0	93.3	-	-	90.2	100.0	94.2	100.0	-	-	94.9	97.4	20.0	80.0	-	-	85.7	100.0	50.0	50.0	-	-	60.0	89.6
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	1.0	0.0	-	-	0.9	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.3
Single-Unit Trucks	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1
% Single-Unit Trucks	0.0	1.1	0.0	-	-	0.8	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	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	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	5	2	0	-	7	0	0	0	0	-	0	0	4	4	0	-	8	0	4	2	0	-	6	21
% Bicycles on Road	0.0	5.5	6.7	-	-	5.7	0.0	0.0	0.0	-	-	0.0	0.0	80.0	20.0	-	-	12.7	0.0	50.0	50.0	-	-	40.0	6.6
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	50.0	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	3	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	50.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Charlotte Street & John Street E - Saturday
Site Code: 220385
Start Date: 08/20/2022



Turning Movement Peak Hour Data Plot (2:45 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Charlotte Street & John Street E - Weekday
Site Code: 220385
Start Date: 08/18/2022

Turning Movement Data

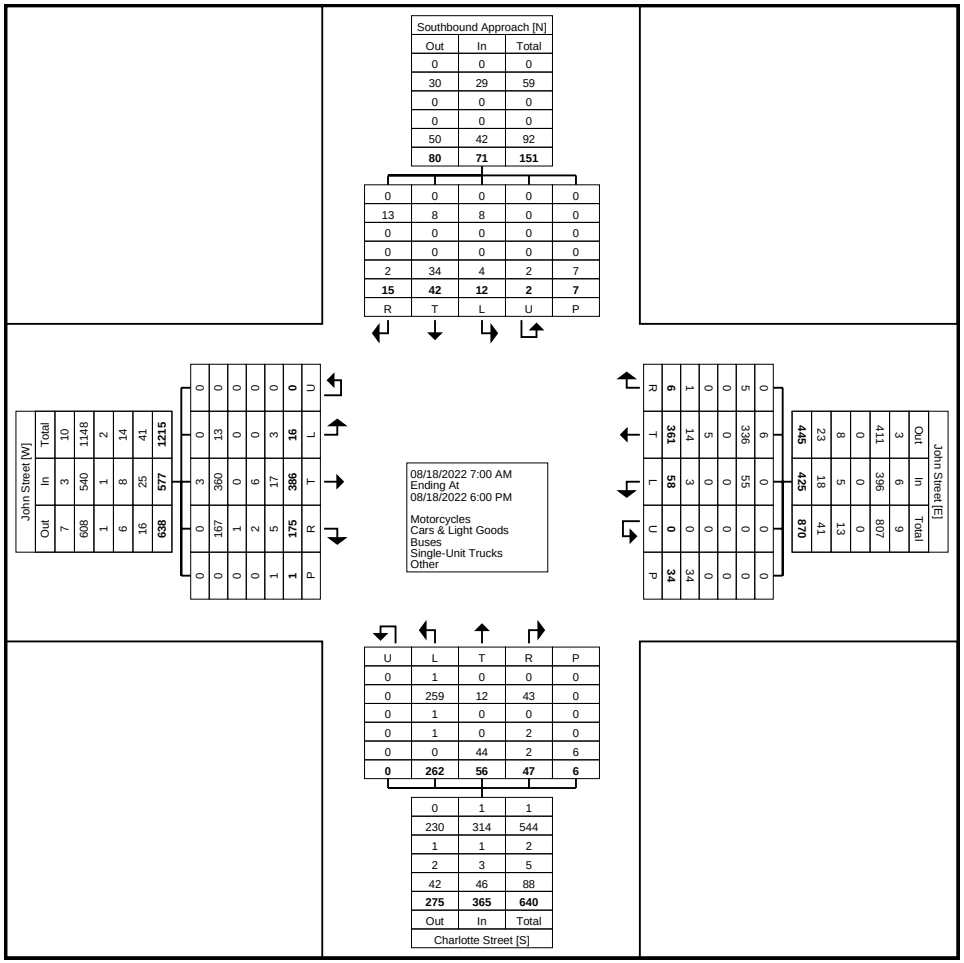
Start Time	John Street Eastbound						John Street Westbound						Charlotte Street Northbound						Southbound Approach Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	3	4	1	0	0	8	0	1	0	0	0	1	1	0	2	0	3	3	0	0	0	0	0	0	12
7:15 AM	1	5	0	0	0	6	0	0	0	0	1	0	2	1	2	0	0	5	0	0	0	0	0	0	11
7:30 AM	0	4	4	0	0	8	0	6	0	0	0	6	9	1	3	0	0	13	0	0	1	0	0	1	28
7:45 AM	1	8	1	0	0	10	0	5	0	0	2	5	6	1	0	0	0	7	0	0	0	0	0	0	22
Hourly Total	5	21	6	0	0	32	0	12	0	0	3	12	18	3	7	0	3	28	0	0	1	0	0	1	73
8:00 AM	0	9	0	0	0	9	2	6	0	0	1	8	2	2	1	0	0	5	1	0	0	0	0	1	23
8:15 AM	0	7	0	0	0	7	0	3	0	0	2	3	5	2	0	0	0	7	0	0	0	0	0	0	17
8:30 AM	1	7	1	0	0	9	0	2	0	0	0	2	5	3	1	0	0	9	0	3	1	0	0	4	24
8:45 AM	0	6	3	0	0	9	1	12	0	0	3	13	14	2	1	0	0	17	0	2	0	0	0	2	41
Hourly Total	1	29	4	0	0	34	3	23	0	0	6	26	26	9	3	0	0	38	1	5	1	0	0	7	105
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	1	10	5	0	0	16	2	9	0	0	0	11	3	1	0	0	0	4	0	0	1	0	0	1	32
11:15 AM	0	11	5	0	0	16	4	7	0	0	1	11	7	7	6	0	0	20	0	1	1	0	0	2	49
11:30 AM	0	14	11	0	0	25	1	15	0	0	0	16	3	0	2	0	0	5	0	3	1	0	0	4	50
11:45 AM	0	20	5	0	0	25	1	8	1	0	1	10	12	0	4	0	0	16	0	0	1	0	0	1	52
Hourly Total	1	55	26	0	0	82	8	39	1	0	2	48	25	8	12	0	0	45	0	4	4	0	0	8	183
12:00 PM	0	17	5	0	0	22	1	14	1	0	0	16	14	0	2	0	0	16	2	1	0	0	0	3	57
12:15 PM	1	15	3	0	0	19	1	18	0	0	1	19	7	1	2	0	0	10	0	2	1	0	0	3	51
12:30 PM	3	17	7	0	0	27	2	14	0	0	0	16	9	6	3	0	0	18	0	2	1	0	0	3	64
12:45 PM	0	20	5	0	0	25	0	13	0	0	0	13	10	0	2	0	0	12	2	0	0	0	0	2	52
Hourly Total	4	69	20	0	0	93	4	59	1	0	1	64	40	7	9	0	0	56	4	5	2	0	0	11	224
1:00 PM	1	15	8	0	0	24	1	18	0	0	0	19	13	1	1	0	0	15	0	4	0	0	0	4	62
1:15 PM	1	13	10	0	0	24	1	15	0	0	2	16	9	3	2	0	1	14	1	0	2	2	0	5	59
1:30 PM	0	11	11	0	0	22	3	18	2	0	3	23	16	1	2	0	0	19	0	6	1	0	0	7	71
1:45 PM	0	23	6	0	0	29	2	11	1	0	1	14	11	11	2	0	1	24	0	0	0	0	0	0	67
Hourly Total	2	62	35	0	0	99	7	62	3	0	6	72	49	16	7	0	2	72	1	10	3	2	0	16	259
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	1	11	10	0	0	22	7	16	0	0	5	23	7	0	0	0	0	7	2	0	0	0	0	2	54
3:15 PM	0	11	7	0	0	18	2	12	0	0	1	14	3	2	1	0	0	6	0	1	1	0	0	2	40
3:30 PM	0	11	6	0	0	17	5	14	0	0	2	19	10	1	0	0	0	11	0	2	0	0	0	2	49
3:45 PM	0	17	2	0	0	19	2	14	0	0	1	16	12	4	1	0	0	17	0	2	0	0	0	2	54
Hourly Total	1	50	25	0	0	76	16	56	0	0	9	72	32	7	2	0	0	41	2	5	1	0	0	8	197
4:00 PM	2	13	10	0	1	25	2	9	0	0	3	11	6	0	1	0	1	7	1	1	1	0	2	3	46
4:15 PM	0	13	7	0	0	20	1	16	0	0	1	17	10	0	0	0	0	10	0	2	0	0	3	2	49
4:30 PM	0	13	12	0	0	25	5	19	0	0	0	24	12	1	2	0	0	15	2	8	0	0	2	10	74

4:45 PM	0	14	3	0	0	17	6	10	0	0	0	16	8	0	0	0	0	8	1	1	0	0	0	2	43
Hourly Total	2	53	32	0	1	87	14	54	0	0	4	68	36	1	3	0	1	40	4	12	1	0	7	17	212
5:00 PM	0	15	10	0	0	25	2	17	0	0	3	19	13	2	0	0	0	15	0	0	0	0	0	0	59
5:15 PM	0	11	6	0	0	17	0	17	1	0	0	18	5	1	2	0	0	8	0	1	2	0	0	3	46
5:30 PM	0	12	5	0	0	17	0	12	0	0	0	12	13	0	1	0	0	14	0	0	0	0	0	0	43
5:45 PM	0	9	6	0	0	15	4	10	0	0	0	14	5	2	1	0	0	8	0	0	0	0	0	0	37
Hourly Total	0	47	27	0	0	74	6	56	1	0	3	63	36	5	4	0	0	45	0	1	2	0	0	3	185
Grand Total	16	386	175	0	1	577	58	361	6	0	34	425	262	56	47	0	6	365	12	42	15	2	7	71	1438
Approach %	2.8	66.9	30.3	0.0	-	-	13.6	84.9	1.4	0.0	-	-	71.8	15.3	12.9	0.0	-	-	16.9	59.2	21.1	2.8	-	-	-
Total %	1.1	26.8	12.2	0.0	-	40.1	4.0	25.1	0.4	0.0	-	29.6	18.2	3.9	3.3	0.0	-	25.4	0.8	2.9	1.0	0.1	-	4.9	-
Motorcycles	0	3	0	0	-	3	0	6	0	0	-	6	1	0	0	0	-	1	0	0	0	0	-	0	10
% Motorcycles	0.0	0.8	0.0	-	-	0.5	0.0	1.7	0.0	-	-	1.4	0.4	0.0	0.0	-	-	0.3	0.0	0.0	0.0	0.0	-	0.0	0.7
Cars & Light Goods	13	360	167	0	-	540	55	336	5	0	-	396	259	12	43	0	-	314	8	8	13	0	-	29	1279
% Cars & Light Goods	81.3	93.3	95.4	-	-	93.6	94.8	93.1	83.3	-	-	93.2	98.9	21.4	91.5	-	-	86.0	66.7	19.0	86.7	0.0	-	40.8	88.9
Buses	0	0	1	0	-	1	0	0	0	0	-	0	1	0	0	0	-	1	0	0	0	0	-	0	2
% Buses	0.0	0.0	0.6	-	-	0.2	0.0	0.0	0.0	-	-	0.0	0.4	0.0	0.0	-	-	0.3	0.0	0.0	0.0	0.0	-	0.0	0.1
Single-Unit Trucks	0	6	2	0	-	8	0	5	0	0	-	5	1	0	2	0	-	3	0	0	0	0	-	0	16
% Single-Unit Trucks	0.0	1.6	1.1	-	-	1.4	0.0	1.4	0.0	-	-	1.2	0.4	0.0	4.3	-	-	0.8	0.0	0.0	0.0	0.0	-	0.0	1.1
Articulated Trucks	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1
% Articulated Trucks	0.0	0.3	0.0	-	-	0.2	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.1
Bicycles on Road	3	16	5	0	-	24	3	14	1	0	-	18	0	44	2	0	-	46	4	34	2	2	-	42	130
% Bicycles on Road	18.8	4.1	2.9	-	-	4.2	5.2	3.9	16.7	-	-	4.2	0.0	78.6	4.3	-	-	12.6	33.3	81.0	13.3	100.0	-	59.2	9.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	4	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	16.7	-	-	-	-	-	57.1	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	34	-	-	-	-	-	5	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	83.3	-	-	-	-	-	42.9	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Charlotte Street & John Street E - Weekday
Site Code: 220385
Start Date: 08/18/2022



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Charlotte Street & John Street E - Weekday
Site Code: 220385
Start Date: 08/18/2022

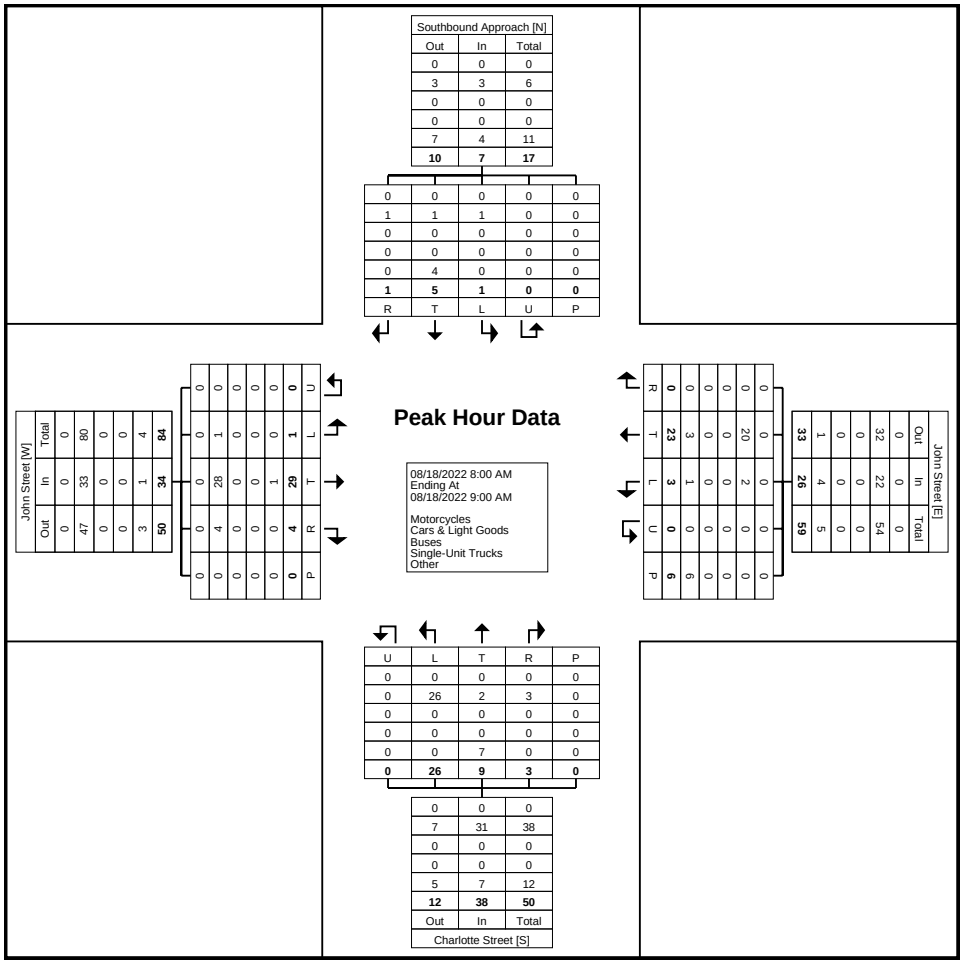
Turning Movement Peak Hour Data (8:00 AM)

Start Time	John Street Eastbound						John Street Westbound						Charlotte Street Northbound						Southbound Approach 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	
8:00 AM	0	9	0	0	0	9	2	6	0	0	1	8	2	2	1	0	0	5	1	0	0	0	0	1	23
8:15 AM	0	7	0	0	0	7	0	3	0	0	2	3	5	2	0	0	0	7	0	0	0	0	0	0	17
8:30 AM	1	7	1	0	0	9	0	2	0	0	0	2	5	3	1	0	0	9	0	3	1	0	0	4	24
8:45 AM	0	6	3	0	0	9	1	12	0	0	3	13	14	2	1	0	0	17	0	2	0	0	0	2	41
Total	1	29	4	0	0	34	3	23	0	0	6	26	26	9	3	0	0	38	1	5	1	0	0	7	105
Approach %	2.9	85.3	11.8	0.0	-	-	11.5	88.5	0.0	0.0	-	-	68.4	23.7	7.9	0.0	-	-	14.3	71.4	14.3	0.0	-	-	-
Total %	1.0	27.6	3.8	0.0	-	32.4	2.9	21.9	0.0	0.0	-	24.8	24.8	8.6	2.9	0.0	-	36.2	1.0	4.8	1.0	0.0	-	6.7	-
PHF	0.250	0.806	0.333	0.000	-	0.944	0.375	0.479	0.000	0.000	-	0.500	0.464	0.750	0.750	0.000	-	0.559	0.250	0.417	0.250	0.000	-	0.438	0.640
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
Cars & Light Goods	1	28	4	0	-	33	2	20	0	0	-	22	26	2	3	0	-	31	1	1	1	0	-	3	89
% Cars & Light Goods	100.0	96.6	100.0	-	-	97.1	66.7	87.0	-	-	-	84.6	100.0	22.2	100.0	-	-	81.6	100.0	20.0	100.0	-	-	42.9	84.8
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
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
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
Bicycles on Road	0	1	0	0	-	1	1	3	0	0	-	4	0	7	0	0	-	7	0	4	0	0	-	4	16
% Bicycles on Road	0.0	3.4	0.0	-	-	2.9	33.3	13.0	-	-	-	15.4	0.0	77.8	0.0	-	-	18.4	0.0	80.0	0.0	-	-	57.1	15.2
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	6	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Charlotte Street & John Street E - Weekday
Site Code: 220385
Start Date: 08/18/2022



Turning Movement Peak Hour Data Plot (8:00 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Charlotte Street & John Street E - Weekday
Site Code: 220385
Start Date: 08/18/2022

Turning Movement Peak Hour Data (1:00 PM)

Start Time	John Street Eastbound						John Street Westbound						Charlotte Street Northbound						Southbound Approach 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	
1:00 PM	1	15	8	0	0	24	1	18	0	0	0	19	13	1	1	0	0	15	0	4	0	0	0	4	62
1:15 PM	1	13	10	0	0	24	1	15	0	0	2	16	9	3	2	0	1	14	1	0	2	2	0	5	59
1:30 PM	0	11	11	0	0	22	3	18	2	0	3	23	16	1	2	0	0	19	0	6	1	0	0	7	71
1:45 PM	0	23	6	0	0	29	2	11	1	0	1	14	11	11	2	0	1	24	0	0	0	0	0	0	67
Total	2	62	35	0	0	99	7	62	3	0	6	72	49	16	7	0	2	72	1	10	3	2	0	16	259
Approach %	2.0	62.6	35.4	0.0	-	-	9.7	86.1	4.2	0.0	-	-	68.1	22.2	9.7	0.0	-	-	6.3	62.5	18.8	12.5	-	-	-
Total %	0.8	23.9	13.5	0.0	-	38.2	2.7	23.9	1.2	0.0	-	27.8	18.9	6.2	2.7	0.0	-	27.8	0.4	3.9	1.2	0.8	-	6.2	-
PHF	0.500	0.674	0.795	0.000	-	0.853	0.583	0.861	0.375	0.000	-	0.783	0.766	0.364	0.875	0.000	-	0.750	0.250	0.417	0.375	0.250	-	0.571	0.912
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	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	2.0	0.0	0.0	-	-	1.4	0.0	0.0	0.0	0.0	-	0.0	0.4
Cars & Light Goods	1	55	31	0	-	87	7	62	3	0	-	72	48	2	7	0	-	57	1	0	2	0	-	3	219
% Cars & Light Goods	50.0	88.7	88.6	-	-	87.9	100.0	100.0	100.0	-	-	100.0	98.0	12.5	100.0	-	-	79.2	100.0	0.0	66.7	0.0	-	18.8	84.6
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	0.0
Single-Unit Trucks	0	2	1	0	-	3	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	3
% Single-Unit Trucks	0.0	3.2	2.9	-	-	3.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	1.2
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	1	5	3	0	-	9	0	0	0	0	-	0	0	14	0	0	-	14	0	10	1	2	-	13	36
% Bicycles on Road	50.0	8.1	8.6	-	-	9.1	0.0	0.0	0.0	-	-	0.0	0.0	87.5	0.0	-	-	19.4	0.0	100.0	33.3	100.0	-	81.3	13.9
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	50.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	6	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	50.0	-	-	-	-	-	-	-	-

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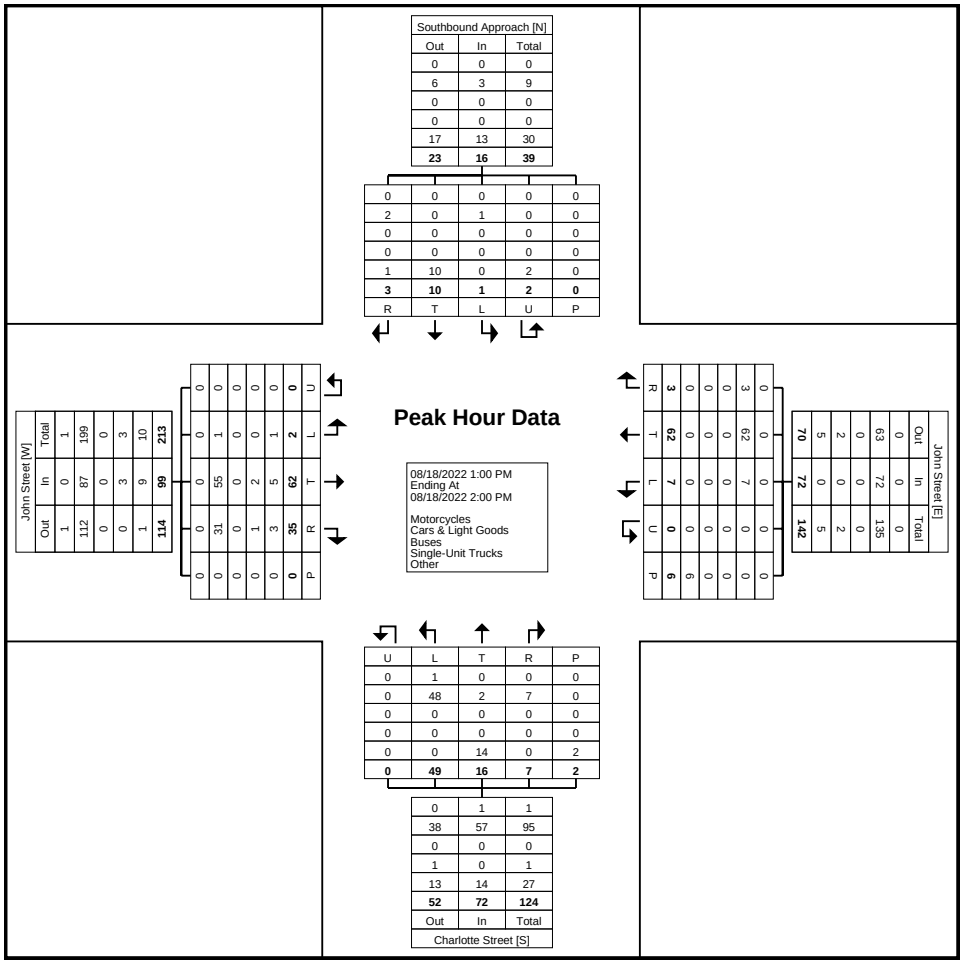


Turning Movement Peak Hour Data Plot (1:00 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Charlotte Street & John Street E - Weekday
Site Code: 220385
Start Date: 08/18/2022

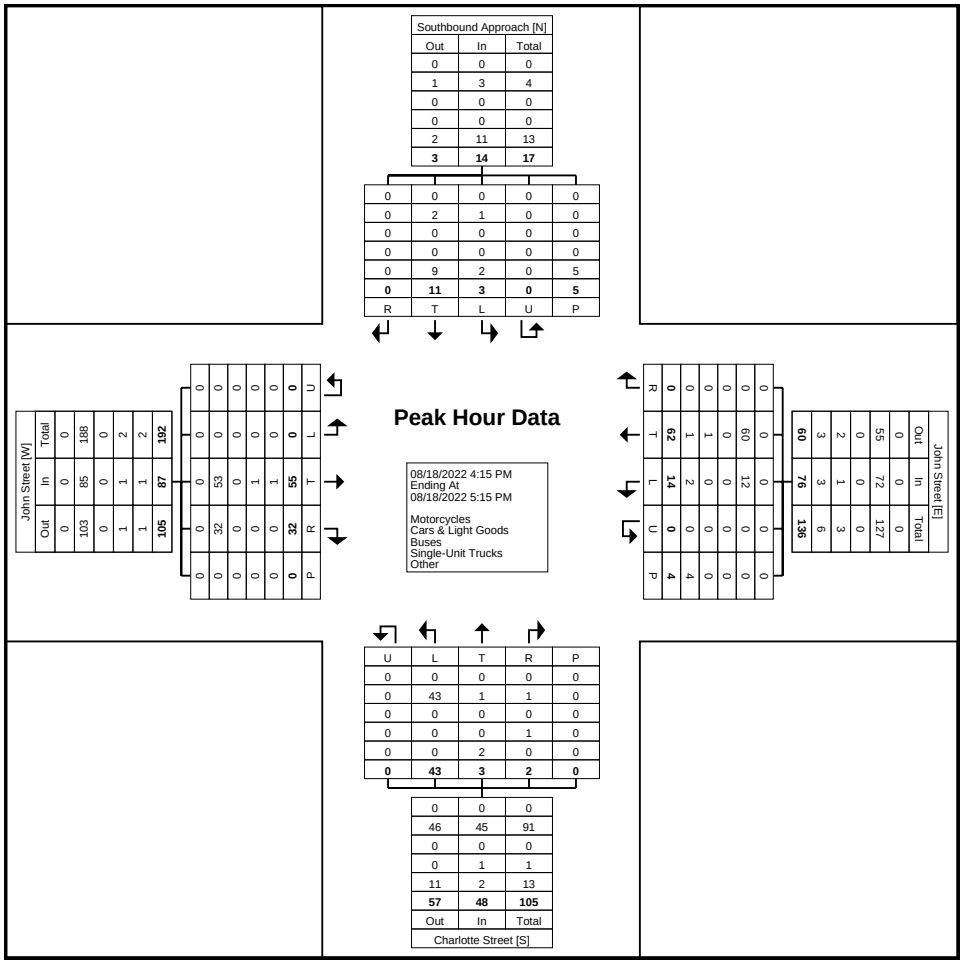
Turning Movement Peak Hour Data (4:15 PM)

Start Time	John Street Eastbound						John Street Westbound						Charlotte Street Northbound						Southbound Approach 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	
4:15 PM	0	13	7	0	0	20	1	16	0	0	1	17	10	0	0	0	0	10	0	2	0	0	3	2	49
4:30 PM	0	13	12	0	0	25	5	19	0	0	0	24	12	1	2	0	0	15	2	8	0	0	2	10	74
4:45 PM	0	14	3	0	0	17	6	10	0	0	0	16	8	0	0	0	0	8	1	1	0	0	0	2	43
5:00 PM	0	15	10	0	0	25	2	17	0	0	3	19	13	2	0	0	0	15	0	0	0	0	0	0	59
Total	0	55	32	0	0	87	14	62	0	0	4	76	43	3	2	0	0	48	3	11	0	0	5	14	225
Approach %	0.0	63.2	36.8	0.0	-	-	18.4	81.6	0.0	0.0	-	-	89.6	6.3	4.2	0.0	-	-	21.4	78.6	0.0	0.0	-	-	-
Total %	0.0	24.4	14.2	0.0	-	38.7	6.2	27.6	0.0	0.0	-	33.8	19.1	1.3	0.9	0.0	-	21.3	1.3	4.9	0.0	0.0	-	6.2	-
PHF	0.000	0.917	0.667	0.000	-	0.870	0.583	0.816	0.000	0.000	-	0.792	0.827	0.375	0.250	0.000	-	0.800	0.375	0.344	0.000	0.000	-	0.350	0.760
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
Cars & Light Goods	0	53	32	0	-	85	12	60	0	0	-	72	43	1	1	0	-	45	1	2	0	0	-	3	205
% Cars & Light Goods	-	96.4	100.0	-	-	97.7	85.7	96.8	-	-	-	94.7	100.0	33.3	50.0	-	-	93.8	33.3	18.2	-	-	-	21.4	91.1
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
Single-Unit Trucks	0	1	0	0	-	1	0	1	0	0	-	1	0	0	1	0	-	1	0	0	0	0	-	0	3
% Single-Unit Trucks	-	1.8	0.0	-	-	1.1	0.0	1.6	-	-	-	1.3	0.0	0.0	50.0	-	-	2.1	0.0	0.0	-	-	-	0.0	1.3
Articulated Trucks	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1
% Articulated Trucks	-	1.8	0.0	-	-	1.1	0.0	0.0	-	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	0.4
Bicycles on Road	0	0	0	0	-	0	2	1	0	0	-	3	0	2	0	0	-	2	2	9	0	0	-	11	16
% Bicycles on Road	-	0.0	0.0	-	-	0.0	14.3	1.6	-	-	-	3.9	0.0	66.7	0.0	-	-	4.2	66.7	81.8	-	-	-	78.6	7.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	4	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	80.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	4	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	20.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Charlotte Street & John Street E - Weekday
Site Code: 220385
Start Date: 08/18/2022



Turning Movement Peak Hour Data Plot (4:15 PM)

Appendix C

TTS DATA

Fri Feb 09 2024 09:47:18 GMT-0500 (Eastern Standard Time) - Run Time: 2131ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Column: Primary travel mode of trip - mode_prime

Filters:
2006 GTA zone of household - gta06_hhld In 6044
and
Primary travel mode of trip - mode_prime In D

Trip 2016
Table:

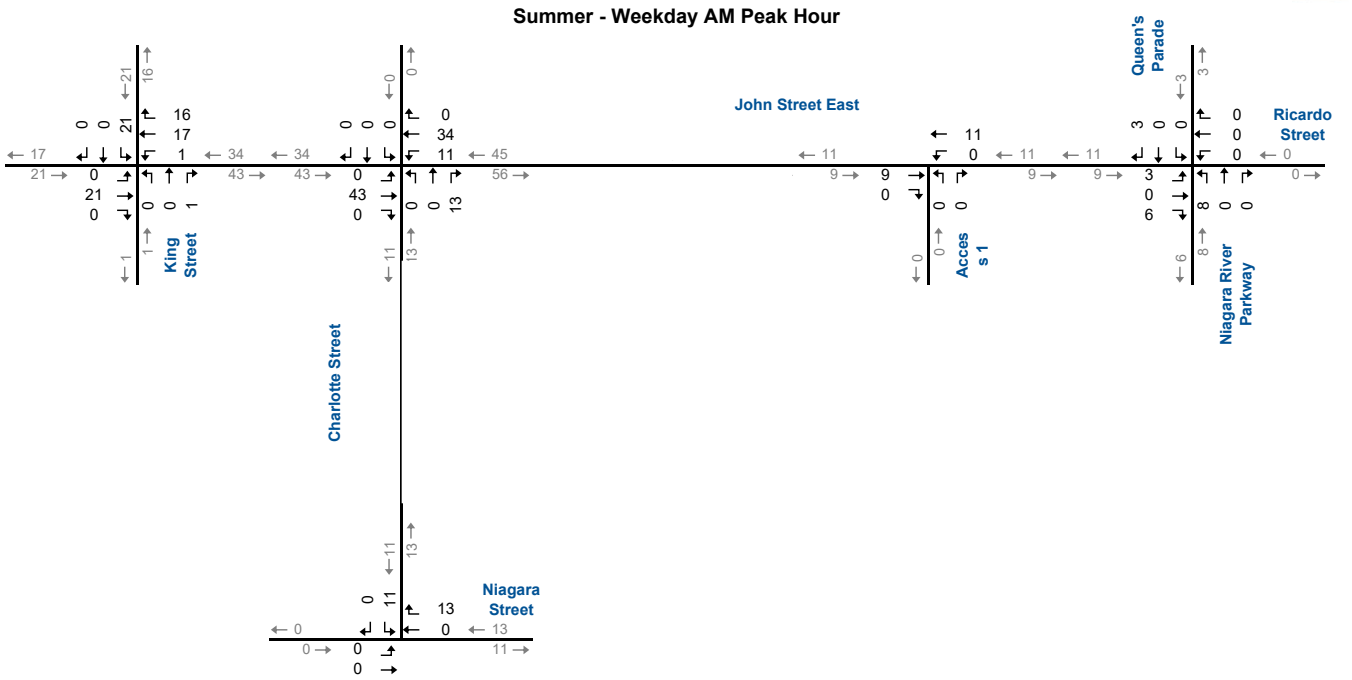
			Route						
Dest	Auto driver	%	Niagara Street (East)	Niagara River Parkway (South)	John Street (West)	Queen's Parade (North)	King Street (North)	King Street (South)	Likely Travel Routes
PD 1 of Toronto	101	1.1%	0.3%	0.9%	0.0%	0.0%	0.0%	0.0%	Niagara Street or Niagara River Parkway
PD 2 of Toronto	74	0.8%	0.2%	0.6%	0.0%	0.0%	0.0%	0.0%	Niagara Street or Niagara River Parkway
PD 4 of Toronto	25	0.3%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	Niagara Street or Niagara River Parkway
PD 6 of Toronto	18	0.2%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	Niagara Street or Niagara River Parkway
PD 8 of Toronto	35	0.4%	0.1%	0.3%	0.0%	0.0%	0.0%	0.0%	Niagara Street or Niagara River Parkway
PD 9 of Toronto	13	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	Niagara Street or Niagara River Parkway
PD 11 of Toronto	13	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	Niagara Street or Niagara River Parkway
PD 13 of Toronto	16	0.2%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	Niagara Street or Niagara River Parkway
PD 14 of Toronto	16	0.2%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	Niagara Street or Niagara River Parkway
Pickering	16	0.2%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	Niagara Street or Niagara River Parkway
Markham	25	0.3%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	Niagara Street or Niagara River Parkway
Vaughan	36	0.4%	0.1%	0.3%	0.0%	0.0%	0.0%	0.0%	Niagara Street or Niagara River Parkway
Brampton	9	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	Niagara Street or Niagara River Parkway
Mississauga	61	0.7%	0.2%	0.5%	0.0%	0.0%	0.0%	0.0%	Niagara Street or Niagara River Parkway
Milton	13	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	Niagara Street or Niagara River Parkway
Oakville	133	1.5%	0.4%	1.1%	0.0%	0.0%	0.0%	0.0%	Niagara Street or Niagara River Parkway
Burlington	143	1.6%	0.4%	1.2%	0.0%	0.0%	0.0%	0.0%	Niagara Street or Niagara River Parkway
Stoney Creek	27	0.3%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	Niagara Street or Niagara River Parkway
Hamilton	83	0.9%	0.2%	0.7%	0.0%	0.0%	0.0%	0.0%	Niagara Street or Niagara River Parkway
Waterloo	25	0.3%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	Niagara Street or Niagara River Parkway
City of Guelph	27	0.3%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	Niagara Street or Niagara River Parkway
Brant	13	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	Niagara Street or Niagara River Parkway
Pelham	27	0.3%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	Niagara Street or Niagara River Parkway
Niagara-on-the-Lake	5896	67.1%	14.1%	30.9%	7.4%	2.0%	10.7%	2.0%	Existing Link Volumes
St. Catharines	1361	15.5%	7.7%	0.0%	7.7%	0.0%	0.0%	0.0%	Niagara Street or John Street
Thorold	37	0.4%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	Niagara Street
Niagara Falls	493	5.6%	0.0%	5.6%	0.0%	0.0%	0.0%	0.0%	Niagara River Parkway
Welland	28	0.3%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	Niagara Street or Niagara River Parkway
Fort Erie	19	0.2%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	Niagara Street
Total	8784	100.0%	25.0%	45.1%	15.1%	2.0%	10.7%	2.0%	100.0%

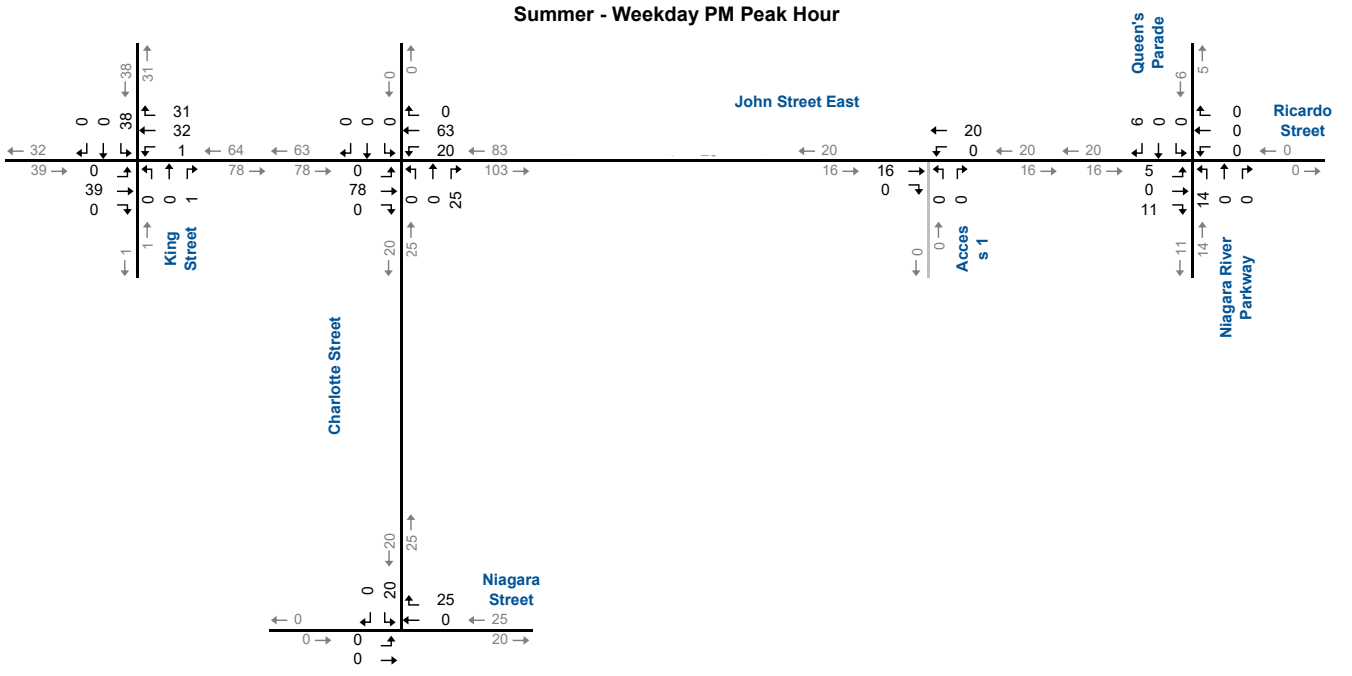
NOTL Existing Link Volumes

AM Peak Hour		Inbound	Outbound	Total	%
North	Queen's Parade	48	96	144	17%
North	King Street	70	83	153	18%
South	Niagara River Parkway	147	83	230	26%
South	King Street	52	50	102	12%
West	John Street	19	26	45	5%
East	Niagara Street	87	107	194	22%
Total	-	423	445	868	100%
PM Peak Hour		Inbound	Outbound	Total	%
North	Queen's Parade	263	213	476	23%
North	King Street	189	160	349	17%
South	Niagara River Parkway	293	346	639	31%
South	King Street	87	107	194	9%
West	John Street	47	67	114	6%
East	Niagara Street	139	159	298	14%
Total	-	1018	1052	2070	100%
Sat. Peak Hour		Inbound	Outbound	Total	%
North	Queen's Parade	405	316	721	25%
North	King Street	200	221	421	15%
South	Niagara River Parkway	418	540	958	33%
South	King Street	147	112	259	9%
West	John Street	68	103	171	6%
East	Niagara Street	209	144	353	12%
Total	-	1447	1436	2883	100%
Total (AM, PM, Sat. Peak Hours)		Inbound	Outbound	Total	%
North	Queen's Parade	716	625	1341	23%
North	King Street	459	464	923	16%
South	Niagara River Parkway	858	969	1827	31%
South	King Street	286	269	555	10%
West	John Street	134	196	330	6%
East	Niagara Street	435	410	845	15%
Total	-	2888	2933	5821	100%
Local Residential Distribution Adjustments			Calcualted Distribution	Adjustment	Revised Distribution
North	Queen's Parade		23%	-20%	3%
North	King Street		16%	0%	16%
South	Niagara River Parkway		31%	15%	46%
South	King Street		10%	-7%	3%
West	John Street		6%	5%	11%
East	Niagara Street		15%	6%	21%
Total	-		100%		100%

Appendix D

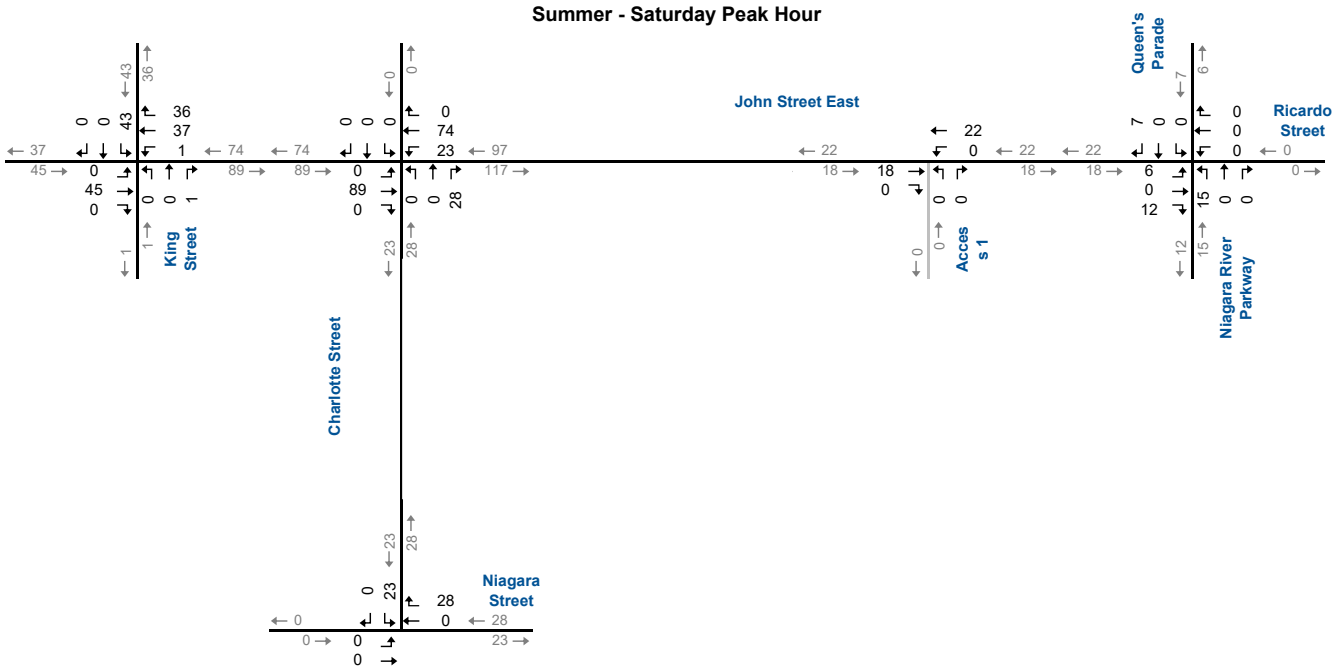
BACKGROUND DEVELOPMENT PROJECTIONS





NTS

144 & 176 John Street East
Trip Assignment



NTS

144 & 176 John Street East
Trip Assignment

Appendix E

SYNCHRO OPERATIONAL REPORTS

Lanes, Volumes, Timings
1: Private Street & John Street East 06-30-2025

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	48	12	10	42	35	31
Future Volume (vph)	48	12	10	42	35	31
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	0.973				0.936	
Flt Protected				0.990	0.974	
Satd. Flow (prot)	1812	0	0	1844	1698	0
Flt Permitted				0.990	0.974	
Satd. Flow (perm)	1812	0	0	1844	1698	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	83.1			270.3	168.6	
Travel Time (s)	6.0			19.5	12.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	52	13	11	46	38	34
Shared Lane Traffic (%)						
Lane Group Flow (vph)	65	0	0	57	72	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
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)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	19.9%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
1: Private Street & John Street East 06-30-2025

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	48	12	10	42	35	31
Future Volume (Veh/h)	48	12	10	42	35	31
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	52	13	11	46	38	34
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			65		126	58
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			65		126	58
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		96	97
cM capacity (veh/h)			1537		862	1007

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	65	57	72
Volume Left	0	11	38
Volume Right	13	0	34
cSH	1700	1537	925
Volume to Capacity	0.04	0.01	0.08
Queue Length 95th (m)	0.0	0.2	2.0
Control Delay (s)	0.0	1.5	9.2
Lane LOS		A	A
Approach Delay (s)	0.0	1.5	9.2
Approach LOS			A

Intersection Summary				
Average Delay		3.9		
Intersection Capacity Utilization		19.9%	ICU Level of Service	A
Analysis Period (min)		15		

Lanes, Volumes, Timings
1: Private Street & John Street East 06-30-2025

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	87	39	35	109	23	21
Future Volume (vph)	87	39	35	109	23	21
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	0.959				0.935	
Flt Protected				0.988	0.975	
Satd. Flow (prot)	1786	0	0	1840	1698	0
Flt Permitted				0.988	0.975	
Satd. Flow (perm)	1786	0	0	1840	1698	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	83.1			270.3	168.6	
Travel Time (s)	6.0			19.5	12.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	95	42	38	118	25	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	137	0	0	156	48	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
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)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	28.0%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
1: Private Street & John Street East 06-30-2025

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	87	39	35	109	23	21
Future Volume (Veh/h)	87	39	35	109	23	21
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	95	42	38	118	25	23
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			137		310	116
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			137		310	116
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		96	98
cM capacity (veh/h)			1447		664	936

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	137	156	48
Volume Left	0	38	25
Volume Right	42	0	23
cSH	1700	1447	772
Volume to Capacity	0.08	0.03	0.06
Queue Length 95th (m)	0.0	0.6	1.6
Control Delay (s)	0.0	2.0	10.0
Lane LOS		A	A
Approach Delay (s)	0.0	2.0	10.0
Approach LOS			A

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	28.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
1: Private Street & John Street East

06-30-2025

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	152	32	29	159	28	24
Future Volume (vph)	152	32	29	159	28	24
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	0.976				0.937	
Flt Protected				0.992	0.974	
Satd. Flow (prot)	1818	0	0	1848	1700	0
Flt Permitted				0.992	0.974	
Satd. Flow (perm)	1818	0	0	1848	1700	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	83.1			270.3	168.6	
Travel Time (s)	6.0			19.5	12.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	165	35	32	173	30	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	200	0	0	205	56	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
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)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	33.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
1: Private Street & John Street East

06-30-2025

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	152	32	29	159	28	24
Future Volume (Veh/h)	152	32	29	159	28	24
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	165	35	32	173	30	26
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			200		420	182
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			200		420	182
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		95	97
cM capacity (veh/h)			1372		577	860

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	200	205	56
Volume Left	0	32	30
Volume Right	35	0	26
cSH	1700	1372	681
Volume to Capacity	0.12	0.02	0.08
Queue Length 95th (m)	0.0	0.6	2.1
Control Delay (s)	0.0	1.4	10.8
Lane LOS		A	B
Approach Delay (s)	0.0	1.4	10.8
Approach LOS			B

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	33.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
1: Private Street & John Street East

06-30-2025

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	48	18	16	42	55	48
Future Volume (vph)	48	18	16	42	55	48
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	0.962				0.937	
Flt Protected				0.987	0.974	
Satd. Flow (prot)	1792	0	0	1839	1700	0
Flt Permitted				0.987	0.974	
Satd. Flow (perm)	1792	0	0	1839	1700	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	83.1			270.3	168.6	
Travel Time (s)	6.0			19.5	12.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	52	20	17	46	60	52
Shared Lane Traffic (%)						
Lane Group Flow (vph)	72	0	0	63	112	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
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)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	22.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
1: Private Street & John Street East

06-30-2025

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	48	18	16	42	55	48
Future Volume (Veh/h)	48	18	16	42	55	48
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	52	20	17	46	60	52
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			72		142	62
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			72		142	62
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		93	95
cM capacity (veh/h)			1528		841	1003

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	72	63	112
Volume Left	0	17	60
Volume Right	20	0	52
cSH	1700	1528	909
Volume to Capacity	0.04	0.01	0.12
Queue Length 95th (m)	0.0	0.3	3.4
Control Delay (s)	0.0	2.1	9.5
Lane LOS		A	A
Approach Delay (s)	0.0	2.1	9.5
Approach LOS			A

Intersection Summary			
Average Delay	4.8		
Intersection Capacity Utilization	22.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
1: Private Street & John Street East

06-30-2025

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	87	63	55	109	37	32
Future Volume (vph)	87	63	55	109	37	32
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	0.944				0.937	
Flt Protected				0.983	0.974	
Satd. Flow (prot)	1758	0	0	1831	1700	0
Flt Permitted				0.983	0.974	
Satd. Flow (perm)	1758	0	0	1831	1700	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	83.1			270.3	168.6	
Travel Time (s)	6.0			19.5	12.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	95	68	60	118	40	35
Shared Lane Traffic (%)						
Lane Group Flow (vph)	163	0	0	178	75	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
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)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	31.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
1: Private Street & John Street East

06-30-2025

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	87	63	55	109	37	32
Future Volume (Veh/h)	87	63	55	109	37	32
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	95	68	60	118	40	35
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		367	129
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			163		367	129
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		93	96
cM capacity (veh/h)			1416		606	921

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	163	178	75
Volume Left	0	60	40
Volume Right	68	0	35
cSH	1700	1416	721
Volume to Capacity	0.10	0.04	0.10
Queue Length 95th (m)	0.0	1.1	2.8
Control Delay (s)	0.0	2.8	10.6
Lane LOS		A	B
Approach Delay (s)	0.0	2.8	10.6
Approach LOS			B

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	31.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
1: Private Street & John Street East 06-30-2025

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	152	51	45	159	43	39
Future Volume (vph)	152	51	45	159	43	39
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				0.936	
Flt Protected				0.989	0.974	
Satd. Flow (prot)	1799	0	0	1842	1698	0
Flt Permitted				0.989	0.974	
Satd. Flow (perm)	1799	0	0	1842	1698	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	83.1			270.3	168.6	
Travel Time (s)	6.0			19.5	12.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	165	55	49	173	47	42
Shared Lane Traffic (%)						
Lane Group Flow (vph)	220	0	0	222	89	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
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)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	36.7%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
1: Private Street & John Street East 06-30-2025

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	152	51	45	159	43	39
Future Volume (Veh/h)	152	51	45	159	43	39
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	165	55	49	173	47	42
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			220		464	192
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			220		464	192
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		91	95
cM capacity (veh/h)			1349		537	849

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	220	222	89
Volume Left	0	49	47
Volume Right	55	0	42
cSH	1700	1349	649
Volume to Capacity	0.13	0.04	0.14
Queue Length 95th (m)	0.0	0.9	3.8
Control Delay (s)	0.0	2.0	11.4
Lane LOS		A	B
Approach Delay (s)	0.0	2.0	11.4
Approach LOS			B

Intersection Summary				
Average Delay	2.7			
Intersection Capacity Utilization	36.7%	ICU Level of Service	A	
Analysis Period (min)	15			