Transportation Impact Study and Haul Route Assessment

Caledon Quarry

December 2022 | Project # 10042

CBM Aggregates, a division of St. Marys Cement Inc. (Canada)

VOTORANTIM cimentos cbm | TYLin

EXECUTIVE SUMMARY

T.Y. Lin International Canada Inc. (TYLin) was retained by CBM Aggregates (CBM), a division of St. Marys Cement Inc. (Canada) to complete a Transportation Impact Study and Haul Route Assessment for the proposed CBM Caledon Pit / Quarry. This assessment concluded the following:

- During the a.m. peak hour, a total of 30 new passenger car trips were estimated consisting of 15 inbound and outbound trips. During the p.m. peak hour, a total of 60 new car trips would be generated consisting of 25 inbound and 35 outbound trips. As employees and contractors are assumed to be entering and exiting the site outside of the adjacent road peak hours on Saturdays, no passenger car trips would be generated during the Saturday peak hour since staff is not expected to arrive or depart during the peak hours
- During the a.m. peak hour, a total of 75 new truck trips would be generated consisting of 30 inbound and 45 outbound trips. During each of the p.m. and Saturday peak hours, a total of 60 new truck trips would be generated consisting of 30 inbound and 30 outbound trips.
- The proposed truck distribution includes 95% of truck traffic heading east on Charleston Sideroad towards Hurontario Street (with 90% travelling south and 5% travelling north on Hurontario Street) and the remaining 5% truck traffic heading west on Charleston Sideroad.
- A haul route assessment was undertaken to determine the location of the new future site access for the Caledon Pit / Quarry and includes several site access considerations including existing haul route restrictions, impact to existing residents, access spacing requirements in accordance with Region of Peel Road Characterization Study (RCS) and TAC guidelines, physical constraints, and safety considerations.
- It was determined that the preferred location of the proposed site access is along Charleston Sideroad (Regional Road 24) between Mississauga Road and Main Street (Regional Road 136) / Cataract Road. TYLin recommends the site access be located approximately 600 metres east of Mississauga Road and 720 metres west of Regional Road 136 measured curb extension-to-curb extension.
- Horizontal and vertical sightline assessments were conducted in the field. Based on a 100 km/h design speed, the proposed Charleston Sideroad access location satisfies Transportation Association of Canada combination truck stopping sight distance and intersection sight distance requirements.
- The requirement for a traffic signal was not explicitly warranted at the proposed Charleston Sideroad site access under future total conditions based on a traffic volume. However,

signalization of the access is recommended to improve the operation of the intersection by providing suitable gaps for trucks to enter and exit the site and accelerate safely without posing risk to other vehicles using Charleston Sideroad. It is noted that if the Region desires a signalized site access, the installation of the signal can be implemented at the cost of the client. Additionally, Charleston Sideroad is classified as Rural Road and satisfies the Region's minimum 600-metre full movement intersection spacing design criteria, preserving the arterial function of Charleston Sideroad, measured from curb extension to curb extension.

- A dedicated eastbound left-turn and westbound right-turn lane is proposed at the site access using requirements from the Region's RCS as well as the Transportation Association of Canada Geometric Design Guide for Canadian Road (TAC Manual).
- Under baseline 2022 conditions, the intersection of Hurontario Street and Charleston Sideroad is approaching capacity at several movements during all peak hours due to high traffic activity. All other intersections operate with reserve capacity and low delays under baseline conditions.
- This traffic impact assessment analyzed one future horizon year for the future conditions of the pit. As a result, the analyses adopted future background and total traffic conditions at a 2032 planning horizon year, based on approximately ten years beyond the baseline 2022 year.
- During future background conditions, with the addition of 10 years of background corridor growth; eastbound, northbound, and southbound movements at Hurontario Street and Charleston Sideroad operate at or above capacity with long delays and level-of-service (LOS) 'F'. As a result, TYLin recommends that the Region make adjustments to the signal timing plan and intersection operation parameters in order to accommodate an increase in background traffic. During the p.m. and Saturday peak hours, operations are expected to improve with the allotted signal timing plan modifications put in place. The remaining study intersections are expected to continue to operate with reserve capacity and relatively low delays.
- Under future total conditions, the eastbound, northbound, and southbound movements at the Hurontario Street and Charleston Sideroad intersection continue to operate with high volume-to-capacity (v/c) ratios and long delays in the a.m. peak hour due to traffic growth in the future background conditions. It was estimated that the addition of site traffic does not materially impact the operation of the intersection. The remaining study intersections, including the proposed site access are expected to operate with reserve capacity and relatively low delays.
- Queueing analysis for all intersections with the exception of Hurontario Street and

Charleston Sideroad shows that the 95th percentile queues can be accommodated by the available storage lengths. The Hurontario Street and Charleston Sideroad intersection, under baseline 2022 conditions, estimated queues exceeding the available storage length for multiple movements. Under future background and total traffic conditions the queues are expected to continue to exceed the available storage length, however, implementation of the recommended signal timing plan adjustments projected, on average, a reduction in 95th percentile queues compared to baseline conditions. As a result, traffic analysis shows that the addition of site traffic would not contribute materially to the conditions at this intersection.

- It is concluded that the adjacent Charleston Sideroad study intersections at Main Street and Mississauga Road can accommodate the proposed Caledon Pit / Quarry development with significant reserve capacity. Under baseline traffic conditions the Hurontario Street and Charleston Sideroad intersection experiences near capacity operations. However, implementation of the recommended signal timing plan adjustments under future conditions are expected to improve operations capacity at the intersection and provide additional capacity to accommodate the nominal volume of site traffic compared to the forecasted background traffic growth.

Overall based on this assessment it is concluded that:

- The proposed haul route is an existing and identified haul route in the Town of Caledon Official Plan;
- With the implementation of the recommendations, the proposed truck traffic from the CBM Pit / Quarry will not have unacceptable impacts on the safe and efficient use of the road network; and
- From an overall transportation perspective, the proximity of the site to market will result in minimizing the length and number of vehicle trips required to transport an essential raw material needed for the construction and maintenance of communities.

The results of the assessment provide the basis for the following technical recommendation to be included on the Aggregate Resources Act Site Plan for the proposed Caledon Pit / Quarry:

- Prior to shipping the licensee shall enter into an agreement with the Region of Peel for the construction of the: a) entrance / exit, b) Charleston Sideroad improvements,
- Prior to below water operations commencing in the Main Area and prior to operations commencing in the South Area, the licensee shall enter into an agreement with the Region of Peel for a crossing underneath Main Street and Charleston Sideroad, respectively.

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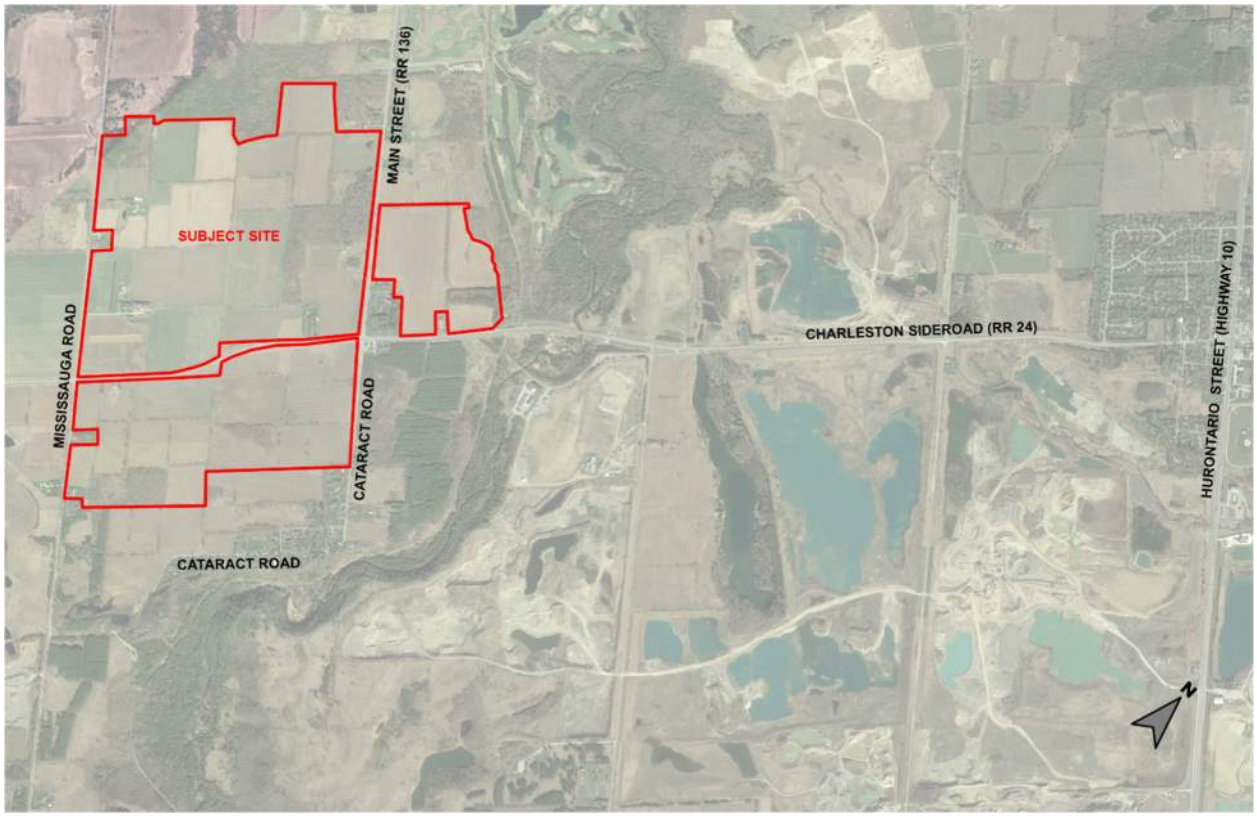
1 INTRODUCTION

CBM Aggregates (CBM), a division of St. Marys Cement Inc. (Canada) is applying to the Ministry of Natural Resources and Forestry (MNRF) for a Class A Licence (Pit and Above Water / Quarry Below Water) and to the Town of Caledon for an Official Plan Amendment and Zoning By-law Amendment to permit a mineral aggregate operation. T.Y. Lin International Canada Inc. (TYLin) has been retained by CBM to complete a Transportation Impact Study and Haul Route Assessment for the proposed CBM Caledon Pit / Quarry in accordance with the Terms of Reference found in **Appendix A**, Caledon Official Plan Sections 5.11.2.4.14 and 5.11.2.5, and the MNRF, Aggregate Resources Act Ontario Regulation 244/97.

CBM owns / controls approximately 323 hectares of land located at the northwest, northeast and southwest intersection of Regional Road 24 (Charleston Sideroad) and Regional Road 136 (Main Street). Of these lands, approximately 262 hectares are proposed to be licensed under the Aggregate Resources Act and designated / zoned under the Planning Act to permit the proposed CBM Caledon Pit / Quarry. These lands are mapped as a Caledon High Potential Mineral Aggregate Resource Area (CHPMARA) in the Town of Caledon Official Plan and High Potential Mineral Aggregate Resource Area (HPMARA) in the Region of Peel Official Plan and are protected for their aggregate potential. The subject lands are generally bounded by Mississauga Road to the west, Main Street to the east, and Cataract to the east and south. The proposed pit / quarry location is shown in **Figure 1-1**.

Figure 1-1 Proposed Caledon Pit / Quarry Location



The remaining approximately 61 hectares of land owned / controlled by CBM are not subject to the application. These lands are referred to as "CBM Additional Lands" and these lands include approximately 36 hectares of land that is located adjacent to the minor urban centre of Cataract. As part of the application, CBM is proposing to create an upland forest and meadow grassland on these lands and is exploring the potential of conveying them permanently to a public authority for long term protection.

The lands proposed to be licensed under the Aggregate Resources Act are referred to as the "Subject Site" and are legally described as Part of Lots 15-18, Concession 4 WSCR and Part of Lot 16, Concession 3 WSCR (former Geographic Township of Caledon). The Subject Site is approximately 262 hectares and extraction is proposed on approximately 204 hectares. These lands are referred to as the "Extraction Area". The remaining approximate 58 hectares within the Subject Site and outside of the Extraction Area are referred to as the "Setback / Buffer Lands". The Setback / Buffer Lands are used to provide setbacks to surrounding land uses and natural heritage features and the majority of these lands include a 5-metre visual / acoustic berm and visual plantings.

The proposed Extraction Area includes approximately 80 million tonnes of a high-quality bedrock

resource and approximately five million tonnes of a high-quality sand and gravel resource; the largest known available source of dolostone in the Greater Toronto and Hamilton Area (GTHA) Testing has confirmed that the mineral aggregate resource found on-site is suitable for the production of a wide range of construction products, including the use for high performance concrete. The bedrock resource provides some of the strongest and most durable aggregate material in Southern Ontario. The primary market area for the proposed CBM Caledon Pit / Quarry is the Greater Toronto Area, including the Town of Caledon and the Region of Peel. This site represents a close to market source of a high-quality mineral aggregate resource.

The proposed tonnage limit for the proposed CBM Caledon Pit / Quarry is 2.5 million tonnes per year and on average CBM anticipates shipping approximately 2.0 million tonnes per year. The proposed CBM Caledon Pit / Quarry is proposed to be operated in 7 phases. Phases 1, 2A, 3, 4, 5 are located to the northwest of the intersection of Regional Road 24 and 136. This area is referred to as the "Main Area". Phase 2B is located to the northeast of the intersection of Regional Road 24 and 136. This area is referred to as the "North Area". Phases 6 and 7 are located to the southwest of the intersection of Regional Road 24 and 136. This area is referred to as the "South Area".

Operations would commence in the Main Area and Phase 1 would include the permanent processing area (crushing, screening, and wash plant), aggregate recycling area and the entrance / exit for the quarry. Until such time as sufficient space is opened up to establish the permanent processing area, a temporary mobile crushing and processing plant is proposed to be used in Phase 1.

The entrance / exit for the CBM Caledon Pit / Quarry is proposed to be located onto Regional Road 24, approximately 720m west of Regional Road 136, measured from curb extension-to-curb extension. The entrance / exit is proposed to be controlled by a new traffic light and the installation of auxiliary turn lanes and tapers on Regional Road 24 at CBM's expense. The primary haul route for the proposed CBM Caledon Pit / Quarry is trucks will travel eastward on Regional Road 24 and then southward on Highway 10. The proposed haul route is an existing aggregate haul route and is designated as an aggregate haul route in the Town of Caledon Official Plan.

Access to the North Area for aggregate extraction is anticipated approximately 10 years after the start of the operations in the Main Area. There will be no processing in the North Area and aggregate extracted from the North Area is proposed to be transported to the Main Area through a proposed tunnel underneath Regional Road 136 that would accommodate either a conveyor system or a truck crossing. Access to South Area is anticipated approximately 30 years after the start of the operations in the Main Area. There will only be initial processing in the South Area and aggregate extracted from the South Area is proposed to be transported to the Main Area through

a proposed tunnel underneath Regional Road 24 that would accommodate either a conveyor system or a truck crossing. Aside from the establishment of a 1-hectare stormwater settling pond on the easternmost portion of the North Area in the initial year of operation, the North and South areas will be maintained in their current state and agricultural uses until they are required for preparation for aggregate extraction.

The CBM Caledon Pit / Quarry is proposed to operate (extraction, processing, and drilling) 7:00 am to 7:00 pm Monday to Saturday, excluding statutory holidays and shipping is proposed from 6:00 am to 7:00 pm Monday to Saturday consistent with other mineral aggregate operations in Caledon. CBM is also proposing to permit limited shipping in the evening (7:00 pm to 6:00 am) to support public authority contracts that require the delivery of aggregates during these hours to complete public infrastructure projects. These activities will be limited to only highway trucks and shipping loaders and no other operations will be permitted during evening hours. Site preparation and rehabilitation is proposed to be permitted 7:00 am to 7:00 pm Monday to Friday.

The proposed CBM Caledon Pit / Quarry involves stripping topsoil and overburden from the subject site to create perimeter berms and any excess soil will be temporarily stored in the northern portion of the Main Area or used for progressive rehabilitation of the site. The proposed Extraction Area includes extracting both sand and gravel below the water table and the site will be dewatered to allow operations in a dry state. The proposed Extraction Area includes extracting sand and gravel resources (e.g., pit) at surface where it is located on site, and bedrock resources below the sand and gravel and/or overburden (e.g., quarry). The proposed quarry is proposed below the water table and the quarry will be dewatered to operate the quarry in a dry state. The site will be extracted in sequence of the proposed phases (Phase 1 to 7) and following extraction of Phase 7 the permanent processing plant in Phase 1 will be removed and this will be the final area to be extracted and rehabilitated. The phasing of the proposed mineral aggregate operation has been designed to reach final extraction limits and depths within each phase so progressive rehabilitation of the side slopes can be completed.

The proposed Aggregate Resources Act Site Plans includes all of the technical recommendations from this report to ensure that the site operates in accordance with applicable provincial standards and the applicable policy requirements of the Provincial Policy Statement, Places To Grow Plan, Greenbelt Plan, Region of Peel Official Plan and Town of Caledon Official Plan.

The objective of this study is to determine the traffic volumes anticipated to be generated by truck activity associated with the proposed quarry activity during the typical weekday a.m., p.m., and Saturday peak periods; to assess the impact of traffic on the adjacent road network; and as necessary, to recommend possible improvements to accommodate the projected site-related traffic (as separate and distinct from traffic generated by background scenarios).

2 SITE CHARACTERISTICS

2.1 Study Environs

CBM owns / controls approximately 323 hectares of land located at the northwest, northeast and southwest intersection of Regional Road 24 (Charleston Sideroad) and Regional Road 136 (Main Street). Of these lands, approximately 262 hectares are proposed to be licensed under the Aggregate Resources Act and designated / zoned under the Planning Act to permit the proposed CBM Caledon Pit / Quarry. These lands are mapped as a Caledon High Potential Mineral Aggregate Resource Area (CHPMARA) in the Town of Caledon Official Plan and High Potential Mineral Aggregate Resource Area (HPMARA) in the Region of Peel Official Plan and are protected for their aggregate potential. The subject lands are generally bounded by Mississauga Road to the west, Main Street to the east, and Cataract to the east and south.

2.2 Study Area

The haul route analyses include the following intersections, as requested during pre-consultation with the review agencies:

- Hurontario Street (Highway 10) and Charleston Sideroad (Peel Regional Road 24)
- Charleston Sideroad (Peel Regional Road 24) and Main Street (Peel Regional Road 136)
- Charleston Sideroad (Peel Regional Road 24) and Mississauga Road
- Charleston Sideroad (Peel Regional Road 24) and Future Site Access

Further details regarding the proposed location of the future site access are found in **Section 4**.

2.3 Quarry Statistics

The proposed tonnage limit for the proposed CBM Caledon Pit / Quarry is 2.5 million tonnes per year and on average CBM anticipates shipping approximately 2.0 million tonnes per year with an average of truck aggregate capacity of approximately 30 tonnes. The CBM Caledon Pit / Quarry is proposed to operate (extraction, processing, and drilling) 7:00 am to 7:00 pm Monday to Saturday, excluding statutory holidays and shipping is proposed from 6:00 am to 7:00 pm Monday to Saturday consistent with other mineral aggregate operations in Caledon. CBM is also proposing to permit limited shipping in the evening (7:00 pm to 6:00 am) to support public authority contracts that require the delivery of aggregates during these hours to complete public infrastructure projects. These activities will be limited to only highway trucks and shipping loaders and no other operations will be permitted during evening hours.

CBM is expected to employ approximately 30 staff members during the day shift (5:00 a.m. to 5:00 p.m.) and 20 members during the night shift (5:00 p.m. to 5:00 a.m.), should a public authority project require a night shift. Additionally, approximately 20 contractors will be on site for non-haulage operations during the day shift should one be needed for public authority contracts, when the site is at full operations.

2.4 Proposed Routing Plan and Haul Route Roadways

In accordance with Caledon Official Plan Section 5.11.2.4.14, the following primary haul routes for trucks destined to/from Caledon Pit / Quarry are proposed: 95% of truck traffic is anticipated to head east on Charleston Sideroad towards Hurontario Street (with 90% travelling south and 5% travelling north on Hurontario Street) and the remaining 5% is proposed to head west on Charleston Sideroad.

3 BASELINE TRAFFIC CONDITIONS

3.1 Road Network

Hurontario Street (Highway 10) is an existing north-south provincial highway with a rural four-lane cross-section under the jurisdiction of the MTO. Within the study area, Hurontario Street has a posted speed limit of 50 km/h north of Charleston Sideroad until Mistywood Drive / Chester Drive where it transitions to 60 km/h. The posted speed limit south of Charleston Sideroad is 50 km/h and increases to 80 km/h approximately one kilometre south of Charleston Sideroad.

Charleston Sideroad (Regional Road 24) is an existing east-west Rural Road with a two-lane cross-section under the jurisdiction of the Region of Peel. Within the study area, Charleston Sideroad has a posted speed limit of 80 km/h west of Willoughby Road and decreases to 50-60 km/h through Caledon Village.

Main Street (Regional Road 136) is an existing north-south Rural Road with a two-lane cross-section under the jurisdiction of the Region of Peel. Within the study area, Main Street has a posted speed limit of 80 km/h.

Mississauga Road is an existing north-south road with a rural two-lane cross-section under the jurisdiction of the Town of Caledon. Within the study area, Mississauga Road has a posted speed limit of 80 km/h north of Charleston Sideroad and 60 km/h south of Charleston Sideroad.

Cataract Road is an existing local road with a rural two-lane cross-section under the jurisdiction of the Town of Caledon. Cataract Road runs north-south from Charleston Sideroad (Peel Regional Road 24) and bends approximately 930 metres south of Charleston Sideroad and intersects as an east-west roadway with Mississauga Road. Within the study area, Cataract Road has a posted speed limit of 40 km/h.

3.2 Baseline Traffic Volumes

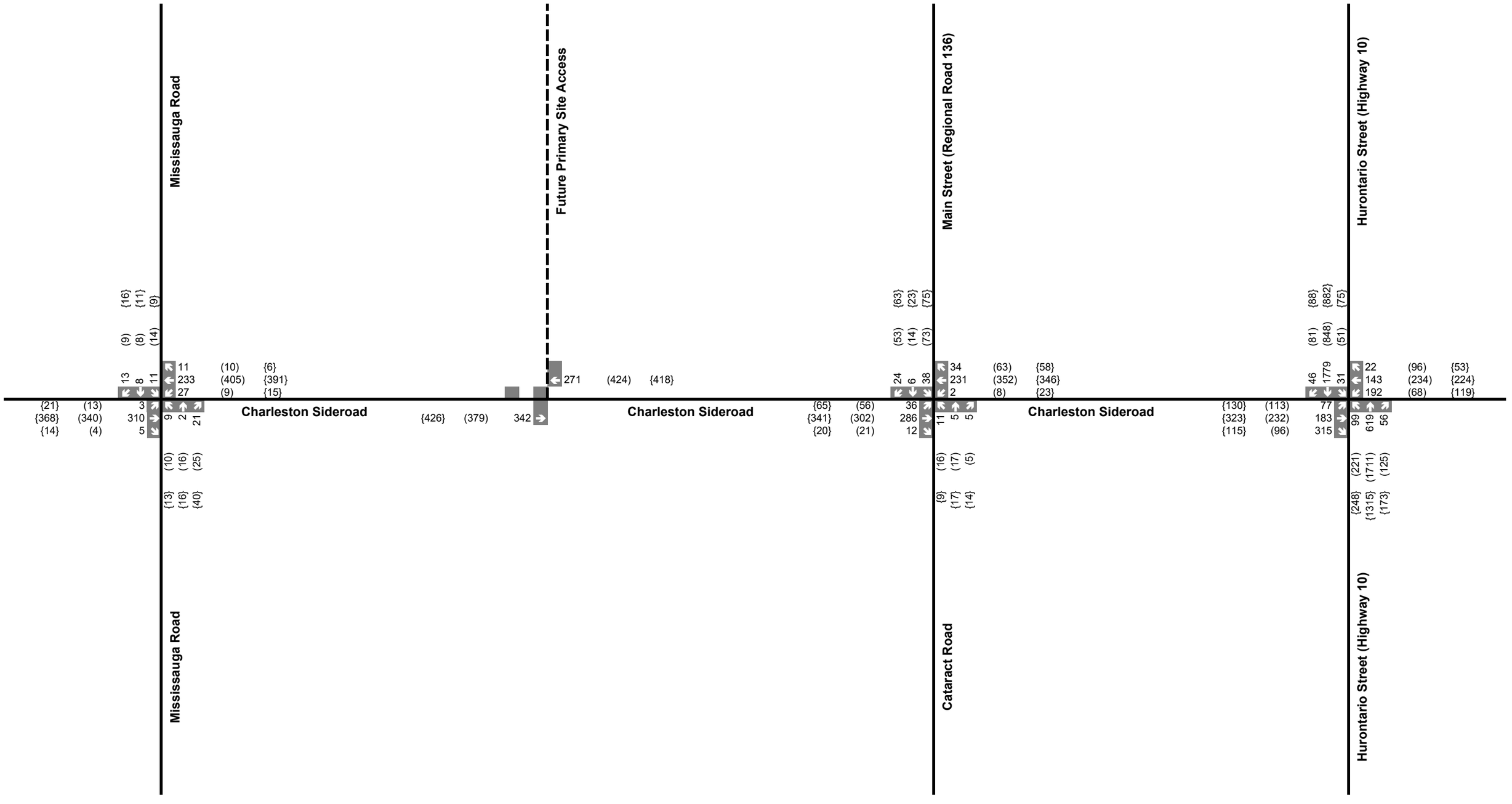
Turning movement counts (TMC) were obtained during 2020, 2021, and 2022 with additional TMC data received for the intersection of Charleston Sideroad and Hurontario Street from MTO for the year of 2018. The table below summarizes all the data collection dates and times. Existing traffic data is provided in **Appendix B**.

Table 3-1 Turning Movement Count Data Summary

Intersection	Date of Data Received		
	Analysis Period		
	AM	PM	Saturday
Hurontario Street and Charleston Sideroad	May 16, 2018 November 5, 2020 July 8, 2021 April 21, 2022	May 16, 2018 November 5, 2020 July 8, 2021 April 21, 2022	November 7, 2020 July 10, 2021 April 23, 2022
Charleston Sideroad and Main Street / Cataract Road	November 5, 2020 July 8, 2021 April 21, 2022	November 5, 2020 July 8, 2021 April 21, 2022	November 7, 2020 July 10, 2021 April 23, 2022
Charleston Sideroad and Mississauga Road	November 5, 2020 July 8, 2021 April 21, 2022	November 5, 2020 July 8, 2021 April 21, 2022	November 7, 2020 July 10, 2021 April 23, 2022

The TMC data was observed for all the collection years to determine the most conservative observed traffic volumes in the study network. At Charleston Sideroad & Hurontario Street, 2018 pre-COVID MTO traffic counts were adopted as baseline traffic volumes as they were the most conservative.

For the remaining intersections, the 2020 volumes recorded the most conservative traffic volumes. The adopted 2020 turning movement data applied an additional fixed 5% growth rate to the relevant movements to account for pre-COVID traffic volumes variations. Additionally, the movements were grown to the baseline 2022 year based on background corridor growth outlined **Section 5.4**. **Figure 3-1** shows the baseline 2022 traffic volumes.



Legend

xx A.M. Peak Hour Traffic
(xx) P.M. Peak Hour Traffic
{xx} Saturday Peak Hour Traffic

TYLin

Figure 3-1

Baseline 2022 Traffic Volumes

4 SITE ACCESS CONSIDERATIONS

In order to satisfy Section 5.11.2.4.4 of the Caledon Official Plan, an evaluation of alternative haul routes has been identified and evaluated. As part of the haul route assessment, the potential locations that were considered for the future site access include:

- The segment on Charleston Sideroad between Mississauga Road and Main Street / Cataract Road;
- The segment on Main Street approximately 300 metres north of Charleston Sideroad and adjacent to the subject lands bounded by Main Street; and
- The segment of Mississauga Road north of Charleston Sideroad and south of existing residential dwellings (approximately 600 metres north of Charleston Sideroad).

A qualitative review was done based on several criteria in order to determine the preferred location for the site access as described below.

4.1 Haul Route Restrictions

One of the criteria for determining the ideal site access location includes a review of heavy vehicle restrictions along the study area roadways where a site access could be proposed. The following summarizes the findings:

- **Charleston Sideroad:** There are no heavy vehicle restrictions along Charleston Sideroad within the vicinity of the subject site and thus, this road is a viable option for a site access location.
- **Mississauga Road:** There are heavy vehicle restrictions on Mississauga Road from King Street to Bush Street, south of the subject site. Furthermore, municipal heavy restrictions (seasonal or all-year) are placed along Mississauga Road directly north and south of the subject lands. In order to propose a site access along Mississauga Road, road improvements may be required to accommodate heavy vehicle activity.
- **Main Street:** There are no heavy vehicle restrictions along Main Street within the study area.
- **Cataract Road:** There are heavy vehicle restrictions along Cataract Road within the vicinity of the site and thus, does not establish a feasible location for a site access.

Additionally, as per the Town of Caledon Official Plan (OP) (April 2018), haul routes for new aggregate operations are to be on High-capacity Arterial roads only. Both Charleston Sideroad and Main Street are identified as high-capacity arterial roads as per the Caledon OP Section 5.11.2.5.1 and Schedule J.

As Cataract Road and Mississauga Road have heavy vehicle restrictions, Charleston Sideroad and Main Street are considered to be preferred alternatives for the future site access location based on heavy vehicle restrictions criteria.

4.2 Access Spacing Requirements

Access spacing requirements were determined using Transportation Association of Canada (TAC) Chapter 9 – Intersections Guidelines and Peel Region Road Characterization Study (RCS). Excerpts from TAC Chapter 9 Guidelines and Peel Region RCS are found in **Appendix C**.

As per TAC Chapter 9 – Intersections Guidelines, minimum intersection spacing along arterial roadways is 200 metres. This allows sufficient space required for left-turn lane facilities and potential acceleration / deceleration distances required at adjacent intersections. Furthermore, satisfying the minimum intersection spacing will ensure that storage and taper lengths of potential left-turn lanes do not impact the private residential accesses.

In accordance with Peel Region RCS guidelines, full moves intersections along rural roads such as Charleston Sideroad and Main Street are required to be spaced a minimum of 600 metres measured from curb extension to curb extension. Along the segment of Charleston Sideroad between Mississauga Road and Main Street / Cataract Road, there are two-600-metre segments where a site access cannot be located which provides a smaller potential area where a site access can be placed. Main Street has only one-600-metre restricted segment within the vicinity of the study area, and Mississauga Road is a local road which follows TAC guideline's intersection spacing requirements of 200 metres; thus, permitting a larger range of acceptable access spacing along Mississauga Road where a quarry access can be located.

4.3 Traffic Signal Infrastructure and Existing Intersection Improvements

Left-turn infrastructure is present at the intersection of Charleston Sideroad and Main Street, allowing for easier left turns to and from the north. Should auxiliary lanes be recommended as a mitigation measure to service the quarry, external road improvements would be required on Charleston Sideroad at Mississauga Road or the quarry access. Furthermore, currently there are traffic signals located only at the Charleston Sideroad and Main Street intersection. If signalization is required at the potential access along Charleston Sideroad, or Mississauga Road intersection, road improvements would be necessary to accommodate signal infrastructure, at CBM's expense.

4.4 Horizontal and Vertical Sightlines

A site visit was conducted on November 16, 2021, by TYLin Staff to assess vertical and horizontal sightlines along the study area road network based on intersection sight distance (ISD) and stopping sight distance (SSD) in accordance with TAC guidelines to confirm practicality for site access locations. **Table 4-1** summarizes the ISD and SSD from Equation 9.9.1, Table 9.9.4 and 9.9.6 from the TAC guidelines that were referred to during the site investigation.

Table 4-1 ISD and SSD for Different Design Vehicles

Parameter	Design Speed	
	90 km/hour	100 km/hour
Left-Turn ISD (m)		
Passenger Car	190	210
Single-Unit Truck	240	265
Combination Truck	290	320
Right-Turn ISD (m)		
Passenger Car	165	185
Single-Unit Truck	215	240
Combination Truck	265	295
Left/Right-Turn SSD (m)		
Passenger Car[1]	160	185

[1] - TAC guidelines only provide SSD for passenger vehicles however Section 2.5.3.1 of TAC states that SSD requirements for trucks are generally longer due to additional distance required to stop as well as due to cabin position.

Figure 4-1 shows the approximate locations where measurements were taken for the sightline review.

Figure 4-1 Approximate Location of SSD and ISD Measurements

Along Mississauga Road, right-turn ISD requirements were not met for trucks at the potential site access near Location 1. Near Location 2, only right-turn ISD was assessed due to limited sightlines at Location 1. All right-turn ISD requirements were met at Location 2.

Along Charleston Sideroad, all sightline distances met the required criteria near Location 3. It was observed that some road signs cause slight visual obstructions due to the horizontal curve. It is recommended to clear all landscape or other obstructions near the edge of the property as driver's sightline may go through the property line in the future.

Along Main Street at Location 4, the right-turn ISD requirements were only met for a single-unit truck due to a crest in the road. All sightline distances met the required standards at Location 5.

Further details and images of the site visit can be found in **Appendix D**.

4.5 Safety and Route Considerations

The Belfountain Village and Conservation Area is located south of the subject site along Mississauga Road; although temporarily closed, this Conservation Area would generate non-site

related traffic when reopened and create potential conflicts with trucks turning outbound along Mississauga Road. Aside from the heavy truck restrictions, this is another reason that Mississauga Road is not a preferred roadway for a site access location.

CBM confirmed the proposed truck distribution estimates 95% of truck traffic heading east on Charleston Sideroad towards Hurontario Street (with 90% travelling south and 5% travelling north on Hurontario Street) and the remaining 5% truck traffic heading west on Charleston Sideroad to serve other markets west of the study area. Placing a site access along the proposed haulage route creates a more efficient haulage process. As the haulage route is proposed to primarily travel along Charleston Sideroad, it is a preferred road for a site access location.

4.6 Physical Constraints

The segment on Charleston Sideroad that is between Mississauga Road and Main Street / Cataract Road as well as the segment on Main Street that is approximately 300 metres north of Charleston Sideroad and adjacent to the subject lands bounded by Main Street are the two preferred locations for the site access. An additional review was conducted to identify if there are physical constraints that could constrain a site location along this segment of Charleston Road.

The most significant physical constraint that is relevant to the site access is the access's proximity to adjacent intersections. TAC Chapter 9 guidelines and Peel Region RCS was used to determine the locations along Charleston Sideroad where the access would not be recommended.

It is noted that between Mississauga Road and Main Street / Cataract Road, there is one active private access for a site that is owned by CBM (1420 Charleston Sideroad) on Charleston Sideroad approximately 230 metres west of Main Street / Cataract Road. There is also a private access on Main Street approximately 180 metres north of Charleston Sideroad.

At its intersection with Main Street / Cataract Road, Charleston Sideroad has an eastbound left-turn storage length and taper length of approximately 125 metres and 70 metres, respectively. At its intersection with Mississauga Road, Charleston Sideroad has a westbound left-turn storage and taper length of 30 metres each. At its intersection with Charleston Sideroad, Main Street has a southbound left-turn storage and taper length of approximately 30 and 35 metres, respectively.

Figure 4-2 shows the locations along study area road network where a site location is not recommended as per TAC and RCS site access guidelines.

Figure 4-2 Locations along Study Area Road Network where Site Access is not Recommended

4.7 Preferred Future Site Access Location

A site access consideration review was conducted to determine the preferred location for the future site access. Several factors and conditions were analyzed quantitatively and qualitatively including haul route restrictions, baseline capacity analysis results, a high-level sightline review, study area road classifications, safety / route considerations, and physical constraints.

Due to heavy vehicle restrictions, Cataract Road and Mississauga Road are not considered preferred locations for the site access unless future road improvements are completed to accommodate heavy truck activity. Main Street is considered as an alternative location for the proposed site access as it does not pose any physical or safety concerns. However, Main Street is the primary north-south connection to /from Alton serving local residents. Additionally, there are no physical or safety concerns for Charleston Sideroad and moreover, the haulage route travels primarily along this roadway; therefore, Charleston Sideroad is another preferred alternative for the future site access location.

After conducting the site access consideration review, TYLin recommends the future site access to be located along the segment of Charleston Sideroad (Regional Road 24) between Mississauga Road and Main Street / Cataract Road. The potential location for the site access adhere to TAC

and Peel Region's RCS guidelines of minimum intersection spacing. This will allow for any future left and right-turn facilities and their associated storage and taper lengths to be accommodated by adjacent intersections and will not interfere with private residential driveway access.

Figure 4-3 illustrates the preferred location for the future site access.

Figure 4-3 Preferred Future Site Access Location

5 FUTURE BACKGROUND CONDITIONS

5.1 Study Horizon Years

As per pre-consultation correspondence and in order to satisfy Caledon Official Plan Section 5.11.2.4.14, a planning horizon study period of 2032 was assumed for future conditions traffic analysis, which correlates to 10 years post-baseline conditions.

5.2 Study Area Road Network Improvements

The Region of Peel and the Town of Caledon confirmed there are no current planning capital roadwork improvements in the study area within the 2032 planning horizon.

5.3 Background Developments

During pre-consultation, Town staff confirmed there are no significant background developments within the vicinity of the site that is anticipated to impact the traffic analysis during the planning horizon period. However, background corridor growth rates, compounded annually (see **Section 5.4** below), were applied to future traffic projections to account for population and employment forecasts. A portion of these growth rates includes background development outside of the Town's jurisdiction to account for future commuter traffic travelling through the study area.

5.4 Background Corridor Growth

All traffic was grown from the year the data was collected to predict future non-quarry related traffic volumes along the haul routes for the baseline and future horizon years using the following growth rates that were agreed upon through pre-consultation correspondence:

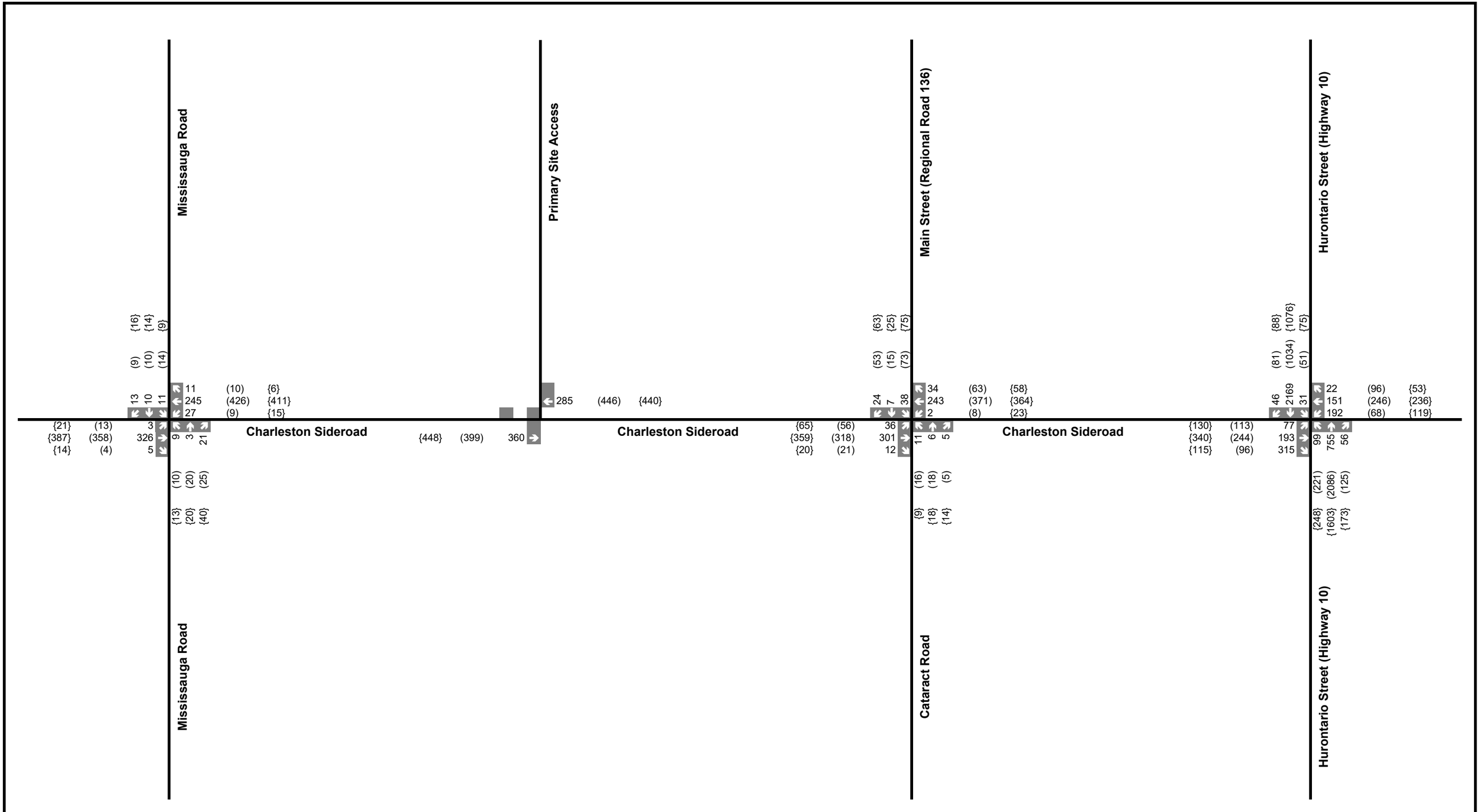
- 2% for Hurontario Street
- 0.5% for Charleston Sideroad
- 0.5% for Main Street
- 2% for Cataract Road
- 2% for Mississauga Road

Utilizing the calculated growth factors, compounded annually, traffic counts for the study area intersections were grown and balanced to the horizon year.

5.5 Future Background Traffic Volumes

The 2022 baseline traffic plus the corridor growth were combined to produce the 2032 background weekday a.m., p.m., and Saturday peak hour traffic volumes.

The future background 2032 traffic volumes are presented in **Figure 5-1**.



Legend

xx A.M. Peak Hour Traffic
(xx) P.M. Peak Hour Traffic
{xx} Saturday Peak Hour Traffic

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Figure 5-1

Future Background
2032 Traffic Volumes

6 SITE GENERATED TRAFFIC

6.1 Site Trip Generation

New employee (passenger car) and truck trips were generated using the following methodology based on data received through pre-consultation correspondence.

6.1.1 Passenger Car Peak Hour Trips

CBM estimates the quarry will employ approximately 30 staff during the day shift between 5:00 a.m. to 5:00 p.m. and 20 employees during the night shift between 5:00 p.m. to 5:00 a.m., should one be needed for public authority projects. As shift change occurs at 5:00 p.m., it is assumed that there will be no employee trips during the a.m. or Saturday peak hours. Although night shift staff members are not intended to be onsite regularly, 20 employees were included during the p.m. peak hour as a conservative measure. Additionally, approximately 20 contractors are estimated to be on site for non-haulage operations during the day shift. It is assumed that these contractors will be entering and exiting the site at different off-peak hours during the day shift, and as a conservative measure, these trips were split 75%-25% between the a.m. and p.m. peak hour, respectively.

Table 6-1 summarizes the new employee passenger car trips generated for all peak hours.

Table 6-1 Passenger Car Peak Hour Trips

Employee Passenger Car Trips								
AM Peak Hour			PM Peak Hour			Saturday Peak Hour		
In	Out	Total	In	Out	Total	In	Out	Total
15	15	30	25	35	60	0	0	0

As seen in **Table 6-1**, there are a total of 30 passenger car trips generated during the a.m. peak hour consisting of 15 inbound and 15 outbound trips. During the p.m. peak hour, a total of 60 trips are generated consisting of 25 inbound and 35 outbound trips. Staff members will be entering and exiting the site outside of the adjacent street peak on Saturdays. Additionally, CBM confirmed contractors are not expected to be onsite on Saturdays. However, on the rare occurrence contractors visit the site on Saturday they would be entering/exiting during the opening hours of the site, outside of the adjacent street Saturday peak hours. Therefore, no passenger car trips are generated on Saturday.

6.1.2 Truck Peak Hour Trips

Caledon Pit / Quarry is proposed to ship a maximum of 2,500,000 tonnes of aggregate per year

with an average of truck aggregate capacity of approximately 30 tonnes.

The haulage hours of operation are between 6:00 a.m. and 7:00 p.m. on weekdays and Saturdays, with no haulage activity occurring on Sundays and holidays; thus, totaling to 78 hours per week (minimum of 312 hours per month) of haulage activity. Based on data received, it was determined that the month of July had the highest percentage of the total haulage activity and therefore will generate the largest volume of new truck trips.

It has been our experience that additional peaking occurs during early morning shipping activity, to provide material to construction sites in the morning. As a result, additional outbound loaded trucks could occasionally occur creating a short-lived 'peak within a peak' condition (generally occurring prior to the adjacent street peak).

To account for this peaking, the a.m. peak hour outbound truck volume was increased by an additional 50%, equating to 45 loaded outbound truck trips per hour. We have adopted this peak trip generation as the design-hour vehicle volume for our site-impact analysis. As alluded to above, these 'peak within a peak' activities are predicted to occur largely outside of the adjacent street peak hours, so in this respect we are predicting an unlikely (and conservative) scenario of the quarry and adjacent street peaks coinciding.

Table 6-2 summarizes the new truck trips generated.

Table 6-2 Truck Peak Hour Trips

Truck Trips								
AM Peak Hour			PM Peak Hour			Saturday Peak Hour		
In	Out	Total	In	Out	Total	In	Out	Total
30	45	75	30	30	60	30	30	60

As seen in **Table 6-2**, there are a total of 75 new truck trips generated during the a.m. peak hour consisting of 30 inbound and 45 outbound trips. During both of the p.m. and Saturday peak hours, a total of 60 new tuck trips are generated consisting of 30 inbound and 30 outbound trips.

6.1.3 Passenger Car Equivalent Factors

In order to satisfy Caledon Official Plan Section 5.11.2.4.14, a comparison between the percentage of heavy vehicle peak hour generation and passenger car equivalent (PCE) was completed for the purpose of the heavy truck impact analyses. PCE factors were applied to account for the additional time it takes a heavy vehicle (in this case, different PCE's for each of the loaded and empty gravel trucks) to travel through an intersection. Based on TYLin's previous pit / quarry traffic study experience, a PCE of 3.0 for outbound loaded trucks and a PCE of 2.0 for inbound empty trucks was adopted. The subsequent PCE adjusted volumes are summarized in **Table 6-3**.

Table 6-3 Passenger Car Equivalent (PCE) Adjusted Vehicle Peak Hour Trips

Truck Trips								
AM Peak Hour			PM Peak Hour			Saturday Peak Hour		
In	Out	Total	In	Out	Total	In	Out	Total
60	135	195	60	90	150	60	90	150

Heavy vehicle volumes generated by the site are accounted for in the future total conditions using the heavy vehicle percentage parameter in the traffic analysis model. Therefore, a PCE factor was not included in the future total volumes for the purpose of traffic capacity analysis. However, it is noted that the PCE factor was applied to future total traffic volumes when conducting a signal warrant at the future proposed site access. Further details are provided in **Section 8.1**.

6.2 Site Trip Distribution and Assignment

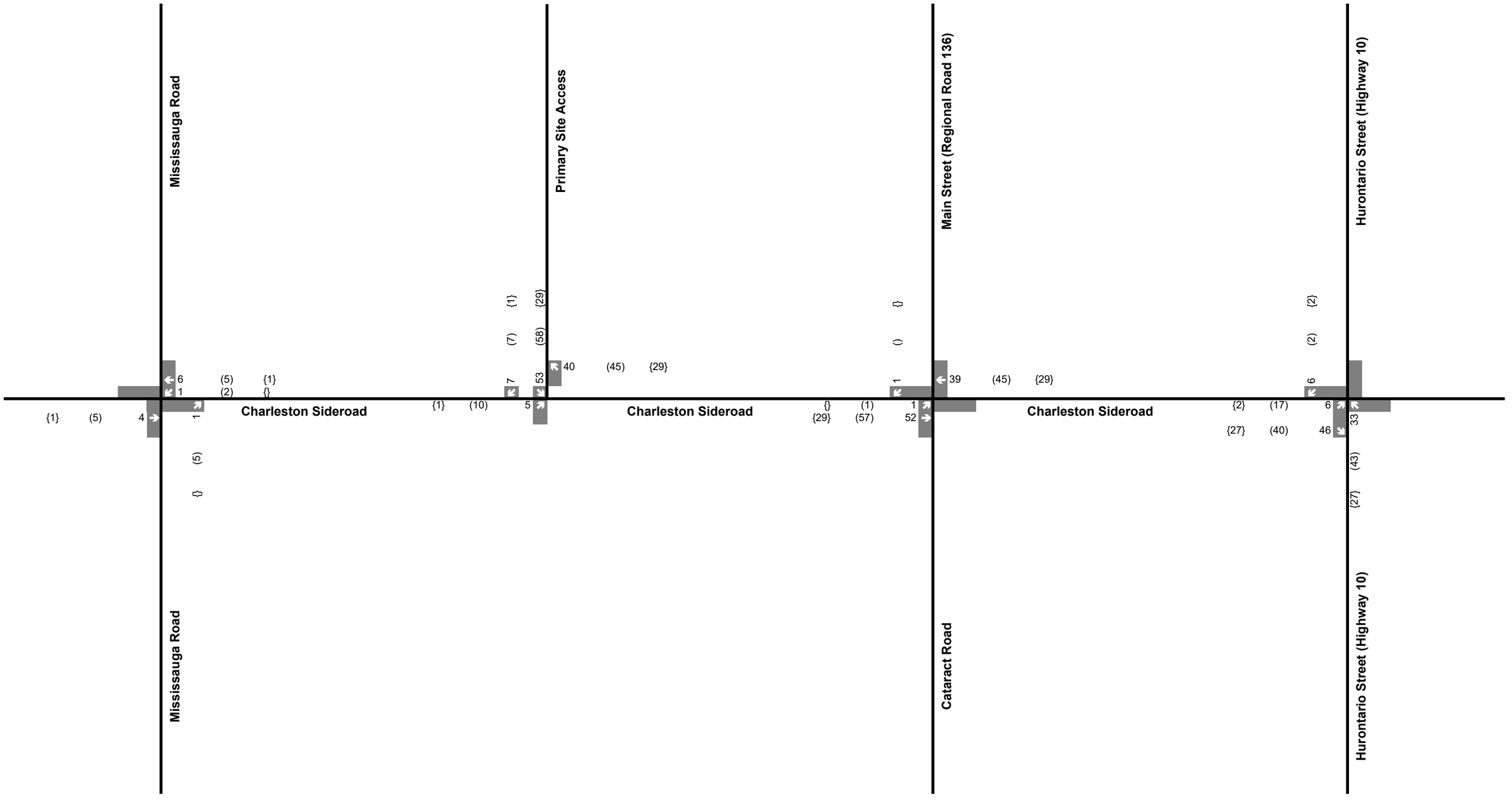
Truck trips were distributed throughout the network based on the proposed haulage route as outlined in **Section 2.4**: 95% heading east on Charleston Sideroad towards Hurontario Street (with 90% travelling south and 5% travelling north on Hurontario Street) and the remaining 5% heading west on Charleston Sideroad.

Distribution of employee trips was derived from a review of 2016 Transportation Tomorrow Survey (TTS) summary data and existing travel patterns. Site traffic was assigned to the road network based on these distributions and have been provided in **Table 6-4**.

Table 6-4 Passenger Site Trip Distribution

Directions	AM Peak Hour		PM Peak Hour		Saturday Peak Hour	
	In	Out	In	Out	In	Out
North	21%	28%	0%	26%	0%	26%
East	18%	19%	0%	35%	0%	35%
South	47%	29%	100%	34%	100%	34%
West	13%	24%	0%	5%	0%	5%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

The estimated proposed site trips during the a.m., p.m., and Saturday peak periods are shown in **Figure 6-1**.



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Legend

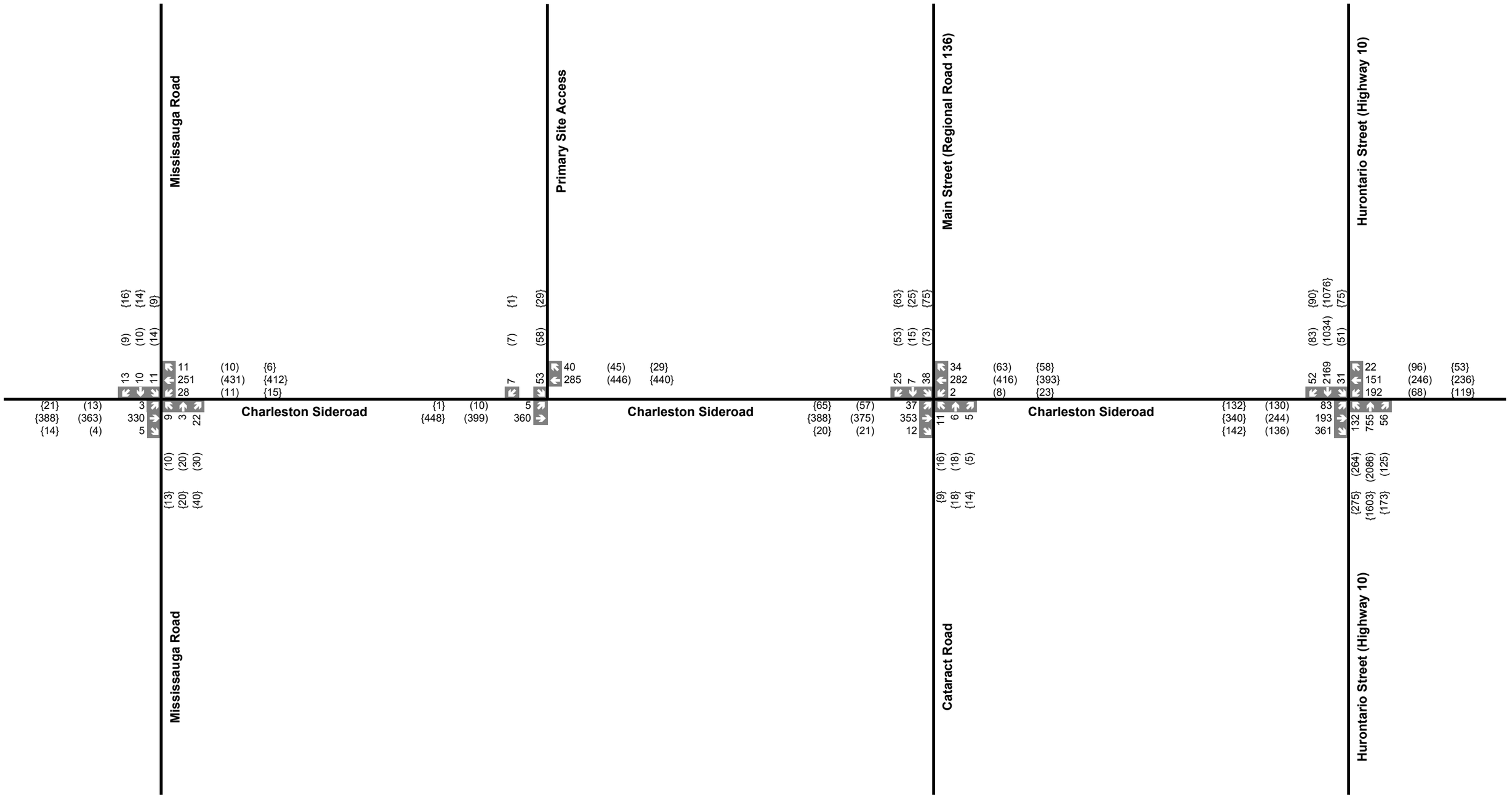
xx A.M. Peak Hour Traffic
(xx) P.M. Peak Hour Traffic
{xx} Saturday Peak Hour Traffic

Figure 6-1

Caledon Quarry Site
Generated Traffic Volumes

7 FUTURE TOTAL TRAFFIC CONDITIONS

The future total traffic conditions for the peak study hours in the 2032 planning horizon was derived by combining the projected future background traffic with the corresponding estimate of the total site generated traffic. **Figure 7-1** summarizes the future total traffic volumes for the 2032 planning horizon during the weekday a.m., p.m., and Saturday peak hours.



TYLin

Legend

xx A.M. Peak Hour Traffic
(xx) P.M. Peak Hour Traffic
{xx} Saturday Peak Hour Traffic

Figure 7-1

Future Total 2032 Traffic Volumes

8 SITE ACCESS WARRANT ANALYSIS

8.1 Signal Warrant

A signal warrant was conducted under future total 2032 conditions to determine if a signal is warranted at the proposed site access on Charleston Sideroad from a capacity standpoint. It was determined that a signal warrant was not satisfied. An additional signal warrant was completed using PCE factors to account for the heavy vehicle trips and was also not satisfied under future total conditions. Results of the signal warrant can be found in **Appendix E**.

Although a signal warrant is not explicitly satisfied at the site access, it is recommended that the site access is signalized in future conditions in order to improve operations and allow for ease of traffic flow onto Charleston Sideroad.

It is noted that if signalization of the future site access on Charleston Sideroad is desired by the Region, a signal can be installed at the cost of the client accordingly, as agreed to by CBM.

8.2 Left-Turn Warrant Analysis

Left-turn warrants were conducted using MTO's Ontario Geometric Design Standards (OGDS) Chapter E – At Grade Intersections guidelines. Under future total 2032 conditions, southbound left-turn warrant analysis was conducted at the site access. It was determined that from a capacity standpoint, a left-turn warrant was not satisfied. Therefore, a southbound left-turn lane is not proposed at the site access.

An eastbound left-turn warrant was also conducted under future total conditions with a design speed of 100 km/h (posted speed at Charleston Sideroad is 80 km/h). It was determined that an eastbound left-turn lane is warranted with a minimum storage length of 15 metres during both a.m. and p.m. peak hours in accordance with OGDS Chapter E. Additionally, as per the Region's RCS, an auxiliary eastbound left-turn lane is recommended to provide increased safety on the road mitigating slower-moving turning vehicles from the higher-speed vehicles in the through lanes. See **Appendix F** for the results of the left-turn lane warrants.

8.3 Auxiliary Right-Turn Lane

TAC Chapter 9 – Intersections states that a right-turn lane (without a separate signal indication) is recommended when the right-turning volume is 10% to 20% of the total approaching volume. Under future total conditions, the right-turning volume is approximately 12% during the a.m. peak hour.

Furthermore, the Region's RCS, recommends including an auxiliary right-turn lane at a new access in order to mitigate traffic flow. Therefore, a right-turn lane at the site access is proposed under future total conditions.

Design criteria for the auxiliary left and right-turn lanes at the site access are discussed in further detail in **Section 9**.

9 PROPOSED SITE ACCESS CONCEPTUAL DESIGN

As part of this study, a conceptual design was considered for the future site access. As mentioned in **Section 4**, Charleston Sideroad is the preferred location for the site access in order to have the least traffic impact on the adjacent study network. The proposed site access is planned to be modelled as a 'T' intersection with access to the site north of Charleston Sideroad proposed within the horizon period.

Region of Peel Public Works Standard Drawings, Peel Region RCS, as well as TAC Chapter 8 – Access and Chapter 9 – Intersections guidelines were referenced when designing the future site access at Charleston Sideroad. The criteria that were used are summarized below. Excerpts from the relevant studies and guidelines is found in **Appendix G**.

9.1 Left-Turn and Right-Turn Auxiliary Lane Requirements

Table 6 in the RCS states some design criteria for auxiliary left and right-turn lanes for rural roads (note that Charleston Road is classified as a rural road as per the RCS).

The minimum storage length for both the left and right-turn lanes is 30 metres. The lane width is required to be a minimum of 3.5 metres for both the left and right-turn lanes.

In accordance with TAC Table 9.14.2, the minimum right-turn taper for a 3.50-metre-wide right-turn lane with a design speed of 100 km/h (based on an 80 km/h posted speed, for higher design speeds, the 80 km/h design speed dimensions are used) is between 60 metres and 84 metres. The minimum parallel deceleration length is between 60 and 130 metres. Furthermore, the minimum storage length was determined to be 15 metres. Therefore, the total minimum auxiliary lane (storage plus deceleration) is required to be between 75 metres. TYLin proposes an auxiliary lane length of 75 metres and a taper length of 85 metres for the dedicated westbound right-turn lane at the site access.

For the dedicated left-turn lane with a width of 3.50 metres, a minimum 15-metre storage length is required as per Section 9.17.4.3 of the TAC guideline. The minimum approach taper for a design speed of 100 km/h is 105 metres as per table 9.17.1. A minimum braking distance is required to be a minimum of 115 metres as per Table 2.5.2 of the TAC guideline. Therefore, TYLin proposes an auxiliary lane length of 130 metres (15-metre storage plus 115-metre braking distance) and a taper length of 105 metres for the dedicated eastbound left-turn lane at the site access.

9.2 Access Spacing and Snow Storage Access Considerations

As mentioned in **Section 4.2**, a minimum of 600 metres is required between full-moves intersections/accesses along Charleston Sideroad from curb extension to curb extension. As such, the access was proposed approximately 600 metres east of Mississauga Road and approximately 720 metres west of Main Street. It is noted that a snow storage facility is located on Charleston Sideroad with 'enter only' and 'exit only' accesses located approximately 820 metres and 710 metres east of Mississauga Road, respectively.

Sound transportation engineering design recommends locating right-turn lane tapers beyond a driveway curb return to mitigate any driver confusion. Therefore, the access design proposes that the 85-metre westbound right-turn lane taper begins west of the inbound (easterly) and ahead of the outbound (westerly) snow storage facility accesses.

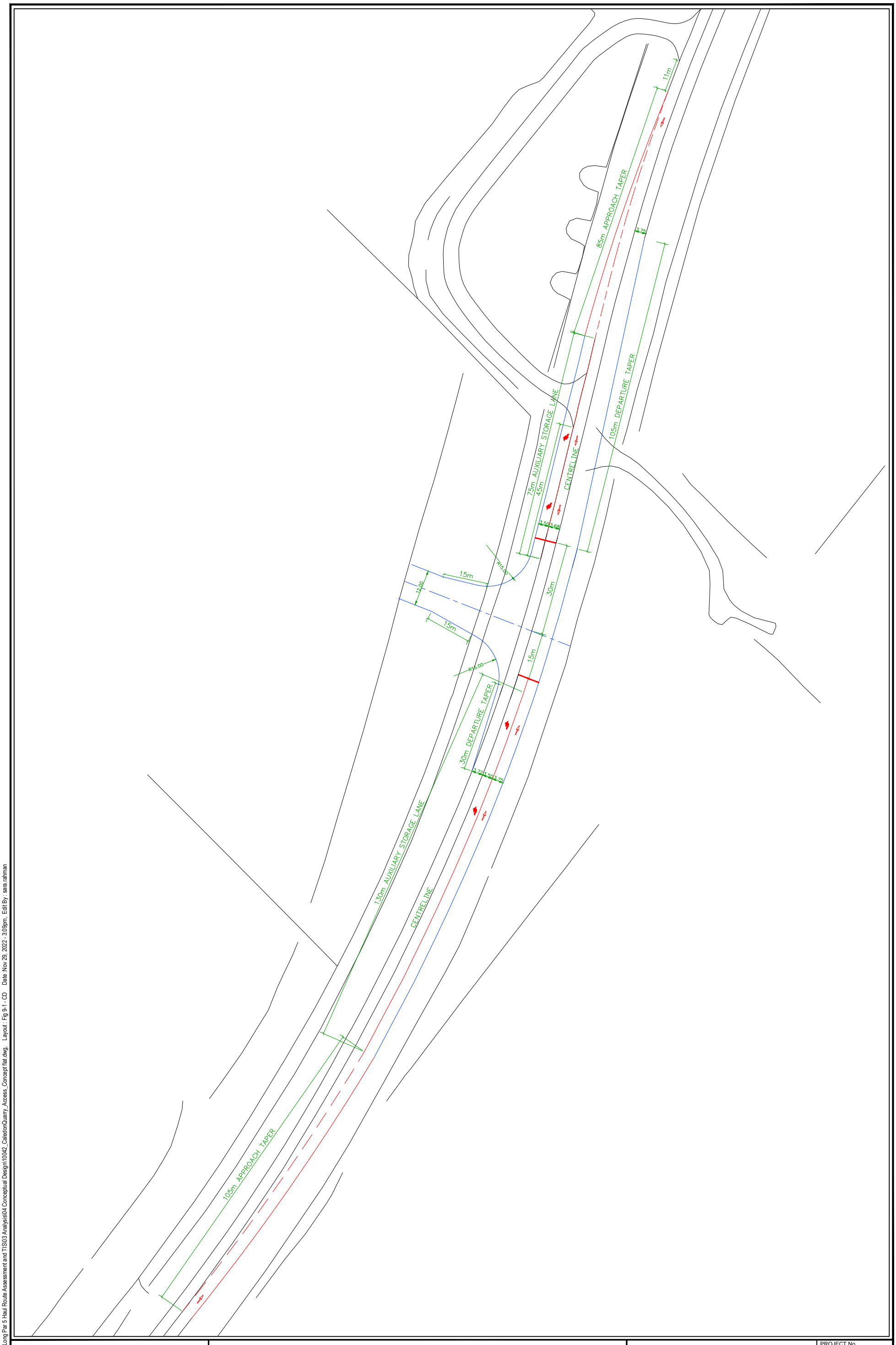
It is expected that the snow storage facility will be gated and not in use during the peak operational months of the quarry (during the spring, summer, and fall seasons); thus, the 45-metre spacing between the outbound access of the snow storage facility and the proposed site access (from curb extension to curb extension) is deemed sufficient and is not expected to negatively impact the operations at the snow storage facility or the operations at the quarry access.

9.3 Left-Turn Lane Design and Curb Radii

Figure 9.17.2 in the TAC guidelines provided three alternatives for an auxiliary left-turn lane. As per TAC, it is preferred that the left-turn lane be designed right of the road centerline. Therefore, the conceptual design of the left-turn lane was modelled after Figure 9.17.2a of the TAC guideline.

A minimum curb radius of 15 metres is required at the site access. In order to accommodate truck maneuvers in and out of the site, a curb radius of 15 metres and 18 metres was proposed for the inbound and outbound curb radii, respectively. Additionally, in order for trucks to exit the site without encroaching onto the incoming lane, a 30-metre departure taper was proposed for trucks turning right out of the site.

Figure 9-1 illustrates the conceptual design for the proposed site access on Charleston Sideroad. **Appendix H** shows the swept path analysis of WB-20 tractor trailers entering and exiting the site. It is concluded that trucks can maneuver the site without conflict and does not encroach onto adjacent lanes.



TYLin

CALEDON QUARRY - CONCEPTUAL DESIGN
FUTURE SITE ACCESS AT CHARLESTON SIDEROAD

SCALE: NTS	PROJECT No. 10042
DATE: NOVEMBER 2022	
DESIGNED BY: SR	FIGURE No. 9-1
CHECKED BY: MD	N

File : G:\Projects\2020\10042 - Long Par 5 Haul Route Assessment and TIS\03 Analysis\04 Conceptual Design\10042_CaledonQuarry_Access_Concept flat.dwg, Layout: : Fig 9-1 - CD Date: Nov 29, 2022 - 3:09pm, Edit By: sara.rahman

10 CAPACITY ANALYSIS

The capacity analysis identifies how well the intersections and access driveways are operating and how they are expected to operate in the future. The analysis contained in this report utilized the Highway Capacity Manual (HCM) 2000 techniques within the Synchro Version 10 Software package. The reported intersection volume-to-capacity ratios (v/c) are a measure of the saturation volume for each turning movement, while the levels-of-service (LOS) are a measure of the average delay for each turning movement. Queueing characteristics are reported as the predicted 95th percentile queues, derived using SimTraffic V.10 micro-simulation software using the following methodology: 10 minutes seeding time, one-hour recording, and 10 runs.

The analysis includes identification of all intersections and for all movements; volume to capacity (v/c) ratios, LOS indicators and 95th percentile queue lengths. 'Critical' intersections and movements are shown in bold below, in accordance with the Region of Peel's Traffic Impact Study Guidelines for signalized and unsignalized intersections:

- V/C ratios for overall intersection operations, through movements or shared through/turning movements increased to 0.90 or above
- V/C ratios for exclusive movements that shall exceed 1.00
- 95th percentile queue lengths for individual movements that exceeds available lane storage

All detailed Synchro intersection capacity sheets are found in **Appendix I**.

10.1 Baseline 2022 Capacity Analysis

The Synchro / HCM capacity results for study intersections during the weekday a.m., p.m., and Saturday peak hours under baseline 2022 traffic conditions are shown in **Table 10-1**.

It is noted that lost time adjustments were applied to the shared northbound and southbound through / right movements at the intersection of Hurontario Street (Highway 10) and Charleston Sideroad (RR 24) as a calibration method in order to improve the operations at these movements that are anticipated to be approaching capacity under future conditions.

Table 10-1 Baseline 2022 Capacity Analysis Summary

Intersection	Movement	AM Peak Hour			PM Peak Hour			Saturday Peak Hour		
		V/C	Delay (s)	LOS	V/C	Delay (s)	LOS	V/C	Delay (s)	LOS
Hurontario Street (Highway 10) & Charleston Sideroad (RR 24)	Overall	***0.91***	*39*	*D*	*0.89*	*35*	*C*	*0.83*	*33*	*C*
	EBL	0.32	43	D	0.58	45	D	0.56	44	D
	EBT	0.74	62	E	0.77	61	E	**0.94**	83	**F**
	EBR	0.79	67	E	0.07	43	D	0.10	43	D
	WBL	0.85	72	E	0.38	43	D	0.78	62	E
	WBT	0.50	49	D	0.79	64	E	0.65	53	D
	WBR	0.02	44	D	0.07	45	D	0.03	43	D
	NBL	0.68	46	D	0.66	17	B	0.78	26	C
	NBTR	0.38	14	B	**0.94**	35	D	0.78	25	C
	SBL	0.09	11	B	0.42	29	C	0.48	22	C
	SBTR	**0.95**	37	D	0.53	20	B	0.53	21	C
Charleston Sideroad (RR 24) & Main Street (RR 136) / Cataract Road	Overall	*0.24*	*8*	*A*	*0.31*	*10*	*B*	*0.30*	*10*	*B*
	EBL	0.04	3	A	0.08	5	A	0.09	5	A
	EBTR	0.24	4	A	0.28	6	A	0.29	6	A
	WBL	<0.01	3	A	0.01	4	A	0.03	4	A
	WBT	0.21	4	A	0.30	6	A	0.28	6	A
	WBR	0.02	3	A	0.04	4	A	0.04	4	A
	NBL	0.07	33	C	0.08	30	C	0.04	30	C
	NBTR	0.03	33	C	0.06	30	C	0.07	30	C
	SBL	0.23	34	C	0.34	32	C	0.36	33	C
	SBTR	0.05	33	C	0.09	30	C	0.13	31	C
Charleston Sideroad (RR 24) & Mississauga Road	EBL	<0.01	8	A	0.01	8	A	0.02	8	A
	EBTR	0.19	0	A	0.21	0	A	0.24	0	A
	WBL	0.03	9	A	0.01	8	A	0.01	8	A
	WBTR	0.15	0	A	0.25	0	A	0.25	0	A
	SBLTR	0.07	13	B	0.13	15	C	0.19	16	C
	NBLTR	0.07	13	B	0.10	17	C	0.12	17	C

As seen in **Table 10-1**, all intersections operate well with reserve capacity and low delays. Charleston Sideroad and Hurontario Street experiences the longest delays for the eastbound through movement, with a v/c ratio of 0.94, delay of 83 seconds, and LOS 'F' (during the Saturday peak hour). The northbound through-right movement experiences a v/c ratio of 0.94, delay of 35 seconds and LOS 'D' (during the p.m. peak hour). Additionally, the southbound through-right movement experiences a v/c ratio of 0.95, delay of 37 seconds, and LOS 'D' (during the a.m. peak hour).

10.2 Future Background 2032 Capacity Analysis

The Synchro / HCM capacity results for study intersections during the weekday a.m., p.m. and Saturday peak hours under future background 2032 traffic conditions are shown in **Table 10-2**. Modifications were made to the signal timing plans to improve operations at Hurontario Street (Highway 10) and Charleston Sideroad (RR 24) under future background conditions. These modifications are summarized below:

- Saturation flow was changed to 2,000 vehicles per hour for the northbound left and through, and southbound through movements
- PHF was changed to 1.00 for all movements
- Cycle length increased to 145 seconds in the a.m. and p.m. peak hours and 135 seconds during the Saturday peak hour
- Walking phase modified to 7 seconds at all movements (in accordance with OTM Book 12 for minimum walking time)
- The eastbound right movement was modified to a permitted + over phase
- Optimization of splits were made

Table 10-2 Future Background 2032 Capacity Analysis Summary

Intersection	Movement	AM Peak Hour			PM Peak Hour			Saturday Peak Hour		
		V/C	Delay (s)	LOS	V/C	Delay (s)	LOS	V/C	Delay (s)	LOS
Hurontario Street (Highway 10) & Charleston Sideroad (RR 24)	Overall	***0.96***	*43*	*D*	***0.91***	*41*	*D*	*0.85*	*36*	*D*
	EBL	0.35	50	D	0.56	49	D	0.48	41	D
	EBT	0.83	82	**F**	0.74	64	E	0.82	63	E
	EBR	0.82	69	E	0.06	37	D	0.14	31	C
	WBL	0.98	117	**F**	0.36	47	D	0.63	46	D
	WBT	0.60	62	E	0.75	66	E	0.57	49	D
	WBR	0.02	53	D	0.06	49	D	0.03	41	D
	NBL	0.65	51	D	0.61	19	B	0.74	33	C
	NBTR	0.38	12	B	**0.99**	46	D	0.88	32	C
	SBL	0.09	11	B	0.44	35	D	0.54	32	C
	SBTR	**0.97**	39	D	0.59	24	C	0.67	30	C
Charleston Sideroad (RR 24) & Main Street (RR 136) / Cataract Road	Overall	*0.25*	*8*	*A*	*0.32*	*10*	*B*	*0.32*	*10*	*B*
	EBL	0.05	3	A	0.08	5	A	0.10	5	A
	EBTR	0.25	4	A	0.29	6	A	0.31	6	A
	WBL	<0.01	3	A	0.01	4	A	0.03	4	A
	WBT	0.22	4	A	0.32	6	A	0.29	6	A
	WBR	0.02	3	A	0.04	4	A	0.04	4	A
	NBL	0.07	33	C	0.08	30	C	0.04	30	C
	NBTR	0.03	33	C	0.07	30	C	0.08	30	C
	SBL	0.23	34	C	0.34	32	C	0.36	33	C

Intersection	Movement	AM Peak Hour			PM Peak Hour			Saturday Peak Hour		
		V/C	Delay (s)	LOS	V/C	Delay (s)	LOS	V/C	Delay (s)	LOS
	SBTR	0.05	33	C	0.09	30	C	0.14	31	C
Charleston Sideroad (RR 24) & Mississauga Road	EBL	<0.01	8	A	0.01	8	A	0.02	8	A
	EBTR	0.20	0	A	0.22	0	A	0.25	0	A
	WBL	0.03	9	A	0.01	8	A	0.01	8	A
	WBTR	0.16	0	A	0.26	0	A	0.26	0	A
	SBLTR	0.07	14	B	0.15	16	C	0.21	18	C
	NBLTR	0.08	14	B	0.11	18	C	0.14	19	C

As seen in **Table 10-2**, Charleston Sideroad and Hurontario Street experiences the long delays for the westbound, northbound, and southbound movements, with a high v/c ratios and LOS 'F' during all peak hours. The changes in intersection operations are significantly due to background corridor growth rates applied to the horizon year.

10.3 Future Total 2032 Capacity Analysis

The Synchro/HCM capacity results for study intersections during the weekday a.m., p.m. and Saturday peak hours under future total 2032 traffic conditions are shown in **Table 10-3**. The modifications that were made Hurontario Street (Highway 10) and Charleston Sideroad (RR 24) under future background conditions were carried forward under future total conditions. No additional modifications or adjustments were made under future total conditions.

Additionally, as mentioned in **Section 8.1**, a signal is proposed at the site access on Charleston Sideroad. The signal timing plan has been modeled as per the Region of Peel Synchro Guidelines (December 2010).

Table 10-3 Future Total 2032 Capacity Analysis Summary

Intersection	Movement	AM Peak Hour			PM Peak Hour			Saturday Peak Hour		
		V/C	Delay (s)	LOS	V/C	Delay (s)	LOS	V/C	Delay (s)	LOS
Hurontario Street (Highway 10) & Charleston Sideroad (RR 24)	Overall	***0.99***	*51*	*D*	*0.92*	*43*	*D*	*0.88*	*40*	*D*
	EBL	0.39	51	D	0.65	56	E	0.47	39	D
	EBT	0.83	82	**F**	0.74	64	E	0.85	66	E
	EBR	0.99	**104**	**F**	0.16	34	C	0.20	28	C
	WBL	0.98	**117**	**F**	0.36	47	D	0.62	45	D
	WBT	0.60	62	E	0.75	66	E	0.57	47	D
	WBR	0.02	53	D	0.06	49	D	0.03	40	D
	NBL	0.86	84	**F**	0.73	28	C	0.84	54	D
	NBTR	0.38	12	B	**0.99**	46	D	**0.90**	36	D
	SBL	0.09	11	B	0.45	35	D	0.61	39	D
	SBTR	**0.99**	46	D	0.64	28	C	0.79	38	D
Charleston	Overall	*0.31*	*8*	*A*	*0.37*	*10*	*B*	*0.38*	*11*	*B*

Intersection	Movement	AM Peak Hour			PM Peak Hour			Saturday Peak Hour		
		V/C	Delay (s)	LOS	V/C	Delay (s)	LOS	V/C	Delay (s)	LOS
Sideroad (RR 24) & Main Street (RR 136) / Cataract Road	EBL	0.05	3	A	0.09	5	A	0.10	5	A
	EBTR	0.33	5	A	0.37	6	A	0.38	7	A
	WBL	<0.01	3	A	0.01	4	A	0.04	4	A
	WBT	0.27	5	A	0.38	7	A	0.37	6	A
	WBR	0.02	3	A	0.04	4	A	0.04	4	A
	NBL	0.07	33	C	0.08	30	C	0.05	30	C
	NBTR	0.03	33	C	0.07	30	C	0.08	30	C
	SBL	0.23	34	C	0.34	32	C	0.36	33	C
	SBTR	0.05	33	C	0.09	30	C	0.14	31	C
Charleston Sideroad (RR 24) & Mississauga Road	EBL	<0.01	8	A	0.01	8	A	0.02	8	A
	EBTR	0.21	0	A	0.23	0	A	0.25	0	A
	WBL	0.03	9	A	0.01	8	A	0.01	8	A
	WBTR	0.16	0	A	0.27	0	A	0.26	0	A
	SBLTR	0.08	14	B	0.17	17	C	0.22	18	C
	NBLTR	0.09	14	B	0.12	20	C	0.14	19	C
Charleston Sideroad (RR 24) & Site Access	*Overall*	*0.30*	*15*	*B*	*0.36*	*16*	*B*	*0.33*	*17*	*B*
	EBL	0.01	11	B	0.04	11	B	0.01	11	B
	EBT	0.47	16	B	0.52	16	B	0.59	18	B
	WBT	0.37	14	B	0.58	17	B	0.58	17	B
	WBR	0.04	11	B	0.05	11	B	0.04	11	B
	SBLR	0.14	12	B	0.13	12	B	0.08	12	B

As seen in **Table 10-3**, with the exception of Hurontario Street (Highway 10) and Charleston Sideroad (RR 24), all intersections operate with reserve capacity, low delays, and LOS 'C' or better.

Under future total conditions, it can be seen that the shared southbound through / right movement at Hurontario Street (Highway 10) and Charleston Sideroad (RR 24) is still experiencing high delays and an LOS 'F'. However, this movement was operating similarly under future background conditions. Additionally, the shared northbound through / right movement operates similarly under future total conditions in comparison to the future background conditions. This demonstrates that the addition of site traffic does not significantly or negatively impact the operation of this movement. This intersection still operated below capacity under future total conditions. It is noted that with the possible implementation of the potential future Caledon Village Bypass, some of the movements at this intersection would be expected to improve under future conditions. However, it is noted that the future construction of the Caledon Village Bypass would necessarily involve multiple stakeholders and is subject to future discussion.

Additionally, the proposed signalized site access at Charleston Sideroad is anticipated to operate well under future total conditions with overall v/c ratios of 0.36 or lower, individual movement delays of 18 seconds or less and LOS 'B'.

11 QUEUEING ANALYSIS

Table 11-1 provides a summary of the 95th percentile queue lengths derived from microsimulation of baseline 2022, future background 2032, and future total 2032 traffic conditions. The queueing report was prepared using SimTraffic V.10 micro-simulation software using the following methodology: 10 minutes seeding time, one-hour recording, and 10 runs. The 95th percentile queue lengths that are bolded are predicted to extend beyond available storage of a dedicated turn lane or extend beyond an upstream intersection and/or major access point. Queueing analysis detailed conditions are provided in **Appendix J**.

Table 11-1 Future Total 2032 Capacity Analysis Summary

Intersection	Movement	Available Storage (m)	95th Percentile Queue (m)								
			Baseline 2022			Background 2032			Future Total 2032		
			AM	PM	SAT	AM	PM	SAT	AM	PM	SAT
Charleston Sideroad (RR 24) & Hurontario Street (Highway 10)	EBL	75	57	**90**	**97**	62	65	75	73	**80**	**82**
	EBR	60	**98**	**83**	**102**	**100**	55	**70**	**100**	**78**	**87**
	WBL	35	**66**	**58**	**66**	**58**	**49**	**60**	**60**	**54**	**62**
	WBR	55	**65**	**102**	**73**	**101**	**61**	26	**97**	52	42
	NBL	80	46	**118**	**97**	45	**140**	**138**	76	140	**139**
	NBTR	-	66	240	163	73	944[1]	511	72	973[1]	751
	SBL	30	**46**	**43**	**51**	**39**	**50**	**64**	**38**	**55**	**66**
	SBTR	-	346	111	106	676[1]	132	143	649[1]	142	189
Charleston Sideroad (RR 24) & Main Street (RR 136) / Cataract Road	EBL	125	10	16	17	11	16	17	11	14	16
	EBTR	-	34	41	40	37	43	42	45	48	53
	WBL	60	2	4	9	1	3	9	2	5	9
	WBR	90	7	11	10	7	11	11	5	10	11
	NBL	70	10	12	9	9	13	8	8	10	8
	NBTR	-	9	12	13	9	12	15	5	10	10
	SBL	85	16	26	24	18	25	23	16	25	24
	SBTR	-	11	17	20	11	16	19	11	18	20
Charleston Sideroad (RR 24) & Mississauga Road	EBL	30	2	5	7	1	7	7	1	5	7
	WBL	30	13	4	6	13	4	6	13	4	5
	WBTR	-	-	1	-	-	-	-	-	-	1
	NBLTR	-	20	15	14	20	17	14	18	17	19
	SBLTR	-	11	13	12	11	12	12	9	11	13
Charleston Sideroad (RR 24) & Site Access	EBL	130	N/A	N/A	N/A	N/A	N/A	N/A	5	10	3
	WBR	75	N/A	N/A	N/A	N/A	N/A	N/A	19	19	21
	SBLR	-	N/A	N/A	N/A	N/A	N/A	N/A	29	27	25

1 – although the 95th percentile queue is longer than the given link distance, the average queue is within the link distance

As shown in **Table 11-1**, above, exception for the Charleston Sideroad (RR 24) and Hurontario Street (Highway 10) intersection, the study intersections operate with 95th percentile queues

accommodated within the available storage lengths under existing and future conditions.

The Hurontario Street and Charleston Sideroad intersection, under baseline 2022 conditions, estimated queues exceeding the available storage length for multiple movements. Under future background and total traffic conditions the queues are expected to continue to exceed the available storage length, however, implementation of the recommended signal timing plan adjustments projected on average a reduction in 95th percentile queues compared to baseline conditions. As a result, the queueing analysis shows that the addition of site traffic would not contribute materially to the conditions at this intersection.

12 CONCLUSIONS AND RECOMMENDATIONS

After conducting the above Haul Route Assessment and Transportation Impact Study, TYLin summarizes the following conclusions and recommendations.

The Caledon Pit / Quarry is expected to ship a maximum of 2,500,000 tonnes of aggregate annually with an assumed average truck aggregate capacity of 30 tonnes. The Quarry is proposed to operate during weekdays and Saturdays during the year, with haulage operation hours being from 6:00 a.m. to 7:00 p.m. Using historical haulage activity data, it was determined that July has the typical highest haulage activity.

During pre-consultation with the Town, no background developments within the vicinity of the study area were identified within the horizon year. However, background corridor growth rates, compounded annually, were applied to future traffic projections to account for population and employment forecasts. A portion of these growth rates include background development outside of the Town's jurisdiction to account for future commuter traffic travelling through the study area. A growth rate of 2% was applied to Hurontario Street, Mississauga Road and Cataract Road, whereas a growth rate of 0.5% was applied to Charleston Sideroad and Main Street (Regional Road 136).

During the a.m. peak hour, a total of 30 new passenger car trips were estimated consisting of 15 inbound and outbound trips. During the p.m. peak hour, a total of 60 new trips were generated consisting of 25 inbound and 35 outbound trips. As employees are entering and exiting the site outside of peak hours on Saturdays, no passenger car trips were generated during the Saturday peak hour.

During the a.m. peak hour, a total of 75 new truck trips were generated consisting of 30 inbound and 45 outbound trips. During each of the p.m. and Saturday peak hours, a total of 60 new truck trips are generated consisting of 30 inbound and 30 outbound trips.

The proposed truck distribution includes 95% of truck traffic heading east on Charleston Sideroad towards Hurontario Street (with 90% travelling south and 5% travelling north on Hurontario Street) and the remaining 5% truck traffic heading west on Charleston Sideroad.

A haul route assessment was undertaken to determine the location of the new future site access for the Caledon Pit / Quarry and include several site access considerations including existing haul route restrictions, impact to existing residents, access spacing requirements in accordance with Region of Peel Road Characterization Study (RCS) and TAC guidelines, physical constraints, and safety considerations. It was determined that the preferred location of the proposed site access is along Charleston Sideroad (Regional Road 24) between Mississauga Road and Main Street (Regional Road 136) / Cataract Road. TYLin recommends the site access be located approximately

600 metres east of Mississauga Road and 720 metres west of Regional Road 136, measured between curb extensions.

Horizontal and vertical sightline assessments were conducted in the field. Based on a 100 km/h design speed, the proposed Charleston Sideroad access location satisfies Transportation Association of Canada combination truck stopping sight distance and intersection sight distance requirements. It is recommended to keep clear low-lying landscape or other obstructions near the edge of the property to ensure driver's sightlines are not encumbered in the future.

A traffic signal warrant was not explicitly satisfied at the proposed Charleston Sideroad site access under future total conditions based on a traffic volume. However, signalization of the access is recommended to improve the operation of the intersection by providing suitable gaps for trucks to enter and exit the site and accelerate safely without posing risk to other vehicles using Charleston Sideroad. It is noted that if the Region desires a signalized site access, the installation of the signal can be implemented at CBM's expense. Additionally, Charleston Sideroad is classified as Rural Road and satisfies the Region's minimum 600-metre full movement intersection spacing design criteria, preserving the arterial function of Charleston Sideroad.

Additionally, a dedicated eastbound left-turn and westbound right-turn lane is proposed at the site access using requirements from the Region's RCS as well as TAC Chapter 9 – Intersections. It is recommended to include a dedicated westbound right-turn lane with an auxiliary lane (storage plus deceleration) length of 75 metres and a taper length of 85 metres. Furthermore, a dedicated eastbound left-turn lane with an auxiliary lane length of 130 metres and a taper length of 105 metres is recommended.

Under baseline 2022 conditions, the intersection of Hurontario Street and Charleston Sideroad is approaching capacity at several movements during all peak hours due to high traffic activity. All other intersections operate with reserve capacity and low delays under baseline conditions.

During future background conditions, with the addition of 10 years of background corridor growth, eastbound, northbound, and southbound movements at Hurontario Street and Charleston Sideroad operate at or above capacity with long delays and LOS 'F'. As a result, TYLin recommends that the Region make adjustments to the signal timing plan and intersection operation parameters in order to accommodate an increase in background traffic. During the p.m. and Saturday peak hours, operations are expected to improve with the allotted signal timing plan modifications put in place. The balance of the study intersections continues to operate with reserve capacity and relatively low delays.

Under future total conditions, the eastbound, northbound, and southbound movements at the Hurontario Street and Charleston Sideroad intersection continue to operate with high v/c ratios and long delays in the a.m. peak hour. It was observed the addition of site traffic does not materially impact the operation of the intersection. The remaining study intersections, including

the proposed site access, are expected to operate with reserve capacity and relatively low delays.

Queueing analysis for all intersections with the exception of Hurontario Street and Charleston Sideroad shows that the 95th percentile queues can be accommodated by the available storage. However, at Hurontario Street and Charleston Sideroad, it is observed under baseline 2022 and future background conditions that queues exceed the available storage length for multiple movements and is expected to continue under future total conditions.

Overall based on this assessment it is concluded that:

- The proposed haul route is an existing and identified haul route in the Town of Caledon Official Plan;
- With the implementation of the recommendations, the proposed truck traffic from the CBM Pit / Quarry will not have unacceptable impacts on the safe and efficient use of the road network; and
- From an overall transportation perspective, the proximity of the site to market will result in minimizing the length and number of vehicle trips required to transport an essential raw material needed for the construction and maintenance of communities.

The results of the assessment provide the basis for the following technical recommendation to be included on the Aggregate Resources Act Site Plan for the proposed Caledon Pit / Quarry:

- Prior to shipping the licensee shall enter into an agreement with the Region of Peel for the construction of the: a) entrance / exit, b) Charleston Sideroad improvements,
- Prior to below water operations commencing in the Main Area and prior to operations commencing in the South Area, the licensee shall enter into an agreement with the Region of Peel for a crossing underneath Main Street and Charleston Sideroad, respectively.

APPENDIX A

Pre-Consultation Correspondence

TYLin

MEMORANDUM

To:	**Hashim Ali Hamdani, Region of Peel** **Kamran Yousaf, Ministry of Transportation of Ontario** **Arash Olia, Town of Caledon**	**From:**	**T.Y. Lin International Canada Inc.** **Date:** August 25, 2022
Re:	**Terms of Reference (UPDATED), Haul Route Assessment and Transportation Impact Study, Caledon Quarry Project**		

Introduction

T.Y. Lin International Canada Inc. (TYLin) is pleased to present this Updated Terms of Reference describing the proposed work program for the Haul Route Assessment and Transportation Impact Study to be prepared in support of the proposed CBM Aggregates, a division of St. Marys Cement Inc. (Canada) (CBM) Caledon Quarry project in the Town of Caledon.

The below is provided for review, discussion, and comment. The final version provide herein has been updated to reflect comments received from the Town of Caledon, Region of Peel and the Ministry of Transportation of Ontario (MTO) to confirm the methods and procedures for our transportation assessment in support of the proposed Caledon Quarry Licensing. The acceptance of this work plan by the reviewing agencies is provided in **Attachment 1**.

Proposed Terms of Reference

TYLin was retained by CBM Aggregates, a division of St. Marys Cement Inc. (Canada) (CBM), to assist with the licence application for lands located near Charleston Sideroad (Peel Regional Road 24), Mississauga Road, and Main Street in the Town of Caledon. A figure illustrating the site location is shown in attached **Figure 1**.

TYLin

Figure 1 – Site Location

This study will provide an assessment of the application taking into consideration the applicable in-effect policies contained in the relevant Provincial Plans, Region of Peel Official Plan and Town of Caledon Official Plan.

Furthermore, where relevant, this study shall be shared with other technical experts completing studies for the application to avoid internal inconsistencies.

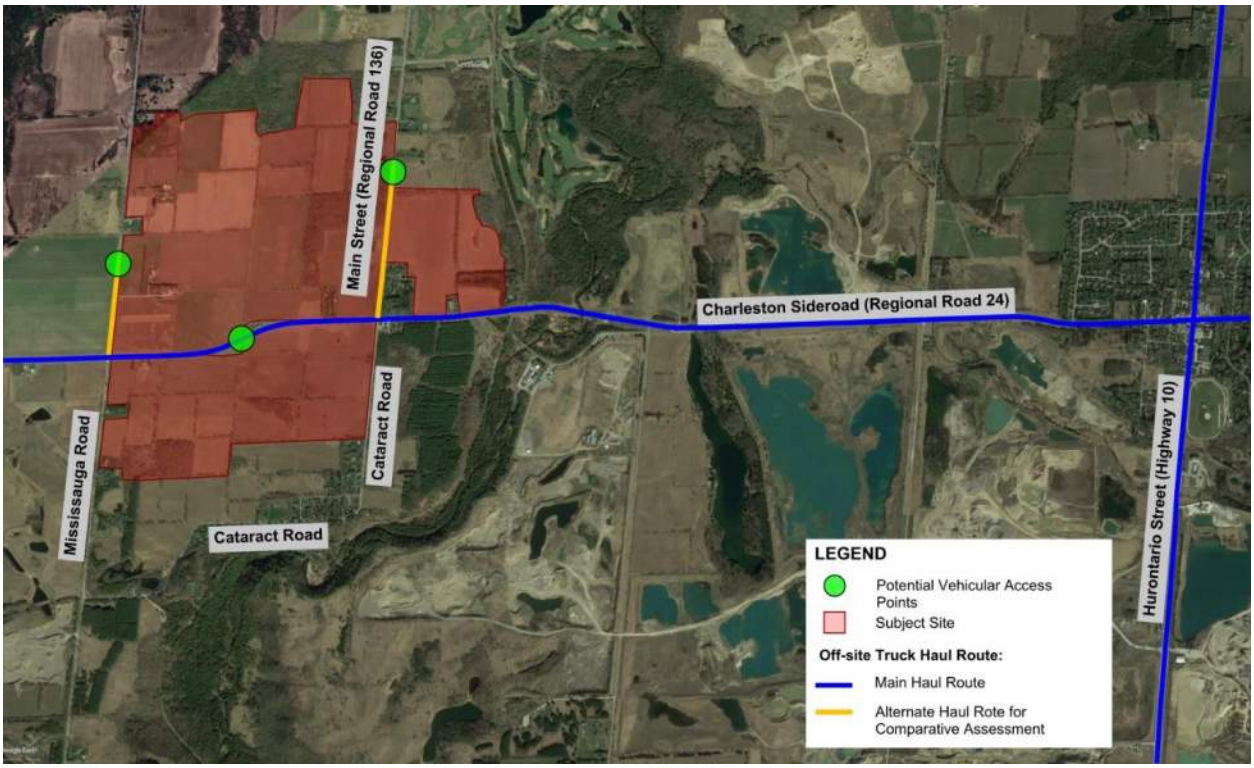
In order to properly scope this project, we present the following scope of work for the fulsome study, which has been updated as per previously received comments from the Town of Caledon, Region of Peel, and MTO.

1. *Traffic Impact Study to be prepared in accordance with Region and MTO traffic impact study guidelines and clearly present the methodologies, information, assumptions and conclusions to the reviewing agencies.*
2. *Collect road inventory information about the study area road network. Due to the established hauling activities in the area, our study will be focused on the intersections of Charleston Sideroad with Hurontario Street (Highway 10), Main Street (Regional Road 136), and Mississauga Road, as well as future site access. Data will be collected for three weekdays*

during the construction season and a Saturday to understand the current traffic patterns in the area. The counts will be conducted to include the proposed operating hours of the quarry.

3. *MTO recommends utilizing the provided turning movement counts (2018) and signal timing plan at Highway 10 intersection with Regional Road 24 (Charleston Sideroad).*
4. *Obtain the most recent available TMCs and/or average annual daily traffic (AADT) from Region staff to undertake a comparative analysis of data collected in Task 2.*
5. *The collected counts will be used to create a baseline for AM, PM, and weekend peak hour traffic operations.*
6. *Obtain from the Town and Region land use and traffic generation information for any relevant nearby proposed developments, and any potential/committed future road or intersection improvements, that will be on-stream within the development horizon of the proposed Caledon Quarry site. This information will inform the 'future background' traffic condition against which to measure site traffic impacts.*
7. *Obtain the most recent traffic signal timing parameters at the signalized study intersections.*
8. *Create a traffic operations model (using Synchro/SimTraffic v.10) to test the effects of the site traffic on the existing and future study area roadway system. It is typical for these types of studies to emulate a horizon of ten years beyond initial opening year (to be confirmed).*
9. *Prepare trip generation estimates for the proposed quarry based on standard first principles approach, utilized in many ARA licence applications. This exercise will be based on the future annual extraction licence for the proposed quarry and on the proposed haulage times of the day and days of the week.*
10. *Distribute/assign the resultant peak hour trips to the primary/alternate haul route(s) for comparative and detailed operational assessments. Please refer to* **Figure 2** *for potential vehicular access and main off-site haul route to and from aggregate operation.*

Figure 2 – Primary and Alternate Haul Routes



11. *Contact Regional staff to confirm an acceptable annual growth rate applied to planning horizons along the subject Regional Road.*
12. *Review MTO's published traffic volume data to derive an appropriate growth rate applied to planning horizons along Highway 10.*
13. *Prepare peak hour operational analyses to investigate and document the impacts of the proposed quarry traffic. This will include a review of intersection turning movement delays, volume to capacity ratios, and vehicular queuing. This will also include recommendations for the proposed site access lane configurations and a conceptual layout for same.*
14. *Present the effects of the traffic generated by the proposed quarry along with mitigation measures necessary along the haul route(s) to accommodate the additional traffic load, which would include conceptional designs of any roadway modifications in-line with applicable agency standards. Recommendations on traffic control measures at all affected haul route intersections as well as the proposed site access will be included.*
15. *Identify existing and potential safety issues using collision data information provided by Town or Region and recommend potential mitigation measures.*

TYLin

Thank you in advance for your attention to this matter. We look forward to your comments on the preceding scope of work and the requested information.

Should you have any questions, please do not hesitate to contact us.

Enclosed: Attachment 1 – Agency Correspondence

Michael Dowdall

Director, Traffic | michael.dowdall@tylin.com

Attachment 1
Agency Correspondence

TYLin

Michael Dowdall

Subject: FW: Transportation Study - Terms of Reference - Input Request

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From: Arash Olia <Arash.Olia@caledon.ca>
Sent: Saturday, December 19, 2020 8:22 PM
To: Alycia Gruchalla <AGruchalla@tmig.ca>
Cc: Michael Dowdall <MDowdall@tmig.ca>
Subject: RE: Transportation Study - Terms of Reference - Input Request

Hi Alycia,

Based on the terms of reference for the TIS, the subject application is located on Charleston Sideroad between Mississauga Road and Main Street (RR 136). Since Charleston Sideroad is a regional road, and the other intersections mentioned in the TIS are either regional or MTO highways (with the possible exception of Cataract Road and any proposed internal roads) review of the TIS ToR's should primarily be addressed by the Region of Peel.

Regarding first principals vs ITE guidelines for trip generation, note the following, I would recommend to take a conservative approach regarding trip generation and use whatever methodology would result in the higher trip generation numbers.

Regards,

Arash Olia, P.Eng., Ph.D.
Manager, Transportation Engineering
Engineering Services Department

Office: 905.584.2272 x.4073
Cell: 416.452.7091
Email: arash.olia@caledon.ca

Town of Caledon | www.caledon.ca | www.visitcaledon.ca | Follow us @YourCaledon

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From: Alycia Gruchalla <agruchalla@tmig.ca>
Sent: Thursday, December 17, 2020 3:03 PM
To: Arash Olia <Arash.Olia@caledon.ca>
Cc: Michael Dowdall <mdowdall@tmig.ca>
Subject: Transportation Study - Terms of Reference - Input Request

Hello Arash,

TMIG has been retained to perform a haul route assessment and transportation impact study in support of the proposed CBM Aggregates, a division of St. Marys Cement Inc., Caledon Quarry project in the Town of Caledon.

Michael Dowdall

From: Khan, Ayesha <ayesha.khan@peelregion.ca>
Sent: Friday, January 15, 2021 9:20 AM
To: Alycia Gruchalla
Cc: Michael Dowdall; Hamdani, Hashim
Subject: RE: Transportation Study - Terms of Reference - Input Request

Good morning Alycia,
We've reviewed your terms of reference submitted in support of the Caledon Quarry Project and wish to offer the following comments:

- We are satisfied with the study area scope/road network;
- We are satisfied with the horizon of 10 years post full build-out for the analyses;
- Please contact Transportation to confirm growth rates along the subject Regional road(s).
- Please contact Damian Jamroz (damian.jamroz@peelregion.ca), Supervisor of Traffic Operations to obtain the most recent TMCs and/or average annual daily traffic (AADT).
- Please contact Rick Laing (rick.laing@peelregion.ca), Supervisor of Traffic Signals and Streetlighting, to obtain traffic signal timing parameters and ensure that the information includes the appropriate walk/don't walk splits, recall modes and offsets.
- Please contact Development Services Planning staff to obtain details on surrounding developments in the area that would affect traffic capacity in the planning horizon year(s)
- Please see the following link for further details on our website for the preferred general layout and requirements of the TIS -https://www.peelregion.ca/pw/transportation/business/traffic-impact-study.asp

Feel free to reach out to me if you have any further questions.

Thank you,

Ayesha Khan
Technical Analyst, Traffic Development & Permits
Traffic Engineering
Region of Peel
10 Peel Centre Drive, Suite B, 4th Floor
Brampton, ON L6T 4B9
(905) 791 - 7800 ext. **7909**

Region of Peel
working with you

From: Alycia Gruchalla <AGruchalla@tmig.ca>
Sent: January 5, 2021 2:22 PM
To: Khan, Ayesha <ayesha.khan@peelregion.ca>
Cc: Carrick, Sean <sean.carrick@peelregion.ca>; Michael Dowdall <MDowdall@tmig.ca>
Subject: Transportation Study - Terms of Reference - Input Request

Michael Dowdall

From: Yousaf, Kamran (MTO) <Kamran.Yousaf@ontario.ca>
Sent: Friday, June 25, 2021 5:00 PM
To: Sara Rahman
Cc: Alycia Gruchalla; Aurini, Shawn (MTO); Lau, Wes (MTO); Zivkovic, Branko (MTO); Hakomaki, Eric (MTO)
Subject: RE: Terms of Reference Contact
Attachments: 16470 - 10 & RR24 - 26-09-18.pdf; Signalized_Hwy 10 at RR 24 - Charleston Sideroad - Main St.pdf; General Guidelines for the Preparation of Traffic Impact Studies Feb 2021.pdf

Hi Sara,

After review of the draft TIS submitted for the proposed quarry in Caledon, MTO would recommend the following:

Since Highway 10 and RR24 intersection is mentioned in the analysis of the study, MTO recommends utilizing the following documents listed in preparation of the TIS:

- Ministry's TIS guideline;
- Ministry's TMC from 2018;
- Ministry's signal timing plan at Hwy 10/RR24 intersection.
- Published traffic volume data: https://www.library.mto.gov.on.ca/SydneyPLUS/TechPubs/Portal/tp/tvSplash.aspx

All documents have been attached for your reference.

Thank you,
Kamran Yousaf

From: Sara Rahman <SRahman@tmig.ca>
Sent: June 24, 2021 12:22 PM
To: Yousaf, Kamran (MTO) <Kamran.Yousaf@ontario.ca>
Cc: Alycia Gruchalla <AGruchalla@tmig.ca>; Aurini, Shawn (MTO) <Shawn.Aurini@ontario.ca>
Subject: RE: Terms of Reference Contact

Hi Kamran,

I am following up on my previous email about the proposed terms of reference for the new Caledon Quarry project (please see attached). I wanted to confirm if you had any questions or comments about the proposed scope of work.

Thanks,

Sara Rahman
TMIG | **TYLI**
+1.905.738.5700 x261 | c: +1.403.862.8438

APPENDIX B

Existing Traffic Data

Ministry of Transportation
Ministere des Transports
Ontario

INTERSECTION LAYOUT SHEET

DATE 2018-05-15 DAY Tues REQUEST # 814 OBSERVER Y. Fouks

GRETCH CODE (LHRS) 0164700000 FILE # _____ TFR # _____

HWY 10 LOCATION RR24 - Charleston side road RAMPS _____

REG/MUN. Peel TOWN/CITY Caledon

COMMENTS _____

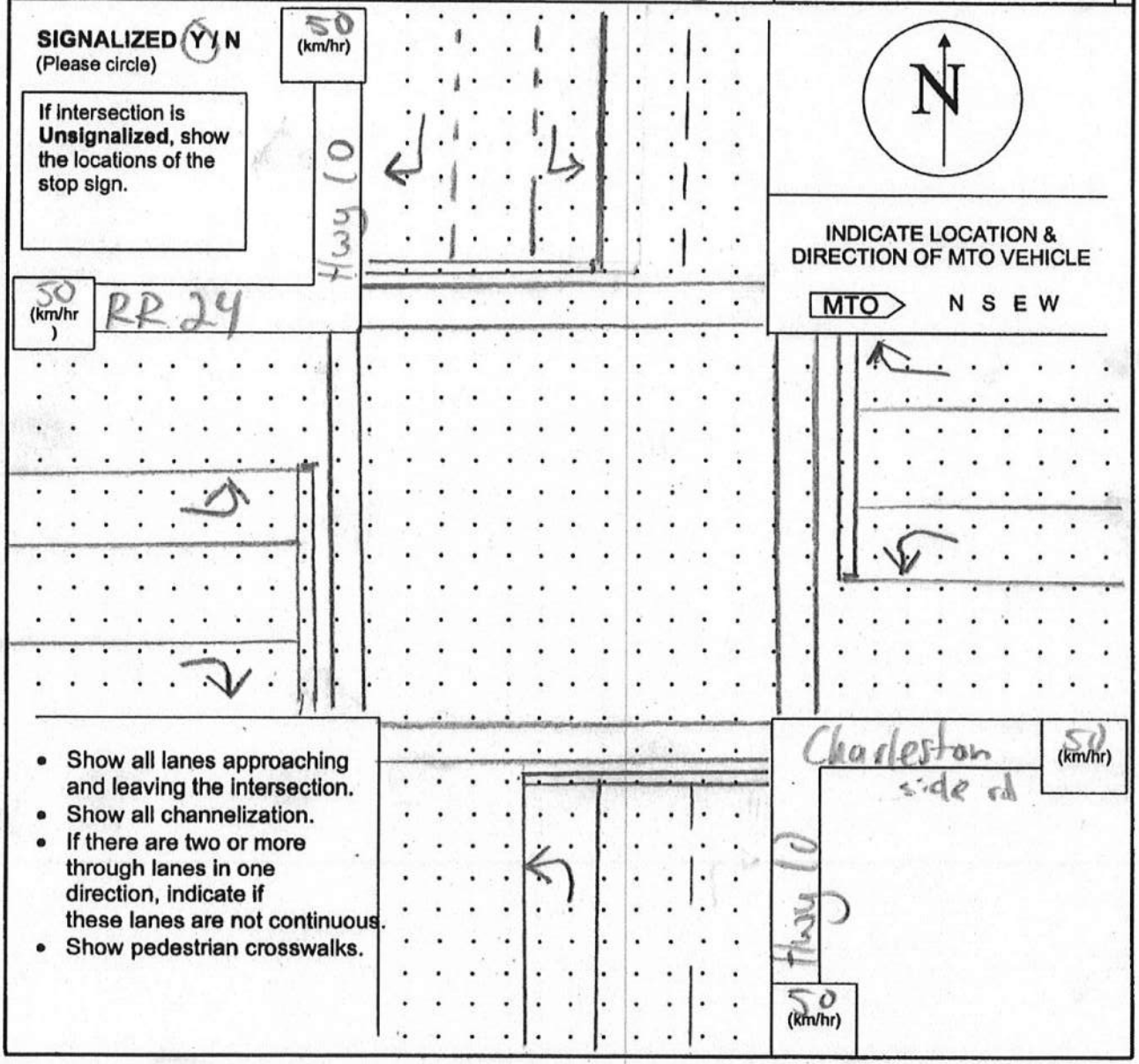
SEGMENT 1 - AM or PM (Please Circle) WEATHER Cloudy

DATASETS:

For office use only:
Edit File: _____
PM Peak: _____
Report: _____
Processed by: _____

SIGNALIZED (Y) / N
(Please circle)

If intersection is **Unsignalized**, show the locations of the stop sign.



- Show all lanes approaching and leaving the intersection.
- Show all channelization.
- If there are two or more through lanes in one direction, indicate if these lanes are not continuous.
- Show pedestrian crosswalks.

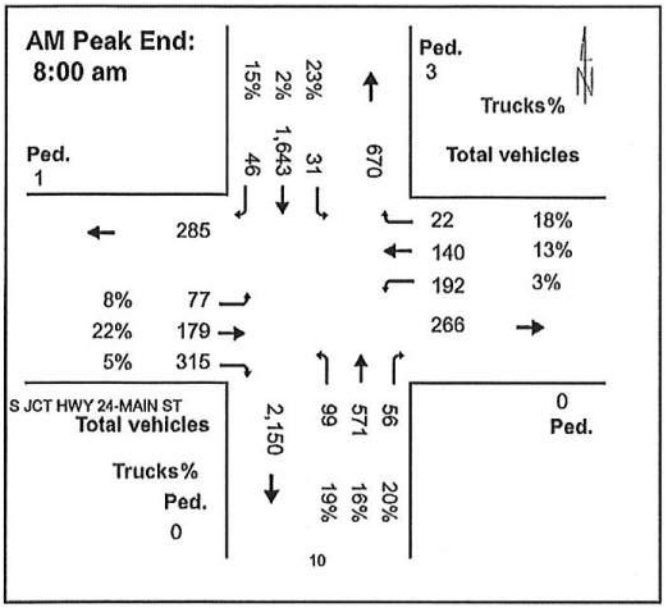
Text File #.....

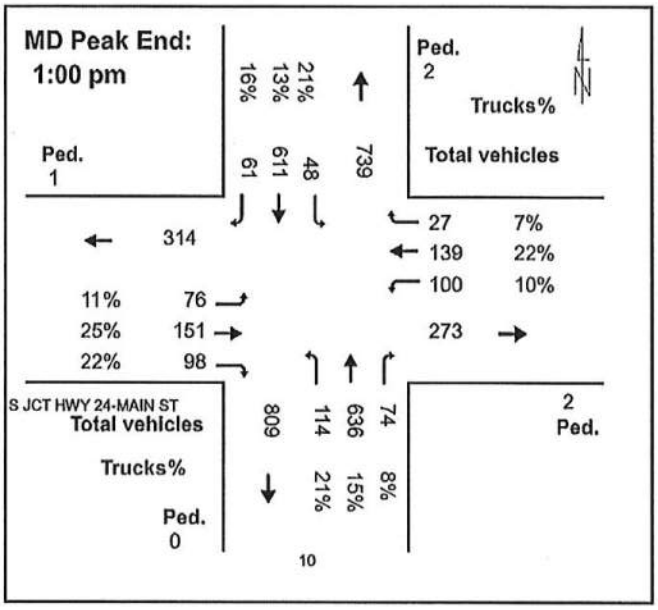
Ontario

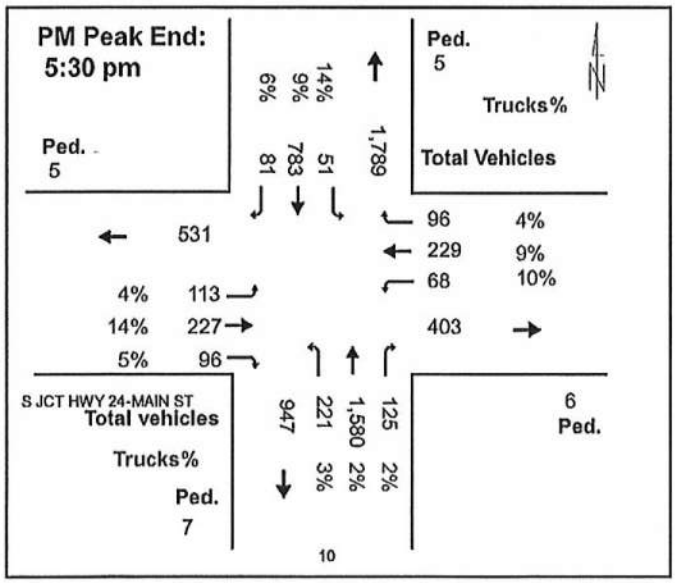
HWY 10 @ S JCT HWY 24-MAIN ST

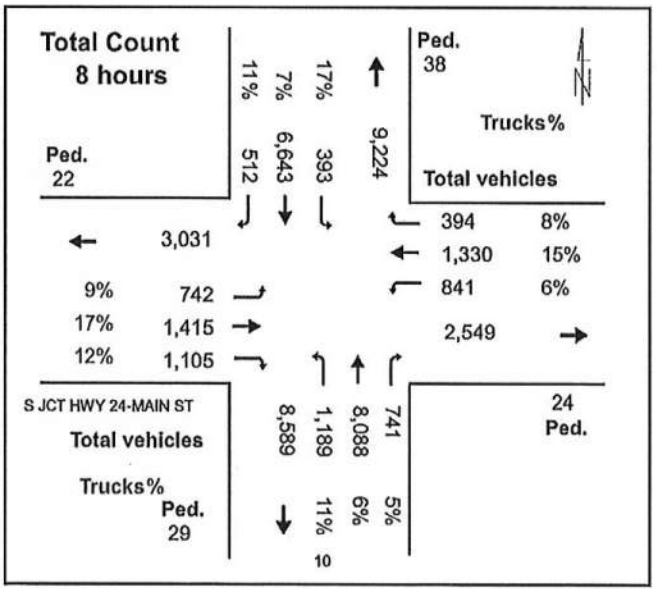
Central

Intersection ID:164700000 **Count Day: Wednesday** **Count Date: 16-May-2018**









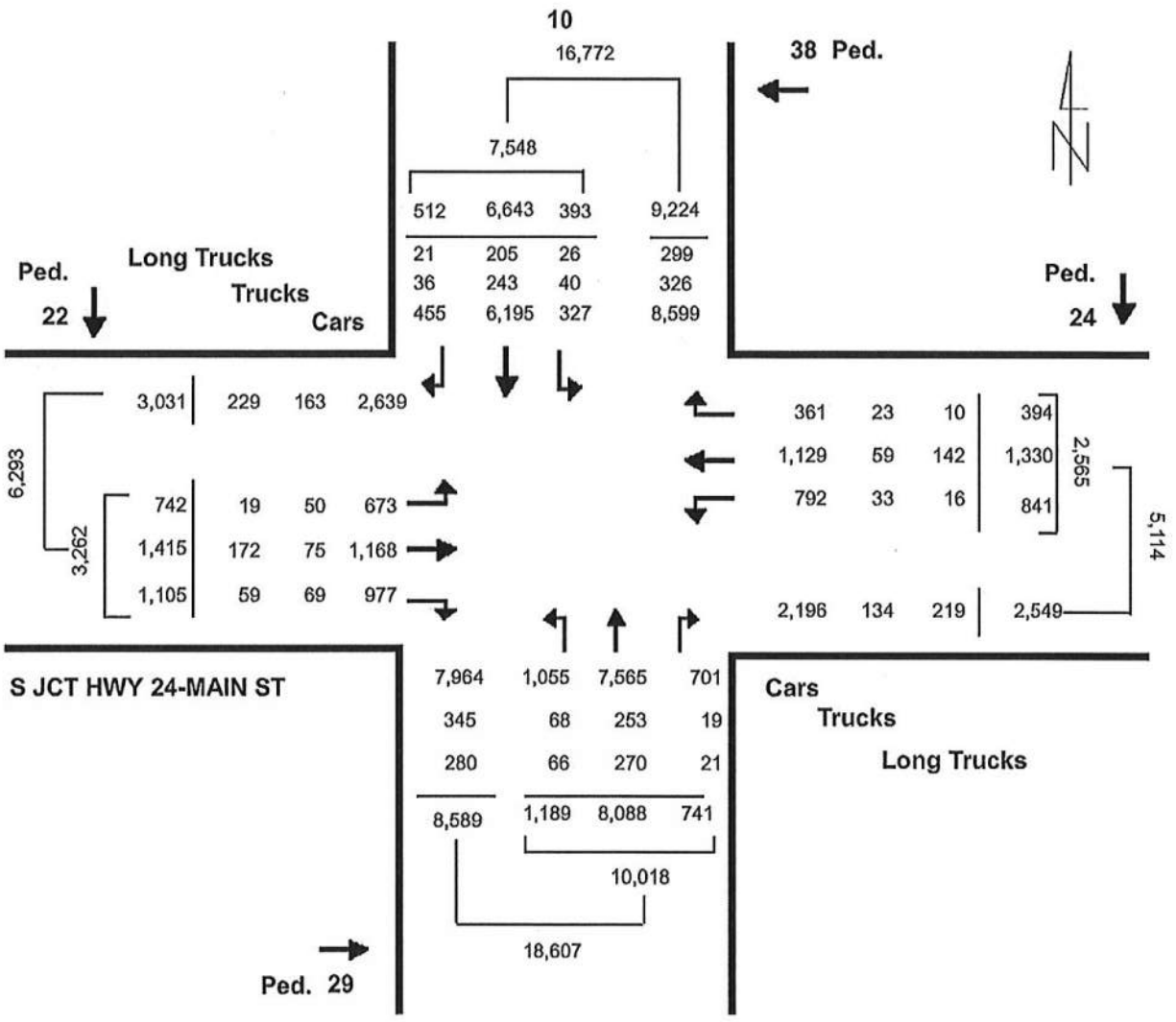
Traffic
Engineering
Software

COUNT TOTAL

HWY 10 @ S JCT HWY 24-MAIN ST

Central

Intersection ID:164700000 **Date: 16-May-2018**



15 MIN REPORT

Intersection ID:164700000 **HWY 10 @ S JCT HWY 24-MAIN ST** **Municipality: Central** **Date: 16-May-2018**

	NORTH APPROACH										EAST APPROACH										SOUTH APPROACH										WEST APPROACH										
Time	Cars			Trucks			Heavies			Ped	Cars			Trucks			Heavies			Ped	Cars			Trucks			Heavies			Ped	Cars			Trucks			Heavies			Ped	Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Period1																																									
7:15	4	417	8	1	5	1	2	2	0	0	40	20	1	2	1	0	0	2	0	0	12	105	9	3	4	0	4	12	1	0	11	35	57	1	3	3	1	8	0	1	776
7:30	7	426	8	1	4	0	0	2	2	1	64	30	4	0	4	0	1	2	1	0	12	97	11	3	13	2	2	15	0	0	12	31	87	0	2	3	1	6	1	0	855
7:45	6	397	11	0	3	1	1	4	2	0	43	34	8	0	1	0	1	3	1	0	26	160	13	1	8	1	3	11	4	0	26	38	92	2	2	1	0	8	6	0	918
8:00	7	374	12	1	4	1	1	5	0	2	39	38	5	2	0	1	0	5	1	0	30	119	12	2	17	1	1	10	2	0	22	35	62	0	2	2	1	9	1	0	826
8:15	11	341	13	1	4	3	0	1	0	1	30	30	9	2	5	0	1	4	0	0	21	129	16	2	20	0	2	8	0	0	23	33	45	1	2	1	1	6	2	0	768
8:30	17	321	16	2	3	0	0	3	0	0	31	27	6	1	3	3	0	9	1	0	17	121	12	5	22	1	4	9	2	0	19	43	46	4	2	2	1	7	3	0	763
8:45	21	204	10	0	6	0	0	9	1	1	34	29	9	2	3	3	1	13	0	3	23	123	13	3	16	1	3	13	2	3	33	36	37	1	4	5	2	4	2	1	674
9:00	20	247	15	2	10	1	1	9	0	0	29	34	6	0	2	3	2	4	0	0	15	131	12	5	13	0	6	13	3	2	22	41	38	6	5	4	0	6	3	0	710
Period2																																									
11:15	9	138	11	1	8	2	1	4	2	4	15	23	11	4	2	4	1	3	0	0	18	115	20	2	8	0	6	12	0	2	15	20	13	2	1	2	0	9	4	1	493
11:30	9	128	13	5	5	1	2	5	0	0	19	19	13	3	3	1	2	4	0	0	15	111	13	8	10	1	2	20	0	0	23	36	28	1	3	7	1	9	6	0	526
11:45	6	148	18	4	15	1	1	8	0	2	17	29	4	3	3	0	0	5	0	0	19	118	11	6	7	0	5	12	3	0	14	36	19	1	1	2	1	2	3	0	524
12:00	9	115	11	5	12	1	1	7	1	4	18	28	8	0	1	0	0	6	1	2	22	127	13	1	5	0	6	9	0	0	17	31	18	2	3	5	3	6	5	0	503
12:15	10	148	7	0	14	3	1	13	1	0	19	32	4	3	3	0	1	4	1	2	18	129	15	4	18	1	5	12	1	0	21	25	18	1	4	3	1	5	3	0	550
12:30	4	120	14	4	11	1	1	9	0	0	18	22	5	1	1	0	1	6	0	0	20	123	21	2	9	1	4	16	0	0	18	31	20	3	1	3	0	6	2	1	499
12:45	12	148	13	0	8	0	0	9	0	0	18	30	6	0	0	0	1	9	0	0	32	134	21	3	7	3	1	14	0	0	15	28	18	1	5	3	0	5	2	0	546
13:00	12	113	17	4	14	3	0	4	2	2	35	24	10	2	0	0	1	8	1	0	20	156	11	1	9	0	4	9	0	0	14	30	20	1	3	1	1	8	5	0	545
Period3																																									
15:15	9	148	18	1	13	3	0	7	0	3	21	29	6	2	0	0	0	7	3	2	33	269	30	3	9	0	1	8	1	3	17	27	13	3	4	4	0	3	3	2	705
15:30	8	130	21	0	9	2	5	8	1	1	23	44	12	2	4	1	0	4	0	2	39	316	36	1	6	3	2	4	0	0	22	54	24	2	4	3	0	4	3	0	800
15:45	12	151	20	1	7	4	1	8	1	0	21	26	17	1	1	0	1	2	0	0	39	355	29	1	6	0	0	5	0	1	22	36	25	2	4	1	0	5	0	1	806
16:00	12	160	13	1	6	1	1	8	0	2	23	60	18	0	4	1	0	4	0	0	45	419	40	2	3	1	1	5	0	0	19	36	35	5	1	1	0	2	3	4	936
16:15	16	166	23	1	14	2	0	5	0	3	20	47	23	0	4	0	0	0	0	2	49	342	37	1	4	0	0	4	0	6	28	36	24	3	3	4	0	6	0	0	873
16:30	10	141	18	1	6	1	1	6	1	1	19	52	18	0	1	1	1	6	0	0	47	402	25	0	3	0	0	7	0	2	27	45	30	4	3	3	0	2	1	0	885
16:45	12	168	14	2	11	1	0	7	0	2	21	40	20	0	4	2	0	4	0	1	66	391	26	1	3	1	1	6	1	0	25	42	25	0	4	1	1	4	0	1	908
17:00	10	217	14	0	5	1	3	7	0	0	9	46	15	1	2	1	0	4	0	3	53	406	35	3	7	0	0	4	0	0	25	50	23	0	2	1	1	7	1	0	956
17:15	12	144	22	0	7	0	2	13	0	1	24	63	29	0	0	1	1	2	0	0	49	342	37	1	4	0	0	4	0	5	30	53	16	1	2	2	1	7	0	4	879
17:30	10	180	26	0	11	0	0	13	3	2	12	59	28	0	2	0	0	3	0	2	47	403	25	0	3	0	0	7	0	2	29	51	27	0	0	0	0	5	0	0	950
17:45	5	130	16	1	7	0	0	4	1	0	20	50	21	1	1	0	0	3	0	0	65	388	26	1	3	1	1	6	1	0	21	38	10	1	2	0	1	2	0	0	827
18:00	16	153	15	0	8	1	1	6	1	0	19	47	11	0	1	0	0	5	0	0	53	404	35	3	7	0	0	4	0	0	24	47	17	0	0	2	0	4	0	0	884
18:15	7	144	14	1	3	1	0	6	1	2	29	39	12	0	1	0	0	2	0	1	48	329	27	0	1	0	1	2	0	0	18	36	26	0	1	0	0	5	0	3	760
18:30	6	137	11	0	7	0	0	4	0	2	21	32	8	1	1	0	0	3	0	3	35	288	29	0	2	0	0	2	0	0	25	35	26	2	1	0	0	4	0	0	685
18:45	11	126	10	0	2	0	0	5	0	1	24	27	8	0	0	0	0	3	0	1	40	249	26	0	2	0	1	4	0	3	19	36	24	0	0	0	0	2	0	1	625
19:00	7	115	3	0	1	0	0	4	1	1	17	19	6	0	1	1	0	3	0	0	27	264	15	0	4	1	0	3	0	0	17	17	14	0	1	0	1	6	0	2	551

Bicycle Count Form

Location: Hwy 10 at Charleston Sideroad / RR 24 /Main St
Site ID: 164700000
Count Date: 05/16/2018

Time	APPROACH			
	North	East	South	West
07:00 to 07:15				
07:15 to 07:30				
07:30 to 07:45				
07:45 to 08:00				
08:00 to 08:15				
08:15 to 08:30				
08:30 to 08:45				
08:45 to 09:00				
09:00 to 09:15				
09:15 to 09:30				
09:30 to 09:45				
09:45 to 10:00				
10:00 to 10:15				
10:15 to 10:30				
10:30 to 10:45				
10:45 to 11:00				
11:00 to 11:15				
11:15 to 11:30				
11:30 to 11:45				
11:45 to 12:00				
12:00 to 12:15				
12:15 to 12:30				
12:30 to 12:45				
12:45 to 13:00				
13:00 to 13:15				
13:15 to 13:30				
13:30 to 13:45				
13:45 to 14:00				
14:00 to 14:15				
14:15 to 14:30				
14:30 to 14:45				
14:45 to 15:00				
15:00 to 15:15				
15:15 to 15:30				
15:30 to 15:45				
15:45 to 16:00				
16:00 to 16:15				
16:15 to 16:30				
16:30 to 16:45				
16:45 to 17:00				
17:00 to 17:15				
17:15 to 17:30				
17:30 to 17:45				
17:45 to 18:00				
18:00 to 18:15				
18:15 to 18:30				
18:30 to 18:45				
18:45 to 19:00				
19:00 to 19:15		**2**		
19:15 to 19:30				
19:30 to 19:45				
19:45 to 20:00				
20:00 to 20:15				
20:15 to 20:30				
20:30 to 20:45				
20:45 to 21:00				

Spectrum

Turning Movement Count
Location Name: CHARLESTON SIDEROAD & HWY 10 /HURONTARIO ST
Date: Thu, Nov 05, 2020 Deployment Lead: Theo Daglis

The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

Turning Movement Count (1 . CHARLESTON SIDEROAD & HWY 10 /HURONTARIO ST) CustID: 02408233 MioID:

Start Time	N Approach HURONTARIO ST						E Approach CHARLESTON SIDEROAD						S Approach HURONTARIO ST						W Approach CHARLESTON SIDEROAD						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
06:00:00	8	338	3	0	0	349	2	14	36	0	0	52	11	70	17	0	0	98	48	21	3	0	0	72	571	
06:15:00	9	302	9	0	0	320	0	23	23	0	0	46	10	112	26	0	0	148	54	26	2	0	0	82	596	
06:30:00	5	286	11	0	0	302	1	24	35	0	0	60	8	125	24	0	0	157	31	37	13	0	0	81	600	
06:45:00	16	309	13	0	0	338	2	22	22	0	0	46	13	114	34	0	0	161	51	33	8	0	0	92	637	2404
07:00:00	6	334	11	0	0	351	0	23	34	0	0	57	15	135	26	0	0	176	44	23	21	0	0	88	672	2505
07:15:00	14	377	8	0	1	399	5	18	33	0	1	56	9	160	24	0	0	193	56	33	21	0	0	110	758	2667
07:30:00	6	349	5	0	0	360	6	40	36	0	1	82	11	181	28	0	0	220	39	31	14	0	0	84	746	2813
07:45:00	14	273	9	0	1	296	6	25	31	0	1	62	13	155	28	0	0	196	52	36	25	0	0	113	667	2843
08:00:00	7	231	10	0	2	248	7	34	31	0	1	72	16	173	35	0	0	224	35	28	13	0	0	76	620	2791
08:15:00	11	247	7	0	0	265	12	43	36	0	0	91	17	169	42	0	0	228	38	43	10	0	0	91	675	2708
08:30:00	10	217	18	0	0	245	8	37	29	0	0	74	15	159	29	0	0	203	49	37	16	0	0	102	624	2586
08:45:00	14	176	15	0	0	205	7	25	28	0	1	60	18	167	33	0	1	218	42	29	20	0	0	91	574	2493
09:00:00	16	211	22	0	1	249	8	27	21	0	0	56	26	147	38	0	0	211	29	45	17	0	1	91	607	2480
09:15:00	6	184	15	0	0	205	12	34	38	0	0	84	14	159	43	0	0	216	34	37	11	0	0	82	587	2392
09:30:00	9	158	11	0	0	178	4	35	28	0	0	67	24	159	24	0	0	207	38	29	16	0	0	83	535	2303
09:45:00	11	177	7	0	2	195	4	42	20	0	0	66	17	135	36	0	0	188	26	39	18	0	0	83	532	2261
10:00:00	13	173	10	0	2	196	5	28	27	0	2	60	16	154	53	0	0	223	33	41	22	0	0	96	575	2229
10:15:00	9	166	17	0	2	192	10	34	32	0	0	76	23	147	41	0	4	211	31	31	20	0	0	82	561	2203
10:30:00	9	162	6	0	1	177	9	29	19	0	0	57	18	158	42	0	1	218	25	28	16	0	0	69	521	2189
10:45:00	15	149	9	0	2	173	8	34	22	0	2	64	21	157	41	0	2	219	24	30	15	0	0	69	525	2182
11:00:00	14	142	13	0	1	169	8	43	14	0	0	65	31	141	47	1	1	220	36	34	25	0	0	95	549	2156
11:15:00	11	147	13	0	0	171	10	26	23	0	0	59	23	153	48	0	0	224	34	24	22	0	0	80	534	2129
11:30:00	12	142	7	0	0	161	4	22	18	0	0	44	16	178	29	0	0	223	35	29	20	0	0	84	512	2120
11:45:00	15	161	12	0	1	188	8	37	19	0	0	64	20	202	48	0	0	270	17	38	18	0	0	73	595	2190
12:00:00	16	146	13	0	1	175	16	24	30	0	0	70	29	192	46	0	0	267	29	30	19	0	0	78	590	2231
12:15:00	9	153	14	0	0	176	6	29	26	0	0	61	17	164	38	0	0	219	34	45	21	0	0	100	556	2253
12:30:00	10	143	21	0	2	174	8	37	29	0	0	74	23	163	36	0	1	222	36	42	17	0	0	95	565	2306
12:45:00	12	152	10	0	6	174	9	40	20	0	0	69	18	180	35	1	2	234	31	31	22	0	1	84	561	2272
13:00:00	11	168	16	0	0	195	12	26	18	0	0	56	20	186	43	0	2	249	23	38	13	0	1	74	574	2256
13:15:00	13	155	13	0	0	181	5	35	28	0	0	68	23	188	40	0	2	251	38	30	17	0	0	85	585	2285
13:30:00	15	161	12	0	0	188	12	37	21	0	0	70	28	187	52	0	0	267	36	40	13	0	0	89	614	2334
13:45:00	9	142	15	1	0	167	10	40	23	0	0	73	23	217	40	0	4	280	36	36	8	0	0	80	600	2373
14:00:00	15	183	20	0	0	218	7	28	18	0	0	53	19	182	40	0	1	241	41	49	13	0	0	103	615	2414
14:15:00	15	183	17	0	0	215	7	26	34	0	0	67	34	261	34	0	1	329	33	40	21	0	0	94	705	2534
14:30:00	8	197	14	0	0	219	11	41	22	0	0	74	26	237	44	0	4	307	32	41	24	0	1	97	697	2617
14:45:00	11	157	13	0	2	181	11	41	16	0	1	68	28	316	42	0	2	386	34	33	18	0	1	85	720	2737
15:00:00	13	168	18	0	0	199	7	36	19	0	0	62	35	291	54	0	0	380	37	48	14	0	0	99	740	2862
15:15:00	21	198	16	0	0	235	20	30	33	0	0	83	34	310	41	0	0	385	38	43	22	0	0	103	806	2963
15:30:00	14	151	15	0	0	180	11	44	26	0	0	81	43	374	42	0	0	459	27	47	23	0	0	97	817	3083
15:45:00	15	164	15	0	0	194	20	60	32	0	0	112	21	334	47	0	0	402	44	40	17	0	0	101	809	3172
16:00:00	17	195	18	0	0	230	24	43	32	0	0	99	35	373	52	0	0	460	31	44	19	0	0	94	883	3315
16:15:00	15	201	14	0	0	230	29	60	22	0	0	111	42	330	42	0	0	414	26	49	22	0	0	97	852	3361
16:30:00	19	231	12	0	0	262	18	49	24	0	0	91	47	348	39	0	0	434	41	40	19	0	0	100	887	3431
16:45:00	9	212	16	0	0	237	19	39	29	0	0	87	36	328	39	0	0	403	43	54	21	0	0	118	845	3467
17:00:00	19	192	18	0	0	229	23	46	28	0	0	97	30	331	34	0	1	395	27	60	30	0	1	117	838	3422

17:15:00	21	213	10	0	1	244	19	53	26	0	2	98	41	343	49	0	0	433	37	38	12	0	1	87	862	3432
17:30:00	17	207	15	0	1	239	19	37	25	0	1	81	41	325	48	0	1	414	19	49	16	0	0	84	818	3363
17:45:00	16	143	13	0	0	172	12	44	30	0	1	86	26	280	39	0	1	345	26	60	16	0	2	102	705	3223
Grand Total	600	9626	619	1	29	10846	481	1664	1266	0	14	3411	1124	10050	1852	2	31	13028	1700	1809	823	0	9	4332	**31617**	-
Approach%	5.5%	88.8%	5.7%	0%		-	14.1%	48.8%	37.1%	0%		-	8.6%	77.1%	14.2%	0%		-	39.2%	41.8%	19%	0%		-	**-**	-
Totals %	1.9%	30.4%	2%	0%		34.3%	1.5%	5.3%	4%	0%		10.8%	3.6%	31.8%	5.9%	0%		41.2%	5.4%	5.7%	2.6%	0%		13.7%	**-**	-
Heavy	56	790	85	0		-	67	277	88	0		-	152	974	504	0		-	420	347	47	0		-	**-**	-
Heavy %	9.3%	8.2%	13.7%	0%		-	13.9%	16.6%	7%	0%		-	13.5%	9.7%	27.2%	0%		-	24.7%	19.2%	5.7%	0%		-	**-**	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

Spectrum

Turning Movement Count
Location Name: CHARLESTON SIDEROAD & HWY 10 /HURONTARIO ST
Date: Thu, Nov 05, 2020 Deployment Lead: Theo Daglis

The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 04:00 PM - 05:00 PM Weather: Clear Sky (10.35 °C)

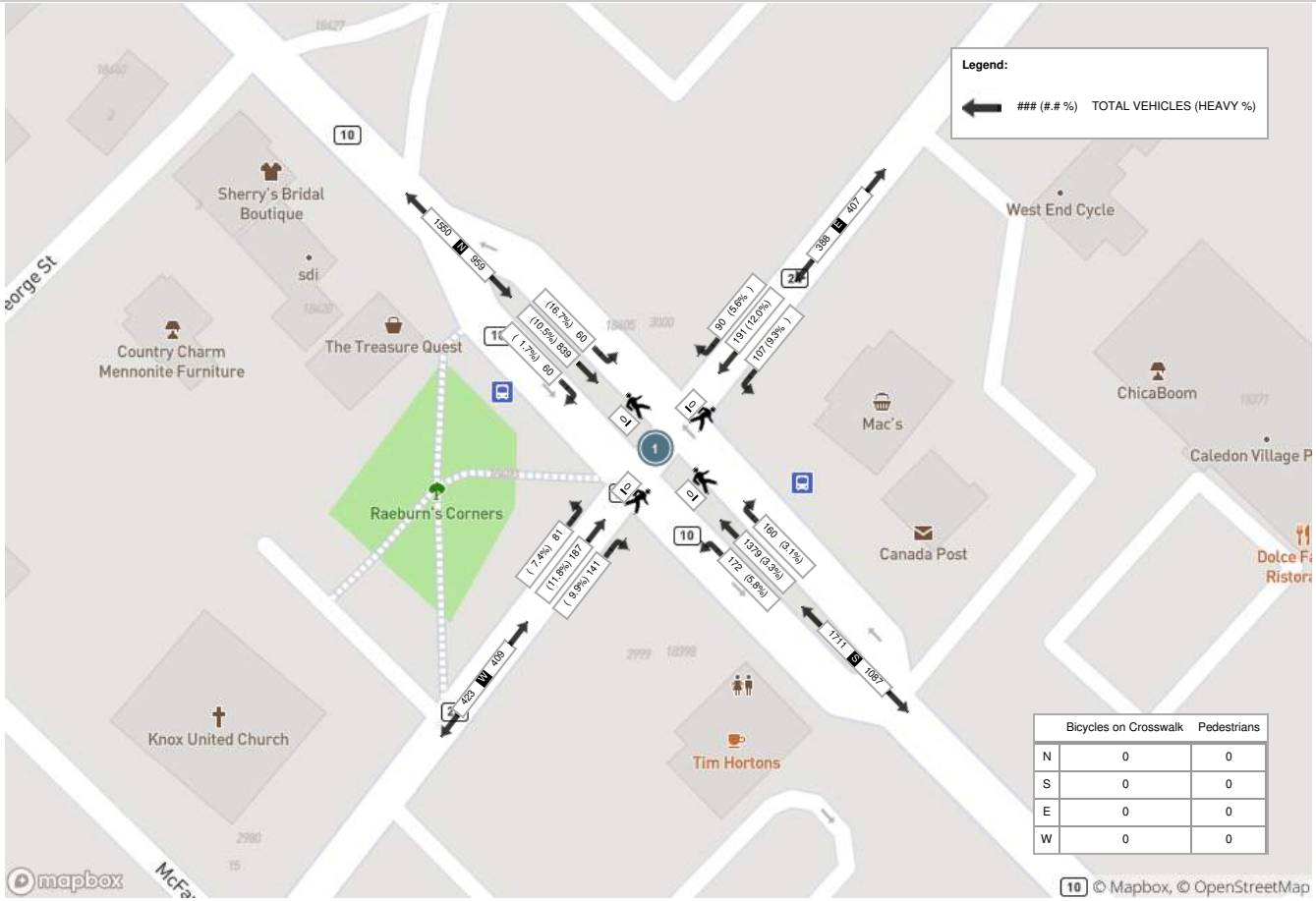
Start Time	N Approach HURONTARIO ST						E Approach CHARLESTON SIDEROAD						S Approach HURONTARIO ST						W Approach CHARLESTON SIDEROAD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:00:00	17	195	18	0	0	230	24	43	32	0	0	99	35	373	52	0	0	460	31	44	19	0	0	94	883
16:15:00	15	201	14	0	0	230	29	60	22	0	0	111	42	330	42	0	0	414	26	49	22	0	0	97	852
16:30:00	19	231	12	0	0	262	18	49	24	0	0	91	47	348	39	0	0	434	41	40	19	0	0	100	887
16:45:00	9	212	16	0	0	237	19	39	29	0	0	87	36	328	39	0	0	403	43	54	21	0	0	118	845
Grand Total	60	839	60	0	0	959	90	191	107	0	0	388	160	1379	172	0	0	1711	141	187	81	0	0	409	**3467**
Approach%	6.3%	87.5%	6.3%	0%		-	23.2%	49.2%	27.6%	0%		-	9.4%	80.6%	10.1%	0%		-	34.5%	45.7%	19.8%	0%		-	-
Totals %	1.7%	24.2%	1.7%	0%		27.7%	2.6%	5.5%	3.1%	0%		11.2%	4.6%	39.8%	5%	0%		49.4%	4.1%	5.4%	2.3%	0%		11.8%	-
PHF	0.79	0.91	0.83	0		0.92	0.78	0.8	0.84	0		0.87	0.85	0.92	0.83	0		0.93	0.82	0.87	0.92	0		0.87	-
Heavy	1	88	10	0		99	5	23	10	0		38	5	45	10	0		60	14	22	6	0		42	-
Heavy %	1.7%	10.5%	16.7%	0%		10.3%	5.6%	12%	9.3%	0%		9.8%	3.1%	3.3%	5.8%	0%		3.5%	9.9%	11.8%	7.4%	0%		10.3%	-
Lights	59	751	50	0		860	85	168	97	0		350	155	1334	162	0		1651	127	165	75	0		367	-
Lights %	98.3%	89.5%	83.3%	0%		89.7%	94.4%	88%	90.7%	0%		90.2%	96.9%	96.7%	94.2%	0%		96.5%	90.1%	88.2%	92.6%	0%		89.7%	-
Single-Unit Trucks	1	19	3	0		23	2	8	3	0		13	2	14	5	0		21	3	3	0	0		6	-
Single-Unit Trucks %	1.7%	2.3%	5%	0%		2.4%	2.2%	4.2%	2.8%	0%		3.4%	1.3%	1%	2.9%	0%		1.2%	2.1%	1.6%	0%	0%		1.5%	-
Buses	0	5	1	0		6	2	0	2	0		4	0	6	1	0		7	0	1	0	0		1	-
Buses %	0%	0.6%	1.7%	0%		0.6%	2.2%	0%	1.9%	0%		1%	0%	0.4%	0.6%	0%		0.4%	0%	0.5%	0%	0%		0.2%	-
Articulated Trucks	0	44	2	0		46	1	11	1	0		13	0	20	3	0		23	4	13	6	0		23	-
Articulated Trucks %	0%	5.2%	3.3%	0%		4.8%	1.1%	5.8%	0.9%	0%		3.4%	0%	1.5%	1.7%	0%		1.3%	2.8%	7%	7.4%	0%		5.6%	-
Aggregate Trucks	0	20	4	0		24	0	4	4	0		8	3	5	1	0		9	7	5	0	0		12	-
Aggregate Trucks %	0%	2.4%	6.7%	0%		2.5%	0%	2.1%	3.7%	0%		2.1%	1.9%	0.4%	0.6%	0%		0.5%	5%	2.7%	0%	0%		2.9%	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-

Spectrum

Turning Movement Count
Location Name: CHARLESTON SIDEROAD & HWY 10 /HURONTARIO ST
Date: Thu, Nov 05, 2020 Deployment Lead: Theo Daglis

The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 04:00 PM - 05:00 PM Weather: Clear Sky (10.35 °C)



Spectrum

Turning Movement Count
Location Name: CHARLESTON SIDEROAD & HWY 10 /HURONTARIO ST
Date: Sat, Nov 07, 2020 Deployment Lead: Theo Daglis

The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

Turning Movement Count (1 . CHARLESTON SIDEROAD & HWY 10 /HURONTARIO ST) CustID: 02408233 MioID:

Start Time	N Approach HURONTARIO ST						E Approach CHARLESTON SIDEROAD						S Approach HURONTARIO ST						W Approach CHARLESTON SIDEROAD						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
06:00:00	0	82	5	0	0	87	2	8	12	0	0	22	5	38	7	0	0	50	4	12	5	0	0	21	180	
06:15:00	3	77	2	0	0	82	1	4	7	0	0	12	9	56	6	0	0	71	12	6	2	0	0	20	185	
06:30:00	5	81	0	0	0	86	1	2	6	0	0	9	7	68	15	0	0	90	5	12	4	0	0	21	206	
06:45:00	2	70	3	0	0	75	2	8	8	0	0	18	7	61	17	0	0	85	6	12	10	0	0	28	206	777
07:00:00	2	80	2	0	0	84	2	7	7	0	0	16	9	97	14	0	0	120	6	16	11	0	0	33	253	850
07:15:00	2	97	5	0	0	104	0	13	12	0	0	25	6	91	15	0	0	112	8	20	12	0	0	40	281	946
07:30:00	1	90	4	0	0	95	3	17	13	0	0	33	9	144	14	0	0	167	9	15	17	0	0	41	336	1076
07:45:00	9	76	4	0	1	89	1	9	17	0	0	27	17	145	26	0	1	188	8	25	10	0	1	43	347	1217
08:00:00	8	119	3	0	0	130	4	28	23	0	0	55	14	163	19	0	0	196	9	32	11	0	0	52	433	1397
08:15:00	6	114	3	0	0	123	4	17	13	0	0	34	26	148	25	0	1	199	14	39	8	0	1	61	417	1533
08:30:00	5	117	7	0	2	129	6	37	21	0	0	64	16	204	34	0	1	254	10	34	11	0	0	55	502	1699
08:45:00	6	138	9	0	1	153	9	20	25	0	1	54	22	212	31	0	1	265	14	45	21	0	1	80	552	1904
09:00:00	8	141	8	0	0	157	12	28	20	0	1	60	15	224	26	0	0	265	15	43	31	0	0	89	571	2042
09:15:00	8	142	7	0	1	157	7	33	16	0	0	56	17	254	29	1	3	301	12	43	20	0	2	75	589	2214
09:30:00	18	161	14	0	0	193	7	46	29	0	1	82	29	204	41	0	3	274	14	36	23	0	0	73	622	2334
09:45:00	10	173	4	0	1	187	6	37	17	0	1	60	25	269	36	0	1	330	21	56	24	0	0	101	678	2460
10:00:00	16	162	11	0	3	189	8	31	18	0	1	57	24	235	48	0	1	307	19	50	28	0	1	97	650	2539
10:15:00	11	191	7	0	1	209	5	48	24	0	1	77	28	349	37	0	1	414	24	45	33	0	0	102	802	2752
10:30:00	19	172	14	0	0	205	9	43	30	0	0	82	16	305	59	0	11	380	19	47	35	0	1	101	768	2898
10:45:00	11	174	12	0	2	197	10	39	31	0	1	80	32	285	45	0	0	362	16	51	50	0	0	117	756	2976
11:00:00	9	154	11	0	1	174	10	47	21	0	5	78	25	312	41	0	1	378	22	58	22	0	0	102	732	3058
11:15:00	13	189	16	0	3	218	11	35	19	0	0	65	28	276	40	0	4	344	22	51	28	0	2	101	728	2984
11:30:00	22	182	11	0	2	215	14	51	36	0	3	101	29	306	40	0	5	375	25	44	40	0	0	109	800	3016
11:45:00	14	171	23	0	0	208	11	49	28	0	0	88	37	310	53	0	4	400	28	57	34	0	2	119	815	3075
12:00:00	17	194	13	0	0	224	7	37	30	0	0	74	40	336	57	0	0	433	28	44	31	0	1	103	834	3177
12:15:00	17	214	22	0	0	253	8	48	25	0	4	81	28	292	47	0	3	367	21	49	30	0	0	100	801	3250
12:30:00	25	221	23	0	3	269	16	48	31	0	7	95	49	310	49	0	1	408	28	52	31	0	0	111	883	3333
12:45:00	32	210	16	0	0	258	5	50	39	0	0	94	30	328	33	0	0	391	28	39	33	0	0	100	843	3361
13:00:00	21	231	21	0	0	273	7	47	34	0	0	88	37	306	45	0	4	388	25	46	28	0	3	99	848	3375
13:15:00	18	230	18	1	0	267	12	48	24	0	0	84	25	271	36	0	1	332	28	49	31	0	0	108	791	3365
13:30:00	24	226	22	0	0	272	10	44	25	0	1	79	28	287	39	0	0	354	24	50	35	0	0	109	814	3296
13:45:00	25	266	9	0	2	300	13	44	26	0	2	83	44	254	49	0	8	347	35	53	23	0	0	111	841	3294
14:00:00	29	241	11	0	3	281	7	53	31	0	1	91	33	302	37	0	0	372	42	52	24	0	0	118	862	3308
14:15:00	23	265	19	1	4	308	11	53	33	0	1	97	31	260	40	0	3	331	32	55	35	0	1	122	858	3375
14:30:00	13	210	25	0	4	248	12	48	36	0	1	96	33	287	63	0	1	383	39	45	20	0	0	104	831	3392
14:45:00	27	218	22	0	2	267	13	41	30	0	2	84	33	291	40	0	2	364	42	46	32	0	0	120	835	3386
15:00:00	19	230	15	0	2	264	11	37	27	0	0	75	31	264	51	0	0	346	36	59	25	0	0	120	805	3329
15:15:00	19	248	15	0	1	282	11	56	46	0	0	113	23	240	36	0	2	299	46	42	20	0	2	108	802	3273
15:30:00	18	274	23	0	3	315	9	42	27	0	2	78	14	265	38	0	0	317	41	49	24	0	0	114	824	3266
15:45:00	28	257	18	0	0	303	8	52	44	0	0	104	19	231	38	0	0	288	52	43	23	0	0	118	813	3244
16:00:00	20	301	19	0	1	340	12	49	26	0	0	87	26	207	39	0	2	272	43	44	28	0	2	115	814	3253
16:15:00	24	302	25	1	0	352	10	53	42	0	0	105	15	211	37	0	0	263	33	56	25	0	0	114	834	3285
16:30:00	27	286	20	0	1	333	7	30	24	0	0	61	24	190	25	0	0	239	45	46	18	0	2	109	742	3203
16:45:00	13	300	24	0	2	337	8	51	34	0	0	93	33	179	42	0	4	254	55	59	21	0	0	135	819	3209
17:00:00	29	354	23	0	0	406	7	45	25	0	0	77	20	181	21	0	2	222	54	27	14	0	2	95	800	3195

17:15:00	19	347	18	2	0	386	7	36	43	0	0	86	25	160	27	0	2	212	36	56	13	0	2	105	789	3150
17:30:00	17	302	13	0	0	332	11	29	31	0	0	71	25	157	19	0	0	201	54	46	11	0	0	111	715	3123
17:45:00	22	294	21	0	1	337	7	31	25	0	1	63	21	175	18	1	2	215	33	35	13	0	0	81	696	3000
Grand Total	734	9374	640	5	47	10753	374	1729	1211	0	37	3314	1139	10740	1644	2	75	13525	1242	1991	1078	0	26	4311	**31903**	-
Approach%	6.8%	87.2%	6%	0%		-	11.3%	52.2%	36.5%	0%		-	8.4%	79.4%	12.2%	0%		-	28.8%	46.2%	25%	0%		-	**-**	-
Totals %	2.3%	29.4%	2%	0%		33.7%	1.2%	5.4%	3.8%	0%		10.4%	3.6%	33.7%	5.2%	0%		42.4%	3.9%	6.2%	3.4%	0%		13.5%	**-**	-
Heavy	17	350	14	0		-	10	68	22	0		-	26	345	31	0		-	22	83	12	0		-	**-**	-
Heavy %	2.3%	3.7%	2.2%	0%		-	2.7%	3.9%	1.8%	0%		-	2.3%	3.2%	1.9%	0%		-	1.8%	4.2%	1.1%	0%		-	**-**	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

Spectrum

Turning Movement Count
Location Name: CHARLESTON SIDEROAD & HWY 10 /HURONTARIO ST
Date: Sat, Nov 07, 2020 Deployment Lead: Theo Daglis

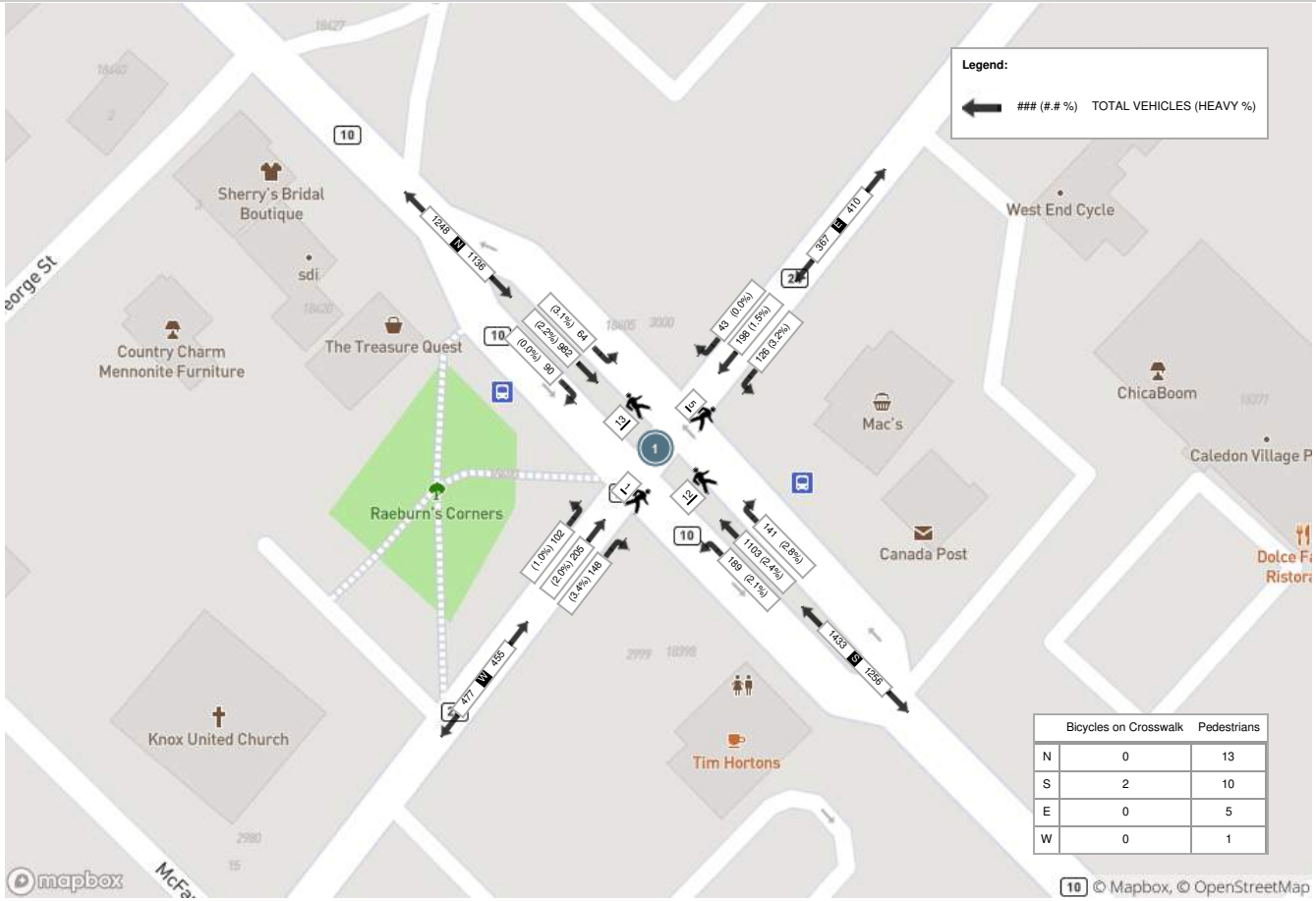
The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 01:45 PM - 02:45 PM Weather: Clear Sky (9.65 °C)

Start Time	N Approach HURONTARIO ST						E Approach CHARLESTON SIDEROAD						S Approach HURONTARIO ST						W Approach CHARLESTON SIDEROAD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
13:45:00	25	266	9	0	2	300	13	44	26	0	2	83	44	254	49	0	8	347	35	53	23	0	0	111	841
14:00:00	29	241	11	0	3	281	7	53	31	0	1	91	33	302	37	0	0	372	42	52	24	0	0	118	862
14:15:00	23	265	19	1	4	308	11	53	33	0	1	97	31	260	40	0	3	331	32	55	35	0	1	122	858
14:30:00	13	210	25	0	4	248	12	48	36	0	1	96	33	287	63	0	1	383	39	45	20	0	0	104	831
Grand Total	90	982	64	1	13	1137	43	198	126	0	5	367	141	1103	189	0	12	1433	148	205	102	0	1	455	**3392**
Approach%	7.9%	86.4%	5.6%	0.1%		-	11.7%	54%	34.3%	0%		-	9.8%	77%	13.2%	0%		-	32.5%	45.1%	22.4%	0%		-	**-**
Totals %	2.7%	29%	1.9%	0%		33.5%	1.3%	5.8%	3.7%	0%		10.8%	4.2%	32.5%	5.6%	0%		42.2%	4.4%	6%	3%	0%		13.4%	**-**
PHF	0.78	0.92	0.64	0.25		0.92	0.83	0.93	0.88	0		0.95	0.8	0.91	0.75	0		0.94	0.88	0.93	0.73	0		0.93	**-**
Heavy	0	22	2	0		24	0	3	4	0		7	4	26	4	0		34	5	4	1	0		10	**-**
Heavy %	0%	2.2%	3.1%	0%		2.1%	0%	1.5%	3.2%	0%		1.9%	2.8%	2.4%	2.1%	0%		2.4%	3.4%	2%	1%	0%		2.2%	**-**
Lights	90	960	62	1		1113	43	195	122	0		360	137	1077	185	0		1399	143	201	101	0		445	**-**
Lights %	100%	97.8%	96.9%	100%		97.9%	100%	98.5%	96.8%	0%		98.1%	97.2%	97.6%	97.9%	0%		97.6%	96.6%	98%	99%	0%		97.8%	**-**
Single-Unit Trucks	0	10	1	0		11	0	0	4	0		4	2	4	3	0		9	1	1	1	0		3	**-**
Single-Unit Trucks %	0%	1%	1.6%	0%		1%	0%	0%	3.2%	0%		1.1%	1.4%	0.4%	1.6%	0%		0.6%	0.7%	0.5%	1%	0%		0.7%	**-**
Articulated Trucks	0	6	0	0		6	0	3	0	0		3	1	8	0	0		9	0	3	0	0		3	**-**
Articulated Trucks %	0%	0.6%	0%	0%		0.5%	0%	1.5%	0%	0%		0.8%	0.7%	0.7%	0%	0%		0.6%	0%	1.5%	0%	0%		0.7%	**-**
Aggregate Trucks	0	6	1	0		7	0	0	0	0		0	1	14	1	0		16	4	0	0	0		4	**-**
Aggregate Trucks %	0%	0.6%	1.6%	0%		0.6%	0%	0%	0%	0%		0%	0.7%	1.3%	0.5%	0%		1.1%	2.7%	0%	0%	0%		0.9%	**-**
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 Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	13	-	-	-	-	-	5	-	-	-	-	-	10	-	-	-	-	-	1	-	**-**
Pedestrians%	-	-	-	-	41.9%		-	-	-	-	16.1%		-	-	-	-	32.3%		-	-	-	-	3.2%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	6.5%		-	-	-	-	0%		**-**

The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 01:45 PM - 02:45 PM **Weather: Clear Sky (9.65 °C)**



Spectrum

Turning Movement Count
Location Name: CHARLESTON SIDEROAD & MISSISSAUGA RD
Date: Thu, Nov 05, 2020 Deployment Lead: Theo Daglis

The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

Turning Movement Count (3 . CHARLESTON SIDEROAD & MISSISSAUGA RD) CustID: 02413835 MioID:

Start Time	N Approach MISSISSAUGA ROAD						E Approach CHARLESTON SIDEROAD						S Approach MISSISSAUGA ROAD						W Approach CHARLESTON SIDEROAD						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
06:00:00	0	1	0	0	0	1	0	42	3	0	0	45	2	0	0	0	0	2	1	50	0	0	0	51	99	
06:15:00	1	3	1	0	0	5	1	40	8	0	0	49	5	0	0	0	0	5	0	62	0	0	0	62	121	
06:30:00	1	2	2	0	0	5	1	41	2	0	0	44	5	0	1	1	0	7	0	60	0	0	0	60	116	
06:45:00	2	1	1	0	0	4	0	48	8	0	0	56	4	0	1	0	0	5	3	56	3	0	0	62	127	463
07:00:00	1	4	4	0	0	9	0	51	5	0	0	56	4	1	0	0	0	5	1	68	0	0	0	69	139	503
07:15:00	0	3	3	0	0	6	0	43	4	0	0	47	3	1	2	0	0	6	3	68	1	0	0	72	131	513
07:30:00	2	2	1	0	0	5	3	61	4	0	0	68	7	1	0	0	0	8	2	66	2	0	0	70	151	548
07:45:00	1	2	0	0	0	3	0	54	6	0	0	60	6	0	1	0	0	7	3	68	2	0	0	73	143	564
08:00:00	3	3	6	0	0	12	1	51	6	0	0	58	4	0	3	0	0	7	1	72	1	0	0	74	151	576
08:15:00	3	2	2	0	0	7	8	55	6	0	0	69	4	1	1	0	0	6	0	76	0	0	0	76	158	603
08:30:00	3	1	0	0	0	4	0	56	7	0	0	63	6	0	2	0	0	8	1	78	0	0	0	79	154	606
08:45:00	3	1	2	0	0	6	1	59	6	0	0	66	6	0	2	0	0	8	2	69	1	0	0	72	152	615
09:00:00	1	1	1	0	0	3	1	55	7	0	0	63	10	0	2	0	0	12	3	58	2	0	0	63	141	605
09:15:00	4	0	0	0	0	4	0	45	5	0	0	50	6	2	0	0	0	8	1	66	0	0	0	67	129	576
09:30:00	2	0	4	0	0	6	1	41	9	0	0	51	8	1	1	0	0	10	1	61	2	0	0	64	131	553
09:45:00	2	2	2	0	0	6	1	51	1	0	0	53	4	0	1	0	0	5	1	53	0	0	0	54	118	519
10:00:00	5	2	0	0	0	7	0	52	7	0	0	59	5	0	1	0	0	6	1	86	3	0	0	90	162	540
10:15:00	1	1	1	0	0	3	1	44	8	0	0	53	7	1	1	0	0	9	0	61	1	0	0	62	127	538
10:30:00	3	1	0	0	0	4	2	51	5	0	0	58	6	3	1	0	0	10	3	44	1	0	0	48	120	527
10:45:00	2	2	0	0	0	4	1	68	8	0	0	77	7	0	1	1	0	9	1	58	2	0	0	61	151	560
11:00:00	2	0	3	0	0	5	3	59	6	0	0	68	5	0	3	0	0	8	1	52	0	0	0	53	134	532
11:15:00	1	2	0	0	0	3	0	61	7	0	0	68	6	5	2	0	0	13	2	70	3	0	0	75	159	564
11:30:00	1	0	1	0	0	2	0	39	2	0	0	41	7	2	1	0	0	10	4	66	2	0	0	72	125	569
11:45:00	0	0	0	0	0	0	1	72	4	0	0	77	6	1	2	0	0	9	2	47	1	0	0	50	136	554
12:00:00	2	2	1	0	0	5	0	45	5	0	0	50	5	3	4	0	0	12	0	65	2	0	0	67	134	554
12:15:00	2	2	1	0	0	5	1	56	8	0	0	65	8	2	1	0	0	11	7	63	1	0	0	71	152	547
12:30:00	5	0	4	0	0	9	1	52	4	0	0	57	8	2	2	0	0	12	2	55	2	0	0	59	137	559
12:45:00	1	2	1	0	0	4	3	66	10	0	0	79	9	1	1	0	0	11	0	49	2	0	0	51	145	568
13:00:00	2	2	1	0	0	5	2	57	5	0	0	64	6	1	4	0	0	11	3	80	3	1	0	87	167	601
13:15:00	8	0	1	0	0	9	0	57	4	0	0	61	10	1	0	0	0	11	4	58	2	0	0	64	145	594
13:30:00	2	2	0	0	0	4	3	69	6	0	0	78	7	2	0	1	0	10	1	49	2	0	0	52	144	601
13:45:00	0	1	0	0	0	1	0	78	4	1	0	83	8	1	1	0	0	10	2	57	5	0	0	64	158	614
14:00:00	4	5	1	0	0	10	2	61	6	0	0	69	5	3	0	0	0	8	1	82	2	0	0	85	172	619
14:15:00	1	1	3	0	0	5	4	61	6	0	0	71	8	2	1	1	0	12	1	63	3	0	0	67	155	629
14:30:00	2	5	0	0	0	7	1	66	10	0	0	77	8	1	2	0	0	11	1	65	1	0	0	67	162	647
14:45:00	1	0	2	0	0	3	3	64	6	0	0	73	7	4	1	0	0	12	2	68	2	0	0	72	160	649
15:00:00	0	0	1	0	0	1	2	82	5	0	0	89	6	3	3	0	0	12	0	73	3	0	0	76	178	655
15:15:00	1	4	2	0	0	7	1	70	6	0	0	77	13	2	5	1	0	21	0	72	5	0	0	77	182	682
15:30:00	12	0	1	0	0	13	4	86	6	0	0	96	5	2	1	0	0	8	2	68	2	0	0	72	189	709
15:45:00	2	0	1	0	0	3	2	85	0	0	0	87	5	4	2	0	0	11	1	78	4	0	0	83	184	733
16:00:00	0	1	1	0	0	2	0	90	2	0	0	92	6	5	5	0	0	16	1	74	4	0	0	79	189	744
16:15:00	1	2	3	0	0	6	2	109	2	0	0	113	6	3	0	0	0	9	0	84	2	0	0	86	214	776
16:30:00	4	2	9	0	0	15	2	101	2	0	0	105	4	3	1	0	0	8	1	78	4	0	0	83	211	798
16:45:00	3	2	0	0	0	5	5	85	2	0	0	92	7	4	3	0	0	14	1	87	2	0	0	90	201	815
17:00:00	1	0	1	0	0	2	0	78	1	0	0	79	4	3	1	0	0	8	1	71	0	0	0	72	161	787

The Municipal Infrastructure Group
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CANADA

17:15:00	0	0	1	0	0	1	2	106	1	0	0	109	2	1	2	0	0	5	1	93	4	0	0	98	213	786
17:30:00	1	2	0	0	0	3	2	85	3	0	0	90	8	5	1	0	0	14	1	82	2	0	0	85	192	767
17:45:00	3	1	1	0	0	5	2	75	1	0	0	78	2	3	2	0	0	7	1	72	5	0	0	78	168	734
Grand Total	102	72	70	0	0	244	70	3023	239	1	0	3333	290	80	72	5	0	447	71	3201	91	1	0	3364	**7388**	-
Approach%	41.8%	29.5%	28.7%	0%		-	2.1%	90.7%	7.2%	0%		-	64.9%	17.9%	16.1%	1.1%		-	2.1%	95.2%	2.7%	0%		-	**-**	-
Totals %	1.4%	1%	0.9%	0%		3.3%	0.9%	40.9%	3.2%	0%		45.1%	3.9%	1.1%	1%	0.1%		6.1%	1%	43.3%	1.2%	0%		45.5%	**-**	-
Heavy	4	1	7	0		-	6	538	143	0		-	159	1	14	1		-	15	505	4	0		-	**-**	-
Heavy %	3.9%	1.4%	10%	0%		-	8.6%	17.8%	59.8%	0%		-	54.8%	1.3%	19.4%	20%		-	21.1%	15.8%	4.4%	0%		-	**-**	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

Spectrum

Turning Movement Count
Location Name: CHARLESTON SIDEROAD & MISSISSAUGA RD
Date: Thu, Nov 05, 2020 Deployment Lead: Theo Daglis

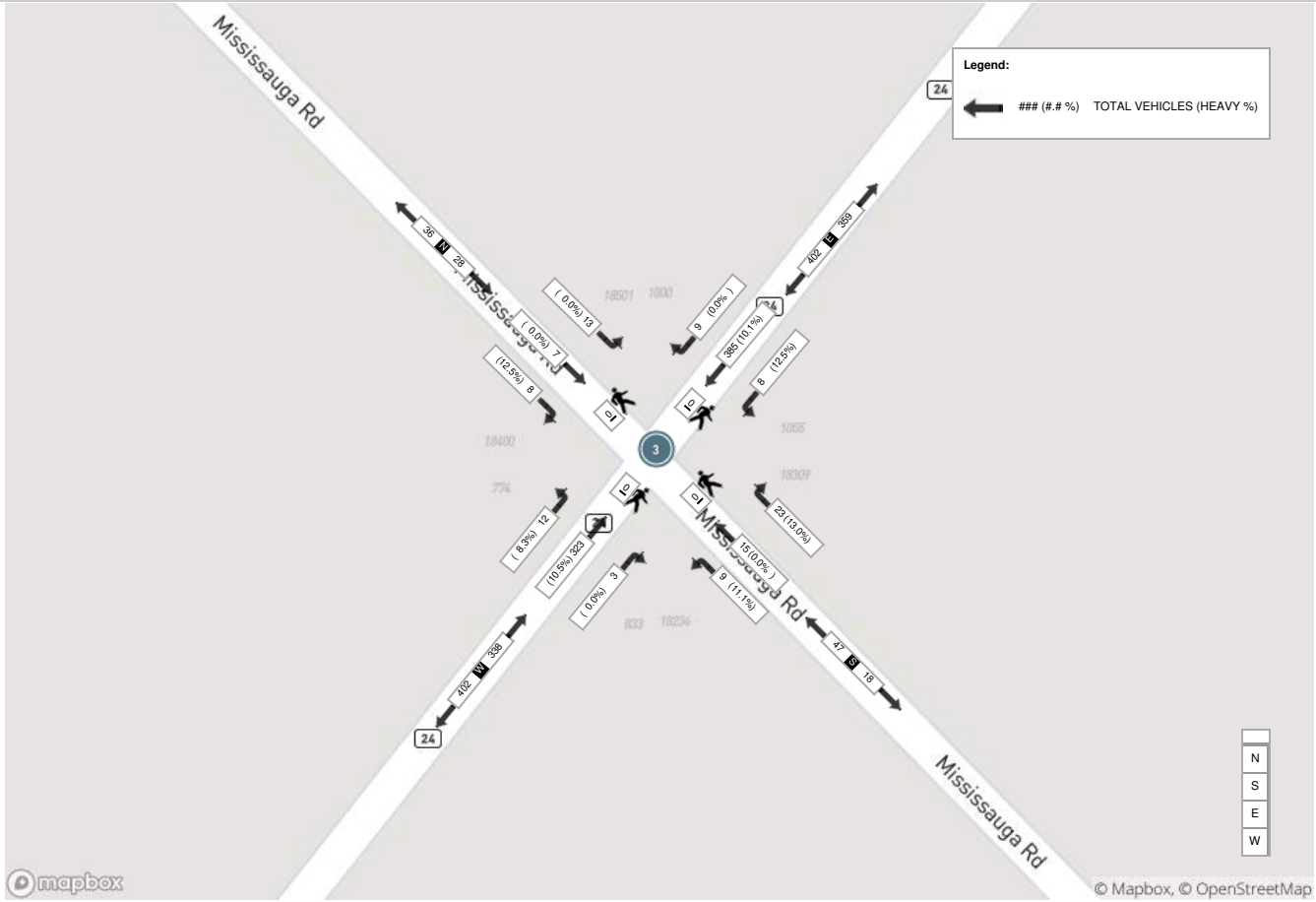
The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 04:00 PM - 05:00 PM Weather: Clear Sky (10.35 °C)

Start Time	N Approach MISSISSAUGA ROAD						E Approach CHARLESTON SIDEROAD						S Approach MISSISSAUGA ROAD						W Approach CHARLESTON SIDEROAD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:00:00	0	1	1	0	0	2	0	90	2	0	0	92	6	5	5	0	0	16	1	74	4	0	0	79	189
16:15:00	1	2	3	0	0	6	2	109	2	0	0	113	6	3	0	0	0	9	0	84	2	0	0	86	214
16:30:00	4	2	9	0	0	15	2	101	2	0	0	105	4	3	1	0	0	8	1	78	4	0	0	83	211
16:45:00	3	2	0	0	0	5	5	85	2	0	0	92	7	4	3	0	0	14	1	87	2	0	0	90	201
Grand Total	8	7	13	0	0	28	9	385	8	0	0	402	23	15	9	0	0	47	3	323	12	0	0	338	**815**
Approach%	28.6%	25%	46.4%	0%		-	2.2%	95.8%	2%	0%		-	48.9%	31.9%	19.1%	0%		-	0.9%	95.6%	3.6%	0%		-	-
Totals %	1%	0.9%	1.6%	0%		3.4%	1.1%	47.2%	1%	0%		49.3%	2.8%	1.8%	1.1%	0%		5.8%	0.4%	39.6%	1.5%	0%		41.5%	-
PHF	0.5	0.88	0.36	0		0.47	0.45	0.88	1	0		0.89	0.82	0.75	0.45	0		0.73	0.75	0.93	0.75	0		0.94	-
Heavy	1	0	0	0		1	0	39	1	0		40	3	0	1	0		4	0	34	1	0		35	-
Heavy %	12.5%	0%	0%	0%		3.6%	0%	10.1%	12.5%	0%		10%	13%	0%	11.1%	0%		8.5%	0%	10.5%	8.3%	0%		10.4%	-
Lights	7	7	13	0		27	9	346	7	0		362	20	15	8	0		43	3	289	11	0		303	-
Lights %	87.5%	100%	100%	0%		96.4%	100%	89.9%	87.5%	0%		90%	87%	100%	88.9%	0%		91.5%	100%	89.5%	91.7%	0%		89.6%	-
Single-Unit Trucks	0	0	0	0		0	0	12	1	0		13	1	0	0	0		1	0	4	0	0		4	-
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	3.1%	12.5%	0%		3.2%	4.3%	0%	0%	0%		2.1%	0%	1.2%	0%	0%		1.2%	-
Buses	1	0	0	0		1	0	3	0	0		3	0	0	1	0		1	0	0	1	0		1	-
Buses %	12.5%	0%	0%	0%		3.6%	0%	0.8%	0%	0%		0.7%	0%	0%	11.1%	0%		2.1%	0%	0%	8.3%	0%		0.3%	-
Articulated Trucks	0	0	0	0		0	0	17	0	0		17	0	0	0	0		0	0	22	0	0		22	-
Articulated Trucks %	0%	0%	0%	0%		0%	0%	4.4%	0%	0%		4.2%	0%	0%	0%	0%		0%	0%	6.8%	0%	0%		6.5%	-
Aggregate Trucks	0	0	0	0		0	0	7	0	0		7	2	0	0	0		2	0	8	0	0		8	-
Aggregate Trucks %	0%	0%	0%	0%		0%	0%	1.8%	0%	0%		1.7%	8.7%	0%	0%	0%		4.3%	0%	2.5%	0%	0%		2.4%	-
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 Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-

The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 04:00 PM - 05:00 PM Weather: Clear Sky (10.35 °C)



Spectrum

Turning Movement Count
Location Name: CHARLESTON SIDEROAD & MISSISSAUGA RD
Date: Sat, Nov 07, 2020 Deployment Lead: Theo Daglis

The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

Turning Movement Count (3 . CHARLESTON SIDEROAD & MISSISSAUGA RD) CustID: 02413835 MioID:

Start Time	N Approach MISSISSAUGA ROAD						E Approach CHARLESTON SIDEROAD						S Approach MISSISSAUGA ROAD						W Approach CHARLESTON SIDEROAD						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
06:00:00	0	0	0	0	0	0	0	9	0	0	0	9	0	0	0	0	0	0	0	20	0	0	0	20	29	
06:15:00	1	0	0	0	0	1	0	15	0	0	0	15	0	0	0	0	0	0	0	16	0	0	0	16	32	
06:30:00	1	0	1	0	0	2	0	13	0	0	0	13	0	0	0	0	0	0	0	18	1	0	0	19	34	
06:45:00	0	0	0	0	0	0	0	17	0	0	0	17	1	1	0	0	0	2	0	19	1	0	0	20	39	134
07:00:00	0	0	2	0	0	2	0	24	0	0	0	24	3	0	1	0	0	4	0	27	0	0	0	27	57	162
07:15:00	2	0	1	0	0	3	3	11	2	0	0	16	0	0	0	0	0	0	0	45	1	0	0	46	65	195
07:30:00	1	1	0	0	0	2	0	33	0	0	0	33	2	0	0	0	0	2	0	24	0	0	0	24	61	222
07:45:00	1	0	0	0	0	1	0	24	1	0	0	25	0	0	1	0	0	1	1	36	0	0	0	37	64	247
08:00:00	0	0	0	0	0	0	0	36	3	0	0	39	2	0	1	0	0	3	0	42	1	0	0	43	85	275
08:15:00	2	0	3	0	0	5	2	37	1	0	0	40	0	0	0	0	0	0	0	63	1	0	0	64	109	319
08:30:00	2	0	0	0	0	2	3	32	0	0	0	35	4	2	0	0	0	6	0	59	0	0	0	59	102	360
08:45:00	1	0	0	0	0	1	0	40	1	0	0	41	5	1	0	0	0	6	0	70	0	0	0	70	118	414
09:00:00	0	1	0	0	0	1	1	42	1	0	0	44	1	0	0	0	0	1	1	56	2	0	0	59	105	434
09:15:00	2	0	3	0	0	5	1	52	2	0	0	55	3	3	3	0	0	9	0	67	0	0	0	67	136	461
09:30:00	5	1	1	0	0	7	2	51	1	0	0	54	1	3	1	0	0	5	1	62	2	0	0	65	131	490
09:45:00	1	0	3	0	0	4	1	74	0	0	0	75	2	1	1	0	0	4	1	93	0	0	0	94	177	549
10:00:00	2	0	3	0	0	5	0	56	0	0	0	56	4	0	0	0	0	4	1	74	1	0	0	76	141	585
10:15:00	0	1	2	0	0	3	1	54	1	0	0	56	5	1	5	0	0	11	1	74	3	0	0	78	148	597
10:30:00	1	1	0	0	0	2	1	79	3	1	0	84	6	0	0	0	0	6	1	99	3	0	0	103	195	661
10:45:00	2	4	2	0	0	8	1	67	1	0	0	69	4	4	1	0	0	9	3	78	1	0	0	82	168	652
11:00:00	6	2	3	0	0	11	0	61	3	0	0	64	8	1	0	1	0	10	3	83	5	0	0	91	176	687
11:15:00	3	1	3	0	0	7	4	75	5	0	0	84	17	4	1	1	0	23	1	84	4	0	0	89	203	742
11:30:00	3	1	5	0	0	9	2	71	2	0	0	75	9	4	3	0	0	16	0	89	7	0	0	96	196	743
11:45:00	5	3	2	0	0	10	4	92	3	0	0	99	8	6	1	0	0	15	3	79	1	0	0	83	207	782
12:00:00	2	1	4	0	0	7	2	83	2	0	0	87	11	3	3	0	0	17	1	66	6	0	0	73	184	790
12:15:00	5	5	2	0	0	12	5	84	3	0	1	92	7	5	1	0	0	13	2	87	1	0	0	90	207	794
12:30:00	1	3	1	0	0	5	1	86	8	0	0	95	6	3	0	0	0	9	1	90	2	0	0	93	202	800
12:45:00	3	3	1	0	0	7	2	83	1	0	0	86	8	0	3	0	0	11	1	84	3	0	0	88	192	785
13:00:00	5	0	5	0	0	10	3	80	6	0	0	89	7	4	2	0	0	13	4	92	3	0	0	99	211	812
13:15:00	5	2	0	0	0	7	2	82	4	0	0	88	4	2	5	0	0	11	3	73	4	0	0	80	186	791
13:30:00	0	1	4	0	0	5	1	91	6	0	0	98	11	9	5	0	0	25	1	80	8	0	0	89	217	806
13:45:00	4	3	1	0	0	8	3	74	7	0	0	84	10	4	5	1	0	20	1	103	3	0	0	107	219	833
14:00:00	3	3	3	0	0	9	3	95	5	0	0	103	11	5	4	0	0	20	6	86	5	0	0	97	229	851
14:15:00	4	3	2	0	0	9	0	93	4	0	0	97	4	1	1	0	0	6	1	83	5	0	0	89	201	866
14:30:00	4	1	2	0	0	7	4	88	3	1	0	96	14	3	3	0	0	20	2	93	2	0	0	97	220	869
14:45:00	4	3	1	0	0	8	1	96	2	0	0	99	9	6	4	0	0	19	4	88	8	0	0	100	226	876
15:00:00	5	1	3	0	0	9	3	81	2	0	0	86	11	3	11	0	0	25	3	75	5	0	0	83	203	850
15:15:00	5	1	3	0	0	9	1	91	4	0	0	96	12	4	4	2	0	22	4	75	3	0	0	82	209	858
15:30:00	4	0	3	0	0	7	1	92	5	0	0	98	8	3	4	0	0	15	3	72	8	0	0	83	203	841
15:45:00	4	1	2	0	0	7	2	90	8	0	0	100	4	1	0	0	0	5	0	79	3	0	0	82	194	809
16:00:00	1	3	2	0	0	6	0	100	4	0	0	104	6	4	1	0	0	11	0	86	2	0	0	88	209	815
16:15:00	4	3	2	0	0	9	1	83	1	0	0	85	8	2	0	0	0	10	1	77	0	0	0	78	182	788
16:30:00	1	0	1	0	0	2	1	82	4	0	0	87	6	2	1	0	0	9	2	93	0	0	0	95	193	778
16:45:00	4	1	2	0	0	7	2	81	2	0	0	85	9	3	3	0	0	15	1	90	1	1	0	93	200	784
17:00:00	5	0	2	0	0	7	1	75	3	0	0	79	4	2	5	0	0	11	0	51	3	0	0	54	151	726

The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

17:15:00	1	4	1	0	0	6	0	78	2	0	0	80	1	4	1	0	0	6	3	73	0	0	0	76	168	712
17:30:00	3	4	2	0	0	9	0	65	3	0	0	68	7	0	3	0	0	10	2	81	0	0	0	83	170	689
17:45:00	1	0	1	0	0	2	2	62	2	0	0	66	0	0	1	0	0	1	1	53	2	0	0	56	125	614
Grand Total	119	62	84	0	0	265	67	3080	121	2	1	3270	263	104	89	5	0	461	64	3307	111	1	0	3483	**7479**	-
Approach%	44.9%	23.4%	31.7%	0%		-	2%	94.2%	3.7%	0.1%		-	57%	22.6%	19.3%	1.1%		-	1.8%	94.9%	3.2%	0%		-	**-**	-
Totals %	1.6%	0.8%	1.1%	0%		3.5%	0.9%	41.2%	1.6%	0%		43.7%	3.5%	1.4%	1.2%	0.1%		6.2%	0.9%	44.2%	1.5%	0%		46.6%	**-**	-
Heavy	2	3	5	0		-	1	107	3	0		-	2	3	1	0		-	2	103	3	0		-	**-**	-
Heavy %	1.7%	4.8%	6%	0%		-	1.5%	3.5%	2.5%	0%		-	0.8%	2.9%	1.1%	0%		-	3.1%	3.1%	2.7%	0%		-	**-**	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

Spectrum

Turning Movement Count
Location Name: CHARLESTON SIDEROAD & MISSISSAUGA RD
Date: Sat, Nov 07, 2020 Deployment Lead: Theo Daglis

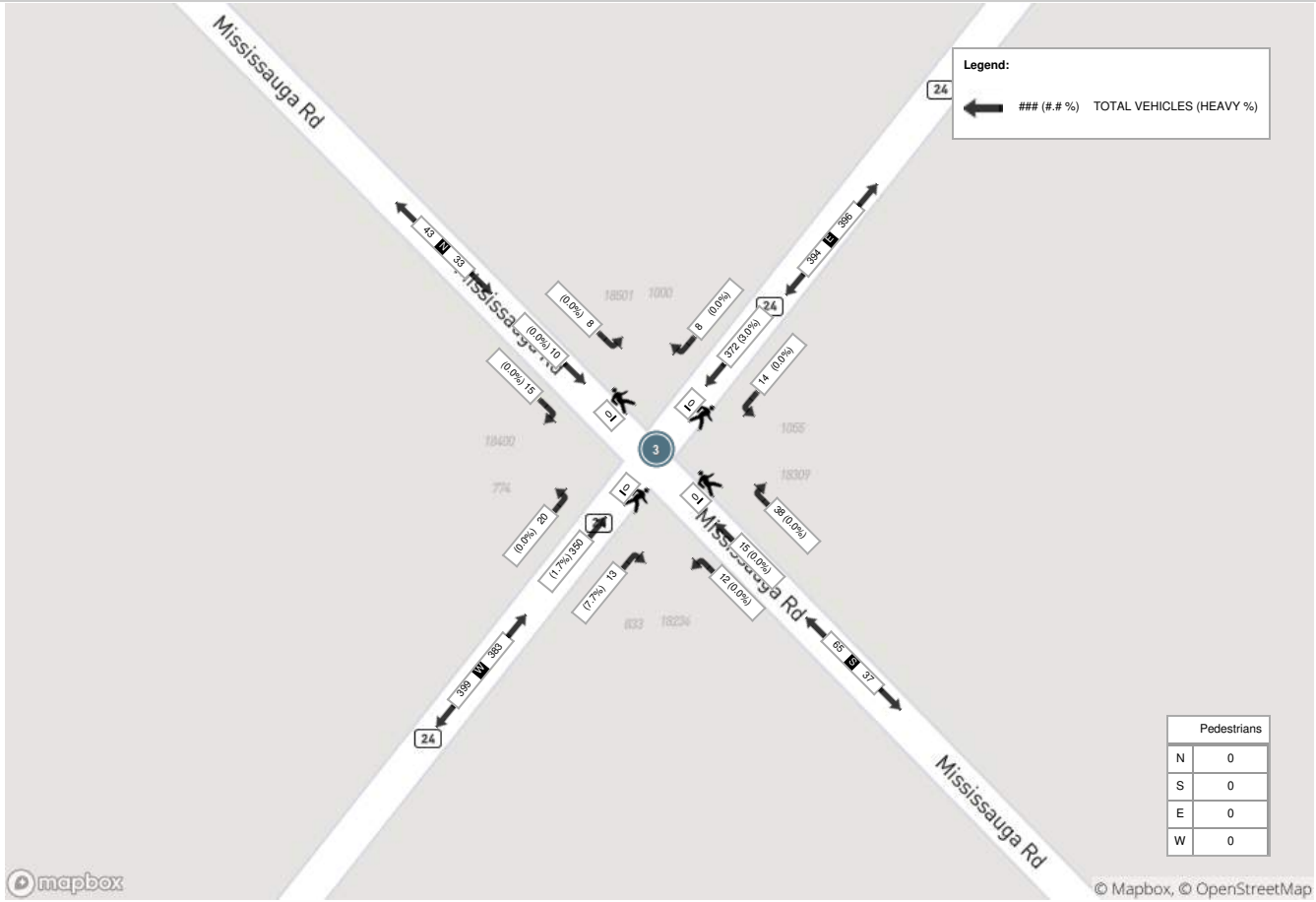
The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 02:00 PM - 03:00 PM **Weather: Clear Sky (9.65 °C)**

Start Time	N Approach MISSISSAUGA ROAD						E Approach CHARLESTON SIDEROAD						S Approach MISSISSAUGA ROAD						W Approach CHARLESTON SIDEROAD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
14:00:00	3	3	3	0	0	9	3	95	5	0	0	103	11	5	4	0	0	20	6	86	5	0	0	97	229
14:15:00	4	3	2	0	0	9	0	93	4	0	0	97	4	1	1	0	0	6	1	83	5	0	0	89	201
14:30:00	4	1	2	0	0	7	4	88	3	1	0	96	14	3	3	0	0	20	2	93	2	0	0	97	220
14:45:00	4	3	1	0	0	8	1	96	2	0	0	99	9	6	4	0	0	19	4	88	8	0	0	100	226
Grand Total	15	10	8	0	0	33	8	372	14	1	0	395	38	15	12	0	0	65	13	350	20	0	0	383	**876**
Approach%	45.5%	30.3%	24.2%	0%		-	2%	94.2%	3.5%	0.3%		-	58.5%	23.1%	18.5%	0%		-	3.4%	91.4%	5.2%	0%		-	-
Totals %	1.7%	1.1%	0.9%	0%		3.8%	0.9%	42.5%	1.6%	0.1%		45.1%	4.3%	1.7%	1.4%	0%		7.4%	1.5%	40%	2.3%	0%		43.7%	-
PHF	0.94	0.83	0.67	0		0.92	0.5	0.97	0.7	0.25		0.96	0.68	0.63	0.75	0		0.81	0.54	0.94	0.63	0		0.96	-
Heavy	0	0	0	0		0	0	11	0	0		11	0	0	0	0		0	1	6	0	0		7	-
Heavy %	0%	0%	0%	0%		0%	0%	3%	0%	0%		2.8%	0%	0%	0%	0%		0%	7.7%	1.7%	0%	0%		1.8%	-
Lights	15	10	8	0		33	8	360	14	1		383	38	15	12	0		65	12	344	20	0		376	-
Lights %	100%	100%	100%	0%		100%	100%	96.8%	100%	100%		97%	100%	100%	100%	0%		100%	92.3%	98.3%	100%	0%		98.2%	-
Single-Unit Trucks	0	0	0	0		0	0	8	0	0		8	0	0	0	0		0	0	4	0	0		4	-
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	2.2%	0%	0%		2%	0%	0%	0%	0%		0%	0%	1.1%	0%	0%		1%	-
Articulated Trucks	0	0	0	0		0	0	2	0	0		2	0	0	0	0		0	0	1	0	0		1	-
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0.5%	0%	0%		0.5%	0%	0%	0%	0%		0%	0%	0.3%	0%	0%		0.3%	-
Aggregate Trucks	0	0	0	0		0	0	1	0	0		1	0	0	0	0		0	1	1	0	0		2	-
Aggregate Trucks %	0%	0%	0%	0%		0%	0%	0.3%	0%	0%		0.3%	0%	0%	0%	0%		0%	7.7%	0.3%	0%	0%		0.5%	-
Bicycles on Road	0	0	0	0		0	0	1	0	0		1	0	0	0	0		0	0	0	0	0		0	-
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0.3%	0%	0%		0.3%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-

The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 02:00 PM - 03:00 PM **Weather: Clear Sky (9.65 °C)**



Spectrum

Turning Movement Count
Location Name: CHARLESTON SIDEROAD & REGIONAL RD 136 / MAIN ST
Date: Thu, Nov 05, 2020 Deployment Lead: Theo Daglis

The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

Turning Movement Count (2 . CHARLESTON SIDEROAD & REGIONAL RD 136 / MAIN ST) CustID: 02412429 MioID:

Start Time	N Approach MAIN ST						E Approach CHARLESTON SIDE RD						S Approach CATARACT RD						W Approach CHARLESTON SIDE RD						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
06:00:00	5	0	12	0	0	17	1	40	0	0	0	41	1	0	0	0	0	1	0	54	0	0	0	54	113	
06:15:00	6	0	13	0	0	19	3	44	0	0	0	47	0	1	0	0	0	1	0	66	1	0	0	67	134	
06:30:00	3	0	19	0	0	22	1	40	1	0	0	42	0	1	0	0	0	1	0	61	2	0	0	63	128	
06:45:00	4	0	11	0	0	15	5	56	0	0	0	61	0	1	0	0	0	1	0	58	7	0	0	65	142	517
07:00:00	8	1	12	0	0	21	3	46	0	0	0	49	1	0	0	0	0	1	1	72	3	0	0	76	147	551
07:15:00	4	0	15	0	0	19	3	43	0	0	0	46	1	2	2	0	0	5	3	61	7	0	0	71	141	558
07:30:00	7	1	19	0	0	27	4	58	1	0	0	63	3	1	0	0	0	4	1	72	4	0	0	77	171	601
07:45:00	9	0	6	0	0	15	8	54	0	0	0	62	1	0	6	0	0	7	1	58	10	0	0	69	153	612
08:00:00	4	1	14	0	0	19	3	52	1	0	0	56	0	1	1	0	0	2	4	68	8	0	0	80	157	622
08:15:00	6	3	8	0	0	17	11	53	0	0	0	64	2	2	2	0	0	6	2	72	4	0	0	78	165	646
08:30:00	3	1	8	0	0	12	10	61	0	0	0	71	1	1	1	0	0	3	4	74	12	0	0	90	176	651
08:45:00	6	3	8	0	0	17	6	52	0	0	0	58	1	2	1	0	0	4	2	65	5	0	0	72	151	649
09:00:00	3	2	3	0	0	8	12	63	1	0	0	76	3	1	1	0	0	5	3	65	6	0	0	74	163	655
09:15:00	2	1	11	0	0	14	15	52	1	0	0	68	0	1	2	0	0	3	1	62	8	0	0	71	156	646
09:30:00	2	3	7	0	0	12	13	44	2	0	0	59	3	2	2	0	0	7	0	68	11	0	0	79	157	627
09:45:00	6	0	0	0	0	6	20	42	0	0	0	62	1	1	2	0	0	4	0	54	4	0	0	58	130	606
10:00:00	7	1	7	0	0	15	11	55	5	0	0	71	1	0	0	1	0	2	1	78	9	0	0	88	176	619
10:15:00	4	1	3	0	0	8	12	49	2	0	0	63	1	3	0	0	0	4	3	54	12	0	0	69	144	607
10:30:00	4	3	6	0	0	13	9	53	2	0	0	64	2	2	2	0	0	6	3	47	8	0	0	58	141	591
10:45:00	6	1	4	0	0	11	10	75	1	0	1	86	2	2	2	0	0	6	1	52	11	0	0	64	167	628
11:00:00	5	3	11	0	0	19	11	59	2	0	0	72	1	2	3	0	0	6	3	57	4	0	0	64	161	613
11:15:00	6	3	8	0	0	17	20	53	5	0	1	78	2	0	2	0	0	4	2	55	15	0	0	72	171	640
11:30:00	6	2	10	0	0	18	12	34	0	0	1	46	4	4	1	0	0	9	2	58	9	0	1	69	142	641
11:45:00	7	3	4	0	0	14	12	67	0	0	0	79	2	1	3	0	0	6	1	52	5	0	0	58	157	631
12:00:00	5	2	6	0	0	13	14	46	0	0	4	60	0	1	0	0	2	1	4	62	5	0	2	71	145	615
12:15:00	13	3	6	0	0	22	10	52	1	0	0	63	3	1	2	0	0	6	5	63	5	0	0	73	164	608
12:30:00	5	3	13	0	0	21	12	54	3	0	0	69	0	3	1	0	2	4	4	62	2	0	0	68	162	628
12:45:00	7	2	5	0	0	14	10	66	0	0	0	76	1	3	1	0	0	5	1	49	8	0	2	58	153	624
13:00:00	7	2	6	0	0	15	12	59	2	0	0	73	2	3	0	0	0	5	2	64	16	0	0	82	175	654
13:15:00	6	3	9	0	0	18	10	57	2	0	0	69	2	3	0	0	0	5	3	58	13	0	0	74	166	656
13:30:00	10	4	9	0	0	23	12	71	0	0	0	83	1	1	1	0	0	3	2	47	7	0	0	56	165	659
13:45:00	11	3	17	0	0	31	11	65	2	0	0	78	4	7	1	0	0	12	0	61	7	0	0	68	189	695
14:00:00	13	3	14	0	0	30	7	55	0	0	0	62	2	2	2	0	0	6	2	74	7	0	0	83	181	701
14:15:00	5	1	12	0	0	18	6	63	1	0	0	70	0	3	0	0	0	3	3	65	7	0	0	75	166	701
14:30:00	10	2	12	0	0	24	15	62	0	0	0	77	2	0	3	0	0	5	4	60	12	0	0	76	182	718
14:45:00	20	0	16	0	0	36	14	55	2	0	0	71	1	3	4	0	0	8	1	71	6	0	0	78	193	722
15:00:00	17	3	24	0	0	44	11	68	2	0	0	81	2	1	3	0	0	6	2	65	7	0	0	74	205	746
15:15:00	12	3	10	0	0	25	7	67	1	0	0	75	2	2	3	0	0	7	3	70	16	0	0	89	196	776
15:30:00	11	1	6	0	0	18	13	77	3	0	0	93	3	2	5	0	0	10	2	61	13	0	0	76	197	791
15:45:00	6	2	11	0	0	19	15	75	3	0	0	93	1	3	4	0	0	8	2	71	8	0	0	81	201	799
16:00:00	10	2	9	0	0	21	18	84	2	0	0	104	1	5	3	0	0	9	2	69	15	0	0	86	220	814
16:15:00	21	2	14	0	0	37	13	84	2	0	0	99	2	1	4	0	0	7	3	76	14	0	0	93	236	854
16:30:00	9	6	16	0	0	31	15	91	1	0	0	107	0	5	4	0	0	9	5	66	14	0	0	85	232	889
16:45:00	10	3	30	0	0	43	14	76	2	0	0	92	1	5	4	0	0	10	10	76	10	0	0	96	241	929
17:00:00	5	3	17	0	0	25	15	69	2	0	0	86	2	6	5	0	0	13	4	66	9	0	0	79	203	912

17:15:00	8	4	15	0	0	27	12	97	3	0	0	112	1	1	6	0	0	8	5	75	13	0	0	93	240	916
17:30:00	9	3	4	0	0	16	10	82	4	0	0	96	0	2	4	0	0	6	4	74	10	0	0	88	206	890
17:45:00	4	5	5	0	0	14	16	62	3	0	0	81	1	3	6	0	0	10	3	66	9	0	0	78	183	832
Grand Total	357	98	505	0	0	960	507	2882	65	0	7	3454	67	97	99	1	4	264	114	3054	398	0	5	3566	**8244**	-
Approach%	37.2%	10.2%	52.6%	0%		-	14.7%	83.4%	1.9%	0%		-	25.4%	36.7%	37.5%	0.4%		-	3.2%	85.6%	11.2%	0%		-	**-**	-
Totals %	4.3%	1.2%	6.1%	0%		11.6%	6.1%	35%	0.8%	0%		41.9%	0.8%	1.2%	1.2%	0%		3.2%	1.4%	37%	4.8%	0%		43.3%	**-**	-
Heavy	13	0	17	0		-	17	670	6	0		-	3	0	7	0		-	1	652	15	0		-	**-**	-
Heavy %	3.6%	0%	3.4%	0%		-	3.4%	23.2%	9.2%	0%		-	4.5%	0%	7.1%	0%		-	0.9%	21.3%	3.8%	0%		-	**-**	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

Spectrum

Turning Movement Count
Location Name: CHARLESTON SIDEROAD & REGIONAL RD 136 / MAIN ST
Date: Thu, Nov 05, 2020 Deployment Lead: Theo Daglis

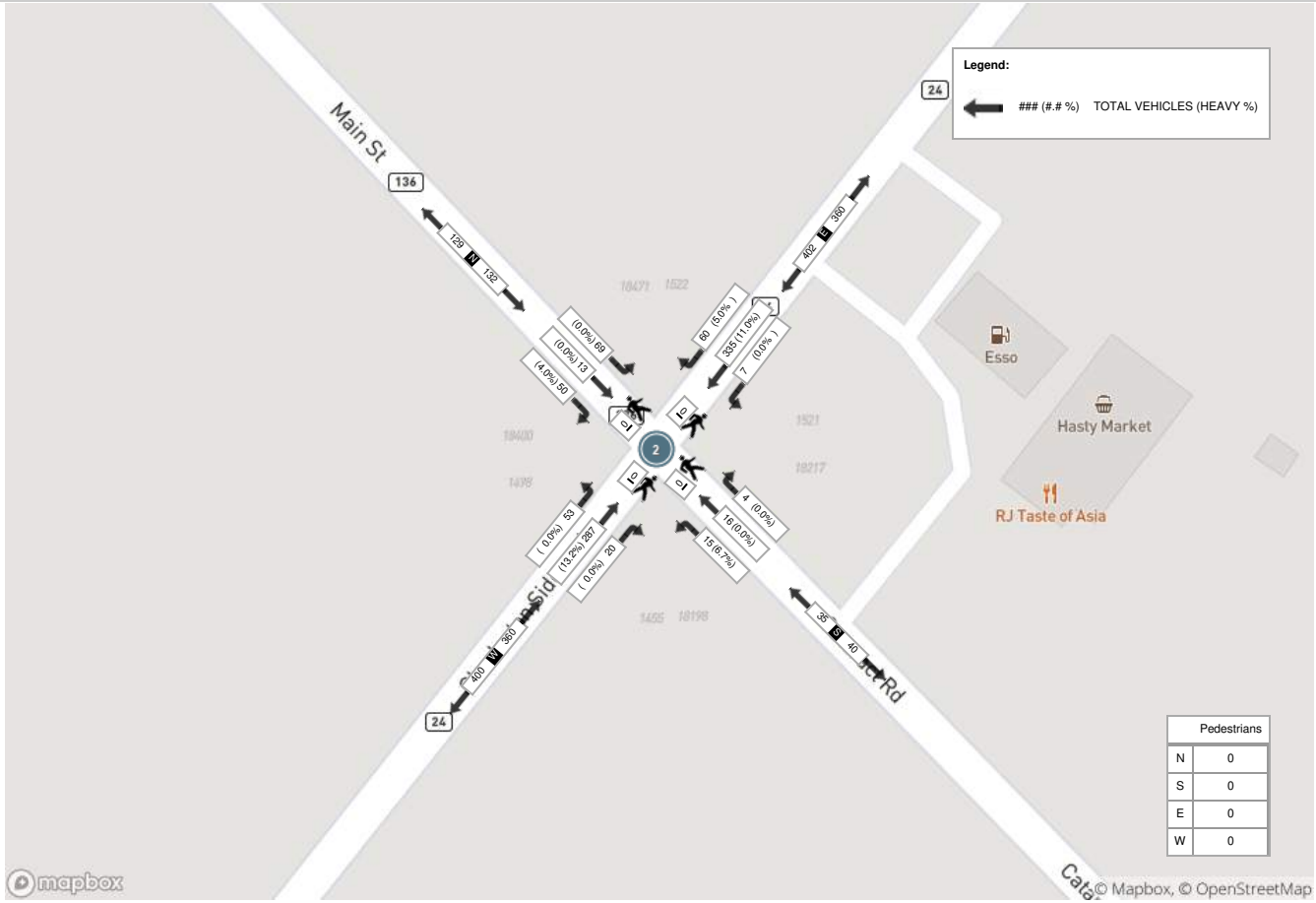
The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 04:00 PM - 05:00 PM Weather: Clear Sky (10.35 °C)

Start Time	N Approach MAIN ST						E Approach CHARLESTON SIDE RD						S Approach CATARACT RD						W Approach CHARLESTON SIDE RD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:00:00	10	2	9	0	0	21	18	84	2	0	0	104	1	5	3	0	0	9	2	69	15	0	0	86	220
16:15:00	21	2	14	0	0	37	13	84	2	0	0	99	2	1	4	0	0	7	3	76	14	0	0	93	236
16:30:00	9	6	16	0	0	31	15	91	1	0	0	107	0	5	4	0	0	9	5	66	14	0	0	85	232
16:45:00	10	3	30	0	0	43	14	76	2	0	0	92	1	5	4	0	0	10	10	76	10	0	0	96	241
Grand Total	50	13	69	0	0	132	60	335	7	0	0	402	4	16	15	0	0	35	20	287	53	0	0	360	**929**
Approach%	37.9%	9.8%	52.3%	0%		-	14.9%	83.3%	1.7%	0%		-	11.4%	45.7%	42.9%	0%		-	5.6%	79.7%	14.7%	0%		-	**-**
Totals %	5.4%	1.4%	7.4%	0%		14.2%	6.5%	36.1%	0.8%	0%		43.3%	0.4%	1.7%	1.6%	0%		3.8%	2.2%	30.9%	5.7%	0%		38.8%	**-**
PHF	0.6	0.54	0.58	0		0.77	0.83	0.92	0.88	0		0.94	0.5	0.8	0.94	0		0.88	0.5	0.94	0.88	0		0.94	**-**
Heavy	2	0	0	0		2	3	37	0	0		40	0	0	1	0		1	0	38	0	0		38	**-**
Heavy %	4%	0%	0%	0%		1.5%	5%	11%	0%	0%		10%	0%	0%	6.7%	0%		2.9%	0%	13.2%	0%	0%		10.6%	**-**
Lights	48	13	69	0		130	57	298	7	0		362	4	16	14	0		34	20	249	53	0		322	**-**
Lights %	96%	100%	100%	0%		98.5%	95%	89%	100%	0%		90%	100%	100%	93.3%	0%		97.1%	100%	86.8%	100%	0%		89.4%	**-**
Single-Unit Trucks	0	0	0	0		0	1	14	0	0		15	0	0	1	0		1	0	5	0	0		5	**-**
Single-Unit Trucks %	0%	0%	0%	0%		0%	1.7%	4.2%	0%	0%		3.7%	0%	0%	6.7%	0%		2.9%	0%	1.7%	0%	0%		1.4%	**-**
Buses	2	0	0	0		2	2	1	0	0		3	0	0	0	0		0	0	0	0	0		0	**-**
Buses %	4%	0%	0%	0%		1.5%	3.3%	0.3%	0%	0%		0.7%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Articulated Trucks	0	0	0	0		0	0	17	0	0		17	0	0	0	0		0	0	22	0	0		22	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	5.1%	0%	0%		4.2%	0%	0%	0%	0%		0%	0%	7.7%	0%	0%		6.1%	**-**
Aggregate Trucks	0	0	0	0		0	0	5	0	0		5	0	0	0	0		0	0	11	0	0		11	**-**
Aggregate Trucks %	0%	0%	0%	0%		0%	0%	1.5%	0%	0%		1.2%	0%	0%	0%	0%		0%	0%	3.8%	0%	0%		3.1%	**-**
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 Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 04:00 PM - 05:00 PM Weather: Clear Sky (10.35 °C)



Spectrum

Turning Movement Count
Location Name: CHARLESTON SIDEROAD & REGIONAL RD 136 / MAIN ST
Date: Sat, Nov 07, 2020 Deployment Lead: Theo Daglis

The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

Turning Movement Count (2 . CHARLESTON SIDEROAD & REGIONAL RD 136 / MAIN ST) CustID: 02412429 MioID:

Start Time	N Approach MAIN ST						E Approach CHARLESTON SIDE RD						S Approach CATARACT RD						W Approach CHARLESTON SIDE RD						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
06:00:00	0	0	2	0	0	2	0	8	0	0	0	8	0	0	0	0	0	0	0	19	0	0	0	19	29	
06:15:00	1	0	4	0	0	5	4	14	0	0	0	18	0	0	0	0	0	0	0	16	0	0	0	16	39	
06:30:00	0	0	2	0	0	2	2	15	0	0	0	17	0	0	0	0	0	0	0	18	1	0	0	19	38	
06:45:00	1	0	4	0	0	5	3	15	0	0	0	18	0	0	0	0	0	0	0	14	2	0	0	16	39	145
07:00:00	4	0	1	0	0	5	2	20	0	0	0	22	0	0	0	0	0	0	1	32	1	0	0	34	61	177
07:15:00	0	0	4	0	0	4	1	17	0	0	0	18	0	2	0	0	0	2	3	40	3	0	0	46	70	208
07:30:00	2	0	2	0	0	4	3	30	0	0	0	33	0	2	0	0	0	2	2	27	0	0	0	29	68	238
07:45:00	3	1	1	0	0	5	2	27	2	0	0	31	0	1	0	0	0	1	0	32	3	0	0	35	72	271
08:00:00	5	1	5	0	0	11	3	34	0	0	0	37	0	1	2	0	0	3	1	43	3	0	0	47	98	308
08:15:00	2	1	4	0	0	7	10	33	2	0	0	45	2	2	1	0	0	5	1	51	11	0	0	63	120	358
08:30:00	3	0	1	0	0	4	5	33	1	0	0	39	1	0	1	0	0	2	1	50	6	0	0	57	102	392
08:45:00	5	4	6	0	0	15	11	34	2	0	0	47	1	0	1	0	0	2	2	64	10	0	0	76	140	460
09:00:00	4	0	3	0	0	7	7	42	0	0	0	49	2	2	1	0	0	5	2	52	4	0	0	58	119	481
09:15:00	9	3	4	0	0	16	13	37	2	0	0	52	2	1	4	0	0	7	3	64	7	0	0	74	149	510
09:30:00	6	0	6	0	0	12	15	52	3	0	0	70	2	2	2	0	1	6	1	54	12	0	0	67	155	563
09:45:00	5	0	8	0	0	13	19	62	0	0	0	81	0	1	3	0	0	4	0	84	12	0	0	96	194	617
10:00:00	8	2	5	0	0	15	12	53	3	0	0	68	3	3	0	0	0	6	1	62	13	0	0	76	165	663
10:15:00	6	4	4	0	0	14	14	48	5	0	0	67	2	1	1	0	0	4	2	77	8	1	0	88	173	687
10:30:00	9	0	6	0	0	15	21	69	5	0	0	95	11	5	3	0	0	19	8	85	15	0	0	108	237	769
10:45:00	4	5	10	0	0	19	15	62	7	0	0	84	3	2	3	1	0	9	4	74	5	0	0	83	195	770
11:00:00	7	5	9	0	0	21	12	61	2	0	0	75	5	6	3	0	0	14	2	69	15	0	0	86	196	801
11:15:00	8	4	6	0	0	18	12	67	2	0	0	81	5	2	2	0	0	9	4	85	13	0	0	102	210	838
11:30:00	8	6	4	0	0	18	15	67	7	0	0	89	4	1	1	0	0	6	4	86	16	0	0	106	219	820
11:45:00	10	2	6	0	0	18	14	84	7	0	0	105	3	1	4	0	0	8	5	71	12	0	0	88	219	844
12:00:00	13	2	8	0	0	23	28	73	5	0	0	106	7	1	3	0	0	11	1	73	10	0	0	84	224	872
12:15:00	11	3	6	0	0	20	22	75	4	0	0	101	5	4	2	0	0	11	5	70	18	0	0	93	225	887
12:30:00	15	3	10	0	0	28	16	86	9	0	0	111	4	3	3	0	0	10	3	79	13	0	0	95	244	912
12:45:00	8	3	5	0	0	16	7	70	5	0	0	82	1	2	1	0	0	4	5	78	19	0	1	102	204	897
13:00:00	12	3	7	0	0	22	19	80	7	0	0	106	7	5	3	0	0	15	4	82	12	0	0	98	241	914
13:15:00	10	8	9	0	0	27	17	71	1	0	0	89	2	4	3	0	0	9	0	75	7	0	0	82	207	896
13:30:00	14	6	10	0	0	30	17	80	5	0	0	102	3	4	2	0	0	9	4	75	14	0	0	93	234	886
13:45:00	12	5	17	0	0	34	14	65	7	0	0	86	2	5	2	0	0	9	4	81	19	0	0	104	233	915
14:00:00	15	4	15	0	0	34	13	87	8	0	0	108	4	5	1	0	0	10	5	86	11	0	0	102	254	928
14:15:00	15	4	12	0	0	31	14	83	6	0	0	103	2	5	3	0	0	10	2	77	12	0	0	91	235	956
14:30:00	14	7	12	0	0	33	14	77	7	0	0	98	4	1	2	0	0	7	5	77	24	0	0	106	244	966
14:45:00	16	6	32	0	0	54	14	82	0	0	0	96	3	5	2	0	0	10	7	84	14	0	0	105	265	998
15:00:00	6	8	15	0	0	29	14	70	3	0	0	87	8	4	8	0	0	20	3	70	11	0	0	84	220	964
15:15:00	10	6	16	0	0	32	18	84	6	0	0	108	2	2	5	0	0	9	3	80	11	0	0	94	243	972
15:30:00	14	4	12	0	0	30	10	79	3	0	0	92	5	2	2	0	0	9	2	71	11	0	0	84	215	943
15:45:00	9	6	25	0	0	40	10	85	8	0	0	103	4	2	4	0	0	10	2	63	10	0	0	75	228	906
16:00:00	18	3	14	0	0	35	17	85	5	0	0	107	5	7	0	0	0	12	2	88	13	0	0	103	257	943
16:15:00	12	3	14	0	0	29	12	72	5	0	0	89	2	3	3	0	0	8	6	75	4	0	0	85	211	911
16:30:00	15	4	27	0	0	46	4	72	2	0	0	78	3	3	0	0	0	6	7	84	8	0	0	99	229	925
16:45:00	6	1	24	0	0	31	9	78	3	0	0	90	1	2	1	0	0	4	3	92	11	0	0	106	231	928
17:00:00	8	9	21	0	0	38	8	69	1	0	0	78	7	1	1	0	0	9	3	43	7	0	0	53	178	849

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17:15:00	9	4	20	0	0	33	6	66	2	0	0	74	3	1	3	0	0	7	3	67	3	0	0	73	187	825
17:30:00	15	3	9	0	0	27	6	54	0	0	0	60	3	1	4	0	0	8	5	68	16	0	0	89	184	780
17:45:00	9	0	10	0	0	19	6	52	1	0	0	59	3	2	2	0	0	7	1	49	7	0	0	57	142	691
Grand Total	396	143	457	0	0	996	530	2779	153	0	0	3462	136	109	92	1	1	338	132	3056	457	1	1	3646	**8442**	-
Approach%	39.8%	14.4%	45.9%	0%		-	15.3%	80.3%	4.4%	0%		-	40.2%	32.2%	27.2%	0.3%		-	3.6%	83.8%	12.5%	0%		-	**-**	-
Totals %	4.7%	1.7%	5.4%	0%		11.8%	6.3%	32.9%	1.8%	0%		41%	1.6%	1.3%	1.1%	0%		4%	1.6%	36.2%	5.4%	0%		43.2%	**-**	-
Heavy	3	0	2	0		-	1	99	2	0		-	1	0	0	0		-	0	113	3	0		-	**-**	-
Heavy %	0.8%	0%	0.4%	0%		-	0.2%	3.6%	1.3%	0%		-	0.7%	0%	0%	0%		-	0%	3.7%	0.7%	0%		-	**-**	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

Spectrum

Turning Movement Count
Location Name: CHARLESTON SIDEROAD & REGIONAL RD 136 / MAIN ST
Date: Sat, Nov 07, 2020 Deployment Lead: Theo Daglis

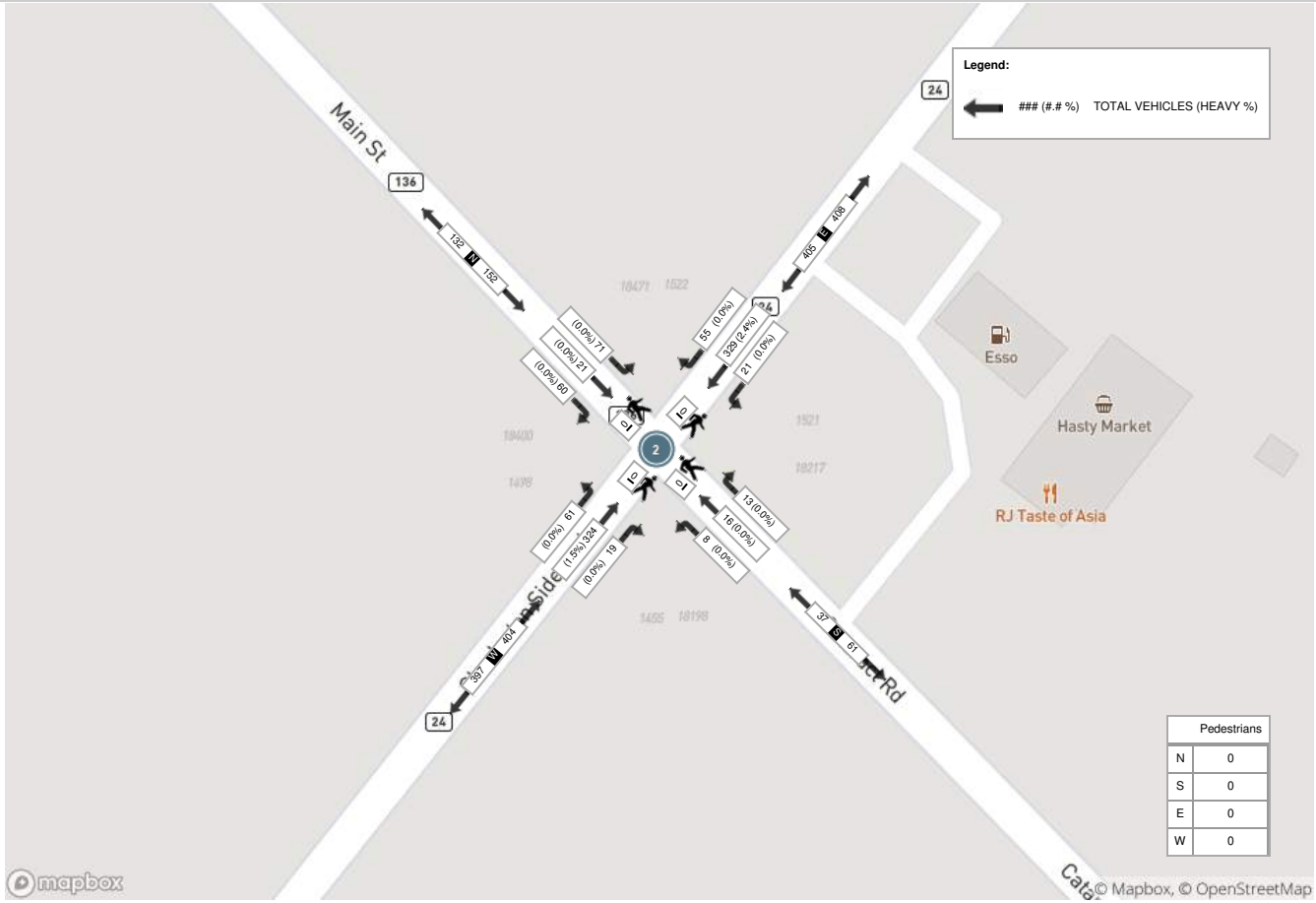
The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 02:00 PM - 03:00 PM Weather: Clear Sky (9.65 °C)

Start Time	N Approach MAIN ST						E Approach CHARLESTON SIDE RD						S Approach CATARACT RD						W Approach CHARLESTON SIDE RD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
14:00:00	15	4	15	0	0	34	13	87	8	0	0	108	4	5	1	0	0	10	5	86	11	0	0	102	254
14:15:00	15	4	12	0	0	31	14	83	6	0	0	103	2	5	3	0	0	10	2	77	12	0	0	91	235
14:30:00	14	7	12	0	0	33	14	77	7	0	0	98	4	1	2	0	0	7	5	77	24	0	0	106	244
14:45:00	16	6	32	0	0	54	14	82	0	0	0	96	3	5	2	0	0	10	7	84	14	0	0	105	265
Grand Total	60	21	71	0	0	152	55	329	21	0	0	405	13	16	8	0	0	37	19	324	61	0	0	404	**998**
Approach%	39.5%	13.8%	46.7%	0%		-	13.6%	81.2%	5.2%	0%		-	35.1%	43.2%	21.6%	0%		-	4.7%	80.2%	15.1%	0%		-	-
Totals %	6%	2.1%	7.1%	0%		15.2%	5.5%	33%	2.1%	0%		40.6%	1.3%	1.6%	0.8%	0%		3.7%	1.9%	32.5%	6.1%	0%		40.5%	-
PHF	0.94	0.75	0.55	0		0.7	0.98	0.95	0.66	0		0.94	0.81	0.8	0.67	0		0.93	0.68	0.94	0.64	0		0.95	-
Heavy	0	0	0	0		0	0	8	0	0		8	0	0	0	0		0	0	5	0	0		5	-
Heavy %	0%	0%	0%	0%		0%	0%	2.4%	0%	0%		2%	0%	0%	0%	0%		0%	0%	1.5%	0%	0%		1.2%	-
Lights	60	21	71	0		152	55	320	21	0		396	13	15	8	0		36	19	319	61	0		399	-
Lights %	100%	100%	100%	0%		100%	100%	97.3%	100%	0%		97.8%	100%	93.8%	100%	0%		97.3%	100%	98.5%	100%	0%		98.8%	-
Single-Unit Trucks	0	0	0	0		0	0	5	0	0		5	0	0	0	0		0	0	3	0	0		3	-
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	1.5%	0%	0%		1.2%	0%	0%	0%	0%		0%	0%	0.9%	0%	0%		0.7%	-
Buses	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%	-
Articulated Trucks	0	0	0	0		0	0	2	0	0		2	0	0	0	0		0	0	1	0	0		1	-
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0.6%	0%	0%		0.5%	0%	0%	0%	0%		0%	0%	0.3%	0%	0%		0.2%	-
Aggregate Trucks	0	0	0	0		0	0	1	0	0		1	0	0	0	0		0	0	1	0	0		1	-
Aggregate Trucks %	0%	0%	0%	0%		0%	0%	0.3%	0%	0%		0.2%	0%	0%	0%	0%		0%	0%	0.3%	0%	0%		0.2%	-
Bicycles on Road	0	0	0	0		0	0	1	0	0		1	0	1	0	0		1	0	0	0	0		0	-
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0.3%	0%	0%		0.2%	0%	6.3%	0%	0%		2.7%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-

The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 02:00 PM - 03:00 PM **Weather: Clear Sky (9.65 °C)**



Spectrum

Turning Movement Count
Location Name: CHARLESTON SIDEROAD & HWY 10 /HURONTARIO ST
Date: Sat, Jul 10, 2021 Deployment Lead: Theo Daglis

The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

Turning Movement Count (1 . CHARLESTON SIDEROAD & HWY 10 /HURONTARIO ST) CustID: 02408233 MioID:

Start Time	N Approach HURONTARIO ST						E Approach CHARLESTON SIDEROAD						S Approach HURONTARIO ST						W Approach CHARLESTON SIDEROAD						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
06:00:00	0	62	0	0	0	62	0	10	8	0	0	18	2	53	5	0	0	60	5	9	1	0	0	15	155	
06:15:00	6	79	0	0	0	85	2	7	9	0	0	18	7	68	15	0	0	90	12	17	3	0	0	32	225	
06:30:00	3	72	2	0	0	77	1	7	13	0	0	21	7	88	14	0	0	109	18	10	5	0	0	33	240	
06:45:00	2	67	5	0	0	74	1	8	10	0	0	19	7	92	26	0	0	125	9	19	7	0	0	35	253	873
07:00:00	3	90	2	0	0	95	0	13	17	0	0	30	10	111	30	0	0	151	4	23	13	0	0	40	316	1034
07:15:00	6	102	7	0	0	115	1	6	11	0	0	18	6	114	16	0	0	136	7	31	19	0	0	57	326	1135
07:30:00	4	100	4	0	0	108	3	12	17	0	0	32	13	153	30	0	0	196	12	22	17	0	0	51	387	1282
07:45:00	6	100	3	0	0	109	4	20	10	0	2	34	15	167	25	0	2	207	9	40	13	0	1	62	412	1441
08:00:00	10	101	2	0	2	113	2	20	17	0	1	39	20	183	29	0	0	232	13	29	9	0	0	51	435	1560
08:15:00	5	136	9	0	0	150	5	16	15	0	0	36	22	223	25	0	1	270	18	34	19	0	0	71	527	1761
08:30:00	12	124	5	0	2	141	7	30	21	0	1	58	30	215	29	1	0	275	19	44	32	0	0	95	569	1943
08:45:00	11	114	10	0	0	135	6	23	20	0	0	49	30	274	29	0	2	333	17	53	24	0	0	94	611	2142
09:00:00	8	116	4	0	0	128	9	25	27	0	0	61	23	206	31	0	1	260	14	55	31	0	0	100	549	2256
09:15:00	15	143	10	0	0	168	7	28	20	0	0	55	30	289	44	0	0	363	19	51	26	0	0	96	682	2411
09:30:00	19	159	15	0	0	193	8	32	24	0	1	64	30	263	42	1	1	336	21	61	32	0	2	114	707	2549
09:45:00	15	138	9	0	3	162	11	48	25	0	2	84	28	263	52	0	1	343	20	47	19	0	1	86	675	2613
10:00:00	16	138	17	0	0	171	5	48	28	0	0	81	33	245	41	0	5	319	13	72	29	0	0	114	685	2749
10:15:00	13	182	17	0	1	212	9	41	21	0	0	71	32	304	30	0	1	366	18	71	27	0	0	116	765	2832
10:30:00	15	170	10	0	1	195	11	54	30	0	1	95	33	304	32	0	2	369	24	68	32	0	0	124	783	2908
10:45:00	15	204	15	0	4	234	4	43	33	0	1	80	39	334	42	0	1	415	26	69	37	0	4	132	861	3094
11:00:00	12	184	15	0	0	211	9	40	35	0	0	84	30	351	42	0	2	423	26	68	29	1	1	124	842	3251
11:15:00	18	198	14	0	3	230	8	52	26	0	2	86	46	326	53	0	3	425	31	57	36	0	5	124	865	3351
11:30:00	22	182	8	0	3	212	9	57	34	0	1	100	32	297	41	0	4	370	28	82	38	0	4	148	830	3398
11:45:00	27	197	18	0	2	242	12	45	26	0	6	83	30	335	52	1	1	418	15	79	29	0	0	123	866	3403
12:00:00	24	188	12	0	0	224	7	53	29	0	0	89	32	319	35	0	0	386	27	61	31	0	0	119	818	3379
12:15:00	22	205	24	0	0	251	9	60	35	0	0	104	35	312	42	0	0	389	23	57	26	0	0	106	850	3364
12:30:00	15	217	17	0	0	249	12	57	34	0	0	103	26	322	52	0	2	400	26	71	43	0	2	140	892	3426
12:45:00	22	193	16	0	0	231	14	41	32	0	0	87	53	306	51	0	0	410	33	59	28	0	0	120	848	3408
13:00:00	21	238	17	0	0	276	10	51	27	0	2	88	47	328	58	0	3	433	22	65	19	0	1	106	903	3493
13:15:00	24	171	19	0	1	214	11	61	32	0	0	104	32	302	55	0	3	389	25	90	38	0	3	153	860	3503
13:30:00	15	215	21	0	3	251	10	51	31	0	3	92	34	316	58	0	0	408	24	81	28	0	6	133	884	3495
13:45:00	15	217	19	0	0	251	15	47	29	0	2	91	36	323	53	0	0	412	39	69	27	0	0	135	889	3536
14:00:00	29	237	12	0	0	278	14	54	21	0	0	89	62	311	70	0	0	443	21	67	30	0	0	118	928	3561
14:15:00	19	195	12	0	0	226	10	66	33	0	0	109	34	257	63	0	0	354	33	75	31	0	0	139	828	3529
14:30:00	23	256	25	0	2	304	8	46	25	0	0	79	39	291	43	0	0	373	23	65	35	0	0	123	879	3524
14:45:00	29	223	11	0	0	263	5	55	35	0	0	95	26	304	43	0	0	373	36	71	29	0	1	136	867	3502
15:00:00	23	208	16	0	2	247	16	68	33	0	0	117	37	259	35	0	0	331	36	45	18	0	0	99	794	3368
15:15:00	19	245	16	0	0	280	8	44	34	0	1	86	36	257	44	0	7	337	21	55	32	0	0	108	811	3351
15:30:00	18	202	11	0	2	231	10	51	31	0	1	92	40	234	46	0	2	320	28	50	22	0	0	100	743	3215
15:45:00	24	230	19	0	0	273	4	48	40	0	2	92	27	261	32	0	1	320	35	67	20	0	0	122	807	3155
16:00:00	20	220	14	0	0	254	6	43	31	0	0	80	32	262	37	0	0	331	41	49	26	0	2	116	781	3142
16:15:00	21	242	16	0	0	279	8	62	46	0	0	116	32	236	35	1	0	304	47	55	20	0	0	122	821	3152
16:30:00	20	215	20	0	0	255	7	50	30	0	0	87	36	217	46	0	2	299	37	46	31	0	0	114	755	3164
16:45:00	19	236	12	1	0	268	7	58	29	0	0	94	15	225	31	0	2	271	41	53	21	0	0	115	748	3105
17:00:00	11	214	19	0	0	244	6	54	30	0	0	90	32	185	35	0	0	252	29	37	14	0	0	80	666	2990

17:15:00	23	266	17	0	2	306	5	40	36	0	0	81	30	206	32	0	0	268	31	47	15	0	0	93	748	2917
17:30:00	18	236	12	0	4	266	11	54	30	0	1	95	24	180	43	0	2	247	32	38	22	0	0	92	700	2862
17:45:00	20	249	14	0	0	283	4	40	39	0	0	83	27	171	29	0	0	227	35	21	21	0	2	77	670	2784
Grand Total	757	8476	592	1	37	9826	351	1939	1269	0	30	3559	1379	11642	1843	4	51	14868	1143	2505	1154	1	35	4803	**33056**	-
Approach%	7.7%	86.3%	6%	0%		-	9.9%	54.5%	35.7%	0%		-	9.3%	78.3%	12.4%	0%		-	23.8%	52.2%	24%	0%		-	**-**	-
Totals %	2.3%	25.6%	1.8%	0%		29.7%	1.1%	5.9%	3.8%	0%		10.8%	4.2%	35.2%	5.6%	0%		45%	3.5%	7.6%	3.5%	0%		14.5%	**-**	-
Heavy	15	229	17	0		-	11	58	12	0		-	25	242	30	0		-	30	77	12	0		-	**-**	-
Heavy %	2%	2.7%	2.9%	0%		-	3.1%	3%	0.9%	0%		-	1.8%	2.1%	1.6%	0%		-	2.6%	3.1%	1%	0%		-	**-**	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

Spectrum

Turning Movement Count
Location Name: CHARLESTON SIDEROAD & HWY 10 /HURONTARIO ST
Date: Sat, Jul 10, 2021 Deployment Lead: Theo Daglis

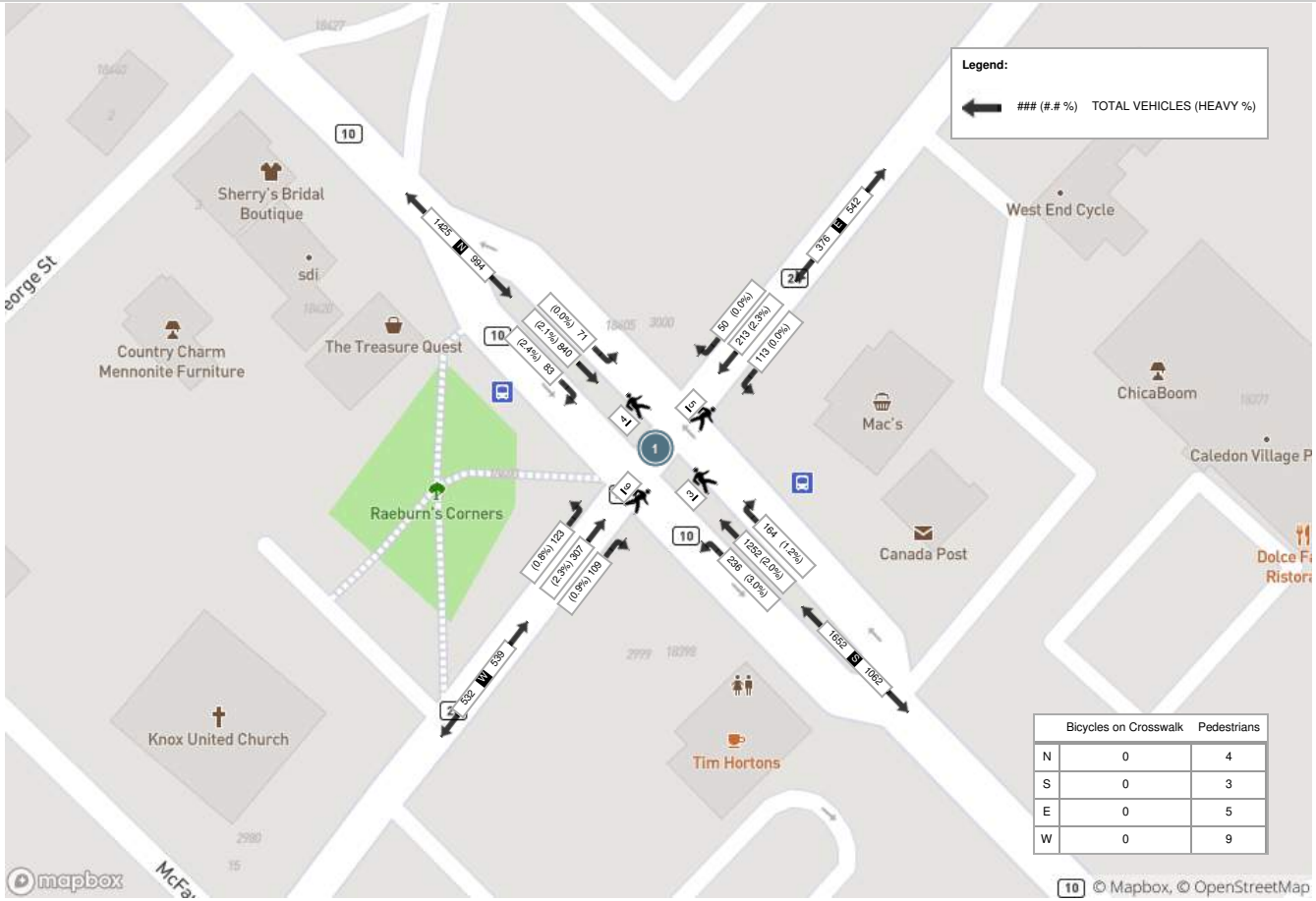
The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 01:15 PM - 02:15 PM Weather: Broken Clouds (11.81 °C)

Start Time	N Approach HURONTARIO ST						E Approach CHARLESTON SIDEROAD						S Approach HURONTARIO ST						W Approach CHARLESTON SIDEROAD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
13:15:00	24	171	19	0	1	214	11	61	32	0	0	104	32	302	55	0	3	389	25	90	38	0	3	153	860
13:30:00	15	215	21	0	3	251	10	51	31	0	3	92	34	316	58	0	0	408	24	81	28	0	6	133	884
13:45:00	15	217	19	0	0	251	15	47	29	0	2	91	36	323	53	0	0	412	39	69	27	0	0	135	889
14:00:00	29	237	12	0	0	278	14	54	21	0	0	89	62	311	70	0	0	443	21	67	30	0	0	118	928
Grand Total	83	840	71	0	4	994	50	213	113	0	5	376	164	1252	236	0	3	1652	109	307	123	0	9	539	**3561**
Approach%	8.4%	84.5%	7.1%	0%		-	13.3%	56.6%	30.1%	0%		-	9.9%	75.8%	14.3%	0%		-	20.2%	57%	22.8%	0%		-	**-**
Totals %	2.3%	23.6%	2%	0%		27.9%	1.4%	6%	3.2%	0%		10.6%	4.6%	35.2%	6.6%	0%		46.4%	3.1%	8.6%	3.5%	0%		15.1%	**-**
PHF	0.72	0.89	0.85	0		0.89	0.83	0.87	0.88	0		0.9	0.66	0.97	0.84	0		0.93	0.7	0.85	0.81	0		0.88	**-**
Heavy	2	18	0	0		20	0	5	0	0		5	2	25	7	0		34	1	7	1	0		9	**-**
Heavy %	2.4%	2.1%	0%	0%		2%	0%	2.3%	0%	0%		1.3%	1.2%	2%	3%	0%		2.1%	0.9%	2.3%	0.8%	0%		1.7%	**-**
Lights	81	822	71	0		974	50	208	113	0		371	162	1227	229	0		1618	108	298	122	0		528	**-**
Lights %	97.6%	97.9%	100%	0%		98%	100%	97.7%	100%	0%		98.7%	98.8%	98%	97%	0%		97.9%	99.1%	97.1%	99.2%	0%		98%	**-**
Single-Unit Trucks	1	9	0	0		10	0	2	0	0		2	0	11	3	0		14	1	2	1	0		4	**-**
Single-Unit Trucks %	1.2%	1.1%	0%	0%		1%	0%	0.9%	0%	0%		0.5%	0%	0.9%	1.3%	0%		0.8%	0.9%	0.7%	0.8%	0%		0.7%	**-**
Buses	0	1	0	0		1	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	**-**
Buses %	0%	0.1%	0%	0%		0.1%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Articulated Trucks	1	5	0	0		6	0	3	0	0		3	2	6	1	0		9	0	4	0	0		4	**-**
Articulated Trucks %	1.2%	0.6%	0%	0%		0.6%	0%	1.4%	0%	0%		0.8%	1.2%	0.5%	0.4%	0%		0.5%	0%	1.3%	0%	0%		0.7%	**-**
Aggregate Trucks	0	3	0	0		3	0	0	0	0		0	0	8	3	0		11	0	1	0	0		1	**-**
Aggregate Trucks %	0%	0.4%	0%	0%		0.3%	0%	0%	0%	0%		0%	0%	0.6%	1.3%	0%		0.7%	0%	0.3%	0%	0%		0.2%	**-**
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	2	0	0		2	**-**
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0.7%	0%	0%		0.4%	**-**
Pedestrians	-	-	-	-	4	-	-	-	-	-	5	-	-	-	-	-	3	-	-	-	-	-	9	-	**-**
Pedestrians%	-	-	-	-	19%		-	-	-	-	23.8%		-	-	-	-	14.3%		-	-	-	-	42.9%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 01:15 PM - 02:15 PM Weather: Broken Clouds (11.81 °C)



Spectrum

Turning Movement Count
Location Name: CHARLESTON SIDEROAD & MISSISSAUGA RD
Date: Thu, Jul 08, 2021 Deployment Lead: Theo Daglis

The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

Turning Movement Count (3 . CHARLESTON SIDEROAD & MISSISSAUGA RD) CustID: 02413835 MioID:

Start Time	N Approach MISSISSAUGA RD						E Approach CHARLESTON SIDEROAD						S Approach MISSISSAUGA RD						W Approach CHARLESTON SIDEROAD						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
06:00:00	3	0	1	0	0	4	1	20	6	0	0	27	1	0	0	0	0	1	0	59	0	0	0	59	91	
06:15:00	0	4	0	0	0	4	0	33	1	0	0	34	3	0	0	0	0	3	0	62	0	0	0	62	103	
06:30:00	0	2	0	0	0	2	1	32	2	0	0	35	3	0	0	0	0	3	2	49	0	0	0	51	91	
06:45:00	3	0	1	0	0	4	0	46	2	0	0	48	2	0	0	0	0	2	1	66	1	0	0	68	122	407
07:00:00	0	1	4	0	0	5	0	37	2	1	0	40	3	0	2	0	0	5	1	67	2	0	0	70	120	436
07:15:00	2	1	0	0	0	3	1	38	1	0	0	40	1	0	0	0	0	1	0	63	0	0	0	63	107	440
07:30:00	4	2	2	0	0	8	0	55	1	0	0	56	1	0	0	0	0	1	0	68	1	0	0	69	134	483
07:45:00	1	1	2	0	0	4	1	46	4	0	0	51	3	2	2	0	0	7	1	65	1	0	0	67	129	490
08:00:00	3	3	1	0	0	7	0	49	5	0	0	54	5	3	1	0	0	9	1	58	3	0	0	62	132	502
08:15:00	4	1	0	0	0	5	0	49	3	0	0	52	3	1	1	0	0	5	2	61	6	0	0	69	131	526
08:30:00	2	2	0	0	0	4	0	41	1	0	0	42	4	0	0	0	0	4	0	76	3	0	0	79	129	521
08:45:00	2	3	2	0	0	7	0	59	3	0	0	62	3	2	3	0	0	8	1	67	2	0	0	70	147	539
09:00:00	3	2	2	0	0	7	0	55	3	0	0	58	1	0	0	0	0	1	0	71	1	0	0	72	138	545
09:15:00	2	0	1	0	0	3	0	60	2	0	0	62	7	3	1	0	0	11	0	54	1	0	0	55	131	545
09:30:00	1	0	0	0	0	1	1	50	0	0	0	51	4	2	0	0	0	6	1	75	4	0	0	80	138	554
09:45:00	1	1	2	0	0	4	1	47	3	0	0	51	1	1	0	0	0	2	0	76	5	0	0	81	138	545
10:00:00	6	0	0	0	0	6	0	43	6	0	0	49	0	1	2	0	0	3	1	80	1	0	0	82	140	547
10:15:00	3	0	1	0	0	4	3	52	2	0	0	57	7	0	0	0	0	7	0	66	2	0	0	68	136	552
10:30:00	2	0	0	0	0	2	1	59	3	0	0	63	4	0	2	0	0	6	0	75	4	0	0	79	150	564
10:45:00	6	1	2	0	0	9	1	75	3	0	0	79	5	2	2	0	2	9	0	73	2	0	0	75	172	598
11:00:00	4	0	2	0	0	6	1	51	1	0	0	53	3	2	6	0	0	11	2	68	2	0	0	72	142	600
11:15:00	2	1	1	0	0	4	1	76	2	0	0	79	2	1	0	0	0	3	3	87	5	0	0	95	181	645
11:30:00	3	0	1	0	0	4	1	64	3	0	0	68	2	1	0	0	0	3	0	72	0	0	0	72	147	642
11:45:00	3	1	5	0	0	9	0	85	2	0	0	87	5	3	0	0	0	8	1	66	1	0	0	68	172	642
12:00:00	1	1	1	0	0	3	1	51	1	0	0	53	7	1	1	0	0	9	1	76	2	1	0	80	145	645
12:15:00	2	2	0	0	0	4	0	68	4	0	0	72	3	1	1	0	0	5	1	66	2	0	0	69	150	614
12:30:00	2	2	2	0	0	6	3	71	2	0	0	76	4	3	0	0	0	7	0	66	0	0	0	66	155	622
12:45:00	1	0	3	0	0	4	2	72	5	0	0	79	3	1	1	0	0	5	3	83	0	0	0	86	174	624
13:00:00	0	1	2	0	0	3	1	63	6	0	0	70	2	2	0	0	0	4	1	73	0	0	0	74	151	630
13:15:00	1	1	1	0	0	3	1	66	4	0	0	71	4	1	4	0	0	9	0	106	1	0	0	107	190	670
13:30:00	4	2	0	0	0	6	1	74	1	0	0	76	5	2	0	0	0	7	0	89	0	0	0	89	178	693
13:45:00	2	2	0	0	0	4	1	66	0	0	0	67	0	1	5	0	0	6	1	94	2	0	0	97	174	693
14:00:00	3	1	1	0	0	5	1	78	1	0	0	80	3	0	1	0	0	4	0	65	2	0	0	67	156	698
14:15:00	4	0	0	0	0	4	1	67	3	0	0	71	4	4	0	0	0	8	2	67	1	0	0	70	153	661
14:30:00	3	0	0	0	0	3	3	91	3	0	0	97	1	2	2	0	0	5	0	75	2	0	0	77	182	665
14:45:00	2	1	1	0	0	4	3	75	3	0	0	81	2	2	0	0	0	4	0	76	1	0	0	77	166	657
15:00:00	2	0	3	0	0	5	0	88	1	0	0	89	5	2	0	0	0	7	1	63	0	0	0	64	165	666
15:15:00	3	2	2	0	0	7	2	83	0	0	0	85	2	5	1	0	0	8	0	81	2	0	0	83	183	696
15:30:00	0	3	1	0	0	4	6	71	0	0	0	77	4	3	0	0	0	7	1	90	5	0	0	96	184	698
15:45:00	1	0	1	0	0	2	2	87	1	0	0	90	6	0	2	0	0	8	3	89	1	0	0	93	193	725
16:00:00	4	1	0	0	0	5	3	93	3	0	0	99	3	1	3	0	0	7	3	101	1	0	0	105	216	776
16:15:00	2	0	1	0	0	3	3	106	1	0	0	110	2	3	2	0	0	7	1	86	2	0	0	89	209	802
16:30:00	5	1	2	0	0	8	1	96	2	0	0	99	4	4	0	0	0	8	0	94	5	0	0	99	214	832
16:45:00	3	1	0	0	0	4	3	91	5	0	0	99	5	2	4	0	0	11	1	83	3	0	0	87	201	840
17:00:00	1	2	3	0	0	6	3	108	1	0	0	112	4	2	1	0	0	7	1	81	2	0	0	84	209	833

17:15:00	2	2	4	0	0	8	3	103	0	0	0	106	3	4	1	0	0	8	0	87	5	0	0	92	214	838
17:30:00	0	0	0	0	0	0	2	88	5	0	0	95	2	6	1	0	0	9	0	84	0	0	0	84	188	812
17:45:00	1	1	1	0	0	3	1	70	1	0	0	72	1	0	1	0	0	2	1	70	3	0	0	74	151	762
Grand Total	109	52	59	0	0	220	61	3148	114	1	0	3324	152	76	53	0	2	281	38	3569	89	1	0	3697	**7522**	-
Approach%	49.5%	23.6%	26.8%	0%		-	1.8%	94.7%	3.4%	0%		-	54.1%	27%	18.9%	0%		-	1%	96.5%	2.4%	0%		-	**-**	-
Totals %	1.4%	0.7%	0.8%	0%		2.9%	0.8%	41.9%	1.5%	0%		44.2%	2%	1%	0.7%	0%		3.7%	0.5%	47.4%	1.2%	0%		49.1%	**-**	-
Heavy	20	1	4	0		-	4	412	46	0		-	48	2	2	0		-	1	455	17	0		-	**-**	-
Heavy %	18.3%	1.9%	6.8%	0%		-	6.6%	13.1%	40.4%	0%		-	31.6%	2.6%	3.8%	0%		-	2.6%	12.7%	19.1%	0%		-	**-**	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

Spectrum

Turning Movement Count
Location Name: CHARLESTON SIDEROAD & MISSISSAUGA RD
Date: Thu, Jul 08, 2021 Deployment Lead: Theo Daglis

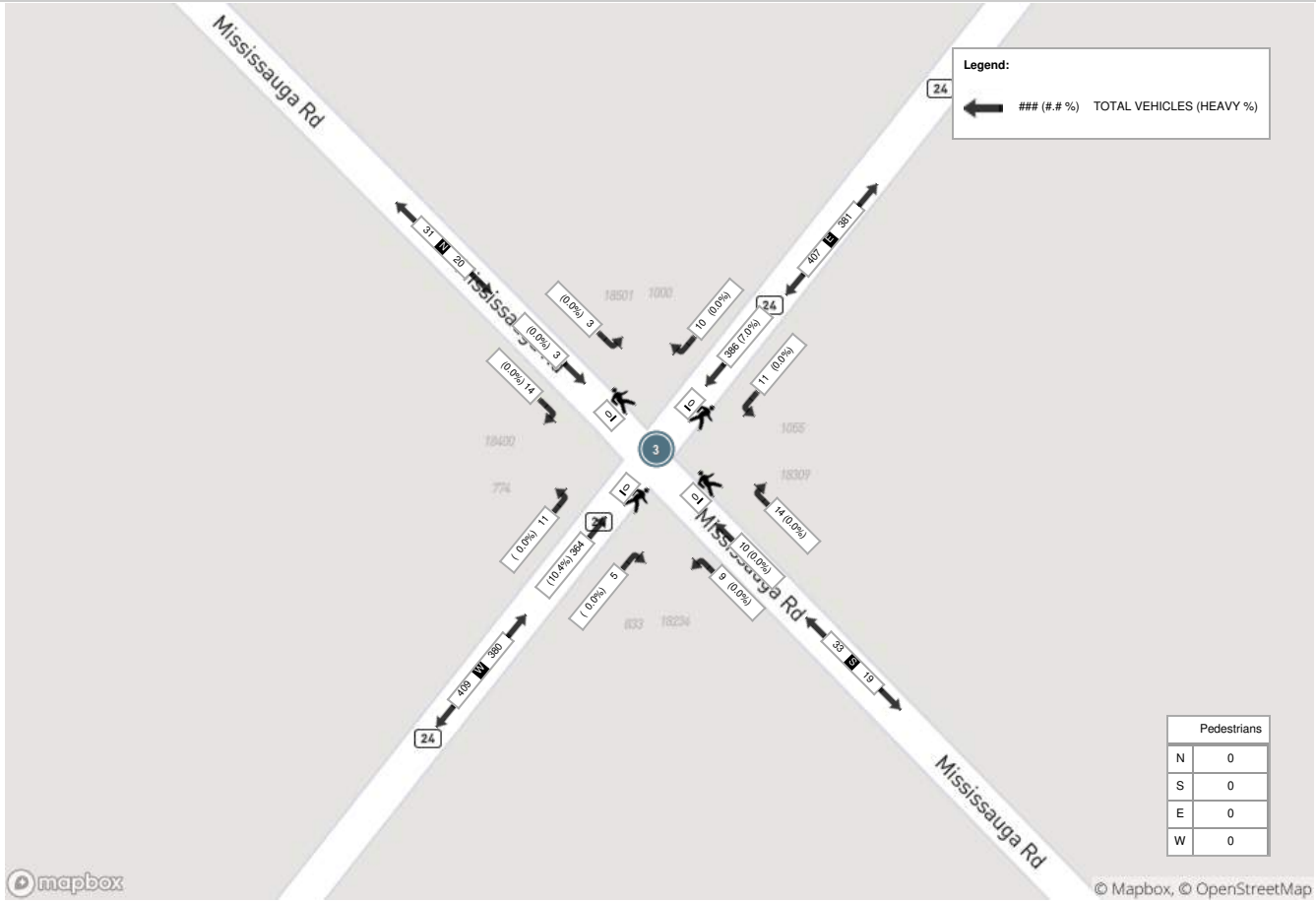
The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 04:00 PM - 05:00 PM Weather: Light Rain (13.85 °C)

Start Time	N Approach MISSISSAUGA RD						E Approach CHARLESTON SIDEROAD						S Approach MISSISSAUGA RD						W Approach CHARLESTON SIDEROAD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:00:00	4	1	0	0	0	5	3	93	3	0	0	99	3	1	3	0	0	7	3	101	1	0	0	105	216
16:15:00	2	0	1	0	0	3	3	106	1	0	0	110	2	3	2	0	0	7	1	86	2	0	0	89	209
16:30:00	5	1	2	0	0	8	1	96	2	0	0	99	4	4	0	0	0	8	0	94	5	0	0	99	214
16:45:00	3	1	0	0	0	4	3	91	5	0	0	99	5	2	4	0	0	11	1	83	3	0	0	87	201
Grand Total	14	3	3	0	0	20	10	386	11	0	0	407	14	10	9	0	0	33	5	364	11	0	0	380	**840**
Approach%	70%	15%	15%	0%		-	2.5%	94.8%	2.7%	0%		-	42.4%	30.3%	27.3%	0%		-	1.3%	95.8%	2.9%	0%		-	**-**
Totals %	1.7%	0.4%	0.4%	0%		2.4%	1.2%	46%	1.3%	0%		48.5%	1.7%	1.2%	1.1%	0%		3.9%	0.6%	43.3%	1.3%	0%		45.2%	**-**
PHF	0.7	0.75	0.38	0		0.63	0.83	0.91	0.55	0		0.93	0.7	0.63	0.56	0		0.75	0.42	0.9	0.55	0		0.9	**-**
Heavy	0	0	0	0		0	0	27	0	0		27	0	0	0	0		0	0	38	0	0		38	**-**
Heavy %	0%	0%	0%	0%		0%	0%	7%	0%	0%		6.6%	0%	0%	0%	0%		0%	0%	10.4%	0%	0%		10%	**-**
Lights	14	3	3	0		20	10	359	11	0		380	14	10	9	0		33	5	326	11	0		342	**-**
Lights %	100%	100%	100%	0%		100%	100%	93%	100%	0%		93.4%	100%	100%	100%	0%		100%	100%	89.6%	100%	0%		90%	**-**
Single-Unit Trucks	0	0	0	0		0	0	8	0	0		8	0	0	0	0		0	0	7	0	0		7	**-**
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	2.1%	0%	0%		2%	0%	0%	0%	0%		0%	0%	1.9%	0%	0%		1.8%	**-**
Buses	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%	**-**
Articulated Trucks	0	0	0	0		0	0	15	0	0		15	0	0	0	0		0	0	24	0	0		24	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	3.9%	0%	0%		3.7%	0%	0%	0%	0%		0%	0%	6.6%	0%	0%		6.3%	**-**
Aggregate Trucks	0	0	0	0		0	0	4	0	0		4	0	0	0	0		0	0	7	0	0		7	**-**
Aggregate Trucks %	0%	0%	0%	0%		0%	0%	1%	0%	0%		1%	0%	0%	0%	0%		0%	0%	1.9%	0%	0%		1.8%	**-**
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 Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 04:00 PM - 05:00 PM Weather: Light Rain (13.85 °C)



Spectrum

Turning Movement Count
Location Name: CHARLESTON SIDEROAD & MISSISSAUGA RD
Date: Sat, Jul 10, 2021 Deployment Lead: Theo Daglis

The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

Turning Movement Count (3 . CHARLESTON SIDEROAD & MISSISSAUGA RD) CustID: 02413835 MioID:

Start Time	N Approach MISSISSAUGA RD						E Approach CHARLESTON SIDEROAD						S Approach MISSISSAUGA RD						W Approach CHARLESTON SIDEROAD						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
06:00:00	0	0	0	0	0	0	0	8	0	0	0	8	1	1	0	0	0	2	0	22	1	0	0	23	33	
06:15:00	0	1	1	0	0	2	0	9	1	0	0	10	0	0	0	0	0	0	0	29	1	0	0	30	42	
06:30:00	0	0	0	0	0	0	0	21	3	0	0	24	1	1	0	0	0	2	0	27	0	0	0	27	53	
06:45:00	1	0	1	0	0	2	0	19	1	0	0	20	0	0	0	0	0	0	0	36	1	0	0	37	59	187
07:00:00	0	1	0	0	0	1	0	23	1	0	0	24	2	0	0	0	0	2	0	40	0	0	0	40	67	221
07:15:00	0	0	2	0	0	2	0	17	5	0	0	22	0	0	0	0	0	0	0	32	0	0	0	32	56	235
07:30:00	0	0	2	0	0	2	0	25	0	0	0	25	2	0	1	0	0	3	0	43	0	0	0	43	73	255
07:45:00	0	0	0	0	0	0	0	26	1	0	0	27	1	0	0	0	0	1	0	58	1	0	0	59	87	283
08:00:00	2	0	1	0	0	3	1	34	0	0	0	35	1	2	0	0	0	3	1	56	1	0	0	58	99	315
08:15:00	1	3	1	0	0	5	0	21	1	0	0	22	2	2	0	0	0	4	0	56	0	0	0	56	87	346
08:30:00	2	1	0	0	0	3	1	36	1	0	0	38	3	1	1	0	0	5	0	74	1	0	0	75	121	394
08:45:00	0	0	0	0	0	0	0	29	2	0	0	31	4	0	0	0	0	4	4	74	3	0	0	81	116	423
09:00:00	0	0	2	0	0	2	0	38	7	0	1	45	6	3	0	0	0	9	1	65	1	0	0	67	123	447
09:15:00	1	0	1	0	0	2	0	51	2	0	0	53	6	0	2	0	0	8	1	94	1	0	0	96	159	519
09:30:00	5	0	1	0	0	6	5	74	2	0	0	81	5	3	2	0	0	10	0	92	0	0	0	92	189	587
09:45:00	1	1	2	0	0	4	0	82	2	0	0	84	2	3	2	0	0	7	1	80	1	1	0	83	178	649
10:00:00	2	0	2	0	0	4	1	69	6	0	0	76	7	1	1	0	0	9	0	91	0	0	0	91	180	706
10:15:00	1	0	1	0	0	2	0	72	1	0	0	73	5	3	4	0	0	12	2	87	2	0	0	91	178	725
10:30:00	3	1	1	0	0	5	0	60	3	0	0	63	4	2	1	0	0	7	1	107	2	0	0	110	185	721
10:45:00	4	1	1	0	0	6	2	81	4	0	0	87	4	1	4	0	0	9	2	111	1	0	0	114	216	759
11:00:00	5	0	0	0	0	5	1	66	4	0	0	71	2	4	1	0	0	7	1	112	2	0	0	115	198	777
11:15:00	2	1	0	0	0	3	4	79	3	0	0	86	6	5	2	0	0	13	0	87	4	0	0	91	193	792
11:30:00	2	1	2	0	0	5	1	104	4	0	0	109	6	1	0	0	0	7	2	112	2	0	0	116	237	844
11:45:00	3	14	0	0	0	17	2	96	4	0	0	102	4	2	0	0	0	6	1	90	1	0	0	92	217	845
12:00:00	1	3	1	0	0	5	2	75	3	0	0	80	12	4	0	0	0	16	2	92	2	0	0	96	197	844
12:15:00	2	2	2	0	0	6	2	82	3	0	0	87	3	2	0	0	0	5	2	108	0	0	0	110	208	859
12:30:00	4	3	2	0	0	9	3	100	5	0	0	108	6	3	5	0	0	14	1	84	2	0	0	87	218	840
12:45:00	4	4	1	0	0	9	2	84	3	0	0	89	3	5	0	0	0	8	2	85	0	0	0	87	193	816
13:00:00	0	2	0	0	0	2	2	95	7	0	0	104	4	7	1	1	0	13	1	123	4	0	0	128	247	866
13:15:00	7	0	1	0	0	8	0	97	8	0	0	105	6	3	2	0	0	11	4	98	3	0	0	105	229	887
13:30:00	4	1	0	0	0	5	2	103	4	0	0	109	2	8	0	0	0	10	0	102	3	0	0	105	229	898
13:45:00	3	4	1	0	0	8	2	81	1	0	0	84	3	3	2	0	0	8	2	100	2	0	0	104	204	909
14:00:00	4	2	2	0	0	8	2	101	5	0	0	108	4	4	3	0	0	11	2	98	3	0	0	103	230	892
14:15:00	3	5	2	0	0	10	4	117	5	0	0	126	2	2	2	0	0	6	1	103	2	0	0	106	248	911
14:30:00	0	3	1	0	0	4	2	102	3	0	0	107	2	4	0	0	0	6	3	99	3	0	0	105	222	904
14:45:00	3	2	1	0	0	6	7	110	7	0	0	124	5	2	3	1	0	11	4	91	0	0	0	95	236	936
15:00:00	6	3	0	0	0	9	0	102	2	0	0	104	3	5	2	0	0	10	0	72	2	0	0	74	197	903
15:15:00	5	3	1	0	0	9	1	93	2	0	0	96	7	3	3	1	0	14	1	96	2	0	0	99	218	873
15:30:00	3	2	1	0	0	6	3	91	0	0	0	94	4	3	1	0	0	8	3	68	1	0	0	72	180	831
15:45:00	6	2	1	0	0	9	1	84	3	0	0	88	2	2	0	0	0	4	1	112	2	0	0	115	216	811
16:00:00	8	1	0	0	0	9	0	84	2	1	0	87	0	2	1	0	0	3	1	90	3	0	0	94	193	807
16:15:00	0	3	4	0	0	7	2	90	5	0	0	97	11	1	1	0	0	13	3	99	4	0	0	106	223	812
16:30:00	4	3	2	0	0	9	1	121	6	0	0	128	3	1	3	0	0	7	2	73	1	0	0	76	220	852
16:45:00	4	1	2	0	0	7	0	87	2	0	0	89	3	5	0	0	0	8	1	82	0	0	0	83	187	823
17:00:00	3	0	0	0	0	3	1	83	2	0	0	86	2	5	1	0	0	8	4	57	2	0	0	63	160	790

The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

17:15:00	1	1	2	0	0	4	0	78	2	0	0	80	3	2	0	0	0	5	0	85	3	0	0	88	177	744
17:30:00	1	3	1	0	0	5	1	87	3	0	0	91	0	3	1	0	0	4	3	59	1	0	0	63	163	687
17:45:00	0	2	2	0	0	4	0	77	2	0	0	79	3	5	1	0	0	9	0	53	1	0	0	54	146	646
Grand Total	111	80	51	0	0	242	58	3364	143	1	1	3566	167	119	53	3	0	342	60	3804	72	1	0	3937	**8087**	-
Approach%	45.9%	33.1%	21.1%	0%		-	1.6%	94.3%	4%	0%		-	48.8%	34.8%	15.5%	0.9%		-	1.5%	96.6%	1.8%	0%		-	**-**	-
Totals %	1.4%	1%	0.6%	0%		3%	0.7%	41.6%	1.8%	0%		44.1%	2.1%	1.5%	0.7%	0%		4.2%	0.7%	47%	0.9%	0%		48.7%	**-**	-
Heavy	0	0	0	0		-	1	87	1	0		-	2	0	1	0		-	2	100	0	0		-	**-**	-
Heavy %	0%	0%	0%	0%		-	1.7%	2.6%	0.7%	0%		-	1.2%	0%	1.9%	0%		-	3.3%	2.6%	0%	0%		-	**-**	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

Spectrum

Turning Movement Count
Location Name: CHARLESTON SIDEROAD & MISSISSAUGA RD
Date: Sat, Jul 10, 2021 Deployment Lead: Theo Daglis

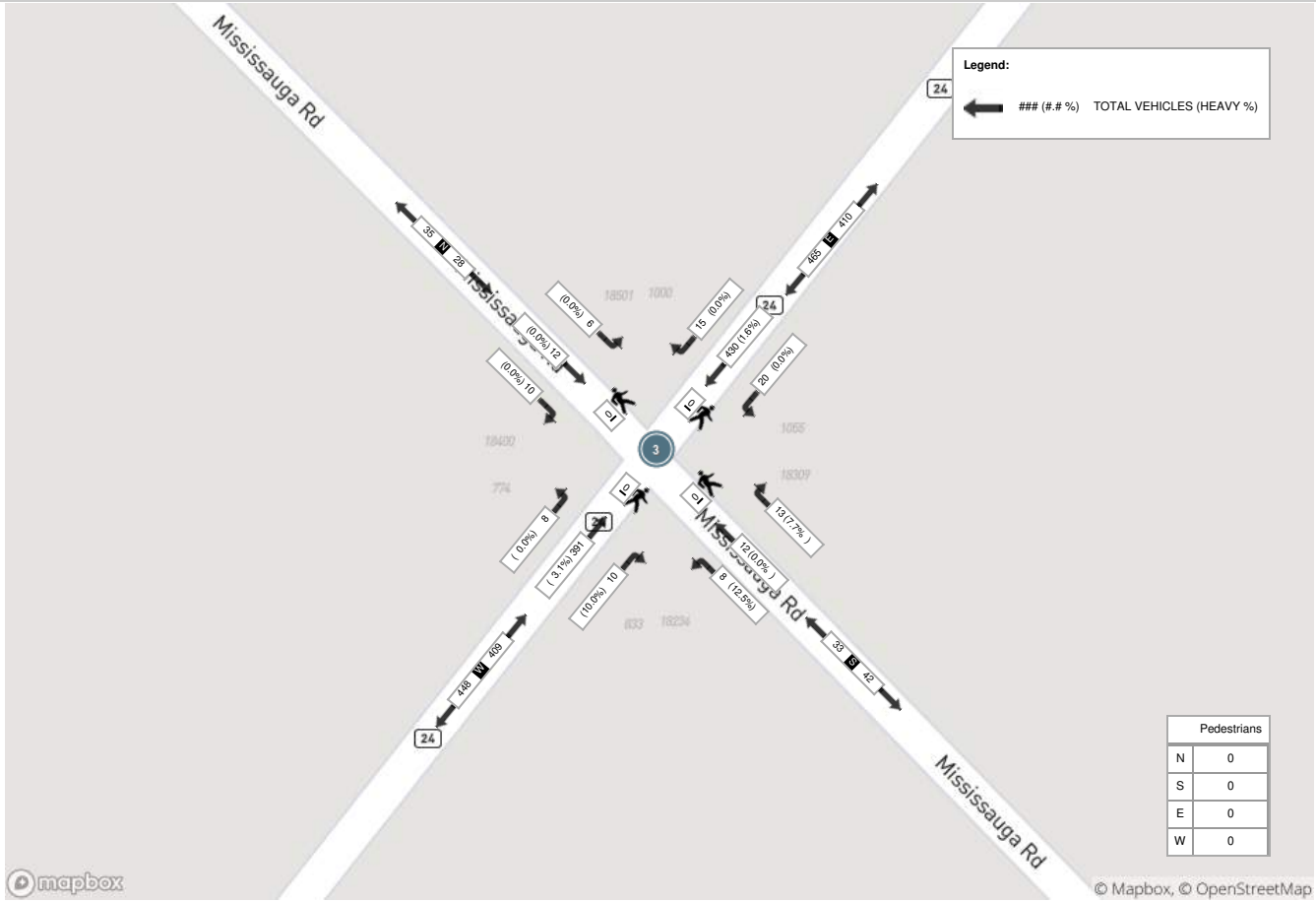
The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 02:00 PM - 03:00 PM Weather: Broken Clouds (11.81 °C)

Start Time	N Approach MISSISSAUGA RD						E Approach CHARLESTON SIDEROAD						S Approach MISSISSAUGA RD						W Approach CHARLESTON SIDEROAD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
14:00:00	4	2	2	0	0	8	2	101	5	0	0	108	4	4	3	0	0	11	2	98	3	0	0	103	230
14:15:00	3	5	2	0	0	10	4	117	5	0	0	126	2	2	2	0	0	6	1	103	2	0	0	106	248
14:30:00	0	3	1	0	0	4	2	102	3	0	0	107	2	4	0	0	0	6	3	99	3	0	0	105	222
14:45:00	3	2	1	0	0	6	7	110	7	0	0	124	5	2	3	1	0	11	4	91	0	0	0	95	236
Grand Total	10	12	6	0	0	28	15	430	20	0	0	465	13	12	8	1	0	34	10	391	8	0	0	409	**936**
Approach%	35.7%	42.9%	21.4%	0%		-	3.2%	92.5%	4.3%	0%		-	38.2%	35.3%	23.5%	2.9%		-	2.4%	95.6%	2%	0%		-	**-**
Totals %	1.1%	1.3%	0.6%	0%		3%	1.6%	45.9%	2.1%	0%		49.7%	1.4%	1.3%	0.9%	0.1%		3.6%	1.1%	41.8%	0.9%	0%		43.7%	**-**
PHF	0.63	0.6	0.75	0		0.7	0.54	0.92	0.71	0		0.92	0.65	0.75	0.67	0.25		0.77	0.63	0.95	0.67	0		0.96	**-**
Heavy	0	0	0	0		0	0	7	0	0		7	1	0	1	0		2	1	12	0	0		13	**-**
Heavy %	0%	0%	0%	0%		0%	0%	1.6%	0%	0%		1.5%	7.7%	0%	12.5%	0%		5.9%	10%	3.1%	0%	0%		3.2%	**-**
Lights	10	10	6	0		26	15	423	20	0		458	12	12	7	1		32	9	378	8	0		395	**-**
Lights %	100%	83.3%	100%	0%		92.9%	100%	98.4%	100%	0%		98.5%	92.3%	100%	87.5%	100%		94.1%	90%	96.7%	100%	0%		96.6%	**-**
Single-Unit Trucks	0	0	0	0		0	0	3	0	0		3	1	0	1	0		2	1	6	0	0		7	**-**
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	0.7%	0%	0%		0.6%	7.7%	0%	12.5%	0%		5.9%	10%	1.5%	0%	0%		1.7%	**-**
Articulated Trucks	0	0	0	0		0	0	2	0	0		2	0	0	0	0		0	0	4	0	0		4	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0.5%	0%	0%		0.4%	0%	0%	0%	0%		0%	0%	1%	0%	0%		1%	**-**
Aggregate Trucks	0	0	0	0		0	0	2	0	0		2	0	0	0	0		0	0	2	0	0		2	**-**
Aggregate Trucks %	0%	0%	0%	0%		0%	0%	0.5%	0%	0%		0.4%	0%	0%	0%	0%		0%	0%	0.5%	0%	0%		0.5%	**-**
Bicycles on Road	0	2	0	0		2	0	0	0	0		0	0	0	0	0		0	0	1	0	0		1	**-**
Bicycles on Road %	0%	16.7%	0%	0%		7.1%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0.3%	0%	0%		0.2%	**-**
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 02:00 PM - 03:00 PM Weather: Broken Clouds (11.81 °C)



Spectrum

Turning Movement Count
Location Name: CHARLESTON SIDEROAD & REGIONAL RD 136 / MAIN ST
Date: Thu, Jul 08, 2021 Deployment Lead: Theo Daglis

The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

Turning Movement Count (2 . CHARLESTON SIDEROAD & REGIONAL RD 136 / MAIN ST) CustID: 02412429 MioID:

Start Time	N Approach MAIN ST						E Approach CHARLESTON SIDE RD						S Approach CATARACT RD						W Approach CHARLESTON SIDE RD						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
06:00:00	2	0	12	0	0	14	1	26	0	0	0	27	0	0	0	0	0	0	0	60	1	0	0	61	102	
06:15:00	4	0	17	0	0	21	2	36	0	0	0	38	0	1	0	0	0	1	2	61	1	0	0	64	124	
06:30:00	2	0	11	0	0	13	2	30	0	0	0	32	1	1	0	0	0	2	0	51	2	0	0	53	100	
06:45:00	4	1	15	0	0	20	6	39	0	0	0	45	0	1	1	0	0	2	1	62	2	0	0	65	132	458
07:00:00	2	0	6	0	0	8	5	38	1	0	0	44	1	0	0	0	0	1	0	75	5	0	0	80	133	489
07:15:00	4	2	15	0	0	21	6	40	1	0	0	47	0	0	0	0	0	0	2	56	5	0	0	63	131	496
07:30:00	5	1	10	0	0	16	5	51	0	0	0	56	1	3	0	0	0	4	1	60	7	0	0	68	144	540
07:45:00	4	1	10	0	0	15	6	50	1	0	0	57	0	1	0	0	0	1	0	68	4	0	0	72	145	553
08:00:00	3	1	8	0	0	12	10	47	1	0	0	58	1	1	0	0	0	2	0	63	3	0	0	66	138	558
08:15:00	3	0	6	0	0	9	6	46	2	0	0	54	2	2	0	0	0	4	0	57	5	0	0	62	129	556
08:30:00	6	1	7	0	0	14	2	41	0	0	0	43	1	0	0	0	0	1	1	70	7	0	0	78	136	548
08:45:00	14	3	6	0	0	23	6	50	0	0	0	56	3	1	1	0	0	5	0	69	6	0	0	75	159	562
09:00:00	6	4	7	0	0	17	4	50	0	0	0	54	1	1	0	0	0	2	1	71	3	0	0	75	148	572
09:15:00	8	1	4	0	0	13	6	52	0	0	0	58	2	1	2	0	0	5	1	54	3	0	0	58	134	577
09:30:00	3	0	5	0	0	8	1	43	0	0	0	44	0	2	1	0	0	3	2	67	10	0	0	79	134	575
09:45:00	7	1	4	0	0	12	9	45	1	0	0	55	0	2	0	0	0	2	2	69	9	0	0	80	149	565
10:00:00	6	1	11	0	0	18	4	39	3	0	0	46	0	4	1	0	0	5	1	73	8	0	0	82	151	568
10:15:00	5	1	6	0	0	12	6	52	0	0	0	58	1	0	1	0	0	2	0	62	9	0	0	71	143	577
10:30:00	7	0	11	0	0	18	9	57	2	0	0	68	1	1	0	0	0	2	0	74	9	0	0	83	171	614
10:45:00	6	2	2	0	0	10	9	65	0	0	0	74	1	4	2	0	0	7	1	68	9	0	0	78	169	634
11:00:00	4	5	14	0	0	23	7	52	0	0	0	59	3	3	0	0	0	6	1	61	13	0	0	75	163	646
11:15:00	6	0	8	0	0	14	9	70	2	0	0	81	2	3	2	0	0	7	1	85	6	0	0	92	194	697
11:30:00	11	3	6	0	0	20	4	55	0	0	0	59	0	4	1	0	0	5	2	60	7	0	0	69	153	679
11:45:00	9	2	3	0	0	14	9	77	0	0	0	86	1	1	3	0	0	5	4	66	9	0	0	79	184	694
12:00:00	4	0	9	0	0	13	4	53	2	0	0	59	0	1	2	0	0	3	1	72	9	0	0	82	157	688
12:15:00	10	3	7	0	0	20	2	57	2	0	0	61	1	2	3	0	0	6	2	68	5	0	0	75	162	656
12:30:00	5	0	11	0	0	16	11	69	1	0	0	81	1	3	0	0	0	4	2	56	12	0	1	70	171	674
12:45:00	7	2	0	0	0	9	5	70	0	0	0	75	2	3	0	0	0	5	3	76	8	0	1	87	176	666
13:00:00	4	2	5	0	0	11	7	62	2	0	0	71	2	0	2	0	0	4	2	64	11	0	0	77	163	672
13:15:00	5	2	12	0	0	19	10	69	0	0	0	79	3	1	5	0	0	9	2	97	14	0	0	113	220	730
13:30:00	1	2	4	0	0	7	4	70	2	0	0	76	1	1	1	0	0	3	1	75	8	0	0	84	170	729
13:45:00	4	3	7	0	0	14	9	65	0	0	0	74	1	1	0	0	1	2	2	91	8	0	0	101	191	744
14:00:00	4	1	8	0	0	13	7	76	1	0	0	84	2	1	1	0	0	4	3	61	5	0	0	69	170	751
14:15:00	12	5	9	0	0	26	8	53	0	0	0	61	1	1	0	0	0	2	3	61	11	0	0	75	164	695
14:30:00	8	1	7	0	0	16	10	89	2	0	0	101	1	1	0	0	0	2	1	68	3	0	0	72	191	716
14:45:00	5	1	7	0	0	13	7	79	2	0	0	88	4	4	0	0	0	8	5	70	4	0	0	79	188	713
15:00:00	6	3	9	0	0	18	18	75	4	0	0	97	2	1	2	0	0	5	2	61	8	0	0	71	191	734
15:15:00	10	3	6	0	0	19	8	80	0	0	0	88	0	5	3	0	0	8	2	69	12	0	0	83	198	768
15:30:00	7	3	6	0	0	16	19	63	1	0	0	83	1	3	1	0	0	5	4	87	7	0	0	98	202	779
15:45:00	10	1	6	0	0	17	12	84	2	0	0	98	1	1	1	0	0	3	0	78	13	0	0	91	209	800
16:00:00	9	4	7	0	0	20	16	78	2	0	0	96	2	6	5	0	0	13	2	94	8	0	0	104	233	842
16:15:00	3	2	4	0	0	9	10	107	0	0	0	117	1	4	2	0	0	7	1	77	9	0	0	87	220	864
16:30:00	12	1	4	0	0	17	13	84	2	0	0	99	2	1	2	0	0	5	3	88	11	0	0	102	223	885
16:45:00	7	3	9	0	0	19	16	93	1	0	0	110	3	2	3	0	0	8	5	81	6	0	0	92	229	905
17:00:00	7	3	6	0	0	16	14	94	2	0	0	110	2	4	6	0	0	12	3	70	17	0	0	90	228	900

The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

17:15:00	6	3	7	0	0	16	11	103	0	0	0	114	4	1	3	0	0	8	4	75	16	0	0	95	233	913
17:30:00	6	2	6	0	0	14	17	84	0	0	0	101	1	2	4	0	0	7	4	74	7	0	0	85	207	897
17:45:00	4	3	5	0	0	12	15	62	2	0	0	79	1	1	2	0	0	4	4	58	6	0	0	68	163	831
Grand Total	287	83	365	0	0	735	387	2970	44	0	0	3401	61	87	63	0	1	211	84	3333	361	0	2	3778	**8125**	-
Approach%	39%	11.3%	49.7%	0%		-	11.4%	87.3%	1.3%	0%		-	28.9%	41.2%	29.9%	0%		-	2.2%	88.2%	9.6%	0%		-	**-**	-
Totals %	3.5%	1%	4.5%	0%		9%	4.8%	36.6%	0.5%	0%		41.9%	0.8%	1.1%	0.8%	0%		2.6%	1%	41%	4.4%	0%		46.5%	**-**	-
Heavy	15	1	9	0		-	6	448	0	0		-	1	2	3	0		-	2	490	19	0		-	**-**	-
Heavy %	5.2%	1.2%	2.5%	0%		-	1.6%	15.1%	0%	0%		-	1.6%	2.3%	4.8%	0%		-	2.4%	14.7%	5.3%	0%		-	**-**	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

Spectrum

Turning Movement Count
Location Name: CHARLESTON SIDEROAD & REGIONAL RD 136 / MAIN ST
Date: Thu, Jul 08, 2021 Deployment Lead: Theo Daglis

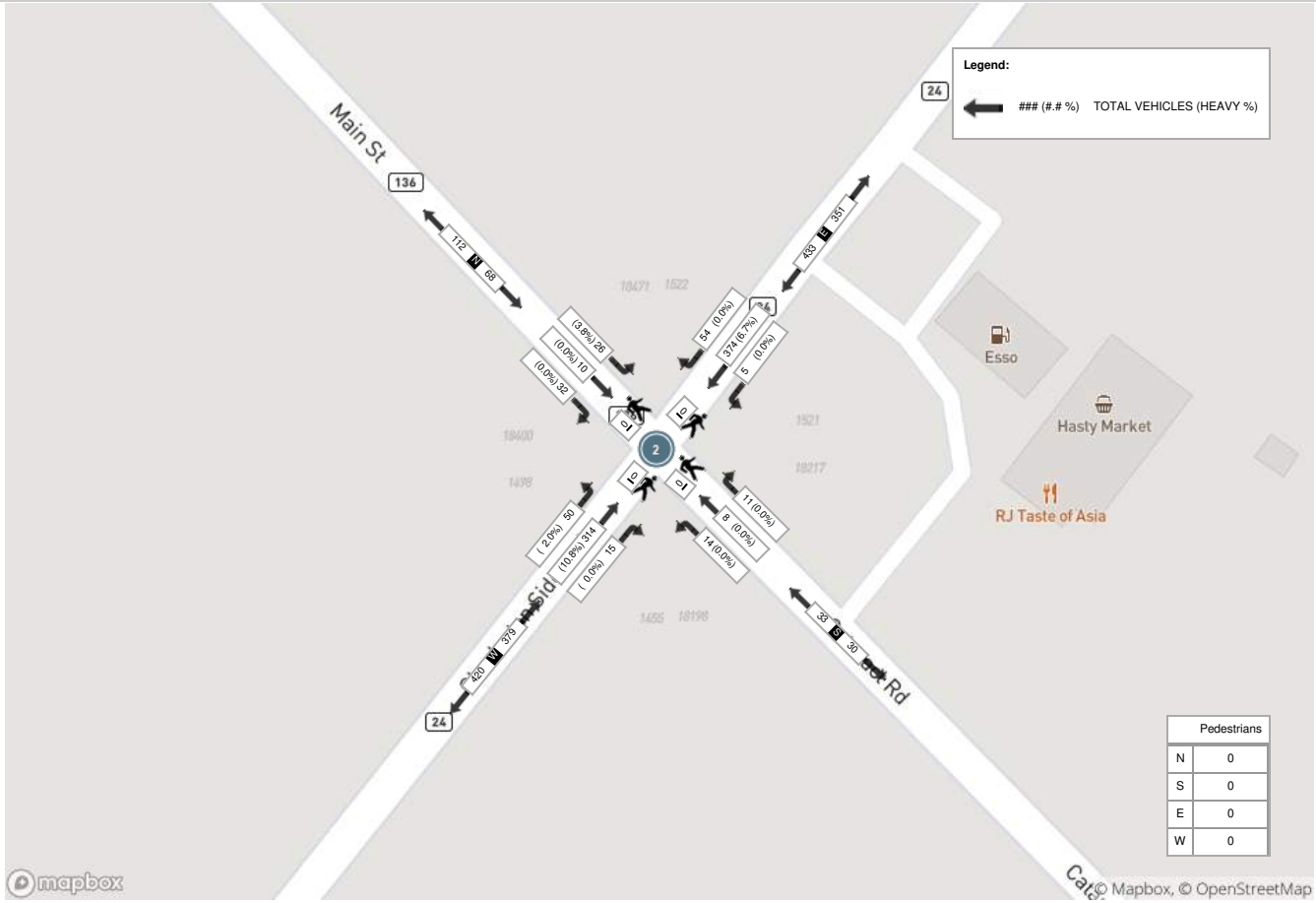
The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 04:30 PM - 05:30 PM Weather: Light Rain (13.85 °C)

Start Time	N Approach MAIN ST						E Approach CHARLESTON SIDE RD						S Approach CATARACT RD						W Approach CHARLESTON SIDE RD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:30:00	12	1	4	0	0	17	13	84	2	0	0	99	2	1	2	0	0	5	3	88	11	0	0	102	223
16:45:00	7	3	9	0	0	19	16	93	1	0	0	110	3	2	3	0	0	8	5	81	6	0	0	92	229
17:00:00	7	3	6	0	0	16	14	94	2	0	0	110	2	4	6	0	0	12	3	70	17	0	0	90	228
17:15:00	6	3	7	0	0	16	11	103	0	0	0	114	4	1	3	0	0	8	4	75	16	0	0	95	233
Grand Total	32	10	26	0	0	68	54	374	5	0	0	433	11	8	14	0	0	33	15	314	50	0	0	379	**913**
Approach%	47.1%	14.7%	38.2%	0%		-	12.5%	86.4%	1.2%	0%		-	33.3%	24.2%	42.4%	0%		-	4%	82.8%	13.2%	0%		-	**-**
Totals %	3.5%	1.1%	2.8%	0%		7.4%	5.9%	41%	0.5%	0%		47.4%	1.2%	0.9%	1.5%	0%		3.6%	1.6%	34.4%	5.5%	0%		41.5%	**-**
PHF	0.67	0.83	0.72	0		0.89	0.84	0.91	0.63	0		0.95	0.69	0.5	0.58	0		0.69	0.75	0.89	0.74	0		0.93	**-**
Heavy	0	0	1	0		1	0	25	0	0		25	0	0	0	0		0	0	34	1	0		35	**-**
Heavy %	0%	0%	3.8%	0%		1.5%	0%	6.7%	0%	0%		5.8%	0%	0%	0%	0%		0%	0%	10.8%	2%	0%		9.2%	**-**
Lights	32	9	25	0		66	54	349	5	0		408	11	8	14	0		33	15	280	49	0		344	**-**
Lights %	100%	90%	96.2%	0%		97.1%	100%	93.3%	100%	0%		94.2%	100%	100%	100%	0%		100%	100%	89.2%	98%	0%		90.8%	**-**
Single-Unit Trucks	0	0	1	0		1	0	9	0	0		9	0	0	0	0		0	0	5	1	0		6	**-**
Single-Unit Trucks %	0%	0%	3.8%	0%		1.5%	0%	2.4%	0%	0%		2.1%	0%	0%	0%	0%		0%	0%	1.6%	2%	0%		1.6%	**-**
Buses	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%	**-**
Articulated Trucks	0	0	0	0		0	0	12	0	0		12	0	0	0	0		0	0	25	0	0		25	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	3.2%	0%	0%		2.8%	0%	0%	0%	0%		0%	0%	8%	0%	0%		6.6%	**-**
Aggregate Trucks	0	0	0	0		0	0	4	0	0		4	0	0	0	0		0	0	4	0	0		4	**-**
Aggregate Trucks %	0%	0%	0%	0%		0%	0%	1.1%	0%	0%		0.9%	0%	0%	0%	0%		0%	0%	1.3%	0%	0%		1.1%	**-**
Bicycles on Road	0	1	0	0		1	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	**-**
Bicycles on Road %	0%	10%	0%	0%		1.5%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 04:30 PM - 05:30 PM Weather: Light Rain (13.85 °C)



Spectrum

Turning Movement Count
Location Name: CHARLESTON SIDEROAD & REGIONAL RD 136 / MAIN ST
Date: Sat, Jul 10, 2021 Deployment Lead: Theo Daglis

The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

Turning Movement Count (2 . CHARLESTON SIDEROAD & REGIONAL RD 136 / MAIN ST) CustID: 02412429 MioID:

Start Time	N Approach MAIN ST						E Approach CHARLESTON SIDE RD						S Approach CATARACT RD						W Approach CHARLESTON SIDE RD						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
06:00:00	0	0	3	0	0	3	2	8	0	0	0	10	0	0	0	0	0	0	0	17	6	0	0	23	36	
06:15:00	2	0	7	0	0	9	3	12	0	0	0	15	1	0	0	0	0	1	0	27	0	0	0	27	52	
06:30:00	0	0	3	0	0	3	4	20	1	0	0	25	0	0	0	0	0	0	2	27	0	0	0	29	57	
06:45:00	3	0	4	0	0	7	12	16	1	0	0	29	1	0	0	0	0	1	1	30	4	0	0	35	72	217
07:00:00	3	0	4	0	0	7	12	20	0	0	0	32	2	2	1	0	0	5	1	41	2	0	0	44	88	269
07:15:00	0	0	8	0	0	8	7	24	0	0	0	31	0	1	0	0	0	1	0	27	5	0	0	32	72	289
07:30:00	3	0	2	0	0	5	6	21	1	0	0	28	0	2	0	0	0	2	2	39	6	0	0	47	82	314
07:45:00	2	0	4	0	0	6	13	24	0	0	0	37	1	1	1	0	0	3	0	50	10	0	0	60	106	348
08:00:00	2	0	2	0	0	4	6	30	0	0	0	36	2	0	2	0	0	4	1	48	7	0	0	56	100	360
08:15:00	3	1	7	0	0	11	10	25	1	0	0	36	1	1	0	0	0	2	0	55	6	0	0	61	110	398
08:30:00	1	2	5	0	0	8	15	31	2	0	0	48	1	3	1	0	0	5	3	67	8	0	0	78	139	455
08:45:00	1	2	9	0	0	12	10	32	6	0	0	48	1	1	0	1	0	3	0	65	7	0	0	72	135	484
09:00:00	3	0	4	0	0	7	9	44	1	0	0	54	1	1	1	0	0	3	1	69	7	0	0	77	141	525
09:15:00	0	2	3	0	0	5	16	48	3	0	0	67	1	1	1	0	0	3	1	92	8	0	0	101	176	591
09:30:00	5	0	6	0	0	11	14	77	1	0	0	92	0	7	0	0	0	7	2	90	9	0	0	101	211	663
09:45:00	7	1	5	0	0	13	8	76	5	0	0	89	0	3	4	0	0	7	1	75	5	0	0	81	190	718
10:00:00	7	3	7	0	0	17	20	65	4	0	0	89	0	0	0	0	0	0	4	82	15	0	0	101	207	784
10:15:00	6	0	9	0	0	15	6	65	0	0	0	71	0	3	2	0	0	5	1	78	13	0	0	92	183	791
10:30:00	12	2	5	0	0	19	14	64	3	0	0	81	2	2	1	0	0	5	1	97	14	0	0	112	217	797
10:45:00	6	3	10	0	0	19	15	66	2	0	0	83	3	2	2	0	0	7	4	100	12	0	0	116	225	832
11:00:00	12	7	9	0	0	28	24	59	2	0	0	85	1	6	1	0	0	8	3	93	10	0	0	106	227	852
11:15:00	10	3	14	0	0	27	18	83	3	0	0	104	1	12	2	0	0	15	4	87	11	0	0	102	248	917
11:30:00	19	3	7	0	0	29	16	76	1	0	0	93	3	3	2	0	0	8	3	101	9	0	0	113	243	943
11:45:00	7	3	7	0	0	17	14	94	12	0	0	120	4	5	3	0	0	12	5	78	13	0	0	96	245	963
12:00:00	8	4	14	0	0	26	13	70	1	0	0	84	3	1	3	0	0	7	7	89	11	0	0	107	224	960
12:15:00	8	3	14	0	0	25	17	82	1	0	0	100	0	4	3	0	0	7	3	90	8	0	0	101	233	945
12:30:00	8	4	10	0	0	22	15	90	5	0	0	110	2	2	3	0	0	7	5	83	12	0	0	100	239	941
12:45:00	12	2	18	0	0	32	16	78	3	0	0	97	5	8	3	0	0	16	2	70	14	0	0	86	231	927
13:00:00	17	5	10	0	0	32	15	79	2	0	0	96	4	3	5	0	0	12	5	117	11	0	0	133	273	976
13:15:00	7	2	9	0	0	18	21	99	1	0	0	121	0	6	4	0	0	10	0	88	11	0	0	99	248	991
13:30:00	9	4	18	0	0	31	18	97	5	0	0	120	2	6	3	0	0	11	2	94	7	0	0	103	265	1017
13:45:00	7	4	16	0	0	27	21	68	4	0	0	93	2	5	0	0	0	7	2	93	13	0	0	108	235	1021
14:00:00	11	3	16	0	0	30	26	104	4	0	0	134	4	5	2	0	0	11	5	86	15	0	0	106	281	1029
14:15:00	14	8	16	0	0	38	12	102	4	0	0	118	1	6	2	0	0	9	0	95	13	0	0	108	273	1054
14:30:00	8	5	17	0	0	30	9	102	8	0	0	119	1	5	3	0	0	9	2	77	15	0	0	94	252	1041
14:45:00	10	5	14	0	0	29	13	105	2	0	0	120	6	4	5	0	0	15	4	92	9	0	0	105	269	1075
15:00:00	10	2	15	0	0	27	14	94	2	0	0	110	1	2	2	0	0	5	2	65	6	0	0	73	215	1009
15:15:00	11	3	19	0	0	33	17	79	2	0	0	98	0	5	2	0	0	7	2	91	8	0	0	101	239	975
15:30:00	6	1	15	0	0	22	10	84	6	0	0	100	2	2	2	0	0	6	5	65	5	0	1	75	203	926
15:45:00	11	2	17	0	0	30	7	80	8	0	0	95	3	2	0	0	0	5	2	101	13	0	1	116	246	903
16:00:00	11	5	9	0	0	25	7	74	4	0	0	85	3	6	2	0	0	11	8	78	10	0	0	96	217	905
16:15:00	12	2	8	0	0	22	14	89	4	0	0	107	2	7	5	0	0	14	6	97	11	0	0	114	257	923
16:30:00	12	3	22	0	0	37	12	100	0	0	0	112	3	3	3	0	0	9	0	73	5	0	0	78	236	956
16:45:00	12	5	19	0	0	36	6	81	1	0	0	88	2	2	1	0	0	5	4	73	10	0	0	87	216	926
17:00:00	7	5	17	0	0	29	7	79	5	0	0	91	2	0	2	0	0	4	3	51	7	0	0	61	185	894

The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

17:15:00	5	6	8	0	0	19	13	69	2	0	0	84	1	2	0	0	0	3	2	73	11	0	0	86	192	829
17:30:00	6	3	17	0	0	26	6	90	3	0	0	99	2	7	3	0	0	12	6	55	4	0	0	65	202	795
17:45:00	4	4	13	0	0	21	7	66	2	0	0	75	4	6	1	0	0	11	2	51	5	0	0	58	165	744
Grand Total	340	122	495	0	0	957	590	3141	128	0	0	3859	81	155	83	1	0	320	119	3482	421	0	2	4022	**9158**	-
Approach%	35.5%	12.7%	51.7%	0%		-	15.3%	81.4%	3.3%	0%		-	25.3%	48.4%	25.9%	0.3%		-	3%	86.6%	10.5%	0%		-	**-**	-
Totals %	3.7%	1.3%	5.4%	0%		10.4%	6.4%	34.3%	1.4%	0%		42.1%	0.9%	1.7%	0.9%	0%		3.5%	1.3%	38%	4.6%	0%		43.9%	**-**	-
Heavy	1	1	8	0		-	6	90	1	0		-	1	0	0	0		-	0	100	6	0		-	**-**	-
Heavy %	0.3%	0.8%	1.6%	0%		-	1%	2.9%	0.8%	0%		-	1.2%	0%	0%	0%		-	0%	2.9%	1.4%	0%		-	**-**	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

Spectrum

Turning Movement Count
Location Name: CHARLESTON SIDEROAD & REGIONAL RD 136 / MAIN ST
Date: Sat, Jul 10, 2021 Deployment Lead: Theo Daglis

The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 02:00 PM - 03:00 PM Weather: Broken Clouds (11.81 °C)

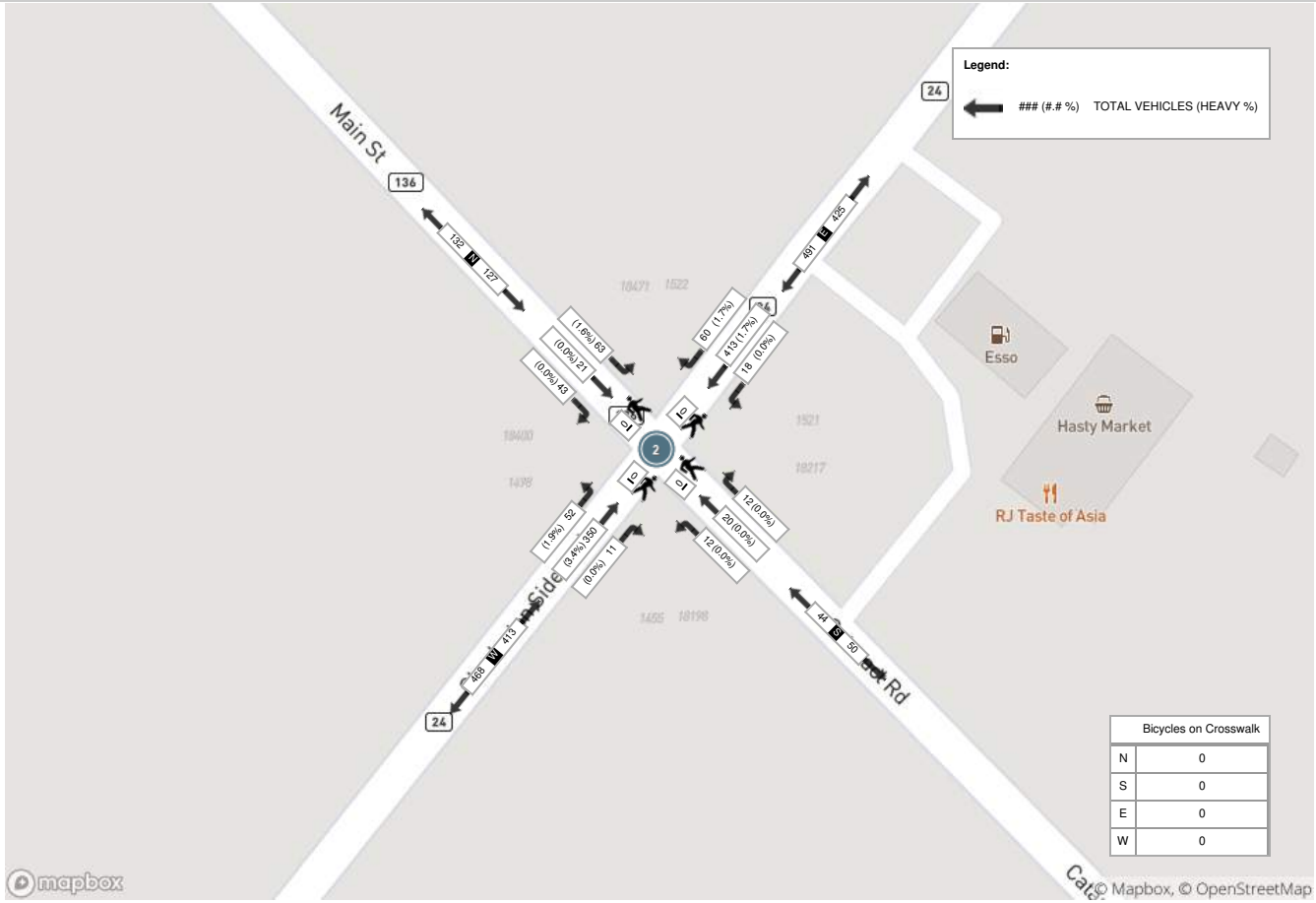
Start Time	N Approach MAIN ST						E Approach CHARLESTON SIDE RD						S Approach CATARACT RD						W Approach CHARLESTON SIDE RD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
14:00:00	11	3	16	0	0	30	26	104	4	0	0	134	4	5	2	0	0	11	5	86	15	0	0	106	281
14:15:00	14	8	16	0	0	38	12	102	4	0	0	118	1	6	2	0	0	9	0	95	13	0	0	108	273
14:30:00	8	5	17	0	0	30	9	102	8	0	0	119	1	5	3	0	0	9	2	77	15	0	0	94	252
14:45:00	10	5	14	0	0	29	13	105	2	0	0	120	6	4	5	0	0	15	4	92	9	0	0	105	269
Grand Total	43	21	63	0	0	127	60	413	18	0	0	491	12	20	12	0	0	44	11	350	52	0	0	413	**1075**
Approach%	33.9%	16.5%	49.6%	0%		-	12.2%	84.1%	3.7%	0%		-	27.3%	45.5%	27.3%	0%		-	2.7%	84.7%	12.6%	0%		-	**-**
Totals %	4%	2%	5.9%	0%		11.8%	5.6%	38.4%	1.7%	0%		45.7%	1.1%	1.9%	1.1%	0%		4.1%	1%	32.6%	4.8%	0%		38.4%	**-**
PHF	0.77	0.66	0.93	0		0.84	0.58	0.98	0.56	0		0.92	0.5	0.83	0.6	0		0.73	0.55	0.92	0.87	0		0.96	**-**
Heavy	0	0	1	0		1	1	7	0	0		8	0	0	0	0		0	0	12	1	0		13	**-**
Heavy %	0%	0%	1.6%	0%		0.8%	1.7%	1.7%	0%	0%		1.6%	0%	0%	0%	0%		0%	0%	3.4%	1.9%	0%		3.1%	**-**
Lights	43	20	62	0		125	59	406	16	0		481	11	19	12	0		42	10	338	51	0		399	**-**
Lights %	100%	95.2%	98.4%	0%		98.4%	98.3%	98.3%	88.9%	0%		98%	91.7%	95%	100%	0%		95.5%	90.9%	96.6%	98.1%	0%		96.6%	**-**
Single-Unit Trucks	0	0	1	0		1	0	3	0	0		3	0	0	0	0		0	0	6	1	0		7	**-**
Single-Unit Trucks %	0%	0%	1.6%	0%		0.8%	0%	0.7%	0%	0%		0.6%	0%	0%	0%	0%		0%	0%	1.7%	1.9%	0%		1.7%	**-**
Buses	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%	**-**
Articulated Trucks	0	0	0	0		0	0	2	0	0		2	0	0	0	0		0	0	4	0	0		4	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0.5%	0%	0%		0.4%	0%	0%	0%	0%		0%	0%	1.1%	0%	0%		1%	**-**
Aggregate Trucks	0	0	0	0		0	1	2	0	0		3	0	0	0	0		0	0	2	0	0		2	**-**
Aggregate Trucks %	0%	0%	0%	0%		0%	1.7%	0.5%	0%	0%		0.6%	0%	0%	0%	0%		0%	0%	0.6%	0%	0%		0.5%	**-**
Bicycles on Road	0	1	0	0		1	0	0	2	0		2	1	1	0	0		2	1	0	0	0		1	**-**
Bicycles on Road %	0%	4.8%	0%	0%		0.8%	0%	0%	11.1%	0%		0.4%	8.3%	5%	0%	0%		4.5%	9.1%	0%	0%	0%		0.2%	**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

Spectrum

Turning Movement Count
Location Name: CHARLESTON SIDEROAD & REGIONAL RD 136 / MAIN ST
Date: Sat, Jul 10, 2021 Deployment Lead: Theo Daglis

The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 02:00 PM - 03:00 PM Weather: Broken Clouds (11.81 °C)



The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

Turning Movement Count (1 . CHARLESTON SIDEROAD & HWY 10 /HURONTARIO ST) CustID: 02408233 MioID:

Start Time	N Approach HURONTARIO ST						E Approach CHARLESTON SIDEROAD						S Approach HURONTARIO ST						W Approach CHARLESTON SIDEROAD						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
06:00:00	4	327	7	0	0	338	0	11	22	0	0	33	3	51	6	0	0	60	43	18	4	0	0	65	496	
06:15:00	3	270	11	0	0	284	1	21	28	0	0	50	8	62	15	0	0	85	53	26	2	0	0	81	500	
06:30:00	4	245	10	0	0	259	3	16	33	0	0	52	11	136	23	0	0	170	42	24	5	0	0	71	552	
06:45:00	11	273	8	0	1	292	2	24	25	0	0	51	4	122	24	0	0	150	36	30	15	0	0	81	574	2122
07:00:00	9	273	7	0	0	289	1	22	27	0	0	50	15	114	18	0	1	147	33	33	10	0	1	76	562	2188
07:15:00	3	310	9	0	1	322	2	32	37	0	0	71	16	132	21	0	0	169	51	30	15	0	0	96	658	2346
07:30:00	8	280	5	0	0	293	5	23	27	0	0	55	16	154	21	0	0	191	30	25	22	0	0	77	616	2410
07:45:00	5	198	17	0	0	220	8	27	28	0	0	63	9	166	32	0	1	207	36	26	19	0	0	81	571	2407
08:00:00	12	250	9	0	0	271	3	31	28	0	0	62	18	160	23	0	0	201	34	20	13	0	0	67	601	2446
08:15:00	11	212	10	0	0	233	8	27	26	0	0	61	8	173	24	0	0	205	39	32	15	0	0	86	585	2373
08:30:00	9	193	15	0	0	217	8	19	37	0	0	64	15	137	32	0	0	184	31	35	20	0	0	86	551	2308
08:45:00	9	196	22	0	0	227	10	31	29	0	0	70	18	144	26	0	0	188	32	37	20	0	0	89	574	2311
09:00:00	8	205	16	0	0	229	3	34	25	0	0	62	18	137	24	0	0	179	31	38	9	0	0	78	548	2258
09:15:00	8	165	8	0	0	181	10	46	27	0	0	83	19	148	29	0	0	196	28	32	34	0	0	94	554	2227
09:30:00	4	185	15	0	0	204	10	23	42	0	0	75	20	141	23	0	0	184	23	31	14	0	0	68	531	2207
09:45:00	19	173	9	0	0	201	5	28	24	0	0	57	18	155	27	0	0	200	31	49	29	0	0	109	567	2200
10:00:00	10	198	7	0	0	215	8	25	30	0	0	63	21	150	21	0	0	192	20	45	13	0	0	78	548	2200
10:15:00	11	161	8	0	0	180	7	35	17	0	0	59	21	154	29	0	0	204	27	35	16	0	0	78	521	2167
10:30:00	12	155	13	0	0	180	4	33	14	0	0	51	21	161	32	0	0	214	30	42	21	0	0	93	538	2174
10:45:00	17	186	16	0	0	219	9	44	25	0	0	78	21	162	30	0	1	213	26	36	20	0	1	82	592	2199
11:00:00	12	175	12	0	1	199	9	40	30	0	0	79	18	133	43	0	1	194	22	47	28	0	0	97	569	2220
11:15:00	16	167	8	0	1	191	12	36	21	0	0	69	19	150	29	0	0	198	22	41	19	0	0	82	540	2239
11:30:00	16	158	7	0	0	181	8	36	16	0	0	60	20	163	36	0	0	219	26	60	19	0	0	105	565	2266
11:45:00	12	150	11	0	1	173	7	43	26	0	0	76	18	167	32	0	0	217	24	38	16	0	0	78	544	2218
12:00:00	18	172	30	0	0	220	6	30	21	0	0	57	20	167	26	0	0	213	21	53	23	0	0	97	587	2236
12:15:00	8	182	18	0	0	208	7	44	27	0	0	78	18	164	27	0	1	209	27	51	24	0	0	102	597	2293
12:30:00	20	185	13	0	0	218	9	35	25	0	0	69	27	176	19	0	0	222	29	34	18	0	0	81	590	2318
12:45:00	20	162	12	0	0	194	13	36	32	0	0	81	19	183	28	0	0	230	24	48	18	0	1	90	595	2369
13:00:00	13	187	17	0	1	217	6	43	34	0	0	83	29	178	30	0	0	237	25	46	17	0	0	88	625	2407
13:15:00	19	201	15	0	1	235	9	48	30	0	0	87	25	182	25	0	2	232	29	58	30	0	2	117	671	2481
13:30:00	20	166	8	0	2	194	10	46	19	0	0	75	22	184	31	0	0	237	24	60	15	0	0	99	605	2496
13:45:00	16	164	14	0	0	194	11	47	25	0	0	83	24	197	29	0	2	250	21	58	26	0	2	105	632	2533
14:00:00	16	209	11	0	1	236	11	46	20	0	0	77	33	216	32	0	0	281	23	52	15	0	0	90	684	2592
14:15:00	15	185	15	0	2	215	12	40	16	0	0	68	27	222	35	0	0	284	21	53	24	0	0	98	665	2586
14:30:00	14	182	13	0	0	209	9	42	25	0	0	76	32	265	39	0	0	336	20	44	20	0	0	84	705	2686
14:45:00	17	171	12	0	1	200	11	39	22	0	0	72	33	252	46	0	0	331	25	41	16	0	0	82	685	2739
15:00:00	19	150	11	0	1	180	12	53	14	0	0	79	27	243	40	0	2	310	22	50	24	0	0	96	665	2720
15:15:00	18	182	13	0	0	213	11	43	15	0	0	69	40	276	32	0	0	348	24	47	11	0	0	82	712	2767
15:30:00	12	162	9	0	0	183	7	35	17	0	0	59	25	277	44	0	0	346	32	64	24	0	0	120	708	2770
15:45:00	15	150	11	0	0	176	7	41	24	0	0	72	45	344	55	0	0	444	27	52	18	0	0	97	789	2874
16:00:00	15	156	9	0	0	180	13	52	20	0	0	85	33	291	51	0	2	375	26	64	23	0	1	113	753	2962
16:15:00	26	174	12	0	0	212	12	52	25	0	0	89	38	355	35	0	3	428	21	51	14	0	3	86	815	3065
16:30:00	17	171	15	0	0	203	19	66	28	0	0	113	43	319	41	0	0	403	27	60	18	0	0	105	824	3181
16:45:00	16	172	16	0	0	204	17	46	26	0	0	89	27	304	63	0	0	394	24	46	28	0	0	98	785	3177
17:00:00	12	175	19	0	1	206	15	58	22	0	0	95	25	324	49	0	2	398	21	54	23	0	0	98	797	3221

The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

17:15:00	22	185	12	0	1	219	12	65	29	0	0	106	42	339	50	0	0	431	27	57	15	0	0	99	855	3261
17:30:00	21	179	6	0	1	206	17	47	16	0	0	80	29	294	47	0	0	370	21	53	16	0	1	90	746	3183
17:45:00	12	132	11	0	0	155	5	36	23	0	0	64	32	299	43	0	2	374	16	44	18	0	0	78	671	3069
Grand Total	634	9259	582	0	17	10475	404	1797	1199	0	0	3400	1090	9423	1537	0	20	12050	1347	2070	876	0	12	4293	**30218**	-
Approach%	6.1%	88.4%	5.6%	0%		-	11.9%	52.9%	35.3%	0%		-	9%	78.2%	12.8%	0%		-	31.4%	48.2%	20.4%	0%		-	**-**	-
Totals %	2.1%	30.6%	1.9%	0%		34.7%	1.3%	5.9%	4%	0%		11.3%	3.6%	31.2%	5.1%	0%		39.9%	4.5%	6.9%	2.9%	0%		14.2%	**-**	-
Heavy	49	667	51	0		-	39	257	52	0		-	104	806	158	0		-	157	313	56	0		-	**-**	-
Heavy %	7.7%	7.2%	8.8%	0%		-	9.7%	14.3%	4.3%	0%		-	9.5%	8.6%	10.3%	0%		-	11.7%	15.1%	6.4%	0%		-	**-**	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

Spectrum

Turning Movement Count
Location Name: CHARLESTON SIDEROAD & HWY 10 /HURONTARIO ST
Date: Thu, Jul 08, 2021 Deployment Lead: Theo Daglis

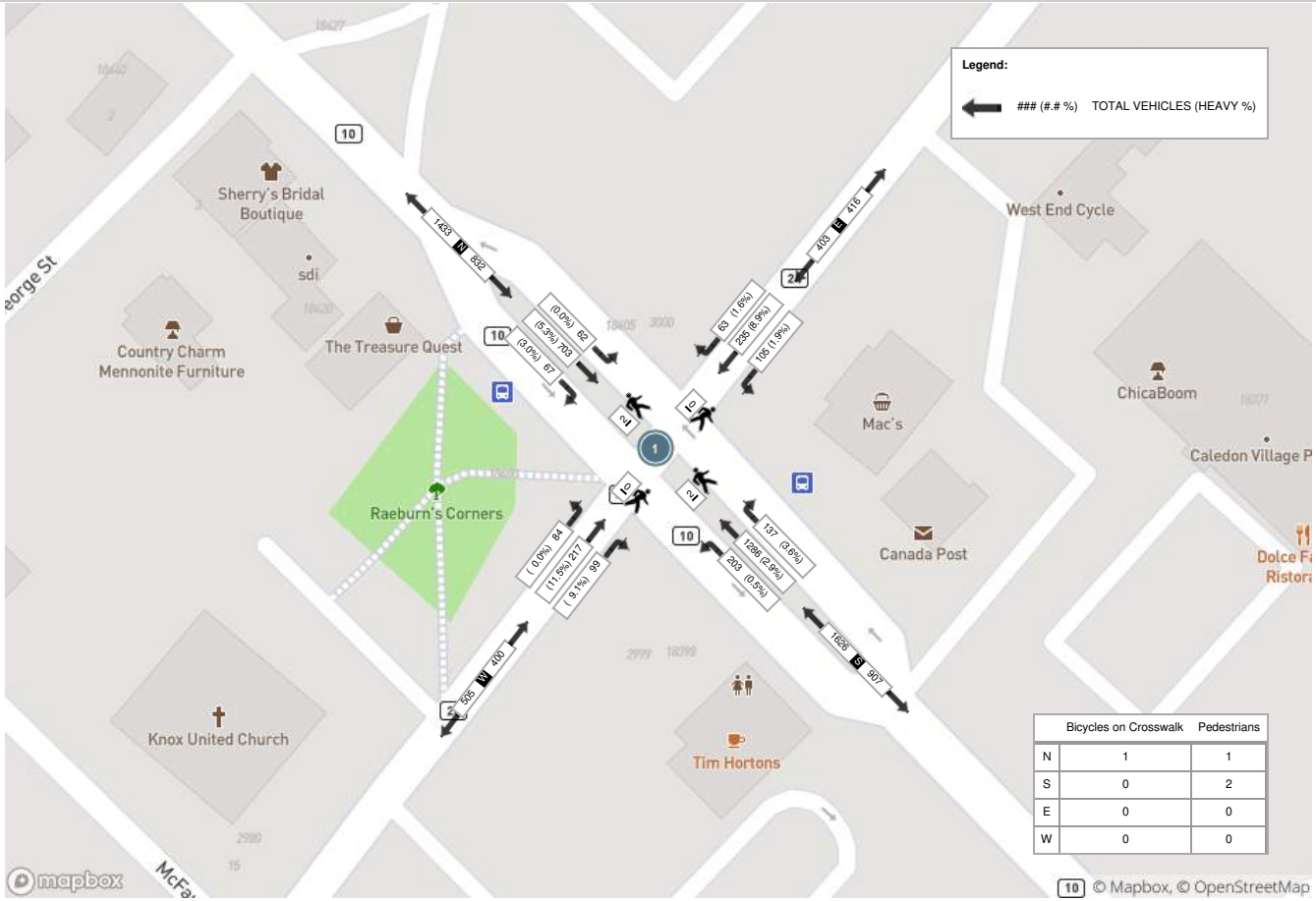
The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 04:30 PM - 05:30 PM Weather: Light Rain (13.85 °C)

Start Time	N Approach HURONTARIO ST						E Approach CHARLESTON SIDEROAD						S Approach HURONTARIO ST						W Approach CHARLESTON SIDEROAD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:30:00	17	171	15	0	0	203	19	66	28	0	0	113	43	319	41	0	0	403	27	60	18	0	0	105	824
16:45:00	16	172	16	0	0	204	17	46	26	0	0	89	27	304	63	0	0	394	24	46	28	0	0	98	785
17:00:00	12	175	19	0	1	206	15	58	22	0	0	95	25	324	49	0	2	398	21	54	23	0	0	98	797
17:15:00	22	185	12	0	1	219	12	65	29	0	0	106	42	339	50	0	0	431	27	57	15	0	0	99	855
Grand Total	67	703	62	0	2	832	63	235	105	0	0	403	137	1286	203	0	2	1626	99	217	84	0	0	400	**3261**
Approach%	8.1%	84.5%	7.5%	0%		-	15.6%	58.3%	26.1%	0%		-	8.4%	79.1%	12.5%	0%		-	24.8%	54.3%	21%	0%		-	**-**
Totals %	2.1%	21.6%	1.9%	0%		25.5%	1.9%	7.2%	3.2%	0%		12.4%	4.2%	39.4%	6.2%	0%		49.9%	3%	6.7%	2.6%	0%		12.3%	**-**
PHF	0.76	0.95	0.82	0		0.95	0.83	0.89	0.91	0		0.89	0.8	0.95	0.81	0		0.94	0.92	0.9	0.75	0		0.95	**-**
Heavy	2	37	0	0		39	1	21	2	0		24	5	37	1	0		43	9	25	0	0		34	**-**
Heavy %	3%	5.3%	0%	0%		4.7%	1.6%	8.9%	1.9%	0%		6%	3.6%	2.9%	0.5%	0%		2.6%	9.1%	11.5%	0%	0%		8.5%	**-**
Lights	65	666	62	0		793	62	214	103	0		379	132	1249	202	0		1583	90	192	84	0		366	**-**
Lights %	97%	94.7%	100%	0%		95.3%	98.4%	91.1%	98.1%	0%		94%	96.4%	97.1%	99.5%	0%		97.4%	90.9%	88.5%	100%	0%		91.5%	**-**
Single-Unit Trucks	2	21	0	0		23	1	5	2	0		8	4	14	0	0		18	3	1	0	0		4	**-**
Single-Unit Trucks %	3%	3%	0%	0%		2.8%	1.6%	2.1%	1.9%	0%		2%	2.9%	1.1%	0%	0%		1.1%	3%	0.5%	0%	0%		1%	**-**
Buses	0	0	0	0		0	0	0	0	0		0	1	1	0	0		2	0	0	0	0		0	**-**
Buses %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0.7%	0.1%	0%	0%		0.1%	0%	0%	0%	0%		0%	**-**
Articulated Trucks	0	13	0	0		13	0	12	0	0		12	0	22	1	0		23	4	23	0	0		27	**-**
Articulated Trucks %	0%	1.8%	0%	0%		1.6%	0%	5.1%	0%	0%		3%	0%	1.7%	0.5%	0%		1.4%	4%	10.6%	0%	0%		6.8%	**-**
Aggregate Trucks	0	3	0	0		3	0	4	0	0		4	0	0	0	0		0	2	1	0	0		3	**-**
Aggregate Trucks %	0%	0.4%	0%	0%		0.4%	0%	1.7%	0%	0%		1%	0%	0%	0%	0%		0%	2%	0.5%	0%	0%		0.8%	**-**
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	25%		-	-	-	-	0%		-	-	-	-	50%		-	-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	25%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 04:30 PM - 05:30 PM **Weather: Light Rain (13.85 °C)**



TYLin
200 8800 DUFFERIN STREET
VAUGHAN ONTARIO, L4K 0C5
CANADA

Turning Movement Count (1 . CHARLESTON SIDEROAD & HWY 10 (HURONTARIO ST)) CustID: 02408233 MioID:

Start Time	N Approach HURONTARIO ST						E Approach CHARLESTON SIDEROAD						S Approach HURONTARIO ST						W Approach CHARLESTON SIDEROAD						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
06:00:00	5	301	4	0	0	310	0	12	25	0	0	37	2	60	17	0	0	79	47	11	5	0	0	63	489	
06:15:00	5	305	5	0	0	315	2	9	29	0	0	40	5	103	15	0	2	123	48	20	5	0	0	73	551	
06:30:00	11	285	8	0	0	304	2	22	36	0	0	60	8	112	14	0	0	134	41	25	4	0	0	70	568	
06:45:00	7	283	5	0	1	295	0	23	32	0	0	55	9	95	22	0	0	126	38	33	4	0	0	75	551	2159
07:00:00	5	360	12	0	0	377	3	19	28	0	0	50	13	120	11	0	0	144	50	24	7	0	0	81	652	2322
07:15:00	5	373	6	0	0	384	3	30	33	0	0	66	16	134	17	0	0	167	65	34	11	0	0	110	727	2498
07:30:00	11	324	10	0	0	345	2	19	31	0	0	52	14	162	20	0	0	196	48	43	18	0	0	109	702	2632
07:45:00	14	328	13	0	1	355	12	31	28	0	0	71	12	177	22	0	1	211	33	34	17	0	0	84	721	2802
08:00:00	7	247	17	0	0	271	9	26	32	0	0	67	9	159	24	0	1	192	56	36	25	0	0	117	647	2797
08:15:00	10	284	13	0	0	307	8	29	37	0	0	74	15	148	26	0	0	189	40	29	11	0	0	80	650	2720
08:30:00	8	269	13	0	0	290	9	31	34	0	0	74	24	142	29	0	0	195	39	25	18	0	0	82	641	2659
08:45:00	11	213	19	0	0	243	8	32	26	0	0	66	17	161	25	0	0	203	21	42	13	0	0	76	588	2526
09:00:00	10	233	20	0	0	263	7	30	24	0	0	61	23	142	34	0	0	199	32	32	20	0	0	84	607	2486
09:15:00	10	206	13	0	0	229	10	35	47	0	2	92	19	150	36	0	0	205	34	30	23	0	0	87	613	2449
09:30:00	4	162	7	0	0	173	5	25	26	0	0	56	22	152	33	0	0	207	28	32	13	0	0	73	509	2317
09:45:00	10	180	9	0	1	199	9	23	25	0	4	57	18	144	28	0	3	190	32	31	17	0	1	80	526	2255
10:00:00	7	176	13	0	2	196	8	26	17	0	0	51	21	128	22	0	1	171	32	27	16	0	0	75	493	2141
10:15:00	15	182	11	0	0	208	10	33	24	0	0	67	13	130	29	0	0	172	35	32	15	0	0	82	529	2057
10:30:00	6	191	12	0	1	209	6	27	19	0	1	52	19	159	29	0	0	207	26	36	20	0	3	82	550	2098
10:45:00	10	127	10	0	0	147	14	18	21	0	0	53	16	154	24	0	5	194	27	33	18	0	0	78	472	2044
11:00:00	16	181	12	0	0	209	5	27	17	0	0	49	18	120	20	0	0	158	23	23	16	0	0	62	478	2029
11:15:00	13	153	7	0	1	173	6	19	19	0	0	44	11	133	28	0	0	172	25	24	14	0	0	63	452	1952
11:30:00	13	169	9	0	0	191	10	24	21	0	0	55	13	144	23	0	0	180	27	34	17	0	0	78	504	1906
11:45:00	9	144	14	0	1	167	7	22	22	0	0	51	17	137	22	0	0	176	21	36	17	0	1	74	468	1902
BREAK																										
12:00:00	13	165	11	0	0	189	6	22	24	0	1	52	29	160	24	0	1	213	14	35	8	0	0	57	511	
12:15:00	12	162	12	0	0	186	13	29	33	0	0	75	12	164	32	0	0	208	23	35	15	0	0	73	542	
12:30:00	13	142	13	0	0	168	6	30	24	0	0	60	28	170	25	0	0	223	23	32	26	0	0	81	532	
12:45:00	8	164	15	0	0	187	3	20	28	0	0	51	26	186	30	1	0	243	23	36	13	0	0	72	553	2138
13:00:00	11	151	7	0	0	169	9	32	27	0	0	68	16	142	26	0	0	184	27	24	17	0	0	68	489	2116
13:15:00	8	159	14	0	0	181	5	32	24	0	1	61	15	176	25	0	1	216	20	34	9	0	1	63	521	2095
13:30:00	17	174	14	0	0	205	5	22	22	0	0	49	23	162	21	0	0	206	20	27	19	0	0	66	526	2089
13:45:00	11	146	4	0	0	161	11	31	12	0	1	54	30	194	39	0	1	263	23	30	18	0	0	71	549	2085
14:00:00	18	176	11	0	1	205	4	26	18	0	1	48	27	163	25	0	1	215	13	46	23	0	0	82	550	2146
14:15:00	14	185	7	0	0	206	2	31	15	0	1	48	26	205	28	0	1	259	22	33	16	0	1	71	584	2209
14:30:00	18	156	8	0	1	182	11	40	27	0	2	78	24	211	28	0	1	263	29	38	18	0	1	85	608	2291
14:45:00	16	149	9	0	1	174	15	33	20	0	2	68	36	275	50	0	1	361	20	28	16	0	0	64	667	2409
15:00:00	13	139	9	0	0	161	1	30	21	0	1	52	29	272	39	0	0	340	22	38	17	0	0	77	630	2489
15:15:00	19	148	10	0	0	177	8	39	20	0	0	67	34	305	31	0	0	370	20	35	15	0	0	70	684	2589
15:30:00	16	164	16	0	1	196	12	35	20	0	1	67	27	370	53	0	1	450	12	48	22	0	1	82	795	2776
15:45:00	10	168	6	0	0	184	15	46	30	0	0	91	41	373	56	0	1	470	29	41	25	0	2	95	840	2949
16:00:00	13	150	16	0	0	179	28	42	33	0	0	103	28	319	50	0	0	397	18	35	25	0	0	78	757	3076
16:15:00	16	174	19	0	2	209	20	60	24	0	0	104	31	379	51	0	2	461	21	45	15	0	1	81	855	3247
16:30:00	12	150	15	0	0	177	15	50	31	0	0	96	33	351	47	0	1	431	23	40	20	0	1	83	787	3239
16:45:00	18	168	11	0	1	197	16	49	24	0	1	89	26	364	46	0	1	436	19	42	20	0	0	81	803	3202

17:00:00	15	178	6	0	0	199	20	49	28	0	0	97	29	331	30	0	0	390	23	39	30	0	0	92	778	3223
17:15:00	22	155	10	0	1	187	23	37	19	0	0	79	27	374	49	0	0	450	20	28	23	0	0	71	787	3155
17:30:00	16	176	20	0	0	212	12	53	20	0	0	85	22	285	41	0	0	348	27	30	13	0	0	70	715	3083
17:45:00	13	169	12	0	2	194	12	36	14	0	1	62	23	294	42	0	2	359	18	39	20	0	1	77	692	2972
Grand Total	564	9544	537	0	18	10645	427	1466	1211	0	20	3104	996	9491	1458	1	28	11946	1377	1584	787	0	14	3748	**29443**	-
Approach%	5.3%	89.7%	5%	0%		-	13.8%	47.2%	39%	0%		-	8.3%	79.4%	12.2%	0%		-	36.7%	42.3%	21%	0%		-	**-**	-
Totals %	1.9%	32.4%	1.8%	0%		36.2%	1.5%	5%	4.1%	0%		10.5%	3.4%	32.2%	5%	0%		40.6%	4.7%	5.4%	2.7%	0%		12.7%	**-**	-
Heavy	65	656	54	0		-	36	199	46	0		-	86	838	178	0		-	122	287	59	0		-	**-**	-
Heavy %	11.5%	6.9%	10.1%	0%		-	8.4%	13.6%	3.8%	0%		-	8.6%	8.8%	12.2%	0%		-	8.9%	18.1%	7.5%	0%		-	**-**	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

Spectrum

Turning Movement Count
Location Name: CHARLESTON SIDEROAD & HWY 10 (HURONTARIO ST)
Date: Thu, Apr 21, 2022 Deployment Lead: Tasos Issaaakidis

TYLin
200 8800 DUFFERIN STREET
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 07:00 AM - 08:00 AM Weather: Overcast Clouds (4.03 °C)

Start Time	N Approach HURONTARIO ST						E Approach CHARLESTON SIDEROAD						S Approach HURONTARIO ST						W Approach CHARLESTON SIDEROAD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
07:00:00	5	360	12	0	0	377	3	19	28	0	0	50	13	120	11	0	0	144	50	24	7	0	0	81	652
07:15:00	5	373	6	0	0	384	3	30	33	0	0	66	16	134	17	0	0	167	65	34	11	0	0	110	727
07:30:00	11	324	10	0	0	345	2	19	31	0	0	52	14	162	20	0	0	196	48	43	18	0	0	109	702
07:45:00	14	328	13	0	1	355	12	31	28	0	0	71	12	177	22	0	1	211	33	34	17	0	0	84	721
Grand Total	35	1385	41	0	1	1461	20	99	120	0	0	239	55	593	70	0	1	718	196	135	53	0	0	384	**2802**
Approach%	2.4%	94.8%	2.8%	0%		-	8.4%	41.4%	50.2%	0%		-	7.7%	82.6%	9.7%	0%		-	51%	35.2%	13.8%	0%		-	**-**
Totals %	1.2%	49.4%	1.5%	0%		52.1%	0.7%	3.5%	4.3%	0%		8.5%	2%	21.2%	2.5%	0%		25.6%	7%	4.8%	1.9%	0%		13.7%	**-**
PHF	0.63	0.93	0.79	0		0.95	0.42	0.8	0.91	0		0.84	0.86	0.84	0.8	0		0.85	0.75	0.78	0.74	0		0.87	**-**
Heavy	3	52	7	0		62	4	12	1	0		17	12	74	16	0		102	16	31	2	0		49	**-**
Heavy %	8.6%	3.8%	17.1%	0%		4.2%	20%	12.1%	0.8%	0%		7.1%	21.8%	12.5%	22.9%	0%		14.2%	8.2%	23%	3.8%	0%		12.8%	**-**
Lights	32	1333	34	0		1399	16	87	119	0		222	43	519	54	0		616	180	104	51	0		335	**-**
Lights %	91.4%	96.2%	82.9%	0%		95.8%	80%	87.9%	99.2%	0%		92.9%	78.2%	87.5%	77.1%	0%		85.8%	91.8%	77%	96.2%	0%		87.2%	**-**
Single-Unit Trucks	2	10	1	0		13	2	3	0	0		5	2	23	2	0		27	1	5	1	0		7	**-**
Single-Unit Trucks %	5.7%	0.7%	2.4%	0%		0.9%	10%	3%	0%	0%		2.1%	3.6%	3.9%	2.9%	0%		3.8%	0.5%	3.7%	1.9%	0%		1.8%	**-**
Buses	1	8	2	0		11	0	0	1	0		1	1	3	0	0		4	0	1	0	0		1	**-**
Buses %	2.9%	0.6%	4.9%	0%		0.8%	0%	0%	0.8%	0%		0.4%	1.8%	0.5%	0%	0%		0.6%	0%	0.7%	0%	0%		0.3%	**-**
Articulated Trucks	0	24	1	0		25	2	7	0	0		9	0	34	2	0		36	3	13	0	0		16	**-**
Articulated Trucks %	0%	1.7%	2.4%	0%		1.7%	10%	7.1%	0%	0%		3.8%	0%	5.7%	2.9%	0%		5%	1.5%	9.6%	0%	0%		4.2%	**-**
Aggregate Trucks	0	10	3	0		13	0	2	0	0		2	9	14	12	0		35	12	12	1	0		25	**-**
Aggregate Trucks %	0%	0.7%	7.3%	0%		0.9%	0%	2%	0%	0%		0.8%	16.4%	2.4%	17.1%	0%		4.9%	6.1%	8.9%	1.9%	0%		6.5%	**-**
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	50%		-	-	-	-	0%		-	-	-	-	50%		-	-	-	-	0%		**-**

TYLin
200 8800 DUFFERIN STREET
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 03:30 PM - 04:30 PM Weather: Light Rain (8.66 °C)

Start Time	N Approach HURONTARIO ST						E Approach CHARLESTON SIDEROAD						S Approach HURONTARIO ST						W Approach CHARLESTON SIDEROAD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
15:30:00	16	164	16	0	1	196	12	35	20	0	1	67	27	370	53	0	1	450	12	48	22	0	1	82	795
15:45:00	10	168	6	0	0	184	15	46	30	0	0	91	41	373	56	0	1	470	29	41	25	0	2	95	840
16:00:00	13	150	16	0	0	179	28	42	33	0	0	103	28	319	50	0	0	397	18	35	25	0	0	78	757
16:15:00	16	174	19	0	2	209	20	60	24	0	0	104	31	379	51	0	2	461	21	45	15	0	1	81	855
Grand Total	55	656	57	0	3	768	75	183	107	0	1	365	127	1441	210	0	4	1778	80	169	87	0	4	336	**3247**
Approach%	7.2%	85.4%	7.4%	0%		-	20.5%	50.1%	29.3%	0%		-	7.1%	81%	11.8%	0%		-	23.8%	50.3%	25.9%	0%		-	**-**
Totals %	1.7%	20.2%	1.8%	0%		23.7%	2.3%	5.6%	3.3%	0%		11.2%	3.9%	44.4%	6.5%	0%		54.8%	2.5%	5.2%	2.7%	0%		10.3%	**-**
PHF	0.86	0.94	0.75	0		0.92	0.67	0.76	0.81	0		0.88	0.77	0.95	0.94	0		0.95	0.69	0.88	0.87	0		0.88	**-**
Heavy	5	45	12	0		62	4	17	8	0		29	10	45	9	0		64	5	29	9	0		43	**-**
Heavy %	9.1%	6.9%	21.1%	0%		8.1%	5.3%	9.3%	7.5%	0%		7.9%	7.9%	3.1%	4.3%	0%		3.6%	6.3%	17.2%	10.3%	0%		12.8%	**-**
Lights	50	611	45	0		706	71	166	99	0		336	117	1396	201	0		1714	75	140	78	0		293	**-**
Lights %	90.9%	93.1%	78.9%	0%		91.9%	94.7%	90.7%	92.5%	0%		92.1%	92.1%	96.9%	95.7%	0%		96.4%	93.8%	82.8%	89.7%	0%		87.2%	**-**
Single-Unit Trucks	1	14	4	0		19	1	3	3	0		7	3	16	5	0		24	4	4	2	0		10	**-**
Single-Unit Trucks %	1.8%	2.1%	7%	0%		2.5%	1.3%	1.6%	2.8%	0%		1.9%	2.4%	1.1%	2.4%	0%		1.3%	5%	2.4%	2.3%	0%		3%	**-**
Buses	0	7	4	0		11	3	6	5	0		14	3	4	1	0		8	0	6	5	0		11	**-**
Buses %	0%	1.1%	7%	0%		1.4%	4%	3.3%	4.7%	0%		3.8%	2.4%	0.3%	0.5%	0%		0.4%	0%	3.6%	5.7%	0%		3.3%	**-**
Articulated Trucks	3	24	4	0		31	0	8	0	0		8	2	18	2	0		22	0	14	2	0		16	**-**
Articulated Trucks %	5.5%	3.7%	7%	0%		4%	0%	4.4%	0%	0%		2.2%	1.6%	1.2%	1%	0%		1.2%	0%	8.3%	2.3%	0%		4.8%	**-**
Aggregate Trucks	1	0	0	0		1	0	0	0	0		0	2	7	1	0		10	1	5	0	0		6	**-**
Aggregate Trucks %	1.8%	0%	0%	0%		0.1%	0%	0%	0%	0%		0%	1.6%	0.5%	0.5%	0%		0.6%	1.3%	3%	0%	0%		1.8%	**-**
Pedestrians	-	-	-	-	3	-	-	-	-	-	1	-	-	-	-	-	4	-	-	-	-	-	4	-	**-**
Pedestrians%	-	-	-	-	25%		-	-	-	-	8.3%		-	-	-	-	33.3%		-	-	-	-	33.3%		**-**

TYLin
200 8800 DUFFERIN STREET
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 07:00 AM - 08:00 AM Weather: Overcast Clouds (4.03 °C)

TYLin
200 8800 DUFFERIN STREET
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 03:30 PM - 04:30 PM Weather: Light Rain (8.66 °C)

TYLin
200 8800 DUFFERIN STREET
VAUGHAN ONTARIO, L4K 0C5
CANADA

Turning Movement Count (1 . CHARLESTON SIDEROAD & HWY 10 (HURONTARIO ST)) CustID: 02408233 MioID:

Start Time	N Approach HURONTARIO ST						E Approach CHARLESTON SIDEROAD						S Approach HURONTARIO ST						W Approach CHARLESTON SIDEROAD						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
06:00:00	1	76	2	0	0	79	0	3	7	0	0	10	2	31	6	0	0	39	9	6	3	0	0	18	146	
06:15:00	1	83	2	0	0	86	1	8	5	0	0	14	5	45	7	0	0	57	5	6	3	0	0	14	171	
06:30:00	2	82	4	0	0	88	0	4	8	0	0	12	5	53	9	0	0	67	10	3	7	0	0	20	187	
06:45:00	1	96	2	0	2	99	1	6	7	0	0	14	6	62	11	0	0	79	7	9	4	0	0	20	212	716
07:00:00	5	116	1	0	0	122	2	8	16	0	0	26	4	52	6	0	0	62	7	10	7	0	0	24	234	804
07:15:00	6	140	5	0	0	151	2	7	14	0	0	23	8	91	13	0	1	112	16	16	4	0	1	36	322	955
07:30:00	4	119	4	0	0	127	2	10	22	0	0	34	7	106	19	0	0	132	17	18	14	0	0	49	342	1110
07:45:00	8	101	1	0	1	110	3	13	12	0	1	28	13	125	20	0	0	158	11	23	12	0	1	46	342	1240
08:00:00	7	105	6	0	0	118	2	22	20	0	0	44	9	106	10	0	1	125	17	17	12	0	1	46	333	1339
08:15:00	9	147	7	0	1	163	3	23	15	0	0	41	10	121	16	0	1	147	18	22	16	0	0	56	407	1424
08:30:00	6	153	2	0	0	161	4	16	11	0	0	31	17	118	25	0	0	160	25	27	15	0	0	67	419	1501
08:45:00	9	130	8	0	0	147	5	27	16	0	0	48	14	137	10	0	0	161	11	25	15	0	0	51	407	1566
09:00:00	7	166	11	0	1	184	4	24	25	0	0	53	13	157	12	0	0	182	13	26	18	0	0	57	476	1709
09:15:00	12	190	10	0	0	212	4	37	14	0	0	55	12	134	15	0	0	161	26	26	12	0	0	64	492	1794
09:30:00	7	147	15	0	0	169	12	31	34	0	1	77	18	155	18	0	1	191	15	27	13	0	0	55	492	1867
09:45:00	4	185	14	0	1	203	9	49	23	0	0	81	19	161	26	0	0	206	25	30	16	0	0	71	561	2021
10:00:00	13	185	5	0	1	203	8	30	20	0	0	58	20	177	28	0	0	225	22	26	25	0	0	73	559	2104
10:15:00	13	195	12	0	0	220	8	29	24	0	0	61	15	159	28	0	0	202	17	35	24	0	0	76	559	2171
10:30:00	13	202	11	0	0	226	6	44	24	0	0	74	9	171	26	0	0	206	23	46	29	0	0	98	604	2283
10:45:00	14	207	14	0	1	235	4	29	35	0	0	68	26	193	23	0	4	242	28	50	29	0	0	107	652	2374
11:00:00	19	233	17	0	0	269	8	37	21	0	2	66	17	209	20	0	4	246	30	35	22	0	0	87	668	2483
11:15:00	14	204	11	0	1	229	6	43	35	0	0	84	24	170	34	0	0	228	25	50	28	0	1	103	644	2568
11:30:00	17	237	19	0	0	273	7	48	30	0	0	85	19	204	27	0	1	250	22	43	22	0	2	87	695	2659
11:45:00	11	204	9	0	0	224	7	44	37	0	0	88	31	195	37	0	0	263	23	50	24	0	0	97	672	2679
BREAK																										
12:00:00	11	217	15	0	0	243	6	43	35	0	0	84	26	192	31	0	0	249	21	46	18	0	1	85	661	
12:15:00	17	232	17	0	1	266	7	46	36	0	0	89	23	191	30	0	0	244	17	42	20	0	0	79	678	
12:30:00	15	211	24	0	5	250	4	40	29	0	3	73	27	213	28	0	0	268	21	47	29	0	0	97	688	
12:45:00	20	224	13	1	2	258	11	38	26	0	0	75	25	194	30	0	0	249	22	58	28	0	0	108	690	2717
13:00:00	11	217	9	1	1	238	8	35	28	0	0	71	28	223	32	0	0	283	26	40	19	0	0	85	677	2733
13:15:00	10	185	11	0	3	206	2	32	26	0	1	60	21	209	33	0	1	263	31	35	28	0	1	94	623	2678
13:30:00	15	190	13	0	5	218	6	30	22	0	3	58	24	204	32	0	0	260	29	43	23	0	0	95	631	2621
13:45:00	19	183	16	0	0	218	10	32	29	0	1	71	36	308	32	0	1	376	30	28	21	0	4	79	744	2675
14:00:00	15	228	12	0	2	255	9	31	29	0	0	69	22	232	29	0	1	283	18	42	16	0	5	76	683	2681
14:15:00	7	219	15	0	0	241	8	41	26	0	1	75	15	196	31	0	0	242	34	35	28	0	0	97	655	2713
14:30:00	19	177	12	0	0	208	14	29	21	0	1	64	25	229	37	0	3	291	25	56	21	0	0	102	665	2747
14:45:00	21	209	12	0	3	242	3	37	22	0	1	62	26	217	33	0	0	276	30	48	25	0	1	103	683	2686
15:00:00	18	204	18	0	4	240	10	35	31	0	0	76	31	246	40	0	0	317	19	60	22	0	0	101	734	2737
15:15:00	12	185	15	0	5	212	7	44	28	0	0	79	17	229	17	0	3	263	33	51	20	0	1	104	658	2740
15:30:00	17	188	7	0	1	212	4	38	14	0	1	56	20	220	45	0	0	285	29	36	19	0	0	84	637	2712
15:45:00	19	185	10	0	4	214	9	34	14	0	2	57	19	182	28	0	0	229	23	31	18	0	0	72	572	2601
16:00:00	11	160	13	0	0	184	6	35	25	0	0	66	25	202	36	0	0	263	29	38	12	0	0	79	592	2459
16:15:00	11	187	15	0	0	213	11	33	21	0	0	65	25	240	31	0	0	296	23	45	12	0	0	80	654	2455
16:30:00	12	192	16	0	1	220	10	25	23	0	0	58	23	182	24	0	0	229	24	38	13	0	0	75	582	2400
16:45:00	16	195	14	0	0	225	3	29	18	0	0	50	26	242	32	0	0	300	27	44	16	0	0	87	662	2490

TYLin
200 8800 DUFFERIN STREET
VAUGHAN ONTARIO, L4K 0C5
CANADA

17:00:00	15	172	21	0	4	208	7	32	33	0	2	72	18	179	24	0	2	221	18	37	15	0	0	70	571	2469
17:15:00	7	188	9	0	5	204	4	31	19	0	0	54	22	194	26	0	0	242	22	32	15	0	0	69	569	2384
17:30:00	12	191	12	0	0	215	5	32	22	0	0	59	23	184	27	0	0	234	24	47	16	0	0	87	595	2397
17:45:00	11	149	13	0	0	173	3	39	22	0	0	64	21	177	29	0	3	227	17	43	21	0	0	81	545	2280
Grand Total	544	8391	524	2	55	9461	275	1433	1074	0	20	2782	891	8217	1183	0	27	10291	1014	1648	849	0	19	3511	**26045**	-
Approach%	5.7%	88.7%	5.5%	0%		-	9.9%	51.5%	38.6%	0%		-	8.7%	79.8%	11.5%	0%		-	28.9%	46.9%	24.2%	0%		-	**-**	-
Totals %	2.1%	32.2%	2%	0%		36.3%	1.1%	5.5%	4.1%	0%		10.7%	3.4%	31.5%	4.5%	0%		39.5%	3.9%	6.3%	3.3%	0%		13.5%	**-**	-
Heavy	9	201	9	0		-	7	25	13	0		-	14	228	18	0		-	19	30	14	0		-	**-**	-
Heavy %	1.7%	2.4%	1.7%	0%		-	2.5%	1.7%	1.2%	0%		-	1.6%	2.8%	1.5%	0%		-	1.9%	1.8%	1.6%	0%		-	**-**	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

TYLin
200 8800 DUFFERIN STREET
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 11:00 AM - 12:00 PM Weather: Broken Clouds (5.75 °C)

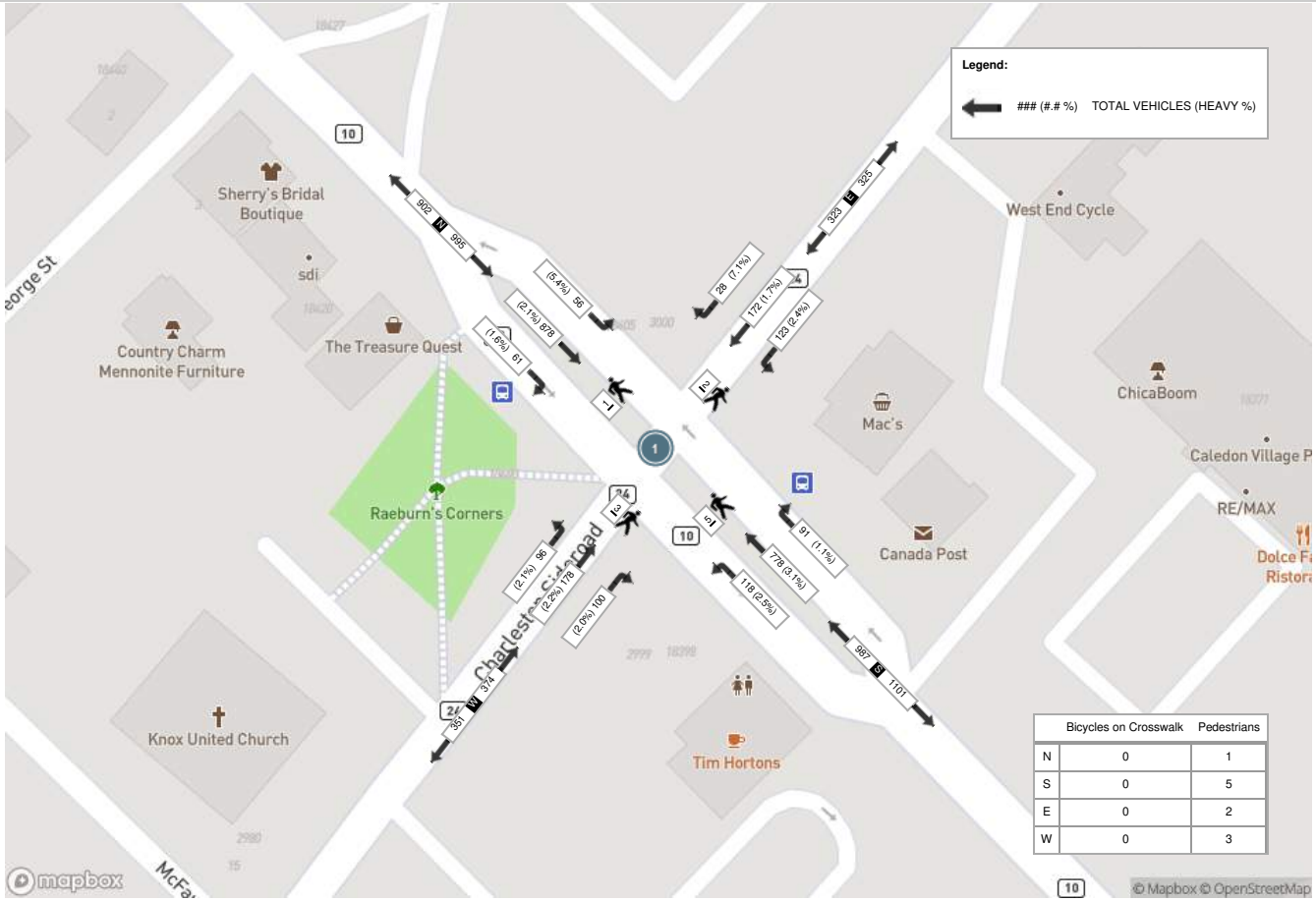
Start Time	N Approach HURONTARIO ST						E Approach CHARLESTON SIDEROAD						S Approach HURONTARIO ST						W Approach CHARLESTON SIDEROAD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
11:00:00	19	233	17	0	0	269	8	37	21	0	2	66	17	209	20	0	4	246	30	35	22	0	0	87	668
11:15:00	14	204	11	0	1	229	6	43	35	0	0	84	24	170	34	0	0	228	25	50	28	0	1	103	644
11:30:00	17	237	19	0	0	273	7	48	30	0	0	85	19	204	27	0	1	250	22	43	22	0	2	87	695
11:45:00	11	204	9	0	0	224	7	44	37	0	0	88	31	195	37	0	0	263	23	50	24	0	0	97	672
Grand Total	61	878	56	0	1	995	28	172	123	0	2	323	91	778	118	0	5	987	100	178	96	0	3	374	**2679**
Approach%	6.1%	88.2%	5.6%	0%		-	8.7%	53.3%	38.1%	0%		-	9.2%	78.8%	12%	0%		-	26.7%	47.6%	25.7%	0%		-	**-**
Totals %	2.3%	32.8%	2.1%	0%		37.1%	1%	6.4%	4.6%	0%		12.1%	3.4%	29%	4.4%	0%		36.8%	3.7%	6.6%	3.6%	0%		14%	**-**
PHF	0.8	0.93	0.74	0		0.91	0.88	0.9	0.83	0		0.92	0.73	0.93	0.8	0		0.94	0.83	0.89	0.86	0		0.91	**-**
Heavy	1	18	3	0		22	2	3	3	0		8	1	24	3	0		28	2	4	2	0		8	**-**
Heavy %	1.6%	2.1%	5.4%	0%		2.2%	7.1%	1.7%	2.4%	0%		2.5%	1.1%	3.1%	2.5%	0%		2.8%	2%	2.2%	2.1%	0%		2.1%	**-**
Lights	60	860	53	0		973	26	169	120	0		315	90	754	115	0		959	98	174	94	0		366	**-**
Lights %	98.4%	97.9%	94.6%	0%		97.8%	92.9%	98.3%	97.6%	0%		97.5%	98.9%	96.9%	97.5%	0%		97.2%	98%	97.8%	97.9%	0%		97.9%	**-**
Single-Unit Trucks	1	8	3	0		12	1	1	3	0		5	1	8	2	0		11	2	3	2	0		7	**-**
Single-Unit Trucks %	1.6%	0.9%	5.4%	0%		1.2%	3.6%	0.6%	2.4%	0%		1.5%	1.1%	1%	1.7%	0%		1.1%	2%	1.7%	2.1%	0%		1.9%	**-**
Buses	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%	**-**
Articulated Trucks	0	7	0	0		7	0	2	0	0		2	0	6	1	0		7	0	1	0	0		1	**-**
Articulated Trucks %	0%	0.8%	0%	0%		0.7%	0%	1.2%	0%	0%		0.6%	0%	0.8%	0.8%	0%		0.7%	0%	0.6%	0%	0%		0.3%	**-**
Aggregate Trucks	0	3	0	0		3	1	0	0	0		1	0	10	0	0		10	0	0	0	0		0	**-**
Aggregate Trucks %	0%	0.3%	0%	0%		0.3%	3.6%	0%	0%	0%		0.3%	0%	1.3%	0%	0%		1%	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 Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	1	-	-	-	-	-	2	-	-	-	-	-	5	-	-	-	-	-	3	-	**-**
Pedestrians%	-	-	-	-	9.1%		-	-	-	-	18.2%		-	-	-	-	45.5%		-	-	-	-	27.3%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

Peak Hour: 01:45 PM - 02:45 PM Weather: Light Rain (5.94 °C)

Start Time	N Approach HURONTARIO ST						E Approach CHARLESTON SIDEROAD						S Approach HURONTARIO ST						W Approach CHARLESTON SIDEROAD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
13:45:00	19	183	16	0	0	218	10	32	29	0	1	71	36	308	32	0	1	376	30	28	21	0	4	79	744
14:00:00	15	228	12	0	2	255	9	31	29	0	0	69	22	232	29	0	1	283	18	42	16	0	5	76	683
14:15:00	7	219	15	0	0	241	8	41	26	0	1	75	15	196	31	0	0	242	34	35	28	0	0	97	655
14:30:00	19	177	12	0	0	208	14	29	21	0	1	64	25	229	37	0	3	291	25	56	21	0	0	102	665
Grand Total	60	807	55	0	2	922	41	133	105	0	3	279	98	965	129	0	5	1192	107	161	86	0	9	354	**2747**
Approach%	6.5%	87.5%	6%	0%		-	14.7%	47.7%	37.6%	0%		-	8.2%	81%	10.8%	0%		-	30.2%	45.5%	24.3%	0%		-	**-**
Totals %	2.2%	29.4%	2%	0%		33.6%	1.5%	4.8%	3.8%	0%		10.2%	3.6%	35.1%	4.7%	0%		43.4%	3.9%	5.9%	3.1%	0%		12.9%	**-**
PHF	0.79	0.88	0.86	0		0.9	0.73	0.81	0.91	0		0.93	0.68	0.78	0.87	0		0.79	0.79	0.72	0.77	0		0.87	**-**
Heavy	1	16	0	0		17	0	2	1	0		3	1	17	1	0		19	0	1	0	0		1	**-**
Heavy %	1.7%	2%	0%	0%		1.8%	0%	1.5%	1%	0%		1.1%	1%	1.8%	0.8%	0%		1.6%	0%	0.6%	0%	0%		0.3%	**-**
Lights	59	791	55	0		905	41	131	104	0		276	97	948	128	0		1173	107	160	86	0		353	**-**
Lights %	98.3%	98%	100%	0%		98.2%	100%	98.5%	99%	0%		98.9%	99%	98.2%	99.2%	0%		98.4%	100%	99.4%	100%	0%		99.7%	**-**
Single-Unit Trucks	1	5	0	0		6	0	1	1	0		2	1	6	1	0		8	0	0	0	0		0	**-**
Single-Unit Trucks %	1.7%	0.6%	0%	0%		0.7%	0%	0.8%	1%	0%		0.7%	1%	0.6%	0.8%	0%		0.7%	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	**-**
Buses %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Articulated Trucks	0	9	0	0		9	0	1	0	0		1	0	8	0	0		8	0	1	0	0		1	**-**
Articulated Trucks %	0%	1.1%	0%	0%		1%	0%	0.8%	0%	0%		0.4%	0%	0.8%	0%	0%		0.7%	0%	0.6%	0%	0%		0.3%	**-**
Aggregate Trucks	0	2	0	0		2	0	0	0	0		0	0	3	0	0		3	0	0	0	0		0	**-**
Aggregate Trucks %	0%	0.2%	0%	0%		0.2%	0%	0%	0%	0%		0%	0%	0.3%	0%	0%		0.3%	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 Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	2	-	-	-	-	-	3	-	-	-	-	-	4	-	-	-	-	-	9	-	**-**
Pedestrians%	-	-	-	-	10.5%		-	-	-	-	15.8%		-	-	-	-	21.1%		-	-	-	-	47.4%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	5.3%		-	-	-	-	0%		**-**

TYLin
200 8800 DUFFERIN STREET
VAUGHAN ONTARIO, L4K 0C5
CANADA

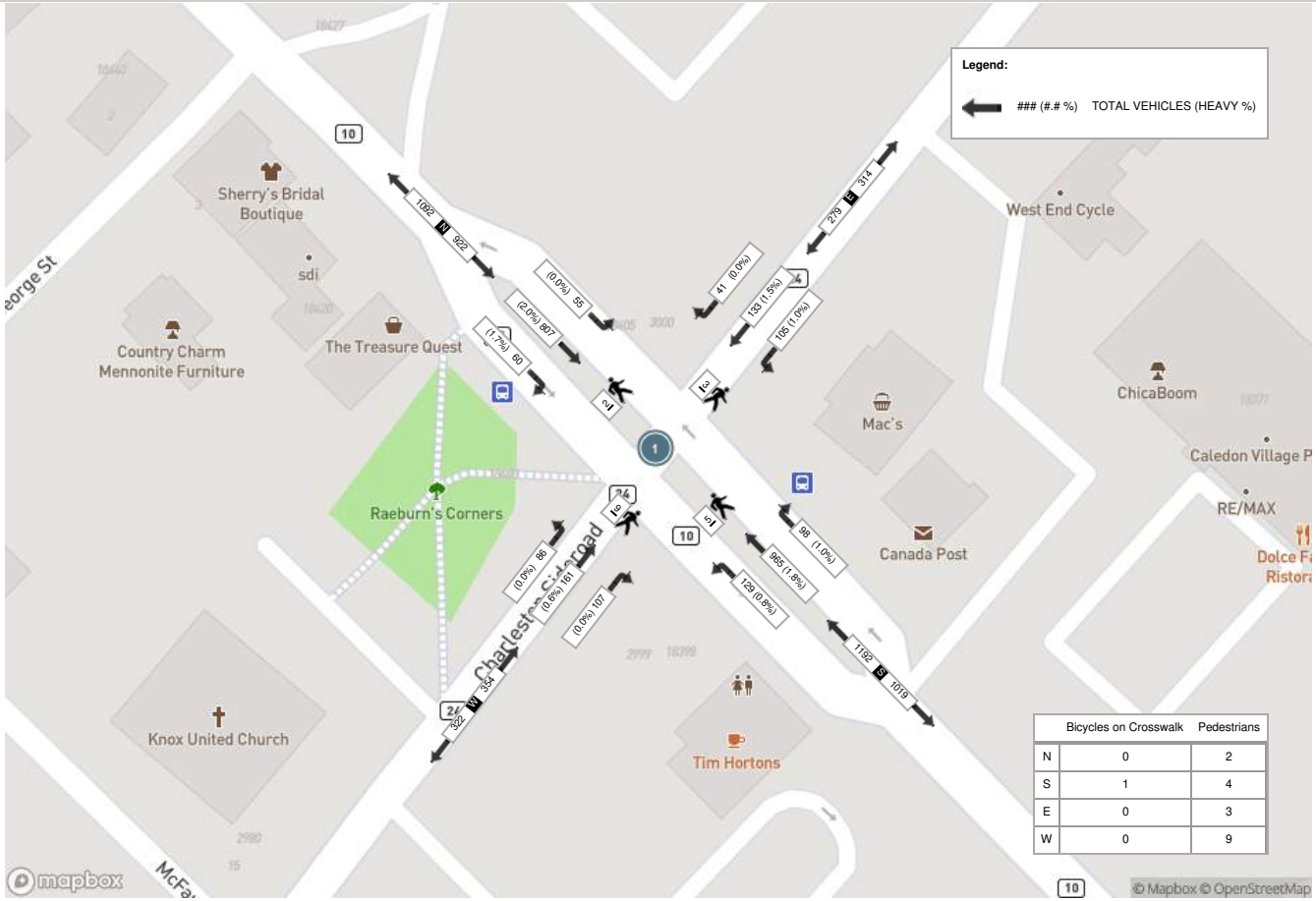
Peak Hour: 11:00 AM - 12:00 PM Weather: Broken Clouds (5.75 °C)



	Bicycles on Crosswalk	Pedestrians
N	0	1
S	0	5
E	0	2
W	0	3

TYLin
200 8800 DUFFERIN STREET
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 01:45 PM - 02:45 PM Weather: Light Rain (5.94 °C)



Spectrum

Turning Movement Count
Location Name: CHARLESTON SIDEROAD & MISSISSAUGA RD
Date: Thu, Apr 21, 2022 Deployment Lead: Tasos Issaaakidis

TYLin
200 8800 DUFFERIN STREET
VAUGHAN ONTARIO, L4K 0C5
CANADA

Turning Movement Count (3 . CHARLESTON SIDEROAD & MISSISSAUGA RD) CustID: 02413835 MioID:

Start Time	N Approach MISSISSAUGA RD						E Approach CHARLESTON SIDEROAD						S Approach MISSISSAUGA RD						W Approach CHARLESTON SIDEROAD						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
06:00:00	0	0	0	0	0	0	0	36	2	0	0	38	0	0	0	0	0	0	0	47	0	0	0	47	85	
06:15:00	2	1	1	0	0	4	0	19	1	0	0	20	0	0	0	0	0	0	0	58	0	0	0	58	82	
06:30:00	1	1	1	0	0	3	0	43	3	0	0	46	0	2	0	0	0	2	0	55	0	0	0	55	106	
06:45:00	1	0	0	0	0	1	0	38	3	0	0	41	0	0	0	0	0	0	1	77	0	0	0	78	120	393
07:00:00	3	3	1	0	0	7	0	40	1	0	0	41	1	0	0	0	0	1	1	48	0	0	0	49	98	406
07:15:00	2	1	3	0	0	6	0	37	1	0	0	38	0	1	0	0	0	1	0	77	0	0	0	77	122	446
07:30:00	1	1	5	0	0	7	1	47	1	0	0	49	2	0	1	0	0	3	0	86	1	0	0	87	146	486
07:45:00	2	1	2	0	0	5	0	50	1	0	0	51	1	2	0	0	0	3	1	76	3	0	0	80	139	505
08:00:00	4	2	2	0	0	8	0	49	2	0	0	51	3	1	1	0	0	5	0	81	4	0	0	85	149	556
08:15:00	5	2	1	0	0	8	1	41	2	0	0	44	0	3	1	0	0	4	1	72	0	0	0	73	129	563
08:30:00	1	3	0	0	0	4	0	60	2	0	0	62	1	1	1	0	0	3	1	63	0	0	0	64	133	550
08:45:00	1	0	1	0	0	2	2	58	2	0	0	62	4	2	0	0	0	6	2	64	1	0	0	67	137	548
09:00:00	1	0	0	0	0	1	4	58	2	0	0	64	2	0	0	0	0	2	2	64	1	0	0	67	134	533
09:15:00	2	1	1	0	0	4	0	52	1	0	0	53	3	1	0	0	0	4	0	64	3	0	0	67	128	532
09:30:00	1	1	0	0	0	2	0	54	2	0	0	56	5	1	1	0	0	7	0	57	5	0	0	62	127	526
09:45:00	3	0	1	0	0	4	1	56	4	0	0	61	1	3	1	0	0	5	0	70	1	0	0	71	141	530
10:00:00	2	0	2	0	0	4	1	38	2	0	0	41	3	0	0	0	0	3	2	55	2	0	0	59	107	503
10:15:00	1	4	4	0	0	9	1	46	2	0	0	49	2	0	0	0	0	2	0	67	1	0	0	68	128	503
10:30:00	3	1	0	0	0	4	1	52	1	0	0	54	3	1	0	0	0	4	1	58	3	0	0	62	124	500
10:45:00	0	2	2	0	0	4	1	33	2	0	0	36	2	1	1	0	0	4	0	62	3	0	0	65	109	468
11:00:00	4	0	2	0	0	6	2	40	1	0	0	43	2	2	1	0	0	5	1	50	2	0	0	53	107	468
11:15:00	2	0	2	0	0	4	2	46	2	0	0	50	2	2	1	0	0	5	1	46	0	0	0	47	106	446
11:30:00	2	0	3	0	0	5	2	53	0	0	0	55	3	1	0	0	0	4	1	51	1	0	0	53	117	439
11:45:00	2	0	1	0	0	3	0	44	2	0	0	46	3	1	2	0	0	6	1	48	5	0	0	54	109	439
BREAK																										
12:00:00	1	1	0	0	0	2	0	35	3	0	0	38	2	3	3	0	0	8	0	57	0	0	0	57	105	
12:15:00	2	0	0	0	0	2	1	59	1	0	0	61	4	2	0	0	0	6	1	42	0	0	0	43	112	
12:30:00	2	2	1	0	0	5	2	56	3	1	0	62	2	6	1	0	0	9	0	65	4	0	0	69	145	
12:45:00	2	2	1	0	0	5	1	59	2	0	0	62	1	1	1	0	0	3	0	63	4	0	0	67	137	499
13:00:00	2	0	2	0	0	4	0	54	1	0	0	55	1	0	0	0	0	1	1	49	1	0	0	51	111	505
13:15:00	5	1	0	0	0	6	3	59	2	0	0	64	4	3	1	0	0	8	0	64	5	0	0	69	147	540
13:30:00	1	1	1	0	0	3	0	56	0	0	0	56	1	2	0	0	0	3	2	41	1	0	0	44	106	501
13:45:00	1	0	1	0	0	2	0	53	2	0	0	55	2	2	0	0	0	4	0	47	2	0	0	49	110	474
14:00:00	2	1	2	0	0	5	1	56	1	0	0	58	3	2	0	0	0	5	0	77	4	0	0	81	149	512
14:15:00	2	1	0	0	0	3	1	54	2	0	0	57	2	3	0	0	0	5	1	59	2	0	0	62	127	492
14:30:00	7	1	1	0	0	9	0	76	0	0	0	76	4	2	0	0	0	6	1	60	4	0	0	65	156	542
14:45:00	2	1	1	0	0	4	3	67	1	0	0	71	1	1	1	0	0	3	0	65	1	0	0	66	144	576
15:00:00	2	2	0	0	0	4	1	72	1	0	0	74	1	2	0	0	0	3	3	69	3	0	0	75	156	583
15:15:00	4	2	1	0	0	7	1	75	0	0	0	76	5	1	2	0	0	8	0	66	2	0	0	68	159	615
15:30:00	5	2	2	0	0	9	1	87	2	0	0	90	6	5	2	0	0	13	3	75	4	0	0	82	194	653
15:45:00	4	4	0	0	0	8	1	84	0	0	0	85	0	0	4	0	0	4	0	77	7	0	0	84	181	690
16:00:00	2	0	1	0	0	3	4	91	2	0	0	97	5	4	1	0	0	10	0	60	3	0	0	63	173	707
16:15:00	7	0	0	0	0	7	1	78	5	0	0	84	8	3	1	0	0	12	0	54	6	0	0	60	163	711
16:30:00	4	0	0	0	0	4	0	97	3	0	0	100	5	5	0	0	0	10	0	79	4	0	0	83	197	714
16:45:00	1	1	0	0	0	2	2	99	3	0	0	104	5	3	0	0	0	8	1	63	2	0	0	66	180	713

17:00:00	2	2	0	0	0	4	2	78	3	0	0	83	4	2	1	0	0	7	0	60	5	0	0	65	159	699
17:15:00	2	0	0	0	0	2	1	86	1	0	0	88	2	4	1	0	0	7	0	57	1	0	0	58	155	691
17:30:00	2	0	4	0	0	6	3	84	4	0	0	91	4	1	1	0	0	6	2	74	7	0	0	83	186	680
17:45:00	2	3	1	0	0	6	0	78	2	0	0	80	2	1	1	0	0	4	1	65	6	0	0	72	162	662
Grand Total	112	51	54	0	0	217	48	2783	86	1	0	2918	117	83	32	0	0	232	32	2984	114	0	0	3130	**6497**	-
Approach%	51.6%	23.5%	24.9%	0%		-	1.6%	95.4%	2.9%	0%		-	50.4%	35.8%	13.8%	0%		-	1%	95.3%	3.6%	0%		-	**-**	-
Totals %	1.7%	0.8%	0.8%	0%		3.3%	0.7%	42.8%	1.3%	0%		44.9%	1.8%	1.3%	0.5%	0%		3.6%	0.5%	45.9%	1.8%	0%		48.2%	**-**	-
Heavy	2	3	4	0		-	3	396	7	0		-	9	3	0	0		-	3	416	2	0		-	**-**	-
Heavy %	1.8%	5.9%	7.4%	0%		-	6.3%	14.2%	8.1%	0%		-	7.7%	3.6%	0%	0%		-	9.4%	13.9%	1.8%	0%		-	**-**	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

TYLin
200 8800 DUFFERIN STREET
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 07:30 AM - 08:30 AM Weather: Overcast Clouds (4.03 °C)

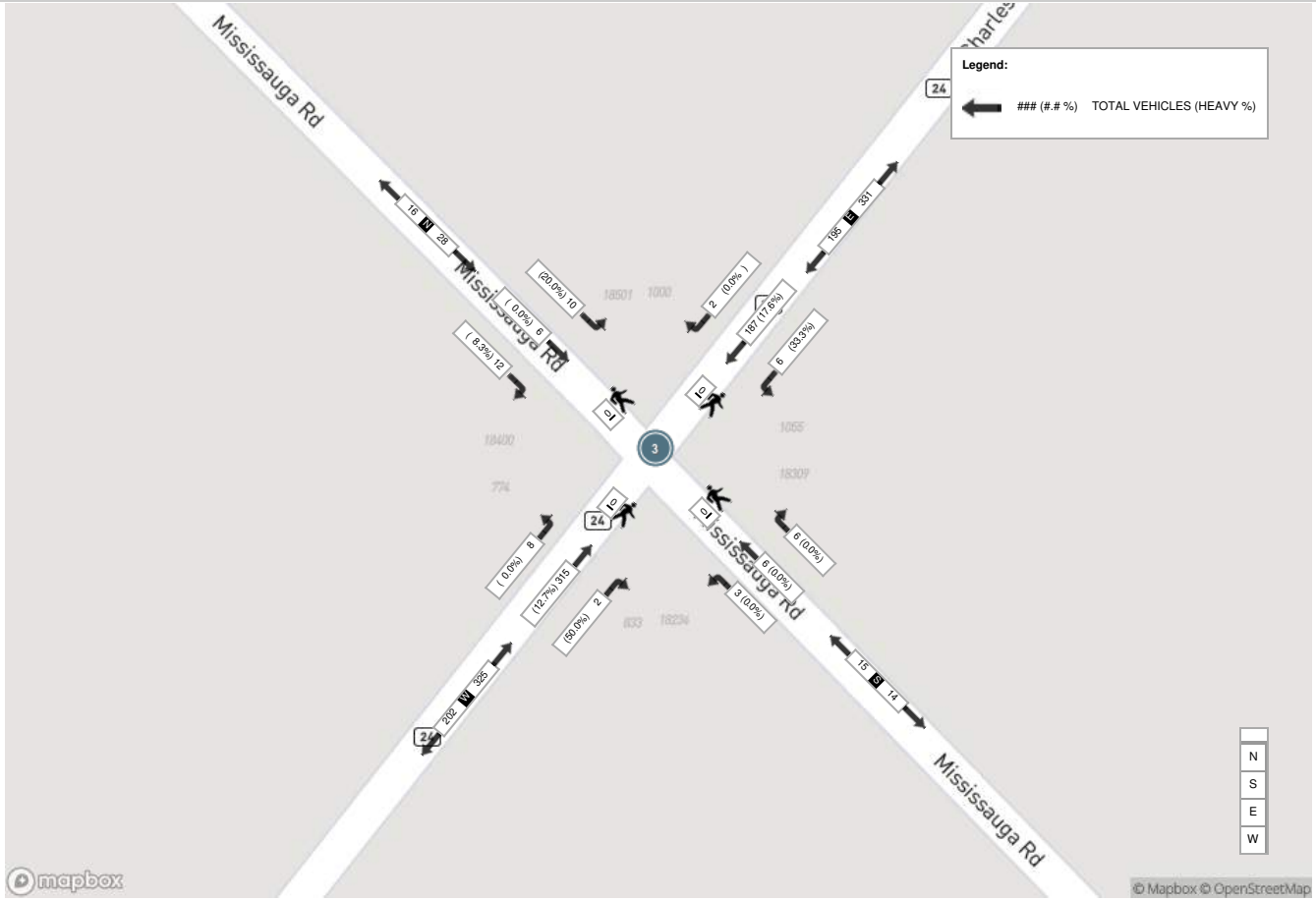
Start Time	N Approach MISSISSAUGA RD						E Approach CHARLESTON SIDEROAD						S Approach MISSISSAUGA RD						W Approach CHARLESTON SIDEROAD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
07:30:00	1	1	5	0	0	7	1	47	1	0	0	49	2	0	1	0	0	3	0	86	1	0	0	87	146
07:45:00	2	1	2	0	0	5	0	50	1	0	0	51	1	2	0	0	0	3	1	76	3	0	0	80	139
08:00:00	4	2	2	0	0	8	0	49	2	0	0	51	3	1	1	0	0	5	0	81	4	0	0	85	149
08:15:00	5	2	1	0	0	8	1	41	2	0	0	44	0	3	1	0	0	4	1	72	0	0	0	73	129
Grand Total	12	6	10	0	0	28	2	187	6	0	0	195	6	6	3	0	0	15	2	315	8	0	0	325	**563**
Approach%	42.9%	21.4%	35.7%	0%		-	1%	95.9%	3.1%	0%		-	40%	40%	20%	0%		-	0.6%	96.9%	2.5%	0%		-	**-**
Totals %	2.1%	1.1%	1.8%	0%		5%	0.4%	33.2%	1.1%	0%		34.6%	1.1%	1.1%	0.5%	0%		2.7%	0.4%	56%	1.4%	0%		57.7%	**-**
PHF	0.6	0.75	0.5	0		0.88	0.5	0.94	0.75	0		0.96	0.5	0.5	0.75	0		0.75	0.5	0.92	0.5	0		0.93	**-**
Heavy	1	0	2	0		3	0	33	2	0		35	0	0	0	0		0	1	40	0	0		41	**-**
Heavy %	8.3%	0%	20%	0%		10.7%	0%	17.6%	33.3%	0%		17.9%	0%	0%	0%	0%		0%	50%	12.7%	0%	0%		12.6%	**-**
Lights	11	6	8	0		25	2	154	4	0		160	6	6	3	0		15	1	275	8	0		284	**-**
Lights %	91.7%	100%	80%	0%		89.3%	100%	82.4%	66.7%	0%		82.1%	100%	100%	100%	0%		100%	50%	87.3%	100%	0%		87.4%	**-**
Single-Unit Trucks	0	0	0	0		0	0	6	0	0		6	0	0	0	0		0	0	9	0	0		9	**-**
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	3.2%	0%	0%		3.1%	0%	0%	0%	0%		0%	0%	2.9%	0%	0%		2.8%	**-**
Buses	1	0	1	0		2	0	0	1	0		1	0	0	0	0		0	1	3	0	0		4	**-**
Buses %	8.3%	0%	10%	0%		7.1%	0%	0%	16.7%	0%		0.5%	0%	0%	0%	0%		0%	50%	1%	0%	0%		1.2%	**-**
Articulated Trucks	0	0	1	0		1	0	16	1	0		17	0	0	0	0		0	0	16	0	0		16	**-**
Articulated Trucks %	0%	0%	10%	0%		3.6%	0%	8.6%	16.7%	0%		8.7%	0%	0%	0%	0%		0%	0%	5.1%	0%	0%		4.9%	**-**
Aggregate Trucks	0	0	0	0		0	0	11	0	0		11	0	0	0	0		0	0	12	0	0		12	**-**
Aggregate Trucks %	0%	0%	0%	0%		0%	0%	5.9%	0%	0%		5.6%	0%	0%	0%	0%		0%	0%	3.8%	0%	0%		3.7%	**-**
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 Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**

Peak Hour: 03:45 PM - 04:45 PM Weather: Light Rain (8.66 °C)

Start Time	N Approach MISSISSAUGA RD						E Approach CHARLESTON SIDEROAD						S Approach MISSISSAUGA RD						W Approach CHARLESTON SIDEROAD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
15:45:00	4	4	0	0	0	8	1	84	0	0	0	85	0	0	4	0	0	4	0	77	7	0	0	84	181
16:00:00	2	0	1	0	0	3	4	91	2	0	0	97	5	4	1	0	0	10	0	60	3	0	0	63	173
16:15:00	7	0	0	0	0	7	1	78	5	0	0	84	8	3	1	0	0	12	0	54	6	0	0	60	163
16:30:00	4	0	0	0	0	4	0	97	3	0	0	100	5	5	0	0	0	10	0	79	4	0	0	83	197
Grand Total	17	4	1	0	0	22	6	350	10	0	0	366	18	12	6	0	0	36	0	270	20	0	0	290	**714**
Approach%	77.3%	18.2%	4.5%	0%		-	1.6%	95.6%	2.7%	0%		-	50%	33.3%	16.7%	0%		-	0%	93.1%	6.9%	0%		-	**-**
Totals %	2.4%	0.6%	0.1%	0%		3.1%	0.8%	49%	1.4%	0%		51.3%	2.5%	1.7%	0.8%	0%		5%	0%	37.8%	2.8%	0%		40.6%	**-**
PHF	0.61	0.25	0.25	0		0.69	0.38	0.9	0.5	0		0.92	0.56	0.6	0.38	0		0.75	0	0.85	0.71	0		0.86	**-**
Heavy	0	1	0	0		1	1	22	0	0		23	2	0	0	0		2	0	31	0	0		31	**-**
Heavy %	0%	25%	0%	0%		4.5%	16.7%	6.3%	0%	0%		6.3%	11.1%	0%	0%	0%		5.6%	0%	11.5%	0%	0%		10.7%	**-**
Lights	17	3	1	0		21	5	328	10	0		343	16	12	6	0		34	0	239	20	0		259	**-**
Lights %	100%	75%	100%	0%		95.5%	83.3%	93.7%	100%	0%		93.7%	88.9%	100%	100%	0%		94.4%	0%	88.5%	100%	0%		89.3%	**-**
Single-Unit Trucks	0	1	0	0		1	0	7	0	0		7	0	0	0	0		0	0	8	0	0		8	**-**
Single-Unit Trucks %	0%	25%	0%	0%		4.5%	0%	2%	0%	0%		1.9%	0%	0%	0%	0%		0%	0%	3%	0%	0%		2.8%	**-**
Buses	0	0	0	0		0	0	1	0	0		1	2	0	0	0		2	0	1	0	0		1	**-**
Buses %	0%	0%	0%	0%		0%	0%	0.3%	0%	0%		0.3%	11.1%	0%	0%	0%		5.6%	0%	0.4%	0%	0%		0.3%	**-**
Articulated Trucks	0	0	0	0		0	1	10	0	0		11	0	0	0	0		0	0	14	0	0		14	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	16.7%	2.9%	0%	0%		3%	0%	0%	0%	0%		0%	0%	5.2%	0%	0%		4.8%	**-**
Aggregate Trucks	0	0	0	0		0	0	4	0	0		4	0	0	0	0		0	0	8	0	0		8	**-**
Aggregate Trucks %	0%	0%	0%	0%		0%	0%	1.1%	0%	0%		1.1%	0%	0%	0%	0%		0%	0%	3%	0%	0%		2.8%	**-**
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 Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**

TYLin
200 8800 DUFFERIN STREET
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 07:30 AM - 08:30 AM **Weather: Overcast Clouds (4.03 °C)**

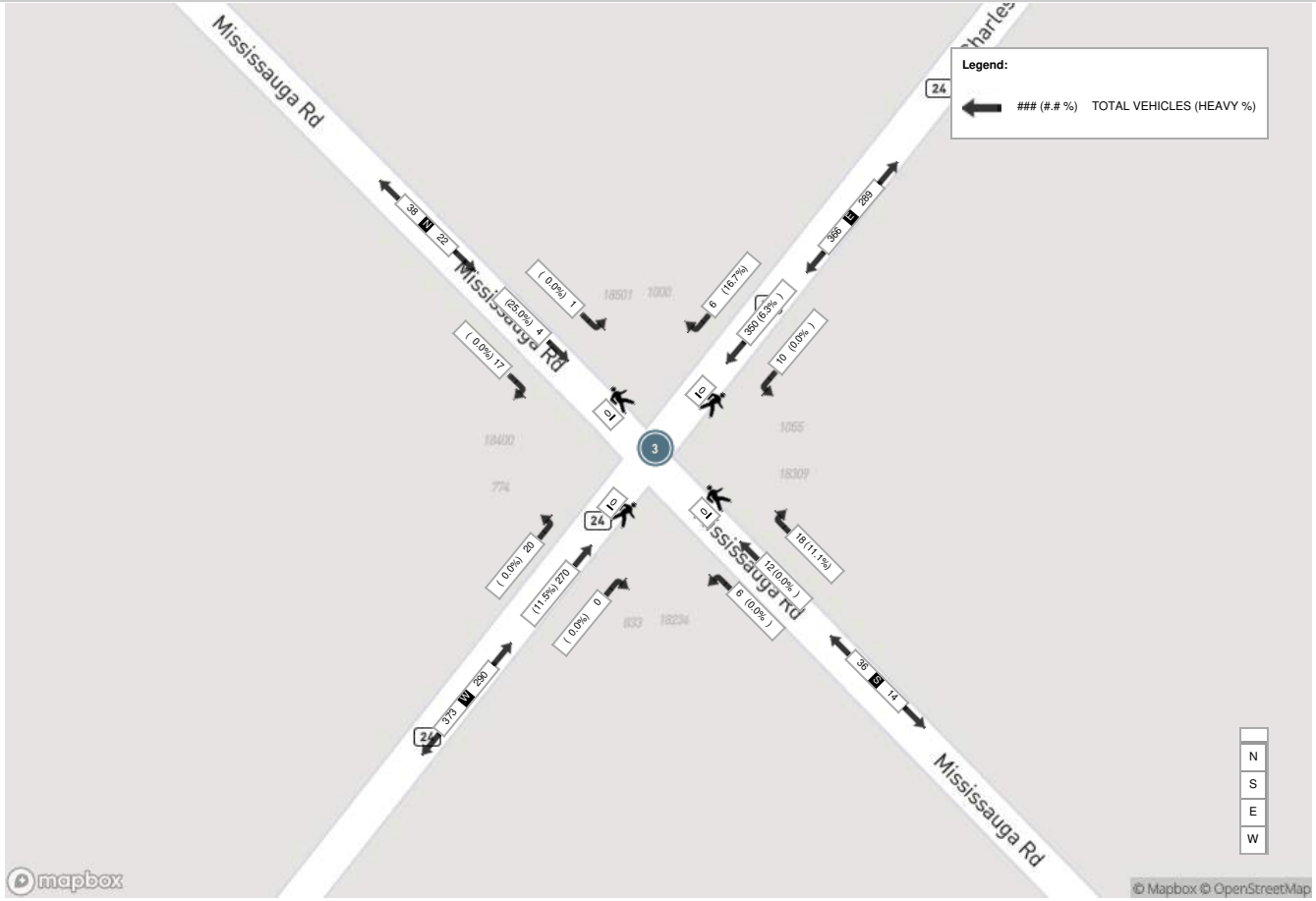


Spectrum

Turning Movement Count
Location Name: CHARLESTON SIDEROAD & MISSISSAUGA RD
Date: Thu, Apr 21, 2022 Deployment Lead: Tasos Issaaakidis

TYLin
200 8800 DUFFERIN STREET
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 03:45 PM - 04:45 PM **Weather: Light Rain (8.66 °C)**



TYLin
200 8800 DUFFERIN STREET
VAUGHAN ONTARIO, L4K 0C5
CANADA

Turning Movement Count (3 . CHARLESTON SIDEROAD & MISSISSAUGA RD) CustID: 02413835 MioID:

Start Time	N Approach MISSISSAUGA RD						E Approach CHARLESTON SIDEROAD						S Approach MISSISSAUGA RD						W Approach CHARLESTON SIDEROAD						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
06:00:00	0	0	0	0	0	0	0	8	0	0	0	8	0	0	0	0	0	0	0	14	0	0	0	14	22	
06:15:00	0	0	0	0	0	0	0	7	0	0	0	7	0	0	1	0	0	1	0	8	0	0	0	8	16	
06:30:00	0	0	0	0	0	0	1	10	0	0	0	11	0	1	0	0	0	1	0	21	0	0	0	21	33	
06:45:00	0	0	1	0	0	1	0	14	0	0	0	14	0	0	0	0	0	0	0	15	0	0	0	15	30	101
07:00:00	3	1	0	0	0	4	0	12	1	0	0	13	0	0	1	0	0	1	0	26	0	0	0	26	44	123
07:15:00	1	0	4	0	0	5	0	18	1	0	0	19	0	0	0	0	0	0	0	21	2	0	0	23	47	154
07:30:00	1	0	0	0	0	1	0	27	0	0	0	27	1	0	0	0	0	1	0	33	0	0	0	33	62	183
07:45:00	1	0	0	0	0	1	0	26	0	0	0	26	2	0	0	0	0	2	1	33	2	0	0	36	65	218
08:00:00	2	1	1	0	0	4	0	22	0	0	0	22	5	0	2	0	0	7	1	29	2	0	0	32	65	239
08:15:00	3	0	0	0	0	3	0	35	0	0	0	35	1	0	0	0	0	1	3	50	3	0	0	56	95	287
08:30:00	1	0	1	0	0	2	0	41	2	0	0	43	1	0	1	0	0	2	1	45	2	0	0	48	95	320
08:45:00	1	0	0	0	0	1	1	31	0	0	0	32	2	1	0	0	0	3	0	39	2	0	0	41	77	332
09:00:00	1	0	3	0	0	4	0	34	1	0	0	35	4	1	0	0	0	5	0	50	1	0	0	51	95	362
09:15:00	2	1	1	0	0	4	0	53	1	0	0	54	0	1	0	0	0	1	0	46	1	0	0	47	106	373
09:30:00	1	0	0	0	0	1	0	47	0	0	0	47	0	1	1	0	0	2	0	43	1	0	0	44	94	372
09:45:00	2	1	1	0	0	4	2	63	0	0	0	65	4	3	2	1	0	10	0	48	0	0	0	48	127	422
10:00:00	2	1	2	0	0	5	1	52	2	0	0	55	3	1	0	0	0	4	1	40	3	0	0	44	108	435
10:15:00	1	0	2	0	0	3	1	40	2	0	0	43	1	2	2	0	0	5	0	60	2	0	0	62	113	442
10:30:00	0	1	1	0	0	2	2	63	2	0	0	67	0	3	0	0	0	3	1	91	2	0	0	94	166	514
10:45:00	3	0	1	0	0	4	0	59	2	0	0	61	5	4	1	0	0	10	1	75	2	0	0	78	153	540
11:00:00	2	1	0	0	0	3	0	51	2	0	0	53	2	0	0	0	0	2	1	58	3	0	0	62	120	552
11:15:00	7	1	1	0	0	9	1	60	1	0	0	62	0	3	0	0	0	3	0	88	3	0	0	91	165	604
11:30:00	1	0	2	0	0	3	2	73	3	0	0	78	4	2	0	0	0	6	1	64	0	0	0	65	152	590
11:45:00	5	0	0	0	0	5	0	60	4	0	0	64	3	4	2	0	0	9	1	72	1	0	0	74	152	589
BREAK																										
12:00:00	0	2	1	0	0	3	1	62	3	0	0	66	3	2	1	0	0	6	3	78	1	0	0	82	157	
12:15:00	5	0	1	0	0	6	0	78	2	0	0	80	3	3	1	0	0	7	0	67	1	0	0	68	161	
12:30:00	1	1	1	0	0	3	1	59	0	0	0	60	4	2	2	0	0	8	0	78	2	1	0	81	152	
12:45:00	3	0	0	0	0	3	0	64	2	0	0	66	1	0	1	0	0	2	1	76	2	0	0	79	150	620
13:00:00	2	0	0	0	0	2	1	67	0	0	0	68	3	0	0	0	0	3	1	89	3	0	0	93	166	629
13:15:00	2	1	1	0	0	4	2	54	2	0	0	58	5	3	1	0	0	9	0	69	1	0	0	70	141	609
13:30:00	1	0	1	0	0	2	0	72	3	0	0	75	2	2	0	0	0	4	1	65	4	0	0	70	151	608
13:45:00	1	0	0	0	0	1	2	66	4	0	0	72	4	2	2	0	0	8	2	67	4	0	0	73	154	612
14:00:00	5	3	0	0	0	8	1	60	0	0	0	61	5	2	0	0	0	7	0	62	1	0	0	63	139	585
14:15:00	1	4	1	0	0	6	0	59	2	0	0	61	3	4	1	0	0	8	2	80	4	0	0	86	161	605
14:30:00	2	0	1	0	0	3	1	67	2	0	0	70	1	3	2	0	0	6	2	80	5	0	0	87	166	620
14:45:00	3	2	2	0	0	7	3	57	0	0	0	60	5	2	0	0	0	7	0	90	1	0	0	91	165	631
15:00:00	1	1	0	0	0	2	2	73	2	0	0	77	2	4	0	0	0	6	3	80	1	0	0	84	169	661
15:15:00	4	1	1	0	0	6	1	64	5	0	0	70	5	1	0	0	0	6	3	77	1	0	0	81	163	663
15:30:00	0	2	0	0	0	2	1	61	4	0	0	66	2	2	1	0	0	5	0	74	4	0	0	78	151	648
15:45:00	3	3	1	0	0	7	4	79	5	0	0	88	1	3	1	0	0	5	0	50	0	0	0	50	150	633
16:00:00	1	1	4	0	0	6	0	60	1	0	0	61	1	1	1	0	0	3	0	65	2	0	0	67	137	601
16:15:00	0	0	2	0	0	2	1	62	6	0	0	69	1	0	0	1	0	2	1	64	1	0	0	66	139	577
16:30:00	5	1	1	0	0	7	2	53	0	0	0	55	1	1	1	0	0	3	2	64	3	0	0	69	134	560
16:45:00	4	1	0	0	0	5	0	58	1	0	0	59	3	1	0	0	0	4	1	75	1	0	0	77	145	555

17:00:00	1	1	0	0	0	2	0	67	2	0	0	69	3	6	0	0	0	9	2	51	3	0	0	56	136	554
17:15:00	5	0	0	0	0	5	1	62	2	0	0	65	1	1	0	0	0	2	0	65	2	0	0	67	139	554
17:30:00	3	2	0	0	0	5	1	57	3	0	0	61	3	3	0	0	0	6	1	80	0	0	0	81	153	573
17:45:00	1	1	0	0	0	2	1	69	1	0	0	71	4	1	0	0	0	5	2	68	3	0	0	73	151	579
Grand Total	94	35	39	0	0	168	37	2436	76	0	0	2549	104	76	28	2	0	210	39	2783	82	1	0	2905	**5832**	-
Approach%	56%	20.8%	23.2%	0%		-	1.5%	95.6%	3%	0%		-	49.5%	36.2%	13.3%	1%		-	1.3%	95.8%	2.8%	0%		-	**-**	-
Totals %	1.6%	0.6%	0.7%	0%		2.9%	0.6%	41.8%	1.3%	0%		43.7%	1.8%	1.3%	0.5%	0%		3.6%	0.7%	47.7%	1.4%	0%		49.8%	**-**	-
Heavy	0	0	1	0		-	1	43	2	0		-	2	0	0	0		-	0	54	0	0		-	**-**	-
Heavy %	0%	0%	2.6%	0%		-	2.7%	1.8%	2.6%	0%		-	1.9%	0%	0%	0%		-	0%	1.9%	0%	0%		-	**-**	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

TYLin
200 8800 DUFFERIN STREET
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 10:30 AM - 11:30 AM Weather: Broken Clouds (5.75 °C)

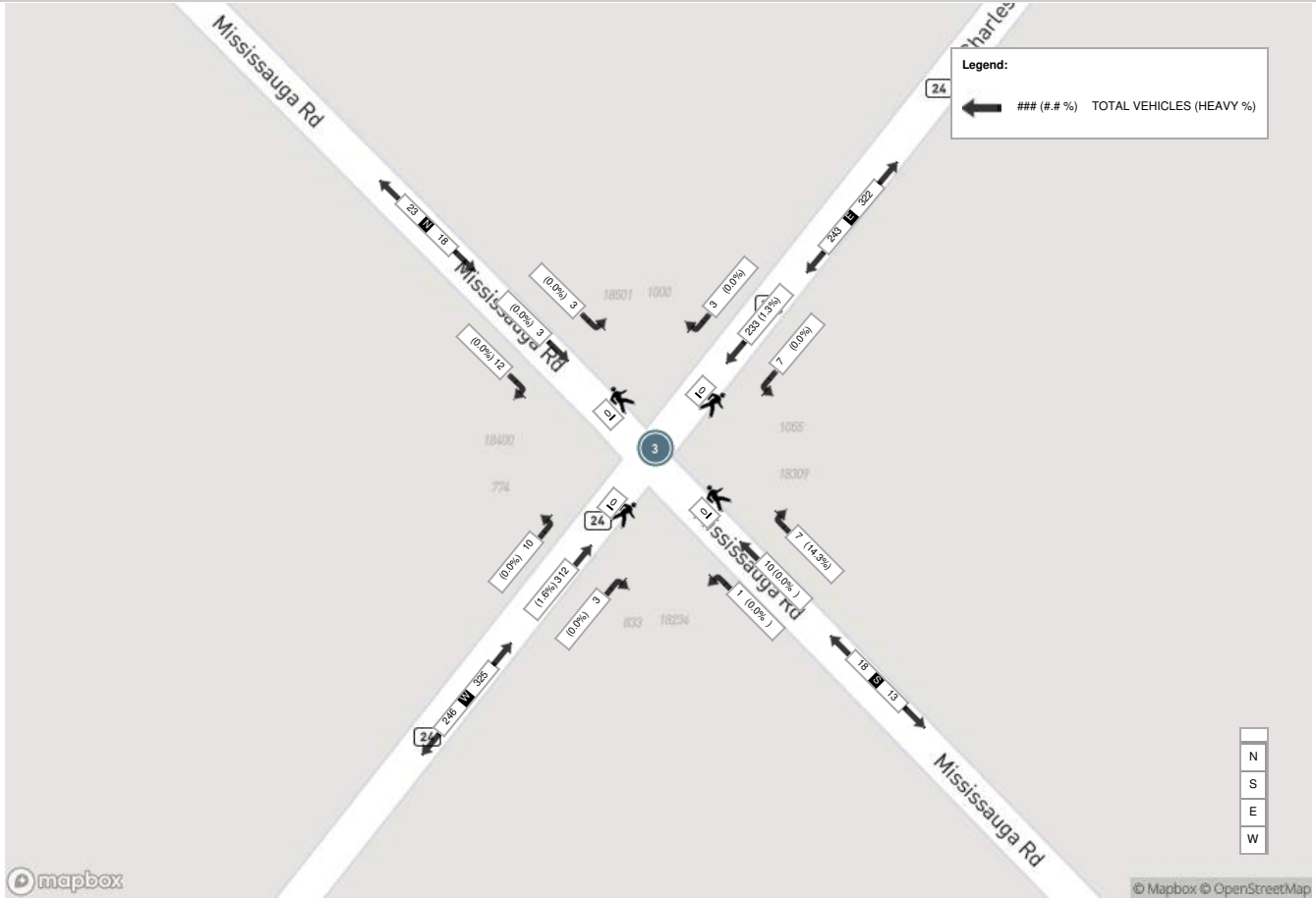
Start Time	N Approach MISSISSAUGA RD						E Approach CHARLESTON SIDEROAD						S Approach MISSISSAUGA RD						W Approach CHARLESTON SIDEROAD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
10:30:00	0	1	1	0	0	2	2	63	2	0	0	67	0	3	0	0	0	3	1	91	2	0	0	94	166
10:45:00	3	0	1	0	0	4	0	59	2	0	0	61	5	4	1	0	0	10	1	75	2	0	0	78	153
11:00:00	2	1	0	0	0	3	0	51	2	0	0	53	2	0	0	0	0	2	1	58	3	0	0	62	120
11:15:00	7	1	1	0	0	9	1	60	1	0	0	62	0	3	0	0	0	3	0	88	3	0	0	91	165
Grand Total	12	3	3	0	0	18	3	233	7	0	0	243	7	10	1	0	0	18	3	312	10	0	0	325	**604**
Approach%	66.7%	16.7%	16.7%	0%		-	1.2%	95.9%	2.9%	0%		-	38.9%	55.6%	5.6%	0%		-	0.9%	96%	3.1%	0%		-	**-**
Totals %	2%	0.5%	0.5%	0%		3%	0.5%	38.6%	1.2%	0%		40.2%	1.2%	1.7%	0.2%	0%		3%	0.5%	51.7%	1.7%	0%		53.8%	**-**
PHF	0.43	0.75	0.75	0		0.5	0.38	0.92	0.88	0		0.91	0.35	0.63	0.25	0		0.45	0.75	0.86	0.83	0		0.86	**-**
Heavy	0	0	0	0		0	0	3	0	0		3	1	0	0	0		1	0	5	0	0		5	**-**
Heavy %	0%	0%	0%	0%		0%	0%	1.3%	0%	0%		1.2%	14.3%	0%	0%	0%		5.6%	0%	1.6%	0%	0%		1.5%	**-**
Lights	12	3	3	0		18	3	230	7	0		240	6	10	1	0		17	3	307	10	0		320	**-**
Lights %	100%	100%	100%	0%		100%	100%	98.7%	100%	0%		98.8%	85.7%	100%	100%	0%		94.4%	100%	98.4%	100%	0%		98.5%	**-**
Single-Unit Trucks	0	0	0	0		0	0	1	0	0		1	1	0	0	0		1	0	4	0	0		4	**-**
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	0.4%	0%	0%		0.4%	14.3%	0%	0%	0%		5.6%	0%	1.3%	0%	0%		1.2%	**-**
Buses	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%	**-**
Articulated Trucks	0	0	0	0		0	0	2	0	0		2	0	0	0	0		0	0	1	0	0		1	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0.9%	0%	0%		0.8%	0%	0%	0%	0%		0%	0%	0.3%	0%	0%		0.3%	**-**
Aggregate Trucks	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	**-**
Aggregate Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**

TYLin
200 8800 DUFFERIN STREET
VAUGHAN ONTARIO, L4K 0C5
CANADA

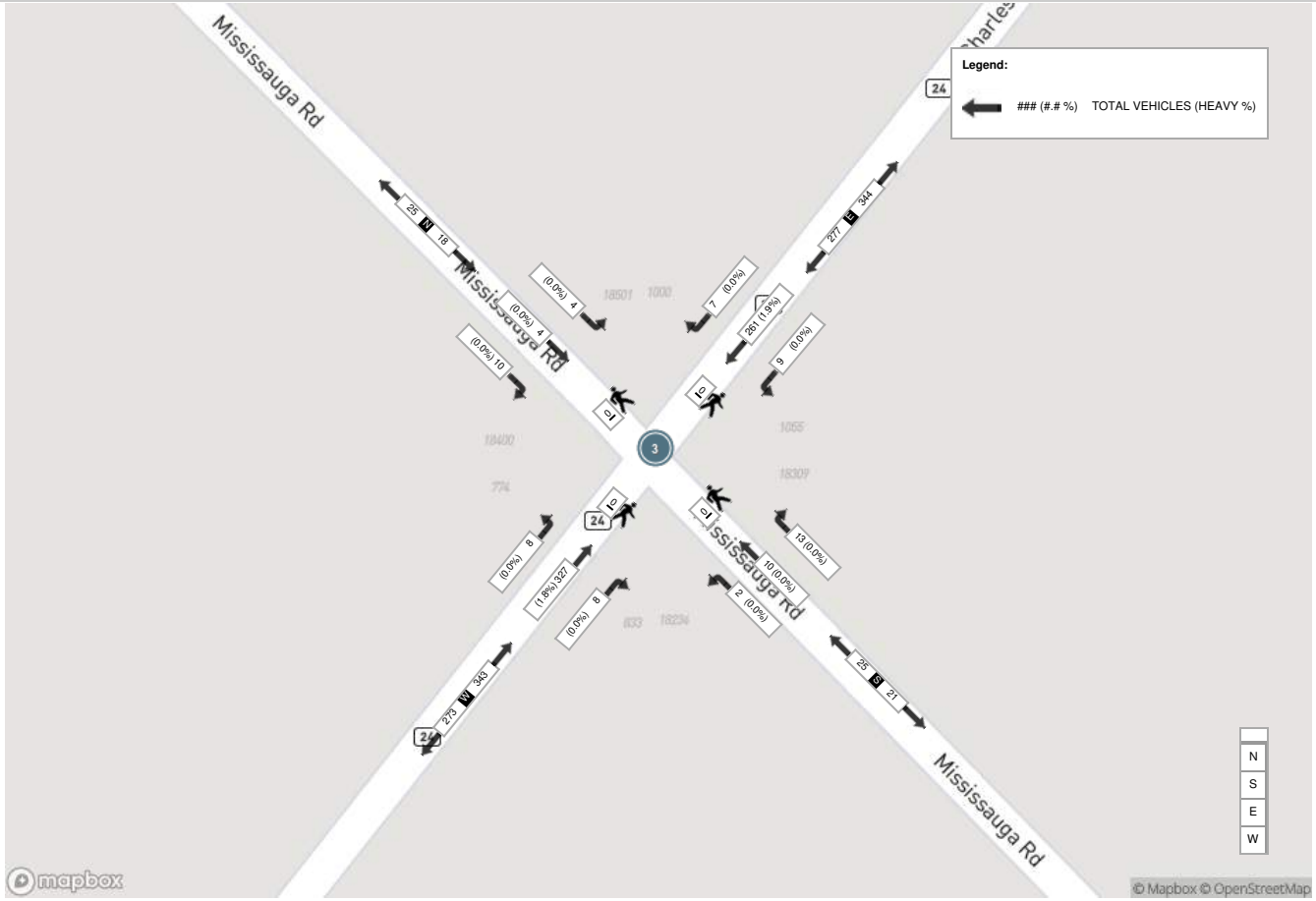
Peak Hour: 02:30 PM - 03:30 PM Weather: Light Rain (5.94 °C)

Start Time	N Approach MISSISSAUGA RD						E Approach CHARLESTON SIDEROAD						S Approach MISSISSAUGA RD						W Approach CHARLESTON SIDEROAD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
14:30:00	2	0	1	0	0	3	1	67	2	0	0	70	1	3	2	0	0	6	2	80	5	0	0	87	166
14:45:00	3	2	2	0	0	7	3	57	0	0	0	60	5	2	0	0	0	7	0	90	1	0	0	91	165
15:00:00	1	1	0	0	0	2	2	73	2	0	0	77	2	4	0	0	0	6	3	80	1	0	0	84	169
15:15:00	4	1	1	0	0	6	1	64	5	0	0	70	5	1	0	0	0	6	3	77	1	0	0	81	163
Grand Total	10	4	4	0	0	18	7	261	9	0	0	277	13	10	2	0	0	25	8	327	8	0	0	343	**663**
Approach%	55.6%	22.2%	22.2%	0%		-	2.5%	94.2%	3.2%	0%		-	52%	40%	8%	0%		-	2.3%	95.3%	2.3%	0%		-	**-**
Totals %	1.5%	0.6%	0.6%	0%		2.7%	1.1%	39.4%	1.4%	0%		41.8%	2%	1.5%	0.3%	0%		3.8%	1.2%	49.3%	1.2%	0%		51.7%	**-**
PHF	0.63	0.5	0.5	0		0.64	0.58	0.89	0.45	0		0.9	0.65	0.63	0.25	0		0.89	0.67	0.91	0.4	0		0.94	**-**
Heavy	0	0	0	0		0	0	5	0	0		5	0	0	0	0		0	0	6	0	0		6	**-**
Heavy %	0%	0%	0%	0%		0%	0%	1.9%	0%	0%		1.8%	0%	0%	0%	0%		0%	0%	1.8%	0%	0%		1.7%	**-**
Lights	10	4	4	0		18	7	256	9	0		272	13	10	2	0		25	8	321	8	0		337	**-**
Lights %	100%	100%	100%	0%		100%	100%	98.1%	100%	0%		98.2%	100%	100%	100%	0%		100%	100%	98.2%	100%	0%		98.3%	**-**
Single-Unit Trucks	0	0	0	0		0	0	5	0	0		5	0	0	0	0		0	0	3	0	0		3	**-**
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	1.9%	0%	0%		1.8%	0%	0%	0%	0%		0%	0%	0.9%	0%	0%		0.9%	**-**
Buses	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%	**-**
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	3	0	0		3	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0.9%	0%	0%		0.9%	**-**
Aggregate Trucks	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	**-**
Aggregate Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**

Peak Hour: 10:30 AM - 11:30 AM **Weather: Broken Clouds (5.75 °C)**



Peak Hour: 02:30 PM - 03:30 PM **Weather: Light Rain (5.94 °C)**



TYLin
200 8800 DUFFERIN STREET
VAUGHAN ONTARIO, L4K 0C5
CANADA

Turning Movement Count (2 . CHARLESTON SIDEROAD & REGIONAL RD 136 (MAIN ST) / CATARACT RD) CustID: 02412429 MioID:

Start Time	N Approach MAIN ST						E Approach CHARLESTON SIDE RD						S Approach CATARACT RD						W Approach CHARLESTON SIDE RD						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
06:00:00	2	0	10	0	0	12	3	28	1	0	0	32	1	1	0	0	0	2	0	46	4	0	0	50	96	
06:15:00	2	0	12	0	0	14	2	20	0	0	0	22	1	0	0	0	0	1	0	53	0	0	0	53	90	
06:30:00	9	0	11	0	0	20	5	38	0	0	0	43	0	0	0	0	0	0	0	57	6	0	0	63	126	
06:45:00	9	0	16	0	0	25	4	33	1	0	0	38	1	0	0	0	0	1	2	68	4	0	0	74	138	450
07:00:00	4	0	17	0	0	21	3	33	0	0	0	36	0	0	0	0	0	0	0	44	4	0	0	48	105	459
07:15:00	5	0	23	0	0	28	5	39	0	0	0	44	1	0	0	0	0	1	1	76	3	0	0	80	153	522
07:30:00	4	1	13	0	0	18	3	41	0	0	0	44	1	0	0	0	0	1	3	81	8	0	0	92	155	551
07:45:00	6	1	10	0	0	17	3	44	1	0	0	48	1	1	3	0	0	5	3	73	6	0	0	82	152	565
08:00:00	4	0	15	0	0	19	12	43	2	0	0	57	1	0	1	0	0	2	1	79	7	0	0	87	165	625
08:15:00	9	2	10	0	0	21	6	39	1	0	0	46	1	1	2	0	0	4	0	62	7	0	0	69	140	612
08:30:00	6	5	15	0	0	26	5	53	0	0	0	58	0	3	1	0	0	4	2	57	7	0	0	66	154	611
08:45:00	8	3	7	0	0	18	10	58	0	0	0	68	2	1	0	0	0	3	1	56	14	0	0	71	160	619
09:00:00	5	1	8	0	0	14	6	54	0	0	0	60	2	2	0	0	0	4	1	56	6	0	0	63	141	595
09:15:00	8	2	6	0	0	16	14	51	1	0	0	66	0	1	3	0	0	4	0	58	10	0	0	68	154	609
09:30:00	8	4	7	0	0	19	12	42	2	0	0	56	5	0	1	0	0	6	3	56	6	0	0	65	146	601
09:45:00	5	0	8	0	0	13	7	54	2	0	0	63	0	1	0	0	0	1	0	58	8	0	0	66	143	584
10:00:00	7	1	10	0	0	18	8	38	0	0	0	46	0	1	0	0	0	1	0	54	9	0	0	63	128	571
10:15:00	4	3	5	0	0	12	12	42	1	0	0	55	2	1	0	0	0	3	3	67	7	0	0	77	147	564
10:30:00	3	1	9	0	0	13	5	53	2	0	0	60	0	3	1	0	0	4	2	51	8	0	0	61	138	556
10:45:00	6	2	7	0	0	15	7	26	0	0	0	33	0	2	2	0	0	4	0	54	6	0	0	60	112	525
11:00:00	5	1	7	0	0	13	8	45	1	0	0	54	0	0	0	0	0	0	3	48	7	0	0	58	125	522
11:15:00	5	1	6	0	0	12	5	38	0	0	0	43	1	2	2	0	0	5	2	45	6	0	0	53	113	488
11:30:00	5	2	13	0	0	20	4	48	0	0	0	52	2	2	0	0	0	4	1	46	9	0	0	56	132	482
11:45:00	6	4	5	0	0	15	2	42	1	0	0	45	1	0	1	0	0	2	2	49	6	0	0	57	119	489
BREAK																										
12:00:00	6	2	7	0	0	15	1	33	0	0	0	34	1	0	0	0	0	1	1	42	8	0	0	51	101	
12:15:00	15	1	16	0	0	32	6	48	2	0	0	56	2	4	2	0	0	8	1	41	10	0	0	52	148	
12:30:00	4	3	9	0	0	16	9	52	2	0	0	63	3	4	2	0	0	9	2	56	4	0	0	62	150	
12:45:00	9	1	5	0	0	15	10	49	1	0	0	60	3	1	3	0	0	7	0	55	16	0	0	71	153	552
13:00:00	7	0	6	0	0	13	5	48	2	0	0	55	0	1	1	0	0	2	2	47	7	0	0	56	126	577
13:15:00	7	0	4	0	0	11	3	55	0	0	0	58	1	3	3	0	0	7	1	54	11	0	0	66	142	571
13:30:00	5	2	7	0	0	14	7	54	2	0	0	63	4	0	2	0	0	6	1	36	6	0	0	43	126	547
13:45:00	5	3	5	0	0	13	13	44	4	0	0	61	3	1	2	0	0	6	0	47	3	0	0	50	130	524
14:00:00	1	2	4	0	0	7	9	53	0	0	0	62	1	3	0	0	0	4	2	70	12	0	0	84	157	555
14:15:00	5	2	8	0	0	15	5	51	6	0	0	62	0	2	1	0	0	3	1	54	7	0	0	62	142	555
14:30:00	11	2	5	0	0	18	11	70	2	0	0	83	6	0	1	0	0	7	1	48	15	0	0	64	172	601
14:45:00	12	3	7	0	0	22	8	58	2	0	0	68	1	6	1	0	0	8	5	54	10	0	0	69	167	638
15:00:00	5	1	6	0	0	12	5	68	1	0	0	74	1	0	1	0	0	2	3	53	16	0	0	72	160	641
15:15:00	8	4	8	0	0	20	8	68	3	0	0	79	1	1	1	0	0	3	0	54	13	0	0	67	169	668
15:30:00	13	2	8	0	0	23	15	66	2	0	0	83	1	2	4	0	0	7	4	68	10	0	0	82	195	691
15:45:00	12	1	9	0	0	22	20	74	3	0	0	97	4	1	1	0	0	6	3	64	10	0	0	77	202	726
16:00:00	9	1	8	0	0	18	12	85	2	0	0	99	2	4	2	0	0	8	2	53	8	0	0	63	188	754
16:15:00	5	3	5	0	0	13	21	85	2	0	0	108	1	1	0	0	0	2	1	57	5	0	0	63	186	771
16:30:00	11	2	5	0	0	18	13	88	0	0	0	101	2	6	2	0	0	10	1	61	17	0	0	79	208	784
16:45:00	8	1	7	0	0	16	8	91	2	0	0	101	1	3	2	0	0	6	1	68	8	0	0	77	200	782

TYLin
200 8800 DUFFERIN STREET
VAUGHAN ONTARIO, L4K 0C5
CANADA

17:00:00	4	1	11	0	0	16	16	74	3	0	0	93	2	4	1	0	0	7	1	51	11	0	0	63	179	773
17:15:00	10	1	6	0	0	17	15	75	1	0	0	91	0	3	2	0	0	5	1	47	9	0	0	57	170	757
17:30:00	11	2	6	0	0	19	10	81	0	0	0	91	2	3	1	0	0	6	3	73	10	0	0	86	202	751
17:45:00	7	3	7	0	0	17	19	70	3	0	0	92	2	1	2	0	0	5	2	52	11	0	0	65	179	730
Grand Total	325	77	419	0	0	821	400	2542	61	0	0	3003	67	76	54	0	0	197	69	2699	395	0	0	3163	**7184**	-
Approach%	39.6%	9.4%	51%	0%		-	13.3%	84.6%	2%	0%		-	34%	38.6%	27.4%	0%		-	2.2%	85.3%	12.5%	0%		-	**-**	-
Totals %	4.5%	1.1%	5.8%	0%		11.4%	5.6%	35.4%	0.8%	0%		41.8%	0.9%	1.1%	0.8%	0%		2.7%	1%	37.6%	5.5%	0%		44%	**-**	-
Heavy	40	3	32	0		-	35	355	5	0		-	3	2	3	0		-	3	380	45	0		-	**-**	-
Heavy %	12.3%	3.9%	7.6%	0%		-	8.8%	14%	8.2%	0%		-	4.5%	2.6%	5.6%	0%		-	4.3%	14.1%	11.4%	0%		-	**-**	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

Spectrum

Turning Movement Count
Location Name: CHARLESTON SIDEROAD & REGIONAL RD 136 (MAIN ST) / CATARACT RD
Date: Thu, Apr 21, 2022 Deployment Lead: Tasos Issaaakidis

TYLin
200 8800 DUFFERIN STREET
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 07:15 AM - 08:15 AM Weather: Overcast Clouds (4.03 °C)

Start Time	N Approach MAIN ST						E Approach CHARLESTON SIDE RD						S Approach CATARACT RD						W Approach CHARLESTON SIDE RD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
07:15:00	5	0	23	0	0	28	5	39	0	0	0	44	1	0	0	0	0	1	1	76	3	0	0	80	153
07:30:00	4	1	13	0	0	18	3	41	0	0	0	44	1	0	0	0	0	1	3	81	8	0	0	92	155
07:45:00	6	1	10	0	0	17	3	44	1	0	0	48	1	1	3	0	0	5	3	73	6	0	0	82	152
08:00:00	4	0	15	0	0	19	12	43	2	0	0	57	1	0	1	0	0	2	1	79	7	0	0	87	165
Grand Total	19	2	61	0	0	82	23	167	3	0	0	193	4	1	4	0	0	9	8	309	24	0	0	341	**625**
Approach%	23.2%	2.4%	74.4%	0%		-	11.9%	86.5%	1.6%	0%		-	44.4%	11.1%	44.4%	0%		-	2.3%	90.6%	7%	0%		-	**-**
Totals %	3%	0.3%	9.8%	0%		13.1%	3.7%	26.7%	0.5%	0%		30.9%	0.6%	0.2%	0.6%	0%		1.4%	1.3%	49.4%	3.8%	0%		54.6%	**-**
PHF	0.79	0.5	0.66	0		0.73	0.48	0.95	0.38	0		0.85	1	0.25	0.33	0		0.45	0.67	0.95	0.75	0		0.93	**-**
Heavy	2	0	4	0		6	3	25	0	0		28	0	0	0	0		0	0	35	2	0		37	**-**
Heavy %	10.5%	0%	6.6%	0%		7.3%	13%	15%	0%	0%		14.5%	0%	0%	0%	0%		0%	0%	11.3%	8.3%	0%		10.9%	**-**
Lights	17	2	57	0		76	20	142	3	0		165	4	1	4	0		9	8	274	22	0		304	**-**
Lights %	89.5%	100%	93.4%	0%		92.7%	87%	85%	100%	0%		85.5%	100%	100%	100%	0%		100%	100%	88.7%	91.7%	0%		89.1%	**-**
Single-Unit Trucks	1	0	1	0		2	3	4	0	0		7	0	0	0	0		0	0	8	0	0		8	**-**
Single-Unit Trucks %	5.3%	0%	1.6%	0%		2.4%	13%	2.4%	0%	0%		3.6%	0%	0%	0%	0%		0%	0%	2.6%	0%	0%		2.3%	**-**
Buses	0	0	2	0		2	0	0	0	0		0	0	0	0	0		0	0	0	2	0		2	**-**
Buses %	0%	0%	3.3%	0%		2.4%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	8.3%	0%		0.6%	**-**
Articulated Trucks	0	0	0	0		0	0	11	0	0		11	0	0	0	0		0	0	16	0	0		16	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	6.6%	0%	0%		5.7%	0%	0%	0%	0%		0%	0%	5.2%	0%	0%		4.7%	**-**
Aggregate Trucks	1	0	1	0		2	0	10	0	0		10	0	0	0	0		0	0	11	0	0		11	**-**
Aggregate Trucks %	5.3%	0%	1.6%	0%		2.4%	0%	6%	0%	0%		5.2%	0%	0%	0%	0%		0%	0%	3.6%	0%	0%		3.2%	**-**
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 Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**

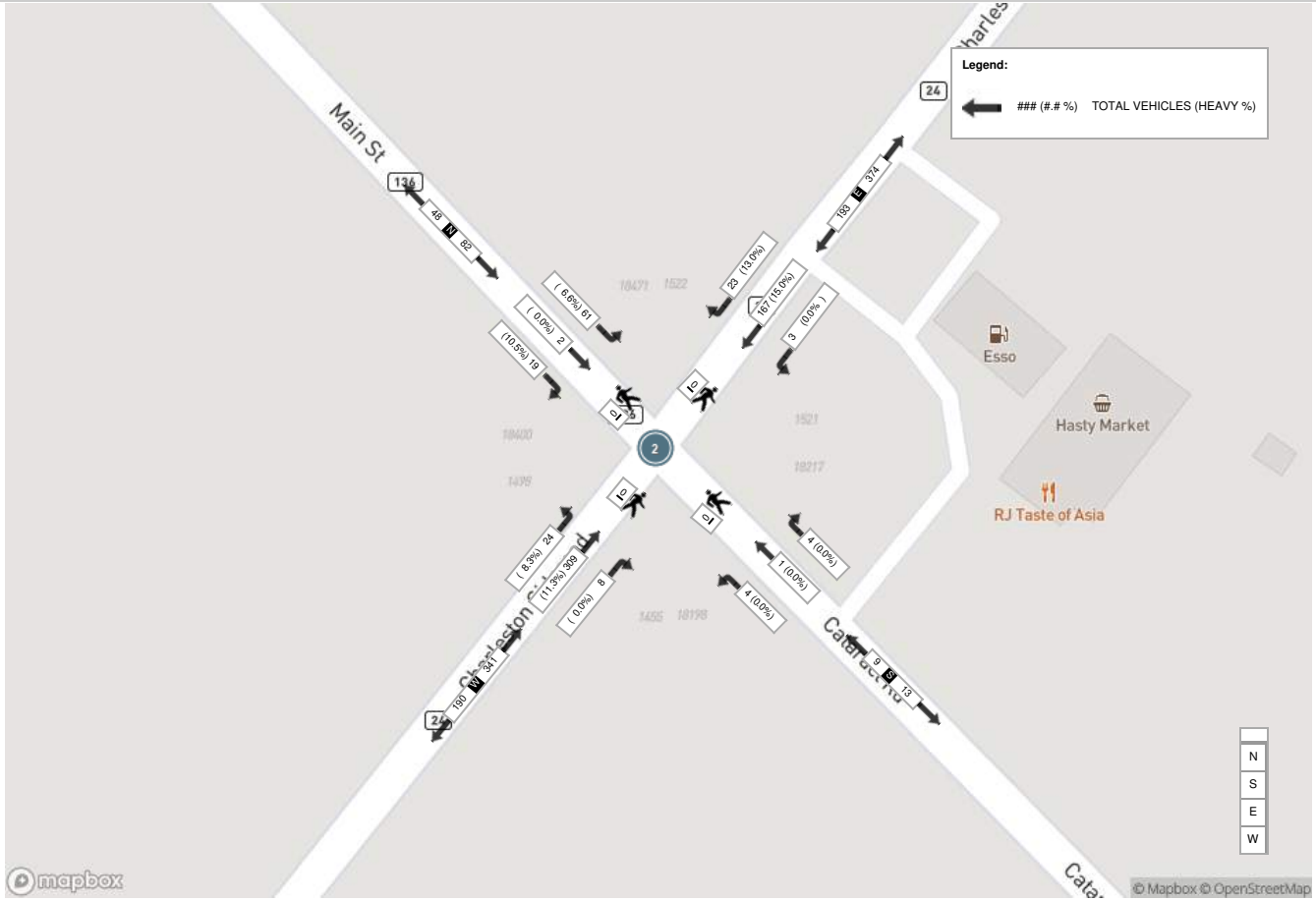
TYLin
200 8800 DUFFERIN STREET
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 03:45 PM - 04:45 PM Weather: Light Rain (8.66 °C)

Start Time	N Approach MAIN ST						E Approach CHARLESTON SIDE RD						S Approach CATARACT RD						W Approach CHARLESTON SIDE RD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
15:45:00	12	1	9	0	0	22	20	74	3	0	0	97	4	1	1	0	0	6	3	64	10	0	0	77	202
16:00:00	9	1	8	0	0	18	12	85	2	0	0	99	2	4	2	0	0	8	2	53	8	0	0	63	188
16:15:00	5	3	5	0	0	13	21	85	2	0	0	108	1	1	0	0	0	2	1	57	5	0	0	63	186
16:30:00	11	2	5	0	0	18	13	88	0	0	0	101	2	6	2	0	0	10	1	61	17	0	0	79	208
Grand Total	37	7	27	0	0	71	66	332	7	0	0	405	9	12	5	0	0	26	7	235	40	0	0	282	**784**
Approach%	52.1%	9.9%	38%	0%		-	16.3%	82%	1.7%	0%		-	34.6%	46.2%	19.2%	0%		-	2.5%	83.3%	14.2%	0%		-	**-**
Totals %	4.7%	0.9%	3.4%	0%		9.1%	8.4%	42.3%	0.9%	0%		51.7%	1.1%	1.5%	0.6%	0%		3.3%	0.9%	30%	5.1%	0%		36%	**-**
PHF	0.77	0.58	0.75	0		0.81	0.79	0.94	0.58	0		0.94	0.56	0.5	0.63	0		0.65	0.58	0.92	0.59	0		0.89	**-**
Heavy	2	0	2	0		4	4	21	1	0		26	1	0	0	0		1	0	26	4	0		30	**-**
Heavy %	5.4%	0%	7.4%	0%		5.6%	6.1%	6.3%	14.3%	0%		6.4%	11.1%	0%	0%	0%		3.8%	0%	11.1%	10%	0%		10.6%	**-**
Lights	35	7	25	0		67	62	311	6	0		379	8	12	5	0		25	7	209	36	0		252	**-**
Lights %	94.6%	100%	92.6%	0%		94.4%	93.9%	93.7%	85.7%	0%		93.6%	88.9%	100%	100%	0%		96.2%	100%	88.9%	90%	0%		89.4%	**-**
Single-Unit Trucks	0	0	2	0		2	2	7	0	0		9	1	0	0	0		1	0	8	0	0		8	**-**
Single-Unit Trucks %	0%	0%	7.4%	0%		2.8%	3%	2.1%	0%	0%		2.2%	11.1%	0%	0%	0%		3.8%	0%	3.4%	0%	0%		2.8%	**-**
Buses	0	0	0	0		0	1	1	1	0		3	0	0	0	0		0	0	2	0	0		2	**-**
Buses %	0%	0%	0%	0%		0%	1.5%	0.3%	14.3%	0%		0.7%	0%	0%	0%	0%		0%	0%	0.9%	0%	0%		0.7%	**-**
Articulated Trucks	0	0	0	0		0	0	11	0	0		11	0	0	0	0		0	0	13	1	0		14	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	3.3%	0%	0%		2.7%	0%	0%	0%	0%		0%	0%	5.5%	2.5%	0%		5%	**-**
Aggregate Trucks	2	0	0	0		2	1	2	0	0		3	0	0	0	0		0	0	3	3	0		6	**-**
Aggregate Trucks %	5.4%	0%	0%	0%		2.8%	1.5%	0.6%	0%	0%		0.7%	0%	0%	0%	0%		0%	0%	1.3%	7.5%	0%		2.1%	**-**
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 Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**

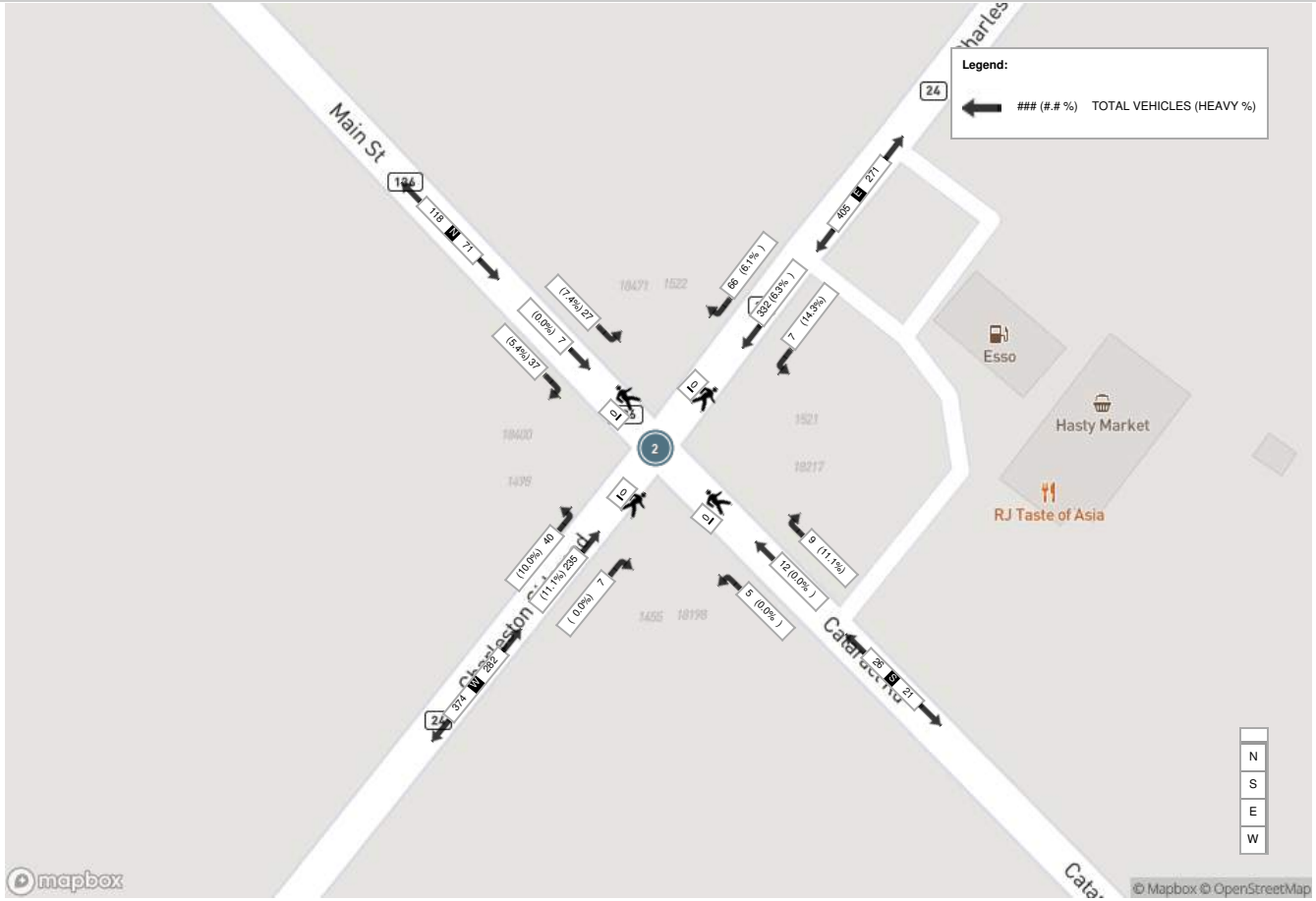
TYLin
200 8800 DUFFERIN STREET
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 07:15 AM - 08:15 AM **Weather: Overcast Clouds (4.03 °C)**



TYLin
200 8800 DUFFERIN STREET
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 03:45 PM - 04:45 PM Weather: Light Rain (8.66 °C)



Spectrum

Turning Movement Count
Location Name: CHARLESTON SIDEROAD & REGIONAL RD 136 (MAIN ST) / CATARACT RD
Date: Sat, Apr 23, 2022 Deployment Lead: Tasos Issaaakidis

TYLin
200 8800 DUFFERIN STREET
VAUGHAN ONTARIO, L4K 0C5
CANADA

Turning Movement Count (2 . CHARLESTON SIDEROAD & REGIONAL RD 136 (MAIN ST) / CATARACT RD) CustID: 02412429 MioID:

Start Time	N Approach MAIN ST						E Approach CHARLESTON SIDE RD						S Approach CATARACT RD						W Approach CHARLESTON SIDE RD						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
06:00:00	0	0	3	0	0	3	2	6	0	0	0	8	1	0	0	0	0	1	0	13	0	0	0	13	25	
06:15:00	0	0	4	0	0	4	1	8	0	0	0	9	0	0	0	0	0	0	0	9	0	0	0	9	22	
06:30:00	0	0	1	0	0	1	1	9	0	0	0	10	0	0	1	0	0	1	0	20	0	0	0	20	32	
06:45:00	2	0	2	0	0	4	3	12	0	0	0	15	0	0	0	0	0	0	0	16	1	0	0	17	36	115
07:00:00	1	0	1	0	0	2	2	14	0	0	0	16	0	0	0	0	0	0	0	22	4	0	0	26	44	134
07:15:00	2	0	3	0	0	5	0	16	0	0	0	16	1	0	0	0	0	1	1	18	3	0	0	22	44	156
07:30:00	4	0	9	0	0	13	3	22	0	0	0	25	1	1	1	0	0	3	0	28	1	0	0	29	70	194
07:45:00	3	0	4	0	0	7	2	24	0	0	0	26	1	2	0	0	0	3	0	36	2	0	0	38	74	232
08:00:00	1	0	7	0	0	8	3	22	0	0	0	25	0	0	0	0	0	0	0	33	2	0	0	35	68	256
08:15:00	4	0	8	0	0	12	3	31	0	0	0	34	1	0	0	0	0	1	1	47	3	0	0	51	98	310
08:30:00	3	0	10	0	0	13	4	39	0	0	0	43	0	1	0	0	0	1	0	42	5	0	0	47	104	344
08:45:00	1	0	5	0	0	6	6	34	0	0	0	40	2	1	0	0	0	3	0	31	8	0	0	39	88	358
09:00:00	4	0	5	1	0	10	6	28	0	0	0	34	0	1	0	0	0	1	1	50	5	0	0	56	101	391
09:15:00	6	0	3	0	0	9	6	50	2	0	0	58	3	0	0	0	0	3	1	45	4	0	0	50	120	413
09:30:00	4	0	3	0	0	7	4	42	2	0	0	48	3	2	0	0	0	5	1	42	2	0	0	45	105	414
09:45:00	7	0	3	0	0	10	10	59	3	0	0	72	2	1	0	0	0	3	0	46	6	0	0	52	137	463
10:00:00	3	6	3	0	0	12	10	52	1	0	0	63	3	4	0	0	0	7	1	37	5	0	0	43	125	487
10:15:00	3	2	7	0	0	12	5	40	2	0	0	47	2	0	2	0	0	4	0	56	3	0	0	59	122	489
10:30:00	10	0	8	0	0	18	5	54	4	0	0	63	0	1	1	0	0	2	2	86	4	0	0	92	175	559
10:45:00	11	1	10	0	0	22	5	48	1	0	0	54	0	3	1	0	0	4	3	68	12	0	0	83	163	585
11:00:00	6	1	7	0	0	14	6	48	2	0	0	56	1	1	1	0	0	3	0	55	7	0	0	62	135	595
11:15:00	3	1	9	0	0	13	6	59	3	0	0	68	3	1	0	0	0	4	0	80	8	0	0	88	173	646
11:30:00	6	2	10	0	0	18	11	73	0	0	0	84	4	1	0	0	0	5	0	60	10	0	0	70	177	648
11:45:00	4	0	7	0	0	11	9	61	1	0	0	71	3	0	0	0	0	3	1	65	12	0	0	78	163	648
BREAK																										
12:00:00	3	3	11	0	0	17	8	63	0	0	0	71	1	6	1	0	0	8	4	64	10	0	0	78	174	
12:15:00	6	1	7	0	0	14	5	69	3	0	0	77	2	3	2	0	0	7	0	63	9	0	0	72	170	
12:30:00	4	2	10	0	0	16	6	52	2	0	0	60	3	1	2	0	0	6	2	72	10	0	0	84	166	
12:45:00	9	4	5	0	0	18	10	62	1	0	0	73	1	1	3	0	0	5	0	66	10	0	0	76	172	682
13:00:00	8	0	9	0	0	17	7	55	3	0	0	65	2	4	0	0	0	6	2	79	16	0	0	97	185	693
13:15:00	7	2	13	0	0	22	11	56	2	0	0	69	1	0	1	0	0	2	3	54	7	0	0	64	157	680
13:30:00	12	3	9	0	0	24	11	55	2	0	0	68	3	3	2	0	0	8	0	66	9	0	0	75	175	689
13:45:00	11	2	8	0	0	21	6	59	3	0	0	68	1	0	2	0	0	3	0	64	12	0	0	76	168	685
14:00:00	6	3	4	0	0	13	10	53	3	0	0	66	0	2	1	0	0	3	2	42	8	0	0	52	134	634
14:15:00	7	1	11	0	0	19	6	53	2	0	0	61	0	2	3	0	0	5	2	72	8	0	0	82	167	644
14:30:00	6	2	4	0	0	12	4	64	2	0	0	70	2	2	1	0	0	5	1	72	10	0	0	83	170	639
14:45:00	5	3	8	0	0	16	8	56	1	0	0	65	3	2	1	0	0	6	2	87	6	0	0	95	182	653
15:00:00	4	1	5	0	0	10	14	69	3	0	0	86	2	2	0	0	0	4	3	79	5	0	0	87	187	706
15:15:00	7	3	12	0	0	22	7	63	3	0	0	73	2	0	1	0	0	3	2	62	9	0	0	73	171	710
15:30:00	8	2	14	0	0	24	4	55	1	0	0	60	0	2	1	0	0	3	3	71	12	0	0	86	173	713
15:45:00	11	5	2	0	0	18	11	81	2	0	0	94	3	2	0	0	0	5	2	49	4	0	0	55	172	703
16:00:00	7	0	4	0	0	11	6	51	3	0	0	60	4	2	1	0	0	7	4	55	9	0	0	68	146	662
16:15:00	7	1	6	0	0	14	6	66	4	0	0	76	2	4	2	0	0	8	0	64	3	0	0	67	165	656
16:30:00	7	4	6	0	0	17	9	39	4	0	0	52	2	2	4	0	0	8	2	65	1	0	0	68	145	628
16:45:00	6	3	7	0	0	16	10	51	0	0	0	61	1	1	3	0	0	5	2	70	5	0	0	77	159	615

TYLin
200 8800 DUFFERIN STREET
VAUGHAN ONTARIO, L4K 0C5
CANADA

17:00:00	5	2	5	0	0	12	6	66	0	0	0	72	3	2	1	0	0	6	2	43	9	0	0	54	144	613
17:15:00	9	0	10	0	0	19	5	55	3	0	0	63	2	0	0	0	0	2	1	52	9	0	0	62	146	594
17:30:00	4	3	8	0	0	15	4	60	0	0	0	64	3	1	1	0	0	5	5	70	8	0	0	83	167	616
17:45:00	2	3	6	0	0	11	8	61	4	0	0	73	2	0	3	0	0	5	1	69	8	0	0	78	167	624
Grand Total	249	66	316	1	0	632	295	2265	72	0	0	2632	76	64	43	0	0	183	57	2555	304	0	0	2916	**6363**	-
Approach%	39.4%	10.4%	50%	0.2%		-	11.2%	86.1%	2.7%	0%		-	41.5%	35%	23.5%	0%		-	2%	87.6%	10.4%	0%		-	**-**	-
Totals %	3.9%	1%	5%	0%		9.9%	4.6%	35.6%	1.1%	0%		41.4%	1.2%	1%	0.7%	0%		2.9%	0.9%	40.2%	4.8%	0%		45.8%	**-**	-
Heavy	2	1	9	0		-	2	42	0	0		-	0	2	1	0		-	1	51	3	0		-	**-**	-
Heavy %	0.8%	1.5%	2.8%	0%		-	0.7%	1.9%	0%	0%		-	0%	3.1%	2.3%	0%		-	1.8%	2%	1%	0%		-	**-**	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

TYLin
200 8800 DUFFERIN STREET
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 11:00 AM - 12:00 PM Weather: Broken Clouds (5.75 °C)

Start Time	N Approach MAIN ST						E Approach CHARLESTON SIDE RD						S Approach CATARACT RD						W Approach CHARLESTON SIDE RD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
11:00:00	6	1	7	0	0	14	6	48	2	0	0	56	1	1	1	0	0	3	0	55	7	0	0	62	135
11:15:00	3	1	9	0	0	13	6	59	3	0	0	68	3	1	0	0	0	4	0	80	8	0	0	88	173
11:30:00	6	2	10	0	0	18	11	73	0	0	0	84	4	1	0	0	0	5	0	60	10	0	0	70	177
11:45:00	4	0	7	0	0	11	9	61	1	0	0	71	3	0	0	0	0	3	1	65	12	0	0	78	163
Grand Total	19	4	33	0	0	56	32	241	6	0	0	279	11	3	1	0	0	15	1	260	37	0	0	298	**648**
Approach%	33.9%	7.1%	58.9%	0%		-	11.5%	86.4%	2.2%	0%		-	73.3%	20%	6.7%	0%		-	0.3%	87.2%	12.4%	0%		-	**-**
Totals %	2.9%	0.6%	5.1%	0%		8.6%	4.9%	37.2%	0.9%	0%		43.1%	1.7%	0.5%	0.2%	0%		2.3%	0.2%	40.1%	5.7%	0%		46%	**-**
PHF	0.79	0.5	0.83	0		0.78	0.73	0.83	0.5	0		0.83	0.69	0.75	0.25	0		0.75	0.25	0.81	0.77	0		0.85	**-**
Heavy	0	0	1	0		1	0	6	0	0		6	0	0	0	0		0	0	6	2	0		8	**-**
Heavy %	0%	0%	3%	0%		1.8%	0%	2.5%	0%	0%		2.2%	0%	0%	0%	0%		0%	0%	2.3%	5.4%	0%		2.7%	**-**
Lights	19	4	32	0		55	32	235	6	0		273	11	3	1	0		15	1	254	35	0		290	**-**
Lights %	100%	100%	97%	0%		98.2%	100%	97.5%	100%	0%		97.8%	100%	100%	100%	0%		100%	100%	97.7%	94.6%	0%		97.3%	**-**
Single-Unit Trucks	0	0	1	0		1	0	3	0	0		3	0	0	0	0		0	0	5	2	0		7	**-**
Single-Unit Trucks %	0%	0%	3%	0%		1.8%	0%	1.2%	0%	0%		1.1%	0%	0%	0%	0%		0%	0%	1.9%	5.4%	0%		2.3%	**-**
Buses	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%	**-**
Articulated Trucks	0	0	0	0		0	0	3	0	0		3	0	0	0	0		0	0	1	0	0		1	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	1.2%	0%	0%		1.1%	0%	0%	0%	0%		0%	0%	0.4%	0%	0%		0.3%	**-**
Aggregate Trucks	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	**-**
Aggregate 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	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%	**-**

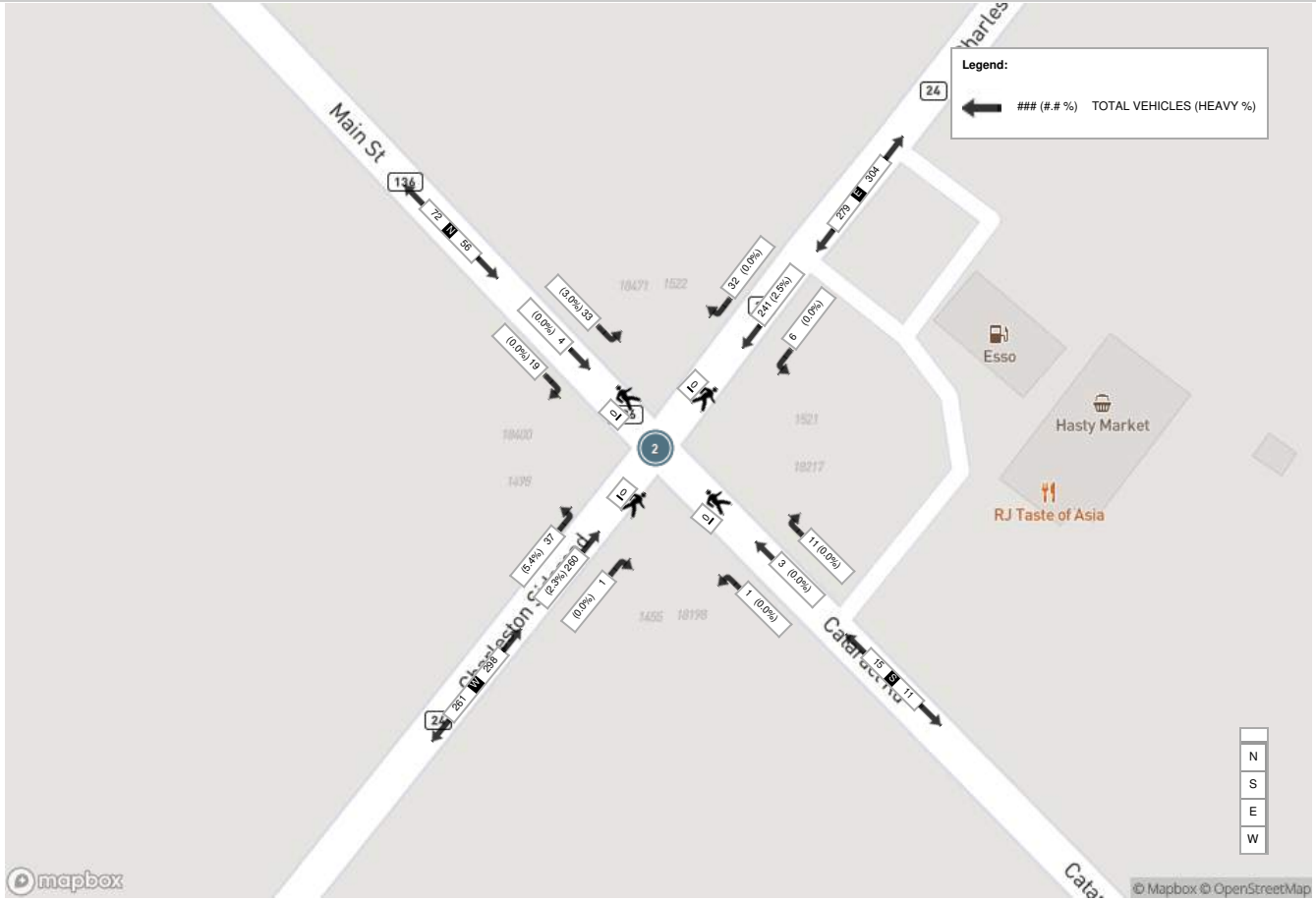
TYLin
200 8800 DUFFERIN STREET
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 02:45 PM - 03:45 PM Weather: Light Rain (5.94 °C)

Start Time	N Approach MAIN ST						E Approach CHARLESTON SIDE RD						S Approach CATARACT RD						W Approach CHARLESTON SIDE RD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
14:45:00	5	3	8	0	0	16	8	56	1	0	0	65	3	2	1	0	0	6	2	87	6	0	0	95	182
15:00:00	4	1	5	0	0	10	14	69	3	0	0	86	2	2	0	0	0	4	3	79	5	0	0	87	187
15:15:00	7	3	12	0	0	22	7	63	3	0	0	73	2	0	1	0	0	3	2	62	9	0	0	73	171
15:30:00	8	2	14	0	0	24	4	55	1	0	0	60	0	2	1	0	0	3	3	71	12	0	0	86	173
Grand Total	24	9	39	0	0	72	33	243	8	0	0	284	7	6	3	0	0	16	10	299	32	0	0	341	**713**
Approach%	33.3%	12.5%	54.2%	0%		-	11.6%	85.6%	2.8%	0%		-	43.8%	37.5%	18.8%	0%		-	2.9%	87.7%	9.4%	0%		-	**-**
Totals %	3.4%	1.3%	5.5%	0%		10.1%	4.6%	34.1%	1.1%	0%		39.8%	1%	0.8%	0.4%	0%		2.2%	1.4%	41.9%	4.5%	0%		47.8%	**-**
PHF	0.75	0.75	0.7	0		0.75	0.59	0.88	0.67	0		0.83	0.58	0.75	0.75	0		0.67	0.83	0.86	0.67	0		0.9	**-**
Heavy	0	1	1	0		2	0	3	0	0		3	0	0	0	0		0	0	9	0	0		9	**-**
Heavy %	0%	11.1%	2.6%	0%		2.8%	0%	1.2%	0%	0%		1.1%	0%	0%	0%	0%		0%	0%	3%	0%	0%		2.6%	**-**
Lights	24	8	38	0		70	33	240	8	0		281	7	6	3	0		16	10	290	32	0		332	**-**
Lights %	100%	88.9%	97.4%	0%		97.2%	100%	98.8%	100%	0%		98.9%	100%	100%	100%	0%		100%	100%	97%	100%	0%		97.4%	**-**
Single-Unit Trucks	0	0	1	0		1	0	3	0	0		3	0	0	0	0		0	0	5	0	0		5	**-**
Single-Unit Trucks %	0%	0%	2.6%	0%		1.4%	0%	1.2%	0%	0%		1.1%	0%	0%	0%	0%		0%	0%	1.7%	0%	0%		1.5%	**-**
Buses	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%	**-**
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	4	0	0		4	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	1.3%	0%	0%		1.2%	**-**
Aggregate Trucks	0	1	0	0		1	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	**-**
Aggregate Trucks %	0%	11.1%	0%	0%		1.4%	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	**-**
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**

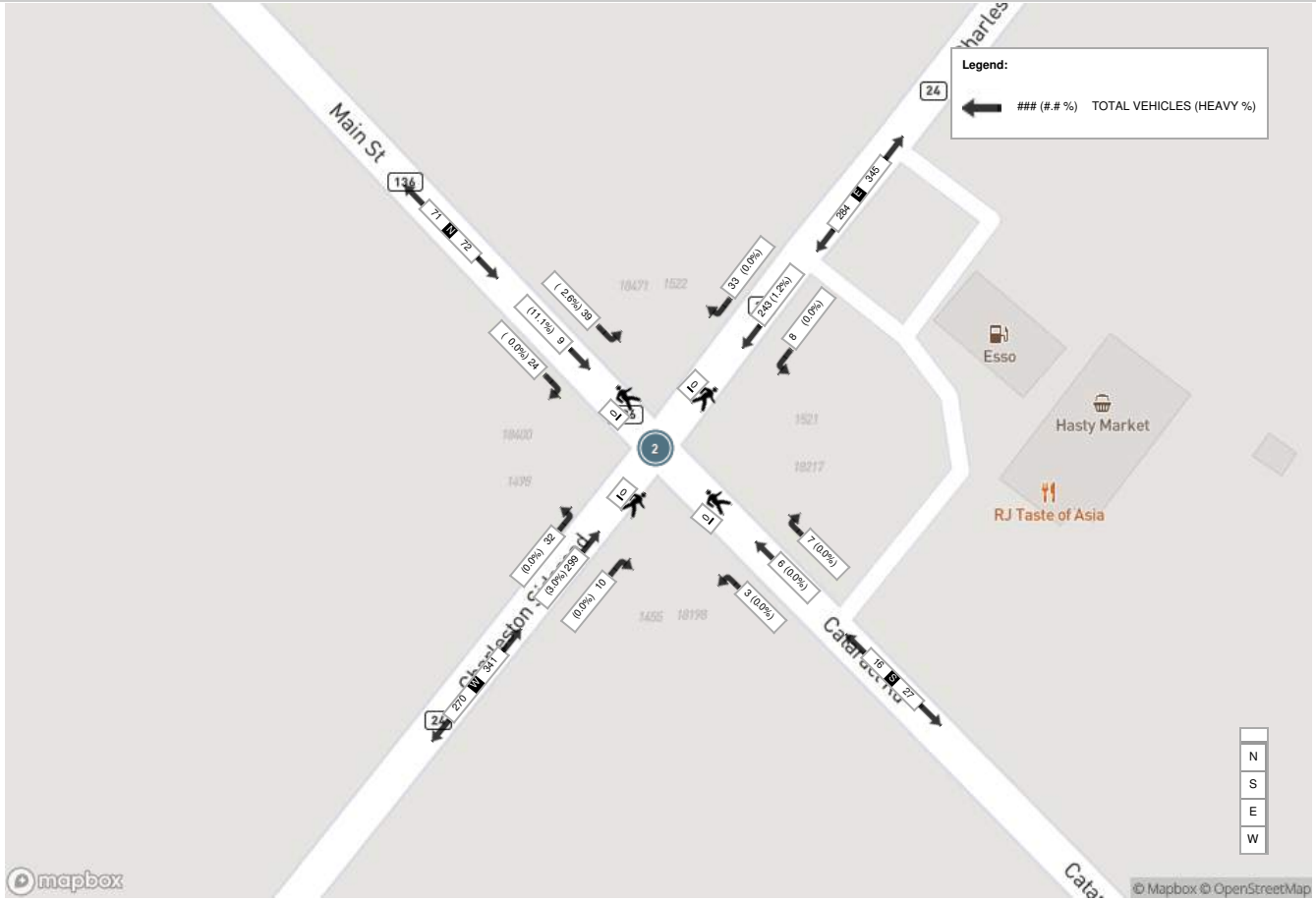
TYLin
200 8800 DUFFERIN STREET
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 11:00 AM - 12:00 PM **Weather: Broken Clouds (5.75 °C)**



TYLin
200 8800 DUFFERIN STREET
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 02:45 PM - 03:45 PM Weather: Light Rain (5.94 °C)



GENERIC SIGNAL TIMING SHEET

ACTUATED [X] PRE-TIMED [ ] SIGNAL TO BE MAINTAINED BY Peel Region

LOCATION: Highway 10 at Charleston Side Road SIGNAL TO BE OPERATED BY: MTO

MAINSTREET (HWY): Highway 10 TIMING DEVELOPED BY: MTO

DATE TIMING DEVELOPED : 2018-09-26

GENERIC TIMING IDENTIFIED HERE SHALL BE TRANSCRIBED ONTO "OFFICIAL" TIMING SHEETS FOR THE TRAFFIC SIGNAL CONTROLLER BEING USED AT THIS SIGNALIZED INTERSECTION. A COPY OF THE "OFFICIAL" LOCAL TIMING SHEETS AND COORDINATION SHEETS IF USED, SHALL BE ATTACHED TO THIS FORM AND FILED IN THE MTO REGIONAL TRAFFIC OFFICE

OPERATIONAL NOTES:

1. All Prot/Perm left turn movements shall be followed by parent through movements without exception
2. If serving F2 and F6 the signal must cycle to F4 and/or F8 prior to serving a call for F1 and/or F5 if these left turn movements are protected/permissive.
3. If serving F4 and F8, the signal must cycle to F2 and/or F6 prior to serving a call for F3 and /or F7 if these left turn movements are protected/permissive.
4. Through Movements shall lag left turn movements unless otherwise specified.
5. 70 km/h operating speed used for Highwy 10 calculations, 60 km/h for RR 24.

FUNCTION/OPERATION	MOVEMENT (FAZE)							
	NB LEFT	NB THRU	WB LEFT	WB THRU	SB LEFT	SB THRU	EB LEFT	EB THRU
PERMITTED MOVEMENTS	X	X	X	X	X	X	X	X
RED LOCK								
AMBER LOCK								
VEHICLE RECALL								
PEDESTRIAN RECALL		X				X		
VEHICLE MAX RECALL								
OVERLAP A								
OVERLAP B								
PROT/PERM LEFT TURN ARROW	X		X		X		X	
PROT/PERM FAST FLASH ADVANCE GREEN								
FULLY PROTECTED LEFT TURN								
DISPLAY AMBER ON STARTUP		X				X		
PLACE PED CALLS ON STARTUP		X		X		X		X
PLACE VEHICLE CALLS ON STARTUP	X	X	X	X	X	X	X	X
REST IN WALK								
MOVEMENTS MUST GAP OUT SIMULTANEOUSLY		X		X		X		X
DOUBLE ENTRY		X		X		X		X
EXCLUSIVE (SEPERATE) PHASING BY APPORACH								

Region of Peel
Working for you

FIELD COPY

Intersection Name	Road Code	Int. #	Sys #	Rev.
Hwy. 10 @ Charleston	00000013	9939	0	9

Controller Make	Model	Firmware Rev. No.
McCain	2070ATC	

*- Start From Main Menu 0

Revision

NO	Date Y	Date M	Date D	Description	Field Chg by
9	18			Implement Timing Provided by MTO	GUILD

*- Start From Main Menu

PHASE DESCRIPTION

Ph1	Hwy. 10 - S/B L.T.	Ph5	Hwy. 10 - N/B L.T.
Ph2	Hwy. 10 - N/B	PH6	Hwy. 10 - S/B
Ph3	Charleston - W/B L.T.	Ph7	Charleston - E/B L.T.
Ph4	Charleston - E/B	Ph8	Charleston - W/B

CONFIGURATION SU phase 2 & 6 jumpered to recall main street ped

Port Protocol.....:	Terminal
Port 2 Enable.....:	X
Telemetry Address.....:	0
System Detector address....:	0
Telem response delay.....:	8700
Duplex - Half or Full.....:	Full
Modem Data Rate (BPS).....:	19.2 k
Data, Parity, Stop.....:	8,N,1

CONFIGURATION SUBMENU - controller sequence

	..1	..2	..3	..4	..5	..6
R1	1	2	3	4	9	10
R2	5	6	7	8	11	12

CONFIGURATIUON SUBMENU - PHASES IN USE

Phase:	1	2	3	4	5	6	7	8
Phase in use :	X	X	X	X	X	X	X	X
Exclusive Ped :	0	0	0	0	0	0	0	0

CONTROLLER SUBMENU - TIMING DATA

Phase:	1	2	3	4	5	6	7	8
Minimum Green..... :	7	20	7	10	7	20	7	10
Walk..... :	0	21	0	22	0	21	0	22
Pedestrian Clearance. :	0	16	0	17	0	16	0	17
Veh. Ext. :	3	4.4	3	3	3	4.4	3	3
Veh. Ext. 2 :	0	0	0	0	0	0	0	0
Max. Ext. :	0	0	0	0	0	0	0	0
Maximum No 1..... :	10	55	7	20	10	55	7	20
Maximum No 2..... :	0	67	0	25	19	67	0	25
Maximum No 3..... :	0	0	0	0	0	0	0	0
Yellow .... :	3	5.0	3	4.5	3	5.0	3	4.5
Red Clr..... :	0	2.4	0	2.4	0	2.4	0	2.4
Detector Delay...	5	0	10	10	5	0	10	10

CONTROLLER SUBMENU - RECALL DATA

Phase:	1	2	3	4	5	6	7	8
Locking Memory :	0	0	0	0	0	0	0	0
Vehicle Recall :	0	X	0	0	0	X	0	0
Ped Recall	0	X	0	0	0	X	0	0
Recall to Max	0	0	0	0	0	0	0	0
Soft Recall	0	0	0	0	0	0	0	0
Don't Rest Here	0	0	0	0	0	0	0	0
Ped Dark n/call	0	0	0	0	0	0	0	0

CONTROLLER SUBMENU - START/FLASH DATA

Phase:	1	2	3	4	5	6	7	8
Power Start	0	X	0	0	0	X	0	0
External Start:	0	X	0	0	0	X	0	0
Power start All Red Time	0	0	0	0	0	0	0	0
Power Start Flash time	0	15	0	0	0	15	0	0
Out of Flash Yellow	0	X	0	0	0	X	0	0
Out of Flash All Red	0	0	0	0	0	0	0	0

CONTROLLER SUBMENU - OPTION DATA

Phase:	1	2	3	4	5	6	7	8
Guar Passage :	0	0	0	X	0	0	0	X
Nonactuated 1 :	0	0	0	0	0	0	0	0
Nonactuated 2	0	0	0	0	0	0	0	0
Dual Entry	0	X	0	X	0	X	0	X
Cond Service	X	0	X	0	X	0	X	0
Rest in Walk	0	X	0	0	0	X	0	0
Flashing Walk	0	0	0	0	0	0	0	0
Phase Omit..... :	2	0	4	0	6	0	8	0
Phase - Yellow..... :	0	0	0	0	0	0	0	0

Enable Programming options Dual Entry..... X

NIC/TOD - NIC PROGRAM STEPS * - 5 - 5

Step	PGM	Time	Pattern	Override
1	1	00:00	0	
2	1	05:30	1	
3	1	09:30	2	
4	1	15:00	~~*~~ 3	
5	1	19:00	2	
6	2	00:00	0	

NIC/TOD - TOD PROGRAM STEPS * - 5 - 6

TOD PROG Step 1
DAY PGM NUM....1
Step Begins....00:00

PHASE	1	2	3	4	5	6	7	8
MAX 2 ENABLE	.	.	.	.	.	.	.	.
MAX 3 ENABLE	.	.	.	.	.	.	.	.
VEH RECALL	.	.	.	.	.	.	.	.
VEH MAX RECALL	.	.	.	.	.	.	.	.
PED RECALL	.	.	.	.	.	.	.	.
PHASE OMIT	.	.	.	.	.	.	.	.

PATTERN 2

TOD PROG Step 2
DAY PGM NUM....1
Step Begins....05:30

PHASE	1	2	3	4	5	6	7	8
MAX 2 ENABLE	.	X	.	X	.	X	.	X
MAX 3 ENABLE	.	.	.	.	.	.	.	.
VEH RECALL	.	.	.	.	.	.	.	.
VEH MAX RECALL	.	.	.	.	.	.	.	.
PED RECALL	.	.	.	.	.	.	.	.
PHASE OMIT	.	.	.	.	.	.	.	.

PATTERN 1

TOD PROG Step 3
DAY PGM NUM....1
Step Begins....09:30

PHASE	1	2	3	4	5	6	7	8
MAX 2 ENABLE	.	.	.	.	.	.	.	.
MAX 3 ENABLE	.	.	.	.	.	.	.	.
VEH RECALL	.	.	.	.	.	.	.	.
VEH MAX RECALL	.	.	.	.	.	.	.	.
PED RECALL	.	.	.	.	.	.	.	.
PHASE OMIT	.	.	.	.	.	.	.	.

PATTERN 2

TOD PROG Step 4
DAY PGM NUM....1
Step Begins....15:00

PHASE	1	2	3	4	5	6	7	8
MAX 2 ENABLE	.	X	.	X	X	X	.	X
MAX 3 ENABLE	.	.	.	.	.	.	.	.
VEH RECALL	.	.	.	.	.	.	.	.
VEH MAX RECALL	.	.	.	.	.	.	.	.
PED RECALL	.	.	.	.	.	.	.	.
PHASE OMIT	.	.	.	.	.	.	.	.

PATTERN 3

TOD PROG Step 5
DAY PGM NUM....1
Step Begins....19:00

PHASE	1	2	3	4	5	6	7	8
MAX 2 ENABLE	.	.	.	.	.	.	.	.
MAX 3 ENABLE	.	.	.	.	.	.	.	.
VEH RECALL	.	.	.	.	.	.	.	.
VEH MAX RECALL	.	.	.	.	.	.	.	.
PED RECALL	.	.	.	.	.	.	.	.
PHASE OMIT	.	.	.	.	.	.	.	.

PATTERN 2

TOD PROG Step 6
DAY PGM NUM....2
Step Begins....00:00

PHASE	1	2	3	4	5	6	7	8
MAX 2 ENABLE	.	.	.	.	.	.	.	.
MAX 3 ENABLE	.	.	.	.	.	.	.	.
VEH RECALL	.	.	.	.	.	.	.	.
VEH MAX RECALL	.	.	.	.	.	.	.	.
PED RECALL	.	.	.	.	.	.	.	.
PHASE OMIT	.	.	.	.	.	.	.	.

NIC/TOD - WEEKLY PROGRAMS

*-5-2

WEEK	SUN	MON	TUE	WED	THU	FRI	SAT
1	2	1	1	1	1	1	2
2							
3							
4							
5							
6							
7							
8							
9							
10							

comments: MAX II Active in AM & PM
05:30 to 09:30
15:00 to 19:00

Authorized Signature: R. Laing

Date: OCT. 10/ 18

PLEASE IMPLEMENT THESE TIMING WHEN LOOPS FAILED.

GENERIC SIGNAL TIMING SHEET

ACTUATED ☐ PRE-TIMED ☒ SIGNAL TO BE MAINTAINED BY Peel Region

LOCATION: Highway 10 at Charleston Side Road SIGNAL TO BE OPERATED BY: MTO

MAINSTREET (HWY): Highway 10 TIMING DEVELOPED BY: MTO

DATE TIMING DEVELOPED : 2018-09-26

GENERIC TIMING IDENTIFIED HERE SHALL BE TRANSCRIBED ONTO "OFFICIAL" TIMING SHEETS FOR THE TRAFFIC SIGNAL CONTROLLER BEING USED AT THIS SIGNALIZED INTERSECTION. A COPY OF THE "OFFICIAL" LOCAL TIMING SHEETS AND COORDINATION SHEETS IF USED, SHALL BE ATTACHED TO THIS FORM AND FILED IN THE MTO REGIONAL TRAFFIC OFFICE

OPERATIONAL NOTES:

1. All Prot/Perm left turn movements shall be followed by parent through movements without exception
2. If serving F2 and F6 the signal must cycle to F4 and/or F8 prior to serving a call for F1 and/or F5 if these left turn movements are protected/permissive.
3. If serving F4 and F8, the signal must cycle to F2 and/or F6 prior to serving a call for F3 and /or F7 if these left turn movements are protected/permissive.
4. Through Movements shall lag left turn movements unless otherwise specified.
5. 70 km/h operating speed used for Highwy 10 calculations, 60 km/h for RR 24.

FUNCTION/OPERATION	MOVEMENT (FAZE)							
	NB LEFT	NB THRU	WB LEFT	WB THRU	SB LEFT	SB THRU	EB LEFT	EB THRU
PERMITTED MOVEMENTS	X	X	X	X	X	X	X	X
RED LOCK								
AMBER LOCK								
VEHICLE RECALL	X		X	X	X		X	X
PEDESTRIAN RECALL		X				X		
VEHICLE MAX RECALL								
OVERLAP A								
OVERLAP B								
PROT/PERM LEFT TURN ARROW	X		X		X		X	
PROT/PERM FAST FLASH ADVANCE GREEN								
FULLY PROTECTED LEFT TURN								
DISPLAY AMBER ON STARTUP		X				X		
PLACE PED CALLS ON STARTUP		X		X		X		X
PLACE VEHICLE CALLS ON STARTUP	X	X	X	X	X	X	X	X
REST IN WALK								
MOVEMENTS MUST GAP OUT SIMULTANEOUSLY		X		X		X		X
DOUBLE ENTRY		X		X		X		X
EXCLUSIVE (SEPERATE) PHASING BY APPORACH								

INTERVAL TIMES	MOVEMENT (FAZE)							
	NB LEFT	NB THRU	WB LEFT	WB THRU	SB LEFT	SB THRU	EB LEFT	EB THRU
WALK		21		22		21		22
FLASHING DON'T WALK		16		17		16		17
MINIMUM GREEN	7.0	50.0	7.0	18.0	7.0	50.0	7.0	18.0
VEHICLE EXTENSION (PASSAGE TIME)	3.0	4.4	3.0	3.0	3.0	4.4	3.0	3.0
MAXIMUM GREEN (INCLUDES MIN GREEN)	10.0	60.0	7.0	25.0	10.0	60.0	7.0	25.0
MAXIMUM GREEN 2 (ALTERNATE MAX GREEN)	19.0	67.0		25.0		67.0		25.0
AMBER CLEARANCE	3.0	5.0	3.0	4.5	3.0	5.0	3.0	4.5
ALL RED CLEARANCE		2.4		2.4		2.4		2.4
MAX GAP (VEH. EXTENSION)	3.0	4.4	3.0	3.0	3.0	4.4	3.0	3.0
MIN GAP (VEH. EXTENSION)	3.0	4.4	3.0	3.0	3.0	4.4	3.0	3.0
REDUCE GAP BY								
REDUCE GAP EVERY								
MAX INITIAL GREEN TIME (VARIABLE INIT)		25				25		
TIME ADDED/VEHICLE (VARIABLE INIT)		1				1		

DETECTOR SETUP	MOVEMENT (FAZE)							
	NB LEFT	NB THRU	WB LEFT	WB THRU	SB LEFT	SB THRU	EB LEFT	EB THRU
DELAY TIME ON PRESENCE DETECTION	5.0		10.0	10.0	5.0		10.0	10.0
DELAY ON LONG DISTANCE DETECTION								
CARRY-OVER ON PRESENCE DETECTION								
CARRY-OVER ON LONG DISTANCE DETECTION								

PRE-EMPTION	MOVEMENT (FAZE)							
	NB LEFT	NB THRU	WB LEFT	WB THRU	SB LEFT	SB THRU	EB LEFT	EB THRU
1ST EMERG. PRE-EMPT MOVEMENTS		X				X		
1ST EMERG. PRE-EMPT DELAY TIME								
1ST EMERG. PRE-EMPT CLEARANCE TIME								
2ND EMERG. PRE-EMPT MOVEMENTS				X				X
2ND EMERG. PRE-EMPT DELAY TIME								
2ND EMERG. PRE-EMPT CLEARANCE TIME								
RR PRE-EMPT TRACK CLEARANCE MOVEMENTS								
RR PRE-EMPT CLEARANCE TIME								
RR PRE-EMPT DELAY TIME								
RR PRE-EMPT LIMITED SERVICE MOVEMENTS								

TIME OF DAY OPERATIONS	TIME OF DAY		DAY OF WEEK							MOVEMENT (FAZE)							
	START	END	S	M	T	W	T	F	S	NB LEFT	NB THRU	WB LEFT	WB THRU	SB LEFT	SB THRU	EB LEFT	EB THRU
PHASE OMIT																	
MAX RECALL	05:30	09:30		X	X	X	X	X			X		X		X		X
MAX RECALL	15:00	19:00		X	X	X	X	X		X	X		X		X		X
PED RECALL																	
MIN RECALL																	
MAX GREEN 2																	
REST IN WALK																	
AMBER LOCK																	
RED LOCK																	

GENERIC SIGNAL TIMING SHEET

ACTUATED [X] PRE-TIMED [ ] SIGNAL TO BE MAINTAINED BY Peel Region

LOCATION: Highway 10 at Charleston Side Road SIGNAL TO BE OPERATED BY: MTO

MAINSTREET (HWY): Highway 10 TIMING DEVELOPED BY: MTO

DATE TIMING DEVELOPED : 2018-09-26

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OPERATIONAL NOTES:

1. All Prot/Perm left turn movements shall be followed by parent through movements without exception
2. If serving F2 and F6 the signal must cycle to F4 and/or F8 prior to serving a call for F1 and/or F5 if these left turn movements are protected/permissive.
3. If serving F4 and F8, the signal must cycle to F2 and/or F6 prior to serving a call for F3 and /or F7 if these left turn movements are protected/permissive.
4. Through Movements shall lag left turn movements unless otherwise specified.
5. 70 km/h operating speed used for Highwy 10 calculations, 60 km/h for RR 24.

FUNCTION/OPERATION	MOVEMENT (FAZE)							
	NB LEFT	NB THRU	WB LEFT	WB THRU	SB LEFT	SB THRU	EB LEFT	EB THRU
PERMITTED MOVEMENTS	X	X	X	X	X	X	X	X
RED LOCK								
AMBER LOCK								
VEHICLE RECALL								
PEDESTRIAN RECALL		X				X		
VEHICLE MAX RECALL								
OVERLAP A								
OVERLAP B								
PROT/PERM LEFT TURN ARROW	X		X		X		X	
PROT/PERM FAST FLASH ADVANCE GREEN								
FULLY PROTECTED LEFT TURN								
DISPLAY AMBER ON STARTUP		X				X		
PLACE PED CALLS ON STARTUP		X		X		X		X
PLACE VEHICLE CALLS ON STARTUP	X	X	X	X	X	X	X	X
REST IN WALK								
MOVEMENTS MUST GAP OUT SIMULTANEOUSLY		X		X		X		X
DOUBLE ENTRY		X		X		X		X
EXCLUSIVE (SEPERATE) PHASING BY APPORACH								

INTERVAL TIMES	MOVEMENT (FAZE)							
	NB LEFT	NB THRU	WB LEFT	WB THRU	SB LEFT	SB THRU	EB LEFT	EB THRU
WALK		21		22		21		22
FLASHING DON'T WALK		16		17		16		17
MINIMUM GREEN	7.0	20.0	7.0	10.0	7.0	20.0	7.0	10.0
VEHICLE EXTENSION (PASSAGE TIME)	3.0	4.4	3.0	3.0	3.0	4.4	3.0	3.0
MAXIMUM GREEN (INCLUDES MIN GREEN)	10.0	55.0	7.0	20.0	10.0	55.0	7.0	20.0
MAXIMUM GREEN 2 (ALTERNATE MAX GREEN)	19.0	67.0		25.0		67.0		25.0
AMBER CLEARANCE	3.0	5.0	3.0	4.5	3.0	5.0	3.0	4.5
ALL RED CLEARANCE		2.4		2.4		2.4		2.4
MAX GAP (VEH. EXTENSION)	3.0	4.4	3.0	3.0	3.0	4.4	3.0	3.0
MIN GAP (VEH. EXTENSION)	3.0	4.4	3.0	3.0	3.0	4.4	3.0	3.0
REDUCE GAP BY								
REDUCE GAP EVERY								
MAX INITIAL GREEN TIME (VARIABLE INIT)		25				25		
TIME ADDED/VEHICLE (VARIABLE INIT)		1				1		

DETECTOR SETUP	MOVEMENT (FAZE)							
	NB LEFT	NB THRU	WB LEFT	WB THRU	SB LEFT	SB THRU	EB LEFT	EB THRU
DELAY TIME ON PRESENCE DETECTION	5.0		10.0	10.0	5.0		10.0	10.0
DELAY ON LONG DISTANCE DETECTION								
CARRY-OVER ON PRESENCE DETECTION								
CARRY-OVER ON LONG DISTANCE DETECTION								

PRE-EMPTION	MOVEMENT (FAZE)							
	NB LEFT	NB THRU	WB LEFT	WB THRU	SB LEFT	SB THRU	EB LEFT	EB THRU
1ST EMERG. PRE-EMPT MOVEMENTS		X				X		
1ST EMERG. PRE-EMPT DELAY TIME								
1ST EMERG. PRE-EMPT CLEARANCE TIME								
2ND EMERG. PRE-EMPT MOVEMENTS				X				X
2ND EMERG. PRE-EMPT DELAY TIME								
2ND EMERG. PRE-EMPT CLEARANCE TIME								
RR PRE-EMPT TRACK CLEARANCE MOVEMENTS								
RR PRE-EMPT CLEARANCE TIME								
RR PRE-EMPT DELAY TIME								
RR PRE-EMPT LIMITED SERVICE MOVEMENTS								

TIME OF DAY OPERATIONS	TIME OF DAY		DAY OF WEEK							MOVEMENT (FAZE)							
	START	END	S	M	T	W	T	F	S	NB LEFT	NB THRU	WB LEFT	WB THRU	SB LEFT	SB THRU	EB LEFT	EB THRU
PHASE OMIT																	
MAX RECALL																	
PED RECALL																	
MIN RECALL																	
MAX GREEN 2	05:30	09:30		X	X	X	X	X			X		X		X		X
MAX GREEN 2	15:00	19:00		X	X	X	X	X		X	X		X		X		X
REST IN WALK																	
AMBER LOCK																	
RED LOCK																	

REGIONAL MUNICIPALITY OF PEEL

Traffic Signal Timing Parameters

Database Date	**August 1, 2001**		**Prepared Date**	**May 7, 2021**	
Database Rev	**1**		**Completed By**	**MA**	
Timing Card / Field rev	**1**		**Checked By**	**BL**	
Location	**Charleston Sideroad @ Main Street/Cataract Road**				

Phase #	Street Name - Direction	Vehicle Minimum (s)	Pedestrian Minimum (s)		Amber (s)	All Red (s)	TIME PERIOD (s) SPLITS = Green + Amber + All Red MAX = Green Only		
			WALK	FDWALK			AM MAX	OFF MAX	PM MAX
1	Not In Use	-	-	-	-	-	-	-	-
2	Charleston Sideroad - E/W	20	8	16	4.6	2.0	40	40	40
3	Not In Use	-	-	-	-	-	-	-	-
4	Main Street/Cataract Road - N/S	16	8	16	4.6	2.0	30	30	30
5	Not In Use	-	-	-	-	-	-	-	-
6	Not In Use	-	-	-	-	-	-	-	-
7	Not In Use	-	-	-	-	-	-	-	-
8	Not In Use	-	-	-	-	-	-	-	-

Note: Phase 2 is set to min. recall

System Control

No

Semi-Actuated Mode

No

TIME (M-F)	PEAK	CYCLE LENGTH (s)	OFFSET (s)
FREE	AM	0	0
FREE	OFF	0	0
FREE	PM	0	0

INTERVAL TIMES	MOVEMENT (FAZE)							
	NB LEFT	NB THRU	WB LEFT	WB THRU	SB LEFT	SB THRU	EB LEFT	EB THRU
WALK		21		22		21		22
FLASHING DON'T WALK		16		17		16		17
MINIMUM GREEN	7.0	20.0	7.0	10.0	7.0	20.0	7.0	10.0
VEHICLE EXTENSION (PASSAGE TIME)	3.0	4.4	3.0	3.0	3.0	4.4	3.0	3.0
MAXIMUM GREEN (INCLUDES MIN GREEN)	10.0	55.0	7.0	20.0	10.0	55.0	7.0	20.0
MAXIMUM GREEN 2 (ALTERNATE MAX GREEN)	19.0	67.0		25.0		67.0		25.0
AMBER CLEARANCE	3.0	5.0	3.0	4.5	3.0	5.0	3.0	4.5
ALL RED CLEARANCE		2.4		2.4		2.4		2.4
MAX GAP (VEH. EXTENSION)	3.0	4.4	3.0	3.0	3.0	4.4	3.0	3.0
MIN GAP (VEH. EXTENSION)	3.0	4.4	3.0	3.0	3.0	4.4	3.0	3.0
REDUCE GAP BY								
REDUCE GAP EVERY								
MAX INITIAL GREEN TIME (VARIABLE INIT)		25				25		
TIME ADDED/VEHICLE (VARIABLE INIT)		1				1		

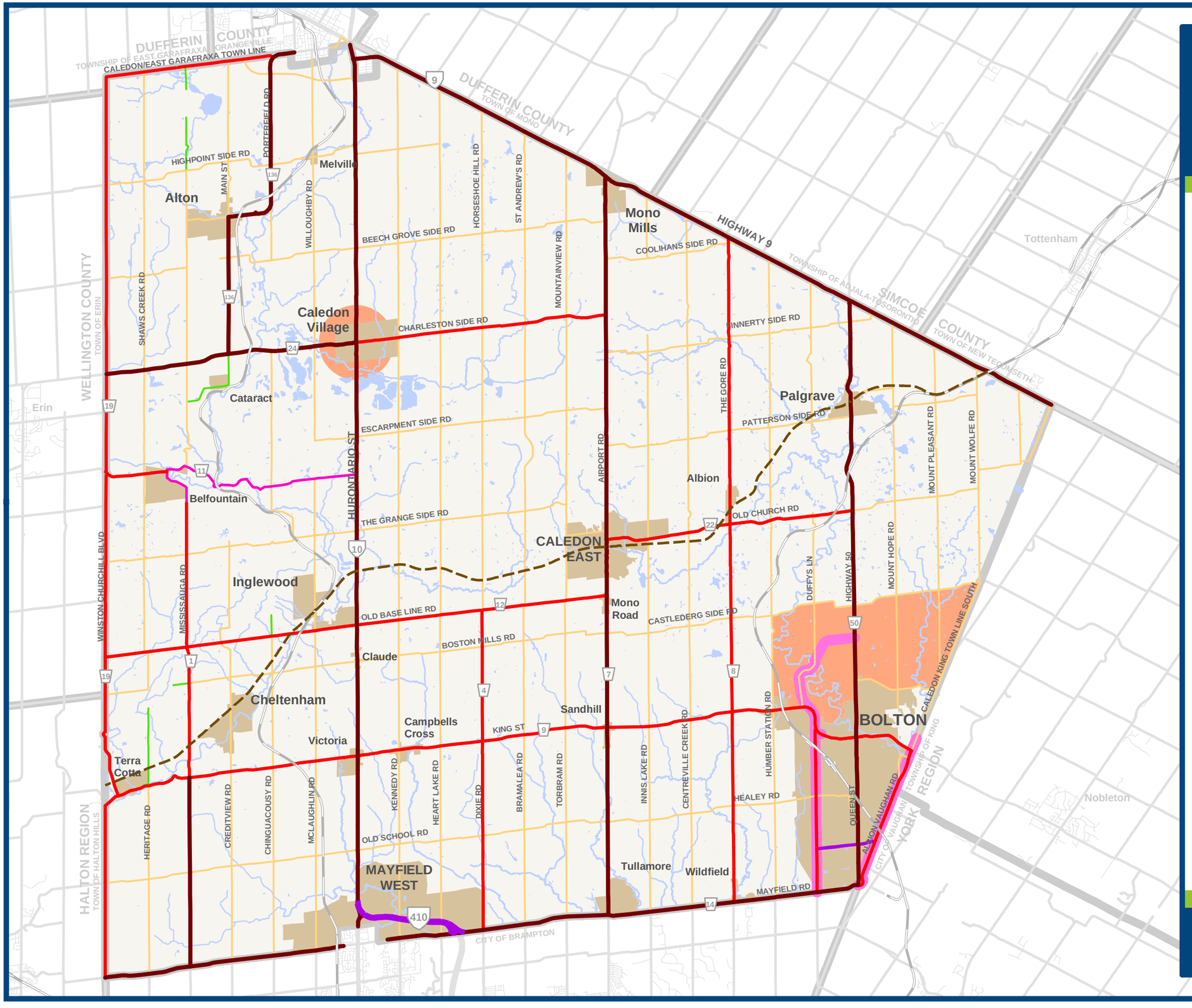
DETECTOR SETUP	MOVEMENT (FAZE)							
	NB LEFT	NB THRU	WB LEFT	WB THRU	SB LEFT	SB THRU	EB LEFT	EB THRU
DELAY TIME ON PRESENCE DETECTION	5.0		10.0	10.0	5.0		10.0	10.0
DELAY ON LONG DISTANCE DETECTION								
CARRY-OVER ON PRESENCE DETECTION								
CARRY-OVER ON LONG DISTANCE DETECTION								

PRE-EMPTION	MOVEMENT (FAZE)							
	NB LEFT	NB THRU	WB LEFT	WB THRU	SB LEFT	SB THRU	EB LEFT	EB THRU
1ST EMERG. PRE-EMPT MOVEMENTS		X				X		
1ST EMERG. PRE-EMPT DELAY TIME								
1ST EMERG. PRE-EMPT CLEARANCE TIME								
2ND EMERG. PRE-EMPT MOVEMENTS				X				X
2ND EMERG. PRE-EMPT DELAY TIME								
2ND EMERG. PRE-EMPT CLEARANCE TIME								
RR PRE-EMPT TRACK CLEARANCE MOVEMENTS								
RR PRE-EMPT CLEARANCE TIME								
RR PRE-EMPT DELAY TIME								
RR PRE-EMPT LIMITED SERVICE MOVEMENTS								

TIME OF DAY OPERATIONS	TIME OF DAY		DAY OF WEEK							MOVEMENT (FAZE)							
	START	END	S	M	T	W	T	F	S	NB LEFT	NB THRU	WB LEFT	WB THRU	SB LEFT	SB THRU	EB LEFT	EB THRU
PHASE OMIT																	
MAX RECALL																	
PED RECALL																	
MIN RECALL																	
MAX GREEN 2	05:30	09:30		X	X	X	X	X			X		X		X		X
MAX GREEN 2	15:00	19:00		X	X	X	X	X		X	X		X		X		X
REST IN WALK																	
AMBER LOCK																	
RED LOCK																	

APPENDIX C

Access Spacing Excerpts from TAC Chapter 9 and Peel RCS



Schedule J

LONG RANGE ROAD NETWORK

- Provincial Freeway
- High Capacity Arterial
- Medium Capacity Arterial
- Low Capacity Arterial
- Collector
- East-West Industrial Collector
- Local
- Trailway
- Proposed Bolton Arterial Route (BAR)

- Transportation Study Area
- Settlement

- Provincial Road
- Regional Road
- Railway

Base Data Source: Town of Caledon

0 0.5 1 2 3 4 5 km

SAVED: 2 April 2018

FILE: S:\POLICY SECTION\GIS\official_plan\mxd\9-april_2018

SAVED BY: bloverock

April 2018 Office Consolidation

5.11.2.5 Aggregate Traffic

5.11.2.5.1 Haul routes for new aggregate operations shall only be located, except as provided for in Section 5.11.2.5.2, on the High Capacity Arterials as are identified on Schedule J to this Plan and on Charleston Sideroad, Old Church Road between Regional Road 7 and Regional Road 50 and King Street between Highway 10 and Regional Road 50. Use of other roads for haul routes by existing aggregate operations can continue.

5.11.2.5.2 Access to a new or expanded aggregate operation should be via an existing entrance onto a road identified in Section 5.11.2.5.1 either directly or through the use of an inter-pit road. Where this is not possible, access via a new entrance onto a road identified in Section 5.11.2.5.1 may be considered. Access onto a road that is not a road identified in Section 5.11.2.5.1 will only be considered where there is no practical alternative and subject to satisfying the requirements of Sections 5.11.2.4.2(b) and 5.11.2.4.4(c). Such access may only be considered subject to the road being improved to a standard considered appropriate by the road authority.

Any required improvement shall be a condition of planning application approval and recommended to the appropriate authority to be a condition on the issuance of any access permit. The Applicant shall prepare a Road Improvement Study for approval by the applicable road authority to indicate the measures proposed to minimize the impacts of any road improvement. This Road Improvement Study shall include the following:

a) Existing road right-of-way characteristics, particularly vertical alignments, should be maintained as closely as possible, subject to safety considerations with an understanding that many of these roads possess inherent traffic calming characteristics;

b) Existing trees and other vegetation within the road right-of-way shall be retained wherever possible, including any scrub-like settings. Introduction of manicured boulevards as "landscaping elements" should be avoided;

c) Wood, wire, stump, and stone fence lines shall be retained wherever possible as historical landscape remnants and incorporated as "new" design elements;

d) Traditional open grassed ditches shall be used at every reasonable opportunity; and,

e) New lighting elements, such as poles or standards and luminaires shall be as unobtrusive as possible within the road right-of-way and lighting should be directed downward and shielded.

5.11.2.5.3 The identification of roads upon which haul routes shall be located in Section 5.11.2.5.1 shall be reviewed and updated as necessary by the Town of Caledon. As part of this review, the Town of Caledon will work with adjacent municipalities and the Region of Peel to minimize impacts from traffic from outside of the Town of Caledon.

9.4.2.1 Arterials

Along signalized arterial roads, vehicular traffic volumes are generally high. It is therefore desirable to provide spacing between signalized intersections that is consistent with the desired vehicular traffic progression speed and signal cycle lengths. By spacing the intersections uniformly, based on known or assumed running speeds and appropriate cycle lengths, signal progression in both directions can be achieved. Progression allows platoons of vehicles to travel through successive intersections without stopping. For a progression speed of about 50 km/h and a cycle length of 60 s, the corresponding desired spacing between signalized intersections is approximately 400 m. As speeds increase, the optimal intersection spacing increases proportionately.

Where an arterial corridor must accommodate a variety of road users (e.g., vehicles, cyclists, and pedestrians), vehicle operations and the consequent intersection designs must balance the various needs while recognizing that the priority of arterial roadways is generally servicing vehicular traffic movement.

A typical minimum intersection spacing along arterial roadways is 200 m, generally only applicable in areas of intense existing development or restrictive physical controls where feasible alternatives do not exist. The 200 m spacing allows for minimum lengths of back to back storage for left turning vehicles at the adjacent intersections.

The close spacing does not permit signal progression; therefore, it is normally preferable not to signalize the intersection that interferes with progression along a major arterial. Intersection spacing at or near the 200 m minimum is normally only acceptable along minor arterials, where optimizing traffic mobility is not as important as along major arterials.

Where intersection spacing along an arterial does not permit an adequate level of traffic service, many alternatives can be considered to improve traffic flow. These include, but are not limited to:

- Converting two-way to one-way operation
- Implementing cul-de-sacs for minor connecting roads
- Introducing channelization to restrict turning movements at selected intersections to right turns only.

The designer's options may be substantially limited by the policies of the local jurisdiction.

On divided arterial roads, a right-in, right-out intersection without a median opening may be permitted at least 100 m from an adjacent all-directional intersection. The distance is measured between the closest edges of pavement of the adjacent intersecting roads.

In retrofit situations, the desired spacing of intersections along an arterial is sometimes compromised in consideration of other design controls, such as the nature of existing adjacent development and the associated access needs.

9.4.2.2 Collectors

The typical minimum spacing between adjacent intersections along a collector road is 60 m.

9.4.2.3 Locals

Along local roads, the minimum spacing between four-legged intersections is normally 60 m. Where the adjacent intersections are three-legged, a minimum spacing of 40 m is acceptable.

on such actions given to arterial roads (because of their importance for mobility) and with less attention given to collector and local streets. Typically in past access control practice, no distinctions were made as to the character of the roads (other than their functional class).The scope of access control measures depends on the road's functional class, reflecting the blend of mobility and property access intended for the road context. The roads addressed in the RCS are all classified as arterial and all of them are important for movement of through traffic (traffic with neither origin nor destination adjacent to the road).

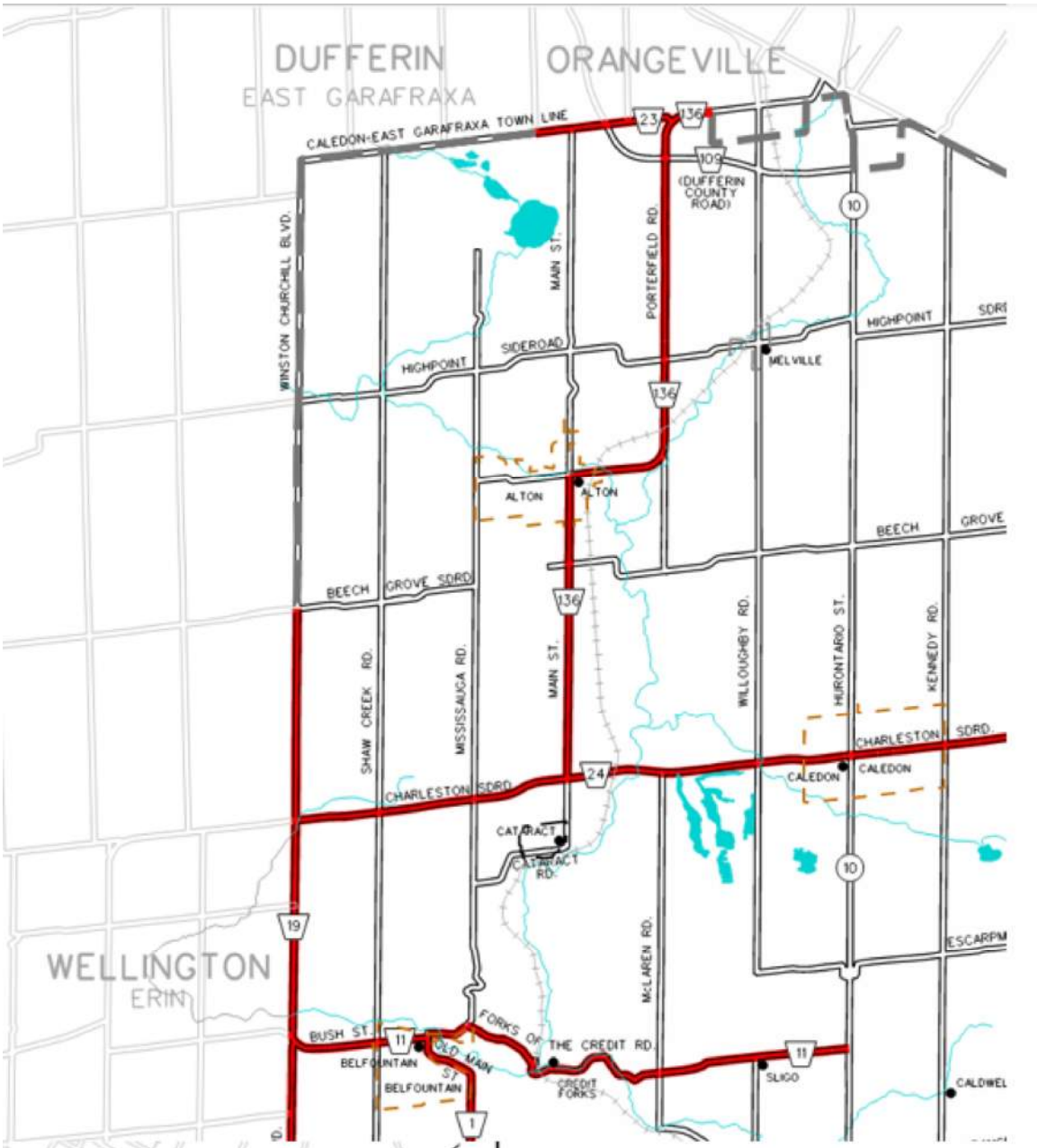
To more effectively consider road character in our access control approach and to address growth and development over time we referenced block dimensions in other successful urban places. This approach reaffirmed that as land uses develop, intersection spacing should decrease. Our new access control approach aligns with the block dimensions of successful places; approximately 150 m x 75 m, closely corresponding to the existing block dimensions in Port Credit, Mississauga and downtown Brampton, among others.

Minimum Spacing Between (metres)	Rural Road	Industrial Connector	Suburban Connector	Commercial Connector	Rural Main Street	Urban Main Street
Full to Full	600	450	300	300	150	150
Full to Left-In/Right-In/Right-Out	ISR	225	150	150	75	75
Left-In/Right-In/Right-Out to Left-In/Right-In/Right-Out	ISR	225	150	150	75	75

Table 1: Median Opening Spacing (from RCS Section 3: Access Control, Table 2)

Legend: ISR – Individual Site Review

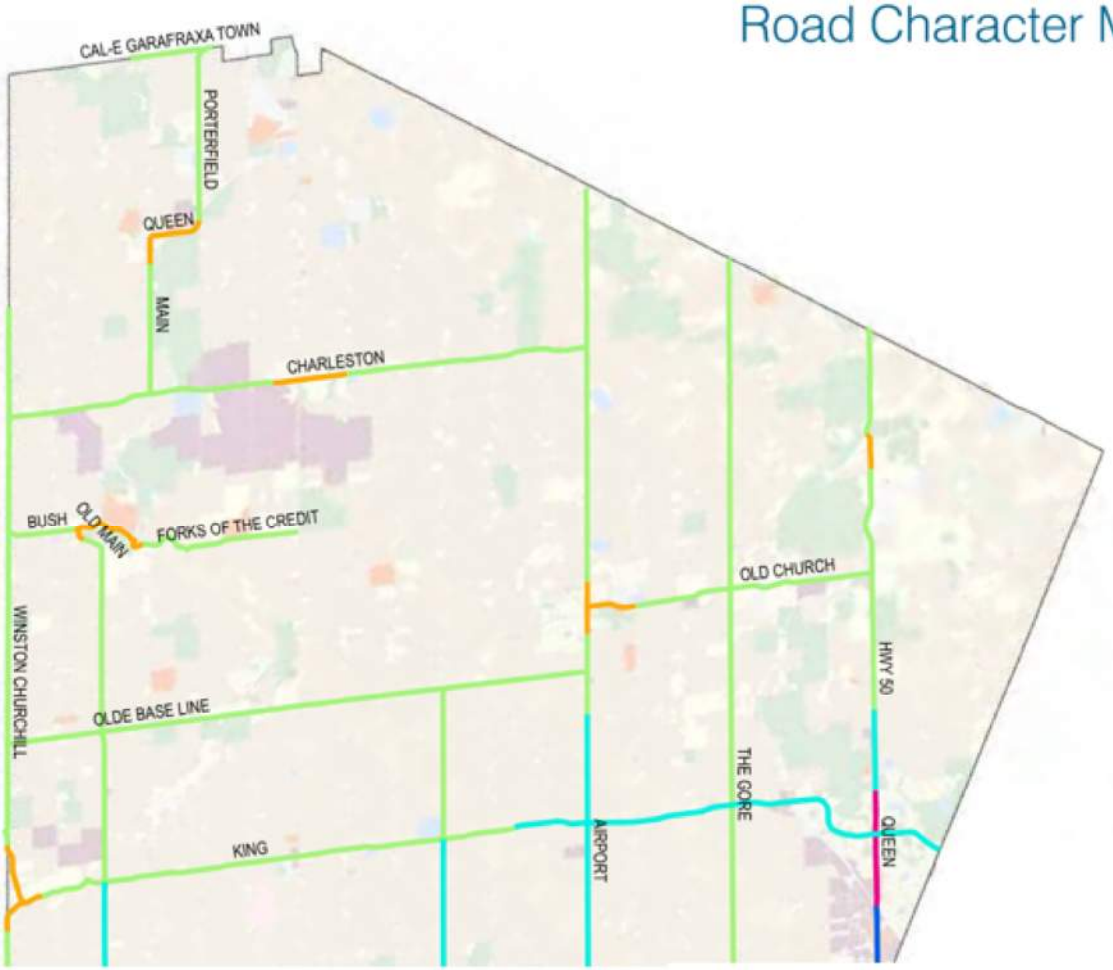
Note: Spacing measured from curb extension to curb extension (See Figures 24-26 in RCS Section 3).
All spacing to be verified by a Transportation Impact Assessment and/or sightline analysis.



Region of Peel
Working for you

SCALE:	DATE REVISED:
AS SHOWN	April 2010
DRAWN BY:	DWG. NAME:
P.W.	REGION ROAD MAP NAD83

Road Character Map



5.0 Road Character Map

The Road Character Map shows Regional Roads and their associated road typologies. Further detail is provided in the Road Character Matrix.

The RCS map will be updated approximately every 5 years, or when there is greater certainty regarding changes in land use or transportation plans, including the GTA West Corridor.

- Rural Road
- Rural Main Street
- Urban Main Street
- Suburban Connector
- Commercial Connector
- Industrial Connector

N

APPENDIX D

Site Visit and Sightline Details

Caledon Quarry Site Visit Summary

On November 16, 2021, the Caledon Quarry site was visited to assess the sight lines of potential access locations based on Intersection sight distance (ISD) and stopping sight distance (SSD).

A review of the TAC manual provided the ISD and SSD distances that were used during the site investigation.

Left Turn ISD	**90 kph**	**100 kph**
Passenger Car	190 m	210 m
Single-Unit Truck	240 m	265 m
Combination Truck	290 m	320 m
Right Turn ISD		
Passenger Car	165 m	185 m
Single-Unit Truck	215 m	240 m
Combination Truck	265 m	295 m
Left/Right Turn SSD		
Passenger Car	160 m	185 m

Source TAC eqn 9.9.1, table 9.9.4, table 9.9.6

ISD values are derived from equation 9.9.1 in the TAC manual which is a function of design speed and time gap for minor vehicle. TAC only provides SSD values for passenger vehicles but notes in paragraph 2.5.3.1 that truck SSD is generally longer due to additional distance required to stop but also generally have a longer sightline due to cabin position.

The 100kph combination truck stopping distance was measured on site for most conservative analysis.

The following figure shows the approximate location where each set of measurements were taken.

The following is the data collected from the site visit. Images were taken with cellphones but due to the distance, lighting conditions, and technology limitations the quality of the images is not the best. The original photos are saved at *G:\Projects\2020\10042 - Long Par 5 Haul Route Assessment and TIS\02 Input Data\09 Site Visit 11.17.2021*

1. **Mississauga Road south access**

The right turn ISD does not meet the truck standards for both design speeds due to a crest in the road at approximately 200m. With the access location moved further to the North, it will improve the sight distance for right turn ISD. All other sightlines met the required standard.

Movement	Distance (m)	Image
Right turn ISD	Available 210 Only meets passenger car ISD	
Right turn SSD	185	

Left turn ISD	320	
Left turn SSD	185	

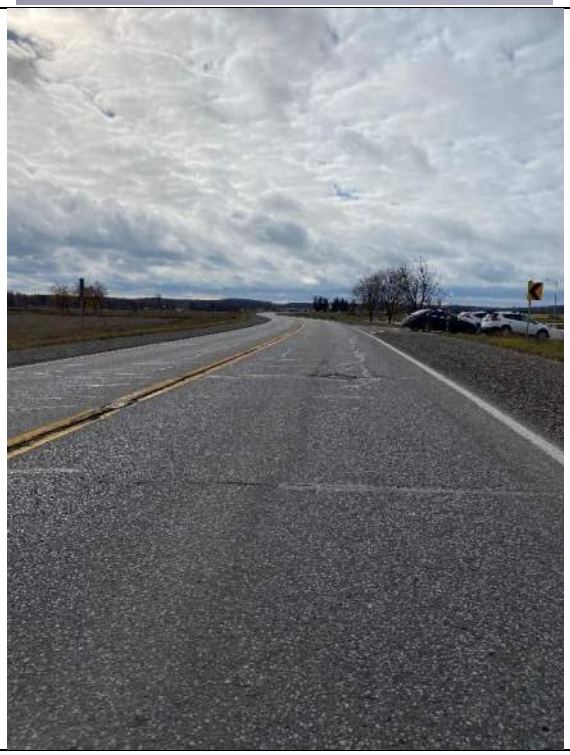
2. Mississauga Road north access

For the alternative north access on Mississauga Road, only the right turn ISD was checked due to limited sightline at the proposed south access. Right turn ISD meets All other sightline distances were deemed acceptable based on the measurements recorded from the southern proposed access

Movement	Distance (m)	Image
Right turn ISD	295	

3. Charleston sideroad access

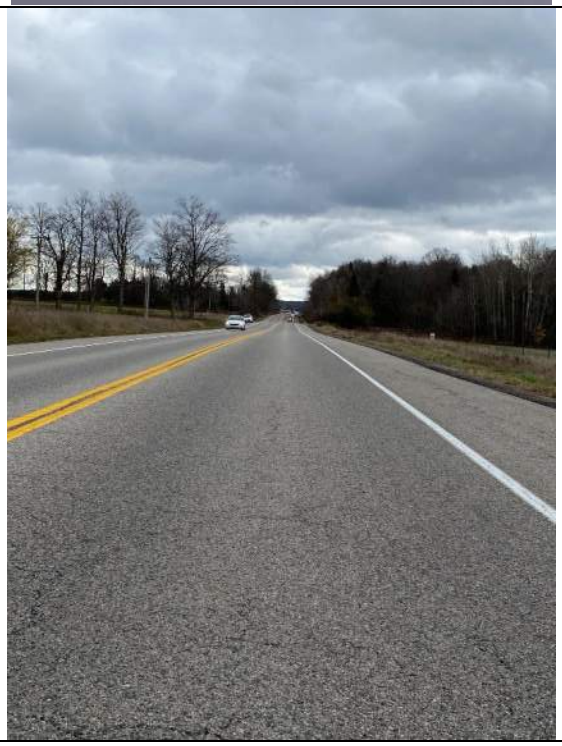
All sightline distances from the Charleston Sideroad access meet the required standards. It was observed that some road signs cause slight visual obstructions for due to the horizontal curve. It is recommended to clear all landscape or other obstructions near the edge of the property as driver's sightline may go through the property line in the future.

Movement	Distance (m)	Image
Right turn ISD	295	
Right turn SSD	185	

Left turn ISD	320	
Left turn SSD	185	

4. Main Street north access

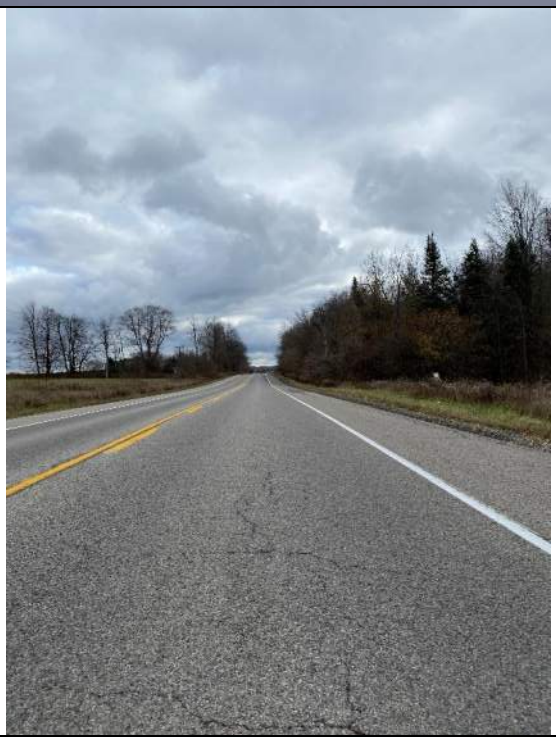
Right turn ISD only meets standard for single unit truck due to crest in road. All other sightline distances meet the required standard.

Movement	Distance (m)	Image
Right turn ISD	Available 270 Only meets the single unit truck sightline distance requirement	
Right turn SSD	185	

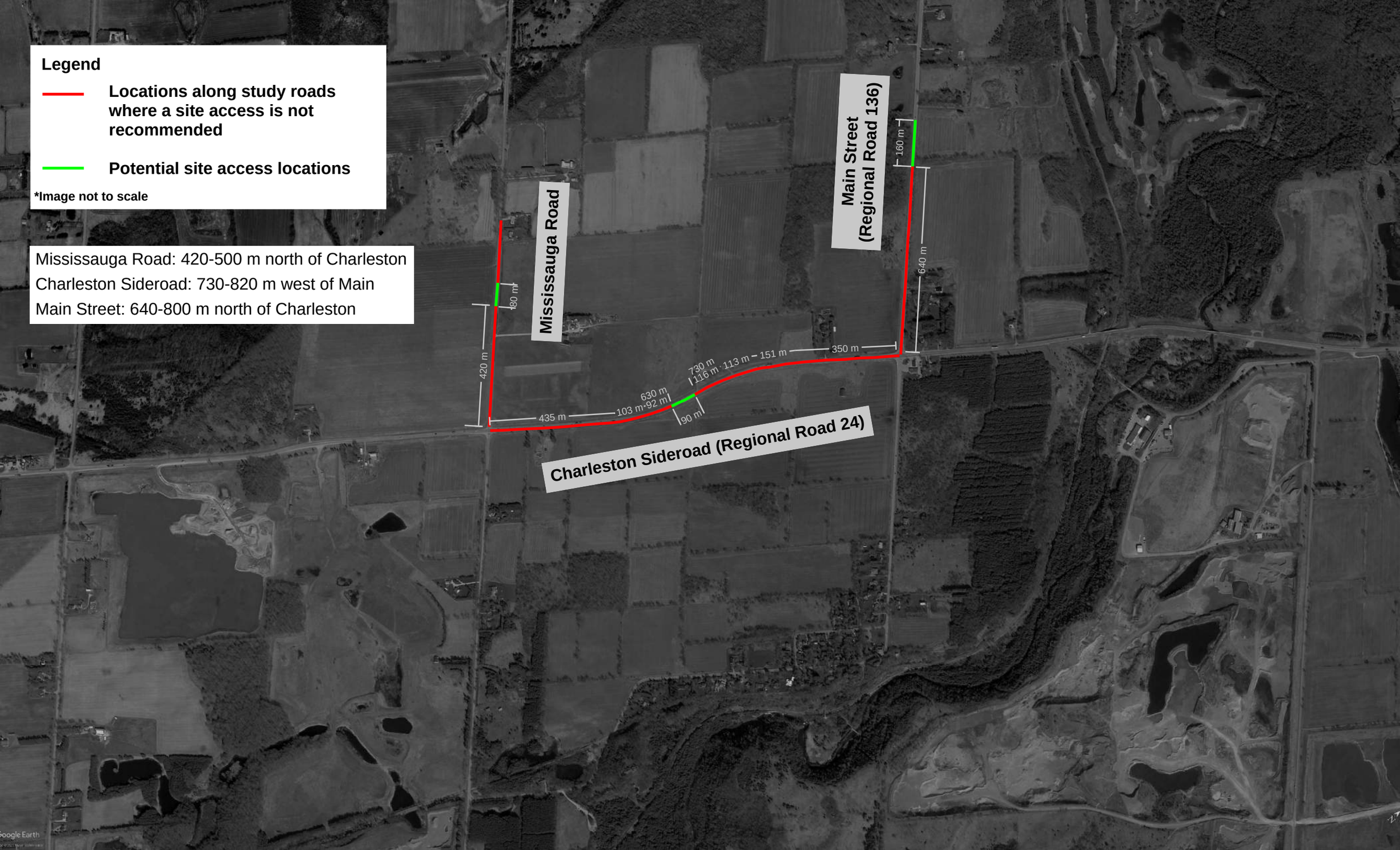
Left turn ISD	320	
Left turn SSD	185	

5. Main Street south access

All sightline distances meet the required standard

Movement	Distance (m)	Image
Right turn ISD	295	
Right turn SSD	185	

Left turn ISD	320	
Left turn SSD	185	


Legend
Locations along study roads where a site access is not recommended
Potential site access locations
*Image not to scale
Mississauga Road: 420-500 m north of Charleston
Charleston Sideroad: 730-820 m west of Main
Main Street: 640-800 m north of Charleston
Mississauga Road
Main Street (Regional Road 136)
Charleston Sideroad (Regional Road 24)
80 m
420 m
435 m
630 m
103 m
92 m
730 m
116 m
113 m
151 m
350 m
90 m
160 m
640 m
Google Earth

APPENDIX E

Signal Warrant Results

Traffic Signal Warrant - Input Sheet
Justification 7 - Projected Volumes

Based Ontario Traffic Manual Book 12 - Traffic Signals (March 2012)

Project and Scenario Summary

Project:	Caledon Quarry			**Project No.:**	10042
				Date:	2022-11-04
Horizon:	Future Total	**Horizon Year:**	2032	**Analyst:**	SR

Study Intersection Summary

Major Street:	Charleston SR	**Direction:**	East/West
Minor Street:	Site Access	**Direction:**	North/South

Intersection Details for Warrant Parameters

Flow Conditions:	Restricted Flow (Urban)	**Number of Lanes:**	1
Number of Legs:	Three ("T" Intersection)	**Intersection Type:**	New

Notes: "Free Flow" is used when the operating speed is greater than or equal to 70km/h, "Restricted Flow" otherwise.
The Number of Lanes greater than 1 only needs to be for one direction along the major road.
An intersection is considered "New" if at least 1-leg is added to an existing intersection.

Input Volumes and Average Hourly Volume Determination

Peak Hour	Major: Charleston SR						Minor: Site Access						Pedestrians Crossing Major
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
AM	5	360	0	0	285	40	0	0	0	53	0	7	0
PM	10	399	0	0	446	45	0	0	0	58	0	7	0
AHV[1]	**4**	**190**	**0**	**0**	**183**	**21**	**0**	**0**	**0**	**28**	**0**	**4**	**0**

1. The AHV is determined by the availability of the peak hour estimates. If both the AM and PM Peak Hour Volume estimate is available then AHV = $(AM_{PHV} + PM_{PHV}) / 4$. In the case that only one estimate is available then AHV = $AM_{PHV} / 2$ **or** AHV = $PM_{PHV} / 2$.

Determination of Justification Volumes (Based on AHV)

Justification 1A: All Approach Lanes	430
Justification 1B: Minor Street Both Approaches	32

Justification 2A: Major Street Both Approaches	398
Justification 2B: Traffic Crossing Major Street	28

Note: The crossing volume is defined as the sum of:

(1) Left turns from both minor street approaches:			28
(2) The heaviest through volume from the minor street:			0
(3) 50% of the heavier left turn movement from major street when both of the following criteria are met:			0
(a) The left turn volume > 120 vph	4	FALSE	
(b) The left turn volume plus the opposing volume > 720 vph	187	FALSE	
(4) Pedestrians crossing the major street:			0
		Total	**28**

Traffic Signal Warrant - Output Sheet
Justification 7 - Projected Volumes

Based Ontario Traffic Manual Book 12 - Traffic Signals (March 2012)

Project and Scenario Summary

Project:	Caledon Quarry			**Project No.:**	10042
				Date:	2022-11-04
Horizon:	Future Total	**Horizon Year:**	2032	**Analyst:**	SR

Study Intersection Summary

Major Street:	Charleston SR	**Direction:**	East/West
Minor Street:	Site Access	**Direction:**	North/South

Summary of Base Justification Thresholds

Justification	1 Approach Lane		2 or More Approach Lanes	
	Free Flow	Restricted Flow	Free Flow	Restricted Flow
1A: All Approach Lanes	480	**720**	600	900
1B: Minor Street Both Approaches	120	**170**	120	170
2A: Major Street Both Approaches	480	**720**	600	900
2B: Traffic Crossing Major Street	50	**75**	50	75

The above values are taken from Table 12 and Table 13 from OTM Book 12 (March 2012).
The grey shaded values are provided for reference only, and are not applicable to the study intersection.

Adjusted Justification Thresholds for Study Intersection Conditions

Justification	Base Threshold	New Intersection	"T" Intersection	Final Threshold
1A: All Approach Lanes	720	150%	-	**1080**
1B: Minor Street Both Approaches	170	150%	150%	**382.5**
2A: Major Street Both Approaches	720	150%	-	**1080**
2B: Traffic Crossing Major Street	75	150%	-	**113**

The above adjustments are taken from OTM Book 12 (March 2012) the "T" Intersection adjustment only applies to Justification 1B, and is a 50% increase on the threshold when the study intersection is a "T' intersection. Otherwise a value of 100% is used.

Warrant Calculation

Justification	Study Intersection Justification Volume	Justification Threshold	Percentage Warrant	Warrant Met?
1A: All Approach Lanes	430	**1080**	40%	**No**
1B: Minor Street Both Approaches	32	**383**	8%	
2A: Major Street Both Approaches	398	**1080**	37%	**No**
2B: Traffic Crossing Major Street	28	**113**	25%	

Notes: In the case of Justification 7 based on AHV both Warrant 1 and 2 must be met 100%, which requires both the A and B part of each warrant being equal to 100%.
When calculating the percentage, any value greater than 100% is expressed as 100%.

Based on OTM Book 12's Signal Warrant Justification 7 and the estimated AHV for the subject study intersection a signal is:

Not Warranted

Traffic Signal Warrant - Input Sheet
Justification 7 - Projected Volumes

Based Ontario Traffic Manual Book 12 - Traffic Signals (March 2012)

Project and Scenario Summary

Project:	Caledon Quarry			**Project No.:**	10042
				Date:	2022-11-04
Horizon:	Future Total	**Horizon Year:**	2032	**Analyst:**	SR

Study Intersection Summary

Major Street:	Charleston SR	**Direction:**	East/West
Minor Street:	Site Access	**Direction:**	North/South

Intersection Details for Warrant Parameters

Flow Conditions:	Restricted Flow (Urban)	**Number of Lanes:**	1
Number of Legs:	Three ("T" Intersection)	**Intersection Type:**	New

Notes: "Free Flow" is used when the operating speed is greater than or equal to 70km/h, "Restricted Flow" otherwise.
The Number of Lanes greater than 1 only needs to be for one direction along the major road.
An intersection is considered "New" if at least 1-leg is added to an existing intersection.

Input Volumes and Average Hourly Volume Determination

Peak Hour	Major: Charleston SR						Minor: Site Access						Pedestrians Crossing Major
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
AM	1	448	0	0	440	29	0	0	0	29	0	1	0
PM	0	0	0	0	0	0	0	0	0	0	0	0	0
AHV[1]	**1**	**224**	**0**	**0**	**220**	**15**	**0**	**0**	**0**	**15**	**0**	**1**	**0**

1. The AHV is determined by the availability of the peak hour estimates. If both the AM and PM Peak Hour Volume estimate is available then AHV = $(AM_{PHV} + PM_{PHV}) / 4$. In the case that only one estimate is available then AHV = $AM_{PHV} / 2$ **or** AHV = $PM_{PHV} / 2$.

Determination of Justification Volumes (Based on AHV)

Justification 1A: All Approach Lanes	476
Justification 1B: Minor Street Both Approaches	16

Justification 2A: Major Street Both Approaches	460
Justification 2B: Traffic Crossing Major Street	15

Note: The crossing volume is defined as the sum of:

(1) Left turns from both minor street approaches:			15
(2) The heaviest through volume from the minor street:			0
(3) 50% of the heavier left turn movement from major street when both of the following criteria are met:			0
(a) The left turn volume > 120 vph	1	FALSE	
(b) The left turn volume plus the opposing volume > 720 vph	221	FALSE	
(4) Pedestrians crossing the major street:			0
		Total	**15**

Traffic Signal Warrant - Output Sheet
Justification 7 - Projected Volumes

Based Ontario Traffic Manual Book 12 - Traffic Signals (March 2012)

Project and Scenario Summary

Project:	Caledon Quarry			**Project No.:**	10042
				Date:	2022-11-04
Horizon:	Future Total	**Horizon Year:**	2032	**Analyst:**	SR

Study Intersection Summary

Major Street:	Charleston SR	**Direction:**	East/West
Minor Street:	Site Access	**Direction:**	North/South

Summary of Base Justification Thresholds

Justification	1 Approach Lane		2 or More Approach Lanes	
	Free Flow	Restricted Flow	Free Flow	Restricted Flow
1A: All Approach Lanes	480	**720**	600	900
1B: Minor Street Both Approaches	120	**170**	120	170
2A: Major Street Both Approaches	480	**720**	600	900
2B: Traffic Crossing Major Street	50	**75**	50	75

The above values are taken from Table 12 and Table 13 from OTM Book 12 (March 2012).
The grey shaded values are provided for reference only, and are not applicable to the study intersection.

Adjusted Justification Thresholds for Study Intersection Conditions

Justification	Base Threshold	New Intersection	"T" Intersection	Final Threshold
1A: All Approach Lanes	720	150%	-	**1080**
1B: Minor Street Both Approaches	170	150%	150%	**382.5**
2A: Major Street Both Approaches	720	150%	-	**1080**
2B: Traffic Crossing Major Street	75	150%	-	**113**

The above adjustments are taken from OTM Book 12 (March 2012) the "T" Intersection adjustment only applies to Justification 1B, and is a 50% increase on the threshold when the study intersection is a "T' intersection. Otherwise a value of 100% is used.

Warrant Calculation

Justification	Study Intersection Justification Volume	Justification Threshold	Percentage Warrant	Warrant Met?
1A: All Approach Lanes	476	**1080**	44%	**No**
1B: Minor Street Both Approaches	16	**383**	4%	
2A: Major Street Both Approaches	460	**1080**	43%	**No**
2B: Traffic Crossing Major Street	15	**113**	13%	

Notes: In the case of Justification 7 based on AHV both Warrant 1 and 2 must be met 100%, which requires both the A and B part of each warrant being equal to 100%.
When calculating the percentage, any value greater than 100% is expressed as 100%.

Based on OTM Book 12's Signal Warrant Justification 7 and the estimated AHV for the subject study intersection a signal is:

Not Warranted

Traffic Signal Warrant - Input Sheet
Justification 7 - Projected Volumes

Based Ontario Traffic Manual Book 12 - Traffic Signals (March 2012)

Project and Scenario Summary

Project:	Caledon Quarry - PCE			**Project No.:**	10042
				Date:	2022-11-04
Horizon:	Future Total	**Horizon Year:**	2032	**Analyst:**	SR

Study Intersection Summary

Major Street:	Charleston SR	**Direction:**	East/West
Minor Street:	Site Access	**Direction:**	North/South

Intersection Details for Warrant Parameters

Flow Conditions:	Restricted Flow (Urban)	**Number of Lanes:**	1
Number of Legs:	Three ("T" Intersection)	**Intersection Type:**	New

Notes: "Free Flow" is used when the operating speed is greater than or equal to 70km/h, "Restricted Flow" otherwise.
The Number of Lanes greater than 1 only needs to be for one direction along the major road.
An intersection is considered "New" if at least 1-leg is added to an existing intersection.

Input Volumes and Average Hourly Volume Determination

Peak Hour	Major: Charleston SR						Minor: Site Access						Pedestrians Crossing Major
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
AM	20	360	0	0	285	55	0	0	0	98	0	54	0
PM	30	399	0	0	446	55	0	0	0	105	0	21	0
AHV[1]	**13**	**190**	**0**	**0**	**183**	**28**	**0**	**0**	**0**	**51**	**0**	**19**	**0**

1. The AHV is determined by the availability of the peak hour estimates. If both the AM and PM Peak Hour Volume estimate is available then AHV = $(AM_{PHV} + PM_{PHV}) / 4$. In the case that only one estimate is available then AHV = $AM_{PHV} / 2$ **or** AHV = $PM_{PHV} / 2$.

Determination of Justification Volumes (Based on AHV)

Justification 1A: All Approach Lanes	484	Justification 2A: Major Street Both Approaches	414
Justification 1B: Minor Street Both Approaches	70	Justification 2B: Traffic Crossing Major Street	51

Note: The crossing volume is defined as the sum of:

(1) Left turns from both minor street approaches:			51
(2) The heaviest through volume from the minor street:			0
(3) 50% of the heavier left turn movement from major street when both of the following criteria are met:			0
(a) The left turn volume > 120 vph	13	FALSE	
(b) The left turn volume plus the opposing volume > 720 vph	196	FALSE	
(4) Pedestrians crossing the major street:			0
		Total	**51**

Traffic Signal Warrant - Output Sheet
Justification 7 - Projected Volumes

Based Ontario Traffic Manual Book 12 - Traffic Signals (March 2012)

Project and Scenario Summary

Project:	Caledon Quarry - PCE			**Project No.:**	10042
				Date:	2022-11-04
Horizon:	Future Total	**Horizon Year:**	2032	**Analyst:**	SR

Study Intersection Summary

Major Street:	Charleston SR	**Direction:**	East/West
Minor Street:	Site Access	**Direction:**	North/South

Summary of Base Justification Thresholds

Justification	1 Approach Lane		2 or More Approach Lanes	
	Free Flow	Restricted Flow	Free Flow	Restricted Flow
1A: All Approach Lanes	480	**720**	600	900
1B: Minor Street Both Approaches	120	**170**	120	170
2A: Major Street Both Approaches	480	**720**	600	900
2B: Traffic Crossing Major Street	50	**75**	50	75

The above values are taken from Table 12 and Table 13 from OTM Book 12 (March 2012).
The grey shaded values are provided for reference only, and are not applicable to the study intersection.

Adjusted Justification Thresholds for Study Intersection Conditions

Justification	Base Threshold	New Intersection	"T" Intersection	Final Threshold
1A: All Approach Lanes	720	150%	-	**1080**
1B: Minor Street Both Approaches	170	150%	150%	**382.5**
2A: Major Street Both Approaches	720	150%	-	**1080**
2B: Traffic Crossing Major Street	75	150%	-	**113**

The above adjustments are taken from OTM Book 12 (March 2012) the "T" Intersection adjustment only applies to Justification 1B, and is a 50% increase on the threshold when the study intersection is a "T' intersection. Otherwise a value of 100% is used.

Warrant Calculation

Justification	Study Intersection Justification Volume	Justification Threshold	Percentage Warrant	Warrant Met?
1A: All Approach Lanes	484	**1080**	45%	**No**
1B: Minor Street Both Approaches	70	**383**	18%	
2A: Major Street Both Approaches	414	**1080**	38%	**No**
2B: Traffic Crossing Major Street	51	**113**	45%	

Notes: In the case of Justification 7 based on AHV both Warrant 1 and 2 must be met 100%, which requires both the A and B part of each warrant being equal to 100%.
When calculating the percentage, any value greater than 100% is expressed as 100%.

Based on OTM Book 12's Signal Warrant Justification 7 and the estimated AHV for the subject study intersection a signal is:

Not Warranted

Traffic Signal Warrant - Input Sheet
Justification 7 - Projected Volumes

Based Ontario Traffic Manual Book 12 - Traffic Signals (March 2012)

Project and Scenario Summary

Project:	Caledon Quarry - PCE			**Project No.:**	10042
				Date:	2022-11-04
Horizon:	Future Total	**Horizon Year:**	2032	**Analyst:**	SR

Study Intersection Summary

Major Street:	Charleston SR	**Direction:**	East/West
Minor Street:	Site Access	**Direction:**	North/South

Intersection Details for Warrant Parameters

Flow Conditions:	Restricted Flow (Urban)	**Number of Lanes:**	1
Number of Legs:	Three ("T" Intersection)	**Intersection Type:**	New

Notes: "Free Flow" is used when the operating speed is greater than or equal to 70km/h, "Restricted Flow" otherwise.
The Number of Lanes greater than 1 only needs to be for one direction along the major road.
An intersection is considered "New" if at least 1-leg is added to an existing intersection.

Input Volumes and Average Hourly Volume Determination

Peak Hour	Major: Charleston SR						Minor: Site Access						Pedestrians Crossing Major
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
AM	21	448	0	0	440	39	0	0	0	75	0	15	0
PM	0	0	0	0	0	0	0	0	0	0	0	0	0
AHV[1]	**11**	**224**	**0**	**0**	**220**	**20**	**0**	**0**	**0**	**38**	**0**	**8**	**0**

1. The AHV is determined by the availability of the peak hour estimates. If both the AM and PM Peak Hour Volume estimate is available then AHV = $(AM_{PHV} + PM_{PHV}) / 4$. In the case that only one estimate is available then AHV = $AM_{PHV} / 2$ **or** AHV = $PM_{PHV} / 2$.

Determination of Justification Volumes (Based on AHV)

Justification 1A: All Approach Lanes	521
Justification 1B: Minor Street Both Approaches	46

Justification 2A: Major Street Both Approaches	475
Justification 2B: Traffic Crossing Major Street	38

Note: The crossing volume is defined as the sum of:

(1) Left turns from both minor street approaches:			38
(2) The heaviest through volume from the minor street:			0
(3) 50% of the heavier left turn movement from major street when both of the following criteria are met:			0
(a) The left turn volume > 120 vph	11	FALSE	
(b) The left turn volume plus the opposing volume > 720 vph	231	FALSE	
(4) Pedestrians crossing the major street:			0
		Total	**38**

Traffic Signal Warrant - Output Sheet
Justification 7 - Projected Volumes

Based Ontario Traffic Manual Book 12 - Traffic Signals (March 2012)

Project and Scenario Summary

Project:	Caledon Quarry - PCE			**Project No.:**	10042
				Date:	2022-11-04
Horizon:	Future Total	**Horizon Year:**	2032	**Analyst:**	SR

Study Intersection Summary

Major Street:	Charleston SR	**Direction:**	East/West
Minor Street:	Site Access	**Direction:**	North/South

Summary of Base Justification Thresholds

Justification	1 Approach Lane		2 or More Approach Lanes	
	Free Flow	Restricted Flow	Free Flow	Restricted Flow
1A: All Approach Lanes	480	**720**	600	900
1B: Minor Street Both Approaches	120	**170**	120	170
2A: Major Street Both Approaches	480	**720**	600	900
2B: Traffic Crossing Major Street	50	**75**	50	75

The above values are taken from Table 12 and Table 13 from OTM Book 12 (March 2012).
The grey shaded values are provided for reference only, and are not applicable to the study intersection.

Adjusted Justification Thresholds for Study Intersection Conditions

Justification	Base Threshold	New Intersection	"T" Intersection	Final Threshold
1A: All Approach Lanes	720	150%	-	**1080**
1B: Minor Street Both Approaches	170	150%	150%	**382.5**
2A: Major Street Both Approaches	720	150%	-	**1080**
2B: Traffic Crossing Major Street	75	150%	-	**113**

The above adjustments are taken from OTM Book 12 (March 2012) the "T" Intersection adjustment only applies to Justification 1B, and is a 50% increase on the threshold when the study intersection is a "T' intersection. Otherwise a value of 100% is used.

Warrant Calculation

Justification	Study Intersection Justification Volume	Justification Threshold	Percentage Warrant	Warrant Met?
1A: All Approach Lanes	521	**1080**	48%	**No**
1B: Minor Street Both Approaches	46	**383**	12%	
2A: Major Street Both Approaches	475	**1080**	44%	**No**
2B: Traffic Crossing Major Street	38	**113**	34%	

Notes: In the case of Justification 7 based on AHV both Warrant 1 and 2 must be met 100%, which requires both the A and B part of each warrant being equal to 100%.
When calculating the percentage, any value greater than 100% is expressed as 100%.

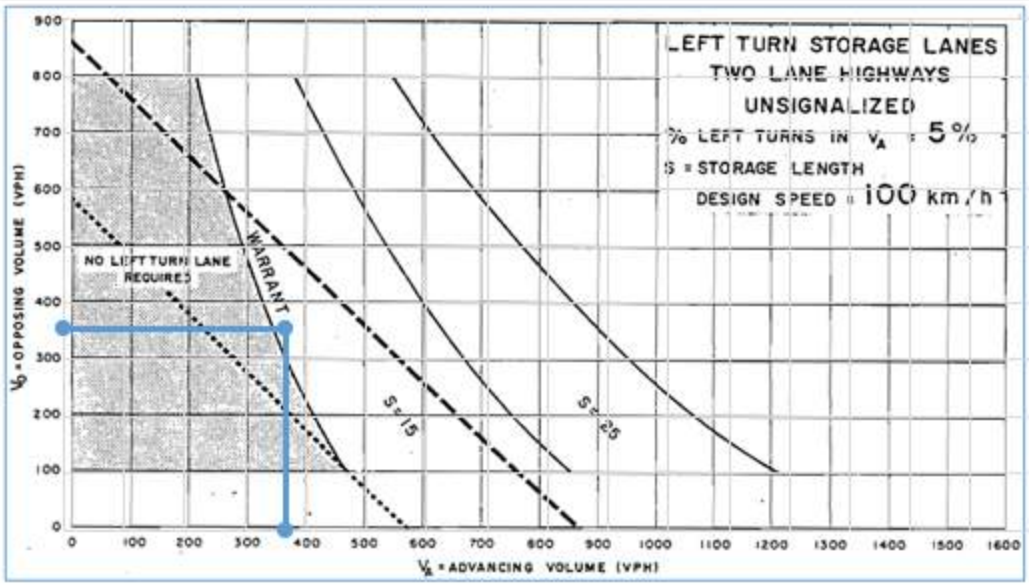
Based on OTM Book 12's Signal Warrant Justification 7 and the estimated AHV for the subject study intersection a signal is:

Not Warranted

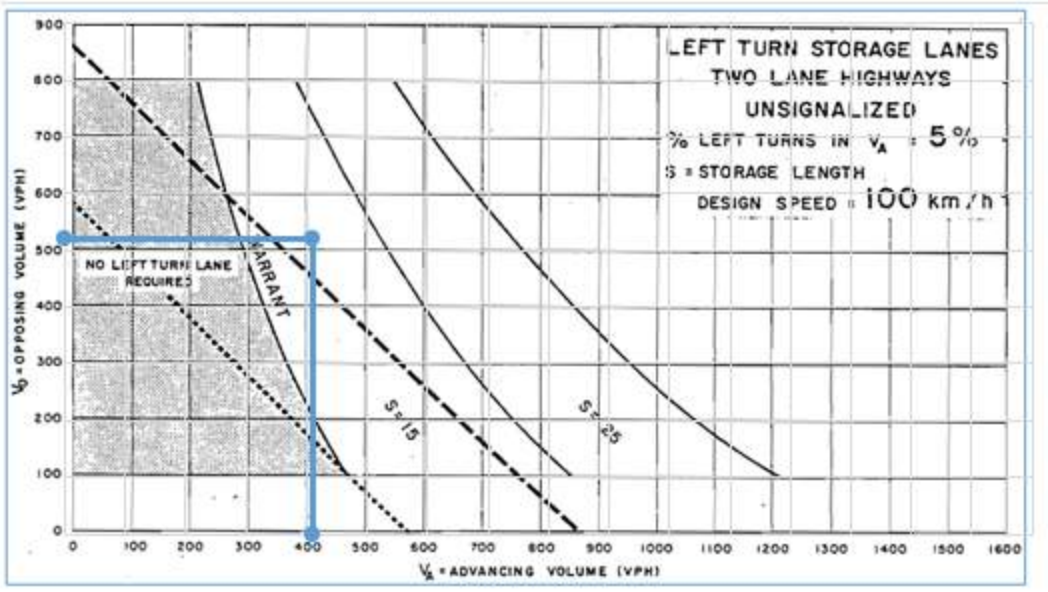
APPENDIX F

Left-Turn Warrant Results

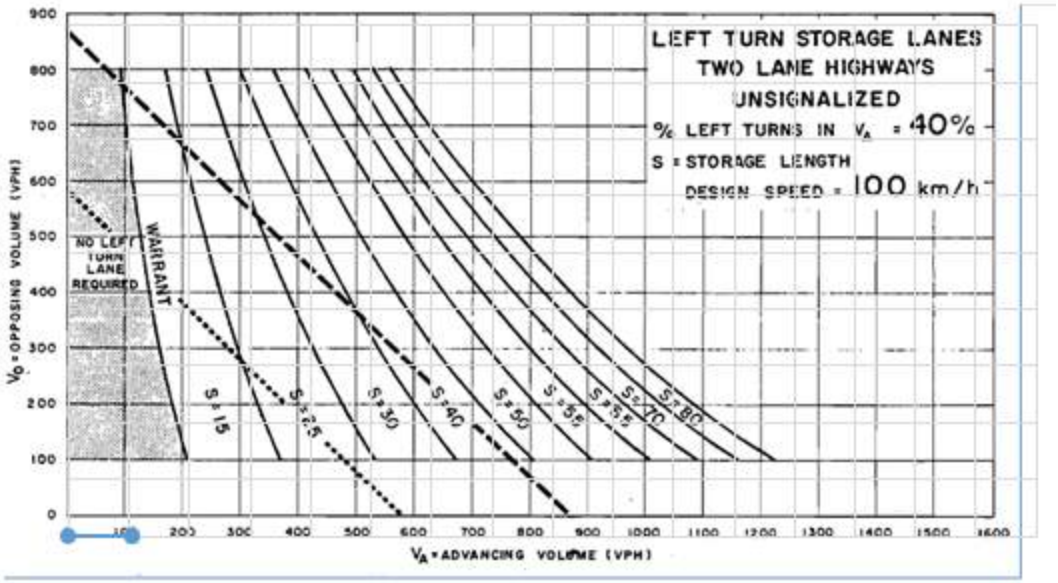
Eastbound Left-Turn AM Peak Hour



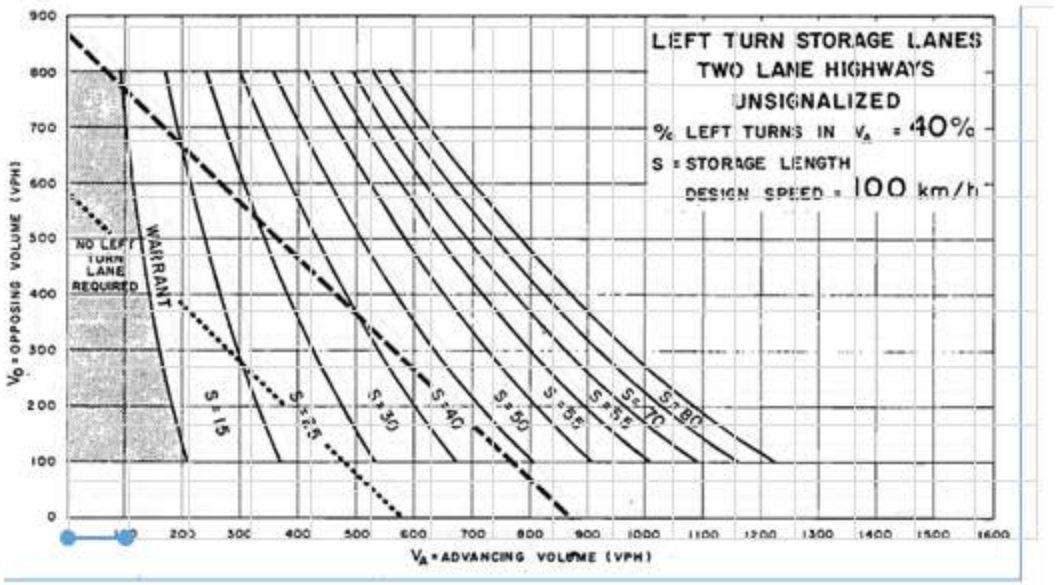
Eastbound Left-Turn PM Peak Hour



Southbound Left-Turn AM Peak Hour



Southbound Left-Turn PM Peak Hour



APPENDIX G

TAC Chapter 9 Excerpts and Peel Region Standard Drawings

Right-turn taper lengths are a function of design speed and are calculated based on the ratios presented in **Table 9.14.1**. Lane widths (w) vary (see **Chapter 4**). Some agencies use reduced taper ratios in constrained urban environments where lower speeds are desired and where property constraints exist.

Table 9.14.1: Right-Turn Tapers without Auxiliary Lanes

Design Speed (km/h) (through roadway)	Taper Ratio	Taper Length for w = 3.5 (m)	Horizontal Curve[a] (R)
50	15:1	53	500
60	18:1	63	750
70	21:1	74	1,000
80	24:1	84	1,200

Note : a) Flat radii as indicated can be used rather than tangent alignment for right-turn tapers.

The taper can be a straight line or a larger radius curve (see **Table 9.14.1** for suggested horizontal curve values); curves are typically used in an urban environment where curb and gutter is provided and straight tapers in a rural environment where curb and gutter is not used.

Shortened taper lengths may be considered for intersections on curve to provide a visible break from the through lanes. On high-speed roads, the taper length should generally conform to that discussed in **Chapter 10**.

9.14.4 DESIGN ELEMENTS FOR RIGHT-TURN TAPERS WITH AUXILIARY LANES

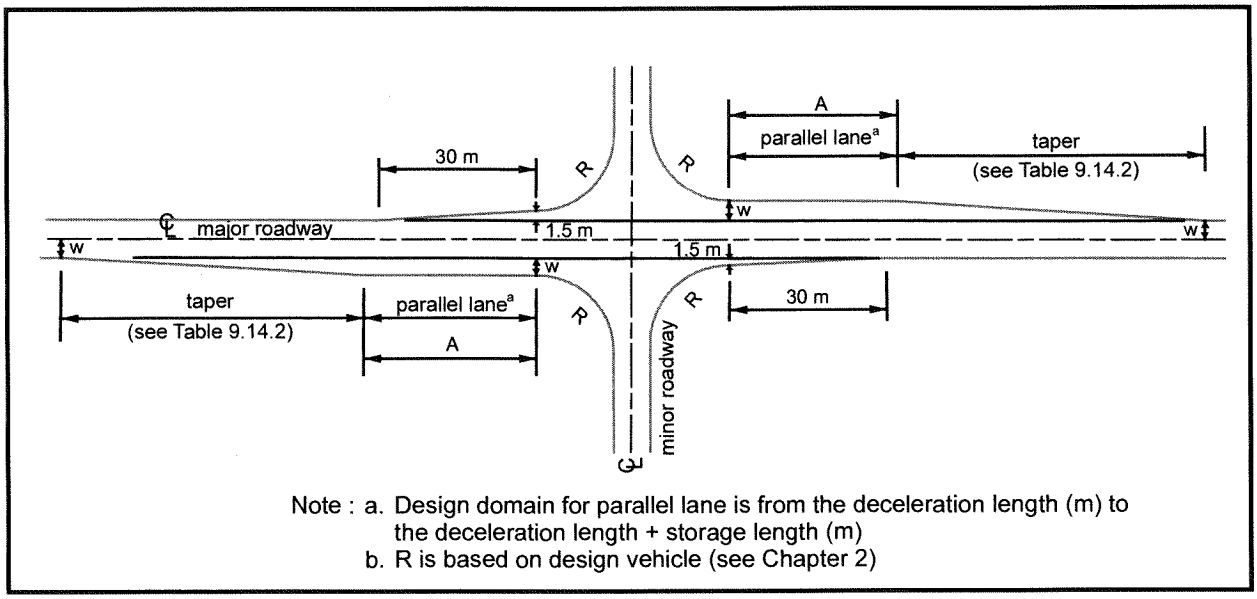
The length of an auxiliary lane is based on deceleration and storage requirements. Deceleration should occur exclusively within the auxiliary lane, although in an urban environment, deceleration (up to 15 km/h) over the bay taper is normally tolerable (especially in a peak-hour condition).

Suggested taper and parallel lengths are shown in **Table 9.14.2** and illustrated in **Figure 9.14.4**. Adjustments for intersections on curves are discussed in **Section 18.8**.

Table 9.14.2: Right-Turn Taper with Parallel Deceleration Lane Design

Design Speed (km/h)	Taper Ratio[a] Design Domain	Radius for Reverse[a] Curves (m)	Parallel Lane Length[b] Design Domain
50	11:1–17:1	90–150	35–75
60	14:1–17:1	150	40–90
70	17:1–20:1	150–220	50–110
80[c]	17:1–24:1	150–300	60–130

Notes:
a) Taper may be straight line or may be symmetrical reverse curves; length is derived from design values calculated for a 3 s lane change criterion for the appropriate operating speed.
b) Additional parallel lane length may be required for storage.
c) For higher design speeds, refer to **Chapter 10**.



Note : a. Design domain for parallel lane is from the deceleration length (m) to the deceleration length + storage length (m)
b. R is based on design vehicle (see Chapter 2)

Figure 9.14.3: Right-Turn with Parallel Deceleration Lane Design

Auxiliary lanes can be developed using reverse curves or straight line tapers; reverse curves are typically used in an urban environment with curb and gutter. On high-speed roads, the taper length to the auxiliary lane should generally conform to that discussed in **Chapter 10**. Where auxiliary lanes are used for the storage of turning vehicles at unsignalized intersections, the length of the lane in addition to deceleration length and exclusive of taper is usually based on the number of vehicles that are likely to accumulate in two minutes. The storage length required is calculated by the following formula and can be used for right- or left-turning vehicles:

$$S = \frac{NL}{30} \qquad (9.14.1)$$

Where:

S = Storage length (m)

N = Design volume of turning vehicles (v/h)

L = Length (m) occupied by each vehicle (see **Chapter 2**)

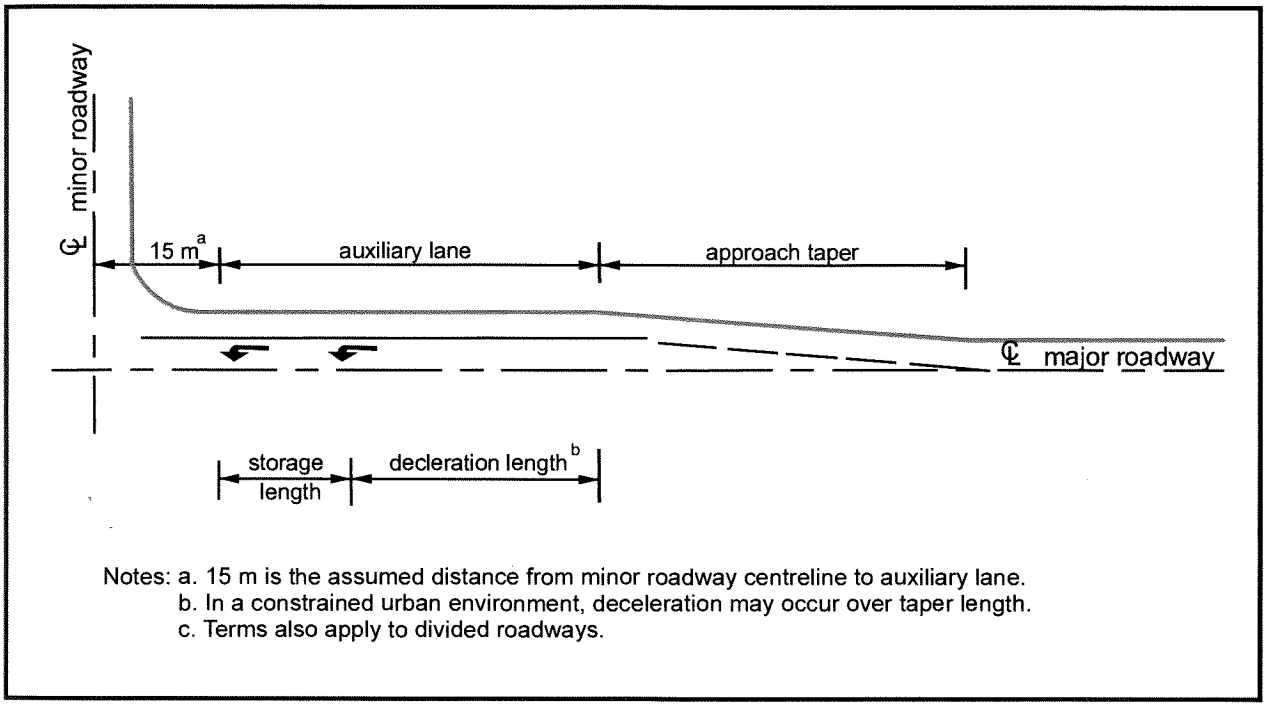
At signalized intersections, the storage lane length should accommodate about 1.5 times the average number of vehicles to be stored per cycle for roadways with design speeds of 60 km/h or less, and about twice the average number of vehicles for design speeds greater than 60 km/h.

The storage length calculated above should be checked against capacity analysis to ensure an acceptable level of service. The required storage for two-lane operation is one half that for a single-lane operation.

Where there is a possibility that an auxiliary lane may be used for either storage or deceleration, the length is determined for both conditions and the total is used in design. For urban and suburban roads, the right-turn lane length tends to be used mainly for storage during peak hours (typically slower peak

The tapers can be made smooth by using horizontal curves at the beginning and end of transitions. The radii of the horizontal curves typically vary from about 500 m for tapers at a design speed of 50 km/h, to 3,000 m for tapers at a design speed of 120 km/h.

Where space to develop tapers is limited, the taper length could also be based on running speed rather than design speed. Gradual approach and departure tapers are particularly important for the higher design speeds. It is also desirable to provide decision sight distance for the taper areas to enhance safe operation. Combinations of minimum sight distance and minimum taper ratios should be avoided.



Notes: a. 15 m is the assumed distance from minor roadway centreline to auxiliary lane.
b. In a constrained urban environment, deceleration may occur over taper length.
c. Terms also apply to divided roadways.

Figure 9.17.1: Left-Turn Lane, Pictorial Description of Terms

Table 9.17.1: Approach and Departure Taper Ratios and Lengths for Left Turns at Intersections

Design Speed (km/h)	Design Domain for Taper Ratio	Horizontal Curve to Smooth Taper R (m)
50	8:1 – 30:1	500
60	15:1 – 36:1	750
70	15:1 – 42:1	1,000
80	15:1 – 48:1	1,200
90	27:1 – 54:1	1,500
100	30:1 – 60:1	2,000
110	33:1 – 66:1	2,500
120	36:1 – 72:1	3,000

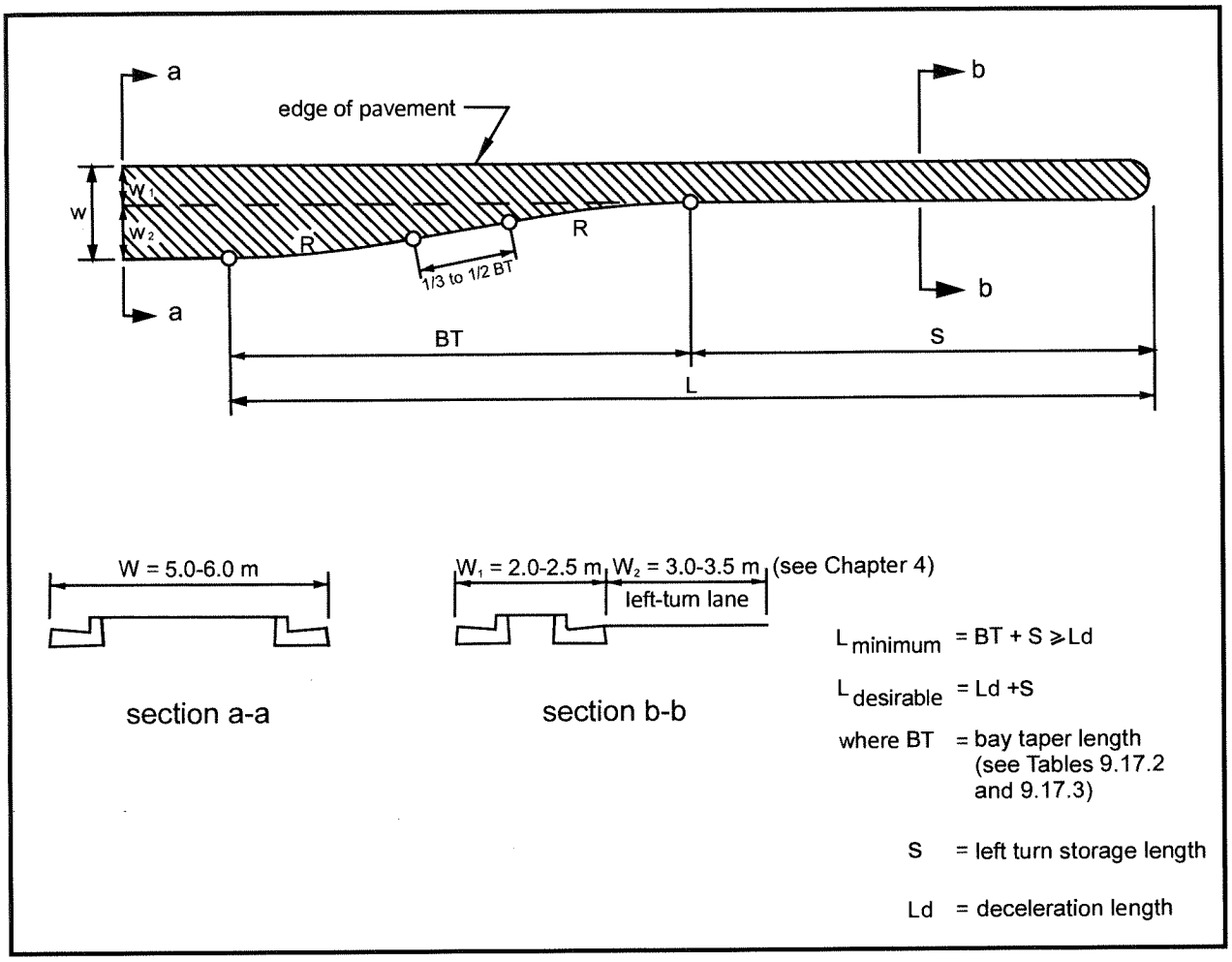


Figure 9.17.4: Left-Turn Lane and Taper with Symmetrical Reverse Curves

Bay taper designs are a function of design speed and the width of the left-turn auxiliary lane. **Table 9.17.2** provides suggested straight-line bay taper ratios for a range of design speeds. **Table 9.17.3** provides suggested taper ratios and radii for bay tapers designed using symmetrical reverse curves. Both tables are applicable to tangent main line alignments. Where the main line alignment is on curve, adjustments to the bay taper may be required.

Table 9.17.2: Bay Tapers Straight Line

Design Speed (km/h)	Taper Ratio Design Domain
50	10:1
60	10:1–12:1
70	10:1–18:1
80	13:1–20:1

Note: For higher design speeds, the 80 km/h design speed dimensions are used and the storage length is increased to provide deceleration length.

Table 9.17.3: Bay Tapers Symmetrical Reverse Curves

Design Speed (km/h)	Taper Ratio Design Domain	Radii (m)
50	10:1	90–150
60	10:1–12:1	150
70	10:1–18:1	150–220
80	13:1–20:1	150–300

Note: For higher design speeds, the 80 km/h design speed dimensions are used and the storage length is increased to provide deceleration length.

9.17.4.2 Deceleration Requirements

In the design of left-turn auxiliary lanes, it is important to consider the deceleration requirements. The minimum deceleration length is based on the distance needed for the driver to brake comfortably to come to a full stop at the intersection. Desirably, the distance needed for deceleration is provided by the auxiliary lane, exclusive of storage requirements. In urban conditions, it is often not feasible to provide both the deceleration distance and storage length due to other considerations, such as intersection spacing, access needs, and other physical controls. In these cases, the taper length may be used for deceleration distance. The deceleration distances for a range of speeds are provided in **Chapter 2**.

9.17.4.3 Storage Length

The storage length is normally designed to accommodate not only left-turning vehicles. It is also made sufficiently long so that vehicles queued in the through lanes do not block the entrance to the turning lane. As a minimum, the auxiliary lane length should be determined by checking that the storage length plus the bay taper length is equal to the deceleration length required for the design speed. Ideally, however, storage length should be provided in addition to deceleration length.

The storage length required to accommodate the left-turning vehicles depends on the number of left-turning vehicles approaching the intersection and whether or not the intersection is, or will be, signalized.

For an unsignalized intersection, storage length can be calculated using the equation outlined in Section 9.14. If the intersection is to be signalized, either initially or in the future, the turn lane provided is normally sufficiently long to store the left-turning traffic and to clear the equivalent per-lane volume of traffic stored on the through lanes, during unsaturated flow conditions. Additional storage length must be provided for larger design vehicles. The minimum storage length that should be provided is 15 m (see Section 9.17.2).

9.17.4.4 Run-out Lane

The run-out lane terminates the bypass lane on the far side of the intersection. The width of the parallel section of the run-out lane is the same as that of the bypass lane. The taper length varies with the design speed and is the same as that applied to the acceleration lane (see **Chapter 10**). The run-out lane is shown in **Figure 9.17.2** and **Figure 9.17.3**.

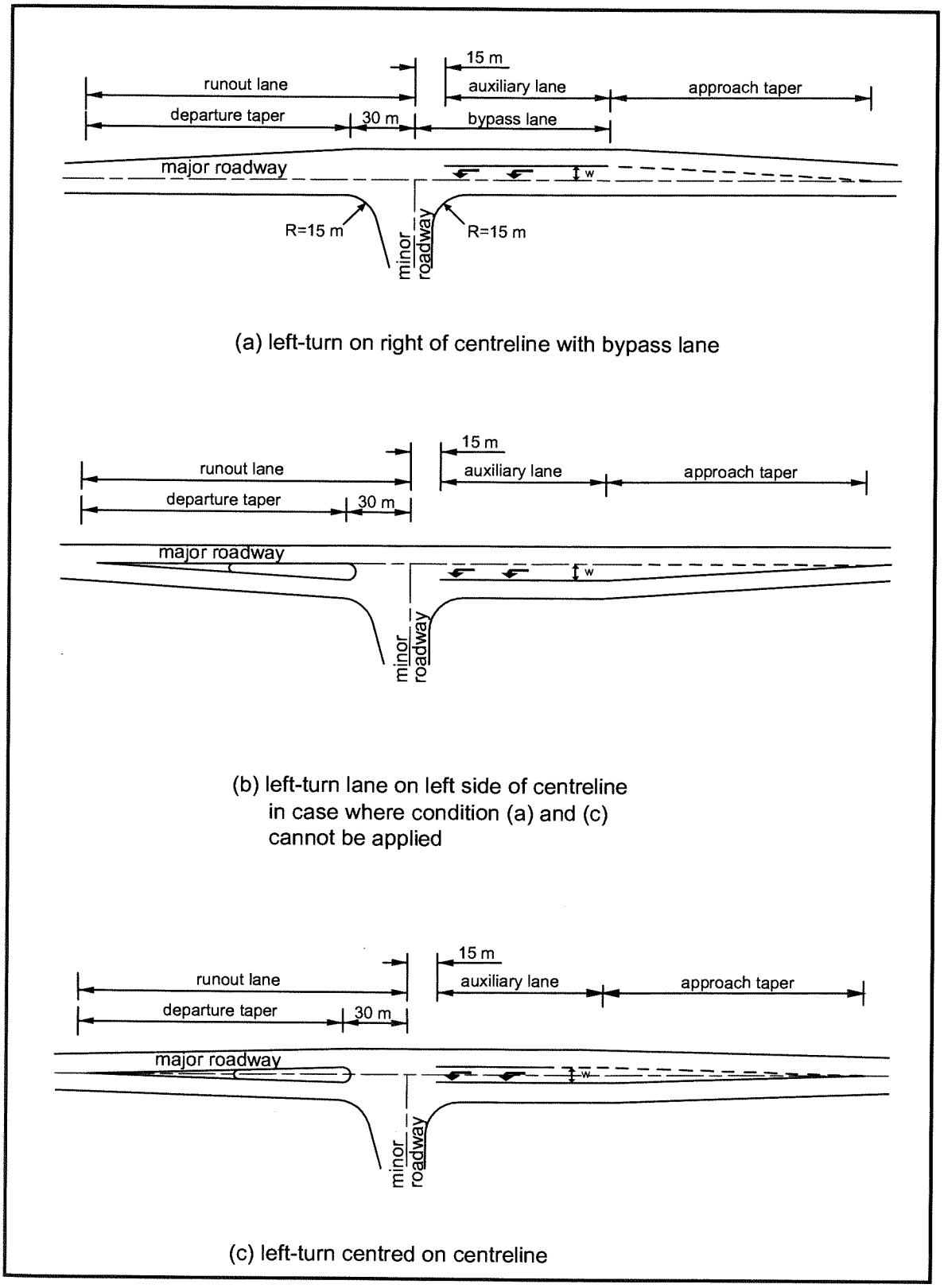
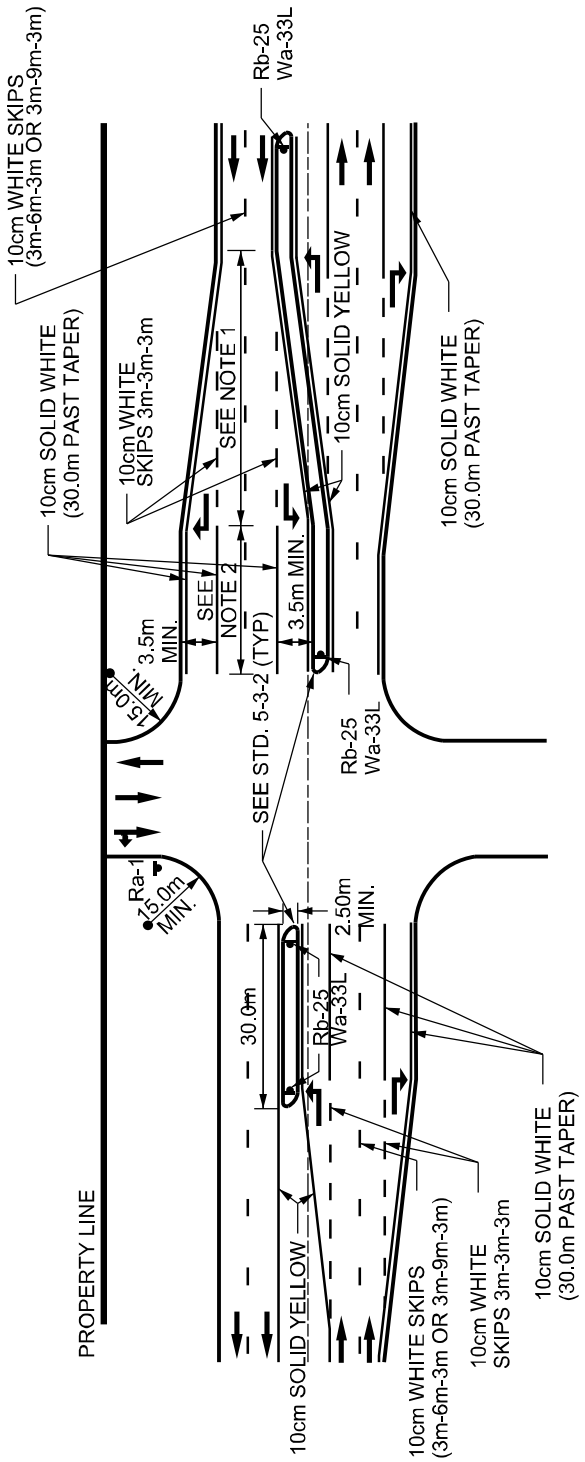


Figure 9.17.2: Left-Turn Lanes at T-Intersections



NOTES

1. THE TAPER LENGTH IS BASED ON DESIGN SPEED OF THE ROADWAY UTILIZING THE TAC MANUAL AND THE ONTARIO TRAFFIC MANUAL
2. THE MINIMUM STORAGE IS 30.0 METERS, HOWEVER ACTUAL LENGTH WILL BE DETERMINED BASED ON PROPOSED TURNING VOLUMES
3. ALL PERMANENT LINE PAINTING APPLICATIONS SHALL BE DONE WITH DURABLE, THERMOPLASTIC PAINT
4. PROPOSED DESIGN AND LOCATION OF ALL ISLANDS SHALL BE VERIFIED AND DESIGNED USING PROPER TURNING TEMPLATES

Region of Peel
Working for you

PUBLIC WORKS
STANDARD DRAWING

REV. DATE: JUNE 2016

TYPICAL DESIGN FOR A FULL MOVES ACCESS

APPROVED BY	DRAWN BY
G.K./S.L.	C.B.
STD. DWG. NUMBER	SCALE
5-1-6	N.T.S.

5.6 Design Criteria for Access

Design criteria for access are summarized in the following table and the four supporting diagrams:

- Table 6: Design Criteria for Access.
- Figure 31: Typical Layout for Right-In/ Right-Out Access (with Median Island).
- Figure 32: Typical Layout for Right-In/ Right-Out Access (without Median Island).
- Figure 33: Typical Layout for Full Moves Median Opening.
- Figure 34: Typical Layout for Left-In, Right-In/Right-Out Access.

Design Criteria (metres)		Rural Road	Industrial Connector	Suburban Connector	Commercial Connector	Rural Main Street	Urban Main Street
Access Width (AW)		ISR	9.0 min	9.0 min	9.0 min	ISR	ISR
Access Throat Length (TL)		ISR	i	i	i	ISR	ISR
Corner Radius, Min (CR)		5.0***	9.0***	9.0***	9.0***	5.0***	5.0***
Median Barrier Length, Min (BL)		30.0*	30.0*	30.0*	30.0*	N/A	N/A
Left Turn Lane Transition (LT)		TAC	TAC	TAC	TAC	TAC	TAC
Left Turn Lane Storage, Min (LS)		30.0	30.0/vol	30.0/vol	30.0/vol	30.0	30.0
Right Turn Lane Transition (RT)		TAC	TAC	TAC	TAC	N/A	N/A
Right Turn Lane Storage, Min (RS)		30.0/vol	30.0/vol	30.0/vol	30.0/vol	N/A	N/A
Auxiliary Lane Width, Min (AW)	L	3.5 **	3.5**	3.5**	3.5**	3.5**	3.5**
	R	3.25***	3.25***	3.25***	3.25***	3.25***	3.25***
Pedestrians		Design of all accesses must consider pedestrians and the continuity of existing or planned Active Transportation facilities.					

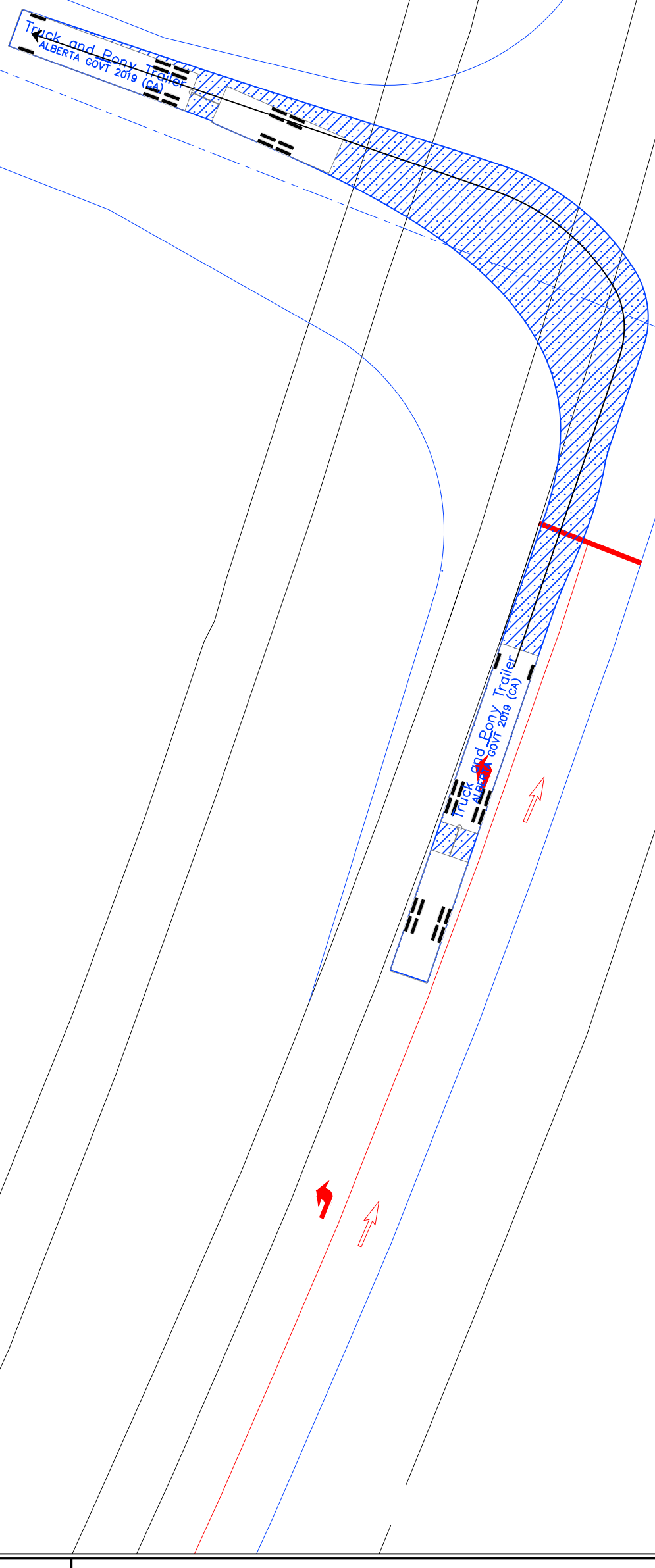
Table 6: Design Criteria for Access

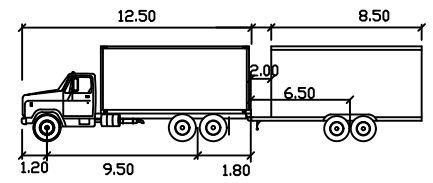
NOTES: * 30m on either side of access control as per current by-law.
** Match through-lane if less or determined based on design vehicle needs.
*** Pending Design Vehicle Needs.
i) Conditional based on needs as identified in Transportation Impact Assessment or at the discretion of the Region. Minimum 30m from curb, except for single residential lots.

LEGEND: TAC: Transition length based on design speed of roadway utilizing the TAC Manual and geometric design standards.
Vol: Determined based on projected turning volumes ISR: Individual Sight Review
N/A: Not Applicable L: Left Turn R: Right Turn

APPENDIX H

Truck Swept Path Analysis at Future Site Access





Truck and Pony Trailer

	meters		
Tractor Width	: 2.60	Lock to Lock Time	: 6.0
Trailer Width	: 2.60	Steering Angle	: 40.0
Tractor Track	: 2.60	Articulating Angle	: 70.0
Trailer Track	: 2.60		

TYLin

CALEDON QUARRY - SWEPT PATH ANALYSIS
EASTBOUND LEFT INBOUND MANEUVER

SCALE: NTS		PROJECT No. 10042
DATE: NOVEMBER 2022		
DESIGNED BY: SR	N	FIGURE No. 01
CHECKED BY: MD		

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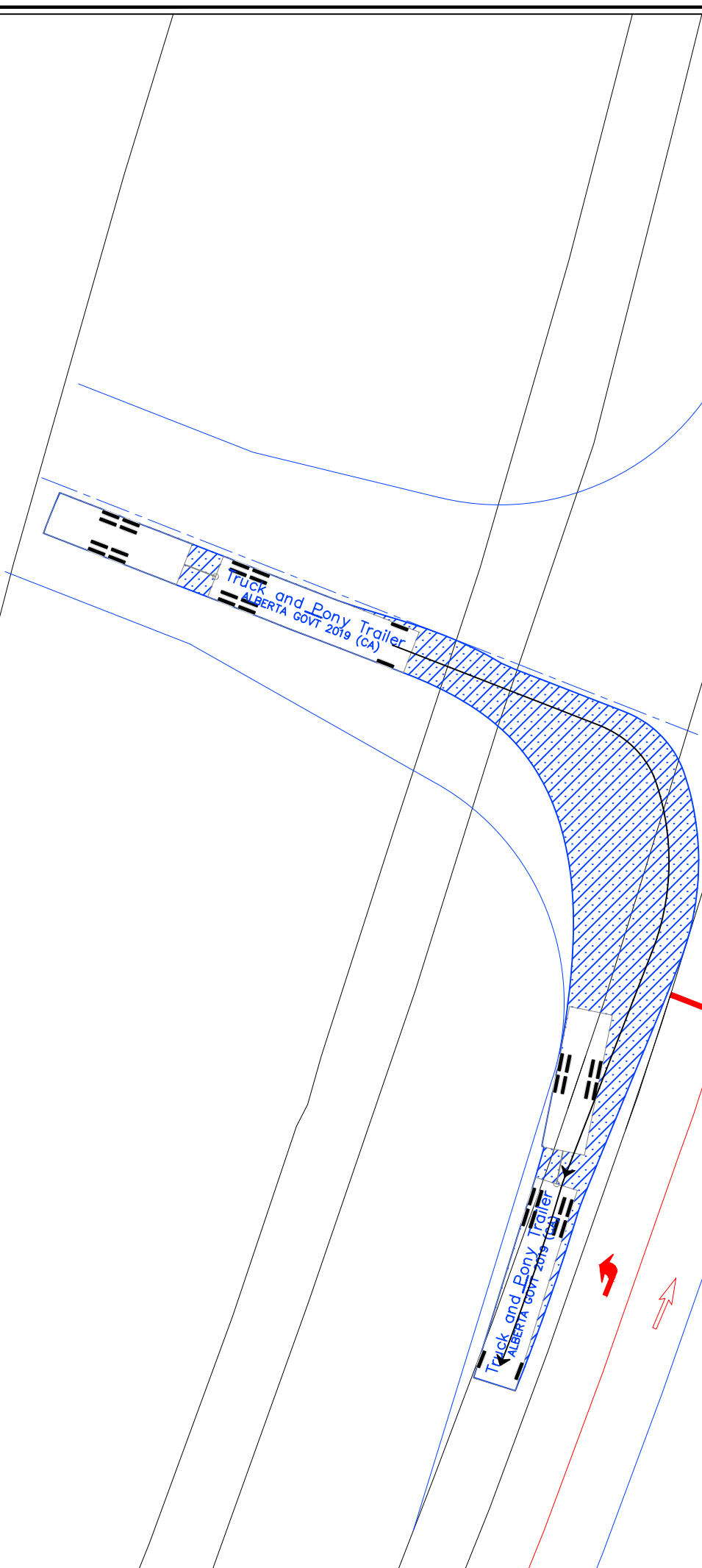

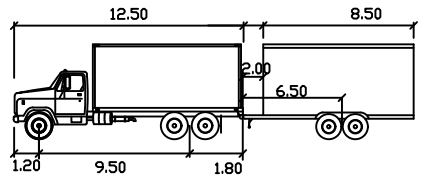

Truck and Pony Trailer

	meters		
Tractor Width	: 2.60	Lock to Lock Time	: 6.0
Trailer Width	: 2.60	Steering Angle	: 40.0
Tractor Track	: 2.60	Articulating Angle	: 70.0
Trailer Track	: 2.60		

TYLin

CALEDON QUARRY - SWEPT PATH ANALYSIS
SOUTHBOUND RIGHT OUTBOUND MANEUVER

SCALE: NTS		PROJECT No. 10042
DATE: NOVEMBER 2022		
DESIGNED BY: SR	N	FIGURE No. 02
CHECKED BY: MD		

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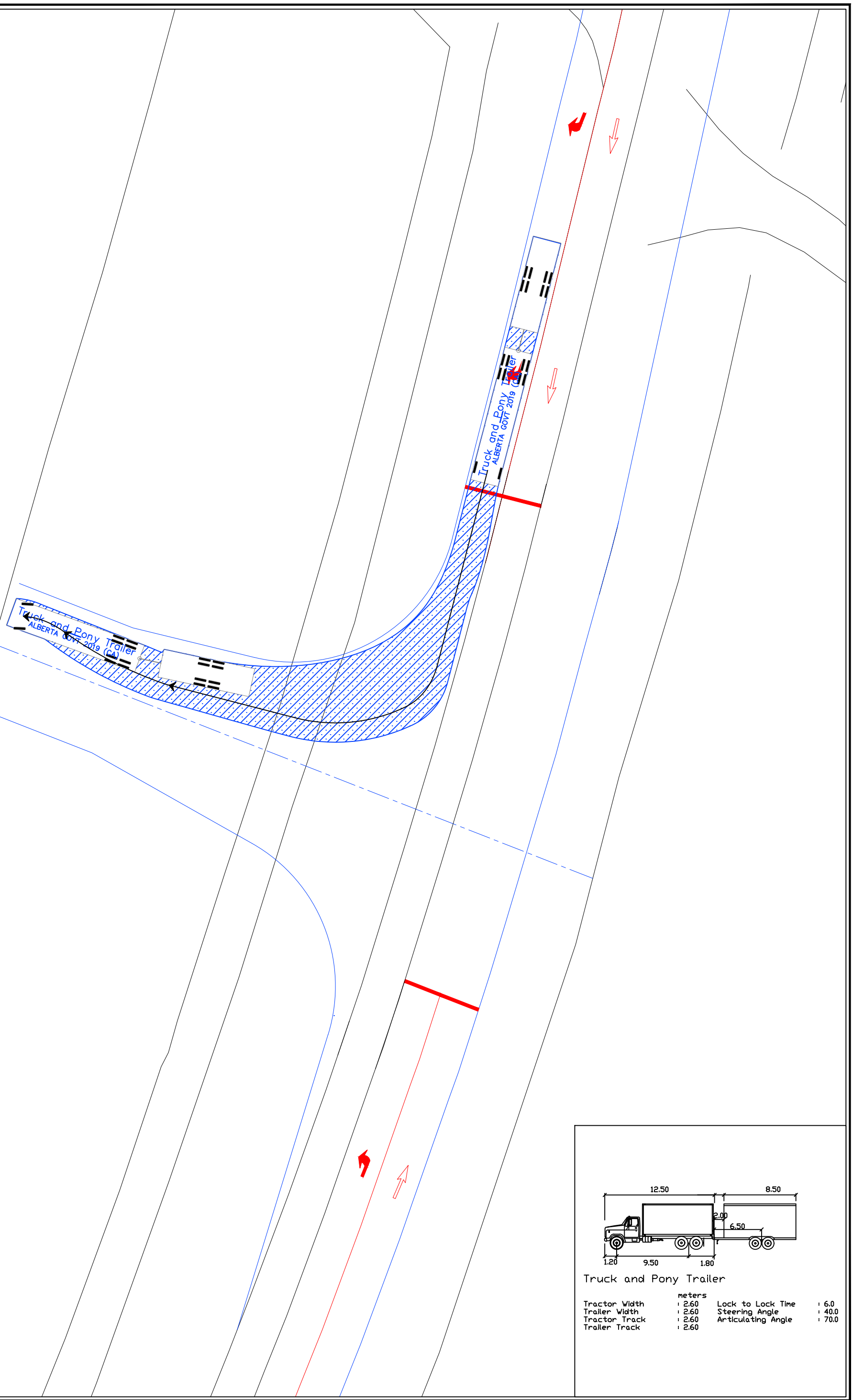

Truck and Pony Trailer

	meters		
Tractor Width	: 2.60	Lock to Lock Time	: 6.0
Trailer Width	: 2.60	Steering Angle	: 40.0
Tractor Track	: 2.60	Articulating Angle	: 70.0
Trailer Track	: 2.60		

TYLin

CALEDON QUARRY - SWEPT PATH ANALYSIS
WESTBOUND RIGHT INBOUND MANEUVER

SCALE: NTS
DATE: NOVEMBER 2022
DESIGNED BY: SR
CHECKED BY: MD
N

PROJECT No. 10042
FIGURE No. 03

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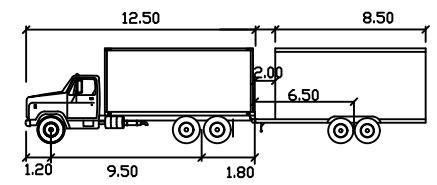
Truck and Pony Trailer
ALBERTA GOVT 2019 (CA)

Truck and Pony Trailer
ALBERTA GOVT 2019 (CA)



Truck and Pony Trailer

	meters		
Tractor Width	: 2.60	Lock to Lock Time	: 6.0
Trailer Width	: 2.60	Steering Angle	: 40.0
Tractor Track	: 2.60	Articulating Angle	: 70.0
Trailer Track	: 2.60		

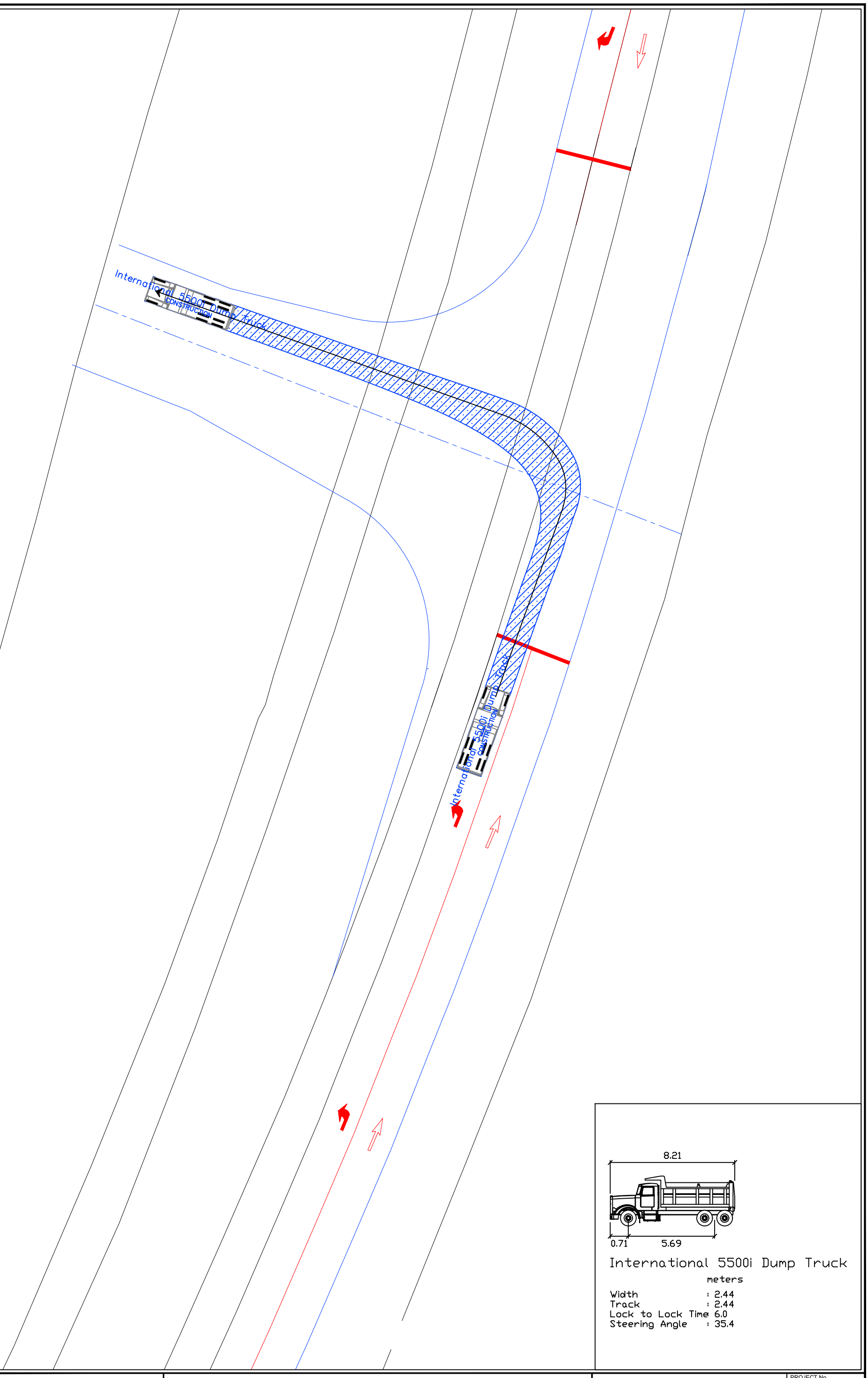
TYLin

CALEDON QUARRY - SWEPT PATH ANALYSIS
SOUTHBOUND LEFT OUTBOUND MANEUVER

SCALE: NTS
DATE: NOVEMBER 2022
DESIGNED BY: SR
CHECKED BY: MD
N

PROJECT No. 10042
FIGURE No. 04

File : G:\Projects\2020\10042 - Long Par 5 Haul Route Assessment and TIS\03 Analysis\04 Conceptual Design\10042_CaledonQuarry_Access_Concept flat.dwg, Layout : Fig 8 - VMD Date :Nov 29, 2022 - 3:09pm, Edit By : sara.rahman



International 5500i Dump Truck

meters

Width	: 2.44
Track	: 2.44
Lock to Lock Time	6.0
Steering Angle	: 35.4

TYLin

CALEDON QUARRY - SWEPT PATH ANALYSIS
EASTBOUND LEFT INBOUND MANEUVER

SCALE:	NTS
DATE:	NOVEMBER 2022
DESIGNED BY:	SR
CHECKED BY:	MD

N

PROJECT No. 10042

FIGURE No. 05

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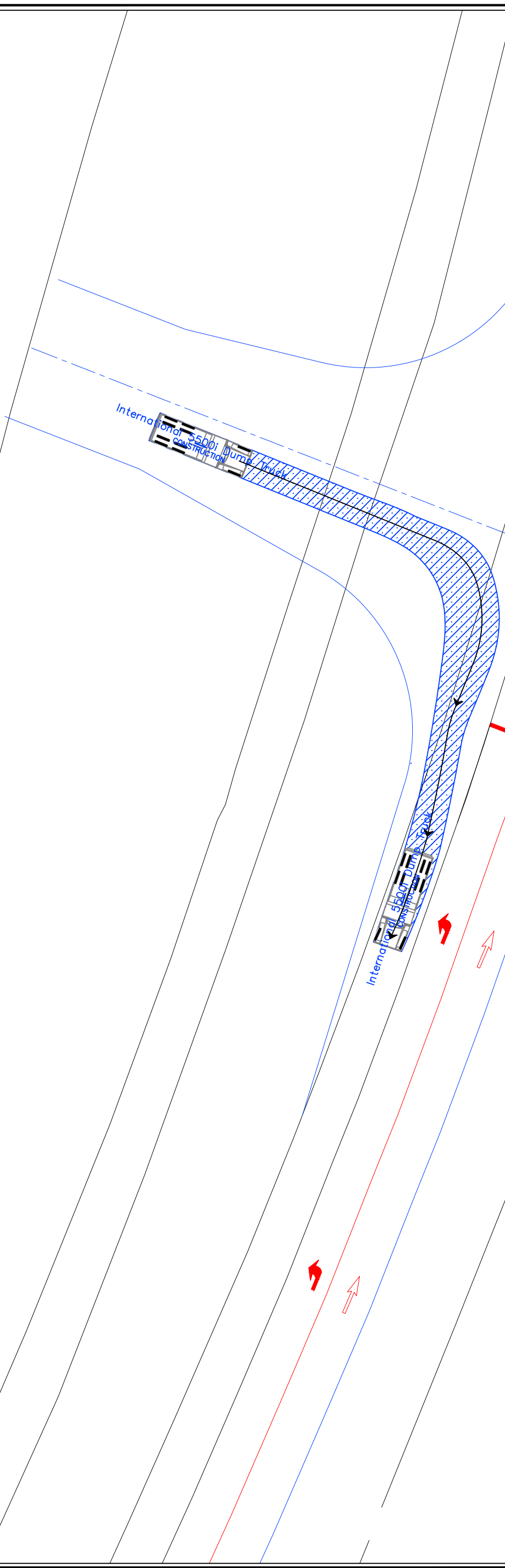

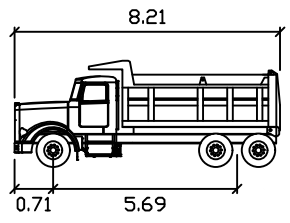

International 5500i Dump Truck

	meters
Width	: 2.44
Track	: 2.44
Lock to Lock Time	6.0
Steering Angle	: 35.4

TYLin

CALEDON QUARRY - SWEPT PATH ANALYSIS
SOUTHBOUND RIGHT OUTBOUND MANEUVER

SCALE:	NTS
DATE:	NOVEMBER 2022
DESIGNED BY:	SR
CHECKED BY:	MD

N

PROJECT No. 10042

FIGURE No. 06

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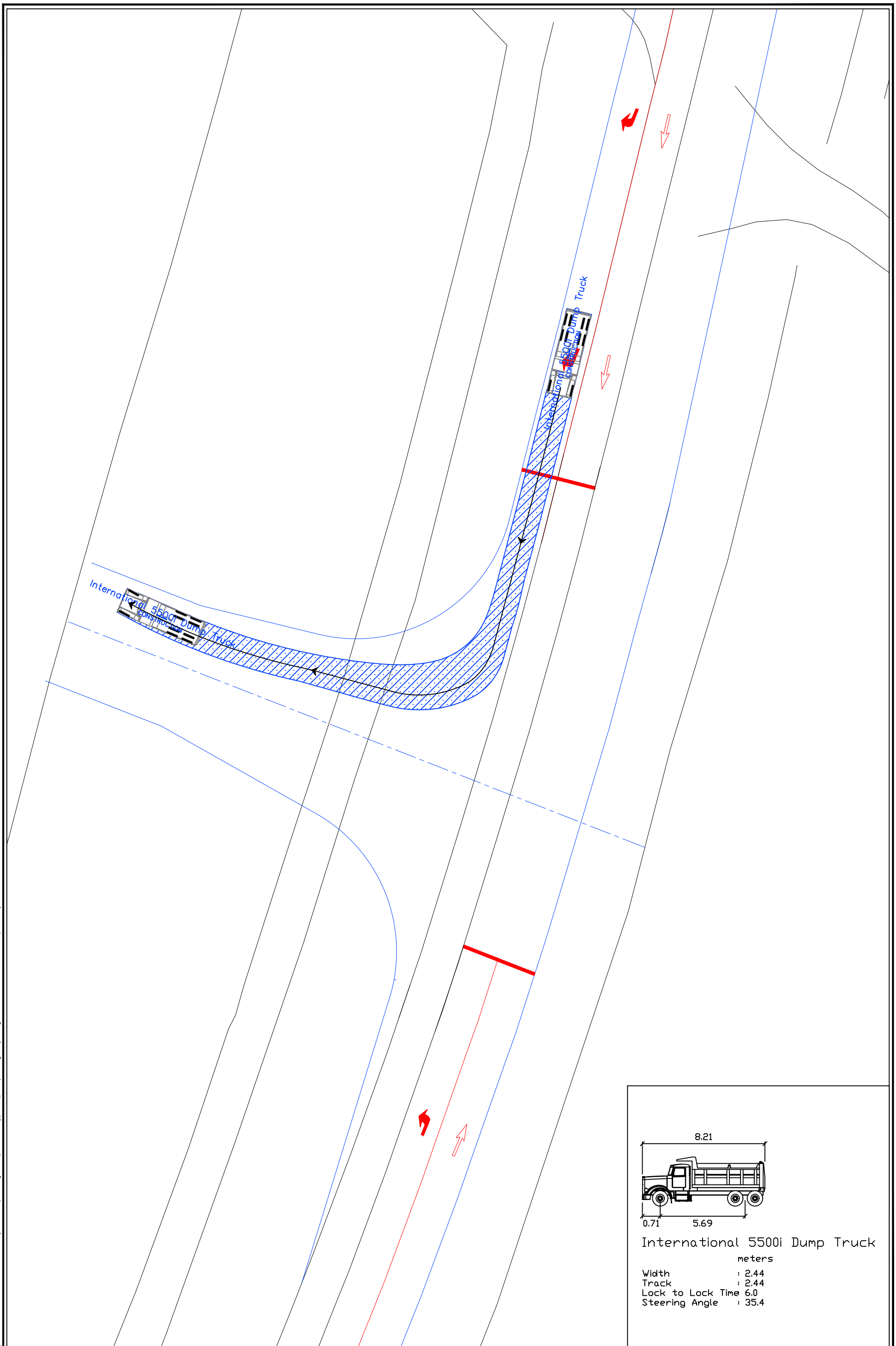


8.21

0.71 5.69

International 5500i Dump Truck

meters

Width	: 2.44
Track	: 2.44
Lock to Lock Time	6.0
Steering Angle	: 35.4

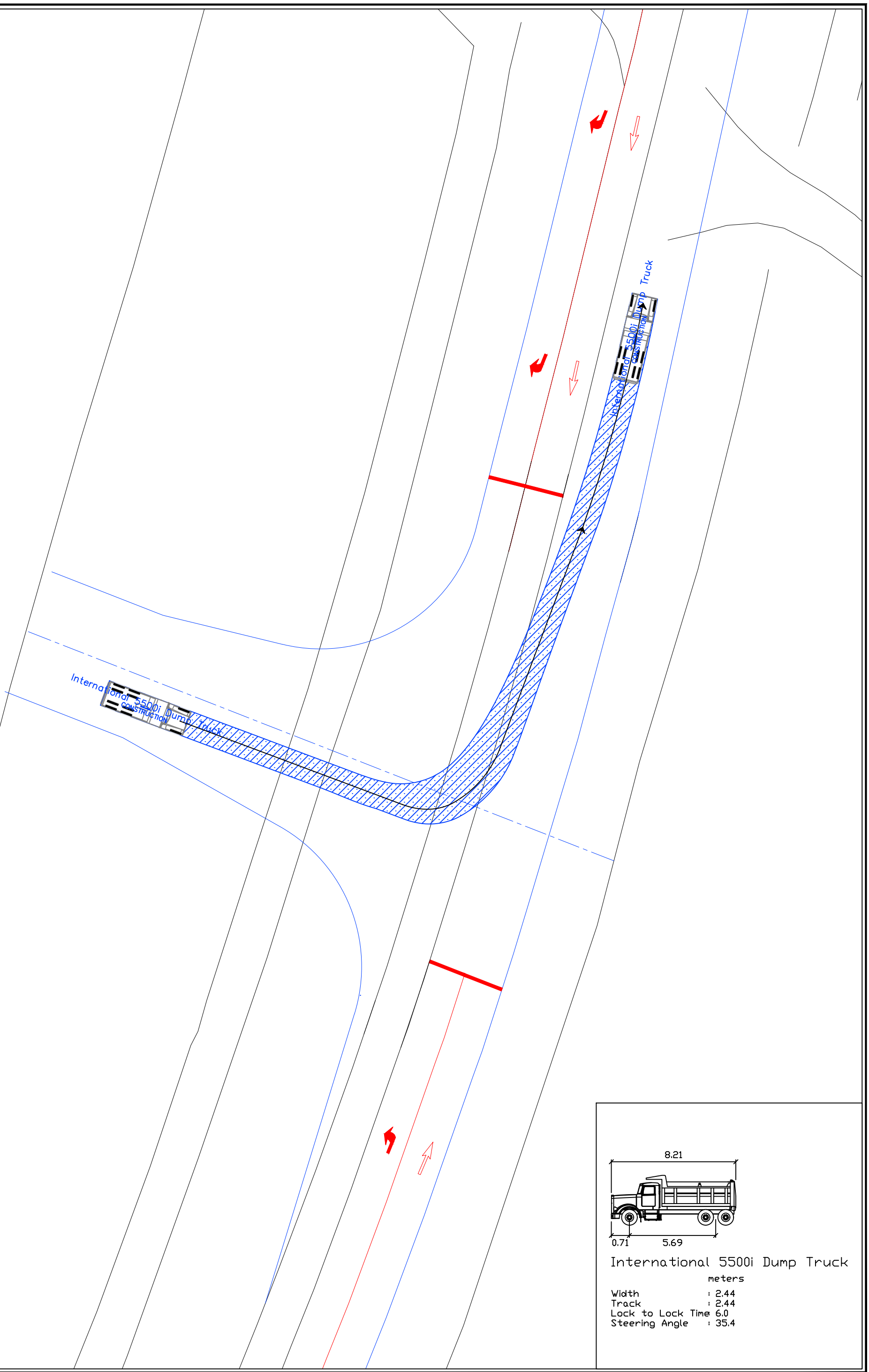
TYLin

CALEDON QUARRY - SWEPT PATH ANALYSIS
WESTBOUND RIGHT INBOUND MANEUVER

SCALE: NTS
DATE: NOVEMBER 2022
DESIGNED BY: SR
CHECKED BY: MD
N

PROJECT No. 10042
FIGURE No. 07

File : G:\Projects\2020\10042 - Long Par 5 Haul Route Assessment and TIS\03 Analysis\04 Conceptual Design\10042_CaledonQuarry_Access_Concept flat.dwg, Layout : Fig 7 - VMD Date :Nov 29, 2022 - 3:09pm, Edit By : sara.rahman



8.21

0.71 5.69

International 5500i Dump Truck

	meters
Width	: 2.44
Track	: 2.44
Lock to Lock Time	6.0
Steering Angle	: 35.4

TYLin

CALEDON QUARRY - SWEPT PATH ANALYSIS
SOUTHBOUND LEFT OUTBOUND MANEUVER

SCALE: NTS		PROJECT No. 10042
DATE: NOVEMBER 2022		
DESIGNED BY: SR	N	FIGURE No. 08
CHECKED BY: MD		

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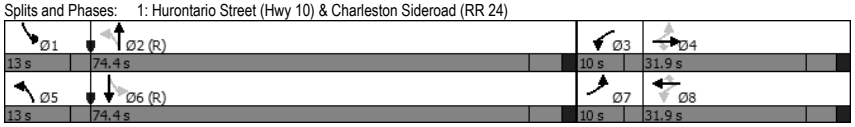
APPENDIX I

Synchro Capacity Analysis Reports

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	77	183	315	192	143	22	99	619	31	1779
Future Volume (vph)	77	183	315	192	143	22	99	619	31	1779
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	7	4		3	8		5	2	1	6
Permitted Phases	4		4	8		8	2		6	
Detector Phase	7	4	4	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	10.0	45.9	45.9	10.0	45.9	45.9	10.0	44.4	10.0	44.4
Total Split (s)	10.0	31.9	31.9	10.0	31.9	31.9	13.0	74.4	13.0	74.4
Total Split (%)	7.7%	24.7%	24.7%	7.7%	24.7%	24.7%	10.1%	57.5%	10.1%	57.5%
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.0	5.0	3.0	5.0
All-Red Time (s)	0.0	2.4	2.4	0.0	2.4	2.4	0.0	2.4	0.0	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.0	0.0	-2.0
Total Lost Time (s)	3.0	6.9	6.9	3.0	6.9	6.9	3.0	5.4	3.0	5.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes				Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	31.8	20.9	20.9	32.4	22.9	22.9	88.2	80.0	84.0	74.4
Actuated g/C Ratio	0.25	0.16	0.16	0.25	0.18	0.18	0.68	0.62	0.65	0.58
v/c Ratio	0.27	0.76	0.88	0.80	0.50	0.07	0.67	0.37	0.08	0.94
Control Delay	37.5	70.5	51.5	64.7	54.2	0.5	43.2	14.0	8.2	36.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.5	70.5	51.5	64.7	54.2	0.5	43.2	14.0	8.2	36.5
LOS	D	E	D	E	D	A	D	B	A	D
Approach Delay		55.7			56.6			17.7		36.0
Approach LOS		E			E			B		D

Intersection Summary		
Cycle Length: 129.3		
Actuated Cycle Length: 129.3		
Offset: 85 (66%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 145		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.94		
Intersection Signal Delay: 37.3	Intersection LOS: D	
Intersection Capacity Utilization 94.4%	ICU Level of Service F	
Analysis Period (min) 15		

Splits and Phases: 1: Hurontario Street (Hwy 10) & Charleston Sideroad (RR 24)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	183	315	192	143	22	99	619	56	31	1779	46
Future Volume (vph)	77	183	315	192	143	22	99	619	56	31	1779	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.9	6.9	3.0	6.9	6.9	3.0	5.4		3.0	5.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00		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	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1689	1575	1555	1772	1700	1366	1534	3092		1483	3554	
Flt Permitted	0.62	1.00	1.00	0.43	1.00	1.00	0.05	1.00		0.36	1.00	
Satd. Flow (perm)	1096	1575	1555	801	1700	1366	86	3092		565	3554	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	81	193	332	202	151	23	104	652	59	33	1873	48
RTOR Reduction (vph)	0	0	128	0	0	19	0	4	0	0	1	0
Lane Group Flow (vph)	81	193	204	202	151	4	104	707	0	33	1920	0
Confl. Peds. (#/hr)	1					1			3	3		
Heavy Vehicles (%)	8%	22%	5%	3%	13%	18%	19%	16%	20%	23%	2%	15%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	27.1	21.5	21.5	29.9	22.9	22.9	83.5	76.2		76.1	71.8	
Effective Green, g (s)	27.1	21.5	21.5	29.9	22.9	22.9	83.5	78.2		76.1	73.8	
Actuated g/C Ratio	0.21	0.17	0.17	0.23	0.18	0.18	0.65	0.60		0.59	0.57	
Clearance Time (s)	3.0	6.9	6.9	3.0	6.9	6.9	3.0	7.4		3.0	7.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.4		3.0	4.4	
Lane Grp Cap (vph)	255	261	258	237	301	241	152	1870		363	2028	
v/s Ratio Prot	0.01	0.12		c0.05	0.09		c0.05	0.23		0.00	c0.54	
v/s Ratio Perm	0.05		0.13	c0.15		0.00	0.39			0.05		
v/c Ratio	0.32	0.74	0.79	0.85	0.50	0.02	0.68	0.38		0.09	0.95	
Uniform Delay, d1	42.4	51.2	51.8	47.1	48.0	43.9	33.8	13.1		11.2	25.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	10.5	15.2	24.4	1.3	0.0	12.0	0.6		0.1	10.8	
Delay (s)	43.2	61.7	67.0	71.5	49.4	43.9	45.8	13.7		11.4	36.8	
Level of Service	D	E	E	E	D	D	D	B		B	D	
Approach Delay (s)		62.1			60.9			17.8			36.3	
Approach LOS		E			E			B			D	

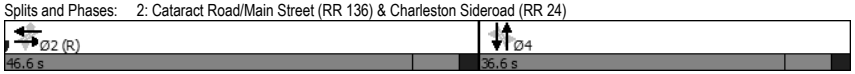
Intersection Summary				
HCM 2000 Control Delay	38.9	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.91			
Actuated Cycle Length (s)	129.3	Sum of lost time (s)	18.3	
Intersection Capacity Utilization	94.4%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	36	286	2	231	34	11	5	38	6
Future Volume (vph)	36	286	2	231	34	11	5	38	6
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		2		2			4		4
Permitted Phases	2		2		2	4		4	
Detector Phase	2	2	2	2	2	4	4	4	4
Switch Phase									
Minimum Initial (s)	20.0	20.0	20.0	20.0	20.0	16.0	16.0	16.0	16.0
Minimum Split (s)	30.6	30.6	30.6	30.6	30.6	30.6	30.6	30.6	30.6
Total Split (s)	46.6	46.6	46.6	46.6	46.6	36.6	36.6	36.6	36.6
Total Split (%)	56.0%	56.0%	56.0%	56.0%	56.0%	44.0%	44.0%	44.0%	44.0%
Yellow Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Min	C-Min	C-Min	C-Min	C-Min	None	None	None	None
Act Effct Green (s)	65.7	65.7	65.7	65.7	65.7	16.0	16.0	16.0	16.0
Actuated g/C Ratio	0.79	0.79	0.79	0.79	0.79	0.19	0.19	0.19	0.19
v/c Ratio	0.04	0.22	0.00	0.19	0.03	0.04	0.03	0.14	0.09
Control Delay	5.1	5.2	5.0	5.1	1.3	28.0	21.6	29.5	14.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.1	5.2	5.0	5.1	1.3	28.0	21.6	29.5	14.2
LOS	A	A	A	A	A	C	C	C	B
Approach Delay		5.2		4.6			25.0		22.7
Approach LOS		A		A			C		C

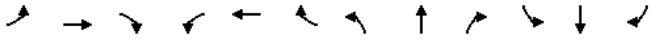
Intersection Summary			
Cycle Length: 83.2			
Actuated Cycle Length: 83.2			
Offset: 22.5 (27%), Referenced to phase 2:EBWB and 6:, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.22			
Intersection Signal Delay: 7.3		Intersection LOS: A	
Intersection Capacity Utilization 63.2%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Cataract Road/Main Street (RR 136) & Charleston Sideroad (RR 24)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	286	12	2	231	34	11	5	5	38	6	24
Future Volume (vph)	36	286	12	2	231	34	11	5	5	38	6	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.6		6.6	6.6	6.6	6.6	6.6		6.6	6.6	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.93		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1772	1742		1825	1588	1633	1825	1777		1825	1623	
Flt Permitted	0.61	1.00		0.57	1.00	1.00	0.74	1.00		0.75	1.00	
Satd. Flow (perm)	1139	1742		1101	1588	1633	1416	1777		1443	1623	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	37	295	12	2	238	35	11	5	5	39	6	25
RTOR Reduction (vph)	0	1	0	0	0	10	0	4	0	0	22	0
Lane Group Flow (vph)	37	306	0	2	238	25	11	6	0	39	9	0
Heavy Vehicles (%)	3%	10%	0%	0%	21%	0%	0%	0%	0%	0%	0%	5%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2		2	4			4		
Actuated Green, G (s)	60.4	60.4		60.4	60.4	60.4	9.6	9.6		9.6	9.6	
Effective Green, g (s)	60.4	60.4		60.4	60.4	60.4	9.6	9.6		9.6	9.6	
Actuated g/C Ratio	0.73	0.73		0.73	0.73	0.73	0.12	0.12		0.12	0.12	
Clearance Time (s)	6.6	6.6		6.6	6.6	6.6	6.6	6.6		6.6	6.6	
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)	826	1264		799	1152	1185	163	205		166	187	
v/s Ratio Prot		c0.18			0.15			0.00			0.01	
v/s Ratio Perm	0.03			0.00		0.02	0.01			c0.03		
v/c Ratio	0.04	0.24		0.00	0.21	0.02	0.07	0.03		0.23	0.05	
Uniform Delay, d1	3.2	3.8		3.1	3.7	3.2	32.8	32.7		33.5	32.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.5		0.0	0.4	0.0	0.2	0.1		0.7	0.1	
Delay (s)	3.3	4.2		3.1	4.1	3.2	33.0	32.7		34.2	32.8	
Level of Service	A	A		A	A	A	C	C		C	C	
Approach Delay (s)		4.1			4.0			32.9			33.6	
Approach LOS		A			A			C			C	

Intersection Summary					
HCM 2000 Control Delay	7.8	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.24				
Actuated Cycle Length (s)	83.2	Sum of lost time (s)		13.2	
Intersection Capacity Utilization	63.2%	ICU Level of Service		B	
Analysis Period (min)	15				
c Critical Lane Group					



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	310	5	27	233	11	9	2	21	11	8	13
Future Volume (Veh/h)	3	310	5	27	233	11	9	2	21	11	8	13
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	3	326	5	28	245	12	9	2	22	12	8	14
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	257			331			654	648	328	662	644	251
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	257			331			654	648	328	662	644	251
tC, single (s)	4.1			4.9			7.2	6.5	6.9	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.9			3.6	4.0	3.9	3.5	4.0	3.3
p0 queue free %	100			97			97	99	96	97	98	98
cM capacity (veh/h)	1320			909			344	379	589	353	381	793

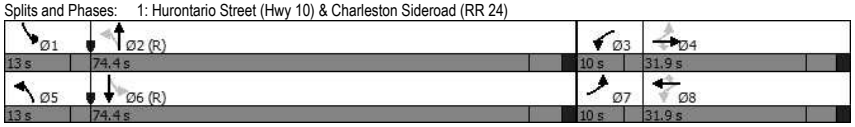
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	3	331	28	257	33	34
Volume Left	3	0	28	0	9	12
Volume Right	0	5	0	12	22	14
cSH	1320	1700	909	1700	480	468
Volume to Capacity	0.00	0.19	0.03	0.15	0.07	0.07
Queue Length 95th (m)	0.1	0.0	0.7	0.0	1.7	1.8
Control Delay (s)	7.7	0.0	9.1	0.0	13.1	13.3
Lane LOS	A		A		B	B
Approach Delay (s)	0.1		0.9		13.1	13.3
Approach LOS					B	B

Intersection Summary						
Average Delay			1.7			
Intersection Capacity Utilization			32.4%	ICU Level of Service		A
Analysis Period (min)			15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	113	232	96	68	234	96	221	1711	51	848
Future Volume (vph)	113	232	96	68	234	96	221	1711	51	848
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	7	4		3	8		5	2	1	6
Permitted Phases	4		4	8		8	2		6	
Detector Phase	7	4	4	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	10.0	45.9	45.9	10.0	45.9	45.9	10.0	44.4	10.0	44.4
Total Split (s)	10.0	31.9	31.9	10.0	31.9	31.9	13.0	74.4	13.0	74.4
Total Split (%)	7.7%	24.7%	24.7%	7.7%	24.7%	24.7%	10.1%	57.5%	10.1%	57.5%
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.0	5.0	3.0	5.0
All-Red Time (s)	0.0	2.4	2.4	0.0	2.4	2.4	0.0	2.4	0.0	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.0	0.0	-2.0
Total Lost Time (s)	3.0	6.9	6.9	3.0	6.9	6.9	3.0	5.4	3.0	5.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes				Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	33.7	24.2	24.2	33.1	22.2	22.2	86.6	76.2	81.8	71.9
Actuated g/C Ratio	0.26	0.19	0.19	0.26	0.17	0.17	0.67	0.59	0.63	0.56
v/c Ratio	0.55	0.77	0.28	0.32	0.81	0.29	0.64	0.93	0.36	0.53
Control Delay	46.2	67.4	10.2	38.1	72.2	10.4	16.8	34.2	17.2	19.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.2	67.4	10.2	38.1	72.2	10.4	16.8	34.2	17.2	19.7
LOS	D	E	B	D	E	B	B	C	B	B
Approach Delay		49.5			51.4			32.3		19.6
Approach LOS		D			D			C		B

Intersection Summary			
Cycle Length: 129.3			
Actuated Cycle Length: 129.3			
Offset: 85 (66%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 33.0		Intersection LOS: C	
Intersection Capacity Utilization 95.8%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 1: Hurontario Street (Hwy 10) & Charleston Sideroad (RR 24)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	113	232	96	68	234	96	221	1711	125	51	848	81
Future Volume (vph)	113	232	96	68	234	96	221	1711	125	51	848	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.9	6.9	3.0	6.9	6.9	3.0	5.4		3.0	5.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00		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	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1753	1685	1527	1657	1762	1544	1771	3535		1601	3304	
Flt Permitted	0.32	1.00	1.00	0.39	1.00	1.00	0.21	1.00		0.06	1.00	
Satd. Flow (perm)	594	1685	1527	679	1762	1544	389	3535		97	3304	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	119	244	101	72	246	101	233	1801	132	54	893	85
RTOR Reduction (vph)	0	0	82	0	0	83	0	4	0	0	5	0
Lane Group Flow (vph)	119	244	19	72	246	18	233	1929	0	54	973	0
Confl. Peds. (#/hr)	5		6	6		5	7		5	5		7
Heavy Vehicles (%)	4%	14%	5%	10%	9%	4%	3%	2%	2%	14%	9%	6%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	31.2	24.2	24.2	28.4	22.8	22.8	82.2	73.0		75.5	69.3	
Effective Green, g (s)	31.2	24.2	24.2	28.4	22.8	22.8	82.2	75.0		75.5	71.3	
Actuated g/C Ratio	0.24	0.19	0.19	0.22	0.18	0.18	0.64	0.58		0.58	0.55	
Clearance Time (s)	3.0	6.9	6.9	3.0	6.9	6.9	3.0	7.4		3.0	7.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.4		3.0	4.4	
Lane Grp Cap (vph)	206	315	285	191	310	272	353	2050		128	1821	
v/s Ratio Prot	c0.03	c0.14		0.02	0.14		c0.05	c0.55		0.02	0.29	
v/s Ratio Perm	0.11		0.01	0.07		0.01	0.37			0.22		
v/c Ratio	0.58	0.77	0.07	0.38	0.79	0.07	0.66	0.94		0.42	0.53	
Uniform Delay, d1	40.7	50.0	43.3	41.4	51.0	44.4	12.8	25.1		27.2	18.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.9	11.3	0.1	1.2	13.0	0.1	4.6	10.1		2.2	1.1	
Delay (s)	44.6	61.2	43.4	42.7	64.0	44.5	17.4	35.3		29.4	19.6	
Level of Service	D	E	D	D	E	D	B	D		C	B	
Approach Delay (s)		53.1			55.6			33.3			20.1	
Approach LOS		D			E			C			C	

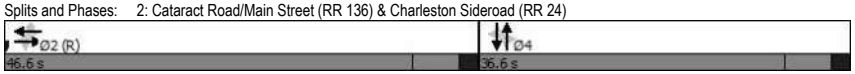
Intersection Summary					
HCM 2000 Control Delay	34.5	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.89				
Actuated Cycle Length (s)	129.3	Sum of lost time (s)		18.3	
Intersection Capacity Utilization	95.8%	ICU Level of Service		F	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	56	302	8	352	63	16	17	73	14
Future Volume (vph)	56	302	8	352	63	16	17	73	14
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		2		2			4		4
Permitted Phases	2		2		2	4		4	
Detector Phase	2	2	2	2	2	4	4	4	4
Switch Phase									
Minimum Initial (s)	20.0	20.0	20.0	20.0	20.0	16.0	16.0	16.0	16.0
Minimum Split (s)	30.6	30.6	30.6	30.6	30.6	30.6	30.6	30.6	30.6
Total Split (s)	46.6	46.6	46.6	46.6	46.6	36.6	36.6	36.6	36.6
Total Split (%)	56.0%	56.0%	56.0%	56.0%	56.0%	44.0%	44.0%	44.0%	44.0%
Yellow Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Min	C-Min	C-Min	C-Min	C-Min	None	None	None	None
Act Effct Green (s)	59.8	59.8	59.8	59.8	59.8	16.0	16.0	16.0	16.0
Actuated g/C Ratio	0.72	0.72	0.72	0.72	0.72	0.19	0.19	0.19	0.19
v/c Ratio	0.08	0.27	0.01	0.29	0.06	0.07	0.06	0.27	0.19
Control Delay	5.8	6.4	5.2	6.6	1.7	28.4	23.8	31.8	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.8	6.4	5.2	6.6	1.7	28.4	23.8	31.8	12.7
LOS	A	A	A	A	A	C	C	C	B
Approach Delay		6.3		5.8			25.7		22.7
Approach LOS		A		A			C		C

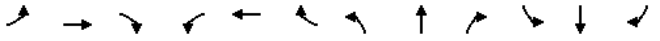
Intersection Summary			
Cycle Length: 83.2			
Actuated Cycle Length: 83.2			
Offset: 22.5 (27%), Referenced to phase 2:EBWB and 6:, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.29			
Intersection Signal Delay: 9.2		Intersection LOS: A	
Intersection Capacity Utilization 65.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Cataract Road/Main Street (RR 136) & Charleston Sideroad (RR 24)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	302	21	8	352	63	16	17	5	73	14	53
Future Volume (vph)	56	302	21	8	352	63	16	17	5	73	14	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.6		6.6	6.6	6.6	6.6	6.6		6.6	6.6	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.97		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1825	1696		1825	1731	1555	1706	1856		1825	1640	
Flt Permitted	0.55	1.00		0.56	1.00	1.00	0.71	1.00		0.74	1.00	
Satd. Flow (perm)	1050	1696		1080	1731	1555	1280	1856		1427	1640	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	57	308	21	8	359	64	16	17	5	74	14	54
RTOR Reduction (vph)	0	2	0	0	0	20	0	4	0	0	46	0
Lane Group Flow (vph)	57	327	0	8	359	44	16	18	0	74	22	0
Heavy Vehicles (%)	0%	13%	0%	0%	11%	5%	7%	0%	0%	0%	0%	4%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2		2	4			4		
Actuated Green, G (s)	57.2	57.2		57.2	57.2	57.2	12.8	12.8		12.8	12.8	
Effective Green, g (s)	57.2	57.2		57.2	57.2	57.2	12.8	12.8		12.8	12.8	
Actuated g/C Ratio	0.69	0.69		0.69	0.69	0.69	0.15	0.15		0.15	0.15	
Clearance Time (s)	6.6	6.6		6.6	6.6	6.6	6.6	6.6		6.6	6.6	
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)	721	1166		742	1190	1069	196	285		219	252	
v/s Ratio Prot		0.19			c0.21			0.01			0.01	
v/s Ratio Perm	0.05			0.01		0.03	0.01			c0.05		
v/c Ratio	0.08	0.28		0.01	0.30	0.04	0.08	0.06		0.34	0.09	
Uniform Delay, d1	4.3	5.0		4.1	5.1	4.2	30.2	30.1		31.4	30.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.6		0.0	0.7	0.1	0.2	0.1		0.9	0.2	
Delay (s)	4.5	5.6		4.1	5.8	4.3	30.3	30.2		32.3	30.3	
Level of Service	A	A		A	A	A	C	C		C	C	
Approach Delay (s)		5.5			5.5			30.2			31.4	
Approach LOS		A			A			C			C	

Intersection Summary					
HCM 2000 Control Delay	10.1	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.31				
Actuated Cycle Length (s)	83.2	Sum of lost time (s)		13.2	
Intersection Capacity Utilization	65.0%	ICU Level of Service		C	
Analysis Period (min)	15				
c Critical Lane Group					



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	340	4	9	405	10	10	16	25	14	8	9
Future Volume (Veh/h)	13	340	4	9	405	10	10	16	25	14	8	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	13	351	4	9	418	10	10	16	26	14	8	9
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	428			355			828	825	353	852	822	423
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	428			355			828	825	353	852	822	423
tC, single (s)	4.2			4.2			7.2	6.5	6.3	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.0	3.4	3.5	4.0	3.4
p0 queue free %	99			99			96	95	96	95	97	99
cM capacity (veh/h)	1100			1145			266	304	667	256	305	608

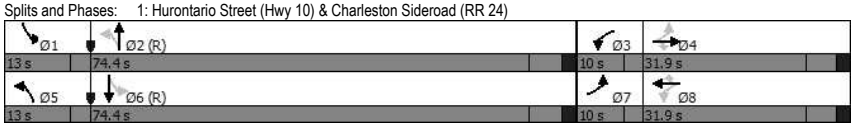
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	13	355	9	428	52	31
Volume Left	13	0	9	0	10	14
Volume Right	0	4	0	10	26	9
cSH	1100	1700	1145	1700	402	324
Volume to Capacity	0.01	0.21	0.01	0.25	0.13	0.10
Queue Length 95th (m)	0.3	0.0	0.2	0.0	3.3	2.4
Control Delay (s)	8.3	0.0	8.2	0.0	15.3	17.3
Lane LOS	A		A		C	C
Approach Delay (s)	0.3		0.2		15.3	17.3
Approach LOS					C	C

Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	32.1%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	130	323	115	119	224	53	248	1315	75	882
Future Volume (vph)	130	323	115	119	224	53	248	1315	75	882
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	7	4		3	8		5	2	1	6
Permitted Phases	4		4	8		8	2		6	
Detector Phase	7	4	4	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	10.0	45.9	45.9	10.0	45.9	45.9	10.0	44.4	10.0	44.4
Total Split (s)	10.0	31.9	31.9	10.0	31.9	31.9	13.0	74.4	13.0	74.4
Total Split (%)	7.7%	24.7%	24.7%	7.7%	24.7%	24.7%	10.1%	57.5%	10.1%	57.5%
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.0	5.0	3.0	5.0
All-Red Time (s)	0.0	2.4	2.4	0.0	2.4	2.4	0.0	2.4	0.0	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.0	0.0	-2.0
Total Lost Time (s)	3.0	6.9	6.9	3.0	6.9	6.9	3.0	5.4	3.0	5.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes				Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	35.5	24.6	24.6	35.5	24.6	24.6	83.9	73.5	79.8	69.5
Actuated g/C Ratio	0.27	0.19	0.19	0.27	0.19	0.19	0.65	0.57	0.62	0.54
v/c Ratio	0.51	0.94	0.31	0.73	0.65	0.15	0.76	0.77	0.41	0.53
Control Delay	42.9	86.2	11.9	60.5	57.8	3.5	25.3	25.5	16.0	20.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.9	86.2	11.9	60.5	57.8	3.5	25.3	25.5	16.0	20.5
LOS	D	F	B	E	E	A	C	C	B	C
Approach Delay		61.2			51.4			25.5		20.2
Approach LOS		E			D			C		C

Intersection Summary		
Cycle Length: 129.3		
Actuated Cycle Length: 129.3		
Offset: 85 (66%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 125		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.94		
Intersection Signal Delay: 32.2	Intersection LOS: C	
Intersection Capacity Utilization 89.7%	ICU Level of Service E	
Analysis Period (min) 15		

Splits and Phases: 1: Hurontario Street (Hwy 10) & Charleston Sideroad (RR 24)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	323	115	119	224	53	248	1315	173	75	882	88
Future Volume (vph)	130	323	115	119	224	53	248	1315	173	75	882	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.9	6.9	3.0	6.9	6.9	3.0	5.4		3.0	5.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00		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	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1883	1593	1825	1883	1607	1771	3509		1825	3518	
Flt Permitted	0.40	1.00	1.00	0.17	1.00	1.00	0.19	1.00		0.07	1.00	
Satd. Flow (perm)	755	1883	1593	326	1883	1607	358	3509		139	3518	
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)	135	336	120	124	233	55	258	1370	180	78	919	92
RTOR Reduction (vph)	0	0	89	0	0	45	0	7	0	0	6	0
Lane Group Flow (vph)	135	336	31	124	233	10	258	1543	0	78	1005	0
Confl. Peds. (#/hr)	4		3	3		4	9		5	5		9
Heavy Vehicles (%)	1%	2%	1%	0%	2%	0%	3%	2%	1%	0%	2%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	31.6	24.6	24.6	31.6	24.6	24.6	80.4	70.9		73.9	67.4	
Effective Green, g (s)	31.6	24.6	24.6	31.6	24.6	24.6	80.4	72.9		73.9	69.4	
Actuated g/C Ratio	0.24	0.19	0.19	0.24	0.19	0.19	0.62	0.56		0.57	0.54	
Clearance Time (s)	3.0	6.9	6.9	3.0	6.9	6.9	3.0	7.4		3.0	7.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.4		3.0	4.4	
Lane Grp Cap (vph)	241	358	303	160	358	305	331	1978		164	1888	
v/s Ratio Prot	0.03	c0.18		c0.04	0.12		c0.06	c0.44		0.02	0.29	
v/s Ratio Perm	0.11		0.02	0.15		0.01	0.42			0.25		
v/c Ratio	0.56	0.94	0.10	0.78	0.65	0.03	0.78	0.78		0.48	0.53	
Uniform Delay, d1	41.1	51.6	43.2	41.1	48.4	42.7	14.7	22.0		19.7	19.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.0	31.7	0.1	20.6	4.2	0.0	11.0	3.1		2.2	1.1	
Delay (s)	44.0	83.4	43.4	61.7	52.6	42.7	25.8	25.1		21.9	20.5	
Level of Service	D	F	D	E	D	D	C	C		C	C	
Approach Delay (s)		66.3			54.0			25.2			20.6	
Approach LOS		E			D			C			C	

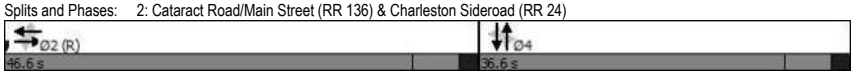
Intersection Summary				
HCM 2000 Control Delay	33.2	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.83			
Actuated Cycle Length (s)	129.3	Sum of lost time (s)	18.3	
Intersection Capacity Utilization	89.7%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	65	341	23	346	58	9	17	75	23
Future Volume (vph)	65	341	23	346	58	9	17	75	23
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		2		2			4		4
Permitted Phases	2		2		2	4		4	
Detector Phase	2	2	2	2	2	4	4	4	4
Switch Phase									
Minimum Initial (s)	20.0	20.0	20.0	20.0	20.0	16.0	16.0	16.0	16.0
Minimum Split (s)	30.6	30.6	30.6	30.6	30.6	30.6	30.6	30.6	30.6
Total Split (s)	46.6	46.6	46.6	46.6	46.6	36.6	36.6	36.6	36.6
Total Split (%)	56.0%	56.0%	56.0%	56.0%	56.0%	44.0%	44.0%	44.0%	44.0%
Yellow Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Min	C-Min	C-Min	C-Min	C-Min	None	None	None	None
Act Effct Green (s)	59.8	59.8	59.8	59.8	59.8	16.0	16.0	16.0	16.0
Actuated g/C Ratio	0.72	0.72	0.72	0.72	0.72	0.19	0.19	0.19	0.19
v/c Ratio	0.09	0.28	0.03	0.27	0.05	0.03	0.09	0.29	0.24
Control Delay	5.9	6.4	5.4	6.3	1.7	27.9	19.4	32.1	13.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.9	6.4	5.4	6.3	1.7	27.9	19.4	32.1	13.2
LOS	A	A	A	A	A	C	B	C	B
Approach Delay		6.3		5.7			21.2		22.0
Approach LOS		A		A			C		C

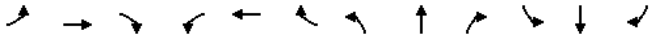
Intersection Summary			
Cycle Length: 83.2			
Actuated Cycle Length: 83.2			
Offset: 22.5 (27%), Referenced to phase 2:EBWB and 6:, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.29			
Intersection Signal Delay: 9.0		Intersection LOS: A	
Intersection Capacity Utilization 65.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Cataract Road/Main Street (RR 136) & Charleston Sideroad (RR 24)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	341	20	23	346	58	9	17	14	75	23	63
Future Volume (vph)	65	341	20	23	346	58	9	17	14	75	23	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.6		6.6	6.6	6.6	6.6	6.6		6.6	6.6	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.93		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1825	1870		1825	1883	1633	1825	1790		1825	1710	
Flt Permitted	0.55	1.00		0.54	1.00	1.00	0.70	1.00		0.74	1.00	
Satd. Flow (perm)	1049	1870		1029	1883	1633	1342	1790		1413	1710	
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)	68	355	21	24	360	60	9	18	15	78	24	66
RTOR Reduction (vph)	0	2	0	0	0	19	0	13	0	0	56	0
Lane Group Flow (vph)	68	374	0	24	360	41	9	20	0	78	34	0
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2		2	4			4		
Actuated Green, G (s)	57.2	57.2		57.2	57.2	57.2	12.8	12.8		12.8	12.8	
Effective Green, g (s)	57.2	57.2		57.2	57.2	57.2	12.8	12.8		12.8	12.8	
Actuated g/C Ratio	0.69	0.69		0.69	0.69	0.69	0.15	0.15		0.15	0.15	
Clearance Time (s)	6.6	6.6		6.6	6.6	6.6	6.6	6.6		6.6	6.6	
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)	721	1285		707	1294	1122	206	275		217	263	
v/s Ratio Prot		c0.20			0.19			0.01			0.02	
v/s Ratio Perm	0.06			0.02		0.03	0.01			c0.06		
v/c Ratio	0.09	0.29		0.03	0.28	0.04	0.04	0.07		0.36	0.13	
Uniform Delay, d1	4.3	5.1		4.2	5.0	4.2	30.0	30.1		31.5	30.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.6		0.1	0.5	0.1	0.1	0.1		1.0	0.2	
Delay (s)	4.6	5.7		4.2	5.6	4.2	30.1	30.2		32.5	30.6	
Level of Service	A	A		A	A	A	C	C		C	C	
Approach Delay (s)		5.5			5.3			30.2			31.5	
Approach LOS		A			A			C			C	

Intersection Summary					
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.30				
Actuated Cycle Length (s)	83.2	Sum of lost time (s)		13.2	
Intersection Capacity Utilization	65.7%	ICU Level of Service		C	
Analysis Period (min)	15				
c Critical Lane Group					



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	368	14	15	391	6	13	16	40	9	11	16
Future Volume (Veh/h)	21	368	14	15	391	6	13	16	40	9	11	16
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)	22	391	15	16	416	6	14	17	43	10	12	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	422			406			914	896	398	938	901	419
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	422			406			914	896	398	938	901	419
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 %	98			99			94	94	93	95	96	97
cM capacity (veh/h)	1148			1164			235	272	656	214	271	638

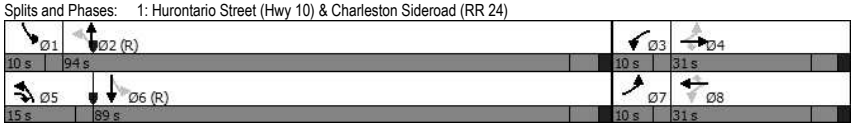
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	22	406	16	422	74	39
Volume Left	22	0	16	0	14	10
Volume Right	0	15	0	6	43	17
cSH	1148	1700	1164	1700	395	332
Volume to Capacity	0.02	0.24	0.01	0.25	0.19	0.12
Queue Length 95th (m)	0.4	0.0	0.3	0.0	5.2	3.0
Control Delay (s)	8.2	0.0	8.1	0.0	16.2	17.3
Lane LOS	A		A		C	C
Approach Delay (s)	0.4		0.3		16.2	17.3
Approach LOS					C	C

Intersection Summary				
Average Delay	2.2			
Intersection Capacity Utilization	32.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	77	193	315	192	151	22	99	755	31	2169
Future Volume (vph)	77	193	315	192	151	22	99	755	31	2169
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	5	3	8		5	2	1	6
Permitted Phases	4		4	8		8	2		6	
Detector Phase	7	4	5	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	7.0	10.0	7.0	7.0	10.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	10.0	30.9	10.0	10.0	30.9	30.9	10.0	30.4	10.0	30.4
Total Split (s)	10.0	31.0	15.0	10.0	31.0	31.0	15.0	94.0	10.0	89.0
Total Split (%)	6.9%	21.4%	10.3%	6.9%	21.4%	21.4%	10.3%	64.8%	6.9%	61.4%
Yellow Time (s)	3.0	4.5	3.0	3.0	4.5	4.5	3.0	5.0	3.0	5.0
All-Red Time (s)	0.0	2.4	0.0	0.0	2.4	2.4	0.0	2.4	0.0	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.0	0.0	-2.0
Total Lost Time (s)	3.0	6.9	3.0	3.0	6.9	6.9	3.0	5.4	3.0	5.4
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes		Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	32.3	21.4	37.9	32.3	21.4	21.4	103.6	95.3	98.1	88.7
Actuated g/C Ratio	0.22	0.15	0.26	0.22	0.15	0.15	0.71	0.66	0.68	0.61
v/c Ratio	0.32	0.83	0.70	0.89	0.60	0.08	0.64	0.38	0.08	0.97
Control Delay	46.4	87.6	48.0	88.8	67.8	0.5	44.0	12.7	7.4	39.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.4	87.6	48.0	88.8	67.8	0.5	44.0	12.7	7.4	39.8
LOS	D	F	D	F	E	A	D	B	A	D
Approach Delay		60.8			74.8			16.1		39.3
Approach LOS		E			E			B		D

Intersection Summary		
Cycle Length: 145		
Actuated Cycle Length: 145		
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 135		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.97		
Intersection Signal Delay: 40.4	Intersection LOS: D	
Intersection Capacity Utilization 101.9%	ICU Level of Service G	
Analysis Period (min) 15		

Splits and Phases: 1: Hurontario Street (Hwy 10) & Charleston Sideroad (RR 24)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	193	315	192	151	22	99	755	56	31	2169	46
Future Volume (vph)	77	193	315	192	151	22	99	755	56	31	2169	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	2000	2000	1900	1900	2000	1900
Total Lost time (s)	3.0	6.9	3.0	3.0	6.9	6.9	3.0	5.4		3.0	5.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00		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	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1689	1575	1555	1772	1700	1365	1614	3264		1483	3745	
Flt Permitted	0.52	1.00	1.00	0.40	1.00	1.00	0.04	1.00		0.33	1.00	
Satd. Flow (perm)	932	1575	1555	746	1700	1365	76	3264		508	3745	
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)	77	193	315	192	151	22	99	755	56	31	2169	46
RTOR Reduction (vph)	0	0	44	0	0	19	0	4	0	0	1	0
Lane Group Flow (vph)	77	193	271	192	151	3	99	807	0	31	2214	0
Confl. Peds. (#/hr)	1					1			3	3		
Heavy Vehicles (%)	8%	22%	5%	3%	13%	18%	19%	16%	20%	23%	2%	15%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	28.4	21.4	31.0	28.4	21.4	21.4	99.3	92.1		90.9	86.7	
Effective Green, g (s)	28.4	21.4	31.0	28.4	21.4	21.4	99.3	94.1		90.9	88.7	
Actuated g/C Ratio	0.20	0.15	0.21	0.20	0.15	0.15	0.68	0.65		0.63	0.61	
Clearance Time (s)	3.0	6.9	3.0	3.0	6.9	6.9	3.0	7.4		3.0	7.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.4		3.0	4.4	
Lane Grp Cap (vph)	219	232	332	195	250	201	153	2118		346	2290	
v/s Ratio Prot	0.02	0.12	c0.05	c0.05	0.09		0.04	0.25		0.00	c0.59	
v/s Ratio Perm	0.05		0.12	c0.14		0.00	0.40			0.05		
v/c Ratio	0.35	0.83	0.82	0.98	0.60	0.02	0.65	0.38		0.09	0.97	
Uniform Delay, d1	49.2	60.1	54.3	57.6	57.8	52.8	41.6	11.9		10.4	26.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	21.7	14.3	59.6	4.1	0.0	9.1	0.5		0.1	12.5	
Delay (s)	50.2	81.8	68.6	117.1	61.9	52.8	50.7	12.4		10.5	39.2	
Level of Service	D	F	E	F	E	D	D	B		B	D	
Approach Delay (s)		70.5			90.4			16.6			38.8	
Approach LOS		E			F			B			D	

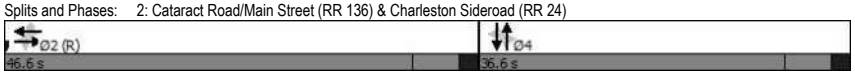
Intersection Summary					
HCM 2000 Control Delay	43.0	HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio	0.96				
Actuated Cycle Length (s)	145.0	Sum of lost time (s)		18.3	
Intersection Capacity Utilization	101.9%	ICU Level of Service		G	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	36	301	2	243	34	11	6	38	7
Future Volume (vph)	36	301	2	243	34	11	6	38	7
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		2		2			4		4
Permitted Phases	2		2		2	4		4	
Detector Phase	2	2	2	2	2	4	4	4	4
Switch Phase									
Minimum Initial (s)	20.0	20.0	20.0	20.0	20.0	16.0	16.0	16.0	16.0
Minimum Split (s)	30.6	30.6	30.6	30.6	30.6	30.6	30.6	30.6	30.6
Total Split (s)	46.6	46.6	46.6	46.6	46.6	36.6	36.6	36.6	36.6
Total Split (%)	56.0%	56.0%	56.0%	56.0%	56.0%	44.0%	44.0%	44.0%	44.0%
Yellow Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Min	C-Min	C-Min	C-Min	C-Min	None	None	None	None
Act Effct Green (s)	65.7	65.7	65.7	65.7	65.7	16.0	16.0	16.0	16.0
Actuated g/C Ratio	0.79	0.79	0.79	0.79	0.79	0.19	0.19	0.19	0.19
v/c Ratio	0.04	0.23	0.00	0.20	0.03	0.04	0.03	0.14	0.10
Control Delay	5.1	5.2	5.0	5.2	1.3	28.0	22.0	29.5	14.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.1	5.2	5.0	5.2	1.3	28.0	22.0	29.5	14.6
LOS	A	A	A	A	A	C	C	C	B
Approach Delay		5.2		4.7			25.0		22.8
Approach LOS		A		A			C		C

Intersection Summary			
Cycle Length: 83.2			
Actuated Cycle Length: 83.2			
Offset: 22.5 (27%), Referenced to phase 2:EBWB and 6:, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.23			
Intersection Signal Delay: 7.3		Intersection LOS: A	
Intersection Capacity Utilization 63.2%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Cataract Road/Main Street (RR 136) & Charleston Sideroad (RR 24)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	301	12	2	243	34	11	6	5	38	7	24
Future Volume (vph)	36	301	12	2	243	34	11	6	5	38	7	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.6		6.6	6.6	6.6	6.6	6.6		6.6	6.6	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.93		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1772	1743		1825	1588	1633	1825	1790		1825	1632	
Flt Permitted	0.60	1.00		0.57	1.00	1.00	0.74	1.00		0.75	1.00	
Satd. Flow (perm)	1126	1743		1086	1588	1633	1415	1790		1442	1632	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	37	310	12	2	251	35	11	6	5	39	7	25
RTOR Reduction (vph)	0	1	0	0	0	10	0	4	0	0	22	0
Lane Group Flow (vph)	37	321	0	2	251	25	11	7	0	39	10	0
Heavy Vehicles (%)	3%	10%	0%	0%	21%	0%	0%	0%	0%	0%	0%	5%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2		2	4			4		
Actuated Green, G (s)	60.4	60.4		60.4	60.4	60.4	9.6	9.6		9.6	9.6	
Effective Green, g (s)	60.4	60.4		60.4	60.4	60.4	9.6	9.6		9.6	9.6	
Actuated g/C Ratio	0.73	0.73		0.73	0.73	0.73	0.12	0.12		0.12	0.12	
Clearance Time (s)	6.6	6.6		6.6	6.6	6.6	6.6	6.6		6.6	6.6	
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)	817	1265		788	1152	1185	163	206		166	188	
v/s Ratio Prot		c0.18			0.16			0.00			0.01	
v/s Ratio Perm	0.03			0.00		0.02	0.01			c0.03		
v/c Ratio	0.05	0.25		0.00	0.22	0.02	0.07	0.03		0.23	0.05	
Uniform Delay, d1	3.2	3.8		3.1	3.7	3.2	32.8	32.7		33.5	32.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.5		0.0	0.4	0.0	0.2	0.1		0.7	0.1	
Delay (s)	3.3	4.3		3.1	4.1	3.2	33.0	32.7		34.2	32.9	
Level of Service	A	A		A	A	A	C	C		C	C	
Approach Delay (s)		4.2			4.0			32.9			33.6	
Approach LOS		A			A			C			C	

Intersection Summary					
HCM 2000 Control Delay	7.8	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.25				
Actuated Cycle Length (s)	83.2	Sum of lost time (s)		13.2	
Intersection Capacity Utilization	63.2%	ICU Level of Service		B	
Analysis Period (min)	15				
c Critical Lane Group					

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	326	5	27	245	11	9	3	21	11	10	13
Future Volume (Veh/h)	3	326	5	27	245	11	9	3	21	11	10	13
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	3	343	5	28	258	12	9	3	22	12	11	14
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	270			348			685	678	346	692	674	264
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	270			348			685	678	346	692	674	264
tC, single (s)	4.1			4.9			7.2	6.5	6.9	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.9			3.6	4.0	3.9	3.5	4.0	3.3
p0 queue free %	100			97			97	99	96	96	97	98
cM capacity (veh/h)	1305			894			325	364	575	336	366	780

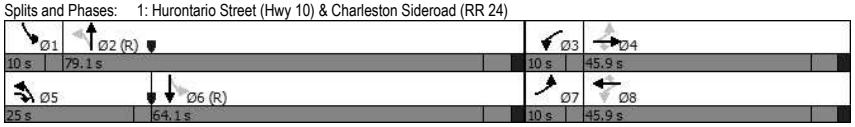
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	3	348	28	270	34	37
Volume Left	3	0	28	0	9	12
Volume Right	0	5	0	12	22	14
cSH	1305	1700	894	1700	459	442
Volume to Capacity	0.00	0.20	0.03	0.16	0.07	0.08
Queue Length 95th (m)	0.1	0.0	0.7	0.0	1.8	2.1
Control Delay (s)	7.8	0.0	9.2	0.0	13.5	13.9
Lane LOS	A		A		B	B
Approach Delay (s)	0.1		0.9		13.5	13.9
Approach LOS					B	B

Intersection Summary					
Average Delay	1.7				
Intersection Capacity Utilization	32.4%	ICU Level of Service		A	
Analysis Period (min)	15				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	113	244	96	68	246	96	221	2086	51	1034
Future Volume (vph)	113	244	96	68	246	96	221	2086	51	1034
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	5	3	8		5	2	1	6
Permitted Phases	4		4	8		8	2		6	
Detector Phase	7	4	5	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	7.0	10.0	7.0	7.0	10.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	10.0	30.9	10.0	10.0	30.9	30.9	10.0	30.4	10.0	30.4
Total Split (s)	10.0	45.9	25.0	10.0	45.9	45.9	25.0	79.1	10.0	64.1
Total Split (%)	6.9%	31.7%	17.2%	6.9%	31.7%	31.7%	17.2%	54.6%	6.9%	44.2%
Yellow Time (s)	3.0	4.5	3.0	3.0	4.5	4.5	3.0	5.0	3.0	5.0
All-Red Time (s)	0.0	2.4	0.0	0.0	2.4	2.4	0.0	2.4	0.0	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.0	0.0	-2.0
Total Lost Time (s)	3.0	6.9	3.0	3.0	6.9	6.9	3.0	5.4	3.0	5.4
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes		Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	37.8	28.3	47.0	37.2	26.3	26.3	98.8	87.8	88.6	78.6
Actuated g/C Ratio	0.26	0.20	0.32	0.26	0.18	0.18	0.68	0.61	0.61	0.54
v/c Ratio	0.54	0.74	0.17	0.31	0.77	0.27	0.60	0.98	0.38	0.59
Control Delay	49.7	69.1	5.3	41.5	72.1	9.1	16.5	43.1	25.1	25.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.7	69.1	5.3	41.5	72.1	9.1	16.5	43.1	25.1	25.9
LOS	D	E	A	D	E	A	B	D	C	C
Approach Delay		50.7			52.3			40.7		25.9
Approach LOS		D			D			D		C

Intersection Summary		
Cycle Length: 145		
Actuated Cycle Length: 145		
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 135		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.98		
Intersection Signal Delay: 38.9	Intersection LOS: D	
Intersection Capacity Utilization 101.6%	ICU Level of Service G	
Analysis Period (min) 15		

Splits and Phases: 1: Hurontario Street (Hwy 10) & Charleston Sideroad (RR 24)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	113	244	96	68	246	96	221	2086	125	51	1034	81
Future Volume (vph)	113	244	96	68	246	96	221	2086	125	51	1034	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	2000	2000	1900	1900	2000	1900
Total Lost time (s)	3.0	6.9	3.0	3.0	6.9	6.9	3.0	5.4		3.0	5.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00		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	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1753	1685	1532	1656	1762	1537	1865	3727		1601	3483	
Flt Permitted	0.32	1.00	1.00	0.38	1.00	1.00	0.16	1.00		0.05	1.00	
Satd. Flow (perm)	597	1685	1532	665	1762	1537	311	3727		89	3483	
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)	113	244	96	68	246	96	221	2086	125	51	1034	81
RTOR Reduction (vph)	0	0	67	0	0	78	0	2	0	0	3	0
Lane Group Flow (vph)	113	244	29	68	246	18	221	2209	0	51	1112	0
Confl. Peds. (#/hr)	5		6	6		5	7		5	5		7
Heavy Vehicles (%)	4%	14%	5%	10%	9%	4%	3%	2%	2%	14%	9%	6%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	35.3	28.3	43.2	32.5	26.9	26.9	93.8	84.6		82.1	75.9	
Effective Green, g (s)	35.3	28.3	43.2	32.5	26.9	26.9	93.8	86.6		82.1	77.9	
Actuated g/C Ratio	0.24	0.20	0.30	0.22	0.19	0.19	0.65	0.60		0.57	0.54	
Clearance Time (s)	3.0	6.9	3.0	3.0	6.9	6.9	3.0	7.4		3.0	7.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.4		3.0	4.4	
Lane Grp Cap (vph)	201	328	456	187	326	285	360	2225		115	1871	
v/s Ratio Prot	c0.03	c0.14	0.01	0.01	0.14		c0.06	c0.59		0.02	0.32	
v/s Ratio Perm	0.11		0.01	0.07		0.01	0.33			0.23		
v/c Ratio	0.56	0.74	0.06	0.36	0.75	0.06	0.61	0.99		0.44	0.59	
Uniform Delay, d1	45.9	54.9	36.4	45.9	55.9	48.7	15.8	28.9		32.5	22.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.6	8.8	0.1	1.2	9.5	0.1	3.1	17.4		2.7	1.4	
Delay (s)	49.4	63.8	36.5	47.1	65.5	48.8	18.9	46.3		35.2	24.2	
Level of Service	D	E	D	D	E	D	B	D		D	C	
Approach Delay (s)		54.4			58.5			43.8			24.7	
Approach LOS		D			E			D			C	

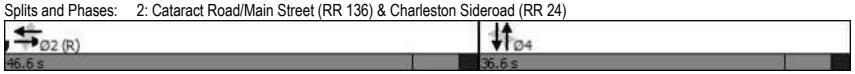
Intersection Summary			
HCM 2000 Control Delay	41.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	18.3
Intersection Capacity Utilization	101.6%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	56	318	8	371	63	16	18	73	15
Future Volume (vph)	56	318	8	371	63	16	18	73	15
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		2		2			4		4
Permitted Phases	2		2		2	4		4	
Detector Phase	2	2	2	2	2	4	4	4	4
Switch Phase									
Minimum Initial (s)	20.0	20.0	20.0	20.0	20.0	16.0	16.0	16.0	16.0
Minimum Split (s)	30.6	30.6	30.6	30.6	30.6	30.6	30.6	30.6	30.6
Total Split (s)	46.6	46.6	46.6	46.6	46.6	36.6	36.6	36.6	36.6
Total Split (%)	56.0%	56.0%	56.0%	56.0%	56.0%	44.0%	44.0%	44.0%	44.0%
Yellow Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Min	C-Min	C-Min	C-Min	C-Min	None	None	None	None
Act Effct Green (s)	59.8	59.8	59.8	59.8	59.8	16.0	16.0	16.0	16.0
Actuated g/C Ratio	0.72	0.72	0.72	0.72	0.72	0.19	0.19	0.19	0.19
v/c Ratio	0.08	0.28	0.01	0.30	0.06	0.07	0.06	0.27	0.19
Control Delay	5.8	6.5	5.2	6.7	1.7	28.4	23.9	31.8	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.8	6.5	5.2	6.7	1.7	28.4	23.9	31.8	13.0
LOS	A	A	A	A	A	C	C	C	B
Approach Delay		6.4		6.0			25.8		22.7
Approach LOS		A		A			C		C

Intersection Summary			
Cycle Length: 83.2			
Actuated Cycle Length: 83.2			
Offset: 22.5 (27%), Referenced to phase 2:EBWB and 6:, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.30			
Intersection Signal Delay: 9.2		Intersection LOS: A	
Intersection Capacity Utilization 66.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Cataract Road/Main Street (RR 136) & Charleston Sideroad (RR 24)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	318	21	8	371	63	16	18	5	73	15	53
Future Volume (vph)	56	318	21	8	371	63	16	18	5	73	15	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.6		6.6	6.6	6.6	6.6	6.6		6.6	6.6	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.97		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1825	1696		1825	1731	1555	1706	1858		1825	1644	
Flt Permitted	0.53	1.00		0.55	1.00	1.00	0.71	1.00		0.74	1.00	
Satd. Flow (perm)	1025	1696		1064	1731	1555	1278	1858		1426	1644	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	57	324	21	8	379	64	16	18	5	74	15	54
RTOR Reduction (vph)	0	2	0	0	0	20	0	4	0	0	46	0
Lane Group Flow (vph)	57	343	0	8	379	44	16	19	0	74	23	0
Heavy Vehicles (%)	0%	13%	0%	0%	11%	5%	7%	0%	0%	0%	0%	4%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2		2	4			4		
Actuated Green, G (s)	57.2	57.2		57.2	57.2	57.2	12.8	12.8		12.8	12.8	
Effective Green, g (s)	57.2	57.2		57.2	57.2	57.2	12.8	12.8		12.8	12.8	
Actuated g/C Ratio	0.69	0.69		0.69	0.69	0.69	0.15	0.15		0.15	0.15	
Clearance Time (s)	6.6	6.6		6.6	6.6	6.6	6.6	6.6		6.6	6.6	
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)	704	1166		731	1190	1069	196	285		219	252	
v/s Ratio Prot		0.20			c0.22			0.01			0.01	
v/s Ratio Perm	0.06			0.01		0.03	0.01			c0.05		
v/c Ratio	0.08	0.29		0.01	0.32	0.04	0.08	0.07		0.34	0.09	
Uniform Delay, d1	4.3	5.1		4.1	5.2	4.2	30.2	30.1		31.4	30.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.6		0.0	0.7	0.1	0.2	0.1		0.9	0.2	
Delay (s)	4.5	5.7		4.1	5.9	4.3	30.3	30.2		32.3	30.4	
Level of Service	A	A		A	A	A	C	C		C	C	
Approach Delay (s)		5.6			5.6			30.3			31.4	
Approach LOS		A			A			C			C	

Intersection Summary					
HCM 2000 Control Delay	10.1	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.32				
Actuated Cycle Length (s)	83.2	Sum of lost time (s)		13.2	
Intersection Capacity Utilization	66.0%	ICU Level of Service		C	
Analysis Period (min)	15				
c Critical Lane Group					

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	358	4	9	426	10	10	20	25	14	10	9
Future Volume (Veh/h)	13	358	4	9	426	10	10	20	25	14	10	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	13	369	4	9	439	10	10	21	26	14	10	9
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	449			373			868	864	371	894	861	444
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	449			373			868	864	371	894	861	444
tC, single (s)	4.2			4.2			7.2	6.5	6.3	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.0	3.4	3.5	4.0	3.4
p0 queue free %	99			99			96	93	96	94	97	98
cM capacity (veh/h)	1080			1128			248	288	651	236	290	591

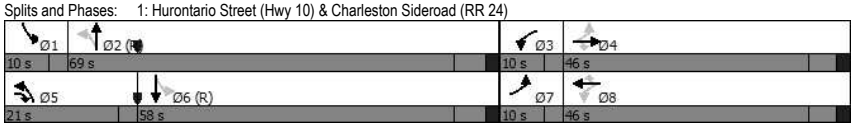
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	13	373	9	449	57	33
Volume Left	13	0	9	0	10	14
Volume Right	0	4	0	10	26	9
cSH	1080	1700	1128	1700	372	302
Volume to Capacity	0.01	0.22	0.01	0.26	0.15	0.11
Queue Length 95th (m)	0.3	0.0	0.2	0.0	4.1	2.8
Control Delay (s)	8.4	0.0	8.2	0.0	16.4	18.4
Lane LOS	A		A		C	C
Approach Delay (s)	0.3		0.2		16.4	18.4
Approach LOS					C	C

Intersection Summary				
Average Delay	1.8			
Intersection Capacity Utilization	33.4%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	130	340	115	119	236	53	248	1603	75	1076
Future Volume (vph)	130	340	115	119	236	53	248	1603	75	1076
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	5	3	8		5	2	1	6
Permitted Phases	4		4	8		8	2		6	
Detector Phase	7	4	5	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	7.0	10.0	7.0	7.0	10.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	10.0	30.9	10.0	10.0	30.9	30.9	10.0	30.4	10.0	30.4
Total Split (s)	10.0	46.0	21.0	10.0	46.0	46.0	21.0	69.0	10.0	58.0
Total Split (%)	7.4%	34.1%	15.6%	7.4%	34.1%	34.1%	15.6%	51.1%	7.4%	43.0%
Yellow Time (s)	3.0	4.5	3.0	3.0	4.5	4.5	3.0	5.0	3.0	5.0
All-Red Time (s)	0.0	2.4	0.0	0.0	2.4	2.4	0.0	2.4	0.0	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.0	0.0	-2.0
Total Lost Time (s)	3.0	6.9	3.0	3.0	6.9	6.9	3.0	5.4	3.0	5.4
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes		Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	40.6	29.7	50.3	40.6	29.7	29.7	85.4	74.4	73.4	63.3
Actuated g/C Ratio	0.30	0.22	0.37	0.30	0.22	0.22	0.63	0.55	0.54	0.47
v/c Ratio	0.44	0.82	0.18	0.59	0.57	0.12	0.73	0.87	0.46	0.67
Control Delay	37.5	66.1	11.6	44.7	51.7	0.6	32.3	33.3	26.9	31.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.5	66.1	11.6	44.7	51.7	0.6	32.3	33.3	26.9	31.7
LOS	D	E	B	D	D	A	C	C	C	C
Approach Delay		49.1			43.0			33.2		31.4
Approach LOS		D			D			C		C

Intersection Summary		
Cycle Length: 135		
Actuated Cycle Length: 135		
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 105		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.87		
Intersection Signal Delay: 35.8	Intersection LOS: D	
Intersection Capacity Utilization 94.8%	ICU Level of Service F	
Analysis Period (min) 15		

Splits and Phases: 1: Hurontario Street (Hwy 10) & Charleston Sideroad (RR 24)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	340	115	119	236	53	248	1603	173	75	1076	88
Future Volume (vph)	130	340	115	119	236	53	248	1603	173	75	1076	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	2000	2000	1900	1900	2000	1900
Total Lost time (s)	3.0	6.9	3.0	3.0	6.9	6.9	3.0	5.4		3.0	5.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00		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	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1804	1883	1599	1824	1883	1603	1865	3703		1825	3711	
Flt Permitted	0.43	1.00	1.00	0.23	1.00	1.00	0.11	1.00		0.07	1.00	
Satd. Flow (perm)	810	1883	1599	434	1883	1603	221	3703		125	3711	
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)	130	340	115	119	236	53	248	1603	173	75	1076	88
RTOR Reduction (vph)	0	0	40	0	0	41	0	5	0	0	4	0
Lane Group Flow (vph)	130	340	75	119	236	12	248	1771	0	75	1160	0
Confl. Peds. (#/hr)	4		3	3		4	9		5	5		9
Heavy Vehicles (%)	1%	2%	1%	0%	2%	0%	3%	2%	1%	0%	2%	2%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	36.7	29.7	46.4	36.7	29.7	29.7	81.0	71.8		67.5	61.3	
Effective Green, g (s)	36.7	29.7	46.4	36.7	29.7	29.7	81.0	73.8		67.5	63.3	
Actuated g/C Ratio	0.27	0.22	0.34	0.27	0.22	0.22	0.60	0.55		0.50	0.47	
Clearance Time (s)	3.0	6.9	3.0	3.0	6.9	6.9	3.0	7.4		3.0	7.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.4		3.0	4.4	
Lane Grp Cap (vph)	271	414	549	190	414	352	335	2024		140	1740	
v/s Ratio Prot	0.02	c0.18	0.02	c0.03	0.13		c0.09	c0.48		0.02	0.31	
v/s Ratio Perm	0.11		0.03	0.14		0.01	0.35			0.24		
v/c Ratio	0.48	0.82	0.14	0.63	0.57	0.03	0.74	0.88		0.54	0.67	
Uniform Delay, d1	39.5	50.1	30.5	39.6	47.0	41.4	24.8	26.6		28.1	27.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.3	12.3	0.1	6.3	1.9	0.0	8.5	5.7		3.9	2.0	
Delay (s)	40.9	62.5	30.6	45.9	48.9	41.4	33.3	32.2		32.0	29.7	
Level of Service	D	E	C	D	D	D	C	C		C	C	
Approach Delay (s)		51.4			47.0			32.4			29.9	
Approach LOS		D			D			C			C	

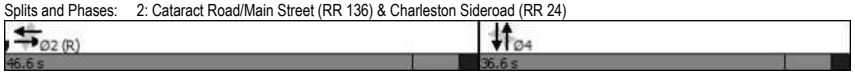
Intersection Summary				
HCM 2000 Control Delay	35.7	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.85			
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	18.3	
Intersection Capacity Utilization	94.8%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	65	359	23	364	58	9	18	75	25
Future Volume (vph)	65	359	23	364	58	9	18	75	25
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		2		2			4		4
Permitted Phases	2		2		2	4		4	
Detector Phase	2	2	2	2	2	4	4	4	4
Switch Phase									
Minimum Initial (s)	20.0	20.0	20.0	20.0	20.0	16.0	16.0	16.0	16.0
Minimum Split (s)	30.6	30.6	30.6	30.6	30.6	30.6	30.6	30.6	30.6
Total Split (s)	46.6	46.6	46.6	46.6	46.6	36.6	36.6	36.6	36.6
Total Split (%)	56.0%	56.0%	56.0%	56.0%	56.0%	44.0%	44.0%	44.0%	44.0%
Yellow Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Min	C-Min	C-Min	C-Min	C-Min	None	None	None	None
Act Effct Green (s)	59.8	59.8	59.8	59.8	59.8	16.0	16.0	16.0	16.0
Actuated g/C Ratio	0.72	0.72	0.72	0.72	0.72	0.19	0.19	0.19	0.19
v/c Ratio	0.09	0.29	0.03	0.28	0.05	0.04	0.10	0.29	0.24
Control Delay	5.9	6.5	5.5	6.4	1.7	27.9	19.5	32.1	13.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.9	6.5	5.5	6.4	1.7	27.9	19.5	32.1	13.4
LOS	A	A	A	A	A	C	B	C	B
Approach Delay		6.4		5.8			21.3		22.0
Approach LOS		A		A			C		C

Intersection Summary			
Cycle Length: 83.2			
Actuated Cycle Length: 83.2			
Offset: 22.5 (27%), Referenced to phase 2:EBWB and 6:, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.29			
Intersection Signal Delay: 9.0		Intersection LOS: A	
Intersection Capacity Utilization 66.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Cataract Road/Main Street (RR 136) & Charleston Sideroad (RR 24)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	359	20	23	364	58	9	18	14	75	25	63
Future Volume (vph)	65	359	20	23	364	58	9	18	14	75	25	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.6		6.6	6.6	6.6	6.6	6.6		6.6	6.6	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.93		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1825	1870		1825	1883	1633	1825	1794		1825	1714	
Flt Permitted	0.53	1.00		0.52	1.00	1.00	0.70	1.00		0.73	1.00	
Satd. Flow (perm)	1025	1870		1003	1883	1633	1340	1794		1412	1714	
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)	68	374	21	24	379	60	9	19	15	78	26	66
RTOR Reduction (vph)	0	2	0	0	0	19	0	13	0	0	56	0
Lane Group Flow (vph)	68	393	0	24	379	41	9	21	0	78	36	0
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2		2	4			4		
Actuated Green, G (s)	57.2	57.2		57.2	57.2	57.2	12.8	12.8		12.8	12.8	
Effective Green, g (s)	57.2	57.2		57.2	57.2	57.2	12.8	12.8		12.8	12.8	
Actuated g/C Ratio	0.69	0.69		0.69	0.69	0.69	0.15	0.15		0.15	0.15	
Clearance Time (s)	6.6	6.6		6.6	6.6	6.6	6.6	6.6		6.6	6.6	
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)	704	1285		689	1294	1122	206	276		217	263	
v/s Ratio Prot		c0.21			0.20			0.01			0.02	
v/s Ratio Perm	0.07			0.02		0.03	0.01			c0.06		
v/c Ratio	0.10	0.31		0.03	0.29	0.04	0.04	0.08		0.36	0.14	
Uniform Delay, d1	4.4	5.1		4.2	5.1	4.2	30.0	30.1		31.5	30.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.6		0.1	0.6	0.1	0.1	0.1		1.0	0.2	
Delay (s)	4.6	5.8		4.3	5.7	4.2	30.1	30.3		32.5	30.7	
Level of Service	A	A		A	A	A	C	C		C	C	
Approach Delay (s)		5.6			5.4			30.2			31.5	
Approach LOS		A			A			C			C	

Intersection Summary					
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.32				
Actuated Cycle Length (s)	83.2	Sum of lost time (s)		13.2	
Intersection Capacity Utilization	66.6%	ICU Level of Service		C	
Analysis Period (min)	15				
c Critical Lane Group					

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	387	14	15	411	6	13	20	40	9	14	16
Future Volume (Veh/h)	21	387	14	15	411	6	13	20	40	9	14	16
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)	22	412	15	16	437	6	14	21	43	10	15	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	443			427			957	938	420	982	943	440
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	443			427			957	938	420	982	943	440
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 %	98			99			94	92	93	95	94	97
cM capacity (veh/h)	1128			1143			217	257	638	196	256	621

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	22	427	16	443	78	42
Volume Left	22	0	16	0	14	10
Volume Right	0	15	0	6	43	17
cSH	1128	1700	1143	1700	365	307
Volume to Capacity	0.02	0.25	0.01	0.26	0.21	0.14
Queue Length 95th (m)	0.5	0.0	0.3	0.0	6.1	3.6
Control Delay (s)	8.3	0.0	8.2	0.0	17.5	18.6
Lane LOS	A		A		C	C
Approach Delay (s)	0.4		0.3		17.5	18.6
Approach LOS					C	C

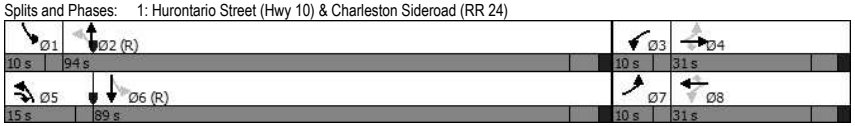
Intersection Summary					
Average Delay	2.4				
Intersection Capacity Utilization	33.9%	ICU Level of Service		A	
Analysis Period (min)	15				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	83	193	361	192	151	22	132	755	31	2169
Future Volume (vph)	83	193	361	192	151	22	132	755	31	2169
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	5	3	8		5	2	1	6
Permitted Phases	4		4	8		8	2		6	
Detector Phase	7	4	5	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	7.0	10.0	7.0	7.0	10.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	10.0	30.9	10.0	10.0	30.9	30.9	10.0	30.4	10.0	30.4
Total Split (s)	10.0	31.0	15.0	10.0	31.0	31.0	15.0	94.0	10.0	89.0
Total Split (%)	6.9%	21.4%	10.3%	6.9%	21.4%	21.4%	10.3%	64.8%	6.9%	61.4%
Yellow Time (s)	3.0	4.5	3.0	3.0	4.5	4.5	3.0	5.0	3.0	5.0
All-Red Time (s)	0.0	2.4	0.0	0.0	2.4	2.4	0.0	2.4	0.0	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.0	0.0	-2.0
Total Lost Time (s)	3.0	6.9	3.0	3.0	6.9	6.9	3.0	5.4	3.0	5.4
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes		Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	C-Max

Intersection Summary

Cycle Length: 145
Actuated Cycle Length: 145
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated

Splits and Phases: 1: Hurontario Street (Hwy 10) & Charleston Sideroad (RR 24)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	193	361	192	151	22	132	755	56	31	2169	52
Future Volume (vph)	83	193	361	192	151	22	132	755	56	31	2169	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	2000	2000	1900	1900	2000	1900
Total Lost time (s)	3.0	6.9	3.0	3.0	6.9	6.9	3.0	5.4		3.0	5.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00		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	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1658	1575	1408	1772	1700	1365	1423	3264		1483	3741	
Flt Permitted	0.52	1.00	1.00	0.40	1.00	1.00	0.05	1.00		0.33	1.00	
Satd. Flow (perm)	915	1575	1408	746	1700	1365	68	3264		520	3741	
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)	83	193	361	192	151	22	132	755	56	31	2169	52
RTOR Reduction (vph)	0	0	43	0	0	19	0	4	0	0	1	0
Lane Group Flow (vph)	83	193	318	192	151	3	132	807	0	31	2220	0
Confl. Peds. (#/hr)	1					1			3	3		
Heavy Vehicles (%)	10%	22%	16%	3%	13%	18%	35%	16%	20%	23%	2%	17%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	28.4	21.4	33.0	28.4	21.4	21.4	99.3	92.1		88.9	84.7	
Effective Green, g (s)	28.4	21.4	33.0	28.4	21.4	21.4	99.3	94.1		88.9	86.7	
Actuated g/C Ratio	0.20	0.15	0.23	0.20	0.15	0.15	0.68	0.65		0.61	0.60	
Clearance Time (s)	3.0	6.9	3.0	3.0	6.9	6.9	3.0	7.4		3.0	7.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.4		3.0	4.4	
Lane Grp Cap (vph)	215	232	320	195	250	201	154	2118		346	2236	
v/s Ratio Prot	0.02	0.12	c0.08	c0.05	0.09		0.07	0.25		0.00	c0.59	
v/s Ratio Perm	0.06		0.15	0.14		0.00	0.51			0.05		
v/c Ratio	0.39	0.83	0.99	0.98	0.60	0.02	0.86	0.38		0.09	0.99	
Uniform Delay, d1	49.4	60.1	55.9	57.6	57.8	52.8	49.2	11.9		11.1	28.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.2	21.7	48.2	59.6	4.1	0.0	34.6	0.5		0.1	17.4	
Delay (s)	50.6	81.8	104.1	117.1	61.9	52.8	83.8	12.4		11.2	46.2	
Level of Service	D	F	F	F	E	D	F	B		B	D	
Approach Delay (s)		90.3			90.4			22.4			45.8	
Approach LOS		F			F			C			D	

Intersection Summary

HCM 2000 Control Delay	51.2	HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio	0.99				
Actuated Cycle Length (s)	145.0	Sum of lost time (s)		18.3	
Intersection Capacity Utilization	103.2%	ICU Level of Service		G	
Analysis Period (min)	15				

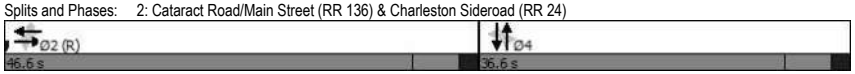
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	37	353	2	282	34	11	6	38	7
Future Volume (vph)	37	353	2	282	34	11	6	38	7
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		2		2			4		4
Permitted Phases	2		2		2	4		4	
Detector Phase	2	2	2	2	2	4	4	4	4
Switch Phase									
Minimum Initial (s)	20.0	20.0	20.0	20.0	20.0	16.0	16.0	16.0	16.0
Minimum Split (s)	30.6	30.6	30.6	30.6	30.6	30.6	30.6	30.6	30.6
Total Split (s)	46.6	46.6	46.6	46.6	46.6	36.6	36.6	36.6	36.6
Total Split (%)	56.0%	56.0%	56.0%	56.0%	56.0%	44.0%	44.0%	44.0%	44.0%
Yellow Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Min	C-Min	C-Min	C-Min	C-Min	None	None	None	None

Intersection Summary

Cycle Length: 83.2
Actuated Cycle Length: 83.2
Offset: 22.5 (27%), Referenced to phase 2:EBWB and 6:, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 2: Cataract Road/Main Street (RR 136) & Charleston Sideroad (RR 24)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	353	12	2	282	34	11	6	5	38	7	25
Future Volume (vph)	37	353	12	2	282	34	11	6	5	38	7	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.6		6.6	6.6	6.6	6.6	6.6		6.6	6.6	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.93		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1772	1589		1825	1501	1633	1825	1790		1825	1642	
Flt Permitted	0.58	1.00		0.54	1.00	1.00	0.74	1.00		0.75	1.00	
Satd. Flow (perm)	1085	1589		1034	1501	1633	1413	1790		1442	1642	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	38	364	12	2	291	35	11	6	5	39	7	26
RTOR Reduction (vph)	0	1	0	0	0	10	0	4	0	0	23	0
Lane Group Flow (vph)	38	375	0	2	291	25	11	7	0	39	10	0
Heavy Vehicles (%)	3%	21%	0%	0%	28%	0%	0%	0%	0%	0%	0%	4%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2		2	4			4		
Actuated Green, G (s)	60.4	60.4		60.4	60.4	60.4	9.6	9.6		9.6	9.6	
Effective Green, g (s)	60.4	60.4		60.4	60.4	60.4	9.6	9.6		9.6	9.6	
Actuated g/C Ratio	0.73	0.73		0.73	0.73	0.73	0.12	0.12		0.12	0.12	
Clearance Time (s)	6.6	6.6		6.6	6.6	6.6	6.6	6.6		6.6	6.6	
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)	787	1153		750	1089	1185	163	206		166	189	
v/s Ratio Prot		c0.24			0.19			0.00			0.01	
v/s Ratio Perm	0.04			0.00		0.02	0.01			c0.03		
v/c Ratio	0.05	0.33		0.00	0.27	0.02	0.07	0.03		0.23	0.05	
Uniform Delay, d1	3.2	4.1		3.1	3.9	3.2	32.8	32.7		33.5	32.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.8		0.0	0.6	0.0	0.2	0.1		0.7	0.1	
Delay (s)	3.4	4.8		3.1	4.5	3.2	33.0	32.7		34.2	32.9	
Level of Service	A	A		A	A	A	C	C		C	C	
Approach Delay (s)		4.7			4.3			32.9			33.6	
Approach LOS		A			A			C			C	

Intersection Summary

HCM 2000 Control Delay	7.8	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.31				
Actuated Cycle Length (s)	83.2	Sum of lost time (s)		13.2	
Intersection Capacity Utilization	63.2%	ICU Level of Service		B	
Analysis Period (min)	15				
c Critical Lane Group					

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	330	5	28	251	11	9	3	22	11	10	13
Future Volume (Veh/h)	3	330	5	28	251	11	9	3	22	11	10	13
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	3	347	5	29	264	12	9	3	23	12	11	14
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	276			352			697	690	350	706	686	270
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	276			352			697	690	350	706	686	270
tC, single (s)	4.1			4.8			7.2	6.5	6.8	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.9			3.6	4.0	3.9	3.5	4.0	3.3
p0 queue free %	100			97			97	99	96	96	97	98
cM capacity (veh/h)	1299			894			321	358	574	328	360	774

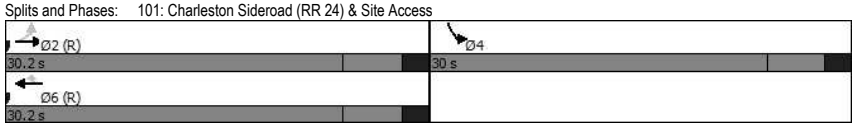
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	3	352	29	276	35	37
Volume Left	3	0	29	0	9	12
Volume Right	0	5	0	12	23	14
cSH	1299	1700	894	1700	458	434
Volume to Capacity	0.00	0.21	0.03	0.16	0.08	0.09
Queue Length 95th (m)	0.1	0.0	0.8	0.0	1.9	2.1
Control Delay (s)	7.8	0.0	9.2	0.0	13.5	14.1
Lane LOS	A		A		B	B
Approach Delay (s)	0.1		0.9		13.5	14.1
Approach LOS					B	B

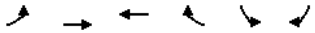
Intersection Summary				
Average Delay	1.8			
Intersection Capacity Utilization	33.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Configurations					
Traffic Volume (vph)	5	360	285	40	53
Future Volume (vph)	5	360	285	40	53
Turn Type	Perm	NA	NA	Perm	Prot
Protected Phases		2	6		4
Permitted Phases	2			6	
Detector Phase	2	2	6	6	4
Switch Phase					
Minimum Initial (s)	12.0	12.0	12.0	12.0	1.0
Minimum Split (s)	30.2	30.2	30.2	30.2	30.0
Total Split (s)	30.2	30.2	30.2	30.2	30.0
Total Split (%)	50.2%	50.2%	50.2%	50.2%	49.8%
Yellow Time (s)	4.2	4.2	4.2	4.2	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2	6.2	6.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	C-Max	C-Max	Max

Intersection Summary
Cycle Length: 60.2
Actuated Cycle Length: 60.2
Offset: 37 (61%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 101: Charleston Sideroad (RR 24) & Site Access





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	5	360	285	40	53	7
Future Volume (vph)	5	360	285	40	53	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2	6.2	6.2	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	1.00	0.85	0.98	
Flt Protected	0.95	1.00	1.00	1.00	0.96	
Satd. Flow (prot)	1521	1921	1921	944	1035	
Flt Permitted	0.57	1.00	1.00	1.00	0.96	
Satd. Flow (perm)	913	1921	1921	944	1035	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	5	360	285	40	53	7
RTOR Reduction (vph)	0	0	0	24	4	0
Lane Group Flow (vph)	5	360	285	16	56	0
Heavy Vehicles (%)	20%	0%	0%	73%	81%	29%
Turn Type	Perm	NA	NA	Perm	Prot	
Protected Phases		2	6		4	
Permitted Phases	2			6		
Actuated Green, G (s)	24.0	24.0	24.0	24.0	24.0	
Effective Green, g (s)	24.0	24.0	24.0	24.0	24.0	
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.40	
Clearance Time (s)	6.2	6.2	6.2	6.2	6.0	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	363	765	765	376	412	
v/s Ratio Prot		c0.19	0.15		c0.05	
v/s Ratio Perm	0.01			0.02		
v/c Ratio	0.01	0.47	0.37	0.04	0.14	
Uniform Delay, d1	10.9	13.4	12.8	11.1	11.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	2.1	1.4	0.2	0.7	
Delay (s)	11.0	15.5	14.2	11.3	12.2	
Level of Service	B	B	B	B	B	
Approach Delay (s)		15.4	13.8		12.2	
Approach LOS		B	B		B	

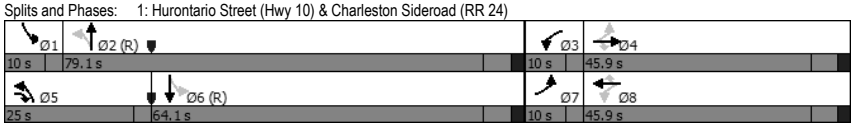
Intersection Summary				
HCM 2000 Control Delay	14.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	60.2	Sum of lost time (s)	12.2
Intersection Capacity Utilization	32.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	130	244	136	68	246	96	264	2086	51	1034
Future Volume (vph)	130	244	136	68	246	96	264	2086	51	1034
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	5	3	8		5	2	1	6
Permitted Phases	4		4	8		8	2		6	
Detector Phase	7	4	5	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	7.0	10.0	7.0	7.0	10.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	10.0	30.9	10.0	10.0	30.9	30.9	10.0	30.4	10.0	30.4
Total Split (s)	10.0	45.9	25.0	10.0	45.9	45.9	25.0	79.1	10.0	64.1
Total Split (%)	6.9%	31.7%	17.2%	6.9%	31.7%	31.7%	17.2%	54.6%	6.9%	44.2%
Yellow Time (s)	3.0	4.5	3.0	3.0	4.5	4.5	3.0	5.0	3.0	5.0
All-Red Time (s)	0.0	2.4	0.0	0.0	2.4	2.4	0.0	2.4	0.0	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.0	0.0	-2.0
Total Lost Time (s)	3.0	6.9	3.0	3.0	6.9	6.9	3.0	5.4	3.0	5.4
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes		Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	C-Max

Intersection Summary

Cycle Length: 145
Actuated Cycle Length: 145
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 135
Control Type: Actuated-Coordinated

Splits and Phases: 1: Hurontario Street (Hwy 10) & Charleston Sideroad (RR 24)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	244	136	68	246	96	264	2086	125	51	1034	83
Future Volume (vph)	130	244	136	68	246	96	264	2086	125	51	1034	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	2000	2000	1900	1900	2000	1900
Total Lost time (s)	3.0	6.9	3.0	3.0	6.9	6.9	3.0	5.4		3.0	5.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00		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	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	1685	1299	1656	1762	1537	1700	3727		1601	3477	
Flt Permitted	0.32	1.00	1.00	0.38	1.00	1.00	0.14	1.00		0.06	1.00	
Satd. Flow (perm)	591	1685	1299	665	1762	1537	254	3727		95	3477	
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)	130	244	136	68	246	96	264	2086	125	51	1034	83
RTOR Reduction (vph)	0	0	67	0	0	78	0	2	0	0	3	0
Lane Group Flow (vph)	130	244	69	68	246	18	264	2209	0	51	1114	0
Confl. Peds. (#/hr)	5		6	6		5	7		5	5		7
Heavy Vehicles (%)	5%	14%	24%	10%	9%	4%	13%	2%	2%	14%	9%	8%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	35.3	28.3	48.4	32.5	26.9	26.9	93.8	84.6		76.9	70.7	
Effective Green, g (s)	35.3	28.3	48.4	32.5	26.9	26.9	93.8	86.6		76.9	72.7	
Actuated g/C Ratio	0.24	0.20	0.33	0.22	0.19	0.19	0.65	0.60		0.53	0.50	
Clearance Time (s)	3.0	6.9	3.0	3.0	6.9	6.9	3.0	7.4		3.0	7.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.4		3.0	4.4	
Lane Grp Cap (vph)	199	328	433	187	326	285	364	2225		114	1743	
v/s Ratio Prot	c0.03	c0.14	0.02	0.01	0.14		c0.10	c0.59		0.02	0.32	
v/s Ratio Perm	0.13		0.03	0.07		0.01	0.37			0.22		
v/c Ratio	0.65	0.74	0.16	0.36	0.75	0.06	0.73	0.99		0.45	0.64	
Uniform Delay, d1	48.0	54.9	34.0	45.9	55.9	48.7	20.6	28.9		32.3	26.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.5	8.8	0.2	1.2	9.5	0.1	7.0	17.4		2.8	1.8	
Delay (s)	55.5	63.8	34.2	47.1	65.5	48.8	27.6	46.3		35.1	28.3	
Level of Service	E	E	C	D	E	D	C	D		D	C	
Approach Delay (s)		53.8			58.5			44.3			28.6	
Approach LOS		D			E			D			C	

Intersection Summary

HCM 2000 Control Delay	42.6	HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio	0.92				
Actuated Cycle Length (s)	145.0	Sum of lost time (s)		18.3	
Intersection Capacity Utilization	102.6%	ICU Level of Service		G	
Analysis Period (min)	15				

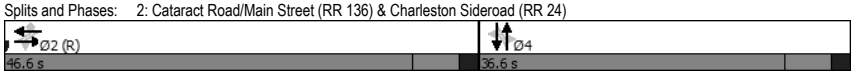
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	57	375	8	416	63	16	18	73	15
Future Volume (vph)	57	375	8	416	63	16	18	73	15
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		2		2			4		4
Permitted Phases	2		2		2	4		4	
Detector Phase	2	2	2	2	2	4	4	4	4
Switch Phase									
Minimum Initial (s)	20.0	20.0	20.0	20.0	20.0	16.0	16.0	16.0	16.0
Minimum Split (s)	30.6	30.6	30.6	30.6	30.6	30.6	30.6	30.6	30.6
Total Split (s)	46.6	46.6	46.6	46.6	46.6	36.6	36.6	36.6	36.6
Total Split (%)	56.0%	56.0%	56.0%	56.0%	56.0%	44.0%	44.0%	44.0%	44.0%
Yellow Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Min	C-Min	C-Min	C-Min	C-Min	None	None	None	None

Intersection Summary

Cycle Length: 83.2
Actuated Cycle Length: 83.2
Offset: 22.5 (27%), Referenced to phase 2:EBWB and 6:, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 2: Cataract Road/Main Street (RR 136) & Charleston Sideroad (RR 24)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	375	21	8	416	63	16	18	5	73	15	53
Future Volume (vph)	57	375	21	8	416	63	16	18	5	73	15	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.6		6.6	6.6	6.6	6.6	6.6		6.6	6.6	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.97		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1825	1615		1825	1642	1555	1722	1861		1825	1643	
Flt Permitted	0.50	1.00		0.51	1.00	1.00	0.71	1.00		0.74	1.00	
Satd. Flow (perm)	958	1615		985	1642	1555	1289	1861		1425	1643	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	59	387	22	8	429	65	16	19	5	75	15	55
RTOR Reduction (vph)	0	2	0	0	0	20	0	4	0	0	47	0
Lane Group Flow (vph)	59	407	0	8	429	45	16	20	0	75	23	0
Heavy Vehicles (%)	0%	19%	0%	0%	17%	5%	6%	0%	0%	0%	0%	4%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2		2	4			4		
Actuated Green, G (s)	57.2	57.2		57.2	57.2	57.2	12.8	12.8		12.8	12.8	
Effective Green, g (s)	57.2	57.2		57.2	57.2	57.2	12.8	12.8		12.8	12.8	
Actuated g/C Ratio	0.69	0.69		0.69	0.69	0.69	0.15	0.15		0.15	0.15	
Clearance Time (s)	6.6	6.6		6.6	6.6	6.6	6.6	6.6		6.6	6.6	
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)	658	1110		677	1128	1069	198	286		219	252	
v/s Ratio Prot		0.25			c0.26			0.01			0.01	
v/s Ratio Perm	0.06			0.01		0.03	0.01			c0.05		
v/c Ratio	0.09	0.37		0.01	0.38	0.04	0.08	0.07		0.34	0.09	
Uniform Delay, d1	4.3	5.4		4.1	5.5	4.2	30.2	30.1		31.4	30.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.9		0.0	1.0	0.1	0.2	0.1		0.9	0.2	
Delay (s)	4.6	6.4		4.1	6.5	4.3	30.3	30.2		32.4	30.4	
Level of Service	A	A		A	A	A	C	C		C	C	
Approach Delay (s)		6.1			6.2			30.3			31.4	
Approach LOS		A			A			C			C	

Intersection Summary

HCM 2000 Control Delay	10.2	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.37				
Actuated Cycle Length (s)	83.2	Sum of lost time (s)		13.2	
Intersection Capacity Utilization	68.4%	ICU Level of Service		C	
Analysis Period (min)	15				
c Critical Lane Group					

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	363	4	11	431	10	10	20	30	14	10	9
Future Volume (Veh/h)	13	363	4	11	431	10	10	20	30	14	10	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	14	382	4	12	454	11	11	21	32	15	11	9
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	465			386			904	901	384	936	898	460
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	465			386			904	901	384	936	898	460
tC, single (s)	4.2			4.2			7.2	6.5	6.3	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.0	3.4	3.5	4.0	3.4
p0 queue free %	99			99			95	92	95	93	96	98
cM capacity (veh/h)	1066			1135			234	273	646	217	275	583

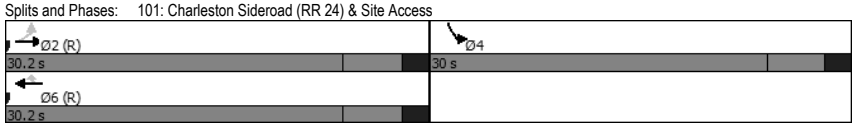
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	14	386	12	465	64	35
Volume Left	14	0	12	0	11	15
Volume Right	0	4	0	11	32	9
cSH	1066	1700	1135	1700	369	281
Volume to Capacity	0.01	0.23	0.01	0.27	0.17	0.12
Queue Length 95th (m)	0.3	0.0	0.2	0.0	4.7	3.2
Control Delay (s)	8.4	0.0	8.2	0.0	16.8	19.6
Lane LOS	A		A		C	C
Approach Delay (s)	0.3		0.2		16.8	19.6
Approach LOS					C	C

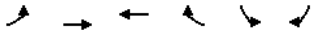
Intersection Summary						
Average Delay			2.0			
Intersection Capacity Utilization			33.9%	ICU Level of Service		A
Analysis Period (min)			15			

Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Configurations					
Traffic Volume (vph)	10	399	446	45	58
Future Volume (vph)	10	399	446	45	58
Turn Type	Perm	NA	NA	Perm	Prot
Protected Phases		2	6		4
Permitted Phases	2			6	
Detector Phase	2	2	6	6	4
Switch Phase					
Minimum Initial (s)	12.0	12.0	5.0	5.0	12.0
Minimum Split (s)	30.2	30.2	30.2	30.2	30.0
Total Split (s)	30.2	30.2	30.2	30.2	30.0
Total Split (%)	50.2%	50.2%	50.2%	50.2%	49.8%
Yellow Time (s)	4.2	4.2	4.2	4.2	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2	6.2	6.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	C-Max	C-Max	Max

Intersection Summary
Cycle Length: 60.2
Actuated Cycle Length: 60.2
Offset: 34 (56%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 101: Charleston Sideroad (RR 24) & Site Access





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	10	399	446	45	58	7
Future Volume (vph)	10	399	446	45	58	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2	6.2	6.2	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	1.00	0.85	0.99	
Flt Protected	0.95	1.00	1.00	1.00	0.96	
Satd. Flow (prot)	1659	1921	1921	996	1239	
Flt Permitted	0.38	1.00	1.00	1.00	0.96	
Satd. Flow (perm)	671	1921	1921	996	1239	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	0.92	1.00
Adj. Flow (vph)	10	399	446	45	63	7
RTOR Reduction (vph)	0	0	0	27	4	0
Lane Group Flow (vph)	10	399	446	18	66	0
Heavy Vehicles (%)	10%	0%	0%	64%	50%	14%
Turn Type	Perm	NA	NA	Perm	Prot	
Protected Phases		2	6		4	
Permitted Phases	2			6		
Actuated Green, G (s)	24.0	24.0	24.0	24.0	24.0	
Effective Green, g (s)	24.0	24.0	24.0	24.0	24.0	
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.40	
Clearance Time (s)	6.2	6.2	6.2	6.2	6.0	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	267	765	765	397	493	
v/s Ratio Prot		0.21	c0.23		c0.05	
v/s Ratio Perm	0.01			0.02		
v/c Ratio	0.04	0.52	0.58	0.05	0.13	
Uniform Delay, d1	11.0	13.7	14.2	11.1	11.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.3	2.5	3.2	0.2	0.6	
Delay (s)	11.3	16.3	17.4	11.3	12.1	
Level of Service	B	B	B	B	B	
Approach Delay (s)		16.2	16.9		12.1	
Approach LOS		B	B		B	

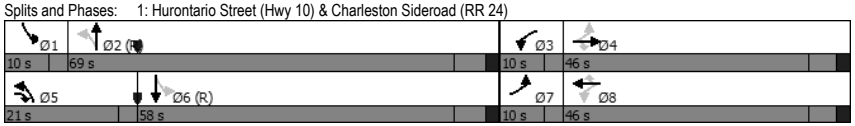
Intersection Summary				
HCM 2000 Control Delay	16.2	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.36			
Actuated Cycle Length (s)	60.2	Sum of lost time (s)	12.2	
Intersection Capacity Utilization	43.6%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	132	340	142	119	236	53	275	1603	75	1076
Future Volume (vph)	132	340	142	119	236	53	275	1603	75	1076
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	5	3	8		5	2	1	6
Permitted Phases	4		4	8		8	2		6	
Detector Phase	7	4	5	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	7.0	10.0	7.0	7.0	10.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	10.0	30.9	10.0	10.0	30.9	30.9	10.0	30.4	10.0	30.4
Total Split (s)	10.0	46.0	21.0	10.0	46.0	46.0	21.0	69.0	10.0	58.0
Total Split (%)	7.4%	34.1%	15.6%	7.4%	34.1%	34.1%	15.6%	51.1%	7.4%	43.0%
Yellow Time (s)	3.0	4.5	3.0	3.0	4.5	4.5	3.0	5.0	3.0	5.0
All-Red Time (s)	0.0	2.4	0.0	0.0	2.4	2.4	0.0	2.4	0.0	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.0	0.0	-2.0
Total Lost Time (s)	3.0	6.9	3.0	3.0	6.9	6.9	3.0	5.4	3.0	5.4
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes		Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	C-Max

Intersection Summary

Cycle Length: 135
Actuated Cycle Length: 135
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated

Splits and Phases: 1: Hurontario Street (Hwy 10) & Charleston Sideroad (RR 24)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	132	340	142	119	236	53	275	1603	173	75	1076	90
Future Volume (vph)	132	340	142	119	236	53	275	1603	173	75	1076	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	2000	2000	1900	1900	2000	1900
Total Lost time (s)	3.0	6.9	3.0	3.0	6.9	6.9	3.0	5.4		3.0	5.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00		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	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1735	1685	1314	1658	1762	1541	1715	3699		1587	3474	
Flt Permitted	0.45	1.00	1.00	0.26	1.00	1.00	0.08	1.00		0.07	1.00	
Satd. Flow (perm)	814	1685	1314	450	1762	1541	152	3699		121	3474	
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)	132	340	142	119	236	53	275	1603	173	75	1076	90
RTOR Reduction (vph)	0	0	40	0	0	40	0	5	0	0	5	0
Lane Group Flow (vph)	132	340	102	119	236	13	275	1771	0	75	1161	0
Confl. Peds. (#/hr)	4		3	3		4	9		5	5		9
Heavy Vehicles (%)	5%	14%	23%	10%	9%	4%	12%	2%	2%	15%	9%	8%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	38.9	31.9	52.6	38.9	31.9	31.9	78.8	69.6		61.3	55.1	
Effective Green, g (s)	38.9	31.9	52.6	38.9	31.9	31.9	78.8	71.6		61.3	57.1	
Actuated g/C Ratio	0.29	0.24	0.39	0.29	0.24	0.24	0.58	0.53		0.45	0.42	
Clearance Time (s)	3.0	6.9	3.0	3.0	6.9	6.9	3.0	7.4		3.0	7.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.4		3.0	4.4	
Lane Grp Cap (vph)	282	398	511	192	416	364	328	1961		122	1469	
v/s Ratio Prot	0.02	c0.20	0.03	c0.03	0.13		c0.13	c0.48		0.03	0.33	
v/s Ratio Perm	0.11		0.05	0.15		0.01	0.36			0.25		
v/c Ratio	0.47	0.85	0.20	0.62	0.57	0.03	0.84	0.90		0.61	0.79	
Uniform Delay, d1	38.2	49.3	27.3	38.9	45.5	39.7	37.3	28.6		30.5	33.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.2	16.2	0.2	5.9	1.8	0.0	16.8	7.3		8.9	4.4	
Delay (s)	39.4	65.5	27.5	44.7	47.2	39.7	54.2	35.9		39.4	38.2	
Level of Service	D	E	C	D	D	D	D	D		D	D	
Approach Delay (s)		51.1			45.5			38.3			38.3	
Approach LOS		D			D			D			D	

Intersection Summary

HCM 2000 Control Delay	40.8	HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio	0.88				
Actuated Cycle Length (s)	135.0	Sum of lost time (s)		18.3	
Intersection Capacity Utilization	94.8%	ICU Level of Service		F	
Analysis Period (min)	15				

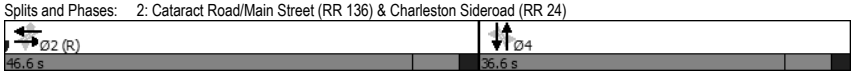
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	65	388	23	393	58	9	18	75	25
Future Volume (vph)	65	388	23	393	58	9	18	75	25
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		2		2			4		4
Permitted Phases	2		2		2	4		4	
Detector Phase	2	2	2	2	2	4	4	4	4
Switch Phase									
Minimum Initial (s)	20.0	20.0	20.0	20.0	20.0	16.0	16.0	16.0	16.0
Minimum Split (s)	30.6	30.6	30.6	30.6	30.6	30.6	30.6	30.6	30.6
Total Split (s)	46.6	46.6	46.6	46.6	46.6	36.6	36.6	36.6	36.6
Total Split (%)	56.0%	56.0%	56.0%	56.0%	56.0%	44.0%	44.0%	44.0%	44.0%
Yellow Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Min	C-Min	C-Min	C-Min	C-Min	None	None	None	None

Intersection Summary

Cycle Length: 83.2
Actuated Cycle Length: 83.2
Offset: 22.5 (27%), Referenced to phase 2:EBWB and 6:, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 2: Cataract Road/Main Street (RR 136) & Charleston Sideroad (RR 24)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	388	20	23	393	58	9	18	14	75	25	63
Future Volume (vph)	65	388	20	23	393	58	9	18	14	75	25	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.6		6.6	6.6	6.6	6.6	6.6		6.6	6.6	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.93		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1825	1602		1825	1628	1555	1644	1794		1825	1655	
Flt Permitted	0.51	1.00		0.50	1.00	1.00	0.70	1.00		0.73	1.00	
Satd. Flow (perm)	985	1602		964	1628	1555	1207	1794		1412	1655	
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)	68	404	21	24	409	60	9	19	15	78	26	66
RTOR Reduction (vph)	0	1	0	0	0	19	0	13	0	0	56	0
Lane Group Flow (vph)	68	424	0	24	409	41	9	21	0	78	36	0
Heavy Vehicles (%)	0%	20%	0%	0%	18%	5%	11%	0%	0%	0%	0%	5%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2		2	4			4		
Actuated Green, G (s)	57.2	57.2		57.2	57.2	57.2	12.8	12.8		12.8	12.8	
Effective Green, g (s)	57.2	57.2		57.2	57.2	57.2	12.8	12.8		12.8	12.8	
Actuated g/C Ratio	0.69	0.69		0.69	0.69	0.69	0.15	0.15		0.15	0.15	
Clearance Time (s)	6.6	6.6		6.6	6.6	6.6	6.6	6.6		6.6	6.6	
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)	677	1101		662	1119	1069	185	276		217	254	
v/s Ratio Prot		c0.26			0.25			0.01			0.02	
v/s Ratio Perm	0.07			0.02		0.03	0.01			c0.06		
v/c Ratio	0.10	0.38		0.04	0.37	0.04	0.05	0.08		0.36	0.14	
Uniform Delay, d1	4.4	5.5		4.2	5.4	4.2	30.0	30.1		31.5	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	0.3	1.0		0.1	0.9	0.1	0.1	0.1		1.0	0.3	
Delay (s)	4.7	6.5		4.3	6.3	4.2	30.1	30.3		32.5	30.7	
Level of Service	A	A		A	A	A	C	C		C	C	
Approach Delay (s)		6.3			6.0			30.2			31.6	
Approach LOS		A			A			C			C	

Intersection Summary

HCM 2000 Control Delay	10.6	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.38			
Actuated Cycle Length (s)	83.2	Sum of lost time (s)	13.2	
Intersection Capacity Utilization	68.1%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	388	14	15	412	6	13	20	40	9	14	16
Future Volume (Veh/h)	21	388	14	15	412	6	13	20	40	9	14	16
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)	22	413	15	16	438	6	14	21	43	10	15	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	444			428			959	940	420	984	945	441
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	444			428			959	940	420	984	945	441
tC, single (s)	4.2			4.2			7.2	6.5	6.3	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.0	3.4	3.5	4.0	3.4
p0 queue free %	98			99			93	92	93	95	94	97
cM capacity (veh/h)	1075			1075			208	256	610	195	255	594

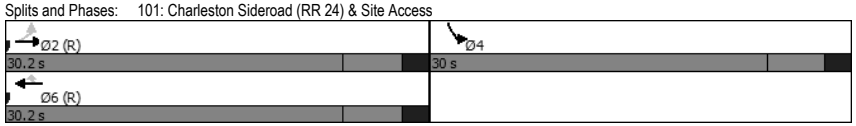
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	22	428	16	444	78	42
Volume Left	22	0	16	0	14	10
Volume Right	0	15	0	6	43	17
cSH	1075	1700	1075	1700	355	302
Volume to Capacity	0.02	0.25	0.01	0.26	0.22	0.14
Queue Length 95th (m)	0.5	0.0	0.3	0.0	6.3	3.6
Control Delay (s)	8.4	0.0	8.4	0.0	18.0	18.8
Lane LOS	A		A		C	C
Approach Delay (s)	0.4		0.3		18.0	18.8
Approach LOS					C	C

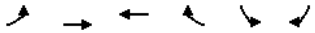
Intersection Summary					
Average Delay	2.4				
Intersection Capacity Utilization	33.9%	ICU Level of Service		A	
Analysis Period (min)	15				

Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Configurations					
Traffic Volume (vph)	1	448	440	29	29
Future Volume (vph)	1	448	440	29	29
Turn Type	Perm	NA	NA	Perm	Prot
Protected Phases		2	6		4
Permitted Phases	2			6	
Detector Phase	2	2	6	6	4
Switch Phase					
Minimum Initial (s)	12.0	12.0	12.0	12.0	12.0
Minimum Split (s)	30.2	30.2	30.2	30.2	30.0
Total Split (s)	30.2	30.2	30.2	30.2	30.0
Total Split (%)	50.2%	50.2%	50.2%	50.2%	49.8%
Yellow Time (s)	4.2	4.2	4.2	4.2	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2	6.2	6.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	C-Max	C-Max	Max

Intersection Summary
Cycle Length: 60.2
Actuated Cycle Length: 60.2
Offset: 33 (55%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 101: Charleston Sideroad (RR 24) & Site Access





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	1	448	440	29	29	1
Future Volume (vph)	1	448	440	29	29	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2	6.2	6.2	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	1.00	0.85	1.00	
Flt Protected	0.95	1.00	1.00	1.00	0.95	
Satd. Flow (prot)	913	1921	1921	816	912	
Flt Permitted	0.39	1.00	1.00	1.00	0.95	
Satd. Flow (perm)	376	1921	1921	816	912	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	0.92
Adj. Flow (vph)	1	448	440	29	29	1
RTOR Reduction (vph)	0	0	0	17	1	0
Lane Group Flow (vph)	1	448	440	12	29	0
Heavy Vehicles (%)	100%	0%	0%	100%	100%	100%
Turn Type	Perm	NA	NA	Perm	Prot	
Protected Phases		2	6		4	
Permitted Phases	2			6		
Actuated Green, G (s)	24.0	24.0	24.0	24.0	24.0	
Effective Green, g (s)	24.0	24.0	24.0	24.0	24.0	
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.40	
Clearance Time (s)	6.2	6.2	6.2	6.2	6.0	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	149	765	765	325	363	
v/s Ratio Prot		c0.23	0.23		c0.03	
v/s Ratio Perm	0.00			0.01		
v/c Ratio	0.01	0.59	0.58	0.04	0.08	
Uniform Delay, d1	10.9	14.2	14.1	11.0	11.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	3.3	3.1	0.2	0.4	
Delay (s)	11.0	17.5	17.3	11.2	11.7	
Level of Service	B	B	B	B	B	
Approach Delay (s)		17.5	16.9		11.7	
Approach LOS		B	B		B	

Intersection Summary				
HCM 2000 Control Delay	17.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	60.2	Sum of lost time (s)	12.2
Intersection Capacity Utilization	43.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

APPENDIX J

SimTraffic Queueing Analysis Reports

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	6:50	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	3617	3668	3783	3663	3621	3591	3836
Vehs Exited	3603	3643	3763	3633	3615	3554	3760
Starting Vehs	197	220	198	199	193	193	196
Ending Vehs	211	245	218	229	199	230	272
Travel Distance (km)	8276	8062	8674	8265	8179	8061	8587
Travel Time (hr)	206.7	213.8	237.9	201.8	196.8	204.2	231.0
Total Delay (hr)	60.3	70.7	85.3	55.6	52.3	61.4	79.4
Total Stops	3080	2920	4279	2791	2964	2838	3955
Fuel Used (l)	615.9	616.0	667.9	614.4	602.1	601.6	657.4

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	3758	3707	3821	3707
Vehs Exited	3738	3715	3700	3672
Starting Vehs	217	212	193	199
Ending Vehs	237	204	314	234
Travel Distance (km)	8636	8516	8572	8383
Travel Time (hr)	219.3	217.6	245.9	217.5
Total Delay (hr)	67.1	67.3	95.2	69.5
Total Stops	3381	3250	4271	3374
Fuel Used (l)	646.9	637.2	667.6	632.7

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	3617	3668	3783	3663	3621	3591	3836
Vehs Exited	3603	3643	3763	3633	3615	3554	3760
Starting Vehs	197	220	198	199	193	193	196
Ending Vehs	211	245	218	229	199	230	272
Travel Distance (km)	8276	8062	8674	8265	8179	8061	8587
Travel Time (hr)	206.7	213.8	237.9	201.8	196.8	204.2	231.0
Total Delay (hr)	60.3	70.7	85.3	55.6	52.3	61.4	79.4
Total Stops	3080	2920	4279	2791	2964	2838	3955
Fuel Used (l)	615.9	616.0	667.9	614.4	602.1	601.6	657.4

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	3758	3707	3821	3707
Vehs Exited	3738	3715	3700	3672
Starting Vehs	217	212	193	199
Ending Vehs	237	204	314	234
Travel Distance (km)	8636	8516	8572	8383
Travel Time (hr)	219.3	217.6	245.9	217.5
Total Delay (hr)	67.1	67.3	95.2	69.5
Total Stops	3381	3250	4271	3374
Fuel Used (l)	646.9	637.2	667.6	632.7

Intersection: 1: Hurontario Street (Hwy 10) & Charleston Sideroad (RR 24)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	T	TR
Maximum Queue (m)	73.0	214.1	85.0	54.9	263.9	82.9	55.2	69.2	73.9	64.8	316.2	316.4
Average Queue (m)	21.7	82.8	64.1	48.0	114.6	14.6	22.9	30.3	37.7	12.0	187.9	187.7
95th Queue (m)	56.8	177.7	97.5	66.1	273.9	64.8	46.4	57.7	66.4	45.8	354.1	346.0
Link Distance (m)		1355.9			586.1			774.3	774.3		547.3	547.3
Upstream Blk Time (%)											0	0
Queuing Penalty (veh)											0	0
Storage Bay Dist (m)	75.0		60.0	35.0		55.0	80.0			30.0		
Storage Blk Time (%)	0	11	22	63	14			0		0	39	
Queuing Penalty (veh)	0	43	56	103	30			0		1	12	

Intersection: 2: Cataract Road/Main Street (RR 136) & Charleston Sideroad (RR 24)

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (m)	13.8	41.5	3.3	50.8	9.9	13.5	11.4	21.7	16.3
Average Queue (m)	2.9	13.7	0.2	12.1	1.7	2.7	2.4	6.7	3.7
95th Queue (m)	9.7	33.8	1.9	36.8	7.2	9.7	8.8	16.4	10.7
Link Distance (m)		1418.7		2799.0			898.9		1191.1
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)	125.0		60.0		90.0	70.0		85.0	
Storage Blk Time (%)				0					
Queuing Penalty (veh)				0					

Intersection: 3: Mississauga Road & Charleston Sideroad (RR 24)

Movement	EB	WB	NB	SB
Directions Served	L	L	LTR	LTR
Maximum Queue (m)	2.6	20.7	24.2	12.3
Average Queue (m)	0.1	2.9	7.8	4.9
95th Queue (m)	1.6	13.2	19.6	11.0
Link Distance (m)			1222.3	609.3
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)	30.0	30.0		
Storage Blk Time (%)		0		
Queuing Penalty (veh)		0		

Network Summary

Network wide Queuing Penalty: 246

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	4:50	4:50	4:50	4:50	4:50	4:50	4:50
End Time	6:00	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	70	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	4134	4105	4095	4192	4151	4185	4152
Vehs Exited	4094	4087	4063	4219	3993	4167	4117
Starting Vehs	226	232	241	272	207	254	240
Ending Vehs	266	250	273	245	365	272	275
Travel Distance (km)	10319	10341	10039	10597	10365	10683	10414
Travel Time (hr)	235.5	235.3	238.3	253.8	274.3	274.5	259.3
Total Delay (hr)	57.0	57.7	64.0	71.0	96.5	91.2	80.2
Total Stops	2951	3068	3149	3391	3357	3369	3204
Fuel Used (l)	751.1	758.5	734.2	781.3	782.2	802.0	773.1

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	4:50	4:50	4:50	4:50
End Time	6:00	6:00	6:00	6:00
Total Time (min)	70	70	70	70
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	4133	4130	4208	4147
Vehs Exited	4159	4142	4163	4121
Starting Vehs	237	253	244	240
Ending Vehs	211	241	289	267
Travel Distance (km)	10459	10254	10525	10400
Travel Time (hr)	250.5	245.4	251.6	251.8
Total Delay (hr)	70.7	68.1	70.8	72.7
Total Stops	3405	3182	3186	3224
Fuel Used (l)	772.7	756.8	775.2	768.7

Interval #0 Information Seeding

Start Time	4:50
End Time	5:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	4134	4105	4095	4192	4151	4185	4152
Vehs Exited	4094	4087	4063	4219	3993	4167	4117
Starting Vehs	226	232	241	272	207	254	240
Ending Vehs	266	250	273	245	365	272	275
Travel Distance (km)	10319	10341	10039	10597	10365	10683	10414
Travel Time (hr)	235.5	235.3	238.3	253.8	274.3	274.5	259.3
Total Delay (hr)	57.0	57.7	64.0	71.0	96.5	91.2	80.2
Total Stops	2951	3068	3149	3391	3357	3369	3204
Fuel Used (l)	751.1	758.5	734.2	781.3	782.2	802.0	773.1

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	4133	4130	4208	4147
Vehs Exited	4159	4142	4163	4121
Starting Vehs	237	253	244	240
Ending Vehs	211	241	289	267
Travel Distance (km)	10459	10254	10525	10400
Travel Time (hr)	250.5	245.4	251.6	251.8
Total Delay (hr)	70.7	68.1	70.8	72.7
Total Stops	3405	3182	3186	3224
Fuel Used (l)	772.7	756.8	775.2	768.7

Intersection: 1: Hurontario Street (Hwy 10) & Charleston Sideroad (RR 24)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	T	TR
Maximum Queue (m)	77.4	381.0	85.0	54.9	257.1	100.0	109.9	263.0	260.0	64.5	119.0	117.2
Average Queue (m)	49.2	161.2	31.1	26.9	117.0	39.5	51.2	120.1	126.6	16.6	55.7	56.5
95th Queue (m)	90.0	414.1	83.2	57.9	244.9	101.6	118.0	234.0	239.6	43.2	110.7	110.8
Link Distance (m)		1355.9			586.1			774.3	774.3		547.3	547.3
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	75.0		60.0	35.0		55.0	80.0			30.0		
Storage Blk Time (%)	12	34		7	57	1	0	18		2	22	
Queuing Penalty (veh)	39	70		23	93	2	2	39		8	11	

Intersection: 2: Cataract Road/Main Street (RR 136) & Charleston Sideroad (RR 24)

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (m)	19.8	52.1	6.8	61.1	15.9	15.5	15.6	33.0	23.0
Average Queue (m)	6.5	19.3	0.8	20.0	3.2	3.7	4.5	12.6	7.7
95th Queue (m)	16.0	40.9	4.3	48.1	10.7	11.9	12.3	26.2	17.4
Link Distance (m)		1418.7		2799.0			898.9		1191.1
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)	125.0		60.0		90.0	70.0		85.0	
Storage Blk Time (%)				0					
Queuing Penalty (veh)				0					

Intersection: 3: Mississauga Road & Charleston Sideroad (RR 24)

Movement	EB	WB	WB	NB	SB
Directions Served	L	L	TR	LTR	LTR
Maximum Queue (m)	7.6	8.7	0.6	18.2	16.6
Average Queue (m)	0.8	0.6	0.0	7.2	5.3
95th Queue (m)	4.5	4.2	0.6	14.6	12.5
Link Distance (m)			1418.7	1222.3	609.3
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)	30.0	30.0			
Storage Blk Time (%)					
Queuing Penalty (veh)					

Network Summary

Network wide Queuing Penalty: 287

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	1:50	1:50	1:50	1:50	1:50	1:50	1:50
End Time	3:00	3:00	3:00	3:00	3:00	3:00	3:00
Total Time (min)	70	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	4062	4014	4019	3963	4125	3952	4126
Vehs Exited	4073	3950	3980	3983	4138	3949	3987
Starting Vehs	257	231	227	242	247	223	212
Ending Vehs	246	295	266	222	234	226	351
Travel Distance (km)	10527	10603	10581	10481	10816	10487	10619
Travel Time (hr)	246.4	274.8	252.3	250.7	247.2	238.7	308.3
Total Delay (hr)	65.7	94.4	71.1	71.4	62.2	59.7	127.2
Total Stops	3576	3562	3460	3433	3373	3137	3788
Fuel Used (l)	766.3	791.2	768.2	763.8	778.3	754.7	817.7

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	1:50	1:50	1:50	1:50
End Time	3:00	3:00	3:00	3:00
Total Time (min)	70	70	70	70
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	4080	4013	4081	4039
Vehs Exited	3999	3988	3955	4000
Starting Vehs	229	235	233	230
Ending Vehs	310	260	359	273
Travel Distance (km)	10711	10691	10621	10614
Travel Time (hr)	286.8	258.7	297.3	266.1
Total Delay (hr)	103.3	76.4	116.0	84.7
Total Stops	3961	3535	3889	3569
Fuel Used (l)	805.0	781.3	812.8	783.9

Interval #0 Information Seeding

Start Time	1:50
End Time	2:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	2:00
End Time	3:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	4062	4014	4019	3963	4125	3952	4126
Vehs Exited	4073	3950	3980	3983	4138	3949	3987
Starting Vehs	257	231	227	242	247	223	212
Ending Vehs	246	295	266	222	234	226	351
Travel Distance (km)	10527	10603	10581	10481	10816	10487	10619
Travel Time (hr)	246.4	274.8	252.3	250.7	247.2	238.7	308.3
Total Delay (hr)	65.7	94.4	71.1	71.4	62.2	59.7	127.2
Total Stops	3576	3562	3460	3433	3373	3137	3788
Fuel Used (l)	766.3	791.2	768.2	763.8	778.3	754.7	817.7

Interval #1 Information Recording

Start Time	2:00
End Time	3:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	4080	4013	4081	4039
Vehs Exited	3999	3988	3955	4000
Starting Vehs	229	235	233	230
Ending Vehs	310	260	359	273
Travel Distance (km)	10711	10691	10621	10614
Travel Time (hr)	286.8	258.7	297.3	266.1
Total Delay (hr)	103.3	76.4	116.0	84.7
Total Stops	3961	3535	3889	3569
Fuel Used (l)	805.0	781.3	812.8	783.9

Intersection: 1: Hurontario Street (Hwy 10) & Charleston Sideroad (RR 24)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	T	TR
Maximum Queue (m)	77.4	495.3	85.0	55.0	241.7	99.7	109.6	185.6	185.4	60.4	118.1	120.0
Average Queue (m)	55.7	274.0	42.2	39.0	108.4	20.1	46.9	83.7	92.2	19.4	57.0	59.4
95th Queue (m)	96.9	578.5	101.7	65.7	262.5	72.5	97.3	154.9	163.0	50.9	102.8	105.8
Link Distance (m)		1355.9			586.1			774.3	774.3		547.3	547.3
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	75.0		60.0	35.0		55.0	80.0			30.0		
Storage Blk Time (%)	5	62		32	43		0	9		1	23	
Queuing Penalty (veh)	20	151		87	73		2	23		3	17	

Intersection: 2: Cataract Road/Main Street (RR 136) & Charleston Sideroad (RR 24)

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (m)	20.7	48.6	11.7	55.8	15.3	11.7	15.3	29.2	27.8
Average Queue (m)	7.5	19.9	2.6	19.4	3.2	2.2	5.0	12.4	9.0
95th Queue (m)	16.6	40.4	8.8	45.7	10.3	8.7	13.1	24.4	19.9
Link Distance (m)		1418.7		2799.0			898.9		1191.1
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)	125.0		60.0		90.0	70.0		85.0	
Storage Blk Time (%)				0					
Queuing Penalty (veh)				0					

Intersection: 3: Mississauga Road & Charleston Sideroad (RR 24)

Movement	EB	WB	NB	SB
Directions Served	L	L	LTR	LTR
Maximum Queue (m)	8.7	9.5	18.0	14.0
Average Queue (m)	1.6	1.4	7.9	5.5
95th Queue (m)	6.5	6.3	14.2	11.7
Link Distance (m)			1222.3	609.3
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)	30.0	30.0		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 377

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	6:50	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	4047	4059	4086	3960	4056	4052	4138
Vehs Exited	3960	3962	3952	3819	3915	3944	4003
Starting Vehs	237	246	229	235	225	250	231
Ending Vehs	324	343	363	376	366	358	366
Travel Distance (km)	9037	8946	8790	8521	8849	8669	8976
Travel Time (hr)	420.2	355.9	477.7	453.1	331.9	409.1	393.6
Total Delay (hr)	260.0	197.5	321.2	302.3	175.0	255.1	235.1
Total Stops	5598	5537	5742	5333	4918	5453	5395
Fuel Used (l)	843.0	786.7	878.3	845.8	753.3	822.0	819.4

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	4072	4102	4077	4069
Vehs Exited	3940	3973	3946	3940
Starting Vehs	231	237	236	233
Ending Vehs	363	366	367	358
Travel Distance (km)	8710	8956	8997	8845
Travel Time (hr)	375.8	394.2	353.6	396.5
Total Delay (hr)	221.2	235.5	194.7	239.8
Total Stops	5135	5659	5674	5443
Fuel Used (l)	789.6	821.9	783.6	814.4

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	4047	4059	4086	3960	4056	4052	4138
Vehs Exited	3960	3962	3952	3819	3915	3944	4003
Starting Vehs	237	246	229	235	225	250	231
Ending Vehs	324	343	363	376	366	358	366
Travel Distance (km)	9037	8946	8790	8521	8849	8669	8976
Travel Time (hr)	420.2	355.9	477.7	453.1	331.9	409.1	393.6
Total Delay (hr)	260.0	197.5	321.2	302.3	175.0	255.1	235.1
Total Stops	5598	5537	5742	5333	4918	5453	5395
Fuel Used (l)	843.0	786.7	878.3	845.8	753.3	822.0	819.4

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	4072	4102	4077	4069
Vehs Exited	3940	3973	3946	3940
Starting Vehs	231	237	236	233
Ending Vehs	363	366	367	358
Travel Distance (km)	8710	8956	8997	8845
Travel Time (hr)	375.8	394.2	353.6	396.5
Total Delay (hr)	221.2	235.5	194.7	239.8
Total Stops	5135	5659	5674	5443
Fuel Used (l)	789.6	821.9	783.6	814.4

Intersection: 1: Hurontario Street (Hwy 10) & Charleston Sideroad (RR 24)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	T	TR
Maximum Queue (m)	77.3	229.1	85.0	55.0	551.6	100.0	49.8	68.4	81.0	59.1	563.4	564.1
Average Queue (m)	24.8	93.6	66.3	54.3	351.4	29.2	24.5	35.7	42.2	9.8	498.9	495.7
95th Queue (m)	62.3	188.3	99.5	57.8	662.8	101.1	45.2	63.3	73.0	39.3	677.8	676.4
Link Distance (m)		1355.9			586.1			774.3	774.3		547.3	547.3
Upstream Blk Time (%)					20						42	42
Queuing Penalty (veh)					0						0	0
Storage Bay Dist (m)	75.0		60.0	35.0		55.0	80.0			30.0		
Storage Blk Time (%)	0	19	17	95	18			0			42	
Queuing Penalty (veh)	0	74	45	164	38			0			13	

Intersection: 2: Cataract Road/Main Street (RR 136) & Charleston Sideroad (RR 24)

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (m)	17.1	45.0	1.3	65.9	10.9	10.4	11.8	22.4	12.8
Average Queue (m)	3.6	15.8	0.0	12.8	1.5	2.6	2.7	7.4	4.1
95th Queue (m)	11.4	36.5	0.9	40.1	7.0	9.2	9.1	18.2	10.7
Link Distance (m)		1418.7		2799.0			898.9		1191.1
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)	125.0		60.0		90.0	70.0		85.0	
Storage Blk Time (%)				0					
Queuing Penalty (veh)				0					

Intersection: 3: Mississauga Road & Charleston Sideroad (RR 24)

Movement	EB	WB	NB	SB
Directions Served	L	L	LTR	LTR
Maximum Queue (m)	1.9	22.2	24.3	10.2
Average Queue (m)	0.1	3.0	8.3	4.9
95th Queue (m)	1.4	13.4	20.1	10.9
Link Distance (m)			1222.3	609.3
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)	30.0	30.0		
Storage Blk Time (%)		0		
Queuing Penalty (veh)		0		

Network Summary

Network wide Queuing Penalty: 335

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	4:50	4:50	4:50	4:50	4:50	4:50	4:50
End Time	6:00	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	70	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	4437	4588	4510	4476	4488	4592	4505
Vehs Exited	4350	4476	4421	4409	4398	4492	4462
Starting Vehs	298	253	301	304	272	259	305
Ending Vehs	385	365	390	371	362	359	348
Travel Distance (km)	10949	11177	11111	10808	10678	10930	10443
Travel Time (hr)	385.2	433.8	422.5	430.0	458.8	394.3	432.6
Total Delay (hr)	196.1	241.5	231.3	242.5	273.5	205.5	249.8
Total Stops	6673	6885	6908	7124	6889	7010	6881
Fuel Used (l)	911.0	972.0	962.5	950.1	969.5	925.2	932.8

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	4:50	4:50	4:50	4:50
End Time	6:00	6:00	6:00	6:00
Total Time (min)	70	70	70	70
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	4458	4527	4598	4518
Vehs Exited	4425	4488	4504	4441
Starting Vehs	330	324	281	290
Ending Vehs	363	363	375	364
Travel Distance (km)	10877	10974	11273	10922
Travel Time (hr)	497.9	461.1	401.0	431.7
Total Delay (hr)	309.5	271.4	207.6	242.9
Total Stops	7218	7164	7032	6977
Fuel Used (l)	1015.3	984.4	947.2	957.0

Interval #0 Information Seeding

Start Time	4:50
End Time	5:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	4437	4588	4510	4476	4488	4592	4505
Vehs Exited	4350	4476	4421	4409	4398	4492	4462
Starting Vehs	298	253	301	304	272	259	305
Ending Vehs	385	365	390	371	362	359	348
Travel Distance (km)	10949	11177	11111	10808	10678	10930	10443
Travel Time (hr)	385.2	433.8	422.5	430.0	458.8	394.3	432.6
Total Delay (hr)	196.1	241.5	231.3	242.5	273.5	205.5	249.8
Total Stops	6673	6885	6908	7124	6889	7010	6881
Fuel Used (l)	911.0	972.0	962.5	950.1	969.5	925.2	932.8

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	4458	4527	4598	4518
Vehs Exited	4425	4488	4504	4441
Starting Vehs	330	324	281	290
Ending Vehs	363	363	375	364
Travel Distance (km)	10877	10974	11273	10922
Travel Time (hr)	497.9	461.1	401.0	431.7
Total Delay (hr)	309.5	271.4	207.6	242.9
Total Stops	7218	7164	7032	6977
Fuel Used (l)	1015.3	984.4	947.2	957.0

Intersection: 1: Hurontario Street (Hwy 10) & Charleston Sideroad (RR 24)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	T	TR
Maximum Queue (m)	77.3	148.2	79.4	54.8	132.4	94.5	109.9	791.8	787.6	64.8	153.0	148.4
Average Queue (m)	30.4	62.9	18.6	20.6	67.1	24.3	70.2	702.4	699.4	18.3	86.4	86.8
95th Queue (m)	65.3	115.9	53.7	48.7	114.8	61.4	139.5	946.9	943.5	50.4	132.3	132.0
Link Distance (m)		1355.9			586.1			774.3	774.3		547.3	547.3
Upstream Blk Time (%)								46	38			
Queuing Penalty (veh)								0	0			
Storage Bay Dist (m)	75.0		60.0	35.0		55.0	80.0			30.0		
Storage Blk Time (%)	0	13		1	37	0	0	40		1	32	
Queuing Penalty (veh)	1	27		4	60	1	1	88		7	16	

Intersection: 2: Cataract Road/Main Street (RR 136) & Charleston Sideroad (RR 24)

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (m)	19.9	53.8	5.9	60.9	15.6	17.3	14.0	28.4	21.9
Average Queue (m)	6.0	19.8	0.5	19.5	3.0	4.5	4.3	12.6	7.3
95th Queue (m)	15.2	43.2	3.3	48.0	10.5	13.2	11.8	25.3	16.0
Link Distance (m)		1418.7		2799.0			898.9		1191.1
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)	125.0		60.0		90.0	70.0		85.0	
Storage Blk Time (%)				0					
Queuing Penalty (veh)				0					

Intersection: 3: Mississauga Road & Charleston Sideroad (RR 24)

Movement	EB	WB	NB	SB
Directions Served	L	L	LTR	LTR
Maximum Queue (m)	10.9	7.4	22.8	13.9
Average Queue (m)	1.4	0.7	8.0	5.4
95th Queue (m)	6.7	4.3	16.5	12.0
Link Distance (m)			1222.3	609.3
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)	30.0	30.0		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 206

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	1:50	1:50	1:50	1:50	1:50	1:50	1:50
End Time	3:00	3:00	3:00	3:00	3:00	3:00	3:00
Total Time (min)	70	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	4476	4540	4561	4522	4504	4558	4747
Vehs Exited	4477	4572	4522	4478	4495	4554	4636
Starting Vehs	287	299	266	281	265	292	283
Ending Vehs	286	267	305	325	274	296	394
Travel Distance (km)	11228	11571	11573	11260	11219	11933	11791
Travel Time (hr)	274.8	284.8	286.2	311.2	273.1	288.4	334.9
Total Delay (hr)	80.6	85.6	87.1	117.0	79.3	84.6	132.2
Total Stops	4462	4632	4748	6137	4400	4651	6771
Fuel Used (l)	826.0	848.5	848.3	857.4	823.6	872.9	906.7

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	1:50	1:50	1:50	1:50
End Time	3:00	3:00	3:00	3:00
Total Time (min)	70	70	70	70
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	4583	4459	4569	4554
Vehs Exited	4504	4445	4532	4520
Starting Vehs	276	289	272	281
Ending Vehs	355	303	309	310
Travel Distance (km)	11032	11107	11702	11442
Travel Time (hr)	315.6	265.8	307.6	294.2
Total Delay (hr)	124.2	74.1	106.7	97.1
Total Stops	6324	4242	5715	5208
Fuel Used (l)	849.9	810.1	876.2	852.0

Interval #0 Information Seeding

Start Time	1:50
End Time	2:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	2:00
End Time	3:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	4476	4540	4561	4522	4504	4558	4747
Vehs Exited	4477	4572	4522	4478	4495	4554	4636
Starting Vehs	287	299	266	281	265	292	283
Ending Vehs	286	267	305	325	274	296	394
Travel Distance (km)	11228	11571	11573	11260	11219	11933	11791
Travel Time (hr)	274.8	284.8	286.2	311.2	273.1	288.4	334.9
Total Delay (hr)	80.6	85.6	87.1	117.0	79.3	84.6	132.2
Total Stops	4462	4632	4748	6137	4400	4651	6771
Fuel Used (l)	826.0	848.5	848.3	857.4	823.6	872.9	906.7

Interval #1 Information Recording

Start Time	2:00
End Time	3:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	4583	4459	4569	4554
Vehs Exited	4504	4445	4532	4520
Starting Vehs	276	289	272	281
Ending Vehs	355	303	309	310
Travel Distance (km)	11032	11107	11702	11442
Travel Time (hr)	315.6	265.8	307.6	294.2
Total Delay (hr)	124.2	74.1	106.7	97.1
Total Stops	6324	4242	5715	5208
Fuel Used (l)	849.9	810.1	876.2	852.0

Intersection: 1: Hurontario Street (Hwy 10) & Charleston Sideroad (RR 24)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	T	TR
Maximum Queue (m)	77.3	155.4	85.0	54.9	111.2	38.1	110.0	448.4	451.6	64.9	153.9	151.9
Average Queue (m)	34.0	74.1	24.6	32.2	53.3	10.3	77.9	282.4	284.4	25.8	98.3	99.5
95th Queue (m)	75.1	129.7	70.0	59.7	90.6	26.3	138.2	516.4	511.1	63.5	142.7	142.7
Link Distance (m)		1355.9			586.1			774.3	774.3		547.3	547.3
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	75.0		60.0	35.0		55.0	80.0			30.0		
Storage Blk Time (%)	0	18		8	26		1	39		1	40	
Queuing Penalty (veh)	0	44		24	46		8	97		7	30	

Intersection: 2: Cataract Road/Main Street (RR 136) & Charleston Sideroad (RR 24)

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (m)	20.7	53.5	13.2	54.4	15.0	11.1	19.2	25.7	23.5
Average Queue (m)	7.4	21.2	2.4	20.6	3.6	2.1	5.8	11.4	9.1
95th Queue (m)	17.1	42.0	8.5	44.8	11.2	8.1	15.0	23.2	19.2
Link Distance (m)		1418.7		2799.0			898.9		1191.1
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)	125.0		60.0		90.0	70.0		85.0	
Storage Blk Time (%)				0					
Queuing Penalty (veh)				0					

Intersection: 3: Mississauga Road & Charleston Sideroad (RR 24)

Movement	EB	WB	NB	SB
Directions Served	L	L	LTR	LTR
Maximum Queue (m)	10.0	8.5	17.5	12.7
Average Queue (m)	1.6	1.2	8.2	5.4
95th Queue (m)	6.7	5.8	14.3	11.5
Link Distance (m)			1222.3	609.3
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)	30.0	30.0		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 257

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	6:50	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	4243	4206	4243	4221	4331	4313	4250
Vehs Exited	4160	4113	4136	4086	4160	4155	4141
Starting Vehs	279	294	280	286	226	240	271
Ending Vehs	362	387	387	421	397	398	380
Travel Distance (km)	9124	9168	9202	9182	9339	9306	9248
Travel Time (hr)	423.3	525.0	441.0	453.5	416.6	412.5	483.3
Total Delay (hr)	261.7	363.2	279.0	291.9	251.9	247.9	320.6
Total Stops	6053	6218	5876	6081	5807	5728	6188
Fuel Used (l)	864.0	955.8	892.0	895.9	872.1	863.1	925.4

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	4269	4175	4287	4256
Vehs Exited	4134	4106	4138	4134
Starting Vehs	282	310	243	269
Ending Vehs	417	379	392	389
Travel Distance (km)	9260	9235	9306	9237
Travel Time (hr)	484.8	558.6	427.3	462.6
Total Delay (hr)	321.9	395.8	263.4	299.7
Total Stops	6082	6356	6000	6037
Fuel Used (l)	924.2	990.1	877.7	906.0

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	4243	4206	4243	4221	4331	4313	4250
Vehs Exited	4160	4113	4136	4086	4160	4155	4141
Starting Vehs	279	294	280	286	226	240	271
Ending Vehs	362	387	387	421	397	398	380
Travel Distance (km)	9124	9168	9202	9182	9339	9306	9248
Travel Time (hr)	423.3	525.0	441.0	453.5	416.6	412.5	483.3
Total Delay (hr)	261.7	363.2	279.0	291.9	251.9	247.9	320.6
Total Stops	6053	6218	5876	6081	5807	5728	6188
Fuel Used (l)	864.0	955.8	892.0	895.9	872.1	863.1	925.4

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	4269	4175	4287	4256
Vehs Exited	4134	4106	4138	4134
Starting Vehs	282	310	243	269
Ending Vehs	417	379	392	389
Travel Distance (km)	9260	9235	9306	9237
Travel Time (hr)	484.8	558.6	427.3	462.6
Total Delay (hr)	321.9	395.8	263.4	299.7
Total Stops	6082	6356	6000	6037
Fuel Used (l)	924.2	990.1	877.7	906.0

Intersection: 1: Hurontario Street (Hwy 10) & Charleston Sideroad (RR 24)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	T	TR
Maximum Queue (m)	77.4	298.7	85.0	55.0	581.5	100.0	86.0	75.2	82.9	64.7	563.3	562.1
Average Queue (m)	31.8	148.9	76.7	54.1	389.2	27.0	41.1	35.0	42.4	9.3	526.4	524.6
95th Queue (m)	73.3	303.7	99.8	59.6	710.2	97.2	75.7	64.7	71.5	37.8	650.3	648.7
Link Distance (m)		1355.9			586.1			774.3	774.3		547.3	547.3
Upstream Blk Time (%)					29						49	49
Queuing Penalty (veh)					0						0	0
Storage Bay Dist (m)	75.0		60.0	35.0		55.0	80.0			30.0		
Storage Blk Time (%)	0	21	35	94	17		1	0		0	43	
Queuing Penalty (veh)	1	95	97	163	36		5	0		0	13	

Intersection: 2: Cataract Road/Main Street (RR 136) & Charleston Sideroad (RR 24)

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (m)	15.4	56.9	4.5	60.2	7.5	10.0	7.0	20.0	14.7
Average Queue (m)	3.2	19.6	0.3	13.3	1.0	2.3	1.2	6.6	4.2
95th Queue (m)	10.5	44.9	2.4	43.0	5.2	7.9	5.0	15.7	11.1
Link Distance (m)		753.6		2799.0			895.6		1191.1
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)	125.0		60.0		90.0	70.0		85.0	
Storage Blk Time (%)				0					
Queuing Penalty (veh)				0					

Intersection: 3: Mississauga Road & Charleston Sideroad (RR 24)

Movement	EB	WB	NB	SB
Directions Served	L	L	LTR	LTR
Maximum Queue (m)	2.6	18.6	20.8	9.2
Average Queue (m)	0.1	3.1	7.1	4.0
95th Queue (m)	1.3	12.6	17.7	8.9
Link Distance (m)			1222.3	607.7
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)	30.0	30.0		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 101: Charleston Sideroad (RR 24) & Site Access

Movement	EB	EB	WB	WB	SB
Directions Served	L	T	T	R	LR
Maximum Queue (m)	7.9	56.0	60.0	24.6	37.2
Average Queue (m)	0.9	29.5	23.0	6.3	11.4
95th Queue (m)	5.3	47.4	44.7	19.3	28.6
Link Distance (m)		623.7	753.6		117.2
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)	130.0			75.0	
Storage Blk Time (%)			0		
Queuing Penalty (veh)			0		

Network Summary

Network wide Queuing Penalty: 412

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	4:50	4:50	4:50	4:50	4:50	4:50	4:50
End Time	6:00	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	70	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	4742	4779	4845	4738	4839	4832	4775
Vehs Exited	4689	4710	4776	4708	4712	4760	4703
Starting Vehs	320	297	303	341	273	314	305
Ending Vehs	373	366	372	371	400	386	377
Travel Distance (km)	11588	11612	11615	11353	11424	11401	11412
Travel Time (hr)	429.4	420.2	489.3	492.0	369.7	471.0	406.3
Total Delay (hr)	229.6	220.2	289.2	296.3	172.6	273.8	209.4
Total Stops	8409	7859	8244	7416	6973	7856	7793
Fuel Used (l)	1005.6	996.7	1060.0	1048.0	943.2	1027.1	978.1

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	4:50	4:50	4:50	4:50
End Time	6:00	6:00	6:00	6:00
Total Time (min)	70	70	70	70
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	4749	4838	4786	4792
Vehs Exited	4669	4738	4677	4716
Starting Vehs	281	284	291	295
Ending Vehs	361	384	400	375
Travel Distance (km)	11344	11461	11439	11465
Travel Time (hr)	473.6	440.8	436.6	442.9
Total Delay (hr)	278.1	243.4	239.8	245.2
Total Stops	7790	7775	7486	7763
Fuel Used (l)	1036.6	1013.5	1002.8	1011.2

Interval #0 Information Seeding

Start Time	4:50
End Time	5:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	4742	4779	4845	4738	4839	4832	4775
Vehs Exited	4689	4710	4776	4708	4712	4760	4703
Starting Vehs	320	297	303	341	273	314	305
Ending Vehs	373	366	372	371	400	386	377
Travel Distance (km)	11588	11612	11615	11353	11424	11401	11412
Travel Time (hr)	429.4	420.2	489.3	492.0	369.7	471.0	406.3
Total Delay (hr)	229.6	220.2	289.2	296.3	172.6	273.8	209.4
Total Stops	8409	7859	8244	7416	6973	7856	7793
Fuel Used (l)	1005.6	996.7	1060.0	1048.0	943.2	1027.1	978.1

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	4749	4838	4786	4792
Vehs Exited	4669	4738	4677	4716
Starting Vehs	281	284	291	295
Ending Vehs	361	384	400	375
Travel Distance (km)	11344	11461	11439	11465
Travel Time (hr)	473.6	440.8	436.6	442.9
Total Delay (hr)	278.1	243.4	239.8	245.2
Total Stops	7790	7775	7486	7763
Fuel Used (l)	1036.6	1013.5	1002.8	1011.2

Intersection: 1: Hurontario Street (Hwy 10) & Charleston Sideroad (RR 24)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	T	TR
Maximum Queue (m)	77.4	204.8	85.0	54.9	115.1	75.5	110.0	791.4	790.1	64.9	151.9	156.9
Average Queue (m)	41.2	77.5	31.7	24.2	61.2	21.5	81.0	687.9	684.1	19.9	95.4	96.3
95th Queue (m)	80.3	169.8	77.5	53.9	102.2	52.0	140.1	977.5	972.7	54.8	142.9	141.8
Link Distance (m)		1355.9			586.1			774.3	774.3		547.3	547.3
Upstream Blk Time (%)								42	35			
Queuing Penalty (veh)								0	0			
Storage Bay Dist (m)	75.0		60.0	35.0		55.0	80.0			30.0		
Storage Blk Time (%)	4	14	0	3	33		1	39		2	35	
Queuing Penalty (veh)	17	37	0	9	55		14	102		9	18	

Intersection: 2: Cataract Road/Main Street (RR 136) & Charleston Sideroad (RR 24)

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (m)	19.5	58.8	7.6	73.1	14.5	14.1	13.0	29.1	26.9
Average Queue (m)	5.3	23.4	0.9	24.3	2.8	2.9	3.5	12.7	7.6
95th Queue (m)	13.7	48.3	4.7	58.1	9.9	9.8	9.7	25.4	17.8
Link Distance (m)		753.6		2799.0			895.6		1191.1
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)	125.0		60.0		90.0	70.0		85.0	
Storage Blk Time (%)				1					
Queuing Penalty (veh)				0					

Intersection: 3: Mississauga Road & Charleston Sideroad (RR 24)

Movement	EB	WB	NB	SB
Directions Served	L	L	LTR	LTR
Maximum Queue (m)	7.2	7.2	21.7	15.2
Average Queue (m)	1.0	0.5	8.5	4.5
95th Queue (m)	5.0	3.5	16.6	11.1
Link Distance (m)			1222.3	607.7
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)	30.0	30.0		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 101: Charleston Sideroad (RR 24) & Site Access

Movement	EB	EB	WB	WB	SB
Directions Served	L	T	T	R	LR
Maximum Queue (m)	14.8	54.9	71.0	23.2	38.8
Average Queue (m)	2.6	30.8	38.9	6.9	10.0
95th Queue (m)	9.9	48.4	65.0	19.1	26.9
Link Distance (m)		623.7	753.6		117.2
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)	130.0			75.0	
Storage Blk Time (%)			0		
Queuing Penalty (veh)			0		

Network Summary

Network wide Queuing Penalty: 261

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	1:50	1:50	1:50	1:50	1:50	1:50	1:50
End Time	3:00	3:00	3:00	3:00	3:00	3:00	3:00
Total Time (min)	70	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	4780	4747	4815	4714	4859	4832	4857
Vehs Exited	4667	4730	4724	4665	4763	4783	4752
Starting Vehs	256	267	321	275	279	287	296
Ending Vehs	369	284	412	324	375	336	401
Travel Distance (km)	11415	11796	11710	11634	11735	11637	11614
Travel Time (hr)	314.1	315.2	356.3	298.8	345.4	317.3	367.2
Total Delay (hr)	116.8	113.4	154.8	98.9	142.9	117.0	167.2
Total Stops	6243	6158	7430	5565	7413	6317	7654
Fuel Used (l)	895.6	917.2	952.4	897.7	934.6	914.8	955.9

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	1:50	1:50	1:50	1:50
End Time	3:00	3:00	3:00	3:00
Total Time (min)	70	70	70	70
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	4822	4816	4787	4800
Vehs Exited	4751	4702	4689	4724
Starting Vehs	317	296	311	287
Ending Vehs	388	410	409	369
Travel Distance (km)	11957	11800	11886	11718
Travel Time (hr)	375.9	374.2	361.7	342.6
Total Delay (hr)	170.7	171.9	158.2	141.2
Total Stops	8136	8460	7290	7063
Fuel Used (l)	978.2	972.3	957.7	937.6

Interval #0 Information Seeding

Start Time	1:50
End Time	2:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	2:00
End Time	3:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	4780	4747	4815	4714	4859	4832	4857
Vehs Exited	4667	4730	4724	4665	4763	4783	4752
Starting Vehs	256	267	321	275	279	287	296
Ending Vehs	369	284	412	324	375	336	401
Travel Distance (km)	11415	11796	11710	11634	11735	11637	11614
Travel Time (hr)	314.1	315.2	356.3	298.8	345.4	317.3	367.2
Total Delay (hr)	116.8	113.4	154.8	98.9	142.9	117.0	167.2
Total Stops	6243	6158	7430	5565	7413	6317	7654
Fuel Used (l)	895.6	917.2	952.4	897.7	934.6	914.8	955.9

Interval #1 Information Recording

Start Time	2:00
End Time	3:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	4822	4816	4787	4800
Vehs Exited	4751	4702	4689	4724
Starting Vehs	317	296	311	287
Ending Vehs	388	410	409	369
Travel Distance (km)	11957	11800	11886	11718
Travel Time (hr)	375.9	374.2	361.7	342.6
Total Delay (hr)	170.7	171.9	158.2	141.2
Total Stops	8136	8460	7290	7063
Fuel Used (l)	978.2	972.3	957.7	937.6

Intersection: 1: Hurontario Street (Hwy 10) & Charleston Sideroad (RR 24)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	T	TR
Maximum Queue (m)	77.4	252.7	85.0	54.9	124.4	39.8	110.0	699.9	669.8	64.9	200.8	205.1
Average Queue (m)	40.1	108.6	36.4	35.4	60.0	12.5	96.4	431.6	427.0	28.7	127.0	126.1
95th Queue (m)	81.9	212.7	86.7	62.2	107.8	41.5	139.0	765.5	750.6	66.4	189.7	188.8
Link Distance (m)		1355.9			586.1			774.3	774.3		547.3	547.3
Upstream Blk Time (%)								5	3			
Queuing Penalty (veh)								0	0			
Storage Bay Dist (m)	75.0		60.0	35.0		55.0	80.0			30.0		
Storage Blk Time (%)	0	26	0	15	29		13	43		5	48	
Queuing Penalty (veh)	1	71	1	44	50		106	117		29	36	

Intersection: 2: Cataract Road/Main Street (RR 136) & Charleston Sideroad (RR 24)

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (m)	23.5	68.8	12.7	65.1	13.6	12.4	11.6	28.1	27.9
Average Queue (m)	6.2	24.1	3.0	23.5	3.6	1.8	3.6	11.9	9.2
95th Queue (m)	16.3	53.1	9.2	52.2	10.7	7.8	9.7	24.0	20.2
Link Distance (m)		753.6		2799.0			895.6		1191.1
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)	125.0		60.0		90.0	70.0		85.0	
Storage Blk Time (%)		0		0					
Queuing Penalty (veh)		0		0					

Intersection: 3: Mississauga Road & Charleston Sideroad (RR 24)

Movement	EB	WB	WB	NB	SB
Directions Served	L	L	TR	LTR	LTR
Maximum Queue (m)	11.3	9.1	0.6	23.9	19.0
Average Queue (m)	1.7	0.9	0.0	9.5	5.4
95th Queue (m)	7.0	5.1	0.6	18.5	13.1
Link Distance (m)			623.7	1222.3	607.7
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)	30.0	30.0			
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 101: Charleston Sideroad (RR 24) & Site Access

Movement	EB	EB	WB	WB	SB
Directions Served	L	T	T	R	LR
Maximum Queue (m)	3.7	65.8	85.1	26.6	34.9
Average Queue (m)	0.1	33.6	38.4	6.6	7.8
95th Queue (m)	2.7	55.4	67.7	20.5	24.6
Link Distance (m)		623.7	753.6		117.2
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)	130.0			75.0	
Storage Blk Time (%)			0		
Queuing Penalty (veh)			0		

Network Summary

Network wide Queuing Penalty: 456

APPENDIX K

Project Team CVs

TYLin

YEARS OF EXPERIENCE
15 Years

YEARS WITH TYLIN
6 Years

EDUCATION
Advanced Diploma in Transportation Engineering Technology, Mohawk College, 2010

LICENSE
Certified Engineering Technologist, Ontario

CERTIFICATIONS
WHMIS 2015 Training, 2016

AODA Understanding Human Rights, 2016

AODA Customer Service Training, 2016

Supervisor Health and Safety Awareness in 5 Steps, 2016

Workplace Violence and Harassment Training (Bills 168 and 132), 2016

AFFILIATIONS
Ontario Association of Certified Technicians and Technologists (OACETT)

Institute of Transportation Engineers (ITE)

BUILDINGS

Michael Dowdall, C.E.T., MITE

DIRECTOR OF TRAFFIC

Michael is the Director of Traffic at TYLin with extensive experience in all aspects of the transportation planning field at the municipal, regional, and provincial level. He has significant experience using AutoCAD and Microstation for the functional design of roadways and site accesses, traffic management implementation plans, and construction management plans. Michael's project experience includes the identification and mitigation of traffic impacts for land development, preparation of conceptual roadway / highway layouts, site access schemes, internal circulation systems, queuing studies, and parking needs reviews. His key public sector experience includes traffic calming, secondary plan road network assessments, and urban / suburban parking studies. This experience enables Michael to prepare thorough and informed transportation studies in support of development applications.

PROJECT EXPERIENCE

City of Mississauga, Lakeview Village Transportation Considerations Report and Vissim Microsimulation Report | Mississauga, ON
Project Manager for development of vehicle travel demand throughout the study area road network and examining the transportation operations under a series of potential road network design options. Managed the trip generation of residential component of site from first principles, taking into consideration TTS data, expected unit occupancy, percentage of residents traveling during the peak hour, modal split implications and adjustments, etc. Oversaw the Creation and calibration of detailed models of the study area road network using both PTV Vissim and Synchro microsimulation software to assess major intersections for Level (Quality) of Service, volume to capacity ratios, delay, and queuing. Analyzed results from Vissim and Synchro models and made recommendations on the ultimate road network to accommodate the predicted build-out of the Lakeview Village area and surrounding developments. Provided supplemental phasing analysis and sensitivity testing throughout approvals process in order to achieve draft plan approval from City.

Town of East Gwillimbury, Green Lane MESP | East Gwillimbury, Ontario, Canada
Buildings, Traffic | Design Bid Build | Traffic Analyst
Examined and assessed the operational impacts of trips generated by the Green Lane Secondary Plan area in the context of the broader area transportation demands. Created a micro-analysis traffic operations model using Synchro and tested the major intersections for Level (Quality) of Service, volume to capacity ratios, delay, and queuing. Tested the reasonableness and ability of the planned internal and external road system to accommodate future traffic. In concert with the traffic operations assessment, developed a series of transportation system plans in coordination with the Region's Transportation Master Plan and other relevant documents. Developed a comprehensive strategy to highlight the features and opportunities of the GLSP study area in efforts to encourage a shift away from SOV travel.

Milton Phase II Landowners Group, Sherwood Survey | Milton, Ontario, Canada
Buildings, Traffic | Design Bid Build | Traffic Analyst
Traffic Analyst for this urban expansion, which is predominately on the west side of Milton, and is under construction with a planned future population of 45,000.

Milton Phase III Landowners Group, Boyne Survey Roads Needs Assessment | Milton, Ontario, Canada
Buildings, Traffic | Design Bid Build | Traffic Analyst
The Boyne Survey Secondary Plan Area is located in the Milton Urban Expansion Area, south of the existing Bristol Survey and Sherwood Survey Secondary Plan Areas. This urban expansion is under

construction with a planned future population of 50,000. Michael analyzed the traffic conditions for full build-out and identified the interim and ultimate intersection improvements required to accommodate development based on the scheduled capital works phasing. The Town adopted this study as a basis for all future development within the Boyne Secondary Plan.

Milton Phase IIII Landowners Group, South Milton Urban Expansion Area | Milton, Ontario, Canada

Buildings, Traffic | Design Bid Build | Traffic Analyst

Provide advisory transportation planning / engineering services for the Landowners Group of the South Milton Urban Expansion Area (established through the passing of Regional Official Plan Amendment 38), and of the ongoing and future Transportation Planning assignments and Capital Works projects that will directly affect these lands and the broader development of Milton.

City of Toronto, Crosslinx Eglinton LRT Traffic and Transit Management Plan | Toronto, Ontario, Canada

Buildings, Traffic | Design Bid Build | Traffic Analyst

Provided traffic analysis and traffic management plans for Segment 2 of the Eglinton LRT project, consisting of five separate Eglinton LRT stations each requiring the use of Synchro analysis software and OTM Book 7 to prepare traffic management plans for each stage of construction and recommend measures to maintain existing capacity along Eglinton Avenue during construction.

Town of Richmond Hill, North Leslie West Residential Subdivisions | Richmond Hill, Ontario, Canada

Buildings, Traffic | Design Bid Build | Traffic Analyst

Michael completed a traffic impact study for the Raki Holdings Inc., Richview 19 Holdings Inc., and Autumnhill Investment Ltd. Draft Plans within the North Leslie West Secondary Plan consistent with their conditions of approval and the North Leslie MESP. Michael calculated trip generation of the three proposed subdivisions and documented the internal road network elements and external arterial access points to ensure the traffic generated by the three subject subdivisions can be accommodated by the network. Traffic Management Implementation Plans and Transportation Demand Management components were included to accommodate other modes of transportation.

Township of Ramara, Fowler Construction Fleming Quarry | Orillia, Ontario, Canada

Buildings, Traffic | Design Bid Build | Project Manager

Project Manager for the traffic impact study assessing the extent of traffic-related impacts on the abutting roadway system generated by Fowler's proposed application for an extraction area boundary increase at Fleming Quarry, located in the northeast quadrant of Switch Road and Rama Road in the Township of Ramara, County of Simcoe. The objectives of this study are to establish baseline traffic conditions for the study area and update the existing traffic conditions, derive the future background operating conditions and analyze future operating conditions for the study intersections at a future 2022 and 2027 planning horizon, and determine what, if any, traffic impacts there are on the study area haul route from the proposed quarry extension.

City of Brampton, Chinquacousy Farm Residential Subdivision | Brampton, Ontario, Canada

Buildings, Traffic | Design Bid Build | Transportation Analyst

Transportation Analyst responsible for the preparation of a traffic impact study and completion of an extensive analysis of future traffic conditions for the development of a 540-unit residential subdivision that satisfied MTO's requirements at the ramp terminals.

Town of Oakville, Green Ginger Residential Subdivision | Oakville, Ontario, Canada

Buildings, Traffic | Design Bid Build | Traffic Analyst

Completed a traffic impact study for Draft Plan approval of a 2,000-unit residential subdivision. Examined the future capacity and operations of the adjacent regional road network and prepared a Transit Facilities Plan consistent with the Town's transit plan.

City of Toronto, 1100 Caledonia Road Commercial Redevelopment | Toronto, Ontario, Canada

Buildings, Traffic | Design Bid Build | Traffic Analyst

Analyzed the existing and future traffic volumes on the adjacent road network for the redevelopment of an existing commercial building. Recommended roadway improvements and completed functional design drawings for the sections of roadway to be improved.

Town of Milton, Traffic Control Plans | Milton, Ontario, Canada

Buildings, Traffic | Design Bid Build | Traffic Analyst

Prepared traffic control plans for a variety of residential subdivisions within the Sherwood and Boyne Survey Secondary Plans. The subdivisions included Mattamy Church Lands Neighbourhood, Willmott Neighbourhood Phase 1 & 2, Capozzi Neighbourhood Phase 2A, and Milton Main Street Homes.

Town of Bowmanville, Brookhill Neighbourhood Residential Subdivision | Bowmanville, Ontario, Canada

Buildings, Traffic | Design Bid Build | Traffic Analyst

Completed a traffic impact study for Draft Plan approval of a 1,500-unit residential subdivision in the Municipality of Clarington. Analysis included extensive redistribution of traffic, multiple road and development phasing, and intersection functional design.

ENVIRONMENTAL ASSESSMENTS

Peel Region, Burnhamthorpe Road Watermain Twinning EA and Preliminary Design | Brampton, Ontario, Canada

Buildings, Traffic | Design Bid Build | Traffic Analyst

Analyzed the existing and future traffic volumes on the adjacent road network along the new Burnhamthorpe Road watermain route, including Webb Drive. Also provided a preliminary summary of the traffic impact at key intersections based on the conceptual construction staging in compliance with OTM Book 7.

City of Kitchener, Huron Road Environmental Assessment | Kitchener, Ontario, Canada

Buildings, Traffic | Design Bid Build | Traffic Analyst

Traffic Analyst who evaluated the existing conditions along the Huron Road Corridor by adhering to the phasing requirements of the Class EA process. Transportation analysis defined problems / opportunities and a preferred road improvement alternative solution. Michael built upon these requirements to meet the needs of the City by developing a system integrating all modes of travel while providing a safe and efficient road network for the movement of both people and goods within and through this area of the City. The transportation planning approach to this study will be multidimensional and recognize the current and projected functions of Huron Road.

Peel Region, Cawthra Road Watermain Installation | Mississauga, Ontario, Canada

Buildings, Traffic | Design Bid Build | Designer

Designer for the construction staging of the proposed 1,500mm Mississauga City Centre (MCC) watermain. Prepared detailed design traffic management plans involving lane closures that were required for the installation of MCC and local watermain on Cawthra Road between Rathburn Road and Burnhamthorpe Road.

NAC Constructors Ltd., Britannia Road Watermain Installation | Milton, Ontario, Canada

Buildings, Traffic | Design Bid Build | Designer

Designer for the construction staging of the proposed watermain. Prepared detailed design traffic plans, involving partial lane shifts required for the installation of MH2 and MH2A shaft sites on Britannia Road.

URBAN REDEVELOPMENT

City of Toronto, Build Toronto Kingston-Dale Residential Development | Toronto, Ontario, Canada

Buildings, Traffic | Design Bid Build | Traffic Analyst

Examined the traffic impacts from the proposed development and considered the City's Traffic Demand Management Strategies and parking requirements for the site. The study included a loading study as per City guidelines confirming the site's internal circulation system's ability to accommodate the maneuverability of passenger cars and expected delivery / emergency vehicles. Prepared a functional / conceptual design of Dale Avenue based on traffic analysis results including lane geometry, pavement markings, traffic control measures, and signage.

City of Toronto, 871-899 College Street Condominium | Toronto, Ontario, Canada

Buildings, Traffic | Design Bid Build | Traffic Analyst

Assessed the traffic impacts of an eight-storey condominium building, including ground floor commercial. The consolidated deliverables included loading, parking, and traffic operations studies required for the application. Provided a Transportation Demand Management plan for the site to reduce the dependency on single occupant vehicle trips and promote a shift to Transit and/or Active Transportation modes. Investigated the appropriateness of the proposed parking supply to accommodate the future demands of the development.

City of Toronto, Laird and Wicksteed Commercial Redevelopment | Toronto, Ontario, Canada

Buildings, Traffic | Design Bid Build | Traffic Analyst

Developed a detailed traffic model for a commercial redevelopment in the Leaside Community of Toronto. Synchro traffic model confirmed the future development can be accommodated on the adjacent road network and subsequently approved by the City of Toronto.

City of Toronto, Sheppard Avenue Condominiums | Toronto, Ontario, Canada

Buildings, Traffic | Design Bid Build | Traffic Analyst

Assessed traffic impacts of two nine–storey condos, including ground floor commercial, and prepared traffic impact studies satisfying City requirements.

Town of Oakville, 70 Old Mill Road Mixed-Use Development | Oakville, Ontario, Canada

Buildings, Traffic | Design Bid Build | Traffic Analyst

Developed a pedestrian circulation plan and assessed the traffic impact of a proposed mixed-use development. The traffic model included existing and future traffic generated from the new Oakville GO parking lot expansion and reviewed the operational and capacity restraints in the Cornwall Road corridor.

City of Mississauga, 6789 Airport Road Restaurant Development | Mississauga, Ontario, Canada

Buildings, Traffic | Design Bid Build | Traffic Analyst

Analyzed the future traffic volumes on the adjacent road network for the redevelopment of an existing warehouse building. Derived an appropriate parking demand for the build-out site and provided an opinion as to the suitability of the proposed parking supply in comparison to the minimum parking requirement. Prepared a functional design of the right-in / right-out access on Airport Road based on Peel Region engineering standards.

City of Mississauga, Dixie Crossing Commercial Development | Mississauga, Ontario, Canada

Buildings, Traffic | Design Bid Build | Traffic Analyst

Examined the future traffic volumes generated by the commercial development and prepared a traffic impact study. With Peel Region's cooperation, a design was agreed upon for the site access onto Dixie Road. The study concluded that traffic generated by the proposed 53,693 sq ft of retail and restaurant GFA can be accommodated by the adjacent street system with the implementation of recommended access improvements.

FUNCTIONAL DESIGN

- Lakeshore Road East external road improvements, City of Mississauga
- Highway 9 and First Line Localized Widening Design, Town of Mono
- Derry / Scott Commercial Access Design, Town of Milton
- William Allen Road Commercial Access Design, City of Toronto
- Caledon-King Townline Residential, Town of Caledon
- Intersection Design, Town of Caledon
- 7150 Edwards Boulevard Parking Lot Layout, City of Mississauga
- Richmond Hill GO Access Design, City of Vaughan
- Rotherglen School Parking Layout, Town of Oakville
- Steeles and Financial Drive Access Design, City of Brampton

PARKING STUDIES

- Shingar Banquet Hall, City of Brampton
- Woodland Court Commercial, Town of Richmond Hill
- Oakville Entertainment Centre, Town of Oakville
- Meadowvale Christian Academy, City of Mississauga
- Trafalgar Sports Park, Town of Milton
- Rotherglen School, Town of Oakville
- Chinguacousy Road Commercial, City of Brampton
- 2441 Finch Residential, City of Toronto
- Eitz Chaim Synagogue, City of Toronto
- Faith of Life Place of Worship, City of Mississauga
- Oakleaf Academy, Town of Oakville
- Orchard Gardens Market, City of Mississauga
- Four Seasons Garden Condominium, Town of Richmond Hill
- Electric Building Condominiums, City of Toronto

TYLin

YEARS OF EXPERIENCE
3 Years

YEARS WITH TYLIN
3 Years

EDUCATION
Bachelor of Applied Science (Honours)

AFFILIATIONS
Engineer-In-Training, Professional Engineers of Ontario

PROFICIENCIES (E.G. SOFTWARE)
Word, Excel, PowerPoint, Synchro, SimTraffic, Bluebeam Revu, AutoCAD, AutoTURN

BUILDINGS

Sara Rahman, BASc, EIT

TRANSPORTATION PLANNER

Sara's three years of industry and research experience includes transportation engineering, traffic impact studies, transportation planning, traffic modelling, environmental assessment, road safety analysis, and conceptual design. He is knowledgeable of municipal, regional, MTO, TAC, and ITE guidelines. He has strong technical writing, oral communication, and analytical abilities developed from both public and private sector experience.

PROJECT EXPERIENCE

Sara has a range of project experience across the Greater Toronto Area from acting in both traffic analyst and technical support roles for traffic impact studies and large-scale transportation assessments. These roles have involved data acquisition, management and processing of traffic data, signal optimization and coordination, traffic capacity analysis, traffic control and turn-lane warrant analysis, by-law and development charge reviews, and preparation of parking and loading assessments. Additionally, Sara has contributed to the transportation design elements of projects through preparation of site geometry reviews, pavement marking and signage plans, and conceptual roadway designs. Projects have ranged from secondary/tertiary plan studies, subdivision draft plan applications, individual site plan applications (residential, commercial, and industrial), and pit/quarry-related traffic studies. Some of these projects include:

CBM Aggregates, Woodville Pit Transportation Impact Study | Kawartha Lakes, ON
Buildings, Traffic | Traffic Analyst
Scoped traffic study for alteration application.

Lafarge, Stouffville Pit Transportation Impact Study | Whitchurch-Stouffville, ON
Buildings, Traffic | Traffic Analyst
Scoped traffic study for pit alteration application.

Lafarge, Goodwood Pit Expansion Transportation Impact Study | Whitchurch-Stouffville, ON
Buildings, Traffic | Traffic Analyst
Scoped traffic study for pit expansion application.

Fieldgate Developments, Secondary Mixed-Use Node (SMUN) Lands Transportation Impact Study | Milton, ON
Buildings, Traffic | Traffic Analyst
Proposed draft plan of subdivision with low/mid/high-rise residential and commercial uses.

Fieldgate Developments, SMUN Block 1 Lands Transportation Impact Study | Milton, ON
Buildings, Traffic | Traffic Analyst
Proposed draft plan of subdivision for commercial block of mixed-use lands.

Lakeview Community Partners, Lakeview Village Transportation Considerations Report | Mississauga, ON
Buildings, Traffic | Technical Support
Large-scale traffic study for proposed lakefront urban waterfront mixed-use community.

Trafalgar Corridor Landowners Group (MP4TC) Road Needs Assessment | Milton, ON
Buildings, Traffic | Technical Support
Large-scale traffic study for Trafalgar Secondary Plan area in support of proposed Tertiary Plan.

Prologis, Halton Hills Distribution Centre Traffic Impact Study | Halton Hills, ON
Buildings, Traffic | Technical Support
Proposed industrial warehouse development.

Davis Drive 404 Retail Limited Partnership, Davis Drive & Highway 404 Retail Development Transportation Mobility Plan | Newmarket, ON
Buildings, Traffic | Technical Support
Proposed retail/commercial development.

GO-TO Spadina Adelaide Square LP, 353 & 355 Adelaide St West Traffic Impact Study | Toronto, ON
Buildings, Traffic | Traffic Analyst
Proposed mixed-use development.

Sam Katz Holdings Ltd, 323 Oxford St West/92 Proudfoot Ln/825 Proudfoot Ln Traffic Impact Study | London, ON
Buildings, Traffic | Traffic Analyst
Proposed residential subdivision development.

Kiya Developments, 1319 Airport Boulevard Traffic Impact Study | Oshawa, ON
Buildings, Traffic | Traffic Analyst
Proposed commercial development.

2512461 Ontario Ltd, 6611 Second Line West Traffic Impact Study | Mississauga, ON
Buildings, Traffic | Traffic Analyst
Proposed residential development.

Panattoni Development Company, 4680 Garrard Road Traffic Impact Study | Whitby, ON
Buildings, Traffic | Traffic Analyst
Proposed industrial warehouse development.

1045502 Ontario Ltd & 1048605 Ontario Ltd Fieldgate Developments, West Lands Traffic Impact Study | Milton, ON
Buildings, Traffic | Traffic Analyst
Proposed draft plan of subdivision with low/mid/high-rise residential uses.